Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

Agenda for a meeting of the Waikato District Council to be held in the Council Chambers, District Office, 15 Galileo Street, Ngaaruawaahia on **MONDAY, 13 MAY 2024** commencing at **9:30 AM.**

*Information and recommendations are included in the reports to assist the Committee in the decision-making process and may not constitute Council's decision or policy until considered by the Committee.*

*The meeting will be opened with a karakia.*

## 1. APOLOGIES AND LEAVE OF ABSENCE

## 2. CONFIRMATION OF STATUS OF AGENDA

## 3. DISCLOSURE OF INTEREST

The register of interests is no longer included on agendas, however members still have a duty to disclose any interests under this item.

## 4. MINUTES FOR CONFIRMATION

Minutes for the meeting held on 2 April 2024

## 5. ACTIONS REGISTER

Actions Register - May

## 6. STRATEGY REPORTS

6.1 Draft Ngaaruawaahia, Hopuhopu, Taupiri Structure Plan | Ngaaruawaahia Town Centre Plan for public engagement

## 7. PERFORMANCE REPORTS

7.1 2023/24 Q3 Non-financial Performance Measure Results

7.2 Financial Performance Summary for the nine months to 31 March 2024

7.3 Treasury Risk Management Policy – Compliance Report at 31 March 2024

7.4 **2024-2034 Long Term Plan. Project close out**

7.5 Chief Executive's Business Plan

## 8. EXCLUSION OF THE PUBLIC

It is intended to discuss all matters in the open section of the meeting, however, should in depth legal advice or information, subject to a confidence, be requested from the Committee a resolution may be passed to exclude the public to hold these discussions.

8.1 Exclusion of the Public

GJ Ion
**CHIEF EXECUTIVE**

# TERMS OF REFERENCE

## PERFORMANCE AND STRATEGY

| | |
|---|---|
| **Reports to:** | The Council |
| **Chairperson:** | Cr Janet Gibb |
| **Deputy Chairperson:** | Cr Marlene Raumati |
| **Membership:** | The Mayor, all Councillors |
| **Meeting frequency:** | Six-weekly |
| **Quorum:** | Majority of members (including vacancies) |

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**Purpose:**

The Performance & Strategy Committee is responsible for:

1. Setting the broad vision and direction for the District's Long Term Plan, determine specific outcomes that need to be met to deliver on Council's vision, develop and monitor strategies to achieve those goals.

2. Monitoring of Council's strategy, and performance (both financial and non-financial) against the Long Term Plan and Annual Plan.

3. Determining financial matters within its delegations and Terms of Reference and making recommendations to Council on financial matters outside its authority.

4. Guiding and monitoring Council's interests in Council Controlled Organisations (CCOs), Council Organisations (COs) and subsidiaries.

***In addition to the common delegations, the Performance & Strategy Committee is delegated the following Terms of Reference and powers:***

**Terms of Reference - Strategy:**

1. Develop and agree strategy and plans for the purposes of consultation (including those required under schedule 10 of the Local Government Act 2002).

2. Recommend to Council strategy and plans for adoption, that underpin Council's Long Term Plan.

3. Monitor and review adopted strategies and plans.

4. To monitor and provide advice on the development and implementation of growth and development strategies, land use, and spatial plans in line with national policy requirements.

**Terms of Reference – Performance:**

1. To monitor Council's financial strategy, and performance against that strategy.

2. To monitor Council's non-financial performance framework as set out in the Long Term Plan.

3. To receive quarterly reports on the Chief Executive's Business Plan.

4. To provide clear direction to Council's CCOs and COs on Council's expectations, including feedback on draft statements of intent.

5. To receive six-monthly reports of Council's CCOs and COs, including on board performance.

6. To undertake any reviews of CCOs and agree CCO-proposed changes to their governance arrangements, except where reserved for full Council's approval.

7. To monitor Council's investments and Local Government Funding requirements in accordance with Council policy and applicable legislation.

**The Committee is delegated the following powers to act:**

- Approval of:
  a. the increase or decrease of the number of members on CCO and CO boards;

  b. appointments to, and removals from, CCO and CO boards; and

  c. a mandate on Council's position in respect of remuneration proposals for CCO and CO board members to be presented at Annual General Meetings.
- Approval of letters of expectation for each CCO and CO.
- Approval of statements of intent for each CCO and CO.
- Exercise the Council's powers as a shareholder, or as given under a trust deed, in relation to a CCO or CO, including (but not limited to) modification of constitutions and/or trust deeds, granting shareholder approval of major transactions where required, or exempting CCOs in accordance with the Local Government Act 2002. For clarity, this delegation includes the approval or otherwise of any proposal to establish, wind-up or dispose of any holding in, a CCO or CO.
- Monitor work programme of Future Proof, Waikato Plan, Growth Strategy and cross-boundary issues.
- Approval of any process for making decisions where additional operating expenditure or capital expenditure funding, or deferred capital expenditure, is required.
- Approval of all insurance matters which exceed the delegation of the Chief Executive or other staff, including considering legal advice from the Council's legal and other advisers, approving further actions relating to insurance issues, and authorising the taking of formal actions
- Review and make recommendations to Council in relation to Fees & Charges (after consultation with relevant community boards or committees).
- Review and recommend to Council the adoption of the Annual Report.
- Approval of transactions in relation to investments in accordance with Council policy.
- Approval of contractual and other arrangements for supply and services, and revenue generating contracts, which exceed the Chief Executive's delegations, but exclude contracts or arrangements that are reserved for the Council or another committee's approval.
- Approval of rating issues where these exceed the delegated authority of officers or are an appeal against officer decisions. For clarity, this excludes decisions that are required, by law, to be made by the Council.
- Approval to write-off outstanding accounts that exceed officer delegations.

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

**Open - Information Only**

| | |
|---|---|
| **To** | **Waikato District Council** |
| **Report title** | **Minutes for the meeting held on 2 April 2024** |
| Date: | 13 May 2024 |
| Report Author: | Thomas Rowland, Democracy Advisor |
| Authorised by: | Gaylene Kanawa, Democracy Manager |

## 1. Purpose of the report
## Te Take moo te puurongo

To confirm the minutes for a meeting of the Performance and Strategy Committee held on April 2 2024.

## 2. Staff recommendations
## Tuutohu-aa-kaimahi

**THAT the Performance and Strategy committee confirms the minutes for a meeting held on Tuesday, 2 April 2024 as a true and correct record.**

## 3. Attachments
## Ngaa taapirihanga

1. 240402 P&S OPEN Unconfirmed Minutes

Minutes for a meeting of the Performance and Strategy Committee held in the Council Chambers, 15 Gallileo Street, Ngaaruawaahia on **TUESDAY, 2 APRIL 2024** commencing at **9:30am**.

**Present:**

Cr J Gibb (Chairperson)
Cr M Raumati (Deputy Chairperson) *departed 9.55am – returning 10.00am, departed 10.48am – returning 10.52am*
Cr C Beavis
Her Worship the Mayor, Mrs JA Church *departed 10.00am*
Cr C Eyre (Deputy Mayor)
Cr M Keir
Cr K Ngataki
Cr E Patterson
Cr V Reeve
Cr L Thomson
Cr P Thomson
Cr T Turner *departed 10.00am*
Cr D Whyte

**Also Attending:**

Cr P Story, Waikato Regional Council *from 9.30am – 10.10am*
Cr N Smith, Waikato Regional Council *from 9.30am - 10.10am*
Mr G Ryan, Waikato Regional Council *from 9.30am - 10.10am*
Mr P King, Waikato Regional Council *from 9.30am - 10.10am*

**Attending:**

Ms A Diaz (Chief Financial Officer)
Mr GJ Ion (Chief Executive)
Ms M May (General Manager, Service Delivery)
Mr TG Whittaker (Chief Operating Officer) *from 10.37am*
Mr W Gauntlett (General Manager, Community Growth) *from 11.00am*
Mr W Durning (Strategic Mayoral Manager) *from 11.00am*
Mr C Bailey (Finance Manager)
Mrs K Brotherston, (Democracy Advisor)

The Council and staff opened the meeting with a joint karakia.

Unconfirmed

## APOLOGIES AND LEAVE OF ABSENCE

No apologies were received, howevern early departure for Council Business was noted for Her Worship the Mayor, Mrs JA Church and Cr Turner.

## CONFIRMATION OF STATUS OF AGENDA ITEMS

Agenda Item 2

**Resolved: (Crs L Thomson/P Thomson)**

**THAT the agenda for the Performance and Strategy Committee meeting held on Tuesday, 2 April 2024 be confirmed:**

**a. with all items therein being considered in open meeting with the exception of those items detailed at agenda items 8, which shall be considered with the public excluded; and**

**b. noting that a deputation from the Waikato Regional Council to present their Long-Term Plan has been added to the agenda as Item 5.1 and will be considered following Item 5 – Actions Register; and**

**c. all reports be received.**

**CARRIED** **P&S2404/01**

## DISCLOSURES OF INTEREST

Agenda Item 3

There were no conflicts disclosed.

## CONFIRMATION OF MINUTES

Agenda Item 4

The report was received *[P&S2404/01 refers]* and the following discussion was held:

- Noted that the purpose of the report for both December and February stated the wrong dates. However, this does not affect the minutes for confirmation.

**Resolved: (Crs Ngataki/L Thomson)**

**THAT the Performance and Strategy Committee confirms the minutes of a meeting held on Monday, 19 February 2024 as a true and correct record.**

Unconfirmed

**CARRIED** **P&S2404/02**

**ACTIONS REGISTER**
Agenda Item 5

The report was received *[P&S2404/01 refers]* and it was noted that the Economic advisory panel discussion would take place after the meeting.

*Deputation – Waikato Regional Council (WRC) – Long-Term Plan (LTP)*
Agenda Item 5.1

The report was received *[P&S2404/01 refers]* and Cr Story, Chairperson for Waikato Regional Council (WRC) together with Mr Ryan, Mr King and Mr Smith were present at the meeting to present their Long-Term Plan (LTP) and the following discussion was held:

- A PowerPoint Presentation was shared and it was noted that WRC's LTP opens for consultation on 2 April 2024 and closes on 2 May 2024, with final decisions to be made in June 2024.
- It was noted that the focus from WRC was acknowledging the affordability issues currently facing communities and a snapshot of the impact of rates was provided.
- WRC outlined proposals with a focus on Biodiversity, Public Transport, Regional Economic Development Fund (RDF), Infrastructure Strategy, and Investment and Affordability.
- Other works being prioritised included: Whangamarino Wetland, Lake Waikare, water security, coastal marine areas, pest management, the Science around Peat land use, Wharekawa Coast 2120, Regional Spartial planning, Te Huia (passenger rail service).
- Other works withdrawn from LTP Eco Retrofit and On the House Project.
- A query was raised in relation to Public Transport charging rates based on capital value and it was noted that currently, the entire district was paying something towards public transport, the main change would be implementing catchments.
- A desire was expressed for Councillors to obtain a copy of WRC's PowerPoint Presentation.

**ACTION:** Democracy Advisor to share the WRC's presentation with the Councillors following the conclusion of the meeting.

- The Chairperson thanked Councillor Story for taking time out of her busy schedule to present to the Committee.

**STRATEGY REPORTS**

Unconfirmed

There were no strategy reports.

**PERFORMANCE REPORTS**

*Report - Operational Budget Reviews*
Agenda Item 7.1

The report was received *[P&S2404/01 refers]* and the following discussion was held:

- The Finance Manager provided a brief overview of the Summary of Processed Budget Review Memos before opening the floor for questions.
- A query was raised in relation to the high figure associated with Domain Carpark, it was noted that further guidance was required before a response could be provided.
- Clarification was sought and received in relation to wording within the decreased/increased section of the Summary of Proposed Budget.
- Concerns were expressed in relation to Capital Value, in response, the Chief Financial Officer noted that as Capital Valuations were being undertaken, assumptions had been made and any additional revenue resulting from these assumptions would be held in a reserve.
- Clarification was sought and received in relation to the variation amount column listed on page 21.
- A query was raised in relation to carpark upgrades, it was noted that a package of work was awarded and the procurement policy outlines further detail around how/when upgrades would commence.
- Clarification was sought and received in relation to the anticipated efficiency savings outlined on page 17.
- A query was raised in relation to the Reserve Fund, it was noted the General Rate Position Report outlines the reserve figures and was scheduled to go before Council in August 2024.

**ACTION:** The Chief Financial Officer to produce a copy of the General Rate Position Report and bring back to the Committee.

*Council Controlled Organisations half-yearly*
Agenda Item 7.2

The report was received *[P&S2404/01 refers]* and following discussion was held:

- The Chief Executive noted a conflict due to his involvement with CoLab, before providing a brief overview of the service provided by CoLab.
- A query was raised in relation to Colabs timeframes, it was noted that while CoLab investigates opportunities, engages with shareholders and supports particular projects,

Unconfirmed

they are limited with the speed in which they can move due largely to shareholder response time.

- It was noted that previously, when there have been changes within Central Government, Colab had been very efficient.

*Chief Executive Business Plan - Report April 2024*
Agenda Item 7.3

The report was received *[P&S2404/01 refers]* and the following discussion was held:

- Clarification was sought and received on Blueprint funding, funding available, consideration of the community aspirations, and the construction of the community plan document.
- Clarification was sought and received on Captial Works (page 56, section 1.2) expectations on project completion and budgets.
- A query was raised in relation to the Council's responsiveness (page 61, section 2), it was noted that status update emails were semi-automated, whereas email notifications required a follow-up and that system compatibility was a factor into two-way integration.
- Discussion ensued with some of the key topics considered including the roading annual budget, potential risks to the community, repair and maintenance, regular grading programme, Waka Kotahi funding and it was noted that projects would not go over budget unless approval was received from the Council.
- A query was raised in relation to sustainability communities (page 58, section 1.2c) and it was noted that the council was getting through more of the work programme.
- Clarification was sought on the Council's responsiveness and after-hours training. In response, it was noted that every quarter a report was brought to council.

**ACTION:** The Chief Financial Officer to have further discussion regarding responsiveness after the report has been released.

*Council Controlled Organisations draft Statements of Intent*
Agenda Item 7.4

The report was received *[P&S2404/01 refers]* and the Chief Financial Officer provided a brief overview of the report and the following discussion was held:

- Discussion ensued with some of the key topics considered including clarification on cashflow, built-up cash reserves, CoLab reporting, SMART goals, staff turnover,

Unconfirmed

**ACTION:** The Chief Operating Officer to circulate a copy of the CoLab report.

**Resolved: (Crs Whyte/Patterson)**

**THAT the Performance & Strategy Committee:**

a. **has considered and is supportive of the draft statement of Intent for Waikato Local Authority Shared Services Limited trading as Colab; and**

b. **has considered and is supportive of the draft Statement of Intent for Waikato Regional Airport Limited; and**

c. **notes that the Chief Financial Officer will document the response to the respective boards.**

**CARRIED** **P&S2404/03**

*Local Government Funding Agency half yearly report and draft Statement of Intent*
Agenda Item 7.5

The report was received *[P&S2404/01 refers]* and the following discussion was held:

- A query was raised in relation to borrowing debt, it was noted that the Waikato District Council (WDC) had received a rating of AA+ and was deemed stable.
- It was noted that WDC was the highest-rated council in the country.

Unconfirmed

**EXCLUSION OF THE PUBLIC**

Agenda Item 8

**Resolved: (Crs P Thomson/Raumati)**

**a. THAT the public be excluded from the following parts of the proceedings of this meeting:**

**The general subject of each matter to be considered while the public is excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under section 48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution are as follows:**

| General subject of each matter to be considered | Reason for passing this resolution in relation to each matter | Ground(s) under section 48(1) for the passing of this resolution |
|---|---|---|
| Item PEX 2<br>Minutes from meeting held on Monday, 19 February 2024 | Good reason to withhold exists under Section 6 or Section 7 Local Government Official Information and Meetings Act 1987 | Section 48(1)(a) |
| Item PEX 3.1<br>Abandoned Land Sale | | |

**This resolution is made in reliance on section 48(1)(a) of the Local Government Official Information and Meetings Act 1987 and the particular interest or interests protected by Section 6 or Section 7 of that Act which would be prejudiced by the holding of the whole or relevant part of the proceedings of the meeting in public, as follows:**

| Item No. | Section | Interest |
|---|---|---|
| Item PEX 2<br>Minutes from meeting held on Monday,<br>19 February 2024 | Refer previous minutes for reasons for exclusion. | |
| Item PEX 3.1<br>Abandoned Land Sale | 7(2)(a) | To protect a person's privacy. |

**CARRIED** **P&S2404/04**

Unconfirmed

*Resolutions P&S2404/05 – P&S2404/06 numbers are contained in the public excluded section of these minutes.*

*It was resolved [Resolution No. P&S240406] during the public excluded section of the meeting that the following resolution be released into open meeting but the report remain confidential and unavailable to the public:*

*Abandoned Land Sale*
*Agenda Item PEX 3.1*

*Resolved: (Crs Whyte/Eyre)*

*THAT the Performance & Strategy Committee approves that:*

a. *recommends to Council that Property 1015156: 11A Cross Street, Raglan be sold to recover outstanding rates, and*

b. *the release of these resolutions into the Open meeting, but the report remain confidential and unavailable to the public.*

*CARRIED*

There being no further business the meeting was declared closed at 11.17am.

Minutes approved and confirmed this day 2024.

Cr Janet Gibb
**CHAIRPERSON**

Unconfirmed

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

**Open - Information Only**

| | |
|---|---|
| **To** | **Waikato District Council** |
| **Report title** | **Actions Register - May** |
| Date: | 13 May 2024 |
| Report Author: | Ashleigh Fairhead, Executive Assistant |
| Authorised by: | Alison Diaz, Chief Financial Officer |

## 1. Purpose of the report
## Te Take moo te puurongo

To update the Performance and Strategy Committee on the actions arising from the previous meeting.

## 2. Executive summary
## Whakaraapopototanga matua

Updates are provided with the attached Actions Register for May.

## 3. Staff recommendations
## Tuutohu-aa-kaimahi

**THAT the Performance & Strategy Committee receives the Actions Register for May 2024.**

## 4. Next Steps
## Ahu whakamua

Once items listed within the actions register have been completed, they will be removed from the register.

# 5. Attachments
# Ngaa taapirihanga

1. Action Register - 13.05.2024

| | Action | Responsible to Action | Status/Update/Response |
|---|---|---|---|
| 1. | Deputation – Waikato Regional Council – Long-Term Plan<br><br>Democracy Advisor to share the WRC's presentation with the Councillors following the conclusion of the meeting. | Democracy Team | Completed, and posted to Council's website. |
| 2. | Operational Budget Review – Report April 2024<br><br>The Chief Financial Officer to provide a summary of the funding impacts associated with the operational budget review report. | Alison Diaz,<br>Chief Financial Officer | Summary report to be updated with funding impacts and tabled at the May meeting. |
| 3. | Chief Executive Business Plan – Report April 2024<br><br>The Chief Financial Officer to ensure after hours response times are considered for inclusion in the 2025-2034 LTP. | Alison Diaz,<br>Chief Financial Officer | Noted. |

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

**Open**

| | |
|---|---|
| **To** | **Performance & Strategy Committee** |
| **Report title** | **Draft Ngaaruawaahia, Hopuhopu, Taupiri Structure Plan \| Ngaaruawaahia Town Centre Plan for public engagement** |
| Date: | 13 May 2024 |
| Report Author: | Fletcher Bell, Strategic Planner |
| | Elsa Snyders, Senior Strategic Planner |
| Authorised by: | William Gauntlett, General Manager Community Growth |

## 1. Purpose of the report
## Te Take moo te puurongo

To inform the Performance and Strategy Committee on the draft Ngaaruawaahia, Hopuhopu, & Taupiri Structure Plan / Ngaaruawaahia Town Centre Plan.

**AND**

To seek approval to engage with the respective communities to seek feedback on the draft plan.

## 2. Executive summary
## Whakaraapopototanga matua

The Ngaaruawaahia, Hopuhopu, & Taupiri Structure Plan | Ngaaruawaahia Town Centre Plan project is moving into its final phase of development, but before the proposed Council adoption date (5 August), a final round of engagement needs to be held in order to gather feedback on the entire plan as a whole.

Staff are seeking approval to engage with the respective communities for a four week engagement period starting 15 May 2024 and ending 12 June 2024.

The decisions and matters of this report are assessed as of low significance, in accordance with the Council's Significance and Engagement Policy. However, this approval for engagement is important because it will be the first time the general community have seen the completed plans.

The public engagement process will provide an opportunity for our communities to provide feedback on the plan in its entirety, which is an important component in making sure that they are right for our communities. To date, the team have extensively and genuinely engaged with a variety of groups spanning close to two years. This has been a focus for the team to get it right.

## 3. Staff recommendations
## Tuutohu-aa-kaimahi

**THAT the Performance and Strategy Committee approves the draft Ngaaruawaahia, Hopuhopu & Taupiri Structure Plan and Ngaaruawaahia Town Centre Plan for public engagement beginning 15 May 2024 and ending 12 June 2024.**

## 4. Background
## Koorero whaimaarama

In 2022 Council agreed to review and further update the 2017 Ngaruawahia Structure Plan. This has been a result of exceeded population projections, land use (zoning) requirements, community needs, infrastructure requirements, and out of date technical assessments.

A Structure Plan / Town Centre plan at its core is a long term 30-year plan to guide development of an area. For this to be accurate and relevant, the technical reports need to reflect the current and future state of Ngaaruawaahia, Hopuhopu, & Taupiri.

The revised/updated plan will look to provide a more recent and future aligned picture for Ngaaruawaahia, Hopuhopu, and Taupiri in relation to the aforementioned gaps. The update will also help deliver the growth directions set out in Waikato 2070, objectives of the 2014 Parks strategy, direction of Te Ture Whaimana, and alignment with Future Proof. Overall, it will assist in achieving Council's vision of creating livable, thriving and connected communities over the years to come.

For the plan to be successful, proper engagement with the communities had to be held. The below summarises the range of engagement had to date:

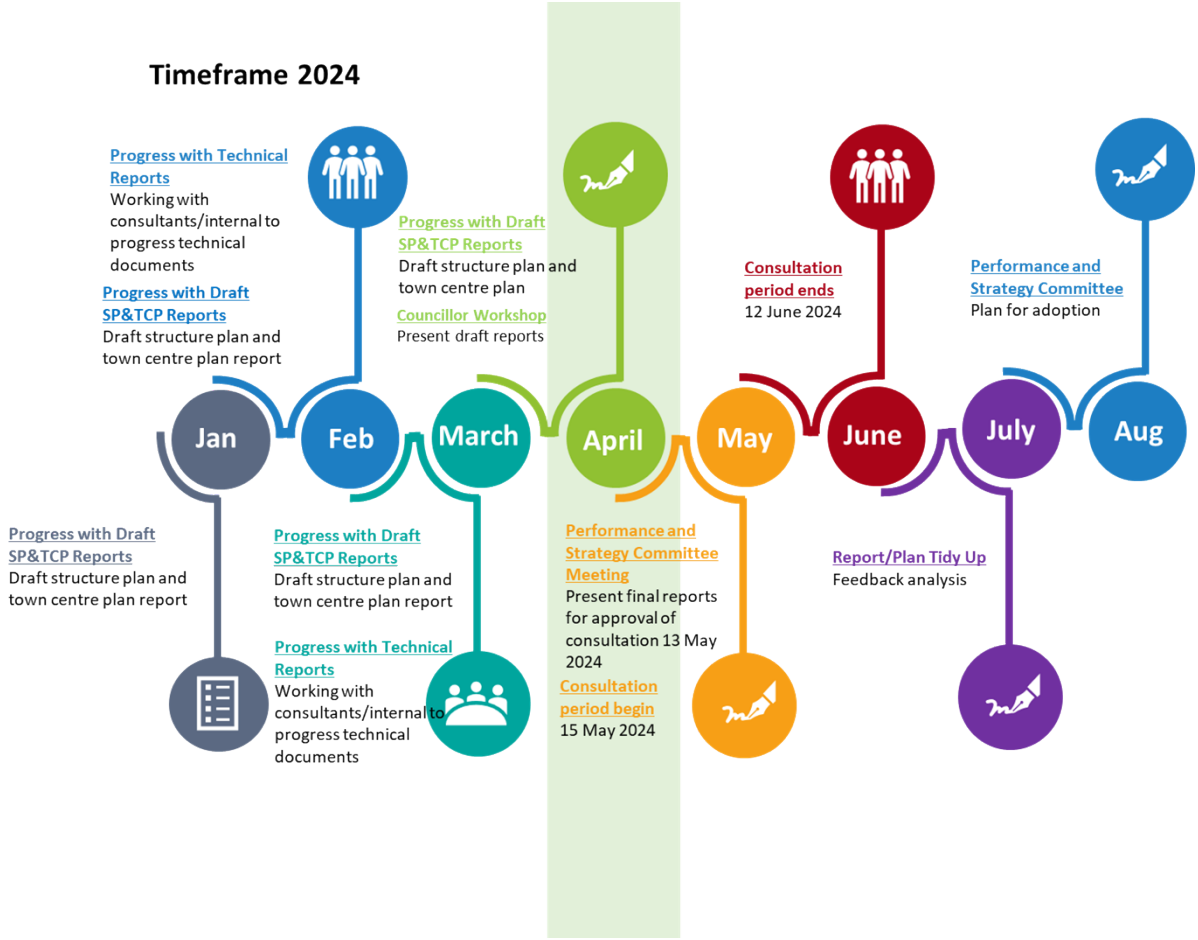
- Mana Whenua survey and wider community survey
- Tainui Games and Tuurangawaewae Regatta
- Two rounds of public workshops
- Online engagement (Social Pinpoint)
- High school engagement
- Reference Group

- Independent (Consultant) engagement with Tangata Whenua
- Various requests and initiatives to meet with Community Boards and Tangata Whenua

Noteworthy is the reference group that was enacted mid 2022, which met bi-monthly to discuss the Structure Plan / Town Centre Plan through the different phases of the project. The group consisted of Tangata Whenua, Community Board representatives, Staff, Councillors and occasionally consultants working on technical reports.

The diagram below concisely illustrates the project's milestones.

**Timeframe 2022**




Consideration was given to the technical evidence required to support the plans, and the below matrix shows which existing technical assessments needed updating. A number of reports were either fully updated or updated via an addendum.

At the time of writing this report, the final Stormwater technical assessment is still outstanding, but it is anticipated this will be completed before public engagement.

Technical Assessments have been coordinated so that the outcomes of one could be fed into another where required.

| Technical Assessments | Fit for Purpose | Addendum Update | Update | New |
|---|---|---|---|---|
| Landscapes & visual amenities | ✓ | | | |
| Geotechnical | ✓ | | | |
| Ground Contamination | ✓ | | | |
| Heritage | | ✓ | | |
| Archaeology | ✓ | | | |
| 3 Waters | | | ✓ | |
| Parks and Facilities Report | | | ✓ | |
| Transportation Assessment | | | ✓ | |
| Urban Design Assessment | | | ✓ | |
| Market assessment | | | ✓ | |
| New – Cultural Assessment | | | | ✓ |

Where technical information has become available, in good faith it has been shared with the community.

# 5. Discussion
# Matapaki

## 5.1 Options
### Ngaa koowhiringa

Staff have assessed that there are two reasonable and viable options for the Performance and Strategy Committee to consider. This assessment reflects the level of significance (see paragraph 6.1). The options are set out below:

Option 1: Approve the Draft Ngaaruawaahia, Hopuhopu, & Taupiri Structure Plan | Ngaaruawaahia Town Centre Plan for public engagement over the period 15 May 2024 - 12 June 2024.

Option 2: Do not approve the Draft Ngaaruawaahia, Hopuhopu, & Taupiri Structure Plan | Ngaaruawaahia Town Centre Plan for engagement over the period 15 May 2024 - 12 June 2024.

Staff recommend Option 1 because it will provide opportunity for the community to make any final comments on the plan and round out the engagement with the community to date.

This option will also will help negate any potential issues around non engagement in the final phases of the Structure plan / Town Centre Plan. Cons associated with this approach are generally related to staff time and resources. However, this investment will provide a greater level of plan accuracy for the communities.

Noteworthy, is that the Special Consultative Process approach under the Local Government Act 2002 will not be taken in either outcomes, this is due to the risk of over consultation on matters that will be more comprehensively covered within a schedule 1 process under the RMA and LTP Engagement; a formal hearing, where submitters will be able to provide detailed views on matters like land use change (Zoning) and individual projects respectively. It is important to note that outcomes from the structure plan are recommendations and that the actual implementation of things like land use changes (zoning) will have further opportunities for consultation. Overall staff have assessed that there are no overall benefits to the project when considering the end to end lifecycle of the Structure Plan / Town Centre Plan.

## 5.2 Financial considerations
### Whaiwhakaaro puutea

There are no material financial considerations associated with the recommendations of this report. However, it is important to note that we are engaging with the intention to eventually implement the plan over time through both the District Plan and Long Term Plan.

## 5.3 Legal considerations
### Whaiwhakaaro-aa-ture

This is a non-statutory document and therefore there are no legal requirements. However, subsequent processes after the adoption of the Structure Plan will include a plan change to the District Plan which requires a schedule 1 process under the RMA for land use implementation.

## 5.4 Strategy and policy considerations
### Whaiwhakaaro whakamaaherehere kaupapa here

This document aligns with the Waikato District Long Term Plan, Ngaruawahia & Taupiri Local Area Blueprint, Waikato District Growth and Economic Development Strategy (Waikato 2070), Parks strategy 2014, Future Proof Strategy, and Te Ture Whaimana.

## 5.5 Maaori and cultural considerations
### Whaiwhakaaro Maaori me oona tikanga

Through the lifetime of this project the team have engaged meaningfully with Tangata Whenua at a focused level which includes:

- Early project engagement occurred before the wider group during the months of July and August 2022, to understand issues and opportunities within the study area.
- Mana Whenua had the chance to formally provide feedback ahead everyone else through the mana whenua survey during the months of September 2022.
- Proposed project lists were confirmed with Tuurangawaewae Marae, Taupiri Marae, and Ngaati Tamainupoo during the month of October 2023.
- Bi-monthly reference group meetings were held.

Complementary to this is the engagement work carried out by Te Huia Natural Resources, which also held focus groups with Tangata Whenua that informed the "Tangata Whenua Statement and Engagement Report".

As a result of this engagement, there are no *material cultural issues* associated with this decision.

## 5.6 Climate response and resilience considerations
### Whaiwhakaaro-aa-taiao

The decisions sought by, and matters covered in, this report are consistent with the Council's Climate Response and Resilience Policy and Climate Action Plan.

**Delivering Climate Response & Resilience Policy**
**Policy Statement 9.1 -** Proposed opportunities with the community to improve walking/cycling network and investigated alternative bus routes.
**Policy Statement 9.6 & 9.8 -** Storm water infrastructure approach at its core is a green approach. e.g. wetlands, rain gardens, swales, & natural filtration.

**Climate Response & Resilience Strategy.**
Although the Structure Plan and Town Centre Plan does not directly reduce emissions, measures have been taken to try and reduce them indirectly. A big focus has been on improving walkability throughout the settlements to reduce dependency on vehicles, whether that be to parks, community facilities, or general day to day activities.

### 5.7 Risks
**Tuuraru**

Using the risk assessment tool, the overall risk profile score is Low
The following are risk associated with not engaging:

- No engagement opportunity on the work that has been done since last Open Days (September 2023); and
- No further engagement opportunity on the draft Structure Plan and Town Centre Plan.

## 6. Significance and engagement assessment Aromatawai paahekoheko

### 6.1 Significance
**Te Hiranga**

The decisions and matters of this report are assessed as of low significance, in accordance with the Council's Significance and Engagement Policy.

### 6.2 Engagement
**Te Whakatuutakitaki**

| Highest level of engagement | Inform | Consult | Involve | Collaborate ✓ | Empower |
|---|---|---|---|---|---|
| *Tick the appropriate box/boxes and specify what it involves by briefly explaining the tools used to engage (refer to the project engagement plan if applicable).* | A Structure plan and Town Centre plan are heavily dependent on community involvement through the different phases of the project life. As a result a collaborative approach was taken, meeting extensively with various community groups, this has been outlined in the "Background" section of this report.<br><br>Outstanding engagement includes only the four week engagement period as outlined in "options" section of this report | | | | |

State below which external stakeholders have been or will be engaged with:

| Planned | In Progress | Complete | |
|---|---|---|---|
| | | ✓ | Internal |
| | | ✓ | Community Boards/Community Committees |
| | | ✓ | Waikato-Tainui/Local iwi and hapū |
| | | ✓ | Affected Communities |
| | | ✓ | Affected Businesses |
| | | ✓ | Government Agencies |

## 7. Next Steps
## Ahu whakamua

If approval is provided, the team will commence the 4 week engagement period, running from 15 May to 12 June 2024. The form of this will be online, with paper engagement forms available as well.

Once completed there will be an analysis period, which involves considering feedback and any potential amendments to the Plans, before presenting the Final Plans for proposed adoption to the Performance and Strategy Committee on 5 August 2024.

## 8. Confirmation of statutory compliance
## Te Whakatuuturutanga aa-ture

As required by the Local Government Act 2002, staff confirm the following:

| | |
|---|---|
| The report fits with Council's role and Committee's Terms of Reference and Delegations | Confirmed |
| The report contains sufficient information about all reasonably practicable options identified and assessed in terms of their advantages and disadvantages (section 5.1) | Confirmed |
| Staff assessment of the level of significance of the issues in the report after consideration of the Council's Significance and Engagement Policy (section 6.1) | Low |
| The report contains adequate consideration of the views and preferences of affected and interested persons taking account of any proposed or previous community engagement and assessed level of significance (Section 6.2) | Confirmed |
| The report considers impact on Maaori (Section 5.5) | Confirmed |
| The report and recommendations are consistent with Council's plans and policies (Section 5.4) | Confirmed<br>Waikato 2070<br>Local Area Blueprints<br>Parks Strategy<br>Climate response and resilience strategy<br>Climate Action Plan |
| The report and recommendations comply with Council's legal duties and responsibilities (Section 5.3) | Confirmed |

## 9. Attachments
## Ngaa taapirihanga

1. 21066_WDC_Ngaaruawaahia_Hopu_Hopu_and_Taupiri_Structure_Plan_document _May_3 - Final (1)-compressed
2. Draft Ngaaruawaahia, Hopuhopu, & Taupiri Structure Plan & Ngaaruawaahia Town Centre Plan
3. Appendix 1 - N.H.T Structure Plan & Town Centre Plan - Econmic Assessment

4. Appendix 2 - N.H.T Structure Plan & Town Centre Plan - Geotechnical Assessment
5. Appendix 3 - N.H.T Structure Plan & Town Centre Plan - Ground Contamination Assessment
6. Appendix 4 - N.H.T Structure Plan & Town Centre Plan - Landscape Assessment
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9. Appendix 8 - N.H.T Structure Plan & Town Centre Plan - CPTED Assessment
10. Appendix 9 - N.H.T Structure Plan & Town Centre Plan - Urban Design Assessment-compressed_2
11. Appendix 10 - N.H.T Structure Plan & Town Centre Plan - Archaeology Assessment
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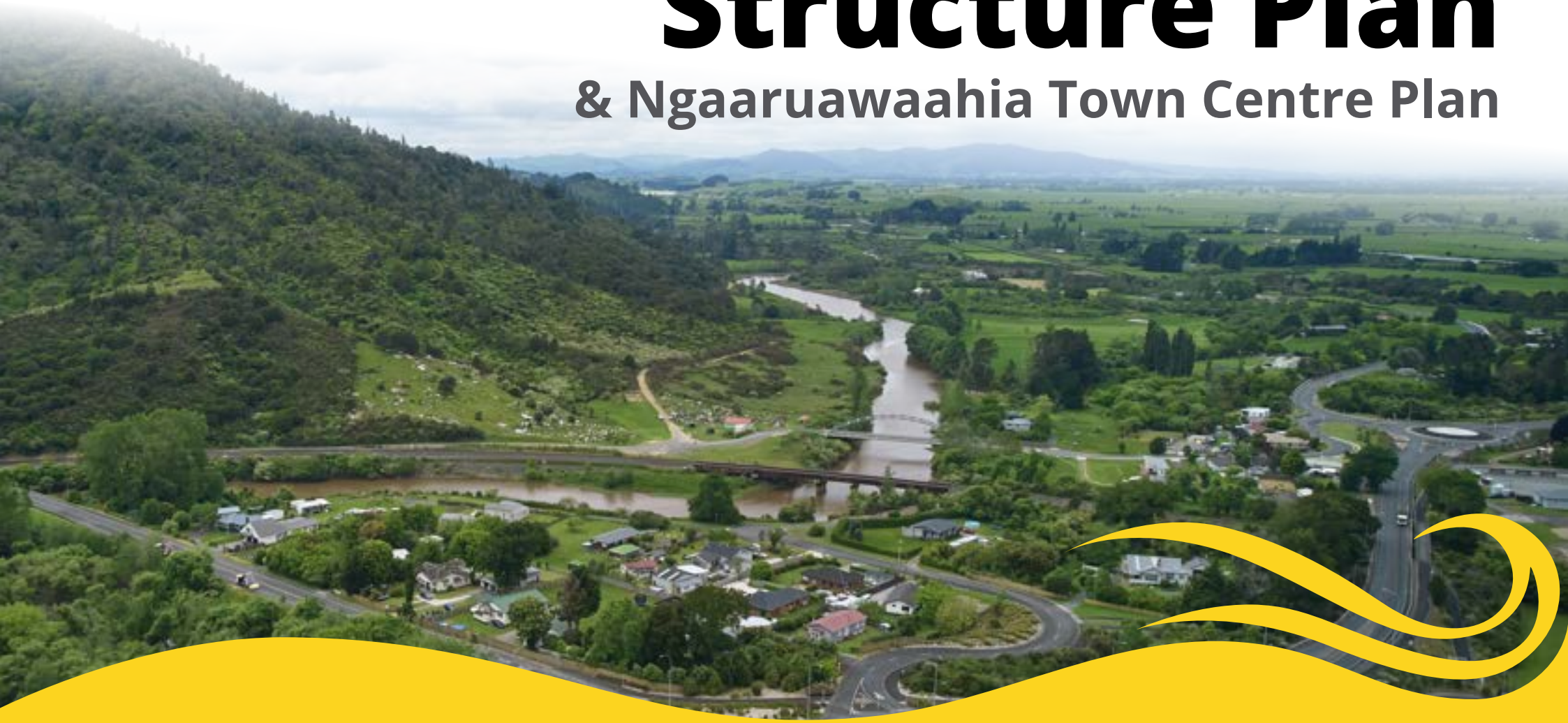
*Ngaaruawaahia, Hopuhopu And Taupiri*

# Structure Plan

## & Ngaaruawaahia Town Centre Plan



**2024 - 2054**

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

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# Glossary

**BDCA** - Business Development Capacity Assessment
**CPTED** – Crime Prevention Through Environmental Design
**WTP** – Water Treatment Plant
**WW** – Wastewater
**GFA** – Gross Floor Area
**H2A** – Hamilton-Auckland Corridor Plan & Implementation Programme
**Ha** – Hectares
**SQM** – Square Meters
**HAIL** - Hazardous Activities and Industries List
**HDCA** – Housing Development Capacity Assessment
**MDRS** - Medium Density Residential Standards
**MSP** - Hamilton-Waikato Metropolitan Spatial Plan
**NES** – National Environmental Standards
**NIMT** – North Island Main Trunk
**PBC** – Hamilton-Waikato Metro Spatial Plan Transport Programme Business Case
**PDP** - Proposed District Plan
**RT, Rapid Transit** - a form of high-speed passenger transport, for example a high frequency bus service
**SH1** – State Highway 1
**TOD** – Transit Orientated Development
**UoW** – University of Waikato
**Waikato 2070** - The Waikato District Council Growth & Economic Development Strategy
**WWTP** – Wastewater Treatment Plant

Authors: Fletcher Bell and Elsa Snyders

# 1 Setting the Scene

## 1.1 Introduction

Ngaaruawaahia, Hopuhopu and Taupiri are small settlements/towns in the Waikato region of the North Island. Ngaaruawaahia is located 20 kilometres north-west of Hamilton at the confluence of the Waikato and Waipaa Rivers, adjacent to the Hakarimata Ranges. Ngaaruawaahia is home to approximately 8200 residents and Taupiri to 700 residents[1] and is connected to Hamilton by Great South Road (formerly State Highway 1, SH1) and the regionally recognised Te Awa River Ride. Tangata whenua for Ngaaruawaahia are Tuurangawaewae Marae (Ngaati Mahuta and Ngaati Te Wehi) and Ngaati Tamainupoo. Turangawaewae Marae is also a nationally significant marae, as well as being the headquarters for the Maaori King (Te Arikinui Tuuheitia Paki). Tangata whenua for Taupiri are Taupiri Marae (Ngaati Kuiaarangi, Ngaati Mahuta, Ngaati Tai and Ngaati Whaawhaakia). Taupiri is also located at the foot of Taupiri Maunga (Mountain), also known as 'Taupiri-Kuao', and the mountain is sacred to Taupiri and Maaori alike. The mountain is the final resting place for members of the prominent Maaori Family.

## 1.2 Vision and Strategic Direction

The vision and principles for Ngaaruawaahia, Hopuhopu and Taupiri were developed over two sessions with the "Structure Plan Reference Group[2]" to ensure thorough discussion and input from all participants. Due to the close relationship between the three towns/settlements, the group determined that the same vision and principles should cover them.

The overarching vision for Waikato District Council is *"We work together as a district to build liveable, thriving and connected communities as our district grows."* This vision served as the foundation for developing a more place-specific vision for the three settlements. By engaging with the community and seeking their input on their desired future for Ngaaruawaahia, Hopuhopu, and Taupiri, an overarching vision that reflects the aspirations and direction of these towns was established. The vision highlights the importance of these places being understood together – acknowledging the relationships between them. It speaks to the rich history of the area and the opportunities of the townships/settlements linked by the Waikato Awa and landscape.

***"To create opportunities for the communities of Ngaaruawaahia, Hopuhopu, and Taupiri and their descendants, connected through the landscape, the awa, and collective yet unique histories."***

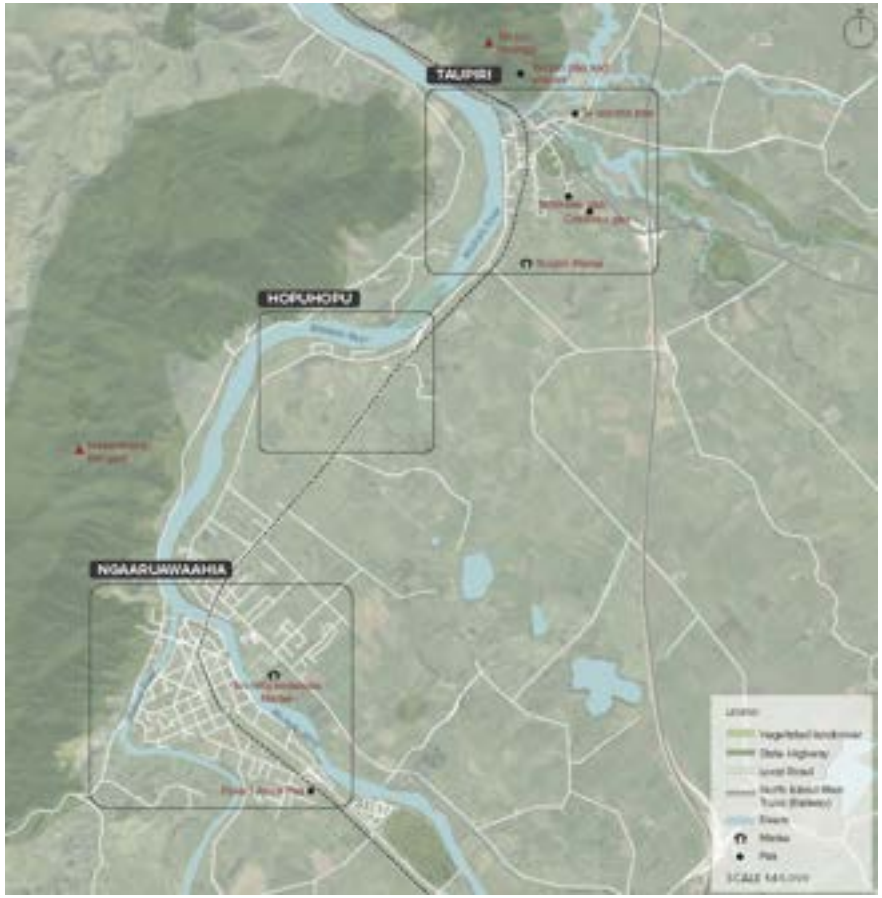



*Figure 1-1: Structure Plan Area - Ngaaruawaahia, Hopuhopu, and Taupiri*

1 University of Waikato. (2021). 2018-base SA2-level population, family and household, and labour force projections for the Waikato region, 2018-2068.

2 The Structure Plan Reference Group was aimed to develop the Structure Plan / Town Centre Pan in collaboration with key partners which included Councillors, Staff, Community Boards, & Tanagata Whenua.

# Principles

## Connected Communities

**Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.**

## Identity

**Strengthen the strong sense of identity and character of the place.**

## Natural Environment

**Celebrate and connect communities to blue-green networks and significant cultural areas supporting recreational use and preserve local identity.**

## Growth and Economy

**Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.**

# Outcomes

- Create clear and accessible connections to places people want to go.
- Support easy and safe to access by active modes and public transport.
- Deliver resilience and respond to a changing climate.
- Provide places for people to meet and connect.
- Investments in our towns to enable us all to reduce our carbon footprint.

- Weave the presence of the rich natural landscape into the local context.
- Share the rich history of place.
- Respond respectfully to culturally significant sites and landscapes.
- Recognise and celebrate Kiingitanga.

- Protect and enhance our natural environment.
- Provide residents of our towns easy access and connection to the natural environment.
- Bring the natural environment into and through our towns.

- Focus on the development of a strong commercial core in our towns.
- Invest in the infrastructure to support access to, and enjoyment of the town/ village centre.
- Enable and support the development of key sites to encourage increased vibrancy, vitality and amenity in the town/village centre.

## Purpose of the Ngaaruawaahia, Hopuhopu and Taupiri Structure Plan

*A structure plan is a guiding framework for the development or redevelopment of an area that will help define the future development and land use patterns, areas of open space, the layout and nature of infrastructure (including transportation links), constraints and key features that influence the effects of development are also considered and managed.*

## Purpose of the Ngaaruawaahia Town Centre Plan

*A town centre is more than just a place where people shop and work. It's the 'heart' of the town or city where the community and visitors can enjoy socialising and recreation. A town centre plan is a strategic roadmap for developing and managing a town or city's central area. It's a detailed document that outlines specific goals and actions to revitalise and enhance the vitality, functionality, and attractiveness of the town centre by encouraging a mix of uses, prioritising public transport and walkability, promoting sustainable development, planning for growth, fostering a sense of place, and celebrating creativity and innovation.*

## 1.3 Statutory and Non-Statutory Consideration

### Regional Strategy Frameworks

**Future Proof Strategy**[3]

*The Future Proof Strategy* is a 30 year growth management and implementation plan specific to the Hamilton, Matamata-Piako, Waipaa and Waikato sub-region within the context of the broader Hamilton - Auckland Corridor (H2A), the Hamilton to Tauranga Corridor and Hamilton - Waikato Metropolitan areas.

*The Future Proof Strategy* was recently updated to include the *Hamilton to Auckland Corridor Plan* and the *Hamilton-Waikato Metropolitan Spatial Plan* (HWMSP). These plans are being brought into alignment with the future proof guiding principles:

1. Effective partnerships, leadership, & implementation
2. Vibrant city centres connected to thriving towns, villages and rural communities.
3. Protection of the natural environment
4. Affordable and sustainable resources use.
5. Productive partnerships with tangata whenua/mana whenua
6. Emission reduction & climate change

Future proof is about how the area should develop into the future. The strategy is underpinned by several fundamental principle that give effect to the strategy and its implementation. The ongoing application of these principles is key to effective implementation. The principles should be used in assessing and measuring proposals against the strategy and any subsequent changes made.

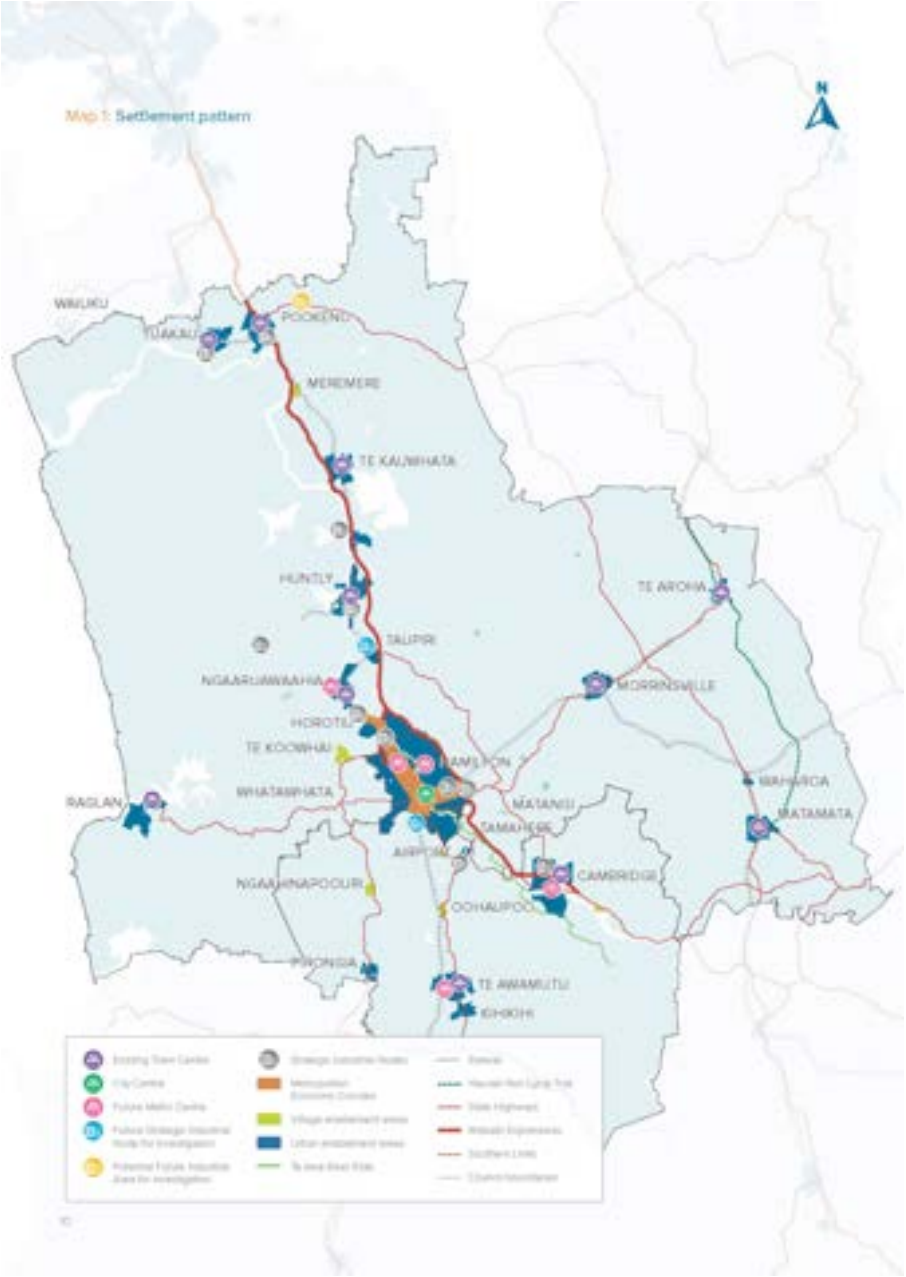



*Figure 1-2: Future Proof Strategy*

3 https://futureproof.org.nz/the-strategy/

A Transport Programme Business Case (PBC), developed to inform the *Hamilton-Waikato Metro Spatial Plan* (HWMSP), focuses on implementing:

- Rapid transit
- Land use intensification
- Walking and cycling (incl. micromobility)
- Freight hubs
- Shared bus and freight lanes,
- Supporting interventions, including a regional and rural access programme and park-and-ride

Ngaaruawaahia, as part of the HWMSP PBC,links into the priority Rapid Transport Corridor 1 north (RT1 north), which looks to provide frequent bus services between Huntly and Ngaaruawaahia connecting to further rapid transit (RT) services in Hamilton. Designated RT corridors within the Hamilton city footprint area will be considered as part of more detailed business cases.

The short term (1–3 years) transport and land use change opportunities relevant to Ngaaruawaahia include:

- Integrate compact urban form requirements – Transport oriented development (TOD) nodal type development, which is relevant to the town centre.
- Investment in micromobility (walking and cycling connections)
- Route protection for and implementation of Rapid Transport Corridor 1 north (RT1) with consideration of frequent bus services from Ngaaruawaahia into Hamilton.

*Figure 1-3: Hamilton-Waikato Metro Spatial Plan Transport Programme Business Case (PBC)*[4]

4 https://futureproof.org.nz/h2a/metrospatialplan/

**Te Ture Whaimana (Vision and Strategy)**[5]

The Waikato River Authority was established in 2010 as the custodian of the *Vision and Strategy for the Waikato* River primary direction-setting document. The strategy responds to four fundamental issues.

1. The degradation of the Waikato River and its catchment has severely compromised Waikato River iwi in their ability to exercise mana whakahaere (community ownership and autonomy) and conduct their kawa (practices) according to tikanga (principles).

2. Human activities along the Waikato River and throughout its catchment areas have degraded the river – affecting the relationships and reducing the aspirations of Waikato River communities .

3. The natural processes of the Waikato River have been altered over time by physical intervention, land use and subsurface hydrological changes. The cumulative effects of these uses have degraded the Waikato River.

4. It will take commitment and time to restore and protect the health of the Waikato River.

Embedded within the document are actions, referred to as strategies, which detail how objectives are to be met. In principle, key themes are to incorporate maatauranga Maaori through the restoration and enhancement of the river, manage adverse effects on the Waikato River appropriately, establish and maintain relationships with an interest in advancing, restoring and protecting the health of the Waikato River.

*Figure 1-4: Te Ture Whaimana (Vision and Strategy)*

5 https://waikatoriver.org.nz/wp-content/uploads/2019/03/Vision-and-Strategy-Re-print-2019web.pdf

## Local Strategy Frameworks

### The Waikato District Council Growth & Economic Development Strategy (Waikato 2070)[6]

*Waikato 2070 (Waikato District council growth & economic development strategy)* has been developed to provide guidance on appropriate growth and economic development that will support the wellbeing of the district. *Waikato 2070* provides a long-term plan to achieve the Waikato District Council's vision of creating liveable, thriving, and connected communities and is based around four key themes which are our Focus Areas:

- Grow Our Communities
- Build Our Businesses
- Embrace Our Identity
- Empower Our People

The strategy details spatially where and when development (residential and employment) can occur in the district, aligned with our four Focus Areas.

**Ngaaruawaahia** is identified as an existing business cluster focused on services and industry and as a preferred location for a mass-transit station within the medium to long-term. In support of the mass-rapid transit medium-density (10–30 years) residential development consisting of townhouse/duplex/terraces has been identified in and around the Ngaaruawaahia town centre.

**Taupiri** is identified as an area of both residential and industrial growth. Being strategically located along SH1 and the new Taupiri interchange, the area is well suited for industrial development. Job opportunities created with new industry will create demand for residential development.

**Ngaaruawaahia**

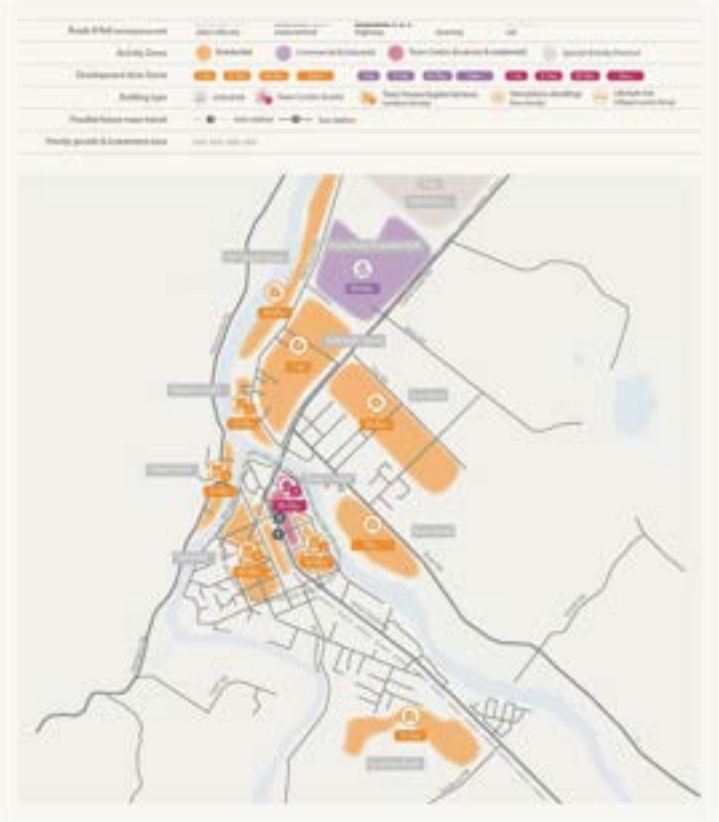


*Figure 1-5: Waikato 2070 - Ngaaruawaahia*

**Taupiri**

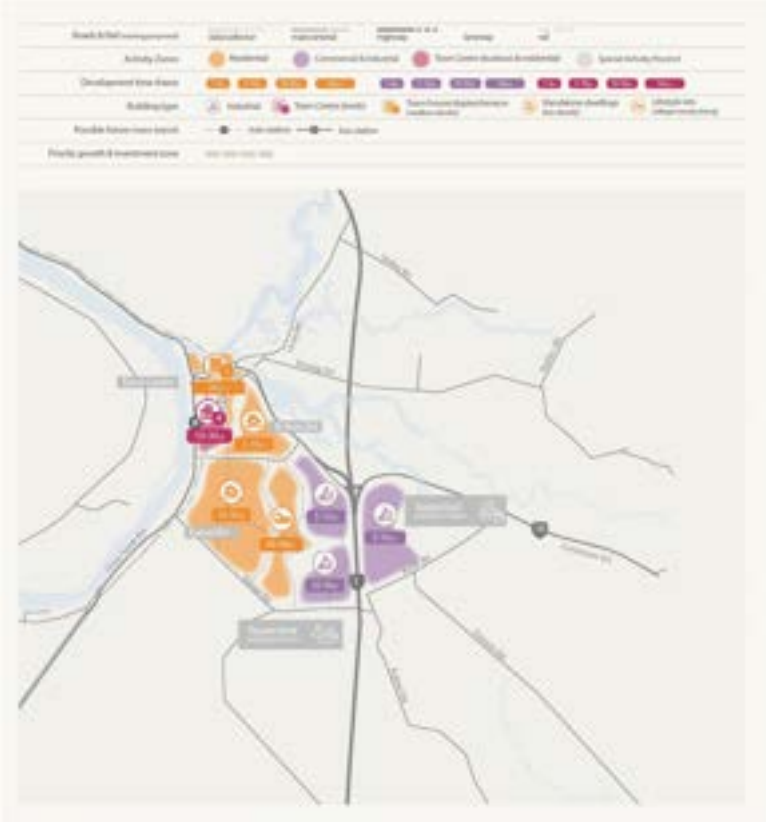


*Figure 1-6: Waikato 2070: Taupiri*

6 https://www.waikatodistrict.govt.nz/docs/default-source/your-council/plans-policies-and-bylaws/strategies/waikato-2070.pdf?sfvrsn=d25e88c9_4

## Local Area Blueprint Initiative[7]

The aim of the Local Area Blueprint Initiative (blueprint) is to provide a high-level 'spatial picture' of how the district could progress over the next 30 years, address the community's identities, social, economic, and environmental needs, and respond to its regional context. The blueprint provides the Waikato District Council with an effective and legible tool to move from vision to strategy, and from strategy to action by setting out specific, prioritised initiatives at the district and local level.

### Ngaaruawaahia – Top Priority Initiatives

- Undertake strategic conversations around council-owned land and halls for the reinvigoration of community assets (1).
- Work with relevant entities to support the strategy for youth initiatives.
- Undertake initiatives to ensure tidy commercial and industrial street frontages.
- Provide longer distance walking and cycling connections to Te Otamanui, Glen Massey (8), the eastern side of the Waikato River to Horotiu (9), and Taupiri (10).
- Progress opportunities for a new community hub.
- Build a strong identity based on the river corridor, and the unique qualities of the local area.

*Figure 1-8: Blueprints - Ngaaruawaahia*

### Taupiri – Top Priority Initiatives

- Develop a town centre plan to address fragmentation and services required to support employment and residential growth. Also, consider the impact of a new service centre at the interchange and the new entrance into Taupiri from the expressway.
- Allow for the continuation of the Te Awa cycle trail.
- Build a strong identity based on the river corridor, and the unique qualities of the local area.
- Investigate the opportunity for industrial land.

*Figure 1-7: Blueprints - Taupiri*

7 https://www.waikatodistrict.govt.nz/your-council/plans-policies-and-bylaws/plans/blueprints/local-area-blueprints

## Other Technical Documents

In addition to the regional and local strategy documents, several supporting technical documents have been developed/updated that underpin the strcture plan and town centre plan assessment. The supporting technical documents include:

- Economics Assessment – Appendix 1
- Geotechnical Assessment – Appendix 2
- Ground Contamination Assessment – Appendix 3
- Landscapes Assessment – Appendix 4
- Tangata Whenua Statement and Engagement Report - Appendix 5
- Water and Waster Assessment – Appendix 6
- Parks and Facilities Assessment– Appendix 7
- Crime Prevention Through Environmental Design – Appendix 8
- Urban Design Assessment – Appendix 9
- Archaeological Assessment – Appendix 10
- Heritage Assessment – Appendix 11-11.2
- Heritage and Notable Trees Addendum Assessment– Appendix 12
- Transport Assessment – Appendix 13-13.2
- Stormwater Assessment – Appendix 14

# 2 Consultation / Engagement Summary

## 2.1 Tangata Whenua Engagement

To support the development of the town centre and structure plan, an independent cultural values assessment (CVA) was undertaken by Te Huia Natural Resources Ltd. This involved engagement and koorero with Tuurangawaewae, Ngaati Tamainupoo, Taupiri Marae and Waikato-Tainui. Through the various hui held the outcomes and stories were identified and highlighted within the Tangata Whenua Statement and Engagement Report.

Complementary to this, Waikato District Council undertook engagement and consultation through a number of forums as part of the wider structure plan and town centre plan including surveys, focus group sessions, open days, workshops, and attendance at public events such as Tainui Games and Tuurangawaewae Regatta.

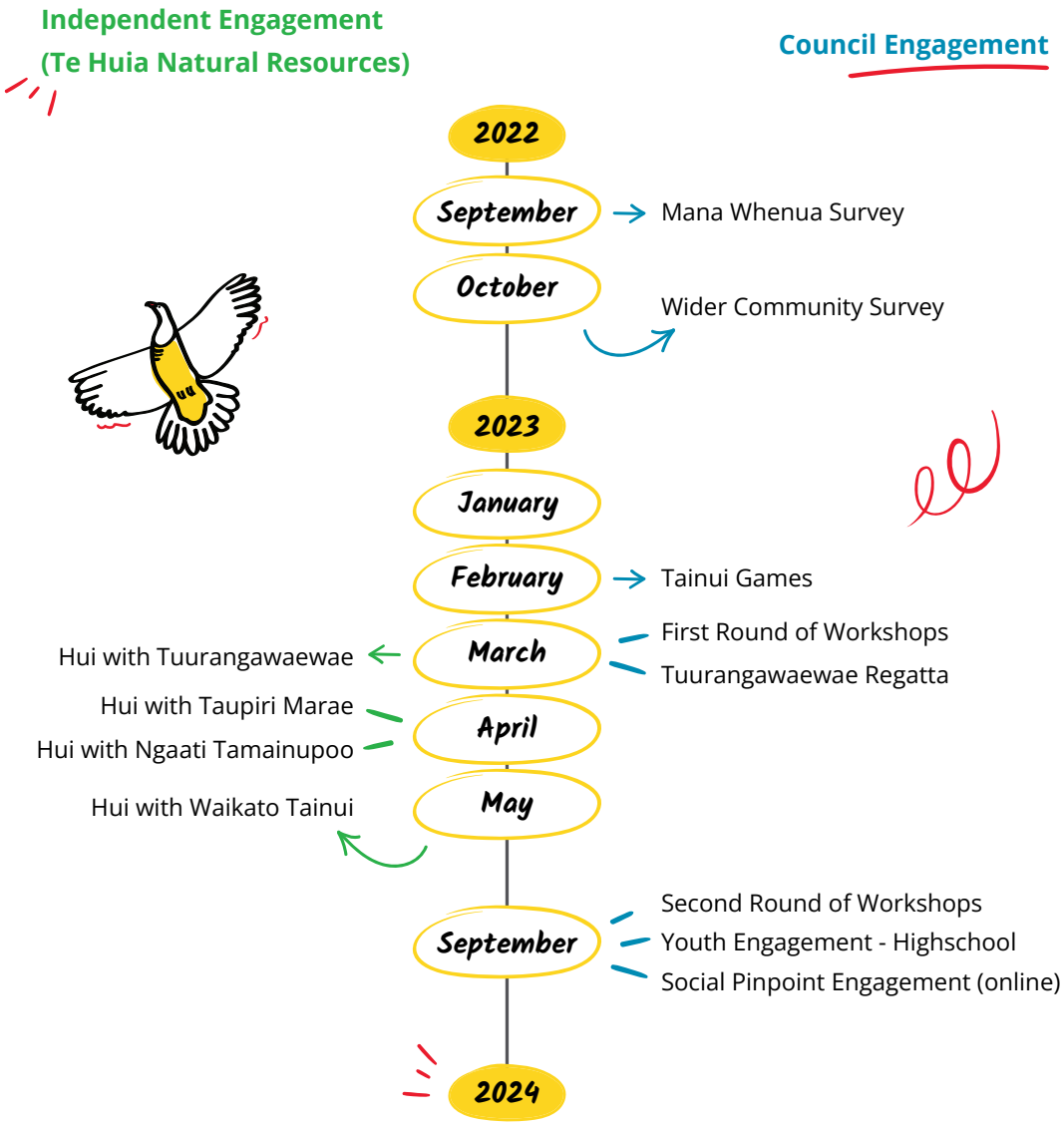
## 2.2 Community Engagement

Formal engagement with the community started in September/October 2022 with the release of the mana whenua and wider community surveys which helped provide background information into community identity and cultural aspirations.

Council attended the Tainui Games in February 2023 where the participation of many tamariki (children) offered a unique chance to seek their perspective on what they value within their community –ultimately their home.

The first round of community open days was held in March 2023 in Ngaaruawaahia, Hopuhopu, & Taupiri where the community took part in identifying opportunities and issues as well as offering thoughts and suggestions on ideas for the future of their community. The attendance at the Tuurangawaewae Regatta in March 2023 provided an unparalleled amount of input which would build on other engagements to help inform a projects list.

The second round of community open days were held September 2023 in Ngaaruawaahia & Taupiri where the community were given the opportunity rank draft proposed projects were of importance to them and those that they were least supportive of. This exercise was also able to be done via Social Pinpoint online platform to give those that could not attend an opportunity to contribute. A youth session was also held at the Ngaaruawaahia High School and follow up focus group sessions with hapuu representatives to confirm proposed projects.



# Ngaaruawaahia

# 3 Ngaaruawaahia

## 3.1 Site Context

Ngaaruawaahia is the largest of the three settlements (including Hopuhopu and Taupiri), located about 22 minutes' drive north of Hamilton at the confluence of the Waipaa and Waikato Rivers. Hopuhopu and Taupiri are located to the north of Ngaaruawaahia along Great South Road, with Horotiu located south of Ngaaruawaahia along Great South Road. The North Island Main Trunk (NIMT) railway line passes through Ngaaruawaahia.

The natural landscape surrounding Ngaaruawaahia is dominated by the Waikato and Waipaa rivers and the Hakarimata Range. These have significant cultural value to the local iwi, Waikato – Tainui, and Maaori generally.

Ngaaruawaahia has been an important Maaori settlement for centuries. In 1858 the first Maaori King, Pootatau Te Wherowhero, was crowned in Ngaaruawaahia, establishing his headquarters on a point between the confluence of the Waikato and Waipaa rivers. Ngaaruawaahia was occupied by troops after the battle of Rangiriri in November 1863 and was settled by Europeans in 1864. Ngaaruawaahia is home to the Maaori Kiingitanga and as a river-based settlement is one of the oldest settlements in the district.

The town currently comprises mostly residential with some commercial and limited-service industrial activities in the town's central area. Over the last few years, there has been a new interest in development in Ngaaruawaahia from a residential and business point of view. It does appear that the favourable location of the town is being re-discovered with a growing number of visitors using the Hakarimata Range for recreation and people exploring the 70km Te Awa cycle trail (Ngaaruawaahia to Horahora) and local history.

*Figure 3-1: Ngaaruawaahia Township*[8]

8 Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

## Site Photos

[9]

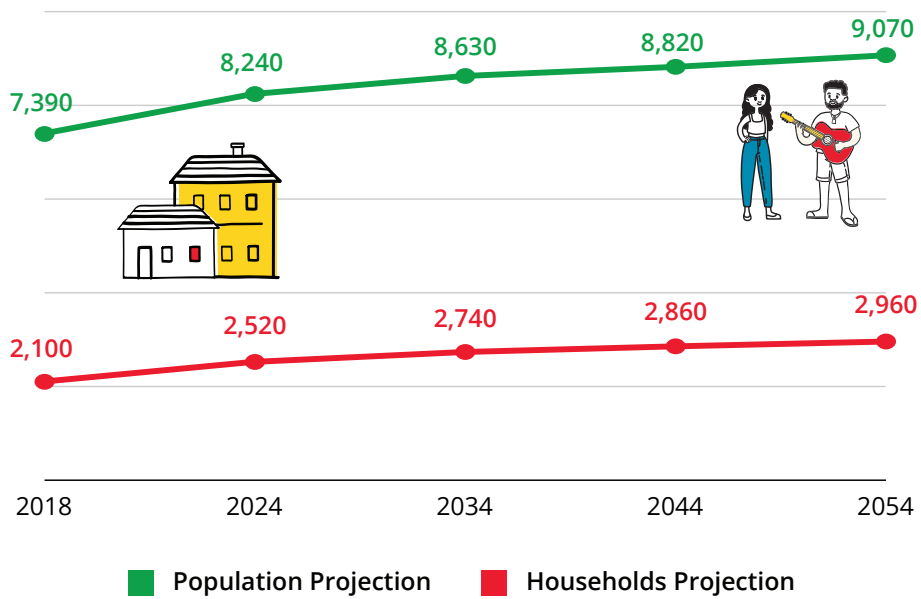
9 Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

### 3.1.1 Population Growth, Market Viability and Development Pressures[10]

**Growth**

Ngaaruawaahia' s current estimated population for 2024 is 8,200 (University of Waikato, 2021) and is projected to experience steady population growth over the next 26 years to around 9,000 by 2050.

**Ngaaruawaahia**




(University of Waikato, 2021)

A range of growth scenarios have been illustrated in tables 3-1 & 3-2, which shows what Ngaaruawaahia's population and dwelling count could be based upon different scenarios. The medium term illustrates a possible future based upon a realistic uptake of the zoning within the proposed Waikato district plan – (decisions version), and does not account for appeals, with any successful appeal, this could eventuate to additional capacity. The long term is a scenario which illustrates a realistic uptake of all residential growth cells for Ngaaruawaahia within *Waikato 2070.*

*Table 3:1: Dwellings Capacity Scenario*

| Dwellings | | | |
|---|---|---|---|
| **Scenario** | **Current Dwellings** | **Reasonably Realised Capacity** | **Total Dwellings** |
| Medium Term (2022-2032) | 2,720 | 180 | 2,900 |
| Long Term (2022-2052) | 2,720 | 2,380 | 5,100 |

(Market Economics, 2023)

*Table 3:2: Population Growth Scenario*

| Population | | | |
|---|---|---|---|
| **Scenario** | **Current Population** | **Additional Population** | **Projected Future Population** |
| Medium Term (2022-2032) | 8,240 | 480 | 8,730 |
| Long Term (2022-2052) | 8,240 | 6,420 | 14,660 |

(Market Economics, 2023 & University of Waikato, 2021)

A possible future for Ngaaruawaahia is the implementation of Variation 3[11] – enabling housing supply. Variation 3 implements the medium density residential standards (MDRS) and provides for three houses up to three storeys high subject to meeting other rules in the proposed plan. Whilst MDRS provides for a wide range of housing typologies, reports prepared by Market Economics for Variation 3 indicate most development in the short to medium term will be one house on a section. The table 3-3 illustrate two different scenarios with different potential uptakes of MDRS where it is commercially feasible/infrastructure ready. A more realistic uptake of this commercially feasible capacity is around 5% to 10% which could generate capacity equivalent to 2,700 people over the long term.

10 Tables contained within this section have been rounded to the nearest 10, some totals may not accurately sum due to the rounding.

11 Waikato District Council – Proposed District Plan Variation 3 - Enabling Housing Supply

*Table 3:3: MDRS Scenario Projections*

| | Scenario (Excluding Urban Fringe) | | Scenario (Including Urban Fringe) | |
|---|---|---|---|---|
| **Uptake** | **Commercially Feasible Capacity** | **Population Equivalent**[12] | **Commercially Feasible Capacity** | **Population Equivalent** |
| 100% | 10,100 | 27,300 | 6,500 | 17,600 |
| 50% | 5,100 | 13,600 | 3,300 | 8,800 |
| 25% | 2,500 | 6,800 | 1,600 | 4,400 |
| 10% | 1,000 | 2,700 | 700 | 1,800 |
| 5% | 500 | 1400 | 300 | 900 |

(Market Economics, 2023)

For the discussion of growth, it is also important to understand the demand and overall picture of sufficiency within Ngaaruawaahia. Table 3-4 illustrates demand against reasonably realised capacity and shows that Ngaaruawaahia has a shortfall over the short and medium term but is in a surplus over the long term. It is important to note that this analysis does not include the additional capacity that will be enabled as part of; variation 3 – enabling housing supply, so it is likely that the capacity that is generated from that will contribute to the medium-term and long-term capacity only, given the timing of when variation 3 is likely to become operative.

*Table 3:4: Ngaaruawaahia Sufficiency Assessment*

| Timing | Demand + Margin | Reasonably Realised Capacity | Sufficiency |
|---|---|---|---|
| Short Term (2022-2025) | 300 | 20 | -280 |
| Medium Term (2022-2032) | 500 | 180 | -320 |
| Long Term (2022-2052) | 1,800 | 2,380 | 580 |

(Market Economics, 2023)

12 These numbers are reached through a dwelling assumption of 2.7 persons per household.

**Commercial and Retail Development**

The retail catchment for Ngaaruawaahia is expected to continue to grow at a steady pace over the next 30 years[13]. The retail catchments are areas that are connected to the townships and represent where the townships would derive most of its customers. It is estimated that the retail catchment currently has a population of 13,950 which represents a 32% growth rate above the 2013 population base. This is expected to grow to just over 20,000 by 2053, a 44% increase between 2023 and 2053 – this is considered robust growth.

Ngaaruawaahia will not require any net additional commercial/retail zoning as there is sufficient capacity (largely vacancies) to meet expected demand, any additional commercial/retail zoning puts the town centre at risk of being diluted, pulling business from the economic centre and shifting the focus. It has been noted that there is ample opportunity to capitalise on the vacancy rates within the Ngaaruawaahia Town Centre with the highest concentration of vacancy around Jesmond Street (Main Street).

With the release of the proposed Waikato District plan – (decisions version) the commercial/retail zones provisions have been revamped making it more permissive to develop, which opens more opportunities to see a variety of different shops in the future, this being highly sought after in our initial structure plan/town centre survey. The new business town centre zone allows also for residential development to occur on the above floors, enabling mixed used development which supports the needed density required for an active economic core.

From a town planning perspective, there is also opportunity to improve the economic viability of the town centre through:

- Improving the shopping experience through the built form and the public realm
- Focus of experience, creating a memorable experience for the customer
- Consolidate the town centre, improving walkability, vitality and focus activities in appropriate areas

The full Market Assessment can be found in Appendix 1

13 Ngaaruawaahia and Taupiri Centres overview – Market Assessment

## Industrial

As shown in the *Future Proof 2023 Business Development Capacity Assessment*[14], Ngaaruawaahia (including Taupiri) has capacity to meet demand over all stated time periods. It has also been noted that there is opportunity to cater for external demand from Huntly, as Huntly is likely to face supply issues across all time periods. It is important to note that this would not affect the net growth but just the redistribution of it.

Noteworthy is Ngaaruawaahia's strategic location in relation to Horotiu – a five minute drive south – Ngaaruawaahia currently has approximately 16 ha of industrial land and Horotiu currently has approximately 179 ha of industrial zoned land. To cater for the future industrial demand an indicative additional 200 ha is identified in *Waikato 2070* for Horotiu. For this reason and its access to SH1, Horotiu is a strategic industrial node for the sub-region providing significant industrial zoning and employment opportunities to the surrounds which is recognised in the *Future Proof Future Development Strategy 2024-2054.*

*Table 3:5: Waikato District Industrial Space Sufficiency Summary – GFA sqm*

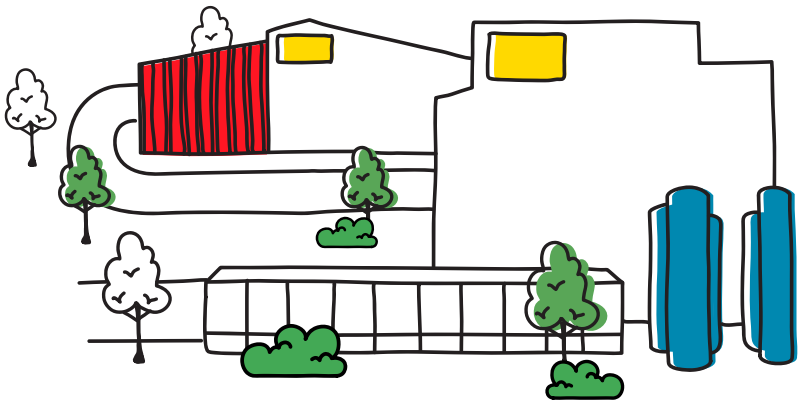
| Waikato District Industrial Space Sufficiency Summary (GFA sqm) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Demand | | | Total GFA Capacity | | | Sufficiency | | |
| Area | Short Term | Medium Term | Long Term | ODP | PDP | Waikato 2070 | Short Term | Medium Term | Long Term |
| Ngaaruawaahia | 3,158 | 11,184 | 35,522 | 115,114 | 194,165 | 801,464 | | | |

(Market Economics, 2024)

*Table 3:6: Waikato District Industrial Space Sufficiency Summary - ha*

| Waikato District Industrial Space Sufficiency Summary (ha) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Demand | | | Total GFA Capacity | | | Sufficiency | | |
| Area | Short Term | Medium Term | Long Term | ODP | PDP | Waikato 2070 | Short Term | Medium Term | Long Term |
| Ngaaruawaahia | 0.8 | 2.7 | 8.5 | 30.1 | 54.8 | 209.3 | | | |

(Market Economics, 2024)



14 https://futureproof.org.nz/assets/FutureProof/Future-Proof-Business-HBA-2023_WR.pdf

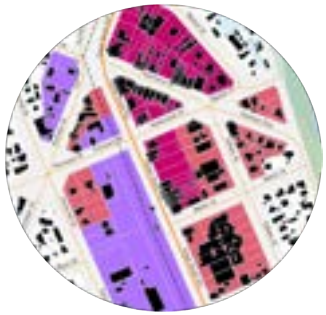
### 3.1.2 Urban Form and Site Features

During 1864 the town now known as Ngaaruawaahia was surveyed and laid out for the first time with what is currently known as Great South Road (formerly SH1) aligning directly to the junction of the two rivers (Waikato and Waipaa), and the inclusion of a street layout of a Union Jack pattern to the east of Great South Road.

Today, the main elements shaping the urban form of Ngaaruawaahia is still Great South Road, the North Island Main Trunk railway line (both running north/ south through the town centre causing severance) the Hakarimata Ranges, and the confluence of the Waikato and Waipaa Rivers.

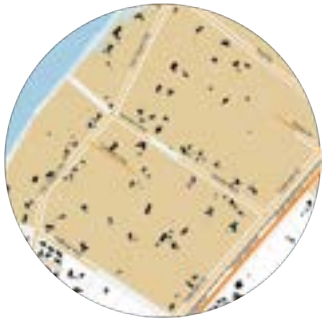
The grain of a town, represented by its building footprints, provides valuable insights into its urban layout and historic development patterns. In the case of Ngaaruawaahia, variation in the building sizes and shapes indicate different land uses within the town (large, uniform footprints suggest retail or industrial areas, as found within the Ngaaruawaahia Town Centre) while smaller, irregular footprints indicate the surrounding residential areas. Larger footprints with more space between them suggest lower density, for example the rural lifestyle zone to the north-east of town.

**Town Centre / Industrial**



**Residential Area**

**Rural Residential**



The Township of Ngaaruawaahia extends from the entry to the town from the south to the joining of the Waikato and Waipaa Rivers. Areas of urbanisation to the north-west over the Waipaa River and larger areas of residential development to the north-east of the Waikato River also forms part of what is considered the Ngaaruawaahia Township.

*Figure 3-2: Ngaaruawaahia Site Features*[15]

Commercial development is focused on the town centre, however there are areas of industrial and commercial land use to the west of the NIMT and to the south. Residential intensification is signalled within a walkable catchment of the town centre, which will increase the number of people with good access to the town centre.

The 800m walking circle shown on Figure 3-2 is the distance that can generally be covered by a 10 minute walk, meaning that a large area of the town is within a walkable distance of the town centre.

15 Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

### 3.1.2.1 Land Use / Zoning Changes

As part of the structure plan/town centre process consideration is given to the existing land use pattern to determine if it is still fit for purpose. Within the context of Ngaaruawaahia, there will be minimal recommended changes due to the recent proposed district plan decisions with many of the land use changes being addressed already. The recommended changes shown below are generally small in nature, with the largest to the north of Ngaaruawaahia (Galbraith).

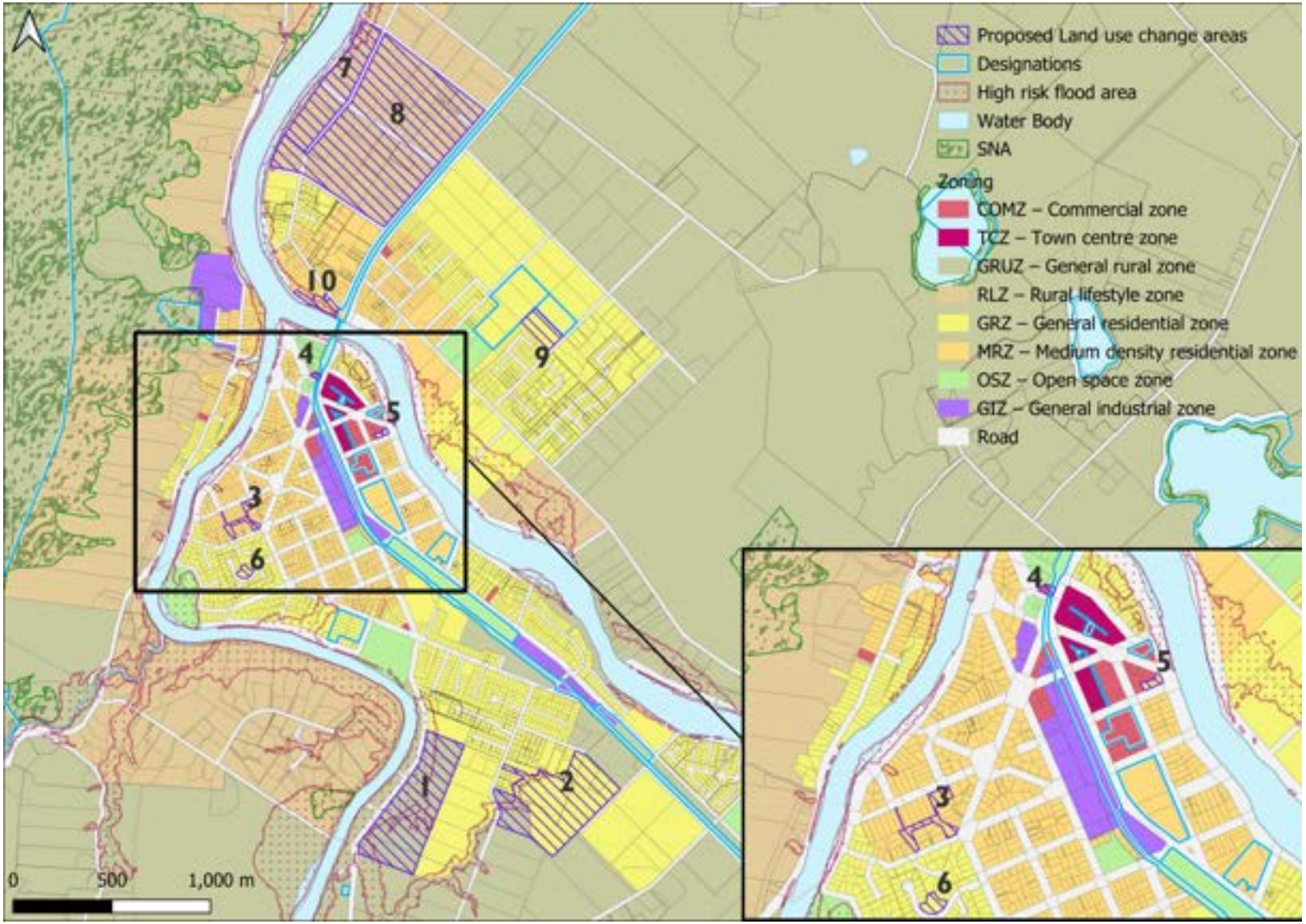
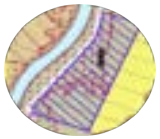
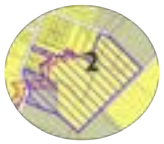
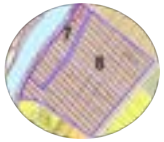



*Figure 3-3: Ngaaruawaahia – Land Use before recommended changes*

**Proposed Land Use Changes**

| | Area | Zone Change | Timing | Notation |
|---|---|---|---|---|
|  | 1 | General Rural Zone › General Residential Zone. | Short Term | The extent of this proposed change relates to properties 99a, 127, 129, 159, 161 Ngaaruawaahia Road, and 18 Rangimarie Road. The extent of the change is to align with the surrounding zoning and provide a more pragmatic land use pattern. |
|  | 2 | ENV-2022-AKL-00030 (Appeal) to resolve land use. | N/a | Properties 29c Rangimarie Road, 30, 44, 46 Jackson Street, and parts of 86 Saulbrey Road are under appeal, the determination of the land use will be left to the appeals process. |
| | 3 | Medium Density Residential Zone › Open Space Zone. | Short Term | The extent of this change relates to property numbers 1010313 & 1010469. The area is currently used as Open Space Zone, the proposed zone change is to align with its current use. |
| | 4 | Commercial Zone › Open Space Zone. | Long Term | The extent of this proposed change relates to properties 1 Waingaro Road. The extent of this proposed change is to align with the surrounding zoning and provide better adjacent land use compatibility as well as further opportunity to expand the Open Space Zone at the Point. |
| | 5 | Medium Density Residential Zone › Commercial Zone. | Long Term | The extent of this proposed change relates to 1 Martin Street & 17 Waikato Esplanade. The extent of this proposed change is to align with the surrounding zoning and provide better adjacent land use compatibility and a more pragmatic land use pattern. |
| | 6 | General Residential Zone › Open Space Zone. | Short Term | The extent of this proposed change relates to property number 2009211. The area is currently used as Open Space Zone, the proposed zone change is to align with its current use. |

| | | | | |
|---|---|---|---|---|
| | **7** | Rural Lifestyle Zone › General Residential Zone.ENV-2022-AKL-000068 (Appeal) to resolve land use. | Short Term<br><br>N/a | Properties 101, 109, 111, 199, 123, 127, 145, 149, 161, 165 Old Taupiri Road are under appeal. The Structure Plan recommends that the General Residential Zone (subject to Variation 3 decision) is the preferred zone which aligns with *Waikato 2070* and planning principles for town expansion. |
|  | **8** | Rural Lifestyle Zone › General Residential Zone. | Short Term | The extent of this change relates to properties 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, & 11 Katote Place, 63, 82a, 84, 91, 93, 94, 96a, 96b, 104, 106, 116a, 116b, 126, 138, 146, 152, & 164 Old Taupiri Road, 14, 24, & 26 Ray Road, 10, 15, 18, 21, 23, 24, 28, 29, 37, & 50 Jacobs Lanes, 43a, 45, 57, 63, 65, & 75 Galbraith Street. The extent of this proposed change is to align with the growth direction set out in *Waikato 2070*. |
| | **9** | General Residential › Open Space Zone. | Short Term | The extent of this proposed change relates to property 41 Duke Street. The area is currently used as Open Space Zone, the proposed zone change is to align with its current use. |
| | **10** | Medium Density Residential Zone › Open Space Zone. | Short Term | The extent of this proposed change relates to properties 1B, & 1C Old Taupiri Road, and property number 1009525. The area is currently used as Open Space Zone, the proposed zone change is to align with its current use. |

The figure on the overleave indicates the land use after the recommended changes.

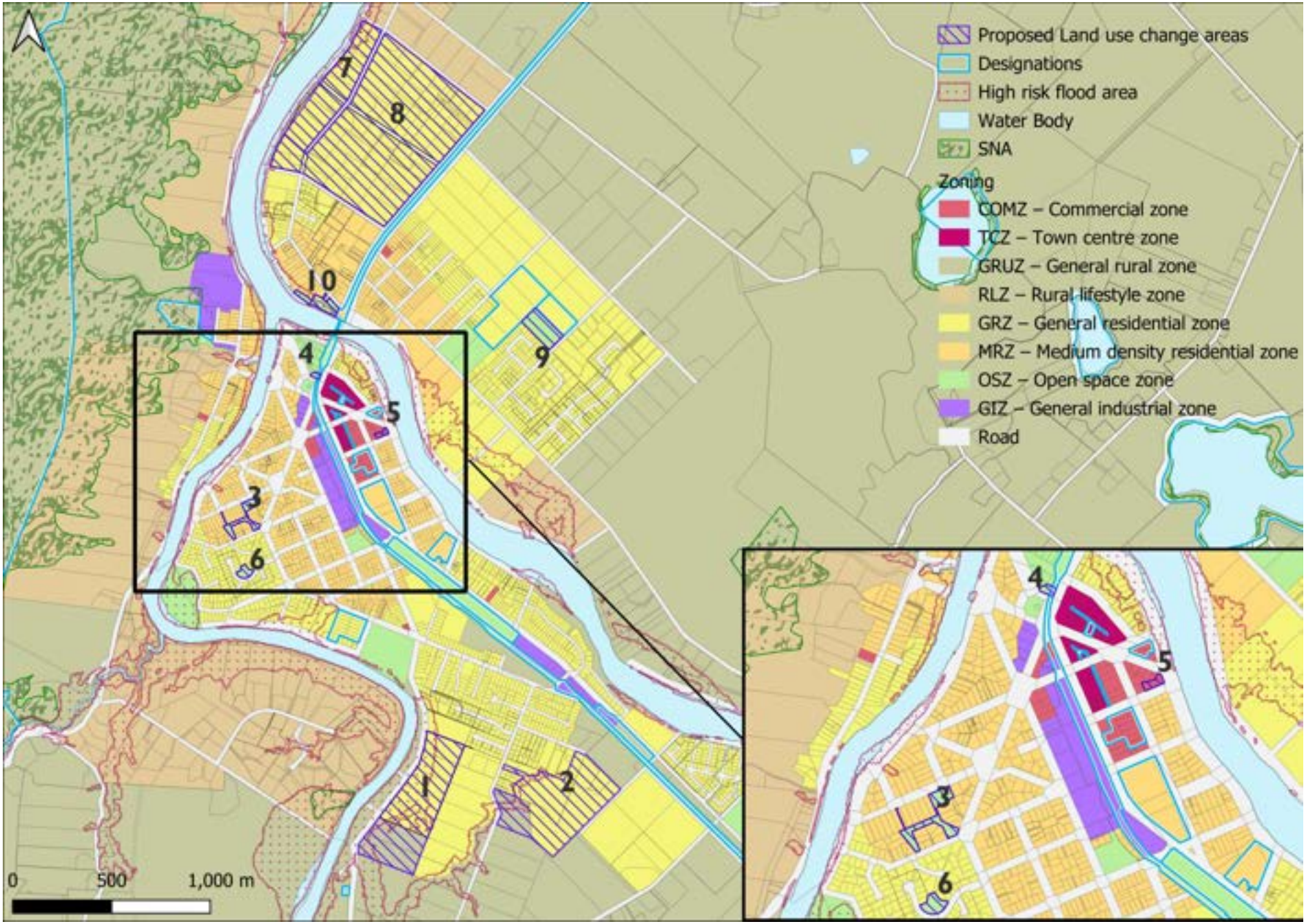



*Figure 3-4: Ngaaruawaahia – Land Use after recommended changes*

### 3.1.3 Infrastructure (Transport and Waters)

## Access and Connections (Transport)

Ngaaruawaahia is bisected by the major corridors of Great South Road (formerly SH1) and the North Island Main Trunk line (NIMT). These create a barrier for east-west access within the town and makes direct access for people walking or on bikes to the town centre difficult, with limited safe crossing locations.

The Te Awa River Ride is a popular scenic cycling and walking trail in New Zealand spanning 70km from Lake Karapiro and terminating at Ngaaruawaahia. The trail features various access points, rest areas, and amenities. The two bridges crossing the Waipaa and Waikato River have narrow footpaths and no provision for cycling to connect to the western and northern areas. There are limited cycle facilities throughout the local network.

Historically the Ngaaruawaahia railway station (1877) was at the junction of the North Island Main Trunk line with its Glen Massey branch, serving Ngaaruawaahia. It was a significant railway node and this continued into the late 20th century as an important part of the Main Trunk line. There was a large station and yards in the town until the late 1970's for goods and passengers. Currently there is no commuter railway stop/ station in Ngaaruawaahia, although the Te Huia service is running on the NIMT, from Frankton, Hamilton stopping at Rotokauri, Hamilton, passing through Ngaaruawaahia, stopping at Raahui Pookeka Huntly before reaching Auckland City with multiple stops.

Through the community engagement held, it became apparent that the community aspire to have a train-based commuter stop re-established in Ngaaruawaahia. A possible site for a future transport node is being considered, which could accommodate bus rapid transit (BRT) and a possible rail siding where it would be close to the town centre maximising the stations accessibility through walking, cycling, and micromobility.

To support this, as well as increasing the general micromobility connection throughout the township the recommended active modes network (Figure 3-5) would look to establish new key route connections locally, and regionally partly through the extension of the Te Awa River Ride through to Taupiri. This would sit at the core of the network allowing new connections to branch from and to the core. To enable the Te Awa River Ride extension regionally, investigations into a new walking/cycling bridge are underway to allow for a safer pedestrian/cyclist experience across the Waikato River as opposed to the narrow footpath on the existing road bridge which inadequately caters for 2-way pedestrian/ cycling traffic.

Complementary to this is the regional bus service running strictly along Great South Road (Figure 3-6, formerly SH1) connecting Ngaaruawaahia to Hamilton and other nearby towns, however currently there are no additional bus services serving the outer parts of Ngaaruawaahia. Future works are envisioned to engage with Waikato Regional Council to improve the existing public transport infrastructure as well as support new public transport infrastructure in step with new land use developments that arise in Ngaaruawaahia which would offer better bus services to the wider Ngaaruawaahia community.

**Intersection upgrades**

Two intersection upgrades have been proposed, the first at Great South Road/ River Road (Figure 3-7), and the second at Great South Road/Old Taupiri Road (Figure 3-8) Given the close proximity of the two intersections, they have been both developed in unity, both intersections are proposed to be roundabouts which aims to contribute to a safer vehicle environment as well as provide better pedestrian/cyclist safety. The intersection treatment option at Great South Road/ Old Taupiri Road will also be able to accommodate the eventual Te Awa River ride connection that will follow Old Taupiri Road through to Taupiri. These treatments will also improve the gateway of Ngaaruawaahia, detailed assessments are provided in Appendices 13-13.1

*Figure 3-5: Micromobility connections*[16]

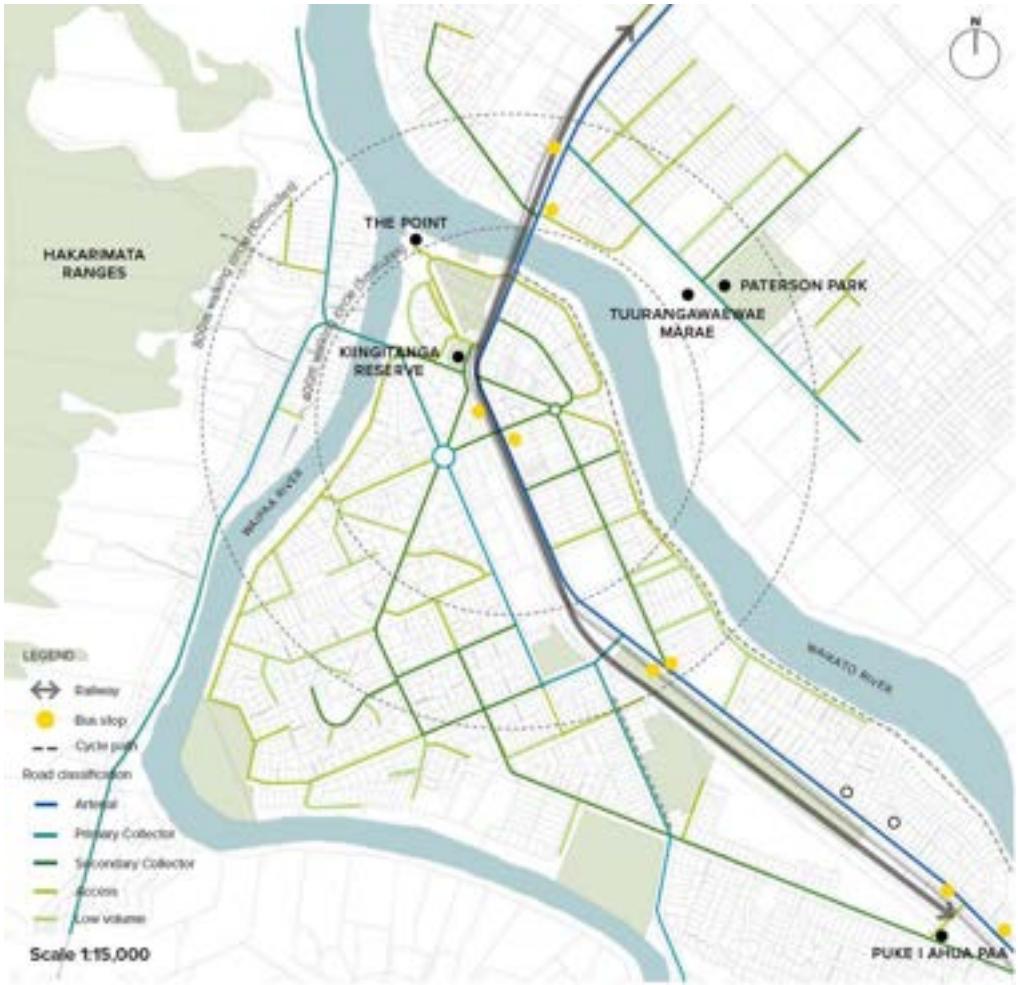



*Figure 3-6: Broader Connections*[17]

16 Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

17 Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

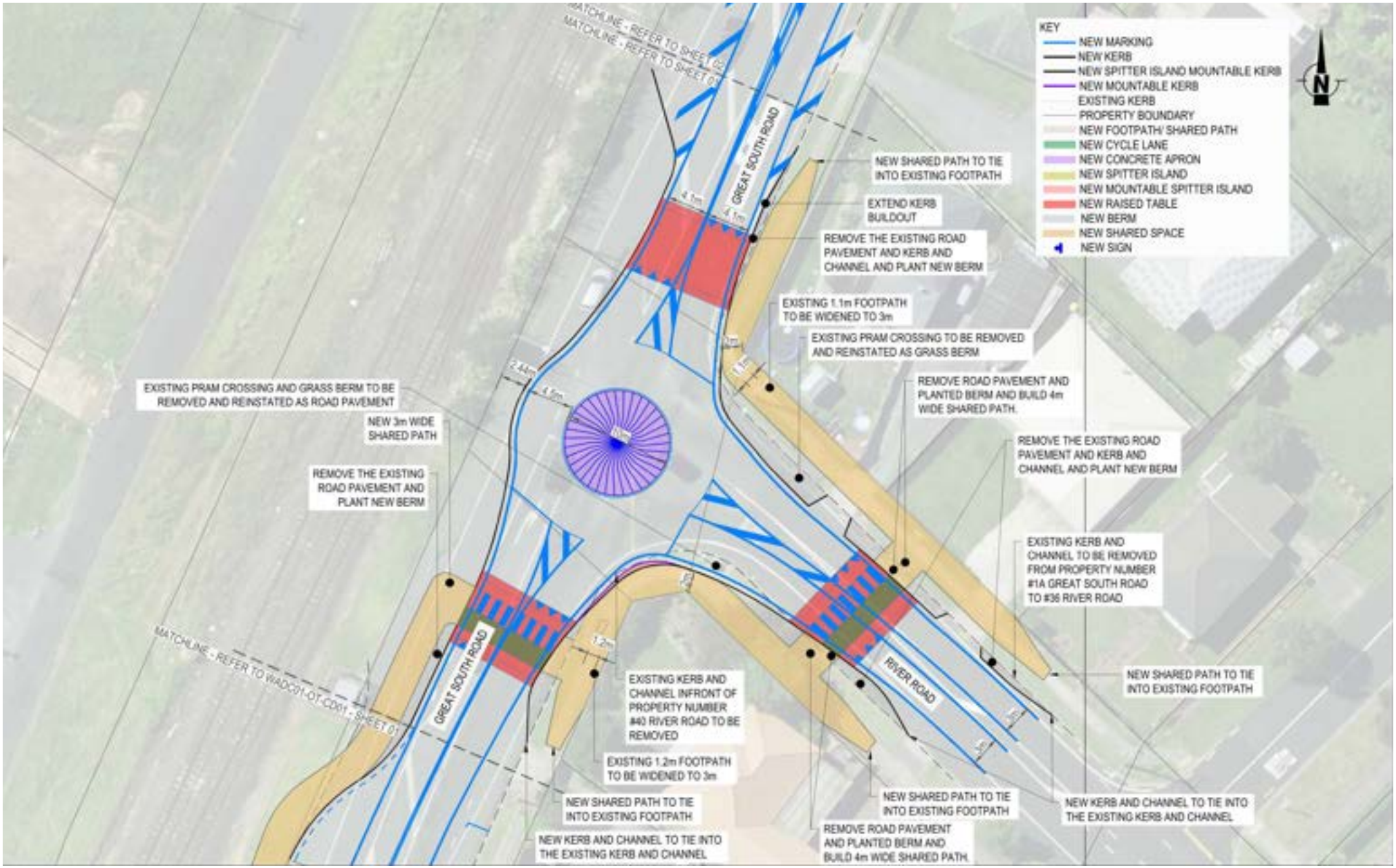



*Figure 3-7: Great South Road / River Road Proposed Intersection Upgrade*[18]

18 Ngaaruawaahia, Hopuhopu & Taupiri Transport Assessment, 2024

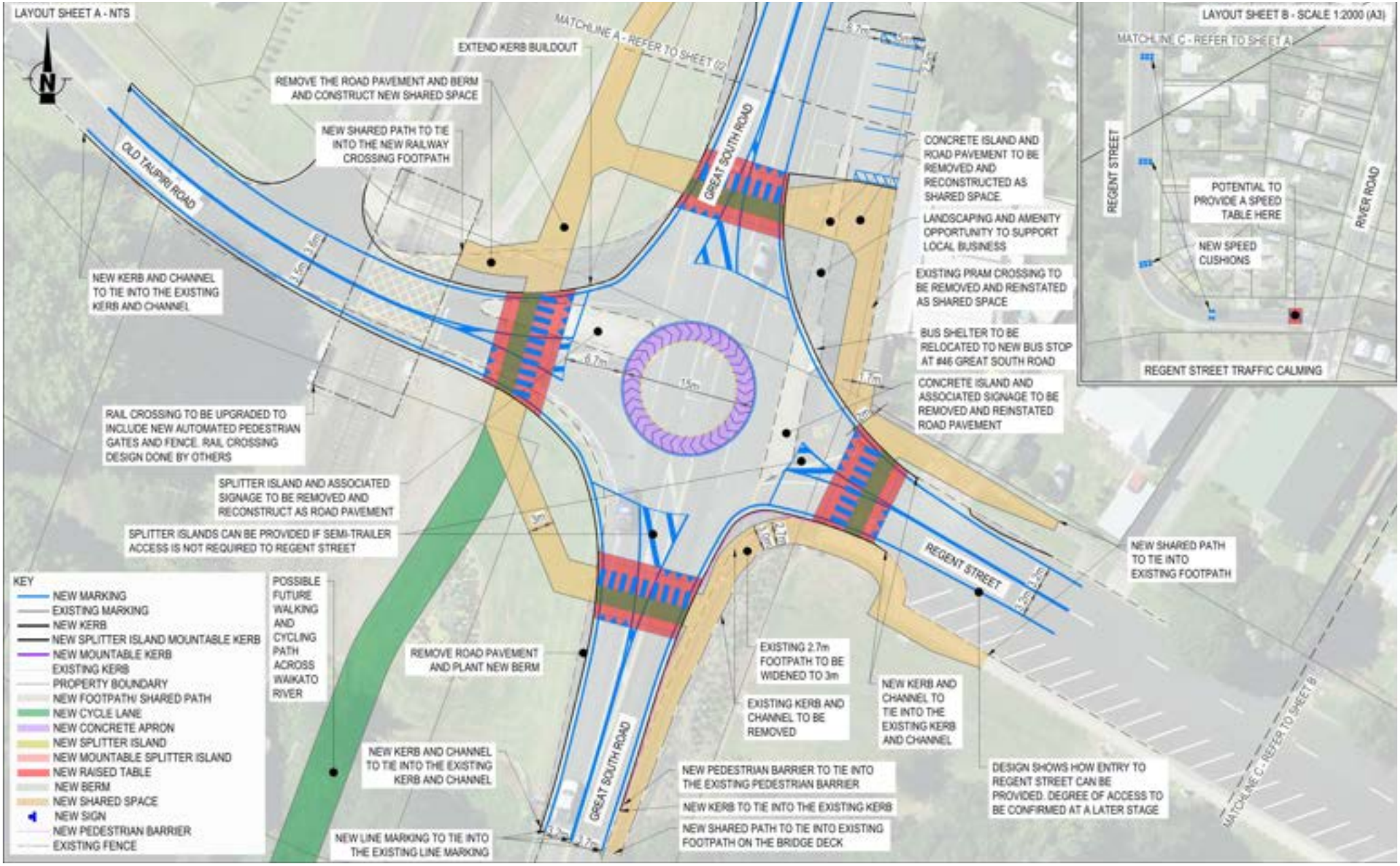



*Figure 3-8: Great South Road / Old Taupiri Road Proposed Intersection Upgrades*[19]

19 Ngaaruawaahia, Hopuhopu & Taupiri Transport Assessment, 2024

## Potable Water, Wastewater, and Stormwater

### Potable Water

The Central District water supply scheme provides drinking water to the townships of Ngaaruawaahia, Horotiu, Hopuhopu and Taupiri. Raw water is extracted from the Waikato River and treated at the Ngaaruawaahia Water Treatment Plant (WTP). There is an interconnection to the Huntly WTP via a transmission main commissioned in 2019 that provides additional resilience to the water supply network.

In general, the hydraulic modelling assessment showed that the network performs well under existing and future demand. The results revealed some issues with the existing infrastructure in both current (2025) and future (2050) scenarios. These are summarised in Table 4-2 and contained within Appendix 6 of this report.

Following the identification of the levels of service deficiencies, a number of upgrade options were evaluated to resolve the current deficiencies, and sized to provide resilience to the ultimate network scenario. A summary of the capital upgrade projects that were recommended to be implemented can be found in Table 4-3 contained within Appendix 6 of this report. Details of the network and proposed capital upgrade projects are shown in Appendix 6.

### Wastewater

The Ngaaruawaahia wastewater treatment plant (WWTP) currently receives its wastewater from Taupiri, Hopuhopu, Ngaaruawaahia and Horotiu. Flows from Taupiri and Hopuhopu are conveyed through a main pipe, shared by the following key pump stations:

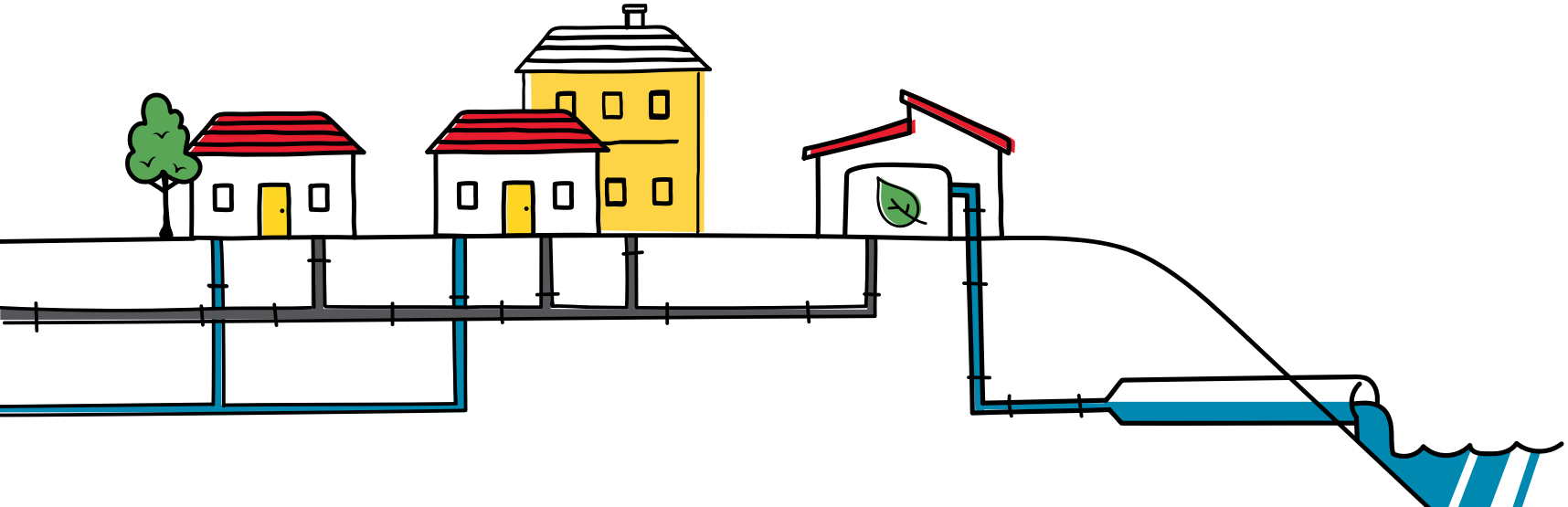
- Taupiri South (Taupiri)
- Reserve (Hopuhopu)
- Ashwell Crescent (Hopuhopu)

Flows from Ngaaruawaahia are predominantly supplied from the following pump stations, also by means of a shared rising main:

- Waikato Esplanade
- Ngaere Street
- Regent Street

Details of the current configuration of the network discharging to the Ngaaruawaahia WWTP can be found in Appendix 6

The current performance indicators for the wastewater network as a whole are under preforming, remediation of the short falls can be found within section 4.2 of Appendix 6



## Stormwater

It is well documented that changes from rural to urban catchments produces contaminants, increased runoff volumes and larger peak flows that can negatively impact the built environment, surrounding natural environments, waterways and wetlands. The *Ngaaruawaahia Structure Plan* presents an opportunity to determine the best practice catchment management solutions, mitigating flood hazard, increased peak flows, volume changes and contaminant loads (including hydrocarbons and heavy metals (zinc/copper) from existing farm practices and new residential development.

Figure 3-9 illustrates the flood extent of Ngaaruawaahia and Figure 3-10 illustrates the mitigation proposed for Ngaaruawaahia's future growth areas which will offset the effects of development on the receiving environment, encompassing peak flow management, conveyance, contaminant load management and the effects of increased volume discharge. Mitigation measures proposed include:

- Flood storage basins;
- Channels or open swales;
- Water treatment devices; and
- Waterway enhancement.

For further information relating to how future growth cells will be provisioned through stormwater refer to Appendix 14

For further information about the stormwater implications of Variation 3 refer to the modelling reports prepared by Te Miro and presented at the Variation 3 Hearings.[20]

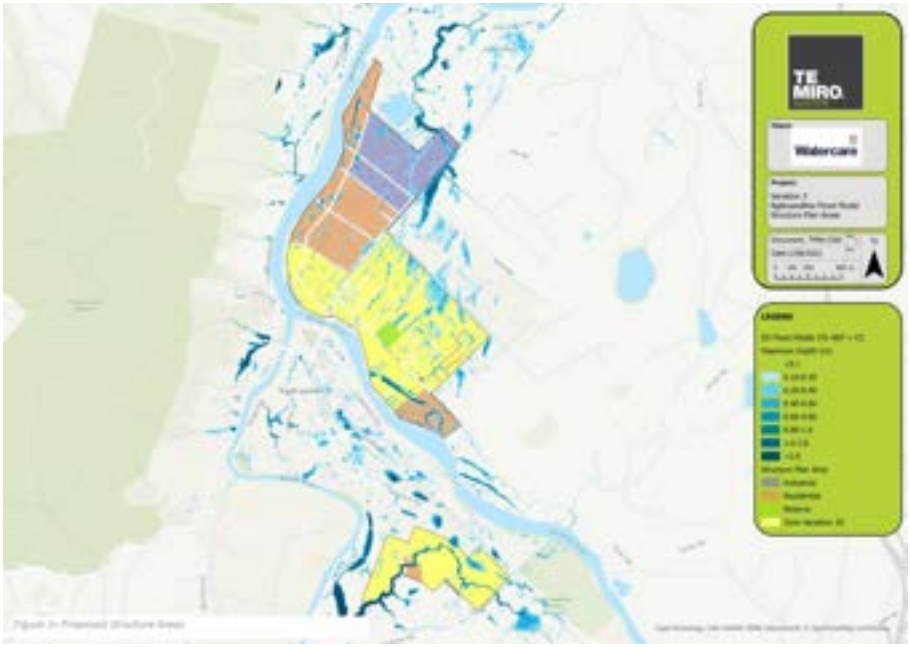



*Figure 3-9: Flood extent of Ngaaruawaahia.*

*Figure 3-10: Proposed Stormwater Mitigation for Ngaaruawaahia*

20 https://www.waikatodistrict.govt.nz/your-council/plans-policies-and-bylaws/plans/waika-to-district-plan/district-plan-review/variations/variation-3-enabling-housing-supply

### 3.1.4 Parks and Facilities

Green spaces and Community Facilities play an important role within the community, and it is essential that this is coupled with good planning practice to allow communities to meet their social, cultural, and environmental wellbeing needs. Green spaces and community facilities provide for a range of uses, extending from general amenity and wellness benefits right through to stormwater management solutions, all of which are important factors when considering what is a well-functioning urban environment.

Through the assessments done, it is important to note that Ngaaruawaahia faces park provision shortfalls with a large portion of Ngaaruawaahia communities falling outside of what is considered a walkable distance to at least one park. To help address this shortfall, approximately 14ha's has been identified for Ngaaruawaahia and have been strategically proposed in parts of the community to serve future growth cells as well as those not currently within what is considered a walkable distance.

| Possible Park Locations | Required green space in growth cell (ha) | Category |
|---|---|---|
| Starr Growth Cell | 3.8 | Neighbourhood Or Sports and recreation |
| Galbraith Growth Cell | 4.5 | Neighbourhood Or Sports and recreation |
| Saulbrey Growth Cell | 5.7 | Neighbourhood Or Sports and recreation |

Ngaaruawaahia is considered to have a higher-than-normal amount of community facilities when compared to other towns in the district, the concentration of facilities is located down the spine of the township which reflects the age and historic population densities. The condition of the facilities within the area is considered to be moderate, with further assessment work still needing to be conducted for a better picture.

To build on what facilities there are currently, opportunities to add include:

- Opportunity to consider the repurpose of the historic Plunket building at 31 Jesmond Street, Ngaaruawaahia into a shared community space.
- Opportunity to consider the veranda space at 18 Jesmond Street,
- Ngaaruawaahia as a community garden, urban play space, or weekend market.
- Opportunity to develop the recently purchased 60 Jesmond Street, Ngaaruawaahia into a multifunctional community hub.

*Figure 3-11: Ngaaruawaahia Growth Cells requiring future parks*

*Figure 3-12: Ngaaruawaahia Community Facilities*

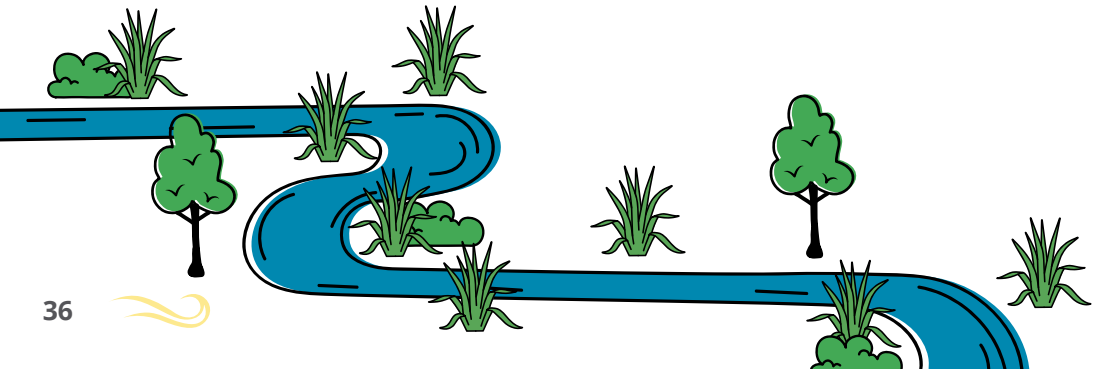
The full assessment for Parks and Facilities can be found in Appendix 7

### 3.1.5 Cultural and Archaeology

Ngaaruawaahia is a culturally significant and archaeologically rich settlement and plays large role as being the heart of Kiingitanga and is of special significance to Waikato–Tainui as well as Tuurangawaewae Marae, Ngaati Tamainupoo, and Taupiri Marae. For Tuurangawaewae this visionary saying was pronounced by Kiingi Taawhiao, for him Ngaaruawaahia was his Tuurangawaewae and his place to stand. Kiingi Taawhiao long regarded Ngaaruawaahia as special and held the view that it would one day become an important base for Waikato tribes and the Kiingitanga. For Ngaati Tamainupoo the story begins with the eponymous ancestor, Tamainupoo, son of Kookako, who married Maahanga's daughter, Tuukotuku. The Waikato River has nourished, healed and sustained Ngaati Tamainupoo, living along its banks for generations. This includes our ancestors who lived at Pukeiaahua Paa and other Ngaati Tamainupoo settlements, through to present-day descendants residing in towns and cities.

At the centre of the tangata whenua and Statement and Engagement report are the principals of Te Tiriti o Waitangi, meaningful and genuine engagement as well as Tangata Whenua. These have been woven throughout hui to understand the cultural, economic, social, and environmental outcomes sought by Tangata Whenua. The cultural stories of these unique places have been given genuine attention and have been spoken from nga waha (the mouths) to be shared with the wider community to help further the understanding of the cultural significance of Ngaaruawaahia, & Taupiri. A common theme discovered is the unity, Ngaaruawaahia, Hopuhopu, & Taupiri are not distinguished from one another, but connected intrinsically through the awa.

> ***"The Waikato River is our tupuna (ancestor) which has mana (spiritual authority and power) and in turn represents the mana and mauri (life force) of Waikato-Tainui. The Waikato River is a single indivisible being that flows from Te Taheke Hukahuka to Te Puuaha o Waikato (the mouth) and includes its waters, banks and beds (and all minerals under them) and its streams, waterways, tributaries, lakes, aquatic fisheries, vegetation, flood plains, wetlands, islands, springs, water column, airspace and substratum as well as its metaphysical being..."***



To balance the metaphysical components of the report is an outcome sought by tangata whenua, which in turn help realise their, but not limited to cultural well-being. These range from urban design and micromobility initiatives through to green spaces and economic opportunities, the outcomes have been as best aligned with the proposed potential projects as outlined in section 3.2, 4.2, 5.2, & 6.2 of this report to ensure that the visions of tangata whenua can come to life.

Through discussion is the recommended addition of new sites and areas of significant to Maaori (SASM) which will offer additional protection over areas and significant sites that are important to Maaori. These are:

- Taupiri Maunga
- Te Mata o Tuutonga
- Te Hihi
- Tuurangawaewae Marae
- Tuurangawaewae House
- Te Paemaunga o Hakarimata

The full *Tangata Whenua Statement and Engagement report* and Archaeology Assessments can be found in Appendix 5 & 10 respectively.

Archaeology forms part of the understanding Ngaaruawaahia's unique histories. The intent of the archaeology report was to identify archaeological sites in the parts of Waikato District covered by the *Ngaaruawaahia and Enviros Structure Plan 2017*. Archaeological sites include locations of significance for both Maaori and European. These sites provide insight into the different eras in the history of the Waikato. Sites and their histories are not isolated, but form an archaeological picture that can safeguard special places and may also provide information about human behaviour in past. Maaori maara (garden sites) are prevalent along both sides of the awa (river) throughout the district. Areas of note include sites associated with paa, villages, gathering sites, eel traps in streams, bird capture areas, and other sites used by garden makers. Pre-1900 European sites include industry, buildings and farms (composed of house, farm buildings, fields, stock holding pens, roads). Understanding of intangible and tangible layers of both Maaori and European sites provides a continuum of cultural understanding and practices.

### 3.1.6 Heritage and Notable Trees

Heritage and notable trees contribute to the unique stories of Ngaaruawaahia and can be memorials and landmarks to daily lives for generations. Historic heritage plays an important role in contributing to understanding of the urban environment; an integral part of communities' connecting to their place. Historic heritage is part of understanding our environment, the past, present and future it represents.

Waikato District's historic heritage is distinctive and forms an integral part of each community. Ngaaruawaahia and its neighbouring settlements have a rich and difficult histories that encompass communities, Maaori and pioneering settlements, as well as the physical and cultural impacts and conflict of the Waikato Land War. Ngaaruawaahia had been deemed early on to be one of the 'urban' areas and at a stage was formally known as Queenstown, in conjunction with the ample surrounding resources provided by the Waipaa and Waikato River and Hakarimata Ranges, it was believed that Queenstown (Ngaaruawaahia) would become the capital of Waikato and was for a short time. However, this was not fulfilled and handed over to Kirikiriroa (Hamilton) which became the principal town. To this day there are a variety of unique heritage items which create visual connections to the past that is particular to this landscape and its peoples.

As part of a statutory process, an updated historic heritage schedule based upon the work done through the proposed district plan – Decision Version has been recommended to replace the proposed schedule within the current Heritage Report, allowing for a more recent picture of protected built heritage items.

Notable trees are part of the historic heritage of a place and are generally integral to the wider understanding of both place and the wider landscape. As part of the protection of historic heritage Notable Trees provide links to the past, events and people and mark places of significance. Notable trees may range from trees of national significant to of local importance and include species from Europe and Native to New Zealand, such as the london plane, and rimu respectively. They contribute to the histories and stories of Ngaaruawaahia, and it is important to recognise these living markers when moving through time.

The Notable trees schedule attached to this report is recommended to replace the schedule contained within the proposed Waikato District plan, there have been minor changes to a description to improve accuracy.

The full *Heritage Assessment* can be found in appendix 11-11.2

*Figure 3-13: Heritage Items*

*Figure 3-14: Notable Trees*

### 3.1.7 Ground Contamination and Geotechnical

Ground contamination is important to assess when considering where and what to develop – left unidentified contamination could have potentially damaging and irreversible effects on humans and the environment.

Within the preliminary ground contamination assessment, it is noted that the majority of the study area is likely to be unaffected by Hazardous activities and industries list (HAIL) activities, only 15% of the study area being potentially affected. Where there is greenfield affected by HAIL sites, it has shown as being low to medium risk to humans. The bulk of contamination relates to horticultural activities which have left behind traces of arsenic, lead, copper, mercury, and a wide range of organic compounds including acidic herbicides, organophosphates, and organochlorines (for example, endosulfan on golf and bowling greens). The concentration is considered to be low – only affecting surface soils located around current or historic shed sites.

To meet the requirements of the National environmental standard for assessing and managing contaminants in soil to protect human health (NES) regulations, and the Waikato District Council and Waikato Regional Council rules, additional assessment and reporting on a site-specific basis will be required for any HAIL sites identified in this assessment.

Geotechnical data provides other development suitability indicators because it illustrates the stability and strength of the ground, slope stability, soil deposits, and natural hazards.

The study area in general consists of hill country, rolling hills of the lowlands, alluvial soils of the lowlands, and valley floor soils. The edges of the rivers in Ngaaruawaahia are more exposed to the risks of soil liquefaction and slope instability. The Geotechnical assessment identified risks at a high-level, noting that the entirety of the land that falls within a given classification may not be fully subject to the Geotechnical risk in question. The intent of the plan is to provide guidance on the general suitability of the land and to act as the starting point for engineering assessment that should accompany development proposals.

The full ground contamination and geotechnical assessments can be found in Appendix 3 & 2 respectively.

*Figure 3-15: Ground Contamination*

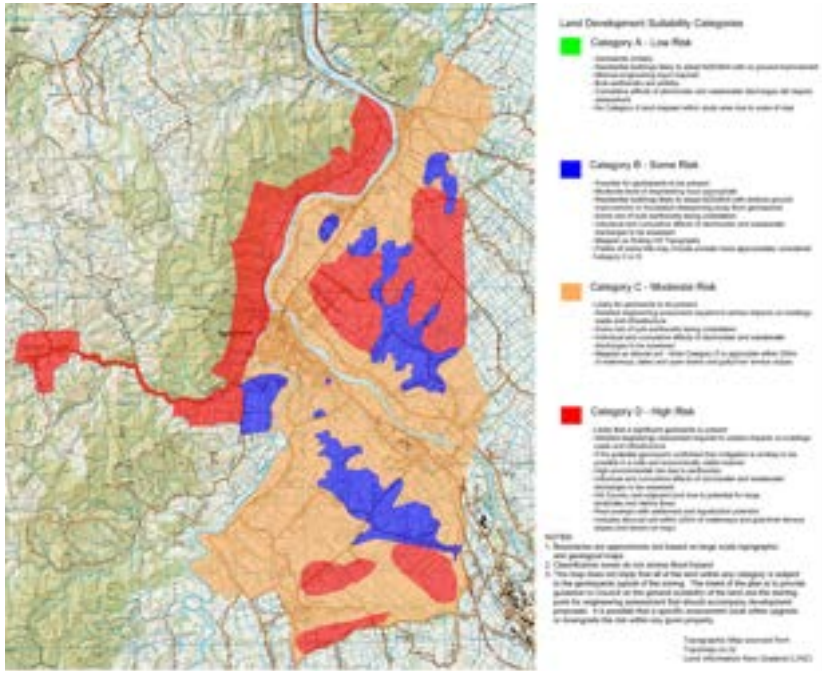


*Figure 3-16: Geotechnical*

### 3.1.8 Natural Environment and Landscapes

Understanding the visual amenities and natural environment of a landscape is integral in both locating development in appropriate spaces, but also maintaining and enhancing visual amenities which benefit the overall well-being of the communities.

The Landscapes assessment conducted looks at identifying outstanding natural features and landscapes by capturing and analysing the landscape character, associated amenity values and landscape constraints. During the development of this assessment, the growth aspirations of Ngaaruawaahia were captured to help determine the level of development suitability.

The majority of the study area is characterised by the underlying Waikato plains/ lowlands, which are bounded by the Hakarimata Range and Te Puroa hill country to the west and Taupiri Range to the north. The Waipaa River bounds the urban environment to the west, while the Waikato River contains the majority of development to the east. Most of the lowland geological features were derived from the deposition of pyroclastic material following the Taupo volcano eruption approximately 22,000 years ago and the various routes adopted by the Waikato River over that time. Subtle changes in elevation and undulations in landform are clearly evident due to the pastoral land cover. Overall, this has led to the unique combination of scenery and visual amenities within Ngaaruawaahia. A heat map is provided, illustrating where the most suitable areas are to develop from an amenities and visual perspective.

All major land use changes within Ngaaruawaahia sit within the most suitable category, namely the Galbraith growth cell to the north of Ngaaruawaahia.

The full landscapes assessments can be found in Appendix 4

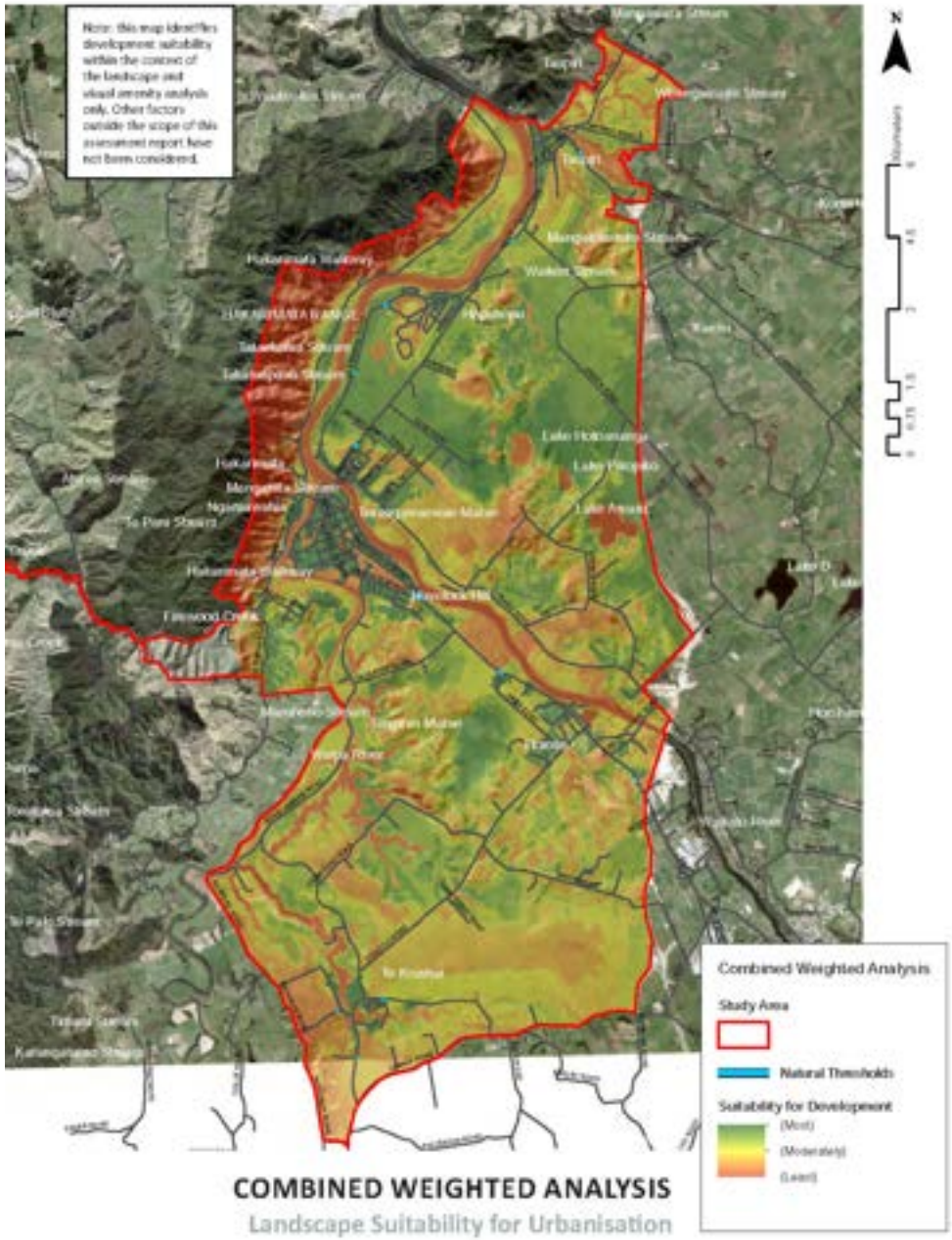



*Figure 3-17: Natural Environment and Landscape*

## 3.2 Insights and Opportunities

Opportunities have been identified for Ngaaruawaahia through a multi-stage approach. They are a combination of:

- The contextual analysis.
- A spatial analysis undertaken through a desktop assessment.
- A site visit in combination with council staff, elected members and community board representatives.
- Input received from technical reports.
- Inputs received by council through community surveys and feedback.

Feedback was received from the community via online engagement and community open day events held in Ngaaruawaahia, Hopuhopu and Taupiri. These sought to understand the issues experienced by the community, and opportunities seen by those that live, work and play in the three settlements to improve the liveability of these places.

The opportunities for investment have been grouped under the headings of the design principles, noting that some opportunities will align with multiple design principles.

The opportunities were grouped into themes relating to:

**Connected Communities**

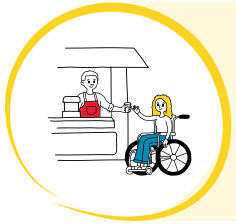
Opportunities relating to transport and accessing the places people want to get to, such as the town centre and key destinations like Tuurangawaewae Marae.

**Identity**

Opportunities related to telling the history, and highlighting the identity, of Ngaaruawaahia, Hopuhopu and Taupiri.

**Natural Environments**

Opportunities related to improving access to, and the quality of, the natural environment.



**Growth and Economy**

Opportunities related to enhancing commercial activity and supporting future growth.

The following pages provide a summary of the opportunities identified through this process. Some of the opportunities sit outside of the remit of Waikato District Council, however, were recorded to fully understand the issues and opportunities seen by the community. These opportunities have been assessed and considered by council as part of this process and have informed the key moves and outcomes. Not all opportunities have been progressed.

## Ngaaruawaahia - Wider Town Opportunities

### Connected Communities

Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.

1. Extend the Te Awa River Ride cycle route from Ngaaruawaahia via Hopuhopu, with links to Taupiri Maunga summit track and urupaa. There is a desire to promote Ngaaruawaahia as a destination (part of a cultural and heritage tourism route) incorporating the Hakarimata Ranges, Waipaa and Waikato Rivers.
2. Connect the town centre with the Waikato River and Te Awa River Ride cycle route.
3. Identify a site along Great South Road for a Te Huia stop (Hamilton to Auckland Rail service).
4. Provide safer east west active mode connections across Great South Road and NIMT.
5. Improve active mode connections across the Great South Road bridge to connect to the wider community.
6. Establish walking and cycling path along Old Taupiri Road.
7. Improve walking and cycling along Waingaro Road bridge.
8. Provide traffic calming initiatives along Hakarimata Road to reduce speeding issues.
9. Provide a pedestrian access point to Waipaa River from Hakarimata Road.
10. Establish signage to the Hakarimata Ranges.
11. Opportunity to reroute freight movement.
12. Strengthen connections between the Waipaa Esplanade Walkway to The Point.

### Identity

Strengthen the existing identity and character of the place.

1. Celebrate areas of cultural significant such as the Kangitanga Reserve, the Point, Hakarimata Ranges, Tuurangawaewae Marae and House through wayfinding, artwork and storytelling.
2. The Waikato River is well-used for the annual Waka Ama event held in March. Opportunities for riverside recreation, access, river edge improvements and viewing areas toward Marae.
3. Opportunity to highlight the riverside heritage features of the flour mill.
4. Opportunity for additional amenities such as a seating and picnic tables at Te Mana o Te Rangi Reserve.
5. Opportunity for additional seating, upgrade of toilets and playground at Paterson Park.
6. Emphasise entry to Tuurangawaewae House.
7. Establish township gateways as a way of physical markers to signify the town's entrance and exit points.

Other opportunities

Identify locations for youth facilities such as a basketball courts.

### Natural Environment

Connect communities to blue-green networks and provide recreational activities and opportunities.

1. Provide community amenities to the riverside such as viewing platforms, shelters and community gathering spaces.
2. Native re-vegetation of riverside to improve water quality, biodiversity and pest control.
3. Identify locations for community gardens and community nurseries.
4. Rehabilitate old quarry track to native bush with the potential for recreation uses.
5. Provide secure bike parking at Hakarimata Reserve.
6. Provide additional community amenities to utilise this open space.

Other opportunities

Identify opportunities for additional open spaces for the northern community.

### Growth and Economy

Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.

## 3.3 Key Moves

The opportunities identified during the first round of consultation were shared with the community across two open days and through online engagement, where feedback and support were gathered. The opportunities were also assessed against the agreed outcome principles for the project, providing a basis for assessment.

The feedback relating to the opportunities identified were considered together to confirm the key moves and outcomes for Ngaaruawaahia and how these are to be prioritised over the short, medium and long term. It was recognised that some of the projects are highly complex, will have associated high costs, and will need further detailed investigation before they are able to be confirmed in the long-term plan for delivery.

The key moves and outcomes have been identified on the following maps. The anticipated prioritisation of these is addressed in the implementation section of this document. The key moves and outcomes have also been grouped into the design principles of:

- **Connected Communities**
- **Identity**
- **Natural Environment**
- **Growth and Economy**

Walking and cycling activities have been identified separately as inputs from the transport workstream.

## Ngaaruawaahia - Wider Town

### Natural Environment

Recreational opportunities

1. Undertake open space and playground assessment and investigate potential locations for parks to serve wider Ngaaruawaahia. Consider multi functional uses such as wetland, playground and community gardens.
2. Complete masterplan for The Point.

Ecological opportunities

3. Improve resilience to localised flooding through a possible suite:
   - Increased permeable surfaces and attenuation planting.
   - Riverbank planting.
   - River edge terracing to protect recreation areas next to the river.
   - Greening of current paved spaces (swales).
   - Wetlands (to be confirmed through investigation).
   - Water sensitive urban design (to be confirmed through investigation).
4. Increase native tree cover and fruit trees in town.
5. Include additional street trees along Great South Road.

Other projects

- Improve native fauna habitat (through education/interpretation and restoration of waterways (native fish, eels etc).
- Undertake a climate risk assessment.

### Growth and Economy

6. Key catalyst development sites:
   a. Corner of Great South Road and Jesmond Street. Community uses - Library, community hall, innovation hub, communal working hub.
   b. Investigate the use of the Chorus site at centre of Jesmond Street as a village green - Potential uses include urban community garden, urban play space and maintaining the weekend market.
   c. Redevelop Plunket building for future community use.

Playground

Urban play in Village Green

Mountain bike/pump track

Kids bike park

River access

Urban community garden

# Artist Impressions of Key Moves

## Amenity upgrades to Paterson Park

23 Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

## 3.4 Implementation

Some of the methods and tools that will be used to implement the structure plan and town centre plan are summarised below.

### District Plan

The district plan is the legislative rule book which sets out what development can and can't be done and where in the district. Structure plans and town centre plans will form the basis for amendments to the district plan via plan changes (to an operative district plan) and plan variations (to a proposed district plan) to enable the development set out in the plans.

### Long Term Plan

The long-term plan (LTP) provides direction on the provision and funding of infrastructure and services within the Waikato district. Projects identified in this plan will need to be identified in the LTP for funding. Not all projects will initially make it into the LTP as the timing may fall outside of the first 10 years, or there may be budget constraints, but over time with each 3 yearly review more projects can be added as others are completed.

### Asset and Activity Management Plans

The Waikato District Council prepares asset and activity management plans which set the various needs, levels of service and demands of assets (e.g. roading, wastewater, water supply, facilities, reserves and open spaces). These are an essential tool in planning and funding infrastructure and services.

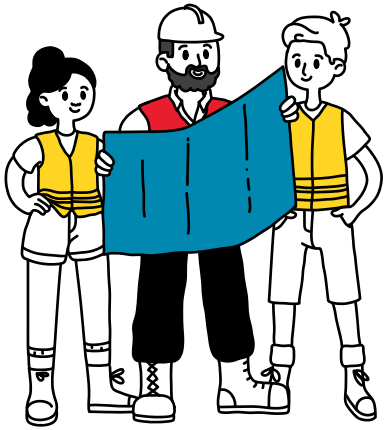
### Partnerships

Waikato District Council will implement the *Waikato 2070* in partnership with various organisations and groups to ensure the vision and future development expectations are achieved. The Waikato District Council will work alongside organisations and groups, such as:

- Waikato-Tainui
- Tangata Whenua/Mana Whenua
- Ministry of Education
- Ministry of Housing and Urban Development
- Ministry of Innovation, Business and Employment
- District Health Boards
- New Zealand Transport Agency
- Kiwi Rail
- Utility providers
- Tourism agencies
- Adjoining local authorities
- Waikato Regional Council
- Community boards, community committees, and community groups
- Local business associations
- Kainga Ora
- Police New Zealand / Fire and Emergency New Zealand
- Heritage New Zealand Pouhere Taonga

### Implementation Table

The following table identifies the key moves, projects or outcomes that have been identified throughout this document. It considers the alignment with the outcome principles, the project complexity and likely timeframe required to implement the projects. The table provides a tool for future identification and prioritisation of investment across the three settlements across the short, medium and long term.



## Ngaaruawaahia

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-2 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **NATURAL ENVIRONMENT** | | | | | | |
| 2. Complete masterplan for The Point. | ✓ | | | ✓ | | |
| 3. Improve resilience to localised flooding through a possible suite | | | | | | |
| - Increased permeable surfaces and attenuation planting | ✓ | ✓ | ✓ | | | ✓ |
| - Riverbank planting | ✓ | ✓ | ✓ | | | ✓ |
| - River edge terracing to protect recreation areas next to the river | ✓ | ✓ | ✓ | | | ✓ |
| - Greening of current paved spaces (swales) | ✓ | ✓ | ✓ | | | ✓ |
| - Wetlands (tbd) | ✓ | ✓ | ✓ | | | ✓ |
| - Water sensitive urban design (tbd) | ✓ | ✓ | ✓ | | | ✓ |
| **CONNECTED COMMUNITIES** | | | | | | |
| 1. Extension of the Te Awa River Ride cycle route | | | ✓ | | | ✓ |
| 4. Create a pedestrian and cycle connection between Te Awa River Ride cycle route (Belt Street), St Paul's Catholic School, Rugby League Club (Whatawhata Avenue), Centennial Park and the Waipa River Trail | | | ✓ | | | ✓ |
| 5. New active mode connection over the Waikato River | | | ✓ | | | ✓ |
| 6. Upgrade active modes facilities over Waingaro Road bridge | | | ✓ | | | ✓ |
| 7. Create a gateway marker at 46 & 108 Great South Road | ✓ | | | ✓ | | |
| 8. Upgrade of corridors with active modes: | | | | | | |
| - Jesmond Street | | | ✓ | | ✓ | |
| - Great South Road (Both directions - cycleway and footpath) | | ✓ | | | ✓ | |
| - Hakarimata Road and Brownlee Avenue (shared path) | ✓ | | | ✓ | | |
| - Waikato Esplanade (bi-directional cycleway and footpath) | ✓ | | | ✓ | | |
| - Lower Waikato Esplanade (Both directions - cycleway and footpath) | ✓ | | | ✓ | | |
| 9. Improve the safety and visibility of intersections: | | | | | | |
| - Great South Road and River Road | | ✓ | ✓ | | | ✓ |
| - Great South Road and Jesmond Street (proposed new roundabout) | | ✓ | ✓ | | | ✓ |
| - Great South Road, Princess Street and Newcastle Street (signalisation under investigation) | | ✓ | ✓ | | | ✓ |
| - Great South Road and Waingaro Road (proposed closure under investigation) | | ✓ | ✓ | | | ✓ |
| - Great South Road and Market Street | | ✓ | ✓ | | | ✓ |
| - Waingaro Road and Herschel Street (traffic calming or mirrors) | | ✓ | | | ✓ | |
| - Old Taupiri Road (south), Great South Road and Regent Street | ✓ | | | | | ✓ |
| - Martin Street and Galileo Street (still under investigation) | | ✓ | ✓ | | | ✓ |
| 10. Improve the safety and visibility of Jesmond Street roundabout | | ✓ | ✓ | | | ✓ |
| 11. Jesmond Street improvements: | | | | | | |
| - Consider shared zones and additional informal crossings to improve pedestrian connections | | | ✓ | | ✓ | |
| - Additional informal crossings and streetscape upgrades. Integrate crossings with intersection upgrades and development sites | | | ✓ | | ✓ | |

## Ngaaruawaahia

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| 12. Great South Road improvements: | | | | | | |
| - Traffic calming and speed management | | ✓ | | | ✓ | |
| - Roadway art at existing pedestrian crossings | | ✓ | | | ✓ | |
| - Additional informal crossing points | | ✓ | | | ✓ | |
| - Beautify the streetscape with planted promenade | | ✓ | | | ✓ | |
| - Separated active modes corridor | | ✓ | | | ✓ | |
| - Formalise crossing on Galileo Street outside Ngaaruawaahia Primary School | ✓ | ✓ | | ✓ | | |
| 13. River Road: | | | | | | |
| - Traffic calming and speed management | | ✓ | | | ✓ | |
| - Formalise crossings in front of Tuurangawaewae Marae | | ✓ | | | ✓ | |
| **IDENTITY** | | | | | | |
| 5. Create a wayfinding suite for key destinations including the following: Ngaaruawaahia town centre, Hakarimata Ranges, The Point, Waipaa Esplanade Walkway, Te Awa River Ride cycle route and proposed extension. | ✓ | | | ✓ | | |
| 6. Celebrate sites of cultural significance and protect waahi tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities at: | | | | | | |
| - Kingitanga Reserve | ✓ | | | | ✓ | |
| - The Point | ✓ | | | | ✓ | |
| - Hakarimata Ranges | ✓ | | | | ✓ | |
| - Tuurangawaewae Marae | ✓ | | | | ✓ | |
| - Tuurangawaewae House | ✓ | | | | ✓ | |
| - Pukeawahua Pas | ✓ | | | | ✓ | |
| 7. Placement of expressions (pou, kowhatu, native trees) to whakaeca (restore balance) to locations of colonial reminders | | ✓ | | | ✓ | |

View of Great Street Road in Ngaaruawaahia

# Ngaaruawaahia Town Centre

# 4 Ngaaruawaahia Town Centre Plan

The Ngaaruawaahia town centre is nestled between the convergence of the Waikato and Waipaa Rivers. The town centre is severed by Great South Road (formerly SH1) and the North Main Trunk Line. The area considered as part of the town centre plan is indicated in Figure 4-1 below, extending from The Point as the most northern point of the study area, southwards to Jordan street, with Herschel Street as the western boundary and the Waikato River as the eastern boundary.

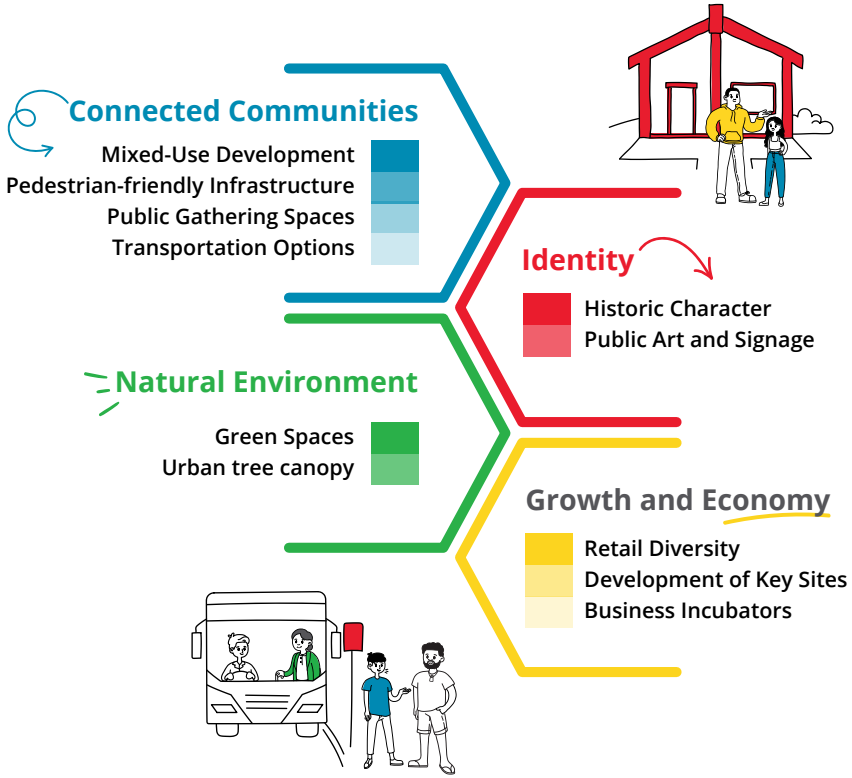
*Figure 4-1: Ngaaruawaahia Town Centre*

The town centre plan focuses on revitalising the town centre of Ngaaruawaahia and aligns with the overarching structure plan, vision, outcomes (relating to connected communities, identity, natural environment, and, growth and economy) and design principles.

**Structure Plan Vision:**

**To create opportunities for the communities of Ngaaruawaahia, Hopuhopu, and *Taupiri and their descendants, connected through the landscape, the awa, and collective yet unique histories.***

The outcomes are unpacked in more detail within the town centre plan, consisting of the following:




The town centre plan consists of the following sections:

- Site Context
- Insights and Opportunities
- Key Moves, and
- Implementation Plan.

# 4.1 Site Context

## 4.1.1 Connected Communities

***Design Principle: Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.***

This section will look at the following elements promoting connected community:

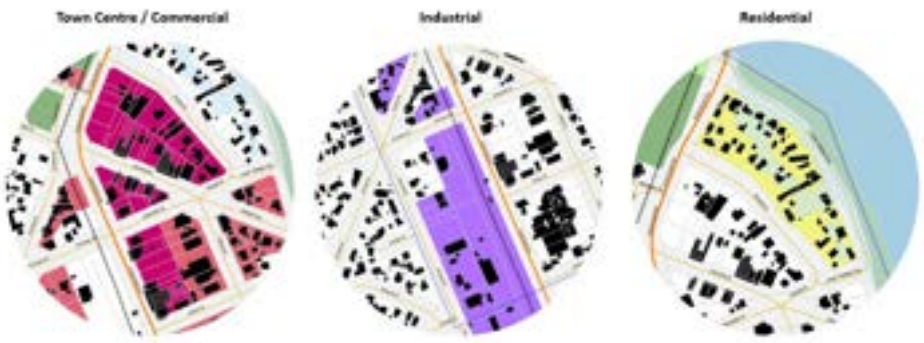
- Mixed-Use Development
- Public Gathering Spaces
- Pedestrian-friendly Infrastructure
- Transportation Options

## Mixed Use Development

**Encourage the integration of residential, retail/commercial, and recreational spaces to foster a sense of community and provide amenities within walking distance.**

The main structural elements shaping the urban form of the Ngaaruawaahia town centre is Great South Road (former SH1), the North Island Main Trunk (NIMT) railway line (both running north/south through the town centre) and the confluence of the Waikato and Waipaa Rivers. Great South Road, the railway line and rivers cause severance of the town and surrounding communities. During the consultation process it became apparent that physical and perceived connections should be strengthened/ enhanced to overcome the physical severance the community experiences.

The grain of a town, represented by its building footprints, provides valuable insights into its urban layout and historic development patterns. In the case of the Ngaaruawaahia town centre, variation in the building sizes and shapes indicate different land uses within the town with large, uniform footprints suggest retail/commercial or industrial areas, while smaller, irregular footprints indicate the surrounding residential areas.




The Ngaaruawaahia town centre is a small and compact town centre, with most amenities located within a 500m walking distance (see Figure 4-2 for walkability assessment). The town centre has potential to redevelop as a mixed use and higher density area, which is provided for through the district plan town centre and medium density zoning provisions.

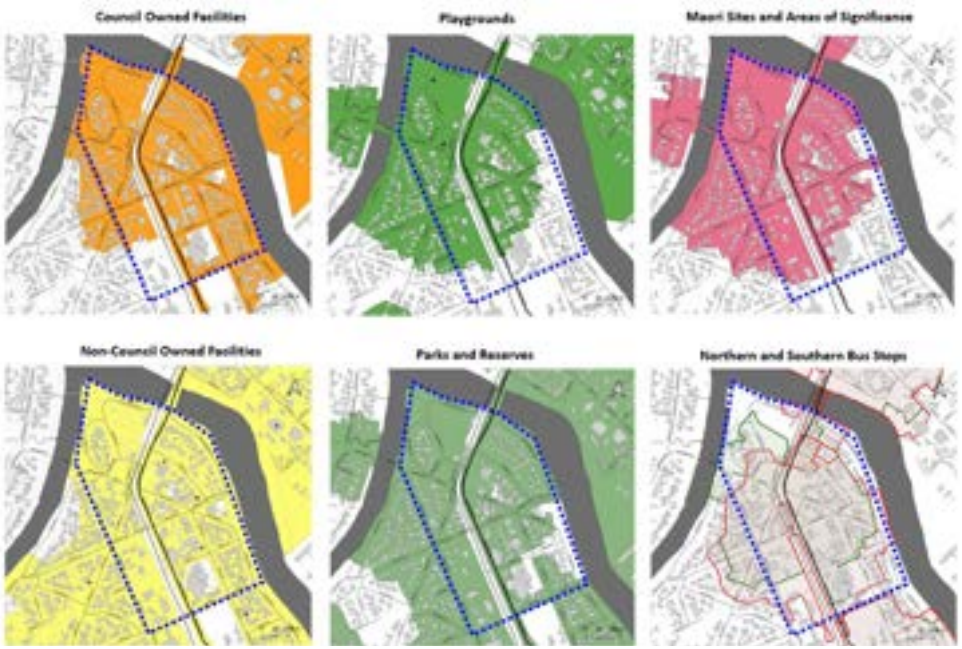
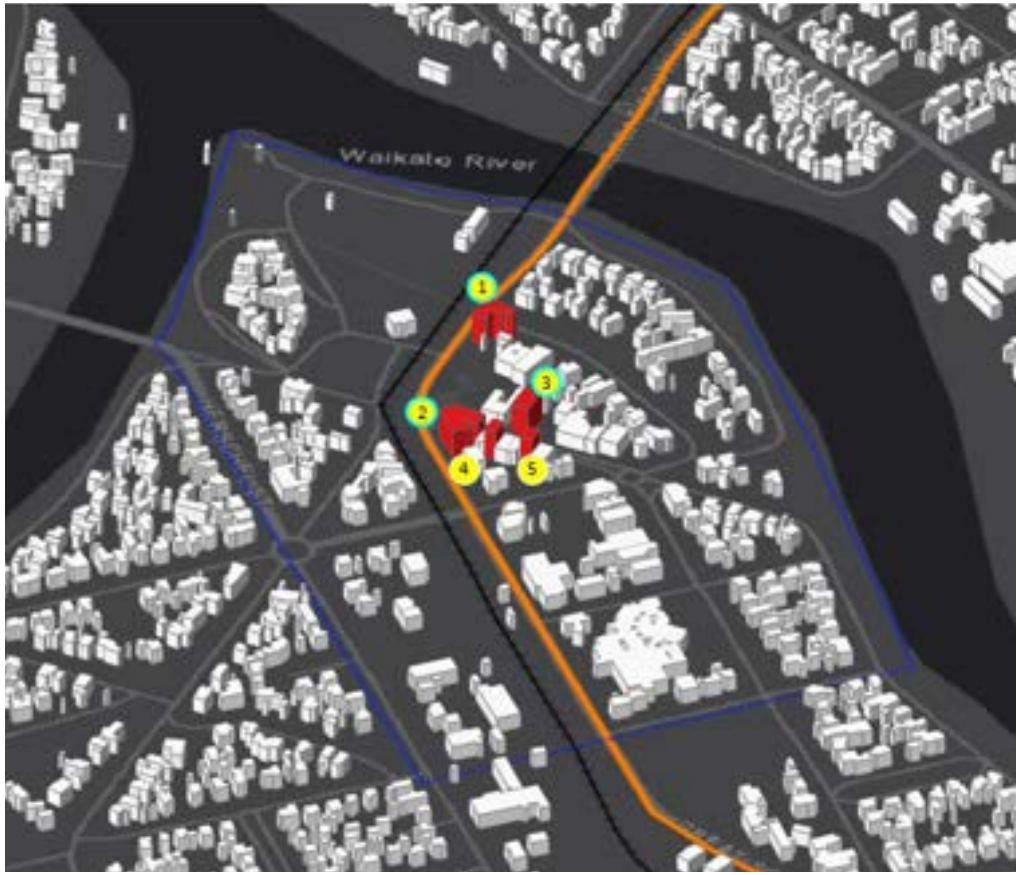



*Figure 4-2: Town Centre Walkability Assessment*

The town centre of Ngaaruawaahia currently has only five multi-story buildings, with three of the five multi-story buildings being historic landmark buildings. All the multi-story buildings are located along Jesmond Street. The underlying Town Centre Zone and Commercial Zones allow for development up to 3 storeys (12m height ) and the medium density residential zone 3 storeys (11m height). The town centre zoning allows and encourages mixed use development. The impact of higher density development within the town centre was assessed as part of the Variation 3, cultural view shaft impact assessment.



## View Shaft Assessment

As part of the Waikato District Council Variation 3[24] hearings process, cultural view shafts of the Hakarimata Range and Taupiri Maunga from Tuurangawaewae Marae were identified. The view shafts are important to local Maaori for cultural reasons. Urban intensification under Variation 3 will affect the existing open spatial and urban character around Tuurangawaewae, potentially resulting in a more enclosed experience.

Effects on the existing cultural view shafts are most likely to result from development within the blocks immediately adjacent to the marae, and development within the Ngaaruawaahia town centre (blocks bounded by Lower Waikato Esplanade, Great South Road, and Ellery Street East). Development outside this area is less likely to intrude into the existing cultural view shafts.

The view shafts that connect Tuurangawaewae, the Hakarimata Range, Taupiri Maunga and the Waikato and Waipaa awa have been modelled using GIS viewshed and skyline analysis tools.

The image below indicates the current view shaft from Tuurangawaewae Marae towards the Hakarimata Range.

Model Showing the Existing View

24 https://www.waikatodistrict.govt.nz/docs/default-source/your-council/plans-policies-and-by-laws/plans/district-plan-review/variations/variation-3-enabling-housing-supply/expert-evidence/final-statement-of-evidence---dave-mansergh.pdf?sfvrsn=f8f569c8_2

The images on the following page indicate the view shaft of the town centre developed as per the ODP, PDP, Variation 3 as notified and Variation 3 without the urban fringe, comprising of:

- Town Centre Zone and Commercial Zone - 3 storeys (12 meters) and,
- Medium Density Zone - 3 storeys (11 meters.).

Based on the ODP, PDP, and Variation 3 as notified, from a landscape perspective, the level of intrusion into the existing cultural view shaft would be small and would not likely change how the Hakarimata Ranges were experienced from Tuurangawaewae. Any development taller or with a greater site coverage has the potential to intrude into the existing views of the Hakarimata Ranges.

Model Showing the Potential Visibility of the PDP Permittable Development Envelope

Model Showing the Potential Visibility of the PDP Permittable Building Mass

Model Showing the Potential Visibility of the Variation 3 Permittable Development Envelope

Model Showing the Potential Visibility of the Variation 3 Permittable Building Mass

## Land Use Assessment

The employment (**town centre**, **commercial** and **industrial** zoned) land is concentrated within the heart of the town centre, with access off Great South Road. The core retail/commercial area is surrounded by supporting medium density and residential zoning. Through the structure plan and town centre plan, the intention is to strengthen the Ngaaruawaahia town centre and not dilute it by zoning any additional town centre or commercial land outside of the core town centre area.

The **town centre** and **commercial** zoning encourages mixed used development. Mixed-use developments typically include a variety of retail/commercial, residential, and recreational/community spaces within one building and/or in close proximity. Mixed land use developments encourage "live, work, play" in the same neighbourhood. This proximity encourages walking and reduces the need for driving, thereby promoting healthier lifestyles and reducing traffic congestion.

The Durham Precinct, located on Durham Street on the western side of the Great South Road and the railway line, is an example of horizontal mixed-use development that provides opportunities for smaller businesses and entrepreneurs to thrive alongside larger retailers (located in the main street, Jesmond Street). The Durham Precinct is zoned **commercial** and backs onto **industrial** sites. This diversity of businesses adds to the unique character of the town centre and creates a sense of place that attracts residents and visitors alike.

As part of the town centre plan development, consideration is given to the existing land use pattern to see if it is fit for purpose. Within the context of Ngaaruawaahia Town Centre, minimal changes are recommended to zoning due to the recent proposed district plan decisions with many of the land use changes being addressed already. The recommended changes shown below are generally small in nature.

*Figure 4-3: Current Zoning Pattern – Town Centre*

| | Zone Change | Timing | Notation |
|---|---|---|---|
| | Commercial Zone › Open Space Zone. | Long Term | The extent of this proposed change relates to the property - 1 Waingaro Road. The extent of this proposed change is to align with the surrounding zoning and provide better adjacent land use compatibility as well as further opportunity to expand the Open Space Zone at the Point. |
| | Medium Density Residential Zone › Commercial Zone. | Long Term | The extent of this proposed change relates to the properties - 1 Martin Street and 17 Waikato Esplanade. The extent of this change is to align with the surrounding zoning and provide better adjacent land use compatibility and a more pragmatic land use pattern. |

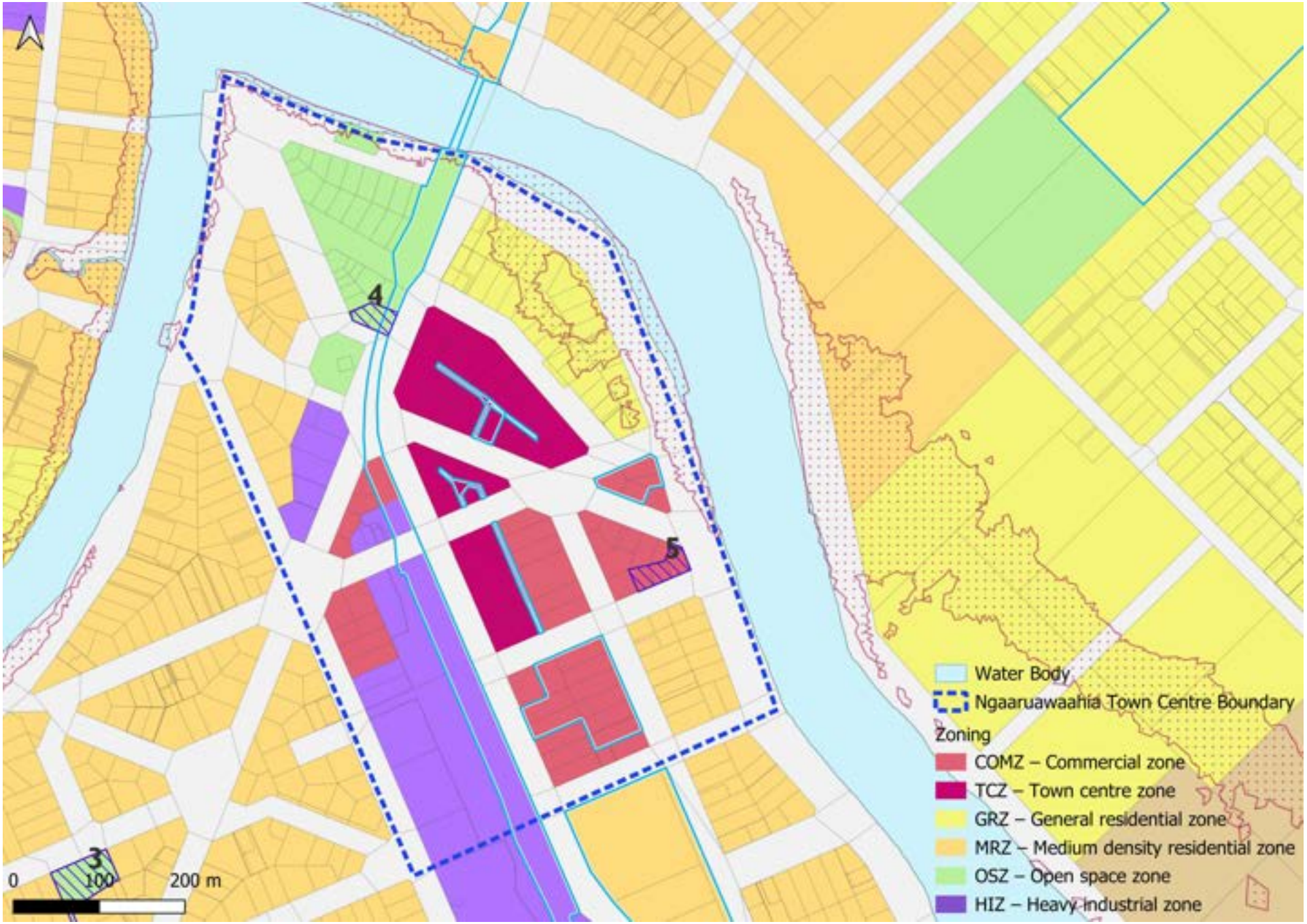



*Figure 4-4: Proposed Zoning Pattern after changes*

## Edge Condition Assessment

The Ngaaruawaahia Town Centre is unique in the number of cultural sites of significance, historic buildings, ample open space, and community amenities that are located within walking distance from the core town centre area / main street, this adds to the vibrancy and liveability of the Town Centre.

Alongside establishing the necessary zoning for mixed-use development, a well-crafted **public realm** is vital in achieving communities that are walkable, enjoyable to live in, and vibrant. A high-quality public realm is made up of a number of qualities that engages with pedestrians. The three main qualities investigated as part of the urban design assessment and town centre plan includes: Permeability (1), Transparency (2) and Built to Boundary (3).

Permeability (1) looks at the provision of pedestrian access points at street frontage. Transparency (2) involves the visual extension of the public space into the private space and is particularly important for retail uses where they rely on visual cues to draw in passing traffic and pedestrians. Building to the boundary (3) assesses if the buildings are located close to or directly on the edge of the property line, creating a more consistent street front.

The public/private interfaces of the Ngaaruawaahia town centre streetscape have been visually evaluated based on the above qualities and identified on Figure 4-5 as strong, weak, poor or missing edge conditions. A building frontage that illustrates all three of the above qualities is identified as having a strong active street frontage and a building frontage with just one as poor.

The areas that require active street frontages identified in the district plan for Ngaaruawaahia are Jesmond Street and Great South Road from Jesmond to Martin Street. The street frontages are currently fragmented and a mix of strong, weak and poor. There are several heritage buildings located within the town centre, with most having weak/poor edge conditions.

A key area of improvement is the built form at the intersection of Jesmond and Great South Road, the two corner sites (one being a heritage building) are gateways and drawcards to the main street and will be a significant contributor to the quality of the streetscape. Heritage street fronts often represent the architectural, cultural, and historical identity of a community. They provide a tangible link to the past, reflecting the values, traditions, and stories of the people who lived there. Preserving these fronts helps maintain a sense of continuity and connection to the past for future generations.

The town centre is also characterised by a large amount of vehicle accesses across footpaths, resulting in large gaps along these key street frontages. Attention should be given to improve the key frontages and filling in the gaps to add to the vibrancy and attractiveness of the main streets.

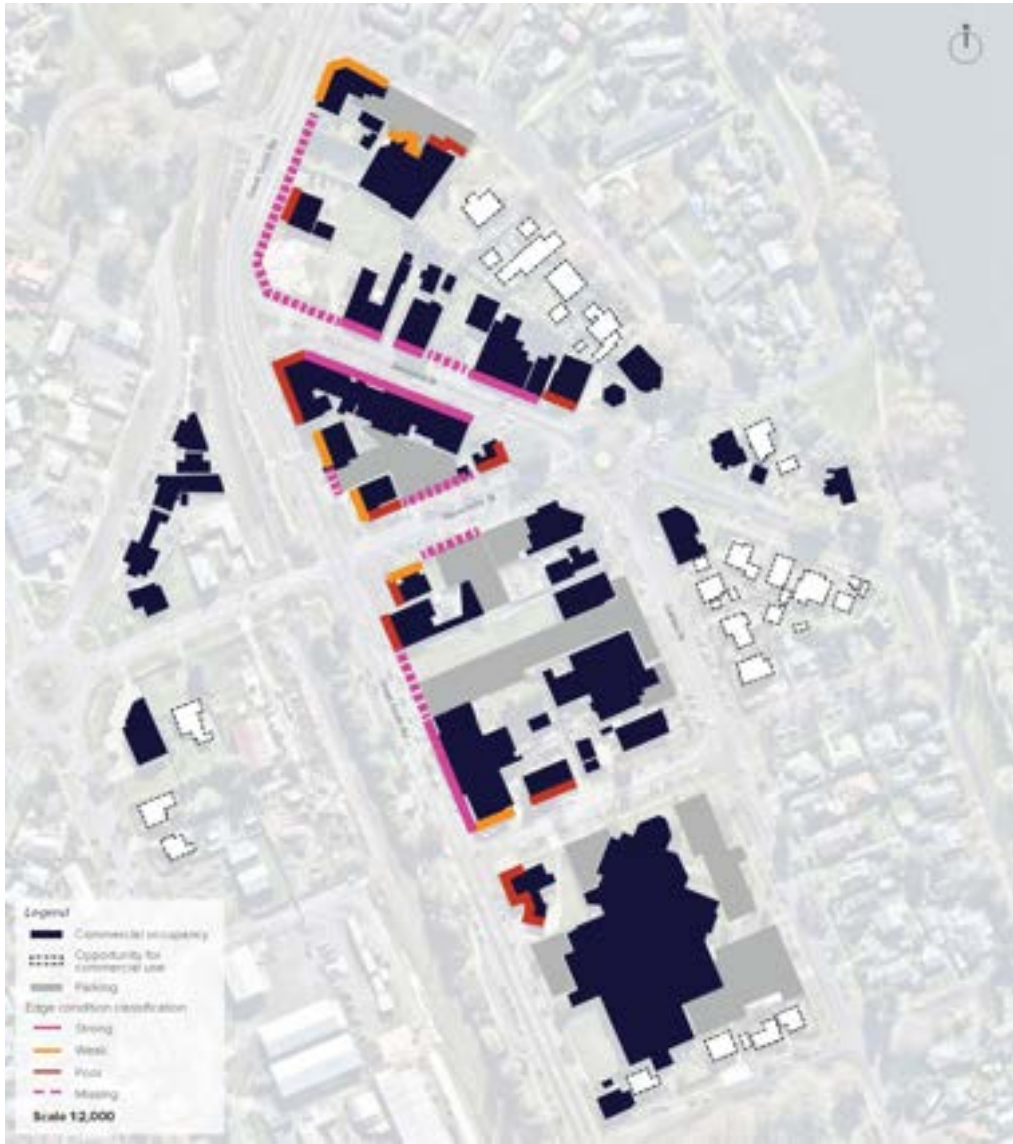



*Figure 4-5: Ngaaruawaahia Town Centre Edge Condition Assessment*[25]

25 Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

## Public Gathering Spaces

**Create plazas, squares, or parks where residents can come together for events, markets, or simply to socialise.**

The Ngaaruawaahia Town Centre has a few spaces that could be classified as public gathering spaces, consisting of smaller "plaza/squares" to bigger reserve spaces. The small public plaza/square centrally located along Jesmond Street has the potential to become a focal point and space for the community to come together. The current community library is located approximately 50m from the public plaza/square.

The Point and Kiingitanga Reserve are located northwest of the town centre with a playground and skatepark. This space is well utilised by the community and tourists visiting the area. The Point is also used for community events throughout the year. The Waikato Esplanade strip includes seating and some outdoor sport equipment.

The public green spaces / gathering spaces are located along the Town Centre Loop (see the pedestrian friendly infrastructure and the green spaces sections below for more details).

It is very important to ensure public gathering spaces are safe and well maintained. By adhering to the crime prevention though environmental design principles (CPTED), the public spaces can be inviting and vibrant. Consideration should be given to the following:

- Vegetation should be maintained to ensure clear sight lines from the street and neighbouring properties.
- Efficient lighting should be provided to ensure the spaces can safely be utilised after sunset/ before sunrise; the extended hours of use will add to the vibrancy of the town centre.
- The surrounding land use should encourage passive surveillance to contribute to a sense of place. Mixed land use with a combination of retail, office and residential will enhance passive surveillance and better use of the public space with extended hours of activity.

## Pedestrian-Friendly Infrastructure

**Design streetscapes that prioritise pedestrians over vehicles, with wide sidewalks, pedestrian crossings, and well-marked crosswalks.**

Ngaaruawaahia is bisected by the major corridors of Great South Road (previously SH1) and the NIMT. These create a barrier for east-west access within the town centre and make direct access for people walking or on bikes to the town centre difficult, with limited safe crossing locations.

The Te Awa River Ride is a popular scenic cycling and walking trail in New Zealand. Unfortunately, the Awa River Ride stops abruptly on Lower Waikato Esplanade, with no direct linkages to The Point or the town centre.

The two bridges crossing the Waipaa and Waikato Rivers have a narrow footpaths and no provision for cycling to connect to the western and northern areas. Currently, there are limited cycle facilities throughout the local network.

Overcoming the above-mentioned challenges, several pedestrian friendly infrastructure upgrades are proposed for the town centre.

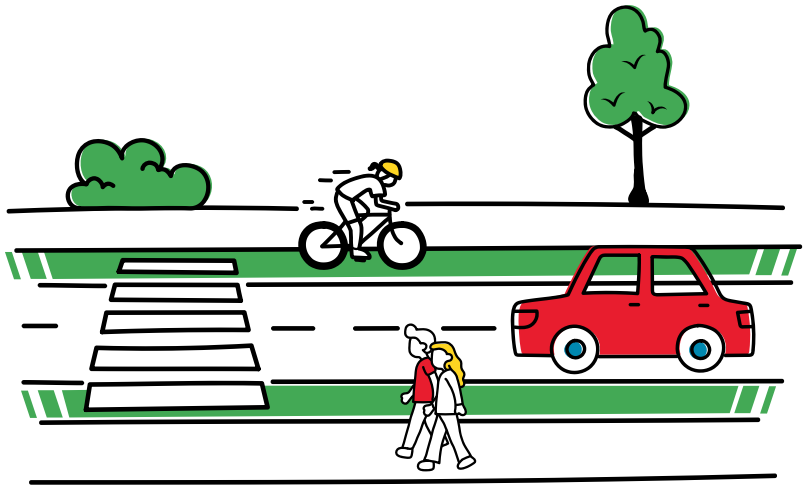
1. Extend the Te Awa River Ride cycle route to the Point and across the Waikato River via Hopuhopu, to Taupiri with links to Taupiri Maunga summit track and urupaa.
2. Connect the town centre with the Waikato River and Te Awa River Ride cycle route with connection along Jesmond Street and Esplanade Road (supporting the Town Centre Loop).
3. Improve the connectivity across Great South Road and the NIMT.
4. Improve the walking/cycling connections across the Waipaa and Waikato Rivers.
5. Upgrade the roundabout at the Jesmond Street/Newcastle Street intersection to manage cyclist and pedestrian safety and reduced speeds as well as deliver on the east-west connection.

By providing the safe pedestrian connection along Jesmond Steet and across Great South Road, the town centre loop is complete.

The image on the overleave graphically illustrating the broader active mode opportunities for the town centre.

26

The image on the overleave graphically illustrates the recommended intersection upgrades along Jesmond Street to improve pedestrian and cyclist safety and connectivity.



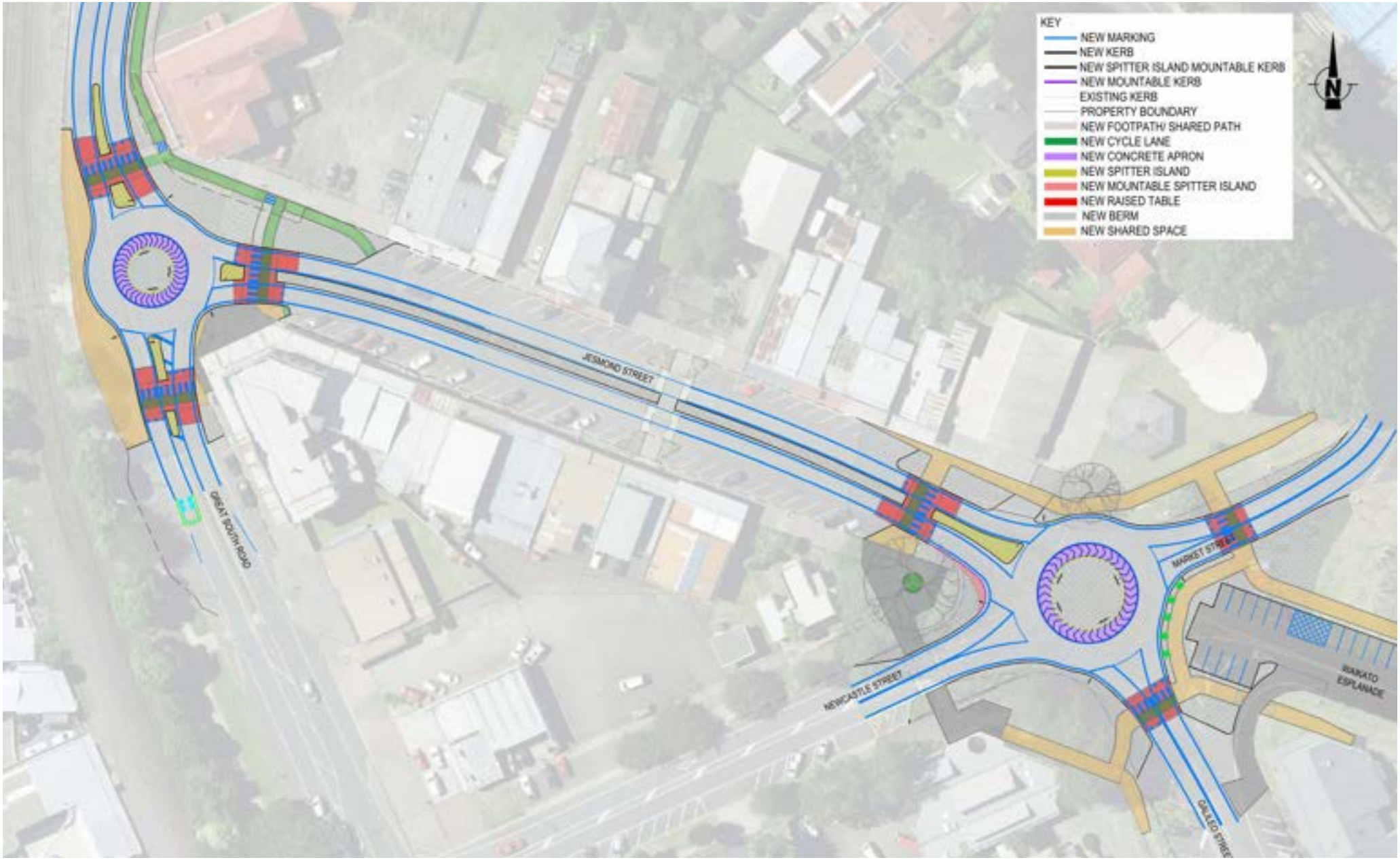



*Figure 4-6: Jesmond Street Intersection Design*[27]

27 Ngaaruawaahia, Hopuhopu & Taupiri Transport Assessment, 2024

## Transportation Options

**Improve public transportation systems, introduce bike lanes, and promote carpooling to reduce reliance on individual vehicles and encourage community interaction.**

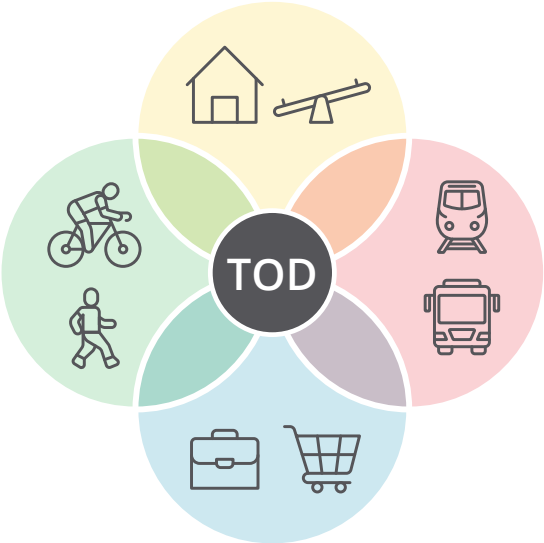
There is a regional bus service running along Great South Road connecting Ngaaruawaahia to Hamilton and other nearby towns. Currently there is no 'within-town' bus services serving Ngaaruawaahia. As the density and population increase, a within-town service is needed. The current bus service is accessible with a 500m walkability catchment (Figure 4-7) within the town centre.

The Ngaaruawaahia Town Centre has been identified as a possible location for a future bus rapid transit (BRT) and/or train station, therefore having the potential to develop as a Transit Oriented Development[28] (TOD) node. TODs support the principles of mixed-use development and has a strong focus on walkability. Options for a suitable location for a future bus/train station are being considered.

Sustainable transport also includes the provision of good wayfinding signage and the right technology for people to find destinations and attractions.

Transitioning to more sustainable modes of transport, a possible site for a universal electric car changing station along Jesmond Street is being investigated.

Lockable charging stations for ebikes and escooters should be provided at The Point along the Te Awa River Ride.



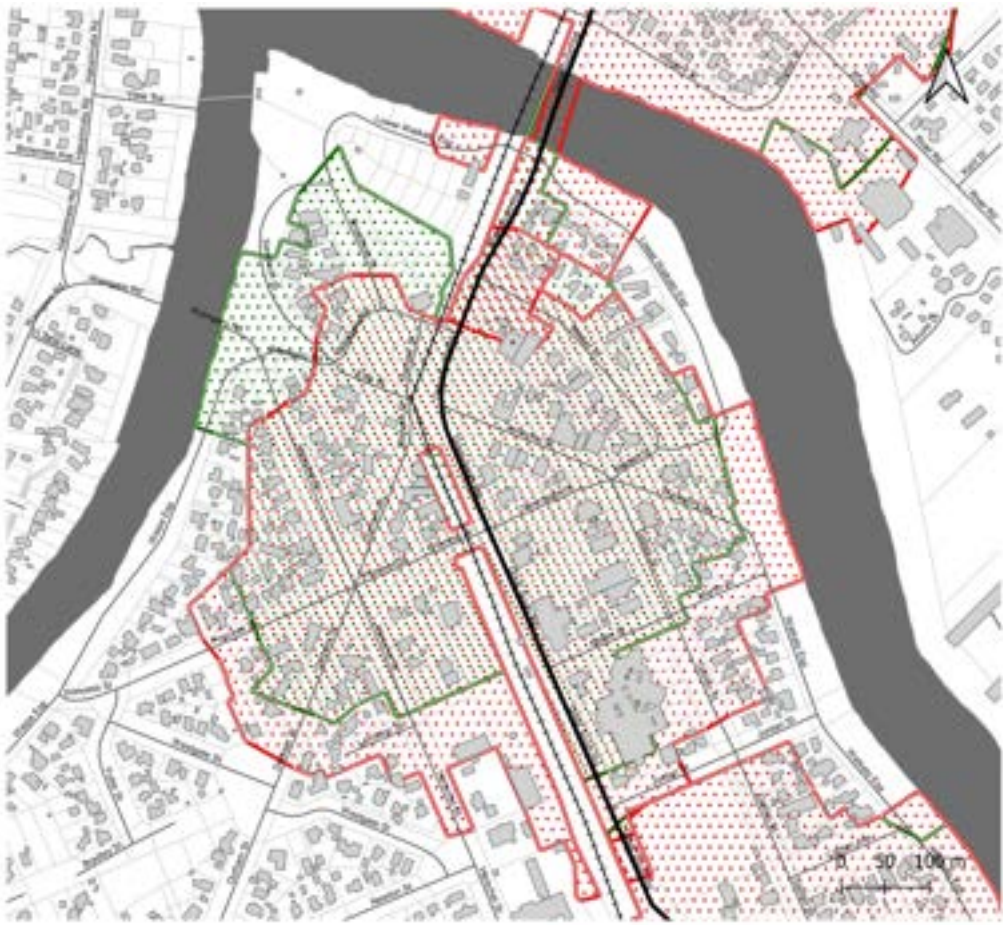



*Figure 4-7: Bus stop walkability assessment*

28 Transit oriented development (TOD) nodes are urban areas designed to integrate different modes of transport (i.e. bus and train) functions with people, activities, buildings, and public spaces that aim to optimise access to public transportation.

### 4.1.2 Identity

*Design Principle: Strengthen the strong sense of identity, and character of the Town Centre.*

| | Identity |
|---|---|
| | Historic Heritage and Character |
| | Public Art and Signage |

## Historic Heritage and Character

**Preserve or enhance existing historic heritage and features that contribute to the town's identity, while also incorporating new design elements that reflect its histories and culture.**

Historical heritage plays an important role in contributing to a sense of belonging, which includes character and recognises peoples' connections to place within both a rural and an urban environment. There are several heritage buildings and landmarks, many archaeological sites, and notable trees located within the town, which showcases the rich cultural histories of the town, and can contribute significantly to the town centre revitalisation in several ways, as listed below:

- **Tourism and Cultural Identity:** Historic places and sites often serve as magnets for tourism, drawing visitors interested in experiencing the town's unique histories and culture. Tourists can contribute to the local economy through spending on dining, shopping, and other activities. Over time Ngaaruawaahia could include overnight accommodation as well.
- **Sense of Place and Community:** Historic landmarks provide a sense of place and identity for local residents, fostering community pride and a connection to their heritage. These spaces (The Point for example) serve as gathering spots for community events and celebrations, contributing to a vibrant social fabric and provide links to the wider community who travel through or visit.
- **Economic Development:** Preserving and repurposing historic buildings (for example the Centennial Memorial Plunket Rooms, Grants Chambers, and the Masonic Lodge Te Marama) can catalyse economic development by attracting businesses, entrepreneurs, and investors. These buildings can be transformed into boutique shops, galleries, restaurants, or cultural centres, creating jobs and stimulating the local town centre economy.
- **Heritage Tourism and Educational Opportunities:** Historic places and sites offer educational opportunities for residents and visitors alike, providing insights into the town's histories, architecture, and cultural heritage. Informational signage, guided tours, and educational programs can enrich the visitor experience and foster a deeper appreciation for the town's heritage.
- **Preservation of Cultural Heritage and Archaeology:** Protecting and preserving historic landmarks and archaeological sites safeguards the town's cultural heritage for future generations, ensuring that important landmarks, stories, traditions, and artifacts are not lost to time. This preservation effort contributes to the town's overall identity and sense of place.
- **Urban Renewal:** Restoring and maintaining historic architecture can enhance the aesthetic appeal of the town centre, making it more attractive to residents, businesses, and visitors. Renovations and adaptive reuse projects can breathe new life into neglected areas and buildings, revitalising the urban landscape.

*Figure 4-8: Cultural Heritage Buildings and Landmark*

## Key Heritage Sites / Buildings

The current heritage listings for the Ngaaruawaahia Town Centre include:

The Point, Kiingitanga Reserve and Tuurangawaewae House are significant cultural sites that deserve recognition by way of protection and preservation. Sites of cultural significance should be protected and celebrated through wayfinding, artwork, and storytelling (raising awareness within the local community and visitors alike).

*Heritage ID - 96*

1 Turangawaewae House / Maori Parlement (1917-1919)

*Heritage ID - 89*

2 Ngaruawahia World War I Memorial Cenotaph (1922)

*Heritage ID - 90*

3 Former Pioneer Gun Turret (1863; relocated 1926)

*Heritage ID - 91*

4 Former Hutt Residence (c.1906)

*Heritage ID - 93*

5 Potatau Monument (1895)

*Heritage ID - 87*

6 Ngaaruawaahia Regatta Association Band Stand (c.1913)

*Heritage ID - 92*

7 Delta Hotel (1900)

*Heritage ID - 88*

8 Former 1877 Ngaaruawaahia Combined Road/Rail Bridge Abutments & Piers (1875-77)

*Heritage ID - 127*

9 Former FH Edgecumbe Residence (c.1887)

## Public Art and Signage

**Install public art installations, murals, or sculptures that celebrate local heritage and culture, and use signage that reflects the town's unique character.**

There are currently several beautiful murals and storyboards located across the town centre. These public art/murals and storyboards reflect the unique identity, history, and values of the local Iwi and community. By incorporating local themes, traditions, and narratives, art installations contribute to a sense of place and foster community pride. They also serve as conversation starters, sparking dialogue and connection among residents and visitors.

Public art installations such as sculptures, murals, and street art can transform bland or neglected spaces into visually captivating attractions. These artistic elements create focal points that draw pedestrians into the town centre, making it a more engaging and enjoyable environment. Township gateway sculptures could be installed as a way of physical markers to signify the town's entrance and exit points.

Eye-catching public art can become iconic symbols of a town, attracting tourists and visitors who seek out memorable and "Instagram-worthy" experiences (for example the angel wings pained on a wall at the Durham Precinct). These art installations can become landmarks in their own right, contributing to the town's identity and increasing foot traffic in the town centre, contributing to the local economy.

Well-designed signage helps residents and visitors navigate the town centre more easily, reducing confusion and enhancing the overall experience. Clear signage for attractions, amenities, parking, and pedestrian routes improves accessibility and encourages exploration of the area. Accordingly, the creation of a wayfinding and signage strategy or plan that reinforces key cultural sites, routes, and amenities is needed. This strategy or plan should be developed in close conversation with local Iwi and the wider community.

### 4.1.3 Natural Environment

**Design Principle: Celebrate and connect communities to blue-green networks and significant cultural areas supporting recreational use and preserve local identity.**

| Natural Environment |
|---|
| Green Spaces |
| Urban tree canopy |

## Green Spaces

**Introduce parks, gardens, and green corridors to improve air quality, provide habitat for fauna and flora, and offer residents places for recreation and relaxation.**

A key natural feature framing the town centre, is the convergence of the Waipaa and Waikato Rivers, with breathtaking views of the Hakarimata ranges. Large areas of flooding have been identified along the banks of the Waipaa River and along the gullies of the land east of the Waikato River.

The town centre includes The Point Reserve (open space) with a playground, esplanade sections along the rivers, and a small public square within the main street. Through the structure plan community engagement, the Point Reserve and public square along Jesmond Street has been identified as possible locations for future community gardens and community nurseries.

1. The Point Reserve - possible location for future community gardens and community nurseries.
2. Public square - possible locations for future community gardens and community nurseries.
3. Notable tree site – there is ample public space with endless possibilities to be transform into a community space.
4. The open space along to the railway line on the Durham Precinct side has the potential to become a community green space as serve as a buffer to the railway line.

*Figure 4-9: Green Spaces and Town Centre Loop*

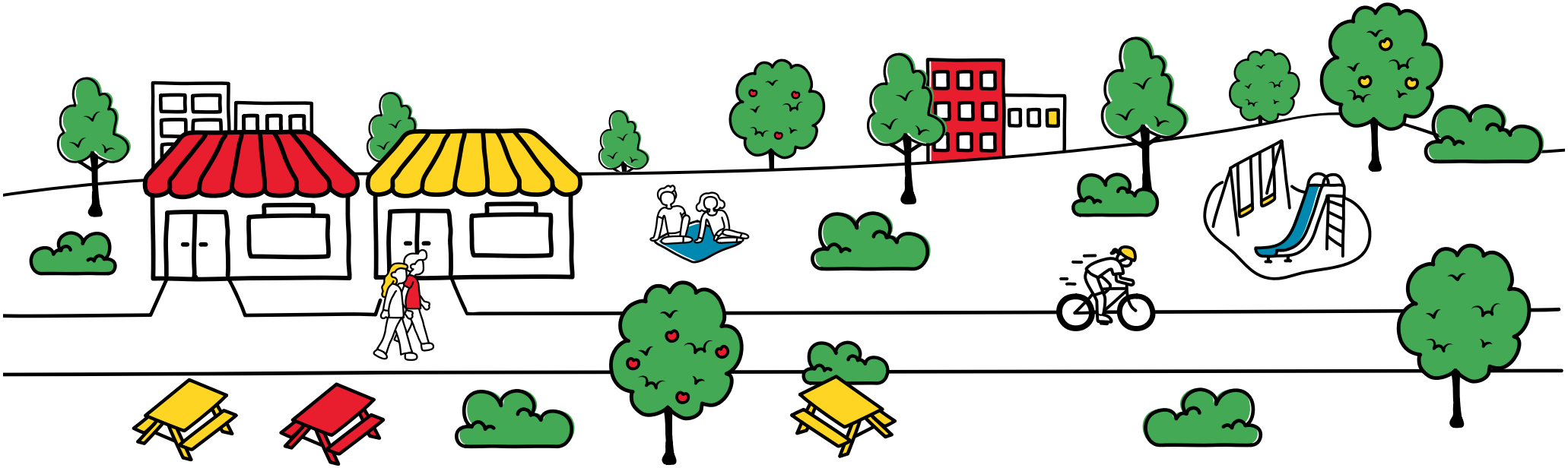
## Urban Tree Canopy

**Plant trees along streets and in public spaces to provide shade, mitigate heat island effects, and enhance the aesthetic appeal of the town centre.**

Trees and greenery soften the built environment, adding visual appeal to the town centre and creating inviting and pleasant spaces for residents, workers, and visitors. Green spaces with lush canopy cover can transform a seemingly concrete space into a vibrant and attractive urban oasis.

Most of the larger and notable trees are located at the Point Reserve and along the Waikato Esplanade. More can be done to increase the number of trees and vegetation in the town centre. Trees provide shade, reduce surface temperatures, and help regulate microclimates in urban areas. By creating cooler and more comfortable environments, urban canopy cover mitigates the urban heat island effect, particularly in built up town centres, and reduces the demand for energy-intensive cooling systems during hot weather.

Throughout the structure plan community consultation process, the community indicated they would like to see kai (food) trees planted in town, to provide not only shade, but also food/fruit to the community.



### 4.1.4 Growth and Economy

**Design Principle: Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.**

| Growth and Economy |
|---|
| Retail Diversity |
| Development of Key Sites |
| Business incubators |

## Retail Diversity

**Encourage a mix of retail establishments, including locally-owned shops, boutiques, cafes, and restaurants, to create a vibrant and diverse commercial district.**

The main retail and commercial activities within the Ngaaruawaahia Town Centre are loacted along Jesond Street and Great South Road. Most of the stores are less than 500 m2 and therefore have a convenience/specialty store focus. The town centre lacks diversity in retail options, with nearly 60% of retail stores focused on the food and takeaway sectors. The town centre commercial service businesses range from hairdressers, beauty therapy/massage, and real estate agencies to medical practitioners.

A cluster of community facilities are located along Galileo Street, including the community War Memorial Hall, a medical centre, two churches, Ngaaruawaahia Tu Tangata Trust, Waikato District Council and Ministry of Social Development offices. The town centre open space/parks and playgrounds are located on the northen end of the town centre, at the convergence of the Waaipa and Waikato rivers.

An important measure of a town centre's health is the level of vacancy. The Ngaaruawaahia town centre currently has 1729 vacant stores, which equates to 22%. This percentage is very high, indicating that the Ngaaruawaahia Town Centre is not healthy and is underperforming relative to its market size. The centre is in need of assistance to successfully play its role and function as envisaged. Unfortunately, many of the retail stores and buildings in the town centre are considered not to be of good quality.

*Figure 4-10: Town Centre Retail Diversity*

29 Ngaaruawaahia and Taupiri Centres Economic Overview, 2023

## Development of Key Sites

**Enable and support the development of key sites to encourage increased vibrancy, vitality and amenity in the town/ village centre.**

Waikato District Council has recently bought the old Waipaa Tavern site, located on the corner of Great South Road and Jesmond Street. The acquisition means Council has a block of 5,361m2 incorporating six council-owned properties, including the former Waipaa Tavern site and the existing Ngaaruawaahia Library site. This key corner site has the potential to be developed as a community hub (a welcoming space for learning, creativity, engagement and connection) and serve as a catalyst for the rejuvenation of the town centre.

The Grants Chambers (1929) is a beautiful historic building located on the corner of Great South Road and Jesmond Street and is a Ngaaruawaahia landmark. It is currently underutilised, but has the potential to be enhanced. As the building is a listed heritage item, the building needs to be preserved, maintaining the town's architectural heritage while accommodating modern needs and uses.

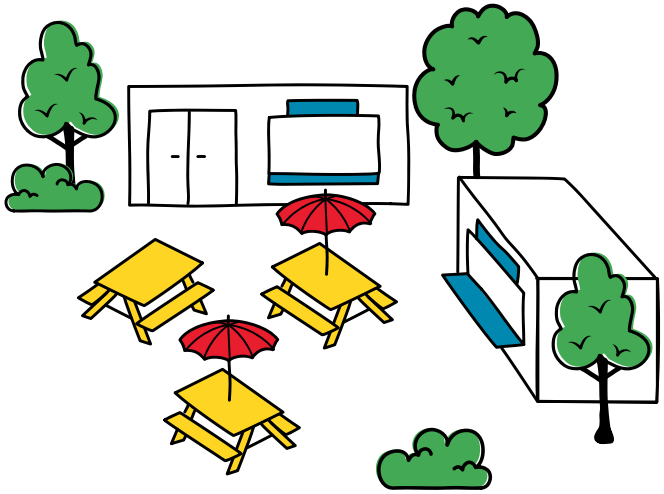
*Image 4-1: The Grants Chambers (1929)*

The Ngaaruawaahia Centennial Memorial Plunket Rooms (1940) historic building has also been identified, within the Parks and Facilities Report (Appendix 7), as having the potential to repurposed into a shared community space.

The Plunket rooms are strategically located at the eastern entry point of the town centre main street, on the corner of Jesmond Street and Newcastle Street. This site has the potential to become a focal point/landmark site – celebrating the entrance of the main street. The Plunket rooms border a large public space and a very old, protected holm oak (notable tree) Figure 4-2 which provides canopy cover and the opportunity for a lovely interactive outdoor space.

*Image 4-2: Notable Tree outside of Plunket building*

These key development sites play a vital role in the town centre revitalisation by catalysing economic growth, creating job opportunities, attracting foot traffic, enhancing infrastructure and amenities, preserving historic heritage, and strengthening the town's identity. By leveraging these sites effectively, they can contribute greatly to the Ngaaruawaahia centre becomming a vibrant, resilient, and inclusive urban centre that thrives for years to come.



## Business Incubators

**Establish incubator spaces or coworking hubs to support local entrepreneurs and start-ups, providing resources, mentorship, and networking opportunities.**

The Durham precinct (Figure 4-3) is a good example of an entrepreneurial incubator space. The shipping containers have been converted into start-up businesses. As noted within the market assessment, the Durham Precinct retail node currently complements the main streets' (Jesmond Street and Great South Road) retail/commercial service offerings in the community but should not expand beyond the designated commercial zone. The Durham Precinct site is not yet developed to full capacity and can accommodated additional start-ups.

*Image 4-3: The Durham Precinct*

## Insights and Opportunities

Opportunities have been identified for Taupiri through a multi-stageapproach. They are a combination of:

- The contextual analysis.
- A spatial analysis undertaken through a desktop assessment.
- A site visit in combination with council staff, elected members and community board representatives.
- Input received from technical reports.
- Inputs received by council through community surveys and feedback.

Feedback was received from the community via online engagement and community open day events held in Ngaaruawaahia, Hopuhopu and Taupiri. These sought to understand the issues experienced by the community, and opportunities seen by those that live, work and play in the three settlements to improve the liveability of these places.

The opportunities for investment have been grouped under the headings of the design principles, noting that some opportunities will align with multiple design principles.

The opportunities were grouped into themes relating to:

**Connected Communities**

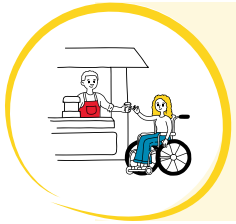
Opportunities relating to transport and accessing the places people want to get to, such as the town centre and key destinations like Tuurangawaewae Marae.

**Identity**

Opportunities related to telling the history, and highlighting the identity, of Ngaaruawaahia, Hopuhopu and Taupiri.

**Natural Environments**

Opportunities related to improving access to, and the quality of, the natural environment.



**Growth and Economy**

Opportunities related to enhancing commercial activity and supporting future growth.

The following pages provide a summary of the opportunities identified through this process. Some of the opportunities sit outside of the remit of Waikato District Council, however, were recorded to fully understand the issues and opportunities seen by the community. These opportunities have been assessed and considered by council as part of this process and have informed the key moves and outcomes. Not all opportunities have been progressed.

## Ngaaruawaahia - Town Centre Opportunities

### Connected Communities

Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance

1. Create a high quality pedestrian experience along Jesmond Road with reduced speeds and pedestrian prioritised movement.
2. Provide a clear pedestrian link from bridge down to edge of the Waikato River.
3. Improve the Jesmond Street five leg roundabout at the eastern end with a pedestrian and cycling focused solution.
4. Provide a safe and prioritised pedestrian and cycling connection.
5. Review of on street parking, there are carparks too close to zebra crossing obstructing visibility.
6. Upgrade intersection at Old Taupiri Rd and Regent St.
7. Clear sightlines and visibility at New World carpark entry points.
8. Increase visibility nursing out of Martin Street.
9. Maximise active mode connectivity through roundabout to improve access to Durham Street Precinct.
10. Improve visibility at the corner of Wangaro Road and Herschel Street.

Other opportunities

- Create a wayfinding and signage strategy and plan that reinforces key cultural sites, routes and amenities.

### Identity

Strengthen the existing identity and character of the place

1. Kingitanga Reserve and Tuurangawaewae House are significant cultural sites that deserve recognition by way of protection and preservation.
2. Provide visual cues across the North Island Main Trunk by improving the back/service areas of Durham Street buildings and edge of Kingitanga Reserve with landscape treatment and art.
3. Opportunity for a rest point with bike parking and e-bike charging stations at The Point and along Waikato River.
4. Market area at Jesmond Street - inclusion of shelter to encourage more active use of the space.
5. Proposed masterplan for The Point with recreational facilities, extended Te Awa River Ride cycle route/walkway and carparking.
6. Key corner site - opportunity for mixed use community functions such as library, meeting rooms and retail.

Other opportunities

- Design guidelines around town centre appearance and improved existing retail and commercial frontages with canopies, street furniture, seating, planting etc. Involve local schools in painting murals to built a sense of ownership within the community.
- Opportunity for story telling, signage and expression of cultural narratives through township - specific places to be investigated.
- Consolidate community facilities where possible, consider relocation or land swap.

### Natural Environment

Connect communities to blue-green networks and provide recreational activities and opportunities

1. Protect existing trees and look to provide upgraded seating, bins and other amenities.

Other opportunities

- Consider inclusion of water sensitive design initiatives such as rain gardens, planted medians, permeable paving, swales and drought resistant planting.

### Growth and Economy

Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community

1. Future proof Durham Precinct.
2. Redevelop the corner site with opportunities to combine with other community uses.
3. Consider future expansion of New World as a anchor tenant and catalyst.
4. Opportunity to relocate Community House to accommodate and enable growth of community services.
5. Redevelop Plunkett building for future community use.
6. Consolidate gaps in the streetscape and reactivate vacant sites with functions that provide active uses after hours.

## 4.2 Key Moves

The opportunities identified were shared with the community across two open days, and through online engagement where feedback and support was gathered. The opportunities were also assessed against the agreed outcome principles for the project.

The feedback relating to opportunities identified were considered together to confirm the key moves and outcomes for Ngaaruawaahia and how these are to be prioritised over the short, medium and long term. It was recognised that some of the projects are highly complex, will have associated cost, and will need further detailed investigation before they are able to be confirmed in the long term plan for delivery.

The key moves and outcomes have been identified on the following maps. The anticipated prioritisation of these is addressed in the implementation section of the document. The key moves and outcomes have also been grouped into the design principles of:

- **Connected Communities**
- **Identity**
- **Natural Environment**
- **Growth and Economy**

Walking and cycling activities have been identified separately as inputs from the transport workstream.

## Ngaaruawaahia - Town Centre

### Connected Communities

**Active mode opportunities**

1. Extension of the Te Awa River Ride cycle route
2. Create a clear walking and cycling recreation link from the Waikato River to the Waipaa River, linking Hakarimata Ranges through Ringtanga Reserve, Jesmond Street and Waikato Esplanade
3. Create a clear walking and cycling recreational loop to include Waipaa Esplanade Reserve, The Point, Regent Street/Old Taupiri Road, Lower Waikato Esplanade, Durham Precinct and Turangawaewae House
4. Create a pedestrian and cycle connection between Te Awa River Ride cycle route (Bell Street), St Paul's Catholic School, Rugby League Club (Whataiwhata Avenue), Centennial Park and the Waipaa River Trail
5. New active mode connection over the Waikato River
6. Upgrade active modes facilities over Waingaro Road bridge
7. Create a gateway marker at 46 & 108 Great South Road
8. Upgrade of corridors with active modes
   - Jesmond Street
   - Great South Road (Both directions - cycleway and footpath)
   - Hakarimata Road and Brownlee Avenue (shared path)
   - Waikato Esplanade (bi-directional cycleway and footpath)
   - Lower Waikato Esplanade (Both directions - cycleway and footpath)

**Intersection and roundabout upgrade**

9. Improve the safety and visibility of intersections
   - Great South Road and River Road
   - Great South Road and Jesmond Street (proposed new roundabout)
   - Great South Road, Princess Street and Newcastle Street (signalisation under investigation)
   - Great South Road and Waingaro Road (proposed closure under investigation)
   - Great South Road and Market Street
   - Waingaro Road and Herschel Street (traffic calming or mirrors)
   - Old Taupiri Road (south), Great South Road and Regent Street
   - Martin Street and Galileo Street (still under investigation)
10. Improve the safety and visibility of Jesmond Street roundabout

**Enhancing the corridor experience**

11. Jesmond Street improvements
    - Consider shared zones and additional informal crossings to improve pedestrian connections
    - Additional informal crossings and streetscape upgrades, integrate crossings with intersection upgrades and development sites
12. Great South Road improvements
    - Traffic calming and speed management
    - Roadway art at existing pedestrian crossings
    - Additional informal crossing points
    - Beautify the streetscape with planted promenade
    - Separated active modes corridor
    - Formalise crossing on Galileo Street outside Ngaaruawaahia Primary School
13. River Road
    - Traffic calming and speed management
    - Formalise crossings in front of Turangawaewae Marae

**Transport Infrastructure**

14. Locate Transport Hub to south of Durham Precinct (location under investigation)
15. Provide bike parking at the base of the Hakarimata Ranges and The Point
16. Identify spaces for charging points for electric vehicles and bikes at Hakarimata Ranges, Jesmond Street and Durham Precinct
17. Define and formalise car parks at the Paterson Park in front of the netball courts

Wayfinding signage

Active modes bridge

Sheltered and protected bike parking

Separated active modes

Tactical urbanism at crossings

Bus hub

## Identity

**Amenities**

1. Development of a reserve site masterplan for Te Mana O Te Rangi Reserve that expresses and represents hapuu konvent through signage, planting and artwork.
2. Upgrade toilets, provide shelter and seating at Paterson Park.
3. Provide rest stops, drinking fountains, bike parking, shelters and viewing platforms along the Waikato River (Lower Waikato Esplanade and Sampson Street).
4. Upgrade Waipaa Esplanade walkway trail with rest stops, lookouts, outdoor seating.
5. Create a wayfinding suite for key destinations including the following: Ngaaruawaahia town centre, Hakarimata Ranges, The Point and Waipaa Esplanade Walkway.
6. Celebrate sites of cultural significance and protect wealth tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities at Kingitanga Reserve, The Point, Hakarimata Ranges, Tuurangawaewae Marae and House, Puteraahua Pae and The Flour Mill.
7. Placement of expressions (pou, koowhatu, native trees) to whakaroa (restore balance) to locations of colonial reminders.

**Maintenance/CPTED/Safety**

9. Fix light bulbs that are not working along Great South Road.
10. Introduce mirrors and lights at staircase at the base of the bridge.
11. Trim overgrown vegetation at 3 Galileo Street, 3 Kent Street, The Point, Great South Road and Market Street.
12. Clean up of graffiti at 11 Jordan Street, 21 River Road, 3 Broadway Street, Great South Road bridge and along Great South Road.

**Other projects**

- Review and update the Commercial Design Guidelines
- Undertake maintenance and repair of street lighting across the township

Cultural storytelling signage

Integrated narratives

Shelter and shade at parks

Viewing platform along river

Village green/Town Square

Integrated gateway and interpretive signage

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## 4.3 Implementation

Some of the methods and tools that will be used to implement the structure plan and town centre plan are summarised below.

### District Plan

The district plan is the legislative rule book which sets out what development can and can't be done and where in the district. Structure plans and town centre plans will form the basis for amendments to the district plan via plan changes (to an operative district plan) and plan variations (to a proposed district plan) to enable the development set out in the plans.

### Long Term Plan

The long-term plan (LTP) provides direction on the provision and funding of infrastructure and services within the Waikato district. Projects identified in this paln will need to be identified in the LTP for funding. Not all projects will initially make it into the LTP as the timing may fall outside of the first ten years, or there may be budget constraints, but over time with each three yearly review more projects can be added as others are completed.

### Asset and Activity Management Plans

The Waikato District Council prepares asset and activity management plans which set the various needs, levels of service and demands of assets (e.g. roading, wastewater, water supply, facilities, reserves and open spaces). These are an essential tool in planning and funding infrastructure and services.

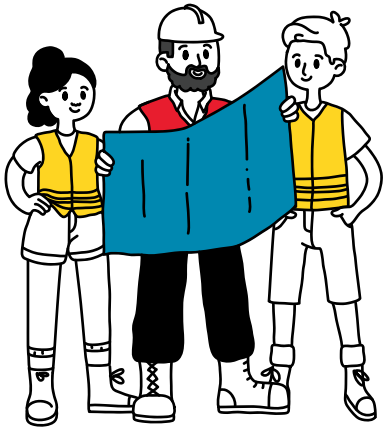
### Partnerships

Waikato District Council will implement the *Waikato 2070* in partnership with various organisations and groups to ensure the vision and future development expectations are achieved. The Waikato District Council will work alongside organisations and groups, such as:

- Waikato-Tainui
- Tangata Whenua/Mana Whenua
- Ministry of Education
- Ministry of Housing and Urban Development
- Ministry of Innovation, Business and Employment
- District Health Boards
- New Zealand Transport Agency
- Kiwi Rail
- Utility providers
- Tourism agencies
- Adjoining local authorities
- Waikato Regional Council
- Community boards, community committees, and community groups
- Local business associations
- Kainga Ora
- Police New Zealand / Fire and Emergency New Zealand
- Heritage New Zealand Pouhere Taonga

### Implementation Table

The following table identifies the key moves, projects or outcomes that have been identified throughout this document. It considers the alignment with the outcome principles, the project complexity and likely timeframe required to implement the projects. The table provides a tool for future identification and prioritisation of investment across the three settlements across the short, medium and long term.



## Ngaaruawaahia

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **NATURAL ENVIRONMENT** | | | | | | |
| 2. Complete masterplan for The Point. | ✓ | | | ✓ | | |
| 3. Improve resilience to localised flooding through a possible suite: | | | | | | |
| - Increased permeable surfaces and attenuation planting. | ✓ | ✓ | ✓ | | | ✓ |
| - Riverbank planting. | ✓ | ✓ | ✓ | | | ✓ |
| - River edge terracing to protect recreation areas next to the river. | ✓ | ✓ | ✓ | | | ✓ |
| - Greening of current paved spaces (swales). | ✓ | ✓ | ✓ | | | ✓ |
| - Wetlands (tbd). | ✓ | ✓ | ✓ | | | ✓ |
| - Water sensitive urban design (tbd). | ✓ | ✓ | ✓ | | | ✓ |
| **CONNECTED COMMUNITIES** | | | | | | |
| 1. Extension of the Te Awa River Ride cycle route. | | | ✓ | | | ✓ |
| 4. Create a pedestrian and cycle connection between Te Awa River Ride cycle route (Belt Street), St Paul's Catholic School, Rugby League Club (Whatawhata Avenue), Centennial Park and the Waipaa River Trail. | | | ✓ | | | ✓ |
| 5. New active mode connection over the Waikato River. | | | ✓ | | | ✓ |
| 6. Upgrade active modes facilities over Waingaro Road bridge. | | | ✓ | | | ✓ |
| 7. Create a gateway marker at 46 & 108 Great South Road. | ✓ | | | ✓ | | |
| 8. Upgrade of corridors with active modes: | | | | | | |
| - Jesmond Street. | | | ✓ | | ✓ | |
| - Great South Road (Both directions - cycleway and footpath). | | ✓ | | | ✓ | |
| - Hakarimata Road and Brownlee Avenue (shared path). | ✓ | | | ✓ | | |
| - Waikato Esplanade (bi-directional cycleway and footpath). | ✓ | | | ✓ | | |
| - Lower Waikato Esplanade (Both directions - cycleway and footpath). | ✓ | | | ✓ | | |
| 9. Improve the safety and visibility of intersections: | | | | | | |
| - Great South Road and River Road. | | ✓ | ✓ | | | ✓ |
| - Great South Road and Jesmond Street (proposed new roundabout). | | ✓ | ✓ | | | ✓ |
| - Great South Road, Princess Street and Newcastle Street (signalisation under investigation). | | ✓ | ✓ | | | ✓ |
| - Great South Road and Waingaro Road (proposed closure under investigation). | | ✓ | ✓ | | | ✓ |
| - Great South Road and Market Street. | | ✓ | ✓ | | | ✓ |
| - Waingaro Road and Herschel Street (traffic calming or mirrors). | | ✓ | | | ✓ | |
| - Old Taupiri Road (south), Great South Road and Regent Street. | ✓ | | | | | ✓ |
| - Martin Street and Galileo Street (still under investigation). | | ✓ | ✓ | | | ✓ |
| 10. Improve the safety and visibility of Jesmond Street roundabout. | | ✓ | ✓ | | | ✓ |
| 11. Jesmond Street improvements: | | | | | | |
| - Consider shared zones and additional informal crossings to improve pedestrian connections. | | | ✓ | | ✓ | |
| - Additional informal crossings and streetscape upgrades. Integrate crossings with intersection upgrades and development sites. | | | ✓ | | ✓ | |

## Ngaaruawaahia

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| 12. Great South Road improvements | | | | | | |
| - Traffic calming and speed management. | | ✓ | | | ✓ | |
| - Roadway art at existing pedestrian crossings. | | ✓ | | | ✓ | |
| - Additional informal crossing points. | | ✓ | | | ✓ | |
| - Beautify the streetscape with planted promenade. | | ✓ | | | ✓ | |
| - Separated active modes corridor. | | ✓ | | | ✓ | |
| - Formalise crossing on Galileo Street outside Ngaaruawaahia Primary School. | ✓ | ✓ | | ✓ | | |
| 13. River Road: | | | | | | |
| - Traffic calming and speed management. | | ✓ | | | ✓ | |
| - Formalise crossings in front of Tuurangawaewae Marae. | | ✓ | | | ✓ | |
| **IDENTITY** | | | | | | |
| 5. Create a wayfinding suite for key destinations including the following: Ngaaruawaahia town centre, Hakarimata Ranges, The Point, Waipaa Esplanade Walkway, Te Awa River Ride cycle route and proposed extension. | ✓ | | | ✓ | | |
| 6. Celebrate sites of cultural significance and protect waahi tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities at: | | | | | | |
| - Kingitanga Reserve. | ✓ | | | | ✓ | |
| - The Point. | ✓ | | | | ✓ | |
| - Hakarimata Ranges. | ✓ | | | | ✓ | |
| - Tuurangawaewae Marae. | ✓ | | | | ✓ | |
| - Tuurangawaewae House. | ✓ | | | | ✓ | |
| - Puketahua Pas. | ✓ | | | | ✓ | |
| 7. Placement of expressions (pou, kowhatu, native trees) to whakaeke (restore balance) to locations of colonial reminders. | | ✓ | | | ✓ | |

View of Great Street Road in Ngaaruawaahia

# Hopuhopu

# 5 Hopuhopu

Hopuhopu played a crucial role for Waikato-Tainui in the raupatu (confiscation) treaty settlement negotiations held from 1989 until 1995. Through the treaty settlement process, the land was returned to Waikato-Tainui. It is held under Te Wherowhero title, which was established as part of the Waikato Raupatu Claims Settlement Act 1995. Te Wherowhero title land is held by custodian trustees for the benefit of all members of Waikato-Tainui.

From 1922 until 1989, Hopuhopu served as an active military camp. As part of base closures within the New Zealand Defence Force, Hopuhopu then ceased to be an active military camp. When the land was returned to Waikato-Tainui, a complex including the Waikato-Tainui College for Research and Development was established.

Through the proposed Waikato District Plan, Waikato-Tainui applied for precinct zoning that would enable the unique innovation hub and residential pro posal. Waikato-Tainui's eventual success led to preparation of a masterplan for the area.

The masterplan for the Hopuhopu innovation hub includes housing, recreation, education, and nursery facilities. It also will be home to the Tribal Hub. This structure plan seeks to support the development of the Hopuhopu Innovation hub. Focus is on facilitation of access to Hopuhopu from Ngaaruawaahia and Taupiri – this namely being through the extension of the Te Awa River Ride.

*Figure 5-1: Hopuhopu Village*

## 5.1 Site Context

### 5.1.1 Urban Features and Site Features

The majority of Hopuhopu is zoned as special purpose. The site consists of various buildings, with the most significant being the Waikato-Tainui Endowed College for Research and Development. There are existing housing units along the Waikato River, storage and maintenance buildings, and a large portion of the area is dedicated to sports fields and open space.

Waikato-Tainui are currently developing the 170 ha Hopuhopu Innovation Precinct over the next 20–30 years. The precinct will include housing, recreation, a nursery, education facilities, a tribal hub, business incubator, and a whare taonga, to share the rich history of Waikato-Tainui.

The relationship of this document with Hopuhopu is in support of the aspirations of Waikato-Tainui on this site and to identify how access and connections to Ngaaruawaahia and Taupiri can be provided that strengthen the connection between these three towns.

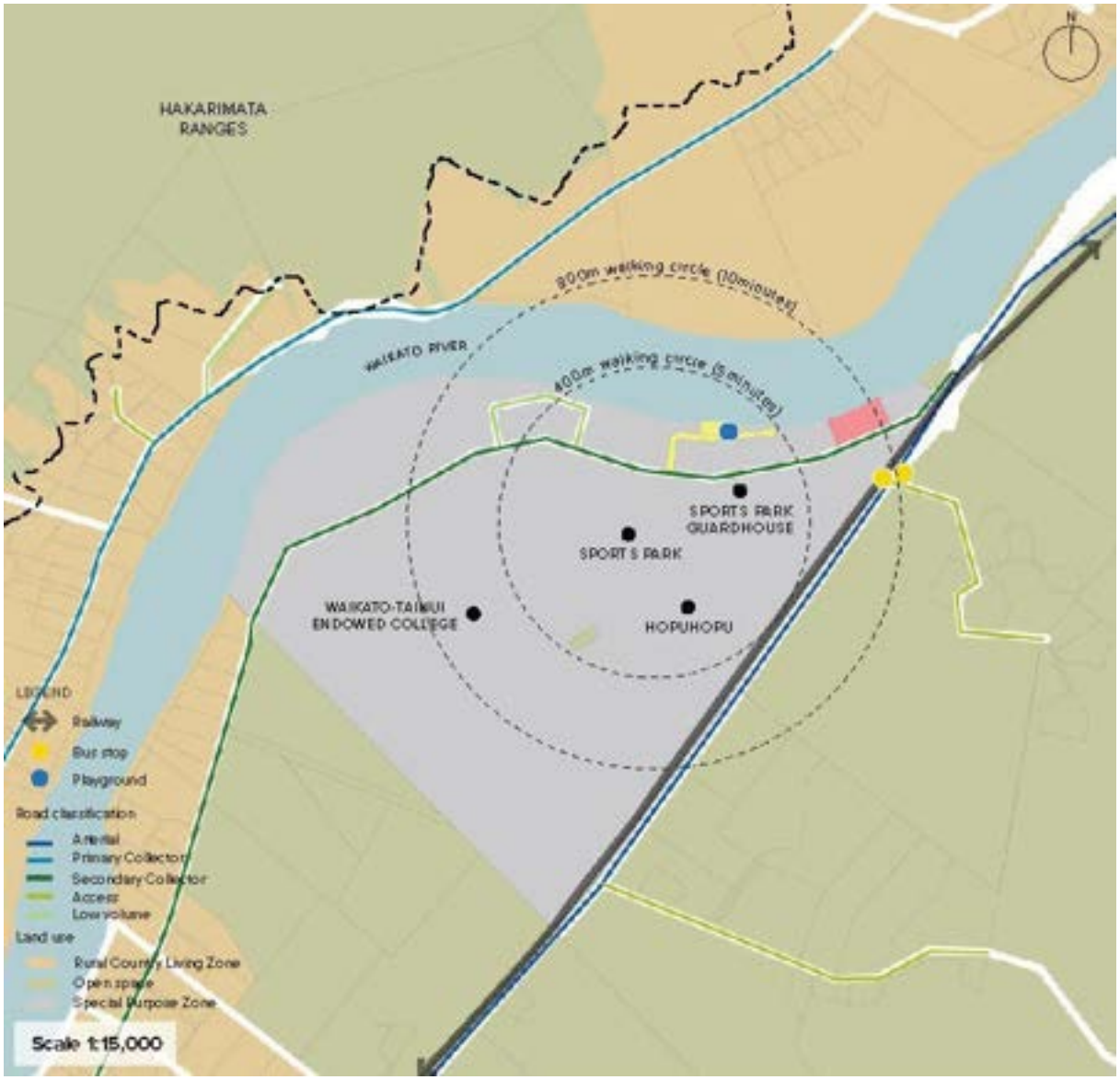



*Figure 5-2: Hopuhopu Site Features*[34]

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## 5.1.2 Waikato – Tainui, Hopuhopu Precinct Plan[35]

35 Note: Waikato Tainui are still working through the final iteration of their innovation hub plans. The final version may look different to the presented.

## 5.2 Insights and Opportunities

Opportunities have been identified for the settlement of Hopuhopu through a multi-stage approach. These have focused on how the development of Hopuhopu by Waikato-Tainui can be supported through connectivity and access. The opportunities are a combination of:

- The contextual analysis.
- A spatial analysis undertaken through a desktop assessment.
- A site visit in combination with council staff, elected members and community board representatives.
- Input received from technical reports.
- Inputs received by council through community surveys.

Feedback was received from the community via online engagement and community open day events held in Ngaaruawaahia, Hopuhopu and Taupiri. These sought to understand the issues experienced by the community, and identify opportunities seen by those that live, work and play in the three towns to improve the liveability of these places.

The opportunities for investment have been grouped under the headings of the design principles, noting that some opportunities will align with multiple design principles.

The opportunities were grouped into themes relating to:

**Connected Communities**

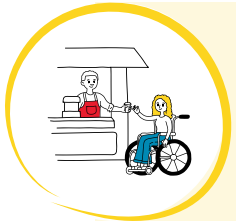
Opportunities relating to transport and accessing the places people want to get to, such as the town centre and key destinations like Tuurangawaewae Marae.

**Identity**

Opportunities related to telling the history, and highlighting the identity, of Ngaaruawaahia, Hopuhopu and Taupiri.

**Natural Environments**

Opportunities related to improving access to, and the quality of, the natural environment.



**Growth and Economy**

Opportunities related to enhancing commercial activity and supporting future growth.

The following pages provide a summary of the opportunities identified through this process. Some of the opportunities sit outside of the remit of Waikato District Council, however were recorded to fully understand the issues and opportunities seen by the community. These opportunities have been assessed and considered by council as part of this process and have informed the key moves and outcomes. Not all opportunities have been progressed.

## Hopuhopu Opportunities

**Connected Communities**

Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.

1. Extend the Te Awa River Ride cycle route from Ngaaruawaahia through Hopuhopu with the inclusion of wayfinding, rest stops and improved facilities along the river.
2. Provide safe and prioritised active mode connection between Ngaaruawaahia and Taupiri that is located off the main road. Consider safety, directness and visibility.
3. Upgrade and bus shelters and improve access to bus stops on Great South Road.
4. Review bus routes and bus stops down Old Taupiri Road in response to anticipated growth of the settlement, providing residents better access to public transport.

**Identity**

Strengthen the existing identity and character of the place.

1. A boulevard of trees line Old Taupiri Road as you enter the Hopuhopu area from the north-east. There is opportunity for a physical marker and a similar boulevard to be planted on the west as gateways into the township.
2. Enable continued development of cultural and visitor activities in collaboration with Waikato-Tainui that reflects the heritage of the area.

**Natural Environment**

Connect communities to blue-green networks and provide recreational activities and opportunities.

1. Opportunities to open up view corridors to significant natural features such the Waikato River, Taupiri Maunga and Hakarimata Ranges.

**Growth and Economy**

Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.

1. Future Hopuhopu Innovation Hub which will include residential, commercial, education and recreational functions.
2. Proposed entry points.

# Key Moves & Outcomes

The opportunities identified were shared with the community across two open days and through online engagement, where feedback and support was gathered. The opportunities were also assessed against the agreed Outcome Principles for the project, providing a basis for assessment.

The feedback received relating to the opportunities identified were considered together to confirm the key moves and outcomes for Hopuhopu and how these are to be prioritised over the short, medium and long term. It is recognised that some of the projects are highly complex, will have associated cost, and will need further detailed investigation before they are able to be confirmed in the Long Term Plan for delivery.

The key moves and outcomes have been identified on the following maps. The anticipated prioritisation of these is addressed in the Implementation Section of the document. The key moves and outcomes have also been grouped into the design principles of:

- Connected Communities
- Identity
- Natural Environments
- Growth and Economy

Walking and cycling activities have been identified separately as inputs from the Transport Workstream.

## Hopuhopu

### Connected Communities

**Active mode opportunities**

1. Extension of the Te Awa River Ride through Hopuhopu with the inclusion of rest stops and formal and informal viewing areas.
2. Create a safe and clear active mode connection between Ngaaruawaahia and Taupiri along Great South Road (separated cycleway).

**Enhancing the pedestrian experience**

3. Establish a boulevard of trees as a gateway marker into Hopuhopu.
4. Protect existing trees/boulevard.
5. Provide bus shelters and a new pedestrian crossing for existing and future bus stops. Explore the re-location of bus stops to a location within Hopuhopu that does not require users to cross Great South Road and the NIMT and provides better access to public transport for residents.

**Intersection and roundabout upgrade**

6. Improve the safety and visibility of the Old Taupiri (north)/Great South Road intersection (under investigation).

### Identity

7. Support the development of the Waikato-Tainui Masterplan for Hopuhopu.

Rest stop and viewing area

Upgraded bus shelters

Riverside shared path

Tree boulevard

## 5.4 Implementation

Some of the methods and tools that will be used to implement the *Waikato 2070* are summarised below.

### District Plan

The district plan is the legislative rule book which sets out what and where development can proceed in the district. Structure plans and town centre plans will form the basis for amendments to the district plan via plan changes (to the operative district plan) and plan variations (to the proposed district plan) to enable the development of these growth areas identified in *Waikato 2070*.

### Long Term Plan

The long term plan (LTP) provides direction on the provision and funding of infrastructure and services within the Waikato district. The location and timing of the growth cells as set out in *Waikato 2070* will inform the LTP in respect to the necessary funding of infrastructure and services in these areas.

### Asset and Activity Management Plans

The Waikato District Council prepares asset and activity management plans which set the various needs and demands of assets (e.g. roading, wastewater, water supply, facilities, reserves and open spaces). These are an essential tool in planning and funding infrastructure and services.

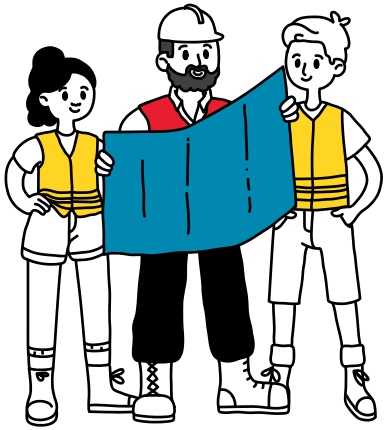
### Partnerships

Waikato District Council will implement the *Waikato 2070* in partnership with various organisations and groups to ensure the vision and future development expectations are achieved. The Waikato District Council will work alongside organisations and groups, such as:

- Waikato-Tainui
- Tangata Whenua/Mana Whenua
- Ministry of Education
- Ministry of Housing and Urban Development
- Ministry of Innovation, Business and Employment
- District Health Boards
- New Zealand Transport Agency
- Kiwi Rail
- Utility providers
- Tourism agencies
- Adjoining local authorities
- Waikato Regional Council
- Community boards, community committees, and community groups
- Local business associations
- Kainga Ora
- Police New Zealand / Fire and Emergency New Zealand
- Heritage New Zealand Pouhere Taonga

### Implementation Table

The following table identifies the key moves and outcomes that have been identified through this document. It considers the alignment with the outcome principles, the project complexity and likely timeframe required to implement the projects. The table provides a tool for future identification and prioritisation of investment across the three settlements across the short, medium and long term.



## Hopuhopu

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **CONNECTED COMMUNITIES** | | | | | | |
| 1. Extension of the Te Awa River Ride cycle route through Hopuhopu with the inclusion of rest stops and formal and informal viewing areas | | | ✓ | | | ✓ |
| 2. Create a safe and clear active mode connection between Ngaruawahia and Taupiri along Great South Road (separated cycleway) | | | ✓ | | ✓ | |
| 3. Establish a boulevard of trees as a gateway marker into Hopuhopu | | ✓ | | | ✓ | |
| 4. Improve the safety and visibility of the Old Taupiri (north)/Great South Road intersection (under investigation) | | ✓ | | | ✓ | |
| **BUSINESS AS USUAL** | | | | | | |
| 4. Protect existing trees/boulevard. | ✓ | | | ✓ | | |
| 5. Provide bus shelters and a new pedestrian crossing for existing and future bus stops | ✓ | | | ✓ | | |

View of Hakarimata Ranges

# Taupiri

# 6 Taupiri

## 6.1 Site context

The natural landscape surrounding Taupiri is dominated by the Waikato River and the Taupiri Mountain all of which have significant cultural value to the local iwi, Waikato – Tainui, and Maaori generally. Taupiri Mountain (Taupiri Maunga) – the sacred burial ground for Maaori of the Waikato iwi and is reserved for Maaori kings and queens. In the 17th century the chief Te Putu had his paa on Taupiri Mountain. After Te Putu was treacherously killed by another chief, Ngaatokowaru, he was buried on the mountain, and it became tapu (sacred). The township of Taupiri was settled by Europeans in the 1870s and became a farming centre with flax mills, sawmill, and a dairy factory.

The town currently comprises mainly residential areas with some smaller commercial activities dotted around the central-northern part of the town. The land identified in the Proposed Waikato District Plan as future urban zone (FUZ) around the south-eastern portion of Taupiri township will assist in delivering a well-connected and culturally sensitive community.

*Figure 6-1: Taupiri Village*

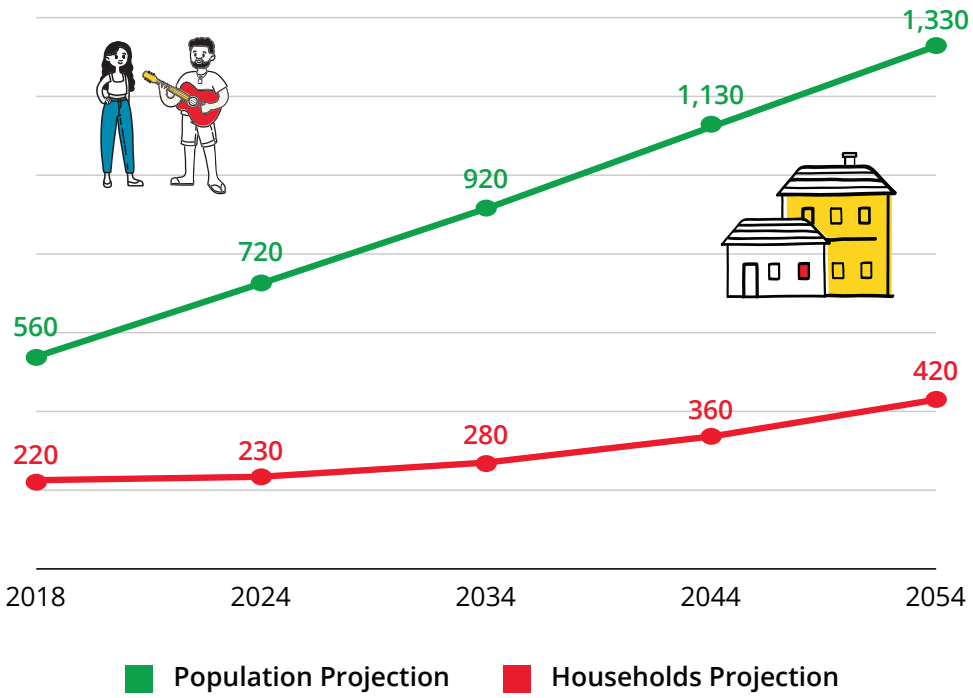
## Site photos

### 6.1.1 Population Growth, Market Viability and Development Pressures

**Population Growth**

The estimated population for Taupiri in 2024 is 700 (University of Waikato, 2021) and the area is projected to experience steady population growth over the next 26 years leading to a population of around 1,200 by 2050.

**Taupiri**




(Waikato District Council, 2021)

Tables 6-1 & 6-2 illustrate a range of growth estimates, reflecting what Taupiri's population and dwelling count might be in future, based on different scenarios. The medium term proposes a possible future based upon a realistic uptake of the zoning within the Proposed Waikato District Plan – Decisions version, and does not account for appeals, with any successful appeal, this could eventuate to additional capacity. The long term scenario illustrates a realistic uptake of all residential growth cells for Taupiri within *Waikato 2070.*

*Table 6:1: Dwellings Capacity Scenario*

| Dwellings | | | |
|---|---|---|---|
| Scenario | Current dwellings | Reasonably realised capacity | Total dwellings |
| Medium term - 2032 | 270 | 50 | 320 |
| Long term - 2052 | 270 | 1,190 | 1,460 |

(Market Economics, 2023)

*Table 6:2: Population Growth Scenarios*

| Population | | | |
|---|---|---|---|
| Scenario | Current population | Additional population | Projected future population |
| Medium term - 2032 | 720 | 130 | 850 |
| Long term - 2052 | 720 | 3,220 | 3,940 |

(Market Economics, 2023 & University of Waikato, 2021)

For the discussion of growth, it is also important to understand the demand and overall picture of sufficiency within Taupiri. Table 6-3 illustrates demand against additional capacity and shows that Taupiri has a shortfall over the medium and long term.

*Table 6:3: Taupiri Sufficiency Assessment*

| Timing | Demand + Margin | Reasonably Realised Capacity | Sufficiency |
|---|---|---|---|
| Short Term (2022-2025) | 10 | 10 | 0 |
| Medium Term (2022-2032) | 200 | 50 | -150 |
| Long Term (2022-2052) | 1200 | 1190 | -10 |

(Market Economics, 2023)

### Commercial and Retail Development

The retail catchment for Taupiri is expected to continue to grow at a steady pace over the next 30 years. The retail catchments are areas that are connected to the townships and represent where the townships would derive most of their customers. It is estimated that the retail catchment currently has a population of 800 and is expected to grow by around +73% by 2053 which is a total base population of around 1,380 people by 2053.

Through our technical market assessment, it has been noted that there is capacity within Taupiri to meet future demand and is recommend that no additional commercial/retail zoning is required. However, recommendations are also made to strengthen and identify a commercial core, as Taupiri in its current state has its commercial/retail zoning sporadically spread. Strategic sites have been identified in Taupiri for retail/commercial which will provide a more defined economic core for Taupiri without diluting or compromising the existing state. Taupiri follows a similar recommendation to Ngaaruawaahia where consolidation and a focus must be made on the economic core of Taupiri for economic revitalisation.

The full Economic Assessment can be found in Appendix 1

With the release of the proposed Waikato district plan – decisions version the commercial/retail zones have been revamped making it more permissive to develop, which opens more opportunities for a variety of shops in the future, this being highly sought after in our initial structure plan/town centre survey.

### Industrial

Taupiri's geographic location is strategically located adjacent to State Highway 1, offering easy on and off access for heavy vehicles. This access, coupled with a portion of Taupiri being signalled in *Waikato 2070* for industrial growth, inspires new employment and growth opportunities. Through the work done in the Future Proof business development capacity assessment 2023 (BDCA)[38] Taupiri is grouped into "Ngaaruawaahia", it is likely that Taupiri occupies a sizeable portion of this capacity represented.

Noteworthy is the industrial growth cell on the eastern side of SH1. This growth cell is identified in *Waikato 2070* and has been included as part of the supply in the future proof BDCA work. It is not recommended in this structure plan that the eastern area is rezoned yet, however future urban zone (FUZ) in the district plan might be appropriate in the future for reasons outlined in section 6.1.2 of this report. We envision that this will not have an impact on the sufficiency of industrial supply.

*Table 6:4: Waikato District Industrial Space Sufficiency Summary – GFA sqm*

| Waikato District Industrial Space Sufficiency Summary (GFA sqm) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Demand | | | Total GFA Capacity | | | Sufficiency | | |
| Area | Short Term | Medium Term | Long Term | ODP | PDP | Waikato 2070 | Short Term | Medium Term | Long Term |
| Ngaaruawaahia | 3,158 | 11,184 | 35,522 | 115,114 | 194,165 | 801,464 | | | |

(Market Economics, 2024)

*Table 6:5: Waikato District Industrial Space Sufficiency Summary – ha*

| Waikato District Industrial Space Sufficiency Summary (ha) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Demand | | | Total GFA Capacity | | | Sufficiency | | |
| Area | Short Term | Medium Term | Long Term | ODP | PDP | Waikato 2070 | Short Term | Medium Term | Long Term |
| Ngaaruawaahia | 0.8 | 2.7 | 8.5 | 30.1 | 54.8 | 209.3 | | | |

(Market Economics, 2024)

38 https://futureproof.org.nz/assets/FutureProof/Future-Proof-Business-HBA-2023_WR.pdf

## 6.1.2 Urban Features and Site Features

Taupiri Village is located at the foot of Taupiri Maunga, a significant site for Waikato-Tainui. Adjacent to the Waikato River, and the Mangawara Stream, with strong growth anticipated to occur in the area.

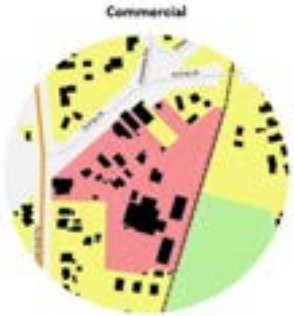
There are a number of paa sites in and near to the village, adding to the significance of the area for mana whenua. The town is located on Great South Road, previously known as SH1, the North Island Main Trunk bisects the town, creating a barrier to movement particularly the east-west connections for people walking and people on bikes.

With the opening of the Waikato Expressway Taupiri is now adjacent to the main transport route through the Waikato, and remains a busy route with the interchange providing access to the township of Huntly.

It is a well-known historic town with a range of special sites and buildings.

There are small areas of commercial activity within the village, focused on Te Putu Street. The Taupiri service centre, accessed via Gordonton Road, provides some convenience retail for local residents, but predominantly serves through-traffic.

A town or village, represented by its building footprints, provides valuable insights into its urban layout and historic development patterns. In the case of Taupiri (dating from the 1860s and before), variation in the building sizes and shapes indicate different land uses within the village (large, uniform footprints suggest retail or commercial areas, as found within the small commercial activity node along Te Putu Street) while smaller, irregular footprints indicate the surrounding residential areas.



The proposed district plan has identified new residential areas south of Te Putu Street between Murphy Lane and Button Lane to facilitate future residential and industrial growth.

The upgrade of services should be carefully identified and planned to support both employment and residential growth within a catchment walkable from the township. By focusing on urban forms of growth primarily in towns and settlements and encouraging compact urban development, residents have the opportunity to “live, work, and play” in their local area.

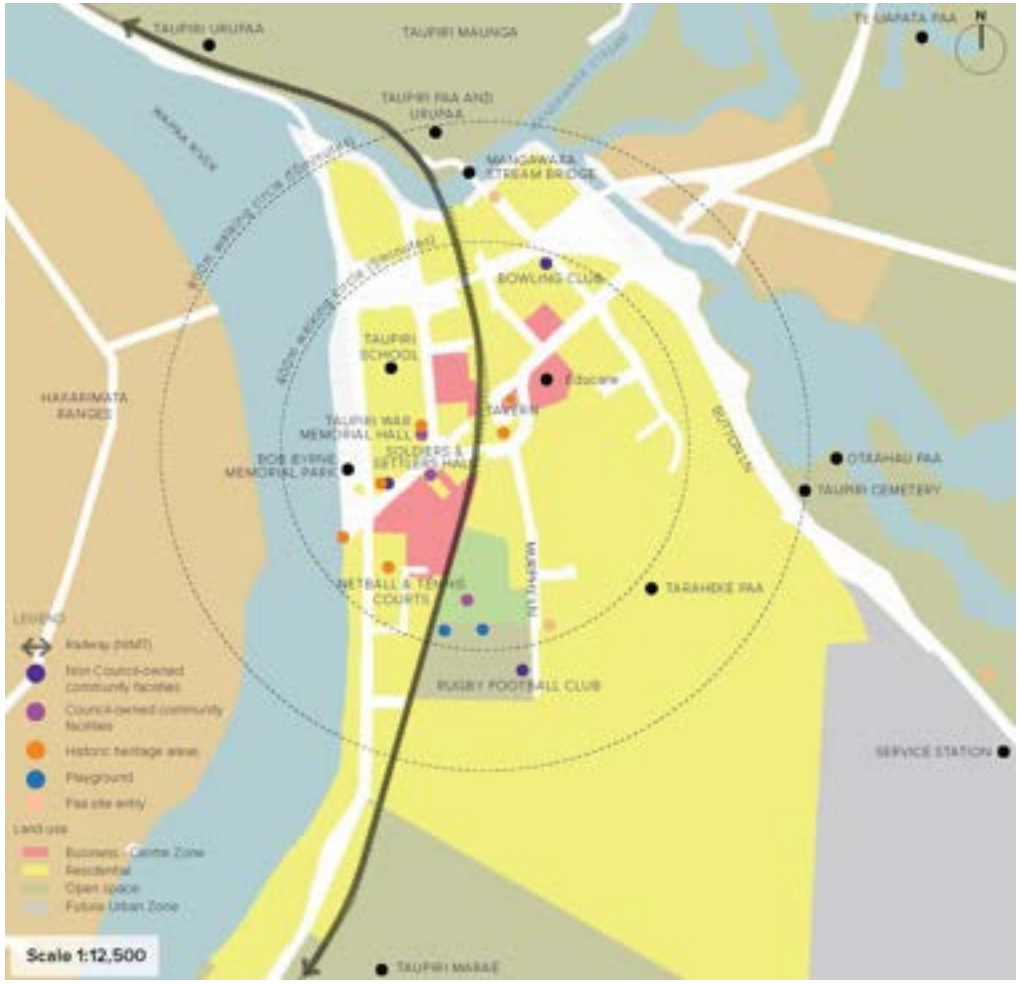



*Figure 6-2: Taupiri Site Features*[39]

39 Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

## Edge Conditions

A high quality public realm is made up of a number of qualities that engages with pedestrians. The three main qualities investigated here are:

- Permeability
- Transparency
- Built to Boundary

Permeability looks at the provision of pedestrian access points at street frontage. Transparency involves the visual extension of the public space in to the private space and is particularly important for retail uses where they rely on visual cues to draw in passing pedestrians.

The public/private interfaces of the Taupiri town centre streetscapes have been visually evaluated based on the above qualities and identified on the plans below as strong, weak, poor or missing edge conditions.

A building frontage that illustrates all three of the above characteristics is identified as having a 'strong' edge condition and a building frontage with just one of three as 'poor'.

The edge condition along the main street of Taupiri is characterised by weak and missing frontages. Future opportunity to consolidate the centre with commercial development that is built to the boundary should be encouraged.

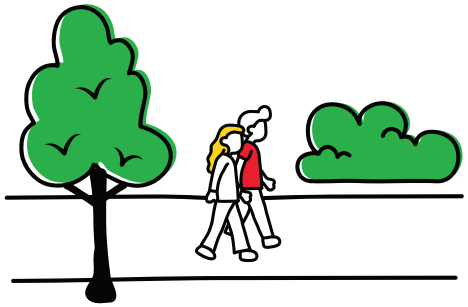


*Figure 6-5: Taupiri Edge Conditions*

#### 6.1.2.1 Land use / Zoning Changes

As part of the structure plan process consideration is given the existing land use pattern and determined if still fit for purpose. Within the context of Taupiri Village, there will be minimal recommended changes due to the recent Proposed District Plan decisions with many of the land use changes being addressed already. The recommended changes within the commercial core area of the Taupiri Village shown below are generally small in nature.

Taupiri – Land Use before recommended changes.

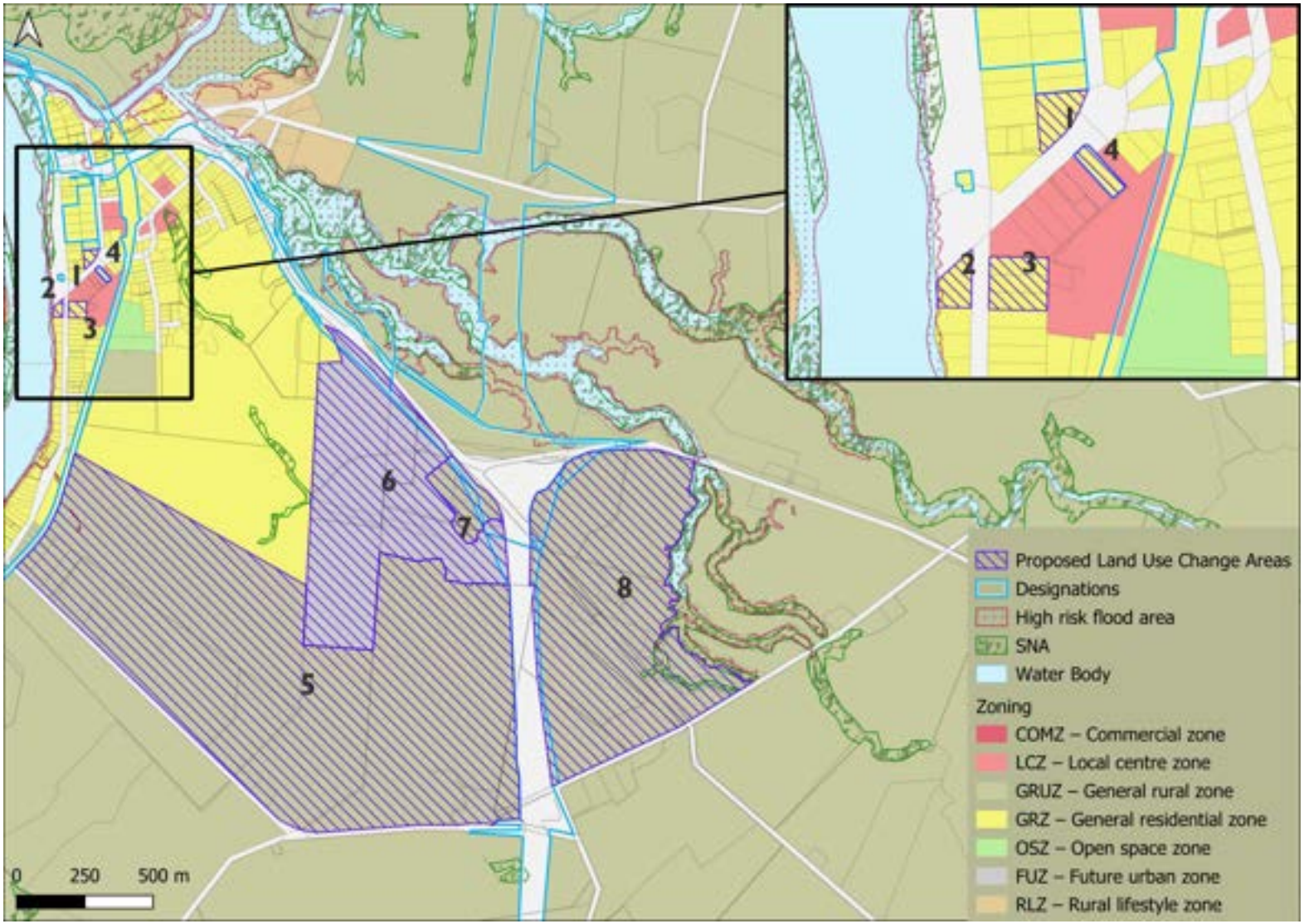



*Figure 6-3: Taupiri – Land Use before recommended changes.*

**Proposed Land Use Changes**

| | Area | Zone Change | Timing | Notation |
|---|---|---|---|---|
| | 1 | General Residential Zone > Local Centre Zone. | Short Term | The extent of this change relates to 5 Te Putu Street. This proposed change is to align with the surrounding zoning and provide better adjacent land use compatibility, a more pragmatic land use pattern, and a more defined economic core, which allows for mixed use development. |
| | 2 | General Residential Zone > Local Centre Zone | Short Term | The extent of this change relates to 60 Great South Road. This proposed change is to align with the current use of the site and provide a better defined economic core. |
| | 3 | General Residential Zone > Local Centre Zone. | Long Term | The extent of this change relates to 59, 61, & 63 Great South Road. This proposed change is to align with the surrounding zoning and provide better adjacent land use compatibility, a more pragmatic land use pattern, and a more defined economic core. |
| | 4 | General Residential Zone > Local Centre Zone. | Short Term | The extent of this change relates to 10 Te Putu Street. This proposed change is to align with the surrounding zoning and provide better adjacent land use compatibility, a more pragmatic land use pattern, and a more defined economic core. |
| | 5 | Rural Zone › Future Urban Zone. | Long Term | The extent of this change relates to a portion of 61 Murphy Lane, 520, 520A, 590, 598, 600, 682, 642, 702, & 706 Kainui Road. This area is not required to serve the immediate demand in Taupiri, and will be better suited for the long term, The proposed FUZ is to ensure that the land is protected from inappropriate land uses until such time it is required. When implementing this into the District Plan, FUZ or a live zone/s will be considered depending on timing, technical evidence and community engagement to support the Plan Variation/Plan Change. |
| | 6 | ENV-2022-AKL-000057 (Appeal) to resolve land use. | N/a | The extent of this relates to 70 Button Lane, 2219, & 2171 Gordonton Road. The determination of the land use will be left to the appeals process. |
| | 7 | General Rural Zone › Commercial Zone | Short Term | The extent of this change relates to 2189 Gordonton Road. The site is currently being used as a service centre, the proposed Commercial zone will align with the existing activity. |
| | 8 | General Rural Zone › General Raul Zon | N/a | The extent of this relates to 132, 158 Kerie Road, Property Number 2020540, & 2125A Gordonton Road. It is not recommended in this structure plan that the eastern area is rezoned yet, however future urban zone (FUZ) in the district plan might be appropriate in the future once further work is done to investigate the transport implications and servicing requirements. |

Taupiri - Land Use after recommended changes.

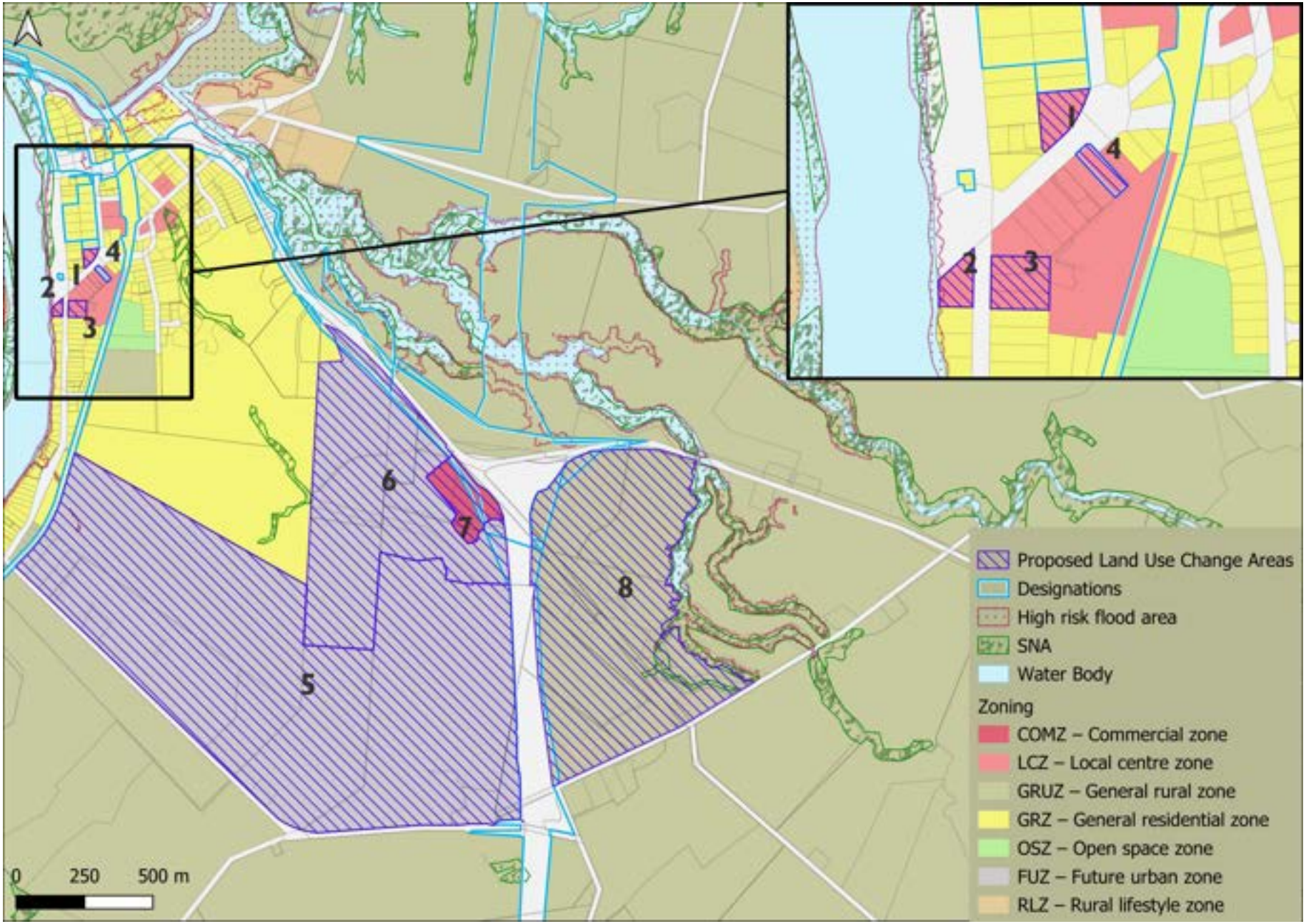



*Figure 6-4: Taupiri - Land Use after recommended changes.*

### 6.1.3 Infrastructure

## Transport – Multimodal (PT and Walking and Cycling); Road Layout, Parking

Taupiri has strong north/south connections with the road network running parallel to the Waikato River and the North Island Main Trunk (NIMT). East/west connections are limited to where the current network crosses the NIMT at Gordonton Road to the north and Te Putu Street to the south.

Walking and cycling facilities are limited and generally constrained. There are underpasses for pedestrian access under Gordonton Road and Te Putu Street that are of a poor standard. There are no east/west connections to the south of Te Putu Street.

Several opportunities exist to improve the overall connectivity and safety for pedestrian and cyclists within Taupiri Village, with the key improvements (but not limited to) including the following:

- Safe walking and cycling connections to the service station precinct on Gordonton Road.
- A safe crossing facility at Great South Road bus stop.
- Safer crossings at Te Putu St from Educare to the footpath across the road.
- Detune Great South Road to enable better cross connectivity and minimise severance to the river.
- Provide interim crime prevention through environmental design (CPTED) solutions at the two underpass – Te Putu Street and Greenlane Rd – and consider future alternative crossing solutions.
- Upgrade active modes facilities on Te Putu Street bridge.
- Improve the safety of Murphy lane/Te Putu St intersection visibility.

The image on the overleave graphically illustrating the active mode opportunities for Taupiri.

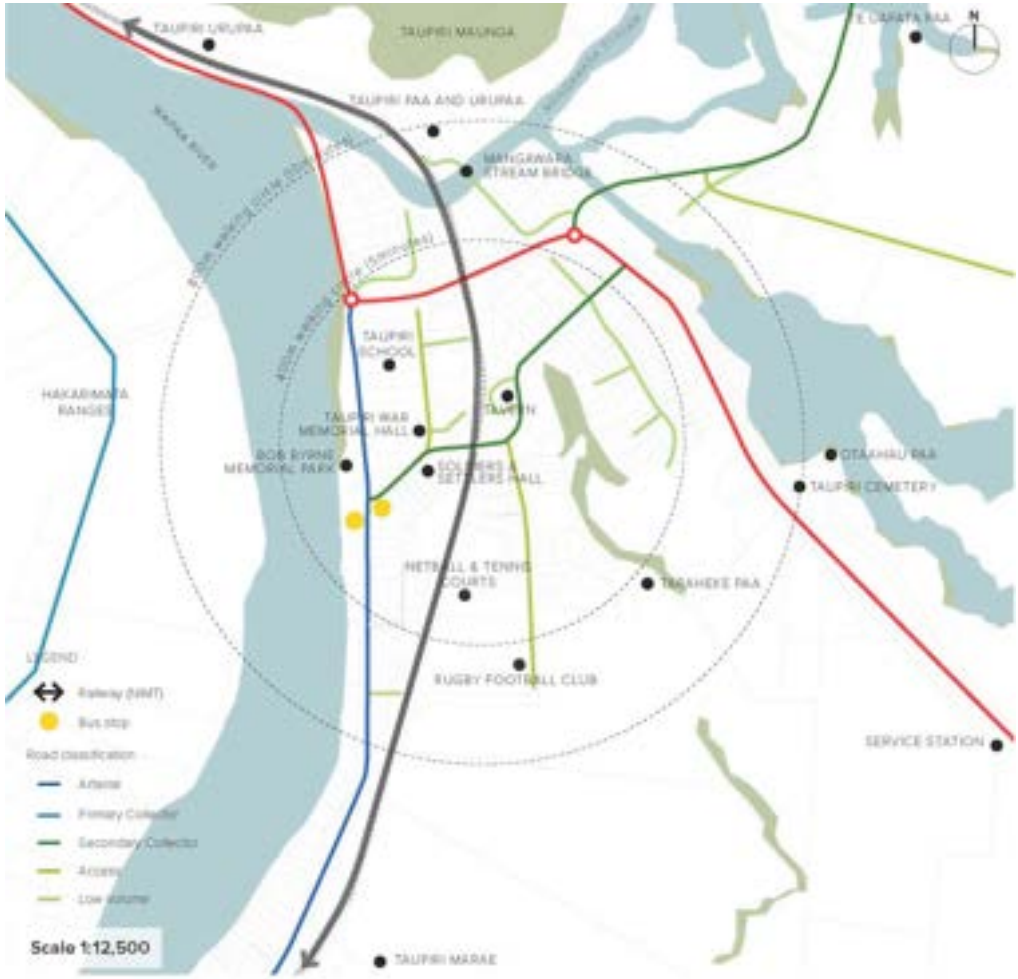



*Figure 6-6: Taupiri Connectivity*

# Taupiri - Active Modes

### Active Modes

1. Provide raised platform at existing zebra crossing.
2. Investigate options to reallocate space on Te Putu Street. This could include removing the flush median to provide space for wider footpaths, cycleways and changes to on-street parking.
3. Investigate new pedestrian crossing at Te Putu Street intersection using existing island. Could provide a staged crossing on raised platforms.
4. Investigate new crossing of Great South Road to improve access to existing bus stops.
5. Investigate footpath widening on the approach to the pedestrian underpass.
6. New raised crossing outside childcare and extend existing footpath to new crossing.
7. Investigate options to improve pedestrian safety when crossing The Crescent. Review kerblines and provide kerb build-outs to reduce the crossing distance.
8. Provide raised platform at existing crossing outside the school. Investigate shared paths along Greenlane Road to encourage walking and cycling to school.
9. Provide angle parking within existing berm north of the school.
10. Investigate new raised crossing at Te Putu St/Greenlane Road intersection to support a continuous route along Te Putu Street.
11. Investigate pedestrian and cycle overbridge of railway at Lovell Ave connecting Great South Road to Murphy Lane via sports fields.

## Stormwater, Wastewater, and Potable Water

### Potable Water

The Central District water supply scheme provides drinking water to the townships of Ngaaruawaahia, Horotiu, Hopuhopu and Taupiri. Untreated water is extracted from the Waikato River and treated at the Ngaaruawaahia water treatment plant (WTP). There is an interconnection to the Huntly water treatment plant via a transmission main commissioned in 2019 that provides additional resilience to the water supply network.

In general, the hydraulic modelling assessment showed that the network performs well under existing and future demand. The results revealed some issues with the existing infrastructure in both current (2025) and future (2050) scenarios. These are summarised in Table 4-2 and contained within Appendix 6 of this report.

Following the identification of the level of service deficiencies, a number of upgrade options were evaluated to resolve the current deficiencies, and sized to provide resilience to the ultimate network scenario. A summary of the capital upgrade projects that were recommended to be implemented can be found in Table 4-3 contained within Appendix 6 of this report. Details of the network and proposed capital upgrade projects are shown in Appendix 6.

### Wastewater

The Ngaaruawaahia wastewater treatment plant (WWTP) currently receives its wastewater from Taupiri, Hopuhopu, Ngaaruawaahia and Horotiu. Flows from Taupiri and Hopuhopu are conveyed through a single main pipe, shared by the following key pump stations:

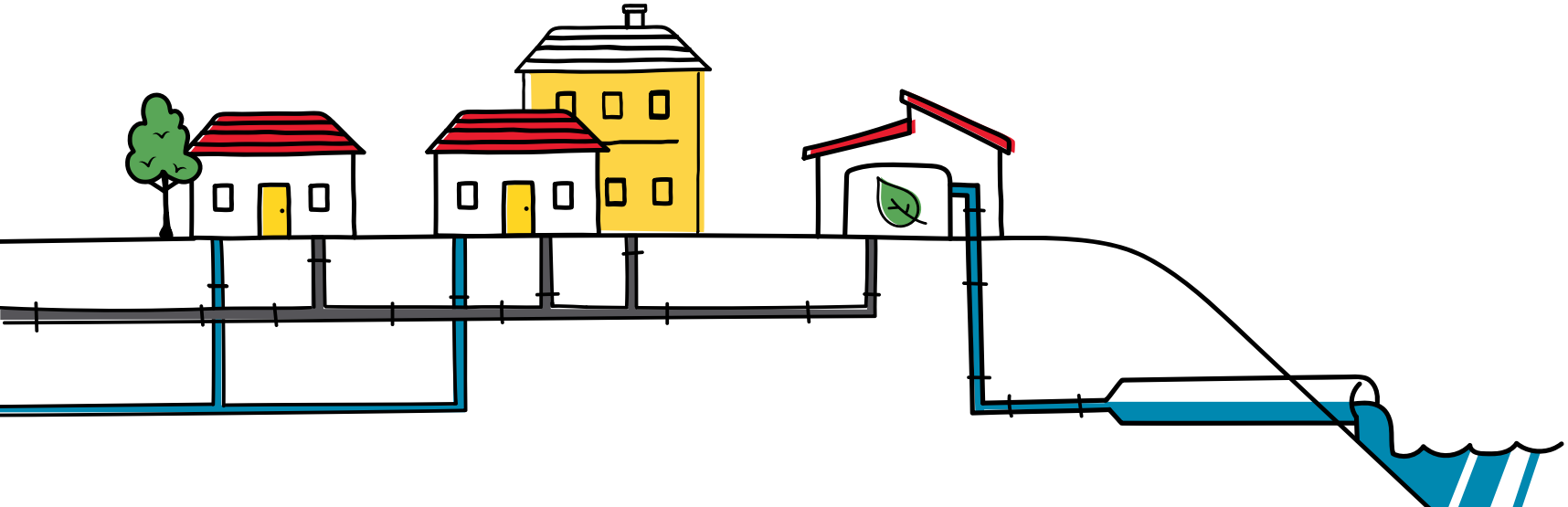
- Taupiri South (Taupiri)
- Reserve (Hopuhopu)
- Ashwell Crescent (Hopuhopu)

Flows from Ngaaruawaahia are predominantly supplied from the following pump stations, also by means of a shared rising main:

- Waikato Esplanade
- Ngaere Street
- Regent Street

Details of the current configuration of the network discharging to the Ngaaruawaahia WWTP can be found in Appendix 6

The current performance indicators for the wastewater network as a whole are underperforming, remediation of the short falls can be found with section 4.2 of Appendix 6



## Stormwater

It is well documented that changes from rural to urban catchments produces contaminants, increased runoff volume and larger peak flows that can negatively impact the built environment, waterways and wetlands. The Ngaaruawaahia structure plan presents an opportunity to determine the best practice catchment management solutions, mitigating flood hazard, increased peak flows, volume changes and contaminant loads (including hydrocarbons and heavy metals (zinc/copper) from existing farming practices and new intensive development.

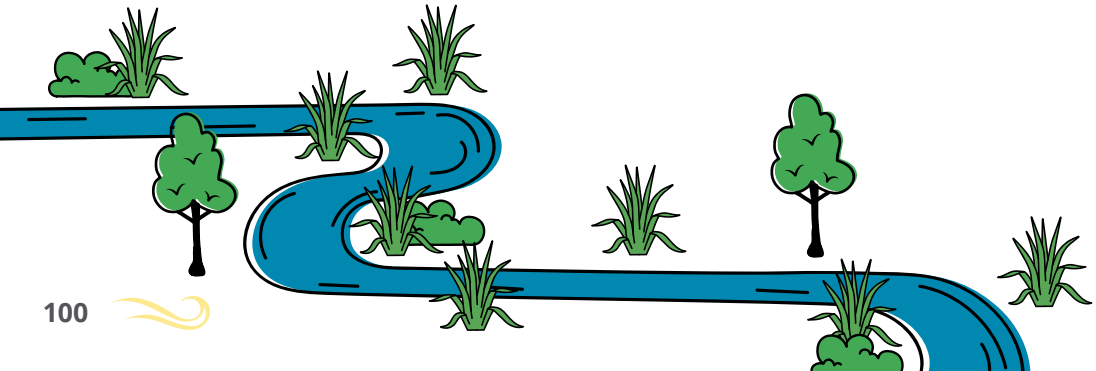
Figure 6-7 illustrates the flood extent of Taupiri and Figure 6-8 illustrates the mitigation proposed for Ngaaruawaahia's future growth areas which will offset the effects of development on the receiving environment, encompassing peak flow management, conveyance, contaminant load management and the effects of increased volume discharge. Mitigation proposed include:

- Flood Storage basins
- Channels or open Swales
- Water Treatment Devices; and
- Waterway Enhancement.

For further information relating to how future growth cells will meet stormwater provisions refer to appendix 14

*Figure 6-7: Taupiri Flood Extent*

*Figure 6-8: Proposed Stormwater Mitigation for Taupiri*



### 6.1.4 Parks and Facilities

Green spaces and community facilities play important roles within the community, and it is essential that these are coupled with good planning practice to allow communities to meet their social, cultural, and wellbeing needs. Green spaces and community facilities provide for a range of uses, extending from general amenity and wellness benefits rights through to stormwater management solutions, all of which are important factors when considering what is a well-functioning urban environment.

Taupiri faces park provision shortfalls generally from the medium to long term and is sufficient in the short term. Existing Taupiri residents are generally within a walkable distance of at least one park. However, where we expect future growth to occur, predicted deficiencies arise. To address these shortcomings, additional green spaces have been identified for Taupiri, -depending on the scenario and have been strategically proposed in parts of the community to serve future growth cells as well as those not currently within what is considered a walkable distance.

| University of Waikato Scenario | | |
|---|---|---|
| **Possible Park Locations** | **Required green space in growth cell (ha)** | **Category** |
| Taupiri Central Growth Cell | 0.4 | Neighbourhood Or Sports and recreation |
| Taupiri West Growth Cell | 0.9 | Neighbourhood Or Sports and recreation |
| **Waikato 2070 Scenario** | | |
| **Possible Park Locations** | **Required green space in growth cell (ha)** | **Category** |
| Taupiri Central Growth Cell | 3.7 | Neighbourhood Or Sports and recreation |
| Taupiri West Growth Cell | 8.7 | Neighbourhood Or Sports and recreation |

It is important to note there are two different parks scenarios for Taupiri, these arise from the large difference in the population projections from University of Waikato (UoW) and *Waikato 2070* over the coming years. UoW projections rely on historic population data for Taupiri for future populations, and for the most part Taupiri has seen little to no growth therefore has been projected to stay relatively the same with little growth. However, council is aware of the increasing scale of development interest in Taupiri and its implications for population projections. Hence the expected growth outlined in *Waikato 2070*. In any case, the *Waikato 2070* population scenario has been provided to illustrate the potential requirements of green spaces under a higher growth scenario.

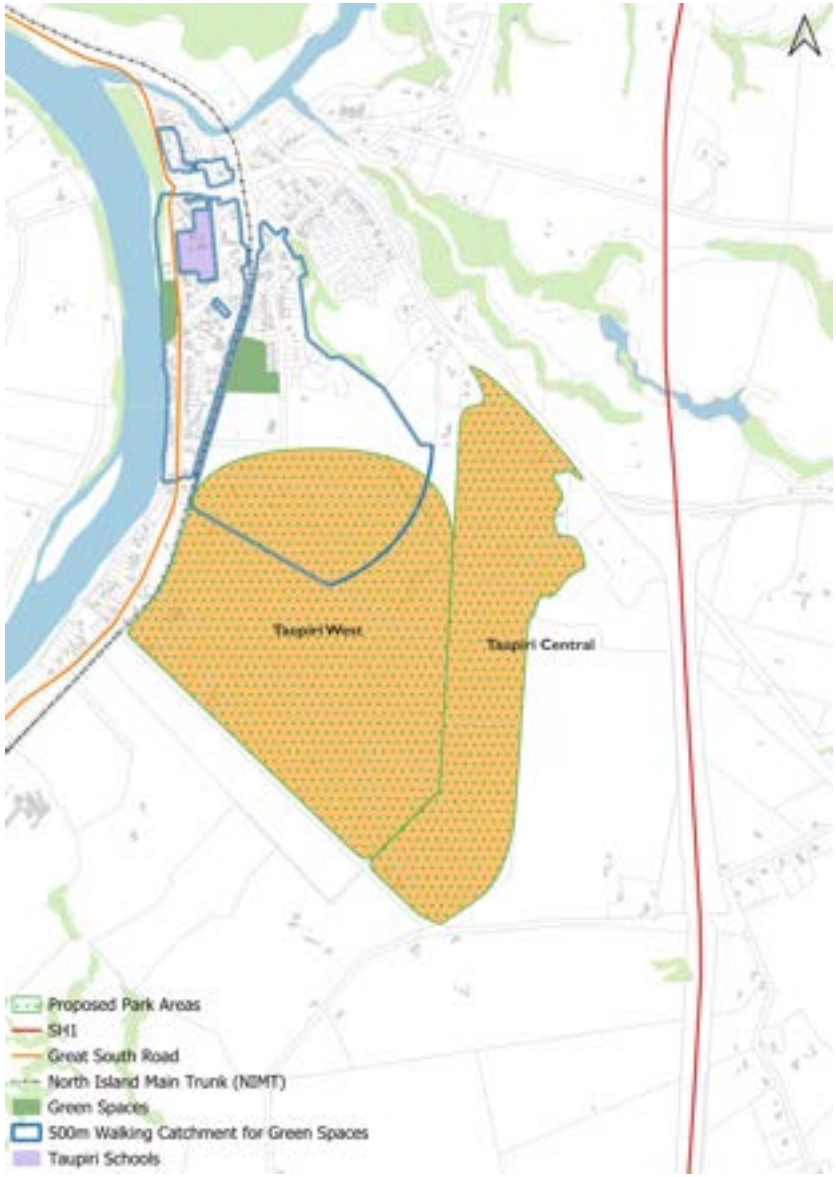
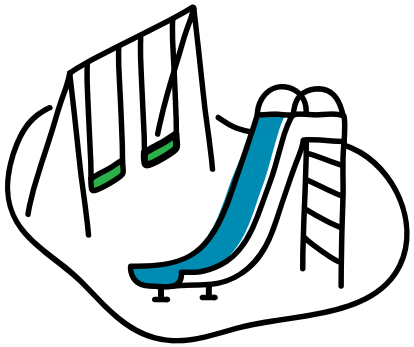



*Figure 6-9: Taupiri Growth Cells requiring future parks*

Taupiri has only a handful of community facilities and these are generally located down the spine of the settlement reflecting the age and historic population densities in the town. The condition of facilities within the area are considered to be moderate, with further assessment work still needing to be conducted for a better picture.

The facilities in Taupiri serve the existing population, however, through the engagement with the community it has been noted that there is a desire for more community facilities. Taupiri currently has two community halls, the Taupiri War Memorial Hall and the Soldiers and Settlers Hall, the latter is underutilised but is strategically located on the main street, Te Putu Street. With the population of Taupiri not being able to efficiently sustain two community halls the Soldiers and Settlers Hall occurs on the possible projects list as an opportunity for a new community facility orientated development. Until then, any gaps in facilities are provided by Ngaaruawaahia – such as the library and local swimming pool.

The full assessment for Parks and Facilities can be found in Appendix 7



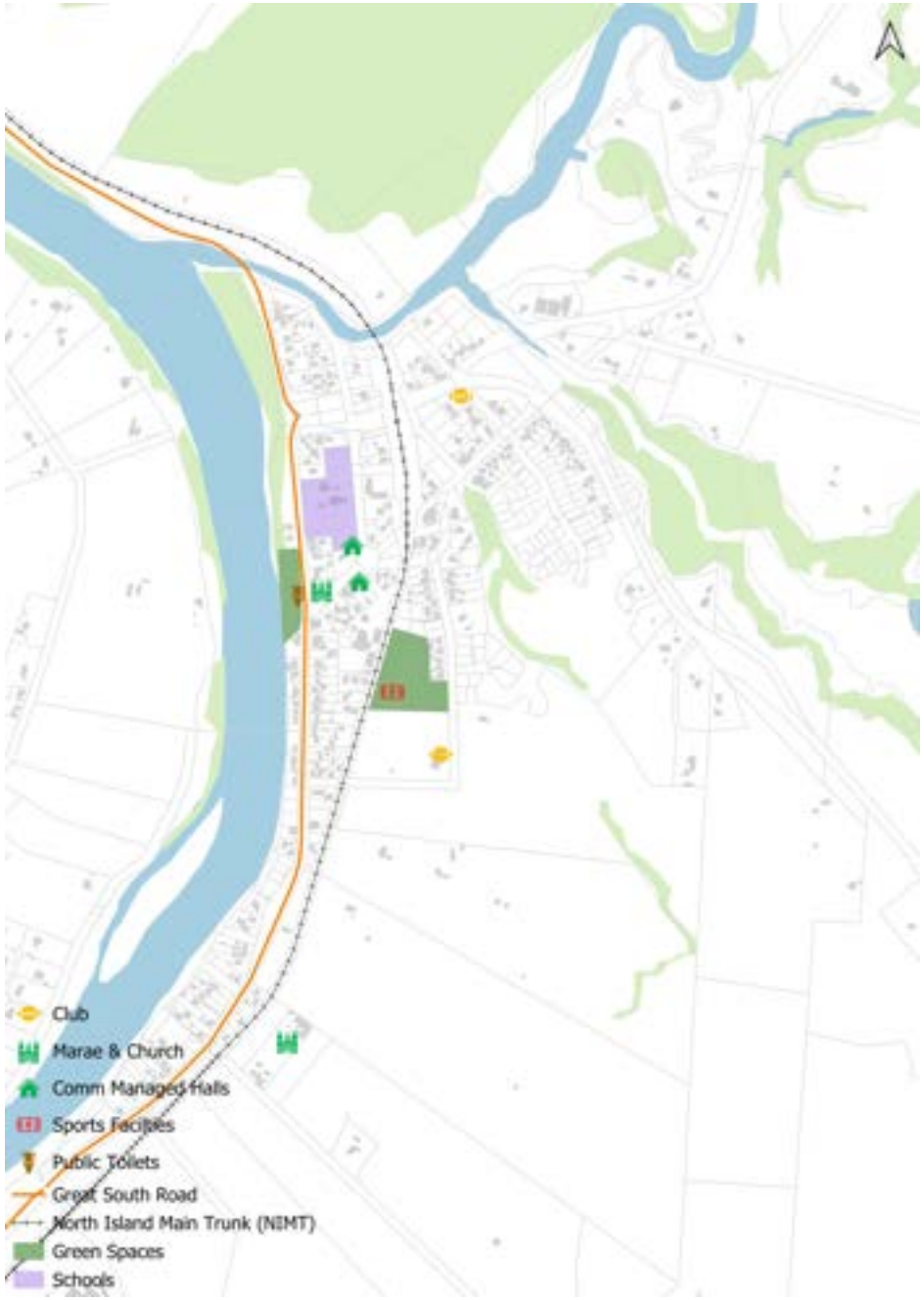



*Figure 6-10: Taupiri Community Facilities*

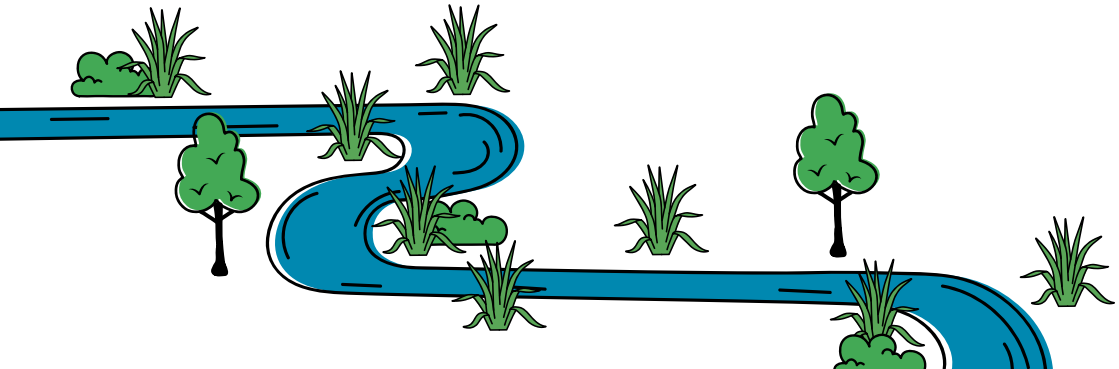
### 6.1.5 Cultural and Archaeology

Taupiri is a culturally significant and archaeologically rich settlement and plays large part as being the heart of Kiingitanga and is of special significance to Waikato–Tainui as well as Tuurangawaewae Marae, Ngaati Tamainupoo, and Taupiri Marae.

Taupiri marae history begins in 1530 with a Rotorua chief named Pikiao. The chief settled in Taupiri, searching for a wife to bear him male offspring. Pikiao met Rereiao – a woman from Pirongia with whom he had children. These children, in turn, gave rise to prominent families eventually forming some of the main hapuu in the Taupiri area. Of note is Taupiri Maunga, – sacred and revered as a living being and a taonga (treasure). The maunga holds an urupaa (cemetery) forms the resting place of over 5,000 tribal ancestors including Maaori royalty. Guarding the maunga are two taniwha who sit at its base in the Waikato River and Mangawhara Stream.

At the centre of the Tangata Whenua and Statement and Engagement report are the principals of Te Tiriti o Waitangi, as well as meaningful and genuine engagement with tangata whenua. These principals have been woven throughout hui in an attempt to understand the cultural, economic, social, and environmental outcomes sought by tangata whenua. The cultural stories of these unique places have been given genuine attention and have been come from nga waha (the mouths) to be shared with the wider community to help further the understanding of the cultural significance of Ngaaruawaahia and Taupiri. A common theme discovered is the unity of these areas: Ngaaruawaahia, Hopuhopu, & Taupiri are not distinguished from one another, but connected intrinsically through the awa.

> ***"The Waikato River is our tupuna (ancestor) which has mana (spiritual authority and power) and in turn represents the mana and mauri (life force) of Waikato-Tainui. The Waikato River is a single indivisible being that flows from Te Taheke Hukahuka to Te Puuaha o Waikato (the mouth) and includes its waters, banks and beds (and all minerals under them) and its streams, waterways, tributaries, lakes, aquatic fisheries, vegetation, flood plains, wetlands, islands, springs, water column, airspace and substratum as well as its metaphysical being…"***



To balance the metaphysical components of the report are some of the outcomes sought by Tangata Whenua, which in turn help realise their, but not limited to cultural well-being. These range from urban design and micro mobility initiatives through to green spaces and economic opportunities. The outcomes have been as best aligned with the proposed potential projects as outlined in sections 3.2, 4.2, 5.2, & 6.2 of this report as possible to ensure that the visions of tangata whenua can come to life.

Through discussion is the recommended addition of new Sites and areas of significant to Maaori ("SASM") which will offer additional protection over areas and significant sites that are important to Maaori. These are:

- Taupiri Maunga
- Te Mata o Tuutonga
- Te Hihi
- Tuurangawaewae Marae
- Tuurangawaewae House
- Te Paemaunga o Hakarimata

Archaeology forms part of the understanding of Taupiri's unique history. The intent of the archaeology report was to identify archaeological sites of significance in the parts of Waikato District affected by the Ngaaruawaahia and Environs Structure Plan. Archaeological sites cover both Maaori and European artefacts and locations and provide insights into the different phases of the Waikato. Sites and their histories are not isolated, but form archaeological picture that can safeguard special places and may also provide information about human behaviour in past. Maaori garden sites are prevalent along both sides of the awa throughout the district: areas associated with paa, villages, gathering sites, eel traps in streams, bird capture areas, and other types of places used by the garden makers. Pre-1900 European sites include industry, buildings and farms composed of house, farm buildings, fields, stock holding pens, roads, etc. Understanding of intangible and tangible layers of both Maaori and European sites provide a continuum of cultural understanding and practice.

The full *Tangata Whenua Statement and Engagement Report* and Archaeology Assessments can be found in Appendix 5 & 10 respectively.

## 6.1.6 Heritage and Notable Trees

Historic heritage is part of understanding our environment, and the past, present and future it represents. Heritage and notable trees contribute to the unique stories and beautification of Taupiri. They play an important role in contributing to understanding of the urban environment and are an integral part of communities' connecting to their places. An updated heritage schedule for built items and notable trees based upon the work done through the proposed district plan – decision version has been recommended to replace the schedule within the current heritage report, allowing for a more recent picture of protected items.

Notable trees in Taupiri, include a tricolour beech and english elm, respectively. They contribute to the overall history and story of Taupiri, and it is important to recognise these when moving through time.

The notable trees schedule attached to this report is recommended to replace the schedule contained within the proposed Waikato district plan, there have been minor changes to a description to improve accuracy.

There are five heritage buildings and one heritage landmark located within Taupiri, with the oldest building – the Taupiri Hotel/Tavern – dating back to around 1911. The heritage items present an opportunity for storytelling to improve connections.

| Nr | Heritage Item |
|---|---|
| 1 | Taupiri Wharf Remains (c.1926) |
| 2 | Former Powell Residence (c.1915) |
| 3 | Christ Church (Anglican) (1940) |
| 4 | Taupiri War Memorial Hall & Plunket Rooms (1952) |
| 5 | Former Taupiri Post Office & Postmaster's Residence (c.1920) |
| 6 | Taupiri Hotel / Tavern (1911) |
| **Nr** | **Notable Tree** |
| 1 | Tricolour Beech |

The full Heritage Assessment can be found in Appendix 11-11.2

### 6.1.7 Ground Contamination and Geotechnical

The current ground contamination assessment is limited to Ngaaruawaahia and excludes Taupiri. However, Waikato District Council are aware that there are two main land developers in Taupiri and, as part of the resource consent process, are completing onsite ground contamination assessments for their developments.

Geotechnical development suitability indicators are important because they indicate the stability and strength of the ground, soil deposits, and the natural hazards associated with the area.

The geology of the study area in general consists of hill country, rolling hills of the lowlands, alluvial soils of the lowlands, and valley floor soils. Around the edges of rivers and foot of the mountain in Taupiri are more likely to be exposed to the risks of soil liquefaction and slope instability. The high-level geotechnical assessment conducted identifies risks, noting that the not all of the land that falls within a given risk classification might be subjected to the geotechnical risk in question.

The intent of the plan is to provide guidance on the general suitability of the land, and the starting point for engineering assessment that should accompany development proposals.

The full Geotechnical Assessments can be found in Appendix 2.

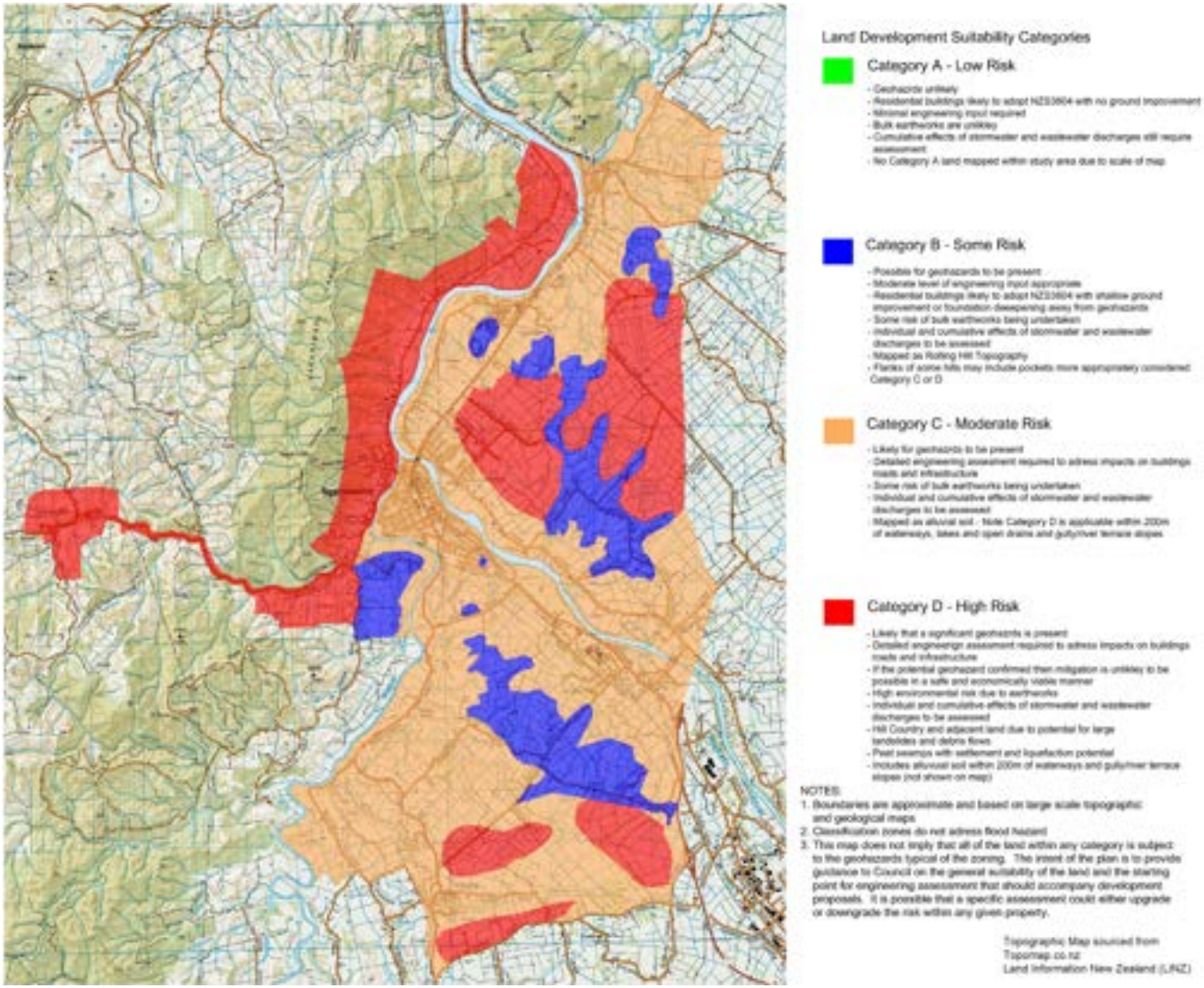



*Figure 6-11: Taupiri Geotechnical Assessment*

### 6.1.8 Natural Environments and Landscapes

Understanding the visual amenities and natural environment of a landscape is integral in both locating development in appropriate spaces, and also in maintaining and enhancing visual amenities which benefit the overall well-being of the communities.

The landscapes assessment conducted looks at identifying outstanding natural features and landscapes by capturing and analysing their character, associated amenity values and landscape constraints. During the development of this assessment, the growth aspirations of Taupiri were captured in determining the level of development suitability.

The majority of the study area is characterised by underlying Waikato plains/ lowlands, which are bounded by the Hakarimata Range and Te Puroa hill country to the west and Taupiri Range to the north. Taupiri Village is characterised by the Waikato River, which bounds the village to the west, the Mangawara Stream which bounds the village to the north, as well as the Taupiri Mountain and Range, also to the north. The character of Taupiri village to the southeast is composed of the extensive Komakorau Stream, wetland and other tributaries of the Mangawara Stream as well as State Highway 1.

Most of the lowland geological features were derived from the deposition of pyroclastic material following the Taupo volcano eruption approximately 22,000 years ago and the various routes adopted by the Waikato River over that time. Subtle changes in elevation and undulations in landform are clearly evident due to the pastoral land cover. The majority of indigenous vegetation has been removed for pastoral farmland development, however, large tracts of regenerating indigenous forest exists on the slopes of Taupiri Mountain.

This has led to the unique combination of scenery and visual amenities within Taupiri, the heat map provided illustrates the areas most suitable to develop from an amenities and visual perspective.

Proposed land use changes that sit within the “least” suitable range of this assessment have been indicated as FUZ, the full spatial extent of the zone is yet to be detailed and will be investigated further at the time of requirement (long term).

The full Landscapes Assessments can be found in Appendix 4

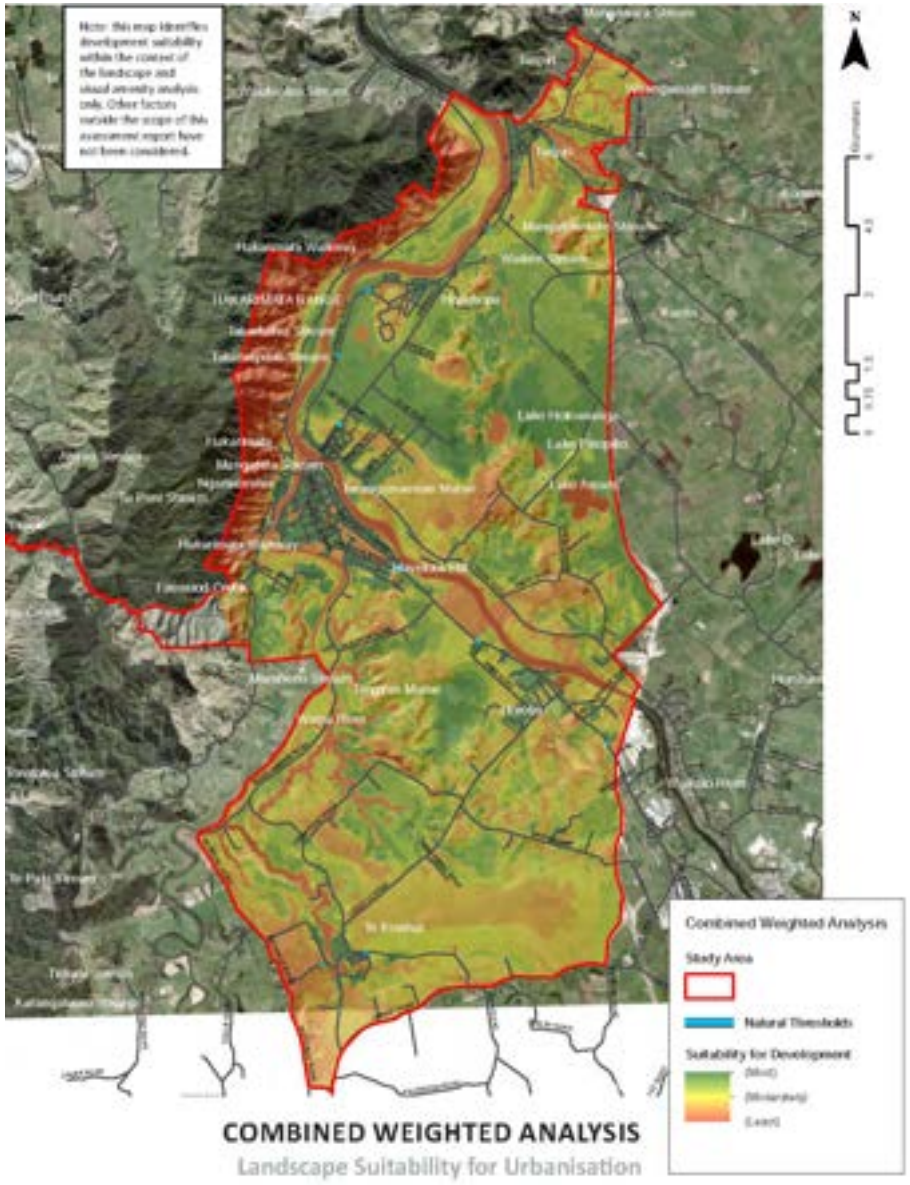



*Figure 6-12: Taupiri Natural Environments and Landscapes*

## 6.2 Insights and Opportunities

Opportunities have been identified for the settlement of Hopuhopu through a multi-stage approach. The opportunities are a combination of:

- The contextual analysis.
- A spatial analysis undertaken through a desktop assessment.
- A site visit in combination with council staff and elected members.
- Input received from technical reports.
- Inputs received by council through community surveys.

Feedback received from the community via online engagement and community open day events held in Ngaaruawaahia, Hopuhopu and Taupiri. These sought to understand the issues experienced by the community and opportunities seen by those that live, work and play in the three towns to improve the liveability of these places.

The opportunities for investment have been grouped under the headings of the design principles, noting that some opportunities will align with multiple design principles.

The opportunities were grouped into themes relating to:

**Connected Communities**

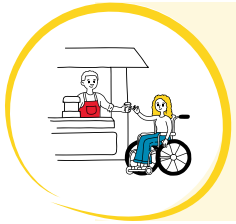
Opportunities relating to transport and accessing the places people want to get to, such as the town centre and key destinations like Tuurangawaewae Marae.

**Identity**

Opportunities related to telling the history, and highlighting the identity, of Ngaaruawaahia, Hopuhopu and Taupiri.

**Natural Environments**

Opportunities related to improving access to, and the quality of, the natural environment.



**Growth and Economy**

Opportunities related to enhancing commercial activity and supporting future growth.

The following pages provide a summary of the opportunities identified through this process. Some of the opportunities sit outside of the remit of Waikato District Council, however were recorded to fully understand the issues and opportunities seen by the community. These opportunities have been assessed and considered by council as part of this process and have informed the key moves and outcomes. Not all opportunities have been progressed.

# Taupiri Opportunities

## Connected Communities

Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.

1. Opportunity to extend the Te Awa River Ride cycle route from Ngaruawahia via Hopuhopu to Taupiri, with link to the Taupiri Maunga summit track and urupaa
2. Provide safe walking and cycling connections to the service station precinct on Gordonton Road
3. Create safe and visible pedestrian and cycling connections between Taupiri Marae and Hopuhopu
4. Provide a safe crossing facility at Great South Road bus stop
5. Review layout of the Great South Rd and Gordonton Rd roundabout to improve visibility and safety
6. Provide signage to Taupiri urupaa along Watts Grove
7. Create safer crossings at Te Putu St from Educare to the footpath across the road
8. Upgrade active modes facilities on Te Putu Street bridge
9. Improve the connection at Taupiri School, currently a kea crossing but no formal pedestrian crossing. Manoeuvering & on-street parking outside Taupiri School is limited.
10. Improve the safety of Murphy lane/Te Putu St intersection visibility
11. Upgrade stairs to the urupaa
12. Provide interim CPTED solutions at the two underpass - Te Putu Street and Greenlane Rd and consider future alternative crossing solutions
13. Detune Great South Road to enable better cross connectivity and minimise severance to the river
14. Provide north-south connections through the new growth area between Taupiri Marae and Murphy Lane
15. Improve safety and visibility of Button Lane and Gordonton Road intersection

## Identity

Strengthen the existing identity and character of the place.

1. Utilise the river as a future transportation route and/or ecotourism opportunity with fishing/ river kai activities to tie-in with local community
2. Opportunity for storytelling to improve connections, outcomes & protection of areas of cultural significance. E.g. Puke i Ahua, Taupiri Maunga, pae rites, urupaa
3. Establish a community focal point on the eastern side of the rail tracks that reflects the local "village" identity
4. Establish a riverside focal point that connects between the Hopin Stopin cafe, Bob Byrne Memorial Park and Te Putu Street commercial functions
5. Improve lighting in targeted areas such as the Rugby Football Club

## Natural Environment

Connect communities to blue-green networks and provide recreational activities and opportunities.

1. Taupiri Maunga, Waikato River, Urupaa, Hakarimata Ranges, Pavitroll and several heritage sites are the assets that make Taupiri unique. These should be celebrated and promoted through story telling, way finding and iconic sculptures
2. Upgrade pathways to include wayfinding, shelter, and rest stops to support riverside recreational use along the Waikato River and adjacent reserves. Consider other benefits such as weed/pest control and re-vegetation for river ecosystem restoration.
3. Initiatives to restore kiwi habitat at Taupiri Maunga

## Growth and Economy

Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.

1. Opportunity to consider local convenience to service new growth area closer to the Taupiri Marae
2. Opportunity for future industrial uses around service station precinct on Gordonton Road
3. The existing Taupiri Rugby Football Club are well used with the desire for another sports/ community hub targeted for the youth
4. Opportunity for new community amenities within township i.e. Supervalue, post office, afterschool care and Educare

Other opportunities

- Future proof for the aging population in Taupiri with the provision of appropriate accommodation and amenities.
- Identify and provide high quality open spaces to service future growth.

## 6.3 Key Moves

The opportunities identified were shared with the community across two open days, and through online engagement, where feedback and support was gathered. The opportunities were also assessed against the agreed outcome principles for the project, providing a basis for assessment.

The feedback relating to the opportunities identified were considered together to confirm the key moves and outcomes for Taupiri and how these are to be prioritised over the short, medium and long term. It is recognised that some of the projects are highly complex, will have associated high costs, and will need further detailed investigation before they are able to be confirmed in the for delivery.

The key moves and outcomes have been identified on the following maps. The anticipated prioritisation of these is addressed in the implementation section of the document. The key moves and outcomes have also been grouped into the design principles of:

**Connected Communities**

**Identity**

**Natural Environment**

**Growth and Economy**

Walking and cycling activities have been identified separately as inputs from the Transport Workstream.

# Taupiri Township

## Connected Communities

### Active mode opportunities

1. Extension of the Te Awa River Ride to Taupiri with the inclusion of rest stops and viewing areas.
2. Create a clear walking and cycling loop from town centre - Great South Road, Te Putu Street, Onslow Avenue, Gordonton Road and segregating off to Watts Grove to connect to Taupiri pas and urupaa.
3. Other active mode connections:
   a. Upgrade Te Putu Street and bridge.
   b. Tanehelie Pas, Taupiri Marae and Great South Road with a connection over rail (under investigation).
   c. Investigate pedestrian and cycle overbridge of railway connecting Great South Road to sports fields.
4. Create a wayfinding suite for key destinations including the urupaa, Taupiri Maunga, Te Putu Street, historic waka landing, Bob Byrne Memorial Park and sports field.
5. Create gateway markers into Taupiri.

### Enhancing the pedestrian experience

6. Great South Road improvements:
   - Create more pedestrian connections with additional crossings including existing bus stops.
   - Short term tactical urbanism at existing pedestrian crossings.
   - Beautify the streetscape with green promenade and provision for active modes.
7. Te Putu Street improvements:
   - Beautify the streetscape.
   - Traffic calming measures.
   - Upgrade pedestrian crossings.
   - Safe access to The Crescent.
   - Provide a pedestrian crossing outside of the childcare facility.
   - Roadway art at Te Putu Street and Great South Road intersection.

### Intersection and roundabout upgrade

8. Improve the safety and visibility of intersections:
   - Gordonton Road and Te Putu Street.
   - Murphy Lane and Te Putu Street.
   - Great South Road and Te Putu Street to connect to Bob Byrne Memorial Park.
   - Greenlane Road and Te Putu Road.
9. Improve the pedestrian safety and visibility of Gordonton Road and Great South Road roundabout (under investigation).

Streetscape beautification

Wayfinding

Te Awa River Ride extension

Protected cycleway on Great South Road

Raised pedestrian crossing

Traffic calming with planted buildouts

## Identity

### Amenities

1. Investigate the use of Council-owned facilities within Taupiri and consider additional community needs or commercial development that could be accommodated.
2. Celebrate sites of cultural significance and protect wealth tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities (Taupiri Mountain urupaa, historical waka landing site, Tarahaka paa, Taupiri Marae, and Te Uapata paa, key transport nodes i.e. roundabouts).
3. Provide formal viewing areas and storytelling boards for waka landings beside existing carpark/boat ramp. In particular for major Tangi processions from Tuurangawaewae Marae to the urupaa.
4. Upgrade and provide signage to public toilets.
5. Upgrade bus stops and shelters.
6. New bi-lingual "Welcome to Taupiri" sign.

### Maintenance/CPTED/Safety

7. Introduce mirrors, art and wayfinding at Murphy Lane and Greenlane Road underpasses.
8. Provide lighting at the Rugby Field carpark/Murphy Lane.
9. Trim overgrown vegetation at Murphy Lane and Greenlane Road underpass, Te Putu Street and urupaa bridge.
10. Clean up of graffiti at Murphy Lane underpass and along Great South Road.

Other projects

- Identify opportunities and locations for cultural expression and symbolism.
- Upgraded suite of street furniture including rubbish bins, drinking fountains and seating.
- Undertake maintenance and repair of street lights across the township.

## Natural Environment

### Recreational opportunities

11. Investigate potential locations for playgrounds to serve within Taupiri (Gordonton Road and Kamui Road).
12. Upgrade Bob Byrne Memorial Park with nature play and improved connections north and south to the Hopin Stopin Cafe.

### Ecological opportunities

13. Improve the resilience to localised flooding through:
    - Increased permeable surfaces and attenuation planting.
    - Riverbank planting.
    - River edge terracing to protect recreation areas next to the river.
14. Increase native tree and fruit trees in town – Urban Ngahere (Forest) to attract native birds into township.
15. Native tree restoration for Taupiri Maunga.
16. Pest and predator management plan on Taupiri Maunga.

Other projects

- Improve native fauna habitat through education/interpretation and restoration of waterways (native fish, eels etc).

Riverside seating

Storytelling and cultural narratives

Underpass

Village feel

Nature play at Bob Byrne Memorial Park

Separated cycleway on Great South Road

# Artist Impressions of Key Moves

## Amenity upgrades to Bob Byrne Memorial Park

## Enhance Te Putu Street pedestrian experience

## 6.4 Implementation

Some of the methods and tools that will be used to implement the *Waikato 2070* are summarised below.

### District Plan

The district plan is the legislative rule book which sets out what development can and can't be done and where in the district. Structure plans and town centre plans will form the basis for amendments to the district plan via plan changes (to the operative district plan) and plan variations (to the proposed district plan) to enable the development of these growth areas identified in *Waikato 2070*.

### Long Term Plan

The long term plan (LTP) provides direction on the provision and funding of infrastructure and services within the Waikato district. The location and timing of the growth cells as set out in *Waikato 2070* will inform the LTP in respect to the necessary funding of infrastructure and services in these areas.

### Asset and Activity Management Plans

The Waikato District Council prepares asset and activity management plans which set the various needs and demands of assets (e.g. roading, wastewater, water supply, facilities, reserves and open spaces). These are an essential tool in planning and funding infrastructure and services.

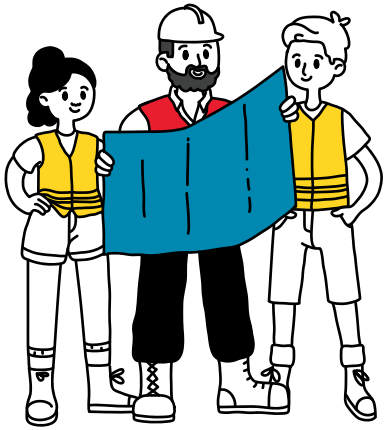
### Partnerships

Waikato District Council will implement the *Waikato 2070* in partnership with various organisations and groups to ensure the vision and future development expectations are achieved. The Waikato District Council will work alongside organisations and groups, such as:

- Waikato-Tainui
- Tangata Whenua/Mana Whenua
- Ministry of Education
- Ministry of Housing and Urban Development
- Ministry of Innovation, Business and Employment
- District Health Boards
- New Zealand Transport Agency
- Kiwi Rail
- Utility providers
- Tourism agencies
- Adjoining local authorities
- Waikato Regional Council
- Community boards, community committees, and community groups
- Local business associations
- Kainga Ora
- Police New Zealand / Fire and Emergency New Zealand
- Heritage New Zealand Pouhere Taonga

### Implementation Table

The following table identifies the key moves and outcomes that have been identified through this document. It considers the alignment with the outcome principles, the project complexity and likely timeframe required to implement the projects. The table provides a tool for future identification and prioritisation of investment across the three settlements across the short, medium and long term.



## Taupiri

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **CONNECTED COMMUNITIES** | | | | | | |
| 1. Extension of the Te Awa River Ride cycle route to Taupiri with the inclusion of rest stops and viewing areas. | | | ✓ | | | ✓ |
| 2. Create a clear walking and cycling loop from town centre - Great South Road, Te Putu Street, Onslow Avenue, Gordonton Road and segregating off to Waitu Grove to connect to Taupiri pas and urupaa. | | ✓ | | | ✓ | |
| 3. Other active mode connections: | | | | | | |
| - Upgrade Te Putu Street and bridge. | | | ✓ | | | ✓ |
| - Tirahekie Pas, Taupiri Marae and Great South Road with a connection over rail (under investigation). | | | ✓ | | | ✓ |
| - Investigate pedestrian and cycle overbridge of railway connecting Great South Road to sports fields. | | | ✓ | | | ✓ |
| 4. Create a wayfinding suite for key destinations including the urupaa, Taupiri Maunga, Te Putu Street, Bob Byrne Memorial Park and sports field. | | ✓ | | ✓ | | |
| 5. Create gateway markers into Taupiri. | | ✓ | | ✓ | | |
| 6. Great South Road improvements: | | | | | | |
| - Create more pedestrian connections with additional crossings including existing bus stops. | | | ✓ | | | ✓ |
| - Short term tactical urbanism at existing pedestrian crossings. | | | ✓ | | | ✓ |
| - Beautify the streetscape with green promenade and provision for active modes. | | | ✓ | | | ✓ |
| 7. Te Putu Street improvements: | | | | | | |
| - Beautify the streetscape. | | | ✓ | | ✓ | ✓ |
| - Traffic calming measures. | | | ✓ | | ✓ | ✓ |
| - Upgrade pedestrian crossings. | | | ✓ | | ✓ | ✓ |
| - Safe access to The Crescent. | | | ✓ | | ✓ | ✓ |
| - Provide a pedestrian crossing outside of the childcare facility. | | | ✓ | | ✓ | ✓ |
| - Roadway set at Te Putu Street and Great South Road intersection. | | | ✓ | | ✓ | ✓ |
| 8. Improve the safety and visibility of intersections: | | | | | | |
| - Gordonton Road and Te Putu Street. | | ✓ | ✓ | | ✓ | |
| - Murphy Lane and Te Putu Street. | | | ✓ | | | ✓ |
| - Great South Road and Te Putu Street to connect to Bob Byrne Memorial Park. | | | ✓ | | | ✓ |
| - Greenlane Road and Te Putu Road. | | ✓ | ✓ | ✓ | | |
| 9. Improve the pedestrian safety and visibility of Gordonton Road and Great South Road roundabout (under investigation). | | | ✓ | | ✓ | ✓ |
| **IDENTITY** | | | | | | |
| 2. Celebrate sites of cultural significance and protect waahi tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities (Taupiri Mountain,urupaa, historical waka landing site, Tirahekie pas, Taupiri Marae, and Te Uapeka pas). | ✓ | | | | ✓ | |
| 3. Provide formal viewing areas and storytelling boards for waka landings beside existing carpark/boat ramp. In particular for major Tangi processions from Tuurangawaewae Marae to the urupaa. | ✓ | | | | ✓ | |
| 5. Upgrade bus stops and shelters. | | ✓ | ✓ | ✓ | | |
| 6. New bi-lingual "Welcome to Taupiri" sign. | ✓ | | | ✓ | | |
| **Other projects** | | | | | | |
| Identify opportunities and locations for cultural expression and symbolism. | | ✓ | | | ✓ | |

## Taupiri

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **NATURAL ENVIRONMENT** | | | | | | |
| 13. Improve the resilience to localised flooding through: | | | | | | |
| - Increased permeable surfaces and attenuation planting | ✓ | ✓ | ✓ | | | ✓ |
| - Riverbank planting | ✓ | ✓ | ✓ | | | ✓ |
| - River edge terracing to protect recreation areas next to the river | ✓ | ✓ | ✓ | | | ✓ |
| 14. Increase native tree and fruit trees in town – Urban Ngahere (Forest), to attract native birds into township | ✓ | | | ✓ | | |
| **BUSINESS AS USUAL** | | | | | | |
| 7. Introduce mirrors, art and wayfinding at Murphy Lane and Greenlane Road underpasses | ✓ | | | ✓ | | |
| 8. Provide lighting at the Rugby Field carpark/Murphy Lane | ✓ | | | ✓ | | |

View of Taupiri Maunga and Church

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https://www.waikatodistrict.govt.nz/docs/default-source/your-council/plans-policies-and-bylaws/strategies/waikato-2070.pdf?sfvrsn=d25e88c9_4

Local Area Blueprint Initiatives.

https://www.waikatodistrict.govt.nz/your-council/plans-policies-and-bylaws/plans/blueprints/local-area-blueprints

# NGAARUAWAAHIA, HOPUHOPU AND TAUPIRI STRUCTURE PLAN & NGAARUAWAAHIA TOWN CENTRE PLAN

2024

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## GLOSSARY

BDCA - Business Development Capacity Assessment
CPTED – Crime Prevention Through Environmental Design
WTP – Water Treatment Plant
WW – Wastwater
GFA – Gross Floor Area
H2A – Hamilton-Auckland Corridor Plan & Implementation Programme
Ha – Hectares
SQM – Square Meters
HAIL - Hazardous Activities and Industries List
HDCA – Housing Development Capacity Assessment
MDRS - Medium Density Residential Standards
MSP - Hamilton-Waikato Metropolitan Spatial Plan
NES – National Environmental Standards
NIMT – North Island Main Trunk
PBC – Hamilton-Waikato Metro Spatial Plan Transport Programme Business Case
PDP - Proposed District Plan
RT, Rapid Transit - a form of high-speed passenger transport, for example a high frequency bus service
SH1 – State Highway 1
TOD – Transit Orientated Development
UoW – University of Waikato
Waikato 2070 - The Waikato District Council Growth & Economic Development Strategy
WWTP – Wastewater Treatment Plant

# 1 Setting the Scene

## 1.1 Introduction

Ngaaruawaahia, Hopuhopu and Taupiri are small settlements/towns in the Waikato region of the North Island. Ngaaruawaahia is located 20 kilometres north-west of Hamilton at the confluence of the Waikato and Waipaa Rivers, adjacent to the Hakarimata Ranges. Ngaaruawaahia is home to approximately 8200 residents and Taupiri to 700 residents[1] and is connected to Hamilton by Great South Road (formerly State Highway 1, SH1) and the regionally recognised Te Awa River Ride. Tangata whenua for Ngaaruawaahia are Tuurangawaewae Marae (Ngaati Mahuta and Ngaati Te Wehi) and Ngaati Tamainupoo. Turangawaewae Marae is also a nationally significant marae, as well as being the headquarters for the Maaori King (Te Arikinui Tuuheitia Paki). Tangata whenua for Taupiri are Taupiri Marae (Ngaati Kuiaarangi, Ngaati Mahuta, Ngaati Tai and Ngaati Whaawhaakia). Taupiri is also located at the foot of Taupiri Maunga (Mountain), also known as 'Taupiri-Kuao', and the mountain is sacred to Taupiri and Maaori alike. The mountain is the final resting place for members of the prominent Maaori Family.

## 1.2 Vision and Strategic Direction

The vision and principles for Ngaaruawaahia, Hopuhopu and Taupiri were developed over two sessions with the "Structure Plan Reference Group[2]" to ensure thorough discussion and input from all participants. Due to the close relationship between the three towns/settlements, the group determined that the same vision and principles should cover them.

The overarching vision for Waikato District Council is "*We work together as a district to build liveable, thriving and connected communities as our district grows*." This vision served as the foundation for developing a more place-specific vision for the three settlements. By engaging with the community and seeking their input on their desired future for Ngaaruawaahia, Hopuhopu, and Taupiri, an overarching vision that reflects the aspirations and direction of these towns was established. The vision highlights the importance of these places being understood together – acknowledging the relationships between them. It speaks to the rich history of the area and the opportunities of the townships/settlements linked by the Waikato Awa and landscape.

***"To create opportunities for the communities of Ngaaruawaahia, Hopuhopu, and Taupiri and their descendants, connected through the landscape, the awa, and collective yet unique histories."***

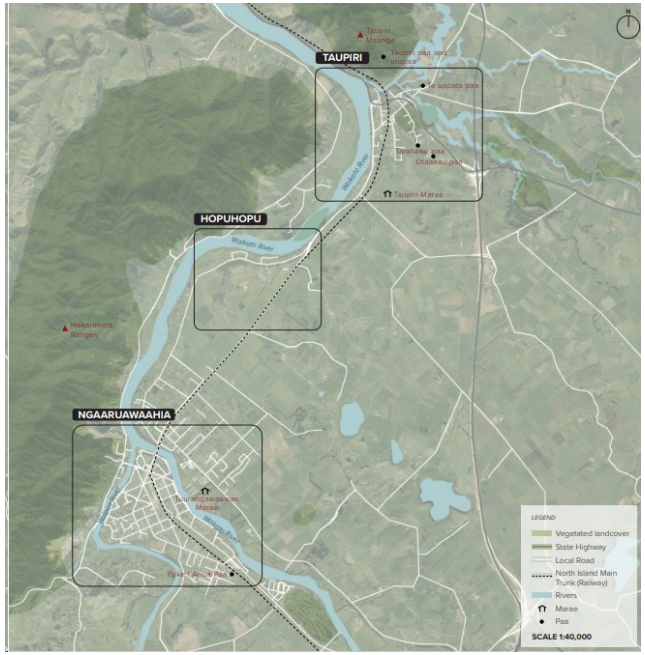



*Figure 1-1: Structure Plan Area - Ngaaruawaahia, Hopuhopu, and Taupiri*

1 University of Waikato. (2021). 2018-base SA2-level population, family and household, and labour force projections for the Waikato region, 2018-2068.

[2] The Structure Plan Reference Group was aimed to develop the Structure Plan / Town Centre Pan in collaboration with key partners which included Councillors, Staff, Community Boards, & Tanagata Whenua.

## Connected Communities

Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.

## Identity

Strengthen the strong sense of identity and character of the place.

## Natural Environment

Celebrate and connect communities to blue-green networks and significant cultural areas supporting recreational use and preserve local identity.

## Growth and Economy

Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.

# Outcomes

- Create clear and accessible connections to places people want to go.
- Support easy and safe to access by active modes and public transport.
- Deliver resilience and respond to a changing climate.
- Provide places for people to meet and connect.
- Investments in our towns to enable us all to reduce our carbon footprint.

- Weave the presence of the rich natural landscape into the local context.
- Share the rich history of place.
- Respond respectfully to culturally significant sites and landscapes.
- Recognise and celebrate Kiingitanga.

- Protect and enhance our natural environment.
- Provide residents of our towns easy access and connection to the natural environment.
- Bring the natural environment into and through our towns.

- Focus on the development of a strong commercial core in our towns.
- Invest in the infrastructure to support access to, and enjoyment of the town/village centre.
- Enable and support the development of key sites to encourage increased vibrancy, vitality and amenity in the town/village centre.

## Purpose of the Ngaaruawaahia, Hopuhopu and Taupiri Structure Plan

*A structure plan is a guiding framework for the development or redevelopment of an area that will help define the future development and land use patterns, areas of open space, the layout and nature of infrastructure (including transportation links), constraints and key features that influence the effects of development are also considered and managed.*

## Purpose of the Ngaaruawaahia Town Centre Plan

*A town centre is more than just a place where people shop and work. It's the 'heart' of the town or city where the community and visitors can enjoy socialising and recreation. A town centre plan is a strategic roadmap for developing and managing a town or city's central area. It's a detailed document that outlines specific goals and actions to revitalise and enhance the vitality, functionality, and attractiveness of the town centre by encouraging a mix of uses, prioritising public transport and walkability, promoting sustainable development, planning for growth, fostering a sense of place, and celebrating creativity and innovation.*

## 1.3 Statutory and Non-Statutory Consideration

### Regional Strategy Frameworks

**Future Proof Strategy**[3]

*The Future Proof Strategy* is a 30 year growth management and implementation plan specific to the Hamilton, Matamata-Piako, Waipaa and Waikato sub-region within the context of the broader Hamilton - Auckland Corridor (H2A), the Hamilton to Tauranga Corridor and Hamilton - Waikato Metropolitan areas.

*The Future Proof Strategy* was recently updated to include the *Hamilton to Auckland Corridor Plan* and the *Hamilton-Waikato Metropolitan Spatial Plan* (HWMSP). These plans are being brought into alignment with the future proof guiding principles:

1. Effective partnerships, leadership, & implementation
2. Vibrant city centres connected to thriving towns, villages and rural communities.
3. Protection of the natural environment
4. Affordable and sustainable resources use.
5. Productive partnerships with tangata whenua/mana whenua
6. Emission reduction & climate change

Future proof is about how the area should develop into the future. The strategy is underpinned by several fundamental principle that give effect to the strategy and its implementation. The ongoing application of these principles is key to effective implementation. The principles should be used in assessing and measuring proposals against the strategy and any subsequent changes made.

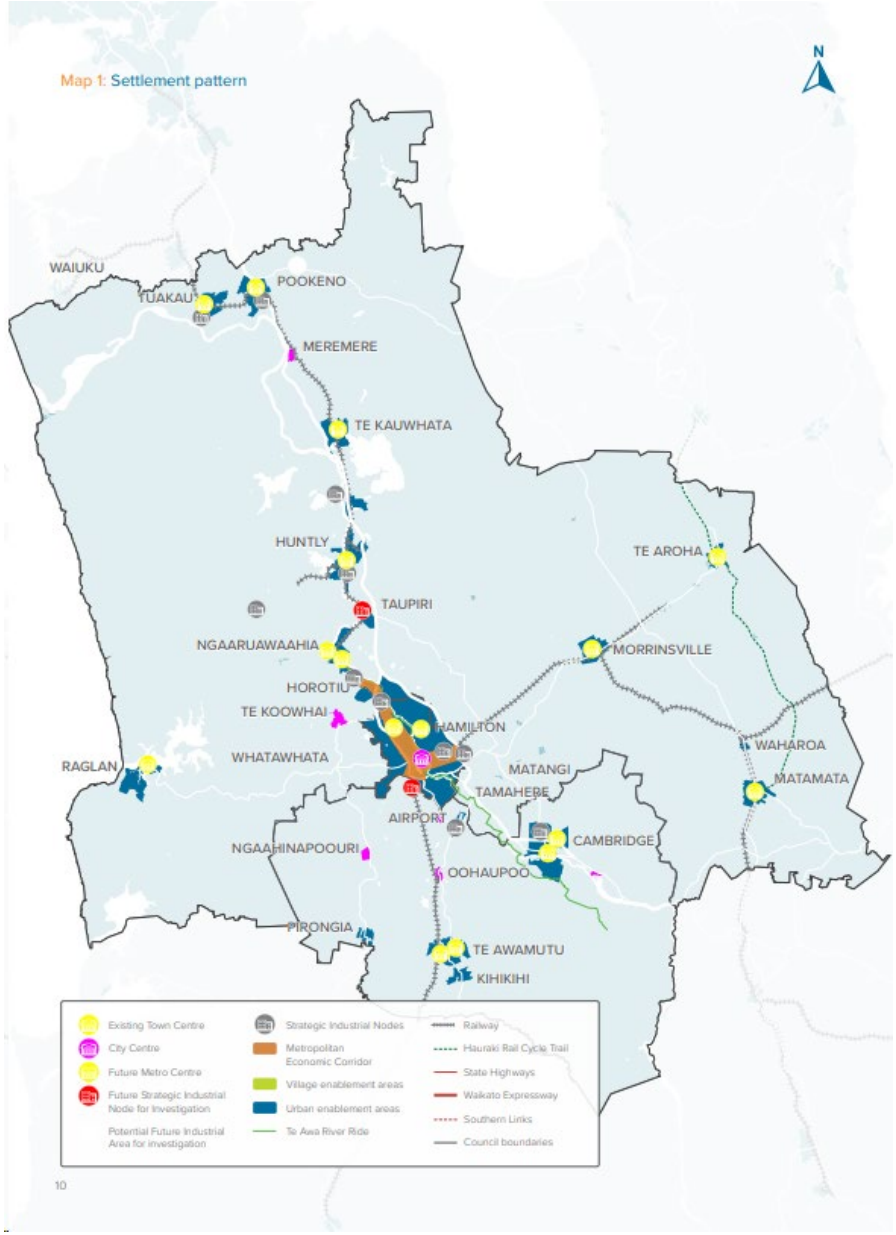



*Figure 1-2: Future Proof Strategy*

[3] https://futureproof.org.nz/the-strategy/

A Transport Programme Business Case (PBC), developed to inform the *Hamilton-Waikato Metro Spatial Plan* (HWMSP), focuses on implementing:

- Rapid transit
- Land use intensification
- Walking and cycling (incl. micromobility)
- Freight hubs
- Shared bus and freight lanes,
- Supporting interventions, including a regional and rural access programme and park-and-ride

Ngaaruawaahia, as part of the HWMSP PBC,links into the priority Rapid Transport Corridor 1 north (RT1 north), which looks to provide frequent bus services between Huntly and Ngaaruawaahia connecting to further rapid transit (RT) services in Hamilton. Designated RT corridors within the Hamilton city footprint area will be considered as part of more detailed business cases.

The short term (1–3 years) transport and land use change opportunities relevant to Ngaaruawaahia include:

- Integrate compact urban form requirements – Transport oriented development (TOD) nodal type development, which is relevant to the town centre.
- Investment in micromobility (walking and cycling connections)
- Route protection for and implementation of Rapid Transport Corridor 1 north (RT1) with consideration of frequent bus services from Ngaaruawaahia into Hamilton.

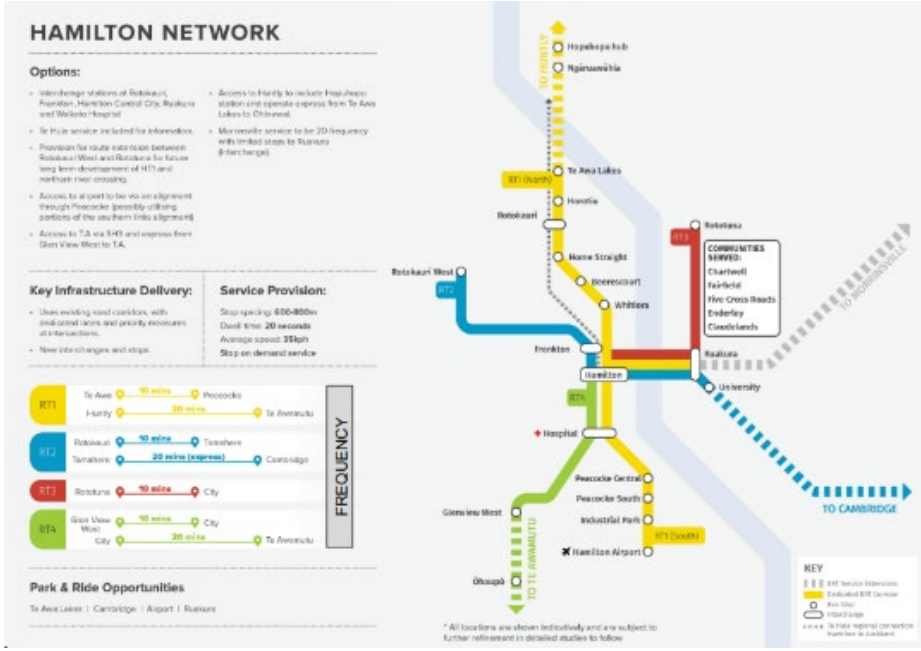



*Figure 1-3: Hamilton-Waikato Metro Spatial Plan Transport Programme Business Case (PBC)*[4]

[4] https://futureproof.org.nz/h2a/metrospatialplan/

## Te Ture Whaimana (Vision and Strategy)[5]

The Waikato River Authority was established in 2010 as the custodian of the *Vision and Strategy for the Waikato* River primary direction-setting document. The strategy responds to four fundamental issues.

1. The degradation of the Waikato River and its catchment has severely compromised Waikato River iwi in their ability to exercise mana whakahaere (community ownership and autonomy) and conduct their kawa (practices) according to tikanga (principles)
2. Human activities along the Waikato River and throughout its catchment areas have degraded the river – affecting the relationships and reducing the aspirations of Waikato River communities
3. The natural processes of the Waikato River have been altered over time by physical intervention, land use and subsurface hydrological changes. The cumulative effects of these uses have degraded the Waikato River
4. It will take commitment and time to restore and protect the health of the Waikato River

Embedded within the document are actions, referred to as strategies, which detail how objectives are to be met. In principle, key themes are to incorporate maatauranga Maaori through the restoration and enhancement of the river, manage adverse effects on the Waikato River appropriately, establish and maintain relationships with an interest in advancing, restoring and protecting the health of the Waikato River

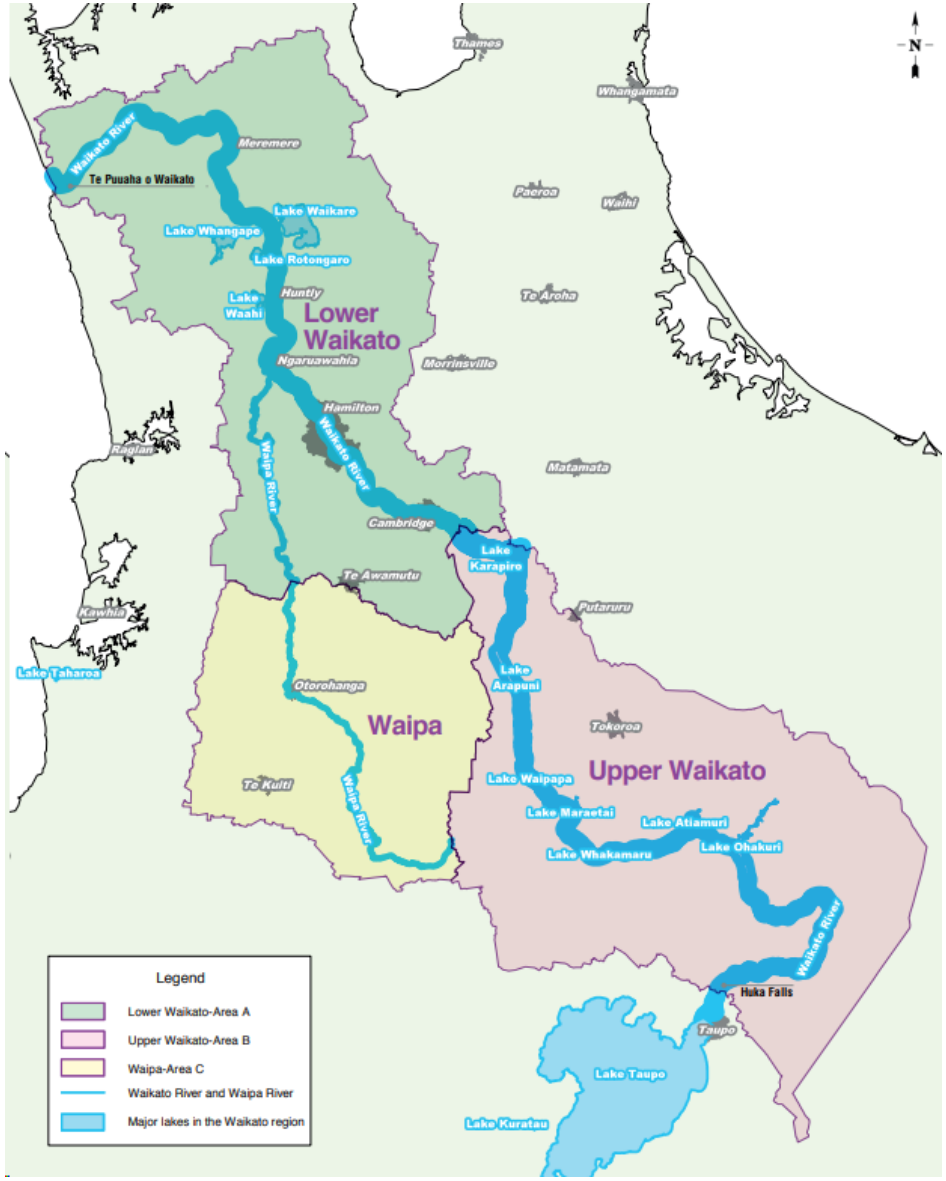



*Figure 1-4: Te Ture Whaimana (Vision and Strategy)*

[5]https://waikatoriver.org.nz/wp-content/uploads/2019/03/Vision-and-Strategy-Reprint-2019web.pdf

## Local Strategy Frameworks

### The Waikato District Council Growth & Economic Development Strategy (Waikato 2070)[6]

*Waikato 2070* (*Waikato District council growth & economic development strategy*) has been developed to provide guidance on appropriate growth and economic development that will support the wellbeing of the district. *Waikato 2070* provides a long-term plan to achieve the Waikato District Council's vision of creating liveable, thriving, and connected communities and is based around four key themes which are our Focus Areas:

- Grow Our Communities
- Build Our Businesses
- Embrace Our Identity
- Empower Our People

The strategy details spatially where and when development (residential and employment) can occur in the district, aligned with our four Focus Areas.

**Ngaaruawaahia** is identified as an existing business cluster focused on services and industry and as a preferred location for a mass-transit station within the medium to long-term. In support of the mass-rapid transit medium-density (10–30 years) residential development consisting of townhouse/duplex/terraces has been identified in and around the Ngaaruawaahia town centre.

**Taupiri** is identified as an area of both residential and industrial growth. Being strategically located along SH1 and the new Taupiri interchange, the area is well suited for industrial development. Job opportunities created with new industry will create demand for residential development.

**Ngaaruawaahia**

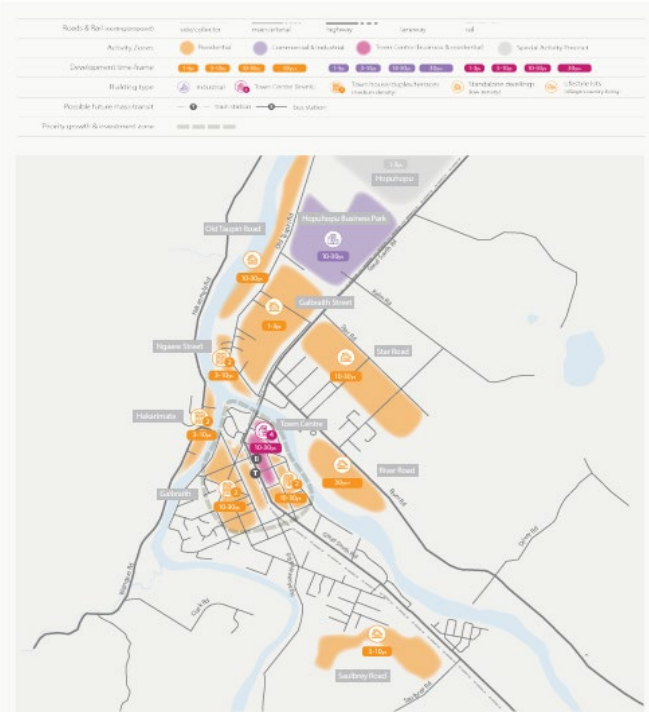


*Figure 1-6: Waikato 2070 - Ngaaruawaahia*

**Taupiri**

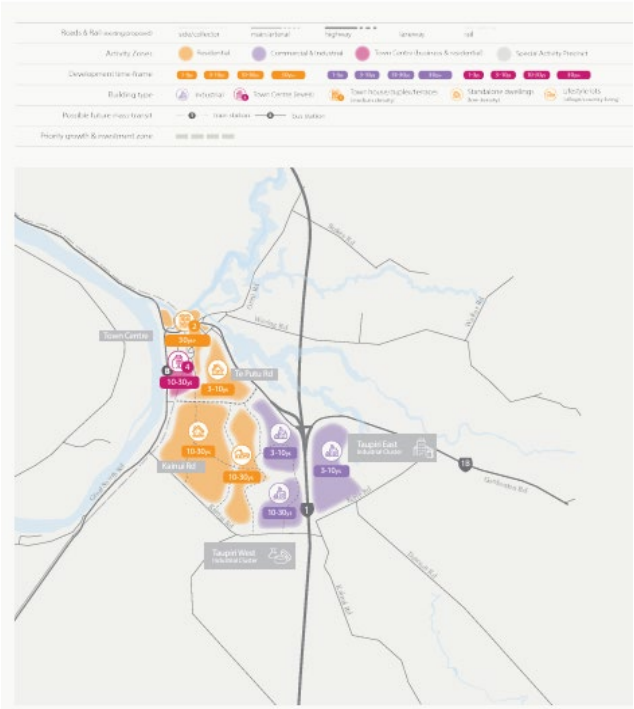


*Figure 1-5: Waikato 2070: Taupiri*

[6]https://www.waikatodistrict.govt.nz/docs/default-source/your-council/plans-policies-and-bylaws/strategies/waikato-2070.pdf?sfvrsn=d25e88c9_4

**Local Area Blueprint Initiative[7]**

The aim of the Local Area Blueprint Initiative (blueprint) is to provide a high-level 'spatial picture' of how the district could progress over the next 30 years, address the community's identities, social, economic, and environmental needs, and respond to its regional context. The blueprint provides the Waikato District Council with an effective and legible tool to move from vision to strategy, and from strategy to action by setting out specific, prioritised initiatives at the district and local level.

**Ngaaruawaahia – Top Priority Initiatives**

- Undertake strategic conversations around council-owned land and halls for the reinvigoration of community assets (1).
- Work with relevant entities to support the strategy for youth initiatives.
- Undertake initiatives to ensure tidy commercial and industrial street frontages.
- Provide longer distance walking and cycling connections to Te Otamanui, Glen Massey (8), the eastern side of the Waikato River to Horotiu (9), and Taupiri (10).
- Progress opportunities for a new community hub
- Build a strong identity based on the river corridor, and the unique qualities of the local area.

**Taupiri – Top Priority Initiatives**

- Develop a town centre plan to address fragmentation and services required to support employment and residential growth. Also, consider the impact of a new service centre at the interchange and the new entrance into Taupiri from the expressway.
- Allow for the continuation of the Te Awa cycle trail.
- Build a strong identity based on the river corridor, and the unique qualities of the local area.
- Investigate the opportunity for industrial land.

*Figure 1-8: Blueprints - Ngaaruawaahia*

*Figure 1-7: Blueprints - Taupiri*

[7]https://www.waikatodistrict.govt.nz/your-council/plans-policies-and-bylaws/plans/blueprints/local-area-blueprints

## Other Technical Documents

In addition to the regional and local strategy documents, several supporting technical documents have been developed/updated that underpin the strcture plan and town centre plan assessment. The supporting technical documents include:

- Economics Assessment – Appendix 1
- Geotechnical Assessment – Appendix 2
- Ground Contamination Assessment – Appendix 3
- Landscapes Assessment – Appendix 4
- Tangata Whenua Statement and Engagement Report - Appendix 5
- Water and Waster Assessment – Appendix 6
- Parks and Facilities Assessment– Appendix 7
- Crime Prevention Through Environmental Design – Appendix 8
- Urban Design Assessment – Appendix 9
- Archaeological Assessment – Appendix 10
- Heritage Assessment – Appendix 11-11.2
- Heritage and Notable Trees Addendum Assessment– Appendix 12
- Transport Assessment – Appendix 13-13.2
- Stormwater Assessment – Appendix 14

# 2 Consultation / Engagement Summary

## 2.1 Tangata Whenua Engagement

To support the development of the town centre and structure plan, an independent cultural values assessment (CVA) was undertaken by Te Huia Natural Resources Ltd. This involved engagement and koorero with Tuurangawaewae, Ngaati Tamainupoo, Taupiri Marae and Waikato-Tainui. Through the various hui held the outcomes and stories were identified and highlighted within the Tangata Whenua Statement and Engagement Report.

Complementary to this, Waikato District Council undertook engagement and consultation through a number of forums as part of the wider structure plan and town centre plan including surveys, focus group sessions, open days, workshops, and attendance at public events such as Tainui Games and Tuurangawaewae Regatta.

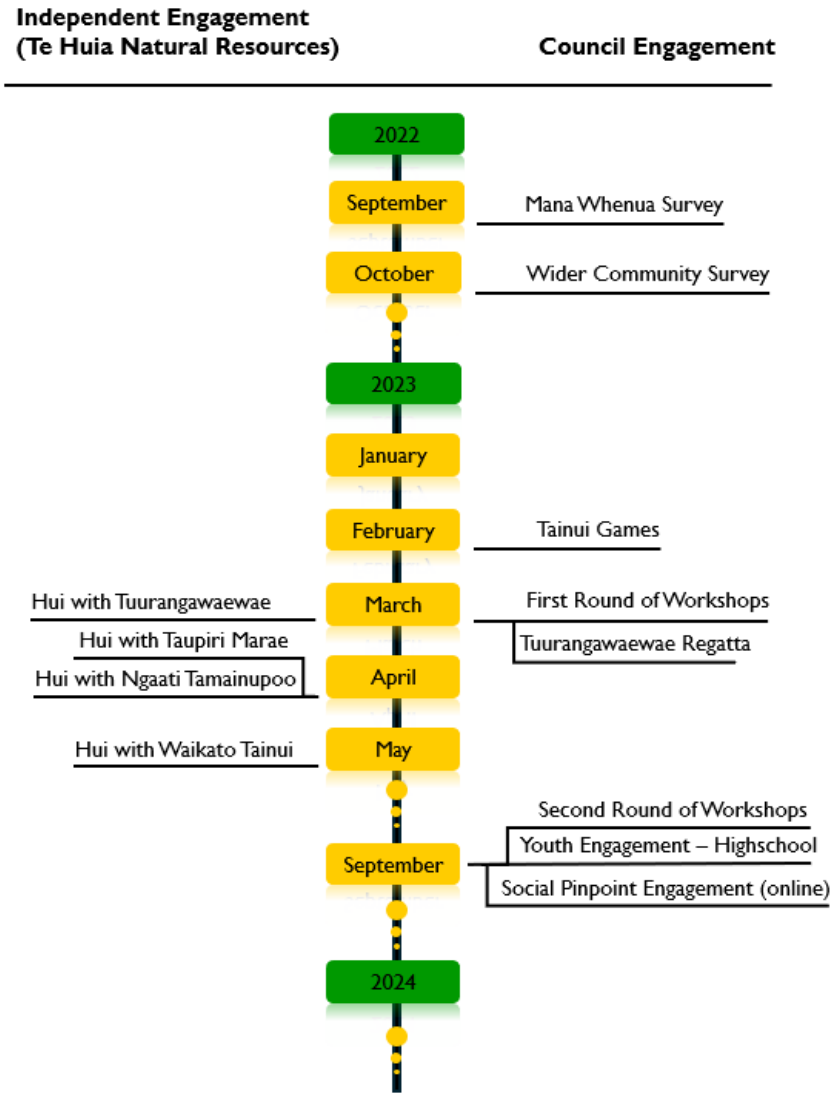
## 2.2 Community Engagement

Formal engagement with the community started in September/October 2022 with the release of the mana whenua and wider community surveys which helped provide background information into community identity and cultural aspirations.

Council attended the Tainui Games in February 2023 where the participation of many tamariki (children) offered a unique chance to seek their perspective on what they value within their community –ultimately their home.

The first round of community open days was held in March 2023 in Ngaaruawaahia, Hopuhopu, & Taupiri where the community took part in identifying opportunities and issues as well as offering thoughts and suggestions on ideas for the future of their community. The attendance at the Tuurangawaewae Regatta in March 2023 provided an unparalleled amount of input which would build on other engagements to help inform a projects list.

The second round of community open days were held September 2023 in Ngaaruawaahia & Taupiri where the community were given the opportunity rank draft proposed projects were of importance to them and those that they were least supportive of. This exercise was also able to be done via Social Pinpoint online platform to give those that could not attend an opportunity to contribute. A youth session was also held at the Ngaaruawaahia High School and follow up focus group sessions with hapuu representatives to confirm proposed projects.



# Ngaaruawaahia

# 3 Ngaaruawaahia

## 3.1 Site Context

Ngaaruawaahia is the largest of the three settlements (including Hopuhopu and Taupiri), located about 22 minutes' drive north of Hamilton at the confluence of the Waipaa and Waikato Rivers. Hopuhopu and Taupiri are located to the north of Ngaaruawaahia along Great South Road, with Horotiu located south of Ngaaruawaahia along Great South Road. The North Island Main Trunk (NIMT) railway line passes through Ngaaruawaahia.

The natural landscape surrounding Ngaaruawaahia is dominated by the Waikato and Waipaa rivers and the Hakarimata Range. These have significant cultural value to the local iwi, Waikato – Tainui, and Maaori generally.

Ngaaruawaahia has been an important Maaori settlement for centuries. In 1858 the first Maaori King, Pootatau Te Wherowhero, was crowned in Ngaaruawaahia, establishing his headquarters on a point between the confluence of the Waikato and Waipaa rivers. Ngaaruawaahia was occupied by troops after the battle of Rangiriri in November 1863 and was settled by Europeans in 1864. Ngaaruawaahia is home to the Maaori Kiingitanga and as a river-based settlement is one of the oldest settlements in the district.

The town currently comprises mostly residential with some commercial and limited-service industrial activities in the town's central area. Over the last few years, there has been a new interest in development in Ngaaruawaahia from a residential and business point of view. It does appear that the favourable location of the town is being re-discovered with a growing number of visitors using the Hakarimata Range for recreation and people exploring the 70km Te Awa cycle trail (Ngaaruawaahia to Horahora) and local history.

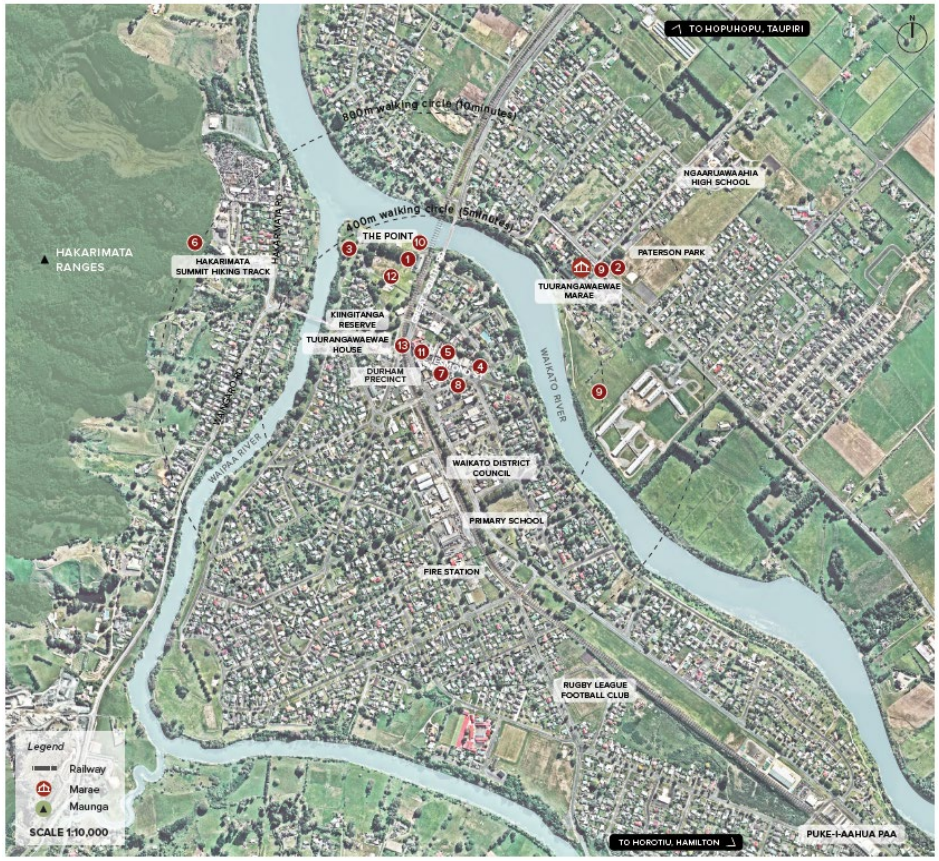
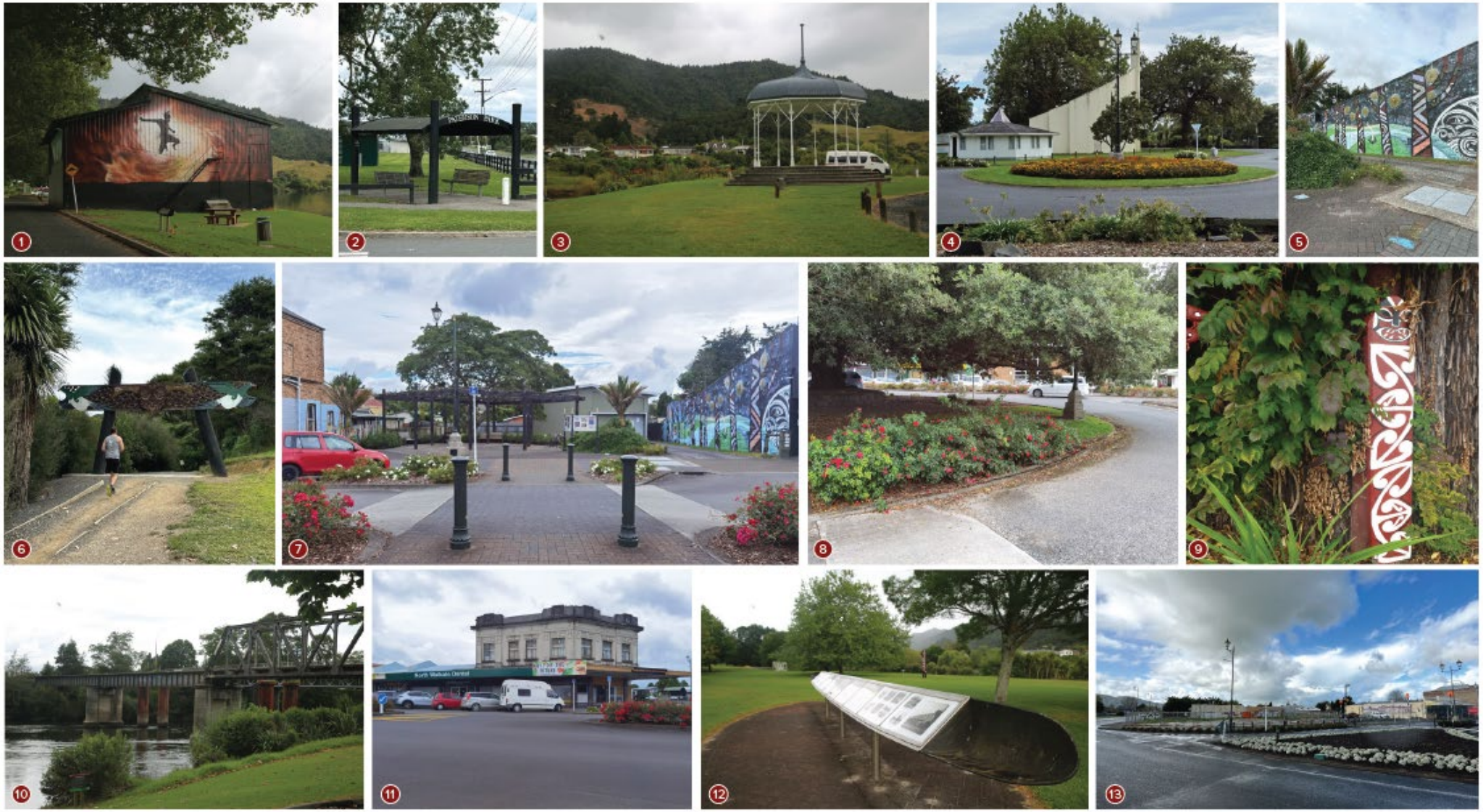



*Figure 3-1: Ngaaruawaahia Township*[8]

## Site photos



[9]

[9] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

### 3.1.1 Population Growth, Market Viability and Development Pressures[10]

**Growth**

Ngaaruawaahia' s current estimated population for 2024 is 8,200 (University of Waikato, 2021) and is projected to experience steady population growth over the next 26 years to around 9,000 by 2050.

| **Ngaruawahia** | 2018 | 2024 | 2034 | 2044 | 2054 |
|---|---|---|---|---|---|
| Population Projection | 7,389 | 8,241 | 8,627 | 8,822 | 9,071 |
| Households Projection | 2,100 | 2,524 | 2,736 | 2,857 | 2,960 |

(University of Waikato, 2021)

A range of growth scenarios have been illustrated in tables 3-1 & 3-2, which shows what Ngaaruawaahia's population and dwelling count could be based upon different scenarios. The medium term illustrates a possible future based upon a realistic uptake of the zoning within the proposed Waikato district plan – (decisions version), and does not account for appeals, with any successful appeal, this could eventuate to additional capacity. The long term is a scenario which illustrates a realistic uptake of all residential growth cells for Ngaaruawaahia within *Waikato 2070*.

*Table 3:1: Dwellings Capacity Scenario*

| **Dwellings** | | | |
|---|---|---|---|
| **Scenario** | **Current Dwellings** | **Reasonably Realised Capacity** | **Total Dwellings** |
| Medium Term (2022-2032) | 2,720 | 180 | 2,900 |
| Long Term (2022-2052) | 2,720 | 2,380 | 5,100 |

(Market Economics, 2023)

*Table 3:2: Population Growth Scenario*

| **Population** | | | |
|---|---|---|---|
| **Scenario** | **Current Population** | **Additional Population** | **Projected Future Population** |
| Medium Term (2022-2032) | 8,240 | 480 | 8,730 |
| Long Term (2022-2052) | 8,240 | 6,420 | 14,660 |

(Market Economics, 2023 & University of Waikato, 2021)

A possible future for Ngaaruawaahia is the implementation of Variation 3[11] – enabling housing supply. Variation 3 implements the medium density residential standards (MDRS) and provides for three houses up to three storeys high subject to meeting other rules in the proposed plan. Whilst MDRS provides for a wide range of housing typologies, reports prepared by Market Economics for Variation 3 indicate most development in the short to medium term will be one house on a section. The table 3-3 illustrate two different scenarios with different potential uptakes of MDRS where it is commercially feasible/infrastructure ready. A more realistic uptake of this commercially feasible capacity is around 5% to 10% which could generate capacity equivalent to 2,700 people over the long term.

[10] Tables contained within this section have been rounded to the nearest 10, some totals may not accurately sum due to the rounding.

[11] Waikato District Council – Proposed District Plan Variation 3 - Enabling Housing Supply

*Table 3:3: MDRS Scenario Projections*

| | Scenario (Excluding Urban Fringe) | | Scenario (Including Urban Fringe) | |
|---|---|---|---|---|
| **Uptake** | **Commercially Feasible Capacity** | **Population Equivalent[12]** | **Commercially Feasible Capacity** | **Population Equivalent** |
| 100% | 10,100 | 27,300 | 6,500 | 17,600 |
| 50% | 5,100 | 13,600 | 3,300 | 8,800 |
| 25% | 2,500 | 6,800 | 1,600 | 4,400 |
| 10% | 1,000 | 2,700 | 700 | 1,800 |
| 5% | 500 | 1400 | 300 | 900 |

(Market Economics, 2023)

For the discussion of growth, it is also important to understand the demand and overall picture of sufficiency within Ngaaruawaahia. Table 3-4 illustrates demand against reasonably realised capacity and shows that Ngaaruawaahia has a shortfall over the short and medium term but is in a surplus over the long term. It is important to note that this analysis does not include the additional capacity that will be enabled as part of; variation 3 – enabling housing supply, so it is likely that the capacity that is generated from that will contribute to the medium-term and long-term capacity only, given the timing of when variation 3 is likely to become operative.

*Table 3:4: Ngaaruawaahia Sufficiency Assessment*

| Timing | Demand + Margin | Reasonably Realised Capacity | Sufficiency |
|---|---|---|---|
| Short Term (2022-2025) | 300 | 20 | -280 |
| Medium Term (2022-2032) | 500 | 180 | -320 |
| Long Term (2022-2052) | 1,800 | 2,380 | 580 |

(Market Economics, 2023)

[12] These numbers are reached through a dwelling assumption of 2.7 persons per household.

## Commercial and Retail Development

The retail catchment for Ngaaruawaahia is expected to continue to grow at a steady pace over the next 30 years[13]. The retail catchments are areas that are connected to the townships and represent where the townships would derive most of its customers. It is estimated that the retail catchment currently has a population of 13,950 which represents a 32% growth rate above the 2013 population base. This is expected to grow to just over 20,000 by 2053, a 44% increase between 2023 and 2053 – this is considered robust growth.

Ngaaruawaahia will not require any net additional commercial/retail zoning as there is sufficient capacity (largely vacancies) to meet expected demand, any additional commercial/retail zoning puts the town centre at risk of being diluted, pulling business from the economic centre and shifting the focus. It has been noted that there is ample opportunity to capitalise on the vacancy rates within the Ngaaruawaahia Town Centre with the highest concentration of vacancy around Jesmond Street (Main Street).

With the release of the proposed Waikato District plan – (decisions version) the commercial/retail zones provisions have been revamped making it more permissive to develop, which opens more opportunities to see a variety of different shops in the future, this being highly sought after in our initial structure plan/town centre survey. The new business town centre zone allows also for residential development to occur on the above floors, enabling mixed used development which supports the needed density required for an active economic core.

From a town planning perspective, there is also opportunity to improve the economic viability of the town centre through:

- Improving the shopping experience through the built form and the public realm
- Focus of experience, creating a memorable experience for the customer

- Consolidate the town centre, improving walkability, vitality and focus activities in appropriate areas

The full Market Assessment can be found in Appendix 1

## Industrial

As shown in the *Future Proof 2023 Business Development Capacity Assessment*[14], Ngaaruawaahia (including Taupiri) has capacity to meet demand over all stated time periods. It has also been noted that there is opportunity to cater for external demand from Huntly, as Huntly is likely to face supply issues across all time periods. It is important to note that this would not affect the net growth but just the redistribution of it.

Noteworthy is Ngaaruawaahia's strategic location in relation to Horotiu – a five minute drive south – Ngaaruawaahia currently has approximately 16 ha of industrial land and Horotiu currently has approximately 179 ha of industrial zoned land. To cater for the future industrial demand an indicative additional 200 ha is identified in *Waikato 2070* for Horotiu. For this reason and its access to SH1, Horotiu is a strategic industrial node for the sub-region providing significant industrial zoning and employment opportunities to the surrounds which is recognised in the *Future Proof Future Development Strategy 2024-2054*.

*Table 3:5: Waikato District Industrial Space Sufficiency Summary – GFA sqm*

| **Waikato District Industrial Space Sufficiency Summary (GFA sqm)** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Demand** | | | **Total GFA Capacity** | | | **Sufficiency** | | |
| **Area** | **Short Term** | **Medium Term** | **Long Term** | **ODP** | **PDP** | **Waikato 2070** | **Short Term** | **Medium Term** | **Long Term** |
| **Ngaaruawaahia** | 3,158 | 11,184 | 35,522 | 115,114 | 194,165 | 801,464 | | | |

(Market Economics, 2024)

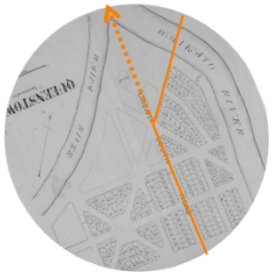
*Table 3:6: Waikato District Industrial Space Sufficiency Summary - ha*

| **Waikato District Industrial Space Sufficiency Summary (ha)** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Demand** | | | **Total GFA Capacity** | | | **Sufficiency** | | |
| **Area** | **Short Term** | **Medium Term** | **Long Term** | **ODP** | **PDP** | **Waikato 2070** | **Short Term** | **Medium Term** | **Long Term** |
| **Ngaaruawaahia** | 0.8 | 2.7 | 8.5 | 30.1 | 54.8 | 209.3 | | | |

(Market Economics, 2024)

[14] https://futureproof.org.nz/assets/FutureProof/Future-Proof-Business-HBA-2023_WR.pdf

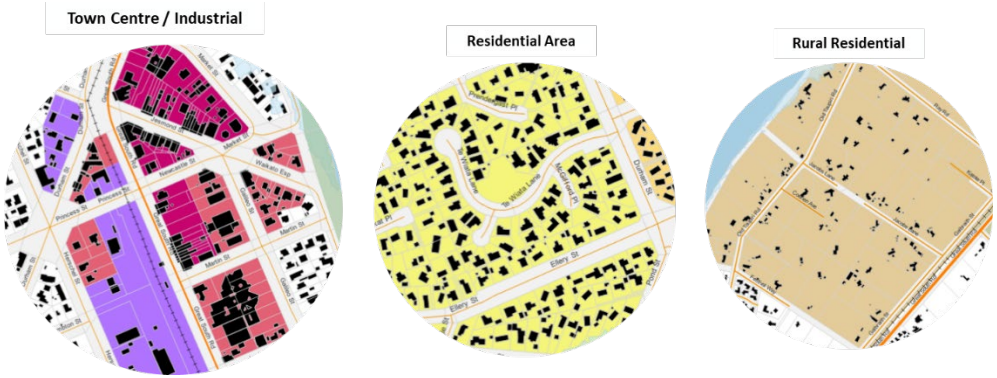
### 3.1.2 Urban Form and Site Features



During 1864 the town now known as Ngaaruawaahia was surveyed and laid out for the first time with what is currently known as Great South Road (formerly SH1) aligning directly to the junction of the two rivers (Waikato and Waipaa), and the inclusion of a street layout of a Union Jack pattern to the east of Great South Road.

Today, the main elements shaping the urban form of Ngaaruawaahia is still Great South Road, the North Island Main Trunk railway line (both running north/south through the town centre causing severance) the Hakarimata Ranges, and the confluence of the Waikato and Waipaa Rivers.

The grain of a town, represented by its building footprints, provides valuable insights into its urban layout and historic development patterns. In the case of Ngaaruawaahia, variation in the building sizes and shapes indicate different land uses within the town (large, uniform footprints suggest retail or industrial areas, as found within the Ngaaruawaahia Town Centre) while smaller, irregular footprints indicate the surrounding residential areas. Larger footprints with more space between them suggest lower density, for example the rural lifestyle zone to the north-east of town.




The Township of Ngaaruawaahia extends from the entry to the town from the south to the joining of the Waikato and Waipaa Rivers. Areas of urbanisation to the north-west over the Waipaa River and larger areas of residential development to the north-east of the Waikato River also forms part of what is considered the Ngaaruawaahia Township.

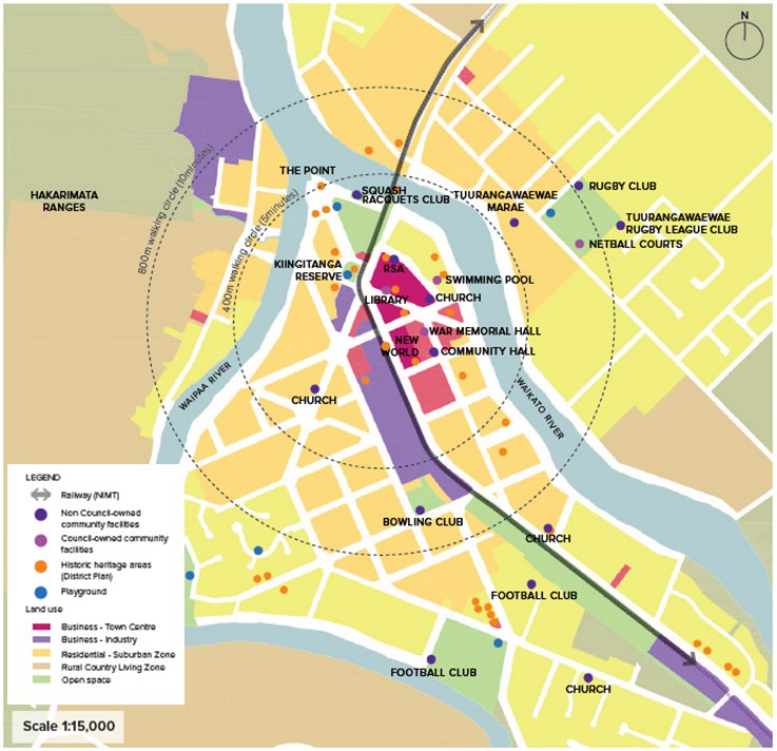



*Figure 3-2: Ngaaruawaahia Site Features*[15]

Commercial development is focused on the town centre, however there are areas of industrial and commercial land use to the west of the NIMT and to the south. Residential intensification is signalled within a walkable catchment of the town centre, which will increase the number of people with good access to the town centre.

The 800m walking circle shown on Figure 3-2 is the distance that can generally be covered by a 10 minute walk, meaning that a large area of the town is within a walkable distance of the town centre.

[15] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

### 3.1.2.1 Land Use / Zoning Changes

As part of the structure plan/town centre process consideration is given to the existing land use pattern to determine if it is still fit for purpose. Within the context of Ngaaruawaahia, there will be minimal recommended changes due to the recent proposed district plan decisions with many of the land use changes being addressed already. The recommended changes shown below are generally small in nature, with the largest to the north of Ngaaruawaahia (Galbraith).

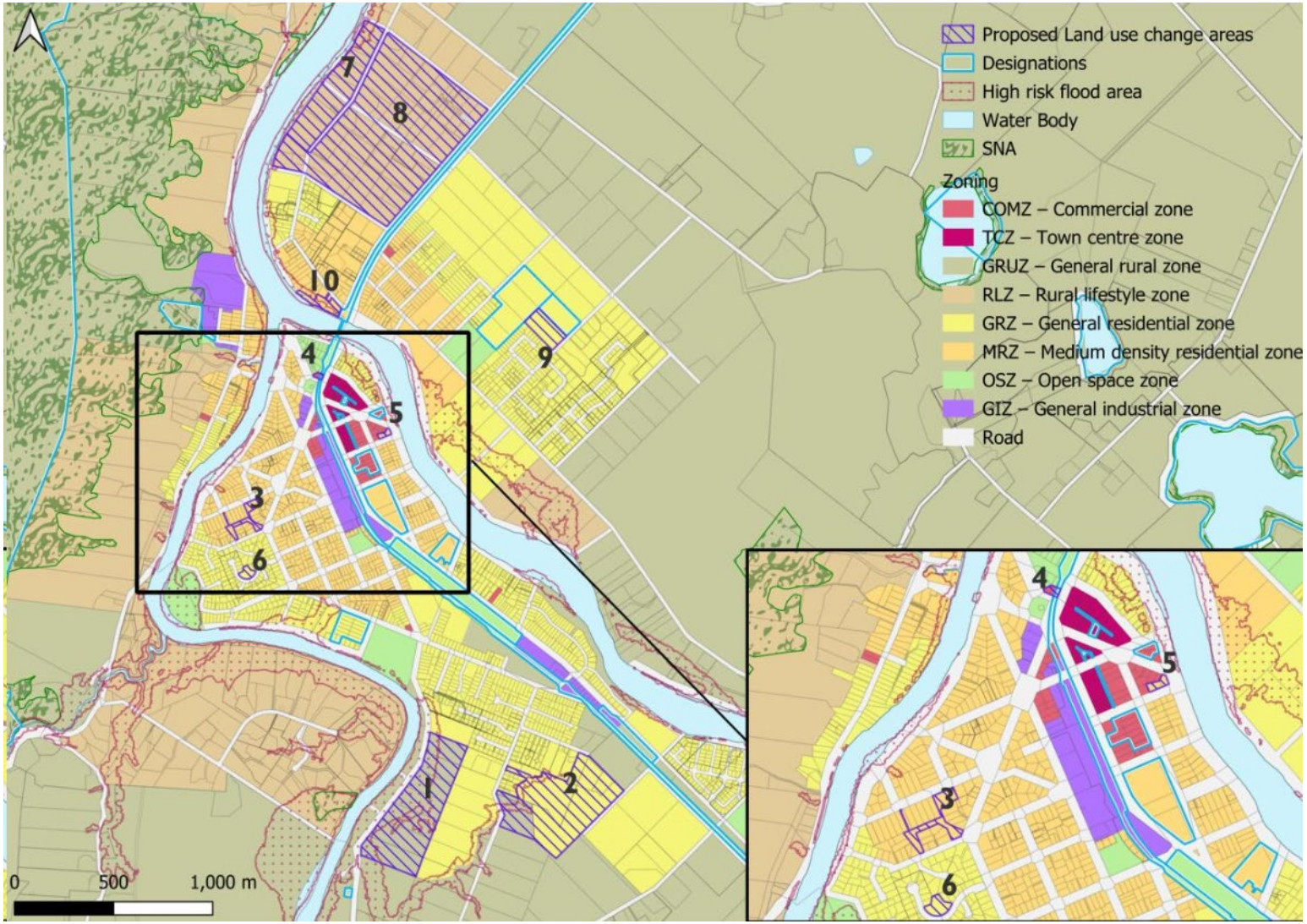
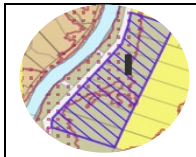
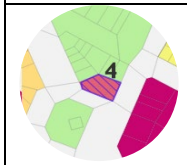
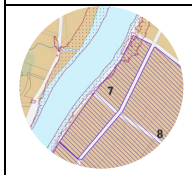
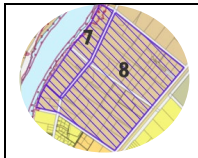
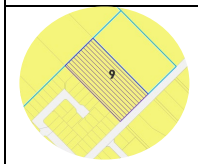
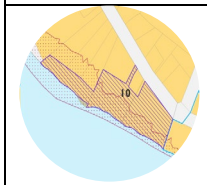



*Figure 3-3: Ngaaruawaahia – Land Use before recommended changes*

**Proposed Land Use Changes**

| | Area | Zone Change | Timing | Notation |
|---|---|---|---|---|
|  | 1 | General Rural Zone › General Residential Zone. | Short Term | The extent of this proposed change relates to properties 99a, 127, 129, 159, 161 Ngaaruawaahia Road, and 18 Rangimarie Road. The extent of the change is to align with the surrounding zoning and provide a more pragmatic land use pattern. |
| | 2 | ENV-2022-AKL-00030 (Appeal) to resolve land use. | N/a | Properties 29c Rangimarie Road, 30, 44, 46 Jackson Street, and parts of 86 Saulbrey Road are under appeal, the determination of the land use will be left to the appeals process. |
| | 3 | Medium Density Residential Zone › Open Space Zone. | Short Term | The extent of this change relates to property numbers 1010313 & 1010469. The area is currently used as Open Space Zone, the proposed zone change is to align with its current use. |
|  | 4 | Commercial Zone › Open Space Zone. | Long Term | The extent of this proposed change relates to properties 1 Waingaro Road. The extent of this proposed change is to align with the surrounding zoning and provide better adjacent land use compatibility as well as further opportunity to expand the Open Space Zone at the Point. |
| | 5 | Medium Density Residential Zone › Commercial Zone. | Long Term | The extent of this proposed change relates to 1 Martin Street & 17 Waikato Esplanade. The extent of this proposed change is to align with the surrounding zoning and provide better adjacent land use compatibility and a more pragmatic land use pattern. |
| | 6 | General Residential Zone › Open Space Zone.<br>. | Short Term | The extent of this proposed change relates to property number 2009211. The area is currently used as Open Space Zone, the proposed zone change is to align with its current use. |
|  | 7 | Rural Lifestyle Zone › General Residential Zone.<br>ENV-2022-AKL-000068 (Appeal) to resolve land use. | Short Term<br>N/a | Properties 101, 109, 111, 199, 123, 127, 145, 149, 161, 165 Old Taupiri Road are under appeal. The Structure Plan recommends that the General Residential Zone (subject to Variation 3 decision) is the preferred zone which aligns with *Waikato 2070* and planning principles for town expansion. |

| | | | | |
|---|---|---|---|---|
|  | **8** | Rural Lifestyle Zone › General Residential Zone. | Short Term | The extent of this change relates to properties 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, & 11 Katote Place, 63, 82a, 84, 91, 93, 94, 96a, 96b, 104, 106, 116a, 116b, 126, 138, 146, 152, & 164 Old Taupiri Road, 14, 24, & 26 Ray Road, 10, 15, 18, 21, 23, 24, 28, 29, 37, & 50 Jacobs Lanes, 43a, 45, 57, 63, 65, & 75 Galbraith Street. The extent of this proposed change is to align with the growth direction set out in *Waikato 2070*. |
|  | **9** | General Residential › Open Space Zone | Short Term | The extent of this proposed change relates to property 41 Duke Street. The area is currently used as Open Space Zone, the proposed zone change is to align with its current use. |
|  | **10** | Medium Density Residential Zone › Open Space Zone | Short Term | The extent of this proposed change relates to properties 1B, & 1C Old Taupiri Road, and property number 1009525. The area is currently used as Open Space Zone, the proposed zone change is to align with its current use. |

The figure on the overleave indicates the land use after the recommended changes.

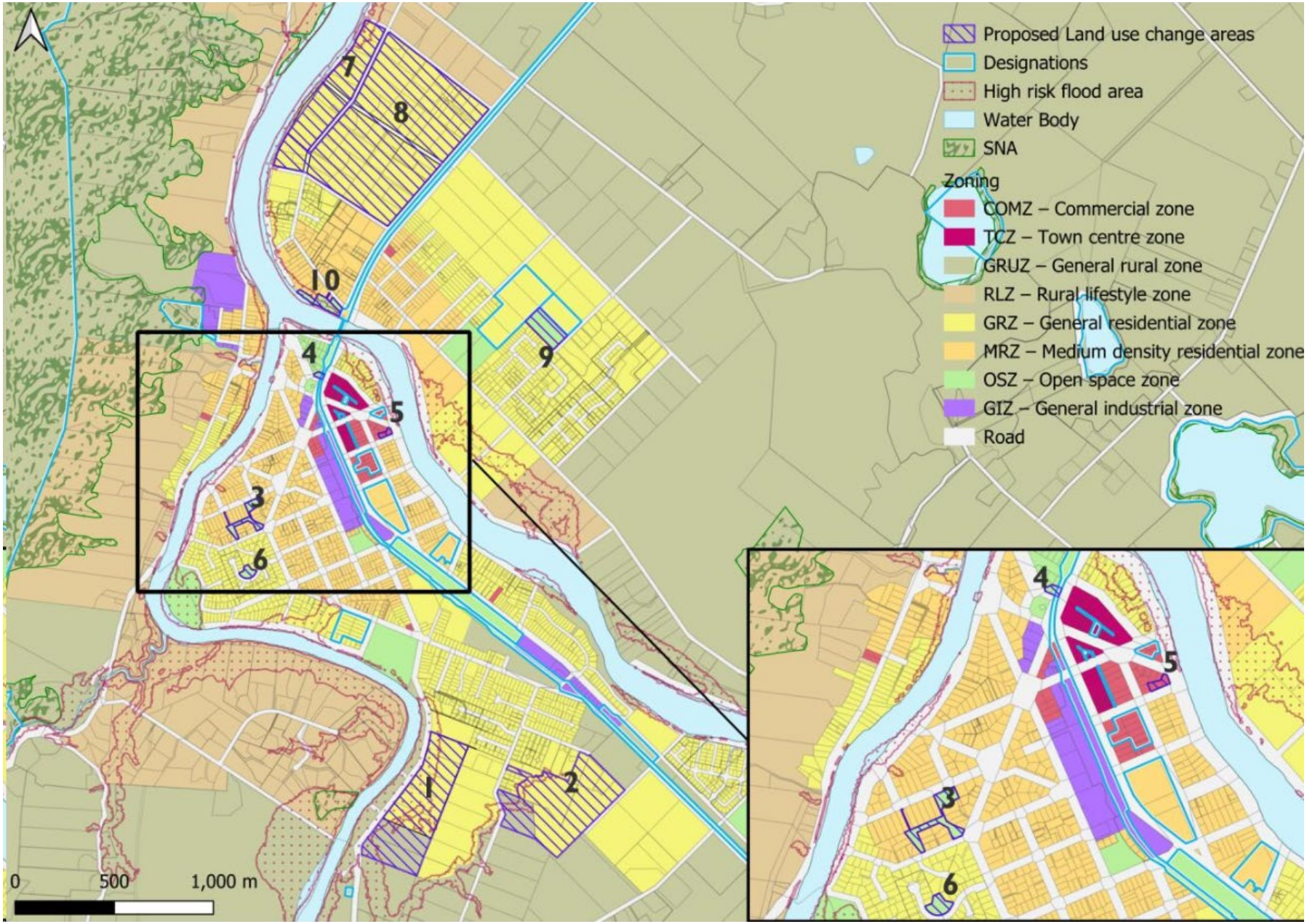



*Figure 3-4: Ngaaruawaahia – Land Use after recommended changes*

### 3.1.3 Infrastructure (Transport and Waters)

## Access and Connections (Transport)

Ngaaruawaahia is bisected by the major corridors of Great South Road (formerly SH1) and the North Island Main Trunk line (NIMT). These create a barrier for east-west access within the town and makes direct access for people walking or on bikes to the town centre difficult, with limited safe crossing locations.

The Te Awa River Ride is a popular scenic cycling and walking trail in New Zealand spanning 70km from Lake Karapiro and terminating at Ngaaruawaahia. The trail features various access points, rest areas, and amenities. The two bridges crossing the Waipaa and Waikato River have narrow footpaths and no provision for cycling to connect to the western and northern areas. There are limited cycle facilities throughout the local network.

Historically the Ngaaruawaahia railway station (1877) was at the junction of the North Island Main Trunk line with its Glen Massey branch, serving Ngaaruawaahia. It was a significant railway node and this continued into the late 20th century as an important part of the Main Trunk line. There was a large station and yards in the town until the late 1970's for goods and passengers. Currently there is no commuter railway stop/station in Ngaaruawaahia, although the Te Huia service is running on the NIMT, from Frankton, Hamilton stopping at Rotokauri, Hamilton, passing through Ngaaruawaahia, stopping at Raahui Pookeka Huntly before reaching Auckland City with multiple stops.

Through the community engagement held, it became apparent that the community aspire to have a train-based commuter stop re-established in Ngaaruawaahia. A possible site for a future transport node is being considered, which could accommodate bus rapid transit (BRT) and a possible rail siding where it would be close to the town centre maximising the stations accessibility through walking, cycling, and micromobility.

To support this, as well as increasing the general micromobility connection throughout the township the recommended active modes network (Figure 3-5) would look to establish new key route connections locally, and regionally partly through the extension of the Te Awa River Ride through to Taupiri. This would sit at the core of the network allowing new connections to branch from and to the core. To enable the Te Awa River Ride extension regionally, investigations into a new walking/cycling bridge are underway to allow for a safer pedestrian/cyclist experience across the Waikato River as opposed to the narrow footpath on the existing road bridge which inadequately caters for 2-way pedestrian/cycling traffic.

Complementary to this is the regional bus service running strictly along Great South Road (Figure 3-6, formerly SH1) connecting Ngaaruawaahia to Hamilton and other nearby towns, however currently there are no additional bus services serving the outer parts of Ngaaruawaahia. Future works are envisioned to engage with Waikato Regional Council to improve the existing public transport infrastructure as well as support new public transport infrastructure in step with new land use developments that arise in Ngaaruawaahia which would offer better bus services to the wider Ngaaruawaahia community.

**Intersection upgrades**

Two intersection upgrades have been proposed, the first at Great South Road/River Road (Figure 3-7), and the second at Great South Road/Old Taupiri Road (Figure 3-8) Given the close proximity of the two intersections, they have been both developed in unity, both intersections are proposed to be roundabouts which aims to contribute to a safer vehicle environment as well as provide better pedestrian/cyclist safety. The intersection treatment option at Great South Road/Old Taupiri Road will also be able to accommodate the eventual Te Awa River ride connection that will follow Old Taupiri Road through to Taupiri. These

treatments will also improve the gateway of Ngaaruawaahia, detailed assessments are provided in Appendices 13-13.1

*Figure 3-5: Micromobility connections*[16]

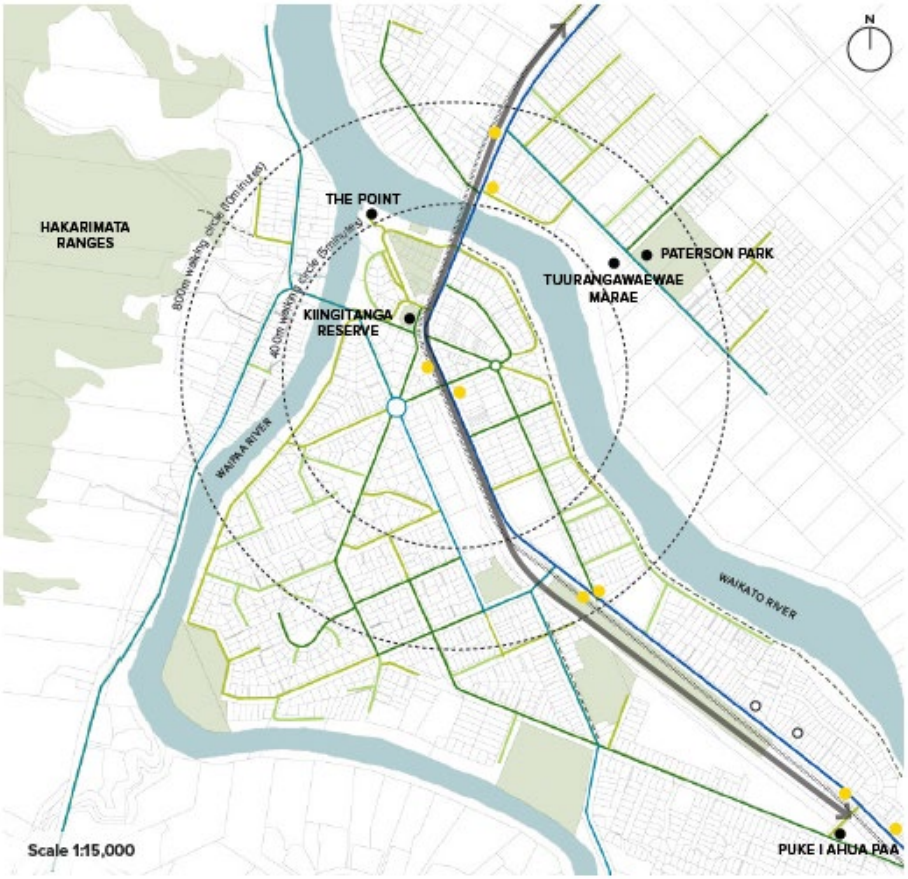



*Figure 3-6: Broader Connections*[17]

[16] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

[17] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

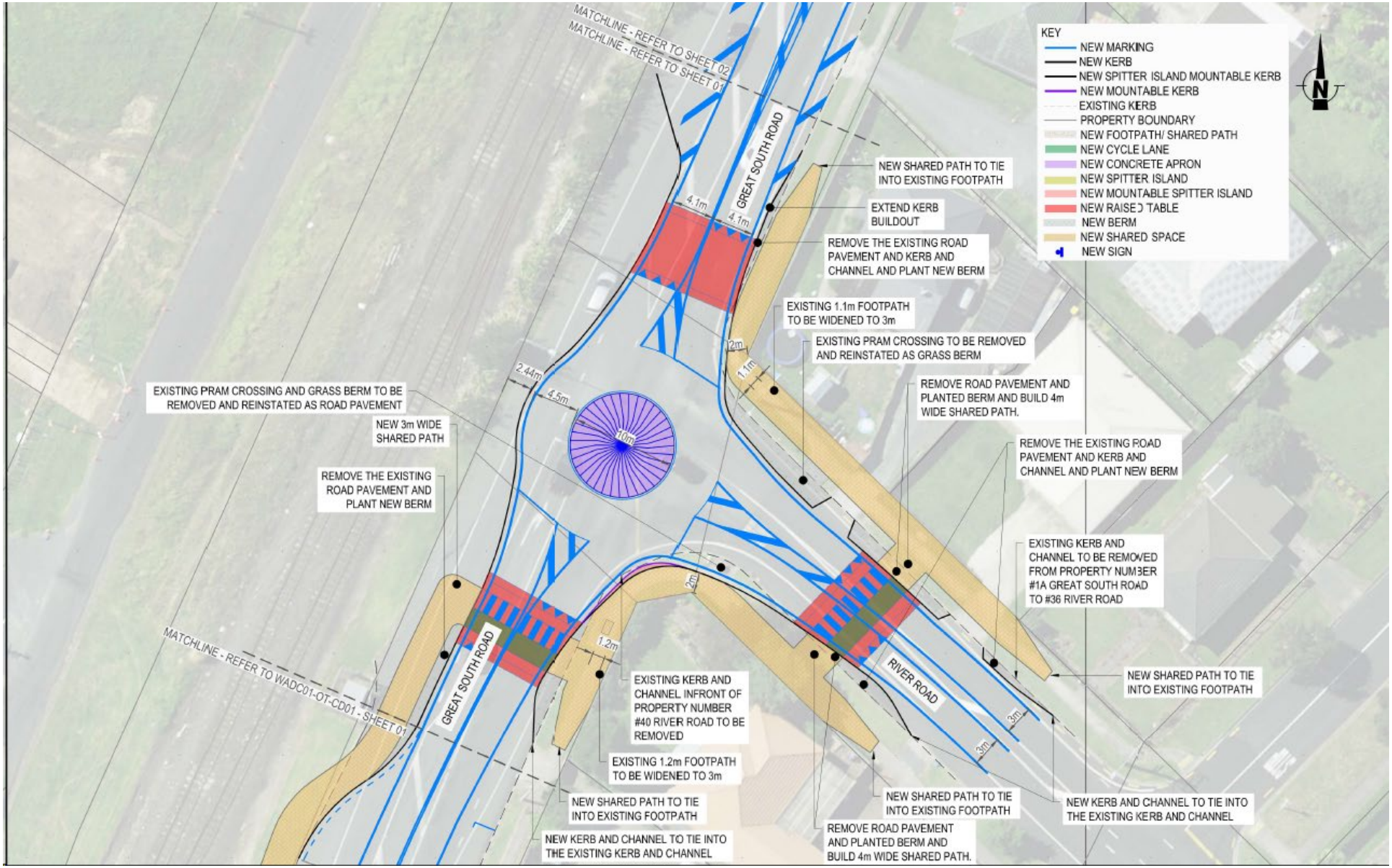
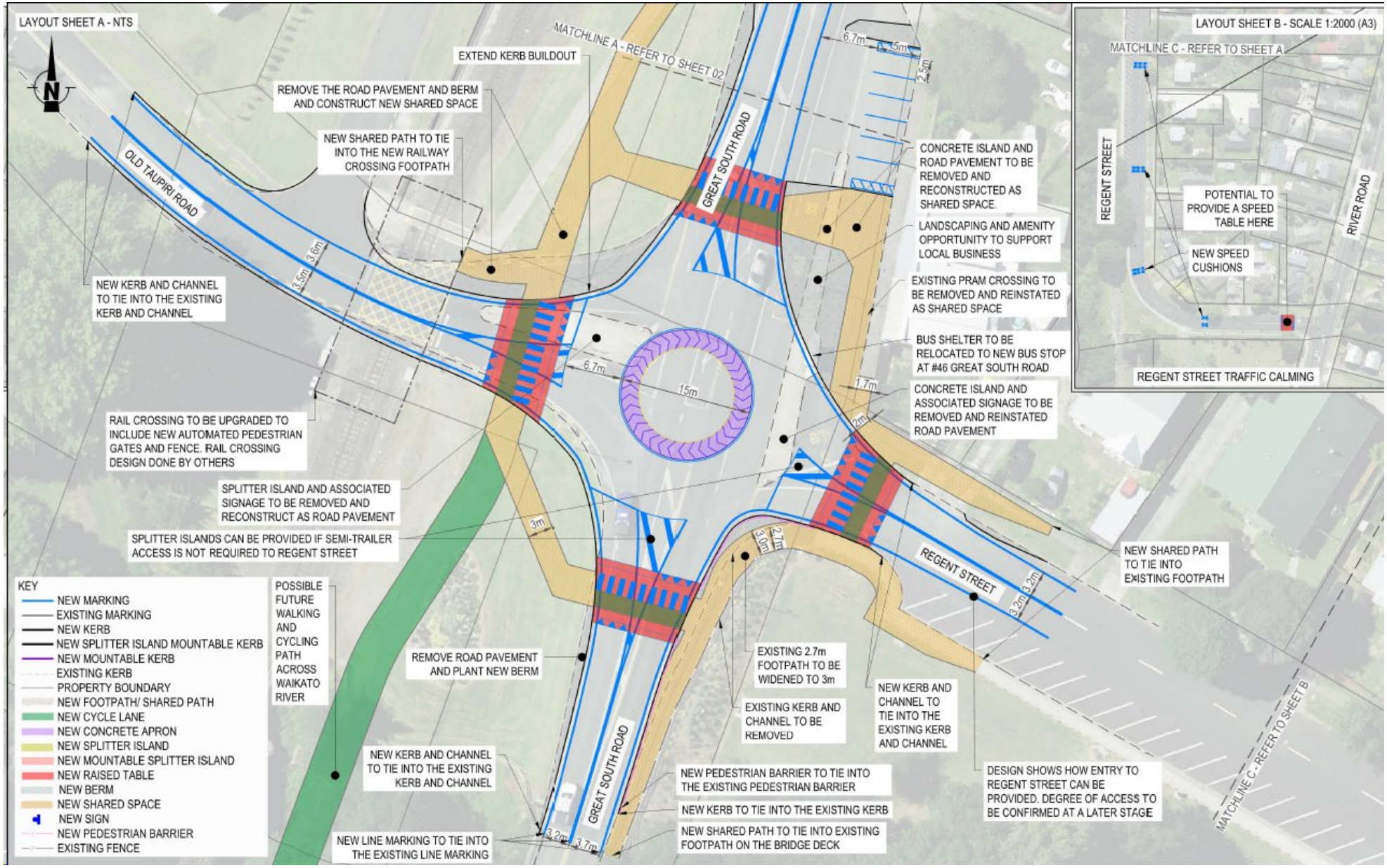



*Figure 3-7: Great South Road / River Road Proposed Intersection Upgrade*[18]

[18] Ngaaruawaahia, Hopuhopu & Taupiri Transport Assessment, 2024



[19]

*Figure 3-8: Great South Road / Old Taupiri Road Proposed Intersection Upgrades*

[19] Ngaaruawaahia, Hopuhopu & Taupiri Transport Assessment, 2024

## Potable Water, Wastewater, and Stormwater

### Potable Water

The Central District water supply scheme provides drinking water to the townships of Ngaaruawaahia, Horotiu, Hopuhopu and Taupiri. Raw water is extracted from the Waikato River and treated at the Ngaaruawaahia Water Treatment Plant (WTP). There is an interconnection to the Huntly WTP via a transmission main commissioned in 2019 that provides additional resilience to the water supply network.

In general, the hydraulic modelling assessment showed that the network performs well under existing and future demand. The results revealed some issues with the existing infrastructure in both current (2025) and future (2050) scenarios. These are summarised in Table 4-2 and contained within Appendix 6 of this report. Following the identification of the levels of service deficiencies, a number of upgrade options were evaluated to resolve the current deficiencies, and sized to provide resilience to the ultimate network scenario. A summary of the capital upgrade projects that were recommended to be implemented can be found in Table 4-3 contained within Appendix 6 of this report. Details of the network and proposed capital upgrade projects are shown in Appendix 6.

### Wastewater

The Ngaaruawaahia wastewater treatment plant (WWTP) currently receives its wastewater from Taupiri, Hopuhopu, Ngaaruawaahia and Horotiu. Flows from Taupiri and Hopuhopu are conveyed through a main pipe, shared by the following key pump stations:

- Taupiri South (Taupiri)
- Reserve (Hopuhopu)
- Ashwell Crescent (Hopuhopu)

Flows from Ngaaruawaahia are predominantly supplied from the following pump stations, also by means of a shared rising main:

- Waikato Esplanade
- Ngaere Street
- Regent Street

Details of the current configuration of the network discharging to the Ngaaruawaahia WWTP can be found in Appendix 6
The current performance indicators for the wastewater network as a whole are under preforming, remediation of the short falls can be found within section 4.2 of Appendix 6

**Stormwater**

It is well documented that changes from rural to urban catchments produces contaminants, increased runoff volumes and larger peak flows that can negatively impact the built environment, surrounding natural environments, waterways and wetlands. The *Ngaaruawaahia Structure Plan* presents an opportunity to determine the best practice catchment management solutions, mitigating flood hazard, increased peak flows, volume changes and contaminant loads (including hydrocarbons and heavy metals (zinc/copper) from existing farm practices and new residential development.

Figure 3-9 illustrates the flood extent of Ngaaruawaahia and Figure 3-10 illustrates the mitigation proposed for Ngaaruawaahia's future growth areas which will offset the effects of development on the receiving environment, encompassing peak flow management, conveyance, contaminant load management and the effects of increased volume discharge. Mitigation measures proposed include:

- Flood storage basins;
- Channels or open swales;
- Water treatment devices; and
- Waterway enhancement.

For further information relating to how future growth cells will be provisioned through stormwater refer to Appendix 14

For further information about the stormwater implications of Variation 3 refer to the modelling reports prepared by Te Miro and presented at the Variation 3 Hearings.[20]

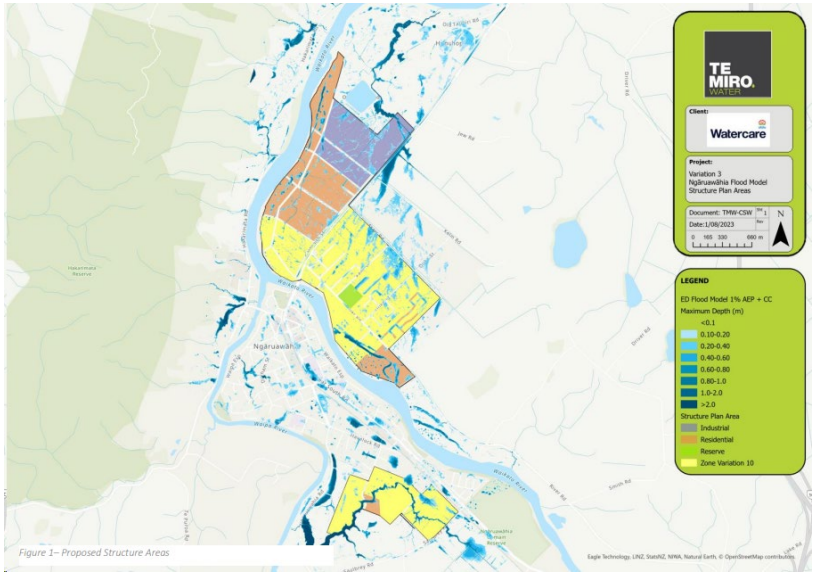



*Figure 3-9: Flood extent of Ngaaruawaahia.*

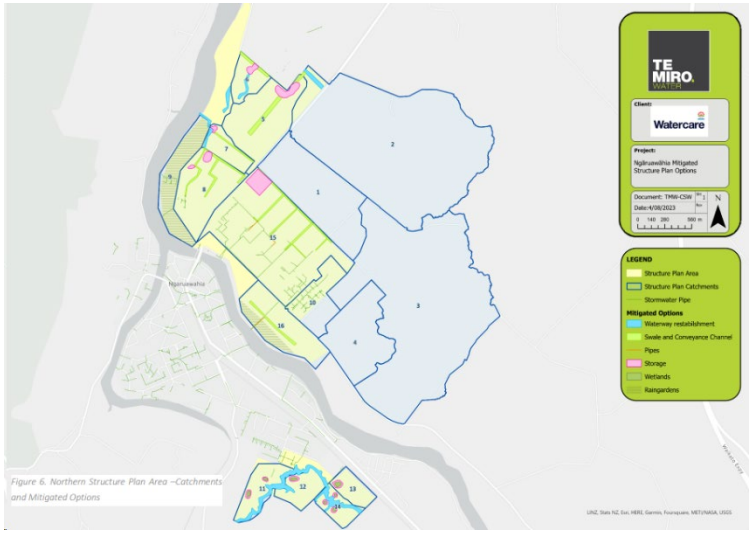



*Figure 3-10: Proposed Stormwater Mitigation for Ngaaruawaahia*

[20] https://www.waikatodistrict.govt.nz/your-council/plans-policies-and-bylaws/plans/waikato-district-plan/district-plan-review/variations/variation-3-enabling-housing-supply

### 3.1.4 Parks and Facilities

Green spaces and Community Facilities play an important role within the community, and it is essential that this is coupled with good planning practice to allow communities to meet their social, cultural, and environmental wellbeing needs. Green spaces and community facilities provide for a range of uses, extending from general amenity and wellness benefits right through to stormwater management solutions, all of which are important factors when considering what is a well-functioning urban environment.

Through the assessments done, it is important to note that Ngaaruawaahia faces park provision shortfalls with a large portion of Ngaaruawaahia communities falling outside of what is considered a walkable distance to at least one park. To help address this shortfall, approximately 14ha's has been identified for Ngaaruawaahia and have been strategically proposed in parts of the community to serve future growth cells as well as those not currently within what is considered a walkable distance.

| Possible Park Locations | Required green space in growth cell (ha) | Category |
|---|---|---|
| Starr Growth Cell | 3.8 | Neighbourhood Or Sports and recreation |
| Galbraith Growth Cell | 4.5 | Neighbourhood Or Sports and recreation |
| Saulbrey Growth Cell | 5.7 | Neighbourhood Or Sports and recreation |

Ngaaruawaahia is considered to have a higher-than-normal amount of community facilities when compared to other towns in the district, the concentration of facilities is located down the spine of the township which reflects the age and historic population densities. The condition of the facilities within the area is considered to be moderate, with further assessment work still needing to be conducted for a better picture.
To build on what facilities there are currently, opportunities to add include:

- Opportunity to consider the repurpose of the historic Plunket building at 31 Jesmond Street, Ngaaruawaahia into a shared community space.
- Opportunity to consider the veranda space at 18 Jesmond Street,
- Ngaaruawaahia as a community garden, urban play space, or weekend market.
- Opportunity to develop the recently purchased 60 Jesmond Street, Ngaaruawaahia into a multifunctional community hub.

The full assessment for Parks and Facilities can be found in Appendix 7

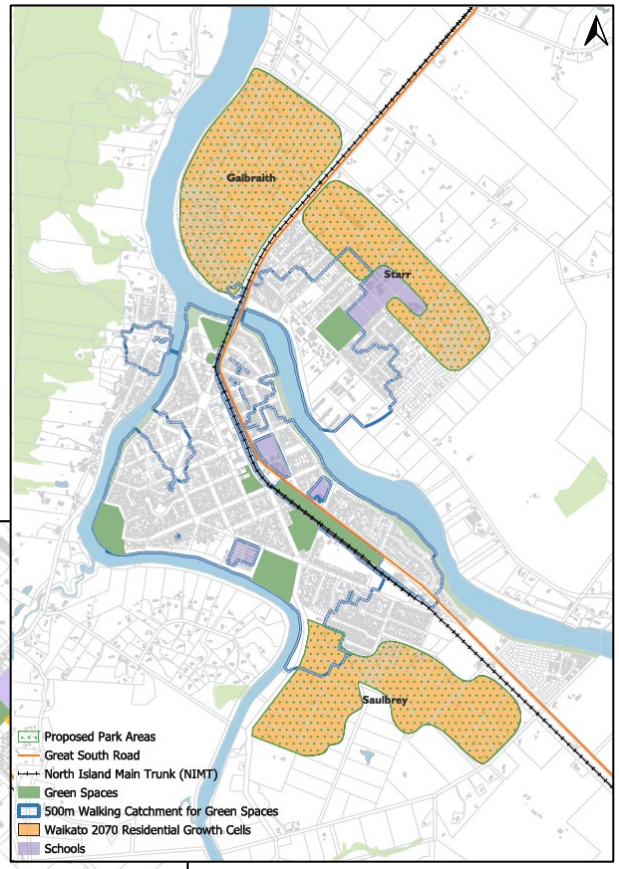



*Figure 3-11: Ngaaruawaahia Growth Cells requiring future parks*

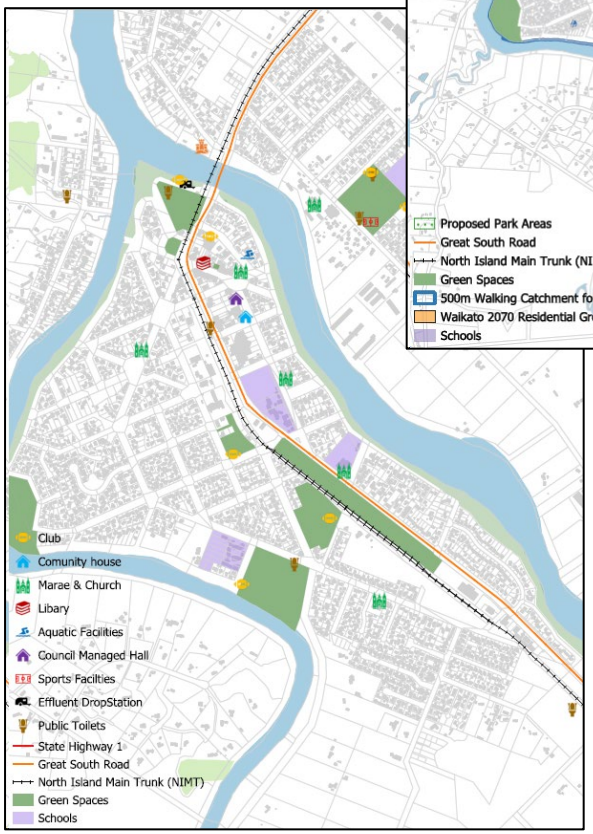



*Figure 3-12: Ngaaruawaahia Community Facilities*

### 3.1.5 Cultural and Archaeology

Ngaaruawaahia is a culturally significant and archaeologically rich settlement and plays large role as being the heart of Kiingitanga and is of special significance to Waikato–Tainui as well as Tuurangawaewae Marae, Ngaati Tamainupoo, and Taupiri Marae. For Tuurangawaewae this visionary saying was pronounced by Kiingi Taawhiao, for him Ngaaruawaahia was his Tuurangawaewae and his place to stand. Kiingi Taawhiao long regarded Ngaaruawaahia as special and held the view that it would one day become an important base for Waikato tribes and the Kiingitanga. For Ngaati Tamainupoo the story begins with the eponymous ancestor, Tamainupoo, son of Kookako, who married Maahanga's daughter, Tuukotuku. The Waikato River has nourished, healed and sustained Ngaati Tamainupoo, living along its banks for generations. This includes our ancestors who lived at Pukeiaahua Paa and other Ngaati Tamainupoo settlements, through to present-day descendants residing in towns and cities.

At the centre of the tangata whenua and Statement and Engagement report are the principals of Te Tiriti o Waitangi, meaningful and genuine engagement as well as Tangata Whenua. These have been woven throughout hui to understand the cultural, economic, social, and environmental outcomes sought by Tangata Whenua. The cultural stories of these unique places have been given genuine attention and have been spoken from nga waha (the mouths) to be shared with the wider community to help further the understanding of the cultural significance of Ngaaruawaahia, & Taupiri. A common theme discovered is the unity, Ngaaruawaahia, Hopuhopu, & Taupiri are not distinguished from one another, but connected intrinsically through the awa.

> "*The Waikato River is our tupuna (ancestor) which has mana (spiritual authority and power) and in turn represents the mana and mauri (life force) of Waikato-Tainui. The Waikato River is a single indivisible being that flows from Te Taheke Hukahuka to Te Puuaha o Waikato (the mouth) and includes its waters, banks and beds (and all minerals under them) and its streams, waterways, tributaries, lakes, aquatic fisheries, vegetation, flood plains, wetlands, islands, springs, water column, airspace and substratum as well as its metaphysical being…"*

To balance the metaphysical components of the report is an outcome sought by tangata whenua, which in turn help realise their, but not limited to cultural well-being. These range from urban design and micromobility initiatives through to green spaces and economic opportunities, the outcomes have been as best aligned with the proposed potential projects as outlined in section 3.2, 4.2, 5.2, & 6.2 of this report to ensure that the visions of tangata whenua can come to life.

Through discussion is the recommended addition of new sites and areas of significant to Maaori (SASM) which will offer additional protection over areas and significant sites that are important to Maaori. These are:

- Taupiri Maunga
- Te Mata o Tuutonga
- Te Hihi
- Tuurangawaewae Marae
- Tuurangawaewae House
- Te Paemaunga o Hakarimata

The full *Tangata Whenua Statement and Engagement report* and Archaeology Assessments can be found in Appendix 5 & 10 respectively.

Archaeology forms part of the understanding Ngaaruawaahia's unique histories. The intent of the archaeology report was to identify archaeological sites in the parts of Waikato District covered by the *Ngaaruawaahia and Enviros Structure Plan 2017*. Archaeological sites include locations of significance for both Maaori and European. These sites provide insight into the different eras in the history of the Waikato. Sites and their histories are not isolated, but form an archaeological picture that can safeguard special places and may also provide information about human behaviour in past. Maaori maara (garden sites) are prevalent along both sides of the awa (river) throughout the district. Areas of note include sites associated with paa, villages, gathering sites, eel traps in streams, bird capture areas, and other sites used by garden makers. Pre-1900 European sites include industry, buildings and farms (composed of house, farm buildings, fields, stock holding pens, roads). Understanding of intangible and tangible layers of both

Maaori and European sites provides a continuum of cultural understanding and practices.

### 3.1.6 Heritage and Notable Trees

Heritage and notable trees contribute to the unique stories of Ngaaruawaahia and can be memorials and landmarks to daily lives for generations. Historic heritage plays an important role in contributing to understanding of the urban environment; an integral part of communities' connecting to their place. Historic heritage is part of understanding our environment, the past, present and future it represents.

Waikato District's historic heritage is distinctive and forms an integral part of each community. Ngaaruawaahia and its neighbouring settlements have a rich and difficult histories that encompass communities, Maaori and pioneering settlements, as well as the physical and cultural impacts and conflict of the Waikato Land War. Ngaaruawaahia had been deemed early on to be one of the 'urban' areas and at a stage was formally known as Queenstown, in conjunction with the ample surrounding resources provided by the Waipaa and Waikato River and Hakarimata Ranges, it was believed that Queenstown (Ngaaruawaahia) would become the capital of Waikato and was for a short time. However, this was not fulfilled and handed over to Kirikiriroa (Hamilton) which became the principal town. To this day there are a variety of unique heritage items which create visual connections to the past that is particular to this landscape and its peoples.
As part of a statutory process, an updated historic heritage schedule based upon the work done through the proposed district plan – Decision Version has been recommended to replace the proposed schedule within the current Heritage Report, allowing for a more recent picture of protected built heritage items.

Notable trees are part of the historic heritage of a place and are generally integral to the wider understanding of both place and the wider landscape. As part of the protection of historic heritage Notable Trees provide links to the past, events and people and mark places of significance. Notable trees may range from trees of national significant to of local importance and include species from Europe and Native to New Zealand, such as the london plane, and rimu respectively. They contribute to the histories and stories of Ngaaruawaahia, and it is important to recognise these living markers when moving through time.
The Notable trees schedule attached to this report is recommended to replace the schedule contained within the proposed Waikato District plan, there have been minor changes to a description to improve accuracy.

The full *Heritage Assessment* can be found in appendix 11-11.2

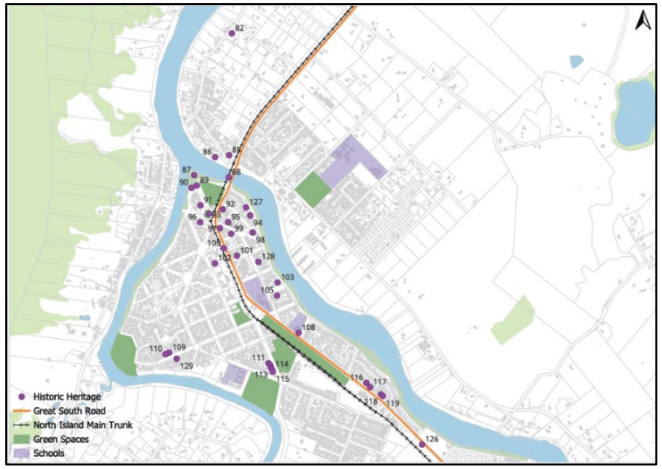



*Figure 3-13: Heritage Items*

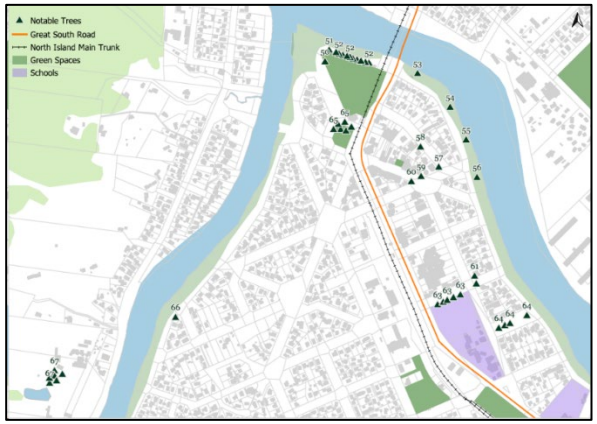



*Figure 3-14: Notable Trees*

### 3.1.7 Ground Contamination and Geotechnical

Ground contamination is important to assess when considering where and what to develop – left unidentified contamination could have potentially damaging and irreversible effects on humans and the environment.

Within the preliminary ground contamination assessment, it is noted that the majority of the study area is likely to be unaffected by Hazardous activities and industries list (HAIL) activities, only 15% of the study area being potentially affected. Where there is greenfield affected by HAIL sites, it has shown as being low to medium risk to humans. The bulk of contamination relates to horticultural activities which have left behind traces of arsenic, lead, copper, mercury, and a wide range of organic compounds including acidic herbicides, organophosphates, and organochlorines (for example, endosulfan on golf and bowling greens). The concentration is considered to be low – only affecting surface soils located around current or historic shed sites.

To meet the requirements of the National environmental standard for assessing and managing contaminants in soil to protect human health (NES) regulations, and the Waikato District Council and Waikato Regional Council rules, additional assessment and reporting on a site-specific basis will be required for any HAIL sites identified in this assessment.

Geotechnical data provides other development suitability indicators because it illustrates the stability and strength of the ground, slope stability, soil deposits, and natural hazards.

The study area in general consists of hill country, rolling hills of the lowlands, alluvial soils of the lowlands, and valley floor soils. The edges of the rivers in Ngaaruawaahia are more exposed to the risks of soil liquefaction and slope instability. The Geotechnical assessment identified risks at a high-level, noting that the entirety of the land that falls within a given classification may not be fully subject to the Geotechnical risk in question. The intent of the plan is to provide guidance on the general suitability of the land and to act as the starting point for engineering assessment that should accompany development proposals.

The full ground contamination and geotechnical assessments can be found in Appendix 3 & 2 respectively.

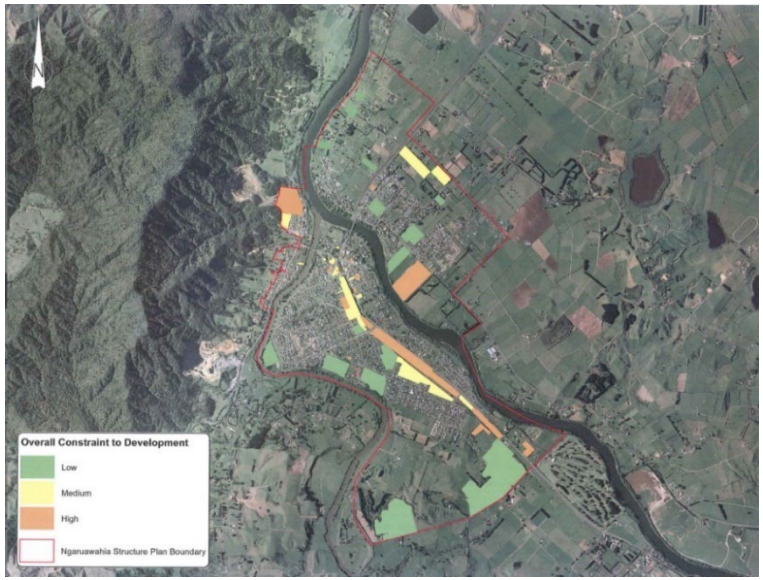



*Figure 3-15: Ground Contamination*

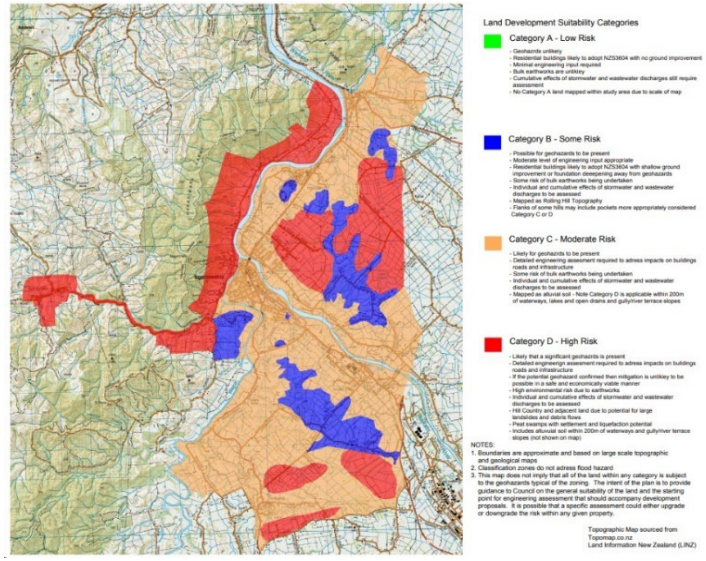



*Figure 3-16: Geotechnical*

### 3.1.8 Natural Environment and Landscapes

Understanding the visual amenities and natural environment of a landscape is integral in both locating development in appropriate spaces, but also maintaining and enhancing visual amenities which benefit the overall well-being of the communities.

The Landscapes assessment conducted looks at identifying outstanding natural features and landscapes by capturing and analysing the landscape character, associated amenity values and landscape constraints. During the development of this assessment, the growth aspirations of Ngaaruawaahia were captured to help determine the level of development suitability.

The majority of the study area is characterised by the underlying Waikato plains/lowlands, which are bounded by the Hakarimata Range and Te Puroa hill country to the west and Taupiri Range to the north. The Waipaa River bounds the urban environment to the west, while the Waikato River contains the majority of development to the east. Most of the lowland geological features were derived from the deposition of pyroclastic material following the Taupo volcano eruption approximately 22,000 years ago and the various routes adopted by the Waikato River over that time. Subtle changes in elevation and undulations in landform are clearly evident due to the pastoral land cover. Overall, this has led to the unique combination of scenery and visual amenities within Ngaaruawaahia. A heat map is provided, illustrating where the most suitable areas are to develop from an amenities and visual perspective.

All major land use changes within Ngaaruawaahia sit within the most suitable category, namely the Galbraith growth cell to the north of Ngaaruawaahia.

The full landscapes assessments can be found in Appendix 4

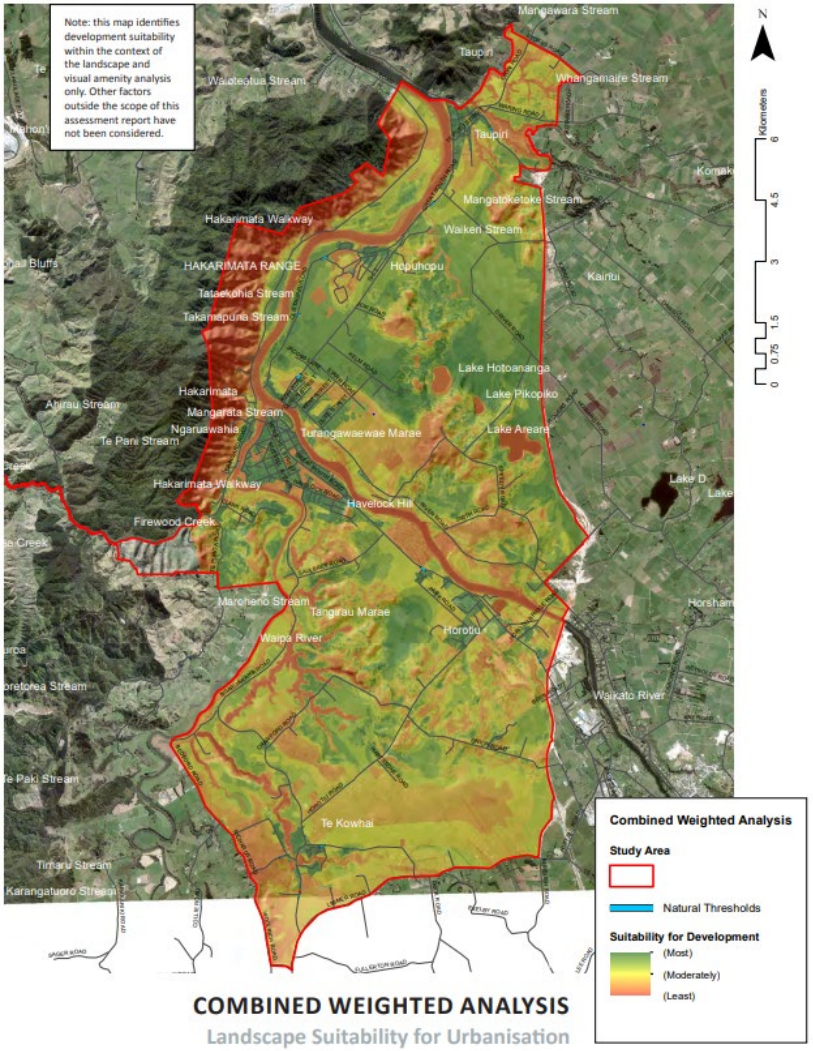



*Figure 3-17: Natural Environment and Landscape*

## 3.2 Insights and Opportunities

Opportunities have been identified for Ngaaruawaahia through a multi-stageapproach. They are a combination of:

- The contextual analysis.
- A spatial analysis undertaken through a desktop assessment.
- A site visit in combination with council staff, elected members and community board representatives.
- Input received from technical reports.
- Inputs received by council through community surveys and feedback.

Feedback was received from the community via online engagement and community open day events held in Ngaaruawaahia, Hopuhopu and Taupiri. These sought to understand the issues experienced by the community, and opportunities seen by those that live, work and play in the three settlements to improve the liveability of these places.

The opportunities for investment have been grouped under the headings of the design principles, noting that some opportunities will align with multiple design principles.

The opportunities were grouped into themes relating to:

| | |
|---|---|
| Connected Communities | Opportunities relating to transport and accessing the places people want to get to, such as the town centre and key destinations like Tuurangawaewae Marae. |
| Identity | Opportunities related to telling the history, and highlighting the identity, of Ngaaruawaahia, Hopuhopu and Taupiri. |
| Natural Environments | Opportunities related to improving access to, and the quality of, the natural environment. |
| Growth and Economy | Opportunities related to enhancing commercial activity and supporting future growth. |

The following pages provide a summary of the opportunities identified through this process. Some of the opportunities sit outside of the remit of Waikato District Council, however, were recorded to fully understand the issues and opportunities seen by the community. These opportunities have been assessed and considered by council as part of this process and have informed the key moves and outcomes. Not all opportunities have been progressed.

## Ngaaruawaahia - Wider Town Opportunities

**Connected Communities**
Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.

1. Extend the Te Awa River Ride cycle route from Ngaaruawaahia via Hopuhopu, with links to Taupiri Maunga summit track and urupaa. There is a desire to promote Ngaaruawaahia as a destination (part of a cultural and heritage tourism route) incorporating the Hakarimata Ranges, Waipaa and Waikato Rivers.
2. Connect the town centre with the Waikato River and Te Awa River Ride cycle route.
3. Identify a site along Great South Road for a Te Huia stop (Hamilton to Auckland Rail service).
4. Provide safer east west active mode connections across Great South Road and NIMT.
5. Improve active mode connections across the Great South Road bridge to connect to the wider community.
6. Establish walking and cycling path along Old Taupiri Road.
7. Improve walking and cycling along Waingaro Road bridge.
8. Provide traffic calming initiatives along Hakarimata Road to reduce speeding issues.
9. Provide a pedestrian access point to Waipaa River from Hakarimata Road.
10. Establish signage to the Hakarimata Ranges.
11. Opportunity to reroute freight movement.
12. Strengthen connections between the Waipaa Esplanade Walkway to The Point.

**Identity**
Strengthen the existing identity and character of the place.

1. Celebrate areas of cultural significant such as the Kilngitanga Reserve, the Point, Hakarimata Ranges, Tuurangawaewae Marae and House through wayfinding, artwork and storytelling.
2. The Waikato River is well-used for the annual Waka Ama event held in March. Opportunities for riverside recreation, access, river edge improvements and viewing areas toward Marae.
3. Opportunity to highlight the riverside heritage features of the flour mill.
4. Opportunity for additional amenities such as a seating and picnic tables at Te Mana o Te Rangi Reserve.
5. Opportunity for additional seating, upgrade of toilets and playground at Paterson Park
6. Emphasise entry to Tuurangawaewae House.
7. Establish township gateways as a way of physical markers to signify the town's entrance and exit points.

Other opportunities
- Identify locations for youth facilities such as a basketball courts.

**Natural Environment**
Connect communities to blue-green networks and provide recreational activities and opportunities.

1. Provide community amenities to the riverside such as viewing platforms, shelters and community gathering spaces.
2. Native re-vegetation of riverside to improve water quality, biodiversity and pest control.
3. Identify locations for community gardens and community nurseries.
4. Rehabilitate old quarry back to native bush with the potential for recreation uses.
5. Provide secure bike parking at Hakarimata Reserve.
6. Provide additional community amenities to utilise this open space.

Other opportunities
- Identify opportunities for additional open spaces for the northern community.

**Growth and Economy**
Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.

[21]

[21] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

## 3.3 Key Moves

The opportunities identified during the first round of consultation were shared with the community across two open days and through online engagement, where feedback and support were gathered. The opportunities were also assessed against the agreed outcome principles for the project, providing a basis for assessment.

The feedback relating to the opportunities identified were considered together to confirm the key moves and outcomes for Ngaaruawaahia and how these are to be prioritised over the short, medium and long term. It was recognised that some of the projects are highly complex, will have associated high costs, and will need further detailed investigation before they are able to be confirmed in the long-term plan for delivery.

The key moves and outcomes have been identified on the following maps. The anticipated prioritisation of these is addressed in the implementation section of this document. The key moves and outcomes have also been grouped into the design principles of:

- Connected Communities
- Identity
- Natural Environment
- Growth and Economy

Walking and cycling activities have been identified separately as inputs from the transport workstream.

[22]

## Ngaaruawaahia - Wider Town

### Natural Environment

**Recreational opportunities**

1. Undertake open space and playground assessment and investigate potential locations for parks to serve wider Ngaaruawaahia. Consider multi functional uses such as wetland, playground and community gardens.
2. Complete masterplan for The Point.

**Ecological opportunities**

3. Improve resilience to localised flooding through a possible suite:
   - Increased permeable surfaces and attenuation planting.
   - Riverbank planting.
   - River edge terracing to protect recreation areas next to the river.
   - Greening of current paved spaces (swales).
   - Wetlands (to be confirmed through investigation).
   - Water sensitive urban design (to be confirmed through investigation).
4. Increase native tree cover and fruit trees in town.
5. Include additional street trees along Great South Road.

Other projects

- Improve native fauna habitat through education/interpretation and restoration of waterways (native fish, eels etc).
- Undertake a climate risk assessment.

### Growth and Economy

6. Key catalyst development sites:
   a. Corner of Great South Road and Jesmond Street. Community uses - Library, community hall, innovation hub, communal working hub.
   b. Investigate the use of the Chorus site at centre of Jesmond Street as a village green - Potential uses include urban community garden, urban play space and maintaining the weekend market.
   c. Redevelop Plunket building for future community use.

Playground

Urban play in Village Green

Mountain bike/pump track

Kids bike park

River access

Urban community garden

[22] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

# Artist Impressions of Key Moves

## Amenity upgrades to Paterson Park

[23]

[23] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

## 3.4 Implementation

Some of the methods and tools that will be used to implement the structure plan and town centre plan are summarised below.

**District Plan**
The district plan is the legislative rule book which sets out what development can and can't be done and where in the district. Structure plans and town centre plans will form the basis for amendments to the district plan via plan changes (to an operative district plan) and plan variations (to a proposed district plan) to enable the development set out in the plans.

**Long Term Plan**
The long-term plan (LTP) provides direction on the provision and funding of infrastructure and services within the Waikato district. Projects identified in this plan will need to be identified in the LTP for funding. Not all projects will initially make it into the LTP as the timing may fall outside of the first 10 years, or there may be budget constraints, but over time with each 3 yearly review more projects can be added as others are completed.

**Asset and Activity Management Plans**
The Waikato District Council prepares asset and activity management plans which set the various needs, levels of service and demands of assets (e.g. roading, wastewater, water supply, facilities, reserves and open spaces). These are an essential tool in planning and funding infrastructure and services.

**Partnerships**

Waikato District Council will implement the *Waikato 2070* in partnership with various organisations and groups to ensure the vision and future development expectations are achieved. The Waikato District Council will work alongside organisations and groups, such as:

- Waikato-Tainui
- Tangata Whenua/Mana Whenua
- Ministry of Education
- Ministry of Housing and Urban Development
- Ministry of Innovation, Business and Employment
- District Health Boards
- New Zealand Transport Agency
- Kiwi Rail
- Utility providers
- Tourism agencies
- Adjoining local authorities
- Waikato Regional Council
- Community boards, community committees, and community groups
- Local business associations
- Kainga Ora
- Police New Zealand / Fire and Emergency New Zealand
- Heritage New Zealand Pouhere Taonga

**Implementation Table**
The following table identifies the key moves, projects or outcomes that have been identified throughout this document. It considers the alignment with the outcome principles, the project complexity and likely timeframe required to implement the projects. The table provides a tool for future identification and prioritisation of investment across the three settlements across the short, medium and long term.

## Ngaaruawaahia

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **NATURAL ENVIRONMENT** | | | | | | |
| 2. Complete masterplan for The Point. | ✓ | | | ✓ | | |
| 3. Improve resilience to localised flooding through a possible suite: | | | | | | |
| - Increased permeable surfaces and attenuation planting. | ✓ | ✓ | ✓ | | | ✓ |
| - Riverbank planting. | ✓ | ✓ | ✓ | | | ✓ |
| - River edge terracing to protect recreation areas next to the river. | ✓ | ✓ | ✓ | | | ✓ |
| - Greening of current paved spaces (swales). | ✓ | ✓ | ✓ | | | ✓ |
| - Wetlands (tbc). | ✓ | ✓ | ✓ | | | ✓ |
| - Water sensitive urban design (tbc). | ✓ | ✓ | ✓ | | | ✓ |
| **CONNECTED COMMUNITIES** | | | | | | |
| 1. Extension of the Te Awa River Ride cycle route. | | | ✓ | | | ✓ |
| 4. Create a pedestrian and cycle connection between Te Awa River Ride cycle route (Belt Street), St Paul's Catholic School, Rugby League Club (Whatawhata Avenue), Centennial Park and the Waipaa River Trail. | | | ✓ | | | ✓ |
| 5. New active mode connection over the Waikato River. | | | ✓ | | | ✓ |
| 6. Upgrade active modes facilities over Waingaro Road bridge. | | | ✓ | | | ✓ |
| 7. Create a gateway marker at 46 & 108 Great South Road. | ✓ | | | ✓ | | |
| 8. Upgrade of corridors with active modes: | | | | | | |
| - Jesmond Street. | | | ✓ | | ✓ | |
| - Great South Road (Both directions - cycleway and footpath). | | ✓ | | | ✓ | |
| - Hakarimata Road and Brownlee Avenue (shared path). | ✓ | | | ✓ | | |
| - Waikato Esplanade (bi-directional cycleway and footpath). | ✓ | | | ✓ | | |
| - Lower Waikato Esplanade (Both directions - cycleway and footpath). | ✓ | | | ✓ | | |
| 9. Improve the safety and visibility of intersections: | | | | | | |
| - Great South Road and River Road. | | ✓ | ✓ | | | ✓ |
| - Great South Road and Jesmond Street (proposed new roundabout). | | ✓ | ✓ | | | ✓ |
| - Great South Road, Princess Street and Newcastle Street (signalisation under investigation). | | ✓ | ✓ | | | ✓ |
| - Great South Road and Waingaro Road (proposed closure under investigation). | | ✓ | ✓ | | | ✓ |
| - Great South Road and Market Street. | | ✓ | ✓ | | | ✓ |
| - Waingaro Road and Herschel Street (traffic calming or mirrors). | | ✓ | | | ✓ | |
| - Old Taupiri Road (south), Great South Road and Regent Street. | ✓ | | | | | ✓ |
| - Martin Street and Galileo Street (still under investigation). | | ✓ | ✓ | | | ✓ |
| 10. Improve the safety and visibility of Jesmond Street roundabout. | | ✓ | ✓ | | | ✓ |
| 11. Jesmond Street improvements: | | | | | | |
| - Consider shared zones and additional informal crossings to improve pedestrian connections. | | | ✓ | | ✓ | |
| - Additional informal crossings and streetscape upgrades. Integrate crossings with intersection upgrades and development sites. | | | ✓ | | ✓ | |

## Ngaaruawaahia

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| 12. Great South Road improvements: | | | | | | |
| · Traffic calming and speed management. | | ✓ | | | ✓ | |
| · Roadway art at existing pedestrian crossings. | | ✓ | | | ✓ | |
| · Additional informal crossing points. | | ✓ | | | ✓ | |
| · Beautify the streetscape with planted promenade. | | ✓ | | | ✓ | |
| · Separated active modes corridor. | | ✓ | | | ✓ | |
| · Formalise crossing on Galileo Street outside Ngaaruawaahia Primary School. | ✓ | ✓ | | ✓ | | |
| 13. River Road: | | | | | | |
| · Traffic calming and speed management. | | ✓ | | | ✓ | |
| · Formalise crossings in front of Tuurangawaewae Marae. | | ✓ | | | ✓ | |
| **IDENTITY** | | | | | | |
| 5. Create a wayfinding suite for key destinations including the following; Ngaaruawaahia town centre, Hakarimata Ranges, The Point, Waipaa Esplanade Walkway, Te Awa River Ride cycle route and proposed extension. | ✓ | | | ✓ | | |
| 6. Celebrate sites of cultural significance and protect waahi tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities at: | | | | | | |
| · Kiingitanga Reserve. | ✓ | | | | ✓ | |
| · The Point. | ✓ | | | | ✓ | |
| · Hakarimata Ranges. | ✓ | | | | ✓ | |
| · Tuurangawaewae Marae. | ✓ | | | | ✓ | |
| · Tuurangawaewae House. | ✓ | | | | ✓ | |
| · Pukeiaahua Paa. | ✓ | | | | ✓ | |
| 7. Placement of expressions (pou, koowhatu, native trees) to whakanoa (restore balance) to locations of colonial reminders. | | ✓ | | | ✓ | |

**View of Great Street Road in Ngaaruawaahia**

# Ngaaruawaahia Town Centre

# 4 Ngaaruawaahia Town Centre Plan

The Ngaaruawaahia town centre is nestled between the convergence of the Waikato and Waipaa Rivers. The town centre is severed by Great South Road (formerly SH1) and the North Main Trunk Line. The area considered as part of the town centre plan is indicated in Figure 4-1 below, extending from The Point as the most northern point of the study area, southwards to Jordan street, with Herschel Street as the western boundary and the Waikato River as the eastern boundary.

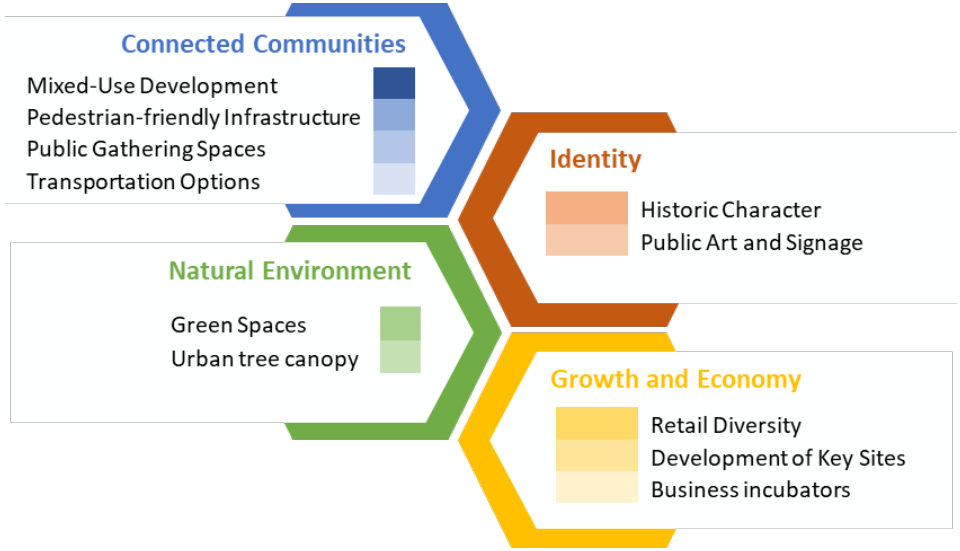
*Figure 4-1: Ngaaruawaahia Town Centre*

The town centre plan focuses on revitalising the town centre of Ngaaruawaahia and aligns with the overarching structure plan, vision, outcomes (relating to connected communities, identity, natural environment, and, growth and economy) and design principles

**<u>Structure Plan Vision:</u>**

**To create opportunities for the communities of Ngaaruawaahia, Hopuhopu, and *Taupiri and their descendants, connected through the landscape, the awa, and collective yet unique histories.***

The outcomes are unpacked in more detail within the town centre plan, consisting of the following:




The town centre plan consists of the following sections:

- Site Context
- Insights and Opportunities
- Key Moves, and
- Implementation Plan.

## 4.1 Site Context

### 4.1.1 Connected Communities

***Design Principle: Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.***

This section will look at the following elements promoting connected community:

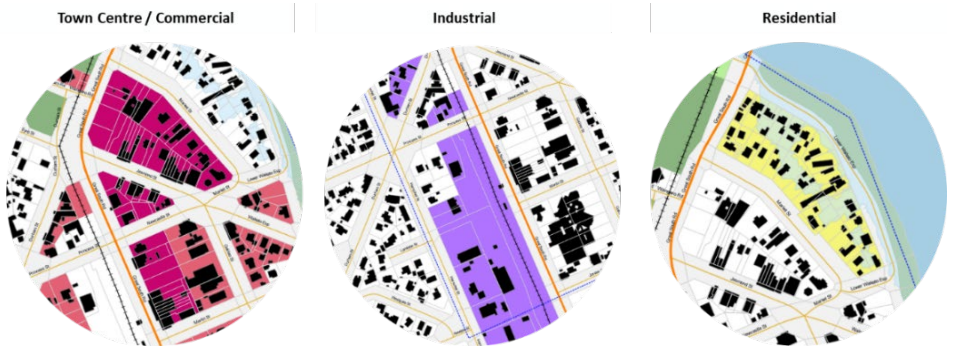
- Mixed-Use Development
- Public Gathering Spaces
- Pedestrian-friendly Infrastructure
- Transportation Options

### Mixed Use Development

Encourage the integration of residential, retail/commercial, and recreational spaces to foster a sense of community and provide amenities within walking distance.

The main structural elements shaping the urban form of the Ngaaruawaahia town centre is Great South Road (former SH1), the North Island Main Trunk (NIMT) railway line (both running north/south through the town centre) and the confluence of the Waikato and Waipaa Rivers. Great South Road, the railway line and rivers cause severance of the town and surrounding communities. During the consultation process it became apparent that physical and perceived connections should be strengthened/enhanced to overcome the physical severance the community experiences.

The grain of a town, represented by its building footprints, provides valuable insights into its urban layout and historic development patterns. In the case of the Ngaaruawaahia town centre, variation in the building sizes and shapes indicate different land uses within the town with large, uniform footprints suggest retail/commercial or industrial areas, while smaller, irregular footprints indicate the surrounding residential areas.




The Ngaaruawaahia town centre is a small and compact town centre, with most amenities located within a 500m walking distance (see Figure 4-2 for walkability assessment). The town centre has potential to redevelop as a mixed use and higher density area, which is provided for through the district plan town centre and medium density zoning provisions.

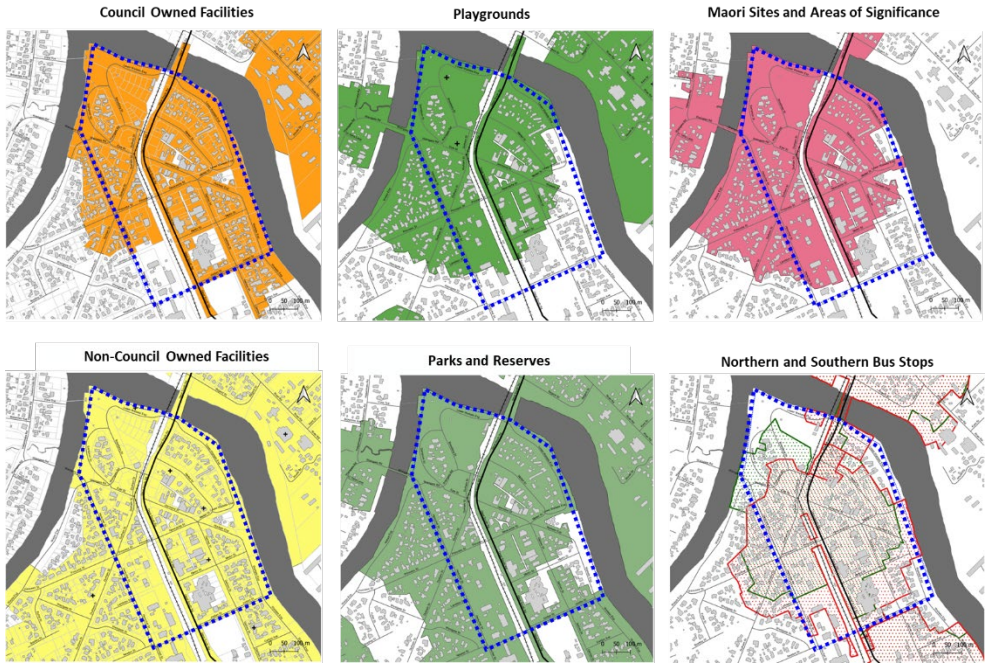



*Figure 4-2: Town Centre Walkability Assessment*

The town centre of Ngaaruawaahia currently has only five multi-story buildings, with three of the five multi-story buildings being historic landmark buildings. All the multi-story buildings are located along Jesmond Street. The underlying Town Centre Zone and Commercial Zones allow for development up to 3 storeys (12m height ) and the medium density residential zone 3 storeys (11m height). The town centre zoning allows and encourages mixed use development. The impact of higher density development within the town centre was assessed as part of the Variation 3, cultural view shaft impact assessment.

**View Shaft Assessment**

As part of the Waikato District Council Variation 3 hearings process, cultural view shafts of the Hakarimata Range and Taupiri Maunga from Tuurangawaewae Marae were identified. The view shafts are important to local Maaori for cultural reasons. Urban intensification under Variation 3 will affect the existing open spatial and urban character around Tuurangawaewae, potentially resulting in a more enclosed experience.

Effects on the existing cultural view shafts are most likely to result from development within the blocks immediately adjacent to the marae, and development within the Ngaaruawaahia town centre (blocks bounded by Lower Waikato Esplanade, Great South Road, and Ellery Street East). Development outside this area is less likely to intrude into the existing cultural view shafts.

The view shafts that connect Tuurangawaewae, the Hakarimata Range, Taupiri Maunga and the Waikato and Waipaa awa have been modelled using GIS viewshed and skyline analysis tools.

The image below indicates the current view shaft from Tuurangawaewae Marae towards the Hakarimata Range.

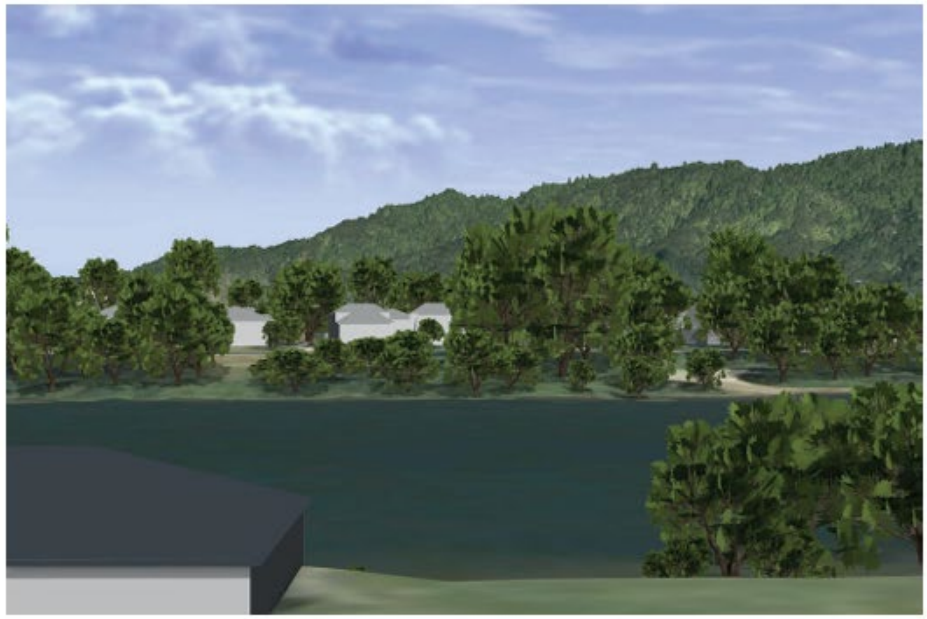
Model Showing the Existing View

The images on the following page indicate the view shaft of the town centre developed as per the ODP, PDP, Variation 3 as notified and Variation 3 without the urban fringe, comprising of:

- Town Centre Zone and Commercial Zone - 3 storeys (12 meters) and,
- Medium Density Zone - 3 storeys (11 meters.).

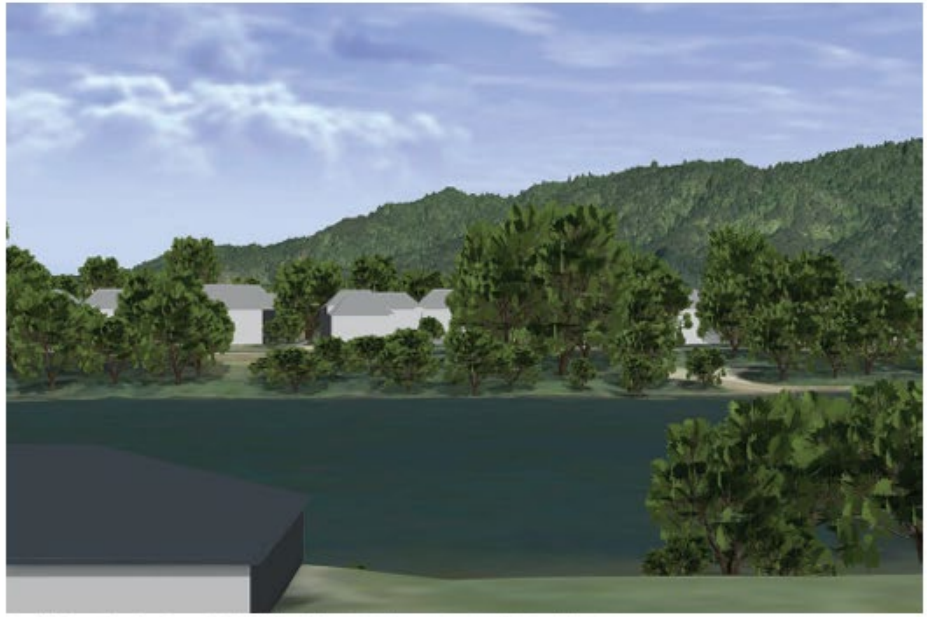
Based on the ODP, PDP, and Variation 3 as notified, from a landscape perspective, the level of intrusion into the existing cultural view shaft would be small and would not likely change how the Hakarimata Ranges were experienced from Tuurangawaewae. Any development taller or with a greater site coverage has the potential to intrude into the existing views of the Hakarimata Ranges.

Model Showing the Potential Visibility of the PDP Permittable Development Envelope



Model Showing the Potential Visibility of the PDP Permittable Building Mass

Model Showing the Potential Visibility of the Variation 3 Permittable Development Envelope



Model Showing the Potential Visibility of the Variation 3 Permittable Building Mass

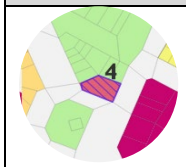
**Land Use Assessment**

The employment (town centre, commercial and industrial zoned) land is concentrated within the heart of the town centre, with access off Great South Road. The core retail/commercial area is surrounded by supporting medium density and residential zoning. Through the structure plan and town centre plan, the intention is to strengthen the Ngaaruawaahia town centre and not dilute it by zoning any additional town centre or commercial land outside of the core town centre area.

The town centre and commercial zoning encourages mixed used development. Mixed-use developments typically include a variety of retail/commercial, residential, and recreational/community spaces within one building and/or in close proximity. Mixed land use developments encourage "live, work, play" in the same neighbourhood. This proximity encourages walking and reduces the need for driving, thereby promoting healthier lifestyles and reducing traffic congestion.

The Durham Precinct, located on Durham Street on the western side of the Great South Road and the railway line, is an example of horizontal mixed-use development that provides opportunities for smaller businesses and entrepreneurs to thrive alongside larger retailers (located in the main street, Jesmond Street). The Durham Precinct is zoned commercial and backs onto industrial sites. This diversity of businesses adds to the unique character of the town centre and creates a sense of place that attracts residents and visitors alike.

As part of the town centre plan development, consideration is given to the existing land use pattern to see if it is fit for purpose. Within the context of Ngaaruawaahia Town Centre, minimal changes are recommended to zoning due to the recent proposed district plan decisions with many of the land use changes being addressed already. The recommended changes shown below are generally small in nature.

| | Zone Change | Timing | Notation |
|---|---|---|---|
|  | Commercial Zone › Open Space Zone. | Long Term | The extent of this proposed change relates to the property - 1 Waingaro Road. The extent of this proposed change is to align with the surrounding zoning and provide better adjacent land use compatibility as well as further opportunity to expand the Open Space Zone at the Point. |
| | Medium Density Residential Zone › Commercial Zone. | Long Term | The extent of this proposed change relates to the properties - 1 Martin Street and 17 Waikato Esplanade. The extent of this change is to align with the surrounding zoning and provide better adjacent land use compatibility and a more pragmatic land use pattern. |

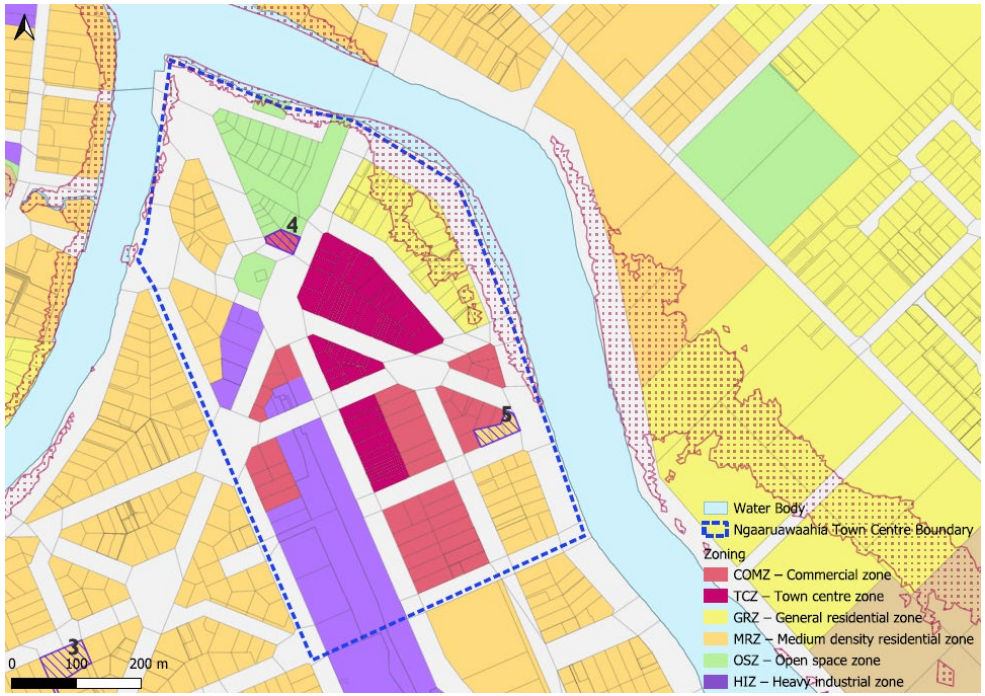



*Figure 4-3: Current Zoning Pattern – Town Centre*

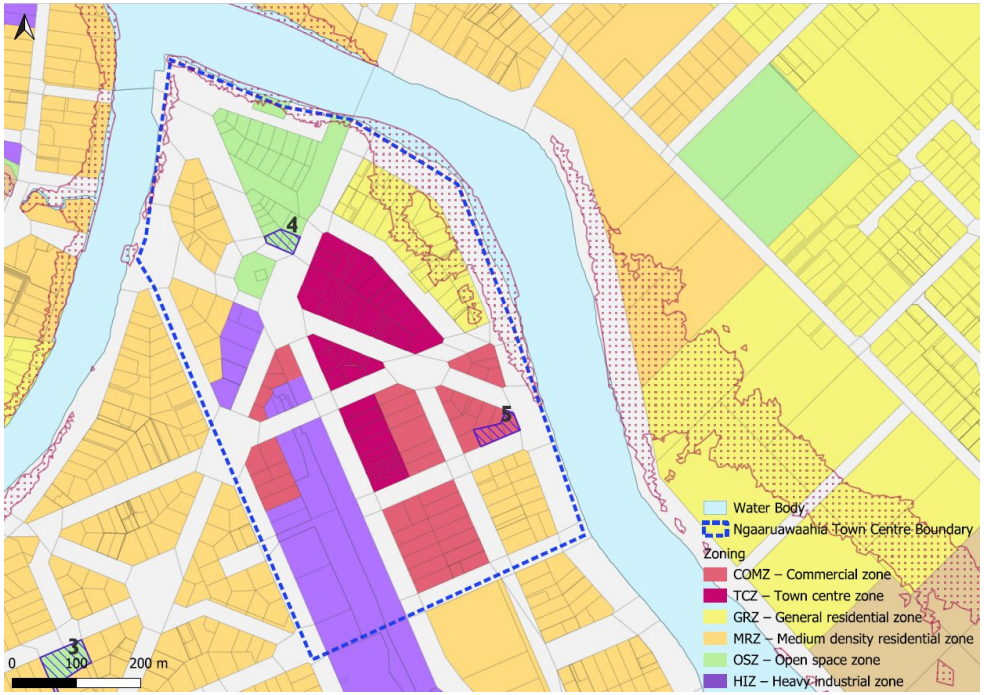



*Figure 4-4: Proposed Zoning Pattern after changes*

**Edge Condition Assessment**

The Ngaaruawaahia Town Centre is unique in the number of cultural sites of significance, historic buildings, ample open space, and community amenities that are located within walking distance from the core town centre area / main street, this adds to the vibrancy and liveability of the Town Centre.

Alongside establishing the necessary zoning for mixed-use development, a well-crafted public realm is vital in achieving communities that are walkable, enjoyable to live in, and vibrant. A high-quality public realm is made up of a number of qualities that engages with pedestrians. The three main qualities investigated as part of the urban design assessment and town centre plan includes: Permeability (1), Transparency (2) and Built to Boundary (3).

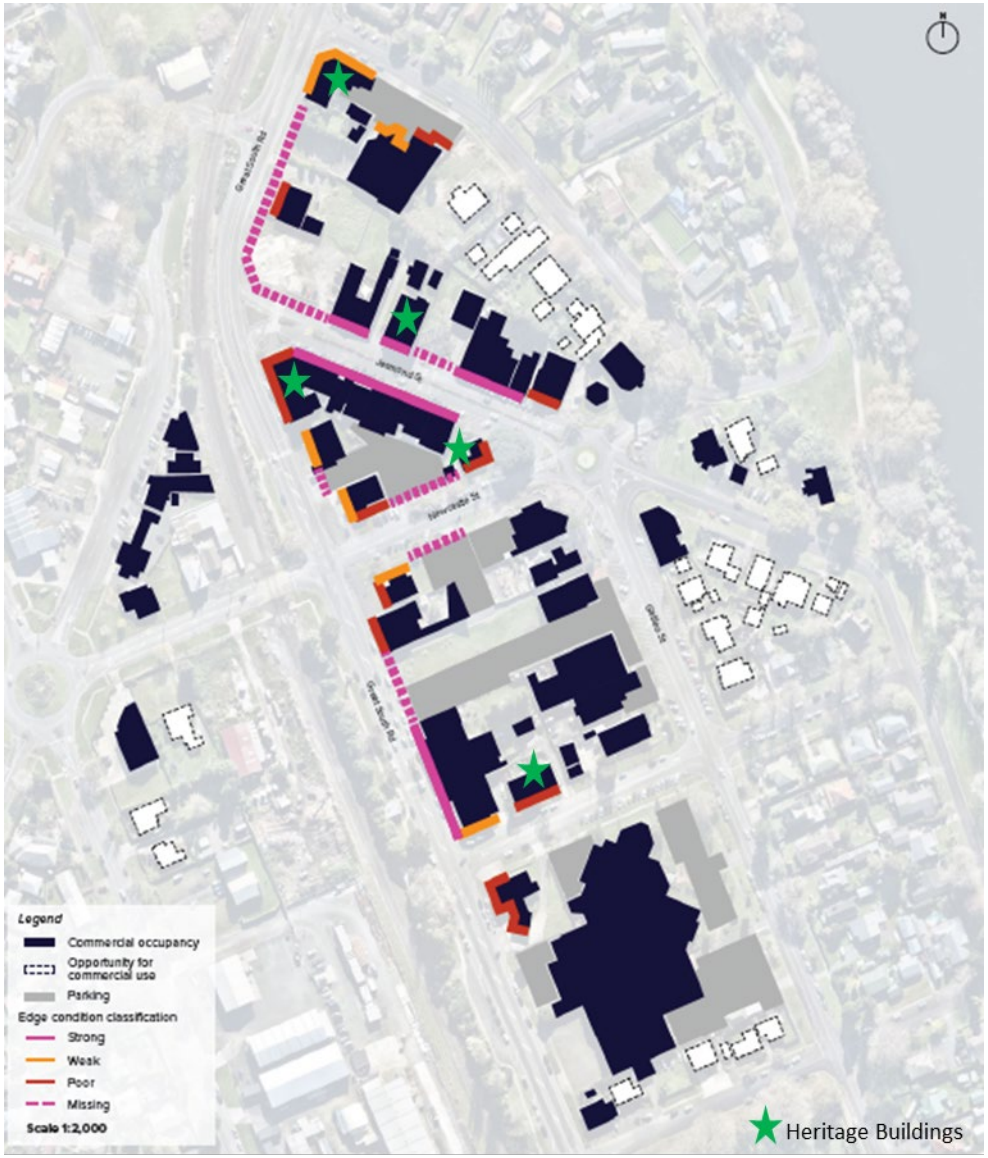
Permeability (1) looks at the provision of pedestrian access points at street frontage. Transparency (2) involves the visual extension of the public space into the private space and is particularly important for retail uses where they rely on visual cues to draw in passing traffic and pedestrians. Building to the boundary (3) assesses if the buildings are located close to or directly on the edge of the property line, creating a more consistent street front.

The public/private interfaces of the Ngaaruawaahia town centre streetscape have been visually evaluated based on the above qualities and identified on Figure 4-4 below as strong, weak, poor or missing edge conditions. A building frontage that illustrates all three of the above qualities is identified as having a strong active street frontage and a building frontage with just one as poor.

The areas that require active street frontages identified in the district plan for Ngaaruawaahia are Jesmond Street and Great South Road from Jesmond to Martin Street. The street frontages are currently fragmented and a mix of strong, weak and poor. There are several heritage buildings located within the town centre, with most having weak/poor edge conditions.

A key area of improvement is the built form at the intersection of Jesmond and Great South Road, the two corner sites (one being a heritage building) are gateways and drawcards to the main street and will be a significant contributor to the quality of the streetscape. Heritage street fronts often represent the architectural, cultural, and historical identity of a community. They provide a tangible link to the past, reflecting the values, traditions, and stories of the people who lived there. Preserving these fronts helps maintain a sense of continuity and connection to the past for future generations.

The town centre is also characterised by a large amount of vehicle accesses across footpaths, resulting in large gaps along these key street frontages. Attention should be given to improve the key frontages and filling in the gaps to add to the vibrancy and attractiveness of the main streets.




24

*Figure 4-5: Ngaaruawaahia Town Centre Edge Condition Assessment*

[24] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

## Public Gathering Spaces

Create plazas, squares, or parks where residents can come together for events, markets, or simply to socialise.

The Ngaaruawaahia Town Centre has a few spaces that could be classified as public gathering spaces, consisting of smaller "plaza/squares" to bigger reserve spaces. The small public plaza/square centrally located along Jesmond Street has the potential to become a focal point and space for the community to come together. The current community library is located approximately 50m from the public plaza/square.

The Point and Kiingitanga Reserve are located northwest of the town centre with a playground and skatepark. This space is well utilised by the community and tourists visiting the area. The Point is also used for community events throughout the year. The Waikato Esplanade strip includes seating and some outdoor sport equipment.

The public green spaces / gathering spaces are located along the Town Centre Loop (see the pedestrian friendly infrastructure and the green spaces sections below for more details).

It is very important to ensure public gathering spaces are safe and well maintained. By adhering to the crime prevention though environmental design principles (CPTED), the public spaces can be inviting and vibrant. Consideration should be given to the following:

- Vegetation should be maintained to ensure clear sight lines from the street and neighbouring properties.
- Efficient lighting should be provided to ensure the spaces can safely be utilised after sunset/ before sunrise; the extended hours of use will add to the vibrancy of the town centre.
- The surrounding land use should encourage passive surveillance to contribute to a sense of place. Mixed land use with a combination of retail, office and residential will enhance passive surveillance and better use of the public space with extended hours of activity.

## Pedestrian-Friendly Infrastructure

Design streetscapes that prioritise pedestrians over vehicles, with wide sidewalks, pedestrian crossings, and well-marked crosswalks.

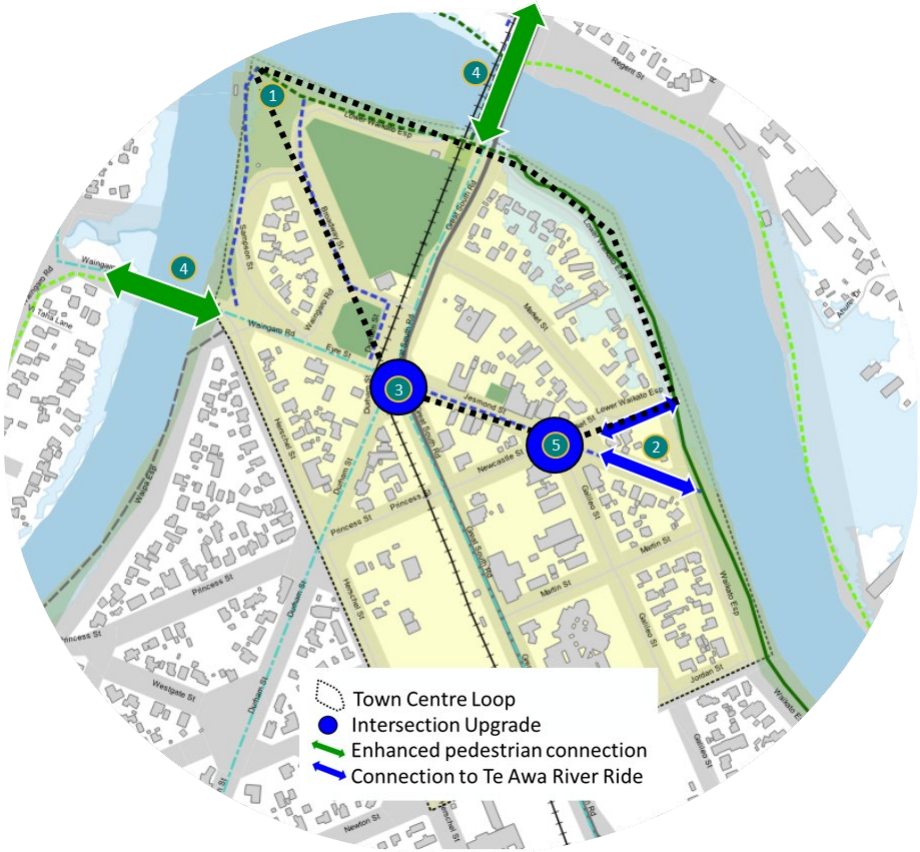
Ngaaruawaahia is bisected by the major corridors of Great South Road (previously SH1) and the NIMT. These create a barrier for east-west access within the town centre and make direct access for people walking or on bikes to the town centre difficult, with limited safe crossing locations.

The Te Awa River Ride is a popular scenic cycling and walking trail in New Zealand. Unfortunately, the Awa River Ride stops abruptly on Lower Waikato Esplanade, with no direct linkages to The Point or the town centre.

The two bridges crossing the Waipaa and Waikato Rivers have a narrow footpaths and no provision for cycling to connect to the western and northern areas. Currently, there are limited cycle facilities throughout the local network.

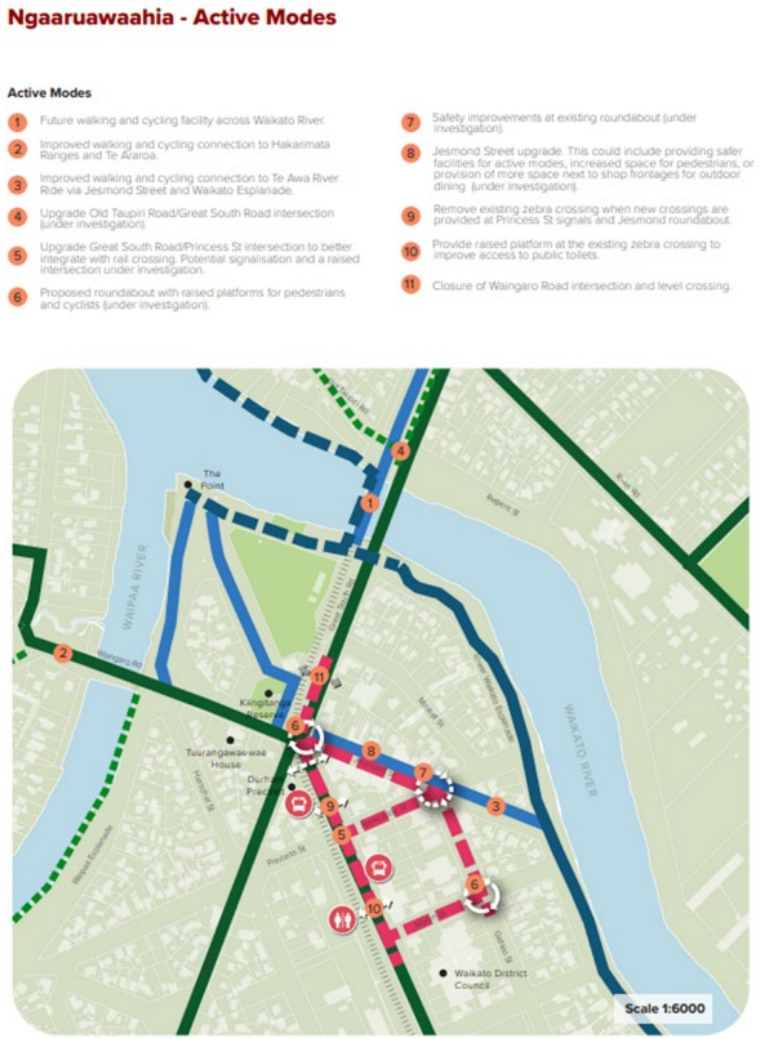
Overcoming the above-mentioned challenges, several pedestrian friendly infrastructure upgrades are proposed for the town centre.

1. Extend the Te Awa River Ride cycle route to the Point and across the Waikato River via Hopuhopu, to Taupiri with links to Taupiri Maunga summit track and urupaa.
2. Connect the town centre with the Waikato River and Te Awa River Ride cycle route with connection along Jesmond Street and Esplanade Road (supporting the Town Centre Loop).
3. Improve the connectivity across Great South Road and the NIMT.
4. Improve the walking/cycling connections across the Waipaa and Waikato Rivers.
5. Upgrade the roundabout at the Jesmond Street/Newcastle Street intersection to manage cyclist and pedestrian safety and reduced speeds as well as deliver on the east-west connection.




By providing the safe pedestrian connection along Jesmond Steet and across Great South Road, the town centre loop is complete.

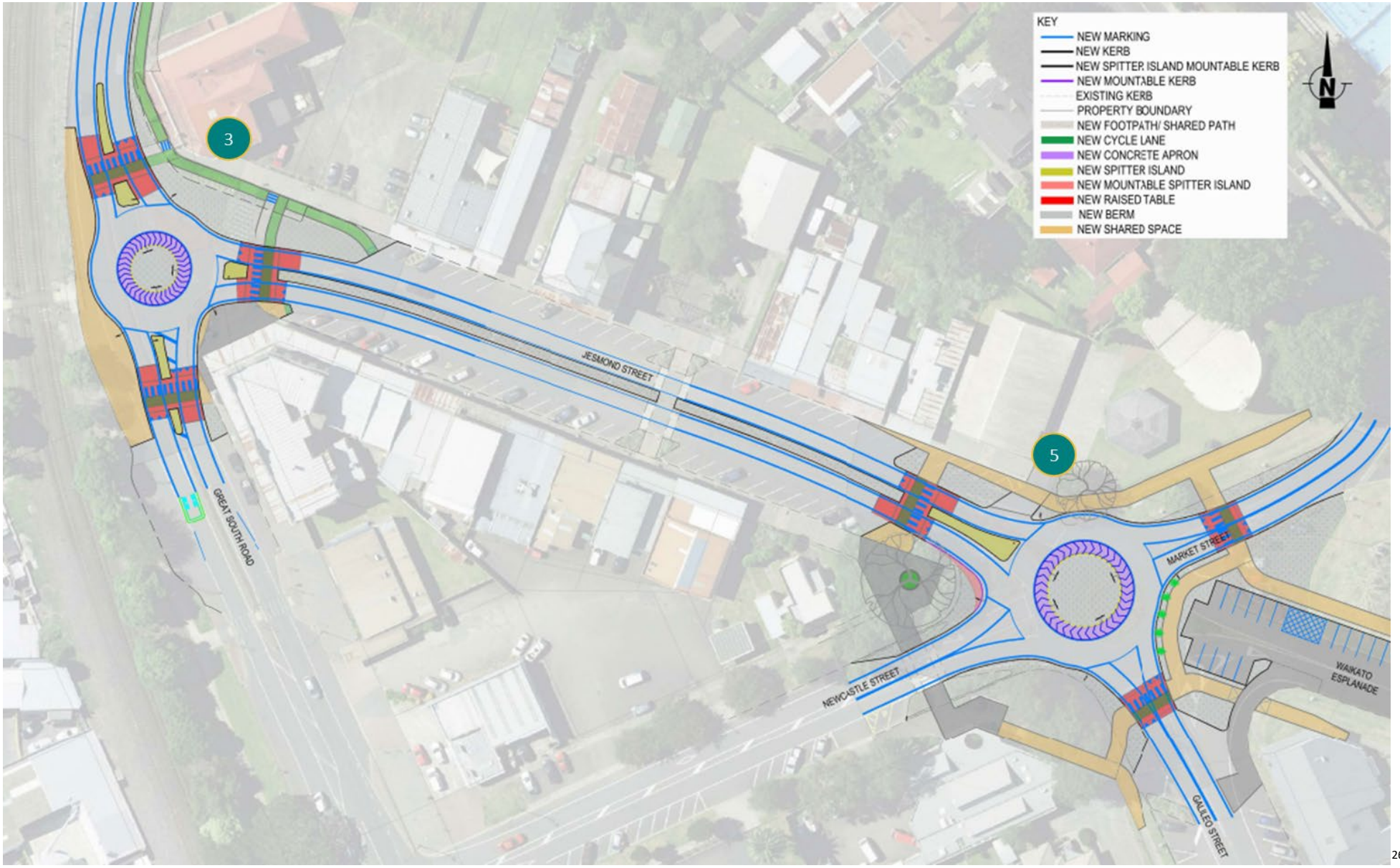
The image on the overleave graphically illustrating the broader active mode opportunities for the town centre.




[25]

The image on the overleave graphically illustrates the recommended intersection upgrades along Jesmond Street to improve pedestrian and cyclist safety and connectivity.

[25] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024



[26]

*Figure 4-6: Jesmond Street Intersection Design*

[26] Ngaaruawaahia, Hopuhopu & Taupiri Transport Assessment, 2024

## Transportation Options

Improve public transportation systems, introduce bike lanes, and promote carpooling to reduce reliance on individual vehicles and encourage community interaction.

There is a regional bus service running along Great South Road connecting Ngaaruawaahia to Hamilton and other nearby towns. Currently there is no 'within-town' bus services serving Ngaaruawaahia. As the density and population increase, a within-town service is needed. The current bus service is accessible with a 500m walkability catchment (Figure 4-7) within the town centre.

The Ngaaruawaahia Town Centre has been identified as a possible location for a future bus rapid transit (BRT) and/or train station, therefore having the potential to develop as a Transit Oriented Development[27] (TOD) node. TODs support the principles of mixed-use development and has a strong focus on walkability. Options for a suitable location for a future bus/train station are being considered.

Sustainable transport also includes the provision of good wayfinding signage and the right technology for people to find destinations and attractions.

Transitioning to more sustainable modes of transport, a possible site for a universal electric car changing station along Jesmond Street is being investigated.

Lockable charging stations for ebikes and escooters should be provided at The Point along the Te Awa River Ride.

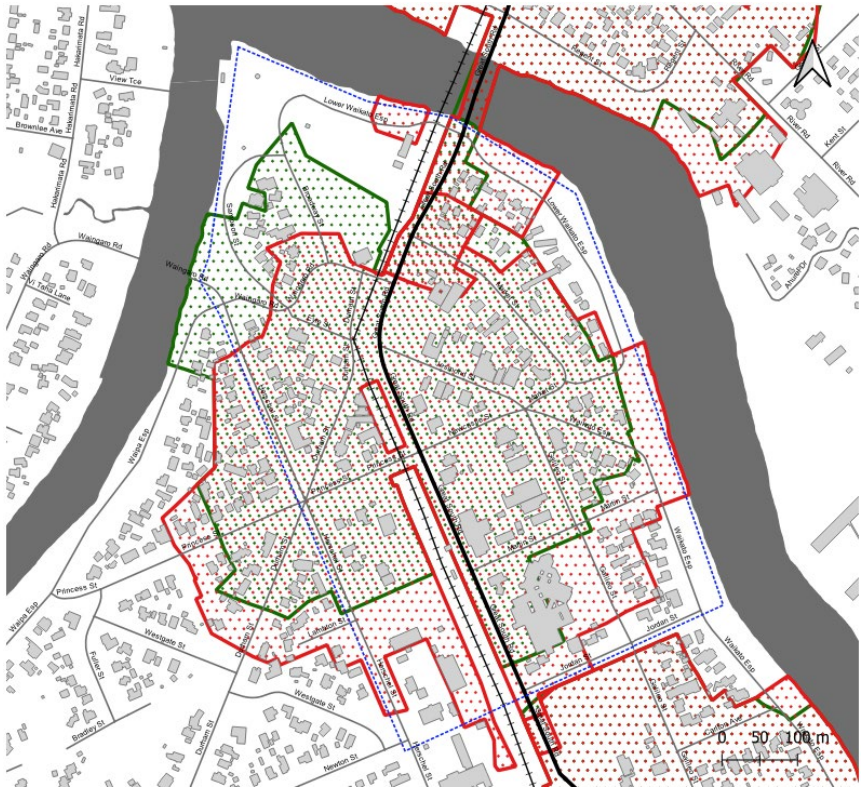



*Figure 4-7: Bus stop walkability assessment*

[27] Transit oriented development (TOD) nodes are urban areas designed to integrate different modes of transport (i.e. bus and train) functions with people, activities, buildings, and public spaces that aim to optimise access to public transportation.

## 4.1.2 Identity

***Design Principle: Strengthen the strong sense of identity, and character of the Town Centre.***

| Identity |
|---|
| Historic Heritage and Character |
| Public Art and Signage |

### Historic Heritage and Character

Preserve or enhance existing historic heritage and features that contribute to the town's identity, while also incorporating new design elements that reflect its histories and culture.

Historical heritage plays an important role in contributing to a sense of belonging, which includes character and recognises peoples' connections to place within both a rural and an urban environment. There are several heritage buildings and landmarks, many archaeological sites, and notable trees located within the town, which showcases the rich cultural histories of the town, and can contribute significantly to the town centre revitalisation in several ways, as listed below:

- **Tourism and Cultural Identity:** Historic places and sites often serve as magnets for tourism, drawing visitors interested in experiencing the town's unique histories and culture. Tourists can contribute to the local economy through spending on dining, shopping, and other activities. Over time Ngaaruawaahia could include overnight accommodation as well.
- **Sense of Place and Community:** Historic landmarks provide a sense of place and identity for local residents, fostering community pride and a connection to their heritage. These spaces (The Point for example) serve as gathering spots for community events and celebrations, contributing to a vibrant social fabric and provide links to the wider community who travel through or visit.
- **Economic Development:** Preserving and repurposing historic buildings (for example the Centennial Memorial Plunket Rooms, Grants Chambers, and the Masonic Lodge Te Marama) can catalyse economic development by attracting businesses, entrepreneurs, and investors. These buildings can be transformed into boutique shops, galleries, restaurants, or cultural centres, creating jobs and stimulating the local town centre economy.
- **Heritage Tourism and Educational Opportunities:** Historic places and sites offer educational opportunities for residents and visitors alike, providing insights into the town's histories, architecture, and cultural heritage. Informational signage, guided tours, and educational programs can enrich the visitor experience and foster a deeper appreciation for the town's heritage.
- **Preservation of Cultural Heritage and Archaeology:** Protecting and preserving historic landmarks and archaeological sites safeguards the town's cultural heritage for future generations, ensuring that important landmarks, stories, traditions, and artifacts are not lost to time. This preservation effort contributes to the town's overall identity and sense of place.
- **Urban Renewal**: Restoring and maintaining historic architecture can enhance the aesthetic appeal of the town centre, making it more attractive to residents, businesses, and visitors. Renovations and adaptive reuse projects can breathe new life into neglected areas and buildings, revitalising the urban landscape.

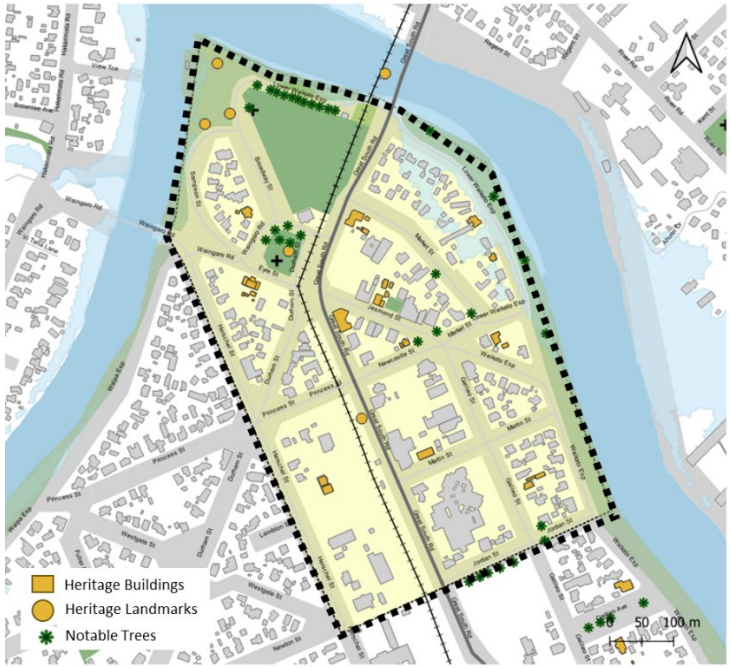



Figure 4-8: Cultural Heritage Buildings and Landmark

## Key Heritage Sites / Buildings

The current heritage listings for the Ngaaruawaahia Town Centre include:

The Point, Kiingitanga Reserve and Tuurangawaewae House are significant cultural sites that deserve recognition by way of protection and preservation. Sites of cultural significance should be protected and celebrated through wayfinding, artwork, and storytelling (raising awareness within the local community and visitors alike).

*Heritage ID - 96*

1 Turangawaewae House / Maori Parlement (1917-1919)

*Heritage ID - 89*

2 Ngaruawahia World War I Memorial Cenotaph (1922)

*Heritage ID - 90*

3 Former Pioneer Gun Turret (1863; relocated 1926)

*Heritage ID - 91*

4 Former Hutt Residence (c.1906)

*Heritage ID - 93*

5 Potatau Monument (1895)

*Heritage ID - 87*

6 Ngaaruawaahia Regatta Association Band Stand (c.1913)

*Heritage ID - 92*

7 Delta Hotel (1900)

*Heritage ID - 88*

8 Former 1877 Ngaaruawaahia Combined Road/Rail Bridge Abutments & Piers (1875-77)

*Heritage ID - 127*

9 Former FH Edgecumbe Residence (c.1887)

## Public Art and Signage

Install public art installations, murals, or sculptures that celebrate local heritage and culture, and use signage that reflects the town's unique character.

There are currently several beautiful murals and storyboards located across the town centre. These public art/murals and storyboards reflect the unique identity, history, and values of the local Iwi and community. By incorporating local themes, traditions, and narratives, art installations contribute to a sense of place and foster community pride. They also serve as conversation starters, sparking dialogue and connection among residents and visitors.

Public art installations such as sculptures, murals, and street art can transform bland or neglected spaces into visually captivating attractions. These artistic elements create focal points that draw pedestrians into the town centre, making it a more engaging and enjoyable environment. Township gateway sculptures could be installed as a way of physical markers to signify the town's entrance and exit points.

Eye-catching public art can become iconic symbols of a town, attracting tourists and visitors who seek out memorable and "Instagram-worthy" experiences (for example the angel wings pained on a wall at the Durham Precinct). These art installations can become landmarks in their own right, contributing to the town's identity and increasing foot traffic in the town centre, contributing to the local economy.

Well-designed signage helps residents and visitors navigate the town centre more easily, reducing confusion and enhancing the overall experience. Clear signage for attractions, amenities, parking, and pedestrian routes improves accessibility and encourages exploration of the area. Accordingly, the creation of a wayfinding and signage strategy or plan that reinforces key cultural sites, routes, and amenities is needed. This strategy or plan should be developed in close conversation with local Iwi and the wider community.

### 4.1.3 Natural Environment

***Design Principle: Celebrate and connect communities to blue-green networks and significant cultural areas supporting recreational use and preserve local identity.***

| | Natural Environment |
|---|---|
| | Green Spaces |
| | Urban tree canopy |

## Green Spaces

Introduce parks, gardens, and green corridors to improve air quality, provide habitat for fauna and flora, and offer residents places for recreation and relaxation.

A key natural feature framing the town centre, is the convergence of the Waipaa and Waikato Rivers, with breathtaking views of the Hakarimata ranges. Large areas of flooding have been identified along the banks of the Waipaa River and along the gullies of the land east of the Waikato River.

The town centre includes The Point Reserve (open space) with a playground, esplanade sections along the rivers, and a small public square within the main street. Through the structure plan community engagement, the Point Reserve and public square along Jesmond Street has been identified as possible locations for future community gardens and community nurseries.

1. The Point Reserve - possible location for future community gardens and community nurseries
2. Public square - possible locations for future community gardens and community nurseries
3. Notable tree site – there is ample public space with endless possibilities to be transform into a community space.
4. The open space along to the railway line on the Durham Precinct side has the potential to become a community green space as serve as a buffer to the railway line.

*Figure 4-9: Green Spaces and Town Centre Loop*

## Urban Tree Canopy

Plant trees along streets and in public spaces to provide shade, mitigate heat island effects, and enhance the aesthetic appeal of the town centre.

Trees and greenery soften the built environment, adding visual appeal to the town centre and creating inviting and pleasant spaces for residents, workers, and visitors. Green spaces with lush canopy cover can transform a seemingly concrete space into a vibrant and attractive urban oasis.

Most of the larger and notable trees are located at the Point Reserve and along the Waikato Esplanade. More can be done to increase the number of trees and vegetation in the town centre. Trees provide shade, reduce surface temperatures, and help regulate microclimates in urban areas. By creating cooler and more comfortable environments, urban canopy cover mitigates the urban heat island effect, particularly in built up town centres, and reduces the demand for energy-intensive cooling systems during hot weather.

Throughout the structure plan community consultation process, the community indicated they would like to see kai (food) trees planted in town, to provide not only shade, but also food/fruit to the community.

### 4.1.4 Growth and Economy

***Design Principle: Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.***

| | Growth and Economy |
|---|---|
| | Retail Diversity |
| | Development of Key Sites |
| | Business incubators |

## Retail Diversity

Encourage a mix of retail establishments, including locally-owned shops, boutiques, cafes, and restaurants, to create a vibrant and diverse commercial district.

The main retail and commercial activities within the Ngaaruawaahia Town Centre are loacted along Jesond Street and Great South Road. Most of the stores are less than 500 $m^2$ and therefore have a convenience/specialty store focus. The town centre lacks diversity in retail options, with nearly 60% of retail stores focused on the food and takeaway sectors. The town centre commercial service businesses range from hairdressers, beauty therapy/massage, and real estate agencies to medical practitioners.

A cluster of community facilities are located along Galileo Street, including the community War Memorial Hall, a medical centre, two churches, Ngaaruawaahia Tu Tangata Trust, Waikato District Council and Ministry of Social Development offices. The town centre open space/parks and playgrounds are located on the northen end of the town centre, at the convergence of the Waaipa and Waikato rivers.

An important measure of a town centre's health is the level of vacancy. The Ngaaruawaahia town centre currently has 17[28] vacant stores, which equates to 22%. This percentage is very high, indicating that the Ngaaruawaahia Town Centre is not healthy and is underperforming relative to its market size. The centre is in need of assistance to successfully play its role and function as envisaged. Unfortunately, many of the retail stores and buildings in the town centre are considered not to be of good quality.

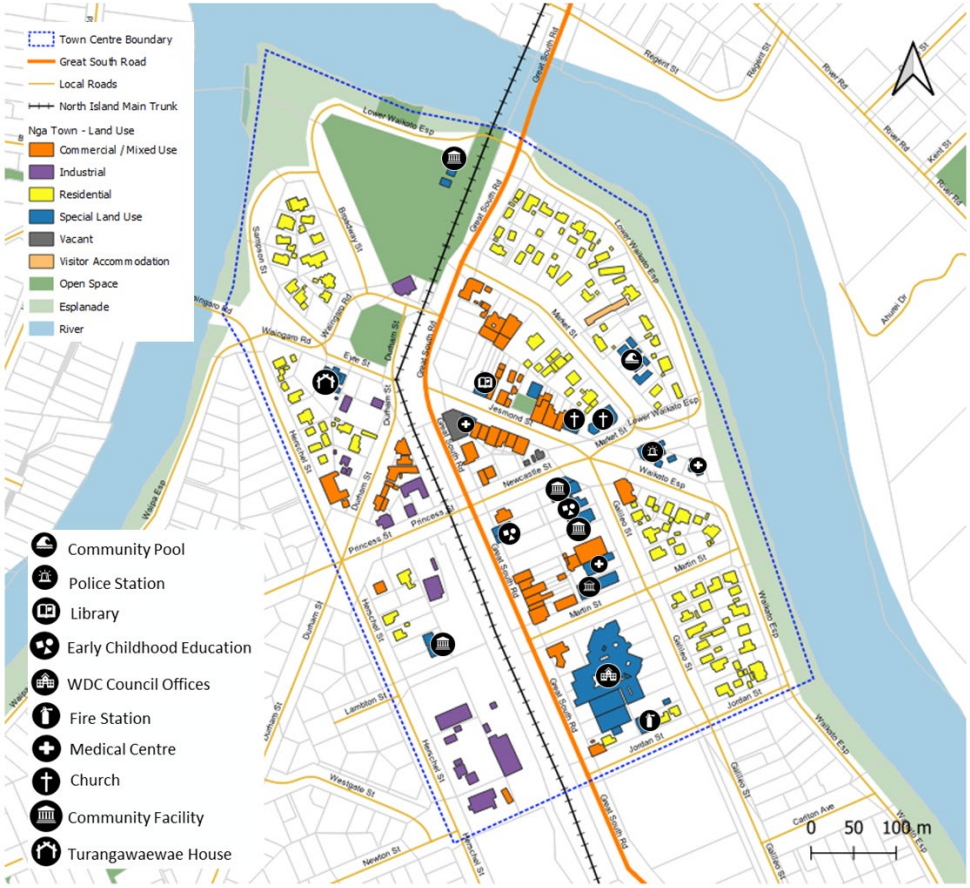



*Figure 4-10: Town Centre Retail Diversity*

[28] Ngaaruawaahia and Taupiri Centres Economic Overview, 2023

## Development of Key Sites

Enable and support the development of key sites to encourage increased vibrancy, vitality and amenity in the town/ village centre.

Waikato District Council has recently bought the old Waipaa Tavern site, located on the corner of Great South Road and Jesmond Street. The acquisition means Council has a block of 5,361m$^2$ incorporating six council-owned properties, including the former Waipaa Tavern site and the existing Ngaaruawaahia Library site. This key corner site has the potential to be developed as a community hub (a welcoming space for learning, creativity, engagement and connection) and serve as a catalyst for the rejuvenation of the town centre.

The Grants Chambers (1929) is a beautiful historic building located on the corner of Great South Road and Jesmond Street and is a Ngaaruawaahia landmark. It is currently underutilised, but has the potential to be enhanced. As the building is a listed heritage item, the building needs to be preserved, maintaining the town's architectural heritage while accommodating modern needs and uses.

*Image 4-1: The Grants Chambers (1929)*

The Ngaaruawaahia Centennial Memorial Plunket Rooms (1940*)* historic building has also been identified, within the Parks and Facilities Report (Appendix 7), as having the potential to repurposed into a shared community space.

The Plunket rooms are strategically located at the eastern entry point of the town centre main street, on the corner of Jesmond Street and Newcastle Street. This site has the potential to become a focal point/landmark site – celebrating the entrance of the main street. The Plunket rooms border a large public space and a very old, protected holm oak (notable tree) Figure 4-2 which provides canopy cover and the opportunity for a lovely interactive outdoor space.

*Image 4-2: Notable Tree outside of Plunket building*

These key development sites play a vital role in the town centre revitalisation by catalysing economic growth, creating job opportunities, attracting foot traffic, enhancing infrastructure and amenities, preserving historic heritage, and strengthening the town's identity. By leveraging these sites effectively, they can contribute greatly to the Ngaaruawaahia centre becomming a vibrant, resilient, and inclusive urban centre that thrives for years to come.

## Business Incubators

Establish incubator spaces or coworking hubs to support local entrepreneurs and start-ups, providing resources, mentorship, and networking opportunities.

The Durham precinct (Figure 4-3) is a good example of an entrepreneurial incubator space. The shipping containers have been converted into start-up businesses. As noted within the market assessment, the Durham Precinct retail node currently complements the main streets' (Jesmond Street and Great South Road) retail/commercial service offerings in the community but should not expand beyond the designated commercial zone. The Durham Precinct site is not yet developed to full capacity and can accommodated additional start-ups.

*Image 4-3: The Durham Precinct*

## 4.2 Insights and Opportunities

Opportunities have been identified for Taupiri through a multi-stageapproach. They are a combination of:

- The contextual analysis.
- A spatial analysis undertaken through a desktop assessment.
- A site visit in combination with council staff, elected members and community board representatives.
- Input received from technical reports.
- Inputs received by council through community surveys and feedback.

Feedback was received from the community via online engagement and community open day events held in Ngaaruawaahia, Hopuhopu and Taupiri. These sought to understand the issues experienced by the community, and opportunities seen by those that live, work and play in the three settlements to improve the liveability of these places.

The opportunities for investment have been grouped under the headings of the design principles, noting that some opportunities will align with multiple design principles.

The opportunities were grouped into themes relating to:

| | |
|---|---|
| Connected Communities | Opportunities relating to transport and accessing the places people want to get to, such as the town centre and key destinations like Tuurangawaewae Marae. |
| Identity | Opportunities related to telling the history, and highlighting the identity, of Ngaaruawaahia, Hopuhopu and Taupiri. |
| Natural Environments | Opportunities related to improving access to, and the quality of, the natural environment. |
| Growth and Economy | Opportunities related to enhancing commercial activity and supporting future growth. |

The following pages provide a summary of the opportunities identified through this process. Some of the opportunities sit outside of the remit of Waikato District Council, however, were recorded to fully understand the issues and opportunities seen by the community. These opportunities have been assessed and considered by council as part of this process and have informed the key moves and outcomes. Not all opportunities have been progressed.

.

## Ngaaruawaahia - Town Centre Opportunities

**Connected Communities**
Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance

1. Create a high quality pedestrian experience along Jesmond Road with reduced speeds and pedestrian prioritised movement.
2. Provide a clear pedestrian link from bridge down to edge of the Waikato River.
3. Improve the Jesmond Street five leg roundabout at the eastern end with a pedestrian and cycling focused solution.
4. Provide a safe and prioritised pedestrian and cycling connection.
5. Review of on street parking, there are carparks too close to zebra crossing obstructing visibility.
6. Upgrade intersection at Old Taupiri Rd and Regent St.
7. Clear sightlines and visibility at New World carpark entry points.
8. Increase visibility turning out of Martin Street.
9. Maximise active mode connectivity through roundabout to improve access to Durham Street Precinct.
10. Improve visibility at the corner of Waingaro Road and Herschel Street.

Other opportunities
- Create a wayfinding and signage strategy and plan that reinforces key cultural sites, routes and amenities.

**Identity**
Strengthen the existing identity and character of the place

1. Klingitanga Reserve and Tuurangawaewae House are significant cultural sites that deserve recognition by way of protection and preservation.
2. Provide visual cues across the North Island Main Trunk by improving the back/service areas of Durham Street buildings and edge of Klingitanga Reserve with landscape treatment and art.
3. Opportunity for a rest point with bike parking and e bike charging stations at The Point and along Waikato River.
4. Market area at Jesmond Street - inclusion of shelter to encourage more active use of the space.
5. Proposed masterplan for The Point with recreational facilities, extended Te Awa River Ride cycle route/walkway and carparking.
6. Key corner site - opportunity for mixed use community functions such as library, meeting rooms and retail.

Other opportunities
- Design guidelines around town centre appearance and improved existing retail and commercial frontages with canopies, street furniture, seating, planting etc. Involve local schools in painting murals to built a sense of ownership within the community.
- Opportunity for story telling, signage and expression of cultural narratives through township - specific places to be investigated.
- Consolidate community facilities where possible, consider relocation or land swap.

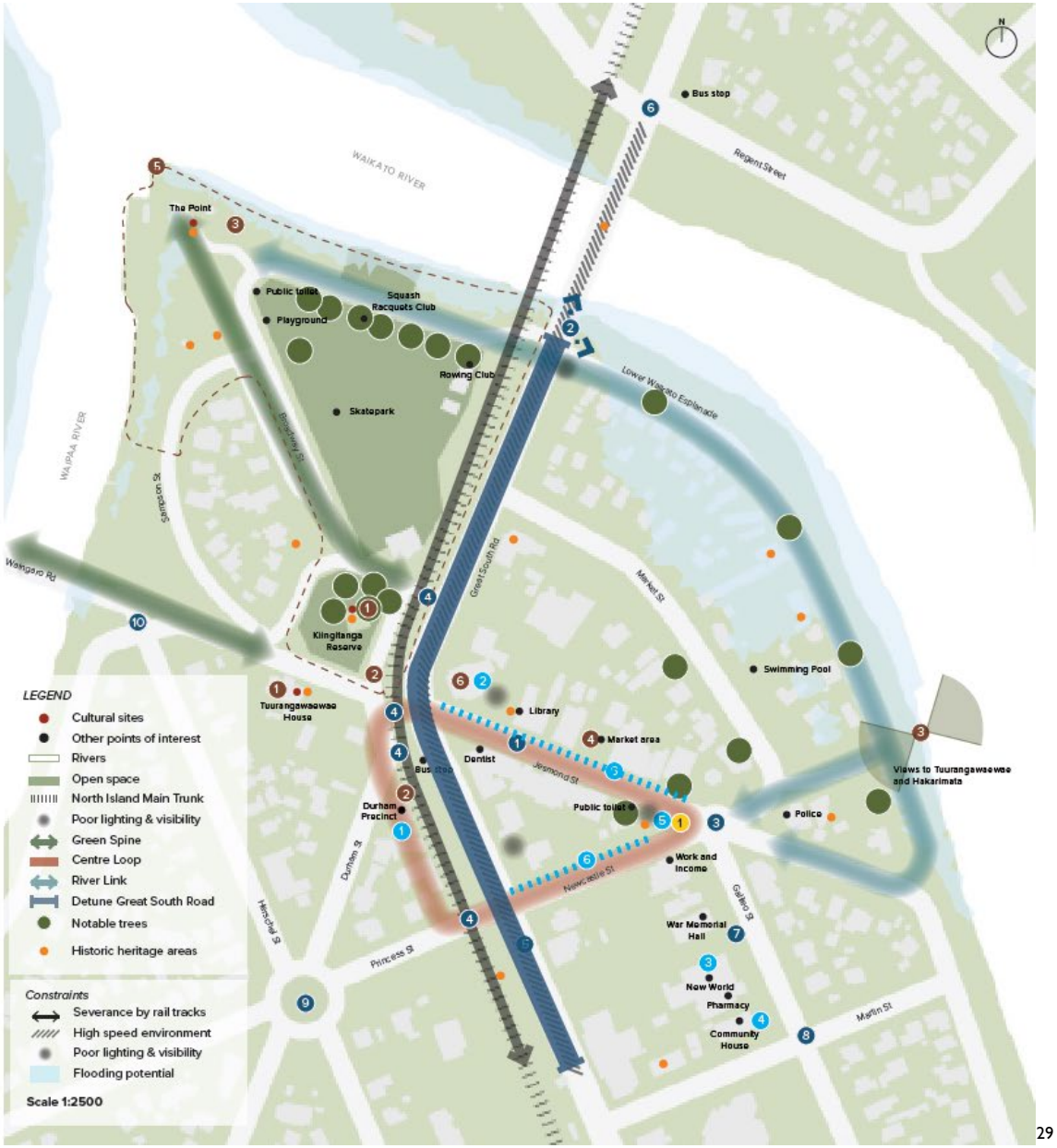
**Natural Environment**
Connect communities to blue-green networks and provide recreational activities and opportunities

1. Protect existing trees and look to provide upgraded seating, bins and other amenities.

Other opportunities
- Consider inclusion of water sensitive design initiatives such as rain gardens, planted medians, permeable paving, swales and drought resistant planting.

**Growth and Economy**
Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community

1. Future proof Durham Precinct.
2. Redevelop the corner site with opportunities to combine with other community uses.
3. Consider future expansion of New World as a anchor tenant and catalyst.
4. Opportunity to relocate Community House to accommodate and enable growth of community services.
5. Redevelop Plunket building for future community use.
6. Consolidate gaps in the streetscape and reactivate vacant sites with functions that provide active uses after hours.



[29]

[29] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

## 4.3 Key Moves

The opportunities identified were shared with the community across two open days, and through online engagement where feedback and support was gathered. The opportunities were also assessed against the agreed outcome principles for the project.

The feedback relating to opportunities identified were considered together to confirm the key moves and outcomes for Ngaaruawaahia and how these are to be prioritised over the short, medium and long term. It was recognised that some of the projects are highly complex, will have associated cost, and will need further detailed investigation before they are able to be confirmed in the long term plan for delivery.

The key moves and outcomes have been identified on the following maps. The anticipated prioritisation of these is addressed in the implementation section of the document. The key moves and outcomes have also been grouped into the design principles of:

- Connected Communities
- Identity
- Natural Environment
- Growth and Economy

Walking and cycling activities have been identified separately as inputs from the transport workstream.

## Ngaaruawaahia - Town Centre

### Connected Communities

**Active mode opportunities**

1. Extension of the Te Awa River Ride cycle route.
2. Create a clear walking and cycling recreation link from the Waikato River to the Waipaa River, linking Hakarimata Ranges through Klingitanga Reserve, Jesmond Street and Waikato Esplanade.
3. Create a clear walking and cycling recreational loop to include Waipaa Esplanade Reserve, The Point, Regent Street/Old Taupiri Road, Lower Waikato Esplanade, Durham Precinct and Tuurangawaewae House.
4. Create a pedestrian and cycle connection between Te Awa River Ride cycle route (Belt Street), St Paul's Catholic School, Rugby League Club (Whatawhata Avenue), Centennial Park and the Waipaa River Trail.
5. New active mode connection over the Waikato River.
6. Upgrade active modes facilities over Waingaro Road bridge.
7. Create a gateway marker at 46 & 108 Great South Road.
8. Upgrade of corridors with active modes:
   - Jesmond Street.
   - Great South Road (Both directions - cycleway and footpath).
   - Hakarimata Road and Brownlee Avenue (shared path).
   - Waikato Esplanade (bi-directional cycleway and footpath).
   - Lower Waikato Esplanade (Both directions - cycleway and footpath).

**Intersection and roundabout upgrade**

9. Improve the safety and visibility of intersections:
   - Great South Road and River Road.
   - Great South Road and Jesmond Street (proposed new roundabout).
   - Great South Road, Princess Street and Newcastle Street (signalisation under investigation).
   - Great South Road and Waingaro Road (proposed closure under investigation).
   - Great South Road and Market Street.
   - Waingaro Road and Herschel Street (traffic calming or mirrors).
   - Old Taupiri Road (south), Great South Road and Regent Street.
   - Martin Street and Galileo Street (still under investigation).
10. Improve the safety and visibility of Jesmond Street roundabout.

**Enhancing the corridor experience**

11. Jesmond Street improvements:
    - Consider shared zones and additional informal crossings to improve pedestrian connections.
    - Additional informal crossings and streetscape upgrades. Integrate crossings with intersection upgrades and development sites.
12. Great South Road improvements:
    - Traffic calming and speed management.
    - Roadway art at existing pedestrian crossings.
    - Additional informal crossing points.
    - Beautify the streetscape with planted promenade.
    - Separated active modes corridor.
    - Formalise crossing on Galileo Street outside Ngaaruawaahia Primary School.
13. River Road:
    - Traffic calming and speed management.
    - Formalise crossings in front of Tuurangawaewae Marae.

**Transport Infrastructure**

14. Locate Transport Hub to south of Durham Precinct (location under investigation).
15. Provide bike parking at the base of the Hakarimata Ranges and The Point.
16. Identify spaces for charging points for electric vehicles and bikes at Hakarimata Ranges, Jesmond Street and Durham Precinct.
17. Define and formalise car parks at the Paterson Park in front of the netball courts.

Wayfinding signage

Active modes bridge

Sheltered and protected bike parking

Separated active modes

Tactical urbanism at crossings

Bus hub

[30]

[30] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

## Identity

### Amenities

1. Development of a reserve site masterplan for Te Mana O Te Rangi Reserve that expresses and represents hapuu koorero through signage, planting and artwork.
2. Upgrade toilets, provide shelter and seating at Paterson Park.
3. Provide rest stops, drinking fountains, bike parking, shelters and viewing platforms along the Waikato River (Lower Waikato Esplanade and Sampson Street).
4. Upgrade Waipaa Esplanade walkway trail with rest stops, lookouts, outdoor seating.
5. Create a wayfinding suite for key destinations including the following; Ngaaruawaahia town centre, Hakarimata Ranges, The Point and Waipaa Esplanade Walkway.
6. Celebrate sites of cultural significance and protect waahi tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities at Kiingitanga Reserve, The Point, Hakarimata Ranges, Tuurangawaewae Marae and House, Pukeiaahua Paa and The Flour Mill.
7. Placement of expressions (pou, koowhatu, native trees) to whakanoa (restore balance) to locations of colonial reminders.

### Maintenance/CPTED/Safety

9. Fix light bulbs that are not working along Great South Road.
10. Introduce mirrors and lights at staircase at the base of the bridge.
11. Trim overgrown vegetation at 3 Galileo Street, 3 Kent Street, The Point, Great South Road and Market Street.
12. Clean up of graffiti at 11 Jordan Street, 21 River Road, 3 Broadway Street, Great South Road bridge and along Great South Road.

Other projects

- Review and update the Commercial Design Guidelines.
- Undertake maintenance and repair of street lighting across the township.

Cultural storytelling signage

Integrated narratives

Shelter and shade at parks

Viewing platform along river

Village green/Town Square

Integrated gateway and interpretive signage

[31]

[31] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

## 4.4 Implementation

Some of the methods and tools that will be used to implement the structure plan and town centre plan are summarised below.

**District Plan**
The district plan is the legislative rule book which sets out what development can and can't be done and where in the district. Structure plans and town centre plans will form the basis for amendments to the district plan via plan changes (to an operative district plan) and plan variations (to a proposed district plan) to enable the development set out in the plans.

**Long Term Plan**
The long-term plan (LTP) provides direction on the provision and funding of infrastructure and services within the Waikato district. Projects identified in this paln will need to be identified in the LTP for funding. Not all projects will initially make it into the LTP as the timing may fall outside of the first ten years, or there may be budget constraints, but over time with each three yearly review more projects can be added as others are completed.

**Asset and Activity Management Plans**
The Waikato District Council prepares asset and activity management plans which set the various needs, levels of service and demands of assets (e.g. roading, wastewater, water supply, facilities, reserves and open spaces). These are an essential tool in planning and funding infrastructure and services.

**Partnerships**

Waikato District Council will implement the *Waikato 2070* in partnership with various organisations and groups to ensure the vision and future development expectations are achieved. The Waikato District Council will work alongside organisations and groups, such as:

- Waikato-Tainui
- Tangata Whenua/Mana Whenua
- Ministry of Education
- Ministry of Housing and Urban Development
- Ministry of Innovation, Business and Employment
- District Health Boards
- New Zealand Transport Agency
- Kiwi Rail
- Utility providers
- Tourism agencies
- Adjoining local authorities
- Waikato Regional Council
- Community boards, community committees, and community groups
- Local business associations
- Kainga Ora
- Police New Zealand / Fire and Emergency New Zealand
- Heritage New Zealand Pouhere Taonga

**Implementation Table**
The following table identifies the key moves, projects or outcomes that have been identified throughout this document. It considers the alignment with the outcome principles, the project complexity and likely timeframe required to implement the projects. The table provides a tool for future identification and prioritisation of investment across the three settlements across the short, medium and long term.

## Ngaaruawaahia

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **NATURAL ENVIRONMENT** | | | | | | |
| 2. Complete masterplan for The Point. | ✓ | | | ✓ | | |
| 3. Improve resilience to localised flooding through a possible suite: | | | | | | |
| · Increased permeable surfaces and attenuation planting. | ✓ | ✓ | ✓ | | | ✓ |
| · Riverbank planting. | ✓ | ✓ | ✓ | | | ✓ |
| · River edge terracing to protect recreation areas next to the river. | ✓ | ✓ | ✓ | | | ✓ |
| · Greening of current paved spaces (swales). | ✓ | ✓ | ✓ | | | ✓ |
| · Wetlands (tbc). | ✓ | ✓ | ✓ | | | ✓ |
| · Water sensitive urban design (tbc). | ✓ | ✓ | ✓ | | | ✓ |
| **CONNECTED COMMUNITIES** | | | | | | |
| 1. Extension of the Te Awa River Ride cycle route. | | | ✓ | | | ✓ |
| 4. Create a pedestrian and cycle connection between Te Awa River Ride cycle route (Belt Street), St Paul's Catholic School, Rugby League Club (Whatawhata Avenue), Centennial Park and the Waipaa River Trail. | | | ✓ | | | ✓ |
| 5. New active mode connection over the Waikato River. | | | ✓ | | | ✓ |
| 6. Upgrade active modes facilities over Waingaro Road bridge. | | | ✓ | | | ✓ |
| 7. Create a gateway marker at 46 & 108 Great South Road. | ✓ | | | ✓ | | |
| 8. Upgrade of corridors with active modes: | | | | | | |
| · Jesmond Street. | | | ✓ | | ✓ | |
| · Great South Road (Both directions - cycleway and footpath). | | ✓ | | | ✓ | |
| · Hakarimata Road and Brownlee Avenue (shared path). | ✓ | | | ✓ | | |
| · Waikato Esplanade (bi-directional cycleway and footpath). | ✓ | | | ✓ | | |
| · Lower Waikato Esplanade (Both directions - cycleway and footpath). | ✓ | | | ✓ | | |
| 9. Improve the safety and visibility of intersections: | | | | | | |
| · Great South Road and River Road. | | ✓ | ✓ | | | ✓ |
| · Great South Road and Jesmond Street (proposed new roundabout). | | ✓ | ✓ | | | ✓ |
| · Great South Road, Princess Street and Newcastle Street (signalisation under investigation). | | ✓ | ✓ | | | ✓ |
| · Great South Road and Waingaro Road (proposed closure under investigation). | | ✓ | ✓ | | | ✓ |
| · Great South Road and Market Street. | | ✓ | ✓ | | | ✓ |
| · Waingaro Road and Herschel Street (traffic calming or mirrors). | | ✓ | | | ✓ | |
| · Old Taupiri Road (south), Great South Road and Regent Street. | ✓ | | | | | ✓ |
| · Martin Street and Galileo Street (still under investigation). | | ✓ | ✓ | | | ✓ |
| 10. Improve the safety and visibility of Jesmond Street roundabout. | | ✓ | ✓ | | | ✓ |
| 11. Jesmond Street improvements: | | | | | | |
| · Consider shared zones and additional informal crossings to improve pedestrian connections. | | | ✓ | | ✓ | |
| · Additional informal crossings and streetscape upgrades. Integrate crossings with intersection upgrades and development sites. | | | ✓ | | ✓ | |

## Ngaaruawaahia

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| 12. Great South Road improvements: | | | | | | |
| · Traffic calming and speed management. | | ✓ | | | ✓ | |
| · Roadway art at existing pedestrian crossings. | | ✓ | | | ✓ | |
| · Additional informal crossing points. | | ✓ | | | ✓ | |
| · Beautify the streetscape with planted promenade. | | ✓ | | | ✓ | |
| · Separated active modes corridor. | | ✓ | | | ✓ | |
| · Formalise crossing on Galileo Street outside Ngaaruawaahia Primary School. | ✓ | ✓ | | ✓ | | |
| 13. River Road: | | | | | | |
| · Traffic calming and speed management. | | ✓ | | | ✓ | |
| · Formalise crossings in front of Tuurangawaewae Marae. | | ✓ | | | ✓ | |
| **IDENTITY** | | | | | | |
| 5. Create a wayfinding suite for key destinations including the following; Ngaaruawaahia town centre, Hakarimata Ranges, The Point, Waipaa Esplanade Walkway, Te Awa River Ride cycle route and proposed extension. | ✓ | | | ✓ | | |
| 6. Celebrate sites of cultural significance and protect waahi tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities at: | | | | | | |
| · Kiingitanga Reserve. | ✓ | | | | ✓ | |
| · The Point. | ✓ | | | | ✓ | |
| · Hakarimata Ranges. | ✓ | | | | ✓ | |
| · Tuurangawaewae Marae. | ✓ | | | | ✓ | |
| · Tuurangawaewae House. | ✓ | | | | ✓ | |
| · Pukeiaahua Paa. | ✓ | | | | ✓ | |
| 7. Placement of expressions (pou, koowhatu, native trees) to whakanoa (restore balance) to locations of colonial reminders. | | ✓ | | | ✓ | |

**View of Great Street Road in Ngaaruawaahia**

[32]

# Hopuhopu

[32] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

# 5 Hopuhopu

Hopuhopu played a crucial role for Waikato-Tainui in the raupatu (confiscation) treaty settlement negotiations held from 1989 until 1995. Through the treaty settlement process, the land was returned to Waikato-Tainui. It is held under Te Wherowhero title, which was established as part of the Waikato Raupatu Claims Settlement Act 1995. Te Wherowhero title land is held by custodian trustees for the benefit of all members of Waikato-Tainui.

From 1922 until 1989, Hopuhopu served as an active military camp. As part of base closures within the New Zealand Defence Force, Hopuhopu then ceased to be an active military camp. When the land was returned to Waikato-Tainui, a complex including the Waikato-Tainui College for Research and Development was established.

Through the proposed Waikato District Plan, Waikato-Tainui applied for precinct zoning that would enable the unique innovation hub and residential proposal. Waikato-Tainui's eventual success led to preparation of a masterplan for the area.

The masterplan for the Hopuhopu innovation hub includes housing, recreation, education, and nursery facilities. It also will be home to the Tribal Hub. This structure plan seeks to support the development of the Hopuhopu Innovation hub. Focus is on facilitation of access to Hopuhopu from Ngaaruawaahia and Taupiri – this namely being through the extension of the Te Awa River Ride.

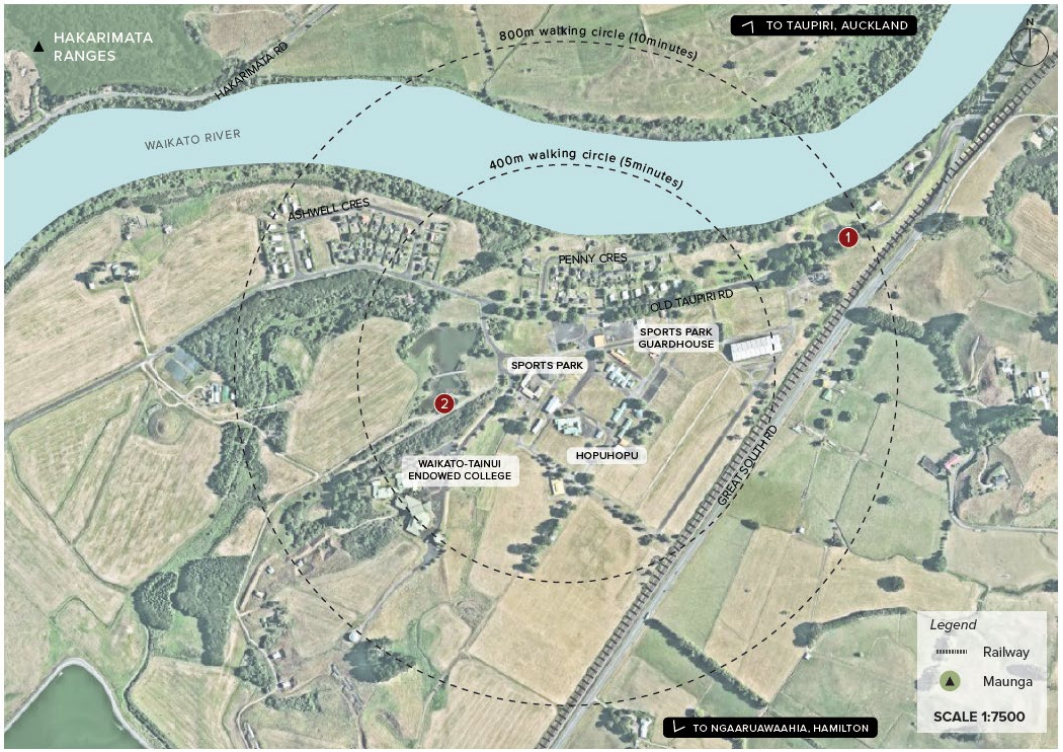



*Figure 5-1: Hopuhopu Village*

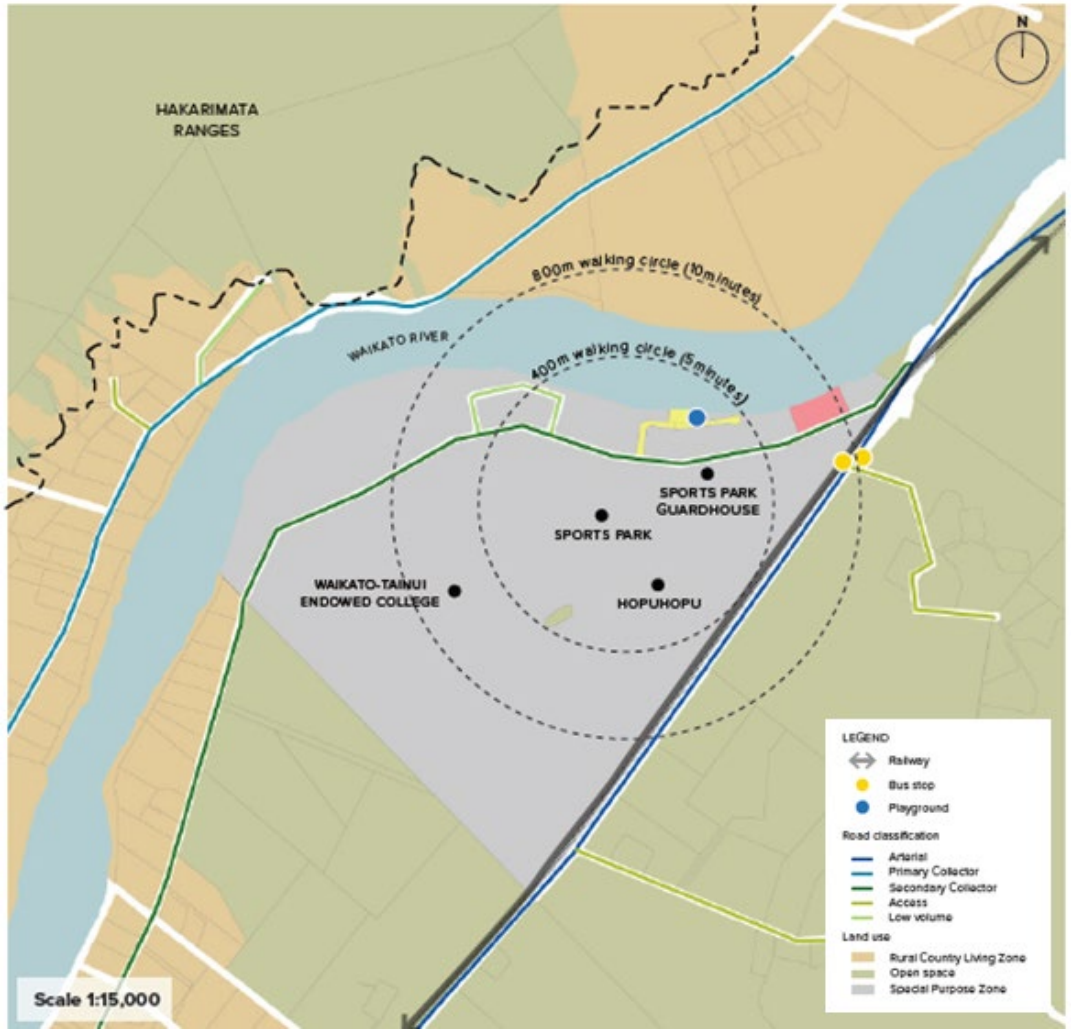
## 5.1 Site Context

### 5.1.1 Urban Features and Site Features

The majority of Hopuhopu is zoned as special purpose. The site consists of various buildings, with the most significant being the Waikato-Tainui Endowed College for Research and Development. There are existing housing units along the Waikato River, storage and maintenance buildings, and a large portion of the area is dedicated to sports fields and open space.

Waikato-Tainui are currently developing the 170 ha Hopuhopu Innovation Precinct over the next 20–30 years. The precinct will include housing, recreation, a nursery, education facilities, a tribal hub, business incubator, and a whare taonga, to share the rich history of Waikato-Tainui.

The relationship of this document with Hopuhopu is in support of the aspirations of Waikato-Tainui on this site and to identify how access and connections to Ngaaruawaahia and Taupiri can be provided that strengthen the connection between these three towns.

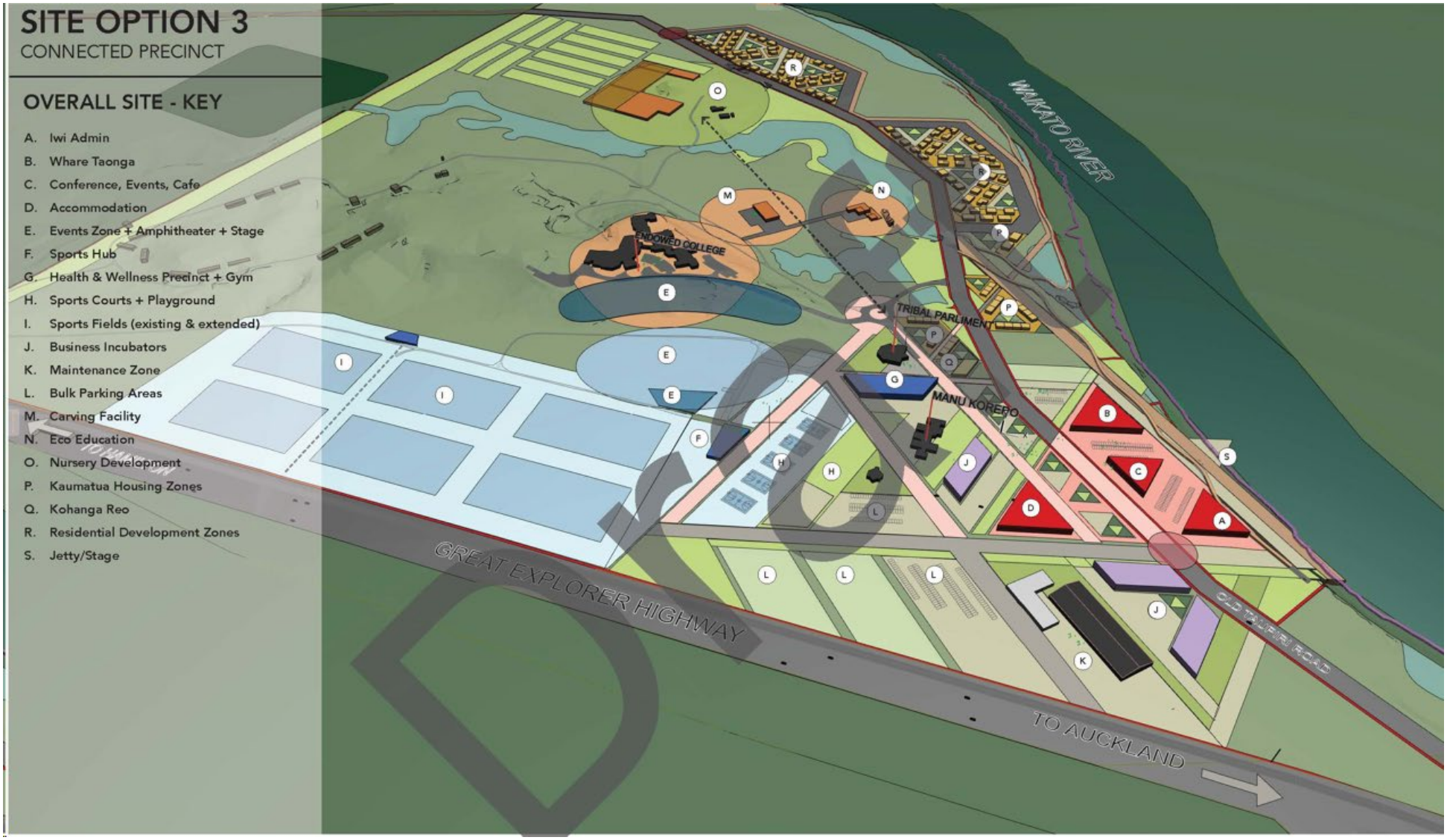


[33]

*Figure 5-2: Hopuhopu Site Features*

[33] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

### 5.1.2 Waikato – Tainui, Hopuhopu Precinct Plan[34]




[34] Note: Waikato Tainui are still working through the final iteration of their innovation hub plans. The final version may look different to the presented.

## 5.2 Insights and Opportunities

Opportunities have been identified for the settlement of Hopuhopu through a multi-stage approach. These have focused on how the development of Hopuhopu by Waikato-Tainui can be supported through connectivity and access. The opportunities are a combination of:

- The contextual analysis.
- A spatial analysis undertaken through a desktop assessment.
- A site visit in combination with council staff, elected members and community board representatives.
- Input received from technical reports.
- Inputs received by council through community surveys.

Feedback was received from the community via online engagement and community open day events held in Ngaaruawaahia, Hopuhopu and Taupiri. These sought to understand the issues experienced by the community, and identify opportunities seen by those that live, work and play in the three towns to improve the liveability of these places.

The opportunities for investment have been grouped under the headings of the design principles, noting that some opportunities will align with multiple design principles.

The opportunities were grouped into themes relating to:

| | |
|---|---|
| Connected Communities | Opportunities relating to transport and accessing the places people want to get to, such as the town centre and key destinations like Tuurangawaewae Marae. |
| Identity | Opportunities related to telling the history, and highlighting the identity, of Ngaaruawaahia, Hopuhopu and Taupiri. |
| Natural Environments | Opportunities related to improving access to, and the quality of, the natural environment. |
| Growth and Economy | Opportunities related to enhancing commercial activity and supporting future growth. |

The following pages provide a summary of the opportunities identified through this process. Some of the opportunities sit outside of the remit of Waikato District Council, however were recorded to fully understand the issues and opportunities seen by the community. These opportunities have been assessed and considered by council as part of this process and have informed the key moves and outcomes. Not all opportunities have been progressed.

## Hopuhopu Opportunities

**Connected Communities**
Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.

1. Extend the Te Awa River Ride cycle route from Ngaaruawaahia through Hopuhopu with the inclusion of wayfinding, rest stops and improved facilities along the river.
2. Provide safe and prioritised active mode connections between Ngaaruawaahia and Taupiri that is located off the main road. Consider safety, directness and visibility.
3. Upgrade and bus shelters and improve access to bus stops on Great South Road.
4. Review bus routes and bus stops down Old Taupiri Road in response to anticipated growth of the settlement, providing residents better access to public transport.

**Identity**
Strengthen the existing identity and character of the place.

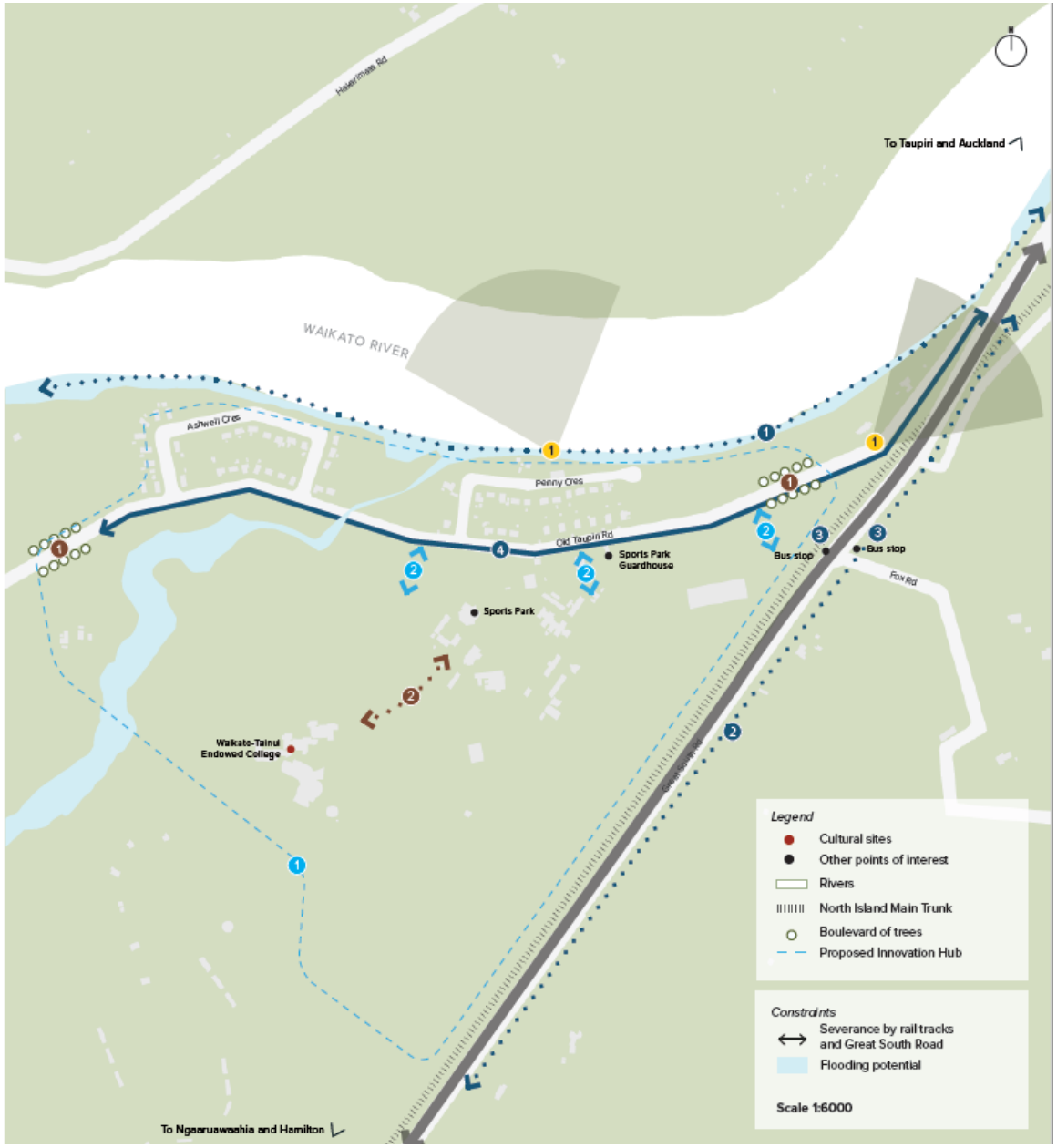
1. A boulevard of trees line Old Taupiri Road as you enter the Hopuhopu area from the north-east. There is opportunity for a physical marker and a similar boulevard to be planted on the west as gateways into the township.
2. Enable continued development of cultural and visitor activities in collaboration with Waikato-Tainui that reflects the heritage of the area.

**Natural Environment**
Connect communities to blue-green networks and provide recreational activities and opportunities.

1. Opportunities to open up view corridors to significant natural features such the Waikato River, Taupiri Maunga and Hakarimata Ranges.

**Growth and Economy**
Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.

1. Future Hopuhopu Innovation Hub which will include residential, commercial, education and recreational functions.
2. Proposed entry points.




35

[35] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

## 5.3 Key Moves

# Key Moves & Outcomes

The opportunities identified were shared with the community across two open days and through online engagement, where feedback and support was gathered. The opportunities were also assessed against the agreed Outcome Principles for the project, providing a basis for assessment.

The feedback received relating to the opportunities identified were considered together to confirm the key moves and outcomes for Hopuhopu and how these are to be prioritised over the short, medium and long term. It is recognised that some of the projects are highly complex, will have associated cost, and will need further detailed investigation before they are able to be confirmed in the Long Term Plan for delivery.

The key moves and outcomes have been identified on the following maps. The anticipated prioritisation of these is addressed in the Implementation Section of the document. The key moves and outcomes have also been grouped into the design principles of:

- Connected Communities
- Identity
- Natural Environments
- Growth and Economy

Walking and cycling activities have been identified separately as inputs from the Transport Workstream.

## Hopuhopu

### Connected Communities

**Active mode opportunities**

1. Extension of the Te Awa River Ride through Hopuhopu with the inclusion of rest stops and formal and informal viewing areas.
2. Create a safe and clear active mode connection between Ngaaruawaahia and Taupiri along Great South Road (separated cycleway).

**Enhancing the pedestrian experience**

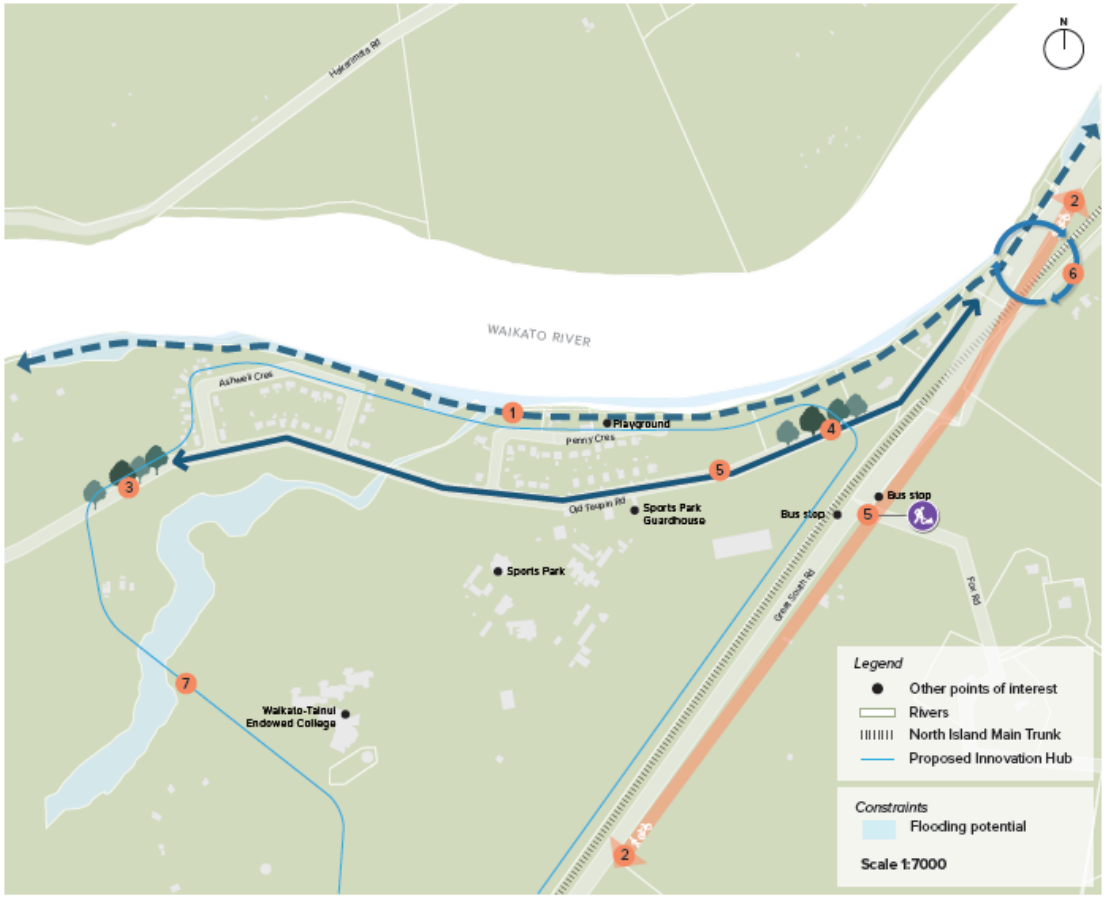
3. Establish a boulevard of trees as a gateway marker into Hopuhopu.
4. Protect existing trees/boulevard.
5. Provide bus shelters and a new pedestrian crossing for existing and future bus stops. Explore the re-location of bus stops to a location within Hopuhopu that does not require users to cross Great South Road and the NIMT and provides better access to public transport for residents.

**Intersection and roundabout upgrade**

6. Improve the safety and visibility of the Old Taupiri (north)/Great South Road intersection (under investigation).

### Identity

7. Support the development of the Waikato-Tainui Masterplan for Hopuhopu.



Rest stop and viewing area

Upgraded bus shelters

Riverside shared path

Tree boulevard

[36]

[36] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment, 2024

## 5.4 Implementation

Some of the methods and tools that will be used to implement the *Waikato 2070* are summarised below.

**District Plan**
The district plan is the legislative rule book which sets out what and where development can proceed in the district. Structure plans and town centre plans will form the basis for amendments to the district plan via plan changes (to the operative district plan) and plan variations (to the proposed district plan) to enable the development of these growth areas identified in *Waikato 2070*.

**Long Term Plan**
The long term plan (LTP) provides direction on the provision and funding of infrastructure and services within the Waikato district. The location and timing of the growth cells as set out in *Waikato 2070* will inform the LTP in respect to the necessary funding of infrastructure and services in these areas.

**Asset and Activity Management Plans**
The Waikato District Council prepares asset and activity management plans which set the various needs and demands of assets (e.g. roading, wastewater, water supply, facilities, reserves and open spaces). These are an essential tool in planning and funding infrastructure and services.

**Partnerships**

Waikato District Council will implement the *Waikato 2070* in partnership with various organisations and groups to ensure the vision and future development expectations are achieved. The Waikato District Council will work alongside organisations and groups, such as:

- Waikato-Tainui
- Tangata Whenua/Mana Whenua
- Ministry of Education
- Ministry of Housing and Urban Development
- Ministry of Innovation, Business and Employment
- District Health Boards
- New Zealand Transport Agency
- Kiwi Rail
- Utility providers
- Tourism agencies
- Adjoining local authorities
- Waikato Regional Council
- Community boards, community committees, and community groups
- Local business associations
- Kainga Ora
- Police New Zealand / Fire and Emergency New Zealand
- Heritage New Zealand Pouhere Taonga

**Implementation Table**
The following table identifies the key moves and outcomes that have been identified through this document. It considers the alignment with the outcome principles, the project complexity and likely timeframe required to implement the projects. The table provides a tool for future identification and prioritisation of investment across the three settlements across the short, medium and long term.

## Hopuhopu

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **CONNECTED COMMUNITIES** | | | | | | |
| 1. Extension of the Te Awa River Ride cycle route through Hopuhopu with the inclusion of rest stops and formal and informal viewing areas. | | | ✓ | | | ✓ |
| 2. Create a safe and clear active mode connection between Ngaaruawaahia and Taupiri along Great South Road (separated cycleway). | | | ✓ | | ✓ | |
| 3. Establish a boulevard of trees as a gateway marker into Hopuhopu. | | ✓ | | | ✓ | |
| 6. Improve the safety and visibility of the Old Taupiri (north)/Great South Road intersection (under investigation). | | ✓ | | | ✓ | |
| **BUSINESS AS USUAL** | | | | | | |
| 4. Protect existing trees/boulevard. | ✓ | | | ✓ | | |
| 5. Provide bus shelters and a new pedestrian crossing for existing and future bus stops. | ✓ | | | ✓ | | |

View of Hakarimata Ranges

# Taupiri

# 6 Taupiri

## 6.1 Site context

The natural landscape surrounding Taupiri is dominated by the Waikato River and the Taupiri Mountain all of which have significant cultural value to the local iwi, Waikato – Tainui, and Maaori generally. Taupiri Mountain (Taupiri Maunga) – the sacred burial ground for Maaori of the Waikato iwi and is reserved for Maaori kings and queens. In the 17th century the chief Te Putu had his paa on Taupiri Mountain. After Te Putu was treacherously killed by another chief, Ngaatokowaru, he was buried on the mountain, and it became tapu (sacred). The township of Taupiri was settled by Europeans in the 1870s and became a farming centre with flax mills, sawmill, and a dairy factory.

The town currently comprises mainly residential areas with some smaller commercial activities dotted around the central-northern part of the town. The land identified in the Proposed Waikato District Plan as future urban zone (FUZ) around the south-eastern portion of Taupiri township will assist in delivering a well-connected and culturally sensitive community.

*Figure 6-1: Taupiri Village*

## Site photos

### 6.1.1 Population Growth, Market Viability and Development Pressures

**Population Growth**

The estimated population for Taupiri in 2024 is 700 (University of Waikato, 2021) and the area is projected to experience steady population growth over the next 26 years leading to a population of around 1,200 by 2050.

| **Taupiri** | 2018 | 2024 | 2034 | 2044 | 2054 |
|---|---|---|---|---|---|
| Population Projection | 559 | 721 | 915 | 1,129 | 1,325 |
| Households Projection | 222 | 225 | 282 | 359 | 418 |

(Waikato District Council, 2021)

Tables 6-1 & 6-2 illustrate a range of growth estimates, reflecting what Taupiri's population and dwelling count might be in future, based on different scenarios. The medium term proposes a possible future based upon a realistic uptake of the zoning within the Proposed Waikato District Plan – Decisions version, and does not account for appeals, with any successful appeal, this could eventuate to additional capacity. The long term scenario illustrates a realistic uptake of all residential growth cells for Taupiri within *Waikato 2070.*

*Table 6:1: Dwellings Capacity Scenario*

| Dwellings | | | |
|---|---|---|---|
| Scenario | Current dwellings | Reasonably realised capacity | Total dwellings |
| Medium term - 2032 | 270 | 50 | 320 |
| Long term - 2052 | 270 | 1,190 | 1,460 |

(Market Economics, 2023)

*Table 6:2: Population Growth Scenarios*

| Population | | | |
|---|---|---|---|
| Scenario | Current population | Additional population | Projected future population |
| Medium term - 2032 | 720 | 130 | 850 |
| Long term - 2052 | 720 | 3,220 | 3,940 |

(Market Economics, 2023 & University of Waikato, 2021)

For the discussion of growth, it is also important to understand the demand and overall picture of sufficiency within Taupiri. Table 6-3 illustrates demand against additional capacity and shows that Taupiri has a shortfall over the medium and long term.

*Table 6:3: Taupiri Sufficiency Assessment*

| **Timing** | **Demand + Margin** | **Reasonably Realised Capacity** | **Sufficiency** |
|---|---|---|---|
| Short Term (2022-2025) | 10 | 10 | 0 |
| Medium Term (2022-2032) | 200 | 50 | -150 |
| Long Term (2022-2052) | 1200 | 1190 | -10 |

(Market Economics, 2023)

## Commercial and Retail Development

The retail catchment for Taupiri is expected to continue to grow at a steady pace over the next 30 years. The retail catchments are areas that are connected to the townships and represent where the townships would derive most of their customers. It is estimated that the retail catchment currently has a population of 800 and is expected to grow by around +73% by 2053 which is a total base population of around 1,380 people by 2053.

Through our technical market assessment, it has been noted that there is capacity within Taupiri to meet future demand and is recommend that no additional commercial/retail zoning is required. However, recommendations are also made to strengthen and identify a commercial core, as Taupiri in its current state has its commercial/retail zoning sporadically spread. Strategic sites have been identified in Taupiri for retail/commercial which will provide a more defined economic core for Taupiri without diluting or compromising the existing state. Taupiri follows a similar recommendation to Ngaaruawaahia where consolidation and a focus must be made on the economic core of Taupiri for economic revitalisation.

The full Economic Assessment can be found in Appendix 1

With the release of the proposed Waikato district plan – decisions version the commercial/retail zones have been revamped making it more permissive to develop, which opens more opportunities for a variety of shops in the future, this being highly sought after in our initial structure plan/town centre survey.

## Industrial

Taupiri' s geographic location is strategically located adjacent to State Highway 1, offering easy on and off access for heavy vehicles. This access, coupled with a portion of Taupiri being signalled in *Waikato 2070* for industrial growth, inspires new employment and growth opportunities. Through the work done in the Future Proof business development capacity assessment 2023 (BDCA)[37] Taupiri is grouped into "Ngaruawahia", it is likely that Taupiri occupies a sizeable portion of this capacity represented.

Noteworthy is the industrial growth cell on the eastern side of SH1. This growth cell is identified in *Waikato 2070* and has been included as part of the supply in the future proof BDCA work. It is not recommended in this structure plan that the eastern area is rezoned yet, however future urban zone (FUZ) in the district plan might be appropriate in the future for reasons outlined in section 6.1.2 of this report. We envision that this will not have an impact on the sufficiency of industrial supply.

*Table 6:4: Waikato District Industrial Space Sufficiency Summary – GFA sqm*

| Waikato District Industrial Space Sufficiency Summary (GFA sqm) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Demand | | | Total GFA Capacity | | | Sufficiency | | |
| Area | Short Term | Medium Term | Long Term | ODP | PDP | Waikato 2070 | Short Term | Medium Term | Long Term |
| Ngaaruawaahia | 3,158 | 11,184 | 35,522 | 115,114 | 194,165 | 801,464 | | | |

(Market Economics, 2024)

*Table 6:5: Waikato District Industrial Space Sufficiency Summary – ha*

| Waikato District Industrial Space Sufficiency Summary (ha) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Demand | | | Total GFA Capacity | | | Sufficiency | | |
| Area | Short Term | Medium Term | Long Term | ODP | PDP | Waikato 2070 | Short Term | Medium Term | Long Term |
| Ngaaruawaahia | 0.8 | 2.7 | 8.5 | 30.1 | 54.8 | 209.3 | | | |

(Market Economics, 2024)

[37] https://futureproof.org.nz/assets/FutureProof/Future-Proof-Business-HBA-2023_WR.pdf

### 6.1.2 Urban Features and Site Features

Taupiri Village is located at the foot of Taupiri Maunga, a significant site for Waikato-Tainui. Adjacent to the Waikato River, and the Mangawara Stream, with strong growth anticipated to occur in the area.

There are a number of paa sites in and near to the village, adding to the significance of the area for mana whenua. The town is located on Great South Road, previously known as SH1, the North Island Main Trunk bisects the town, creating a barrier to movement particularly the east-west connections for people walking and people on bikes.

With the opening of the Waikato Expressway Taupiri is now adjacent to the main transport route through the Waikato, and remains a busy route with the interchange providing access to the township of Huntly.
It is a well-known historic town with a range of special sites and buildings.

There are small areas of commercial activity within the village, focused on Te Putu Street. The Taupiri service centre, accessed via Gordonton Road, provides some convenience retail for local residents, but predominantly serves through-traffic.

A town or village, represented by its building footprints, provides valuable insights into its urban layout and historic development patterns. In the case of Taupiri (dating from the 1860s and before), variation in the building sizes and shapes indicate different land uses within the village (large, uniform footprints suggest retail or commercial areas, as found within the small commercial activity node along Te Putu Street) while smaller, irregular footprints indicate the surrounding residential areas.

The proposed district plan has identified new residential areas south of Te Putu Street between Murphy Lane and Button Lane to facilitate future residential and industrial growth.

The upgrade of services should be carefully identified and planned to support both employment and residential growth within a catchment walkable from the township. By focusing on urban forms of growth primarily in towns and settlements and encouraging compact urban development, residents have the opportunity to "live, work, and play" in their local area.

*Figure 6-2: Taupiri Site Features*[38]

#### Edge Conditions

A high quality public realm is made up of a number of qualities that engages with pedestrians. The three main qualities investigated here are:

- Permeability
- Transparency
- Built to Boundary

Permeability looks at the provision of pedestrian access points at street frontage. Transparency involves the visual extension of the public space in to the private

[38] Ngaaruawaahia, Hopuhopu & Taupiri Urban Design Assessment,

space and is particularly important for retail uses where they rely on visual cues to draw in passing pedestrians.

The public/private interfaces of the Taupiri town centre streetscapes have been visually evaluated based on the above qualities and identified on the plans below as strong, weak, poor or missing edge conditions.

A building frontage that illustrates all three of the above characteristics is identified as having a 'strong' edge condition and a building frontage with just one of three as 'poor'.

The edge condition along the main street of Taupiri is characterised by weak and missing frontages. Future opportunity to consolidate the centre with commercial development that is built to the boundary should be encouraged.

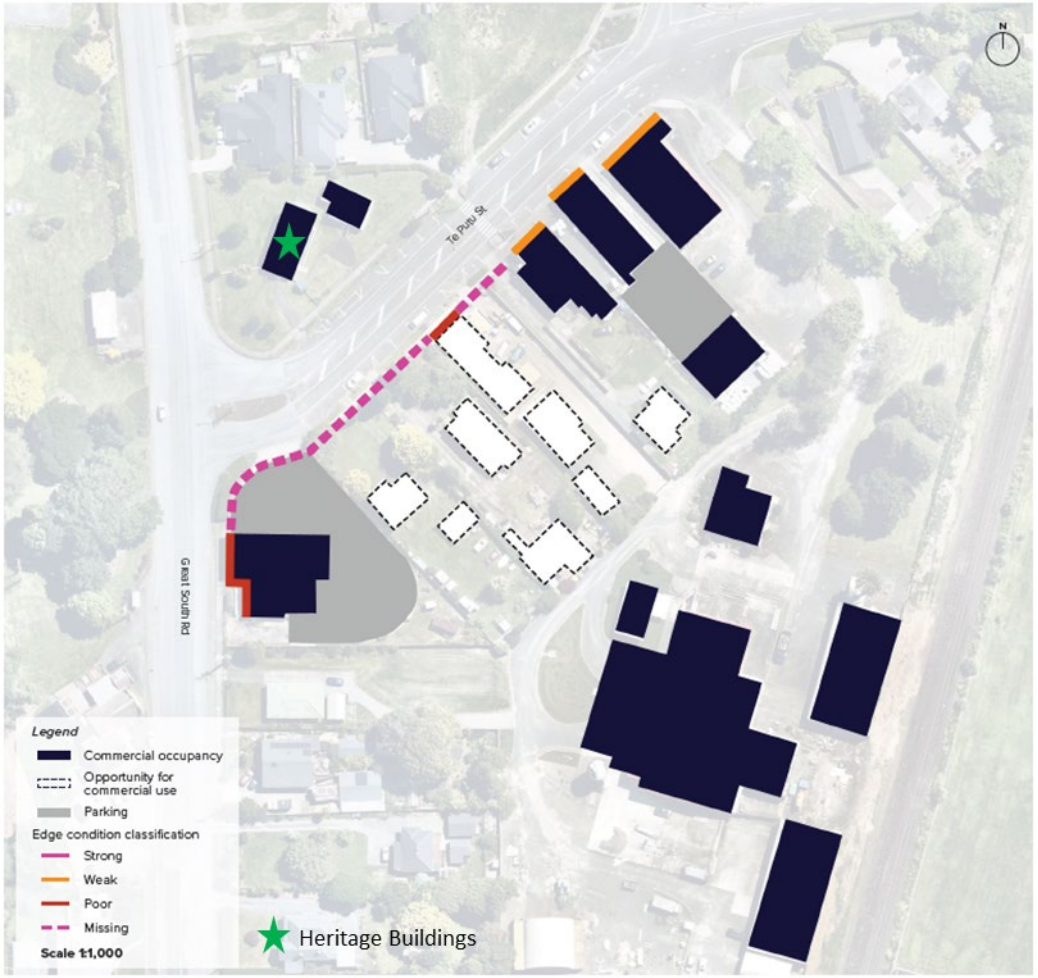



*Figure 6-3: Taupiri Edge Conditions*

### *6.1.2.1 Land use / Zoning Changes*

As part of the structure plan process consideration is given the existing land use pattern and determined if still fit for purpose. Within the context of Taupiri Village, there will be minimal recommended changes due to the recent Proposed District Plan decisions with many of the land use changes being addressed already. The recommended changes within the commercial core area of the Taupiri Village shown below are generally small in nature.

Taupiri – Land Use before recommended changes.

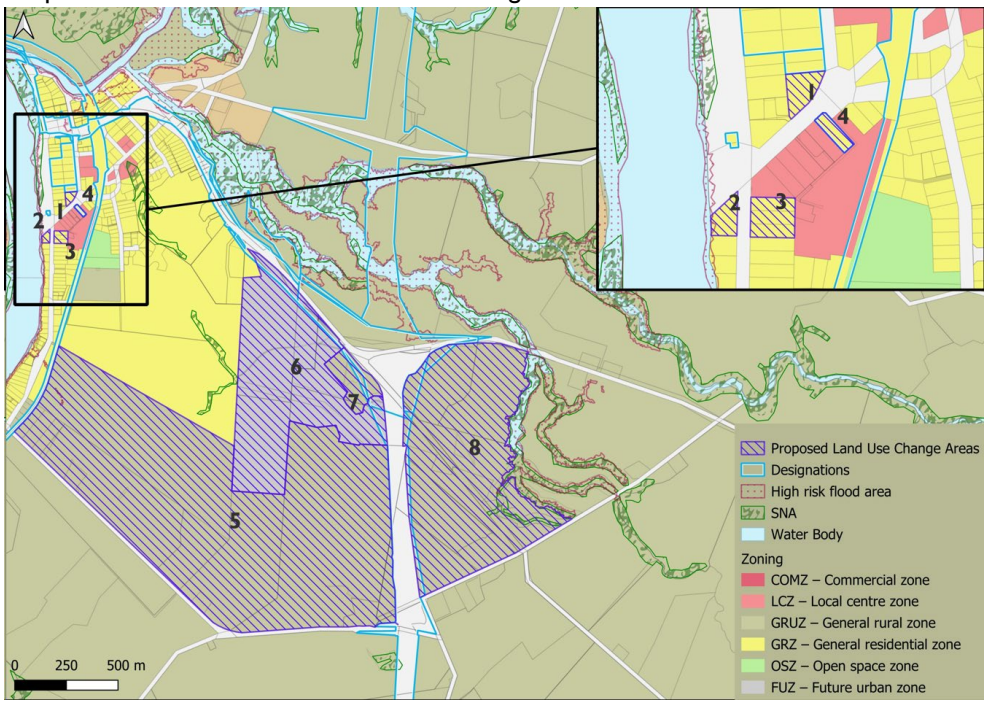



*Figure 6-5: Taupiri – Land Use before recommended changes.*

Taupiri - Land Use after recommended changes.

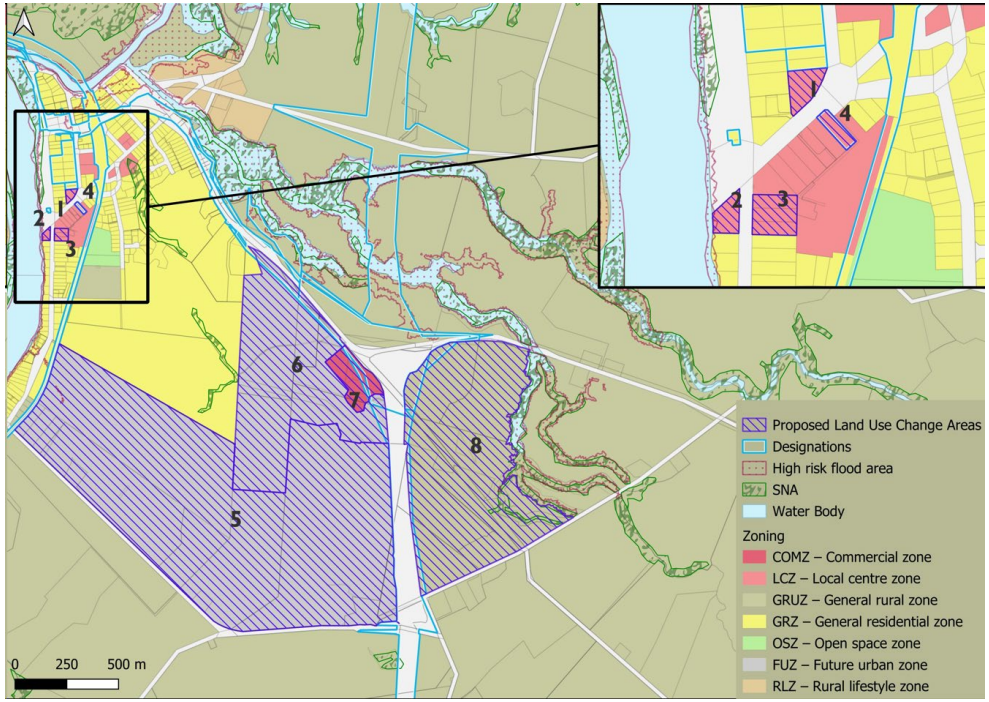
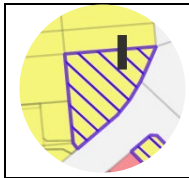
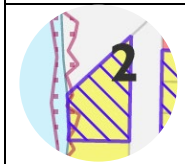
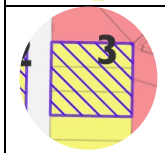
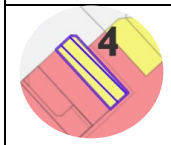
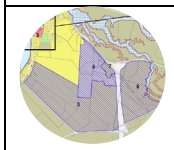
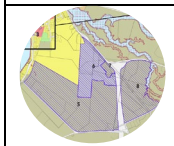



*Figure 6-4: Taupiri - Land Use after recommended changes.*

**Proposed Land Use Changes**

| | Area | Zone Change | Timing | Notation |
|---|---|---|---|---|
|  | 1 | General Residential Zone > Local Centre Zone. | Short Term | The extent of this change relates to 5 Te Putu Street. This proposed change is to align with the surrounding zoning and provide better adjacent land use compatibility, a more pragmatic land use pattern, and a more defined economic core, which allows for mixed use development. |
|  | 2 | General Residential Zone > Local Centre Zone. | Short Term | The extent of this change relates to 60 Great South Road. This proposed change is to align with the current use of the site and provide a better defined economic core. |
|  | 3 | General Residential Zone > Local Centre Zone. | Long Term | The extent of this change relates to 59, 61, & 63 Great South Road. This proposed change is to align with the surrounding zoning and provide better adjacent land use compatibility, a more pragmatic land use pattern, and a more defined economic core. |
|  | 4 | General Residential Zone > Local Centre Zone. | Short Term | The extent of this change relates to 10 Te Putu Street. This proposed change is to align with the surrounding zoning and provide better adjacent land use compatibility, a more pragmatic land use pattern, and a more defined economic core. |
|  | 5 | Rural Zone › Future Urban Zone. | Long Term | The extent of this change relates to a portion of 61 Murphy Lane, 520, 520A, 590, 598, 600, 682, 642, 702, & 706 Kainui Road. This area is not required to serve the immediate demand in Taupiri, and will be better suited for the long term, The proposed FUZ is to ensure that the land is protected from inappropriate land uses until such time it is required. When implementing this into the District Plan, FUZ or a live zone/s will be considered depending on timing, technical evidence and community engagement to support the Plan Variation/Plan Change. |
|  | 6 | ENV-2022-AKL-000057 (Appeal) to resolve land use. | N/a | The extent of this relates to 70 Button Lane, 2219, & 2171 Gordonton Road. The determination of the land use will be left to the appeals process. |
| | 7 | General Rural Zone › Commercial Zone | Short Term | The extent of this change relates to 2189 Gordonton Road. The site is currently being used as a service centre, the proposed Commercial zone will align with the existing activity. |

| | | | | |
|---|---|---|---|---|
| | **8** | General Rural Zone › General Raul Zone | N/a | The extent of this relates to 132, 158 Kerie Road, Property Number 2020540, & 2125A Gordonton Road. It is not recommended in this structure plan that the eastern area is rezoned yet, however future urban zone (FUZ) in the district plan might be appropriate in the future once further work is done to investigate the transport implications and servicing requirements. |

### 6.1.3 Infrastructure

## Transport – Multimodal (PT and Walking and Cycling); Road Layout, Parking

Taupiri has strong north/south connections with the road network running parallel to the Waikato River and the North Island Main Trunk (NIMT). East/west connections are limited to where the current network crosses the NIMT at Gordonton Road to the north and Te Putu Street to the south.

Walking and cycling facilities are limited and generally constrained. There are underpasses for pedestrian access under Gordonton Road and Te Putu Street that are of a poor standard. There are no east/west connections to the south of Te Putu Street.

Several opportunities exist to improve the overall connectivity and safety for pedestrian and cyclists within Taupiri Village, with the key improvements (but not limited to) including the following:

- Safe walking and cycling connections to the service station precinct on Gordonton Road.
- A safe crossing facility at Great South Road bus stop.
- Safer crossings at Te Putu St from Educare to the footpath across the road.
- Detune Great South Road to enable better cross connectivity and minimise severance to the river.
- Provide interim crime prevention through environmental design (CPTED) solutions at the two underpass – Te Putu Street and Greenlane Rd – and consider future alternative crossing solutions.
- Upgrade active modes facilities on Te Putu Street bridge.
- Improve the safety of Murphy lane/Te Putu St intersection visibility.

The image on the overleave graphically illustrating the active mode opportunities for Taupiri.

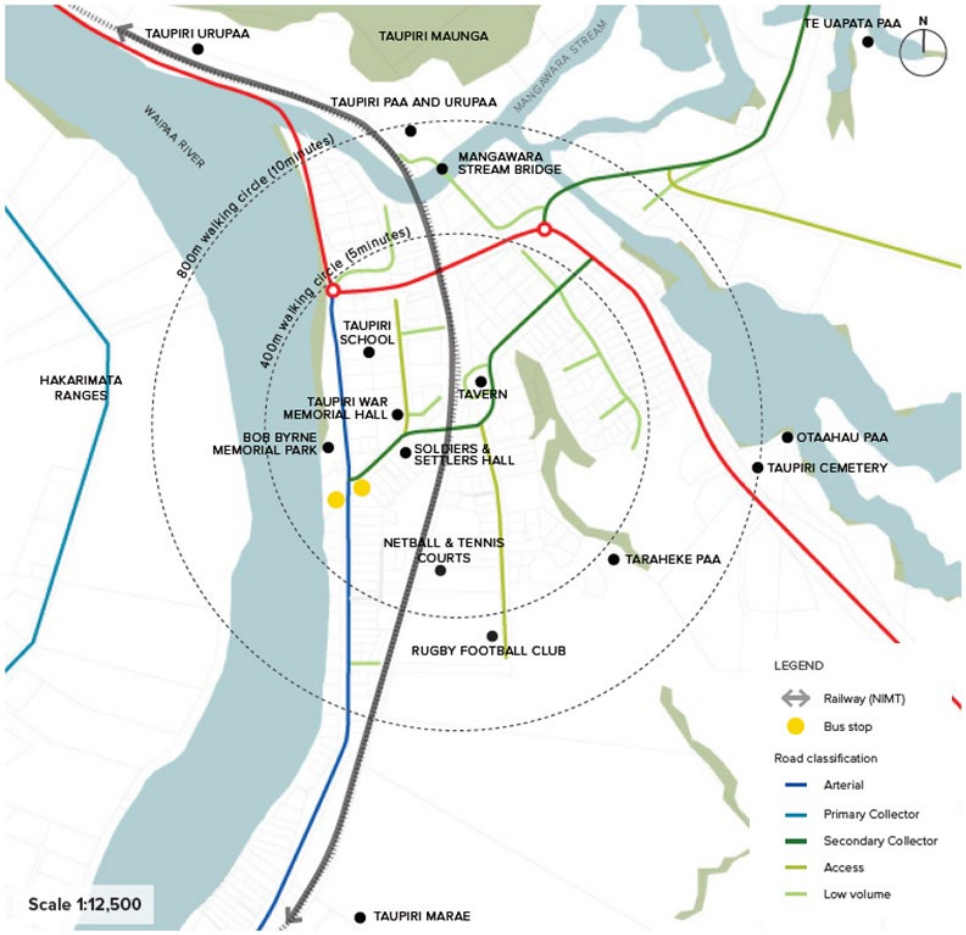
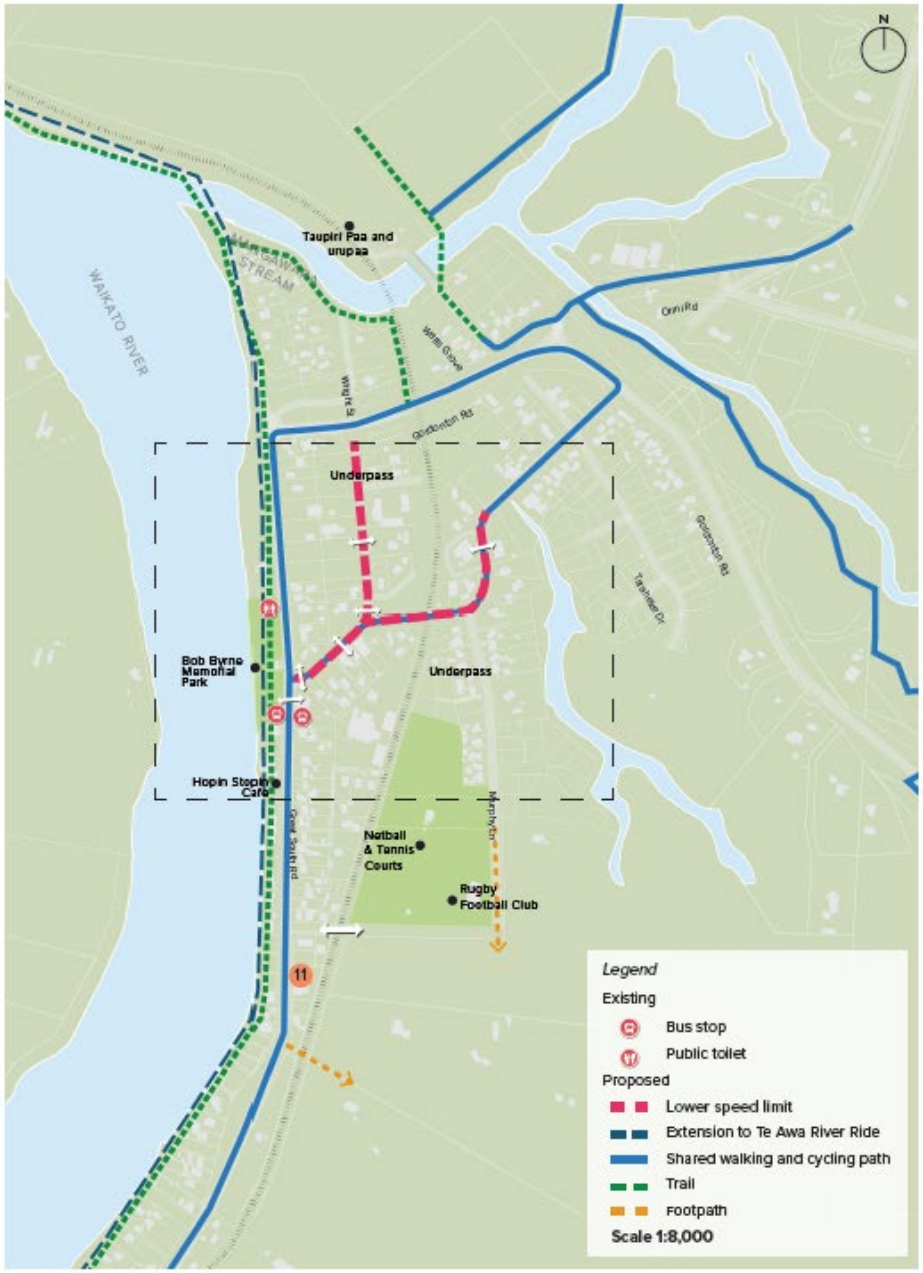



*Figure 6-6: Taupiri Connectivity*

# Taupiri - Active Modes

### Active Modes

1. Provide raised platform at existing zebra crossing.
2. Investigate options to reallocate space on Te Putu Street. This could include removing the flush median to provide space for wider footpaths, cycleways and changes to on-street parking.
3. Investigate new pedestrian crossing at Te Putu Street intersection using existing island. Could provide a staged crossing on raised platforms.
4. Investigate new crossing of Great South Road to improve access to existing bus stops.
5. Investigate footpath widening on the approach to the pedestrian underpass.
6. New raised crossing outside childcare and extend existing footpath to new crossing.
7. Investigate options to improve pedestrian safety when crossing The Crescent. Review kerblines and provide kerb build-outs to reduce the crossing distance.
8. Provide raised platform at existing crossing outside the school. Investigate shared paths along Greenlane Road to encourage walking and cycling to school.
9. Provide angle parking within existing berm north of the school.
10. Investigate new raised crossing at Te Putu St/Greenlane Road intersection to support a continuous route along Te Putu Street.
11. Investigate pedestrian and cycle overbridge of railway at Lovell Ave connecting Great South Road to Murphy Lane via sports fields.



## Stormwater, Wastewater, and Potable Water

**Potable Water**

The Central District water supply scheme provides drinking water to the townships of Ngaaruawaahia, Horotiu, Hopuhopu and Taupiri. Untreated water is extracted from the Waikato River and treated at the Ngaaruawaahia water treatment plant (WTP). There is an interconnection to the Huntly water treatment plant via a transmission main commissioned in 2019 that provides additional resilience to the water supply network.

In general, the hydraulic modelling assessment showed that the network performs well under existing and future demand. The results revealed some issues with the existing infrastructure in both current (2025) and future (2050) scenarios. These are summarised in Table 4-2 and contained within Appendix 6 of this report. Following the identification of the level of service deficiencies, a number of upgrade options were evaluated to resolve the current deficiencies, and sized to provide resilience to the ultimate network scenario. A summary of the capital upgrade projects that were recommended to be implemented can be found in Table 4-3 contained within Appendix 6 of this report. Details of the network and proposed capital upgrade projects are shown in Appendix 6.

**Wastewater**

The Ngaaruawaahia wastewater treatment plant (WWTP) currently receives its wastewater from Taupiri, Hopuhopu, Ngaaruawaahia and Horotiu. Flows from Taupiri and Hopuhopu are conveyed through a single main pipe, shared by the following key pump stations:

- Taupiri South (Taupiri)
- Reserve (Hopuhopu)
- Ashwell Crescent (Hopuhopu)

Flows from Ngaaruawaahia are predominantly supplied from the following pump stations, also by means of a shared rising main:

- Waikato Esplanade
- Ngaere Street
- Regent Street

Details of the current configuration of the network discharging to the Ngaaruawaahia WWTP can be found in Appendix 6

The current performance indicators for the wastewater network as a whole are underperforming, remediation of the short falls can be found with section 4.2 of Appendix 6

**Stormwater**

It is well documented that changes from rural to urban catchments produces contaminants, increased runoff volume and larger peak flows that can negatively impact the built environment, waterways and wetlands. The Ngaaruawaahia structure plan presents an opportunity to determine the best practice catchment management solutions, mitigating flood hazard, increased peak flows, volume changes and contaminant loads (including hydrocarbons and heavy metals (zinc/copper) from existing farming practices and new intensive development.

Figure 6-7 illustrates the flood extent of Taupiri and Figure 6-8 illustrates the mitigation proposed for Ngaaruawaahia's future growth areas which will offset the effects of development on the receiving environment, encompassing peak flow management, conveyance, contaminant load management and the effects of increased volume discharge. Mitigation proposed include:

- Flood Storage basins
- Channels or open Swales
- Water Treatment Devices; and
- Waterway Enhancement.

For further information relating to how future growth cells will meet stormwater provisions refer to appendix 14

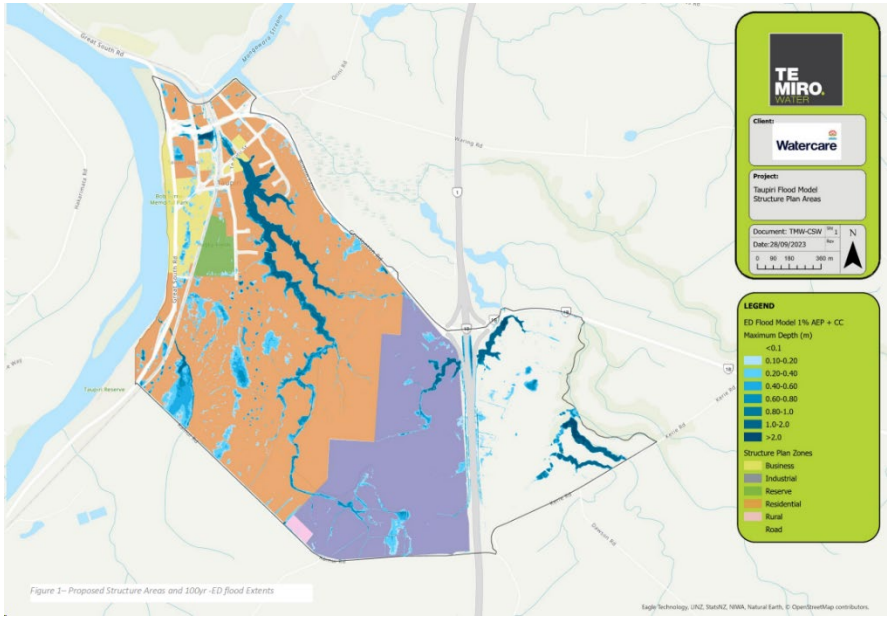



*Figure 6-7: Taupiri Flood Extent*

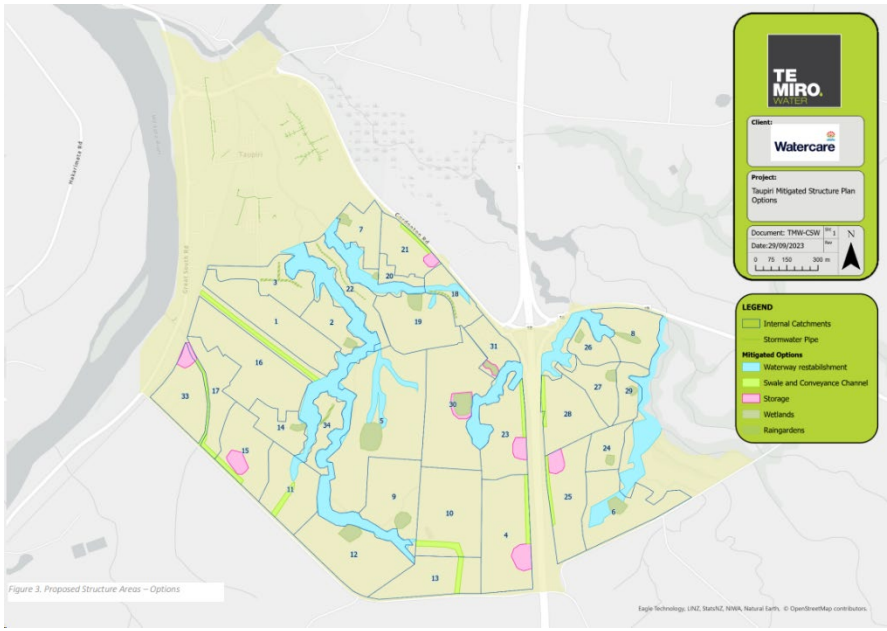



*Figure 6-8: Proposed Stormwater Mitigation for Taupiri*

### 6.1.4 Parks and Facilities

Green spaces and community facilities play important roles within the community, and it is essential that these are coupled with good planning practice to allow communities to meet their social, cultural, and wellbeing needs. Green spaces and community facilities provide for a range of uses, extending from general amenity and wellness benefits rights through to stormwater management solutions, all of which are important factors when considering what is a well-functioning urban environment.

Taupiri faces park provision shortfalls generally from the medium to long term and is sufficient in the short term. Existing Taupiri residents are generally within a walkable distance of at least one park. However, where we expect future growth to occur, predicted deficiencies arise. To address these shortcomings, additional green spaces have been identified for Taupiri, -depending on the scenario and have been strategically proposed in parts of the community to serve future growth cells as well as those not currently within what is considered a walkable distance.

| **University of Waikato Scenario** | | |
|---|---|---|
| **Possible Park Locations** | **Required green space in growth cell (ha)** | Category |
| Taupiri Central Growth Cell | 0.4 | Neighbourhood Or Sports and recreation |
| Taupiri West Growth Cell | 0.9 | Neighbourhood Or Sports and recreation |
| **Waikato 2070 Scenario** | | |
| **Possible Park Locations** | **Required green space in growth cell (ha)** | Category |
| Taupiri Central Growth Cell | 3.7 | Neighbourhood Or Sports and recreation |
| Taupiri West Growth Cell | 8.7 | Neighbourhood Or Sports and recreation |

It is important to note there are two different parks scenarios for Taupiri, these arise from the large difference in the population projections from University of Waikato (UoW) and *Waikato 2070* over the coming years. UoW projections rely on historic population data for Taupiri for future populations, and for the most part Taupiri has seen little to no growth therefore has been projected to stay relatively the same with little growth. However, council is aware of the increasing scale of development interest in Taupiri and its implications for population projections. Hence the expected growth outlined in *Waikato 2070*. In any case, the *Waikato 2070* population scenario has been provided to illustrate the potential requirements of green spaces under a higher growth scenario.

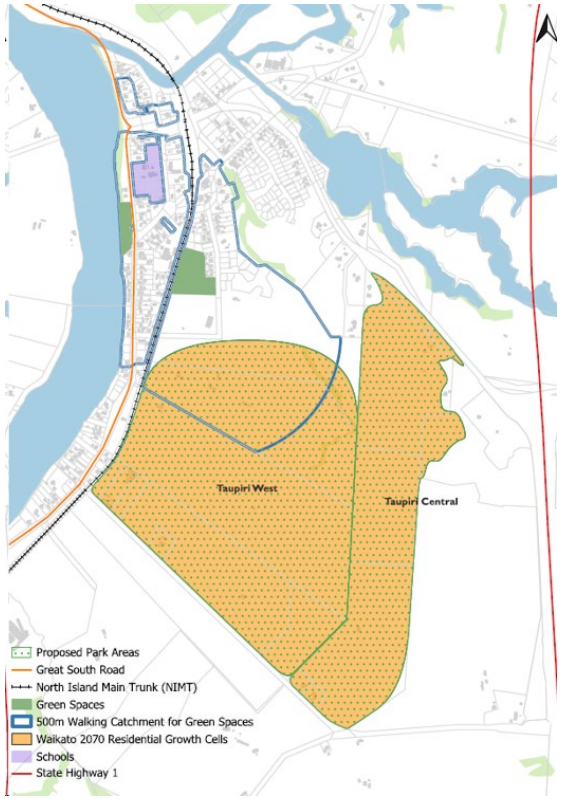



*Figure 6-9: Taupiri Growth Cells requiring future parks*

Taupiri has only a handful of community facilities and these are generally located down the spine of the settlement reflecting the age and historic population densities in the town. The condition of facilities within the area are considered to be moderate, with further assessment work still needing to be conducted for a better picture.

The facilities in Taupiri serve the existing population, however, through the engagement with the community it has been noted that there is a desire for more community facilities. Taupiri currently has two community halls, the Taupiri War Memorial Hall and the Soldiers and Settlers Hall, the latter is underutilised but is strategically located on the main street, Te Putu Street. With the population of Taupiri not being able to efficiently sustain two community halls the Soldiers and Settlers Hall occurs on the possible projects list as an opportunity for a new community facility orientated development. Until then, any gaps in facilities are provided by Ngaaruawaahia – such as the library and local swimming pool.

The full assessment for Parks and Facilities can be found in Appendix 7

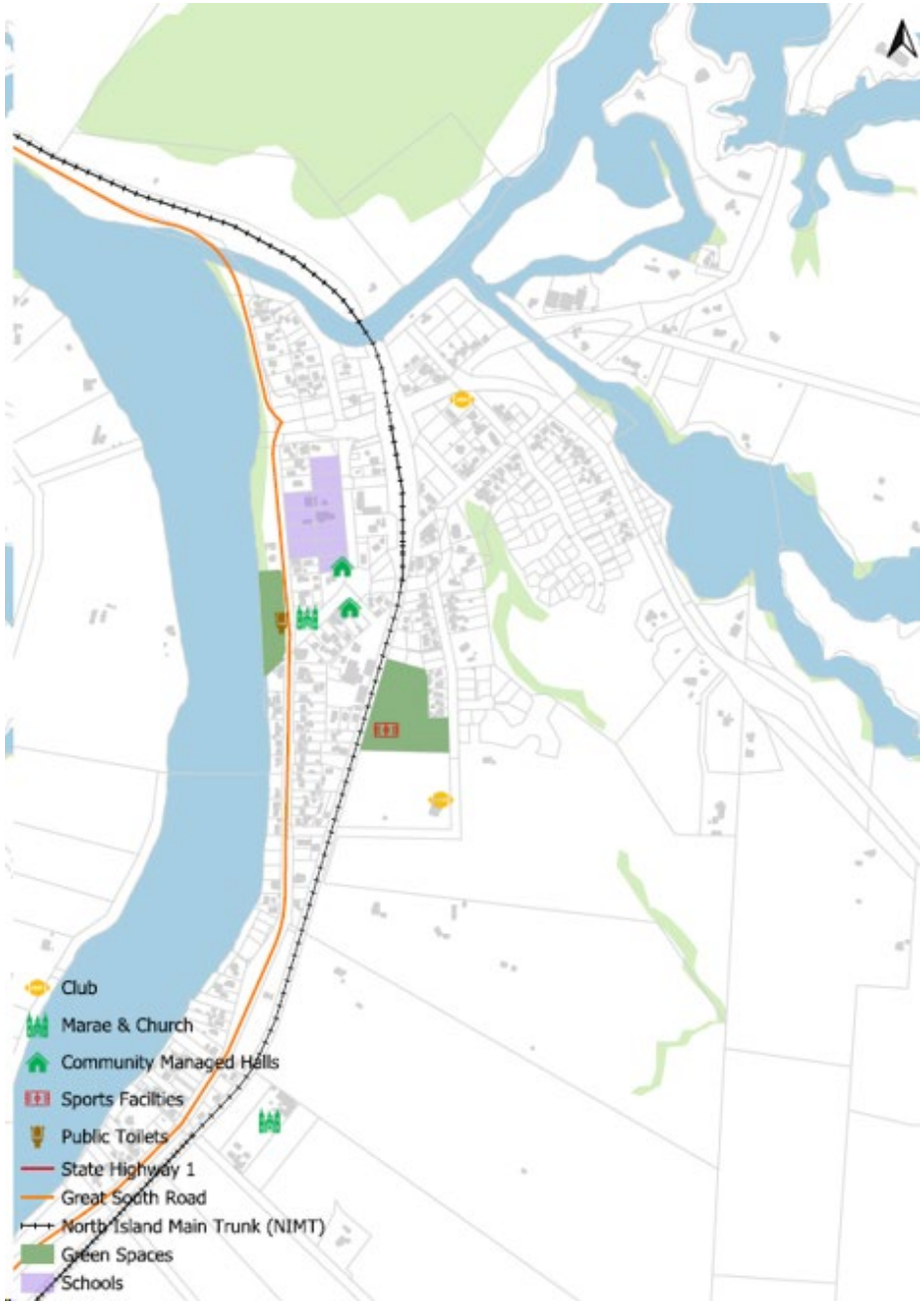



*Figure 6-10: Taupiri Community Facilities*

### 6.1.5 Cultural and Archaeology

Taupiri is a culturally significant and archaeologically rich settlement and plays large part as being the heart of Kiingitanga and is of special significance to Waikato–Tainui as well as Tuurangawaewae Marae, Ngaati Tamainupoo, and Taupiri Marae.
Taupiri marae history begins in 1530 with a Rotorua chief named Pikiao. The chief settled in Taupiri, searching for a wife to bear him male offspring. Pikiao met Rereiao – a woman from Pirongia with whom he had children. These children, in turn, gave rise to prominent families eventually forming some of the main hapuu in the Taupiri area. Of note is Taupiri Maunga, – sacred and revered as a living being and a taonga (treasure). The maunga holds an urupaa (cemetery) forms the resting place of over 5,000 tribal ancestors including Maaori royalty. Guarding the maunga are two taniwha who sit at its base in the Waikato River and Mangawhara Stream.

At the centre of the Tangata Whenua and Statement and Engagement report are the principals of Te Tiriti o Waitangi, as well as meaningful and genuine engagement with tangata whenua. These principals have been woven throughout hui in an attempt to understand the cultural, economic, social, and environmental outcomes sought by tangata whenua. The cultural stories of these unique places have been given genuine attention and have been come from nga waha (the mouths) to be shared with the wider community to help further the understanding of the cultural significance of Ngaaruawaahia and Taupiri. A common theme discovered is the unity of these areas: Ngaaruawaahia, Hopuhopu, & Taupiri are not distinguished from one another, but connected intrinsically through the awa.

> "*The Waikato River is our tupuna (ancestor) which has mana (spiritual authority and power) and in turn represents the mana and mauri (life force) of Waikato-Tainui. The Waikato River is a single indivisible being that flows from Te Taheke Hukahuka to Te Puuaha o Waikato (the mouth) and includes its waters, banks and beds (and all minerals under them) and its streams, waterways, tributaries, lakes, aquatic fisheries, vegetation, flood plains, wetlands, islands, springs, water column, airspace and substratum as well as its metaphysical being…*"

To balance the metaphysical components of the report are some of the outcomes sought by Tangata Whenua, which in turn help realise their, but not limited to cultural well-being. These range from urban design and micro mobility initiatives through to green spaces and economic opportunities. The outcomes have been as best aligned with the proposed potential projects as outlined in sections 3.2, 4.2, 5.2, & 6.2 of this report as possible to ensure that the visions of tangata whenua can come to life.

Through discussion is the recommended addition of new Sites and areas of significant to Maaori ("SASM") which will offer additional protection over areas and significant sites that are important to Maaori. These are:

- Taupiri Maunga
- Te Mata o Tuutonga
- Te Hihi
- Tuurangawaewae Marae
- Tuurangawaewae House
- Te Paemaunga o Hakarimata

Archaeology forms part of the understanding of Taupiri's unique history. The intent of the archaeology report was to identify archaeological sites of significance in the parts of Waikato District affected by the Ngaaruawaahia and Environs Structure Plan. Archaeological sites cover both Maaori and European artefacts and locations and provide insights into the different phases of the Waikato. Sites and their histories are not isolated, but form archaeological picture that can safeguard special places and may also provide information about human behaviour in past. Maaori garden sites are prevalent along both sides of the awa throughout the district: areas associated with paa, villages, gathering sites, eel traps in streams, bird capture areas, and other types of places used by the garden makers. Pre-1900 European sites include industry, buildings and farms composed of house, farm buildings, fields, stock holding pens, roads, etc. Understanding of intangible and tangible layers of both Maaori and European sites provide a continuum of cultural understanding and practice.

The full *Tangata Whenua Statement and Engagement Report* and Archaeology Assessments can be found in Appendix 5 & 10 respectively.

### 6.1.6 Heritage and Notable Trees

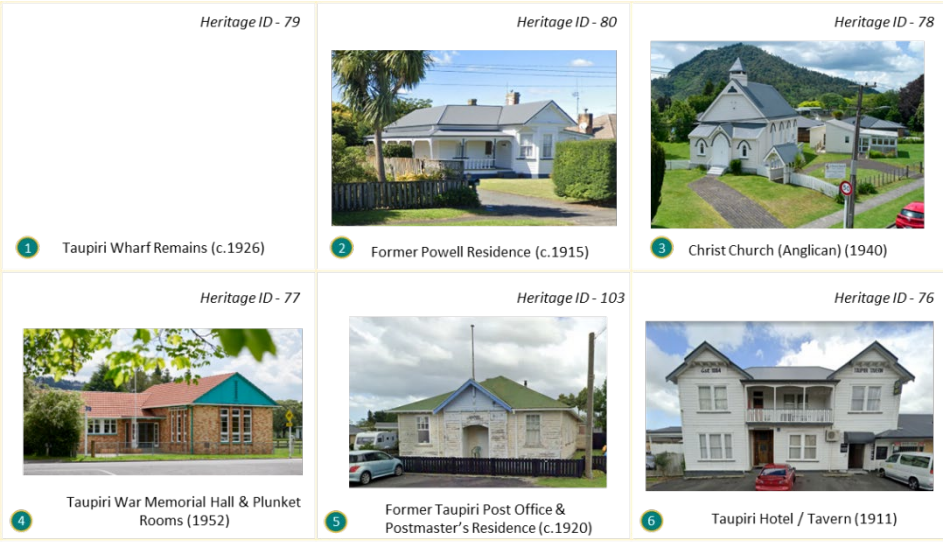
Historic heritage is part of understanding our environment, and the past, present and future it represents. Heritage and notable trees contribute to the unique stories and beautification of Taupiri. They play an important role in contributing to understanding of the urban environment and are an integral part of communities' connecting to their places. An updated heritage schedule for built items and notable trees based upon the work done through the proposed district plan – decision version has been recommended to replace the schedule within the current heritage report, allowing for a more recent picture of protected items.

Notable trees in Taupiri, include a tricolour beech and english elm, respectively. They contribute to the overall history and story of Taupiri, and it is important to recognise these when moving through time.

The notable trees schedule attached to this report is recommended to replace the schedule contained within the proposed Waikato district plan, there have been minor changes to a description to improve accuracy.

| Nr | Heritage Item |
|---|---|
| 1 | Taupiri Wharf Remains (c.1926) |
| 2 | Former Powell Residence (c.1915) |
| 3 | Christ Church (Anglican) (1940) |
| 4 | Taupiri War Memorial Hall & Plunket Rooms (1952) |
| 5 | Former Taupiri Post Office & Postmaster's Residence (c.1920) |
| 6 | Taupiri Hotel / Tavern (1911) |
| **Nr** | **Notable Tree** |
| 1 | Tricolour Beech |

There are five heritage buildings and one heritage landmark located within Taupiri, with the oldest building – the Taupiri Hotel/Tavern – dating back to around 1911. The heritage items present an opportunity for storytelling to improve connections.




The full Heritage Assessment can be found in Appendix 11-11.2

### 6.1.7 Ground Contamination and Geotechnical

The current ground contamination assessment is limited to Ngaaruawaahia and excludes Taupiri. However, Waikato District Council are aware that there are two main land developers in Taupiri and, as part of the resource consent process, are completing onsite ground contamination assessments for their developments.

Geotechnical development suitability indicators are important because they indicate the stability and strength of the ground, soil deposits, and the natural hazards associated with the area.

The geology of the study area in general consists of hill country, rolling hills of the lowlands, alluvial soils of the lowlands, and valley floor soils. Around the edges of rivers and foot of the mountain in Taupiri are more likely to be exposed to the risks of soil liquefaction and slope instability. The high-level geotechnical assessment conducted identifies risks, noting that the not all of the land that falls within a given risk classification might be subjected to the geotechnical risk in question.

The intent of the plan is to provide guidance on the general suitability of the land, and the starting point for engineering assessment that should accompany development proposals.

The full Geotechnical Assessments can be found in Appendix 2.

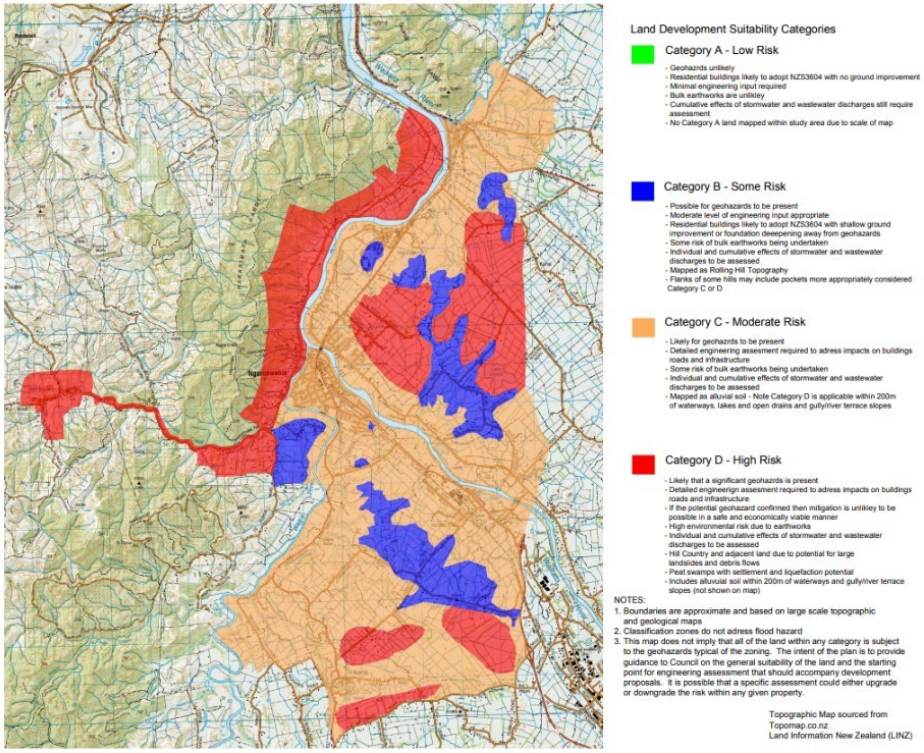


*Figure 6-11: Taupiri Geotechnical Assessment*

### 6.1.8 Natural Environments and Landscapes

Understanding the visual amenities and natural environment of a landscape is integral in both locating development in appropriate spaces, and also in maintaining and enhancing visual amenities which benefit the overall well-being of the communities.

The landscapes assessment conducted looks at identifying outstanding natural features and landscapes by capturing and analysing their character, associated amenity values and landscape constraints. During the development of this assessment, the growth aspirations of Taupiri were captured in determining the level of development suitability.

The majority of the study area is characterised by underlying Waikato plains/lowlands, which are bounded by the Hakarimata Range and Te Puroa hill country to the west and Taupiri Range to the north. Taupiri Village is characterised by the Waikato River, which bounds the village to the west, the Mangawara Stream which bounds the village to the north, as well as the Taupiri Mountain and Range, also to the north. The character of Taupiri village to the southeast is composed of the extensive Komakorau Stream, wetland and other tributaries of the Mangawara Stream as well as State Highway 1.

Most of the lowland geological features were derived from the deposition of pyroclastic material following the Taupo volcano eruption approximately 22,000 years ago and the various routes adopted by the Waikato River over that time. Subtle changes in elevation and undulations in landform are clearly evident due to the pastoral land cover. The majority of indigenous vegetation has been removed for pastoral farmland development, however, large tracts of regenerating indigenous forest exists on the slopes of Taupiri Mountain.

This has led to the unique combination of scenery and visual amenities within Taupiri, the heat map provided illustrates the areas most suitable to develop from an amenities and visual perspective.

Proposed land use changes that sit within the "least" suitable range of this assessment have been indicated as FUZ, the full spatial extent of the zone is yet to be detailed and will be investigated further at the time of requirement (long term).

The full Landscapes Assessments can be found in Appendix 4

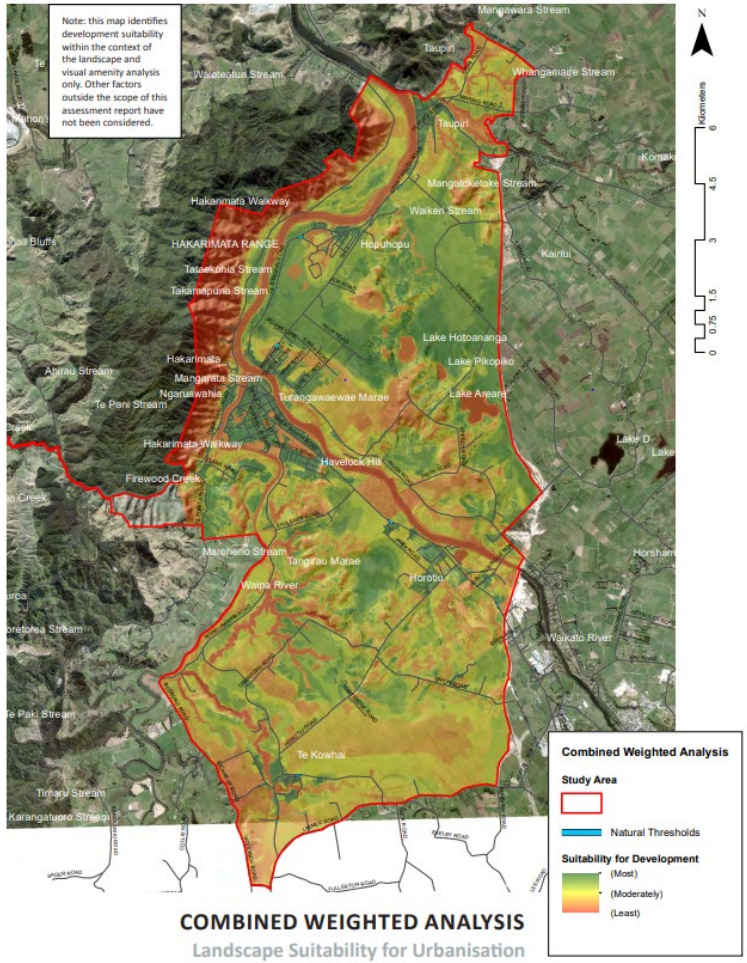



*Figure 6-12: Taupiri Natural Environments and Landscapes*

## 6.2 Insights and Opportunities

Opportunities have been identified for the settlement of Hopuhopu through a multi-stage approach. The opportunities are a combination of:

- The contextual analysis.
- A spatial analysis undertaken through a desktop assessment.
- A site visit in combination with council staff and elected members.
- Input received from technical reports.
- Inputs received by council through community surveys.

Feedback received from the community via online engagement and community open day events held in Ngaaruawaahia, Hopuhopu and Taupiri. These sought to understand the issues experienced by the community and opportunities seen by those that live, work and play in the three towns to improve the liveability of these places.

The opportunities for investment have been grouped under the headings of the design principles, noting that some opportunities will align with multiple design principles.

The opportunities were grouped into themes relating to:

| | |
|---|---|
| Connected Communities | Opportunities relating to transport and accessing the places people want to get to, such as the town centre and key destinations like Tuurangawaewae Marae. |
| Identity | Opportunities related to telling the histories, protecting heritage and highlighting the identity, of Ngaaruawaahia, Hopuhopu and Taupiri. |
| Natural Environments | Opportunities related to improving access to, and the quality of, the natural environment. |
| Growth and Economy | Opportunities related to enhancing commercial activity and supporting future growth. |

The following pages provide a summary of the opportunities identified through this process. Some of the opportunities sit outside of the remit of Waikato District Council, however were recorded to fully understand the issues and opportunities seen by the community. These opportunities have been assessed and considered by council as part of this process and have informed the key moves and outcomes. Not all opportunities have been progressed.

# Taupiri Opportunities

## Connected Communities

Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.

1. Opportunity to extend the Te Awa River Ride cycle route from Ngaaruawaahia via Hopuhopu to Taupiri, with link to the Taupiri Maunga summit track and urupaa.
2. Provide safe walking and cycling connections to the service station precinct on Gordonton Road.
3. Create safe and visible pedestrian and cycling connections between Taupiri Marae and Hopuhopu.
4. Provide a safe crossing facility at Great South Road bus stop.
5. Review layout of the Great South Rd and Gordonton Rd roundabout to improve visibility and safety.
6. Provide signage to Taupiri urupaa along Watts Grove.
7. Create safer crossings at Te Putu St from Educare to the footpath across the road.
8. Upgrade active modes facilities on Te Putu Street bridge.
9. Improve the connection at Taupiri School, currently a kea crossing but no formal pedestrian crossing. Maneuvering & on-street parking outside Taupiri School is limited.
10. Improve the safety of Murphy lane/Te Putu St intersection visibility.
11. Upgrade stairs to the urupaa.
12. Provide interim CPTED solutions at the two underpass - Te Putu Street and Greenlane Rd and consider future alternative crossing solutions.
13. Detune Great South Road to enable better cross connectivity and minimise severance to the river.
14. Provide north-south connections through the new growth area between Taupiri Marae and Murphy Lane.
15. Improve safety and visibility of Button Lane and Gordonton Road intersection.

## Identity

Strengthen the existing identity and character of the place.

1. Utilise the river as a future transportation route and/or ecotourism opportunity with fishing/river kai activities to tie-in with local community.
2. Opportunity for storytelling to improve connections, outcomes & protection of areas of cultural significance. E.g. Puka I Ahua, Taupiri Maunga, paa sites, urupaa.
3. Establish a community focal point on the eastern side of the rail tracks that reflects the local "village" identity.
4. Establish a riverside focal point that connects between the Hopin Stopin cafe, Bob Bryne Memorial Park and Te Putu Street commercial functions.
5. Improve lighting in targeted areas such as the Rugby Football Club.

## Natural Environment

Connect communities to blue-green networks and provide recreational activities and opportunities.

1. Taupiri Maunga, Waikato River, Urupaa, Hakarimata Ranges, Flaxmill and several heritage sites are the assets that make Taupiri unique. These should be celebrated and promoted through story telling, way finding and iconic sculptures.
2. Upgrade pathways to include wayfinding, shelter, and rest stops to support riverside recreational use along the Waikato River and adjacent reserves. Consider other benefits such as weed/pest control and re-vegetation for river ecosystem restoration.
3. Initiatives to restore kiwi habitat at Taupiri Maunga.

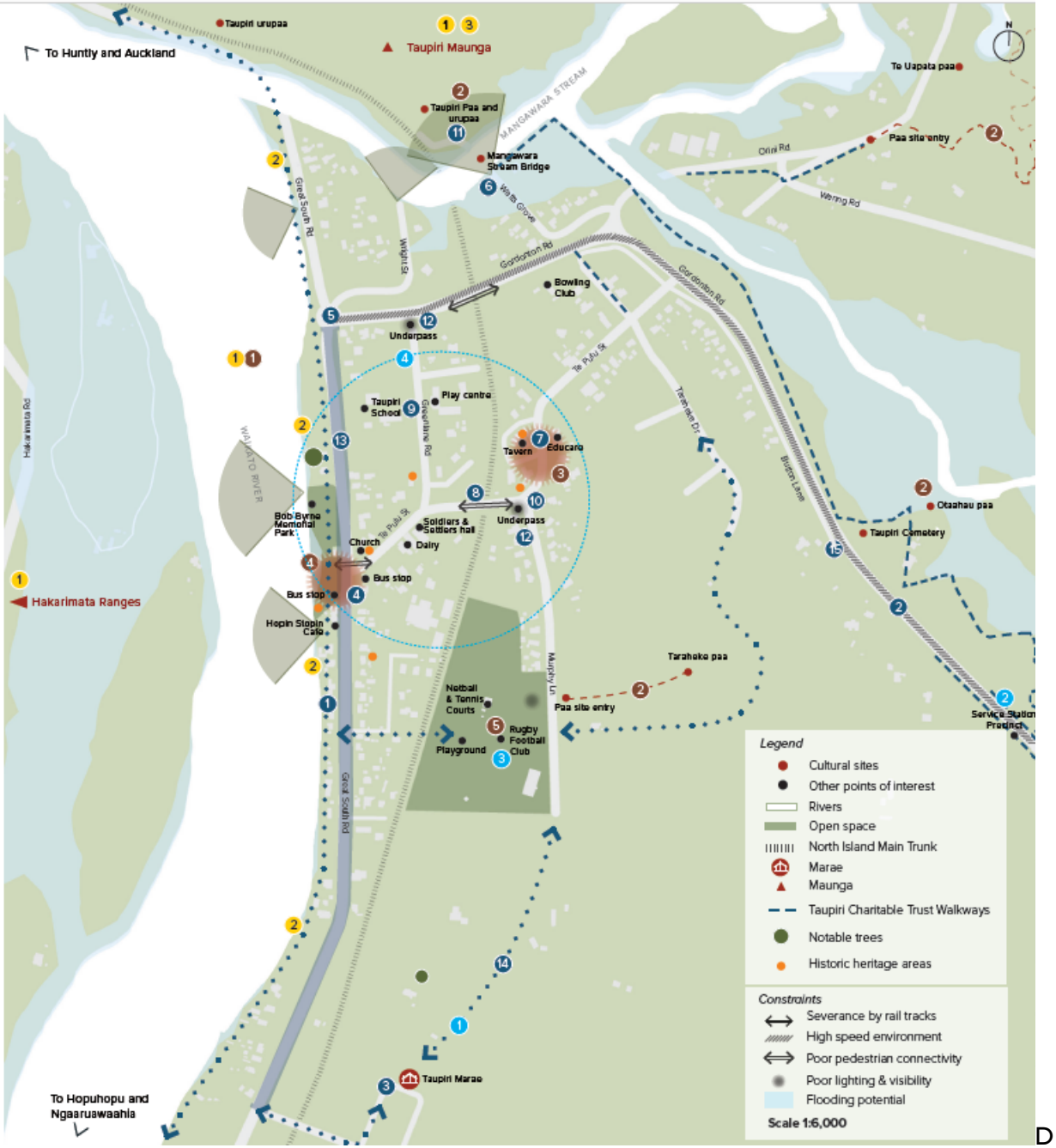
## Growth and Economy

Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.

1. Opportunity to consider local convenience to service new growth area closer to the Taupiri Marae.
2. Opportunity for future industrial uses around service station precinct on Gordonton Road.
3. The existing Taupiri Rugby Football Club are well used with the desire for another sports/community hub targeted for the youth.
4. Opportunity for new community amenities within township i.e. Supervalue, post office, afterschool care and Educare.

Other opportunities

- Future proof for the aging population in Taupiri with the provision of appropriate accommodation and amenities.
- Identify and provide high quality open spaces to service future growth.

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## 6.3 Key Moves

The opportunities identified were shared with the community across two open days, and through online engagement, where feedback and support was gathered. The opportunities were also assessed against the agreed outcome principles for the project, providing a basis for assessment.

The feedback relating to the opportunities identified were considered together to confirm the key moves and outcomes for Taupiri and how these are to be prioritised over the short, medium and long term. It is recognised that some of the projects are highly complex, will have associated high costs, and will need further detailed investigation before they are able to be confirmed in the for delivery.

The key moves and outcomes have been identified on the following maps. The anticipated prioritisation of these is addressed in the implementation section of the document. The key moves and outcomes have also been grouped into the design principles of:

- Connected Communities
- Identity
- Natural Environments
- Growth and Economy

Walking and cycling activities have been identified separately as inputs from the Transport Workstream.

# Taupiri Township

## Connected Communities

### Active mode opportunities

1. Extension of the Te Awa River Ride to Taupiri with the inclusion of rest stops and viewing areas.
2. Create a clear walking and cycling loop from town centre - Great South Road, Te Putu Street, Onslow Avenue, Gordonton Road and segregating off to Watts Grove to connect to Taupiri paa and urupaa.
3. Other active mode connections:
   a. Upgrade Te Putu Street and bridge.
   b. Taraheke Paa, Taupiri Marae and Great South Road with a connection over rail (under investigation).
   c. Investigate pedestrian and cycle overbridge of railway connecting Great South Road to sports fields.
4. Create a wayfinding suite for key destinations including the urupaa, Taupiri Maunga, Te Putu Street, historic waka landing, Bob Byrne Memorial Park and sports field.
5. Create gateway markers into Taupiri.

### Enhancing the pedestrian experience

6. Great South Road improvements:
   - Create more pedestrian connections with additional crossings including existing bus stops.
   - Short term tactical urbanism at existing pedestrian crossings.
   - Beautify the streetscape with green promenade and provision for active modes.
7. Te Putu Street improvements:
   - Beautify the streetscape.
   - Traffic calming measures.
   - Upgrade pedestrian crossings.
   - Safe access to The Crescent.
   - Provide a pedestrian crossing outside of the childcare facility.
   - Roadway art at Te Putu Street and Great South Road intersection.

### Intersection and roundabout upgrade

8. Improve the safety and visibility of intersections:
   - Gordonton Road and Te Putu Street.
   - Murphy Lane and Te Putu Street.
   - Great South Road and Te Putu Street to connect to Bob Byrne Memorial Park.
   - Greenlane Road and Te Putu Road.
9. Improve the pedestrian safety and visibility of Gordonton Road and Great South Road roundabout (under investigation).

Streetscape beautification

Wayfinding

Te Awa River Ride extension

Protected cycleway on Great South Road

Raised pedestrian crossing

Traffic calming with planted buildouts

## Identity

### Amenities

1. Investigate the use of Council-owned facilities within Taupiri and consider additional community needs or commercial development that could be accommodated.
2. Celebrate sites of cultural significance and protect waahi tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities (Taupiri Mountain,urupaa, historical waka landing site, Taraheke paa, Taupiri Marae, and Te Uapata paa, key transport nodes (i.e. roundabouts).
3. Provide formal viewing areas and storytelling boards for waka landings beside existing carpark/boat ramp. In particular for major Tangi processions from Tuurangawaewae Marae to the urupaa.
4. Upgrade and provide signage to public toilets.
5. Upgrade bus stops and shelters.
6. New bi-lingual "Welcome to Taupiri" sign.

### Maintenance/CPTED/Safety

7. Introduce mirrors, art and wayfinding at Murphy Lane and Greenlane Road underpasses.
8. Provide lighting at the Rugby Field carpark/Murphy Lane.
9. Trim overgrown vegetation at Murphy Lane and Greenlane Road underpass, Te Putu Street and urupaa bridge.
10. Clean up of graffiti at Murphy Lane underpass and along Great South Road.

Other projects

- Identify opportunities and locations for cultural expression and symbolism.
- Upgraded suite of street furniture including rubbish bins, drinking fountains and seating.
- Undertake maintenance and repair of street lights across the township.

## Natural Environment

### Recreational opportunities

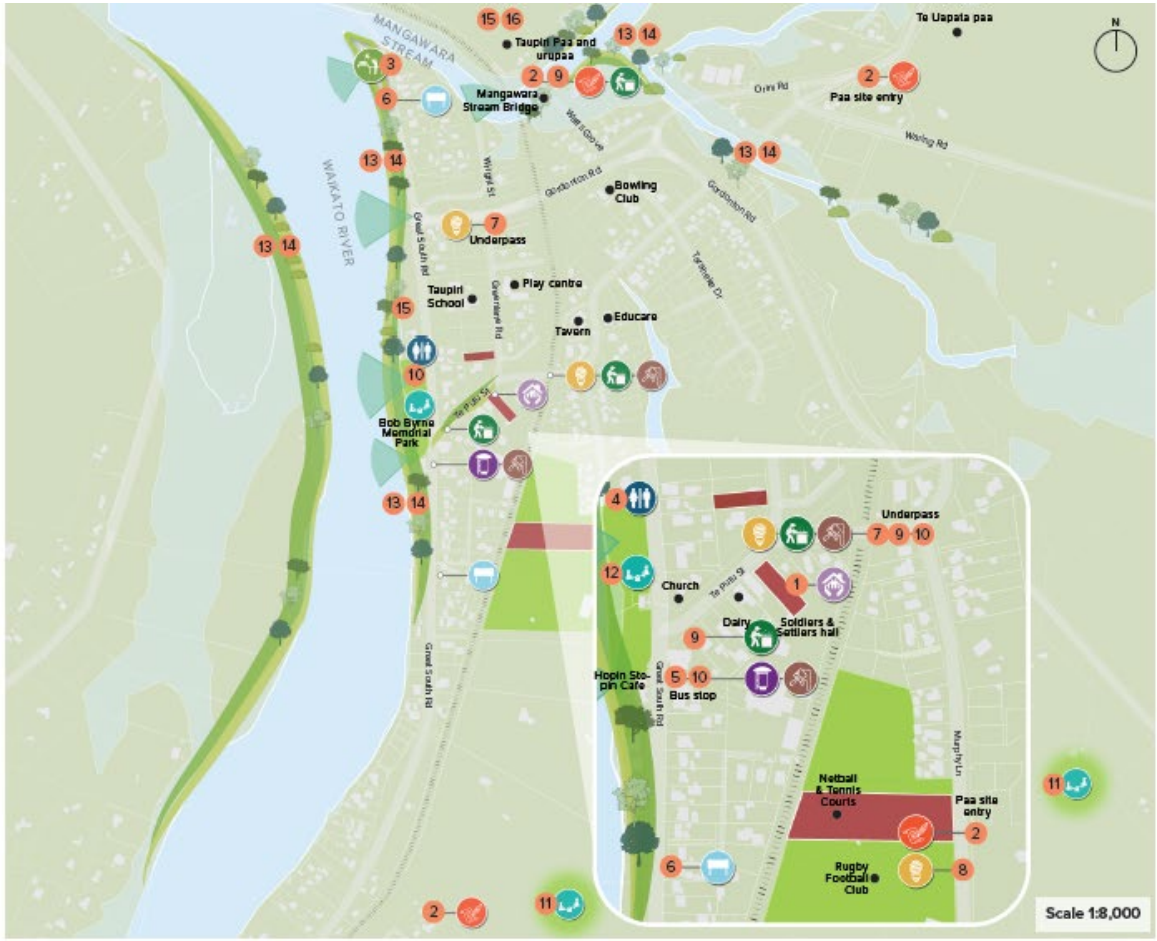
11. Investigate potential locations for playgrounds to serve wider Taupiri (Gordonton Road and Kainui Road).
12. Upgrade Bob Byrne Memorial Park with nature play and improved connections north and south to the Hopin Stopin Cafe.

### Ecological opportunities

13. Improve the resilience to localised flooding through:
    - Increased permeable surfaces and attenuation planting.
    - Riverbank planting.
    - River edge terracing to protect recreation areas next to the river.
14. Increase native tree and fruit trees in town – Urban Ngahere (Forest), to attract native birds into township.
15. Native tree restoration for Taupiri Maunga.
16. Pest and predator management plan on Taupiri Maunga.

Other projects

- Improve native fauna habitat through education/interpretation and restoration of waterways (native fish, eels etc).



Riverside seating

Storytelling and cultural narratives

Underpass

Village feel

Nature play at Bob Byrne Memorial Park

Separated cycleway on Great South Road

# Artist Impressions of Key Moves

## Amenity upgrades to Bob Byrne Memorial Park

## Enhance Te Putu Street pedestrian experience

## 6.4 Implementation

Some of the methods and tools that will be used to implement the *Waikato 2070* are summarised below.

**District Plan**
The district plan is the legislative rule book which sets out what development can and can't be done and where in the district. Structure plans and town centre plans will form the basis for amendments to the district plan via plan changes (to the operative district plan) and plan variations (to the proposed district plan) to enable the development of these growth areas identified in *Waikato 2070*.

**Long Term Plan**
The long term plan (LTP) provides direction on the provision and funding of infrastructure and services within the Waikato district. The location and timing of the growth cells as set out in *Waikato 2070* will inform the LTP in respect to the necessary funding of infrastructure and services in these areas.

**Asset and Activity Management Plans**
The Waikato District Council prepares asset and activity management plans which set the various needs and demands of assets (e.g. roading, wastewater, water supply, facilities, reserves and open spaces). These are an essential tool in planning and funding infrastructure and services.

**Partnerships**

Waikato District Council will implement the *Waikato 2070* in partnership with various organisations and groups to ensure the vision and future development expectations are achieved. The Waikato District Council will work alongside organisations and groups, such as:

- Waikato-Tainui
- Tangata Whenua/Mana Whenua
- Ministry of Education
- Ministry of Housing and Urban Development
- Ministry of Innovation, Business and Employment
- District Health Boards
- New Zealand Transport Agency
- Kiwi Rail
- Utility providers
- Tourism agencies
- Adjoining local authorities
- Waikato Regional Council
- Community boards, community committees, and community groups
- Local business associations
- Kainga Ora
- Police New Zealand / Fire and Emergency New Zealand
- Heritage New Zealand Pouhere Taonga

**Implementation Table**
The following table identifies the key moves and outcomes that have been identified through this document. It considers the alignment with the outcome principles, the project complexity and likely timeframe required to implement the projects. The table provides a tool for future identification and prioritisation of investment across the three settlements across the short, medium and long term.

## Taupiri

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **CONNECTED COMMUNITIES** | | | | | | |
| 1. Extension of the Te Awa River Ride cycle route to Taupiri with the inclusion of rest stops and viewing areas. | | | ✓ | | | ✓ |
| 2. Create a clear walking and cycling loop from town centre - Great South Road, Te Putu Street, Onslow Avenue, Gordonton Road and segregating off to Watts Grove to connect to Taupiri paa and urupaa. | | ✓ | | | ✓ | |
| 3. Other active mode connections: | | | | | | |
| · Upgrade Te Putu Street and bridge. | | | ✓ | | | ✓ |
| · Taraheke Paa, Taupiri Marae and Great South Road with a connection over rail (under investigation). | | | ✓ | | | ✓ |
| · Investigate pedestrian and cycle overbridge of railway connecting Great South Road to sports fields. | | | ✓ | | | ✓ |
| 4. Create a wayfinding suite for key destinations including the urupaa, Taupiri Maunga, Te Putu Street, Bob Byrne Memorial Park and sports field. | | ✓ | | ✓ | | |
| 5. Create gateway markers into Taupiri. | | ✓ | | ✓ | | |
| 6. Great South Road improvements: | | | | | | |
| · Create more pedestrian connections with additional crossings including existing bus stops. | | | ✓ | | | ✓ |
| · Short term tactical urbanism at existing pedestrian crossings. | | | ✓ | | | ✓ |
| · Beautify the streetscape with green promenade and provision for active modes. | | | ✓ | | | ✓ |
| 7. Te Putu Street improvements: | | | | | | |
| · Beautify the streetscape. | | | ✓ | | ✓ | ✓ |
| · Traffic calming measures. | | | ✓ | | ✓ | ✓ |
| · Upgrade pedestrian crossings. | | | ✓ | | ✓ | ✓ |
| · Safe access to The Crescent. | | | ✓ | | ✓ | ✓ |
| · Provide a pedestrian crossing outside of the childcare facility. | | | ✓ | | ✓ | ✓ |
| · Roadway art at Te Putu Street and Great South Road intersection. | | | ✓ | | ✓ | ✓ |
| 8. Improve the safety and visibility of intersections: | | | | | | |
| · Gordonton Road and Te Putu Street. | | ✓ | ✓ | | ✓ | |
| · Murphy Lane and Te Putu Street. | | | ✓ | | | ✓ |
| · Great South Road and Te Putu Street to connect to Bob Byrne Memorial Park. | | | ✓ | | | ✓ |
| · Greenlane Road and Te Putu Road. | | ✓ | ✓ | ✓ | | |
| 9. Improve the pedestrian safety and visibility of Gordonton Road and Great South Road roundabout (under investigation). | | | ✓ | | ✓ | ✓ |
| **IDENTITY** | | | | | | |
| 2. Celebrate sites of cultural significance and protect waahi tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities (Taupiri Mountain,urupaa, historical waka landing site, Taraheke paa, Taupiri Marae, and Te Uapata paa). | ✓ | | | | ✓ | |
| 3. Provide formal viewing areas and storytelling boards for waka landings beside existing carpark/boat ramp. In particular for major Tangi processions from Tuurangawaewae Marae to the urupaa. | ✓ | | | | ✓ | |
| 5. Upgrade bus stops and shelters. | | ✓ | ✓ | ✓ | | |
| 6. New bi-lingual "Welcome to Taupiri" sign. | ✓ | | | ✓ | | |
| **Other projects** | | | | | | |
| · Identify opportunities and locations for cultural expression and symbolism. | | ✓ | | | ✓ | |

## Taupiri

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **NATURAL ENVIRONMENT** | | | | | | |
| 13. Improve the resilience to localised flooding through: | | | | | | |
| · Increased permeable surfaces and attenuation planting. | ✓ | ✓ | ✓ | | | ✓ |
| · Riverbank planting. | ✓ | ✓ | ✓ | | | ✓ |
| · River edge terracing to protect recreation areas next to the river. | ✓ | ✓ | ✓ | | | ✓ |
| 14. Increase native tree and fruit trees in town – Urban Ngahere (Forest), to attract native birds into township. | ✓ | | | ✓ | | |
| **BUSINESS AS USUAL** | | | | | | |
| 7. Introduce mirrors, art and wayfinding at Murphy Lane and Greenlane Road underpasses. | ✓ | | | ✓ | | |
| 8. Provide lighting at the Rugby Field carpark/Murphy Lane. | ✓ | | | ✓ | | |

View of Taupiri Maunga and Church

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PROPERTY ECONOMICS

# NGAARUAWAAHIA AND TAUPIRI CENTRES ECONOMIC OVERVIEW

Project No: 52271

Date: October 2023

Client: Waikato District Council

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SCHEDULE

| Code | Date | Information / Comments | Project Leader |
|---|---|---|---|
| 52271.10 | October 2023 | Report | Tim Heath / Phil Osborne |

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# 1. INTRODUCTION

Property Economics has been engaged by Waikato District Council (**WDC**) to undertake an economic assessment of the Ngaaruawaahia and Taupiri commercial centres to assist Council in their strategic planning of their respective areas to ensure each centre is positioned to meet the future commercial requirements of the communities they serve and can successfully play their envisaged role and function.

The main purpose of this report is to provide reliable data and ground truthed information to assess the current health and '*state*' of the centres in terms of built form, quality of shopping environment and tenancies, and current level of vacancy in each centre. The report will also outline implications of projected growth in demand, estimate future community size and quantify future retail / commercial / industrial land requirements for each centre to assist WDC in the development of a robust Structure Plan for the Ngaaruawaahia and Taupiri areas.

Output of this economic assessment will provide a greater level of understanding of the implications of the area's projected growth over the period to 2053 from a strategic planning and long-term Spatial Plan perspective.

## 1.1. KEY RESEARCH OBJECTIVES

- Delineate and geospatially map the extent of the Ngaaruawaahia, Taupiri and Hopuhopu economic catchment and the location of the Ngaaruawaahia and Taupiri centres and Hopuhopu area in the context of the surrounding competitive environment.

- Evaluate and quantify population growth (demand) projections to 2053 within the catchment using Stats NZ's most up-to-date Medium and High population and household growth projections.

- Undertake demographic profiling of the identified market in terms of key economic and social characteristics to identify the market's key customer base.
- Breakdown the employment trends and market movements of the commercial and industrial sectors over the last 22 years in the catchment based on the latest Stats NZ Business Demography Statistics.
- Forecast the level of retail expenditure generated within the economic catchments on an annualised basis across the relevant ANZSIC retail sectors and forecast this out to 2053 to quantify growth in retail market size.
- Assess and quantify MarketView retail spending patterns, and flow of food and beverage spend in particular, to better understand sustainable market opportunity and current performance.
- Quantify the amount of sustainable retail floorspace (GFA) that can be supported by the catchments both currently and over the forecast period by relevant sector and assess against current retail supply.
- Undertake a business audit of existing activities in the Ngaaruawaahia and Taupiri centres to assess the current 'state', role, function, health, quality of retail offer, built environment and shopping experience of each centre. This includes a geospatial distribution of vacant tenancies within the Ngaaruawaahia centre.
- Review the Future Proof Business Development Capacity Assessment 2021 and outline the economic implications for the Structure Plan area.
- Review the Waikato 2070 and Tainui's Hopuhopu aspirations and assess economic / market implications of the aforementioned economic analysis in the context of these documents and the Structure Plan.

## 1.2. INFORMATION AND DATA SOURCES

Information have been obtained from a variety of credilble data sources and publications available to Property Economics, including:

- Business Classifications – ANZSIC[1]
- Business Demography Statistics – Stats NZ
- Catchment Maps – Google Maps, ESRI, LINZ[2]

[1] *Australia New Zealand Standard Industrial Classification 2006*

[2] *Land Information New Zealand*

- Centre Business Audit – Property Economics
- Future Proof Business Development Capacity Assessment 2021 – Market Economics
- NZ Census of Population and Dwellings 2013 & 2018 - Stats NZ
- Retail Spending Pattern Data – MarketView
- Waikato District Plan –Waikato District Council
- Population and Household Estimates & Projections – Stats NZ
- National Policy Statement on Urban Development 2020 – Ministry for the Environment
- Retail Growth Model – Property Economics
- Site and Centre Visits – Property Economics
- Statistics Area 1 & 2 – Stats NZ
- Waikato 2070 – Waikato District Council

## 2. EXECUTIVE SUMMARY

Population and household growth are critical drivers of future urban land demand within the Ngaaruawaahia market. Given the recent growth profile of the area, this economic assessment utilises Stats NZ High growth projections as the major input of land requirement forecasts for the Ngaaruawaahia Structure Plan catchment area.

Both Ngaaruawaahia and Taupiri are projected to experience steady population and household growth over the next 30 years. While this appears robust growth on a proportional basis, nominally in retail market terms it is less impactful.

The Ngaaruawaahia catchment currently (2023) generates an estimated $127m in annual retail expenditure. The majority of this is spent outside the district in Hamilton. By 2053, the catchment's generated retail expenditure is projected increase to $237m annually.

While this represents a solid increase in annual retail expenditure, the main benefactors of this are likely to be retail stores in Hamilton. Based on the latest MarketView retail spend data, a total of 78% of the catchment's generated retail expenditure leaves the area and is spent elsewhere. Specifically, around 66% of this is spent in Hamilton.

In light of this significant retail spend leakage, there is increasing opportunity for Ngaaruawaahia to internalise a higher proportion of this spend to the benefit of the local community and economy. This is best achieved not through a larger centre but a better-quality centre.

Based on Property Economics' grounding truthing, there is noticeable room for improvement in the quality of the offer and environment to better satisfy the consumers modern day retail needs. There has been a significant increase in the number of vacant stores (currently 22%) in Ngaaruawaahia Town Centre indicating a centre in a deteriorating state, particularly since COVID-19.

A vacancy rate of 22% is unhealthy in retail terms and highlights an underperforming centre. It is clear the centre requires a circuit breaker response rather than 'more of the same' to change its growth trajectory.

This requires focus on the Jesmond Street commercial area, which serves as an important core component of the wider Ngaaruawaahia Town Centre. However, our ground truthing indicates a considerable number of unoccupied tenancies in this area and one burnt down building (Waipā Hotel). This indicates that significant investment from both public and private sectors are necessary to catalyse the revitalisation of the area, enabling it to better fulfil its intended purpose and function.

Any market growth in Ngaaruawaahia should initially be channelled into supporting the existing provision, vacant stores and consolidating the centre into a more coherent, walkable centre. A core area (Jesmond Street) should be identified to focus private and public sector investment to improve the built form, public realm, shopping experience and centre

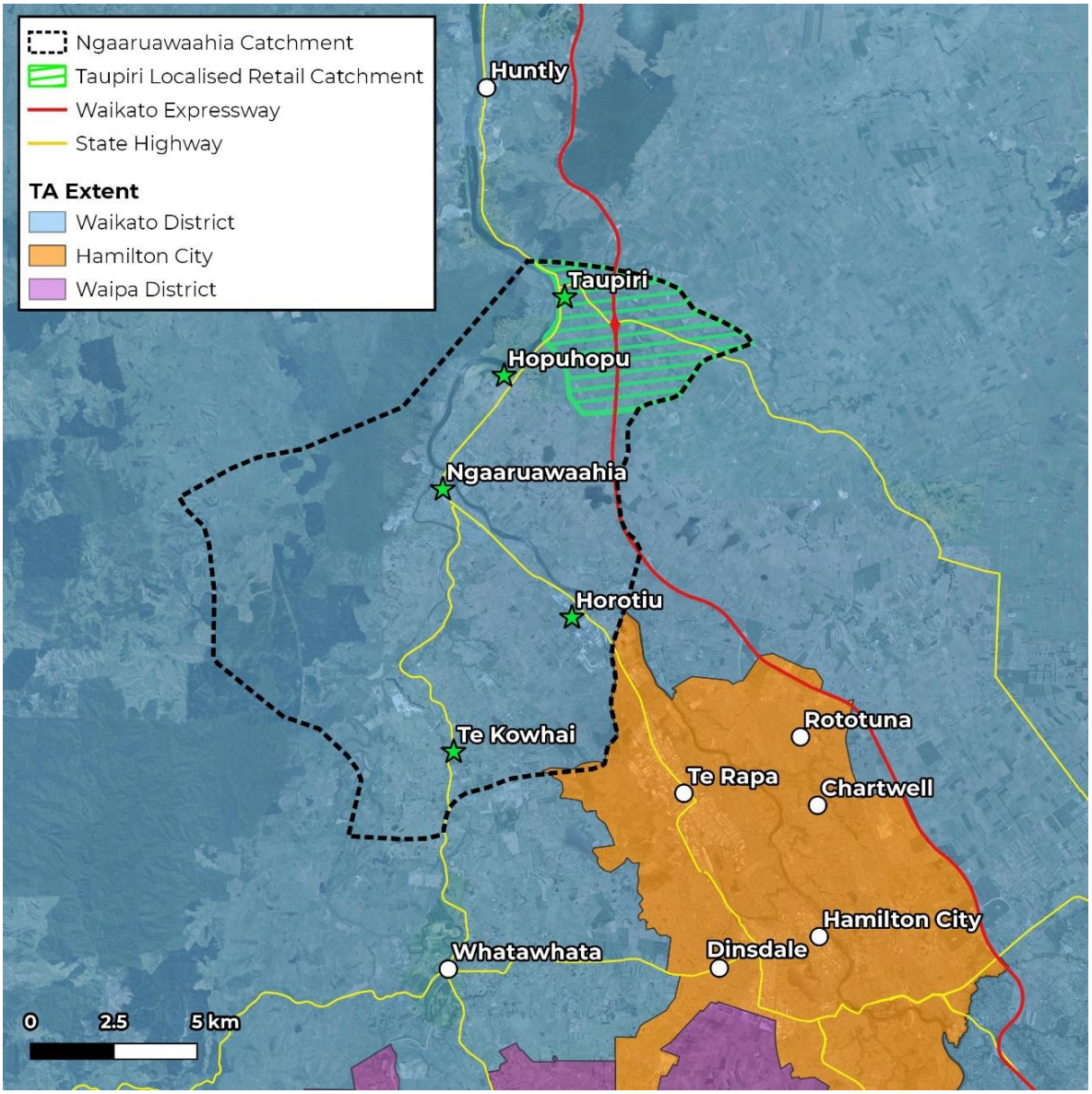
environment. No additional commercial zone land in the Ngaaruawaahia Town Centre is required to meet future requirements, focussing efforts on producing a better use of the existing zoned provision would provide a more appropriate and efficient economic outcome.

The Taupiri Centre is a very small convenience-based retail centre. The commercial zone is spread out and like Ngaaruawaahia identification of a core area to focus future investment and development would be appropriate. Growth potential is low with the Taupiri Service Centre limiting its potential and this centre also service Taupiri given its close proximity. So, no additional commercial zone land is required with sufficient capacity exiting in the centre.

## 3. NGAARUAWAAHIA CATCHMENT

The following figure illustrates the indicative economic catchment for Ngaaruawaahia. This has been based on the centre's composition and scale (current and likely future), proximity to other competing retail and commercial activity (i.e. centres fulfilling similar role and function), demographic distribution, Stats NZ Statistical Area 2 (SA2) for statistical analysis purposes, the roading network, other natural and physical geographic barriers, and the professional opinion of Property Economics factoring in known retail spending patterns and trade areas for similar size and type centres in NZ.

**FIGURE 1: ECONOMIC CATCHMENTS FOR NGAARUAWAAHIA AND TAUPIRI**




*Source: Google Maps, LINZ, Property Economics*

Any marginal reshaping of the catchment boundaries is unlikely to materially change the population and household base, and therefore the catchment and market size.

It is important to note that this is an indicative economic catchment only, and residents within this catchment will also shop in centres outside of the catchment and vice versa. In this regard the catchment illustrated in the figure illustrates the geographic extent of Ngaaruawaahia and Taupiri's core economic catchment and represents the area where the Ngaaruawaahia and Taupiri's commercial centres would derive the majority of its customers and sales.

For the purpose of context, the Ngaaruawaahia township as well as other key settlements in the surrounding area have also been identified on the figure above. It is these catchments on which the subsequent analysis in this assessment is based.

The identified localised catchment of Taupiri in the figure is the localised market for the retail provision in Taupiri, excluding the Taupiri Service Centre situated beside SH1. The service centre primarily attracts customer spend from passing SH1 traffic and is not reliant on the size of the local Taupiri market to be viable.

This is a niche centre in Waikato driven by SH1 and not the localised population base with retail brands that would not be located in Taupiri if it were not for the centre's ability to draw in SH1 traffic. As such, the Taupiri Service Centre, while an important part of the Waikato District retail offer given the centre draws in a significant amount of 'out-of-district' retail expenditure into the district on an annualised basis, is not given significant time in this report due to the focus being more on the Ngaaruawaahia and Taupiri centres specifically.

# 4. POPULATION AND HOUSEHOLD GROWTH

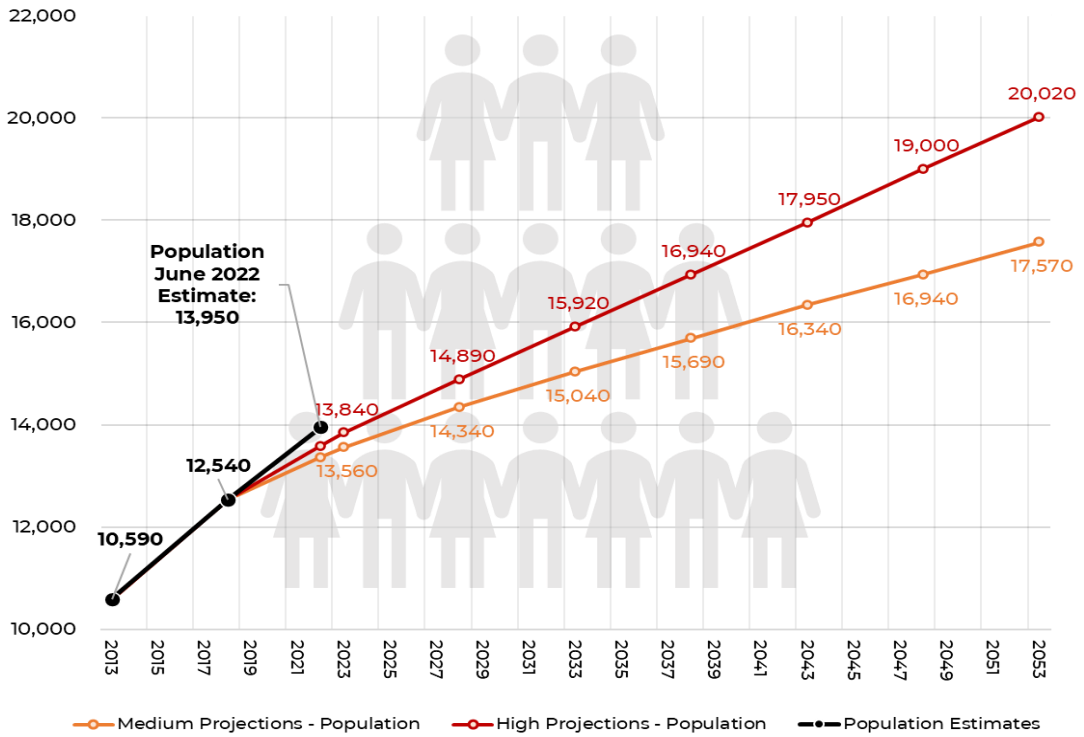
This section assesses the recent, current, and projected growth of the identified catchments (i.e., the Ngaaruawaahia catchment and the Taupiri retail catchment) based on the latest Stats NZ population estimates under their latest Medium and High growth scenarios for the period between 2013 and 2048. Property Economics has extended the forecast out to 2053 to provide a 30-year (long term) projection period based on the Stats NZ projections trends.

Note that Waikato District Council has recently adopted the University of Waikato's High population projections, which are considered conservative compared to Stats NZ's High growth scenario. In line with the Property Economics report from 2014 and Waikato 2070, this economic assessment relies on Stats NZ projections and represents a more optimistic growth profile for the area. This is particularly important considering the potential increase in residents resulting from future residential provision supply outlined in the proposed Waikato District Plan (PDP) and increasing affordability issues in main urban centres adjacent to the district.

## 4.1. NGAARUAWAAHIA CATCHMENT

It is estimated that the Ngaaruawaahia catchment has a current (2022) total population of around 13,950 people, which represents +32% growth above the 2013 population base. This is considered robust growth. As a result, the current population growth profile for the catchment is tracking above the Stats NZ High growth scenario.

**FIGURE 2: NGAARUAWAAHIA CATCHMENT POPULATION PROJECTIONS**

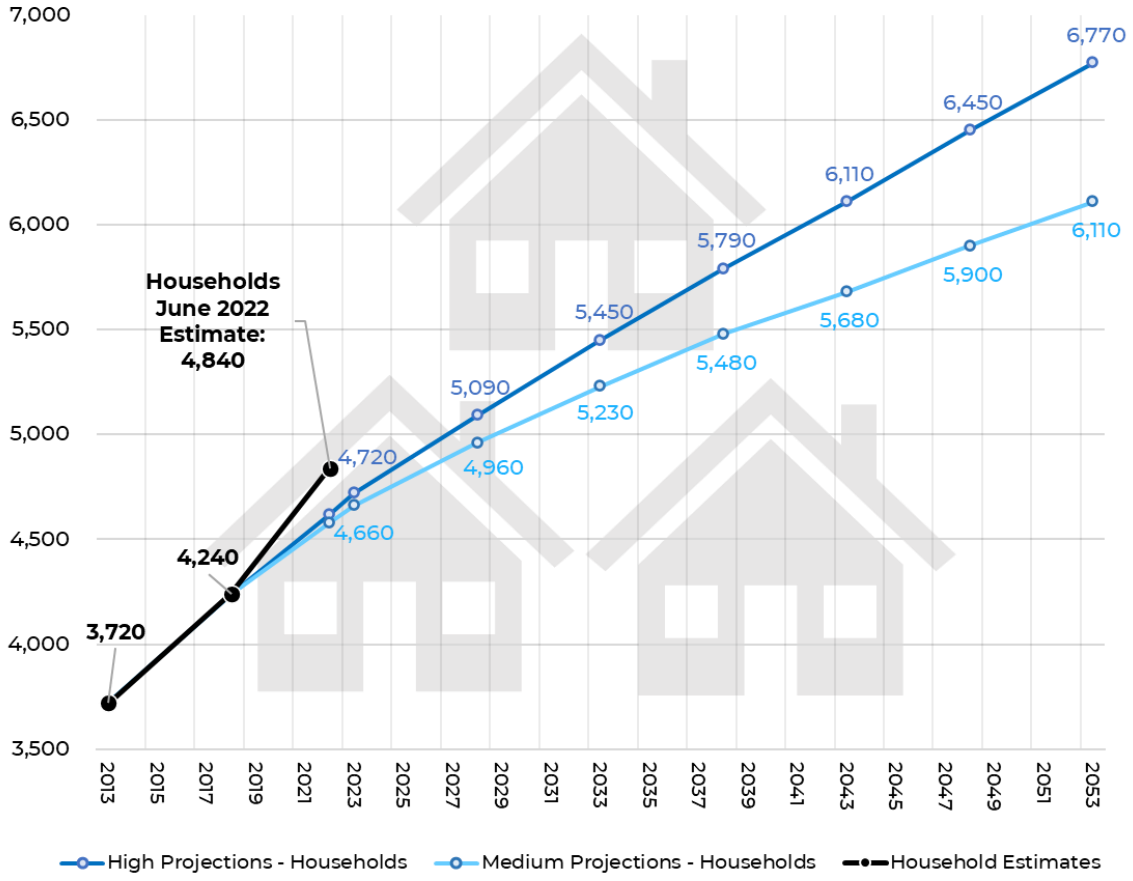



*Source: Stats NZ, Property Economics*

Under the Stats NZ High growth scenario, the Ngaaruawaahia catchment's population is forecast to grow by around +44% between 2022 and 2053. This equates to annual average growth of nearly 200 people net and result in a population base of just over 20,000 people by 2053.

It is projected that the number of households in the Ngaaruawaahia catchment would grow to 6,770 by 2053 under the High growth scenario. This growth would require around 700 new dwellings within the catchment to accommodate the expected growth on a one household per dwelling basis.

**FIGURE 3: NGAARUAWAAHIA CATCHMENT HOUSEHOLD PROJECTIONS**




*Source: Stats NZ, Property Economics*

The Medium growth projection is more conservative and represents a future population base of around 17,570 people by 2053, or +26% growth in population. This equates to net growth of 117 people per annum over the assessed period.

In the long-term, it is anticipated that the High growth scenario would better represent the likely future population growth track of the Ngaaruawaahia catchment due to improved transport connections to Hamilton and Auckland (for employment and business opportunities) reducing travel times.

This would mean that the Ngaaruawaahia catchment would reach a population base of around 20,200 people by 2053. This would create economic growth locally and generate additional demand for business activities and employment opportunities in the local economy, particularly within the area to create an efficient and more self-sufficient urban environment.

Increasing house prices in Hamilton, and to a lesser degree Auckland, on a relative basis is also likely to increase the attraction of Ngaaruawaahia as a place to live. Ngaaruawaahia has a more affordable price point for purchasers which is likely to be an increasingly attractive proposition to the market moving forward due to New Zealand's lower wage growth patterns. The implications of this mean Ngaaruawaahia could sustain a higher growth path than indicated in the Stats NZ growth projections over the long term.

## 4.2. TAUPIRI RETAIL CATCHMENT

The following figures presents the population and household forecast for the identified Taupiri retail catchment.

As with the Ngaaruawaahia catchment, Taupiri retail catchment is tracking above the Stats NZ High growth scenario with a current (2022) population base of around 800 people and 280 households.

Under the Stats NZ High growth scenario, Taupiri retail catchment's population is forecast to grow by around +73% by 2053. This equates to annual average growth of around 19 people net and result in a population base of around 1,380 people by 2053.

The Medium growth projection represents a future Taupiri population base of around 1,240 people by 2053, or +55% growth in population above the 2022 base. This equates to net growth of only 14 people per annum over the assessed period.

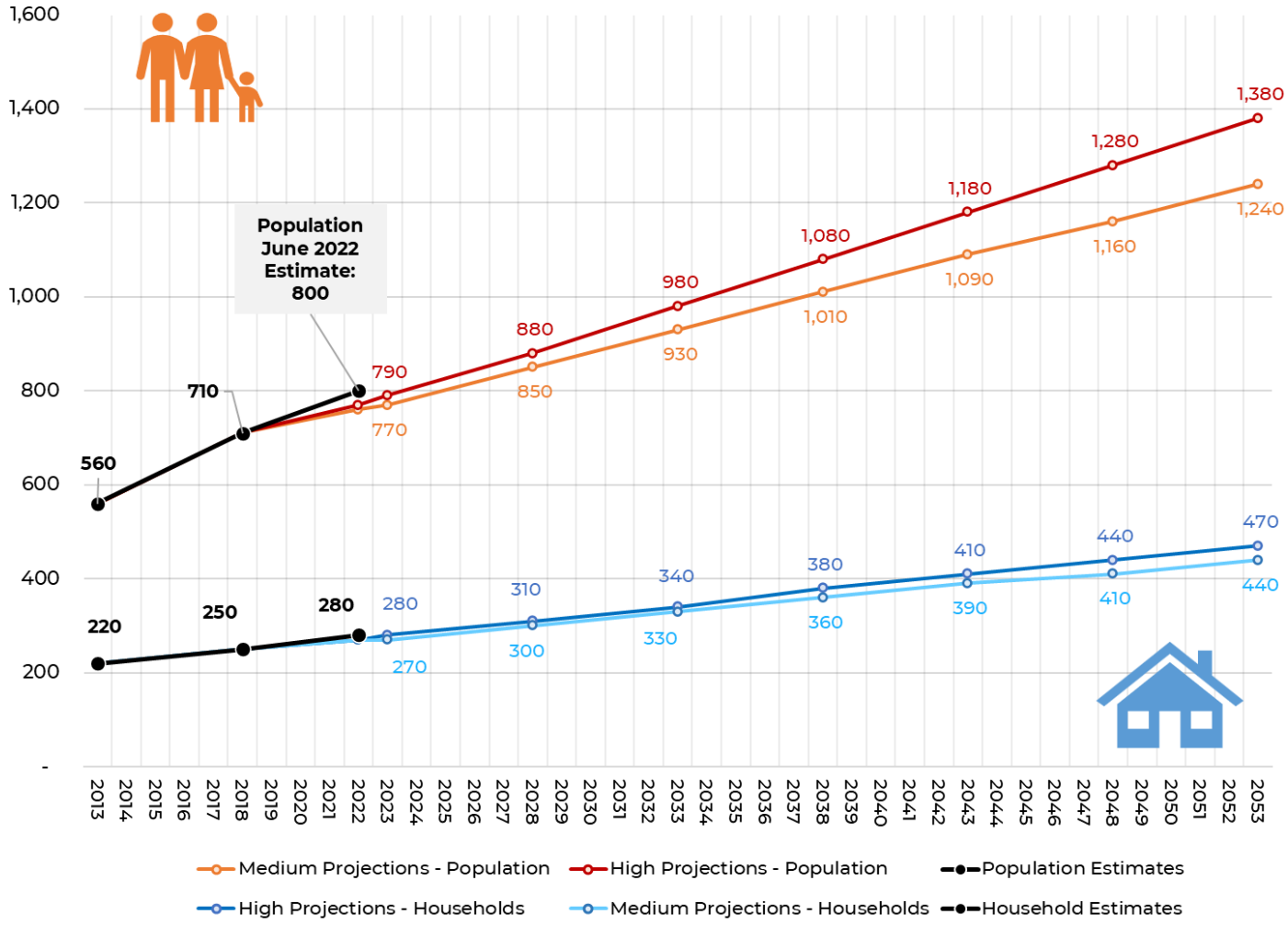
The figure below also shows the corresponding household projections for the Taupiri retail catchment. Currently, the catchment is estimated to have just 280 households, which is in line with the Stats NZ High growth scenario.

It is projected that Taupiri catchment households would grow further to around 470 households in 2053 under the High growth scenario, equating to a 68% increase by 2053.

The anticipated continuous growth in Taupiri and the wider Ngaaruawaahia catchment's population and household base would generate additional demand for retail, commercial and industrial activity across the area.

For similar reasons outlined for Ngaaruawaahia, Taupiri's local catchment could grow at a slightly faster rate than projected.

**FIGURE 4: TAUPIRI CATCHMENT POPULATION AND HOUSEHOLD FORECASTS**




*Source: Stats NZ, Property Economics*

Table 1 following is a summary table of the projected Medium and High growth scenarios for the catchment broken down by more localised areas. The largest urban area, by some margin, is Ngaaruawaahia and this is projected to continue in this role and be the primary area of urban growth over the next 30 years. This includes the Hopuhopu area.

**TABLE 1: CATCHMENT GROWTH SUMMARY BY AREA**

| SA1 Extent | 2022 Estimate | Stats NZ Scenario | 2023 | 2033 | 2043 | 2053 | 2023 - 2053 Growth | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | Nominal | Percentage |
| Ngaaruawaahia | 8,760 | Medium | 8,420 | 8,900 | 9,200 | 9,470 | +1,050 | +12% |
| | | High | 8,590 | 9,430 | 10,190 | 10,950 | +2,360 | +27% |
| Taupiri | 580 | Medium | 560 | 690 | 810 | 920 | +360 | +64% |
| | | High | 570 | 720 | 870 | 1,010 | +440 | +77% |
| Horotiu | 860 | Medium | 870 | 1,060 | 1,260 | 1,470 | +600 | +69% |
| | | High | 890 | 1,130 | 1,370 | 1,630 | +740 | +83% |
| Rest of the Catchment | 3,750 | Medium | 3,710 | 4,390 | 5,070 | 5,710 | +2,000 | +54% |
| | | High | 3,790 | 4,640 | 5,520 | 6,430 | +2,640 | +70% |
| **Catchment total** | **13,950** | **Medium** | **13,560** | **15,040** | **16,340** | **17,570** | +4,010 | +30% |
| | | **High** | **13,840** | **15,920** | **17,950** | **20,020** | +6,180 | +45% |

*Source: Stats NZ, Property Economics.*

*Note that the figures for Ngaaruawaahia, Taupiri and Horotiu are based on township's Statistical Area 1 (SA1) extent which do not directly equate to the extent of Ngaaruawaahia and Taupiri catchments identified earlier in Section 3.*

## 5. DEMOGRAPHIC PROFILING

This section identifies some of the relevant economic and social demographics of the identified catchments and compares them with the wider Waikato District and the national average demographics for comparative context. A full breakdown of the demographic profiling has been provided in Appendix 1.

### NGAARUAWAAHIA CATCHMENT

- The Ngaaruawaahia catchment currently has around 13,950 residents and approximately 4,840 households, giving an average size of around 2.9 persons per household. This ratio is marginally higher than the Waikato District average (2.8) and the national average (2.7). This catchment represents around 16% of the Waikato District's total population base.
- The Ngaaruawaahia catchment area has a larger proportion of residents aged under 30 years (46%) and conversely a smaller proportion of residents aged 40+ years (42%). As a result, the Ngaaruawaahia catchment area has a younger age structure and higher proportion of children relative to the wider district and national averages.
- The catchment has a lower annual average household income at around $78,000pa compared with $86,000pa within the wider district. Lower household income typically translates into lower levels of annualised retail expenditure generated on a per household unit basis, and lower discretionary spending power.
- There is a lower proportion of people in the Ngaaruawaahia area that identify as European (56%) compared to the district's 66%. There is also a higher proportion of Māori in the catchment (35%), compared to the wider district's 23%.
- In respect to qualification attainment, there is a higher proportion of the catchment (around 25%) without qualifications, compared to the district average of 21% and national average of 18%. Similarly, only 15% of the working age population have a Bachelor's Degree or higher, compared with 20% of the district and 25% of the wider country. Overall, the Ngaaruawaahia catchment has a lower level of qualification attainment proportionally.
- Residents within the catchment are also more likely to own the home that they live in, with 60% of households owning / partly owning their own home which is higher than both the wider district and the national average (56% and 51%, respectively). This is likely a reflection of cheaper housing stock within the catchment area relative to the comparative areas.
- Furthermore, the Ngaaruawaahia catchment area is a proportionately cheaper place to reside when compared to the national average. The area currently has 94% of residents paying less than $400 per week for rent compared to 83% within the wider district and 63% in the wider NZ.

- Overall, the Ngaaruawaahia catchment can be considered as having a significantly younger, a Māori ethnic predisposition (proportionally), earning a slightly lower annual income, residing in lower price properties (on average), but having a higher level of home ownership.

## TAUPIRI RETAIL CATCHMENT

- The Taupiri catchment area has a current estimated population base of approximately 800 people and 280 households, with a slightly larger average person per household ratio of 2.86 compared to the district average of 2.79 persons. The Taupiri catchment area represents only 1% of the district's current (2022) population base and 5.7% of the wider Ngaaruawaahia catchment's current population base. In retail terms, the Taupiri catchment represents a very small market.
- The Taupiri catchment area has a higher proportion of elderly (aged 60+ years) than the wider Ngaaruawaahia catchment and the district. Of Taupiri's population base 22% are estimated to be 60+ years. This is 18% for Waikato District.
- While the distribution of household income for Taupiri and surrounding areas' residents across the income bands is not entirely dissimilar from the district averages, the median household income in the Taupiri catchment is slightly higher at $90,000 per annum relative to the $86,000 per annum within the wider district and the national average of $76,000. A high 45% of households in Taupiri earn in the higher annual income bracket of $100,000 plus., above the district and national averages 43% and 37%, respectively.
- In the Taupiri catchment area, 11% of residents receive jobseeker support compared to 7% at the district level. This is directly attributable to the greater number of residents that are not in the labour force and a smaller number of full-time employees.
- The Taupiri catchment area is a proportionately more expensive place to reside when compared to the district average due to its newer housing stock. It currently has 100% of residents paying less than $400 per week for rent compared to only 94% across the Ngaaruawaahia wider catchment and the district average of 83%.
- Overall, the Taupiri catchment area can be considered as having a slightly older (relative to the rest of the district), earning a proportionally higher income, and having a high level; of home ownership.

## 6. WAIKATO 2070 CONTEXT

Waikato 2070 draws on the initiatives and ambitions that are identified in the Waikato District Blueprint to inform future planning, investment, and decision-making by the Council for the wider district. It has outlined development plans for both Ngaaruawaahia and Taupiri, providing indicative extent and timing for future growth cells by broader land use type.

These development plans are attached in Appendix 2.

Using the Stats NZ projections as the basis, Waikato 2070 anticipated that Ngaaruawaahia (refer to the 'township', not the identified catchment) and Taupiri would have a population base of around 10,500 people and 4,000 people, respectively, over the next 50 years (i.e., by 2070).

To accommodate the expected growth, in Ngaaruawaahia, the development plan outlines that the Town Centre will be expanded to include up to four levels of shops and commercial activity over the next 10 to 30 years. There will also be different types of housing built around the centre, including standalone houses, townhouses, and lifestyle lots over the same time period. The Hopuhopu Business Park will also be developed to meet the local demand for industrial land use.

Taupiri Town Centre will also be developed to include up to four levels of shops and businesses, as well as different types of housing. There will also be an industrial cluster near State Highway 1, which will take around 30 years to fully develop.

Although Waikato 2070 has ambitious plans for the growth and development of both towns, it is not yet clear how much land will be needed to accommodate the expected population growth. The following assessment will be carried out to understand the amount of floorspace / extent of land area needed for different types of buildings, including retail (including supermarket), commercial and industrial uses.

# 7. RETAIL GROWTH FORECAST

This section sets out the projected retail expenditure and sustainable GFA forecasts for the identified catchment areas. These forecasts have been based on the Stats NZ High growth population and household projections, business spend and retail shopping patterns, and prepared using Property Economics' Retail Model.

## 7.1. RETAIL EXPENDITURE MODEL

A more detailed breakdown of the retail model and its inputs is set out in Appendix 3.

The following flow chart provides a graphic representing the Property Economics Retail Model to assist WDC in better understanding the methodology and key inputs utilised.

### GROWTH IN REAL RETAIL EXPENDITURE

For the purposes of projecting retail expenditure, growth in real retail spend has been incorporated into the model at an average rate of 1% per annum over the forecast period. This 1% rate is based on the level of debt retail spending, interest rates and changes in disposable income levels, and is the average inflation adjusted increase in spend per household over the assessed period.

## LAYERED RETAIL CATCHMENTS

It is important to note that the retail expenditure generated in the identified market does not necessarily equate to the sales within that particular area. Residents can freely travel in and out of the area, and they will typically choose the centres with their preferred range of stores, products, brands, proximity, accessibility and price points. A good quality offering will attract customers from beyond its core market, whereas a low-quality offering is likely to experience retail expenditure leakage out of its core market.

For that reason, it is appropriate for modern retail markets to be assessed on the basis of "layered catchments". This is where consumers spread their retail spending across a wider spectrum of centres, with the majority of their "higher order" spend going to "higher order"' centres (predominantly large scale regional or main metropolitan shopping destinations). Meanwhile, convenience spend tends to remain more localised, triggering a layering of centre catchments across the city. In other words, a consumer could be in the primary catchment of numerous centres, not just one.

Therefore, the retail expenditure generated in an area represents the sales centres or retail stores within that area could potentially achieve and is the key influence on what the market can potentially sustain. This should not be interpreted as a negative, but simply represents normal commercial market mechanisms (competition) and is a consideration that needs to be appropriately accounted for in any retail analysis.

## EXCLUDED ACTIVITIES

The retail expenditure figures below are in 2023 NZ dollars and exclude the following retail activities, as categorised under the ANZSIC categorisation system:

- Accommodation (hotels, motels, backpackers, etc.)
- Vehicle and marine sales & services (petrol stations, car yards, boat shops, caravan sales, and stores such as Repco, Super Cheap Autos, tyre stores, panel beating, auto electrical and mechanical repairs, etc.)
- Hardware, home improvement, building and garden supplies retailing (e.g., Mitre 10, Hammer Hardware, Bunnings, PlaceMakers, ITM, Kings Plant Barn, Palmers Garden Centres, etc.)

The above activities classified as retail by ANZSIC have been excluded because they are not considered to be core retail expenditure, nor fundamental retail centre activities in terms of visibility, location, viability or functionality. Modern retail centres do not rely on these types of stores to be viable or retain their role and function in the market as such stores have the potential to generate only consequential trade competition effects rather than flow-on retail distribution effects. Therefore, the retail centre network's economic wellbeing and social amenity cannot be unduly compromised.

The latter two bullet points contain activity types that generally have difficulty establishing new stores in centres for land economic and site constraint reasons, i.e. the commercial reality is that for most of these activity types it would be unviable to establish new stores in centres given their modern store footprint requirements and untenable to remain located within them for an extended period of time (beyond an initial lease term) in successful centres due to property economic considerations such as rent, operating expenses, land value and site sizes.

Trade orientated activities such as kitchen showrooms, plumbing stores, electrical stores, tile warehouses and paint stores are also excluded from the model for similar reasons. As such, demand for these store types is additional to the retail demand assessed in this analysis.

However, in the future, it is increasingly difficult from a retail economic perspective to see these store types establishing in centres (new or redeveloped), albeit they likely have equal planning opportunity to do so. As such, demand for these store types is additional to the retail demand assessed in this analysis.

## SUSTAINABLE GFA

This analysis uses a sustainable footprint approach to assess retail demand. Sustainable floorspace in this context refers to the level of floor space proportionate to an area's retainable retail expenditure that is likely to result in an appropriate quality and offer in the retail environment. This does not necessarily represent the 'break even' point, but a level of sales productivity ($/sqm) that allows retail stores to trade profitably and provide a good quality retail environment, and thus economic wellbeing and amenity.

It is necessary to separate the Gross Floor Area into:

- Net retail floorspace (Sustainable Floorspace); and
- Back office floorspace that does not generate any retail spend.

A store's net retail floor area only includes the area which displays the goods and services sold and represents the area to which the general public has access. By contrast, the Gross Floor Area typically represents the total area leased by a retailer. Back Office Floorspace in a retail store is the area used for storage, warehousing, staff facilities, admin functions or toilets and other 'back office' uses.

These activities typically occupy around 25-30% of a store's GFA. It is important to separate out such back office floorspace from sustainable floorspace because back office floorspace does not generate any retail spend. For the purposes of this analysis a 30% ratio has been applied and included in the figures outlined in the following analysis.

Furthermore, retail stores in general can be split into Specialty and Large Format Retailing (LFR). Specialty retailing generally consists of smaller, boutique more specialised stores typically operating within, and offering products from, a specific retail sector. These are typically stores for items such as clothing, footwear, pharmaceuticals, and food and beverages, with the vast majority of store sizes for this type of retailing under 500sqm GFA.

LFR activity is typically identified as stores with a larger store footprint, generally over 500sqm GFA, and includes store types such as supermarkets, furniture, appliances, hardware and department stores. It is important to note that these store type examples are not mutually exclusive and can include a range of products across a number of retail sectors.

LFR stores, while large in floorspace terms comparatively, typically represent only a small proportion of physical stores nominally. These LFR store types, with the exception of supermarkets, generally trade at lower productivities on a per sqm basis relative to smaller Specialty stores but are able to remain profitable by selling more in terms of volume, having superior 'purchasing power' (i.e., LFR stores can typically purchase goods at lower wholesale costs on a per unit basis due to the larger volumes bought, particularly for national retail chains), and typically lower per square metre rental rates.

## 7.2. NGAARUAWAAHIA CATCHMENT RETAIL FORECAST

The following table forecasts and disaggregates the total annual retail expenditure by ANZSIC retail sector category over the 2023 – 2053 period generated by the Ngaaruawaahia catchment. All figures are in 2023-dollar terms.

The Ngaaruawaahia catchment is currently (2023) estimated to generate approximately $127m in annual retail expenditure. This is broadly representative of the 'pool' of retail spend that the catchment area would generate annually.

**TABLE 2: NGAARUAWAAHIA CATCHMENT ANNUALISED RETAIL SPEND ($M) FORECAST**

| ANZSIC Sector | 2023 | 2028 | 2033 | 2038 | 2043 | 2048 | 2053 | 2023-53 Growth | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | $m | % |
| Food retailing | $59.2 | $66.3 | $74.0 | $82.0 | $90.6 | $101.5 | $112.2 | **$53.0** | **90%** |
| Clothing, footwear and personal accessories retailing | $6.6 | $7.2 | $7.9 | $8.5 | $9.2 | $10.6 | $11.7 | **$5.1** | **77%** |
| Furniture, floor coverings, houseware and textile goods retailing | $4.8 | $5.3 | $5.9 | $6.6 | $7.2 | $8.2 | $9.1 | **$4.3** | **89%** |
| Electrical and electronic goods retailing | $6.7 | $7.4 | $8.3 | $9.1 | $10.1 | $11.4 | $12.7 | **$6.0** | **89%** |
| Pharmaceutical and other store-based retailing | $10.5 | $11.7 | $13.0 | $14.3 | $15.7 | $17.6 | $19.4 | **$8.9** | **85%** |
| Department stores | $9.5 | $10.3 | $11.4 | $12.4 | $13.4 | $15.5 | $17.1 | **$7.7** | **81%** |
| Recreational goods retailing | $3.8 | $4.2 | $4.7 | $5.1 | $5.6 | $6.3 | $7.0 | **$3.2** | **83%** |
| Food and beverage services | $25.7 | $28.9 | $32.2 | $35.6 | $39.2 | $43.3 | $47.5 | **$21.9** | **85%** |
| Total Retail Spend ($m) | $127 | $141 | $157 | $174 | $191 | $214 | $237 | **$110** | **87%** |

*Source: Property Economics*

Under the Stats NZ High growth scenario, this total annual retail expenditure is expected to grow by approximately $110m annually (or 87%) to around $237 per annum by 2053.

The largest sector is Food Retailing[3], which includes supermarket shopping. This sector accounts for about 47% of all retail expenditure generated within the catchment area and currently totals around $59m in annual expenditure generated. It is estimated that Food Retailing would grow by $53m (or 90%) to approximately $112m annually by 2053.

Food and Beverage Services[4] is the second-largest sector with a current estimated annualised expenditure at $26m (or 20% of total retail expenditure). It is anticipated that Food and Beverage Services would grow by $22m (or 85%) to around $48m annually by 2053.

The balance of the retail sectors is comparatively smaller (in nominal figures) and involve a lot of goods consumers are prepared to travel greater distances to purchase. This is particularly the case for the more competitive LFR store types.

The following table illustrates the level of sustainable retail GFA (sqm) within each retail sector that can be supported by the generated total retail spend within the Ngaaruawaahia catchment area.

The total sustainable GFA based on the Ngaaruawaahia catchment's total generated retail spend equates to 24,100sqm (rounded) in 2023 and is expected to grow further to around 44,800sqm by 2053. This equates to an additional growth in sustainable GFA of around 20,700sqm between 2023 and 2053 across all assessed retail sectors.

It is important to note that this is not the total retail GFA currently being supplied by the Ngaaruawaahia market, but rather the amount of GFA that can be sustained by the catchment's generated retail spend irrespective of where retail supply is located, or if this total generated retail expenditure was internalised within the area.

Despite comprising around 47% of retail expenditure, Food Retailing encompasses just 32% of 2053 sustainable GFA. This is a reflection simultaneously of higher productivity rates (sales/sqm) of supermarkets and the scale of which supermarkets are built / demanded.

In contrast, Department Stores which have relatively lower floorspace productivity rates, represents 7% of retail expenditure but around 14% of total sustainable GFA. For the Fashion and Department Store sectors, cumulatively, the generated spend in the catchment could sustain around 8,500sqm GFA, around 19% of the area's sustainable GFA by 2053.

[3] *Includes supermarkets, fruit & vege stores, bakeries, butchers, dairies, fish shops, cake shops, etc.*

[4] *Includes cafes, bars, restaurants and takeaway food services.*

**TABLE 3: NGAARUAWAAHIA CATCHMENT SUSTAINABLE GFA (SQM) FORECAST**

| ANZSIC Sector | 2023 | 2028 | 2033 | 2038 | 2043 | 2048 | 2053 | 2023-53 Growth | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | sqm | % |
| Food retailing | 7,560 | 8,470 | 9,450 | 10,470 | 11,570 | 12,960 | 14,330 | **6,770** | **90%** |
| Clothing, footwear and personal accessories retailing | 1,340 | 1,460 | 1,600 | 1,730 | 1,860 | 2,160 | 2,380 | **1,040** | **78%** |
| Furniture, floor coverings, houseware and textile goods retailing | 1,680 | 1,870 | 2,080 | 2,300 | 2,530 | 2,870 | 3,180 | **1,500** | **89%** |
| Electrical and electronic goods retailing | 1,910 | 2,130 | 2,370 | 2,610 | 2,870 | 3,260 | 3,620 | **1,710** | **90%** |
| Pharmaceutical and other store-based retailing | 2,570 | 2,860 | 3,180 | 3,500 | 3,840 | 4,300 | 4,740 | **2,170** | **84%** |
| Department stores | 3,380 | 3,690 | 4,060 | 4,410 | 4,780 | 5,540 | 6,120 | **2,740** | **81%** |
| Recreational goods retailing | 1,060 | 1,180 | 1,300 | 1,430 | 1,560 | 1,770 | 1,950 | **890** | **84%** |
| Food and beverage services | 4,580 | 5,160 | 5,750 | 6,350 | 7,010 | 7,720 | 8,490 | **3,910** | **85%** |
| Total Retail Sustainable GFA (sqm) | 24,100 | 26,800 | 29,800 | 32,800 | 36,000 | 40,600 | 44,800 | **20,700** | **86%** |

*Source: Property Economics*

For context, at present the Ngaaruawaahia town centre contains an estimated 7,200sqm GFA (rounded) of retail floorspace, of which an estimated 21% is vacant.

The above estimates contextualise the forecast retail demand implications of the growth scenarios for the total retail market but does not reflect the GFA Council should consider accommodating as part of their strategic planning process for business land demand and Spatial Plan development. This is due to market leakage from the catchment to Hamilton predominantly, which lowers the sustainable GFA provision appropriate to accommodate in Ngaaruawaahia.

In addition to the forecast demand, based on Property Economics' grounding truthing, there is a significant room for improvement in the quality of the offer, on average, to better meet the modern-day retail needs of the market. This approach to better service local resident retail requirements would internalise more spend and would magnify positive impacts on the wider Ngaaruawaahia area's retail economy.

## SUPERMARKET SPEND AND SUSTAINABLE GFA

The following table presents the projected supermarket retail spend ($m) and sustainable GFA (sqm) within the Ngaaruawaahia catchment.

As of 2023, $44m of annualised supermarket spend is generated within the Ngaaruawaahia catchment. This is broadly representative of the 'pool' of supermarket retail spend that the supermarket provision would be competing for within the Ngaaruawaahia catchment.

Under the High growth scenario, the annualised supermarket retail spend is anticipated to grow by around 90% or $40m per annum by 2053 and represents a total pool in the order of

$84m in annualised supermarket retail spend. This is translated into a net additional supermarket retail GFA requirement of around 9,600sqm between 2023 and 2053 within the Ngaaruawaahia catchment.

It is of importance to note that not all this net increase in sustainable GFA will be delivered in new floorspace but delivered through a combination of new GFA and increased store productivities.

**TABLE 4: NGAARUAWAAHIA CATCHMENT ANNUALISED SUPERMARKET SPEND & SUSTAINABLE GFA**

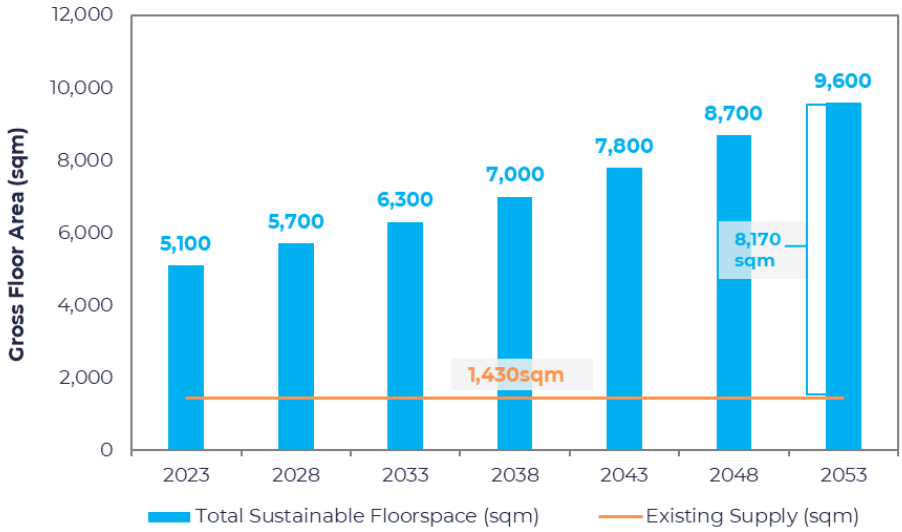
| | 2023 | 2028 | 2033 | 2038 | 2043 | 2048 | 2053 | 2023-53 Growth | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | sqm | % |
| Supermarket Spend ($m) | $44 | $50 | $55 | $61 | $68 | $76 | $84 | **$40** | **90%** |
| Supermarket Sustainable GFA (sqm) | 5,100 | 5,700 | 6,300 | 7,000 | 7,800 | 8,700 | 9,600 | **4,500** | **88%** |

*Source: Property Economics*

The following figure illustrates the total existing supermarket floorspace supply versus the forecast sustainable retail requirement GFA to satisfy future demand within the catchment to 2053.

It shows that the Ngaaruawaahia catchment generates sufficient food retailing expenditure to sustain an additional 3,670sqm (5,100sqm-1,430sqm) of supermarket GFA. If no further change in supply, this differential is projected to rise to around 8,170sqm (9,600sqm-1,430sqm) by 2053.

**FIGURE 5: NGAARUAWAAHIA CATCHMENT SUPERMARKET SUPPLY-DEMAND DIFFERENTIAL**




*Source: Property Economics.*

*Note that the existing supply includes SuperValue Ngaaruawaahia. While not larger than 1,000sqm GFA (the typical GFA threshold to be defined as a supermarket), Ngaaruawaahia is a smaller market and the*

*store's inclusion recognises it plays a higher order role and function in the community than the local dairies or superettes.*

Based on the above forecast, the current supermarket supply levels are below the Ngaaruawaahia catchment's sustainable GFA indicating significant capacity for expansion with this differential projected to grow unless a new or expanded supermarket provision is developed in the Ngaaruawaahia market.

Given supermarkets are a fundamental store type for a local community, the Spatial Plan for Ngaaruawaahia should have the ability to accommodate a new or expanded supermarket in the future.

Note that not all of the expenditure that is generated by the Ngaaruawaahia catchment will be internalised and captured by the local supermarket and retail tenancies. This is because leakage occurs to other larger supermarkets or centres outside the catchment (such as in Hamilton) draw significant spend out of the area.

## RETAIL SPEND LEAKAGE

In the following analysis, retail expenditure spending patterns have been assessed using retail transaction data sourced from MarketView. MarketView data is based on the spending and retail transactions of credit and debit (EFTPOS) cardholders. The MarketView data has been collected from a range of stores across the spectrum of assessed retailers in the market, from national chains to small independent stores.

The retail transactional data sources for the Ngaaruawaahia catchment are based on the most recently available year ending May 2023.

Given the large sample size of card holders and prolific use of EFTPOS within NZ, MarketView data is considered to provide a robust and accurate depiction of the destination of retail spending flows out of the catchment, and hence has been used as a basis for the following analysis.

'Destination' retail spending is derived from identifying where retail expenditure generated in the catchment is spent, quantifying the 'outflow' of spend from the retail market.

The following figure illustrates the composition of retail spending made by residents residing in the catchment by 'destination'. Due to the relatively limited mix of retail activities within the catchment and MarketView confidentiality criteria, only broader retail categories (i.e., "Food Retailing" – supermarkets and groceries and "All Other Categories") are used for analysis.

Separating the catchment's resident spend by destination indicates that only 22% of all retail expenditure generated within the catchment is spent locally (or internalised within the catchment). This means that only approximately $1 out of every $5 dollars spent by Ngaaruawaahia residents is spent within the catchment's retail stores.

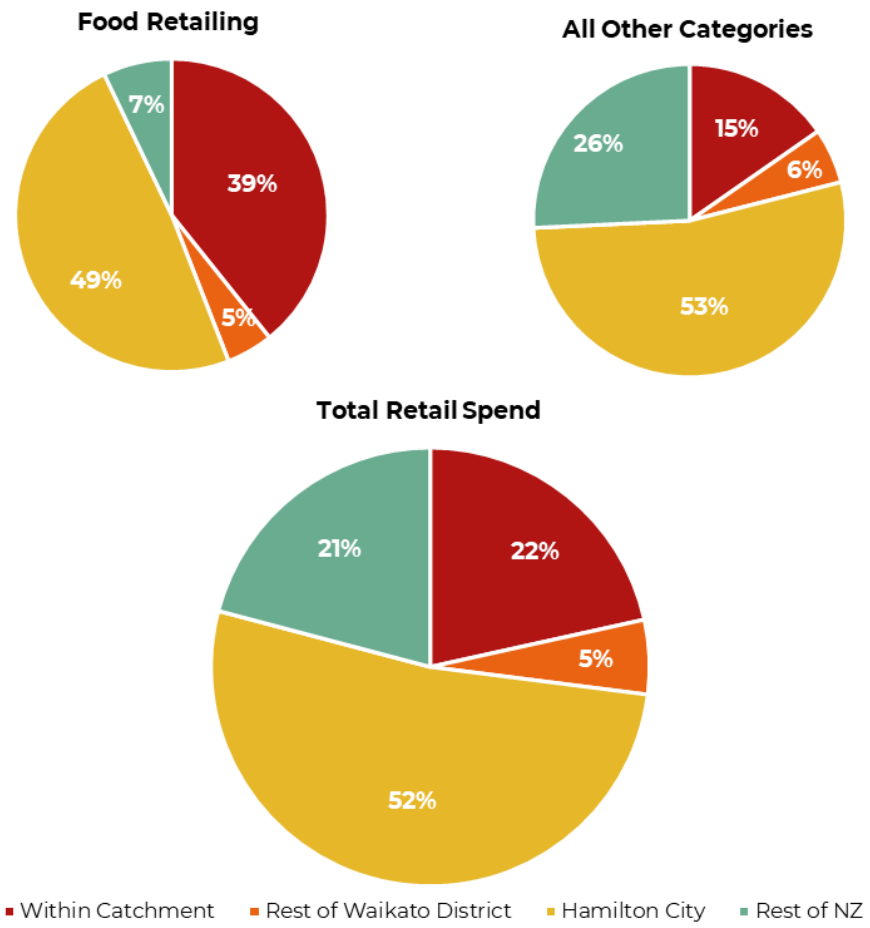
Conversely, a total of 78% of the catchment's generated expenditure leaves the area and is spent elsewhere. Specifically, around 66% of this is spent in Hamilton. This is the result of shopping trips to Hamilton, especially the major shopping malls (e.g., The Base) due to the catchment's relatively short drive to Hamilton and frequent employment travel to Hamilton by many of the catchment's residents.

The rest of the Waikato District captures only 5% of the total retail spend, while the rest of NZ captures 21% with the bulk of this going to Auckland.

The food retailing sector performs better with 39% of retail spend in this sector internalised, i.e., lower levels of retail leakage. This is the result of New World and SuperValue stores giving the catchment a better retail presence and offer in this sector relative to other retail categories.

A yet to be actioned consent for a new Pak'N Save supermarket in Te Rapa (opposite the Base shopping centre) will increase the draw of food retailing spend out of the Ngaaruawaahia catchment when the store is developed given its close proximity to Ngaaruawaahia. This could decrease the proportion of internalised food retailing spend in Ngaaruawaahia in the future.

**FIGURE 6: NGAARUAWAAHIA CATCHMENT DESTINATION OF RETAIL SPEND**




*Source: MarketView*

Based on analysis of other similar catchments / markets with similar geographic attributes[5], the Ngaaruawaahia catchment could aim to retain around half of its generated retail expenditure (including supermarket) locally. This would assist Ngaaruawaahia becoming more self-sufficient, improve market efficiency and catalyse the local economy and local employment opportunities.

However, applying a more commercially practical lens to the Ngaaruawaahia catchment, given its close proximity to one of the region's largest and most comprehensive retail destinations (The Base), a more realistic aim of retaining 35% of the retail sectors the centre can meaningfully compete in (food retailing, food and beverage, and pharmaceuticals and other sectors) is considered more pragmatic. This equates to around $63m per annum in retail expenditure by 2053. This spend equates to a sustainable local market provision of around 11,000sqm by 2053. This is approximately 4,000sqm GFA more than the current retail provision in the Ngaaruawaahia centre by 2053.

However, emphasis over the short-medium term (i.e., the next 10 years) should be to consolidate and focus on improving the performance and viability of the existing GFA in the town centre, particularly with projected growth and the rate of that growth still to be realised.

Specifically, a better local supermarket provision in Ngaaruawaahia is possible with a market that could sustain an additional 1,800sqm GFA at present. By 2053 the Ngaaruawaahia catchment could sustain an additional large format supermarket of 3,500 – 4,000sqm GFA over the current provision.

## 7.3. TAUPIRI CATCHMENT RETAIL FORECAST

The following table breaks down the total retail market for Taupiri over the assessed 30-year period to 2053 on an annualised basis.

It is estimated that the Taupiri retail catchment would generate a total of around $9m per annum of retail expenditure in 2023 from which retail stores can draw sales. This is projected to grow to around $19m by 2053, a net +113% increase. This equates to an additional $10m in annualised retail expenditure above the 2023 base year. This confirms the Taupiri market is small in retail market terms both at present and in 2053.

Note this projection excludes the SH1 spend market potential captured by the new Taupiri Service Centre. This is considered a niche centre that is designed to primarily service SH1 traffic and customers who reside in areas outside the catchment. This inflow has not been factored into Taupiri's catchment potential for the purposes of this report.

As the Waikato 2070 anticipated that the longer-term population base of Taupiri would be around 4,000 people. Applying this possible population base would further increase the

[5] *Retail catchments on the edge of main urban centres such as Rangiora, Kaiapoi, Rolleston, Omokoroa, Te Puke, Otaki, Te Awamutu, Cambridge, Huntly, Pokeno and Tuakau.*

annualised retail spend to approximately $56m by 2070. This is significantly higher than the Stats NZ High projection so should be treated with caution.

At the sectoral level, Food Retailing and Food and Beverage Services are estimated to be the sectors with the most significant annualised retail spend over the next 30 years. These two sectors cumulatively would generate around $15m of retail spend per annum in 2053, which accounts for around two thirds of the total annualised retail spend generated within the catchment.

**TABLE 5: TAUPIRI RETAIL CATCHMENT ANNUALISED RETAIL SPEND ($M) FORECAST**

| ANZSIC Sector | 2023 | 2028 | 2033 | 2038 | 2043 | 2048 | 2053 | 2023-53 Growth | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | $m | % |
| Food retailing | $4.1 | $4.8 | $5.5 | $6.3 | $7.1 | $8.1 | $9.2 | **$5.0** | **121%** |
| Clothing, footwear and personal accessories retailing | $0.5 | $0.5 | $0.6 | $0.7 | $0.7 | $0.9 | $1.0 | **$0.5** | **98%** |
| Furniture, floor coverings, houseware and textile goods retailing | $0.3 | $0.3 | $0.4 | $0.4 | $0.5 | $0.5 | $0.6 | **$0.3** | **128%** |
| Electrical and electronic goods retailing | $0.4 | $0.4 | $0.5 | $0.5 | $0.6 | $0.7 | $0.8 | **$0.5** | **128%** |
| Pharmaceutical and other store-based retailing | $0.8 | $0.9 | $1.0 | $1.1 | $1.2 | $1.4 | $1.6 | **$0.8** | **103%** |
| Department stores | $0.6 | $0.7 | $0.8 | $0.9 | $1.0 | $1.2 | $1.3 | **$0.7** | **112%** |
| Recreational goods retailing | $0.3 | $0.3 | $0.4 | $0.4 | $0.5 | $0.5 | $0.6 | **$0.3** | **107%** |
| Food and beverage services | $2.1 | $2.5 | $2.8 | $3.1 | $3.5 | $3.9 | $4.3 | **$2.1** | **100%** |
| Total Retail Spend ($m) | $9 | $10 | $12 | $13 | $15 | $17 | $19 | **$10** | **113%** |

*Source: Property Economics*

For context, at present the Taupiri centre contains an estimated 400sqm GFA (rounded) of retail floorspace across two primary locations - the Taupiri Tavern location and the dairy on Te Putu Street.

The following table illustrates the level of sustainable retail GFA (sqm) within each retail sector that can be supported by the generated total retail spend within the Taupiri retail catchment.

The total sustainable GFA based on the catchment's total generated retail spend equates to 1,700sqm (rounded) in 2023 and is expected to grow further to around 3,600sqm by 2053. This equates to an additional growth in sustainable GFA of around 1,900sqm by 2053.

Once again not all this GFA should be provided locally within Taupiri. Ngaaruawaahia town centre would capture some of this spend, as would Huntly and centres in Hamilton. All are within a short drive from Taupiri. The reality is only the fundamental convenience retail stores are likely to be sustainable in Taupiri over the foreseeable future.

The diversion of SH1 and its through traffic away from Taupiri has adversely affected the market potential in the Taupiri centre. This market potential has been picked up in a new location at the Taupiri Service Centre so is not lost to Taupiri altogether. Simple been transferred to another location in Taupiri.

Applying the possible 2070 population of 4,000 people would further increase the sustainable GFA to approximately 10,400sqm by 2070. This equates to additional 8,740sqm GFA by 2070. This is considered improbable.

**TABLE 6: TAUPIRI CATCHMENT SUSTAINABLE GFA (SQM) FORECAST**

| ANZSIC Sector | 2023 | 2028 | 2033 | 2038 | 2043 | 2048 | 2053 | 2023-53 Growth | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | sqm | % |
| Food retailing | 530 | 610 | 700 | 800 | 910 | 1,040 | 1,170 | **640** | **121%** |
| Clothing, footwear and personal accessories retailing | 100 | 110 | 120 | 140 | 150 | 180 | 200 | **100** | **100%** |
| Furniture, floor coverings, houseware and textile goods retailing | 100 | 110 | 130 | 150 | 160 | 190 | 220 | **120** | **120%** |
| Electrical and electronic goods retailing | 100 | 120 | 140 | 160 | 180 | 210 | 240 | **140** | **140%** |
| Pharmaceutical and other store-based retailing | 190 | 210 | 240 | 270 | 300 | 340 | 380 | **190** | **100%** |
| Department stores | 220 | 250 | 290 | 320 | 350 | 420 | 470 | **250** | **114%** |
| Recreational goods retailing | 80 | 90 | 100 | 120 | 130 | 150 | 170 | **90** | **113%** |
| Food and beverage services | 380 | 440 | 500 | 560 | 620 | 690 | 760 | **380** | **100%** |
| Total Retail Sustainable GFA (sqm) | 1,700 | 1,900 | 2,200 | 2,500 | 2,800 | 3,200 | 3,600 | **1,900** | **112%** |

*Source: Property Economics*

## SUPERMARKET DEVELOPMENT POTENTIAL IN TAUPIRI

Given the current and projected population base of the Taupiri catchment, Property Economics considers that Taupiri has limited propensity to sustain a supermarket over the next 30 years (by 2053).

In the short to medium term, local retail demand can be comfortably accommodated by the existing retail and commercial provisions as well as the distinctive offerings within the newly opened Waikato Expressway Taupiri Service Centre. In the long run, a new grocery outlet with a smaller scale, such as a Superette, would be sustainable and could cater to the smaller day-to-day and frequently required 'top-up' convenience needs of the Taupiri community.

### IMPLICATIONS OF MR HOWARD LOVELL'S PROPOSED CONCEPT PLAN

Property Economics notes that Mr Lovell, in his appeal to the PDP, has proposed a concept plan for the Lovell South Blocks in Taupiri. This will largely accommodate projected growth rather than generate additional growth. This concept plan can be found in Appendix 4.

From Property Economics' perspective, even if these proposed residential areas are developed in the future, there is no need for additional commercial land in Taupiri. The existing zoned commercial land area is already more than sufficient to accommodate the expected growth, including the new residents resulting from the concept plan's residential developments.

Additionally, the nearby Taupiri Service Centre also materially contributes to meeting the frequently required convenience needs of the local Taupiri market.

## 7.4. IMPLICATIONS OF RECENT ONLINE SHOPPING TRENDS

The COVID-19 pandemic has catalysed online spending in NZ and had a significant impact on New Zealanders attitudes and acceptance of purchasing retail goods and services online. Online shopping is becoming increasingly normalised, and it is now unusual for New Zealand retailers not to have an online presence and the ability for consumers to purchase goods through an online channel.

The size of New Zealand's online retail market is just over $8b per annum[6] at present and anticipated to continue growing albeit at a slightly more subdued rate than experienced during the COVID-19 period.

There are important implications of the growth in internet retailing (or e-tailing) for consumers, businesses, and the economy as a whole. Following are some of the key implications that are relevant to the future centre development of the wider Ngaaruawaahia area:

- Increased online spending: The Ngaaruawaahia market will not be immune to growth in e-tailing, albeit the impact of internet retailing on localised centres such as Ngaaruawaahia and Taupiri is anticipated to be minimal given their strong convenience retailing focus. The effects of e-tailing are more impactful on larger national banner retail chains and therefore larger retail centres such as The Base tend to bear the brunt of any impacts via reduced in-store sales.

  Impacts in relation to Ngaaruawaahia specifically are likely focused on the supermarket stores. Supermarkets have a growing online presence with click'n collect a growing shopping purchasing option for many shoppers now. This growth has led to changes in supermarket store design to accommodate the evolution in this side of their business. Any new, expanded or reconfigured supermarket in Ngaaruawaahia is likely to have an improved offer for this type of shopping.

[6] *https://www.ibisworld.com/nz/industry/online-shopping/1905/*

The Ngaaruawaahia community will undertake more shopping online in the future, but as identified above these are likely to be from stores in Hamilton, Auckland or internationally. Therefore, the effects of increased e-tailing in Ngaaruawaahia will not likely impact the on-the-ground opportunities in the Ngaaruawaahia Town Centre.

- Shift in consumer preferences: The pandemic has also led to a shift in consumer preferences towards contactless and online shopping experiences. Retailers who are able to adapt to this new reality by investing in e-commerce platforms and improving their online presence are likely to thrive in the post-pandemic era. Online retailers need to continuously improve their website layout, customer navigation, security, reliability and efficiency to remain competitive and grow sales. Shoppers are also becoming more discerning online and seek greater choice, value and improved shopping experience.

- Opportunities for small businesses: The pandemic has created opportunities for small businesses to establish an online presence and reach customers beyond their local markets. This has led to an increase in the number of small businesses offering online services and products, which could help to diversify the local economy. There is some opportunity here for Ngaaruawaahia Town Centre to potentially trial some tenancies for incubator businesses and 'start ups' designed to serve not only a local but wider online market. This would diversify the town centre offering, increase profile and hopefully catalyse business success.

- Challenges for brick-and-mortar stores: Physical retailers were hit hard by the pandemic, with many struggling to survive due to reduced foot traffic and social distancing requirements. This can be seen in the Ngaaruawaahia Town Centre with the significant increase in vacant stores since the previous audit. Some retailers have responded by shifting towards online sales, while others have closed their physical stores altogether.

- Impact on the economy: The surge in online spending has had a positive impact on the NZ economy, particularly in the eCommerce sector. This has been at the expense of physical store performance for many retailers. The shift of a portion of spend away from physical retail has had negative implications for the commercial real estate sector and traditional brick-and-mortar stores in many centres with softening rents for landlords and store viability concerns for retailers. This restructuring of the market is still playing out with online sales growing as a proportion of the total retail market. This is likely to be an ongoing challenge for the commercial market and retailers in the foreseeable future.

As the world continues to navigate through the post-pandemic period, commercial centres within the wider Ngaaruawaahia catchment area will need to adapt to a new normal and implement strategies to rebuild customer confidence and drive foot traffic. Here are some potential actions commercial centres could take:

- Improve shopping environment: Commercial centres need to provide reasons for customers to visit centres. This includes both retail and non-retail reasons. Ngaaruawaahia Town Centre need to improve its retail environment and improve its shopping experience. This includes both physical built form and the public realm.
- Consolidate the town centre: The Ngaaruawaahia Town Centre is disjointed as a retail centre at the moment and should be consolidated are a core centre area. This will improve walkability, vitality and focus activity in an area more appropriate to the size of the market the centre services.
- Offer value to customers: In the post-pandemic period and current state of the economy, many customers may be facing financial hardships, so commercial centres should look for ways to offer value to customers, such as discounts or special promotions.
- Embrace positive change: Commercial centres should consider investing in technology solutions such as online ordering, curb side pickup, and delivery options to make it easier for customers to shop.
- Focus on experiences: To entice customers to visit the Ngaaruawaahia Town Centre, commercial centres need to focus on creating memorable experiences for customers, such as hosting events or offering unique services.
- Support local businesses: The pandemic has hit small businesses particularly hard, so commercial centres should consider ways to support local businesses such as offering discounted rent, marketing support, or collaborative promotions.

# 8. CENTRE HEALTH ANALYSIS

## 8.1. METHODOLOGY

The health and success of a centre is generally determined by its ability to attract businesses and customers, especially better-quality retail and commercial businesses. There are two reasons for this, the first is that these businesses are both more productive than others and are the drivers of productivity growth. The second is that a high profile and successful centre provides a regional and national profile for business and therefore contributes to a city's economic competitive advantage.

Given these factors the following analysis assesses the 'state' and health of the subject centres / commercial areas based on Property Economics' centre visits and ground truthing undertaken in February 2023. The number of vacant (and under-construction, if any) tenancies / lots are quantified in contrast to the level of total tenancies to highlight the centre's attractiveness for investment and current level of overall vitality.

The business audit results are also compared to Property Economics' previous retail audit undertaken for Ngaaruawaahia in 2014 as part of the economic assessment for the Ngaaruawaahia Structure Plan 2017.

Based on Property Economics professional experience across the country, an appropriate (in terms of providing a good quality retail environment and experience) vacancy rate for a destination shopping location is often between 3 - 7%. Centres with a vacancy rate higher than 7% tend to be underperforming relative to their respective market opportunity and in need of assistance to improve their envisaged role and function.

## 8.2. NGAARUAAWAAHIA TOWN CENTRE BUSINESS AUDIT

Based on Property Economics' centre business audit, Ngaaruawaahia Town Centre is comprised of 59 operating retail and commercial tenancies. This is increased to 76 stores when accounting for vacant tenancies. Notably, virtually all stores have a small footprint (less than 500sqm GFA), and therefore have a convenience / specialty store focus. The one exception is the New World supermarket with a footprint around 1,000sqm, albeit that is small for a modern-day supermarket which typically have footprints above 3,000sqm GFA.

The Ngaaruawaahia Town Centre has a strong food and takeaway shops focus with nearly 60% of retail stores within these sectors. There are a total of 33 retail stores within the town centre. This excludes the SuperValue store due to its standalone location outside the town centre.

In addition, there are 26 commercial service businesses, ranging from hairdressers, beauty therapy / message, real estate agencies to medical practitioners.

An important measure of a centre's health is the level of vacancy, of which the Ngaaruawaahia Town Centre currently has 17 vacant stores. Proportionally, this equates to a very high 22%,

which indicates the Ngaaruawaahia Town Centre is not healthy, underperforming relative to its market size and in need of assistance to successfully play its envisaged role and function.

The following table also contains the store count comparison between the 2014 retail audit and the 2023 business audit for the centre. It shows that the current vacancy rate of 22% is significantly higher than the 7% recorded in 2014.

Whilst these vacancies are not directly comparable given that non-retail activities were not identified in the 2014 Business Audit survey, the current 22% vacancy rate is a significant step backwards for the health and vitality of the centre and potentially reflects the impacts of the COVID-19 pandemic on the town centre. This statistic alone suggests the current '*state*' of the Ngaaruawaahia Town Centre is worse than when assessed in 2014. This is also reflected in the current condition of many of the retail stores and buildings in the town centre which are not considered of good quality.

**TABLE 7: NGAARUAWAAHIA CENTRE BUSINESS AUDIT (2014 VS 2023)**

| Ngaaruawaahia Centre | 2023 | 2014 (Retail) |
|---|---|---|
| **Retail Sector** | **33** | **29** |
| Supermarket retailing | 1 | 1 |
| Food retailing | 5 | 6 |
| Food and beverage services | 15 | 12 |
| Clothing, footware and personal accessories | 1 | 0 |
| Pharmaceuticals | 2 | 1 |
| Other Retail (e.g., Petrol, Antiques, Florists, Gift Shops) | 9 | 9 |
| **Non-Retail Sector** | **26** | |
| **Community Facilities** | **7** | |
| Library / Council / WINZ | 4 | |
| Other (e.g., Community Hall / RSA) | 3 | |
| **Commercial Services** | **19** | |
| Hairdresser | 5 | |
| Financial Advisors | 1 | |
| Beauty Therapy / Massage | 2 | |
| Real Estate | 2 | |
| Vets / Pet Daycare | 1 | |
| Childcare / Daycare facilities | 2 | |
| Dentists | 1 | |
| Physiotherapists | 1 | |
| Medical Centre | 1 | |
| Other (Panelbeater, Print, IT Support, Architects, Design, etc) | 3 | |
| **Vacant** | **17** | **2** |
| **TOTAL TENANCIES (excl. vacant)** | **59** | **29** |
| **TOTAL TENANCIES (incl. vacant)** | **76** | **31** |

*Source: Property Economics*

The figure following shows the locations of the vacant & occupied tenancies within the assessed area.

**FIGURE 7: NGAARUAWAAHIA BUSINESS AUDIT SUMMARY BY OCCUPANCY STATUS**

*Source: Property Economics, LINZ*

## 8.3. TAUPIRI CENTRE BUSINESS AUDIT

The Taupiri Centre comprises a small number of business activities within the Business zone, consisting of eight tenancies. Notably, the centre offers a limited range of retailers, including one Food Retailing and one Food and Beverage Services (i.e., a pub). Additionally, there are six non-retail services / activities within the area, servicing the Taupiri local demand.

The small provision is not unexpected given the small localised market. There is no existing supermarket in Taupiri as the market is not of a sufficient size to sustain that store type. As such, while the local convenience 'top up' retail demand can be serviced by the small dairy on Te Putu Street, the vast majority of food retailing expenditure generated in Taupiri is spent outside the catchment.

The Taupiri Centre had only one identified vacant store. However, during the visit Property Economics noted that the geospatial distribution of retail and commercial activities in Taupiri is spread and an improvement in the quality of the commercial environment would be beneficial to the centre. Additional retail activity over time would assist Taupiri's centre environment and generate greater business agglomeration effects and local employment opportunities. Growth in the local market over the next 30 years should catalyse this in due course.

**TABLE 8: TAUPIRI CENTRE BUSINESS AUDIT (2023)**

| Taupiri | Business Zone | Waikato Expressway Taupiri Service Centre |
|---|---|---|
| **Retail Sector** | **2** | **6** |
| Food retailing | 1 | 3 |
| Food and beverage services | 1 | 3 |
| Other Retail (e.g., Petrol) | | 1 |
| **Non-Retail Sector** | **6** | |
| Community Facilities | 1 | |
| Vets / Pet Daycare | 1 | |
| Commercial Services | 1 | |
| Childcare / Daycare facilities | 1 | |
| Industrial Activities | 2 | |
| **Vacant** | **1** | **3** |
| **TOTAL TENANCIES (excl. vacant)** | **8** | **6** |
| **TOTAL TENANCIES (incl. vacant)** | **9** | **9** |

*Source: Property Economics*

The commercial activity that is likely to limit retail growth in the Taupiri urban area is the new Taupiri Service Centre located a few minutes' drive from Taupiri at the intersection of Gordonton Road and Waikato Expressway. The Service Centre comprises six national banner brand retail tenants at present, including McDonald's, Taco Bell, Robert Harris, Subway and BP.

The Service Centre's close proximity to Taupiri means these stores also service the Taupiri market, albeit that is not their primary target market (which is SH1 passing traffic).

There are currently three vacant tenancies within this Service Centre, indicating that further retail tenancies will be developed in due course increasing its attraction for current and future Taupiri residents.

## 8.4. IMPLICATIONS ON CENTRE FUTURE GROWTH DIRECTION

In Property Economics view, the priority for the Council lies in revitalising existing commercial centres rather than expanding or creating new ones within the Ngaaruawaahia catchment. This approach would make more efficient use of the current infrastructure, buildings, and resources available in commercial centres, particularly the Ngaaruawaahia Town Centre. By

revitalising these areas, their full potential can be realised before considering any further expansion.

Property Economics suggests that future revitalisation efforts should focus on improving the overall appearance, functionality, and attractiveness of commercial centres to enhance their competitiveness in attracting businesses, customers, and investments. A vibrant and well-maintained commercial centre is expected to create a positive image and stimulate more economic activity.

Supporting existing local businesses is crucial for the recovery and revitalization of commercial centres. This involves creating an environment that promotes growth and sustainability, addressing challenges they may face, and providing opportunities for them to thrive, thereby better contributing to the local economy.

Additionally, meeting the community's needs is vital for the future growth of Ngaaruawaahia's commercial centres. In addition to considering expansion, existing commercial centres need to ensure that the preferences and requirements of the local population are taken into account. By addressing community needs and enhancing the quality of the commercial centre offer, residents are more likely to support and engage with local businesses.

Overall, Property Economics considers that revitalising commercial centres before any future expansion would ensure that existing assets are optimised, businesses are supported, and community needs are met. This would set a strong foundation for future growth and expansion in a strategic and well-planned manner.

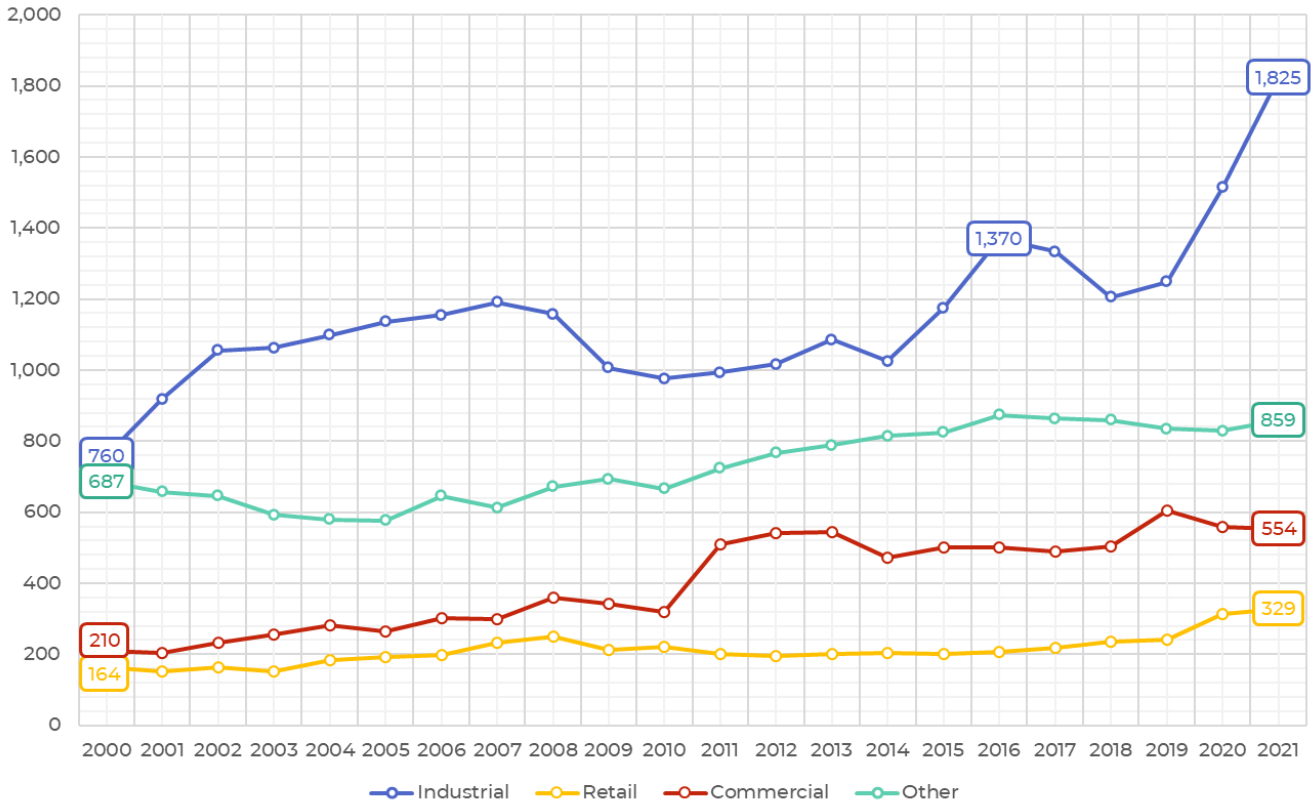
## 9. BUSINESS GROWTH TRENDS

This section assesses employment trends and changes in the employment structure of the Ngaaruawaahia and Taupiri catchments over the last 22 years. This informs the current dominant sectors in the areas and the recent performance of those sectors. Additionally, the historic performance of commercial and industrial employment is used to inform future growth in these two sectors. This analysis is useful to contextualise commercial and industrial sector opportunities with the Ngaaruawaahia Structure Plan area.

Property Economics utilises the most recent version of the ANZSIC system as guidance, whereby businesses are assigned an industry according to their predominant economic activity. The employment base has been aggregated into four core categories – Industrial, Retail, Commercial and Other. A breakdown of what ANZSIC activity has been included in each category has been set out in Appendix 5.

The figure following identifies the employment trends of the Ngaaruawaahia catchment on a temporal basis from 2000 to 2022 to highlight the changing composition of the local market by sector over the last two decades, and consequently, each sector's performance relative to the broader market in terms of employment trends.

**FIGURE 8: NGAARUAWAAHIA CATCHMENT EMPLOYMENT COUNT TRENDS BY CORE SECTOR**




*Source: Stats NZ, Property Economics*

Total employment in the Ngaaruawaahia catchment area has increased by +19% during the 2000-2022 period, from 1,820 people employed in 2000 to just over 2,170 people in 2022.

The Industrial sector has experienced the highest level of nominal growth, with a net increase of about 1,020 employees, or a 134% increase in this sector's employment base since 2000. This equates to around 62% of the catchment's total employment growth over the last 22 years. Clearly the data shows industrial activity is an important component of the district's economy and important source of employment for the local community.

The second-largest sector in the catchment is the Other sector (i.e., employment in community services, Council, health, education and recreational activities) which has seen a +177% growth in employment. The current employment base of the Other sector (i.e., around 780 persons) accounts for about 22% of the catchment's total employment base.

Retail has had a relatively constant employment base over the last 22 years, with low increases in retail employment as the market has grown.

A breakdown of the catchment's employment composition by ANZSIC sector s are provided in the table below.

**TABLE 9: NGAARUAWAAHIA CATCHMENT EMPLOYMENT COUNT TRENDS**

| ANZSIC | 2000 | 2005 | 2010 | 2015 | 2020 | 2022 | 2000-22 Growth | |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | # | % |
| A - Agriculture, Forestry and Fishing | 196 | 191 | 157 | 102 | 123 | 145 | -51 | -32% |
| B - Mining | 18 | 42 | 45 | 53 | 12 | 12 | -6 | -13% |
| C - Manufacturing | 424 | 497 | 658 | 598 | 589 | 643 | 219 | 33% |
| D - Electricity, Gas, Water and Waste Services | 9 | 9 | 3 | 3 | 3 | 3 | -6 | -200% |
| E - Construction | 227 | 188 | 181 | 220 | 193 | 199 | -28 | -15% |
| F - Wholesale Trade | 21 | 57 | 54 | 57 | 106 | 94 | 73 | 135% |
| G - Retail Trade | 136 | 133 | 142 | 127 | 139 | 150 | 14 | 10% |
| H - Accommodation and Food Services | 33 | 21 | 27 | 30 | 54 | 51 | 18 | 67% |
| I - Transport, Postal and Warehousing | 57 | 142 | 131 | 152 | 174 | 161 | 104 | 79% |
| J - Information Media and Telecommunications | 15 | 18 | 21 | 21 | 18 | 18 | 3 | 14% |
| K - Financial and Insurance Services | 15 | 15 | 18 | 15 | 12 | 12 | -3 | -17% |
| L - Rental, Hiring and Real Estate Services | 18 | 21 | 24 | 48 | 56 | 58 | 40 | 167% |
| M - Professional, Scientific and Technical Services | 6 | 3 | 3 | 6 | 9 | 3 | -3 | -100% |
| N - Administrative and Support Services | 12 | 15 | 30 | 42 | 54 | 51 | 39 | 130% |
| O - Public Administration and Safety | 192 | 183 | 196 | 209 | 243 | 230 | 38 | 19% |
| P - Education and Training | 261 | 200 | 226 | 201 | 219 | 204 | -57 | -25% |
| Q - Health Care and Social Assistance | 75 | 67 | 67 | 64 | 63 | 75 | 0 | 0% |
| R - Arts and Recreation Services | 85 | 104 | 94 | 80 | 50 | 36 | -49 | -52% |
| S - Other Services | 21 | 24 | 21 | 36 | 27 | 27 | 6 | 29% |
| **Total All Industries** | **1,821** | **1,930** | **2,098** | **2,064** | **2,144** | **2,172** | **+351** | **+19%** |

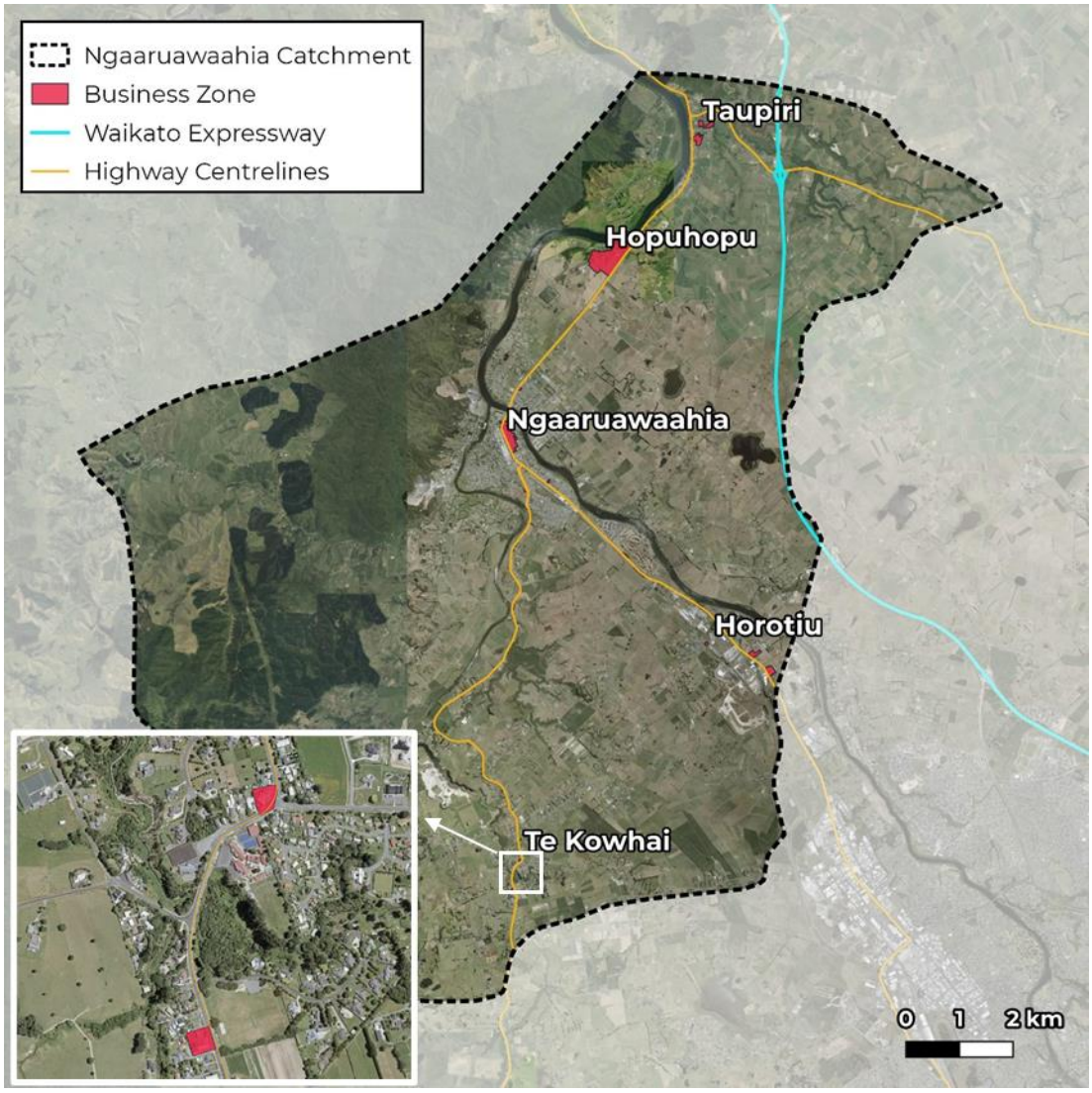
*Source: Stats NZ, Property Economics*

## 10. COMMERCIAL LAND CAPACITY SUFFICIENCY

This section provides a high-level overview of the Business zoned provisions within the Ngaaruawaahia catchment and reviews the future demand for Business zoned capacity within the area in the short (3 years), medium (10 years) and long term (30 years) based on the Future Proof Business Development Capacity Assessment (BDCA) 2021.

The following figure geospatially maps the distribution of business land provisions within the Ngaaruawaahia catchment area.

**FIGURE 9: EXISTING BUSINESS LAND PROVISIONS WITHIN THE NGAARUAWAAHIA CATCHMENT**




*Source: Waikato District Council, LINZ, Property Economics*

The total business land zoned provisions are estimated at around 53ha. In particular, the largest tranche of business land is in Hopuhopu, encompassing a total of approximately 33ha. This is followed by the Ngaaruawaahia Town Centre, which has a business zoned provision of circa 9ha.

The Taupiri Town Centre spans across three non-contiguous areas south of Gordonton Road and is roughly half the size of the Ngaaruawaahia Town Centre.

The figure following depicts the "zoomed in" extent of Ngaaruawaahia and Taupiri Town Centres based on the ODP zonings.

Hopuhopu currently has existing business land provision, which is not fully developed and is anchored primarily by the Hopuhopu Innovation Hub / Precinct. It is anticipated that once the Hub is fully developed, Hopuhopu will become a key business employment hub within the broader Ngaaruawaahia catchment area. This will partly address the demand for business activity and employment opportunities in the local market.

According to the BDCA 2021 (pp.93), there is approximately 73ha of vacant commercial land capacity in Ngaaruawaahia[7]. This capacity is more than enough to meet the projected long-term demand for 1.5ha of commercial land in Ngaaruawaahia and its surrounding areas between 2021 and 2051. However, this is inflated by Hopuhopu where the bulk of this particularly vacant land provision is located.

**TABLE 10: WAIKATO DISTRICT COMMERCIAL LAND SUFFICIENCY SUMMARY (HA)**

| Name | Short Term | Medium Term | Long Term | Total Vacant Land (ha) | Short Term | Medium Term | Long Term |
|---|---|---|---|---|---|---|---|
| Pokeno | 0.2 | 0.6 | 1.3 | 34.5 | | | |
| Tuakau | 0.9 | 2.2 | 3.5 | 94.0 | | | |
| Te Kauwhata | 0.4 | 1.4 | 2.4 | 28.2 | | | |
| Huntly | 0.2 | 0.7 | 1.6 | 9.1 | | | |
| Ngaruawahia | 0.0 | 0.4 | 1.5 | 73.3 | | | |
| Raglan | 0.4 | 1.0 | 2.5 | 4.4 | | | |
| Rest of Waikato | - 0.1 | 1.5 | 6.4 | 72.2 | | | |
| **Total** | **1.9** | **7.7** | **19.2** | **315.6** | | | |

*Source: Future Proof Partners, Market Economics*

In terms of the Ngaaruawaahia Town Centre, the commercial land area equates to approximately 9ha. The centre is very dispersed and spreads across a number of retail street frontages. This is partly a reflection of a number of retail tenancies trading to what was SH1 previously.

The centre is also not densely developed indicating there is a lot of development potential in the existing commercial zone of the centre. This would be better (re)developed first from an economic perspective to ensure the centre consolidates and generates the economic efficiencies and benefits of such centres rather than disperses further.

[7] *Note that this Ngaaruawaahia area is different from the identified Ngaaruawaahia catchment used in this economic assessment. The BDCA's estimates were estimated at a proxy-town level based around the significant townships, urban areas and their connectivity (pp.61).*

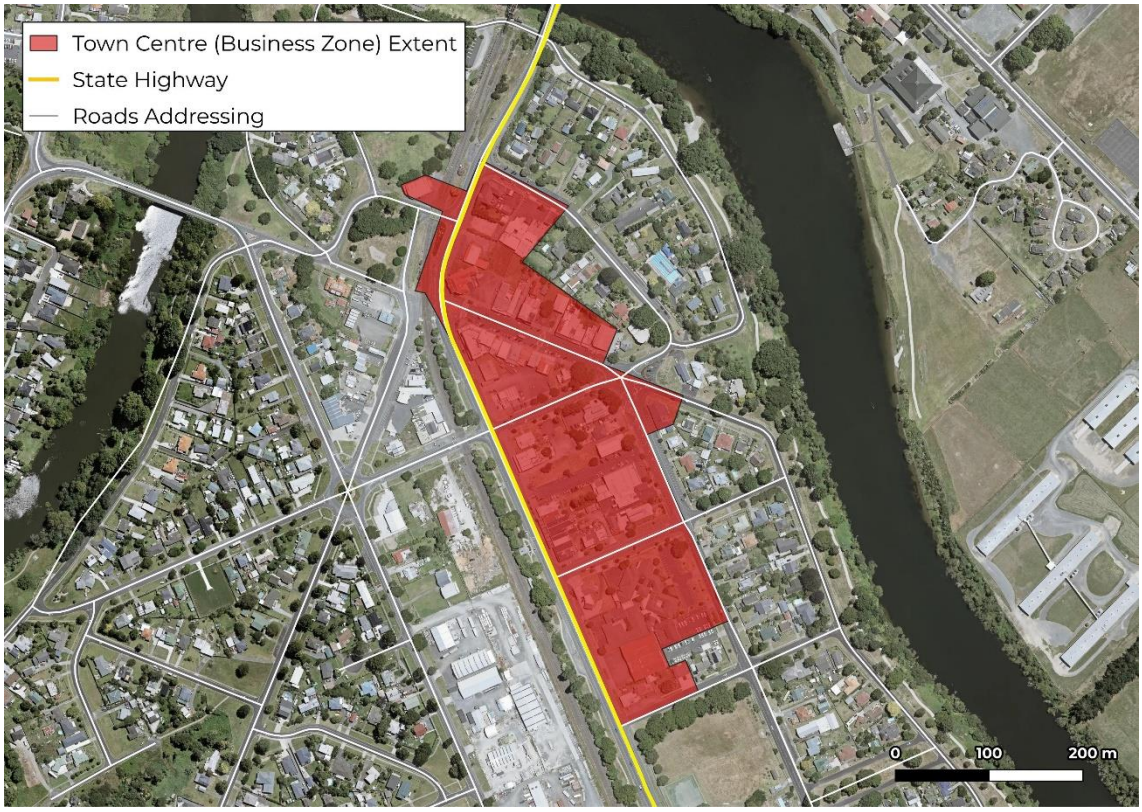
Therefore, there is no need for additional commercial land provision in the Ngaaruawaahia Town Centre in the foreseeable future, just a more efficient use of the centre's existing commercial zone land resource. The same applies to Taupiri.

The Ngaaruawaahia Town Centre currently has a significant level of tenancy vacancies in the centre, while a lot of the balance of centre with operating tenancies do not appear to be performing strongly, i.e., these stores could be performing better with improved sales performance within the same store footprint.

Increased retail expenditure generated by growth in the Ngaaruawaahia catchment in the foreseeable future should be channelled into improving the performance of the existing stores and filling vacant tenancies, particularly in the core / main street on the Ngaaruawaahia Town Centre (Jesmond Street). Expanding the zone / centre further would only serve to dilute sales and centre performance over a greater area and undermine the improvement of performance and environment in the existing centre.

The New World supermarket is a crucial retail tenant for the Ngaaruawaahia Town Centre. The analysis in this report indicates a larger store could be supported by the catchment currently, and future growth only grows this potential. Council should work with the store owner and Foodstuffs to look at options for improving the size and offer of this store. An improved supermarket would reduce retail leakage and catalyse activity and investment in the centre.

**FIGURE 10: NGAARUAWAAHIA TOWN CENTRE ZONED EXTENT**




*Source: WDC, LINZ, Property Economics*

In terms of Taupiri commercial centre the following figure identifies the geospatial spread of the zone. Property Economics consider WDC need to identify a core commercial area for convenience retail and commercial activity to ensure commercial activity in Taupiri is developed in a consolidated area. This would represent a more efficient outcome and provide a single clustered commercial destination for the community. This would assist infrastructure and public realm cost efficiencies also.

**FIGURE 11: TAUPIRI TOWN CENTRE ZONED EXTENT**

*Source: WDC, LINZ, Property Economics*

## 11. INDUSTRIAL LAND CAPACITY SUFFICIENCY

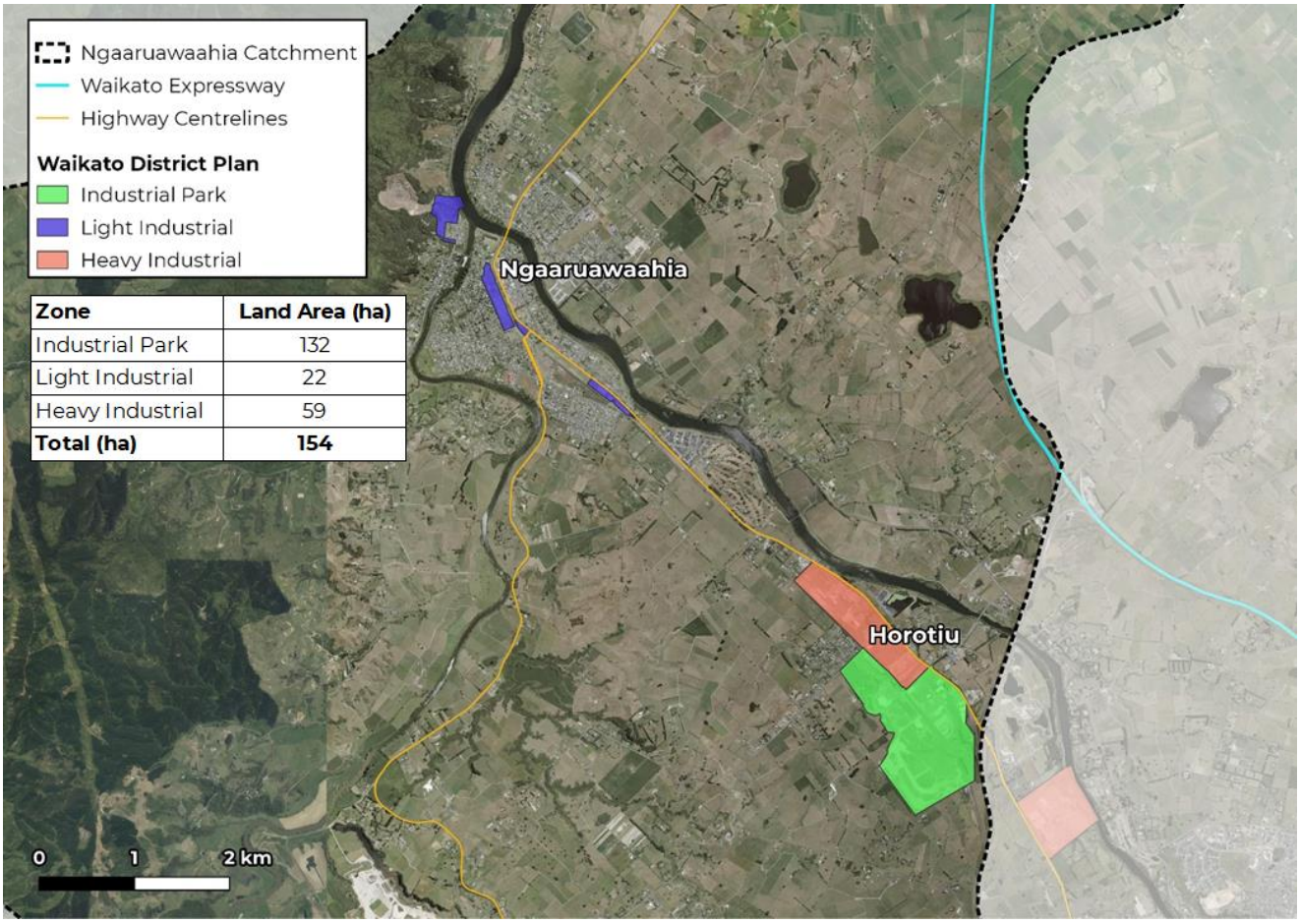
This section provides a high-level overview of the industrial zoned provisions within the Ngaaruawaahia catchment and reviews the future demand for industrially zoned capacity within the area in the short (3 years), medium (10 years) and long term (30 years) based on the BDCA 2021.

The following figure geospatially maps the location and extent of the industrially zoned land within the wider Ngaaruawaahia catchment area, under the WDP industrial zonings.

The existing residentially zoned land within the area is concentrated in Ngaaruawaahia and Horotiu, encompassing a total of approximately 154ha. Specifically, the Industrial Park in Horotiu (circa 132ha) dominates the supply and accounts for approximately 86% of the catchment's total capacity.

Ngaaruawaahia has a light industrial zoned provision of about 22ha. The remaining 59ha of industrial land is in Horotiu and zoned for heavy industrial activities. There is no existing industrial land provision in other settlements, such as Taupiri, within the catchment area.

**FIGURE 12: EXISTING INDUSTRIAL LAND PROVISIONS WITHIN THE NGAARUAWAAHIA CATCHMENT**




| Zone | Land Area (ha) |
|---|---|
| Industrial Park | 132 |
| Light Industrial | 22 |
| Heavy Industrial | 59 |
| **Total (ha)** | **154** |

*Source: Waikato District Council, LINZ, Property Economics*

The following table is sourced from the BDCA 2021 (pp.95). It indicates that the Ngaaruawaahia area has a total vacant industrial land capacity of around 259ha. This capacity is more than sufficient to accommodate the projected short-, medium- and long-term industrial land in Ngaaruawaahia and surrounding areas (i.e., a total of 5.4ha over the long term). As such, Ngaaruawaahia does not require additional industrial land provisions over the assessed period (i.e., 2021 – 2051) based on the BDCA methodology.

**TABLE 11: WAIKATO DISTRICT INDUSTRIAL LAND SUFFICIENCY SUMMARY (HA)**

| Name | Short Term | Medium Term | Long Term | Total Vacant Land (ha) | Short Term | Medium Term | Long Term |
|---|---|---|---|---|---|---|---|
| Pokeno | - 0.0 | 4.2 | 19.7 | 53.3 | | | |
| Tuakau | 7.6 | 14.1 | 20.9 | 103.0 | | | |
| Te Kauwhata | 1.1 | 8.0 | 13.7 | 14.0 | | | |
| Huntly | 1.9 | 4.3 | 9.5 | 3.3 | | Insufficient | Insufficient |
| Ngaruawahia | - 1.7 | 0.1 | 5.4 | 258.8 | | | |
| Raglan | 2.2 | 6.5 | 17.0 | 1.2 | Insufficient | Insufficient | Insufficient |
| Rest of Waikato | 1.5 | 17.8 | 58.7 | 740.8 | | | |
| **Total** | **12.4** | **55.1** | **144.9** | **1,174.4** | | | |

*Source: Future Proof Partners, ME*

The BDCA, however, also identified that "Huntly faces demand growth in the short, medium and long term that is not likely to be able to meet locally". Given the close proximity to Huntly, the residual capacity within the wider Ngaaruawaahia area is well-positioned to capture some of the Huntly's future industrial land demand. This is considered one opportunity for Ngaaruawaahia and WDC over the longer term.

Property Economics considers the new SH1 Waikato Expressway could create additional industrial opportunities that may see industrial demand and growth in the Waikato District exceed the BDCA projections. Accessibility to Auckland is vastly improved by the new SH1 and land prices are significantly cheaper, likely making any new industrial land provision competitive in the broader market.

Industrial land options adjacent to the expressway would likely provide additional impetus to the district's industrial land demand projections and accelerate local employment opportunities. Development of this opportunity would be subject to a separate piece of economic work outside the scope of this report but is an opportunity WDC should give further consideration to undertaking as the economic benefits the opportunity could bring to the local economy is potentially significant.

## COMMENTARY ON RUDY VAN DAM'S APPEAL

Relevant to the identification of additional industrial land in the catchment is an appeal made by Rudy Van Dam to the PDP. Rudy Van Dam and Howard Lovell jointly submitted a request to extend the Residential Zone, Country Living / Village (CLV) Zone, and the Commercial / Light Industrial Zone (**CLI**) in Taupiri, as outlined in his Notice of Appeal (**NoA**).

According to Appendix A and B of the NoA (refer to Appendix 6 of this report), the submitters propose locating the CLI zone adjacent to the Taupiri Service Centre, bordering three distinct residential zones to the west.

In Property Economics view, the proposed CLI extension would be well-positioned geographically to provide additional industrial land capacity, benefiting from its proximity to the Waikato Expressway and other major highways.

However, Property Economics has concern around the potential negative impact on the surrounding residential environments, particularly the interfaces with the proposed living zones, the proposed CLI extension requires closer scrutiny with the CLI zone likely resulting in a decrease in the overall amenity value of the surrounding residential areas if effects are not appropriately mitigated or managed. This could undermine the potential economic benefits of the zone.

Additionally, based on the proposed concept plan, there would be a merging of industrial and residential traffic and road usage, as both the proposed CLI and other residential zones rely on the same local road. Management of this potential conflict would need to be carefully considered also.

Considering the above high-level comments, Property Economics does not consider the submission to extend the CLI as an efficient distribution of future land uses in Taupiri without further information being available of effects.

In regard to commercial activity, the commercial area is not required or sustainable by the development area. The zoned Taupiri commercial area and the Service Centre is more than sufficient to accommodate the retail requirements of Taupiri (currently and future).

A new commercial area would only dilute the existing areas and undermine their potential to grow. The future market is not large enough to sustain three commercial nodes for convenience activities in Taupiri. In essence, Taupiri a very small market (current and future) with the Service Centre already relying on Waikato Expressway (non-Taupiri resident) drive-by traffic for the bulk of its sales.

Again, it is not industrial activity to service Taupiri as the market's too small, but simply playing on its location next to the Waikato Expressway. Council needs to consider the site as a new industrial area and whether this location is appropriate for the future.

Industrial locations around / in close proximity to SH1 intersections are generally popular and sought after by the industrial market for efficiency reasons. A new industrial hub in this location is really targeting non-Taupiri industrial activity and therefore Council needs to take a broader perspective and consider if this is the right location to grow WDC's industrial market.

It could generate some relocations of industrial business activity from Huntly to Taupiri due to the rerouting of SH1, and these businesses being in a better location to service Huntly as well as a broader market. Any relocations from Huntly (or elsewhere in WDC) to this site would not represent growth, simple a redistribution of existing WDC industrial activity to a new location.

There are also potential reverse sensitivity issues that need to be considered and addressed. This may not be a deal breaker if mitigated and managed appropriately but given the adjacent proximity of the residential and industrial areas this needs to be carefully thought through, particularly if larger industrial businesses are attracted to the site due to its location.

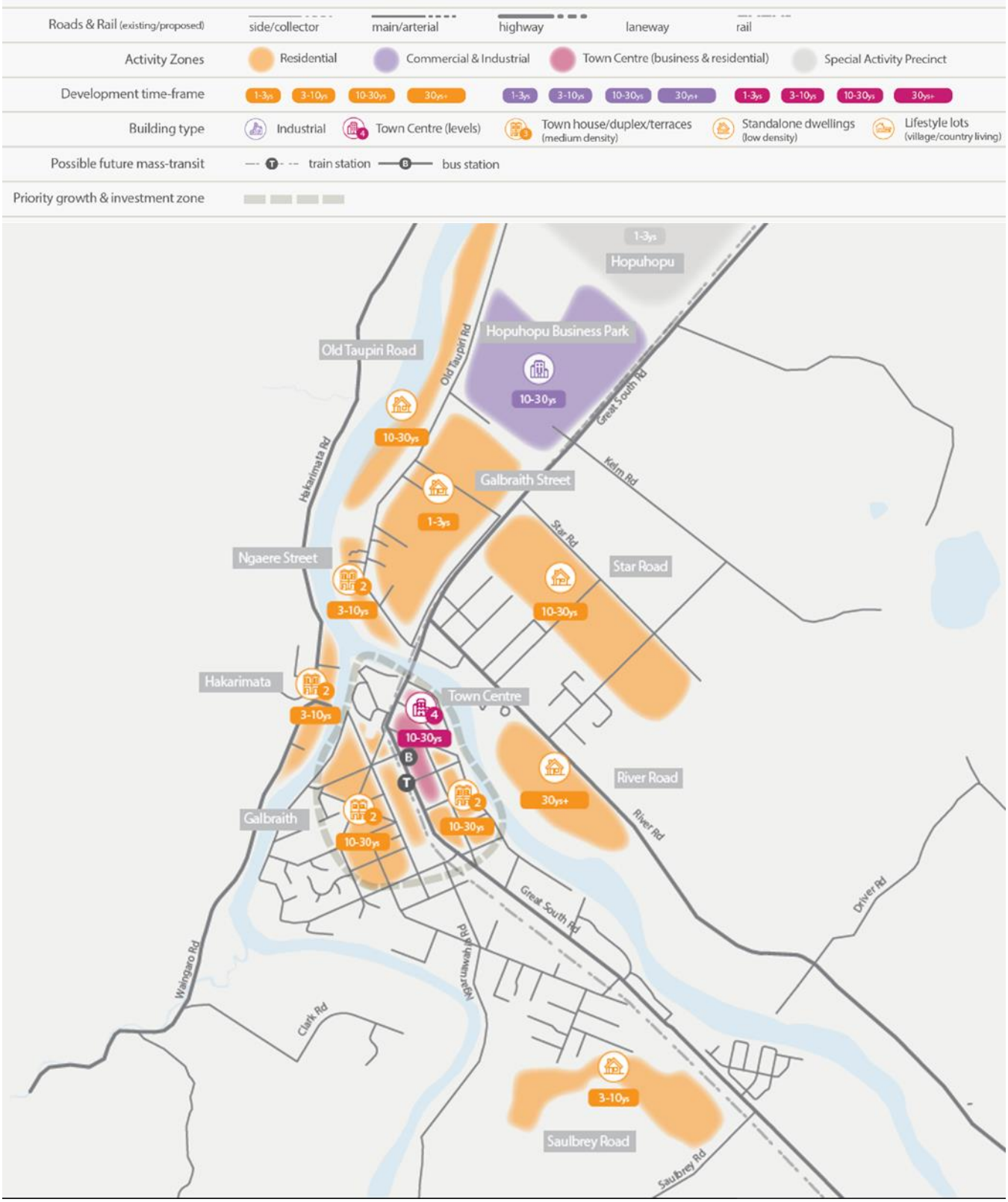
# APPENDIX 1. DEMOGRAPHIC PROFILE

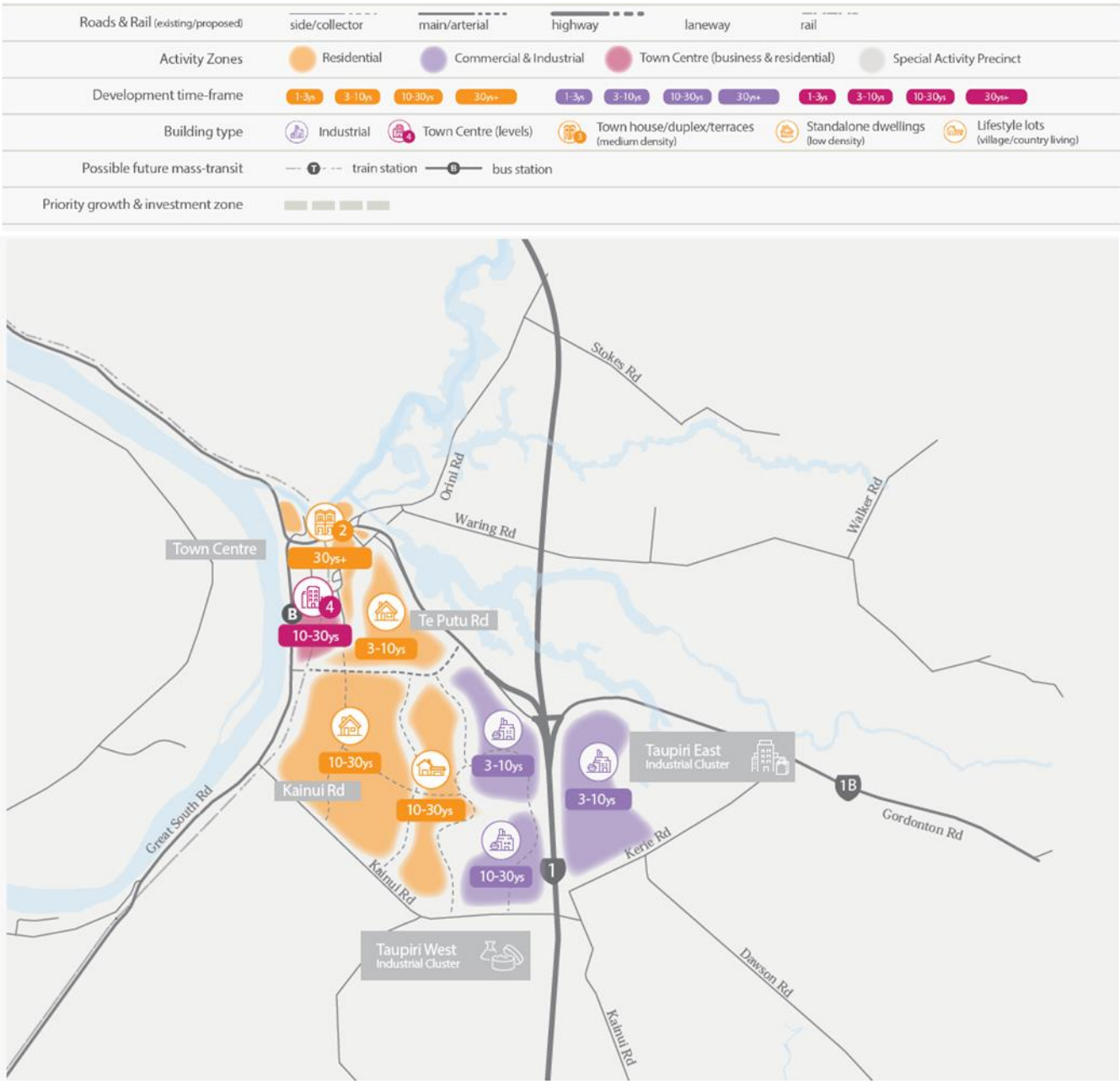
| | | Ngaaruawaahia Catchment | Taupiri Retail Catchment | Waikato District | New Zealand |
|---|---|---|---|---|---|
| GENERAL | Population | 13,950 | 800 | 88,870 | 5,124,130 |
| | Households | 4,840 | 280 | 31,860 | 1,927,620 |
| | Person Per Household Ratio | 2.88 | 2.86 | 2.79 | 2.66 |
| | Intercensal Population Growth (Total \| % | 1,952 \| 3.4% | 152 \| 4.9% | 15,141 \| 4.5% | 462,280 \| 2.0% |
| AGE PROFILE | 0 - 9 Years | 17% | 15% | 15% | 13% |
| | 10 - 19 Years | 16% | 13% | 15% | 13% |
| | 20 - 29 Years | 13% | 11% | 11% | 14% |
| | 30 - 39 Years | 13% | 12% | 12% | 13% |
| | 40 - 49 Years | 13% | 13% | 14% | 13% |
| | 50 - 59 Years | 13% | 13% | 14% | 13% |
| | 60 - 69 Years | 9% | 11% | 10% | 10% |
| | 70 - 79 Years | 5% | 7% | 6% | 7% |
| | 80 Years and Over | 2% | 4% | 2% | 4% |
| | **Median Age** | **33.3** | **38.4** | **37.8** | **37.4** |
| Household Income | $20,000 or less | 9% | 8% | 8% | 9% |
| | $20,001-$30,000 | 8% | 6% | 7% | 10% |
| | $30,001-$50,000 | 14% | 12% | 13% | 15% |
| | $50,001-$70,000 | 13% | 12% | 13% | 13% |
| | $70,001-$100,000 | 18% | 18% | 17% | 16% |
| | $100,001-$150,000 | 22% | 24% | 22% | 19% |
| | $150,001 or more | 15% | 21% | 21% | 18% |
| | **Median Income** | **$78,000** | **$90,000** | **$86,000** | **$76,000** |
| ETHNICITY | Asian | 3% | 1% | 5% | 13% |
| | European | 56% | 67% | 66% | 62% |
| | Maori | 35% | 26% | 23% | 15% |
| | Middle Eastern Latin American African | 0% | 0% | 1% | 1% |
| | New Zealander | 1% | 1% | 1% | 1% |
| | Other Ethnicity | 1% | 1% | 1% | 1% |
| | Pacific Peoples | 4% | 3% | 4% | 7% |
| QUALIFICATION ATTAINMENT | No qualification | 25% | 30% | 21% | 18% |
| | Overseas secondary school qualification | 2% | 3% | 3% | 6% |
| | Level 1 certificate | 14% | 18% | 14% | 11% |
| | Level 2 certificate | 11% | 10% | 11% | 10% |
| | Level 3 certificate | 12% | 8% | 11% | 11% |
| | Level 4 certificate | 12% | 12% | 11% | 9% |
| | Level 5 diploma | 5% | 4% | 5% | 5% |
| | Level 6 diploma | 3% | 2% | 4% | 5% |
| | Bachelor degree and Level 7 qualification | 10% | 7% | 12% | 15% |
| | Post graduate and honours degrees | 3% | 4% | 5% | 6% |
| | Masters degree | 1% | 2% | 3% | 4% |
| | Doctorate degree | 0% | 0% | 1% | 1% |
| LOCATION 5 YEARS AGO | Elsewhere in New Zealand | 49% | 50% | 50% | 45% |
| | No fixed abode five years ago | 0% | 0% | 0% | 0% |
| | Not born five years ago | 10% | 9% | 8% | 7% |
| | Overseas | 1% | 3% | 3% | 8% |
| | Same as usual residence | 40% | 38% | 39% | 40% |

| | | Ngaaruawaahia Catchment | Taupiri Retail Catchment | Waikato District | New Zealand |
|---|---|---|---|---|---|
| EMPLOYMENT | Employed Full time | 53% | 49% | 53% | 50% |
| | Employed Part time | 13% | 13% | 15% | 15% |
| | Not in the Labour Force | 28% | 30% | 28% | 31% |
| | Unemployed | 6% | 8% | 4% | 4% |
| EMPLOYMENT CLASSIFICATION | Clerical and Administrative Workers | 12% | 11% | 11% | 11% |
| | Community and Personal Service Workers | 8% | 7% | 8% | 10% |
| | Labourers | 14% | 11% | 12% | 11% |
| | Machinery Operators and Drivers | 9% | 11% | 8% | 6% |
| | Managers | 17% | 21% | 22% | 18% |
| | Professionals | 18% | 19% | 20% | 23% |
| | Sales Workers | 8% | 8% | 7% | 9% |
| | Technicians and Trades Workers | 14% | 12% | 13% | 12% |
| PERSONAL INCOME SOURCES | Wages, Salary, Commissions, Bonuses etc paid by my employer | 62% | 55% | 59% | 61% |
| | Interest, Dividends, Rent, Other Investments | 10% | 11% | 15% | 17% |
| | Jobseeker Support | 10% | 11% | 7% | 6% |
| | New Zealand Superannuation or Veteran s Pension | 14% | 18% | 15% | 17% |
| | Other government benefits, Payments or Pension | 5% | 4% | 4% | 4% |
| | Other Sources of Income | 1% | 1% | 1% | 2% |
| | Other Superannuation, Pensions or Annuities | 1% | 1% | 2% | 2% |
| | Regular payments from ACC or a Private Work Accident Insurer | 2% | 1% | 2% | 2% |
| | Self Employment or Business I own and work in | 13% | 19% | 20% | 15% |
| | Sole Parent Support | 2% | 1% | 2% | 2% |
| | Student Allowance | 2% | 2% | 1% | 2% |
| | Supported Living Payment | 2% | 2% | 1% | 2% |
| | No source of income during that time | 7% | 7% | 7% | 6% |
| INDUSTRY OF EMPLOYMENT | Accommodation and Food Services | 4% | 4% | 4% | 7% |
| | Administrative and Support Services | 4% | 5% | 4% | 5% |
| | Agriculture Forestry and Fishing | 5% | 15% | 12% | 6% |
| | Arts and Recreation Services | 1% | 0% | 2% | 2% |
| | Construction | 12% | 14% | 12% | 9% |
| | Education and Training | 8% | 11% | 9% | 8% |
| | Electricity Gas Water and Waste Services | 1% | 2% | 1% | 1% |
| | Financial and Insurance Services | 2% | 0% | 2% | 3% |
| | Health Care and Social Assistance | 8% | 6% | 8% | 10% |
| | Information Media and Telecommunications | 1% | 0% | 1% | 2% |
| | Manufacturing | 16% | 14% | 12% | 10% |
| | Mining | 0% | 0% | 1% | 0% |
| | Other Services | 4% | 1% | 4% | 4% |
| | Professional Scientific and Technical Services | 7% | 6% | 8% | 10% |
| | Public Administration and Safety | 7% | 6% | 5% | 5% |
| | Rental Hiring and Real Estate Services | 1% | 0% | 2% | 2% |
| | Retail Trade | 9% | 7% | 7% | 9% |
| | Transport Postal and Warehousing | 4% | 7% | 4% | 4% |
| | Wholesale Trade | 5% | 3% | 5% | 5% |

| | | Ngaaruawaahia Catchment | Taupiri Retail Catchment | Waikato District | New Zealand |
|---|---|---|---|---|---|
| WEEKLY RENT PAID | Under $100 | 5% | 0% | 5% | 7% |
| | $100 - 149 | 10% | 8% | 8% | 9% |
| | $150 - 199 | 9% | 0% | 6% | 6% |
| | $200 - 299 | 20% | 15% | 30% | 18% |
| | $300 - 399 | 49% | 77% | 34% | 22% |
| | $400 - 499 | 5% | 0% | 12% | 17% |
| | $500 - 599 | 0% | 0% | 4% | 10% |
| | $600 and over | 1% | 0% | 1% | 10% |
| DWELLING OWNERSHIP | Dwelling held in a family trust | 10% | 9% | 15% | 13% |
| | Dwelling not owned and not held in a family trust | 30% | 32% | 30% | 35% |
| | Dwelling owned or partly owned | 60% | 60% | 56% | 51% |
| DWELLING TYPE | Joined dwelling | 4% | 3% | 5% | 15% |
| | Other private dwelling | 1% | 1% | 1% | 1% |
| | Private dwelling not further defined | 0% | 0% | 0% | 0% |
| | Separate house | 95% | 95% | 94% | 84% |
| DWELLING OCCUPANCY | Dwelling Under Construction | 0% | 0% | 1% | 1% |
| | Empty Dwelling | 4% | 3% | 5% | 5% |
| | Occupied Dwelling | 93% | 91% | 89% | 89% |
| | Residents Away | 3% | 5% | 5% | 5% |
| NUMBER OF BEDROOMS | One bedroom | 4% | 2% | 4% | 6% |
| | Two bedrooms | 13% | 14% | 12% | 19% |
| | Three bedrooms | 48% | 56% | 42% | 44% |
| | Four bedrooms | 27% | 23% | 32% | 24% |
| | Five or more bedrooms | 7% | 5% | 10% | 7% |
| STUDYING | Full time study | 24% | 21% | 22% | 21% |
| | Not studying | 74% | 78% | 75% | 76% |
| | Part time study | 2% | 2% | 2% | 3% |
| Household Size | One usual resident | 18% | 15% | 18% | 23% |
| | Two usual residents | 31% | 36% | 34% | 33% |
| | Three usual residents | 17% | 16% | 16% | 16% |
| | Four usual residents | 16% | 18% | 17% | 16% |
| | Five usual residents | 10% | 9% | 9% | 7% |
| | Six usual residents | 4% | 3% | 4% | 3% |
| | Seven usual residents | 2% | 1% | 1% | 1% |
| | Eight or more usual residents | 2% | 2% | 1% | 1% |
| | Number of usual residents unidentifiable | 4% | 5% | 5% | 4% |

## APPENDIX 2. WAIKATO 2070 – NGARUAAWAAHIA & TAUPIRI






*Source: Waikato District Council*

# APPENDIX 3. RETAIL GROWTH MODEL

This overview outlines the methodology that is applied to estimate retail spend generated for an identified catchment for a specific projection period.

## Statistical Area 1 2018 Boundaries

All analysis has been based on Statistical Area 2 2018 boundaries, the most recent available.

## Household Estimates

As a key base input into Property Economics Retail Model. Specifically, the household count projections from Statistics New Zealand, based off the 2018 Census (available at the SA1 level) and Statistics New Zealand's population growth projections, have been applied in the model. These projections also make adjustments for changes in the population per household ratios at a national level. The Statistics New Zealand household projections are cross referenced with any more specific projections provided by the client.

## Population Growth

The population growth projections used in projecting future household retail growth are outlined in the report. These are derived from Statistics New Zealand's most recent population projection series. These are cross referenced with any more specific population growth projections provided by the client.

Although the demographics at the household level drive the estimates in the distribution of the household retail spend, the growth in population has been used as the input to project future retail growth.

Statistics New Zealand's latest household projections are based on the assumption of a decreasing household size, resulting in proportionally greater household growth than population. However, the Household Expenditure Survey shows a clear positive relationship between household size and retail expenditure. Therefore, relying solely on the household growth as an indicator without adjusting for the changing demographic would artificially inflate the projected retail growth.

Given the recent trends of an increasing household size contrary to the projection assumptions, Property Economics considers projecting the retail growth based on future population growth rather than households is a more appropriate assumption. This is ultimately a conservative assumption in the decreasing household size scenario and will be more accurate the less the demographics shift.

## International Tourist Spend

The total tourism retail spend has been derived from the Tourism Satellite Account and distributed to each district according to the data as published by MBIE. Within each district, this has been distributed on a 'spend per retail employee' basis. Employees are the preferred

basis for distributing regional spend geo-spatially, as tourists tend to gravitate toward areas of commercial activity, however they are very mobile.

### Total Tourist Spend Forecast

Growth is forecast in the model at 3% per annum.

### Average Household Retail Spend

The Household Expenditure survey breaks down average weekly spend by retail category on a national level by annual household income brackets and by the average number of usual residents. These have been applied to each of the geospatial units based on the distribution of household size and income for that geospatial unit, as determined in the 2018 Census.

While there are variables other than household income that will affect retail spending levels, such as wealth, access to retail, population age, household types and cultural preferences, the effects of these are not able to be assessed given data limitations and have been excluded from these estimates.

### Real Retail Spend Growth (excl. trade-based retailing)

Real retail spend growth has been factored in at 1% per annum. This accounts for the increasing wealth of the population and the subsequent increase in retail spend. The following explanation has been provided.

Retail Spend is an important factor in determining the level of retail activity and hence the 'sustainable amount 'of retail floorspace for a given catchment. For the purposes of this outline 'retail' is defined by the following categories:

- Food Retailing
- Footwear
- Clothing and Soft goods
- Furniture and Floor coverings
- Appliance Retailing
- Chemist
- Department Stores
- Recreational Goods
- Cafes, Restaurants and Takeaways
- Personal and Household Services
- Other (Retail) Stores.

These are the retail categories as currently defined by the ANZSIC codes (Australia New Zealand Standard Industry Classification).

Assessing the level and growth of retail spend is fundamental in planning for retail networking and land use within a regional network.

### Internet Retail Spend Growth

Internet retailing within New Zealand has seen significant growth over the last few decades. This growth has led to an increasing variety of business structures and retailing methods including; internet auctions, just-in-time retailing, online ordering, virtual stores, etc.

Additionally, growth of internet retailing for virtual stores, auctions and overseas stores is leading to a proportional decrease in on-the-ground spend and floor space demand. To account for this, a non-linear percentage decrease of 8% in 2020 growing to 12.5% by 2053 has been applied to retail expenditure encompassing all retail categories in our retail model. These losses represent the retail diversion from on-the-ground stores to internet-based retailing that will no longer contribute to retail floor space demand.

### Retail Spend Determinants

Retail spend for a given area is determined by: the population, number of households, size and composition of households, income levels, available retail offer and real retail growth. Changes in any of these factors can have a significant impact on the available amount of retail spend generated by the area. The coefficient that determines the level of 'retail spend' that eventuates from these factors is the MPC (Marginal Propensity to Consume). This is how much people will spend of their income on retail items. The MPC is influenced by the amount of disposable and discretionary income people can access.

### Retail Spend Economic Variables

Income levels and household MPC are directly influenced by several macroeconomic variables that will alter the amount of spend. Real retail growth does not rely on the base determinants changing but a change in the financial and economic environment under which these determinants operate. These variables include:

Interest Rates: Changing interest rates has a direct impact upon households' discretionary income, as a greater proportion of income is needed to finance debt and typically lowers general domestic business activity. Higher interest rates typically lower real retail growth.

Government Policy (Spending): Both monetary and fiscal policy play a part in domestic retail spending. Fiscal policy, regarding government spending, has played a big part recently with government policy being blamed for inflationary spending. Higher government spending (targeting on consumer goods, direct and indirectly) typically increases the amount of nominal retail spend. Much of this spend does not, however, translate into floor pace, since it is inflationary and only serves to drive up prices.

Wealth / Equity / Debt: This had a dramatic impact in the early-mid 2000s on the level of retail spending nationally. The increase in property prices has increased homeowners unrealised equity in their properties. This has led to a significant increase in debt funded spending, with residents borrowing against this equity to fund consumer spending. This debt spending is a growth facet of New Zealand retail. In 1960, households saved 14.6% of their income, while households currently spend 14% more than their household income.

Inflation: As discussed above, this factor may increase the amount spent by consumers but typically does not dramatically influence the level of sustainable retail floor space. This is the reason that productivity levels are not adjusted and similarly inflation is factored out of retail spend assessments.

Exchange Rate: Apart from having a general influence over the national balance of payments accounts, the exchange rate directly influences retail spending. A change in the $NZ influences the price of imports and therefore their quantity and the level of spend.

General consumer confidence: This indicator is important, as consumers consider the future and the level of security/finances they will require over the coming year.

Economic / Income growth: Income growth has a similar impact to confidence. Although a large proportion of this growth may not impact upon households' MPC (rather just increasing the income determinant), it does impact upon households' discretionary spending and therefore likely retail spend.

Mandatory Expenses: The cost of goods and services that are necessary has an impact on the level of discretionary income that is available from a household's disposal income. Important factors include housing costs and oil prices. As this increase, the level of household discretionary income drops, reducing the likely real retail growth rate.

### Current and Future Conditions

Retail spend has experienced a significant real increase in the early-mid 2000s. This was due in large part to the increasing housing market. Although retail growth is tempered or crowded out in some part by the increased cost of housing it showed significant gains as homeowners, prematurely, access their potential equity gains. This resulted in strong growth in debt / equity spending as residents borrow against capital gains to fund retail spending on consumption goods. A seemingly strong economy also influenced these spending trends, with decreased employment and greater job security producing an environment where households were more willing to accept debt.

New Zealand's economy has been impacted on by several key events over the last two decades. Firstly, this trend temporally reversed in the light of the worldwide GFC recession in 2008 with economic uncertainty and job losses reducing consumers' willingness and ability to accept debt. Following this however, New Zealand's economy recovered with growth in the first half of the 2010-2020 decade fuelled by the Christchurch earthquake. Additionally, rapid inflation in the construction industry has contributed to the rapidly rising house prices. This has had a significant impact on reducing disposable income, which has flow-on effects to the rate of retail growth. Finally, most recently the COVID-19 global pandemic resulted in a national lockdown with retailers forced to close under alert Level 3 and 4.

Despite this, New Zealand's economy so far has not fallen to the extent economists predicted heading into the first lockdown during the first quarter of 2020. Data available on Statistics New Zealand showed that total retail expenditure declined by only 0.2% between 2020 and

2019. This is in comparison to the average annual growth of just over 5% per annum between 2010 – 2019.

From an economic perspective, COVID-19 represents significant uncertainty and thereby making the already difficult job of anticipating the future, that much harder. There are several unpredictable factors that will decide the fate of worldwide economy and it is difficult to accurately predict what long term impacts this global pandemic will have on international travel, the domestic economy and retail trends as it relates to internet retailing.

### Impacts of Changing Retail Spend

At this point, a 1% real retail growth rate is being applied by Property Economics over the longer term 30-year period. This rate is highly volatile however and is likely to be in the order of 0.5% to 1% over the next 5 – 10 years rising to 1% - 2% over the more medium term as the economy stabilises and experiences cyclical growth. This would mean that it would be prudent in the shorter term to be conservative regarding the level of sustainable retail floor space within given centres.

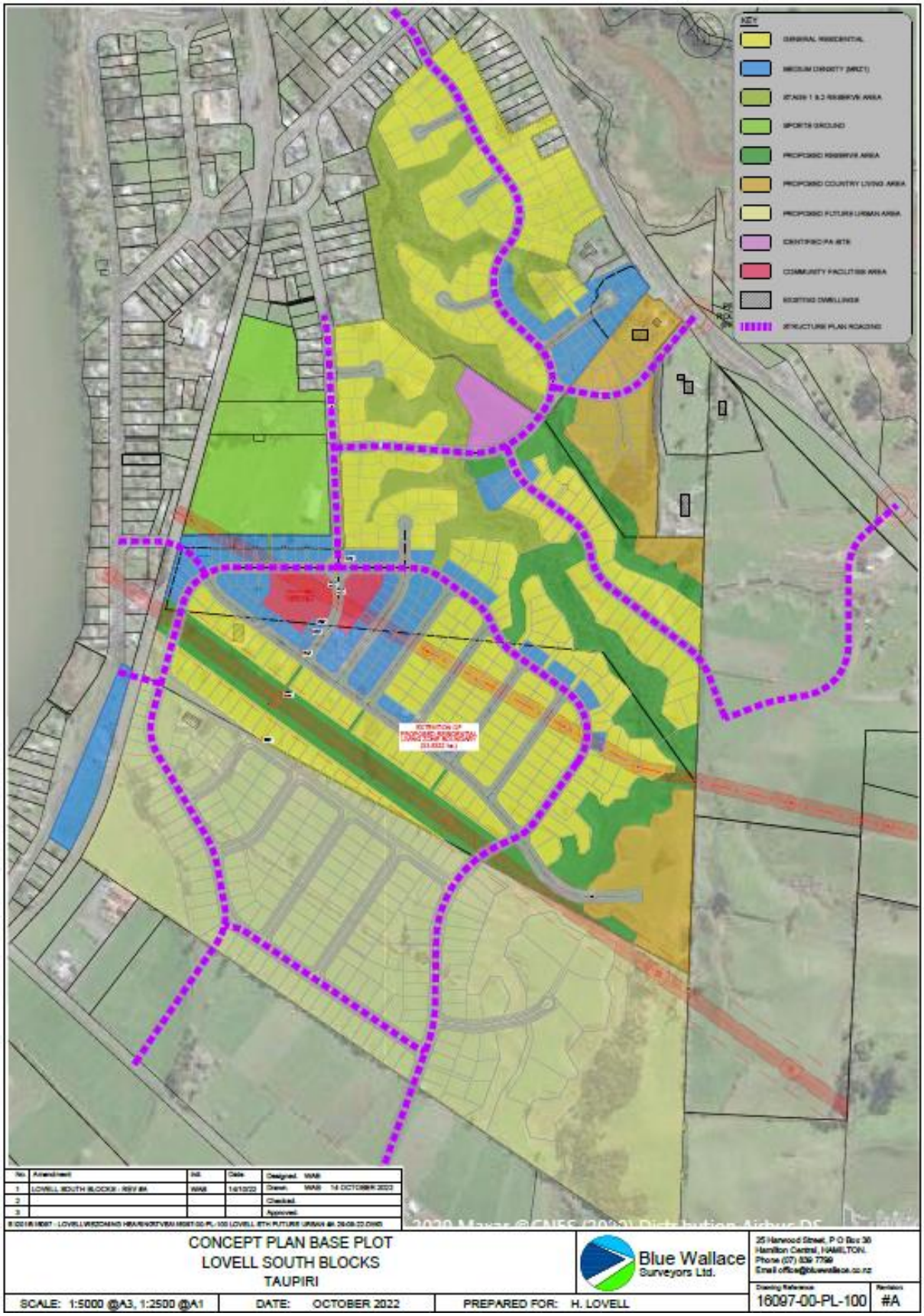
### Business Spend

This is the total retail spend generated by businesses. This has been determined by subtracting International tourism retail spend and the household retail expenditure from the total retail sales, as determined by the Retail Trade Survey (RTS) which is prepared by Statistics NZ. All categories are included with the exception of accommodation and automotive related spend. In total, business spend accounts for 36% of all retail sales in NZ. Business spend is distributed based on the location of employees in each census area unit and the national average retail spend per employee.

### Business Spend Forecast

Business spend has been forecasted at the same rate of growth estimated to be achieved by household retail sales in the absence of reliable information on business retail spend trends. It is noted that while working age population may be decreasing as a proportion of total population, employees are likely to become more productive over time and therefore offset the relative decrease in the size of the total workforce.

## APPENDIX 4. PROPOSED TAUPIRI CONCEPT PLAN



## APPENDIX 5. BUSINESS CLASSIFICATION

Property Economics utilises the 2006 Australian and New Zealand Standard Industrial Classification (ANZSIC) as guidance, whereby businesses are assigned an industry according to their predominant economic activity.

A proportion of employees coded within industrial categories can work within other more commercial (office) arms of a business in other locations, e.g., employees in the sales branch of electrical companies are coded in the electricity, gas, water and waste services. Despite being in the industrial industry, these employees are technically not industrial employees.

For planning purposes commercial and industrial employees are those working on zoned business land corresponding to their respective sector. Often this is not the case, whereby activities such as hospitals, schools, police services and etc. are classified under commercial services focused sectors but are typically not zoned as such.

For this reason, Property Economics has divided these classifications into industrial, commercial, retail and other sectors. These sectors correspond to the zoning of industrial, commercial, retail and special land zonings by the local authorities.

Industrial activities in general refer to land extensive activities, it includes part of the primary sector, largely raw material extraction industries such as mining and farming; the secondary sector, involving refining, construction, and manufacturing; and part of the tertiary sector, which involves distribution of manufactured goods. The employees work for the following sectors are considered an industrial sector employee:

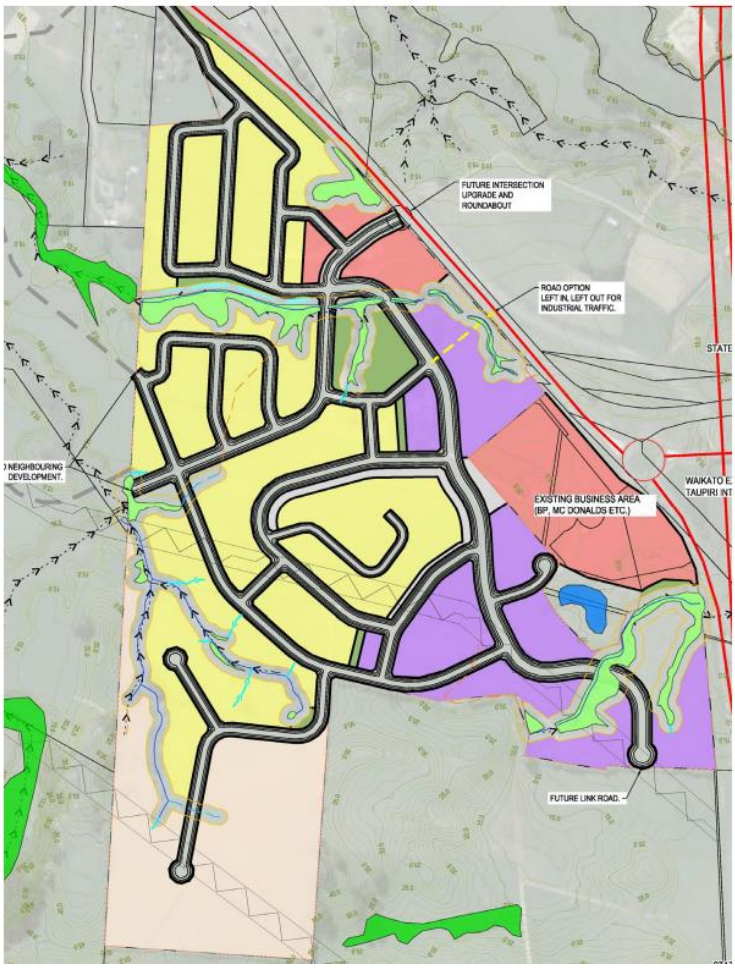
- 10% of Agriculture, Forestry and Fishing
- 10% of Mining
- Manufacturing
- 30% Electricity, Gas, Water and Waste Services
- Construction
- Wholesale Trade
- Transport, Postal and Warehousing
- 40% Rental, Hiring and Real Estate Services

Commercial activities generally refer to land intensive activities. They include a large proportion of the tertiary sector of an economy, which deals with services; and the quaternary sector, focusing on technological research, design and development. The employees working for the following sectors are considered commercial sector employees:

- 15% of Accommodation and Food Services

- Information Media and Telecommunications
- Financial and Insurance Services
- 60% of Rental, Hiring and Real Estate Services
- Administrative and Support Services
- 35% of Public Administration and Safety
- 15% of Education and Training
- 25% of Heath care and Social Assistance
- 25% of Arts and Recreation Services

## APPENDIX 6. VAN DAM FARM PROPOSED STRUCTURE PLAN



EXISTING BOUNDARIES
EXTENT OF DEVELOPMENT
FUTURE BOUNDARY
16.0 EX MAJ CONTOUR
16.2 EX MIN CONTOUR
RESIDENTIAL LIVING
BUSINESS
INDUSTRIAL
COUNTRY LIVING
OPEN SPACE ZONE
BATTER/RETAINING
EXISTING OLFP
EX. OVERHEAD POWER
PERENNIAL
EPHEMERAL
FLOW PATH
ARTIFICIAL
WETLAND
WETLAND OFFSITE
COMBINED WETLAND STREAM SETBACKS (10m) 6.8054 Ha
EFFLUENT PONDS (DECOMMISSIONED)
BP STORMWATER POND

Waikato District Council
08-Aug-2014

# Ngaruawahia Structure Plan

## Geotechnical Suitability Assessment

# Ngaruawahia Structure Plan

Geotechnical Suitability Assessment

Client: Waikato District Council

ABN: N/A

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# Executive Summary

The Waikato District Council (WDC) engaged AECOM New Zealand Limited (AECOM) to undertake an assessment of the geotechnical constraints within the study area for the Ngaruawahia Structure Plan. Geotechnical constraints are natural hazards (geohazards) that can impact on developments or be adversely affected by development.

AECOM has undertaken a desk study of the potential geohazards within the Ngaruawahia Structure Plan study area. The desk study has comprised:

- A review of natural hazard regulations related to development,
- A review of relevant geological maps and topographical maps,
- A review of aerial photography within the public domain,
- Experience of development issues within the study area, and
- Review of site hazard information supplied by the Waikato District Council.

The Ngaruawahia Structure Plan study area is approximately 9,600 Hectares of predominately rural farmland. The topography can be broadly grouped into the “Lowlands” and the “Hill Country”.

The lowlands are typically near level to gently undulating with river and stream gully systems incised across the surface. The soils of the lowlands are highly variable due to the alluvial deposition, and organic soils can also be present. Rolling hills up to 20 metres high can protrude above the alluvial terraces of the lowlands. The rolling hills have a volcanic ash mantle covering, ancient alluvial deposits, and ignimbrite flows.

The Hill Country is located in the western part of the study area and includes the Hakarimata Range, the Taupiri Range and the hills west of the Hakarimata Range. The slopes angles can range from gently sloping to very steep. Residual soils have formed by the weathering of bedrock. A mantle of volcanic ash may be present above the residual soils.

The key geohazards identified within the Ngaruawahia Structure Plan study area are:

- Settlement of soft soils and shrinkage of peat has potential to damage structures and infrastructure within the lowlands.
- Slope instability has the potential to affect both the lowlands and the hill country. Within the hill country there is a significant risk of deep seated landslides and debris flows that can travel a significant distance from the source.
- Soil liquefaction is a geohazard applicable to the lowlands. Soil liquefaction can result in vertical settlement and horizontal displacement. This hazard has potential to do widespread damage to structures, roads and infrastructure.

A number of development practices have been identified as having potential to instigate, accelerate or make worse geohazards. Earthworks and tracking within the hill country have previously resulted in slips and erosion. Discharges to ground for managing stormwater and on-site effluent systems can reduce the stability of slopes and result in erosion.

AECOM has assessed the land within the study areas against four development suitability categories. The suitability categories do not imply that a site is subject to natural hazard, but that the hazard is associated with that area and needs to be specifically assessed. The development suitability categories and the areas assessed as fitting the categories are:

Category A – Low risk - No land mapped within the study area.

Category B – Some risk - Rolling hills within the lowlands.

Category C – Moderate risk - Alluvial soils of the lowlands, flanks of rolling hills.

Category D – High risk - Hill country, peat swamps, alluvial terraces within 200m of gullies and streams.

In addition to the development suitability categories, AECOM has made several recommendations for modifications to the Waikato District Plan to address geohazards. It is recommended that:

- A land instability policy layer is incorporated into the District Plan to guide and restrict development in areas recognised as having a high risk of land instability such as the Hill Country within the study area.
- A mine workings policy layer is recommended to identify areas that have previously been affected by mining activities.
- Liquefaction risk mapping is advisable. As a minimum, systems to record liquefaction risk assessments that are submitted as part of consent documentation should be put in place.
- The engineering standards within the District Plan should have an increased focus on the importance of geotechnical engineering in the identification and management of geohazards.
- Definitions should be added to the District Plan for the terms “Natural hazard” and “Geotechnical suitability”.

# 1.0 Introduction

Waikato District Council (WDC) engaged AECOM New Zealand Limited (AECOM) to assess geotechnical constraints and issues for the proposed development of a Ngaruawahia Structure Plan. The Structure Plan area of interest was provided by WDC and includes the rural areas around Ngaruawahia Township and the nearby villages of Taupiri, Horotiu and Te Kowhai, as shown on Sheet A1 in Appendix A.

The purpose of the Structure Plan is to provide a framework for sustainable development within the district. Recent changes to the District Plan have reduced the potential for further subdivision of rural land; however it is likely that the Structure Plan will result in some areas of rural land adjacent to the existing towns and villages being rezoned to allow for residential and commercial growth.

Geotechnical constraints are development constraints that are due to the potential for a geohazard to impact on the development or other land if the geohazard is not addressed. A geohazard is a broad term that refers to geological hazards caused by a combination of the structure, type, strength and topography of the land. Geohazards may be obvious such a large land slide, or revealed only by thorough investigation like the settlement potential of buried soil, or unknown until they occur such as an earthquake generated by an unknown fault.

The purpose of this assessment is to advise WDC of the potential geohazards within the area being considered under the Ngaruawahia Structure Plan and provide advice regarding the suitability of the land for development.

# 2.0 Scope of assessment

This assessment is a desk study and comprises:

- A review of natural hazard regulations related to development,
- A review of relevant geological maps and topographical maps,
- A review of aerial photography in the public domain,
- Experience of development issues within the study area, and
- Review of site hazard information supplied by the Waikato District Council.

This assessment focuses on geohazards and therefore excludes other natural hazards such as flooding, surface ponding and wind.

The purpose of the assessment is to identify the geohazards that may be present within the study area. Identifying the actual location and extent of any geohazard is beyond the scope of this assessment.

# 3.0 Legal framework

Geotechnical suitability of land for development is concerned with the avoidance and mitigation of geohazards. The foundation framework is outlined in Legislation, District Plans, and New Zealand Standards.

A brief outline how these documents address the Natural Hazards is provided in the following sections.

## 3.1 Resource Management Act 1992

The Resource Management Act 1992 gives Territorial Authorities the control of any actual or potential effects of the use, development, or protection of land, including for the purpose of the avoidance or mitigation of natural hazards.

In the case of subdivisions, the territorial Authority may refuse to grant subdivision consent, or may grant subdivision consent subject to conditions, if it considers that:

- *the land in respect of which a consent is sought, or any structure on the land, is or is likely to be subject to material damage by erosion, falling debris, subsidence, slippage, or inundation from any source; or*
- *any subsequent use that is likely to be made of the land is likely to accelerate, worsen, or result in material damage to the land, other land, or structure by erosion, falling debris, subsidence, slippage, or inundation from any source; or*

- *sufficient provision has not been made for legal and physical access to each allotment to be created by the subdivision.*

## 3.2 Building Act 2004

The Building Act, 2004 defines a Natural Hazard as:

- *erosion (including coastal erosion, bank erosion, and sheet erosion)*
- *falling debris (including soil, rock, snow, and ice)*
- *subsidence*
- *inundation (including flooding, overland flow, storm surge, tidal effects, and ponding) or*
- *slippage.*

The Building Act addresses natural hazards by requiring that the building consent authority refuse to grant building consent for construction of a building, or major alterations to a building, if:

- *the land on which the building work is to be carried out is subject or is likely to be subject to 1 or more natural hazards or*
- *the building work is likely to accelerate, worsen, or result in a natural hazard on that land or any other property.*

The Building Control Authority can issue a building consent if the building consent authority is satisfied that suitable provision has been or will be made to:

- *protect the land, building work, or other property referred to in that subsection from the natural hazard or hazards or*
- *restore any damage to that land or other property as a result of the building work.*

The Building Act includes all site work within the definition of building work. Site work is defined as "*work on a building site, including earthworks, preparatory to, or associated with, the construction, alteration, demolition, or removal of a building*".

## 3.3 Waikato District Plan

The Waikato District Plan has objectives and policies to manage development in areas prone to natural hazards. However the District Plan does not provide a definition of a Natural Hazard. Flooding, wind, erosion and mine subsidence are all mentioned in discussion, and reference is given to the Building Act 2004.

The objectives and policies favour avoidance over mitigation and notes that the development should not increase natural hazards.

Planning maps provide information on flood hazard, riverbank stability zones and the Huntly East Subsidence Zone. A land stability policy area is mapped near Raglan and while there are rules related to development in that area, there is no additional guidance apparent for developers or council staff.

The District Plan rules relating to building and subdivision refer to geotechnical suitability as a matter that council may consider. Geotechnical suitability is however, undefined.

## 3.4 NZS4404:2010 Land Development and Subdivision Infrastructure

NZS4404 outlines the geotechnical considerations for assessing the suitability of land for subdivision and designing new landforms (recontouring by earthworks). In addition to addressing the natural hazards that are defined in the RMA, this standard also includes the assessment of special soil types, which includes but is not limited to:

- *Soils with high shrinkage and expansion*
- *Compressible soils*
- *Volcanic soils*
- *Soils subject to liquefaction*

- *Soils prone to dispersion*

## 3.5 NZS3604:2011 Timber Framed Buildings

NZS3604 provides a definition of “good ground” which is suitable for buildings that are within the scope of the standard and also NZS4229:1999 Concrete Masonry Structures Not Requiring Specific Engineering Design.

The intent of the site requirements section in NZS3604 is to enable compliance with the building code to be readily established for most residential type buildings, without the need for soil bearing capacity and settlement calculations.

Land with instability in the “immediate locality”, compressible soil, subsidence, organic soil, and expansive soil are excluded from “good ground”.

# 4.0 Study area description

## 4.1 Overview

The study area covers approximately 9,600 Hectares of predominately rural farmland. The topography can be broadly grouped into the “Lowlands” and the “Hill Country”. A topographic map is presented on Sheet A2 in Appendix A.

The lowlands are typically flat to gently undulating. The Waikato River and the Waipa River are the major river systems. The topography adjacent to the rivers includes flood terraces, gentle slopes and steep banks. Incised tributary gully systems traverse the lowlands and are more prominent close to the rivers. A network of rolling hills rise up to 20 metres above the surrounding lowlands. Swamps with shallow lakes are present in areas of poor surface drainage.

The hill country is in the western part of the study area and includes the Hakarimata Range, Taupiri Range and the hills west of the Hakarimata Range. The slopes range from gentle to very steep.

Land use on the flat, gentle and rolling lowlands is predominantly dairy farms with some cropping, while dry stock and sheep farming predominates on the steep hills west of the lowlands. Light industrial and commercial development is limited to Ngaruawahia and Horotiu. A decommissioned landfill occupies the narrow strip of land south-west of SH1 on the south side of Ngaruawahia and is a reserve. The disused Hopuhopu army facility is located on the rolling hills west and south of Lake Hotoananga, a few kilometres east of Ngaruawahia.

## 4.2 Settlements

### 4.2.1 Ngaruawahia

Ngaruawahia Township is located at the confluence of the Waikato and Waipa rivers approximately 20 kilometres north-west of Hamilton City. The township has been developed on near level to gently undulating land and is generally elevated approximately 20 metres above mean sea level (RL20).

There are several shallow gully systems within the township. To the west of the Waipa River and the Waikato River north of the confluence is the Hakarimata Range, which has peak evaluations of approximately RL370.

### 4.2.2 Glen Massey

Glen Massey village is west of the Hakarimata Range and approximately 7 kilometres west of Ngaruawahia. Glen Massey is nestled in the base of a stream valley at approximately RL100. It is surrounded by steep to very steep hills that rise to approximately RL200. The hills in general have been cleared for agriculture.

### 4.2.3 Taupiri

Taupiri village is on the eastern side of the Waikato River, where the Mangawara Stream and several smaller tributaries meet prior to discharging into the Waikato River. At Taupiri the Waikato River turns to the west and flows between the Hakarimata Range and the Taupiri Range. The village is separated from the range by Mangawara Stream. Taupiri has been developed primarily on the near level to gently undulating topography adjacent to the waterways.

### 4.2.4 Te Kowhai

Te Kowhai village is approximately 8 kilometres to the south of Ngaruawahia on near level to gently undulating topography. A prominent gully runs east to west through, and along the northern side of the village.

### 4.2.5 Horotiu

Horotiu is approximately 5 kilometres south east of Ngaruawahia. It is located on near level to gently undulating land and alluvial terraces near the banks of the Waikato River. A tributary stream gully is at the southern end of the village.

# 5.0 Geology

## 5.1 General

The landforms of the study area and many potential geohazards are substantially related to the underlying geology. A geological map of the study area is shown on Sheet A3 in Appendix A. The map is an extract from the published Q-Map.

The geology is considered here in terms of the dominant landforms (geomorphology). The landform units are Hill Country, Rolling Hills of the Lowlands, Alluvial Soils of the Lowlands, and Valley Floor Soils.

## 5.2 Hill country

The hill country in the project area is the mapped as Newcastle Group indurated sedimentary siltstone and sandstone, which commonly are collectively termed greywacke. The greywacke is typically deeply weathered, resulting in stiff to hard clay soils. A thin (less than 1 m) mantle of weathered volcanic ashes may also be present. On steeper slopes the depth of weathering and thickness of ash mantle is reduced due to erosion processes.

The greywacke is very closely fractured, with common faults and folds. The Hakarimata Anticline trends north south and generally follows the crest of the Hakarimata Range. A syncline is mapped approximately 1 km east of Glen Massey and a secondary Anticline approximately 600 m east of Glen Massey.

The Wilton Fault trends north to south approximately 400 m west of Glen Massey. Numerous other faults are mapped west of the Wilton Fault. All faults in the immediate vicinity of the study area considered to be inactive.

The greywacke when unweathered is strong to very strong and strength decreases as weathering increases. While the intact rock strength is high, the strength of the rockmass is considerably less due to the closely spaced joints and shear zones. A weathered zone up to 15 m in thickness can form where the rock has completely weathered to clay soil, but with rockmass fractures still present, creating weak zones.

## 5.3 Rolling hills of the lowlands

The sinuous lowland rolling hills are mapped as the Walton Subgroup, which comprises the Puketoka and Karapiro Formations and dates from about 1 to 0.4 million years ago. These formations typically comprise silt, sand and clay of volcanic (rhyolitic) origin and were deposited by the proto-Waikato River along with ignimbrite flows from the Taupo Volcanic Zone. Peat, breccia and non-welded ignimbrite may also be present. Soil type and strength can be highly variable. Some of the Walton Subgroup soils can undergo a significant strength loss when the in-situ structure is destroyed by earthworks. The Walton Subgroup is typically not a surface deposit in the Ngaruawahia area, as it is mantled by the Hamilton Ash Formation. The Walton Subgroup can be exposed in cuttings and or in areas where erosion or instability has occurred.

The Hamilton Ash is a series of completely weathered, clay-rich rhyolitic volcanic ash beds (airfall tephra). The ash beds were deposited between 80 and 380 thousand years ago. The ashes mantled the pre-existing landscape (eroded Walton Subgroup) and locally can be up to 6 metres in thickness, but are typically less than 2 metres on the flanks of slopes in the Ngaruawahia area. The Hamilton Ash is generally a stiff clay soil and does not undergo a significant strength loss when worked due to earthworks.

## 5.4 Alluvial soil of the lowlands

The rolling hills are surrounded by a gently north-westward sloping plain (Hinuera Surface) constructed of alluvial sediments deposited by the ancestral Waikato River. The alluvial sediments are mapped as the Hinuera Formation, and were deposited between 50 and 17 thousand years ago by the ancient braided river system, with the bulk of the sediments being deposited following the voluminous Oruanui eruption 26 thousand years ago. Following cessation of rapid sedimentation, the river became entrenched in its current course and formed the modern Waikato River. As the Waikato River became more deeply entrenched so did the tributary gullies and streams.

The Hinuera Formation consists of variably pumiceous and rhyolitic gravel, sand and silt. Young surface and old subsurface peat and organic silt (lacustrine) deposits can be present. There is distinct cross-bedding throughout the formation, and soil conditions can be highly variable.

In areas with poor drainage, peat swamps have formed. These swamps (and associated lakes) were formed by the Hinuera Formation sediments damming valleys in the rolling hills. Some of the valleys are broad, forming large areas of peat, for example the Driver Road valley (Kainui bog) to the east of Ngaruawahia. Smaller swamps are present in the Te Kowhai area.

The Taupo Formation was deposited following the Taupo Ignimbrite eruption approximately two thousand years ago. The eruption blocked Lake Taupo (as did the earlier Oruanui eruption), raising its level. The eventual breakout flood resulted in rapid sedimentation that, in the Hamilton Basin, did not overtop the entrenched channel of Waikato River, but formed low terraces of pumiceous sand and silt within the channel. Undifferentiated alluvial and colluvial deposits have accumulated in the incised tributary gullies.

## 5.5 Valley floor soils

The soils in the valley floors around Glen Massey are mapped as young alluvial and colluvial deposits resulting from erosion of the surrounding Greywacke hills.

# 6.0 Geohazards

## 6.1 Introduction

The geological hazards (geohazards) considered relevant to the study area include slope instability, river bank erosion, seismicity and liquefaction, volcanic hazard and poor ground conditions (e.g. peat). Related issues of possible subsidence due to past underground mining activity and decommissioned industrial sites and landfills are also addressed.

## 6.2 Soil strength and characteristics

### 6.2.1 Overview

The study area is large and encompasses a variety of terrains and soil types. Soil strength is an important consideration when assessing the suitability of land for development, in particular the potential for unacceptable settlement and subsidence of buildings and infrastructure.

### 6.2.2 Static settlement

Static settlement results from compression of the ground underlying a structure or fill embankment due to the increased load. Generally, if uniform settlement occurs and it is of limited magnitude, structures typically do not sustain structural damage and the settlement can be undetectable without reference levels. When settlement occurs it is common for the land adjacent to the structure to also be affected as a depression is created towards the loaded area.

Differential settlement occurs when there is non-uniform settlement across a structure. This can be due to lateral variability in applied loads or differences in the thickness and/or compressibility of the materials underlying the loaded area.

When differential settlement occurs, the walls and cladding of buildings are susceptible to cracking, floors become uneven, and doors and windows become tight and prone to jamming. The integrity and function of onsite services can also be compromised when settlement affects auxiliary structures such as water tanks. Connections between buried services and buildings can also be adversely affected.

Roads and buried services are generally at low risk of issues related to static settlement, unless the works include embankments or structures as part of the works or in close proximity to the infrastructure.

### 6.2.3 Peat shrinkage

Peat is a difficult material with respect to land development. It is highly compressible and therefore settlements can be large under fill and structure loads unless mitigated or accommodated in design. In addition, where surface peat has been or is being drained, peat shrinkage is a significant issue due to the resulting potentially large ground settlements. Settlement due to peat shrinkage can be exacerbated due to applied loads.

Buildings can be readily isolated from the effects of peat shrinkage by ensuring that the building loads are transferred to underlying competent soil. This is typically done by either excavating the peat and replacing it or supporting the structure on deep foundations. Buildings however, are seldom isolated structures and are typically connected to on-site or reticulated services, leading to problems with connections as the surrounding land settles while the building remains fixed.

Roads and buried services are both prone to differential settlement due to peat compression and shrinkage. This can lead to disruption of services and costly remediation. Mitigation can be achieved by excavating shallow peat or adopting pile support when cost-effective excavation is not possible.

Areas with undrained surface peat will generally have a water table close to or at the ground surface. In drained peat, as the peat shrinks over time, the water table depth decreases relative to the ground surface and surface ponding can recur. Land owners respond by deepening the drains which can lead to reactivation or acceleration of the shrinkage as the peat re-stabilises to the new hydrogeological conditions.

### 6.2.4 Expansive soils

Expansive soils are those that contain clay minerals that shrink and swell significantly upon wetting and drying. These soils can apply significant pressure to foundations, resulting in differential movements and damage similar to that experienced due to settlement. Expansive soils can be mitigated by specific design of foundations;

however as laboratory testing is required it is more efficient to address the presence of expansive soils during subdivision consent.

## 6.3 Slope instability

### 6.3.1 Lowland river and gully slopes

The slopes that define the gullies and banks associated with the Waikato River and tributaries are generally steep to very steep. There is typically a sharp slope break at the crest of gullies. Slope materials tend to consist of sub-horizontally bedded layers of silt and sand. Full slope saturation is unusual, as percolating rainfall tends to be impeded by the less permeable layers (e.g. silt) and track horizontally to the slope face.

Slope failures tend to be of the shallow regressive type, and commonly associated with rainfall or slope modification. Stream and river bank erosion can remove toe support, which destabilises the slope above. Deeper-seated failures can occur but they tend to exit at the base of the slope and not extend below the toe level. Debris from slips generally accumulates at the toe of the slope forming a protective ramp; subsequent stream erosion however can progressively remove the debris leading to further slope failures.

Except for the riverside terraces associated with the Waikato and Waipa rivers, building development generally has not occurred at the toe of gully slopes.

Within the Waikato region, typical practice for residential subdivision and building in the vicinity of gully slopes has been to project a 1V:2H line from the toe of the slope to obtain a development setback line. With sharp slope breaks being typical of gully slopes, this development restriction line is readily defined on site. Conventional development is restricted within the zone defined by the setback line, although development within the zone may be acceptable provided the potential for instability within the zone is addressed by specific engineering provisions in the foundation design. However, while simple and easily applied and interpreted this method of restricting development close to gully slopes does not address seismic conditions and how groundwater changes could affect stability.

Stormwater soakage is currently encouraged as the preferable method for managing stormwater. This increases the percentage of rainfall entering the ground containing the soakage facility compared to what would have naturally infiltrated from the surface, as rainfall is collected from a larger area and concentrated in the soakage field. This can alter the hydrogeological conditions near gullies and reduce stability.

### 6.3.2 Hill country and rolling hills

The foot hills of the Hakarimata Range and the Rolling Hills of the Waikato Lowlands have slopes ranging from 5° to 35°.

Three types of instability are readily identifiable in this terrain.

- Soil creep
- Shallow slumping
- Deep-seated instability

Soil creep is common on slopes steeper than approximately 20°. Soil creep is the gradual downslope movement of the soil profile, which is generally limited to the zone about 1 m below the ground surface. Land owners typically refer to the visible manifestation of soil creep as sheep or cattle tracks.

Shallow instability that occurs in this terrain is generally rotational slumping that affects the uppermost 1 m to 2 m of the soil profile on the steeper slopes. Hummocky ground may be present where this has previously occurred.

Aerial photography of the Hakarimata Range and Glen Massey area show that the hill slopes in those areas have relatively large scale deep-seated landslide scars.

Debris from these slips can be fluid and travel a significant distance down slope and across adjacent level ground. Landslide debris from rapid failures poses a significant hazard to property and life. Case Study 2 in Appendix C, discusses a recent slip and debris flow within this area.

Typical building and subdivision practise has been to undertake shallow hand auger investigations within the building site, including determining the slope profile below the building site. Provided that the slope is less than 26° and the investigations indicate soils of at least stiff consistency, the slope is typically reported as stable and suitable for building. A setback of 3 m to 5 m from the edge of the steep slope would be common; however, as

lateral changes in the slope gradient tend to be gradual and rounded, this can lead to ambiguous recommendations and misinterpretation.

This approach to stability assessment and defining development restriction also fails to recognise that the most significant risks to property and life are the deep-seated landslides that may be generated upslope of a dwelling.

It is also significant that the area most likely to generate a landslide that affects a property may be located beyond the property boundaries, which can be a barrier to access for further detailed assessment, should it be warranted.

## 6.4 Seismic hazard

### 6.4.1 Introduction

Earthquakes can result widespread damage to land and buildings. Land damage has traditionally been considered in this context as destabilisation of slopes and ground surface movement associated with shaking and fault rupture.

Building codes and standards such as NZS3604 Timber Framed Buildings have generally ensured that buildings are structurally designed to withstand earthquake shaking.

Since the occurrence of the Canterbury Earthquake Sequence (2011 to present) there has been heightened awareness of the effects of soil liquefaction on both buildings and infrastructure. Soil liquefaction is addressed in greater detail in Section 6.5.

### 6.4.2 Tectonic setting

New Zealand is on the boundary of the Australian and Pacific tectonic plates. Ngaruawahia is approximately 350 kilometres west of the plate boundary.

The Newcastle Group greywacke has been extensively faulted and folded by intra-plate stresses in the past. The Hakarimata Anticline trends north south and generally follows the crest of the ridge of the Hakarimata Range. There is a syncline approximately 1 km east of Glen Massey and a secondary anticline approximately 600 m east of Glen Massey.

The Waipa Fault is concealed by the Hinuera Formation and Walton Subgroup, and trends south to north from North Taranaki to Ngaruawahia. The Wilton Fault also has a north to south trending surface expression approximately 400 m west of Glen Massey. Numerous other faults are mapped west of the Wilton Fault. All faults in the vicinity of the study area mapped as inactive.

The closest faults that are currently identified as active are the Turi Fault, Wairoa Fault and the Kerepehi Fault. The Turi Fault is located off the west coast of the Waikato, approximately 100 km south west of Ngaruawahia, and is estimated to be capable of generating a M7.2 earthquake approximately every 1,600 years. The Wairoa Fault (50 km north of Ngaruawahia) and the Kerepehi Fault (40 km west of Ngaruawahia) are estimated to be capable of generating M6.6 earthquakes, with return periods of 22,000 and 2,500 years respectively.

### 6.4.3 Seismic history

Sheet B1 in Appendix B shows the locations of shallow earthquakes M3.5 or greater within and near the Waikato Q-Map area from 1840 to 2003. The three significant shallow earthquakes closest to Ngaruawahia Study Area are:

- 1891 Port Waikato M5.9
- 1912 Te Awamutu M5.5
- 1972 Te Aroha M5.3

The New Zealand Institute of Geological and Nuclear Sciences online earthquake search tool indicates shallow earthquakes having a magnitude less than M3.5 occur relatively frequently in the hill country within 5 km of Ngaruawahia. It is not clear if these are related to intra-plate stress or blasting that was recorded by the seismograph network.

It is a feature of both information sources that the vast majority of earthquakes that have been recorded have not occurred on the faults that are recognised as being active. Although there is a low frequency of large earthquakes, the records cover a period much less than the return event that needs to be considered for building code compliance.

### 6.4.4 Managing the seismic hazard

The Zealand Building Code requires that structures perform to a requisite standard during an earthquake. The design earthquake strength is a factor of the structures importance level (determines the return period event to be considered) and the location. This means that the more seismically active regions have stronger earthquake actions in design.

While seismic forces are taken into account as a routine part of structural engineering it is often overlooked when assessing civil works, land modification and stability, yet these works can equally affect the structural integrity of buildings. Case Study 1 in Appendix C discusses liquefaction knowledge and the lack of mitigation in Canterbury prior to 2010.

## 6.5 Soil liquefaction

### 6.5.1 Liquefaction mechanism

The cyclic ground motion induced by earthquakes can cause a build-up of excess pore pressure within the soil. If the excess pore pressure exceeds overburden pressure, liquefaction can occur, which causes a loss of strength and commonly ejection of material at the surface (e.g. sand boils). As the excess pore pressure dissipates following cessation of shaking, densification of the soil can occur that, together with the loss of ejected material, causes settlement that may damage structures.

Such liquefaction and densification typically occurs in geologically young, loose, saturated, fine to medium grained, non-cohesive and low plasticity soils.

### 6.5.2 Potential effects of soil liquefaction

When soil liquefaction occurs there is a significant decrease in the soil strength. While this is a temporary situation, foundation bearing capacity failure can occur if the liquefied soil is sufficiently close to the foundations.

Liquefied material adjacent to a free face, such as a terrace, gully or river, can allow un-liquefied material above it to move towards the free face (lateral spreading). Lateral spreading can result in ground displacement and cracks developing several hundred metres from the slope. Lateral spreading is particularly damaging to buildings, roads and services with the zone of displacement.

Services such as buried pipelines, manholes and tanks can become buoyant resulting in damage to infrastructure. This can also be worsened by ground surface settlement. Roads can be damaged by ground settlement and lateral spreading.

### 6.5.3 Soil liquefaction potential

Within the study area, the alluvial soils of the lowlands (e.g. Hinuera Formation) can contain significant beds of loose sand and silt which are commonly saturated close to the surface, particularly at locations distant from incised gullies. As these soils are also relatively young there is a potential liquefaction hazard throughout the Hamilton lowlands.

### 6.5.4 Soil liquefaction mitigation

Engineering solutions are available to mitigate the effects of soil liquefaction should assessment indicate that the effects are significant and warrant mitigation. Some of the commonly adopted methods are:

- raft foundations
- ground improvement (replacement, stabilisation, deep soil mixing)
- piles

The final solution will depend on the end use, the degree of deformation estimated, and the depth to underlying non-liquefiable strata.

Infrastructure can also be protected by using non-rigid pipes, slip joins and mass blocks to prevent buoyancy.

## 6.6 Volcanic hazard

There are no active volcanoes in the study area or within the wider surrounds. Distant large rhyolitic and andesitic volcanoes in the Central North Island could result in volcanic ash fallout in the study area. The risk of a direct volcanic hazard affecting the study area is very low.

## 6.7 Subsidence

### 6.7.1 Mine subsidence

Coal mining was undertaken in the in the Glen Massey and Taupiri Areas in the early to mid-twentieth century. AECOM has reviewed the Glen Massey Coalfield Map which indicates that underground mining was not undertaken within the study area.

A similar map for Taupiri was not readily available, however the study area does not include the Taupiri Range and it is unlikely that coal mining was undertaken beneath the alluvial terrace.

### 6.7.2 Rolling hill subsidence

Subsurface conduits and voids (tomos) can occur within the rolling hills of the Waikato lowlands. While they are rare, tomos have been exposed or collapsed during development earthworks on the northern fringes of Hamilton. The mechanism for the formation of these voids is unclear and the distribution is not known. Given their rarity, specific exploration to detect these features is not warranted and they are best managed during project construction.

## 6.8 Non-engineered fill

Non-engineered fill can be prone to settlement and instability. Hazard maps supplied by Waikato District Council show locations where non-engineered fill (including some landfills) has been recorded by Council. It is likely that there are more instances of non-engineered fill throughout the study area. It is appropriate to deal with any non-engineered fill during subdivision planning and construction.

# 7.0 Development issues

Development of flat ground is generally straightforward. Aside from erosion of exposed soils and potential to alter land drainage paths, there is little risk of subdivision works contributing to natural hazards or environmental issues.

On sloping ground or near gullies, certain activities have the potential to result in environmental damage or alter the stability of the natural ground. Earthworks are often required for access to lots and then the building platforms within the lots.

Cuttings have the potential to destabilise land above the cutting and can increase the erosion potential of the site. Cuttings within stiff clay soil such as Hamilton Ash or soils derived from weathered greywacke can also stand steeply and unsupported when initially excavated. Over time the cutting will fritter back to a more stable angle through erosion processes. In some instances sudden collapse can occur, which can be shortly after excavation or some time later.

Filling has the potential to increase load on a slope, which can result in instability in the underlying in-situ soil. Side-casting over unprepared ground is inherently unstable increasing both the erosion and instability potential of the slope.

Effluent discharges to ground continually add water to the slope. This can reduce soil strength and lead to slope destabilisation. Effluent discharge fields are defined as building work and are subject to the same requirements to avoid or mitigate natural hazards as the building itself.

Stormwater discharges to ground have the potential to decrease the stability of nearby slopes. Poorly located dispersion systems can increase erosion potential and also result in instability. Where development is intensified, the cumulative effects of the discharges to ground need to be addressed.

Tracks or driveways constructed through sloping terrain capture and concentrate stormwater runoff from both the track itself and also the land upslope of the track. Runoff volumes can far exceed what would be generated by the track alone. This concentration of stormwater can lead to soil erosion and instability.

# 8.0 Development suitability recommendations

## 8.1 Development suitability categories

### 8.1.1 Overview

A map has been developed (Sheet A4, Appendix A) that classifies the development suitability of the study area land based on landforms and geological and geotechnical constraints. The map provides a high level classification of the land suitable for Structure Planning purposes.

The categorisation does not imply that all of the land within any category is subject to the geohazards typical of the zoning. The intent of the plan is to provide guidance to Council on the general suitability of the land and the starting point for engineering assessment that should accompany development proposals. It is possible that a specific assessment could either upgrade or downgrade the risk.

### 8.1.2 Category A – Low Risk

Category A represents land that is likely to be suitable for development with minimal geotechnical input. There is little risk to buildings and infrastructure. Residential buildings are likely to be able to be developed using foundation details from NZS3604. There is also little environmental risk from developments within the Category A land; however the cumulative effects of stormwater discharges onto or into the land should be addressed as it may affect land beyond this zone. There is no Category A land shown within the Ngaruawahia Structure Plan study area due to the scale of the map presented. Category A land may be identified as part of a development specific proposal.

### 8.1.3 Category B – Some Risk

Category B represents land that is likely to be suitable for development with some geotechnical input. Although pockets of land that are unsuitable for development may occur, most land is suitable for residential buildings developed using foundation details from NZS3604 but with shallow ground improvement (e.g. undercut and replacement or foundations that are deepened to more competent materials).

There is some environmental risk from developments within the Category B land, which will typically be related to earthworks for building sites and accesses. Consideration to the management of development induced water discharges and the cumulative effects of increased runoff volumes or soakage to ground volumes is required.

### 8.1.4 Category C – Moderate Risk

Category C land has a moderate development risk. There are likely to be development constraints that will need specific and detailed geotechnical assessment to identify how the potential hazards could impact on the development. It may be costly and difficult to develop land in Category C.

There can be significant environmental risk from developments within the Category C land, which will typically be related to earthworks for building sites and accesses. Assessment of the cumulative effects of development induced water discharges, in particular increased runoff or soakage to ground volumes and how these may affect the geohazards is required.

### 8.1.5 Category D – High Risk

Land within Category D is assessed as having a high risk of being subject to a significant geohazard within the zone. Where such hazards are present, mitigation is unlikely to be possible in a safe and economically viable manner and avoidance should be the expectation. Development is not recommended without extensive engineering assessment and design. Hazards may be due to geological conditions beyond the property boundary, and assessment of the wider area is recommended in Category D areas near slopes.

There can be significant environmental risk from developments within the Category D land, which will typically be related to earthworks for building sites and accesses, and development induced water discharges. Assessment of the cumulative effects of development induced water discharges, in particular increased runoff volumes or the volume discharged to ground, and how these may affect the geohazards is required.

## 8.2 Geomorphological categories

### 8.2.1 Alluvial Terraces of the Lowlands

The alluvial terraces of the lowlands can generally be considered suitable for urban development or country living zoning, subject to a detailed assessment during the consenting process. Due to variability of soil type and strength, the potential for soil liquefaction and settlement and compression and settlement of soft and/or peaty soils will need to be assessed on a case by case basis. Assessment will need to address risks to both building and infrastructure. It is likely that engineering solutions to mitigate hazards will be required. The alluvial terraces are therefore generally considered to be Category C.

Category D is applicable near the toe of the hill country and steep slopes associated with the rolling hills due to potential for inundation from landslide debris.

Development adjacent to the gullies and water bodies (streams, rivers, lakes, open drains) will need to address the stability of the slopes. Due to the potential for soil liquefaction to result in lateral displacements that extend considerable distances from slopes, land within 200 metres of the gullies and waterways is considered to be Category D.

Areas mapped as surface peat swamps are also included in Category D.

### 8.2.2 Rolling Hills

The rolling hills that protrude above the alluvial terrace have a mantle of Hamilton Ash which is typically stiff and has a negligible risk of soil liquefaction. Earthworks may expose lower strength soil which can likely be mitigated during the building consent process.

Slope instability can be present on the steeper flanks of the rolling hills; however it is typically shallow and regressive. Deep-seated failures and debris flows are not typical of the hills.

The rolling hills are mapped into Category B. Category C and D land occurs on the flanks of the rolling hills.

### 8.2.3 Hill Country

The hill country contains a significant deep seated landslide risk and debris flow risk that is a potential threat to property and life. There is also a significant risk of development works destabilising the land or resulting in environmental damage. This area is mapped in Category D and a detailed geotechnical assessment is required. Simplistic approaches to assessing suitability for building are not appropriate.

# 9.0 Policy recommendations

## 9.1 Land instability policy area

Future intensification of development of the hill country has the potential to expose Council to significant risk should the current development model and processes continue.

An option is to remove the living and country living zones from undeveloped land within the hill country area. This approach however, would likely be met with resistance by the owners of land that has not yet been subdivided or developed. This would also not address the geohazard issue as new buildings can still be built on rural land as permitted activities.

The recommended approach is for Waikato District to consider a Land Instability Policy Layer for such land. To be effective the Land Instability Policy Area would need to outline the issues, objectives and policies so that it provides guidance to developers, builders and council officers of the significant potential for land instability within this area. Key to such a policy is additional assessment of the existing instability through mapping, examination of current and historic aerial photos, and an estimation of the frequency of landslide-generated debris flows and run out distances.

Development proposals for hill country land will need to consider that not all land will be suitable for development and that greater costs will be incurred to develop the land.

It is also recommended that there is greater emphasis on the developer to undertake the engineering works, including the formation of building sites and accesses within the policy zone. Wherever possible domestic discharges onto and into slopes should be prevented, and provision may be required during subdivision planning and engineering to establish appropriate discharge locations and easements.

## 9.2 Mine workings policy layer

It is recommended that Waikato District Council obtains all available information regarding areas that have been subjected to underground mining and mine / quarry tailings disposal for inclusion in future revisions of the Waikato District Plan. A development policy should also be formulated for managing consent applications within areas that have been previously mined.

## 9.3 Liquefaction risk mapping

Many New Zealand Territorial Authorities, particularly those that have alluvial soils, now have high level liquefaction risk maps available to guide development. These maps are often accompanied by guidance on the minimum level of assessment for development and building consent. It is recommended that preliminary mapping be undertaken within the living and country living zones to guide future development and building.

The Hazard information that Council provided AECOM had no information on liquefaction. This appears to be a gap in how information is collected and used to the Council's advantage.

As a minimum it is recommended that engineering reports that contain an analytical liquefaction assessment be added to the Hazard Register with a hazard grading. To aid the usefulness of the information would be to require that all liquefaction assessments be supplied with the raw CPT data in electronic form for future area wide analysis.

## 9.4 Increased geotechnical focus

AECOM also recommends that the Waikato District Plan and Structure Plans include an update to Appendix B engineering standards to include an increased focus on best practise geotechnical engineering and integration with the other engineering standards.

## 9.5 Definitions

AECOM recommends that future revisions of the Waikato District Plan and Structure Plans include definitions in Appendix P for the following:

- Natural hazard

- Geotechnical suitability

# 10.0 References

Edbrooke, S.W. (compiler) 2005. Geology of the Waikato Area. Institute of Geological and Nuclear Sciences 1:250:0000 Geological map 4. 1 sheet + 68p. Lower Hutt, New Zealand: Institute of Geological and Nuclear Sciences Limited.

Kear, D. and Petty, D. R. 1976, Waikato Coalfiields: Glen Massey Coalfield, 1:15 840, New Zealand Geological Survey Miscellaneous Series Maps 7 (Geology) & 8 (Mining) and notes (14p), New Zealand Department of Scientific and Industrial Research, Wellington.

New Zealand Institute of Geological and Nuclear Sciences, Quakesearch, http://quakesearch.geonet.org.nz/

Taylor, M. 2012, Geohazard Mitigation in New Zealand - In Search of a normative and informative balance. New Zealand Geomechanic News, Bulletin of the New Zealand Geotechnical Society, Issue 83, June 2012.

Waikato District Council, 2013, Ngaruawahia Structure Plan Preliminary Assessment Scoping Report.

Waikato Regional Council, 2003, Waikato Region Earthquake Hazard Map.

# 11.0 Limitations

The recommendations and opinions contained in this report are based upon topography, geological maps and engineering experience of the issues within the areas considered. Inferences about the nature and continuity of geohazards are made using geological principles and engineering judgement. However it is possible that ground conditions over the site may vary and therefore it is not possible to guarantee that all hazards have been identified and appropriately zoned.

This report has been prepared for the particular project described in the owner's brief to us and no responsibility is accepted for the use of any part of this report in other contexts or for any other purposes.

Appendix A

# Figures

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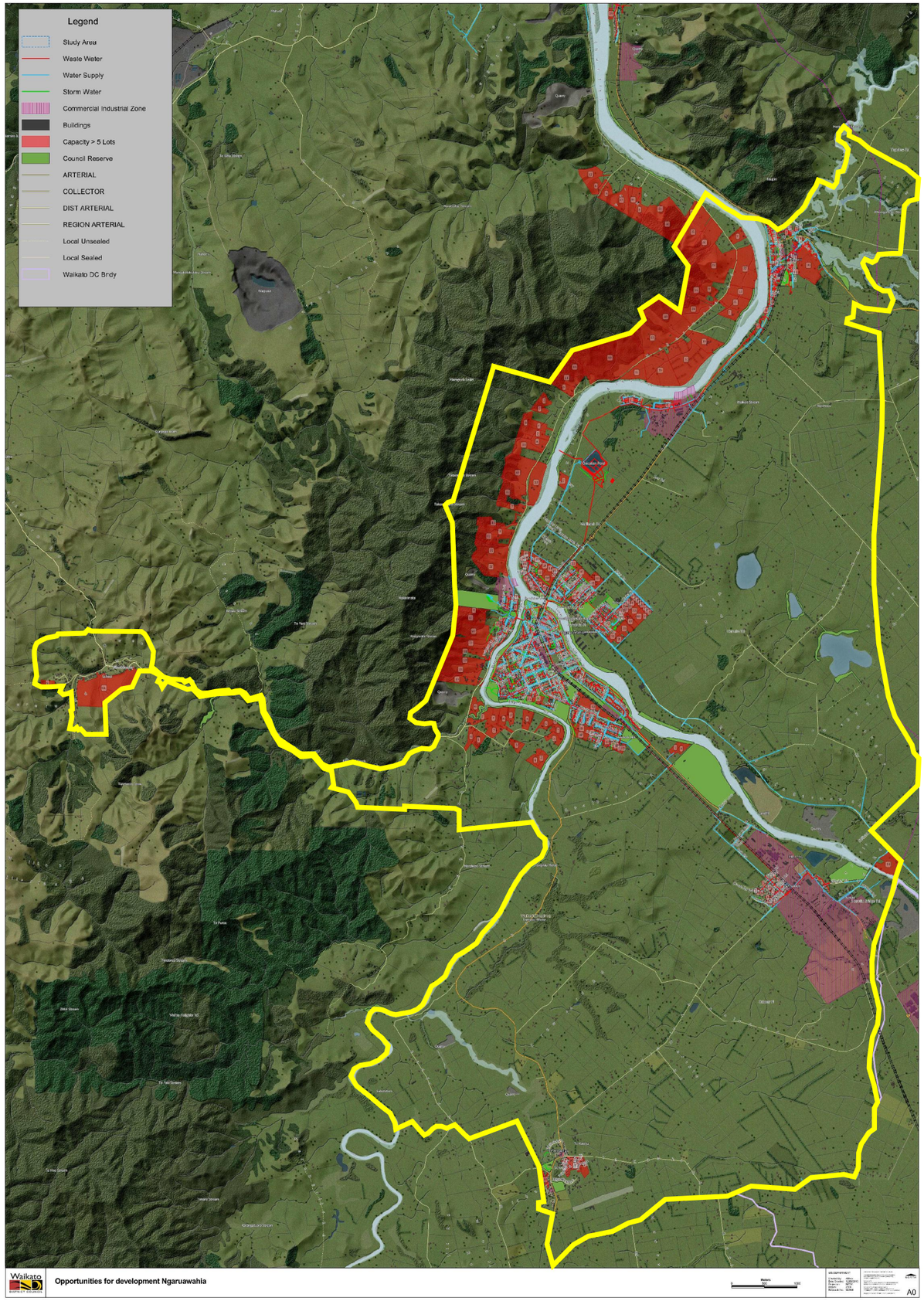


Plan showing the study area supplied by Waikato District Council

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Ngaruawahia Structure Plan
Geotechnical Assessment

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**KEY PLAN**

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Study Area

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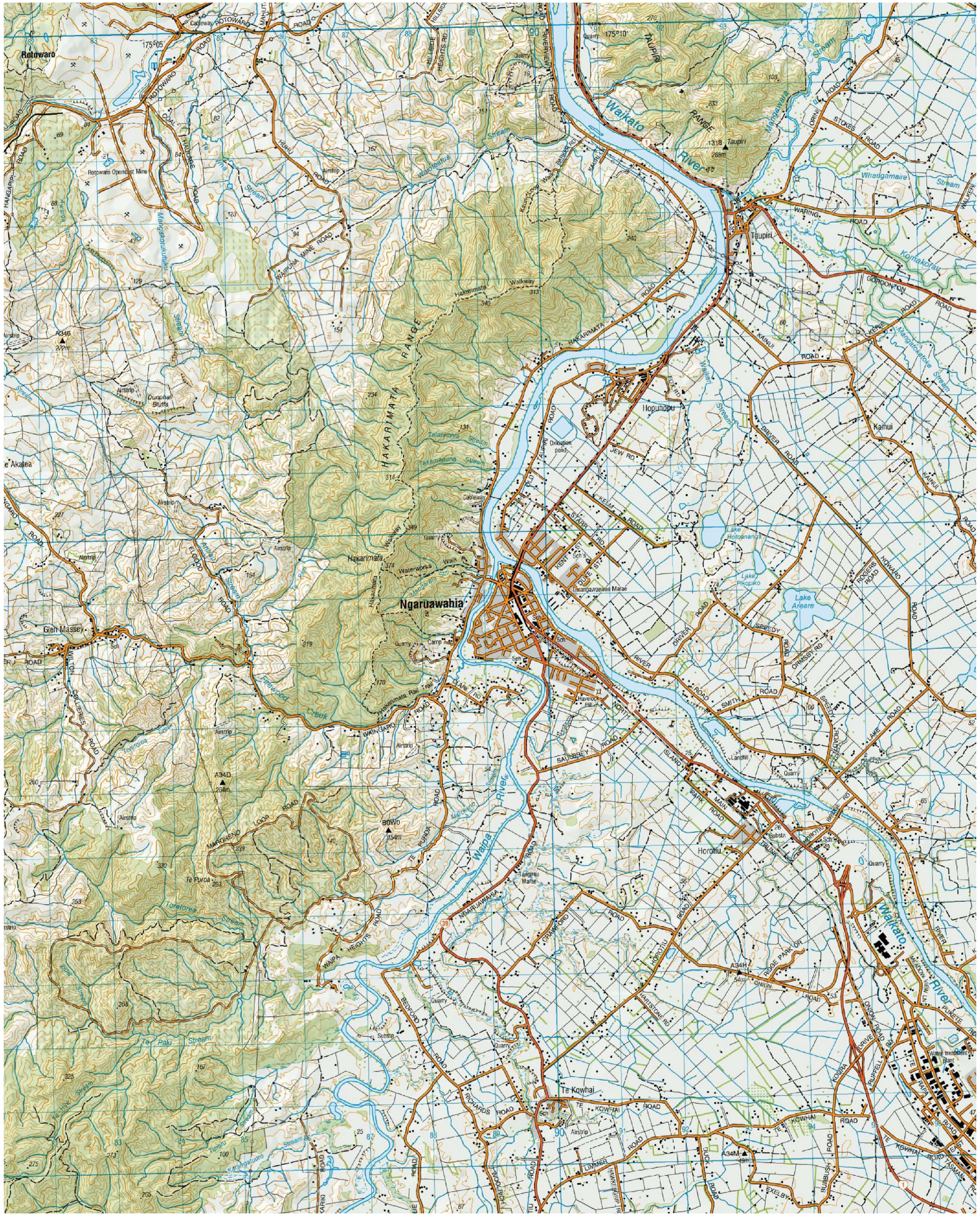


Topographic Map sourced from
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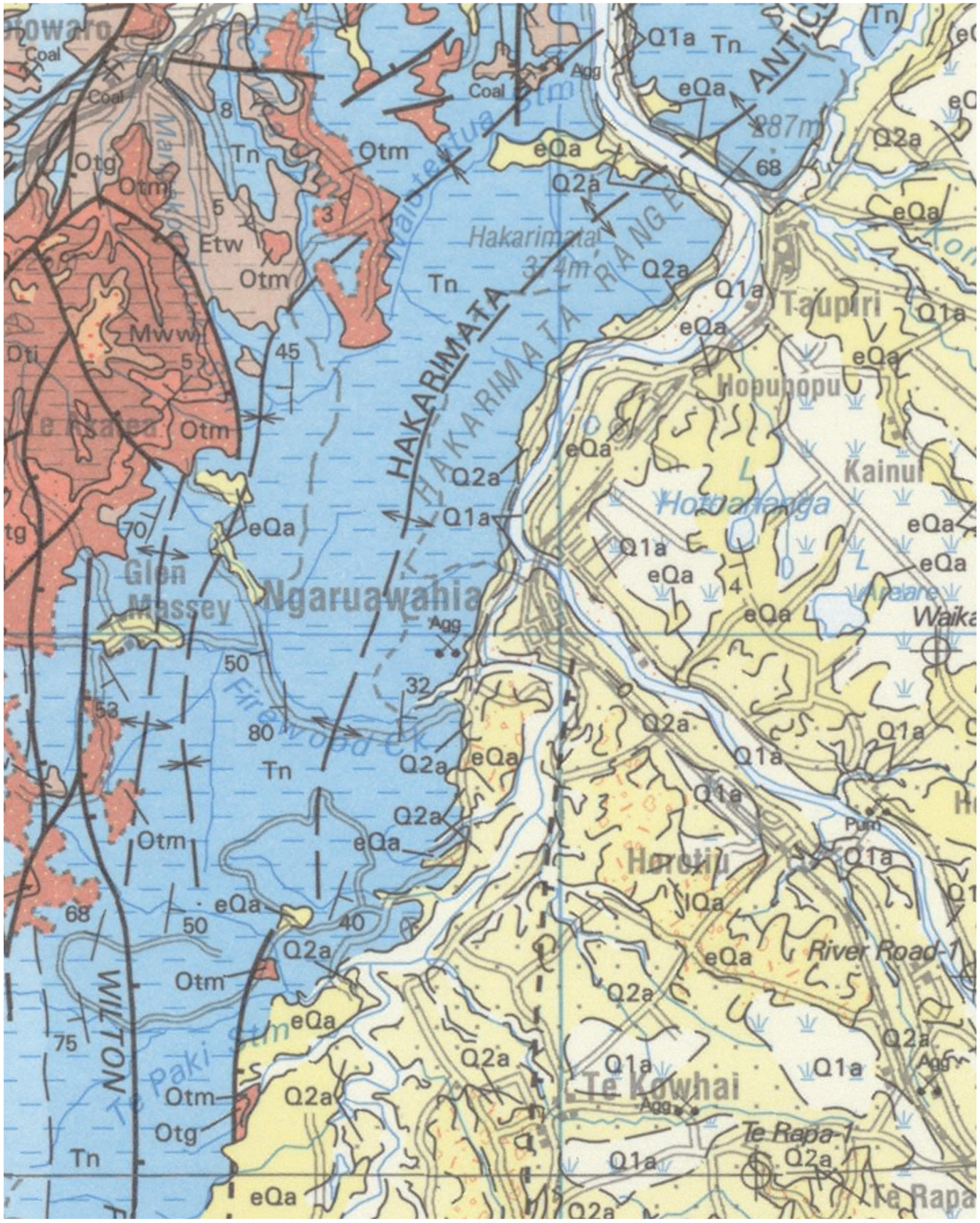


Alluvium/colluvium | Swamp/peat deposits | Pumice alluvium

Q1a — TAUPO FORMATION (Q1a) Pumice sand, silt and gravel alluvium with charcoal fragments.

Q1a — Alluvial and colluvial sand, silt, mud and clay with local gravel and peat beds (Q1a).

Q1a — Swamp deposits consisting of soft, dark brown to black, organic-rich mud, muddy peat and woody peat (Q1a).

Q2a — HINUERA FORMATION (Q2a) Cross-bedded pumice sand, silt and gravel with interbedded peat.

Q2a — Predominantly lacustrine mud, silt, sand and gravel with interbedded peat (Q2a).

IQa — Alluvial and colluvial pumiceous clay, sandy clay, silt and gravel with local muddy peat (IQa).

eQa — WALTON SUBGROUP (eQa) Pumiceous alluvium and colluvium dominated by primary and reworked, non-welded ignimbrite.

Tn — NEWCASTLE GROUP (Tn) Predominantly thin-bedded to massive siltstone with fine- to coarse-grained sandstone, mainly in the upper part, and rare shellbeds. Common zeolite veins and some tuff beds. Thick conglomerate (> 1000 m) south of Kiritehere.

FOLD

Anticline

Syncline

FAULT *

Fault (tick on downthrown side)

Reference:
Edbrooke, S.W. (compiler) 2005. Geology of the Waikato Area.
Institute of Geological and Nuclear Sciences 1:250:0000 Geological map 4.
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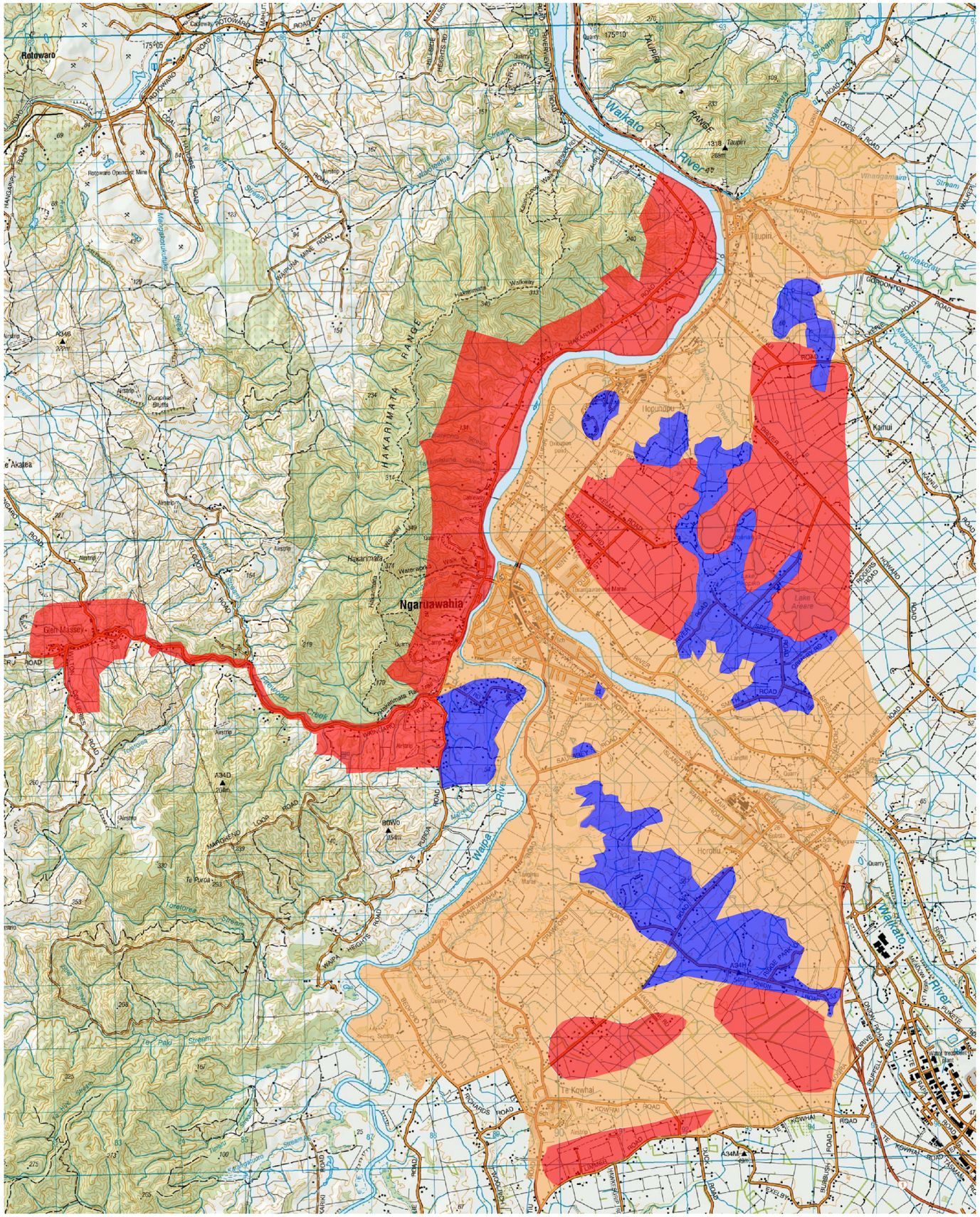


## Land Development Suitability Categories

### Category A - Low Risk

- Geohazrds unlikely
- Residential buildings likely to adopt NZS3604 with no ground improvement
- Minimal engineering input required
- Bulk earthworks are unlikley
- Cumulative effects of stormwater and wastewater discharges still require assessment
- No Category A land mapped within study area due to scale of map

### Category B - Some Risk

- Possible for geohazards to be present
- Moderate level of engineering input appropriate
- Residential buildings likely to adopt NZS3604 with shallow ground improvement or foundation deeepening away from geohazards
- Some risk of bulk earthworks being undertaken
- Individual and cumulative effects of stormwater and wastewater discharges to be assessed
- Mapped as Rolling Hill Topography
- Flanks of some hills may include pockets more appropriately considered Category C or D

### Category C - Moderate Risk

- Likely for geohazrds to be present
- Detailed engineering assesment required to adress impacts on buildings roads and infrastructure
- Some risk of bulk earthworks being undertaken
- Individual and cumulative effects of stormwater and wastewater discharges to be assessed
- Mapped as alluvial soil - Note Category D is applicable within 200m of waterways, lakes and open drains and gully/river terrace slopes

### Category D - High Risk

- Likely that a significant geohazrds is present
- Detailed engineerign assesment required to adress impacts on buildings roads and infrastructure
- If the potential geohazard confirmed then mitigation is unlikley to be possible in a safe and economically viable manner
- High environmental risk due to earthworks
- Individual and cumulative effects of stormwater and wastewater discharges to be assessed
- Hill Country and adjacent land due to potential for large landslides and debris flows
- Peat swamps with settlement and liquefaction potential
- Includes alluvuial soil within 200m of waterways and gully/river terrace slopes (not shown on map)

NOTES:

1. Boundaries are approximate and based on large scale topographic and geological maps
2. Classification zones do not adress flood hazard
3. This map does not imply that all of the land within any category is subject to the geohazards typical of the zoning. The intent of the plan is to provide guidance to Council on the general suitability of the land and the starting point for engineering assessment that should accompany development proposals. It is possible that a specific assessment could either upgrade or downgrade the risk within any given property.

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Development Suitability Categories

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Appendix B

# Seismic history

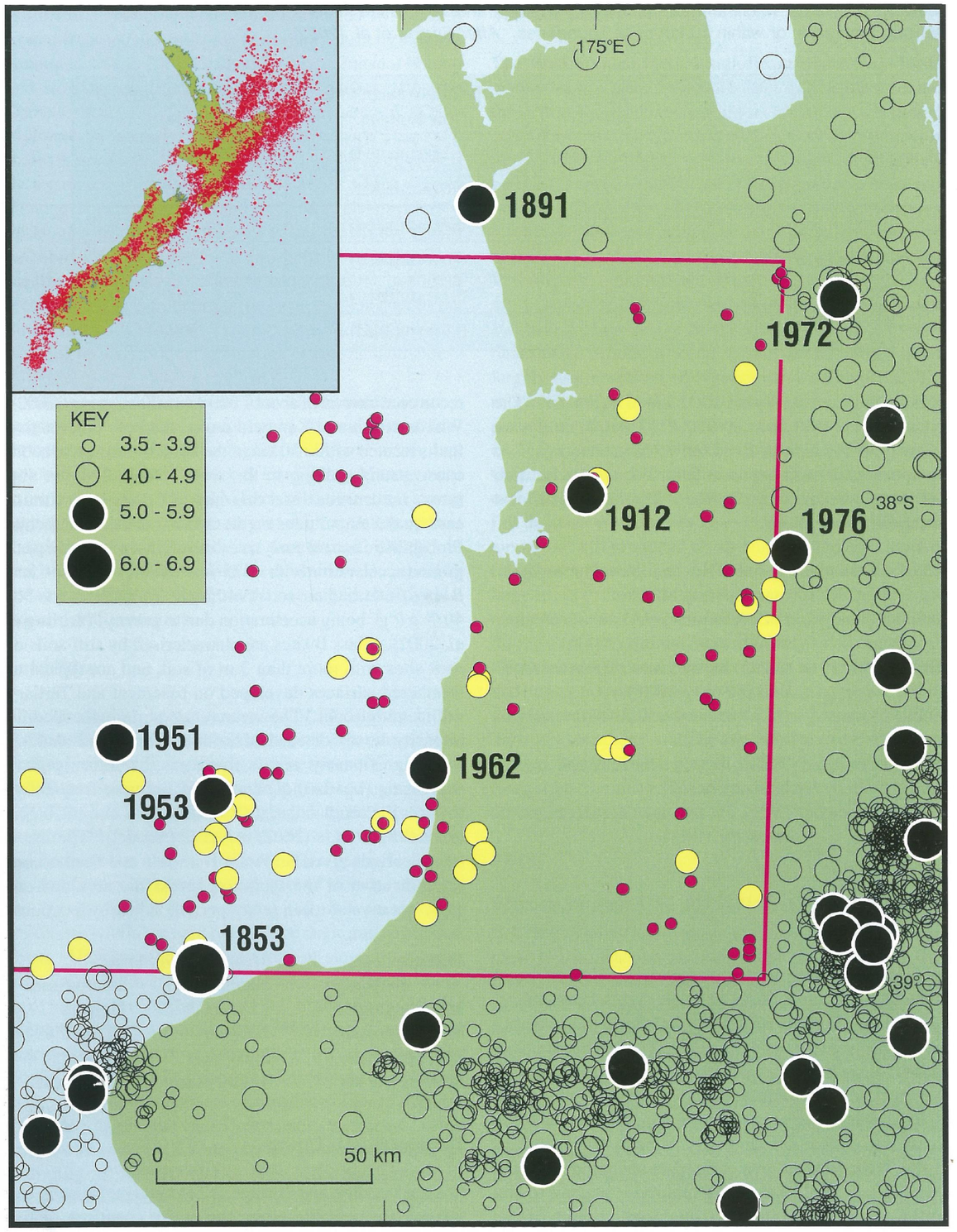


**Figure 61** Locations of shallow (depth ≤40 km) earthquakes in the Waikato map and surrounding area, with magnitudes M≥3.5 (January 1840-June 2003). Note that the record of small earthquakes is incomplete before 1964, and the record of moderate to large earthquakes is probably incomplete before 1900. Inset: Shallow earthquakes recorded in the New Zealand region from 1964 to 2002.

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Institute of Geological and Nuclear Sciences 1:250:0000 Geological map 4.
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KEY PLAN

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SHEET TITLE
Seismic History

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Appendix C

# Case studies

# Appendix C Case studies

## Case Study1 – Canterbury development prior to 2010

Following the Canterbury Earthquake sequence that commenced in September 2010, councils, central government and insurance companies have incurred enormous costs repairing the damage to public and private property.

The New Zealand Geotechnical Society has published a paper by Merrick Taylor which delves into what was known about liquefaction in Canterbury pre 2010 and the processes for development and building consents.

Despite the existence of liquefaction hazard maps produced in the 1990s and the inclusion of these in the Regional Plan, only two developments considered the potential for liquefaction. This was due to the reliance on engineers acting for the developer, and a lack of direction from council officers.

The situation arises from the developers' profit motives and desire to do the minimum required to get a consent. The engineers were operating in a competitive market and generally followed their clients brief to do the minimum required. The minimum required was based on the engineers' experience with previous consents.

Taylor concluded that the reliance on individual engineers and the absence of clear direction from council officers resulted in development and building occurring in areas that had been previously identified as hazard prone without addressing the hazard. The developments that did include mitigation measures had engineers that had a "full awareness of such hazards and international best practice with regards to the evaluation and mitigation".

There is potential that local authorities could be exposed to risk if new developments are consented without reasonable consideration of natural hazards, if a reasonably foreseeable hazard occurred.

Hazard avoidance and mitigation requires appropriate zoning, the collection and dissemination of information regarding hazards, and policies and rules that direct developers and their engineers to assess those hazards.

## Case Study 2 – Hakarimata Road, Ngaruawahia

In July 2012 a slip occurred on the ridge supporting a dwelling that had been recently relocated to the site. A series of aerial photographs from Google Earth Pro follow this discussion.

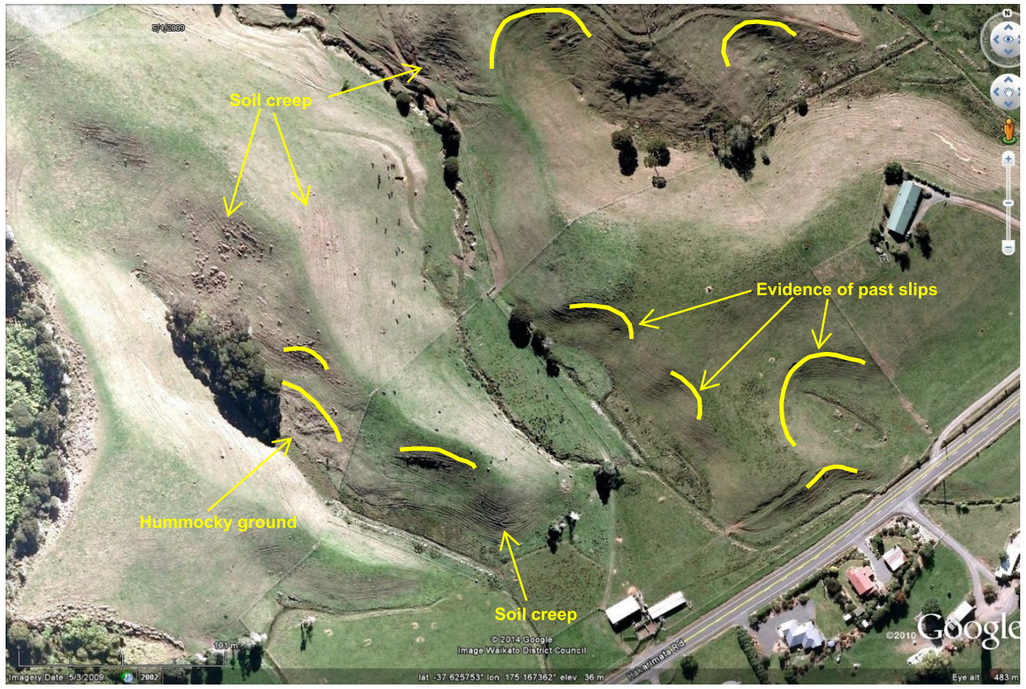
The pre-existing ridge slope is estimated to be 30 to 32 degrees. Following a period of normal winter rainfall a slip occurred with a back scarp estimated to be 8 to 10 metres high and 15 to 20 metres long. The resulting debris flow is still visible in the August 2012 image, which shows the debris travelled in excess of 100 metres from the scarp. The debris also had enough velocity to travel up the adjacent ridge. When the debris came to rest it was approximately 2 metres thick at the toe.

Prior to the slip occurring the there was a stream near the toe of the ridge, with a stream bank height of approximately 0.5 metres. The aerial image taken in May 2012, shows the house positioned on the site and the formation of the access driveway up the ridge. Comparing these two photos indicates that the track did not cut into the toe of the slip.

The 2009 aerial photograph is very clear and shows numerous large slips in the vicinity of the site, indicating that slips of this size and magnitude have happened in this area previously and can be expected to happen in the future. Examination of aerial photographs along Hakarimata Road indicates instability of this size is not unusual, and much larger slips have occurred in the past.

Had this house been positioned on the slip or in the path of debris flow it would have been destroyed, and any occupants would have been unlikely to survive.

ISO A1 594mm x 841mm




1. This image was taken in May 2009. It shows multiple slips have occurred in the past. Associated with these slips are evidence of hummocky grounds and soil creep.

3. By May 2012 a house was relocated to the risge. The image indicates that the driveway did not interfere with the toe of the slope, which subsequently failed in July 2012. The image also indicates that no earthworks were undertaken on the slope.

2. This image was taken in July 2010. No major change in slope.

4. This image was taken in August 2012 approximately 6 weeks after the slip occurred. Note the soil has flowed approximately 100 metres from the headscarp. Works have cleared the driveway however surge marks are still visible on the opposite ridge.

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AECOM

**PROJECT**

Ngaruawahia Structure Plan
Geotechnical Assessment

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All images are sourced from Google Earth Pro 2014

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Case Study 2 - Aerial Photos

**SHEET NUMBER**

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5. Looking across slip backscarp towards Hakarimata Road.

7. The size and depth of back scarp is apparent in this photo

6. Note debris flow had sufficient velocity to travel several metres up adjacent slope and topple mature trees.

8. View from Hakarimata Road. Note the thickness of the debris 100m from the source.

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Case Study 2 - Site Photos

**SHEET NUMBER**

C2

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# REPORT

**Waikato District Council**

**Ngaruawahia Structure Plan area Preliminary contaminated land assessment**

Tonkin & Taylor

ENVIRONMENTAL AND ENGINEERING CONSULTANTS

# REPORT

**Waikato District Council**

**Ngaruawahia Structure Plan area Preliminary contaminated land assessment**

**Report prepared for:**

**Waikato District Council**

**Report prepared by:**

**Tonkin & Taylor Ltd**

**Distribution:**

| | |
|---|---|
| **Waikato District Council** | **2 copies** |
| **Tonkin & Taylor Ltd (FILE)** | **1 copy** |

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# Executive summary

Tonkin & Taylor Ltd (T&T) has been commissioned by the Waikato District Council (WDC) to provide preliminary contaminated land information for the Ngaruawahia structure plan area in relation to proposed future growth. The extent of the Ngaruawahia structure plan area as defined by WDC is presented in Figure 1 (Appendix A).

Urban growth within the Ngaruawahia structure plan area is likely to include a range of land uses in defined areas including standard and rural residential land use, industrial land use, and retail/ commercial land use. This may include "greenfields" development of rural land, or re-development of existing urban land within the structure plan area.

The identification of potentially contaminated land in this assessment has been carried out through the identification of potential HAIL activities (as defined by the Ministry for the Environment in their list of Hazardous Activities and Industries (HAIL)) which have the potential to result in ground contamination. These sites have been identified through the review of available information including:

- Historical and recent aerial photographs.
- WDC database of potentially contaminated sites.
- T&T database.
- Published information regarding HAIL activities.
- Site observations.

The assessment identified that the majority of the structure plan area is likely to be unaffected by HAIL activities, approximately 116 ha (15%) of the structure plan area.. The rural parts of the area, where greenfields development may occur, are largely unaffected by HAIL activities, with occasional, individual sites identified throughout these areas. Industrial HAIL activities were identified within established industrial areas of Ngaruawahia township but the majority of the urban area is also unlikely to be affected by HAIL activities.

While the methodology used in this assessment has some limitations, the information gathered from the different information sources presents a consistent picture of a small community supporting a large rural catchment. The most significant HAIL activities affecting the area are considered to have been identified and any individual sites or activities that may have been missed are unlikely to have a significant impact on the outcomes of this assessment, or broad scale decisions about future development.

The available information, and past experience with investigation and remediation of contaminated land has been used to define a relative constraint to development with regard to ground contamination. The results of this assessment show that land identified as being potentially affected by a HAIL activity in the rural parts of the structure plan area are likely to present a low constraint to development. HAIL land within the urban area may present a more significant constraint to development.

Additional assessment and reporting on a site specific basis will be required for any development on <u>any</u> HAIL sites identified in this assessment. All works should be carried out by a suitably qualified and experienced practitioner, and undertaken in accordance with the Ministry for the Environment Contaminated Land Management Guidelines.

# List of acronyms

BTEX – Benzene, toluene, ethylene and xylenes

DDT - dichlorodiphenyltrichloroethane

DSI – Detailed Site Investigation

GIS – Global Information System

HAIL – Hazardous Activities and Industries List

NES Soil – National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health

PAHs – Polycyclic aromatic hydrocarbons

PCBs – Polychlorinated biphenyls

PCP - Pentacholophenol

PSI – Preliminary Site Investigation

RAP – Remediation Action Plan

SVR – Site Validation Report

TBT – tributyl tin

WDC – Waikato District Council

WRC – Waikato Regional Council

# 1 Introduction

Tonkin & Taylor Ltd (T&T) has been commissioned by Waikato District Council (WDC) to provide preliminary contaminated land information for the Ngaruawahia structure plan area in relation to proposed future growth. The extent of the Ngaruawahia structure plan area as defined by WDC is presented in Figure 1 (Appendix A).

The persons undertaking, managing reviewing and certifying this report are suitably qualified and experienced practitioners as defined in the NES Soil regulations[1].

This work was undertaken in accordance with our proposal dated 27 March 2014.

## 1.1 Background

WDC is seeking preliminary information about the potential constraints with regard to ground contamination for land development within areas which are flagged for potential urban growth across the Waikato District. Urban growth is likely to include a range of land uses in defined areas including standard and rural residential land use, industrial land use, and retail/ commercial land use. This may include "greenfields" development of rural land, or re-development of existing urban land within the structure plan area.

As part of this project, a preliminary assessment of potentially contaminated land has been undertaken for the Tuakau and Ngaruawahia structure plan areas. Although no specific details of potential development within these structure plan areas have been provided by WDC, it is assumed that the majority of new development within these areas will be greenfields.

Other potential urban growth areas within the District were not included in this assessment as the scale of future development in these areas means contaminated land is likely to be more easily assessed on a site specific basis.

This report focuses on the land defined within the Ngaruawahia structure plan area (as shown on Figure 1, Appendix A).

## 1.2 Objective and scope of work

The objectives of this work are to:

- Identify areas of potential ground contamination including the specific HAIL classification as stated by the Ministry for the Environment[2].
- Assess the overall relative constraint for land development of the identified HAIL areas (i.e. low, medium, or high categories).
- Provide indicative information regarding works that are likely to be required to address ground contamination issues and enable development of identified HAIL areas.

The following scope of work was undertaken to achieve the above objectives:

- Liaison with the Environmental Health Team at WDC to discuss the information they hold and what they consider are the key issues associated with ground contamination within the structure plan area.

[1] Resource Management (National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health) Regulations 2011.
[2] Ministry for the Environment, 2011, Hazardous Activities and Industries List.

- Review of information held by WDC[3] on potentially contaminated sites within the structure plan area.
- Review of three sets of historical aerial photographs from the Tonkin & Taylor library dating back to 1942, and recent aerial photographs from Google Earth.
- Review of T&T database and other published information regarding HAIL activities.
- Broad scale ground truthing of reviewed information by site observation (from the road reserve only) within the structure plan area.
- Preparation of a GIS database of the identified HAIL activities.
- Assessment of identified HAIL sites in terms of constraint to development (i.e. low, medium or high categories).
- Preparation of this report documenting the methodology and findings of the assessment and providing indicative information regarding works likely to be required to address ground contamination issues and enable development of identified HAIL areas.

[3] Data sharing between Waikato Regional Council and WDC means that WDC's information reflects information held by both councils; therefore, no liaison with Waikato Regional Council was undertaken.

# 2 Ngaruawahia structure plan area description

## 2.1 Location

The Ngaruawahia structure plan area encompasses the central Waikato township of Ngaruawahia and surrounds, located approximately 17 km northwest of the centre of Hamilton. The location and extent of the Ngaruawahia structure plan area is presented in Figure 1 (Appendix A). The structure plan area covers approximately 781 ha. The structure plan area is bounded by the natural borders of the Waipa and Waikato Rivers, and the Hakarimata Ranges to the west, and by rural land to the north, east and south.

The land within the structure plan area is dominated by Ngaruawahia which includes residential, commercial and industrial land used. Agricultural land dominates the remainder of the structure plan area, beyond the current urban boundary. Other land uses currently occurring within the structure plan area include rural residential and limited horticultural land use. The North Island Main Truck railway line runs through the centre of the structure plan area, following State Highway 1 through the centre of Ngaruawahia township.

The main commercial/retail area of Ngaruawahia is located in the centre of the structure plan area, between State Highway 1 and the Waikato River. Established industrial areas are located to the west of the town centre, and further south, adjacent to the rail corridor. Residential areas make up the bulk of the Ngaruawahia urban area which surrounds the town centre, and extend to the western boundary of the structure plan area.

Outside of the township, the structure plan area is dominated by pastoral land with some rural residential development. Individual blocks of horticultural and industrial land use are present within the rural parts of the structure plan area.

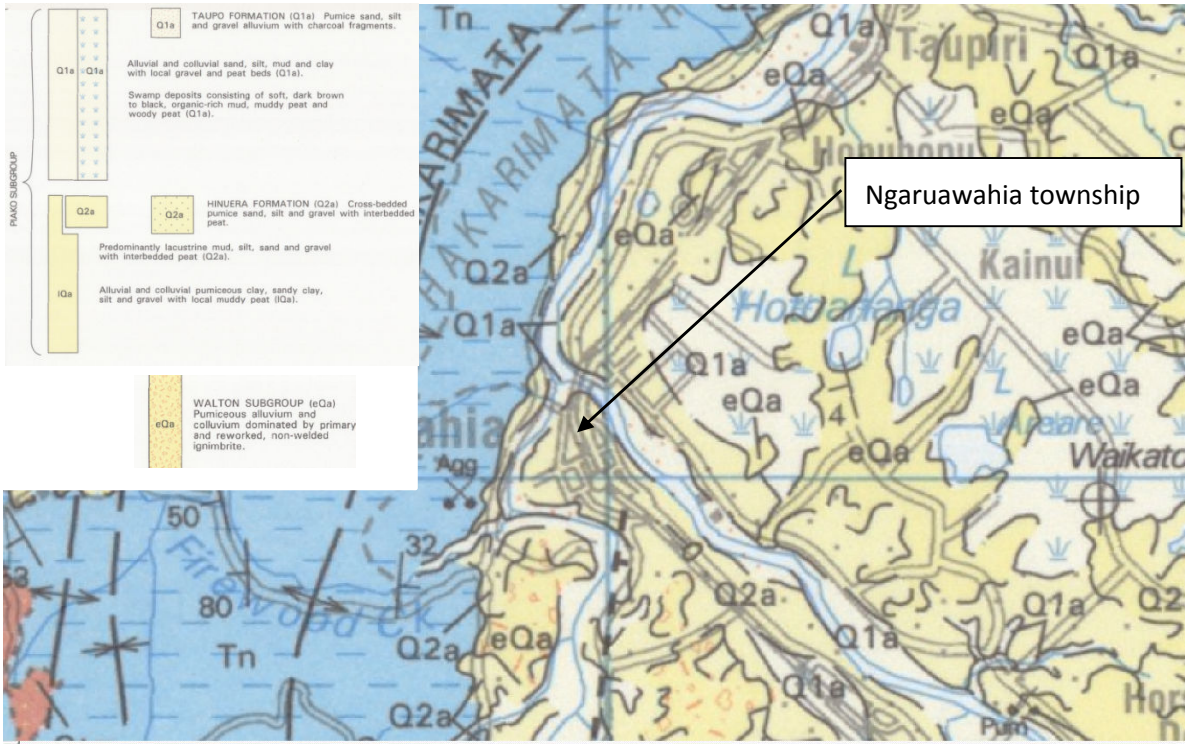
The topography of the structure plan area is mainly flat and the area is dominated by the incised channels of the Waikato and Waipa Rivers. Near these features, the land generally slopes down gently to meet the river level. The southern part of the structure plan area is more undulating. Immediately beyond the western boundary lies the Hakarimata Ranges which rise steeply above the surrounding river terraces.

## 2.2 Geology and hydrogeology

The published geology of the area shows that the majority of the Ngaruawahia structure plan area is underlain alluvial and colluvial deposits of the Piako Subgroup[4] as shown in the geological map below. The Ngaruawahia township is underlain by the Hinuera Formation which comprises cross-bedded pumice sand, silt and gravel with interbedded peat. Along the river channels, Taupo Formation pumice alluvium is present which comprises pumice sand, silt and gravel alluvium with charcoal fragments. In the eastern part of the structure plan area, north of the Waikato River, swamp deposits consisting of soft, dark brown to black, organic-rich mud, muddy peat and woody peat are present.

The hills in the southern part of the structure plan area are underlain by older Walton Subgroup deposits comprising pumiceous alluvium and colluvium dominated by primary and reworked, non-welded ignimbrite.

[4] Edbrooke, S. W. (compiler), 2005, *Geology of the Waikato area. Institute of Geological and Nuclear Sciences 1:250,000 geological map 4*, Institute of Geological and Nuclear Sciences




*Geological map of Ngaruawahia structure plan area.*

Groundwater within the structure plan area is expected to be shallow (<5m below ground level) and unconfined. The groundwater flow direction will be controlled by the Waikato and Waipa Rivers, with groundwater likely to flow towards the closer of these two receptors.

# 3 Assessment methodology

The identification of potentially contaminated land in this assessment has been carried out through the identification of potential HAIL activities. The Ministry for the Environment has developed a list of Hazardous Activities and Industries (HAIL) which have the potential to result in ground contamination. A copy of the current HAIL is attached in Appendix C.

The approximate extent of the HAIL activities identified from the various data sources have been collated into a GIS database as shape files. Each identified area/ land parcel is referred to as a "HAIL site" in this assessment. The source of the information, and the HAIL classification (from MfE's list) for each HAIL site is included in the database.

In some areas the potential for HAIL activities has been identified but no specific HAIL activity was determined. For example where industrial buildings were observed but the activities occurring within them are unknown, or where fill is thought to be present but limited information is available about it. In these instances the sites have been included as HAIL classification "I" – Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment.

Some sites may have been subject to multiple HAIL activities. The information included in this assessment identifies the key HAIL activity however for sites involving industrial activities in particular, consideration of other potential HAIL activities should also be given during planning for any proposed development.

The information sources and the methodologies employed in this assessment are outlined below.

## 3.1 Information sources

Identification of potential HAIL activities within the structure plan area has been undertaken through the review of available information including:

- Historical and recent aerial photographs.
- WDC database of potentially contaminated sites.
- T&T database.
- Published information regarding HAIL activities.
- Site observations.

### 3.1.1 Aerial photographs

Historic aerial photographs from 1941, 1961/63 and 1979 were reviewed to identify potential HAIL activities. This imagery was sourced from the Tonkin & Taylor library. Review of more recent photographs available on Google Earth was also undertaken as part of this assessment. Table 1 presents a list of photographs and sources that were reviewed.

**Table 1: Aerial photography reviewed**

| Year | Source |
|---|---|
| 1941 | SN0174 Run 299 photos 20-21, Run 300 photo 22 |
| 1961-63 | SN1397 Run 3274 photo 12, Run 3275 photos 11, 13, Run 3276 photo 13 |
| 1979 | SN5479 Run B photo 17, Run C photo 17 |
| 2000-2014 | Google Earth |

The lateral extent of potential HAIL activities as observed in the respective aerial photographs was captured and the relevant HAIL classification applied.

Pastoral land has the potential to have been affected by contaminants in fertilisers which have been applied to these areas. However fertiliser application is not specifically included as a HAIL activity. As agreed with WDC (Kelly Deihl pers. com.), pastoral land observed in the aerial photograph review which shows no evidence of HAIL activities has not been included in this assessment.

### 3.1.2 WDC database

A copy of the WDC database of potentially contaminated sites was provided in GIS format. The information within the database was used to define the relevant HAIL classification for each land parcel for inclusion in this assessment.

WDC holds additional information regarding many of the HAIL sites on their database, including site specific reports and laboratory results. This information has not been reviewed as part of this assessment but will be an important source of information if development on a particular HAIL site is proposed.

Waikato Regional Council (WRC) also maintains a database of potentially contaminated sites in the region. However, as a result of data sharing between WRC and WDC, the WDC information reflects information held by both councils. Therefore, no liaison with WRC was undertaken.

### 3.1.3 Other published information

Other readily available published information has also been reviewed including:

- Milsearch, 2011, Desktop review – potential ammunition and explosives contaminated sites in the Waikato Region, prepared for Waikato Regional Council.
- Environment Waikato, 1993, Timber Treatment Sites in the Waikato Region.

### 3.1.4 Site observations

Following review of the available information, a broad scale visual assessment of the structure plan area was undertaken with observations made from the roads and other public places. This allowed for confirmation of current HAIL activities, and identifying additional HAIL activities which were not already identified through the other information sources.

## 3.2 GIS database

The boundaries of the HAIL activities identified in the above reviews have been collated into an ArcGIS database as shape files.

This report should be read in conjunction with the GIS database (electronic version or figures) that has been delivered to WDC as part of this assessment. Each GIS database shape file includes:

- Information source
  - WDC – WDC database
  - AP – Aerial photograph review
  - SO – site observations.
- HAIL classification/s relevant to the land area
  - As described in MfE's 2011 HAIL.

- Relative constraint to development
  - Low, medium or high.
- Other information provided by WDC
  - Additional attribute information included with the WDC database shape files has been retained.

The figures within this report, provided in Appendix A, have been derived from the GIS database and are intended to show key outcomes of the investigation.

Particular limitations of the GIS database are:

- Shape files are based on a desk top study and limited visual observations only. Site specific inspections and intrusive investigations have not been undertaken.
- The areas identified may not be an accurate representation of the extent of a HAIL activity. For example land adjacent to a HAIL activity may have been impacted by that activity, alternatively a HAIL activity may be isolated to one part of a land parcel but the whole land parcel has been identified.
- Geo-referencing of aerials over successive years has resulted in slight variations in HAIL activity boundaries. Some boundaries identified by aerial photography have been manually adjusted within the GIS database to minimise these variations.

## 3.3 Limitations

It must be noted that this assessment identifies potential HAIL activities and does not confirm if any land within the structure plan area is or is not contaminated.

Some specific limitations of this assessment are:

- The aerial photograph review was limited by the quality and scale of the photographs. Some potential historical HAIL sites may have been missed as a result of this limitation.
- The aerial photograph review was limited to three historical photographs between 1941 and 1979, with more frequent photographs from 2000 to present. Additional historical HAIL activities may have occurred in the times between the historical photographs that were reviewed.
- Historical HAIL activities which largely occur indoors or under cover may not have been identified such as retail service stations, small scale/ light industrial activities, drycleaners, and printing premises.
- Current and historical HAIL activities with a small footprint may not have been identified such as sheep dips, agricultural activities such as storage and mixing areas for agrichemicals and above and underground fuel storage tanks.

Despite these limitations, the methodology that has been applied is likely to be provide a broad scale assessment of potential ground contamination issues within the structure plan area.

This assessment does not meet the requirements of a preliminary site investigation under the NES Soil Regulations, and additional work will be required on a site specific basis to confirm if the land is covered by the NES Soil, and any requirements for a proposed future development under these regulations. No site specific inspections or investigations were undertaken as part of this assessment.

# 4 Findings of the assessment

The findings of this assessment are discussed in this section with regard to the relevant information source. A summary of identified HAIL activities is provided in Figure 2 (Appendix A). Refer to the GIS database for more details.

## 4.1 Aerial photographs

The principal source of information for this assessment is the historical aerial photographs as described in Section 3.1.1. The key findings of the aerial photograph review are outlined below:

- The township of Ngaruawahia was well established in the central part of the structure plan area in 1941. Urban development was on a much smaller scale than present day but the roading network is largely consistent with the current layout.
- The township was surrounded by pastoral land which the urban area of Ngaruawahia has encroached onto over time.
- Identification of HAIL activities within Ngaruawahia township was difficult from aerial photographs as much of this area is largely built up, with little indication of the use of the buildings. Larger scale activities including the railway yards and landfill which are located within the township were identified in the aerial photographs.
- The southern part of the structure plan area shows very little change since 1941. It has remained predominantly in pasture over that time. Some area were used for cropping in the 2000s. The crops that were planted are unknown, therefore as a conservative measure, these areas were included as potential areas where persistent pesticides may have been stored or used.
- Some evidence of large scale earthworks was observed within the structure plan area from the aerial photographs reviewed. These areas are generally associated with other HAIL activities and have been captured in this assessment.

## 4.2 WDC database

Waikato District Council maintains a database containing known and potentially contaminated land within the district. This information was provided to T&T as part of this assessment. The WDC database includes approximately 70 entries within the Ngaruawahia structure plan area. Some of the sites have multiple entries in the database as they cover several land parcels. The HAIL sites included in the WDC database cover a wide range of HAIL activities reflecting the needs of the rural community surrounding the town.

The main HAIL activities included in the database, by land area, are summarised in Table 2.

Two land parcels identified as HAIL sites in the WDC database contained insufficient information to determine what HAIL activities had occurred there. These sites cover a very small area and the missing information has not significantly impacted on the results of this assessment. These sites are identified as “U” for unknown land use.

The information included in the WDC database is associated with land parcels, therefore the boundaries of the shape files may not accurately reflect the boundaries of the HAIL activities.

**Table 2: Summary of main HAIL activities in WDC database**

| HAIL classification | No. of entries* | Approx land area (ha)* | Comments |
|---|---|---|---|
| G4 - Scrap yards including automotive dismantling, wrecking or scrap metal yards | 6 | 9.2 | Multiple sites within established industrial areas of Ngaruawahia township |
| G3 – Landfill sites | 6 | 7.5 | One main site (Ngaruawahia Closed Landfill adjacent to the railway line south of the town centre) and several small sites spread throughout the urban area of Ngaruawahia |
| F4 – Motor vehicle workshops | 12 | 3.9 | Mostly located within the established industrial areas of the township |
| A17 - Storage tanks or drums for fuel, chemicals or liquid waste | 9 | 1.5 | Isolated sites throughout the structure plan area |

* Number of entries and land area excludes duplicate database entries

## 4.3 Other published information

Other readily available published information regarding HAIL activities has also been reviewed including:

- Milsearch, 2011, Desktop review – potential ammunition and explosives contaminated sites in the Waikato Region, prepared for Waikato Regional Council
- Environment Waikato, 1993, Timber Treatment Sites in the Waikato Region

No HAIL sites within the structure plan area were identified in the Milsearch report, although several historical military sites are present within the vicinity of the structure plan area.

The Environment Waikato report on timber treatment sites refers to two closed timber treatment sites in the Ngaruawahia area; Pukekara Timber Co Ltd and Delta Timber Co. The locations of these sites is not provided in the report (listed as unknown). No evidence of these sites was identified through the other information sources used in this review and it is considered unlikely that they were located within the structure plan area.

## 4.4 Site observations

Broad scale ground truthing of reviewed information by site observation (from the roads and other public places) was undertaken by a T&T Contaminated Land Specialist on 13 May 2014.

Observations made during this exercise helped to confirm the HAIL classifications identified through the other information sources and gain a general sense of the land uses occurring within the structure plan area. In particular, site observations allowed for industrial buildings to be differentiated from agricultural/ horticultural buildings or residential buildings, and allowed the inclusion of small scale industrial activities.

Site observations confirmed that HAIL activities captured through the other information sources appear to be a relatively accurate reflection of actual land uses within the structure plan area. There are unlikely to be significant information gaps in this assessment, and the majority of potential HAIL sites are likely to have been captured through at least one of the information sources used in this assessment.

## 4.5 Summary of assessment findings

Our assessment of potential ground contamination issues within the Ngaruawahia structure plan area indicates that the majority of the area is unlikely to have been affected by HAIL activities. The sites that have been identified are either clustered within the existing industrial areas of Ngaruawahia township, or are individual sites around the periphery of the urban area. The main HAIL activity affecting the area (by land area) is A10 – persistent pesticide bulk storage or use, and includes orchards, cropping, and playing fields.

A significant number of industrial type HAIL activities have been identified within the structure plan area including timber treatment and storage sites, chemical/fuel storage, and railway related activities. These sites are mainly located within the industrial areas of the structure plan area, the west of the railway corridor. A cluster of industrial HAIL activities is also present on Hakarimata Road, on the western side of the Waipa River. This cluster includes transport depots, a scrap yard, filling and an unknown industrial activity.

The rural parts of the structure plan area were found to contain occasional HAIL sites only, most of which are associated within horticultural land uses. Some areas of recent cropping have been included in the assessment (along Saulbrey Road in the southern part of the area) however further assessment of these sites may indicate that no HAIL activities have occurred here.

Approximately 100 individual HAIL sites have been identified within the structure plan area covering approximately 116 ha (15%) of the area.

16 different HAIL classifications have been identified within the structure plan area. A list of all of the potential HAIL activities identified is provided in Appendix B along with the hazardous substances that are typically associated with that activity or industrial[5], and the potential likelihood, extent and magnitude of ground contamination.

[5] Hazardous substance information is sourced from Appendix C of the NES Soil Users' Guide; Ministry for the Environment, April 2012, *Users' Guide – National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health.*

# 5 Implications for future development

The potential for ground contamination needs to be taken into account if future development on potential HAIL sites is proposed. The information included in this section provides an indication of the potential implications for future development in these areas.

The identification of a HAIL site in this assessment is unlikely to preclude development from occurring, however additional assessment of any HAIL sites will be required if development is proposed on those properties, and investigation, resource consents and remediation may also be required.

## 5.1 Regulatory framework

The rules relating to the control of potentially contaminated land in the Ngaruawahia area are specified in the following documents:

- The National Environmental Standard for Assessing and Managing Contaminants in Soil to Protect Human Health (NES Soil).
- The Waikato Regional Plan.
- The Waikato District Plan.

Land that has been used for, or potentially used for HAIL activities, is covered by the NES Soil regulations, but may also be subject to the requirements for works on contaminated land in the Waikato District Plan and Waikato Regional Plan.

This may require additional investigation, resource consents and remediation.

## 5.2 Further information requirements

Additional assessment and reporting on a site specific basis will be required for any HAIL sites identified in this assessment that are subject to a change in land use, site disturbance (earthworks) or subdivision under the NES Soil. Further site specific assessment may also be required under the District Plan or Regional Plan.

The individual site requirements will differ, however all works should be carried out by a suitably qualified and experienced practitioner, and undertaken in accordance with the Ministry for the Environment Contaminated Land Management Guidelines. Typical reporting requirements for potentially contaminated sites include:

- Preliminary Site Investigation (PSI)
  - To confirm if the site is (or is not) covered by the NES Soil regulations and if there is likely to be a potential risk to human health from the proposed activity.
  - To indicate if the site is likely to present a risk to the environment.
- Detailed Site Investigation (DSI)
  - If the PSI indicates a potential risk to human health or the environment, and/or the proposed activity does not comply with the permitted activity criteria in the NES Soil, a DSI may be required to assess the actual extent and concentrations of contaminants at the site, and assess the potential effects on human health and the environment.
- Remediation Action Plan (RAP)
  - If the DSI identifies contamination in excess of appropriate standards for the proposed land use, remediation of the site may be required to allow the development to proceed. Environmental effects may also require remediation.

- Site Validation Report (SVR)
  - Following any remedial works, validation of the site is likely to be required, including completion of an SVR, to confirm that the objectives of the RAP have been met.
- Ongoing monitoring and management plan
  - Depending on the remedial techniques applied, an ongoing monitoring and management plan may be required to ensure the integrity of the remedial works is maintained for the life of the works.

## 5.3 Relative constraint to development

To assist with determining the likely implications for future development within the Ngaruawahia structure plan area, an overall assessment of the likely constraint to development has been undertaken. This assessment takes account of the typical characteristics of the individual HAIL activity, our knowledge of the nature and characteristics of contamination associated with these activities, and published information. This information is provided in the HAIL table in Appendix B and has been summarised in the context of the Ngaruawahia structure plan area and the objectives of this assessment to determine an overall level of constraint to development.

An overall constraint class of low, medium or high has been assigned to each identified HAIL site. The broad definition of each of these classes, and the HAIL activities which are typically associated with each class is presented in Table 3.

The overall level of constraint considers standard and rural residential land use, industrial land use, and retail/ commercial land uses. However, if a particularly sensitive land use such as a school or childcare facility is proposed, issues associated with ground contamination may present a more significant constraint than indicated in this broad level assessment.

The likely costs involved in addressing any potential ground contamination issues have not been directly considered, however it can be expected a higher constraint to development, and/or a more sensitive land use will result in higher costs to address ground contamination issues.

The main consideration for determining the overall level of constraint to development has been the potential effects on human health. A higher degree of constraint may apply to sites which include, or are located close to sensitive environmental receptors.

The overall constraint to development as a result of ground contamination is presented in Figure 3 (Appendix A).

## Table 3 – Overall constraint to development description

| Overall constraint to development class | Typical HAIL activities identified by this assessment | Potential magnitude and extent of contamination, and likely requirements to enable development |
|---|---|---|
| Low | • Horticultural activities including market gardens, orchards, glass houses and sports turfs | • Contamination typically present at low concentrations (potentially above background but within standards for protection of human health), affecting the whole or part of the site uniformly, and only affecting near surface soils.<br>• Potential for localised hotspots of contamination which may present a higher constraint for isolated areas.<br>• As a minimum, a PSI may be sufficient to establish that the proposed development can comply with the permitted activity requirements.<br>• Limited soil sampling may be required to support the findings of the PSI.<br>• Resource consents in relation to ground contamination may not be required if concentrations are within background ranges or earthworks volumes comply with the permitted limits within the NES Soil*. |
| Medium | • Industrial activities such as workshops, manufacturing, chemical storage, timber storage, scrap yards, and railway yards<br>• Transport depots<br>• Waste disposal and treatment sites | • Contaminant concentrations may be non-uniform across the site and may exceed appropriate standards for the protection of human health or the environment in some areas.<br>• A PSI (and probably a DSI) will be required to characterise the contamination and enable appropriate controls and/or small scale remedial works to be developed in order for the proposed development to proceed.<br>• Resource consents in relation to ground contamination are likely to be required from WDC and potentially WRC.<br>• Resource consents for discharges of contaminants to land and water during development may be required from WRC. |
| High | • Landfills<br>• Timber treatment sites<br>• Power stations and switchyards | • Significant contamination may be present in all or parts of the site with the potential for migration of contaminants away from the source.<br>• A PSI and DSI will be required to characterise the contamination which may include soil and groundwater investigations.<br>• Significant remedial works may be required to allow for redevelopment of the site.<br>• Resource consents in relation to ground contamination and discharges to air and water are likely to be required from WDC and WRC. |

* The permitted activity requirements for earthworks on land covered by the NES Soil include volume limits which are irrespective of the presence of contamination. Depending on the level of earthworks proposed, resource consent under the NES Soil may still be required irrespective of the potential risk to human health.

# 6 Summary

This investigation has been undertaken to identify preliminary contaminated land information that may influence future land development in the Ngaruawahia structure plan area. The investigation involved analysis of historical aerial photographs, Council provided information, other readily available information, and broad scale site observations.

The assessment identified that the majority of the structure plan area is likely to be unaffected by HAIL activities. The rural parts of the area, where greenfields development may occur, are largely unaffected by HAIL activities, with occasional, individual sites identified throughout these areas. Industrial HAIL activities were identified within established industrial areas of Ngaruawahia township but the majority of the urban area is also unlikely to be affected by HAIL activities.

While the methodology used in this assessment has some limitations, the information gathered from the different information sources presents a consistent picture of a small community supporting a large rural catchment. The most significant HAIL activities affecting the area are considered to have been identified and any individual sites or activities that may have been missed are unlikely to have a significant impact on the outcomes of this assessment, or broad scale decisions about future development.

The available information, and past experience with investigation and remediation of contaminated land has been used to define an overall constraint to development with regard to ground contamination. The results of this assessment show that land identified as being potentially affected by a HAIL activity in the rural parts of the structure plan area are likely to present a low constraint to development. HAIL land within the urban area may present a more significant constraint to development.

To meet the requirements the NES Soil regulations, and the WDC and WRC contaminated land rules, additional assessment and reporting on a site specific basis will be required for <u>any</u> HAIL sites identified in this assessment. All works should be carried out by a suitably qualified and experienced practitioner, and undertaken in accordance with the Ministry for the Environment Contaminated Land Management Guidelines.

# 7 Applicability

This report has been prepared for the benefit of Waikato District Council with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

Recommendations and opinions in this report are based on the historical data that has been reviewed. The nature and continuity of potential HAIL sites and associated contamination are inferred and it must be appreciated that actual conditions could vary from the assumed model.

Tonkin & Taylor Ltd

Environmental and Engineering Consultants

| Report prepared by: | Authorised for Tonkin & Taylor Ltd by: |
|---|---|
| ..... | ..... |
| Joanne Ferry | Peter Cochrane |
| Contaminated Land Specialist | Project Director |

JMC

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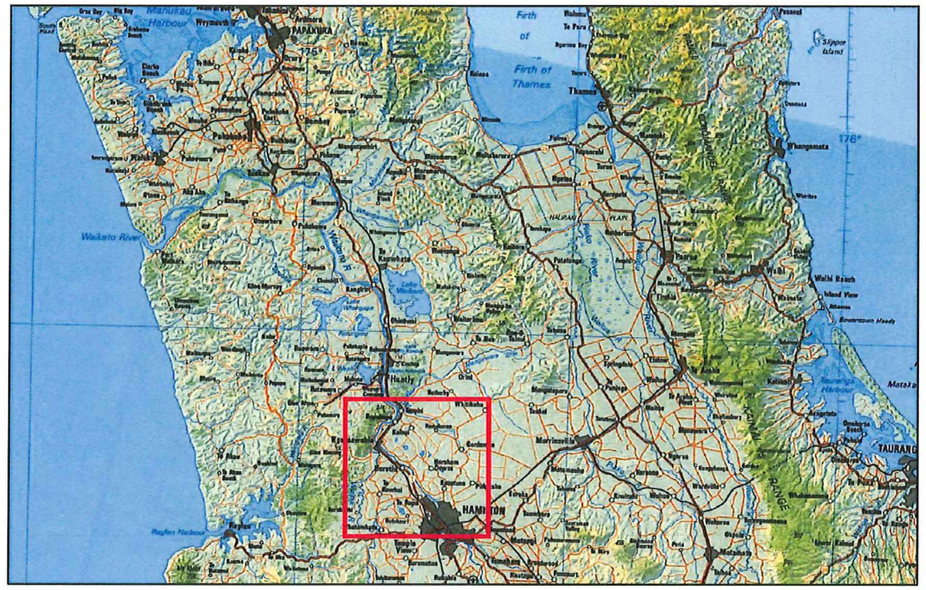
# Appendix A: Figures

- **Figure 1 – Site location plan**
- **Figure 2 – Potential HAIL sites**
- **Figure 3 – Constraint to development**




LOCATION MAP
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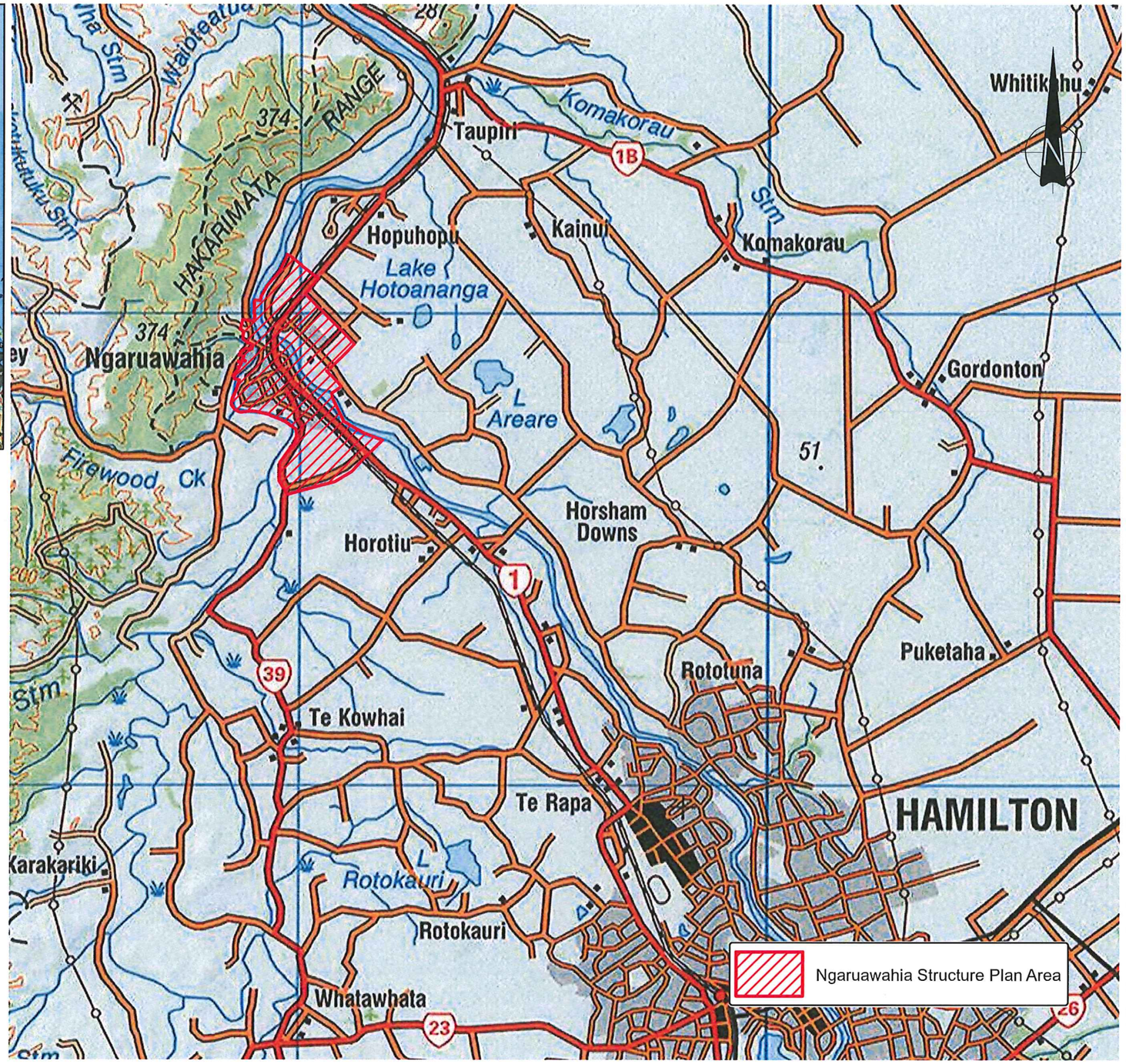


Notes: Topomaps sourced from Land Information New Zealand (Crown Copyright Reserved)

A3 SCALE 1:100,000

0 1 2 3 4 5 Kilometers

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| | | |
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| APPROVED | JMC | 6/14 |
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WAIKATO DISTRICT COUNCIL
CONTAMINATED LAND ASSESSMENT OF NGARUAWAHIA STRUCTURE PLAN AREA
Site Location Plan

FIGURE No. Figure 1 | Rev. 0

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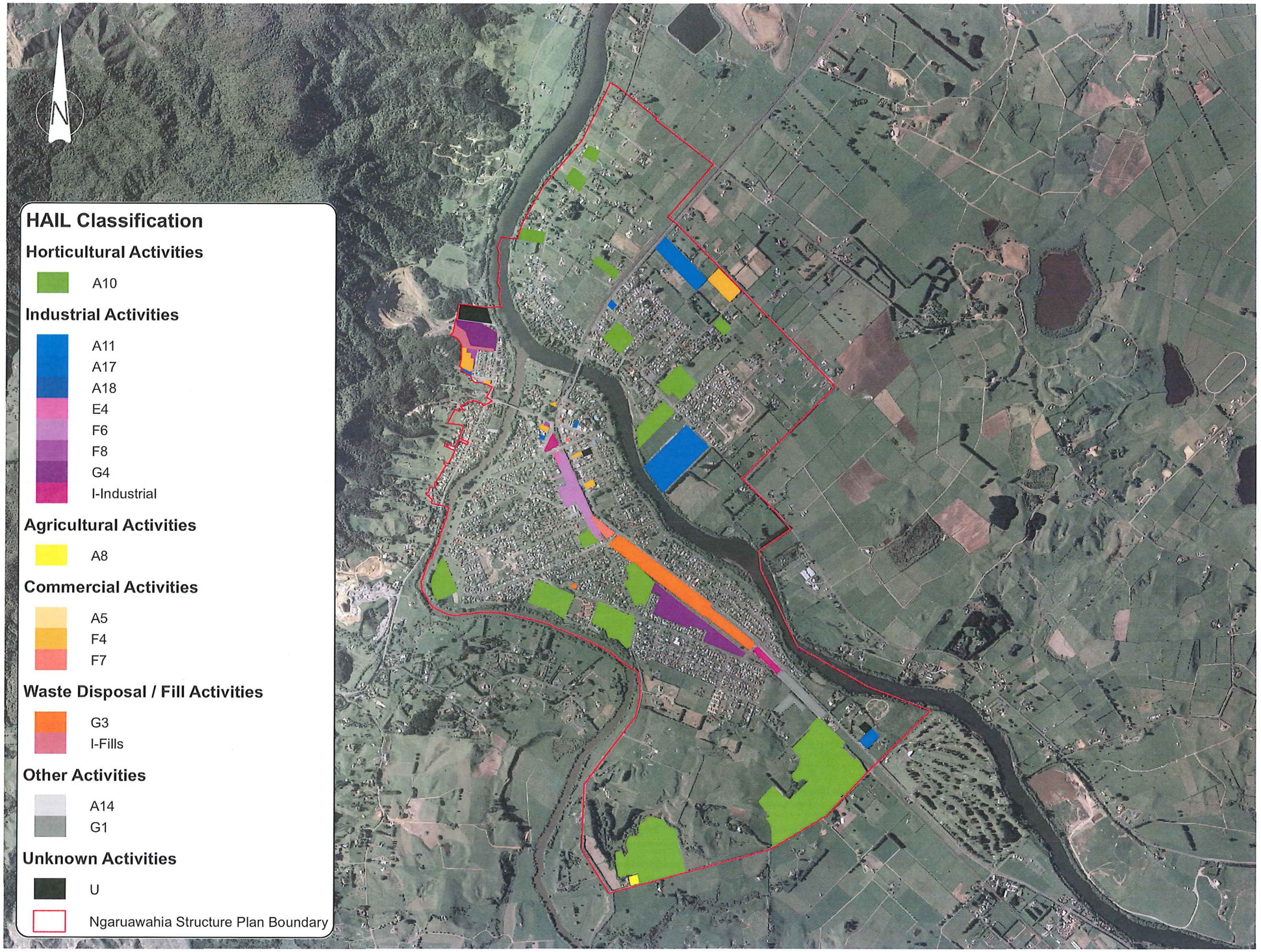


Notes: Aerial photograph Copyright 2002-2005 Terralink International Limited

A3 SCALE 1:25,000

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| PROJECT No. 61814.201 | | |

# WAIKATO DISTRICT COUNCIL
## CONTAMINATED LAND ASSESSMENT OF NGARUAWAHIA STRUCTURE PLAN AREA
Identified HAIL Sites

FIGURE No. Figure 2

Rev. 0

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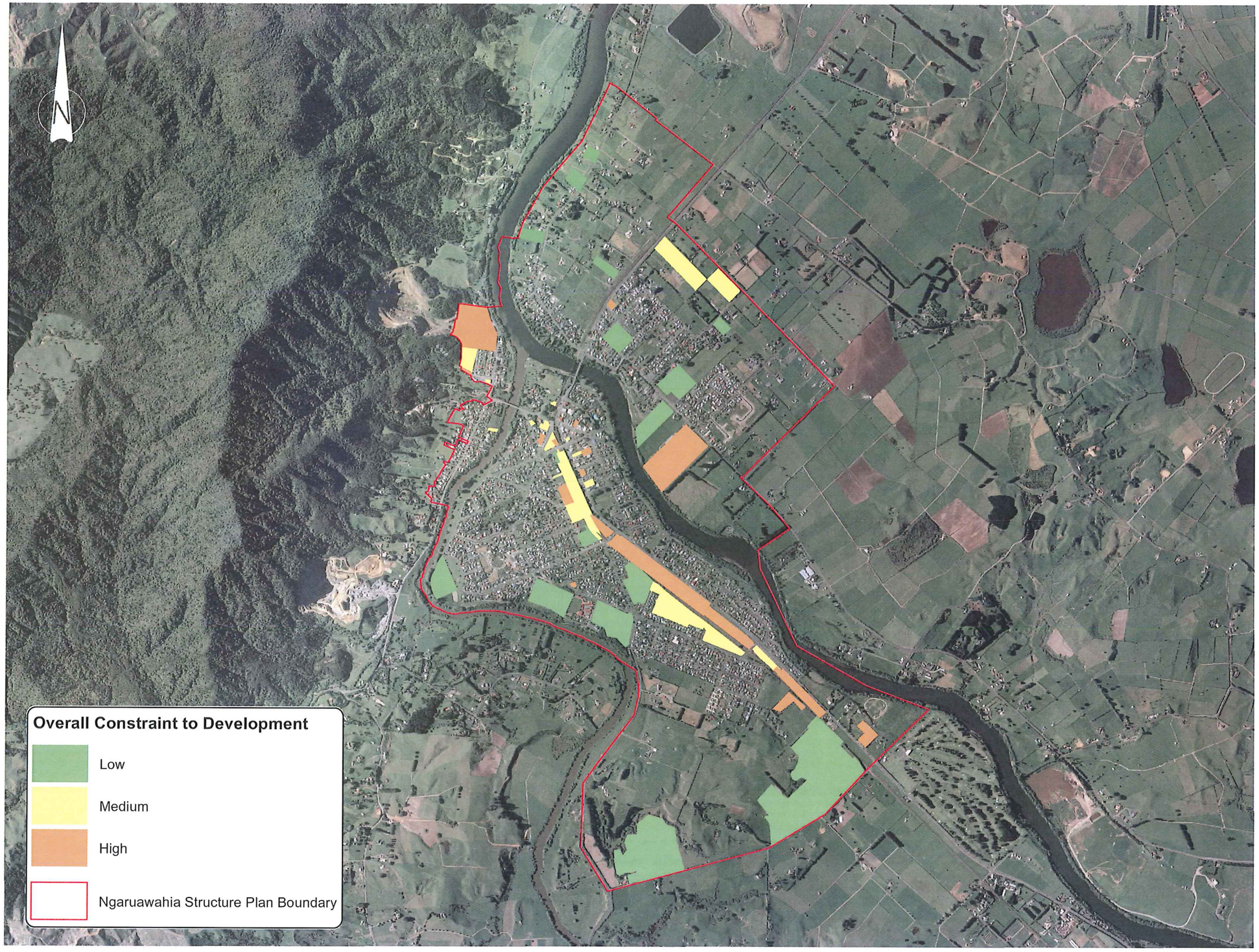


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A3 SCALE 1:25,000

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# WAIKATO DISTRICT COUNCIL
## CONTAMINATED LAND ASSESSMENT OF NGARUAWAHIA STRUCTURE PLAN AREA
Overall Constraint to Development

FIGURE No. Figure 3

Rev. 0

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# Appendix B: Summary of identified HAIL activities and potential contaminants

**List of all potential HAIL activities identified within the Ngaruawahia structure plan area**

| HAIL classification | Activity or industry | No. of sites identified[4] | Hazardous substances[1] | Potential likelihood, extent and magnitude of contamination[2] | Relative constraint to development[3] |
|---|---|---|---|---|---|
| A5 | Dry-cleaning plants including dry-cleaning premises or the bulk storage of dry-cleaning solvents | 1 | Volatile hydrocarbons including trichloroethylene 1,1,1-trichloroethane tetrachlorothene (also known as PCE), and carbon tetrachloride | Potential for significant contamination to depth in the vicinity of chemical storage tanks. Contaminants are highly mobile and may present a risk to adjacent site uses (from vapour intrusion) and | Medium to high |
| A8 | Livestock dip or spray race operations | 1 | Arsenic, organochlorines (eg, aldrin, dieldrin, DDT, lindane) and organophosphates, carbamates, and synthetic pyrethroids | High probability of significant contamination to depth in immediate vicinity of dip structure. Lower contaminant concentrations possible across wider areas associated with dipping activities. | Low to medium |
| A10 | Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds | 25 | Arsenic, lead, copper, mercury; wide range of organic compounds including acidic herbicides, organophosphates, and organochlorines (eg, endosulfan on golf and bowling greens) | Potentially low contaminant concentrations affecting near surface soils across large areas with hotspots of contamination centred around sheds and mixing/ storage areas. | Low to medium |
| A11 | Pest control including the premises of commercial pest control operators or any authorities that carry out pest control where bulk storage or preparation of pesticide occurs, including preparation of poisoned baits or filling or washing of tanks for pesticide application | 2 | Arsenic, cyanide, strychnine, mercury, phosphorus, 1080, organochlorines and organophosphates, carbamates, synthetic pyrethroids, and other commercial preparations | Variable contaminant concentrations likely across each site depending on where different activities were carried out. Potential for deep contamination if activities have been occurring for a prolonged period or if underground storage tanks were present. | Medium to high |
| A14 | Pharmaceutical manufacture including the commercial manufacture, blending, mixing or formulation of pharmaceuticals, including animal remedies or the manufacturing of illicit drugs with the potential for environmental discharges | 2 | Wide range of chemicals and solvents | Variable contaminant concentrations likely across each site depending on where different activities were carried out. Potential for deep contamination if activities have been occurring for a prolonged period or if underground storage tanks were present. | Low to medium |
| A17 | Storage tanks or drums for fuel, chemicals or liquid waste | 10 | Wide range of chemicals (organic and inorganic), and biological hazards | Wide range of activities and land uses potentailly include this activity.<br>High probability of contamination, potentially significant, in the vicinity of the storage tanks, reducing with depth and distance from the source. Potential for contamination associated with waste disposal from systems which use fuel/ chemicals, eg: boilers. Contamination may affect groundwater as well as soil. | Medium to high |
| A18 | Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside | 3 | Pentachlorophenol (PCP), copper, arsenic, chromium, boron, PAHs, phenolics (creosote), antisapstain, organochlorine pesticides, fungicides, and tributyltin (TBT) | Potential for significant contamination affecting surface and deeper soils in the vicinity of timber treatment activities. Potential for more widespread, albeit typically lower concentrations, of contamination in near surface soils across areas where treated timber has been stored outside. | Medium to high |
| E4 | Comercial concrete manufacture or commercial cement storage | 1 | Cement, calcium hydroxide, alkalis, and ammonia | Variable contaminant concentrations possible across site depending on where different activities were carried out. | Low to medium |
| F4 | Motor vehicle workshops | 14 | Hydrocarbons including PAHs, solvents, and metals contained in waste oil | Variable contaminant concentrations likely across site depending on where different activities were carried out. Potential for deep contamination if activities have been occurring for a prolonged period or if underground storage tanks were present. | Low to medium |

| HAIL classification | Activity or industry | | No. of sites identified[4] | Hazardous substances[1] | Potential likelihood, extent and magnitude of contamination[2] | Relative constraint to development[3] |
|---|---|---|---|---|---|---|
| F6 | Railway yards including goods-handling yards, workshops, refuelling facilities or maintenance areas | | 7 | Hydrocarbons including PAHs, solvents, creosote/phenols, and metals | Variable contaminant concentrations likely across site depending on where different activities were carried out. Potential for deep contamination if activities have been occurring for a prolonged period or if underground storage tanks were present. | Low to medium |
| F7 | Service stations including retail or commercial refuelling facilities | | 5 | Petroleum hydrocarbons (BTEX, PAHs) and lead | High probability of contamination, potentially significant, in the vicinity of the storage tanks, reducing with depth and distance from the source. Contamination may affect groundwater as well as soil. | Medium to high |
| F8 | Transport depots or yards including areas used for refuelling or the bulk storage of hazardous substances | | 2 | Wide variety of chemicals, dependent on products being transported | Potential for low contaminant concentrations across site with localised hotspots in areas where specific activities were carried out. Potential for deep contamination if refueling occurred on site. | Low to medium |
| G1 | Cemeteries | | 7 | Nitrates, lead, mercury, formaldehyde, and biological hazards | High probability of biological contamination within recent burial areas. Potential effects on groundwater. | Medium to high |
| G3 | Landfill sites | | 7 | Dependent on original waste composition, wide range of hydrocarbons and metals, organic acids, landfill gas, and ammonia | High probability of contamination, potentially significant, within fill material. Potential for release of landfill gas and leachate which may affect offsite receptors. | Medium to high |
| G4 | Scrap yards including automotive dismantling, wrecking or scrap metal yards | | 7 | Metals, petroleum hydrocarbons (particularly lube oils), solvents used for cleaning, and PCBs | Variable contaminant concentrations likely across site depending on where different activities were carried out. Potential for deep contamination if activities have been occurring for a prolonged period or if underground storage tanks were present. | Low to medium |
| I | Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment | I - Industrial | 1 | Dependent on industry involved | Variable contaminant concentrations possible across site depending on the industry involved and where different activities were carried out. Potential for deep contamination if activities have been occurring for a prolonged period or if underground storage tanks were present. | Medium to high |
| | | I - Fill | 6 | Dependant on source of fill | Potential for contamination within fill depending on source and composition. If volatile or mobile contaminants are present, contamination may affect offsite receptors. | Low to medium |
| - | Unknown | | 3 | Dependant on the type of activity | Unknown contamination potential. High constraint applied as a conservative approach. | High |

Notes:

1. Hazardous substances information sources from MfE NES Uers' Guide 2012
2. Potential likeihood, extent and magnitude of contamiantion based on past experience and published information regarding different HAIl activities
3. See report text for description of low/ medium and high constraint to development
4. Numbers of sites refers to numbers of shape files in the GIS database. Some sites will be duplicated across different information sources and some businesses will be counted multiple times where they cover multiple land parcels

See lsit of acronyms in report for chemical descriptions

# Appendix C: Ministry for the Environment HAIL (2011)

Ministry for the Environment
Manatū Mō Te Taiao

# Hazardous Activities and Industries List (HAIL)

**October 2011**

**A Chemical manufacture, application and bulk storage**

1. Agrichemicals including commercial premises used by spray contractors for filling, storing or washing out tanks for agrichemical application
2. Chemical manufacture, formulation or bulk storage
3. Commercial analytical laboratory sites
4. Corrosives including formulation or bulk storage
5. Dry-cleaning plants including dry-cleaning premises or the bulk storage of dry-cleaning solvents
6. Fertiliser manufacture or bulk storage
7. Gasworks including the manufacture of gas from coal or oil feedstocks
8. Livestock dip or spray race operations
9. Paint manufacture or formulation (excluding retail paint stores)
10. Persistent pesticide bulk storage or use including sport turfs, market gardens, orchards, glass houses or spray sheds
11. Pest control including the premises of commercial pest control operators or any authorities that carry out pest control where bulk storage or preparation of pesticide occurs, including preparation of poisoned baits or filling or washing of tanks for pesticide application
12. Pesticide manufacture (including animal poisons, insecticides, fungicides or herbicides) including the commercial manufacturing, blending, mixing or formulating of pesticides
13. Petroleum or petrochemical industries including a petroleum depot, terminal, blending plant or refinery, or facilities for recovery, reprocessing or recycling petroleum-based materials, or bulk storage of petroleum or petrochemicals above or below ground
14. Pharmaceutical manufacture including the commercial manufacture, blending, mixing or formulation of pharmaceuticals, including animal remedies or the manufacturing of illicit drugs with the potential for environmental discharges
15. Printing including commercial printing using metal type, inks, dyes, or solvents (excluding photocopy shops)
16. Skin or wool processing including a tannery or fellmongery, or any other commercial facility for hide curing, drying, scouring or finishing or storing wool or leather products
17. Storage tanks or drums for fuel, chemicals or liquid waste
18. Wood treatment or preservation including the commercial use of anti-sapstain chemicals during milling, or bulk storage of treated timber outside

**B Electrical and electronic works, power generation and transmission**

1. Batteries including the commercial assembling, disassembling, manufacturing or recycling of batteries (but excluding retail battery stores)

2. Electrical transformers including the manufacturing, repairing or disposing of electrical transformers or other heavy electrical equipment
3. Electronics including the commercial manufacturing, reconditioning or recycling of computers, televisions and other electronic devices
4. Power stations, substations or switchyards

**C Explosives and ordinances production, storage and use**

1. Explosive or ordinance production, maintenance, dismantling, disposal, bulk storage or re-packaging
2. Gun clubs or rifle ranges, including clay targets clubs that use lead munitions outdoors
3. Training areas set aside exclusively or primarily for the detonation of explosive ammunition

**D Metal extraction, refining and reprocessing, storage and use**

1. Abrasive blasting including abrasive blast cleaning (excluding cleaning carried out in fully enclosed booths) or the disposal of abrasive blasting material
2. Foundry operations including the commercial production of metal products by injecting or pouring molten metal into moulds
3. Metal treatment or coating including polishing, anodising, galvanising, pickling, electroplating, or heat treatment or finishing using cyanide compounds
4. Metalliferous ore processing including the chemical or physical extraction of metals, including smelting, refining, fusing or refining metals
5. Engineering workshops with metal fabrication

**E Mineral extraction, refining and reprocessing, storage and use**

1. Asbestos products manufacture or disposal including sites with buildings containing asbestos products known to be in a deteriorated condition
2. Asphalt or bitumen manufacture or bulk storage (excluding single-use sites used by a mobile asphalt plant)
3. Cement or lime manufacture using a kiln including the storage of wastes from the manufacturing process
4. Commercial concrete manufacture or commercial cement storage
5. Coal or coke yards
6. Hydrocarbon exploration or production including well sites or flare pits
7. Mining industries (excluding gravel extraction) including exposure of faces or release of groundwater containing hazardous contaminants, or the storage of hazardous wastes including waste dumps or dam tailings

**F Vehicle refuelling, service and repair**

1. Airports including fuel storage, workshops, washdown areas, or fire practice areas
2. Brake lining manufacturers, repairers or recyclers
3. Engine reconditioning workshops
4. Motor vehicle workshops
5. Port activities including dry docks or marine vessel maintenance facilities

6. Railway yards including goods-handling yards, workshops, refuelling facilities or maintenance areas
7. Service stations including retail or commercial refuelling facilities
8. Transport depots or yards including areas used for refuelling or the bulk storage of hazardous substances

**G Cemeteries and waste recycling, treatment and disposal**

1. Cemeteries
2. Drum or tank reconditioning or recycling
3. Landfill sites
4. Scrap yards including automotive dismantling, wrecking or scrap metal yards
5. Waste disposal to land (excluding where biosolids have been used as soil conditioners)
6. Waste recycling or waste or wastewater treatment

**H Any land that has been subject to the migration of hazardous substances from adjacent land in sufficient quantity that it could be a risk to human health or the environment**

**I Any other land that has been subject to the intentional or accidental release of a hazardous substance in sufficient quantity that it could be a risk to human health or the environment**

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ENVIRONMENTAL AND ENGINEERING CONSULTANTS

This Landscape Assessment report of the Ngaruawahia & Surrounds Study Area has been prepared for Waikato District Council (WDC), by Mansergh Graham Landscape Architects Ltd.

# Ngaruawahia Study Area | Assessment of Landscape, Visual and Amenity Effects

Report Version: R2
May 2014

This Landscape Assessment Report of the Ngaruawahia and Surrounds Study Area has been prepared for Waikato District Council (WDC), by Mansergh Graham Landscape Architects.


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BLA (Hons)

Report checked by:

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Director

Registered Member
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New Zealand Institute of Landscape Architects.



Report Version: 260514/R2

Date: May 2014

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# BACKGROUND

## Ngaruawahia and Surrounds Structure Plan

The Waikato District Council is currently developing a Structure Plan for Ngaruawahia. The primary drivers for this structure plan are the Future Proof and Waikato District Growth Strategy document. Population figures within this document indicate potential for rapid growth in Ngaruawahia, requiring the creation of a Structure Plan to manage the growth within the Ngaruawahia Study Area.

In order for the Ngaruawahia Structure Plan Strategy to remain flexible while facilitating growth and development, the following areas have been identified and considered:

Town Boundaries: The identification of landscape opportunities and constraints to identify areas within which Ngaruawahia Township and surrounding villages might be urbanised without compromising Outstanding Natural Features and Landscapes (ONFLs), landscape character and associated landscape amenity values;

Scale: The scale and intensity of development that can be accommodated without compromising landscape amenity values;

Function: The identification of how the Ngaruawahia Township and surrounding satellite villages function both internally, and within the context of the wider landscape. This includes an allowance for legibility and integration into the surrounding rural/market gardening and horticultural environment;

Methods : The methods required to maintain and enhance the character, scale and atmosphere of the township and its surrounds.

# PROJECT BRIEF

## Ngaruawahia Study Area

In 2013, Mansergh Graham Landscape Architects Ltd (MGLA), were engaged by Waikato District Council (WDC) to undertake a Landscape Assessment of the Ngaruawahia and surrounds study area in order to inform the Ngaruawahia and Surrounds Structure Plan (being prepared by WDC).

The overall purpose of the landscape assessment was to carry out an Outstanding Natural Features Landscapes assessment (ONFL) and identify landscape opportunities and constraints to the future growth of the Ngaruawahia and surrounds study area. Affirming the boundaries/ extent of the township and indicating the controls required to maintain and enhance the rural character and amenity values will also be undertaken. The outcomes of this assessment will be used to inform the preparation of a Structure Plan for Ngaruawahia.

This report addresses:

- Whether there are any ONFL's within the Ngaruawahia Study Area;
- The directions in which the township should expand (from a landscape perspective);

This work has been guided by the set of principles outlined below, in addition to the requirements of the Resource Management Act 1991, the Waikato Regional Poicy Statement, The Waikato District Plan and the Waikato District Growth Strategy.

The approach and stages involved in the Ngaruawahia Landscape Assessment Study are set out below:

**Stage One: Project Establishment**

- Meet with the Ngaruawahia and surrounds project team to discuss the project brief;
- Site visit to the Ngaruawahia and surrounds study area.

**Stage Two: Rationalisation and Integration of Existing Information**

- Review existing information relevant to the project including the Waikato District Growth Strategy, Open Space, Recreation and Public Facilities Technical Paper, Settlement Patterns, Spatial Structure and Development Character Technical Paper the Waikato District Landscape Evaluation (1992) and teh Waikato District Landscape Review (2003);

- Liaise with urban design, heritage and archaeological consultants and discuss constraint mapping;
- Identify wider landscape character units;
- Analysis of the character of Ngaruawahia and surrounds to identify and map key landscape features and attributes;
- Identification of landscape opportunities and constraints;
- Identification of infrastructural opportunities and constraints;
- Review existing development strategies and proposals;
- Review Community outcomes of community workshop/ open-days and resultant development strategies/ concept plans;
- Presentation of preliminary findings and maps to Project Team for comment and feedback.

**Stage Three: Analysis of landscape opportunities and constraints**

- Identification of township growth boundaries guided by a rationalisation of the visual amenity and landscape character assessment and the constraint analysis;
- Review the potential growth area maps and determine whether any special protection or development areas are required to retain particular character and amenity and Resource Management Act tested District Plan provisions for protection of wider landscape character;
- Undertake analysis, combining landscape character and landscape constraint mapping to inform areas suitable for urbanisation
- Identification of urban amenity determined by the infrastructural opportunities and constraints (distance analysis);
- Meet with the project team to discuss and compare analysis and receive comments and feedback on potential areas of Ngaruawahia suitable for urbanisation;
- Review and amend as required;
- Presentation of preliminary analysis map findings to the Waikato District Council representatives for comment and feedback;
- Produce an outcome analysis map indicating suggested growth areas and suggested development intensities within theses growth areas;
- Compare the outcome analysis map with the community driven concept plan and identify common areas for urban expansion.

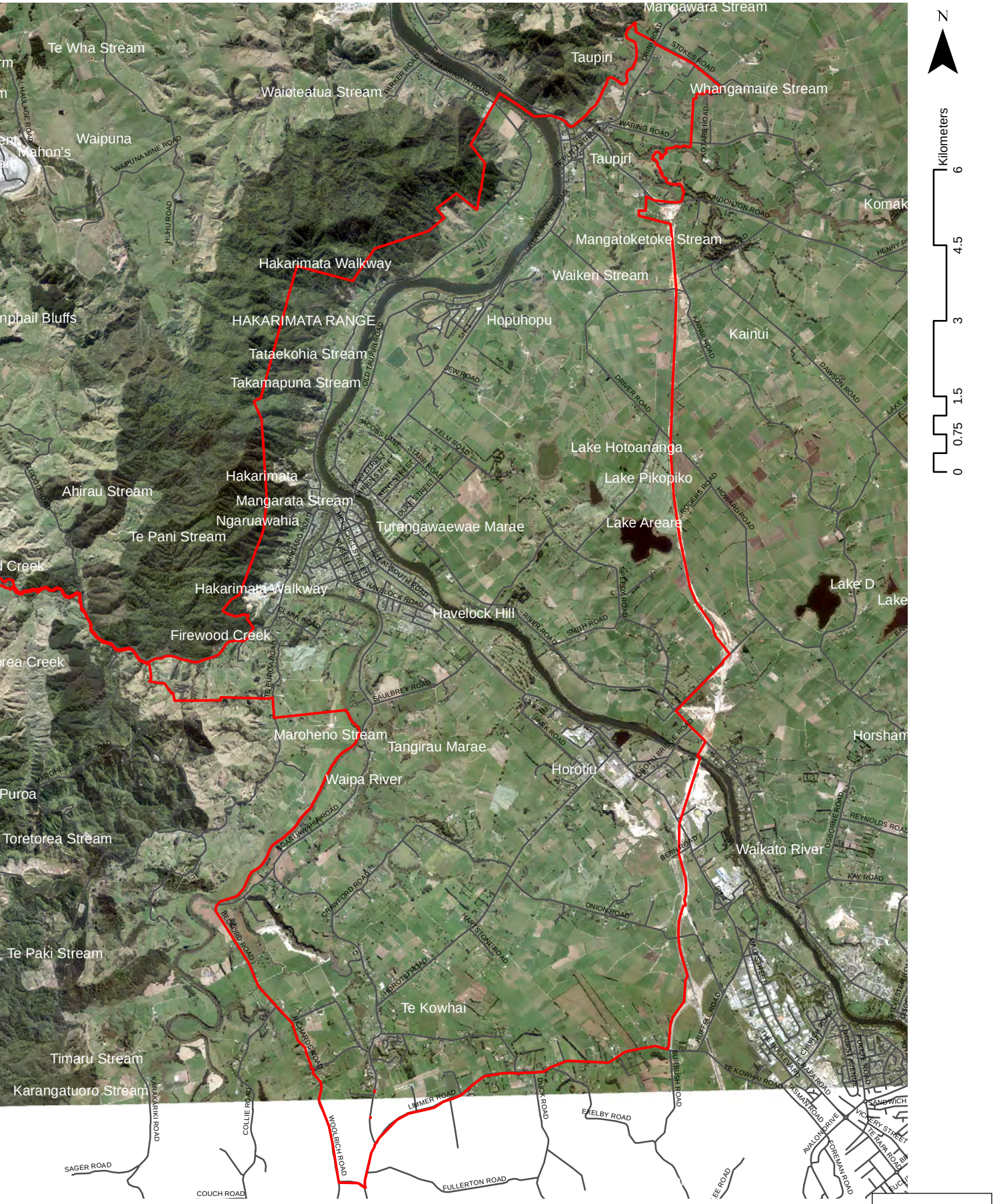
**Stage Four: Reporting**

- Presentation of Ngaruawahia Landscape Assessment (including written report and GIS data) to the Waikato District Council

**The Ngaruawahia and surrounds study area**

The extent of the Ngaruawahia and surrounds study area, identified by the Waikato District Council, is defined by both natural and cultural boundaries, including the Waikato and Waipa Rivers, peat lakes, the Hakarimata and Taupiri Ranges, remnant patches of vegetation, gully systems, roads, and cadastral boundaries. The adjacent plan indicates the extent of the Ngaruawahia and surrounds study area.

While this report limits its findings to within the study area, parts of the adjoining lansdcpe that influences the study area has been taken into account.


Mangawara Stream
Te Wha Stream
Taupiri
Waioteatua Stream
Whangamaire Stream
Waipuna
Mahon's
Taupiri
Komak
Mangatoketoke Stream
Hakarimata Walkway
Waikeri Stream
HAKARIMATA RANGE
Hopuhopu
Kainui
Tataekohia Stream
Takamapuna Stream
Lake Hotoananga
Lake Pikopiko
Hakarimata
Ahirau Stream
Mangarata Stream
Ngaruawahia
Turangawaewae Marae
Lake Areare
Te Pani Stream
Hakarimata Walkway
Lake D
Havelock Hill
Firewood Creek
Maroheno Stream
Tangirau Marae
Horsham
Horotiu
Waipa River
Puroa
Toretorea Stream
Waikato River
Te Paki Stream
Te Kowhai
Timaru Stream
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Study Area

# METHODOLOGY

## Ngaruawahia Structure Plan Study Area

An interactive assessment approach has been used, which assesses the study area to:

a) identify any ONFL's within the study area (s6b landscapes)and;
b) Indicate those factors and attributes that contribute to existing landscape and urban amenity

The approach used is summarised in the following flow charts.

This has been achieved by capturing and analysing the landscape character, associated amenity values and landscape constraints, while considering the aspirations of the Ngaruawahia and surrounds community. It is considered that this will allow Ngaruawahia Township and the surrounding satellite villages to develop in a controlled and sustainable manner, without detrimental affects to surrounding rural amenity values.

During the initial stages of analysis (ONFL analysis), findings of the relevant technical papers provided by WDC were reviewed, followed by site investigation to determine whether there were any ONFL within the Ngaruawahia and surrounds study area. Existing landscape and town character; as well as key natural thresholds; were identified on a macro level for the landscape surrounding Ngaruawahia Township and each of the satellite villages. Potential areas for urbanisation were then identified through a combination landscape constraint and opportunity identification and analysis; landscape character analysis and landscape design; and planning principles. The resultant map was then compared and tested against the outcomes of the public consultation (Concept Plan) process.

The Ngaruawahia and surrounds landscape has been assessed through the following process:

- Review of relevant technical papers, background information and reports;
- Identification of Outstanding Natural Features and Landscapes, through field analysis;
- Identification and analysis of existing landscape character through field investigation and GIS landuse classification mapping;
- Identification of township growth boundaries guided by a rationalisation of the natural features and edges, identified during site visits;
- Identification of Community preferences;

- GIS identification and analysis of landscape constraints and opportunities;
- Application of landscape and urban design principles to determine opportunities and constraints;
- Identification of potential areas of growth for Ngaruawahia based on the principles of landscape design (considered through landscape constraints and opportunity mapping)
- Identifying national, regional and district planning provisions to inform landscape opportunities and constarints for growth within the study area.
- Review of existing Ngaruawahia development concepts (based on community preference) and compare with the areas for potential urbanisation map;
- Identification of the potential effect development would have on the landscape character attributes identified;
- Recommendations of appropriate areas for development at an intensity that is appropriate to the character, scale and atmosphere of Ngaruawahia;

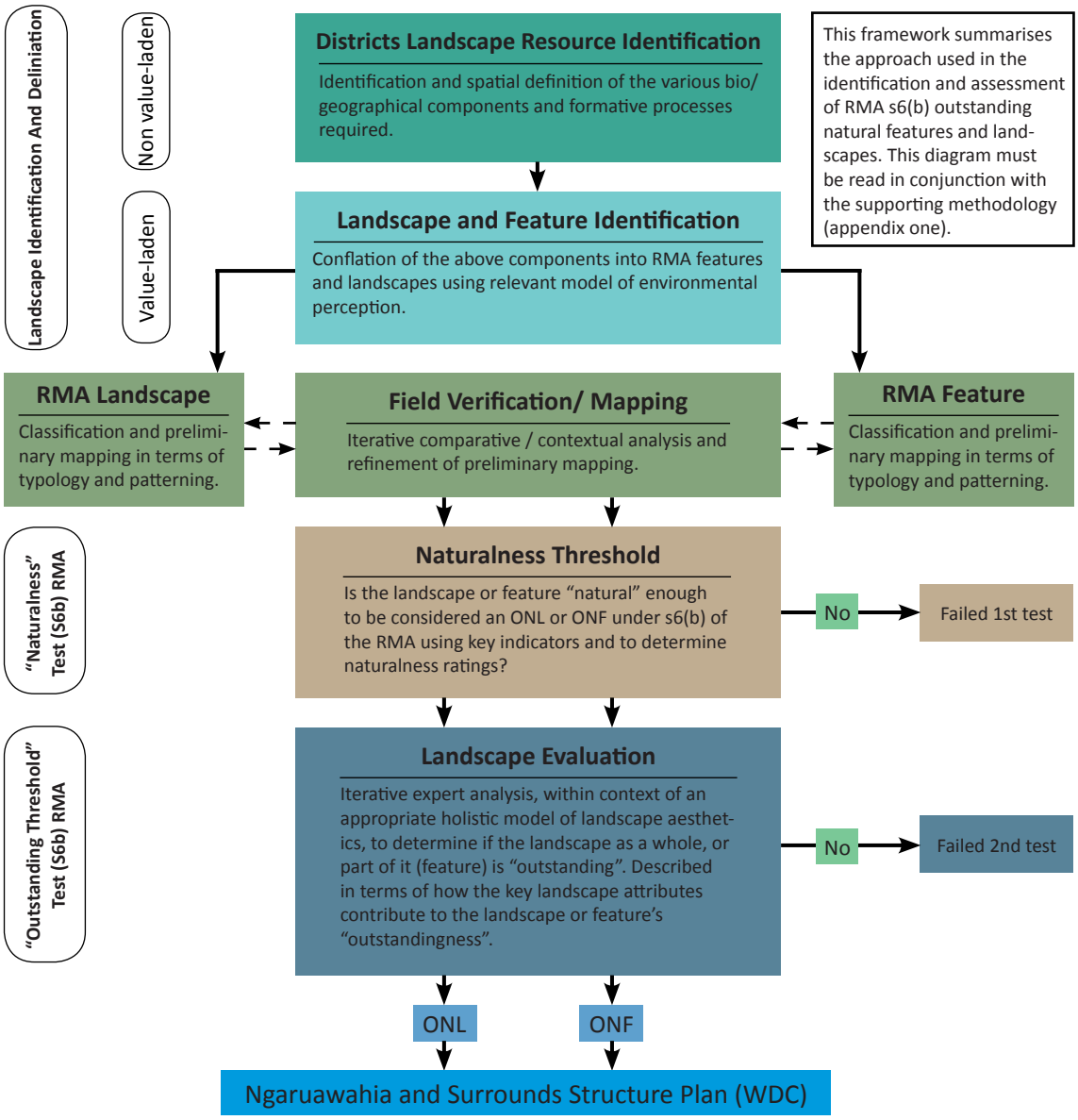
The following landscape analysis, management and design principles have been taken into consideration.

Principles for the Ngaruawahia Landscape Assessment:

- Planned growth that takes into account the unique character, geophysical and infrastructure constraints;
- Protection of landscape values and character, in particular the rural/market gardening character of the township and the Ngaruawahia environs;
- Protection of visual amenity values associated with the surrounding rural landscape character;
- Environmental sustainability of any expansion of the township - including the capabilities for utility and social infrastructure provision;
- Effects on water quality;
- Ensuring that any development maintains and enhances the individual character, community identity, cultural heritage and environmental integrity of the township;
- Ensuring that any development avoids the fragmentation of existing rural economic, social and cultural networks;
- The sequencing of all new growth should be co-ordinated with the provision or upgrading of new infrastructure.

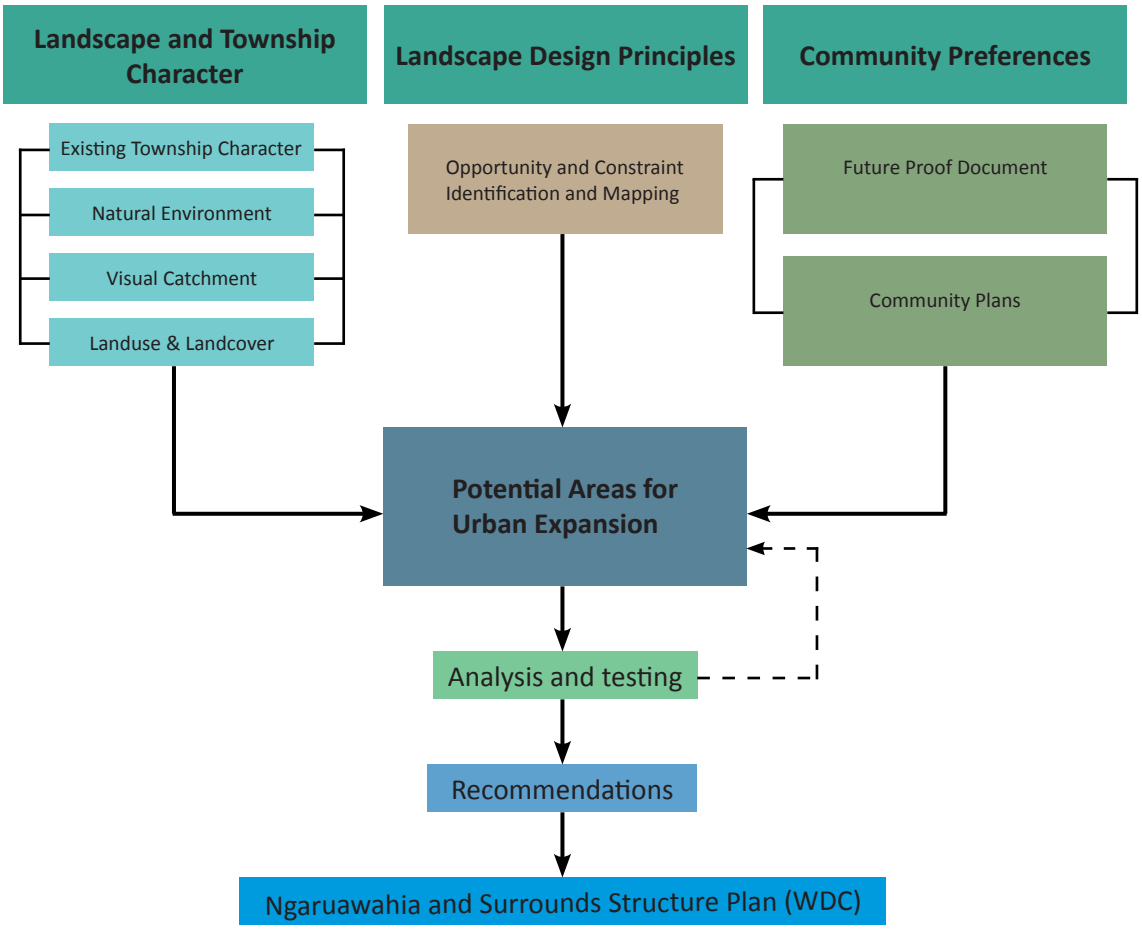
# METHODOLOGY

## ONFL Flow Chart



# METHODOLOGY

## Amenity Landscape Flow Chart



# REVIEW OF TECHNICAL PAPERS

## Landscape Assessment

An initial review of relevant technical papers has helped to inform landscape character and broader landscape patterns of Ngaruawahia and surrounds. Relevant reports included:

- Future Proof Document[1];
- Waikato District Council Growth Strategy[2];
- Ngaruawahia Township Development Plan[3];
- Landscape Policy Areas[4];
- Ngaruawahia Structure Plan: Preliminary Assessment Scoping Report[5];
- Draft Community Plans.

The Future Proof document suggests that the district faces intense pressure for growth and for Ngaruawahia this new residential growth is in response to the development of an employment hub at Horotiu. The document also indicates that Ngaruawahia needs to retain its individual identity as a distinctive town.

Waikato District Council Growth Strategy indicates that future development should occur to the south and east of Taupiri village, due to the constraints of the expressway and state highway development. In Ngaruawahia, the report states that there will be particular opportunity for future development where a residential neighbourhood could be specifically designed to relate to its setting and of a density that will support viable public transport services. The intensification will be supported by appropriate urban design standards for high quality and mid-density developments. A greenbelt will be developed between Horotiu and Ngaruawahia in order to protect the separate identity of the two towns and promote the cultural significance of Ngaruawahia.

In Horotiu there is considerable pressure for further residential and industrial development. The growth strategy needs to give direction to such market pressure and provide a context for further investment in necessary infrastructure. This growth will be largely through light

1 Hamilton City, Waipa District, Waikato District, Environment Waikato, Matamata Piako, NZ Transport Agency & Nga Karu Atua o te Waka; (2009). *Growth Strategy & Implementation Plan*.
2 Waikato district Council; (2009). *Waikato District Growth Strategy*.
3 OPUS International Consultants and Waikato District Council; (2004). *Ngaruawahia Township Plan*.
4 Boffa Miskell; (2011). Waikato District Council: Landscape Policy Areas.
5 Waikato District Council; (2013). *Ngaruawahia Structure Plan: Preliminary Assessment Scoping Report.*

industrial and commercial development. Expansion of Horotiu village, particularly to take advantage of proximity to the river, will contribute towards increasing the local labour supply.

Following the Ngaruawahia and Te Rapa Bypasses and the potential realignment of State Highway 39, future development within Te Kowhai will have the potential to consolidate and enhance the village core.

The Ngaruawahia Township Development Plan indicates an importance of linking key nodes into a greenbelt that surrounds the town. The report recognises that Ngaruawahia has an outstanding setting, particularly noticeable when entering the township from the north, where views of the Hakarimata Range and of the confluence of the Waipa and Waikato Rivers can be appreciated. The report suggests that the transition from the rural to urban environment should be emphsised through key gateways, through the use of large scale structured planting that contrasts with the rural vegetation and more urban elements such as the Ngaruawahia Bridge, footpaths and kerbing. The report also suggests that a strong environment change and sense of closure between the countryside and the township should be created with any future development.

The Landscape Policy Areas report examines the accuracy of the outstanding landscape natural boundary of the Hakarimata Range. The report included a re-mapping of the ONFL boundary to follow the edge of the intact native vegetation which is contiguous with the Hakarimata Range.

In the Ngaruawahia Structure Plan: Preliminary Assessment Scoping Report, detailed analysis of the existing landscape has been provided (including the underlying geology and key landscape features within the study area). This background information has aided in determining the existing landscape character and amenity of the Ngaruawahia study area.

The Ngaruawahia Draft Community Plan, Taupiri Community Plan, Glen Massey Community Plan (2007 - 2017) and Te Kowhai Community Plan indicate key community aspirations for the development of Ngaruawahia Township and surrounding villages, which have been summarised in the following pages.

# COMMUNITY PREFERENCES

## Ngaruawahia Structure Plan Study Area

**Ngaruawahia**
The key community issues identified during community consultation which relate to landscape include:

- A desire to protect and enhance natural resources for future generations;
- A desire to effectively manage growth
- Promote Ngaruawahia as a destination incorporating the Hakarimata Ranges, Waipa and Waikato rivers
- Focus on making Ngaruawahia a tourist route and a cultural and heritage corridor (aim to make the township the cultural and heritage capital of New Zealand);
- Promote Ngaruawahia as a destination for its parkland, recreational value and natural features (Hakarimata Ranges) and rivers (Waipa and Waikato);
- Making the most of the natural areas eg Hakarimata, the rivers and the peat lakes;
- Enhancement of the Waikato and Waipa rivers;
- Promote the regional park by developing a gondola concept into the Hakarimata's

The Ngaruawahia community view the landscape as having high scenic values, including landscape ridges and hilltops, riparian areas, high natural conservation value of outstanding natural features, remnant or regenerating lowland forest and wetland areas. The community wish for gully restoration to be undertaken (Newton Street) and plant isolated pockets of Council-owned land. They also wish to eradicate weeds and establish native plantings on the riverbanks and stop quarry defacing hillside and rehabilitate with indigenous species. Ensure commercial/industrial activities do not have an adverse effect on the surrounding landscape (including the Waipa and Waikato Rivers and their tributaries as well as peat lakes).

**Te Kowhai**
The Te Kowhai community have a desire to retain a village character within a rural setting.

They want to upgrade and maintain the gully system through the village, continue planting of Kowhai trees for beautification purposes and establish esplanade reserves when they arise through subdivision. There is a desire to obtain additional land around the existing village to protect it from development.

**Glen Massey**
The Glen Massey community want for any future development to respect the environment and preserve the unique village heritage.

**Taupiri**
The Taupiri community are interested in reviewing the Country Living Zone around the village and promoting river walkways/development of the riverbanks. The community has pride in its surrounding environment. They wish to promote the importance of the Waikato River by ensuring waterways and connections are clean and they wish to identify the cultural significance and iconic status of Taupiri Mountain. The community have requested planting within and surrounding the village, to improve amenity and to ensure managed expansion of residential development.

These community preferences were compared with landscape design and planning principles (page 42 of this report) and were found to be generally consistent with those principles. The community preferences were therefore taken into consideration during landscape sensitivity and landscape constraint mapping.

A comparison between the community preference concept plan and the recommendations of this report included on page 75.

# NGARUAWAHIA ONFL ASSESSMENT

## Outstanding Natural Landscapes and Features (ONFL)

A methodological approach consistent with the recent findings of the environment court[6] was utilised to ascertain whether the landscape contained any Outstanding Natural Features or Landscapes (refer to appendix one of this report for full ONFL methodological approach). This included an initial identification and spatial definition of the bio/geographical components and formative processes, classification and mapping in terms of typology and patterning, iterative comparative and contextual analysis, through site investigation and desktop analysis.

The first test: the "naturalness threshold" test was then applied to the landscape, using key indicators to determine naturalness ratings. The second test being the "landscape evaluation" test was then applied through iterative analysis, within the context of a holistic model of landscape aesthetics to determine if the landscape as a whole, or part of it (feature) was "outstanding".

The outcome of this analysis was that the majority of the landscape surrounding Ngaruawahia Township and Taupiri, Hopuhopu, Glen Massey, Horotiu and Te Kowhai Villages, (with the exception of the Hakarimata Range, Waikato and Waipa River's) did not pass the first "naturalness threshold" test, as the predominantly pastoral landscape was found to be too highly modified by human processes.

The Hakarimata Range and sections of the Waikato River have been identified as Landscape Policy Areas (Outstanding Natural Features and Landscapes) within the Operative Waikato District Plan (OWDP).

Although the Taupiri Range is located outside of the study area, it is an important feature which aids in forming the unique character of the Taupiri village (as discussed in the landscape character section of this report. The Taupiri Range has been identified as a Landscape Policy Area (outstanding natural landscape) under the OWDP.

6 High Country Rosehip Orchards v MacKenzie District Council (Decision No [2011 NZEnvC 387)

While the ridgeline policy areas identified in the OWDP identify areas sensitve to developmental change, no specific amenity landscapes have been identified or mapped through the ONFL assessment process, however; landscape character and constraint analysis mapping and evaluation of the landscape surrounding Ngaruawahia and the surrounding satellite villages did identify subtle differences in landscape character as well as landscape character thresholds more sensitive to change. These subtle character differences are discussed in the following Landscape Character section of this report.

Through the application of the above ONFL methodology, the Hakarimata Range was confirmed as an ONL. Formative processes are legibly expressed and the Hakarimata Range sits prominantly above the Waikato and Waipa River's and surrounding plains of the Waikato basin (to the west, south and east). The immense size of the Hakarimata Range is exaggerated by the relatively flat-gently rolling terrain of the Waikato Basin to the east and southeast and the lower elevation of the hill country to the south and west. The spatial arrangement and relationship is simple, with the majority of the range covered in mature and regenerating indigenous vegetation. The combination of these landscape perception factors come together to create an outstanding natural feature.

Future development inside the Ngaruawahia and surrounds study area could affect amenity values derived from the natural character of the Waipa and Waikato River's. With regard to the Operative Waikato District Plan (OWDP), parts of the Waikato River have been identified as ONFL, protected by the provisions of the Policy Area. The Waikato Regional Policy Statement (WRPS) is currently under appeal. The entire length of the river was previously identified and mapped as an Outstanding Natural Feature in the draft version of the WRPS; but was later removed and does not appear in the Decisions version of the WRPS.

If the Waikato River was assessed on a section by section basis it is considered that the likelyhood of it being outstanding is low. However, in its entirety the river could possibly be identified as an outstanding natural feature (ONF), due to its impressive length and connection through a wide range of landscapes from Taupo to Port Waikato. Determining whether the entire Waikato River is an ONF is outside the scope of this study.

For the basis of this landscape assessment; the Waikato and Waipa River's and their margins have been assessed as a "Sensitive Landscape Area", which is unsuitable for development.

# LANDSCAPE CHARACTER

## Wider Ngaruawahia Landscape Character

Landscape character is a function of the landscapes visual expression. This includes elements that contribute to its appearance and the cultural modifications which have occurred upon it.

The landscape and visual quality of the site is a function of a series of factors including intactness of visual and physical elements such as topography and vegetation cover, the degree of modification that has occurred and surrounding landscape elements and attributes. Further contributing factors include juxtaposition and coherence between landscape elements within the subject site and those of the surrounding area, as well as human attributes or values assigned to an area.

The relationship between the major geophysical features contained within the broader landscape and the human modifications that have occurred upon them are important factors to consider when assessing how the proposed development will influence surrounding landscape character and the amenity derived from that character.

Ngaruawahia Township is located along Great North Road, approximately 7.25km northwest of Hamilton City boundary and 15km south of Huntly. Hopuhopu is located approximately 6 km northeast, Glen Massey approximately 9.5km west, Taupiri, 7.5km northeast, Te Kowhai 10km south and Horotiu, 5.6km southeast of Ngaruawahia.

The majority of the study area is characterised by the underlying Waikato plains/lowlands, which are bounded by the Hakarimata Range and Te Puroa hill country to the west and Taupiri Range to the north. The Main township of Ngaruawahia is enclosed to the north by the confluence of the Waikato and Waipa Rivers. The Waipa River bounds the urban environment to the west, while the Waikato River contains the majority of development to the east.

The lowlands to the east Ngaruawahia consists of a broad alluvial plain with prominent, widely spaced, rounded hills, interspersed with peat mires, peat lakes and deep gully formations. Most of the lowland geological features were derived from the deposition of pyroclastic material following the Taupo volcano eruption approximately 22,000 years ago and the various routes adopted by the Waikato River over that time. Subtle changes in elevation and undulations in landform are clearly evident due to the pastoral land cover. Peat mires and lakes developed

in blocked embayments and low areas of the plain and are typically surrounded with lake margin vegetation, and juxtapose the geometric patterns associated with the subdivision of the surrounding rural landscape.

The alluvial Waikato and Waipa Rivers, flow through flood plains that have been created by depositing sediment. The largest, the Waikato, begins on Mt Ruapehu, flowing from Lake Taupo across the Volcanic Plateau, into the Waikato basin and out to the Tasman Sea at Port Waikato. Its major tributary, the Waipa River, rises in the Rangitoto Range in Otorohanga. The two rivers converge at Ngaruawahia. An extensive network of tributary streams from the hill country feed into both of the rivers[7].

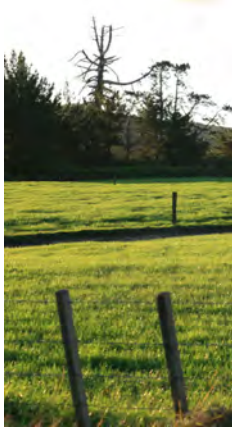
The relatively flat river terracing adjacent to the Waikato and Waipa Rivers is influenced by the fluvial deposition associated with the rivers. While some of the larger old river channels are evident in the wider surrounding landscape, many of the smaller and more subtle landforms and features associated with overland flow patterns have either been channelised or lost to productive land management practices such as agriculture, market gardening and horticulture. Spurs and ridges within Ngaruawahia are clearly ledgible due to pastoral landcover across much of the study area.

Much of the Wetlands along the banks of the Waikato and Waipa Rivers have been drained and converted to pastoral farmland. However, remnant stands of Kahikatea and other indigenous vegetation are scattered in clusters along the river banks.

The Hakarimata and Taupiri ranges are formed on basement greywacke and argillite rock, which have been strongly folded, faulted and overlain by a generally thin cover sedimentary rock[8]. Erosional processes usually act on a thick mantle of weathered rock and clay to form close-set steep-sided valleys. Sandstone, siltstone and greywacke which have been strongly folded; faulted and overlain by sedimenatry rocks form the Hakarimata Range and adjacent land1[9].

A cloak of indigenous forest covers the majority of the Hakarimata Range, with a skirt of pastoral farmland and low-density development along the base of the range. The immense size of the Hakarimata Range is exaggerated by the relatively flat-gently rolling terrain of the Waikato Basin to the east and southeast. The size and distinctive form of the ranges is more difficult to appreciate from the steeper hill country surrounding Glen Massey to the west of the Hakarimata's.

7 Waikato District Council; (2013). *Ngaruawahia Structure Plan Scoping Report.*
8 http://www.doc.govt.nz/parks-and-recreation/places-to-visit/waikato/waikato/hakarimata-scenic-reserve/Edbrook;
9 Edbrook; S. W; (2005). *Geology of the Waikato Area.*



Ngar

Ngar

Favourable topography and climate means that the land within the Ngaruawahia and surrounds study area is well suited to a wide range of productive uses including pastoral grazing, poultry farms, forestry and pockets of crop production (such as cornfields). This has influenced the landscape characteristics of the land surrounding the Ngaruawahia Township, which can be described as a productive rural landscape.

Rural land use surrounding the site influences the character and visual amenity of the area. Pastoral grazing is the predominant land use and imparts the wider landscape with a largely open spatial character. A degree of compartmentalisation is provided by Hedgerows, (e.g. Hawthorne) and exotic shelter planting, (e.g. Poplar, and Willow) on property and paddock boundaries, which enclose views to the broader landscape from some locations. It is noted that a number of the shelter trees in the surrounding landscape are deciduous. As such, during the winter months, the landscape within the Ngaruawahia and surrounds Study Area has a more open character than when the trees are in leaf.

A juxtaposition can be seen within the landscape between the natural form of the of water bodies (Waikato River), the Hakarimata/ Taupiri Ranges, the remnant bush patches and the geometric patterns associated with the subdivision and compartmentalisation of the rural landscape and urban environment.

Natural resources include hard rock aggregate, sand, gravel, non-productive coal measures, thermal hot springs and high quality soil resources (primary productivity). Therefore; a number of quarries operate within the Ngaruawahia Structure Plan Area:

- Clay and hard rock quarry at the southern end of the Hakarimata Range along Waingaro Road
- Three sand and/or shingle quarries; two at Horotiu and one near Te Kowhai and a disused hard rock quarry at the base of the

A https://natlib.govt.nz/records/23197907?search%5Bpath%5D=items&search%5Btext%5D=ngaruawahia
B https://natlib.govt.nz/records/23077726?search%5Bpath%5D=items&search%5Btext%5D=ngaruawahia
C https://natlib.govt.nz/records/22881601?search%5Bpage%5D=3&search%5Bpath%5D=items&search%5Btext%5D=ngaruawahia
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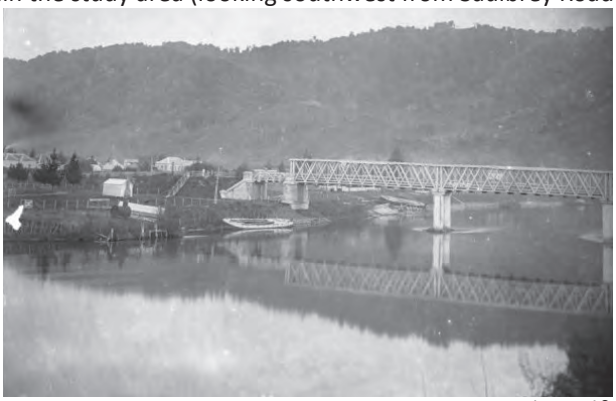
Open pastoral landscape character within the study area (looking northeast from State Highway 39)

Waikato Basin enclosed by surrounding hill country to the southwest within the study area (looking southwest from Saulbrey Road

uawahia Township (1972)[A]

Ngaruawahia Township (1970)[B]



Waikato River, Ngaruawahia Township (1890)[C]

uawahia Township (1979)[D]

Ngaruawahia Township (1968)[E]

Ngaruawahia Township (1955)[F]

Hakarimata range, directly opposite The Point at the northern end of Ngaruawahia[10].

The relationship between the major geographical features contained within this landscape and the human modifications that have occurred upon them are important factors to consider when assessing how the proposed development will influence existing amenity values and the natural character of the adjacent rural environment and surrounding outstanding natural landscape.

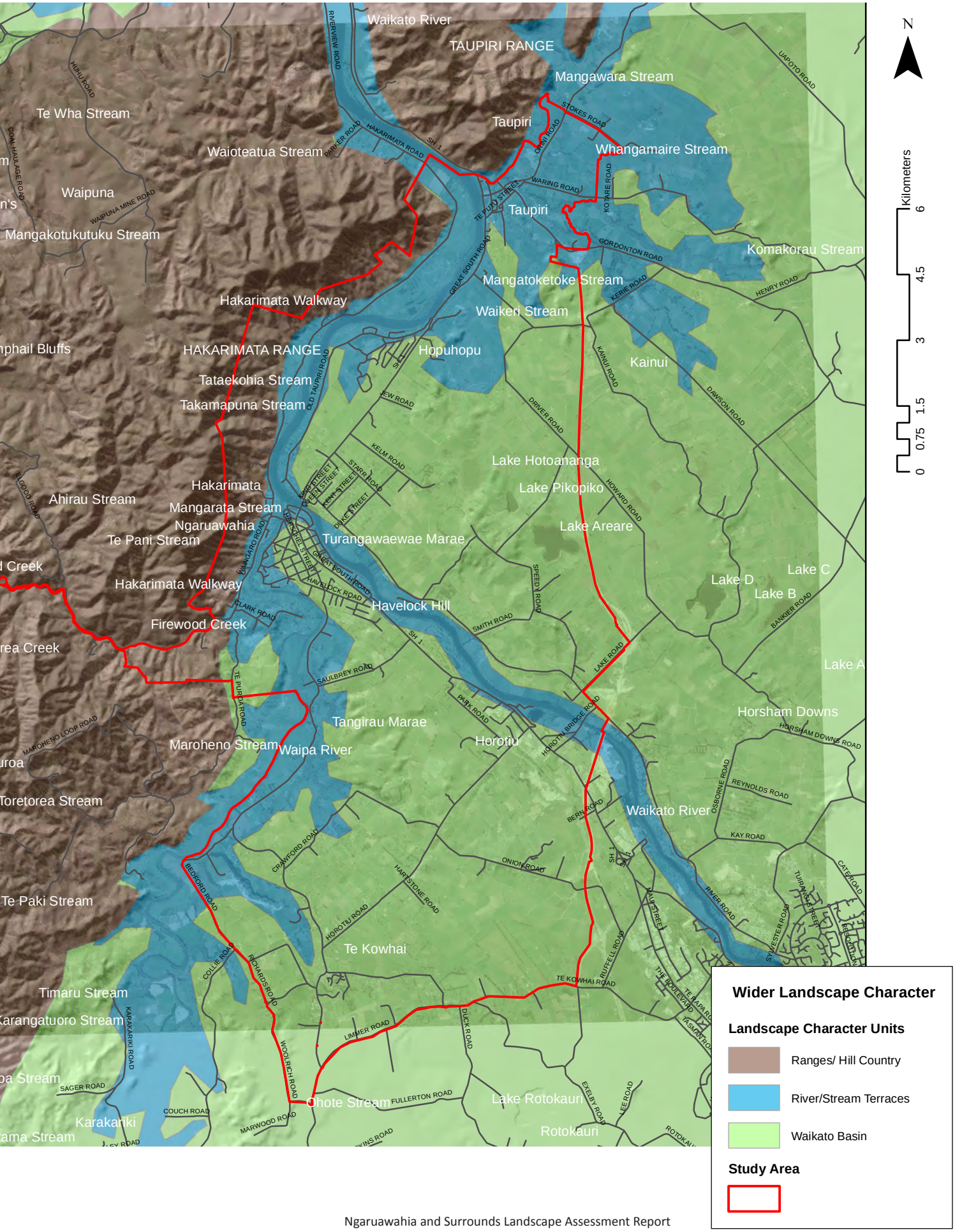
The key landscape features that influence perceptions of overall character of the Ngaruawahia and surrounds Study Area include:

a. The Waikato and Waipa Rivers and their associated river terraces and wetlands; as well as peat lakes juxtapose the geometric landuse patterning;
b. The tributaries of the Waikato River and associated gully systems which dissect the Ngaruawahia study area;
c. The low-lying topography of the Waikato basin, compartmentalised by rural landuse (agricultural, horticultural, crop production, forestry and quarries) and enclosed to the west by the Hakarimata's and Te Puroa hill country and to the north by Mangawara Stream and the Taupiri Range.

These features are also influenced by land use, land management and development patterns including:

a. Great South Road, which follows the Waikato River through to Hamilton;
b. State Highway 39, which links Ngaruawahia with Whatawhata;

10 Waikato District Council; (2013). *Ngaruawahia Structure Plan Preliminary Scoping Report.*


Waikato River
TAUPIRI RANGE
Mangawara Stream
Te Wha Stream
Taupiri
Waioteatua Stream
Whangamaire Stream
Waipuna
Mangakotukutuku Stream
Komakorau Stream
Mangatoketoke Stream
Hakarimata Walkway
Waikeri Stream
HAKARIMATA RANGE
Hopuhopu
Kainui
Tataekohia Stream
Takamapuna Stream
Lake Hotoananga
Lake Pikopiko
Hakarimata
Ahirau Stream
Mangarata Stream
Ngaruawahia
Lake Areare
Te Pani Stream
Turangawaewae Marae
Lake C
Lake D
Lake B
Hakarimata Walkway
Havelock Hill
Firewood Creek
Lake A
Horsham Downs
Tangirau Marae
Maroheno Stream
Waipa River
Horotiu
Toretorea Stream
Waikato River
Te Paki Stream
Te Kowhai
Timaru Stream
Karangatuoro Stream
Ohote Stream
Lake Rotokauri
Karakariki
Rotokauri
Kilometers
0 0.75 1.5 3 4.5 6
N
Wider Landscape Character
Landscape Character Units
Ranges/ Hill Country
River/Stream Terraces
Waikato Basin
Study Area

c. The Waikato Expressway; which defines the eastern boundary of the study area;
d. Productive land use including pastoral grazing, forestry, christmas tree plantations, crop production and associated rural buildings, processing and packing sheds;
e. Rural based light industrial activities and services including light engineering, manufacturing and processing (concentrated around Horotiu);
f. Isolated large scale quarrying and processing including rock quarries (along the base of the Hakarimata Range) and sand quarries (along Bedford Road and Horotiu Road), concentrated around Ngruawahia and Horotiu.
g. Township and rural settlements at key nodes along main roads, including Great South Road (Taupiri, Hopuhopu, Ngaruawahia and Horotiu), Waingaro Road (Glen Massey) and Horotiu Road (Te Kowhai);
h. Scattered dwellings throughout the rural landscape, predominantly adjacent to the roads;
i. Town reserves and facilities, including Ngaruawahia Domain, Centennial Park, Ngaruawahia golf course and the Hakarimata Reserve;
j. Existing transmission lines;
k. Schools, community centres, cultural sites and commercial buildings within Ngaruawahia and the surrounding areas.

The landsacpe has been modified by human influences, creating patterns and altering its natural character through different types of land use. Pastoral farming, forestry and quarrying make up the rural character of Ngaruawahia. This rural landsacpe is interspersed with rural subdivision, urban development and roading networks. The convergence of these differing land uses is relatively common in the peri-urban fringe of townships and cities across the Waikato District.

Due to productive requirements, subdivision of larger blocks of land surrounding Ngaruawahia Township has been driven by production economics rather than a demand for urbanization. As a result; residential, commercial/ industrial, community, cultural, and quarrying activities are found in relatively close proximity to one another. As such, there are noticeable juxtapositions caused by the contrasting characteristics of neighbouring properties; open rural land alongside commercial and residential properties with both rural and commercial outlooks.

This is further emphasized by the compartmentalization of the landscape through the establishment of horticultural shelter belts around production blocks and property boundaries.

# LANDSCAPE CHARACTER

## Ngaruawahia and Surrounds Landscape Character

The existing township of Ngaruawahia extends approximately 3km north-south and 2km east-west (between the Waipa and Waikato Rivers). Taupiri village extends approximately 1km north-south and 1km east-west. Hopuhopu village extends approximately 600m north-south and 1km east-west. Horotiu village extends approximately 3km north-south and 1km east-west. Te Kowhai village extends approximately 1.3km north-south and 1km east-west.

The character of Ngaruawahia and surrounding township's landscape is heavily influenced by historic development patterns.

In the early 1700"s Ngati Mahuta, had headquarters in and around Taupiri. The Pa, apart from its excellent strategic site at the junction of the Waikato and Mangawara Rivers, and in the narrow gorge between the Mountain and the Hakarimata Range, was also the centre of the three important highways of the day. The first was the Waikato River, the second a track from Taupiri via the Mangawara to the Piako Valley and the East Coast, and the third was the Kaitotehe to Kawhia Track[11]. During the 1800"s Missionaries began establishing schools and stations in the Waikato at Horotiu and Pepepe, which has influenced the position of the villages today. Following the completion of the railway in the 1870's there was considerable progress made within Taupiri.

In 1853 land was gifted by Maori to the Church of England to set up the schools. By the 1900"s the buildings had disappeared and by 1922 the Church sold Pepepe to the Crown for "Defense purposes." The land became the site of a large defence force base (Ngaruawahia Military Base). On 31st August 1991 a formal announcement was given by the Crown to return the Ngaruawahia Military Base to Waikato-Tainui. Waikato-Tainui have since built a complex at the site (Hopuhopu) which includes the Waikato-Tainui Endowed College. Residential development has followed the development of the complex, in clusters adjacent to the Waikato River; along Old Taupiri Road.

Ngaruawahia has long been gathering point for Waikato-Tainui, with the convenience of canoe travel, influencing the position of the township at the confluence of the Waikato and

11 Waikato District Council; (2013). *Ngaruawahia Structure Plan: Preliminary Assessment Scoping Report.*

Waipa Rivers. The first Europeans arrived in Ngaruawahia in 1863. River transport resulted in the development of a wharf, shipyard, goods shed, hotels, general stores, a brewery, cordial factory, flour mill and sawmills, as well as the newspaper "The Waikato Times". Expansion of the railway line from Auckland gradually saw the decline of the river trade and influenced the current position of the main commercial centre of the township, alongside the railway line and concentrated around the train station.

Ngaruawahia also has a strong European and Maori history that has influenced the pattern of settlement and architecture of the town. Many of the buildings along Great South Road and Jesmond Street are based on a Victorian architectural style. These buildings are characteristically two storeys high with verandahs and verandah posts, with detailed mouldings and trims.

The town itself has been laid out in a grid pattern. This grid layout created a number of key view shafts connecting to the rivers and ranges and to key focal points such as 'The Point'. This geometric pattern of settlement and detailed architectural style juxtaposes with the natural form of the surrounding bush clad Hakarimata Ranges and Waikato and Waipa River's, reinforcing the presence of the surrounding natural environment. These visual connections to key focal points and features are key elements to be considered in the future development of Ngaruawahia[12].

In response to the needs of the farming community the Auckland Farmers Freezing Co. agreed in 1914 to build a freezing works between Frankton Junction and Ngaruawahia. Horotiu was selected for the new works because of the proximity of road and rail access and a plentiful water supply. In its early existence the works were a stimulus to the district and an area of land was set aside and subdivided for employee houses. These then formed the village behind the works which is still where the majority of the village inhabitants reside. The Horotiu Bridge was opened in 1921 and has provided access to the eastern side of the Waikato River, providing more convenient access to the meatworks for farmers within the surrounding agricultural farmland.

Apart from very steep and inaccessible land, by the time of the First World War almost all accessible land in the District was in pasture. Therefore, apart from the steeper, less accessible

12 OPUS; (2004). *Ngaruawahia Township Plan*.

landform within the Hakarimata and Taupiri Ranges, only sparse pockets of indigenous vegetation remain within the Ngaruawahia and surrounds study area. The extent of indigenous vegetation would have been more wide-spread along the banks of the Waikato and Waipa River's and the peat lakes; had the settlers not introduced willow, which has grown out of control along the river banks and lake margins.

Since land in the Hakarimata Range was reserved (1850 hectares) the fringe areas and lower slopes have slowly regenerated after a history of light logging and fires. Introduced possums, goats and pigs cause significant damage to the Reserve's vegetation. Birds suffer too, through the loss of food plants and predation by rats and mustelids (stoats, weasels etc)[13].

13 http://www.doc.govt.nz/parks-and-recreation/places-to-visit/waikato/waikato/hakarimata-scenic-reserve/

**Taupiri**

Taupiri Village is characterised by the Waikato River, which bounds the village to the west, the Mangawara Stream which bounds the village to the north and acts as the northern study area boundary; as well as the Taupiri Mountain and Range, also to the north (but outside the study area). The character of Taupiri village to the southeast is composed of the extensive Komakorau Stream, wetland and other tributaries of the Mangawara Stream as well as State Highway 1, which runs parallel to the Komakorau Stream. These natural and infrastructural barriers have restricted existing residential development to small pockets generally located adjacent to the state highway. Rural pastoral farmland bounds the village to the south and east, where the transition from residential development to open pastoral farmland is sudden, as lifestyle blocks are not present around the urban fringe of the village (natural thresholds).

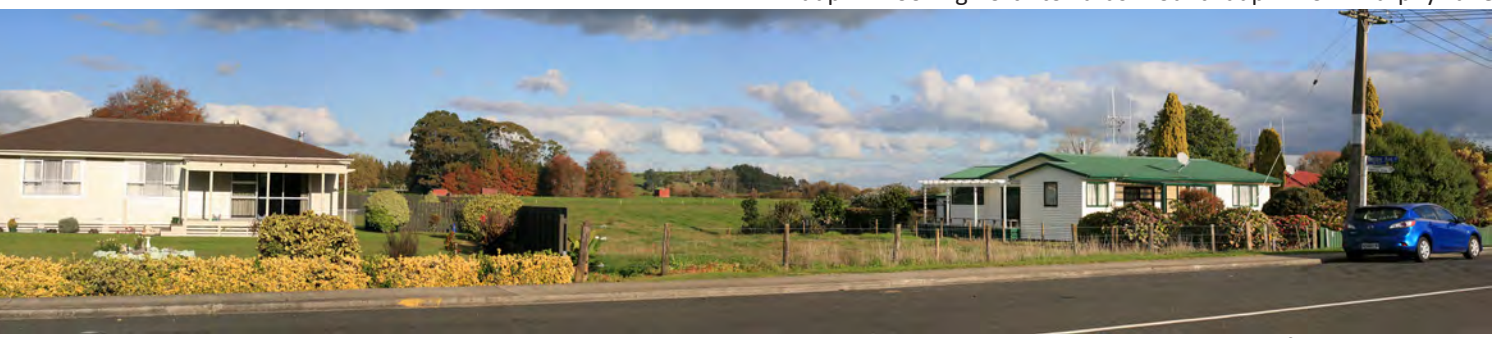
The North Island Main Trunk Railway dissects the village, running north-south adjacent to one of the tributaries of the Mangawara Stream; before sweeping west along the base of the Taupiri Range, adjacent to the Waikato River. The Taupiri cemetary is located at the base of the Taupiri Mountain, which sits prominently above the village, to the north of the Mangawara Stream and to the east of the Waikato River. Existing ribbon development has occured along Great South Road (southern approach to Taupiri village). The resultant village character is somewhat disjointed, with development patterns fitting in around existing natural and infrastructural barriers.

The majority of indigenous vegetation has been removed for pastoral farmland developemnt, however, large tracts of regenerating indigenous forest exists on the slopes of Taupiri Mountain. A predominance of exotic vegetation characterises the margins of the Waikato River and Mangawara Stream, while a mix of indigenous and exotic vegetation exists within the Komakorau Stream and wetland.

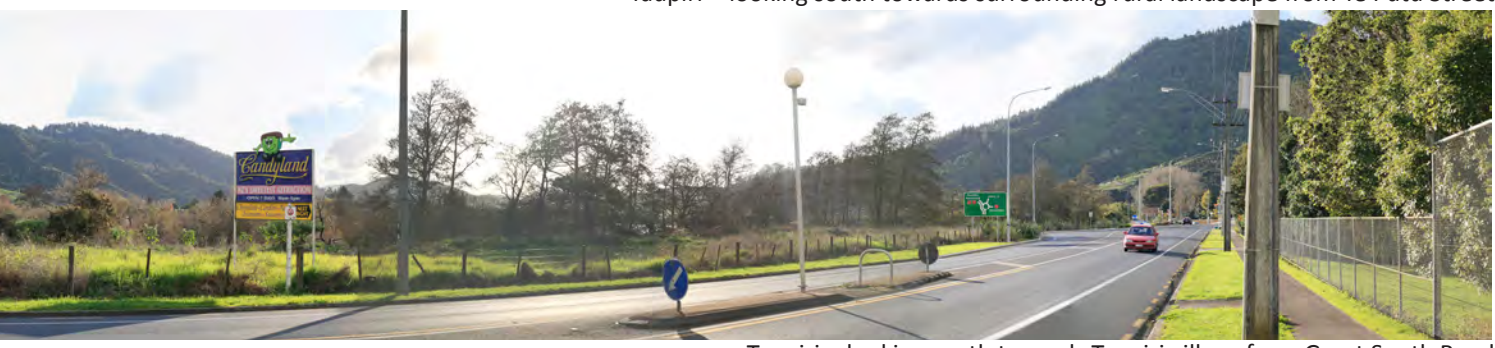
It is recognised that Taupiri Maunga holds special cultural significance to Iwi, however this is not assessed within the scope of this report**.**

Taupiri - looking east towards surroudning rural landscape and gully systems from Murphy Lane

Taupiri - looking north towards Mount Taupiri from Murphy Lane

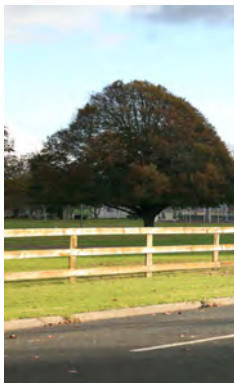


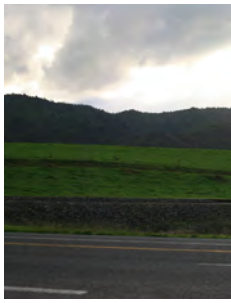
Taupiri - looking south towards surrounding rural landscape from Te Putu Street




Taupiri - looking north towards Taupiri village from Great South Road

Taupiri - looking north towards Taupiri village from Great South Road





**Hopuhopu**
Hopuhopu village is bound to the north by the Waikato River and the south and east by Great South Road. Tainui management facilities are located on a small hill on the western edge of the village, with an amphitheatre built into the side of the hill and a sweeping roadway entrance off Old Taupiri Road. The management facilities overlook a cluster of buildings on the flat topography below, utilised for educational purposes, within close proximity to Old Taupiri Road (to the northeast). Clusters of residential development are located to the north of Old Taupiri Road, overlooking the Waikato River and adjacent to generous open space reserves. The landscape surrounding the village is characterised by open pastoral and productive cropland, with a prominent backdrop of the Hakarimata Range to the north and west. A natural threshold exists along Old Taupiri Road, as a subtle character transition occurs between the open pastoral landscape and the built development of the existing village.

The majority of indigenous vegetation has been lost to productive farmland. However; restoration planting has occured along the banks of a stream and pond which are located adjacent to the Old Taupiri Road and large tracts of indigenous and exotic vegetation can be found along the Waikato River margins. Ornamental exotic species create an avenue along Old Taupiri Road and provide amenity throughout the management and educational facilities.

**Ngaruawahia**
Ngaruawahia Township is located within the flat lowland Waikato and Waipa River terraces of the Waikato Basin. Ngaruawahia Township is divided north-south by the North Island Main trunk Railway. Perpendicular to the railway runs Waingaro Road and Newcastle Street at the northern end of the township and Ellery Street at the southern end. The main commercial/ industrial and community center of Ngaruawahia straddles the railway line from Market Street at the northern end to Ellery Street in the south. Higher-density residential development has occurred mainly

Hopuhopu - looking southwest towards Hopuhopu village

Hopuhopu - looking northeast towards Hopuhopu village

Hopuhopu - looking east across Hopuhopu development from Old Taupiri Road

Ngaruawahia - looking east across to Jesmond Street

Ngaruawahia - looking east across to Jesmond Street

within the relatively narrow land bound by the confluence of Waikato and Waipa Rivers, the Waipa River to the west and the Waikato River to the east. The bowling green and Ngaruawahia Primary School demarcate the end of the main retail, commercial, light industrial zone within Ngaruawahia Township. The majority of residential lots are generally larger than in other townships within Waikato districts, lending to the spatious village feel of Ngaruawahia township. Residential development continues to the west, across the Waingaro Road bridge, between the Waipa River and the base of the Hakarimata Range. Residential development is also located on the eastern side of the Waikato River, with a small cluster running adjacent to the river and a large portion of the township located to the southeast of Great South Road, off River Road, centred around the Turangawaewae Marae. Natural thresholds occurs along River Road, Great South Road and Waingaro Road, where subtle character changes, from residential to large lot residential/ lifestyle blocks to rural landscape occurs. These thresholds will aid in informing future township development boundaries.

Lifestyle blocks are generally located to the northwest (Hakarimata Road), along the base of the ranges, north (along Old Taupiri Road), east (River Road, Great South Road and Starr Road), west and southwest (Waingaro, Te Puroa and Clark Roads) of Ngaruawahia Township. Rural farmland and the golf course bounds Ngaruawahia Township to the southeast. A distinctive natural threshold exists to the southeast of Ngaruawahia Township, where the pa site, adjacent to the Ngaruawahia cemetery along Great South Road signifies the transition from urban fringe to rural landscape character. The western boundary of the study area is defined by the bush clad slopes of the Hakarimata Range. The Hakarimata's are the main focal point of views from much of the township and create a natural barrier to development. An appropriate contour within the Hakarimata Range has been identified

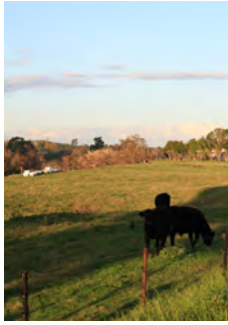
Ngaruawahia - Jesmond Street, looking west

Ngaruawahia - Eyre Street, looking southwest

Ngaruawahia - Waipa Esplanade, looking west

Ngaruawahia - Waipa Esplanade, looking west

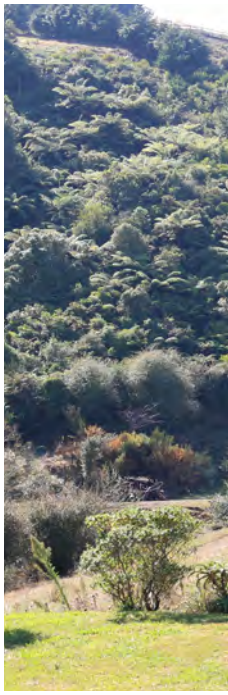
Ngaruawahia - Hakarimata Road, looking east



for the restriction of development. If development were to occur above this elevation, it would begin to alter the existing natural character of the Hakirimata Range, as this is the elevation above which the Hakarimata Range (in its entirety) is consistently seen and overtly recognisable from afar.

It is noted that the indigenous bush and streams with headwaters in the Hakarimata bush reserve is an important habitat for a range of fauna (including threatened species)[14].

Significant specimen trees within Ngaruawahia township include a range of large exotic trees, including eucalyptus, oak, London plane, redwoods, ash, English elm, linden and copper beach. Four totara are located within the central road reserve at Carlton Avenue. Large hard beech and kauri can be seen along the ridgelines of the Hakarimata Range towering over the canopy of tawa, kohekohe, hinau, rewarewa, mangeao and pukatea. There are pockets of miro, Hall's totara and tanekawa. The large kauri on the Kauri Loop Track is of special interest as kauri this size are rare in the Waikato area. The Reserve contains Alseuosmia quercifolia, a strongly scented bush daphne, only be found in the central Waikato.



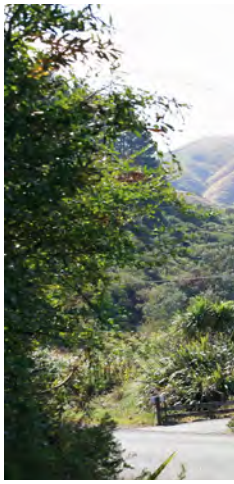
**Glen Massey**
Firewood Creek flows from the steep hill country, within which Glen Massey village is contained, towards Ngaruawahia Township, breaking the strong north-south underlying geological folding of the Hakarimata Range and Te Puroa hill country. Glen Massey has developed along the relatively flat terraces of a stream valley, adjacent to the confluence of several tributaries of the Firewood Creek. Steep hill country surrounds the village directly to the north (along Waingaro Road), east (along either side of Waingaro Road) and west (along Kereru Road) and further to the south (Wilton Collieries Road). The existing development patterns have therefore been restricted to

14 http://www.doc.govt.nz/parks-and-recreation/places-to-visit/waikato/waikato/hakarimata-scenic-reserve/

Ngaruawahia - Hakarimata Road, looking east

Glen Massey - Waingaro Road, looking west

Glen Massey - Edgecombe Drive looking east



the relatively flat river terraces by a number of natural barriers. The village is characterised by the surrounding steep-sided pastoral hill country; as well as patches of forestry to the east. It is considered that the surrounding topography provides a high degree of containment of the existing Glen Massey development, resulting in a series of natural thresholds which help to define the character of the village. These include distinctive thresholds along Wilton Collieries Road, Kereru Road and Waingaro Road (heading north) on the ascent into the surrounding hill country.

**Te Kowhai**

Te Kowhai village is characterised by flat to gently rolling topography, giving way to hill country to the west of the village, along Woolrich and Richards Roads. An extensive stream gully system (tributary of the Waipa River) dissects the village in an east-west direction, splitting the village into two main parts. Te Kowhai school and residential development straddling Te Kowhia Road, is located immediately to the north of the gully system, while large lot residential development and reserve land is located immediately to the south. Horotiu Road is characterised by open pastoral landscape to the east and residential and large lot residential development to the west, which is bound by another fork of the gully system.

A natural threshold to the east of the village, along Te Kowhai Road is characterised by a sharp transition between the Perrinpark retirement village on the urban fringe and the adjacent rural landscape. Similarly, at the intersection of Te Kowhai and Horotiu Roads, a pocket of residential development has occurred adjacent to rural pastoral landscape. A gentler transition can be observed along Bedford Road, and further north along Horotiu Road, where lifestyle blocks exist between residential and rural farmhouse development.

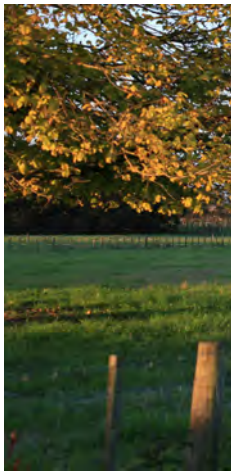
Shelterbelt planting within surrounding open pastoral landscape compartmentalises the landscape and help to affirm a strong rural village character. The steeper terrain; southwest of the main village; towards

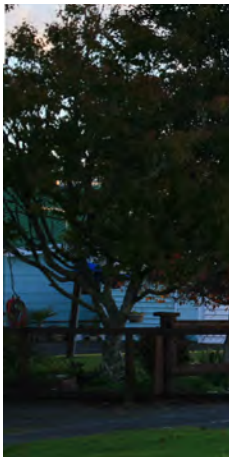
Glen Massey -Kereru Road looking east

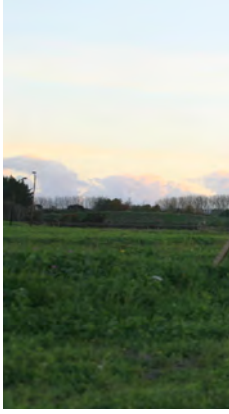
Te Kowhai - Richards Road looking northeast

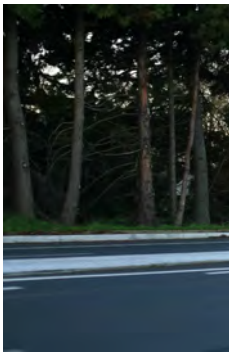
Te Kowhai - Richards Road looking east

Te Kowhai - Richards Road looking southeast









Woolrich Road has acted as a natural barrier and prevented extensive urban development. Scattered rural-residential development exists within this terrain adjacent to Woolrich and Richards Roads. A prominent natural threshold was identified during site investigation, as a clear character shift occurs along Richards Road. As the road dips downwards towards the village a subtle shift from lifestyle block to residential development character can be detected.

**Horotiu**

Horotiu village is located within relatively flat topography, adjacent to the southern banks of the Waikato River. The industrial meatworks facility, surrounded by open pastoral landscape and screen hedge planting characterises the northwestern extent of the village. The majority of residential development has occured to the southwest of the meatworks facility, on the northern side of Horotiu Road. Light industrial, commercial facilities and sand quarries characterising the southeastern extent of the village, interspersed with pockets of residential development associated with the Thermal explorer Highway, Horotiu Bridge Road and the Waikato River banks. A subtle natural threshold is created to the northwest of Horotiu village, between the open pastoral landscape to the north of the village and a pocket of lifestyle block development within the urban fringe. A mix of water treatment facilities, pastoral landscape and productive cropland characterises the eastern edge of the village, situated between the Waikato River and the Thermal Explorer Highway. To the south, Horotiu village is bounded by the Waikato Expressway.

Although much of the indigenous vegetation has been lost to productive farmland surrounding the village, a mix of indigenous and exotic vegetation exists along the margins of the Waikato River. Hedge planting is a common component in the landscape surrounding Horotiu, providing screening of the industrial development from the main roads.

Te Kowhai - Te Kowhai Road looking east

Te Kowhai - Te Kowhai Road looking west

Horotiu- Thermal Explorer Hihway looking northwest

Horotiu- Thermal Explorer Hihway looking southeast

# LANDSCAPE DESIGN AND PLANNING PRINCIPLES

## Informing Ngaruawahia's Growth Options

This section identifies the landscape design and planning principles followed in the identification of opportunities and constraints for future urbanisation in Ngaruawahia and surrounds. These principles (along with landscape character analysis) were considered when identifying and mapping landscape sensitivity to change and landscape constraints:

- Avoid developing within visually prominent locations;
- Avoid developing within steep/weak terrain which will require excessive earthworks;
- Avoid developing sensitive landscapes and features, such as wetlands and along stream and riverbanks;
- Maximise development on land with higher amenity value (maximise solar gain and most attractive aspect (north facing));
- Avoid loss/change of character;
- Avoid the removal of indigenous vegetation;
- Aim to integrate ecological corridors and stands of vegetation within the study area to improve habitat connectivity and amenity values associated with natural character;
- Provide for 'green belts'/ rural buffers between landuses within Ngaruawahia and the surrounding villages within the study area;
- Plan for future infill;
- Allow for connectivity with existing town amenities;
- Avoid rural-sprawl: aim for defined settlements with green buffers;
- Avoid ribbon development along main access routes;
- Avoid urbanisation of high quality productive land where possible;
- Prevent the ad-hoc fragmentation of farmland;
- Avoid development within close proximity to historic landscapes (heritage);
- Avoid development within reserves or other protected land.

The adjacent diagram provides an example of a typical urbanisation transition from rural to urban development with adequate provision of open space and amenity planting. This type of transition will generally support the retention of existing landscape characteristics[G].

G Rural-city density diagram, from Smartcode. a Comprehensive Form-Based Planning Ordinance. Spring 2005.

# GROWTH CONTAINMENT

## Informing Ngaruawahia's Growth Options

Any potential urban expansion within the study area should seek to maintain the distinctive character of the surrounding landscape and the key attributes that give rise to Ngaruawahia's, Taupiri's, Hopuhopu's, Glen Massey's, Horotiu's and Te Kowhai's genius loci and landscape amenity. In order to achieve this, future growth needs to be limited within a specified boundary. Set out below are a number of reasons why future growth within the township and villages needs to be contained.

The first priority when planning for future growth should be to direct growth toward the existing township. This is the area within the rural landscape that has existing infrastructure and public facilities that will most efficiently accommodate new growth.

Directing future growth towards the existing township not only helps to retain a distinct township area that represents the heart of the community, but also prevents rural sprawl, which would take away from the intimate, friendly, village atmosphere which Ngaruawahia and the surrounding villages within the study area possess.

Rural sprawl can take two forms. The first is low-density residential development that is scattered outside of towns. The other type of rural sprawl is strip development along arterial routes leading into and out of towns. Both of these forms of rural sprawl would take away from the existing character, scale and small township atmosphere of Ngaruawahia and surrounds, as well as placing pressure on existing infrastructure. The impacts of rural sprawl must be examined in terms of the cumulative impact over time. Initially, scattered development does not seem to place a large burden on the environment or local services, but over time, such a mosaic of houses can incur infrastructural issues, and the loss of a clearly defined town area, through the lack of visual distinction between the township and surrounding rural areas.

Growth should therefore occur in a way that, amongst other things, protects the landscape, and preserves or improves a community's quality of life.

The critical ideas embedded in this concept are the importance of balancing development with landscape construction in order to manage growth, rather than prevent it. The community desires a growth pattern that moves away from sprawl, towards that that preserves, maintains, and creates a sense of place. This provides a better balance between development and the protection of natural resources and open space.

During the character analysis and mapping process; potential areas for urbanisation were identified. Growth containment principles were applied by identifying “natural thresholds” (as identified in the local landscape character section of this report) within the Ngaruawahia Study Area, which aim to maintain the key factors which make up the existing landscape character of Ngaruawahia and surrounds. These areas will allow for future growth, while limiting the development to within a defined physical boundary, in order to retain an identifiable center and destination point for the Ngaruawahia community. By keeping the township contained within a boundary, the unique character of the township can be conserved and enhanced through co-ordinated and well-designed development.

Township boundaries are important in determining the limits of township growth and create a clear definition between township and rural areas. An edge should be established around a township to demarcate areas suitable for development, from areas designated for rural-residential development. These natural thresholds will also help to ensure that development outside the township does not affect the township’s landscape character or amenity. The boundary could promote a distinct and attractive township, which stands out from surrounding low density rural-residential development.

# BOUNDARY GROWTH ASSESSMENT

## Informing Ngaruawahia's Growth Options

There are a number of different approaches available to use for assessing options for township growth boundaries. The approach taken for the Ngaruawahia Study Area was to analyse potential thresholds against the four boundary types listed below, each weighted according to their physical presence within the landscape.

**Geo-Physical Boundaries**
Geo-physical boundaries are natural boundaries within the landscape. These boundaries can be thought of as edges, with no inherent meaning. The boundaries are created by natural features, visible to everyone in the landscape, and in many instances may physically prevent development beyond them. For example:

- Ridge lines
- Valley floors
- Streams/ Waikato River
- Vegetation patterns

A significant and highly visible natural feature (e.g. a steep cliff river bank) forms a clearly defined physical boundary that is more accepted as a boundary, than a line drawn on paper with no physical manifestation, because it is a logical constraint that people can understand. A natural feature that is visually less defined (e.g. a rolling hill) provides less of an actual physical boundary, but is still a visually obvious boundary that people can identify with.

Geo-physical boundaries are also used to define areas in which additional meaning and value are added. For example:

- Flood Hazard Zones
- Visual Catchment
- Areas of Fertile Soils

Geo-physical boundaries should be given the heaviest weighting in terms of justifying where the Ngaruawahia Township future development boundary should be set. This is because these boundaries are manifest to everyone and require no prior knowledge to understand why they have been set where they are.

**Socio-Physical Boundaries**
Socio-physical boundaries are created by the perception that some man-made physical elements form manifest boundaries or edges. While often perceived to be limiting factors or constraints, this type of boundary is more related to the perception of its use, rather than a natural boundary. Examples of such boundaries are:

- Roads
- Green belts/ rural buffer
- Parks and reserves

Socio-physical boundaries are not as clearly defined as geo-physical boundaries because they are only obvious to varying extents and depend on peoples individual perceptions. These boundaries should not be weighted as heavily as geo-physical boundaries in terms of justifying where the Ngaruawahia township future development boundary should be set, as they are not clearly manifest to everyone. However, a socio-physical boundary would be given more weighting than a social construct boundary because of its association with physical and visual element.

**Social Construct Boundaries**
Social construct boundaries are not visible in the landscape. Most people are unaware of where these boundaries exist, as they are often only represented by lines drawn on paper, and can be difficult to detect. Social construct boundaries include:

- Property boundaries;
- Planning zones boundaries/overlays/policy areas;
- Study area boundaries;
- Political boundaries

Social construct boundaries should be given the lightest weighting in terms of justifying where the Ngaruawahia future development boundary should be set because only those people in-the-know would understand why the boundary has been set. Setting boundaries for development based on social construct boundaries leaves open the possibility that boundaries are set based purely on peoples' perceptions of how big the town should be.

It is recommended that social construct boundaries be aligned with geophysical and/ or sociophysical boundaries.

# CONSTRAINT IDENTIFICATION & ANALYSIS

## Wider Ngaruawahia landscape character

Following the identification of the character and resources within the Study Area, GIS analysis, site investigation, and desktop review were undertaken to determine how the township and villages could develop, while maintaining their rural small town atmosphere and key unique attributes.

Opportunity and constraint mapping has been used to help determine potential areas for future development within the Ngaruawahia Study Area.
This includes:

- Landcover and landuse
- Visibility
- Distance from the town centre
- Topographic Position (Ridge/midslope/gully)
- Slope
- Solar gain
- Elevation
- Identified sensitive landscape areas (including the Waikato River and its tributaries)

Landscape constraint mapping has been included in the following section.

**Waikato and Waipa River's and Tributaries**

Management of the Waikato and Waipa River's and their tributaries anticipates:

- Protection of existing landscape features associated with riparian margins and overland flow paths.
- Provision of future ecological corridors.

**Constraint Identification Methodology**

A two tiered weighted analysis approach has been used. The first tier examines the effect of development on wider landscape character by examining the wider susceptibility of key

landscape attributes to character change arising from development.

The second tier of analysis examines those factors or attributes that are likely to enhance or decrease general amenity values, and/ or effect landscape character and amenity at the 'neighbourhood' level.

The first tier is weighted more heavily than the second tier because changes to these landscape attributes (through future development) is likely to affect landscape character and associated amenity values to a higher degree than attributes of the second tier.

**Weighting**
For consistency, each factor has been weighted from 1 (least suitable for development) to 9 (most suitable for development).

Assigning an appropriate weighting to the range of landscape attributes within each factor has been considered and determined through the analysis of technical papers, community preferences, landscape preference studies (refer to appendix three), ONFL and landscape character assessment and landscape design (current best practice).

This is reflected in the relevant planning provisions, which include particular protection of:

- Protection of ONFL 6(b) of the RMA
- Landscape character section 6(a) of the RMA
- Amenity section 7(c) of the RMA
- Natural features

Portions of the Waikato River and its margins have been identified as landscape policy areas (ONFL) under the Operative Waikato District Plan (OWDP). The Hakarimata Range has also been identified as a landscape policy area (ONFL) under the OWDP.

Of particular importance under the OWDP is the:

- Landscape Policy Areas, including the Waikato River and Hakarimata Range (3A.2)
- Wetlands (13.6.2);
- Indigenous vegetation (25.43.1);
- Natural features (13.6.2);

- Ridgeline Policy areas (25.26)
- Landscape and visual amenity values, as viewed from public places (3.4.1);
- Natural character of the coastal environment, wetlands, and lakes and rivers and their margins is preserved (3.6.1);
- Setback of development from rivers or lakes (25.59);
- Amenity values of localities are maintained and enhanced (13.2.6).

Each of these OWDP concerns relating to landscape have been taken into consideration through the landscape character and landscape opportunity and constraint mapping of suitable development areas within this report. ONFL, Natural features, wetlands, indigenous bush and ridgelines have been considered as unsuitable for development through landscape character and constraint mapping. The mapping also aims to protect existing landscape character and amenity values.

Refer to appendix two for relevant sections of the RMA, PWRPS and OWDP.

**Limitations**
Due to limitations in data provided, coarse grained analysis was undertaken within the Ngaruawahia and surrounds study area. The purpose of the findings and mappings of this report is to indicate general areas more suitable for development than others, with specific regard to landscape character and amenity values.

Data was insufficient to determine landscape character and constraint mapping to the west of the Hakarimata Range and Glen Massey village. However, site investigation indicated that future development is constrained by the steep terrain surrounding the village and future development is therefore most suitable in and around the existing village, within the relatively flat stream terraces.

# TIER ONE: LANDSCAPE SENSITIVITY

## Informing Ngaruawahia's Growth Options

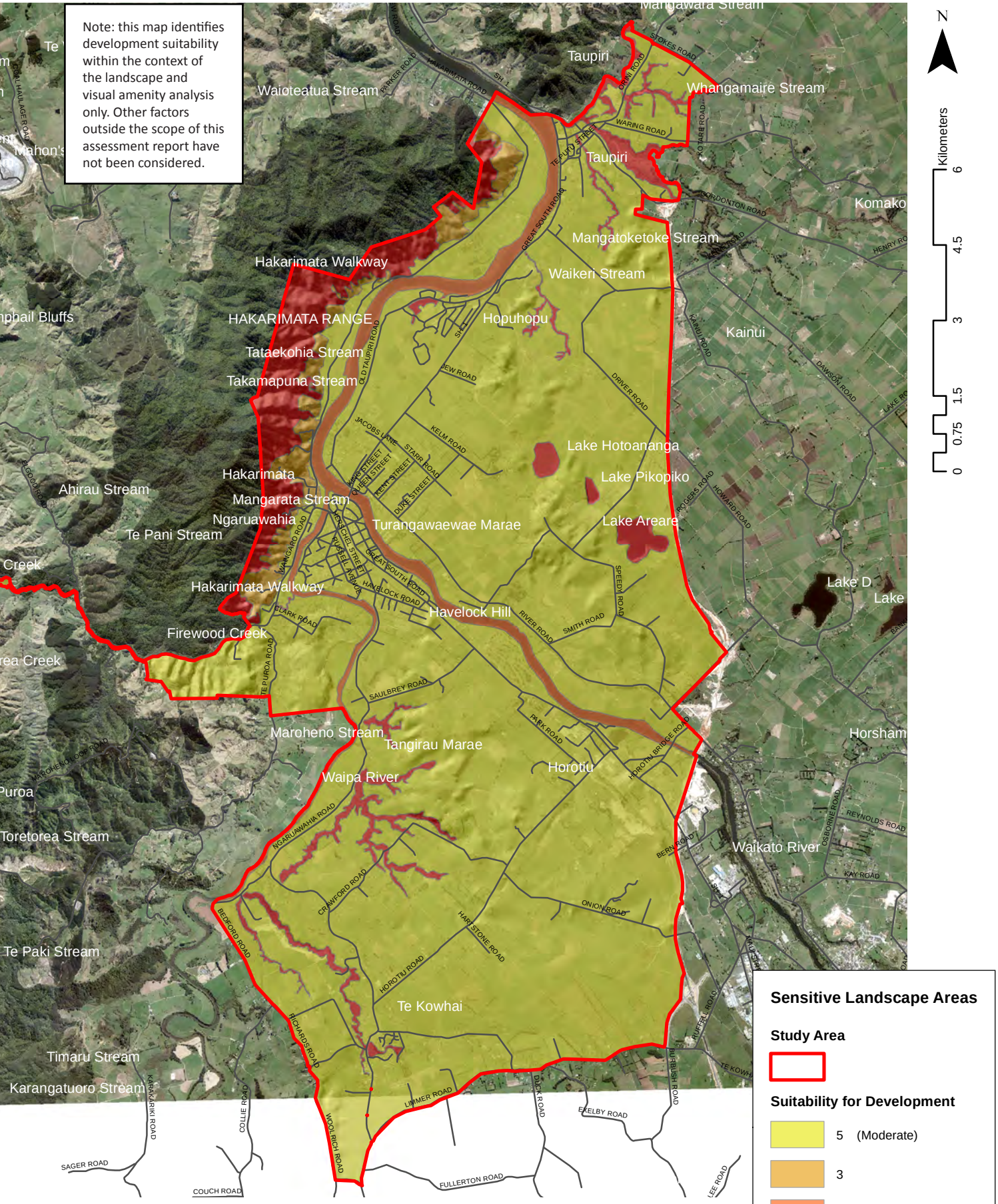
Landscape areas sensitive to change were identified during the landscape character analysis process and sorted into 9 categories (1 being least suitable for development and 9 being most suitable). These included:

Gully systems and peat lakes (sensitive due to rarity within the Ngaruawahia Study Area and development being more likely to alter existing natural character values, due to the small size of these areas). Hakarimata Range (sensitive due to ONFL status under the district plan). Gully systems, peat lakes and Hakarimata Range were therefore attributed to category 1 (least suitable for development).

The Waikato and Waipa River's and adjacent river terraces, (sensitive due to a minimal presence of existing development along the wetlands and river terraces immediately adjacent to the Ngaruawahia section of the river; and the high natural character associated with the pockets of indigenous wetland vegetation and the river itself). However, the large size of the Waikato River and presence of town development in other locations along its banks gives it a higher capacity to absorb change than the small gully systems. The Waikato and Waipa Rivers were therefore attributed a 2 (less suitable for development).

So as not to skew the analysis, the remainder of the Ngaruawahia study area not found to be sensitive to change has been attributed a neutral rating (5).

It should be noted that these sensitive landscape areas are more susceptible to change, and that a small change within these areas may have a greater effect on landscape character and associated amenity values than the exact same change in another location within the study area not identified as a sensitive landscape area.




# TIER ONE: LANDSCAPE SENSITIVITY

## Informing Ngaruawahia's Growth Options

# TIER ONE: LANDCOVER AND LANDUSE

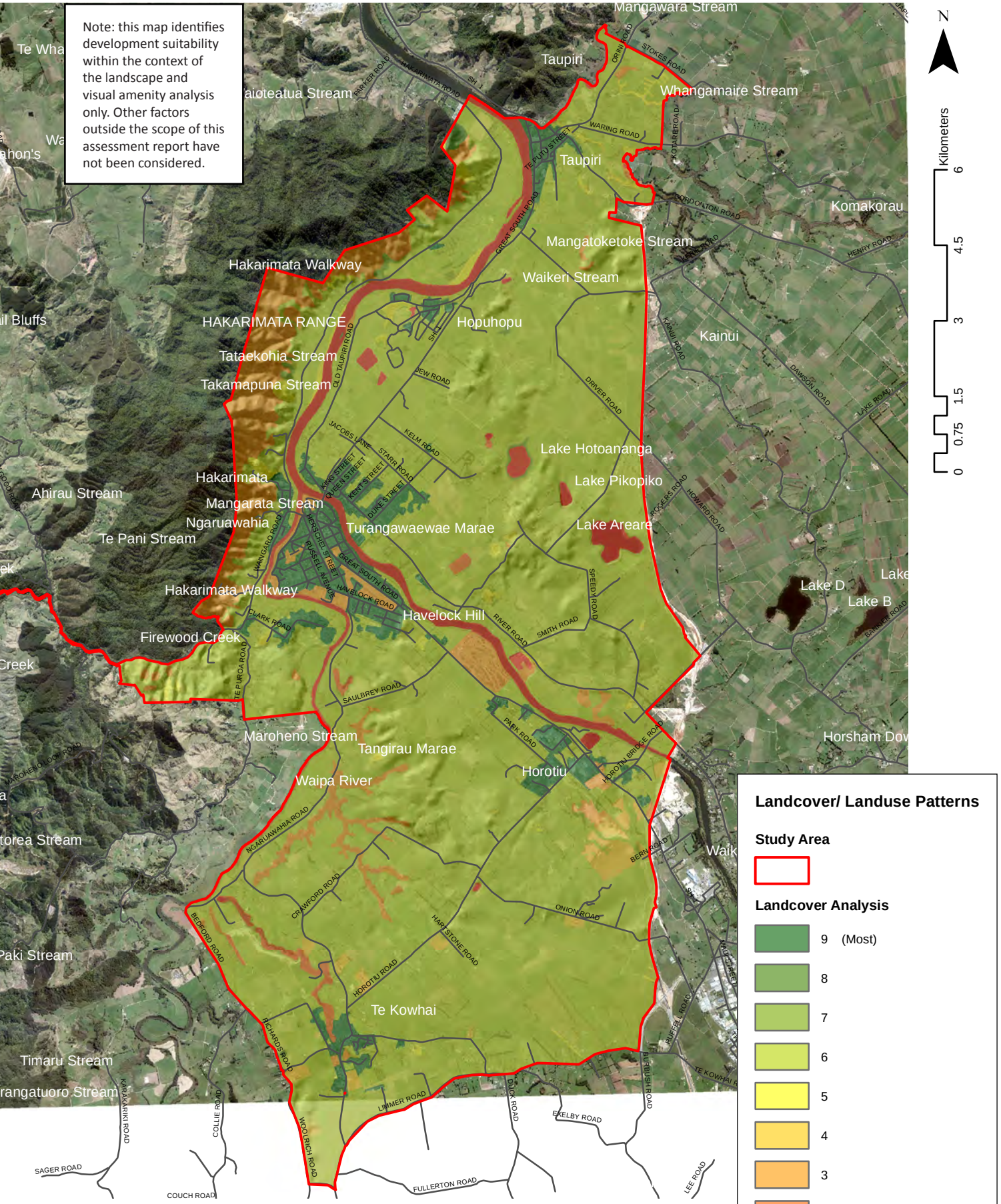
## Constraint Identification and Analysis

Landcover data was analysed and sorted into 9 categories (1 being least suitable for development and 9 being most suitable).

It was considered that water bodies, including the Waikato River and surrounding lakes (category 1) as well as areas of high natural value, such as wetlands (2) and indigenous vegetation (3) were least suitable for development. Conversely, land within existing built-up areas, such as Ngaruawahia Township (9) and little natural or productive value: low producing grassland (8) and mixed exotic gorse and broom (7) were considered most suitable for development.  High producing grassland (6), exotic grassland (5) and cropland, including vineyards and orchards (4) were considered to sit in between most and least suitable for development.

The outcome of this analysis indicated that the majority of the flat landscape of the Waikato basin is suitable for development in terms of landcover and landuse. The existing built up areas of the Ngaruawahia Township and the surrounding villages were found to be the most suitable for future development.

The steeper bush-clad slopes of the Hakarimata Range, the peat lakes, Waikato and Waipa River's and surrounding gully systems were found to be the least suitable for development in terms of landcover and landuse.




# TIER ONE: LANDCOVER AND LANDUSE

## Constraint Identification and Analysis

# TIER ONE: POTENTIAL VISIBILITY

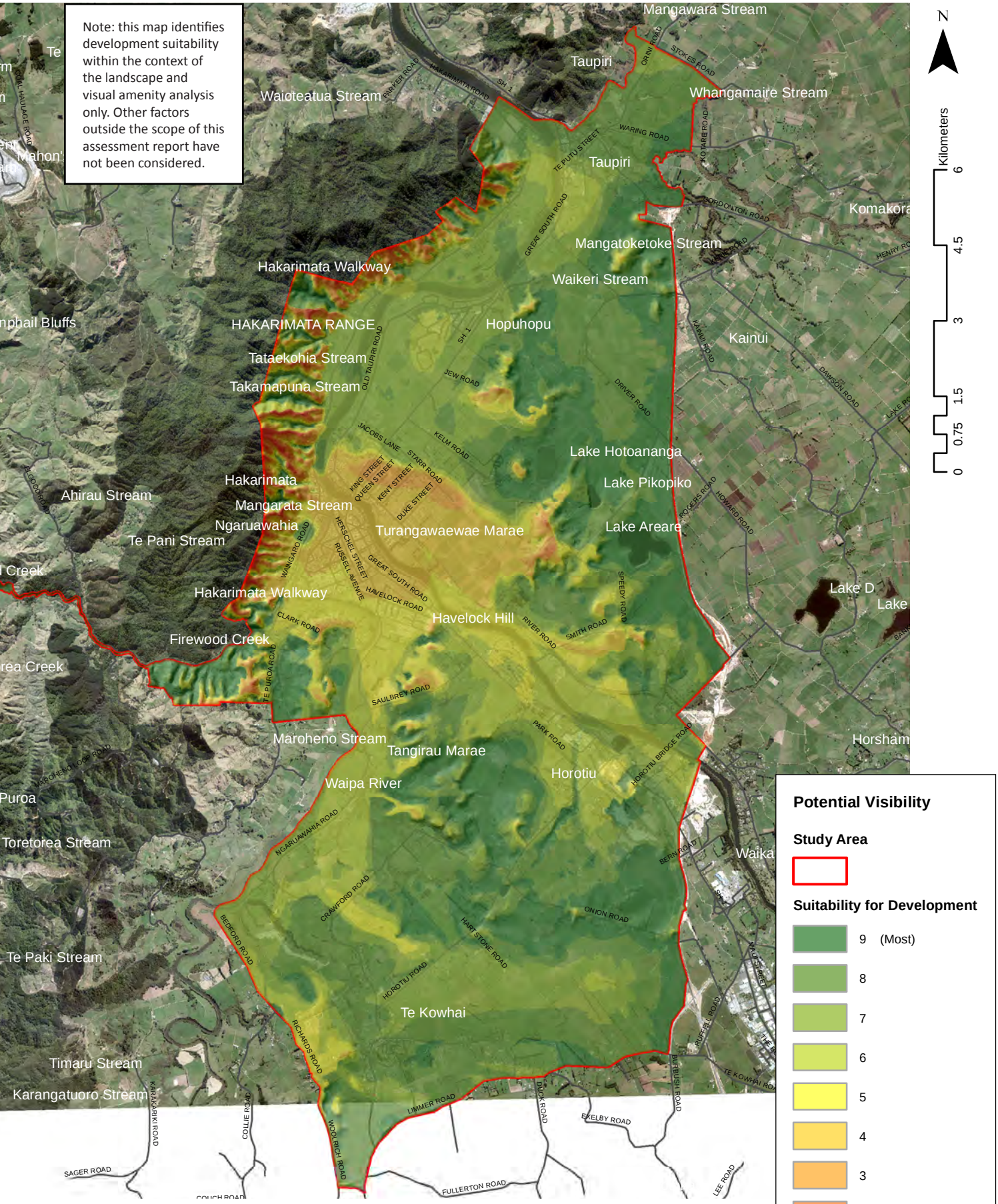
## Constraint Identification and Analysis

The potential visibility has been assessed from public view locations along the main roads within the Ngaruawahia and surrounds study area. The visual catchment identifies the extent of surrounding landscape visibility from the main roads, subject to intervening built development and vegetation. This provides an indication of the landscape within the study area that is less visible from publicly accessible locations; and therefore more suitable for urban expansion (less likely to alter existing landscape character and associated amenity values).

Context, viewing frequency, viewer types, viewer distance, viewing time and framework are all factors requiring consideration when examining the visual catchment. A combination of GIS mapping and site inspection were used to identify the visual catchment of the study area.

The visual catchment map indicates that elevated locations within the Hakarimata Range to the west and north of Ngaruawahia Township are highly visible from publicly accessible roads within the study area. Small mounds in the surrounding relatively flat landscape of the Waikato Basin are also highly visible from public roads. Urban expansion on these elevated sites is therefore likely to affect amenity values associated with existing expansive views across existing rural landscape.

Hills and undulations along the main roads within the study area provide subtle transition zones in which the extent of visibility gradually increases or decreases. These transition zones therefore become important natural thresholds for determining appropriate boundaries within which to contain the future growth of Ngaruawahia Township and the surrounding satellite villages. Directly to the north of Ngaruawahia Township for example Great South Road dips down, therefore making it less visible from the majority of surrounding public roads.




# TIER ONE: POTENTIAL VISIBILITY

## Constraint Identification and Analysis

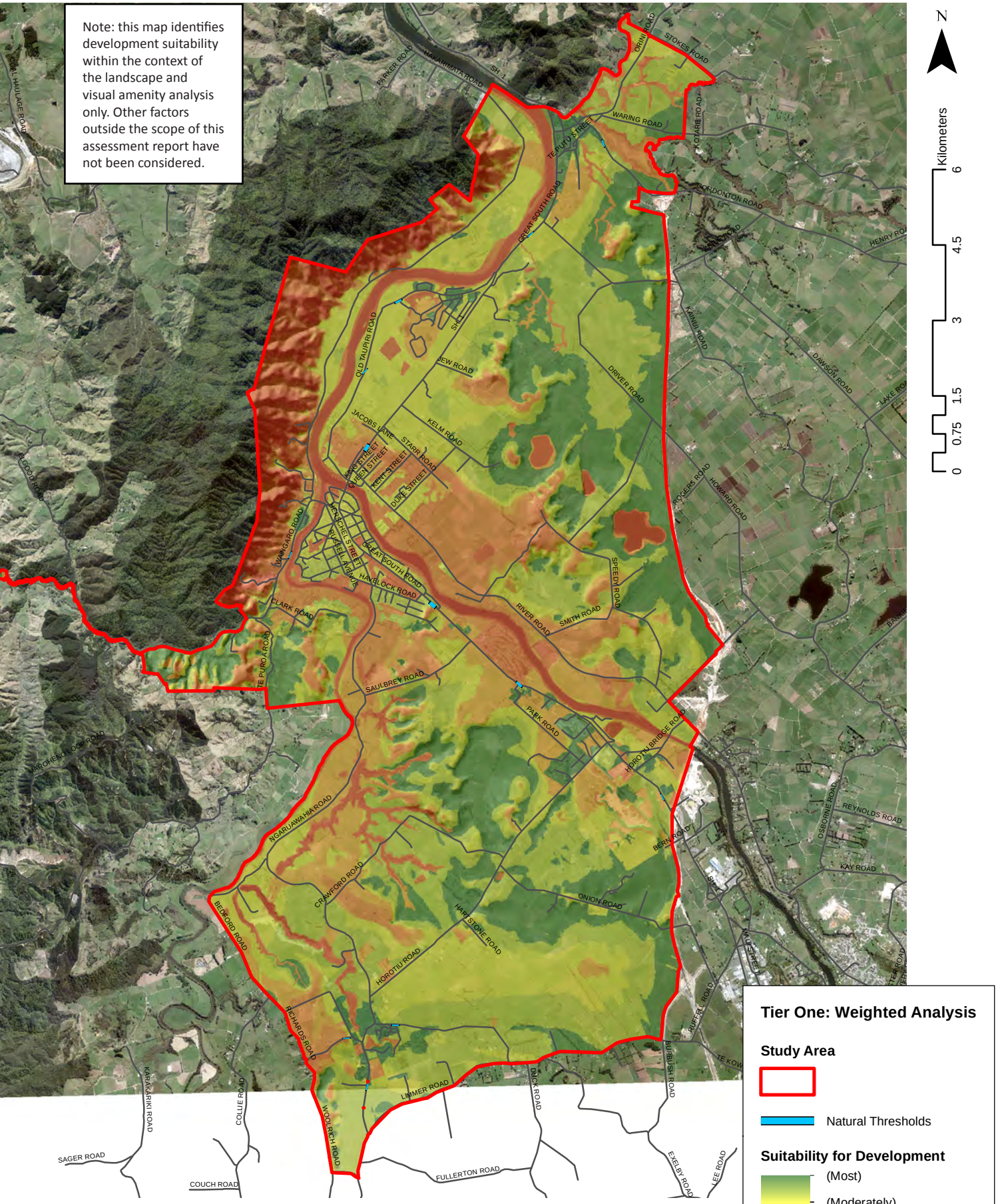
# TIER ONE: WIDER LANDSCAPE CHARACTER

## Weighted Analysis

The landscape sensitivity, landcover and potential visibility maps have been analysed using weighted analysis. Landcover and visibility were each attributed 34% weighting (as landcover analysis and visual catchment analysis are considered to be of equal importance). The landscape sensitivity analysis was attributed 32% of the weighting. The resultant map (adjacent) indicates the landscape character and associated visual amenity constraints of urbanisation within certain locations of the Ngaruawahia and surrounds study area.

This weighted analysis mapping indicates that overall, the areas less suitable for dvelopment within the Ngaruawahia and surrounds study area are located:

- Towards the west of Ngaruawahia Township, within the slopes of the Hakarimata Range, due to this landscape feature being highly visible from public roads, the high natural character of the range, and indigenous vegetation landcover;
- Along the Waikato and Waipa Rivers and their margins, as well as portions of the flat river terraces to the east and south of NgaruawahiaTownship;
- In the gully systems within close proximity to Te Kowhai and Taupiri villages, due to the presence of indigenous vegetation landcover and higher sensitivity to change;
- Towards the east of Ngaruawahia Township, where peat lakes charcterise the lowland flats of the Waikato Basin landscape;
- Natural thresholds have also been indicated within the adjacent map along main roads, where subtle changes in landscape character were identified during site investigation (and have been described in the Local Landscape Character section of this report).




# TIER ONE: WIDER LANDSCAPE CHARACTER

## Weighted Analysis

# TIER TWO: DISTANCE ANALYSIS

## Constraint Identification and Analysis

Distance analysis has been undertaken to determine locations closest to the existing infrastructural services of Ngaruawahia Township; and therefore most suitable for development (from an urban/ landscape design and planning best practice point of view).

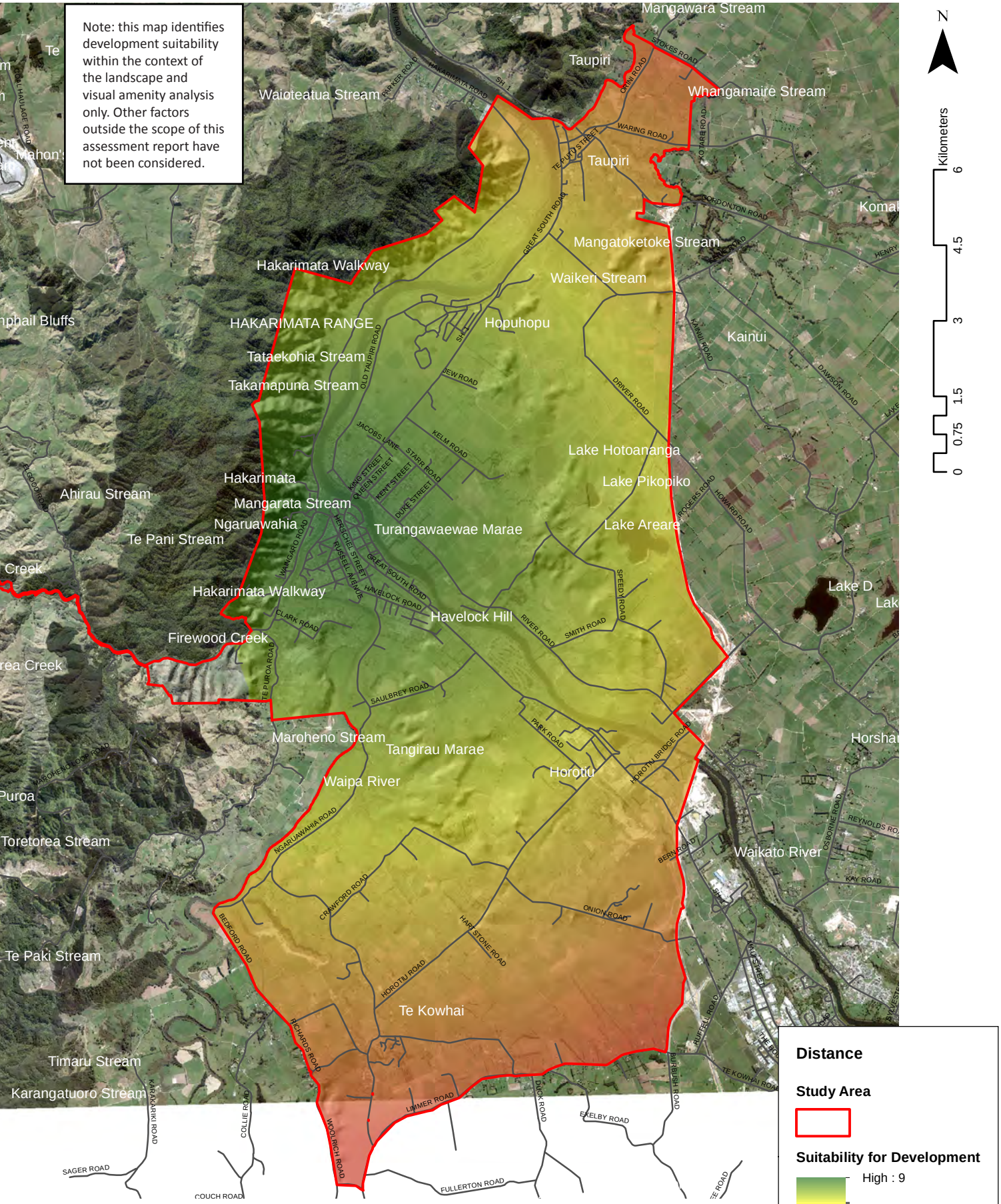
The commercial centre of Ngaruawahia Township provided the centre point for the distance analysis (as it acts as the main service area for the surrounding villages).

The outcome of the distance analysis suggests that land beyond the existing southeastern urban fringe of Ngaruawahia Township is less suitable for development due to the distance out from existing infrastructure and services provided for by Ngaruawahia Township.

To the northeast of Ngaruawahia Township urbanisation up to Kelm Road would be most suitable for future development in terms of distance to existing services and infrastructure.

The analysis indicated that areas most suitable for urbanisation to the south of the township would be approximately bound by Saulbrey Road, in terms of convenience to town centre services and other landscape design and planning principles.

In terms of the distance analysis, urbanistation could occur as far southwest as the edge of the study area (approximately).




# TIER TWO: DISTANCE

## Constraint Identification and Analysis

# TIER TWO: TOPOGRAPHIC POSITION INDEX (TPI)

## Constraint Identification and Analysis

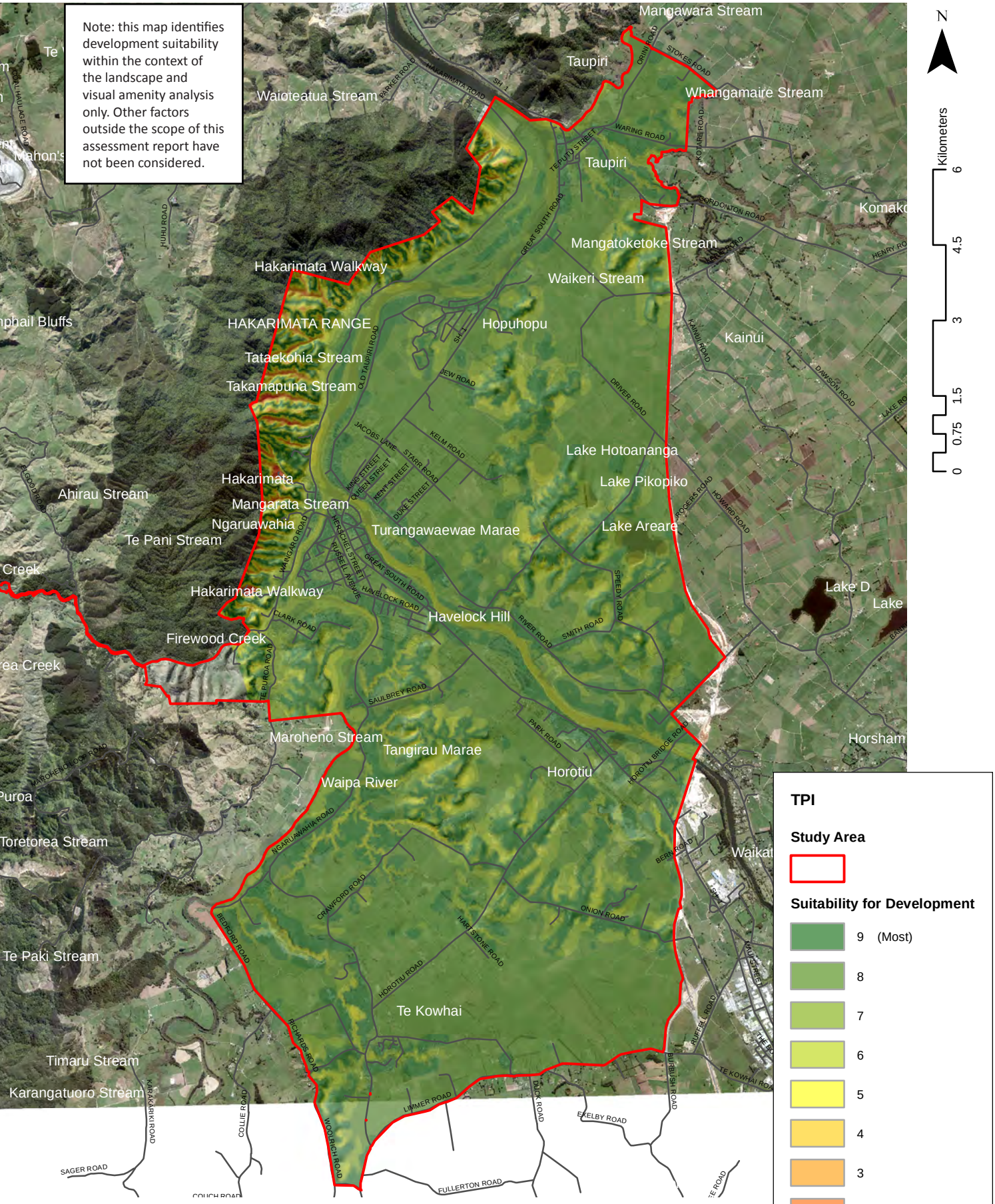
The adjacent TPI analysis map has been based on 0.5m Digital Elevation Model data provided by Waikato District Council. The TPI data has been assigned a number from 1-9 (where 1 indicates areas least suitiable for urbanisation and 9 indicates areas most suitable for urbanisation).

Mid-slopes were classified as most suitable for urbanisation (9), while ridgelines and gully slopes/ river trenches were classified as least suitable (1). Ridgeline development is less suitable because skylines should be protected from development (landscape design ideal), to avoid affects on visual amenity. Development within gully slopes and river trenches is less suitable due to potential disturbance of natural processes of streams.

The adjacent TPI analysis map indicates that upper hill country and ridgelines within the study area; are generally found to the west of Ngaruawahia and surrounds (within the Hakarimata Ranges). These areas would be unsuitable for development due to potential skylining, which would effect the natural character associated with these landscapes.

Lower gully slopes were identified throughout the study area, with a concentration of gully systems within close proximity to the Waikato and Waipa River's. These areas indicate further constraints for urbanisation due to the high natural landscape value of the gully systems, streams and rivers.

Areas most suitable for urbanisation according to the TPI analysis include small pockets of land directly to the south, north and northeast of Ngaruawahia Township, to the north of Te Kowhai village, to the south and northeast of Taupiri and to the west of Horotiu.




# TIER TWO: TOPOGRAPHIC POSITION INDEX (TPI)

## Constraint Identification and Analysis

# TIER TWO: SLOPE ANALYSIS

## Constraint Identification and Analysis

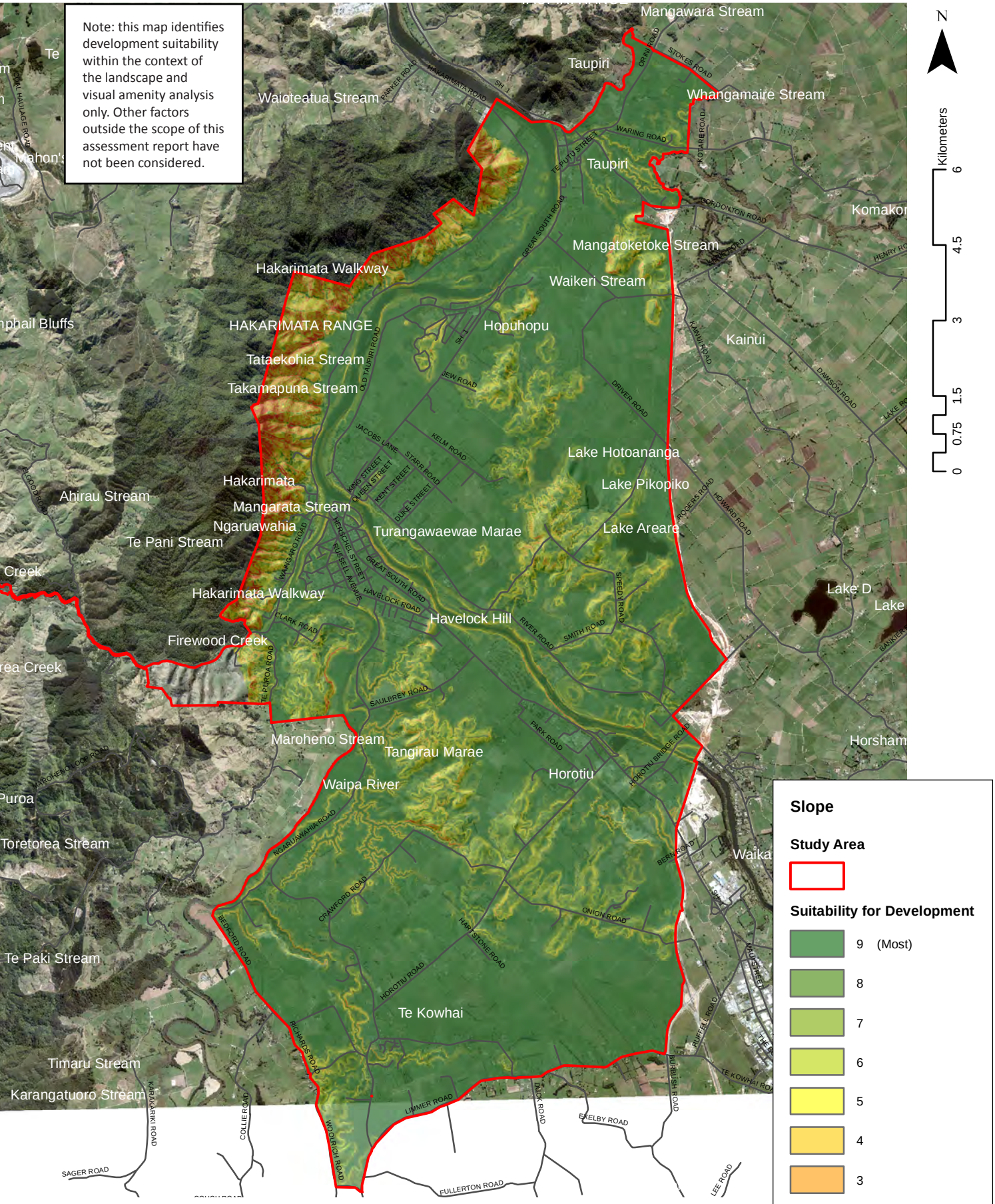
The adjacent slope analysis map has been based on 0.5m DEM data provided by Waikato District Council.

The slope analysis data was assigned a number from 1-9, where category 1 represented the steepest slopes, less suitable for urbanisation and category 9 represented the gentlest slopes, most suitable for urbanisation.

Development on steep slopes is more likely to result in the requirement for retaining and road cuttings, which could subsequently affect landform character and associated amenity values.

The outcome of this slope analysis indicates that with the exception of the Hakarimata Range to the west of the town centre, pockets of steep-sided gully systems throughout the study area (within close proximity to the Waikato and Waipa River's), most land within the Study Area is relatively flat in terms of slope.

This indicates that most localities within the Study Area are suitable for future urbanisation in terms of slope analysis.




# TIER TWO: SLOPE ANALYSIS

## Constraint Identification and Analysis

# TIER TWO: SOLAR GAIN

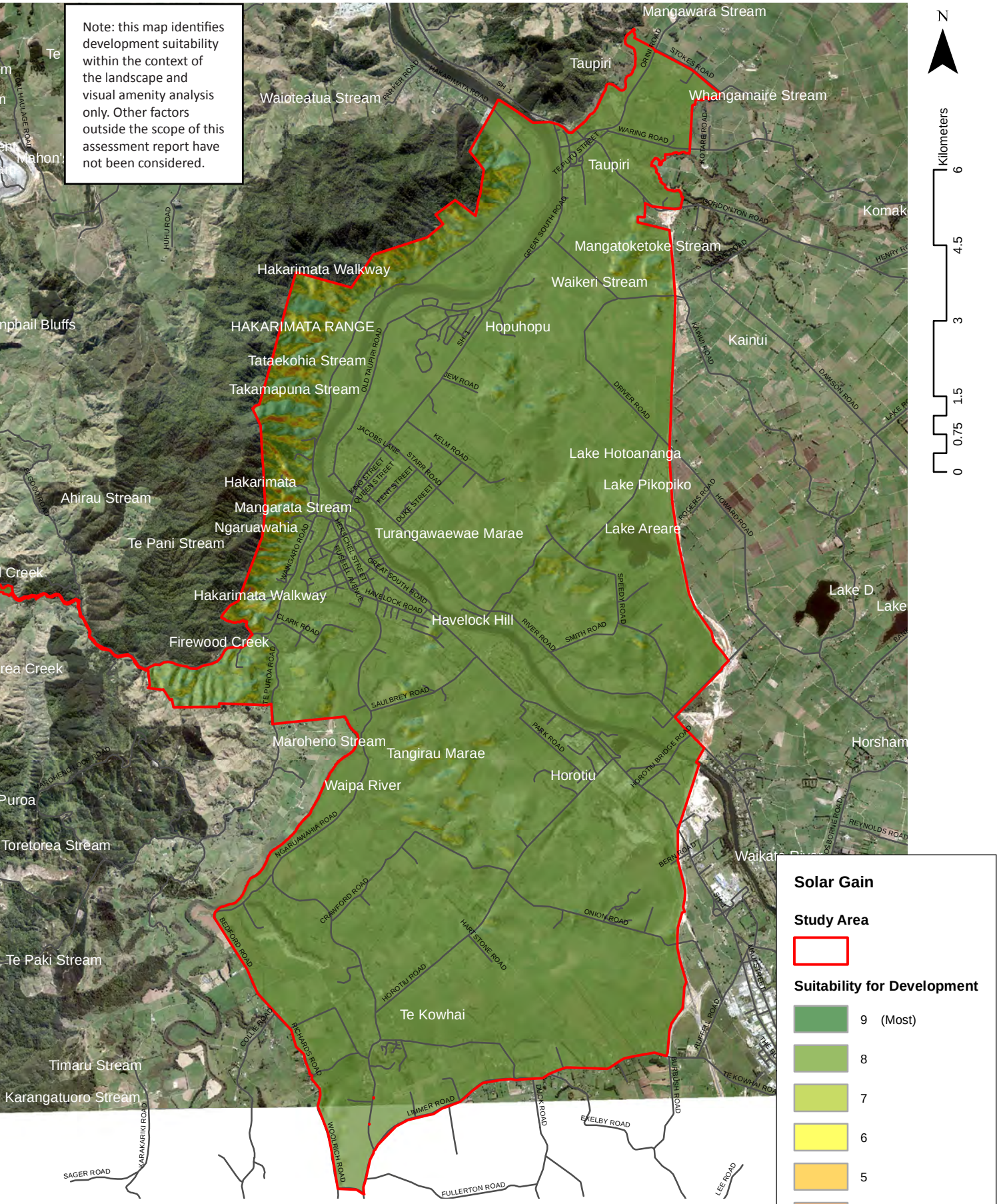
## Constraint Identification and Analysis

The adjacent solar radiation analysis map has been based on 0.5m DEM data provided by Waikato District Council.

The solar radiation analysis calculated the sunshine hours of the entire study area in 2-hour increments, over a year. The solar radiation data was then assigned a number from 1-9, with areas receiving the highest sunshine hours categorised as 9 and areas receiving the least sunshine hours over a year categorised as 1.

Overall, solar gain was found to be good across the majority of the study area, with the exception of the land along steep sides of the Hakarimata Range (to the north and west of the Ngaruawahia Township) and steep hill country to the north of Glen Massey village.

Areas with lower solar gain (1-5) would typically be less desirable land; as associated dwellings would generally be colder and damper than those developed on land with higher solar gain.




# TIER TWO: SOLAR GAIN

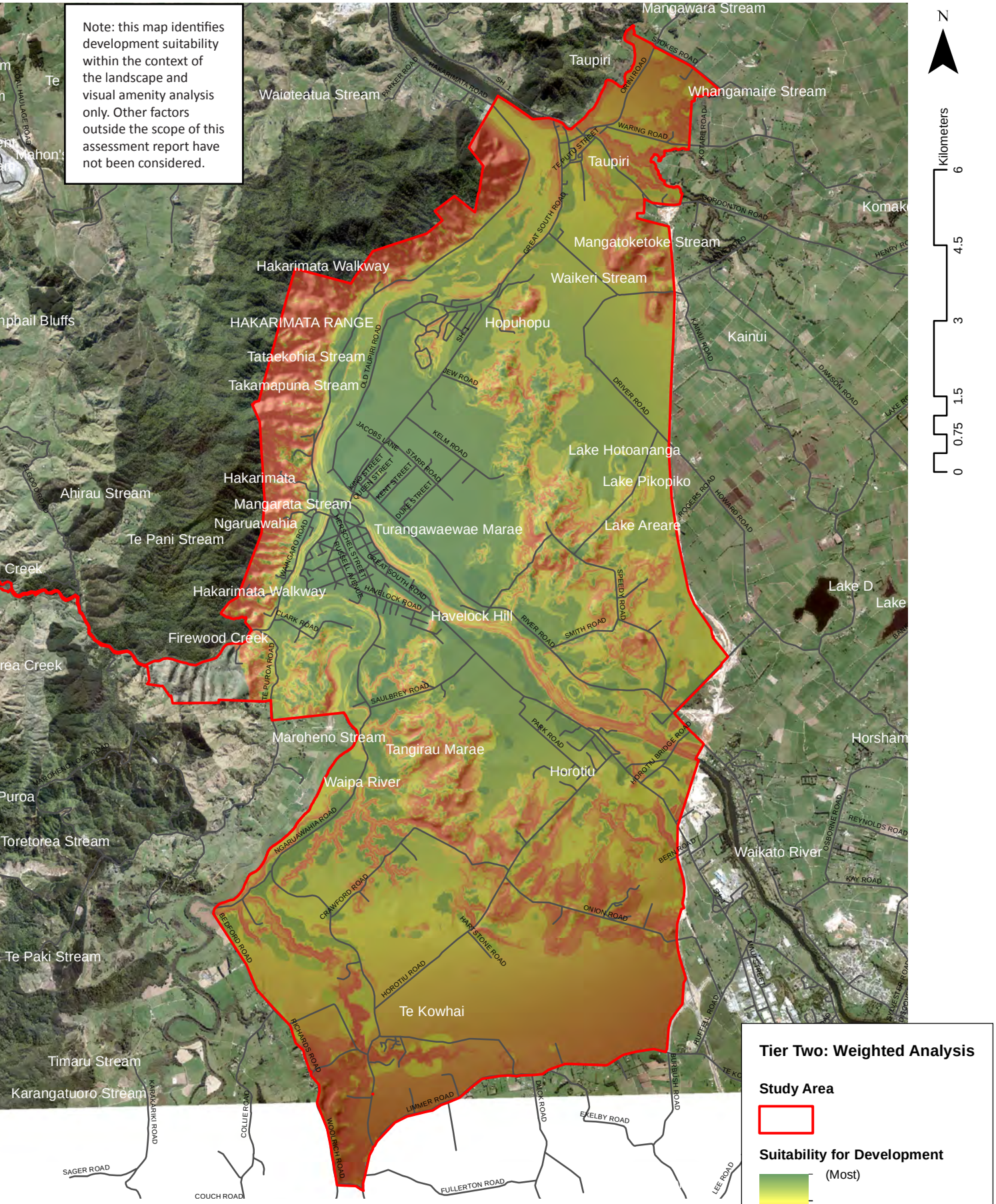
## Constraint Identification and Analysis

# TIER TWO: AMENITY CONSTRAINTS

## Weighted Analysis

Weighted analysis was utilised to provide an indication of the combined amenity constraints within the Ngaruawahia Study Area. 30% of the weighting was attributed to Distance Analysis, TPI analysis and Slope Analysis, while 10% was attributed to Solar Analysis.

The resultant map (adjacent) indicates that the majority of landscape constraints are associated with the elevated topography, steeper slopes, areas of little solar gain and a greater distance out from the centre of Ngaruawahia Township. These areas are generally to the far south of Ngaruawahia Township (in and around the hill country and gully systems surrounding Te Kowhai), to the far northeast (in and around the gully systems surrounding Ngaruawahia) and to the west (slopes of the Hakarimata Range).




# TIER TWO: AMENITY CONSTRAINTS

## Weighted Analysis

# COMBINED WEIGHTED ANALYSIS

## Landscape Suitability for Urbanisation

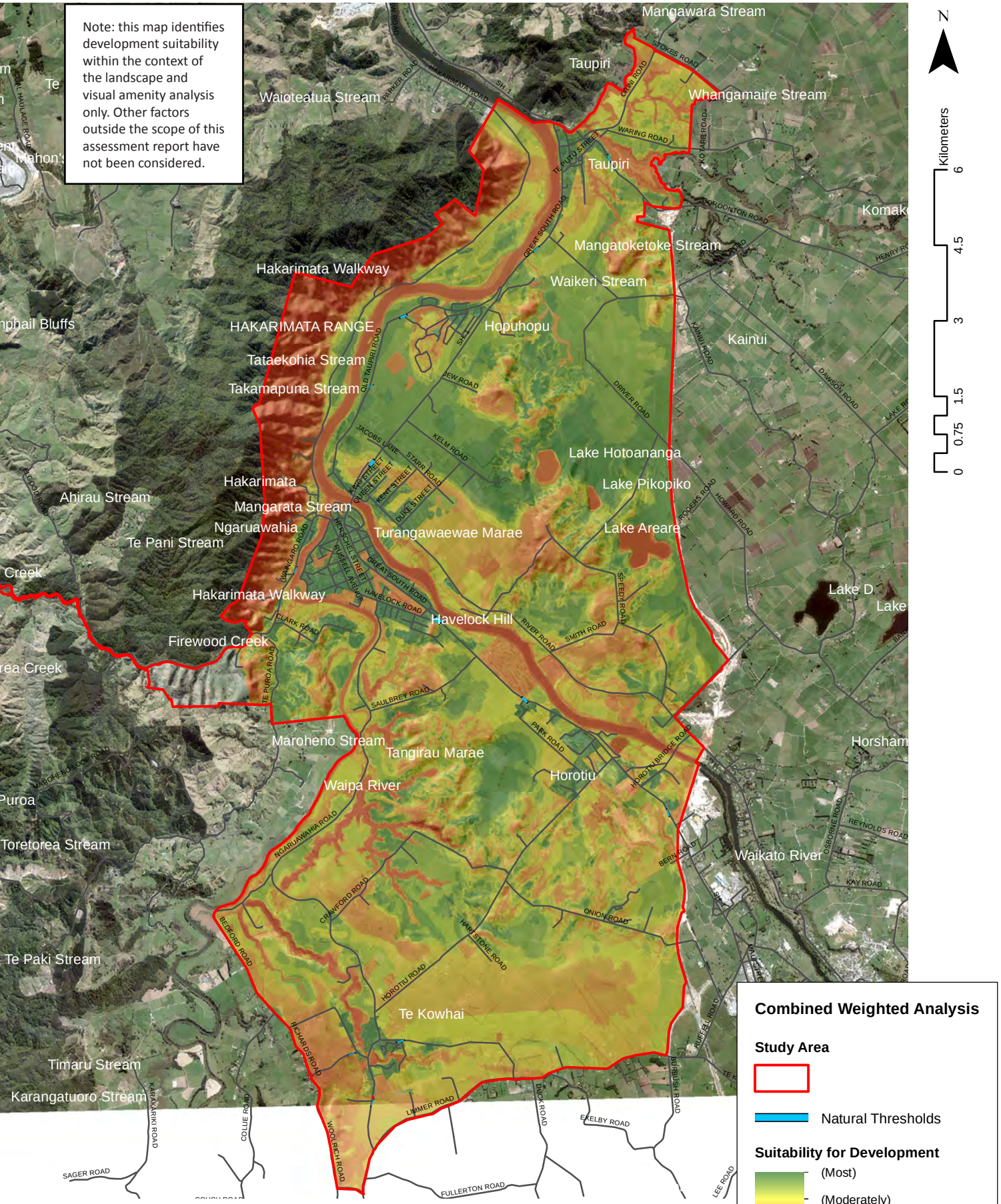
In combining amenity constraint mapping (distance, slope, TPI and solar radiation) with character constraint analysis (landcover and visual catchment), analysis was used to inform areas most and least suitable for development overall.

- 17% of the weighting was attributed to each landcover and potential visibility;
- 16% of the weighting was put on sensitive landscape areas;
- 15% of the weighting was put on each distance analysis, slope and TPI;
- 5% was given to solar radiation.

Landcover and visual catchment analysis was attributed to the highest weighting because it directly effects landscape character and associated amenity values.

The outcome of this analysis suggests that areas most suitable for development are generally located to the southeast and northeast of Ngaruawahia Township due to a combination of landscape character and landscape amenity constraints directly to the east and west of the township. The majority of the landscape surrounding Te Kowhai has been found to be suitable for future development, with the exception of the hill country to the west of the village. Similarly, in Horotiu the main landscape constraint is the Waikato River, to the east of the village. Only small pockets of landscape were found to be suitable for development around Taupiri due to the extensive gully systems, the location of the Mangawara Stream, Taupiri Range and infrastructural development restricting space for future development within close proximity to the existing village centre.

However, with the exception of the Hakarimata's and the Waipa/ Waikato River and other stream margins, overall there are no major restrictions in terms of which direction to develop in from a landscape perspective.




# COMBINED WEIGHTED ANALYSIS

## Landscape Suitability for Urbanisation

# LANDSCAPE CHARACTER & AMENITY VALUES

## Findings

The key attributes and landscape features in the adjacent table that contribute to landscape character and amenity of the Ngaruawahia Study Area area were identified during site investigations and landscape character and landscape constraint mapping analysis.

Future development within the areas indicated in the combined weighted analysis map as suitable for development is likely to have a low effect on the key attributes of the surrounding landscape which influence wider landscape character and associated amenity values. This is because the mapping analysis indicated no major landscape constraints within the study area (with the exception of the Waipa River, Waikato River, peat lakes, gully systems and the Hakarimata Range).

Expansion beyond the existing urban fringe of Ngaruawahia Township and each of the surrounding villages is likely to slightly alter amenity values associated with the existing rural landscape character. However, the affect on landscape character and amenity values is likely to have less than if development were to occur within the areas shown as less suitable for development. The outstanding natural landscape values associated with the Hakarimata Range and natural character values of the river, streams, lakes and their margins have been protected through the mapping analysis. As have ridgelines, gullies, steep slopes, indigenous vegetation, productive landscape, solar gain, distance from Ngaruawahia and areas highly visible from surroudning public roads.

Natural thresholds indicate subtle changes in landscape character and aim to protect the unique character of the Ngaruawahia Township and each of the surrounding villages. Expanding beyond the visual natural thresholds identified would create a more noticeable change in landscape character (although not significant), as development within areas out beyond these natural thresholds would be more difficult to integrate with the surrounding predominantly rural landscape character, as in most cases visual connection with the existing township is lost beyond these thresholds.

Overall, with the exception of the rivers and the Hakarimata Range, no major landscape constraints were found to exist within the Ngaruawahia and surrounds study area, only subtle differences, which make some areas slightly more or less suitable for development. Landscape

is therefore not likely to be the deciding factor in determining the extent/ exact locations for future development within the Ngaruawahia Study Area. Analysis of parallel studies indicating opportunities and constraints in terms of infrastructure, urban design, heritage and culture should therefore be carefully considered.

The following table of key attributes and landscape features found to contribute to landscape character and amenity in the surrounding area (refer to the landscape character section of this report).

| | Feature | Scale | Key Attributes | Potential Effect |
|---|---|---|---|---|
| 1 | Waikato and Waipa Rivers | Medium | • Formative processes overtly obvious.<br>• Meandering river channel.<br>• Broad river channel.<br>• Vegetated embankments and riparian areas.<br>• Recreational opportunities.<br>• Transient values (wildlife). | A negligible effect on the Waikato and Waipa Rivers; as the areas indicated as suitable for development (as shown on the combined weighted analysis map) are at a sufficient distance from the rivers to ensure adverse effects on landscape character and amenity values are avoided. |
| 2 | Streams and gully systems within the Ngaruawahia and surrounds study area | Small | • Meandering streams<br>• Vegetated embankments and riparian areas.<br>• Recreational opportunities.<br>• Transient values (wildlife). | Low effects, as streams and gully systems are indicated as less suitable for development within the combined weighted analysis map and therefore should be protected from future development. |
| 3 | Rural landscape | Large | • The subdivision of the rural pastoral landscape into a mosaic of paddocks and crops.<br>• Established shelter rows and planting.<br>• Mix of rural-industrial development within pastoral/ horticultural landscape.<br>• Cultural influences (formative processes) obvious. | Low effects, as the suitable future development areas, indicated in the combined weighted analysis map are more likely to ensure that existing landscape character of the wider surrounding landscape is maintained. |

# CONCLUSIONS & RECOMMENDATIONS

## Ngaruawahia Study Area

Weighted analysis of the various landscape and amenity factors identified in this report has found that:

- The Hakarimata Range is an ONFL;
- Subtle differences in landscape character and amenity values exist across the study area (as discussed in the landscape character section of this report);
- Natural thresholds rationalise natural features contributing to character and amenity shifts (identified on the combined weighted analysis map) provide guidance for township and village growth boundaries;
- Technical papers and community preferences indicate the importance of retaining the existing identity of the Ngaruawahia township and each of the villages by directing growth towards each existing township/ village and allowing for rural buffers;
- Landscape character and amenity assessment in combination with Landscape and urban design principles and relevant planning provisions helped determine GIS opportunities and constraints. These included:
    - Sensitive landscape areas should be protected through weighted analysis mapping. These were found to include the Hakarimata Range, Waikato and Waipa Rivers, stream systems and associated gullies and peat lakes to retain existing natural character and associated amenity values within the study area;
    - The protection of indigenous vegetation and water-bodies as opposed to existing built up areas, low producing grassland and exotic vegetation;
    - The avoidance of areas of high visibility from surrounding public roads within the study area;
    - The concentration of future development in and around the main service center of Ngaruawahia Township;
    - The avoidance of steep slopes, prominent ridgelines/ deep gully systems and areas of low solar gain;
- The outcome of the combined weighted analysis indicated that areas most suitable for development are generally located:
    - Within the existing Ngaruawahia town centre and each of the existing village town centres;
    - To the southeast and northeast of and within the existing Ngaruawahia Township;

- With the exception of hill country, the majority of the surrounding landscape in Te Kowhai is suitable for development;
- The majority of the surrounding landsacpe; except for local hills (elevated above the plains) and the Waikato River margins is suitable for future development within Horotiu and Hopuhopu;
- Only small pockets of land are suitable for development in Taupiri, in between existing natural feature (Waikato River, gully systems) and infrastructural constraints.

These findings suggest that only subtle differences exist in the suitability of different parts of the Ngaruawahia landscape to absorb the levels of development that will likely occur without affecting wider landscape character and the amenity derived from it.

It is therefore recommended that, from a landscape and amenity perspective, development should occur in a manner that has the least effect on wider landscape values over time. This suggests a staged approach which sees any growth being prioritised within areas identified as 'most' suitable on the combined weighted analysis map.

# WEIGHTED ANALYSIS - OUTCOME

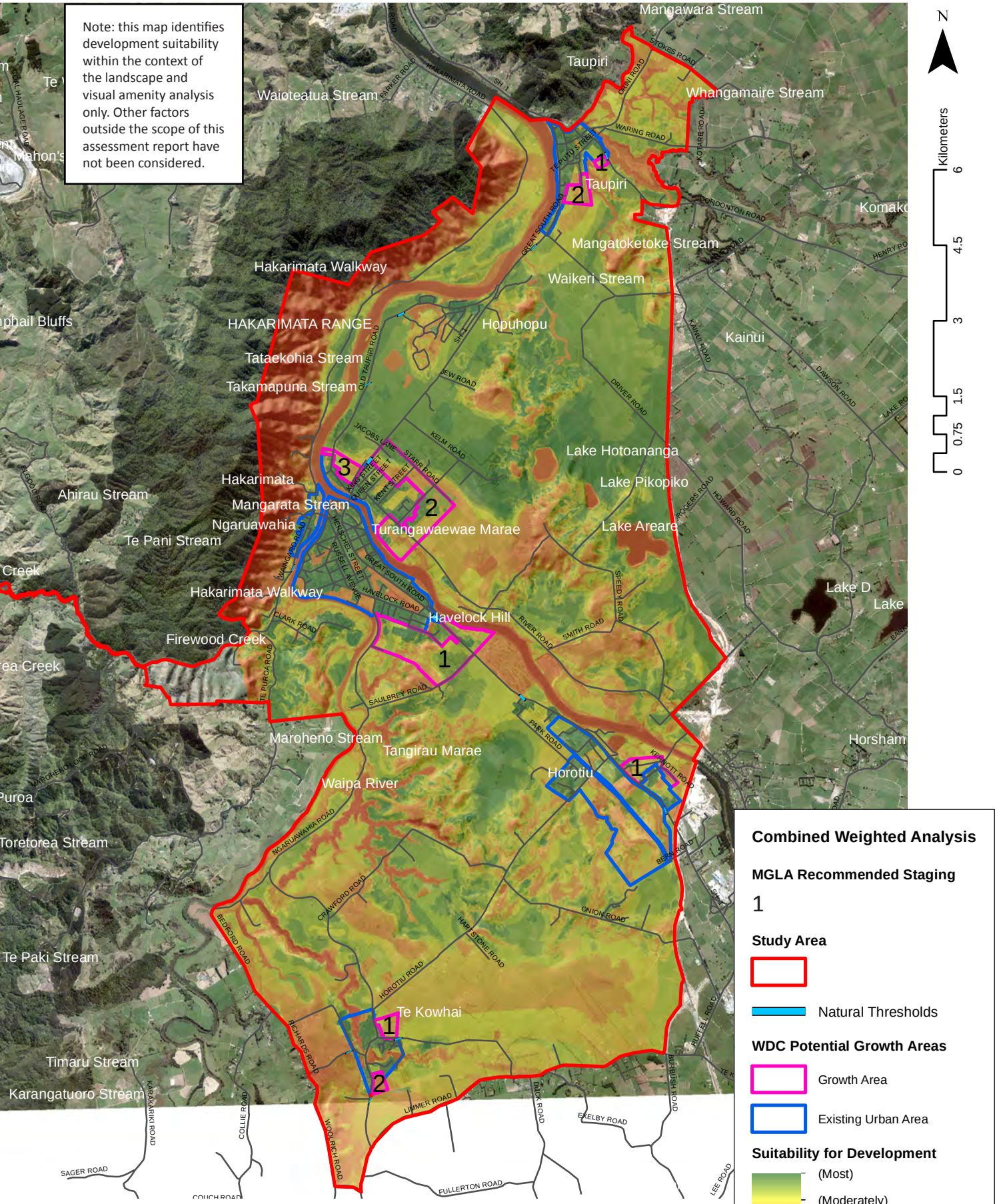
## Comparison with Urban Design Analysis

The WDC potential growth areas (indicated by the urban design team) have been overlaid on top of the combined weighted analysis map to indicate areas most suitable for development from a landscape and urban design point of view.

The majority of areas mapped through the urban design process align with areas found to be most suitable for development through the weighted analysis within this report. Some slight discrepancies have occurred however, these include:

- A small area of land to the south of Te Kowhai (hill country) where weighted analysis has found this landscape to be less suitable for development (due to the elevated position, where future development would be more highly visible from surrounding public roads and may therefore slightly alter existing open pastoral landscape character);
- The proximity of the suggested boundary lines for the growth areas surrounding Ngaruawahia Township are located within areas found to be less suitable for future development: within close proximity to the margins of the Waikato River. Care should therefore be taken at the fine-grained structure plan development stage to ensure that the key landscape attributes contributing to the natural character of the river are maintained with any future development.

The numbers on the adjacent map indicate appropriate staging, from a landscape perspective, for the future growth areas (areas provided by the urban design analysis team). Urban development areas identified as stage 1 are less likely to alter landscape character and amenity values of the surrounding landscape and will aid in integrating the stage 2 and 3 development as further urban expansion is required into the future. Stage 1 indicates areas more suitable for immediate development (largest areas of green) and stage 3 indicates areas less suitable for immediate development (mix of yellow and green areas, above the moderate rating threshold) in order to help preserve wider development, should be developed last.




# WEIGHTED ANALYSIS - OUTCOME

## Comparison with Urban Design Analysis

**Ngaruawahia**
As indicated in the weighted analysis - outcome map: comparison with urban design analysis, the area to the southeast of the existing town centre has been recommended as the most appropriate for stage one of growth area development. This is because this area was found to be overall the most suitable for development from a landscape perspective.

It is recommended that the second stage of growth area development occurs to the east of Ngaruawahia Township, expanding further southeast along River Road.

It is recommended that the third stage of growth area development occurs to the northeast of Ngruawahia Township, adjacent to great South and Old Taupiri Roads. Although a large portion of this area was found to be only moderately suitable for development, the proposed staging of development within Ngaruawahia Township will ensure a gradual integration of development within the surrounding rural landscape, reducing adverse effects on landscape character and amenity values.

**Taupiri**
The growth area proposed by the urban design team to the southeast of Taupiri village was found to be more suitable for development from a landscape perspective. This area is therefore recommended as the first stage for any potential future development, while the area to the southwest is recommended as second stage development.

**Te Kowhai**
Stage 1 of future growth area development in Te Kowhai is recommended to the east of the existing village, within flat topography, where less landscape constraints exist. Stage 2 is recommended to the south, where hill country makes the landscape less suitable for development.

**Horotiu**
Since only one area was identified by the urban design team for future growth within Horotiu, this area has been recommended to occur as stage one future development.

Because there are no major constraints in terms of the landscape within the Ngaruawahia and surrounds study area (with the exception of the Hakarimata Range, gully systems and Waikato and Waipa Rivers), the above recommendations and proposed staging order indicates the most suitable areas for development in terms of landscape character and amenity, but not the only suitable areas or staging. It is therefore important that the outcomes of other analysis, parallel to this study is considered before final recommendations for urban expansion are made.

The following statutory documents, issues, objectives, policies and rules are considered relevant in the assessment of visual, landscape and amenity effects.

The outcome of this comparative analysis between the combined weighted outcome map and the urban design potential growth areas has assumed that the potential growth areas will reflect the existing development type of adjacent existing zoning under the WDP and will not propose inappropriate zone mixes, (such as heavy industrial abutting existing residential).

# APPENDIX ONE

## ONFL Methodological Approach

## 1. PREFACE

Outlined within this document is an identification of the legal prerequisite tests to be applied, a direction to be applied resulting from the Waikato Regional Policy Statement and a methodological approach that will be used in the identification and analysis of the District's outstanding natural features and landscapes.

This document forms the basis of the agreed methodological approach, following caucusing.

The methodology does not include an approach for the assessment of the amenity landscapes within the district as this is outside the scope of engagement.

## 2. THE LEGAL PREREQUISITE TEST

In the *Rosehip*[1] decision where the Court wrote:

> *A fundamental question for these proceedings is whether there is one or more outstanding natural landscapes within the meaning of section 6(b) of the RMA in the Mackenzie Basin. To answer this we need first a definition of "landscape" and then to answer three factual questions:*
> *(1) is there one landscape or more in the Mackenzie Basin?*
> *(2) if so, is any identified landscape natural?*
> *(3) if yes to (1) and (2) for any landscape, then is the natural landscape also outstanding?*

This reasoning sequence forms the basis of the s6(b) analysis process and is fundamental to a number of decisions that are subsequently made during the detailed assessment.

Through the application of the following approach, the above test is satisfied.

## 3. REGIONAL POLICY STATEMENT

The Proposed Waikato Regional Policy Statement – Decisions Version (PWRPS) indentifies a requirement for the identification of the district's ONFLs:

> ***12.1.1 Protect values of outstanding natural features and landscapes***
> *Regional and district plans shall identify and provide for the protection of the values and characteristics of outstanding natural features and landscapes, including those of regional significance identified in section 12A (Table 12-1).*
>
> ***12.1.2 Identify local outstanding natural features and landscapes***
> *Waikato Regional Council will encourage territorial authorities to undertake a district-wide assessment of outstanding natural features and landscapes of local significance, the criteria in section 12B (Table 12-2) should be used as the basis of any new assessment.*

[1] High Country Rosehip Orchards v MacKenzie District Council (Decision No [2011 NZEnvC 387)

The Regional Council identifies that:

> *All data are mapped at 1:50,000 based on a variety of data sources so the accuracy of those sources applies (see Data Sets Used in section 4 below). However, which datasets were used to define the edges/boundaries of which parts of the polygons is not clear.*
>
> *The group who undertook the landscape assessment were instructed not to go onto private land and to assess the landscape from public places. Given the difficulty in defining the "edge" of a landscape and/or feature the boundaries of the ONFL are to be considered indicative only and may vary by up to +/- one kilometre from that actually mapped.*

## 4. METHODOLOGICAL APPROACH

A number of recent Environment Court decisions have highlighted the need for the assessment of the outstanding natural features and landscapes under Section 6(b) of the RMA to be undertaken in a rigorous and defensible manner.

Analysis of recent decisions suggests that various divisions of the Environment Court have based their decisions on ONLs after considering the spectrum of scientific and evaluative evidence put before them.

### The Relevant Model of Environmental Perception

Aesthetic appreciation, in the sense that it describes the level of satisfaction (positive or negative) derived from our perceptions, experiences and interactions with the environment, is fundamental to the way we define landscapes and ascribe values and meanings to them. Various models of aesthetic appreciation have been developed to explain environmental and landscape preference. These can be used to explain both landscape preference and attractiveness.

It is considered that, within the context of the requirements of section 6(b) of the RMA, an appropriate theoretical framework for the identification and evaluation of the District's outstanding natural features and landscapes is a *holistic model of landscape aesthetics* within which consideration is given to interaction between people and the landscape, and for which the various key models of aesthetic appreciation can be used to explain why some landscapes and/or features come together in a such a manner that they are perceived as being "outstanding" while others do not (even though on cursory examination they appear to contain similar components/spatial relationships).

Under such an approach, scientific explanation of the biophysical and geophysical elements that enhance an understanding of the landscape (or feature) are evaluated within the context of a range of associative and perceptual factors that ascribe value and meaning to that landscape (or feature). These may then be described and evaluated using the language of aesthetics.

**Approach Overview**

A holistic methodological approach will be followed, starting with the identification of topographical and land use patterns of the district in a hierarchical manner. *Expert evaluation*, drawing upon relevant aspects of the physical and perceptual landscape, will be used to draw together the various components[2] of the landscape, starting with a spatial framework and using associative and perceptual data to enrich an understanding of its intrinsic and contextual values.

The following iterative approach will be applied in the identification and analysis of the District's ONFLs:

Stage One: Identification of the District's Landscape Resource

Stage one will involve the identification of the District's landscape resource through GIS analysis and field survey. This will identify, and spatially define, the various geophysical and biophysical components and formative processes relevant to the identification and understanding of "RMA features and landscapes";

Stage Two: Identification of the District's Landscapes and Features (Unevaluated)

Stage two will involve the conflation of the (above) components into *features*[3] and *landscapes*[4] based on key perceptual and associative factors considered within the context a relevant model of environmental perception (in other words, the collective identification and analysis of the components of the landscape that have identifiable associations and/or spatial relationships that, when considered as a whole, affect the way they are collectively perceived and valued). Landscape and features will be classified in terms of:

i. *Landscape/feature typology*: A systematic classification of landscape and feature types based on the attributes that describe properties of interest (e.g. bio/geophysical, socio-cultural, perceptual). Landscapes are defined by the unique relationships between natural components (geology, soils, etc) and human components (land-use, buildings etc); and
ii. *Landscape/feature patterns*: The spatial patterns formed by different landscape/feature typologies that form unique spatial arrangements with distinctive identities.

Stage Three: Application of the "Natural" Prerequisite Test

The "natural" pre-requisite test will be applied to the District's identified landscapes and features in order to identify which landscapes are sufficiently natural to be considered as candidates for further assessment and ONFL evaluation. Candidate ONFLs will be subject to further analysis in the following stage. The pre-requisite test will identify:

i. Natural landscapes and features: Those landscapes and features that pass the "natural" prerequisite test.

[2] For the purposes of this study, a landscape *component* is considered to be part of a landscape or feature that (for all intents and purposes and within the scale of analysis being undertaken), is consistent in its geophysical and biophysical makeup and appearance. *Components* represent the smallest unit of analysis that will be considered during the assessment process.
[3] Meaning a *feature* under RMA s6(b). Where used in this sense, a *feature* is usually comprised of a single or relatively small number of *components*, and is generally smaller than a (RMA s6(b)) *landscape*.
[4] Meaning a *landscape* under RMA s6(b). A *landscape* can be considered to be an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors. Where used in this sense, a *landscape* is usually comprised of many *components* and/or *features*, and is generally much larger than a (RMA s6(b)) *feature*.

ii. Other landscapes or features: Those landscapes that do not pass the "natural" prerequisite test.

Landscapes and features that do not pass the "natural" threshold test will not be evaluated further or mapped.

Stage Four: Identification of Outstanding Natural Features and Landscapes (Evaluated)

A preliminary sieving exercise will occur (based on expert analysis and a review of the ONFL's identified in similar landscapes in the surrounding Districts) to identify the District's candidate ONFLs (and discount from further analysis, natural landscapes that are not likely to achieve ONFL status).

An iterative process will be followed in order to identify the District's candidate ONFLs and its other natural landscapes (for which no further analysis will occur):

i. ONFL candidate landscapes and features: Those landscapes and features that having already passed the "natural" prerequisite test, may; or are likely contain the various bio/geophysical, perceptual and associative attributes and values necessary for "outstanding" status.

ii. Other natural landscapes or features: Those landscapes that pass the "natural" prerequisite test, but are unlikely to contain the various bio/geophysical, perceptual and associative attributes and values necessary for "outstanding" status.

Each candidate ONFL will undergo further (iterative) expert evaluation and analysis, within the context of a relevant holistic model of environmental aesthetics that informs an understanding of the landscape (or feature), its perception and why it can be considered to be "outstanding" when compared to similar (or dissimilar) surrounding RMA landscapes or features.

Identified ONFLs will be mapped and the key attributes of each described.

**Stage One: Identification of the District's Landscape Resource.**

The districts geographical and landscape features will be identified through a combination of desktop analysis using existing geospatial data, non-geospatial data (descriptive data) and field investigation and verification. This will identify, and spatially define, the various geophysical and biophysical components and formative processes relevant to the identification and understanding of "RMA features and landscapes"

Geospatial Data

The following base geospatial data will be used to identify relevant geophysical and biophysical features and their associated (non value laden) attributes that contribute to an understanding of the landscape within which they are contained:

a. Geological (geology and soils)
   i. GNS (QMap) Geological Data (1:250000)
   ii. LRI Soil Data

b. Topographical Data
   i. Contour Data

ii. Digital Elevation Models
iii. Topographic Position Indexing
iv. Slope
v. Visual catchment
vi. Watershed
vii. Catchment
viii. Rivers/streams
ix. Lakes

c. Land cover
   i. Vegetation (LCDBv3)
   ii. Land use
   iii. Development
   iv. Urban areas
   v. Development density
   vi. Development patterns

d. Aerial photography;
   i. Google
   ii. ESRI
   iii. District Council Aerial Photography

This exercise will be used to identify the District's landscape resource as a series of spatially associated landscape (or geographical) features, that when considered within the context of each other, form the basis from which the District's landscapes (including candidate ONFL's) are identified.

<u>Other Data</u>

When considering additional values associated with the district's landscapes, the following types of (potentially non-geospatial) data will be reviewed and considered:

e. Cultural Associations
   i. Iwi
   ii. European

f. Heritage and Historic Associations
   i. Iwi
   ii. European

g. Planning
   i. Existing protection mechanisms and requirements (RPS/CPS/NZCPA/RMA etc)
   ii. Tenure (Private/DoC/Council/etc)

**Stage Two: Identification of the District's Landscapes and Features (Unevaluated)**

In the sense used in s6(b) of the RMA, a landscape is an amalgam of bio/geophysical components and cultural land use patterns that has an identifiable spatial association or relationship which gives rise to cultural and perceptual values. Communities of interest attribute value to landscapes, and the density and strength of value attributed may be regarded as indicative of the relative significance of different landscapes. It can be described in terms of its spatial extent, geophysical and biophysical components and processes as well as in terms of its values and associations based on how people perceive and interact with it.

Support for this approach can be derived from the aesthetic paradigm explained within the theoretical framework of environmental perception.

This is consistent with the findings of a number of recent decisions including *WESI*[5], *Long Bay*, *Lammermoor*[6] and *Rosehip*, where a wide range of bio/geophysical, associative and perceptual factors were assessed in detail (by various landscape architectural and non-landscape architectural witnesses from an expert or scientific perspective) and considered by the Court in the definition of various s6(b) landscapes and features.

Expert evaluation, within a theoretical framework of environmental perception and landscape aesthetics, will be used to identify and describe the relationships between the various environmental and/or geographic/landscape features present, and how they contribute to an understanding of/perceptions of a landscape.

To achieve this, the various factors identified in the following table (consistent with those identified in the WESI and Lammermoor cases) will be analysed in order to identify the district's landscape resource. By conflating the various empirical factors (non value laden) within the context of various perceptual and associative factors (value laden), the district's landscapes and features can be identified and described. In doing so, hierarchical emphasis will be placed on the consideration of what are termed primary factors and secondary factors.

Primary factors, are those factors considered to be a constant (such as the presence and spatial extent of a particular forest type) or unaffected by a secondary factor (such as it is perceived as the largest patch of forest in the district). Secondary factors are those that are considered to influence perceptions of the primary factors, but are not consistently present, or influence the primary factor (or perceptions of them) in different ways (such as value to Iwi).

[5] Wakatipu Environmental Society Incorporated v Queenstown Lakes District Council (C180/99)
[6] Maniototo Environmental Society Incorporated v Meridian Energy (Case C103/2009)

**Stage Three: Application of the "Natural" Prerequisite Test**

Following the identification of the District's landscape resource, the "natural" prerequisite test will be applied in order to determine if they are sufficiently natural to be able to be considered as candidate ONLs.

The test will be applied at both the "landscape" and "landscape feature" level. Landscapes that are considered to be "natural enough" will be further evaluated to determine if they are also outstanding (refer next stage). Where a landscape is found to be "not natural enough", the features within it will be evaluated in order to determine if they are "natural enough" to be considered as outstanding natural features.

This is supported in the Rosehip and the Denniston[7] decisions, where the Court appears to have accepted the following seven point scale and ONFL threshold. The following scale[8] indicates the continuum between landscapes and features that are natural enough to be considered for ONFL status and those that are not, that were considered by the Court.

| Natural enough | | Not natural enough | | | | |
|---|---|---|---|---|---|---|
| Very High | High | Moderate – High | Moderate | Moderate – Low | Low | Very Low |

The following modified version of the above scale will be used to assess if a landscape or feature is considered to be "natural enough" to be considered as a candidate for ONFL status (in other words, if it passes the "natural" part of the prerequisite test). The scale indicates the existence of a continuum between natural and unnatural and identifies key indicators that will be used to determine its state of naturalness (Very High – Very Low along the continuum).

[7] West Coast Environmental Network Inc. Et al v Buller Coal Ltd. [2013] NZEnvC 047 – Para 47-48.
[8] Presented in the expert evidence of ML Steven and reproduced within the *Rosehip* decision

| NATURAL ENOUGH | | NOT NATURAL ENOUGH | | | | |
|---|---|---|---|---|---|---|
| **Very High** | **High** | Moderate – High | Moderate | Moderate – Low | Low | Very Low |
| **NATURAL** | | | (continuum) | | | UNNATURAL |
| All of the key indicators remain unmodified or untouched by human activity / the consequence of human activity (to the extent possible).<br><br>All natural formative processes and association remain evident.<br><br>No; or rare discernable sign of human activity. | Most of the key indicators remain unmodified with only one or two key indicators modified to a small extent by human activity / the consequence of human activity.<br><br>All natural formative processes and association remain evident.<br><br>Some signs of human activity. | Most key indicators modified to a small extent with only one or two key indicators modified to a moderate extent by human activity / the consequence of human activity.<br><br>Most natural formative processes and associations remain evident in places.<br><br>Human activity overt in places. Landscape modification readily discernable in places. | Most key indicators modified to a moderate extent by human activity / the consequence of human activity.<br><br>Most natural formative processes and association remain discernable.<br><br>Regular signs of human activity and landscape modification. | Most key indicators modified to a moderate extent with one or two key indicators modified to a high extent by human activity / the consequence of human activity.<br><br>Some natural formative processes and association remain evident.<br><br>Signs of human activity and landscape modification common. | Most key indicators modified to a high extent with one or two key indicators completely modified or destroyed by human activity / the consequence of human activity.<br><br>Few natural formative processes and associations remain evident.<br><br>Human activity and landscape modification dominant. | All key indicators are either completely modified or have been destroyed by human activity / the consequence of human activity.<br><br>No natural formative processes or associations remain discernable.<br><br>Human activity and landscape modification predominant. |
| Examples:<br>• National parks (wilderness area).<br>• Scenic reserves.<br>• Undeveloped private land.<br>• Undeveloped coastal environment. Coastal foreshore and hinterland landform intact. No buildings or roads evident. | Examples:<br>• National parks or reserves (with occasional track and/or hut).<br>• Indigenous vegetation cover dominant over farm development and rural land cover.<br>• Coastal environment containing an occasional building nestled in amongst predominantly native vegetation. Low levels of road access restricted to coastal hinterland. Foreshore intact. | Examples:<br>• Recreation reserves (developed).<br>• Farmland just dominant over indigenous and/or exotic vegetation cover.<br>• Cut over (regenerating) native bush.<br>• Coastal environment containing dispersed or small clusters of buildings with moderate tracts of indigenous and exotic vegetation. Road access restricted to coastal hinterland. Some developed access to the foreshore (low key). | Examples:<br>• Rural land with some indigenous and/or exotic vegetation cover.<br>• Bush covered peri-urban areas.<br>• Coastal environment containing low levels of urban development and a mix of remnant indigenous and exotic vegetation. Coastal hinterland modified by roads and lot development. Developed (regular) access to the foreshore. | Examples:<br>• Rural land with little or no indigenous and/or exotic vegetation.<br>• Urban parks (parks and gardens).<br>• Production forestry.<br>• Bush covered urban areas.<br>• Coastal environment containing medium levels of urban development and a mix of remnant indigenous and exotic vegetation. | Examples:<br>• Rural-residential areas.<br>• Urban parks and recreation reserves (sports grounds etc).<br>• Cut over production forestry.<br>• Coastal environment containing high levels of urban development and a mix of remnant indigenous and exotic vegetation | Example:<br>• City Centre / CBD.<br>• Industrial areas.<br>• Canals<br>• Coastal environment dominated by very high levels of urban development with the coastal edge artificially retained or modified. Little or no vegetation. |
| **KEY INDICATORS** | | | | | | |
| Natural processes.<br>Natural landforms and geological features.<br>Endemic vegetation patterns and associations.<br>Ecological associations.<br>Water courses and bodies. | | | | | | |
| Note: Naturalness ratings will take into consideration the size of the landscape/feature being assessed in relation to the extent of any modification that has occurred within it or influences perceptions of it. | | | | | | |

**Stage Four: Identification of Outstanding Natural Features and Landscapes (Evaluated)**

This stage of the assessment process will draw upon the unifying theoretical model of *holistic aesthetic appreciation* to help explain why some landscapes/features come together in a manner that they can be perceived as being "outstanding" while other do not (even though on cursory examination they appear to contain similar components/spatial relationships.

An iterative assessment and analysis approach will be adopted to ensure that identification of the District's ONFLs is robust and defensible.

<u>Identification of Candidate Outstanding Natural Features and Landscapes</u>

Following the application of the "natural" prerequisite test, an iterative analysis will be undertaken (using expert analysis techniques and a review of the ONFL's identified in similar landscapes in the surrounding Districts) to identify the District's candidate ONFLs and its other natural landscapes (for which no further analysis will occur):

i. ONFL candidate landscapes and features: Those landscapes and features (having already passed the "natural" prerequisite test) that may or are likely to contain the various bio/geophysical, perceptual and associative attributes and values necessary for "outstanding" status.

ii. Other natural landscapes or features: Those landscapes and features that are unlikely to contain the various bio/geophysical, perceptual and associative attributes and values necessary for "outstanding" status.

In the application of the iterative analytical approach, the key geophysical/biophysical, associative and perceptual factors to be considered in the identification of the district's landscapes will be divided into two factor groups. These are primary factors and secondary factors.

Primary factors are considered to be the more constant (or enduring) factors that inform an understanding of landscape values and meaning. These will be used in the analysis and identification of whether a natural landscape (or feature) is outstanding.

Secondary factors are considered to be those that are either highly dynamic or variable and/or those that are associative, meaning that they are either:

i. Not always present or do not always have a consistent effect on how a landscape or feature is perceived, its meaning or values (for example the effect of seasonal of atmospheric variation); or

ii. Do not affect perceptions relating to its degree of naturalness, but enrich the understanding of the landscape or a feature through identifying values associated with past, present and future occurrences (for example historical or associative) and may affect perceptions of whether a landscape or features is outstanding or not.

The reason for this separation is that for a landscape or feature to be considered sufficiently outstanding to be included in the District Plan, it must consistently display those attributes that make it so under all conditions, meaning that factors that make it appear outstanding at some times and not others, should not be used as a determining factor in ONFL analysis and evaluation.

This approach is consistent with the findings of the Holcim case[9], in which the Court considered the contribution of heritage values (and tangata whenua values) to the identification of section 6(b) landscapes. In paragraph 175 of the decision, the Court wrote:

> *...in terms of section 6(b) the question is not whether these* [historic] *items exist, or are important, but whether they are such that in combination they give a particular character to the landscape such that together with tangata whenua cultural associations they make the wider landscape outstanding as a natural landscape.*

In paragraph 182, when considering Tangata whenua values, the Court went on to say:

> *As we have said, under section 6(e) we are required to recognise and provide for the relationship of Maori and their culture and traditions with their ancestral lands, water sites, waahi tapu and other taonga. Their presence contributes to an understanding of landscape, but while it may, it does not necessarily, result in the landscape being regarded as outstanding. But we bear their presence in mind as we consider whether the landscape of the Waiareka valley should be so classified. We reiterate, that inasmuch as a landscape does derive its significance from these items of significance to Maori, recognition and provision for them in a way that would satisfy the requirements of section 6(e) is likely also to satisfy the requirements of section 6(b).*

This suggests that, under the RMA, the proper approach to the identification of ONFLs (s6(b) landscapes) it is to place primacy on those factors that contribute to the naturalness of the landscape first, and its outstanding nature second (as indentified in the legal prerequisite tests). This suggests that, a landscape or feature may contain outstanding heritage of tangata whenua values, but be insufficiently natural to be considered as an ONFL under s6(b). This of course does not preclude its identification as a landscape of cultural value or a heritage landscape under s6(e) or s6(f) of the RMA.

Therefore, where secondary factors are considered to add significant value to an area that is also an ONFL candidate, these will be identified and considered. Where such factors and features are considered to add meaning or value to a landscape or feature in their own right but are not contained within an area that is considered to be outstanding (within the context of the primary factors), then these will not be identified by the work undertaken in response to the appeals to the landscape provisions of the district plan.

Thus, each candidate ONFL will undergo further (iterative) expert evaluation and analysis, within the context of a relevant holistic model of environmental aesthetics that informs an understanding of the landscape (or feature), its perception and why it can be considered to be "outstanding" when compared to similar (or dissimilar) surrounding RMA landscapes or features.

[9] Waireka Valley Preservation Society et al v Waitaki District Council and Otago Regional Council (C058/2009)

The following factors will be considered, within the appropriate holistic aesthetic framework, in the evaluation of the districts' landscape resource:

| KEY BIO/GEOPHYSICAL FACTORS | NON VALUE/VALUE LADEN | FUNCTION |
|---|---|---|
| Key Geophysical, Biophysical and Cultural (Physical) Factors that influence landscape perception:<br>a. Geological<br>• Type (volcanic/sedimentary/igneous etc - surface geology)<br>• Spatial extent (large – small)<br>• Spatial relationship (simple-complex)<br>• Temporal relationship (age)<br>b. Geomorphology<br>• Formative processes (tectonic/volcanic/alluvial/coastal etc)<br>• Typology (mountainous, rolling, plains, etc)<br>• Pedology (Soils)<br>• Type<br>• Spatial extent<br>• Spatial relationship (proximity/TPI10)<br>• Temporal relationship (recent – ancient)<br>c. Ecological<br>• Vegetation (type)<br>• Spatial extent (large – small)<br>• Spatial relationship (simple-complex)<br>• Temporal relationship (primary – climatic)<br>• Habitat (type)<br>d. Cultural (physical)<br>• Type (building/road/etc)<br>• Spatial extent (large - small)<br>• Spatial relationship (simple-complex) | Non value laden identification of the components of the physical environment that contribute to an understanding of the landscape or features within it. | Primary factors used in the identification of the districts landscape resource. |
| Key Environmental Variables:<br>e. Dynamic<br>• Type (climatic/seasonal/etc)<br>• Rate of change (fast/slow)<br>• Extent (large/small)<br>f. Temporal<br>• (past/present/future) | Non value laden identification of the transient or highly dynamic elements/events within the physical environment that have the potential to alter perceptions of the landscape and landscape values. | Secondary factors (environmental) that may affect the values associated with the districts landscapes and/or ONFLs in either a positive or negative way, but are not constantly present. |

| KEY PRECEPTUAL FACTORS | NON VALUE/VALUE LADEN | FUNCTION |
|---|---|---|
| Key Perceptual Factors that influence how landscapes are identified and perceived:<br>g. Legibility (does it make sense / is it readable)<br>• Internal Cohesion (between elements with a landscape)<br>• External Cohesion (between different landscapes)<br>• Patterning<br>h. Magnitude<br>• Size (spatial extent)<br>• Scale (overwhelming / intimate)<br>i. Spatial arrangement (of elements)<br>• Ordered/chaotic<br>• Juxtaposition | Value laden analysis of the (above) geophysical, biophysical, physical and environmental factors to determine whether, and to what degree, under which conditions they are valued by the (wider) community or communities of interest. | Primary factors (associative and perceptual) that can be used to identify and define the districts landscapes and the values associated with them. Used (in conjunction with the above geophysical, biophysical & physical factors) in the identification and evaluation of the |

[10] Topographic Position Index (relationship relative to topography – i.e. valley floor soils / upper slope soils etc)

| KEY PRECEPTUAL FACTORS | NON VALUE/VALUE LADEN | FUNCTION |
|---|---|---|
| j. Spatial relationship (of elements)<br>• Association (dispersed / clustered)<br>• Pattern<br>k. Naturalness<br>• Dominance of natural/cultural processes<br>l. Other aesthetic descriptors | | districts candidate ONFLs. |

| KEY ASSOCIATIVE FACTORS | NON VALUE/VALUE LADEN | FUNCTION |
|---|---|---|
| Key Associative Factors that influence how landscapes are identified and perceived:<br>m. Heritage/Historic<br>• Past events and occurrences (history)<br>• Memories & associations<br>n. Cultural<br>• Tangata whenua values<br>• Other cultural values<br>• Views of key informants (individuals)<br>o. Resource Management<br>• Existing use (productive/conservation)<br>• Future use/potential (economic potential) | Value laden analysis of the associative and perceptual factors. | Secondary factors (associative and perceptual) that enhance the values associated with the districts ONFLs but do not contribute to their existing natural or landscape attributes. |

Any other relevant factors, identified during the iterative analysis process, will also be considered

The "Outstanding" Threshold

During the above analysis process, consideration will be given to the meanings and thresholds applied by various divisions of the Environment Court to the term "outstanding", as it is used in the sense of s6(b) of the RMA.

The term "Outstanding" is synonymous with the notion that an entity or act is so obviously different or out of the ordinary when compared to its physical surroundings or baseline level of activity that it stands apart as being extraordinary, stupendous, exceptional, dazzling or a superior example . It is therefore critical that the threshold, above which a feature or landscape becomes "outstanding", is identified correctly.

In the *WESI* decision the Court, using the Concise Oxford Dictionary, defines the word "outstanding" to mean:

> *"conspicuous, eminent, especially because of excellence."*
> *"remarkable in"*

It is noted that a landscape can be considered to be notable or of special significance without attaining ONL status. In the *WESI* case, the Court observed that:

> *A landscape may be magnificent without being outstanding (Munro v Waitaki District Council). New Zealand is full of beautiful or picturesque landscapes that are not necessarily outstanding natural landscapes.*

An outstanding landscape must stand apart from its surroundings as being so extraordinary, stupendous, exceptional, dazzling or superior that it is recognisable by nearly all that encounter it.

This appears to be supported in paragraph 99 of the *WESI* decision where the Court stated:

> *....ascertaining an area of outstanding natural landscape should not (normally) require experts[92]. Usually an outstanding natural landscape should be so obvious (in general terms) that there is no need for expert analysis.*

By necessity, this requires cognisance and comparative analysis of the range of landscapes available within the District (as identified in previous stages).

Outstanding Natural Features and Landscapes

Analysis of those landscapes identified in the earlier stage the process, which have passed the "natural" threshold test will go beyond merely describing the landscape or feature in terms of its biophysical, associative or perceptual factors. In other words, to be considered outstanding, it is not sufficient that a landscape or feature just contain the set of elements (such as water, trees, cliffs etc) or is able to be described using the WESI factors. The analysis and descriptions must be meaningful, clearly identifying the key attributes that make the landscape stand apart from other landscapes with common elements and how they are associated with each other.

Thus the test for "outstanding" will not be a quasi numerical analysis of the individual scores attained from the analysis of WESI or Lammermoor[11] type assessment factors, rather these factors will be assessed to identify and articulate the relative contribution that different parts of the landscape make to its overall "outstanding" status in support of an overall comparative analysis using an iterative process and broad judgement approach.

Expert evaluation within the context a holistic aesthetic model will be used to identify which landscapes and features are outstanding in terms of s6(b) of the RMA before a reductionist process (splitting the landscape into its component parts) is used to clearly identify and describe the relationship between the landscape's various component features. This will ensure that the "whole" of a landscape or feature is evaluated, rather than the "sum of its component parts".

The following analytical suppositions will be applied during evaluation:

a. A *natural landscape* can be composed of those components and/or features that are either outstanding in their own right or are less than outstanding (including ordinary components and/or features or components and/or features with high amenity values) that when considered in combination result in the landscape being considered as *outstanding* as a whole. These will be identified and mapped as ONLs for district planning purposes.

b. A *natural landscape* can be composed of components and/or features that are either outstanding in their own right and/or are less than outstanding (including ordinary features or features with high amenity values) that when considered in combination results in the landscape being considered as having high amenity value but <u>not</u> being *outstanding* as a whole. These will not be identified or mapped.

c. A *natural landscape* can be composed of components and/or features that are either in their own right and/or are less than outstanding (including ordinary components/ features or components/features with high amenity values) that when considered in combination results in the landscape being considered as *ordinary*. These will not be identified or mapped.

d. *Natural landscapes* that, when considered as a whole, are not *outstanding* may contain features that are *outstanding* in their own right. These will be identified and mapped as ONFs for district planning purposes.

Expert evaluation, within the context of a holistic aesthetic model, will be applied using the following premises:

[11] Maniototo Environmental Society Incorporated v Meridian Energy (Case C103/2009)

a. In order for a "landscape" to be considered to be an "outstanding natural landscape, its components must come together is in such a way that the overall landscape is considered (aesthetically) extraordinary, stupendous, exceptional, dazzling or a superior example;

b. In order for a landscape "feature" to be considered to be an "outstanding natural feature", it must sit above the identified threshold for "natural" end of the "natural – modified" continuum and is (aesthetically) extraordinary, stupendous, exceptional, dazzling or a superior example in its entirety.

Expert analysis and evaluation with reference to an appropriate holistic aesthetic model will be undertaken in order to identify the key attributes of each ONF or ONL with sufficient accuracy and detail to allow Council to determine the likelihood of a proposed activity affecting those key attributes, without need for a high level of additional detailed analysis.

## 5. MAPPING

The following approach will be applied during mapping.

Scale of Analysis

Analysis and mapping will be undertaken at a resolution that sensibly informs the district plan and allows its users to clearly identify the spatial delineation of any ONFL's that may affect them.

In order to achieve this:

a. GIS analysis will be undertaken at the accuracy and resolution of the available base data. Where data is aggregated, analysis will be undertaken at the "coarsest" data resolution.

b. GIS mapping for analysis purposes will be undertaken at as scale of 1:25000 for intended use at a printed scale of 1:50000 (commensurate with the scale of the District Planning Maps).

Boundary Definition

A hierarchical approach to the decision making around the type of feature used for landscapes/features delineation will be used. The following table indicates the boundary mapping preference continuum that will be applied.

| **Boundary Types** | | |
|---|---|---|
| Geophysical | Socio-physical | Socio-cultural |
| *Most Preferred* | *(continuum)* | *Least Preferred* |

Geophysical/biophysical boundaries are naturally occurring boundaries within the landscape. Such boundaries are an interpretive response to certain natural features or elements that are evident (to different extents) within the landscape. They have no inherent meaning associated with them but are often perceived as the point where (at least one) key attribute of a particular landscape feature changes (such as along a ridge where the topography ceases to ascend and starts to descend); a severance in a continuous landform pattern (such as a river or a gorge); a change in landform type (such as a edge of a plain or the coastal edge). Geophysical boundaries may include geographical features like ridge lines, valley floors, streams, the coastal edge, or biophysical features such as vegetation patterns.

Geophysical/biophysical boundaries will be given the heaviest weighting when defining the spatial extent of the districts ONFLs. This is because these boundaries are generally manifest

to everyone although they may require little or no prior knowledge to understand why they have been established where they are.

Preference will be given to clearly perceivable and (where possible) permanent natural features (such as distinct landforms or distinct changes in vegetation patterns) that form a clearly defined or sharp transition or "edge" between different parts of the landscape. Natural features with edges that are not as overt (such as rolling ridgelines) will not be preferred.

Where no geo physical boundaries are obvious, socio-physical boundaries will be used to delineate the ONFL boundaries. These types of boundaries are created by the perception that some manmade physical elements form manifest boundaries or edges. While often perceived to be limiting factors or constraints, this type of boundary is more related to the perception of its use, rather than a point of physical change (e.g. a road may be perceived as a boundary between two landscapes even though the landscape may be essentially the same on both sides of it, making the road an arbitrary boundary). These types of boundaries can include features such as the edge of town, roads, green belts, parks and reserves.

Socio-physical boundaries are not as clearly defined as geo-physical boundaries because they are only obvious to varying extents and depend on peoples individual perceptions. These boundaries will not be used in preference to an obvious geo-physical boundary as they are not clearly manifest to everyone. However, a socio-physical boundary would be given more weighting than a social construct boundary because of its association with physical and visual element.

Socio-cultural boundaries are not detectible in the landscape and their use will be avoided where possible (or a best used as a last resort). Most people are unaware of where these boundaries exist, as they are often only represented by lines drawn on paper, and can be difficult to detect. This type of boundary will only be used in the circumstance where it is logical to conflate a geophysical/biophysical or socio-physical boundary outward or inward to an existing legal or planning boundary. Socio-cultural boundaries include property boundaries, planning zones/overlays/policy areas, study area boundaries and political boundaries.

## 6. REPORTING

A findings report will be prepared in support of all identified ONFLs.

## 7. QUALITY PLANNING GUIDANCE NOTE

The above methodology is consistent with key aspects of the 2013 RMA Quality Planning Resource Document – Plan Topics Landscape.

Amongst other things, the *Quality Planning* guidance document emphasis the need for a transparent methodology together with an integrated approach to managing the landscape.

The guidance document support the analysis of landscape in terms of its:

1. *Biophysical elements, patterns and processes;*
2. *Associative meanings and values including spiritual, cultural or social associations; and*
3. *Sensory or perceptual qualities.*

# APPENDIX TWO

## Relevant Planning Matters

The following statutory documents, issues, objectives, policies and rules are considered relevant in the assessment of visual, landscape and amenity effects.

**RESOURCE MANAGEMENT ACT (1991) AND SUBSEQUENT AMENDMENTS**

The development must meet the requirements of this Act in terms of integration into the landscape. The relevant provisions are as follows:

Part 2 Purpose and principles

5 Purpose

(1) The purpose of this Act is to promote the sustainable management of natural and physical resources.

(2) In this Act, sustainable management means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural well-being and for their health and safety while -

(a) sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and

(b) safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and

(c) avoiding, remedying, or mitigating any adverse effects of activities on the environment.

6 Matters of national importance

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:

- the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and
- the protection of them from inappropriate subdivision, use, and development:
- the protection of outstanding natural features and landscapes from inappropriate subdivision, use and development:
- the protection of areas of significant indigenous vegetation and significant habitats

of indigenous fauna:

- the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers: [Emphasis Added]

7 Other matters

In achieving the purpose of the Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to:

(c) the maintenance and enhancement of amenity values:

(f) maintenance and enhancement of the quality of the environment:

**Proposed Waikato Regional Policy Statement (PWRPS)**

The Proposed Waikato Regional Policy Statement (PWRPS) contains a suite of objectives and policies pertaining to the protection of outstanding natural features and landscapes (Objective 3.19), amenity (Objective 3.20) and the natural character (Objective 3.21). Policy 12.1 requires the identification and protection of outstanding landscapes of local and regional significance.

The objectives and policies of the PWRPS appear to have been addressed by the existing provisions of the Operative Waikato District Plan (OWDP).

Specific regard to the protection of the Waikato River has been considered under the PWRPS: 2.1 Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010. The Vision and Strategy for the Waikato River sits statutorily above the Regional Policy Statement and must be taken into account.

**2.4 Vision and Strategy for the Waikato River**

2.4.1 states that: a healthy Waikato River sustains abundant life and prosperous communities who, in turn, are all responsible for restoring and protecting the health and wellbeing of the Waikato River, and all it embraces, for generations to come.

In order to realise the vision, the following objectives will be pursued:

a. The restoration and protection of the health and wellbeing of the Waikato River.

f. The adoption of a precautionary approach towards decisions that may result in significant adverse effects on the Waikato River, and in particular, those effects that threaten serious or irreversible damage to the Waikato River.

g. The recognition and avoidance of adverse cumulative effects, and potential cumulative effects, of activities undertaken both on the Waikato River and within the catchment on the health and wellbeing of the Waikato River.

h. The recognition that the Waikato River is degraded and should not be required to absorb further degradation as a result of human activities.
i. The protection and enhancement of significant sites, fisheries, flora and fauna.

2.4.3 Strategies for the Waikato River
To achieve the vision, the following strategies will be followed:
g.Recognise and protect appropriate sites associated with the Waikato River that are of significance to the Waikato regional community.

**Waikato District Plan**

3.4 Issue – Landscape and Visual Amenity Values

3.4.1
Landscapes and visual amenity values, as viewed from public places, are retained and enhanced.

3.4.2
Natural features and landscapes, including locally distinctive landforms and prominent ridgelines, and general visual amenity values should be protected from inappropriate subdivision, use and development, in particular by:
(a) avoiding or mitigating adverse effects on natural features such as indigenous vegetation, lakes, rivers and mountains

3.5.1 Landscape and Visual Amenity
The objective seeks to retain and enhance landscape and visual amenity values viewed from public places.

3.5.1A Ridgelines
Prominent ridgelines that have been identified as having particular landscape and amenity value due to their visibility from public places have been identified as Ridgeline Policy Areas on the planning maps. This is consistent with the maintenance and enhancement of amenity values under section 7(c) of the Resource Management Act

3.5.9 Rural Landscapes
Larger, highly visible landscape units may be vulnerable to changes that occur through subdivision, use and development where prominent land forms are affected.

**Issue – Natural Character**

Inappropriate subdivision, use and development can adversely affect the natural character of the coastal environment, wetlands, and lakes and rivers and their margins.

3.6.1
The natural character of the coastal environment, wetlands, and lakes and rivers and their margins is preserved.

3.6.2
Subdivision, use and development should be of a density, scale, intensity and location that preserves the natural character of the coastal environment, wetlands, and lakes and rivers and their margins and should retain or enhance the relevant components of that character, including:

(a) geology, landform, indigenous vegetation and wildlife, and
(b) natural processes, elements and patterns, and
(c) intrinsic values of ecosystems, and
(d) restoration potential, including potential vegetation cover, and
(e) aesthetic, visual, cultural and heritage values attached to places and features including the cultural and spiritual relationship of Maori with their ancestral lands, and
(f) unique or typical characteristics, and
(g) the scale and context of modifications, including:

- the ratio of open space to areas covered by buildings and other development
- land use
- open space areas in pasture, trees, crops or indigenous vegetation
- water quality and flows
- views of natural features, the coast, indigenous vegetation and water bodies.

3.7.1 Natural Character
Geology, landform, indigenous vegetation and wildlife: these are primary components of natural character. The extent to which these are readily identifiable at a location will provide the most immediate indication of issues in relation to natural character.

Natural processes, elements and patterns: the viable functioning of natural processes and systems is essential to the survival of many species and habitats. These processes may not be readily visible.

3.11
Waikato District Plan Chapter 3 – Natural Features and Landscapes February 2014
Intrinsic values of ecosystems: while these are expressly referred to in section 7 of the Resource Management Act, they also provide a valid indicator of the existence of natural character.

**Schedule 3A Outstanding Natural Features and Landscapes**

3A.1 Mapping
The land comprising outstanding natural features and landscapes is shown on the Planning Maps as Landscape Policy Areas. Features and landscapes are subject to the same rules.

3A.2 Outstanding Landscapes and Features
Whangamarino Wetland, Hakarimata Range, Taupiri Range, Kokako Hills, Te Hoe, Mt Karioi, Papanui Point, Matakotako Area, Bridal Veil Falls, Mt Pirongia, Horea-Rangitoto Pt, Potaki Pt (Aotea Harbour north head), Waikato River, Lake Waikare, Lake Whangape,

3A.3 Criteria for Outstanding Landscapes
The Waikato Landscape Study (1992, revised 2003 and 2006) by Boffa Miskell Ltd describes the visual qualities and sensitivities of 31 separate landscape units within the district. Within each unit a ranking was ascribed for visual quality, from 1 (low) to 5 (high). Each unit was also ascribed a ranking for visual absorption capability, i.e. the ability for the landscape to absorb change or development. These were ascribed from 1 (low) to 5 (high). The landscape units that scored high for visual quality and low for visual absorption capacity were then considered for “outstanding” status against criteria developed in case law. The above landscapes met the criteria.

3A.4 Criteria for Outstanding Natural Features
This plan recognises outstanding natural features following wide criteria, including scientific, historic, archaeological, scenic, recreational, social and cultural factors. Documentation includes the Waikato Landscape Study and its revisions referred to above. As with the outstanding landscapes, features were considered for outstanding status against criteria developed in case law.

**Chapter 13: Amenity Values**

13.1 Introduction
A wide variety of environmental qualities and characteristics contribute to amenity values. Green and open spaces, daylight, clean air, views, natural landscapes and vegetation, recreational area

An increasing diversity of activities in an area may generate differing expectations of acceptable amenity. For example agricultural practices such as crop spraying and night harvesting may adversely affect residential amenity. Activities establishing in an area will need to recognise existing, accepted amenity levels, which reflect common management practices in the area and the effects of existing activities. Managing subdivision and building to sustain amenity can reduce future conflicts. The towns of Raglan, Ngaruawahia, Huntly and Te Kauwhata and the rural villages and localities all have different amenity values that add to the diversity of the district.

13.2.6
Amenity values of localities are maintained and enhanced.

13.2.7
Scale, intensity, timing and duration of effects of activities should be managed to be compatible with the amenity and character of the locality.

13.2.8
Activities with similar effects or a similar expectation of amenity should be located together.

13.4.1
Amenity values of sites and localities maintained or enhanced by subdivision, building and development

13.4.2
Subdivision, building and development should be located and designed to:
(a) be sympathetic to and reflect the natural and physical qualities and characteristics of the area
(b) ensure buildings have bulk and location that is consistent with buildings in the neighbourhood and the locality
(c) avoid buildings and structures dominating adjoining land or public places, the coast, or water bodies
(d) retain private open space and access to public open space
(e) encourage retention and provision of trees, vegetation and landscaping

13.6 Issue – Rural Character
13.6.1
Rural character is preserved.

13.6.2
Rural subdivision and development should be of a density, scale, intensity and location to retain or enhance rural character, including:
(aa) a predominance of natural features over built features
(a) a very high ratio of open space in relation to areas covered by buildings
(b) open space areas in pasture, trees, crops or indigenous vegetation
(c) tracts of unmodified natural features, indigenous vegetation, streams, rivers, wetlands and ponds

13.6.5
The cumulative adverse effects of subdivision or development on rural character and amenity

13.6.6
Rural character should be maintained and the cumulative adverse effects of subdivision should be avoided.

25.26
Ridgeline Policy Area
25.26.1
Any activity is a permitted activity if:
(a) earthworks and formation of tracks and accesses in a Ridgeline Policy Area are at least 20m vertically below the level of a ridge, measured at the nearest point of the ridgeline

25.43
Indigenous vegetation clearance
- Landscape Policy Area
- Conservation Policy Area

25.43.1
Vegetation clearance of indigenous vegetation or habitat of indigenous fauna in a Landscape Policy Area
or Conservation Policy Area is a permitted activity if:
(a) it does not exceed 1000m2 or 1% of contiguous indigenous vegetation or habitat of

indigenous fauna, whichever is the lesser, per contiguous area per site in any 3-year period, and is limited to:

(i) a building platform for a permitted or approved building, or structure(s) or access, or

(ii) gathering of plants in accordance with Maori custom and values, or

(b) it does not exceed 3000m2 or 3% of contiguous indigenous vegetation or habitat of indigenous fauna, whichever is the lesser, per contiguous area per site in any 3-year period, and is limited to:

(i) maintaining or reinstating productive pasture and productive forests and maintenance of tracks and fences through the removal of manuka and / or kanuka and / or treeferns that are more than 10m from a water body and less than 15 years old or less than 5m in height and any under-storey under such manuka or kanuka or treeferns growing on land that was previously in productive use, or

(c) it is for the following purposes

(i) removing vegetation that endangers human life or existing buildings or structures or poses a risk to the integrity of, the safe use of, or access to existing network utilities, or

(ii) conservation fencing to exclude stock or pests, or

(iii) fire risk management in a production forest stream or river crossings or the formation of farm drains1,

25.59
Building near a lake or river

25.59.1
Construction or alteration of a building is a permitted activity if:

(a) the building is set back at least 32m from

(i) the margin of any lake with a bed area of 8ha or more, and

(ii) the bank of any river whose bed has an average width of 3m or more, and

(iii) any wetland with an area greater than 1ha and

(aa) the building is set back at least 37m from the Waikato River and the Waipa River, and

(ab) the building is set back at least 50m from the river on sites to which the River Bank Stability Area applies. Despite the above, a public amenity of up to 25m2 on an esplanade reserve, a public walkway, or a pump shed are not subject to this rule.

Note: Refer to rule 4.2.18.1 of the Waikato Regional Plan, which controls building within 10m of artificial watercourses (drains), modified watercourses or rivers within drainage districts and river control scheme areas that are managed by the Waikato Regional Council or the Waikato District Council.

# APPENDIX THREE

## Landscape Preference Studies

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# Tāngata Whenua Statement and Engagement Report (PUBLIC VERSION)

# Ngāruawāhia, Hopuhopu, Taupiri Structure Plan. Ngāruawāhia Town Centre Plan

A Statement on behalf of Taupiri Marae, Tūrangawaewae Marae, Ngāti Tamainupō and Waikato-Tainui to inform the Structure and Town Centre Plan.

*31 January 2024*


Prepared for Waikato District Council

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Report to Fletcher Bell | Strategic Planner | Strategic Planning Team

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# 1. EXECUTIVE SUMMARY

Te Huia Natural Resources Ltd (Te Huia Ltd) developed this Tāngata Whenua Statement and Engagement Report with the support of Waikato-Tainui, Taupiri Marae, Tūrangawaewae Marae, Taupiri Marae and Ngāti Tamainupō to inform the Ngāruawāhia, Hopuhopu, Taupiri Structure Plan and Ngāruawāhia Town Centre Plan.

This area is the heart of the Kīngitanga and is of special significance to Waikato-Tainui featuring significantly in identity of the tribe. Tūrangawaewae Marae, Ngaati Tamainupō and Taupiri Marae are tāngata whenua and are at the centre of this report. Therefore at the outset, Te Huia Ltd sought, and gratefully received, formal support from them to undertake this work. This report expresses their values, narratives and kōrero, their sites and areas of significance and their outcomes and aspirations to inform the structure and town centre plan.

Our engagement approach was distinct, as Te Huia Ltd and the Waikato District Council wanted the engagement, wānanga and research to be delivered and facilitated by tāngata whenua. Furthermore, that tāngata whenua will be remunerated for their contributions acknowledging the time and information shared. Te Huia Ltd collated information shared by tāngata whenua and sought the expertise of GMD Consultants (Giles Boundy) to assist with the preparation of the report in a manner that can be implemented by the Council and respectful of information shared.

Tāngata whenua hosted and facilitated online and in-person hui with their beneficiaries to consider what their respective spaces should look like in the future. The information provided in this report is given with their blessing in the hope that their aspirations are reflected in the Ngāruawāhia, Hopuhopu, Taupiri Structure Plan and Ngāruawāhia Town Centre Plan.

Te Huia Ltd and the Council note that the information shared in this report may be considered in other Council plans and plan variations. We also note that concurrent engagements are occurring for the Kīngitanga Reserve and Te Huingā o ngā Wai (the Point). These two projects are not considered in this report and it was the wish of tāngata whenua that the opportunities for the Kīngitanga Reserve continue to be discussed directly with the Office of the Kīngitanga.

*This Report is the public version of the full Tāngata Whenua Statement and Engagement Report held by Waikato District Council.*

## Dialectal Conventions

The Report is written with the tohutō (macrons) for Māori words. Where tāngata whenua have chosen to use double vowels, as is the preferred convention in Waikato, the words have not been altered to suit the authors preference. Direct quotes that reference Māori words with either tohutō, or double vowels, remain as they are quoted.

# 2. TĀNGATA WHENUA STATEMENT AND ENGAGEMENT REPORT

This Report presents the position of tāngata whenua to inform the Ngāruawāhia, Hopuhopu, Taupiri Structure Plan and Ngāruawāhia Town Centre Plan.

Te Huia Ltd has developed this Tāngata Whenua Statement and Engagement Report (the Report) to support documentation to Waikato District Council and respective decision makers. The Report will cover a range of matters that decision making authorities would expect in a Cultural Values Assessment (CVA). However, Te Huia Ltd has developed many CVA's and it is the authors preference to title the report as a "Tāngata Whenua Statement and Engagement Report". This is purely for personal reasons and based on previous experiences, as the term "cultural" implies that the values of tāngata whenua are limited only to that. This approach was supported by tāngata whenua. Also, it is important to note that the values of tāngata whenua change over time based on surrounding conditions, policy impositions and lack of regulation. The report captures a statement of this time and demonstrates the engagement required to satisfy the expectations of tāngata whenua and responsibilities of Waikato District Council.

## Objectives of the Report

The Report embraces the principles of Te Tiriti o Waitangi (as noted previously) to deliver the following:

- Cultural, economic, social and environmental matters relating to the structure plan and town centre plan;
- Satisfy the obligations of WDC to Te Tiriti o Waitangi and tāngata whenua;
- Demonstration of meaningful engagement driven by tāngata whenua;
- Provide the opportunity for tāngata whenua to draft and present their own narratives; and
- Deliver outcome statements that reflect the aspirations of tāngata whenua for the structure plan and town centre plan.

## Use of this Report

The Report is expected to accompany formal documentation for decision, not as an appendix, or attachment, but as an independent Volume to be held in the high regard.

Unless specifically stated, all sections of this report, can be used for intended purposes by WDC. However, it is the position of Taupiri Marae and Tūrangawaewae Marae that the narratives they have provided in "Section 8 and 9" are not to be used publicly. WDC will determine the best way to hold that information within WDC.

Ngāti Tamainupō are happy for WDC to refer to the narrative and information they have presented for the Structure Plan and Town Centre Plan.

# 3. TE TIRITI O WAITANGI

Waikato District Council must uphold the duty to honour and give effect to the principles of Te Tiriti o Waitangi.

As an agent of the Crown, the duty of WDC to uphold the principle of partnership is well-established in Treaty jurisprudence. Partnership is a duty on both parties to act reasonably, honourably and in good faith (as upheld by the Court of Appeal), with the Waitangi Tribunal emphasising that these duties are derived from the principle of reciprocity and the principle of mutual benefit.

The duty to act in good faith, goes further and obligates WDC to make informed decisions on matters that affect the interests of Māori. This requires the Crown to consult with Māori. In this instance, the interests of Māori are represented by tāngata whenua, notably Waikato-Tainui, Taupiri Marae, Tūrangawaewae Marae and Ngāti Tamainupō.

Lastly, the Crown has a duty to actively protect Māori use of their lands and waters to the fullest extent practicable (as upheld by the Court of Appeal). This is a central Treaty principle, under Article 2 of Te Tiriti, with guarantees in the preamble and Article 3. This principle presumes that the Crown is obligated to preserve and protect tino rangatiratanga of mana whenua over their whenua, kāinga and taonga. The duty of active protection is engaged when a taonga is negatively affected (and is also inclusive of disparities between Māori and non-Māori).

As such, the Council must uphold a genuine, active and enduring partnership with tāngata whenua, in ways that:

1. acknowledge their rights to exercise rangatiratanga and kaitiakitanga;
2. acknowledge that tikanga and mātauranga Māori are key to achieving the protection of Article 2 assets; and

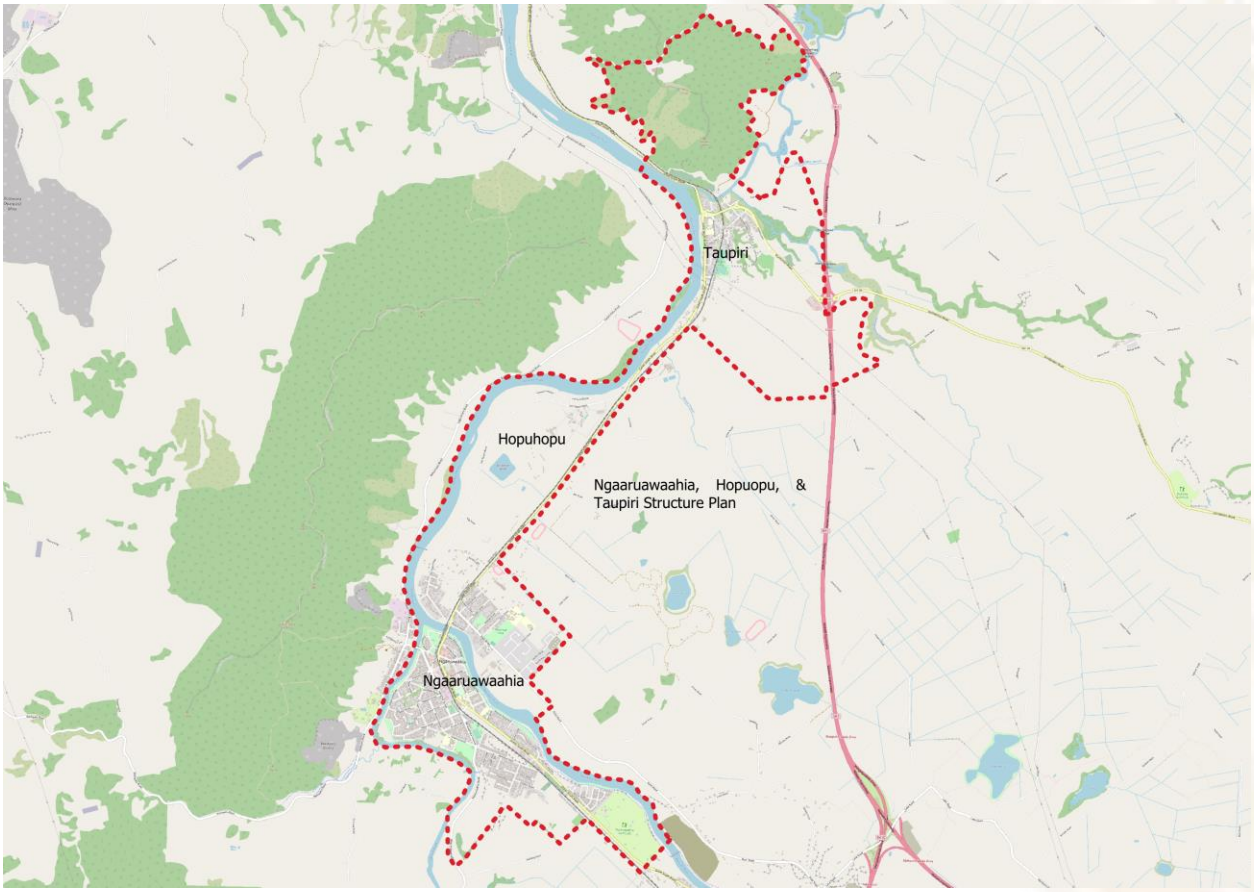
Actively engaging in a genuine and enduring partnership with mana whenua and is key to decision-making that protects the interests of mana whenua and meets the WDC duty of active protection. The Report, hui and discussions held directly between mana whenua, project consultants and Te Huia Ltd sought to achieve the obligations of WDC to Te Tiriti. Te Huia Ltd believes that the obligations of WDC have been upheld and is a great practical example of partnership.

# 4. PROJECT BACKGROUND

## The Ngāruawāhia, Hopuhopu and Taupiri Structure Plan

The Ngāruawāhia, Hopuhopu and Taupiri Structure plan is a guiding framework for the development or redevelopment of these areas that will help define the future development and land use patterns, areas of open space, the layout and nature of infrastructure (including transportation links), constraints and key features that influence the effects of development are also considered and managed.

It is the view of tāngata whenua that Ngāruawāhia, Hopuhopu and, Taupiri are seen as a connected community hub, through whakapapa, its taonga and common objectives to enhance the lives of its people and history. To achieve the objective of wellbeing, tāngata whenua and WDC sought to understand what the future of Ngāruawāhia, Hopuhopu and Taupiri should look like while providing for schooling, community services, business and retail.  The area that is being considered as part of the structure plan is shown on the maps below.

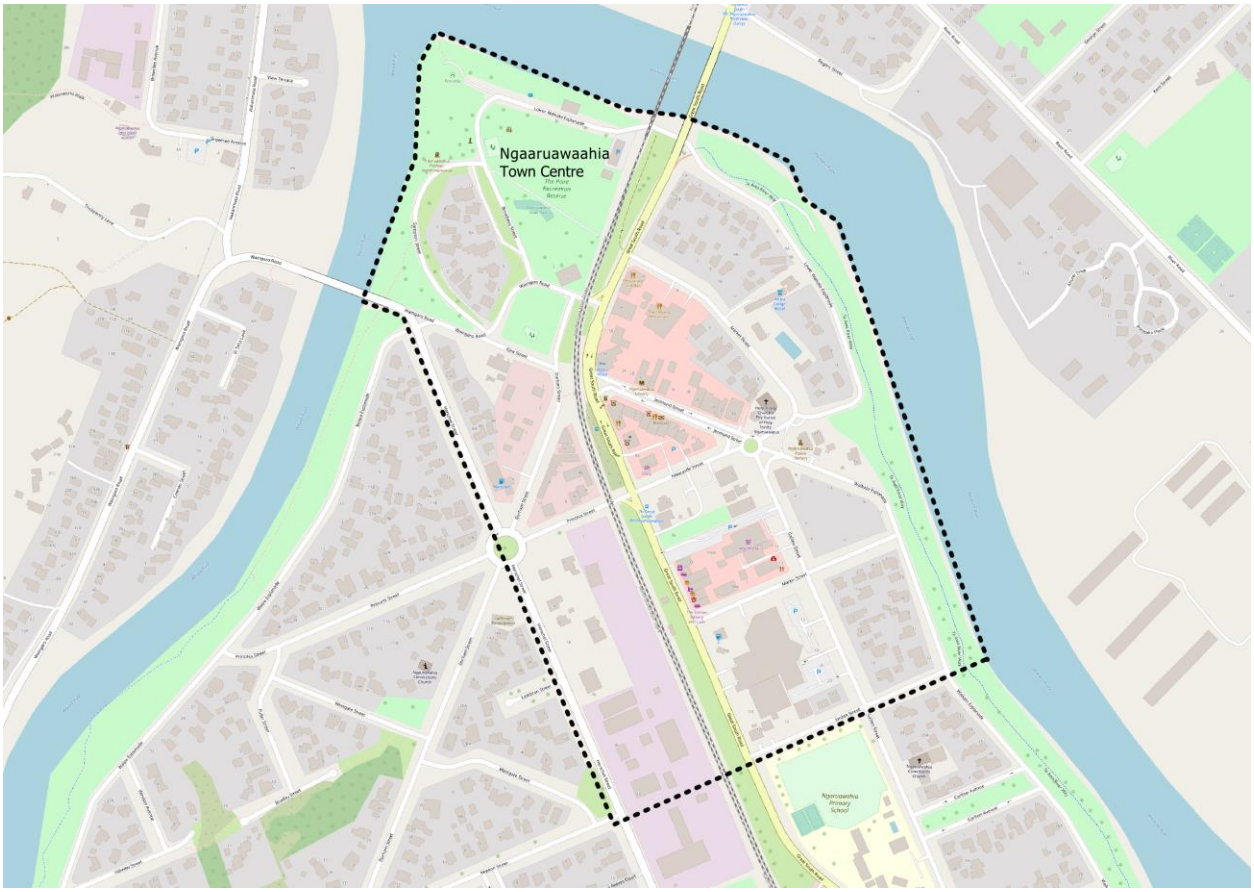



Map 1: Boundary of The Ngāruawāhia, Hopuhopu and Taupiri Structure Plan

## The Ngāruawāhia Town Centre Plan

Combined with this project is consideration of the Ngāruawāhia Structure Plan. For the purposes of this report, the information shared by tāngata whenua has not been separated between what could be considered for the Town Centre Plan versus the Structure Plan. However, given the interests in Ngāruawāhia are predominantly from Tūrangawaewae Marae and Ngāti Tamainupō, those sections of this report align with the boundary below.

The author would also like to note that both Tūrangawaewae Marae and Ngāti Tamainupō defer discussions related to the development of the areas known as the Point or Kīngitanga Reserve.




Map 2: Boundary of Ngāruawāhia Town Centre

# 5. TĀNGATA WHENUA

Waikato-Tainui, Ngāti Tamainupō, Tūrangawaewae Marae (Ngāti Mahuta and Ngāti Te Wehi) and Taupiri Marae (Ngaati Kuiaarangi, Ngaati Mahuta, Ngaati Tai and Ngaati Whaawhaakia) hold mana with regards to decision making associated with this report.

The rights and interests of tāngata whenua are confirmed and recognised by Waikato District Council, supported by the establishment of Joint Management Agreements and collaborative partnerships. Their rights and interests within this space do not need to be proven.

Te Whakakitenga o Waikato-Tainui (Waikato-Tainui) is the Iwi Authority on behalf of the 68 Marae and its beneficiaries. The hapū, on behalf of their beneficiaries, are tāngata whenua and hold mana (power and authority derived from whakapapa, continued occupation and use) within the Taupiri, Hopuhopu and Ngāruawāhia area.

Tāngata whenua, in simple terms, are naturally the people of the lands. Tāngata whenua have a historic and spiritual affiliation to the lands, waters and all the taonga that they embrace. Tāngata whenua continue to occupy and actively demonstrate their affiliation and interests to the Waikato River, its lands, waters and taonga. They are representative of their marae and whānau in matters related to local and central Government, fisheries, aquaculture, farming, education, environmental, social and other affairs.

They hold political and occupational authority over Taupiri, Hopuhopu and Ngāruawāhia that is determined by whakapapa (genealogical ties) and secured by ahi kaa (continued occupation). They have a responsibility to protect the taonga, hauanga kai, and other values of these places for the benefit and use of their whānau and its communities.

Each of the tāngata whenua groups have a responsibility to protect the taonga, mahinga kai, and other values of the rohe for the benefit and use of their tribal members. The following descriptions are an introduction to the full narratives provided by each of the tāngata whenua groups engaged to provide advice into the structure plan and town centre plan.

## Te Whakakitenga o Waikato

Te Whakakitenga o Waikato is the iwi authority that represents tribal members of the 68 Marae of Te Whakakitenga o Waikato, of which 41 are situated within the Waikato District Council boundary. Te Whakakitenga is the governance body that serves to protect and advance the collective interests of the iwi and more than 75,000 registered beneficiaries.

Waikato District Council has a Joint Management Agreement with Waikato-Tainui guided by the Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010. It was the first JMA between the tribe and a local authority. The JMA sets principles for the relationship between the parties. This JMA hui provides a good opportunity to present regular updates to the Iwi. The following responsibilities

were also considered, or at least awareness of these responsibilities were shared with all members of the project team:

- **Waikato-Tainui Claims Settlement Act 1995**
  - Right of First Refusal
    Any lands owned by Council prior to 1995 are subject to this provision in the Settlement Act 1995. If any properties subject to this provision are being disposed of, or the purpose of the property changes, then the Council must inform Waikato-Tainui and agree the process for disposal.
  - Lands owned by Waikato-Tainui within the Council boundaries
    There are two main properties owned by the Iwi Authority that are subject to the Ngāruawāhia, Hopuhopu, Taupiri Structure Plan and Ngāruawāhia Town Centre Plan. Taupiri Maunga (reserve for burial purposes) and Hopuhopu (previously known as the Army Base). Hopuhopu is proposed for large scale development with which the Council and Waikato-Tainui are working together closely, to enable the development.
- **Waikato-Tainui Raupatu Claims (Waikato River) Settlement Act 2010**
  - Joint Management Agreement
    The JMA includes schedules and principles that express interests and expectations of Waikato-Tainui related to the management of its taonga, including the Waikato River and all it embraces.
  - Te Ture Whaimana o te Awa o Waikato (Vision and Strategy for the Waikato River)
    Te Ture Whaimana is the primary direction setting document for the Waikato and Waipā Rivers. All activities within the catchment should advance Te Ture Whaimana and its objectives. The District Plan should give effect to Te Ture Whaimana.
- **Tai Tumu, Tai Pari, Tai Ao – Waikato-Tainui Environmental Plan[1]**
  - The Waikato-Tainui Environmental Plan, Tai Tumu, Tai Pari, Tai Ao is developed out of the Whakatupuranga 2050 long-term development approach and seeks to build the capacity of our marae, hapuu, and iwi in the sustainability space.
  - The overarching purpose of the Plan is to provide a map or pathway that will return the Waikato-Tainui rohe to the modern day equivalent of the environmental state that it was in when Kiingi Taawhiao composed his maimai aroha.
- **Whakatupuranga 2050[2]**
  - Whakatupuranga Waikato-Tainui 2050 is the blueprint for cultural, social and economic advancement for Waikato-Tainui people. It is a long-term development approach to building the capacity of Waikato-Tainui Marae, hapuu, and Iwi.

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[1] *Environmental Plan – Waikato-Tainui (waikatotainui.com)*

[2] *Whakatupuranga 2050 – Waikato-Tainui (waikatotainui.com)*

## Tūrangawaewae Marae

***Ko Arekahaanara tooku haona kaha***
***Ko Kemureti tooku oko horoi***
***Ko Ngāruawāhia tooku Tūrangawaewae***

***Alexandra [present day Pirongia] will ever be a symbol of my strength of character***
***Cambridge a symbol of my wash bowl of sorrow***
***And Ngāruawāhia my footstool***.

This visionary saying was pronounced by Kiingi Taawhiao, for him Ngāruawāhia was his Tūrangawaewae and his place to stand. Kiingi Taawhiao long regarded Ngāruawāhia as special and held the view that it would one day become an important base for Waikato tribes and the Kiingitanga.

The Tūrangawaewae Board is the governing body that represents the interest of Tūrangawaewae Marae, the Kiingitanga, and the community who identifies with it, in and around Ngāruawāhia. The Tūrangawaewae Board also represents and advocates for the interests of Ngāti Mahuta.

Tūrangawaewae Marae is one of the marae beneficiaries of Te Whakakitenga o Waikato.

Tūrangawaewae Marae is a place of significance and should be acknowledged as such.

## Ngāti Tamainupō

Ngāti Tamainupō is one of 33 iwi/hapū in the Waikato district who have mana whenua as part of Ngā Iwi o Tainui.

Ngāti Tamainupō takes their name from the eponymous ancestor, Tamainupō, son of Kōkako, who married Māhanga's daughter, Tūkotuku.

The traditional pou whenua (tribal boundaries) of Ngāti Tamainupō includes the following areas: Huntly, Taupiri, Ngāruawāhia/Puke-i-āhua Pā, Horotiu, Hamilton, Ohaupo and extends west towards Te Kowhai, Whatawhata and the Whāingaroa Harbour, the surrounding whenua and moana.

Ngāti Tamainupō has numerous descendant hapū, including Ngāti Toa Kōtara and Ngāti Te Huaki. There are two active Ngāti Tamainupō marae located along the Whāingaroa Harbour, Waingaro and Mai Uenuku ki te Whenua (Rānui).

Ngā Uri o Tamainupō ki Whaingaroa Trust is the mandated governing authority for Ngāti Tamainupō and has been since its establishment at a hui-ā-hapū in 2019. In 2021, Ngāti Tamainupō released their Mātauranga and Taonga Management Plan "Te Mata Herenga".

## Taupiri Marae

Taupiri marae's history starts in 1530 by a chief from Rotorua named Pikiao, he settled in Taupiri as he searched for a wife to bare him a male offspring. He met a woman from Pirongia named Rereiao. Their children became the prominent families eventually leading to some of the main Hapū in the Taupiri area.

- Ngāti Mahuta
- Ngāti Uenaenae
- Ngāti te Kiriwai
- Ngāti Koura
- Ngāti Huakatoa
- Ngāti Whouroa

Taupiri Marae is one of the marae beneficiaries of Te Whakakitenga o Waikato.

A full outline of Taupiri marae is provided later in the report by Taupiri Marae.

# 6. SITES AND AREAS OF SIGNIFICANCE TO TĀNGATA WHENUA

The following section provides an overview of key areas and spaces of significance to tāngata whenua with a particular focus on the Waikato River, Ngāruawāhia and Taupiri. The information provided below is generally well known and can be sourced from many documents. It informed technical workshops and was a significant factor for tāngata whenua in determining their aspirations for the structure plan.

Waikato District Council have provided the opportunity to tāngata whenua to identify additional Sites and Areas of Significance to Māori (SASM) which are to be considered as part of a future variation / plan change to the Waikato District Council. These are:

- Taupiri Maunga
- Te Mata o Tūtonga
- Te Hihi
- Tūrangawaewae Marae
- Tūrangawaewae House
- Te Paemaunga o Hakarimata

The focus of their inclusion is to ensure their appropriate protection and recognition, and that the responsible kaitiaki and landowners are informed of any activities within its immediate vicinity.

The following information will inform a future variation / plan change and could be included in the District Plan.

## Ko Taupiri te Maunga, Ko Waikato te Awa.

To the Iwi of Waikato-Tainui, the story is told of Tongariro and Taupiri who grew up as brother and sister in the Taupo region, the lands of Tūwharetoa. Taupiri married a rangatira maunga named Pirongia from the Tainui region. For some years Taupiri lived happily in her new home, just north of Ngāruawāhia, although she sometimes felt homesick for Tongariro, her friends and whānau in Tūwharetoa. It is said that the Hakarimata Range are the children of Taupiri and Pirongia. Sadly, she separated from Pirongia, eventually fell ill and none of the tohunga (priests) could cure her. Taupiri sent forth a servant to Tongariro, to bring back some water from a tapu (sacred) spring.

After an arduous journey south, the servant and his dog found Tongariro who sent waters from the spring high up the mountainside. Tongariro commanded that the stream follow the servant on his journey, so that Taupiri should have a constant supply of the sacred waters. The stream flowed into the great crater that is called Taupo-nui a-Tia, and then overflowed northward. The people of Te Arawa tried to entice the river to flow through their land, but the servant's dog dug a ditch to persuade it to turn westward, near Te Ohaaki, and then resume its northward journey. At Piarere, it was diverted again, to flow north through the Hinuera valley. It heard the surf on the beach of the Bay of Plenty, but it was blocked by the Kaimai Range, and so it flowed on out to sea in Hauraki. The servant and his dog were unable to stop the river, so they journeyed on to the home of Taupiri with their calabashes of sweet water from Tongariro.

Taupiri recovered from her illness and the Tainui people planned a return visit to Tongariro. During the preparation for this journey the servant told her of the runaway river Tongariro had sent to her, which had escaped to Hauraki. Taupiri began a karakia and her message was carried southward by the wind. Tongariro heard it and he too began a karakia that summoned Ruaumoko, the maker of earthquakes. He woke in a terrible fury, volcanoes erupted and the land shook and split. The river did not know where to turn, but it heard the familiar sound of the servant's dog barking, and it followed that to the home of Taupiri and eventually reached the sea of the western coast, Te Puuaha o Waikato. And so, the Waikato River came to flow in its present course and provide sustenance for the Waikato tribes along its lower reaches. Without Taupiri maunga, the Waikato River would not have traversed here. The Waikato River invigorates the lands and its people.

When considering the scope of the Waikato River, we refer to the statement of significance provided in the Waikato-Tainui Deed of Settlement for the Waikato River and the Waikato River Settlement Act"

> *"The Waikato River is our tupuna (ancestor) which has mana (spiritual authority and power) and in turn represents the mana and mauri (life force) of Waikato-Tainui. The Waikato River is a single indivisible being that flows from Te Taheke Hukahuka to Te Puuaha o Waikato (the mouth) and includes its waters, banks and beds (and all minerals under them) and its streams, waterways, tributaries, lakes, aquatic fisheries, vegetation, flood plains, wetlands, islands, springs, water column, airspace and substratum as well as its metaphysical being…"*

## Raupatu / Confiscation

The Waikato War of 1863 to 1864 is said to be the defining war of the New Zealand Wars. Initiated by the invasion of the Waikato by the British Army, it was the largest and arguably the most important of the New Zealand Wars. The scale of the war in Waikato was immense, involving the largest numbers of British soldiers of any of the New Zealand Wars. A total force of up to 12,000 British troops were engaged in the invasion of Waikato.

The Kīngitanga force was drawn from tribes from all over the North Island and is estimated at a total of up to 4,000. Substantial areas of Māori land were confiscated by the government after the New Zealand wars of the early 1860s. On 5 May 1863, Premier Alfred Domett sent a memorandum to Governor George Grey proposing that Māori in a 'state of rebellion' have their lands confiscated as a punishment. At first confiscation was intended to be relatively restricted, but it gradually became more and more elaborate. Land was confiscated both from tribes who had rebelled against the government and from those who had fought as government supporters. It was envisaged that military settlers would be placed on confiscated land.

The New Zealand Settlements Act was passed in 1863, which allowed the Crown to confiscate lands belonging to 'Māori rebels. In July 1863 British Troops under the command of General Cameron crossed the Mangatāwhiri River and waged war on Waikato iwi. Post the Waikato invasion, in 1865 the Crown confiscated over 1.2 million acres of land. The consequences of Raupatu were vast and devastating with the loss of lives, lands and resources. The biggest confiscations were in Waikato and Taranaki. The effects varied from region to region, but the consequences were very severe for Waikato–Tainui tribes.

Imperial and colonial troops entered Ngāruawāhia on 8 December 1863, symbolically hoisting a British flag and thereby establishing a major military base. The design of roading within the township still symbolically representing the Union Jack pattern (see Figure 1). In 1865, under the New Zealand Settlements Act, the Government eventually confiscated these lands from Waikato, Ngāti Mahuta and Ngāti Tamainupō. It should not be underestimated about the long lasting impact of confiscation on these Iwi in particular their poor representation in the deprivation index and social inequities.

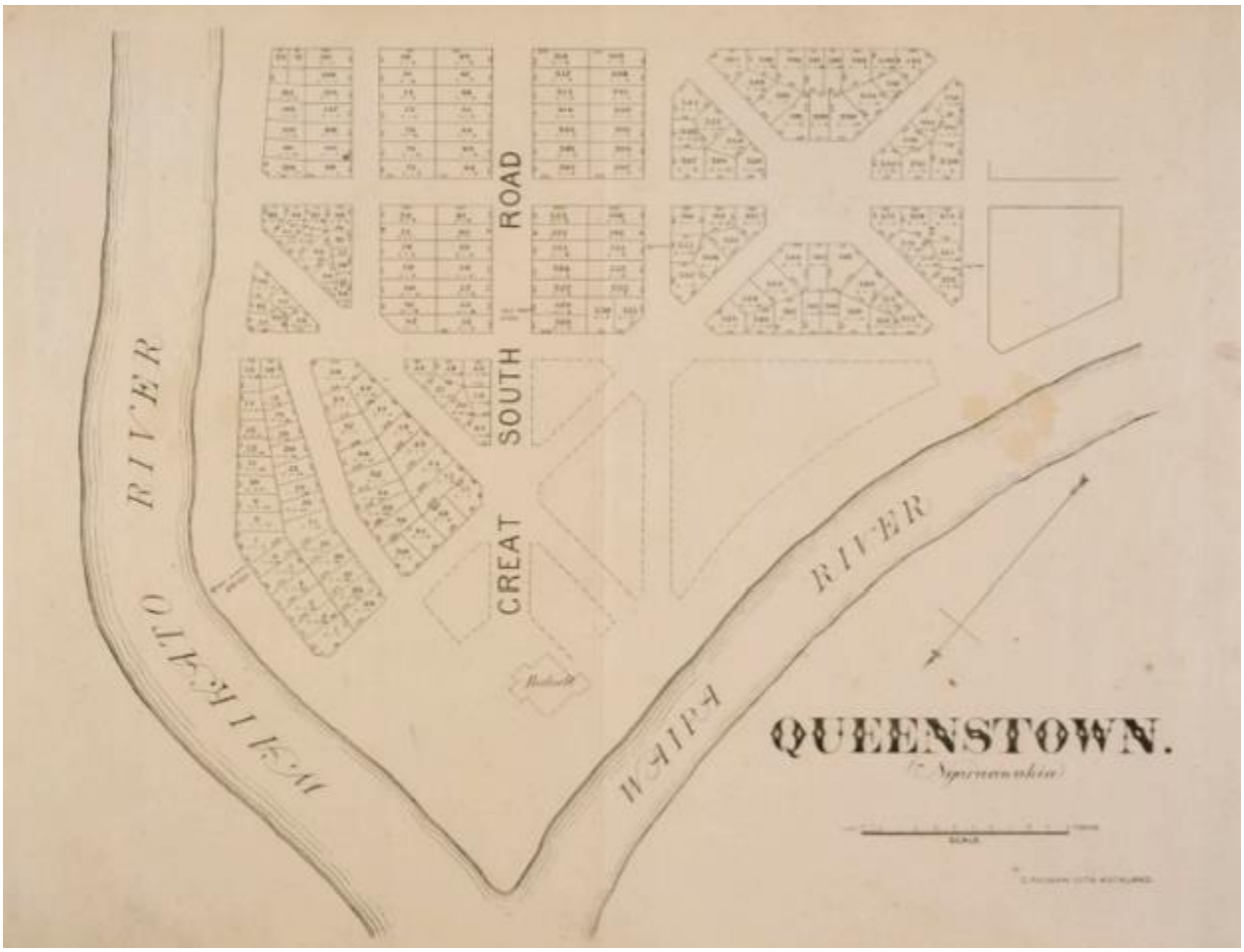


Figure 1: "Queenstown" Ngāruawāhia surveyors drawing of local road design in the form of the Union Jack.

The Crown confiscated land from many Waikato tribes, including Ngāti Māhuta and Ngāti Tamainupō, as punishment. The structure plan boundary sits wholly within the confiscation area.

## He piko he taniwha, Waikato taniwharau: Ngāruawāhia

The following information was provided by Kimai Huirama of Ngāti Tamainupō, describing the commonly known story about the naming of Ngāruawāhia.

> *Our story begins in the early 1600s with the chiefs, Kookako and Tuuheitia, who were mortal enemies. After Tuuheitia died of mysterious circumstances, the bitter feud continued between his son, Maahanga, and Kōkako.*
>
> *Kōkako had a son with Whaeataapoko from Marokopa, who they named Tamainupō. Eventually, Tamainupō married the daughter of Maahanga, who was called Tuukotuku. After the birth of the couple's son, Wairere, peace was made between Maahanga and Kookako. According to Ngāti Tamainupō traditions, Maahanga gifted half of his lands to Tamainupō and Tuukotuku as a peace offering. The other half was gifted to another daughter, Waitaawake. The whakapapa ties between descendants of Ngāti Maahanga, Ngāti Tamainupō and Ngāti Wairere are still acknowledged today.*
>
> *Wairere married Hinemoa from Ngāti Maahanga, and they had a son named Whenu. As was the custom, Whenu's people gathered the bones of past chiefs into flax baskets and carried them to a cave in Raglan. So that this task would be remembered, Whenu named his son Keteiwi, which means "Basket of Bones." When Keteiwi grew up, he married Hinemata. She was the daughter of Paoa and Tukutuku. Paoa was another Waikato chief of that time and Tukukuku was a woman from the Hauraki region. Keteiwi and Hinemata had many children and two of their sons were Toa Kotara and Ngaere.*
>
> *Because of the land gift from Maahanga, the traditional pou whenua (tribal boundaries) of Ngāti Tamainupō are extensive and spread across a large part of the Waikato region.*
>
> *In the early 1700s, Keteiwi was chief of Pukeiaahua, the principal Ngāti Tamainupō Paa located in the area now known as Ngāruawāhia. His eldest son, Toa Kotara, was betrothed to Hekeiterangi of Ngāti Maniapoto, daughter of a chief called Maniauruahu. When the tribe visited Hekeiterangi's people, she fell madly in love with the younger son, Ngaere, instead.*
>
> *Hekeiterangi was disowned by her father for going against his wishes and she returned to Pukeiaahua as Ngaere's wife. After Hekeiterangi gave birth to their son, the couple invited her father to the child's naming ceremony to heal the rift between them. Maniauruahu accepted their invitation. As he travelled with his large group along the Waipaa River, they were met with great hospitality from the villages they came across. Whenever Maniauruahu asked who their chief was, the answer was always 'Ngaere'. By the time Maniauruahu reached Pukeiaahua, he had a new-found respect for Ngaere and gave his approval for their marriage. At the ceremony, Keteiwi named the child 'Te mana o te Rangi' (the greatness of the day) because Ngāti Maniapoto had honoured them with their presence.*

*For the celebration feast, mounds of uncooked delicacies stretched from Te Huinga o Ngaa Wai (the place where the Waipaa and Waikato Rivers meet) to Pukeiaahua. The sight of the plentiful food resembled the nearby hills, so they were given the name, Haakarimata (Haakari = feast; Mata = preserved or uncooked food). After the formalities, Ngaere called out "Waahia ngaa rua! Break open the food pits!" The feasting and celebration began and continued for many days and nights, strengthening the kinship bonds between Ngāti Maniapoto and Waikato. This is the centuries-old story of how Ngāruawāhia got its name.*

Refer to Figure 2 for known significant sites within and around Ngāruawāhia:

- Pukeiaahua Pā
- Tūrangawaewae Marae
- Pikiarero Pā
- Te Huinga o ngā wai (meeting of the Waikato and Waipā Rivers)
- Te Pae Maunga o Hakarimata
- Tūrangawaewae Marae
- Tūrangawaewae House
- Kīngitanga Reserve

**Figure 2: Known sites of significance adjacent to the Waikato River in Ngāruawāhia**

## Taupiri

As noted in the 'Taupiri te maunga, Waikato te Awa' kōrero of this section, Taupiri is the foremost reason for the current position of the Waikato River. Te Mata o Tuutonga is the prominent paa on Taupiri Kuao, which is the smaller knoll of Taupiri Range, where the people of the Waikato are buried.

The area around Komakorau, with its swamps and lagoons, is described as teeming with eels and wild fowl, which were stable food resources. Te Wherowhero, the first Maaori king, lived for a time on the west side of the Waikato River at Taupiri in the early nineteenth century.

Leslie Kelly (1940 & 1949) describes the Taupiri area as "the home of Mahuta and Paoa, the sons of Hekemaru. The former lived at Komakorau in his village Te Uapata, while the latter occupied a settlement on the bend of the Waikato immediately opposite Taupiri mountain, called Kaitotehe" Paoa left the district by way of the Mangawhara Stream and travelled to Hauraki, but Mahuta remained.

Mahuta's grandsons, Wharetiipeti and Tapuae, continued to occupy the paa Te Uapata, but ultimately decided they wanted the better gardening land available on the western bank of the Waikato River, opposite Taupiri mountain at the place called Kaitotehe. Te Uapata was a swampy place, but Kaitotehe had soil better suited to kumara cultivation. By using a ruse, i.e., assisting Te Iranui and his people with planting kumara, Wharetipeti and Tapuae were able to over-power Te Iranui and capture his tribes' lands on the west bank of the Waikato River at Kaitotehe, opposite Taupiri mountain. Wharetiipeti and Tapaue were to remain at Kaitotehe.

Ultimately, both brothers were killed by Te Ruinga (Rangihoto's son) and his friend Maoa as a result of their deeds.

Te Putu, the son of Tapaue, lived his life at Taupiri, with his son Tawhia-ki-te-rangi. The time came when Ngāti-Raukawa, began to encroach upon the territory of Ngāti Maahuta. Gradually moving northward, they established themselves at Nukuhau and Tamahere, at Horotiu or that part of the river between Kirikiriroa (Hamilton) and Ngāruawāhia. Naturally this move was strongly resented by Waikato, and open hostilities broke out, with the result that Ngāti Raukawa, under their chief Ngatokowaru, paddled downstream and attacked the chief Kakeha at Te Pepepe.

Te Putu was by this time an old man, and it now fell upon his son Tawhia-ki-te-rangi to lead the people. News that Te Pepepe was beseiged was soon communicated to Ngāti Maahuta and messengers hurried off to rally their own warriors to assist in repelling the invaders. In answer to the call a detachment of Ngāti Te Ata, Ngāti Tipa and Ngāti Tahinga came up the river in the war canoe Taraweka and anchored opposite Te Pepepe, where they were joined by other canoes belonging to Tawhia-ki-te-rangi and Ngāti Mahuta.

A landing was now made, and a battle raged in the open in front of the palisades of the Paa. Seeing their enemies attacked by fresh warriors Kakeha and his people rushed forth to assist their friends; and thus assailed, Ngāti Raukawa were defeated, losing many of their men, the survivors being literally driven into the river. Numbers of prisoners were taken, and among those captured was Ngatokowaru. As he

was about to be killed, he requested that he should first be allowed to see Te Putu. He was therefore temporarily allowed to live.

The Waikato victors paddled across to Taupiri, taking with them their prisoners and the heads of the slain chiefs, and these they set up on posts in a long row along the bank of the river. It is said that a hundred heads formed the grim line which started below Taupiri and stretched for over a quarter of a mile along the river. This part of the bank was from then on called Te Rauangaanga (a place of hundred heads).

The captive Ngatokowaru was conducted into the presence of Te Putu who was informed of what had transpired, and of the request made by the prisoner. The aged Te Putu, little knowing the sinister reason which actuated the request, came over to greet Ngatokowaru. Knowing full well that his life was forfeit, Ngatokowaru had concealed beneath his cloak a 'tete'or dagger made from the barb of a stingray, and as Te Putu leaned forward to press noses, he suddenly stabbed him in the throat; and as the blood gushed forth, quickly smeared it over himself. Ngatokowaru was instantly seized by the horrified warriors, but because he was covered with the sacred blood of Te Putu, he was beaten to death and his body buried instead of being eaten. This incident took place at the home of Te Putu, the name of which was Te Mata-o-Tuutonga.

Taupiri Maunga then became a resting place for the people of the Waikato, its chiefs, Maaori Kings and Te Arikinui Te Atairangakaahu. It is a very significant place for its people. Surrounding Taupiri are many other Paa sites and historical sites as shown on figure 3.

Refer to Figure 3 for known significant sites within and around Taupiri:

- Te Pepepe
- Kaitotehe Kainga
- Mangawhara River
- Taupiri Maunga
- Te Mata o Tutonga
- Tukupoto Pā
- Te Uapata
- Te Hihi
- Te Rauanganga (not mapped as its area is undefined. It is near the mouth of the Mangawhara and runs south along the Waikato River).

**Figure 3: Known sites of significance surrounding Taupiri**

# 7. TĀNGATA WHENUA: NARRATIVES AND FEEDBACK TO THE PLAN

To ensure success for this project, Te Huia Ltd had a discussion with Taupiri Marae, Tūrangawaewae Marae and Ngāti Tamainupō prior to submitting the request for tender application. One of the critical elements for success, is that each tāngata whenua group wanted to facilitate their own wānanga, and be resourced for their time and contribution. This was triggered by a historic concern which was that other consultants had sought information and hui with tāngata whenua, held those hui and took captured information back to offices in Hamilton or Auckland. The approach for the structure plan would be that tāngata whenua facilitate and host their own wānanga and would be supported by Te Huia Ltd (when required).

With the support of Waikato District Council, including resourcing of equipment, information and financial recognition, Taupiri Marae, Tūrangawaewae Marae and Ngāti Tamainupō held wānanga and developed the following information to be considered by Waikato District Council. Waikato District Council also held public engagements at Taupiri Town Hall, Hopuhopu Sports Facility and Ngāruawāhia Town Hall. Information gathered from the public engagements were shared with tāngata whenua.

Prior to holding their own wānanga, Te Huia Ltd provided a summary of information and presentation overview about the structure plan, including direction for tāngata whenua to consider. Te Huia Ltd provides narratives from Taupiri Marae, Tūrangawaewae Marae and Ngāti Tamainupō. These narratives were drafted by each of the tāngata whenua groups and is unedited in its presentation. Following each narrative, Taupiri Marae, Tūrangawaewae Marae and Ngāti Tamainupō provide their feedback to the Ngāruawāhia, Taupiri, Hopuhopu Structure Plan and the Ngāruawāhia Town Centre Plan.

The information shared by tāngata whenua has been used to inform key aspects for the structure plan.

It is the position of Taupiri Marae and Tūrangawaewae Marae that the narratives they have provided in "Section 8(a) and 9(a): Narratives and Feedback to the Plan" are not to be used publicly. **This version does not include these sections.**

All feedback provided in the following sections by tāngata whenua can be used for intended purposes by WDC.

WDC will determine the best way to hold that information within WDC.

Ngāti Tamainupō is favourable for WDC to refer to the narrative and information they have presented for the Structure Plan and Town Centre Plan.

# 8. TAUPIRI MARAE

## 8(a) – Taupiri Marae Narrative

This section has been removed from the public version as requested by Taupiri Marae.

## 8(b) Taupiri Marae – Feedback to the Structure Plan

1. Taupiri Marae seek clarity and further discussions with Waikato District Council over the following:

    i. Use of information gathered for the structure plan;

    ii. How the information will be prioritised;

    iii. Expectations with the use of information provided;

    iv. Long term plans and funding;

    v. The implementation of recommendations;

    vi. Decision making process

    Taupiri Marae would like to be a part of the decision making process for the inclusion of Taupiri Marae aspirations and support of other mana whenua groups.

2. Increased development and new housing in Taupiri. Mana whenua would like to see more papatākaro (Playgrounds, sports fields) and wharepaku, and have direct input into the design and planning of these places. The playground should be a good size reflective of a growing community.

3. For us to totally redesign Taupiri according to our values and connecting the pā sites maunga, and awa.

4. Currently we have a pub at one place, a dairy on the other road and Hopin Stopin by the River. We want to redesign the town centre to create a hub or local businesses.

5. Commerce and Community Services

    i. The BP Centre needs to be named Taupiri Service Centre not Gordonton's Service Centre.

    ii. A cultural centre, that would encourage local tourism lead by mana whenua.

    iii. Town centre to be a community centre, medical centre, bigger supermarket, with a lotto shop.

    iv. Day care centres for whānau who have to work beyond 3pm.

    v. Railway Station for future transport access.

    vi. Natural water tourism platform reflects historical narratives and future focused ones.

    vii. Town energy and water alternatives in event of energy crisis.

    viii. Town community swimming pool for our whānau, like Te Aroha.

    ix. Doc conservation centre with Tangata whenua, and maintenance kaitiaki strategies.

    x. Develop local food sovereignty strategies.

    xi. Crematorium, tribal funeral parlour to protect space on Taupiri Urupaa. Enabling Marae and local investors to achieve this.

xii. Participating in identifying transport links to regional spaces. Especially bus stops and the connectivity with Taupiri and the surrounding areas. Having stories and kōrero incorporated into the design of the bus stops.

xiii. The possibility of having a kura kaupapa school in Taupiri.

6. Making sure that signs associated with the River are written positively e.g. swim safely, not, Do Not Swim Here it is Dangerous.

7. Cycleway (connectivity with Taupiri, Hopuhopu and Ngāruawāhia).

8. Environment Points:

    i. Native Tree restoration for Taupiri Maunga

    ii. Predator control on Taupiri Maunga

    iii. Fruit trees within council reserves and along walkways and proposed cycleways

    iv. We have Tui at Taupiri Maunga, but would love to see Kiwi returned one day.

9. Rubbish bins. Change in design and approach. Promote Kaitiakitanga and the act of being a kaitiaki, or guardian, of Taupiri by placing your rubbish in the bins. Incorporate ideas to reframe thinking and approach to rubbish.

10. Tourism. Increase tourism within the area. Possibility to promote paths to the many Paa sites that have already been acknowledged. Connect the areas to the Kiingitanga Trail that is promoted during the Koroneihana or Regatta.

11. Anzac Celebrations. Holding significant events within Taupiri. Holding these events in Taupiri in remembrance of ancestors who fought in the World Wars, even if it was by force and conscription.

12. A disconnection with the new B.P development with the Taupiri community and Mana whenua. How do we encourage visitors to continue from the BP and that precinct into the township of Taupiri itself.

13. Signage

    i. A new welcome to Taupiri sign. Mana whenua input into the design (appropriate signage). The signage is grammatically incorrect. The sign should reflect the significance of Taupiri.

    ii. Signage to the bridge access and also to the walkway up the Maunga.

    iii. Marae signage.

14. What is the icon we could use to promote Taupiri? E.g. Patea have a Poi.

15. Cultural Expression and Symbolism

    i. How do we build on the work created by TK, Boxer etc for the expressions crafted into the roundabouts. Where are the spaces we want to create our cultural symbolism? E.g. historic sites

ii. Can we redesign the entire cultural space of Taupiri

16. Work with all parties to eventually shift the Railway away from Taupiri Maunga and our Urupaa.

17. Do we have all the necessary services such as internet speed and phone connections to make sure our whaanau are able to contact emergency services.

# 9. TŪRANGAWAEWAE MARAE

## 9(a) Turangawaewae Narrative

This section has been removed from the public version as requested by Turangawaewae Marae.

## 9(b) Tūrangawaewae Marae – Feedback to the Structure Plan

The following information was gathered by Tūrangawaewae Marae at their regular Marae hui and meetings with Trustees, the end of March and June 2023.

1. Tūrangawaewae Marae and Pāpākāinga are significant areas. They should be acknowledged as significant areas within the Town Centre and Structure Plans.
2. Tūrangawaewae Strategic Plan: Align the cultural assessment work with the Marae strategic plan, and ensure place for the proposed Tūrangawaewae Taiao Plan (Environmental Plan)
3. Te Puea Farms: Want to ensure that there are no impacts and no imposed restrictions to existing practices from housing development and associated infrastructure.
4. Acknowledge every area of importance to the Marae. These areas will be identified and shared through the development of a Tūrangawaewae Environmental Plan.
5. The Marae to prioritise its environmental objectives and have these reflected in the District Plan.
6. Would like to see representation of the towns history and connections to the Kīngitanga, Tūrangawaewae Marae and the Waikato and Waipā Rivers.
7. Surrounding area of Tūrangawaewae marae
    i. Speed Limits: regulate the speed limits on river road outside of the marae.
    ii. Improve street lighting in the surrounding area of the marae. Make safer.
    iii. Safer walkways.
    iv. Better toilet facilities at Patterson park.
    v. More public carparking (e.g., Netball courts/front verge).
    vi. Safer pedestrian island/crossing, (outside marae).
8. Confirm/investigate all the land titles of land surrounding tūrangawaewae marae.
9. The use of the old Plunket building/site for Marae use.
10. Economic opportunities near the marae. Increased development and houses. Need for a small shopping hub catering for area. Dairy/café etc
11. Enable the use of “5 acres” property for pāpākāinga development and commercial opportunities
12. Cultural Murals/Artwork at the entrances to the town. Also town centre. Check the artwork on the squash club.
13. Move the squash club so that the entire river frontage is available for access. Seems a relic of the past.

14. Tidy the township and make it more welcoming. Move swiftly to remove derelict buildings such as the Waipā Tavern (recently burned down).

15. Planting of fruit trees on the existing walkways for tamariki and whānau to enjoy.

16. Consider establishing a sports facility on Patterson Park that encourages the township to come together for activities.

17. Create more access spaces to the Marae so that people visit the “marae” side of town. At present the people on the “marae” side of town go into the town centre but not the other way around.

18. Establish safe connections to Hopuhopu as the tribe prepares to create a tribal and community hub.

19. Maintain cultural sightlines and outlooks to the Awa from the Marae, Hakarimata and Taupiri.

20. Seeking the placement of expressions (pou, kōwhatu, native trees) to whakanoa (restore balance) to the areas and places in Ngāruawāhia that continue to carry colonial reminders. The past can be acknowledged, but the future should be enabled through tikanga. This includes:

    i. Galbraith Street Roundabout (Union Jack).

    ii. The Gun Turret. Not to be removed but maybe placed somewhere more appropriate.

    iii. The Waipa Tavern is where the 1946 partial settlement for the tribe was agreed between Te Puea, Pei Te Hurunui Jones and Prime Minister Peter Fraser (representative of).

21. Kīngitanga Reserve to be informed by the Office of the Kīngitanga

# 10. NGĀTI TAMAINUPŌ

## Ngāti Tamainupō Cultural Statement

***Wāhia Ngā Rua! Open the food pits!***

*(Ngāti Tamainupō saying)*

**1. Ko mātou Ko Tamainupō**

Ngāti Tamainupō is one of 33 iwi/hapū in the Waikato district who have mana whenua as part of Ngā Iwi o Tainui.

Ngāti Tamainupō takes their name from the eponymous ancestor, Tamainupō, son of Kōkako, who married Māhanga's daughter, Tūkotuku.

The traditional pou whenua (tribal boundaries) of Ngāti Tamainupō includes the following areas: Huntly, Taupiri, Ngāruawāhia/Puke-i-āhua Pā, Horotiu, Hamilton, Ohaupo and extends west towards Te Kowhai, Whatawhata and the Whāingaroa Harbour, the surrounding whenua and moana.

Ngāti Tamainupō has numerous descendant hapū, including Ngāti Toa Kōtara and Ngāti Te Huaki. There are two active Ngāti Tamainupō marae located along the Whāingaroa Harbour, Waingaro and Mai Uenuku ki te Whenua (Rānui).

Ngā Uri o Tamainupō ki Whaingaroa Trust is the mandated governing authority for Ngāti Tamainupō and has been since its establishment at a hui-ā-hapū in 2019.

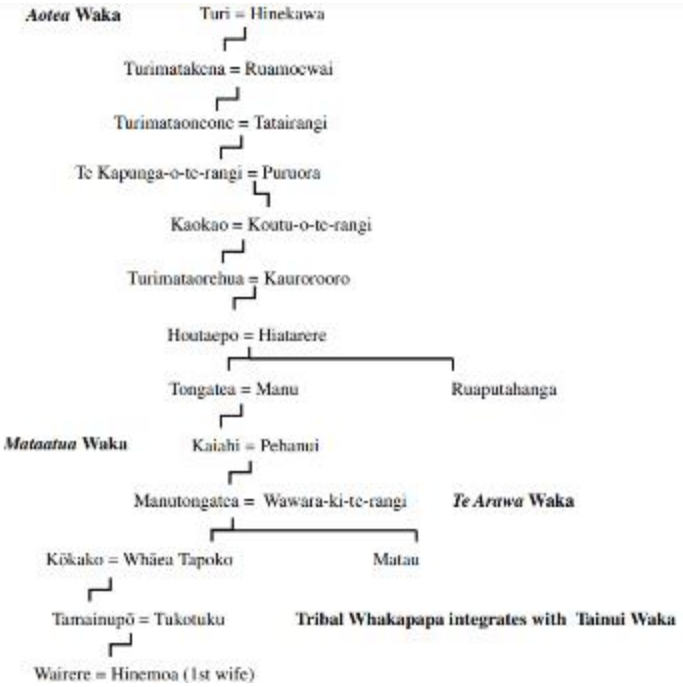


*Figure 1: Whakapapa Chart showing Waka connections (Barrett, 2012)*

## 1.1 Our Whakapapa

Ngāti Tamainupō is an iwi of the Waikato confederation and represents the interests of Ngā Uri o Tamainupō, Toa Kōtara me Te Huaki.

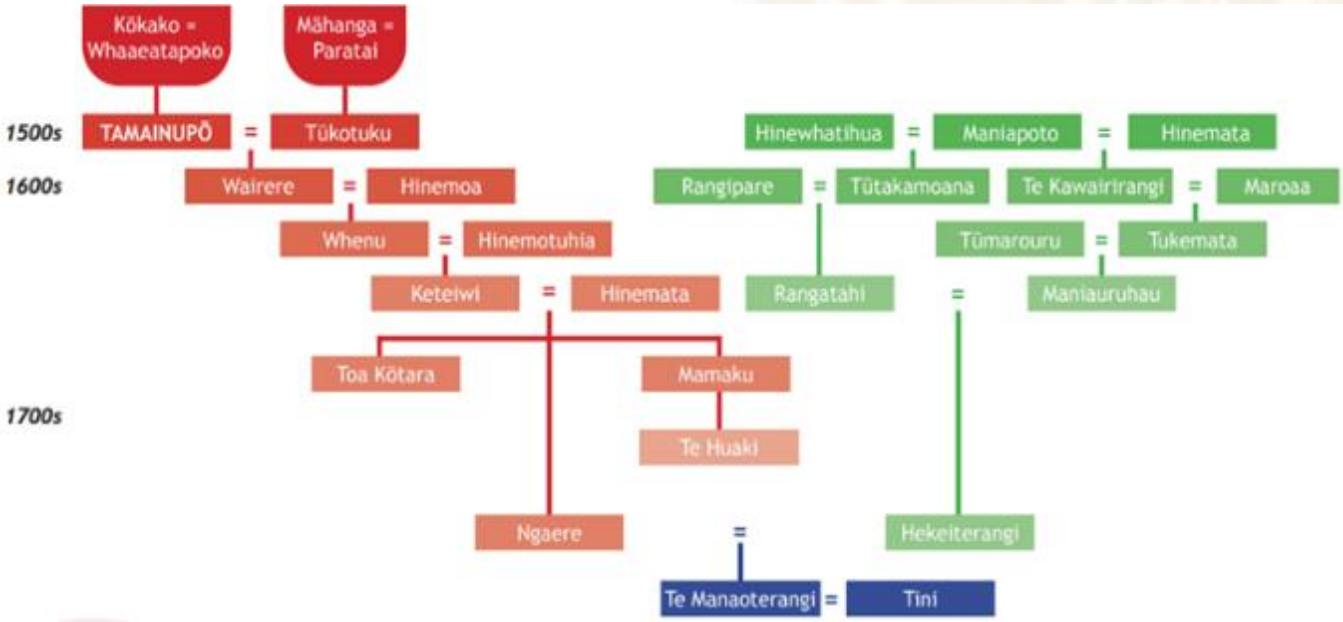


*Figure 2: Whakapapa Chart showing Ngāti Maniapoto connections*

*(Ngā Uri o Tamainupō ki Whaingaroa Trust, 2021)*

## 1.2 Our History

Ngāti Tamainupō is founded on the tupuna Tamainupō, the son of Kōkako. Kōkako descended from Mataatua, Te Arawa and Aotea Waka, and lived in the valleys of Waikato.

In the early 1600s the chiefs, Kōkako and Tūheitia, were mortal enemies. After Tūheitia died of mysterious circumstances, the bitter feud continued between his son, Māhanga, and Kōkako. Kōkako had a son with Whaeatāpoko from Marokopa, who they named Tamainupō. Eventually, Tamainupō married the daughter of Māhanga, who was called Tūkotuku. After the birth of the couple's son, Wairere, peace was made between Māhanga and Kōkako.

To consolidate and memorialise this peace, Māhanga gifted the northern lands of one of his wives to Tamainupō and Tūkotuku. These lands became the Ngāti Tamainupō pouwhenua, with Ngāruawāhia located at its centre.

In the years after, the descendants of Tamainupō and Tūkotuku became hapū themselves (Ngāti Wairere, Ngāti Hauā, Ngāti Koroki Kahukura, Ngāti Iranui).

## 1.3 Formation of Ngāti Tamainupō

Wairere had several wives and many famous offspring but it was his eldest son, Whenu from his first wife Hinemoa who would become the grandfather of Toa Kōtara, Ngaere and great grandfather to Te Huaki. Wairere and Hinemoa had three children called Whenu, Iranui and Takerewakanui. Hinemoa died as a young mother and her children were adopted by Tamainupō and Tūkotuku. From that point on, the family became known as Ngāti Tamainupō.

*Figure 3: Keteiwi (Huirama, 2018)*

Tamainupō gave Whenu the task of collecting the bones of his ancestors and interning them at a cave in the Whāingaroa Harbour.

It's not known exactly where the cave was located but there are numerous places where limestone caves could be found around the Harbour.

When Whenu married Hinemotuhia, they named their first-born child Keteiwi (the bag of bones). Keteiwi married Hinemata and they had five children called Toa Kōtara, Ngaere, Mata-te-Rangi, Huamoetu and Mamaku.

## 2. Te Mata Herenga – Hapū Environmental Plan

Te Mata Herenga – Ngāti Tamainupō Mātauranga and Taonga Management Plan (2021) is our Hapū Environmental Management Plan. It has been recognised by Waikato-Tainui, as our iwi authority. Accordingly, it has the statutory status and recognition of an Iwi Environmental Management Plan and is to be considered in addition to the Waikato Tainui Environmental Management Plan Tai Tumu Tai Pari Tai Ao.

Ngāti Tamainupō has exercised tino rangatiratanga within our traditional pouwhenua since time immemorial. We assert unreservedly our rangatiratanga over our lands, waterways, ngahere, ngāwhā, Wāhi tapu, Wāhi tūpuna and taonga. As kaitiaki of same, ensuring the protection and sustainability of our taonga for our mokopuna is imperative.

The heritage, history and taonga of Ngāti Tamainupō are our stories. We own and live our narrative, it is our voice and as such, the voice of our mokopuna. The future of Ngāti Tamainupō is thus dependent on our creating cultural, social and economic space to ensure the voice of our mokopuna is heard. To this end, we maintain that ***only Ngāti Tamainupō can speak for Ngāti Tamainupō***.

According to our tikanga, Ngāti Tamainupō recognises Te Whakakitenga o Waikato and the shared interests within the takiwā / pouwhenua of neighbouring hapū, such as Ngāti Māhanga, Ngāti Wairere, Ngāti Iranui and Ngāti Mahuta (Tuurangawaewae Marae).

For a digital copy of Te Mata Herenga, please visit: https://www.tamainupo.iwi.nz/our-place/

## 3. Our Connection to Ngāruawāhia

### 3.1 Ko Waikato te awa

The spiritual connection that the Waikato people have with the Waikato River, our tupuna awa (ancestral river), is captured in numerous pepeha, tongikura and korero tukuiho.

One such story is when Kōkako performed the baptism rites for his grandson Wairere, he took the child to the edge of the river and cupped the flowing water (wai-rere) to sprinkle over him while chanting karakia. Some say that this was when the ancient name for the river changed from Te Awanui o Taikehu to Waikato ('pluck water').

For Ngāti Tamainupō, the Waikato River has nourished, healed and sustained our people living along its banks for generations. This includes our ancestors who lived at Pukeiāhua Pā and other Ngāti Tamainupō settlements, through to present-day descendants residing in towns and cities. In this sense, the mauri of our Waikato River continues to influence our sense of wellbeing.

Ngāti Tamainupō endorses the sentiments for freshwater as stated in the Waikato-Tainui Environmental Management Plan Tai Tumu Tai Pari Tai Ao, that the significance of water is immeasurable and the respect tāngata whenua has for it is demonstrated by the manner and purposes for which it is used and handled (Ngā Uri o Tamainupō ki Whaingaroa Trust, 2021). It is no coincidence that marae and papakāinga were established alongside or near water bodies to sustain the functions of the marae, hapū, and the people.

Ngāti Tamainupō also supports that a 'hierarchy of obligations' as in the National Policy Statement for Freshwater Management 2020 should be applied, to require that first the health and wellbeing of water ecosystems is prioritised, second the health needs of people, and third the ability for communities to provide for its wellbeing.

### 3.2 Ngāruawāhia

Ngāti Tamainupō has occupied the Ngāruawāhia area for centuries.

The area is of immeasurable cultural significance to Ngāti Tamainupō in terms of whakapapa and kōrero tukuiho.

Ngāruawāhia is the focal point of an important network of Tamainupō pā named in the Wāhia Ngā Rua narrative (Ngā Uri o Tamainupō ki Whaingaroa Trust, 2023).

Pukeiāhua is the principal pā within this network and remains an important part of our identity as Ngāti Tamainupō descendants.

There is also a series of pā along the banks of the Waipā river through to what is now known as 'The Point'. These pā sites include Pahīwai, Whāuko, Marohemo and Oikoi.

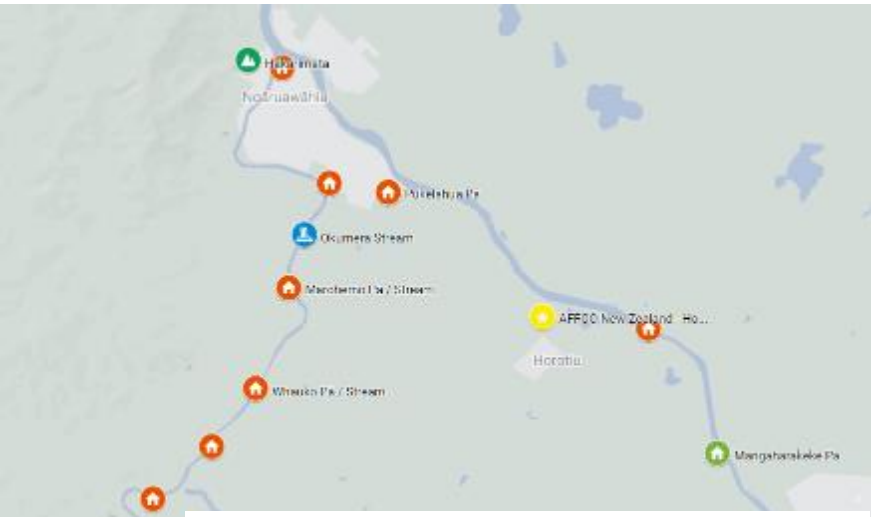


*Figure 4: Ngāti Tamainupō Pā Sites*
*(Ngā Uri o Tamainupō ki Whaingaroa Trust, 2023)*

While the whole of the Waikato region is the traditional lands of Waikato, each of the individual hapū who make up Waikato have their own traditional land areas within the region. Ngāruawāhia and the surrounding district were developed upon the traditional lands of several of those hapū, including Ngāti Tamainupō.

### 3.3 Pukeiāhua Pā

According to Ngāti Tamainupō, the following narrative describes the story about the naming of Ngāruawāhia (Barrett, 2012; Jones & Biggs, 1995; Kelly, 1949).

By the 1700s, Keteiwi of Ngāti Tamainupō was the chief of Pukeiāhua Pā. His eldest son Toa Kotara was betrothed to Hekeiterangi of Ngāti Maniapoto, eldest daughter of a chief called Maniauruahu. However, when the Waikato hapū visited, she fell in love with Ngaere who was the younger brother of Toa Kotara. After a failed elopement, Hekeiterangi was disowned by her father, and she returned with Ngaere to Pukeiāhua.

Hekeiterangi fell pregnant and gave birth to a son. The couple invited her father to the child's naming ceremony to heal the rift between the two tribes. Maniauruahu accepted the invitation.

*Figure 5: Te Mana o Te Rangi (Huirama, 2018)*

A little while later, Maniauruahu travelled with a large party along the Waipā River. Past Whatawhata, they were welcomed with great hospitality from several pā, including Te Ruamakamaka, Tikirahi, Whakatakotoranga, Te Wakapuku and Pahīwai, before arriving at Pukeiāhua.

At each pā, when the people were asked who their chief was, the answer was 'Ngaere'. By the time Maniauruahu arrived at Pukeiāhua, he was satisfied that Ngaere was a rangatira of high standing and he fully approved of the marriage. At the ceremony, Keteiwi named the child 'Te Mana o te Rangi' (greatness of the day) because Ngāti Maniapoto had honoured Waikato by joining them for the celebration.

Numerous uncooked delicacies had been gathered, prepared, and stored for months in advance. Tuna, ika, manu, berries, taro and kūmara were some of the kai gathered from māra kai, awa and ngāhere.

At the feast, large mounds of mostly preserved delicacies stretched from Te Huinga o Ngā Wai (the Point) to Pukeiāhua. According to other accounts, the food stretched from Pāhiwai Pā on the banks of the Waipā river to the banks of the Waikato.

The sight of the plentiful food resembled the nearby hills, so they were given the name, Hākarimata (Hākari = feast; Mata = preserved or uncooked food). After the formalities, Ngaere called out "Wāhia ngā rua! Break open the food pits!"

The feasting and celebration began and continued for many days and nights, strengthening the kinship bonds between Ngāti Maniapoto and Waikato.

This is the story of how Ngāruawāhia was named.

### 3.4 Pahīwai Pā

In the 1700s, Pahīwai Pā is named in the Wāhia Ngā Rua narrative as one of the Ngāti Tamainupō pā situated along the Waipā River. It was the closest pā to Pukeiāhua, where their rangatira Ngaere, lived. Therefore, it was the last pā to host the Ngāti Maniapoto chiefs, Maniauruahu and his brother Maniaopetini, before the great feast.

In 1864, Pahīwai's location was recorded on the map below.

*Figure 6: Pahiwai Pā (University of Waikato, 2022).*

In 1867, at Compensation Court hearings in Ngāruawāhia, Wiremu Pātene (Ngāti Tamainupō rangatira) describes Pahīwai as an area of "kūmara cultivation" (University of Auckland, 1867). This is consistent with horticultural features mentioned in recent archaeological reports (Huirama, 2023).

The Okumera Stream, which runs near Pahiwai Pā, was a waterway used to access Pukeiāhua Pā from the Waipā River. The stream has since been drained to allow for farming

### 3.5 Te Huinga o Ngā Wai ('The Point')

At the same time that Ngaere was chief of Pukeiāhua Pā, Toa Kōtara was chief of the pā at Te Huinga o Ngā Wai.

Ngāti Kōtara are a descendant hapū of Ngāti Tamainupō and take their name from the eponymous ancestor, Toa Kōtara. According to Ngāti Tamainupō kaumatua, they were the occupants of Oikoi pā in the early 1700s which was located on the lower terrace at the Point, below the domain (Huirama, 2016).

Toa Kōtara had a daughter named Ngāhia. Her descendants took on the name 'Ngāti Ngāhia' (another descendant hapū of Ngāti Tamainupō) and lived in Ngāruawāhia.

It is through these connections and the gifting of land by Māhanga that Ngāti Tamainupō claim ahikā and mana whenua status within Ngāruawāhia and at Te Huinga o ngā Wai.

### 3.6 Raupatu

Since its inception, Ngāti Tamainupō has been an active supporter of the Kīngitanga, which is strengthened through whakapapa ties over many generations.

Tamainupō
Wairere
Whenu
Te Keteiwi
Mamaku
Te Huaki
Kuraataiwhakaea
Te Atairangikaahu
Tuata
Te Rauangaanga
Pōtatau Te Wherowhero

*Figure 7: Whakapapa showing a Kiingitanga Connection (University of Auckland, 1867)*

Ngāti Tamainupō were in full support when King Pōtatau Te Wherowhero's whare was erected in 1858 at Te Huinga o Ngā Wai. Wiremu Pātene also spoke at the Compensation Court hearing in Ngāruawāhia about Ngāti Tamainupō agreeing to the Kīngitanga capital being in Ngāruawāhia (University of Auckland, 1867). Pātene said that while Pōtatau's whare was built there with the blessing of Ngāti Tamainupō, the whenua would still belong to Ngāti Tamainupō.

During the Waikato land wars in 1863, when British troops arrived in Ngāruawāhia, they noticed it was recently abandoned and seized the land. Following the invasion of Waikato, 1.2 million acres of Waikato land, including all Ngāti Tamainupō's land, was illegally confiscated by colonial forces.

In 1864, in an effort to legitimise the acquisition of Ngāruawāhia, three hapū (Ngāti Tamainupō, Ngāti Māhanga and Ngāti Hourua) were offered money from the Crown for the sale of Ngāruawāhia, even though the land had already been confiscated (University of Auckland, 1867). The Deed of Sale for Ngāruawāhia, also referred to as the 'Turton Deed', included land between the Horotiu and Waipā rivers.

At Compensation Court, Wiremu Pātene described how he was approached by a Crown agent, Mr Turton, and offered money for Ngāti Tamainupō's share in the sale of Ngāruawāhia in 1864. Patene testified that after he took the offer to the hapū, Ngāti Tamainupō refused the money and it was returned to Mr Turton. Ngāti Tamainupō kaumātua today still remember this story and that this payment was referred to by the old people as 'black penny' (Barrett, 2012).

Pātene also gave detailed testimony regarding the pou whenua (boundaries) of Ngāruawāhia and rightful Tamainupō claimants for the area (University of Auckland, 1867). In his description of pouwhenua, at that time the boundaries of Ngāruawāhia stretched southwards to Te Kowhai and Rotokauri in Hamilton.

### 3.7 Horticultural Features

Ngāruawāhia is located within the Waikato Horticultural Complex. The images below are sourced from a technical report prepared to support the Proposed Waikato District Plan (Kahotea, 2020).

The images identify sites and areas of historic heritage value and where there is observable cultural association of Māori, including Ngāti Tamainupō (relationship, culture and traditions) in the Ngāruawāhia area.

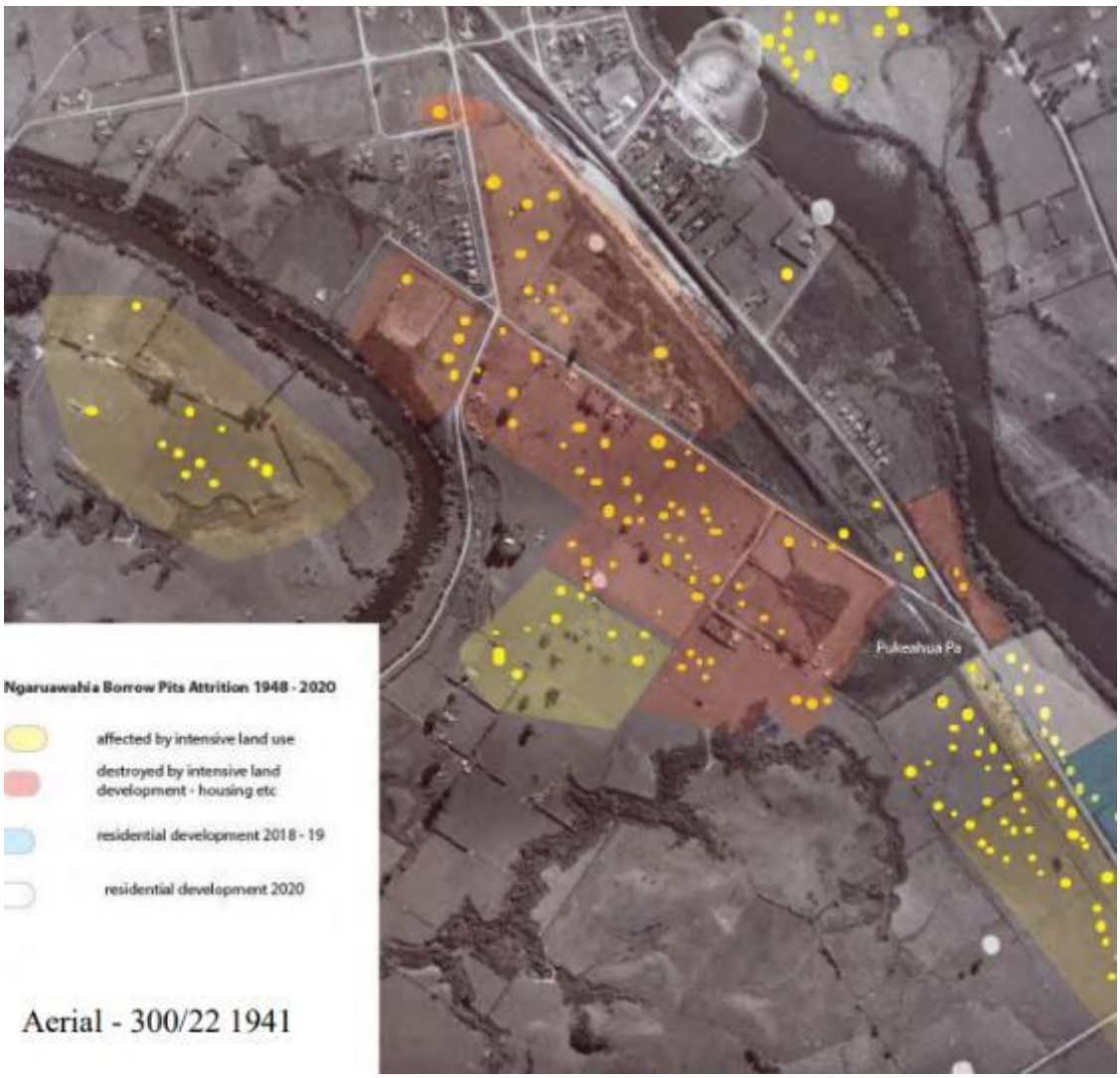


*Figure 7: Ngāruawāhia Borrow Pits Attrition 1948 – 2020 (Kahotea, 2020)*

*Figure 8: Borrow Pits Attrition between Ngāruawāhia & Horotiu (Kahotea, 2020)*

There are numerous registered archaeological and horticultural sites in Ngāruawāhia, which supports the rich cultural narrative of the area and how the whenua and awa was, and still is today, valued, cared for and used, intergenerationally, by Ngāti Tamainupō and mana whenua.

The Māori worldview recognises that economic, social, and cultural values are interdependent with the environment, and that the taiao is an integrated system. A mātauranga Māori view would not look at a relationship between people in general and the taiao as a separate entity, but rather be concerned with how people function as a part of the taiao.

### 3.8 Relationship with the Taiao

Ngāti Tamainupō holds a unique and special relationship with, and responsibility to the taiao (environment). There is a natural order and balance where the taiao is understood not merely as a set of resources, but part of network of kin relationships, which we articulate in (and as) whakapapa and whanaungatanga. It is this whakapapa and whanaungatanga that defines our perspective, through which we express our relationships with the elements of the physical world, the spiritual world, and each other as people.

Our relationship with taonga in the environment (with landforms, waterways, flora and fauna) is articulated using kinship concepts. Whakapapa shows that all living things, whether people, plants or animals, share a common ancestry. We acknowledge these relationships and that people are descendants of the environment.

In the reciting of whakapapa and whanaungatanga, we are identifying and articulating our generational connection, association, practice, stewardship, guardianship, as well as exclusive use, with/over/of taonga within their natural environment.

### 4. Future Aspirations

***Ka tūreia! A leap of faith towards greatness!***

*(Ngāti Tamainupō saying)*

Ngāti Tamainupō has transformational & future-focussed aspirations for Ngāruawāhia. These moemoea (dreams) are inspired and shaped by past examples of manaakitanga, kaitiakitanga and mana motuhake woven throughout our shared stories and carved into our unique landscapes.

### 4.1 Mana Whenua Engagement (2022)

A Mana Whenua early engagement survey for the Ngāruawāhia Town Plan ran during the month of September 2022 for 3 weeks.

Based on analysis of the feedback, the top issue/opportunity raised by mana whenua related to the theme of ***Māori culture and heritage***.

Within this category, the main areas of concern/opportunities for mana whenua related to:

- Protecting our town's historical site of **Pukeiāhua Pā** on Great South Road, including our **māra kai** (**sacred gardens)**.
- Recognising hapū kōrero related to the tupuna name of **Te Mana o te Rangi**, and developing a **reserve site plan** that expresses and represents this kōrero through signage, planting etc. **in collaboration with Ngāti Tamainupō**

## Ngāti Tamainupō – Feedback to Structure Plan (2023)

In May 2023, Ngāti Tamainupō asked whānau what they wanted to see in the future for Ngāruawāhia. The results were thematically analysed and are presented below:

| | |
|---|---|
| **Whānau (n=30)** | Female 43%, Male 57% |
| **Age Group** | Tamariki (under 17 years) = 13.3%<br>Rangatahi (18-29 years) = 43.3%<br>Pakeke (30-64 years) = 33.3%<br>Kaumātua (65+ years) = 10.0% |
| **Environment** | ***Which areas should be protected or restored?***<br>• Pukeiahuā Pā (24%)<br>• Waikato/Waipā Awa (24%) |

| | |
|---|---|
| | • Hākarimata Ranges (14%)<br>• The Point (8%)<br>• Te Mana o Te Rangi (5%)<br>***How might we improve the environment?***<br>• Promote and educate about taking care of the enviroment (19%)<br>• Strict monitoring of waste going into awa (animal, human) (16%)<br>• Riparian planting along the awa (12%)<br>• Provide rubbish bins (12%) |
| **History/ Culture** | ***What history is important for people to know?***<br>• The story of how Ngaruawahia got its name (21%)<br>• Kīngitanga & Tūrangawaewae story (19%)<br>• Pukeiāhua & māra kai (14%)<br>• Waikato Land Wars (12%)<br>• Hākarimata & Te Mana o Te Rangi (12%)<br>• Tamainupō story (10%)<br>***How might we help people learn the history of Ngāruawāhia?***<br>• Mana whenua working with community groups, especially local schools (34%)<br>• Establish Pukeiāhua as an information hub (12%)<br>• Mana Whenua published books eg Wāhia Ngā Rua (12%)<br>• Virtual Tours/geocaching (12%)<br>• Use of technology (internet, social media, QR codes) (10%) |
| **Recreation** | ***Is there anything you would like to see added or improved?***<br>• A new Recreation Centre for all ages, with a focus on gym facilities & indoor sports (24%)<br>• Support for more variety of clubs and upgrade in facilities (13%)<br>• Improved parks & sports fields (13%)<br>• Improved signage & visibility of walkways (10%)<br>• Improved access to awa at the Point (7%)<br>• Improved outdoor exercise equipment (7%) |
| **Urban** | ***Do you have any issues or ideas for things like roading, housing, public transport etc? Is there better access or connectivity needed to?***<br>• More housing for locals & increased support to enable healthier homes (19%)<br>• Improved access & signage to Tamainupō pā sites (15%)<br>• New train station for transport to Auckland and Hamilton (11%)<br>• Improved foot paths and crossings (esp.Whatawhata, Havelock, Supervalue, High school) (11%)<br>• More around-town transport options (eg bus, taxi, uber) (8%)<br>• Improved parking along Gt South Road (6%)<br>• Clarity around variable speed limits in town (6%)<br>• Stop gentrification of the town (6%) |

| | |
|---|---|
| **Commerce** | ***What more do you want to see in terms of businesses or enterprise? Is there any creativitiy or innovation you would like to see?***<br>• A bigger range of new or existing businesses (eg. Banks, grocery stores, hardware, hairdressers, dentists, hotels, restaurants, clothing etc) (33%)<br>• More healthier eating options available (i.e. less bakeries) (20%)<br>• More cultural tourism businesses (eg Tamainupō Tourism Hub, Tamainupō owned restaurants) (9%)<br>• Whare Wānanga/Whare Hauora (Health, Wellbeing & Trauma support services) (8%)<br>• More ecotourism businesses (eg e-bikes) (8%)<br>• Give the town centre and shops a 'facelift' (8%) |

As a hapū of Ngāruawāhia, it is our expectation that the Ngāruawāhia Town Plan will be developed *in collaboration* with Ngāti Tamainupō and take into consideration our aspirations for the area.

## 5. Conclusion

As mana whenua, Ngāti Tamainupō, have an ongoing and enduring relationship with the Ngāruawāhia area and the surrounding district through whakapapa and mātauranga. This relationship has numerous interdependencies which include our Tikanga and the values we hold for our Taiao such as mauri, mana, manaakitanga, kaitiakitanga, whanaungatanga and rangatiratanga.

For Ngāti Tamainupō, the Ngāruawāhia Town Plan must include a sound understanding of the cultural values that Ngāti Tamainupō/mana whenua associate with the Whenua (land), Wai Māori (fresh water) and Rangi (Atmosphere) for Ngāruawāhia.

This also requires a sound understanding of any impact that the Ngāruawāhia Town Plan might have on these cultural values, and possible mitigations to alleviate any such impacts.

As kaitiaki, ensuring the protection and sustainability of our taonga for future generations is both an obligation and a privilege.

***Ka puta te hau, ka papā te whatitiri, ka hikohiko te uira, ā, ka ua te ua…***

***The wind will rise, the thunder will crash, the lightning will strike and the rain will pour…***

*Ngāti Tamainupō omen*

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# 11. TĀNGATA WHENUA OUTCOME STATEMENTS FOR THE STUCTURE PLAN AND TOWN CENTRE PLAN

At the workshops noted above and in research presented to tāngata whenua, the following matters of significance are presented to the Waikato District Council. From these grouped themes Te Huia Ltd and GMD propose outcome statements for consideration by the Council in the Ngāruawāhia, Hopuhopu, Taupiri Structure Plan and Ngāruawāhia Town Centre Plan.

Whilst matters of significance relate to Te Awa o Waikato, Taupiri Maunga, Tribal Assets, Sites of Significance, Urban Layout, Cultural Expression, Commerce and Community Facilities, there is a considerable amount of interconnectedness between the matters and recommendations and as such this section must be read in such a manner. The recommendations are best not considered in isolation and should be viewed as a package.

This section should be read in reference to the feedback from tāngata whenua and report section should not be seen as the 'end of the road'. Implementing the structure plan will direct engagement and partnering with tāngata whenua. This will enable Council to develop and better understand the context of the recommendations as a basis to foster new, and strengthen, ongoing relationships and partnerships.

## Te Awa o Waikato (the Waikato River)

To tāngata whenua and Waikato-Tainui, the following statement encompasses a full expression of the relationship and connection to the Waikato River:

> *"The Waikato River is our tupuna (ancestor) which has mana (spiritual authority and power) and in turn represents the mana and mauri (life force) of Waikato-Tainui. The Waikato River is a single indivisible being that flows from Te Taheke Hukahuka to Te Puuaha o Waikato (the mouth) and includes its waters, banks and beds (and all minerals under them) and its streams, waterways, tributaries, lakes, aquatic fisheries, vegetation, flood plains, wetlands, islands, springs, water column, airspace and substratum as well as its metaphysical being…"*

Tāngata whenua have noted the significance of the Awa within their contributions to the structure plan.

That the significance of the Waikato River to the community and tāngata whenua is reflected in the structure plan. Based on the comments provided by tāngata whenua, the following recommendations are presented:

- Explicit recognition in the structure plan and its implementation of the status of the Waikato River and the relationship of tāngata whenua with the River.
- Ensure that the structure plan and its implementation as whole is guided by Te Ture Whaimana o Te Awa o Waikato and that council use Te Ture Whaimana tool to monitor and measure implementation of the structure plan.
- Ongoing riparian restoration including pest plant control along margins of the Waikato River, its tributaries, wetlands and lakes. This includes re-connecting and linking areas and the restoration of hauanga kai.
- That all council signs associated with the Waikato River are written positively e.g. swim safely, not "Do Not Swim Here it is Dangerous"
- Structure plan provisions and implementation that enable tangata whenua to maintain and enhance their relationship with the River including through maintain existing access points and ensuring further access in appropriate locations where they see fit.
- Ensuring that residential development and subdivision and development does not dominate the Waikato River and contributes to restoration and protection (betterment) of the awa this could be through building controls in areas near the river and improved provisions to manage stormwater and identifying areas for restoration and protection.

To tāngata whenua, any structure that pierces the bed or banks of the Waikato River is akin to piercing the veins of an ancestor.

- Where discharge structures can be removed, or limited in a project, then it will be regarded as an improvement to the activity and beneficial for the Waikato River.
- It is the preference of tāngata whenua that there would be no structures in the bed or bank of the Waikato River or its tributaries.
- If structures are required and present in the Waikato River, the structure should have a minimal impact on the relationship of tāngata whenua with the River and the ability of the River to naturally function. This includes minimal impact on the river channel, deposition and erosion on/off the bed and banks, habitat and movement of taonga species, access to significant sites, customary fisheries and food gathering.

## Taupiri Maunga

As described in the narrative of Taupiri Marae, and previous sections of this report, Taupiri Maunga is a *maunga tapu*, a sacred and revered maunga for three reasons. Firstly, Taupiri is a living being and a taonga. Secondly, it is an *urupaa* (cemetery). Thirdly, it is the burial place of over 5000 tribal ancestors including the Māori Kings and Māori Queen. Guarding the maunga are two taniwha who sit at the base of the maunga in the Waikato and Mangawhara Rivers.

At the meeting place of Taupiri and the Waikato River, where the Maaori Kings are resting, the physical expression of the *peepeha* (proverbial saying) for Waikato-Tainui presents itself in physical form:

| | |
|---|---|
| Ko Taupiri te Maunga | *Taupiri is the Mountain* |
| Ko Waikato te Awa | *Waikato is the River* |
| Ko Pootatau te Tāngata | *Pootatau is the chief* |
| He piko he taniwha | *At every bend a taniwha* |
| He piko he taniwha | *At every bend a taniwha* |
| Waikato taniwha rau | *Waikato of a hundred Chiefs* |

For these reasons, and more, the sanctity of Taupiri and its space should be protected. Currently there are a lot of issues occurring at Taupiri including the impact of the North Island Main Trunkline (NIMT), the old SH1 which severs the base of the maunga and its connection with the awa, soil instability on the maunga, water quality issues from activities in the Mangawhara and upper Waikato River and safe access for Waikato-Tainui tribal members visiting whānau at the urupā. These matters were shared by tāngata whenua, in particular representatives of Taupiri Marae and Tūrangawaewae Marae. Where possible, impacts on Taupiri and the Pae Maunga (mountain range), should be eliminated.

Taupiri Maunga is culturally, spiritually and physically significant to the community of Taupiri, the Kīngitanga and Waikato Iwi. Based on the comments provided by tāngata whenua, the following recommendations are presented:

- That council support Taupiri marae and other parties to advocate the shifting of the Railway awa from Taupiri Maunga and Urupaa
- Restoration of Taupiri Maunga with native vegetation and pest plant and pest animal control on Taupiri Maunga with the ultimate aim of re-introducing Kiwi and other native species which were once common on the Maunga.
- That cultural outlooks and viewshafts to Taupiri Maunga from Taupiri Marae and Tuurangawaewae Marae are recognised and protected in the structure plan and its implementation.
- That cultural outlooks and viewshafts from Taupiri Maunga to the Waikato Awa are recognised and protected in the structure plan and its implementation.

## Tribal Assets

The structure plan extends to areas that hold tribal assets, marae assets and Māori Freehold Title. The Ngāruawāhia WWTP is based at Hopuhopu, in between the Waikato River and lands in the ownership of Waikato-Tainui. The property is a tribal hub for the Iwi and includes the Waikato-Tainui College for Research and Development, the tribal Parliament offices, a regional park and multiple sporting fields. The lands were returned as an offer of good faith to Waikato-Tainui in 1994, prior to the enactment of the Waikato-Tainui Raupatu Settlement Act 1995.

The tribal property is ideally located adjacent to the NIMT and regional road that links to the Waikato Expressway. It is earmarked for tribal development to support the social, cultural and educational well beings of the Iwi. There are also tribally significant properties within the structure plan scope including:

- Hopuhopu Education and Sports facility and Hopuhopu housing properties;
- Tūrangawaewae Marae and Pāpākāinga (see Picture);
- Te Puea Farms (Tūrangawaewae Marae Trustees);
- 5 Acres Block (Tūrangawaewae Marae Trustees);
- Taupiri Marae and Pāpākāinga;
- Taupiri Urupā and Scenic Reserve;
- Tūrangawaewae House (Office of the Kīngitanga);
- Kīngitanga Reserve;
- Parcels of land held under Te Ture Whenua Māori Act;
- Hakarimata Range – in 1995 the tribe returned the Hakarimata Reserve to the Department of Conservation as a gift for all New Zealanders;
- Council and Government owned properties subject to the Right of First Refusal.

These properties were either returned under treaty settlement redress, or purchased for a significant purpose.

Based on the comments provided by tāngata whenua, the following recommendations are presented:

- The structure plan and its implementation enables the aspirations of the Iwi and tāngata whenua to utilise their lands and assets for their intended purpose and provide for the development and growth of the Iwi.
- Tāngata Whenua have noted that any new conveyance, or connectivity systems such as footpaths, required to enable the outcomes of the structure plan should, where possible, avoid Māori owned land (if any), sites of significance and marae owned assets.
- That the structure plan and its implementation, including the management of reserves and community facilities, does not limit tribal interests in crown derived lands.
- There should be minimal structures in the bed and banks of the Waikato River, when considering the growth of Taupiri, Hopuhopu and Ngāruawāhia.

## Urban Layout and Design, Transport, walking/cycling and connectivity

Urban layout, design and the transport network affects the daily lives of tāngata whenua. There are various barriers for tāngata whenua in moving through and between the structure plan area and public transport is lacking. There also remains an imbalance with constant reminders of the impacts of Raupatu and colonisation in the layout and form of streets and public land, this is a matter that is addressed in regards to cultural expression, symbolism and signage. Of note, Tūrangawaewae Marae noted that there is inequity when you compare River Road in Ngāruawāhia and River Road in Hamilton, when it comes to safety, crossing and lighting.

Based on the comments provided by tāngata whenua, the following recommendations are presented:

**Public transport and connectivity:**

- There should be more bus stops connecting Taupiri and the Surrounding areas.
- Council should advocate for improved public transport links to Hamilton and regional areas.
- Council should work with mana whenua to advocate having stories and kōrero incorporated into the design of bus stops (and the transport network).

**Walkways/Cycleways and connectivity:**

- There should be a cycleway/walkway connecting Taupiri, Hopuhopu and Ngāruawāhia, along the Waikato River.
- There should be fruit trees along walkways/cycleways

**Urban Layout and Design:**

- That council work with Taupiri Marae to redesign the town centre to create a hub and attract local businesses to serve the needs of the community. Currently we have a pub at one place, a dairy on the other road and Hopin Stopin by the River.

## Cultural Expression, Symbolism and Signage

There remain constant reminders of Raupatu and colonisation in the layout and form of streets, their names and in the use and structures on public land. Through implementing the structure plan there are opportunities for tāngata whenua to rebalance the current cultural expressions and symbolism. Through the structure plan and its implementation, a key element will be to whakanoa to the areas and places in the structure plan area that continue to carry colonial reminders.

Based on the comments provided by tāngata whenua, the following recommendations are presented:

**Signage:**

That through implementing the structure plan and other council work that Council work with tāngata whenua to address signage including:

- A new welcome to Taupiri sign. Tāngata whenua input into the design (appropriate signage). The signage is grammatically incorrect and should reflect the dialect of tāngata whenua. The sign should reflect the significance of Taupiri.
- Signage to the bridge access and also to the walkway up Taupiri Maunga.
- Marae signage and directions.

**Cultural Expression and Symbolism:**

That council work with tāngata whenua to incorporate cultural expression and symbolism into the design of spaces including in the design of reserves and the transport network including building on the expressions crafted into the roundabouts at Taupiri.

**ANZAC day Events:**

That council work with Taupiri Marae and the community to have significant Anzac Celebrations at Taupiri. Holding these events in Taupiri in remembrance of ancestors who fought in the World Wars, even if it was by force and conscription.

## Commerce, Community Facilities and Reserves

Community facilities are key parts of the social fabric of the structure plan. Community facilities may be managed by council but many are managed and run by community groups, marae, iwi and hapū. Commercial areas are also vital and feedback from tāngata whenua in this process shows there is a narrow range of goods and services available to whānau. Reserves are key locations for tāngata whenua containing papatākaro and areas for informal recreation and are often the remaining routes and places where tāngata whenua maintain a physical connection to significant cultural areas and features, such as the Awa, Taupiri and Hakarimata. Through the structure plan we can better realise the needs and aspirations of tāngata whenua regarding community facilities and reserves. Related to this are components of cultural expression, symbolism and signage.

Based on the comments provided by tāngata whenua, the following recommendations are presented:

**Reserves:**

- Mana whenua would like to see more papatākaro (Playgrounds, sports fields) and whare paku, and have direct input into the design and planning of these places. The playground should be a good size reflective of a growing community.
- Active planting of fruit trees within council reserves, road reserves along walkways and cycleways.

**Commerce, Goods and Services:**

- That through the implementation of the structure plan and council through its broader functions work to attract a wider range of businesses to Ngāruawāhia and Taupiri to serve the needs of whānau.
- That the structure plan identifies Strategic upgrades to the Taupiri town centre to make it a centre for the community including a more attractive location for a wider range of goods and services including a medical centre and a bigger supermarket.
- That Council work with mana whenua to advocate for the need of kura kaupapa and childcare centre at Taupiri.
- That the structure plan enable crematorium, tribal funeral parlour to protect space on Taupiri Urupā Including through enabling marae and local investors to achieve this.

**Community services:**

- That as part of the structure plan Council should investigate at Taupiri, a town community swimming pool.
- That council Incorporate ideas to reframe thinking and approach to rubbish and that council actively involve mana whenua early in their approaches to recycling and waste. This could include the promotion of Kaitiakitanga and the act of being a kaitiaki, or guardian, of Taupiri by placing your rubbish in the bins.
- That all the necessary services such as high-speed internet and mobile network coverage is available to whānau and that these services are available in time of emergency.
- Natural water tourism platform reflects historical narratives and future focused ones.
- Increase tourism within the area. Possibility to promote paths to the many Paa sites that have already been acknowledged. Connect the areas to the Kiingitanga Trail that is promoted during the Koroneihana and the Regatta.

# HE MIHI AROHA

An acknowledgement is respectfully gifted to tāngata whenua, the Iwi Authority and Waikato District Council for their contributions to discussions related to the structure plan. Being kaitiaki and responsible leaders for your space can be challenging when you have to consider the concerns and needs of other kaitiaki, the community and sectors that rely on the Waikato River and all taonga that it embraces. Each of the kaitiaki representatives shared their knowledge and contributed to this report with an understanding that the Council is a community partner that can enable the aspirations of this generation for the next.

The kaitiaki listened to one another and took their own time to consider the matters raised in a holistic manner and demonstrated that the main focus of discussions was for the benefit of the Waikato River.

Tēnei te mihi aroha ki a tātou, e ngā kaitiaki o tetahi piko ki tetahi piko o tō tātou awa me ngā taonga I waenganui, he piko he taniwha.

Mauri ora

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# Ngaaruawaahia Structure Plan - Water & Wastewater Technical Assessment

Prepared for Watercare Services Ltd
Prepared by Beca Limited

**27 October 2023**

Creative people together transforming our world

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## Revision History

| Revision Nº | Prepared By | Description | Date |
|---|---|---|---|
| A | Diego Valenzuela | Draft for Client Review | 10/02/2023 |
| B | Diego Valenzuela | Final | 02/03/2023 |
| C | Diego Valenzuela | Updated | 20/03/2023 |
| D | Claire Scrimgeour | Minor edits as requested | 27/10/2023 |
| | | | |

## Document Acceptance

| Action | | Name | Signed | Date |
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| Prepared by | | Diego Valenzuela | | 27/10/2023 |
| Reviewed by | | Claire Scrimgeour/Shaun Le Grange | | 27/10/2023 |
| Approved by | | Claire Scrimgeour | | 27/10/2023 |
| on behalf of | Beca Limited | Beca Limited | | |

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# 1 Introduction

A structure plan for Ngaaruawaahia was prepared by Waikato District Council (WDC) in 2017 with the purpose to provide a long term 30 year planning framework for the future development of the wider Ngaaruawaahia area. The 2017 structure plan included a water and wastewater technical assessment to identify the infrastructure needs to provide water services to the existing and future developments. The structure plan study area is shown in Figure 1-1 below:

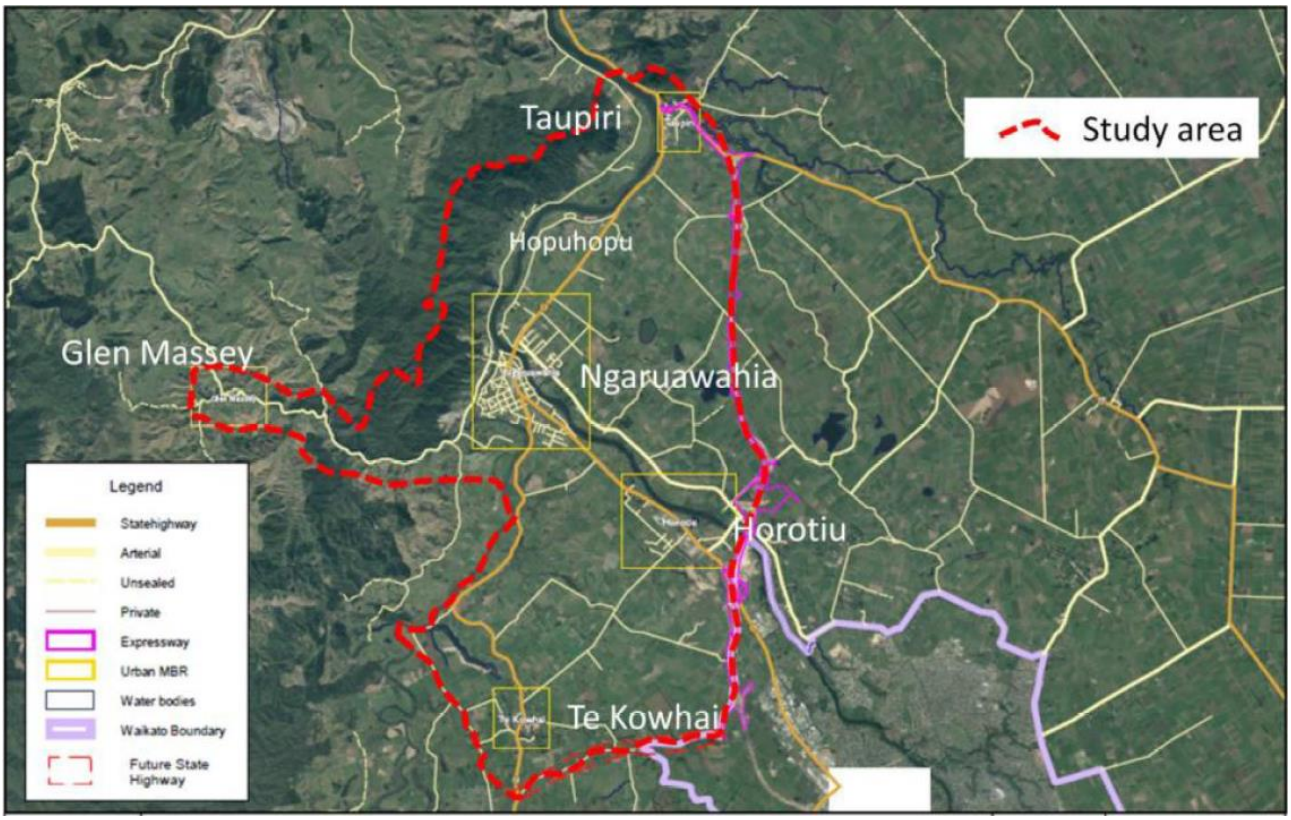



Figure 1-1: Ngaaruawaahia Structure Plan Area

WDC is currently updating the structure plan to include the latest information available in regard to proposed developments, existing and future infrastructure, land use and other constraints that will influence the growth in the area. Since 2017 there have been significant changes in the area including:

- the water network model has been updated
- various network improvements have been implemented
- the Waikato 2070 Growth Strategy has been developed
- the Northern Metro Wastewater Detailed Business Case has been undertaken
- and the growth cells and population projections have been revised.

This report is an update to the 2017 structure plan water and wastewater technical assessment to reflect all these changes.

## 1.1 Scope

The updated water and wastewater technical assessment focuses in identifying the water and wastewater infrastructure needs related to each growth cell in Ngaaruawaahia, Taupiri and Hopuhopu. Te Kowhai has also been included as there are plans to provide public water and wastewater services from/to the Ngaaruawaahia network. See Figure 1-2 for an overview of growth cell locations.

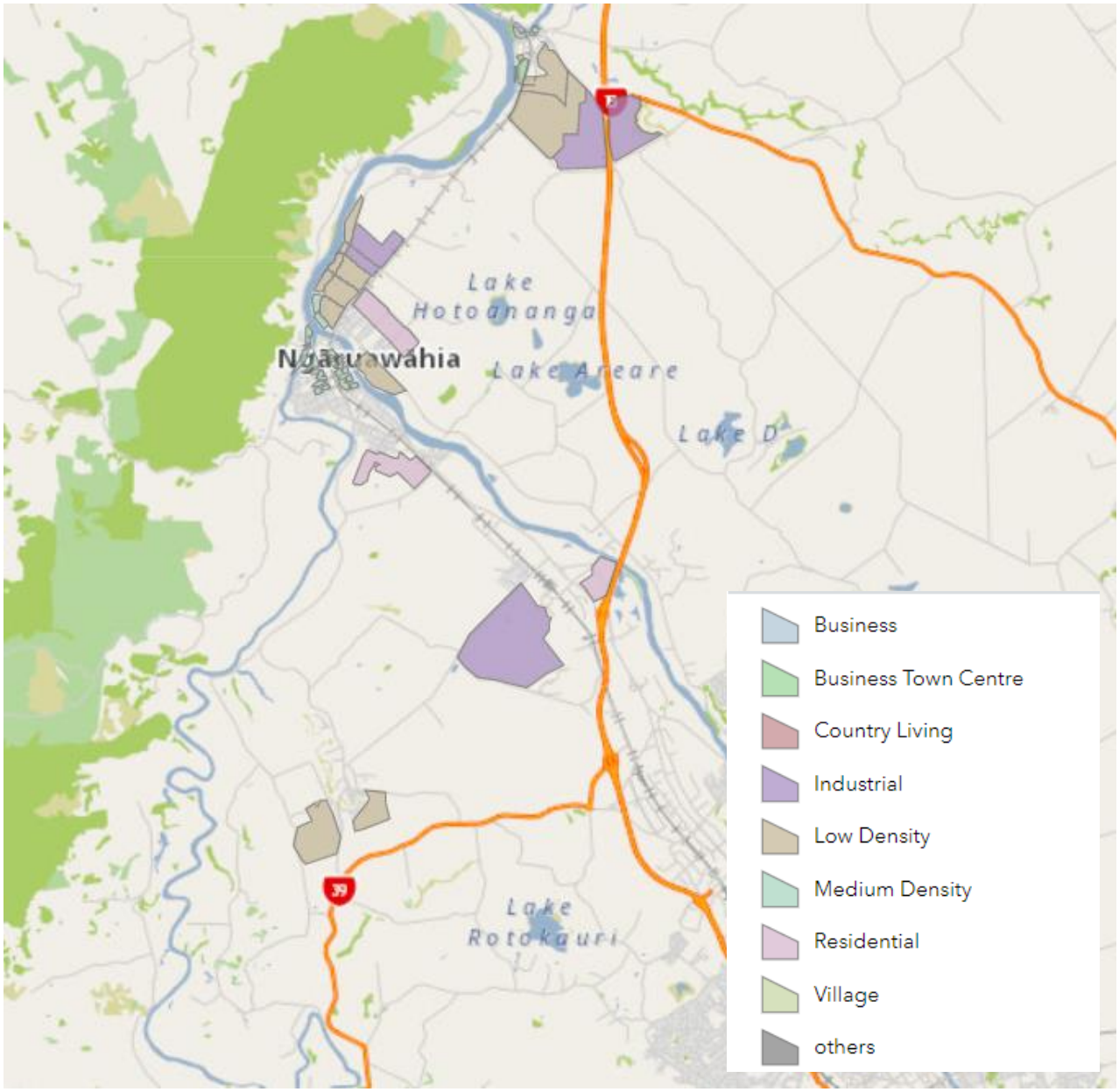



Figure 1-2: Growth Cells Overview

The scope of the water and wastewater assessment is to:

- Provide a summary of the existing network infrastructure including its limitations and how these are planned to be addressed.
- Summarise water supply demand projections out to 2050 for the four settlements.
- Summarise wastewater flow projections out to 2050 for the four settlements.
- Develop high level infrastructure improvements to meet growth out to 2050 or as far as practicable, including indicative timing of servicing for each of the growth cells in Ngaaruawaahia, Hopuhopu, Taupiri and Te Kowhai.
- Prepare a high level servicing scheme plan for each growth cell.
- Prepare high level cost estimates for the proposed network upgrades.

## 1.2 Limitations

- The water and wastewater assessment is based on existing modelling information available. No modelling was undertaken as part of this report.
- Assessment of the existing water and wastewater treatment plants capacity is excluded from the review.
- Consent matters for water take and wastewater discharges are excluded.
- Proposed infrastructure and cost estimates are at high level only. More detailed reviews are needed in order to identify the preferred option for the projects that will cater for the improved levels of service and future growth.
- Cost estimates are only prepared for projects associated with growth. Projects to address existing levels of service are excluded.

# 2 Existing Networks

## 2.1 Water

The Central District water supply scheme provides drinking water to the townships of Ngaaruawaahia, Horotiu, Hopuhopu and Taupiri. Raw water is extracted from the Waikato River and treated at the Ngaaruawaahia Water Treatment Plant (WTP). There is an interconnection to the Huntly WTP via a transmission main commissioned in 2019 that provides additional resilience to the water supply network.

The existing network is divided in three supply zones, Ngaaruawaahia City Centre, Taupiri-Hopuhopu and the Horotiu Boosted zone. Two reservoirs are located at the WTP that provide a head source for gravity feed into the town reticulation. The Horotiu Boosted zone is supplied from the Central Districts reservoir and a booster pump station. The Taupiri / Hopuhopu water reticulation is supplied by the Hopuhopu reservoirs adjacent to the old State Highway 1.

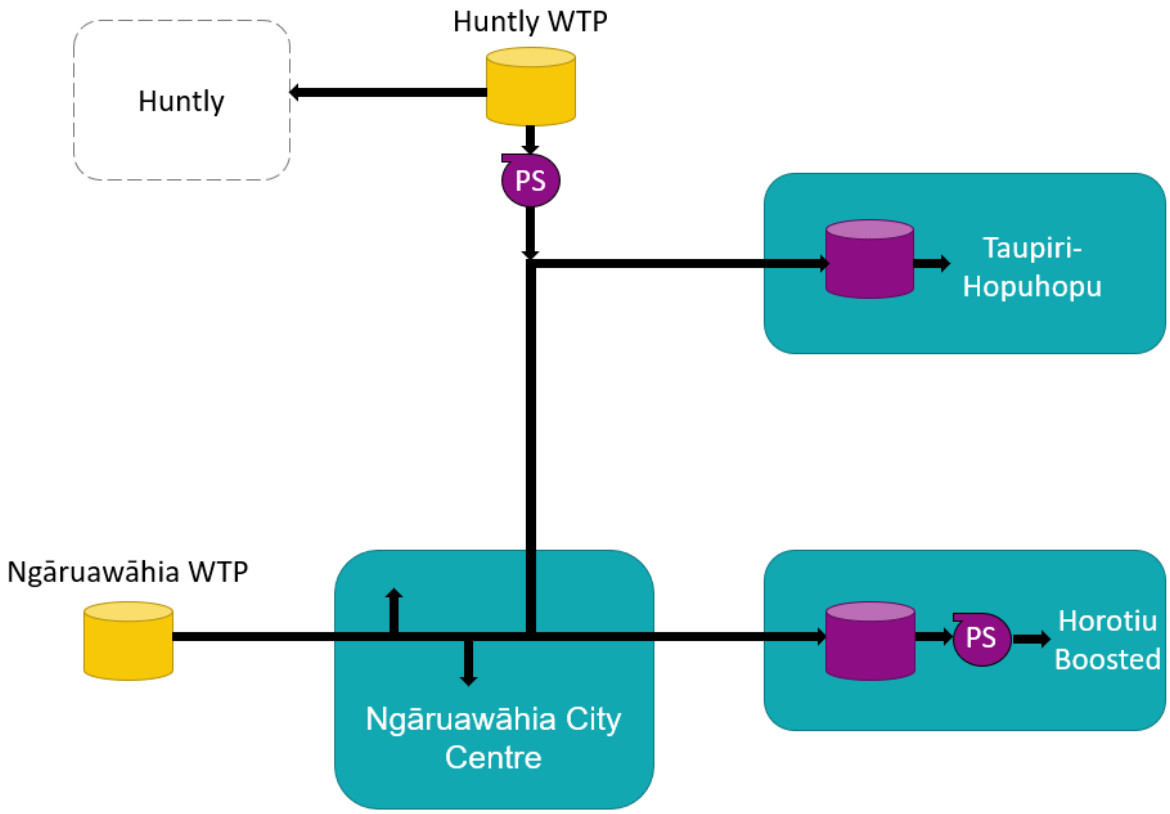



Figure 2-1: Ngaaruawaahia Network Schematic

The townships of Te Kowhai and Glen Massey are not serviced by a public water supply, however there are plans to provide reticulated water supply to Te Kowhai due to planned residential development.

## 2.2 Wastewater

The Ngaaruawaahia wastewater treatment plant (WWTP) currently receives its wastewater from Taupiri, Hopuhopu, Ngaaruawaahia and Horotiu.

Flows from Taupiri and Hopuhopu are conveyed through a single DN150 mPVC main, shared by the following key pump stations:

- Taupiri South (Taupiri)

- Reserve (Hopuhopu)
- Ashwell Crescent (Hopuhopu)

Flows from Ngaaruawaahia are predominantly supplied from the following pump stations, also by means of a shared DN250/375 AC rising main:

- Waikato Esplanade
- Ngaere Street
- Regent Street

Flows from Horotiu are conveyed from the Horotiu Road SPS to Thomas Street SPS (Ngaaruawaahia), which in return, discharges to a gravity section which flows to the Waikato Esplanade SPS.

The schematics below illustrate the current configuration of the network discharging to the Ngaaruawaahia WWTP.

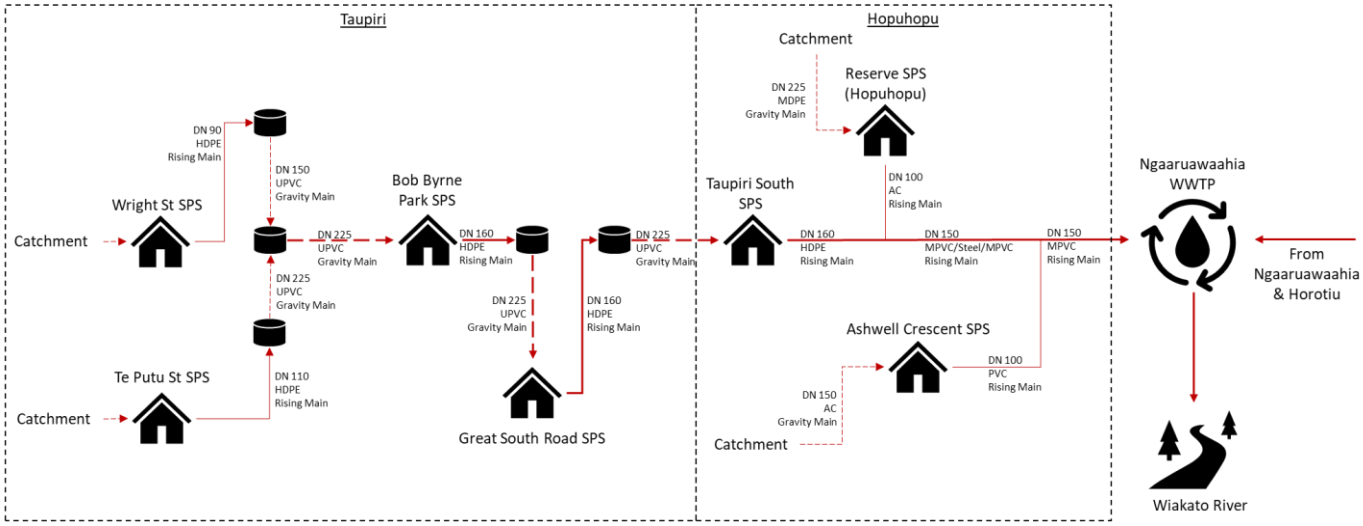



Figure 2-2: Status Quo - Taupiri/Hopuhopu to Ngaaruawaahia WWTP

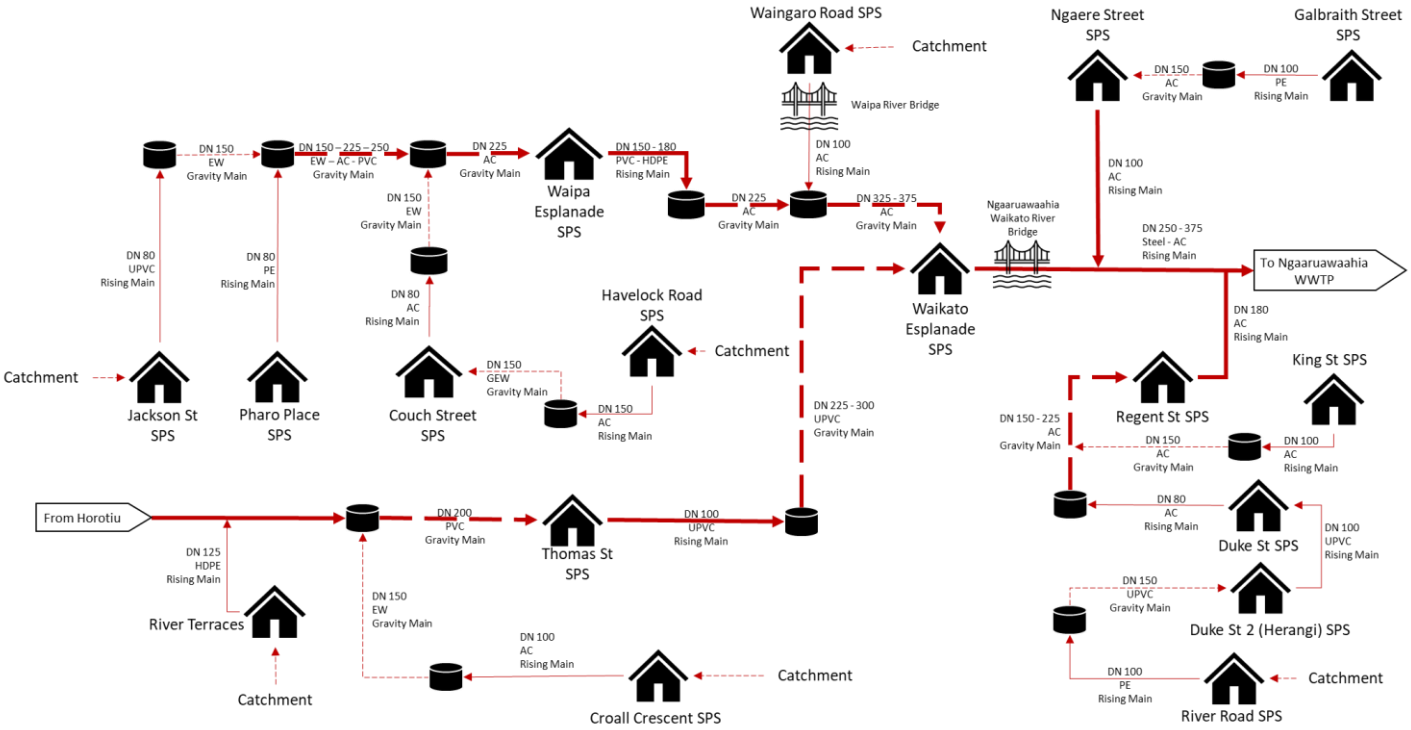



Figure 2-3: Status Quo - Ngaaruawaahia to Ngaaruawaahia WWTP

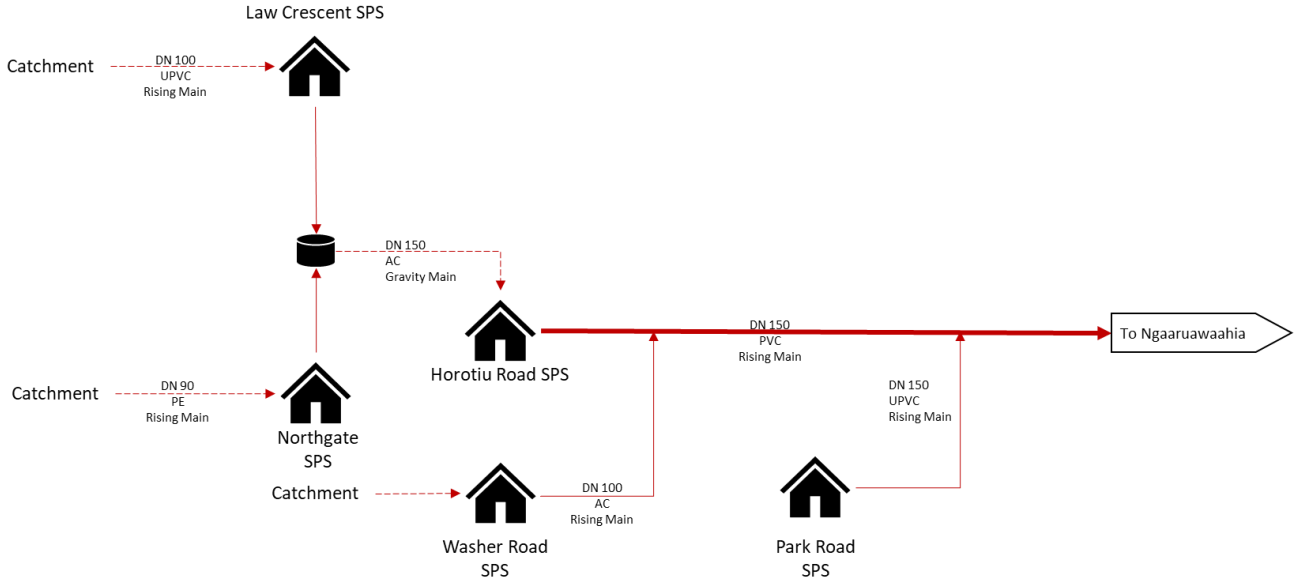



Figure 2-4: Status Quo - Horotiu to Ngaaruawaahia

Te Kowhai currently has a wastewater treatment system (septic tanks and recirculating filter) servicing a small portion of the village (approx. 20 properties). The treatment plant discharges to land adjacent to the Te Kowhai Stream.

There are a number of planned/committed projects that have been considered as part of the pumping and conveyance options development.

A new SPS is planned in Horotiu that will ultimately service the entire Horotiu township. In addition, it is planned to connect Horotiu Street SPS (HR-SPS) to the POAL-SPS via a gravity sewer and abandoning the HS-SPS, see below (Jacobs, August 2019).

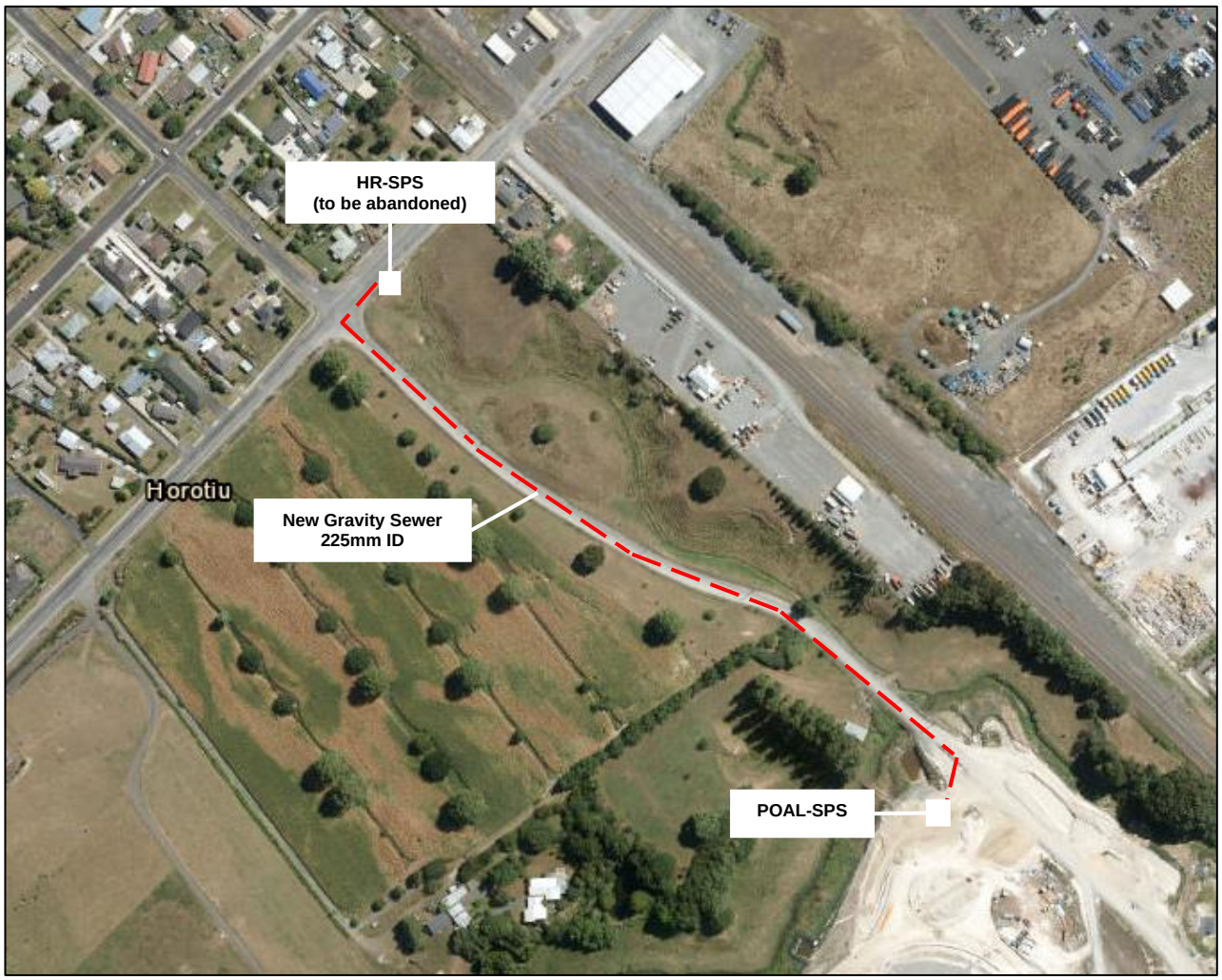



Figure 2-5: Horotiu Planned/Committed Projects

Currently in construction is the rising main upgrade from the Esplanade SPS (E-SPS) and across the Ngaaruawaahia Waikato River bridge. The next stage of the upgrade will include a new gravity sewer (800 OD PE) along Great South Road and a new lift pump station (N-SPS) at the Ngaaruawaahia WWTP. The new N-SPS will lift the flows received from the gravity sewer through the inlet works.

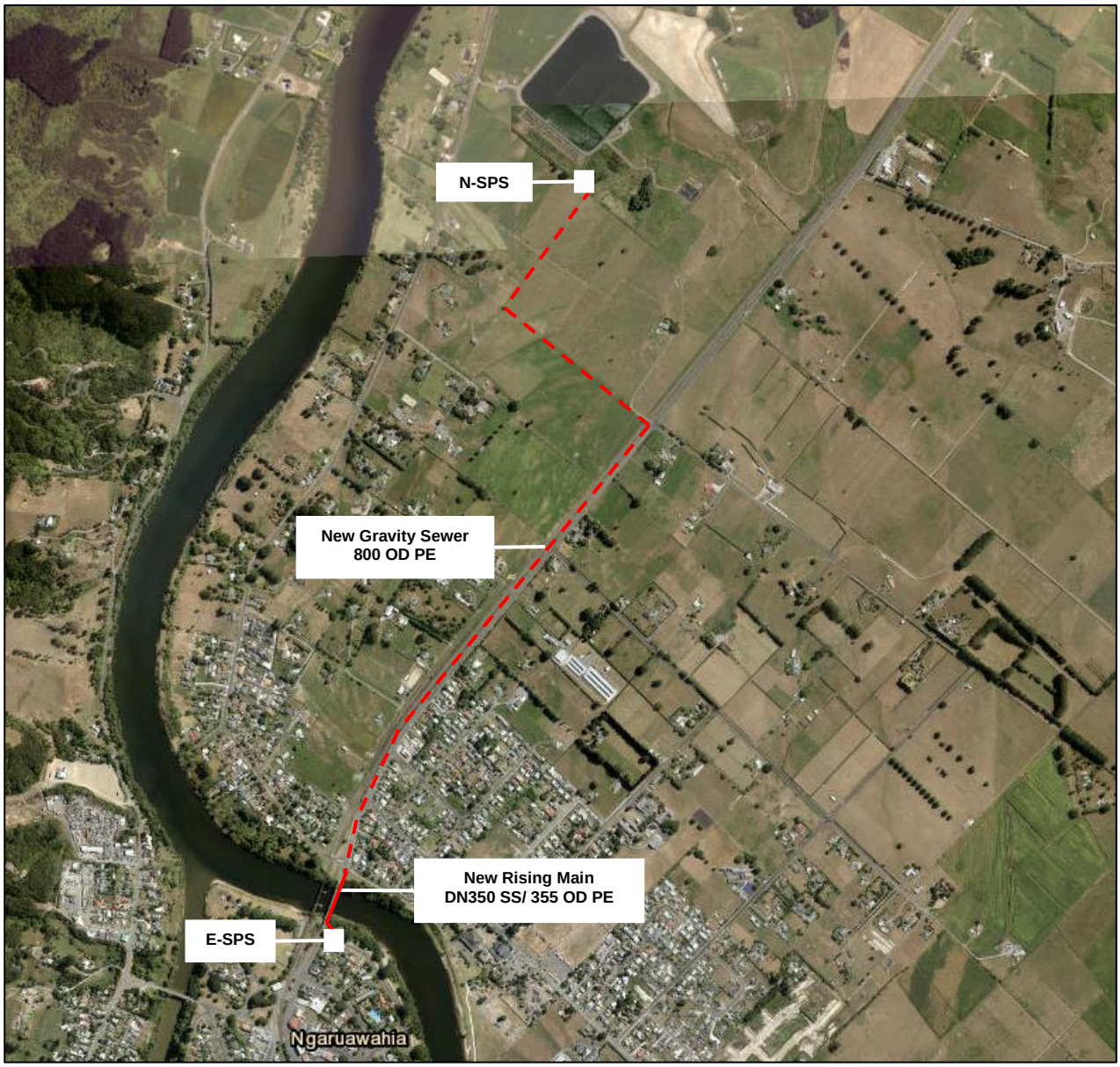



Figure 2-6: Ngaaruawaahia Planned/Committed Projects

# 3 Population and Demand Projections

The water and wastewater service areas are different; therefore, population and demand projections need to be considered separately.

## 3.1 Water

A water hydraulic model calibration was carried out by HAL in 2021 using field data collected in December 2020. Following the calibration, an assessment of the system performance of the existing networks and future growth scenarios was undertaken (HAL, 2022). The performance assessment identified upgrades required to meet the levels of service for the actual and future scenarios.

A population growth model was built for the modelling purposes, which included predicted infill growth and additional information provided by WDC. To calculate the future demand, 2.8 persons/household and 220 L/person/day were used, in accordance with the Watercare (WSL) modelling specification. For commercial and industrial growth, zones from the WDC operative district plan were assigned. For the purpose of this report, no changes have been made to the population and demands projections used by HAL.

Note that HAL did not include allowances for all the future commercial/business zones in Taupiri, Ngaaruawaahia and Horotiu.

A servicing options assessment report prepared by BTW predicted the future populations for Te Kowhai (BTW Company, 2022). The methodology used populations provided by WSL, which were reviewed and updated with information given by developers.

Table 3-1: Population Equivalent Projections

| Town | 2025 | 2030 | 2045 | 2050 |
|---|---|---|---|---|
| Ngaaruawaahia/Horotiu | 8,348 | 9,360 | | 12,359 |
| Taupiri | 644 | 1,366 | | 2,698 |
| Te Kowhai | 842 | 2,163 | 5,018 | |

The peak daily water demand projections are summarised in Table 3-2 below. The information is taken from the HAL report for Ngaaruawaahia/Horotiu and Taupiri, which used a peak factor of 2.0 (from WSL modelling specification). For Te Kowhai, the BTW report considered an average of 260 L/person/day and a 1.5 peak factor, in accordance with the RITS 6.2.3, so these values were used to estimate the future peak water demand.

Table 3-2: Peak Daily Water Demand Projections

| Peak Water Demand ($m^3$/day) | 2025 | 2030 | 2045 | 2050 |
|---|---|---|---|---|
| Ngaaruawaahia/Horotiu | 4,010 | 4,730 | | 6,550 |
| Taupiri | 520 | 840 | | 1,430 |
| Te Kowhai | 328 | 844 | 1,957 | |

Population and demand projections for Glen Massey are not shown as there are no plans to provide a reticulated public water supply to this town in the near future.

## 3.2 Wastewater

The population and growth assumptions in the 2016 wastewater model are out of date as they were based on 2013 census projections and did not consider the Waikato 2070 growth strategy. The growth assumptions for the Northern Metro DBC are the most relevant to this assessment. The Northern Metro DBC (Beca, 2022) assumptions have been used, which include:

- Data from Council on residential population projections was used (University of Waikato (UoW) April 2021 'High' projections).
- Wet industry allowance in Horotiu (50ha).
- All industrial and commercial growth cells included in Waikato 2070 were included with development assumed to be complete by 2050.
- Te Kowhai residential area included the village and adjacent growth cells and 100 dwellings at the airpark.
- Allowance for infill growth as per Metro Spatial Plan.
- The residential and non-residential information was combined to provide population equivalent projections for input into conveyance as outlined in Table 3-3 below.

Table 3-3: Metro Area Combined Growth Summary - Wastewater

| Total Population Equivalent Projections (Residential and Non-residential) | | | | |
|---|---|---|---|---|
| **Area** | **2021** | **2031** | **2041** | **2051** |
| Taupiri | 632 | 2,473 | 4,344 | 6,215 |
| Ngaaruawaahia (incl Hopuhopu) | 5,700 | 9,008 | 11,637 | 13,478 |
| Horotiu | 1,309 | 3,135 | 6,538 | 6,548 |
| Te Kowhai | 1,012 | 1,677 | 2,017 | 2,248 |

The population equivalent data for wastewater are higher than for water mainly due to the additional industrial/commercial allowances, and allowances for infill.

Table 3-4: Average Daily Wastewater Flow Demand Projections

| Average Daily Flow ($m^3$/day) | 2021 | 2031 | 2041 | 2051 |
|---|---|---|---|---|
| Taupiri | 143 | 511 | 885 | 1,260 |
| Ngaaruawaahia | 1,189 | 1,851 | 2,377 | 2,745 |
| Horotiu | 196 | 561 | 1242 | 1,244 |
| Te Kowhai | 229 | 362 | 430 | 476 |

Population and demand projections for Glen Massey are not shown as there are no plans to provide a reticulated public wastewater to this town in the near future.

# 4 Water and Wastewater Servicing Assessment

## 4.1 Water Supply Assessment

### 4.1.1 Methodology

The water network was assessed by reviewing the previous modelling reports (HAL, 2022) and the servicing options assessment report prepared by BTW for Te Kowhai (BTW Company, 2022). This section provides a summary of the existing infrastructure limitations based on these reports.

It is understood that both reports considered the latest future development areas available at the time, however it is noted that the HAL report did not include all the projected commercial/industrial growth cells in Taupiri, Ngaaruawaahia and Horotiu included in Waikato 2070. Water and wastewater infrastructure within future development areas are typically responsibility of the developer through the subdivision process. Therefore, an assessment of water and wastewater infrastructure within the development areas has not been undertaken.

The existing water network infrastructure was assessed by HAL against the levels of service (LoS) specified in the WDC Water Modelling Guideline specification, which are summarised below:

Table 4-1: WDC Level of Service Requirements

| Parameter | Level of Service | Level of Service Requirement |
|---|---|---|
| Minimum pressure (on-demand) | 20m | Pressure at point of supply to on-demand residential lots |
| Minimum pressure (restricted supply) | 10m | Pressure at point of supply to restricted rural supply |
| Maximum pressure | 80m | Pressure at point of supply preferably between 40-60m |
| Maximum velocity | 2 m/s | Under peak flow conditions |
| Maximum headloss | 5m/km | Under peak flow conditions |
| Fireflows | FW2<br>FW3<br>FW4 | As outlined in SNZ PAS 4509 – minimum FW2 residential, FW3/FW4 where specifically required.<br>Minimum 10m residual pressure availability |

In addition, the following was also reviewed:

- Overall reservoir storage, based on 24 hrs and 48 hrs of average day demand
- Security of supply based on pipe criticality
- Opportunities for optimising pressure management to target non-revenue water (NRW) reduction

The HAL review included actual and future scenarios based on the population and water demand projections.

### 4.1.2 Ngaaruawaahia/Taupiri/Horotiu

In general, the hydraulic modelling assessment showed that the network performs well under existing and future demand. The results revealed some issues with the existing infrastructure in both current (2025) and future (2050) scenarios. These are summarised in Table 4-2.

Table 4-2: Summary of Ngaaruawaahia Network System Performance Issues

| Issue | Zone | Location | Comment | Upgrade Proposed? |
|---|---|---|---|---|
| Low Pressure | Horotiu Boosted | Kay Road | Pressure may drop below 15m due to long stretch of rural pipework supply. | Yes |
| Low Pressure | Taupiri-Hopuhopu | Tainui College | Pressure may drop below 10m at peak demand, but it is assumed there is a private booster pump | No |
| Low Pressure | Ngaaruawaahia Central | Kelm Road | Pressure may drop below 10m under future scenario. Upgrade will be required as the development area progresses – Note this area is not included as a growth cell within Waikato 2070. | Yes |
| High Pressure | Horotiu Boosted | Horotiu Boosted Zone | Pressure currently boosting to 65m, opportunity to be optimised to reduce pipe burst risk | Operational only |
| High Headloss | Ngaaruawaahia Central | Ngaaruawaahia WTP | 240m of 300mm CI (1987) exceeds headloss LoS (current and future) | No (Low priority) |
| High Headloss | Taupiri-Hopuhopu | Hopuhopu Reservoir | 550m of 200mm MPVC (2009) exceeds headloss LoS (current and future) | Yes |
| High Headloss | Horotiu Boosted | River Road | 1.5km of 80mm PVC (1991) exceeds headloss LoS (current and future) | Yes |
| High Headloss | Ngaaruawaahia Central | Various | Increased headlosses in Ngaaruawaahia Central under future development scenario | No |
| High Headloss | Taupiri-Hopuhopu | River crossing | 560m of 150mm HDPE (2017) exceeds headloss LoS when operating emergency supply to Taupiri (future scenario only) | Yes |
| Fireflow | Ngaaruawaahia Central | Duke Street | Not able to supply FW2 (25 L/s) residential fireflows | Yes |
| Fireflow | Ngaaruawaahia Central | Kia Toa Street | Not able to supply FW2 (25 L/s) residential fireflows | Yes |
| Fireflow | Ngaaruawaahia Central | Coach Street - Havelock Road | Not able to supply FW2 (25 L/s) residential fireflows | Yes |
| Security of Supply | Horotiu Boosted | Whole zone | Risk due to single supply from Central Districts reservoir servicing the entire zone. In an unplanned outage, River Road boundary valve could be opened, however not sufficient HGL for all customers in zone | Operational only (rezoning from HCC network) |
| Reservoir Storage | Taupiri-Hopuhopu | Hopuhopu Reservoir | Hopuhopu new reservoir not able to supply 48 hrs of ultimate (2050) average demand. Assumes old reservoir is decommissioned | Yes |

Following the identification of the LoS deficiencies, a number of upgrade options were evaluated to resolve the current deficiencies, and sized to provide resilience to the ultimate network scenario. The options were discussed with WDC Operations and Planning teams in a workshop. Table 4-3 below provides a summary of the capital upgrade projects that were recommended to be implemented. Details of the proposed capital upgrade projects are shown in Appendix A.

Table 4-3: Proposed Ngaaruawaahia Network Capital Upgrade Projects

| Project | LoS Failure | Proposed Upgrade | Year Required | Required to service growth? |
|---|---|---|---|---|
| CAP8 – Upgrade River Road Main | Low pressures Kay Road | 2200m of 150mm ID main | 2022 | No |
| CAP9 – Install PSV on Hopuhopu New Reservoir Inlet/Outlet | High headloss Hopuhopu Reservoir Inlet/Outlet main | Install 200mm PSV + flow meter | 2022 | No |
| CAP10 – Decommission Hopuhopu Old Reservoir | Low turnover Hopuhopu reservoir | Decommission Hopuhopu old reservoir | 2022 | No |
| CAP11 – Upgrade Kelm Road Supply Mains | Low pressures Kelm Road | 810m of 150mm ID main<br>1,050m of 100mm ID main | 2030 | Yes – Duke St watermain upgrade only, further upgrades if Kelm Rd area is identified as a growth cell in future |
| CAP12 – Upgrade Taupiri Supply Main | High headloss supplying Taupiri | 2,700m of 250mm ID main | 2030 | Yes |
| CAP13 – Ngaaruawaahia Fireflow Upgrades | FW2 failures | Various main upgrades[1] | 2022 | Potentially in part due to infill |
| CAP14 – New Reservoir | Taupiri township 48hr storage | New reservoir at Hopuhopu or alternative location such as closer to Taupiri | 2050 | Yes |

Refer to Appendix A for maps of upgrades required to service growth.

### 4.1.3 Te Kowhai

Te Kowhai is not currently serviced by a public water supply. The servicing strategy (BTW Company, 2022) identified key infrastructure required to provide reticulated drinking water to Te Kowhai. The assessment was based on previous modelling reports that assessed the feasibility of servicing Te Kowhai from the Ngaaruawaahia-Huntly network. Water supply servicing from the HCC network was not assessed in the report. The servicing option assessment considered inputs from modelling work done for the Ngaaruawaahia network (HAL, 2022) to understand the effects on the existing network when supplying Te Kowhai.

The proposed infrastructure includes the key items described below:

- Connection into DN250 main from the Ngaaruawaahia water supply network at the intersection of Horotiu Road and Park Road.
- New 2,800m$^3$ reservoir capacity (24.5m diameter x 6.0m height), based on 2045 two days of average daily demand plus 1 hr FW3 (50 L/s) fire flow event, located within the Te Kowhai West growth cell. Two reservoirs of 1,400 m$^3$ each is likely to be a better solution to avoid water quality issues. These are assumed to be provided in 2 stages.
- New 7.2km DN250 PE100 PN12.5 reservoir water filling line.

[1] HAL report suggests duplication of mains to meet the fireflow requirements. An alternative solution could be upsize existing mains, depending on the age and condition of them.

- New water supply trunk reticulation from the proposed reservoir to Te Kowhai (refer
- Table 4-4).
- Pump station at the reservoir outlet likely required to provide adequate pressure to the reticulated network.
- New chlorine dosing system at Te Kowhai reservoir likely required.
- New flow control valve (or pressure sustaining valve) at Te Kowhai reservoir inlet to restrict flows into the reservoir to allow refills of the Central Districts reservoir.
- Upgrade of 2.1 km of DN200 MPVC watermain along Horotiu Road is likely required for 2050 future scenario. For cost estimate purposes, it is assumed a new dedicated DN315 PE100 PN12.5 will be installed.

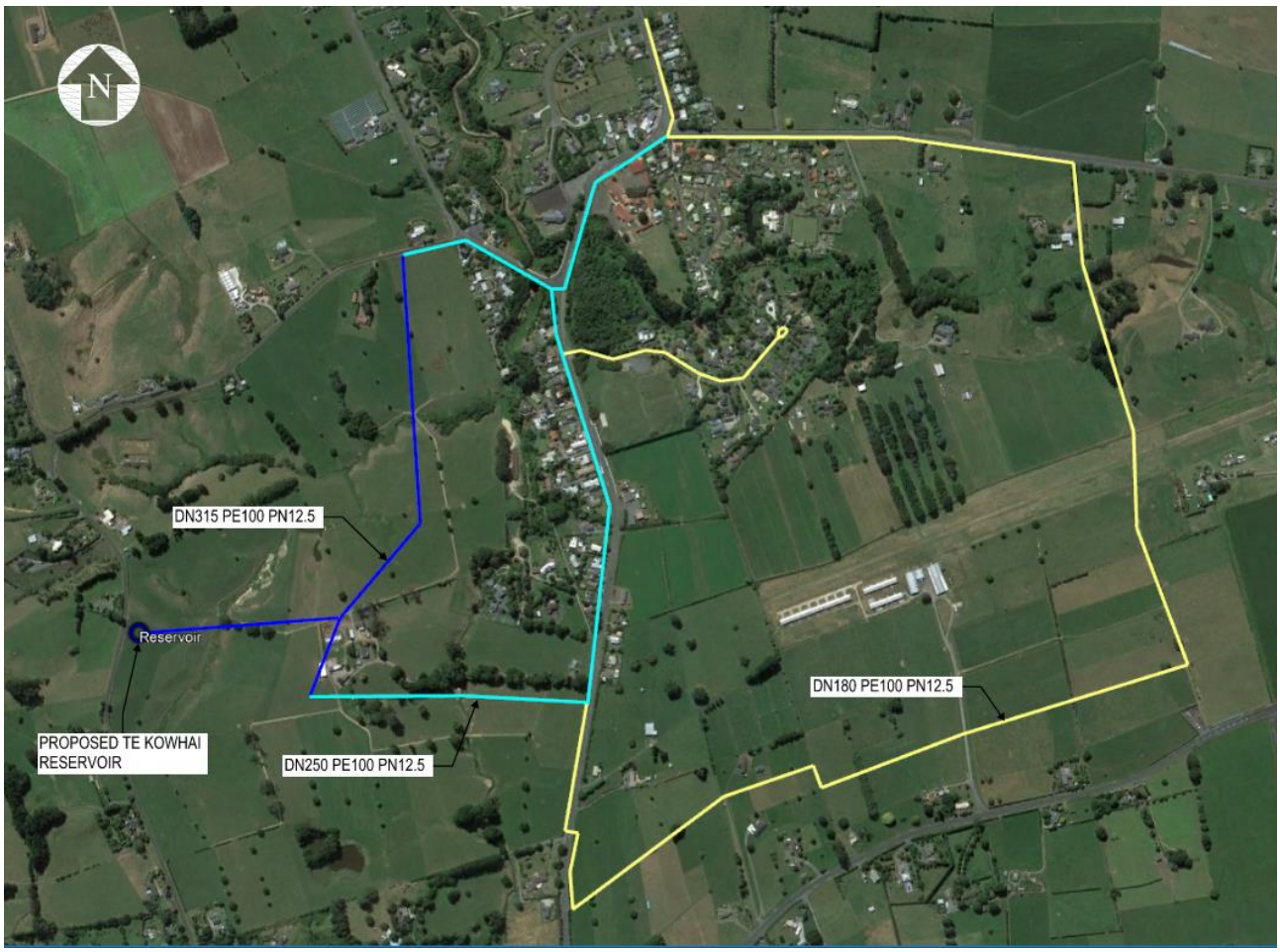



Figure 4-1: Te Kowhai Proposed Trunk Reticulation Network (image from Google Earth)[2]

Table 4-4: Proposed Te Kowhai Trunk Water Reticulation Network

| Pipe | Approximate Length |
|---|---|
| DN315 PE100 PN12.5 | 1,200m |
| DN250 PE100 PN12.5 | 1,900m |
| DN180 PE100 PN12.5 | 4,000m |

[2] Length and pipe diameters were not specified in BTW report. Figure 4-1 is an estimate based on Figure 3.9 and drawing 220289-00-02-A of BTW report

## 4.2 Wastewater Assessment

The Central Districts wastewater model was built and calibrated in DHI Mike Urban in 2016. The model was used to undertake a range of system performance analyse for the existing (2016) and future (2025 and 2045) scenarios. The results of the system performance include:

- Dry Weather System Performance Network hydraulic capacity is sufficient for the existing and future dry weather flows. Infiltration and exfiltration is not considered to be a significant issue, however some catchments (FM02, FM03 and FM05) appear to have moderate infiltration or poor to very poor implied asset condition.
- Approximately 76% of the network is expected to experience low velocities (less than 0.6m/s) under existing peak dry weather conditions. These pipes are at a higher risk of siltation.
- The emergency storage capacity at most local pump stations exceeds six hours of average dry weather flow (note – the RITS now specifies 8 hours storage required).
- Wet Weather System Performance Network hydraulic capacity and overflows during wet weather were assessed for the 6 months, 1 year, 2 year and 5 year ARI storm events. Downstream constraints, particularly pump stations, pose the greatest risk to pipe capacity with up to 45% of the network being surcharged in the 2045 5 year ARI storm.
- Pump stations appear to pose significant constraints, with many pump stations have a pump start level above the invert of the upstream pipe. Uncontrolled overflows are predicted in several areas in Ngaaruawaahia and Horotiu. Some of these issues, such as at Waingaro Rd and Thomspon St, have been confirmed by operational staff.
- All catchments exhibit relatively low levels of inflow and infiltration when compared against the standards set out in the WSAA Management of Wastewater System Infiltration and Inflow. This implies it would typically not be cost effective to remedy the network through an I/I reduction programme. However, the I/I does have a significant impact on the network capacity largely due to pump stations being under-capacity and backflows surcharging the network.

A review of the wastewater model by HAL in 2018 identified some issues with the model calibration, inconsistencies in the model, missing GIS data and some unsuitable growth area assumptions. Projects undertaken since 2016 have not been taken into account for the modelling.

### 4.2.1 Methodology

The wastewater high level design was based on the Regional Infrastructure Technical Specifications (RITS) with the following features:

- Where possible planned/committed infrastructure has been incorporated in the options development.
- The alignment of proposed routes has been kept within the road corridor where possible/practical.
- It has been assumed that an air valve will be required every 600 m for a rising main.
- For gravity pipe sections, the average measured grade has been assumed to calculate the required pipe size.
- The population equivalent data were used to calculate the ADF, PDF and PWWF design flows in accordance with RITS Equation 5.1, 5.2 and 5.3 respectively.
- The existing and future development areas in hectares (ha), were used to calculate the PDF and PWWF design flow projections.

### 4.2.2 Ngaaruawaahia/Taupiri/Horotiu

The Northern Metro DBC considered the transfer mains to connect Taupiri, Ngaaruawaahia, Te Kowhai and Horotiu to the Pukete WWTP. The preferred option is illustrated in Figure 4-2. The key projects are:

- New pump station at Taupri (T-SPS) with rising main to Ngaaruawaahia WWTP site
- Upgrade of Ngaaruawaahia WWTP pump station (N-SPS) and installation of rising main to Horotiu

- Upgrade of Horotiu POAL pump station and installation of rising main to Pukete WWTP
- New pump station at Te Kowhai with rising/gravity main to Horotiu.

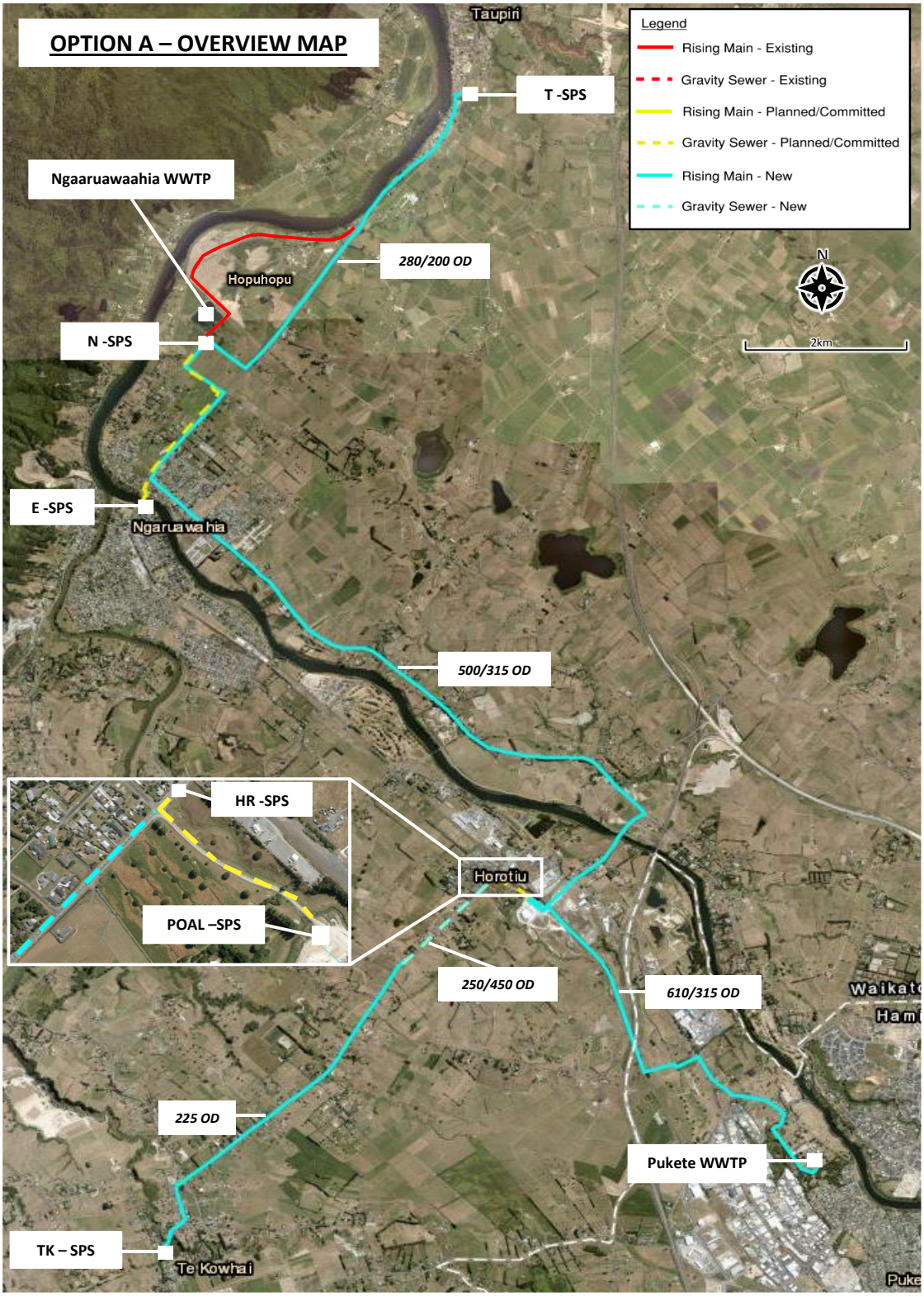



Figure 4-2: Northern Metro DBC Preferred Option Overview

Upgrades within the towns were not considered in the DBC. To service the growth areas, the following additional wastewater upgrades are required (refer Figure 4-3):

- Starr Road – extend a gravity main along Starr Rd to connect up to the new gravity main along Great South Road (this has been designed at suitable depth for this connection and also a potential connection at Kerr Road).
- Saulbrey Road – provide a new pump station and rising main to connect to the Thomas Road wastewater pump station. This route has been selected as the existing network west of Great South Road has very limited capacity, and the Thomas Road pump station would have capacity available once the Horotiu wastewater is diverted to Pukete WWTP.
- River Road – it is likely to be feasible to extend a gravity main along River Road to service this growth area, however, this is expected to be post 2050 so has not been included in cost estimates.

Only limited infill was allowed for in the 2016 Wastewater Model, however, indications were that many pipes to the west of Great South Road were under capacity during wet weather and any infill would make this worse. Recent projects including pump station storage and upgrade of the rising main from the Waikato Esplanade pump station are likely to have improved capacity, particularly in the areas east of Great South Road. Updated modelling is required to confirm upgrades due to infill growth.

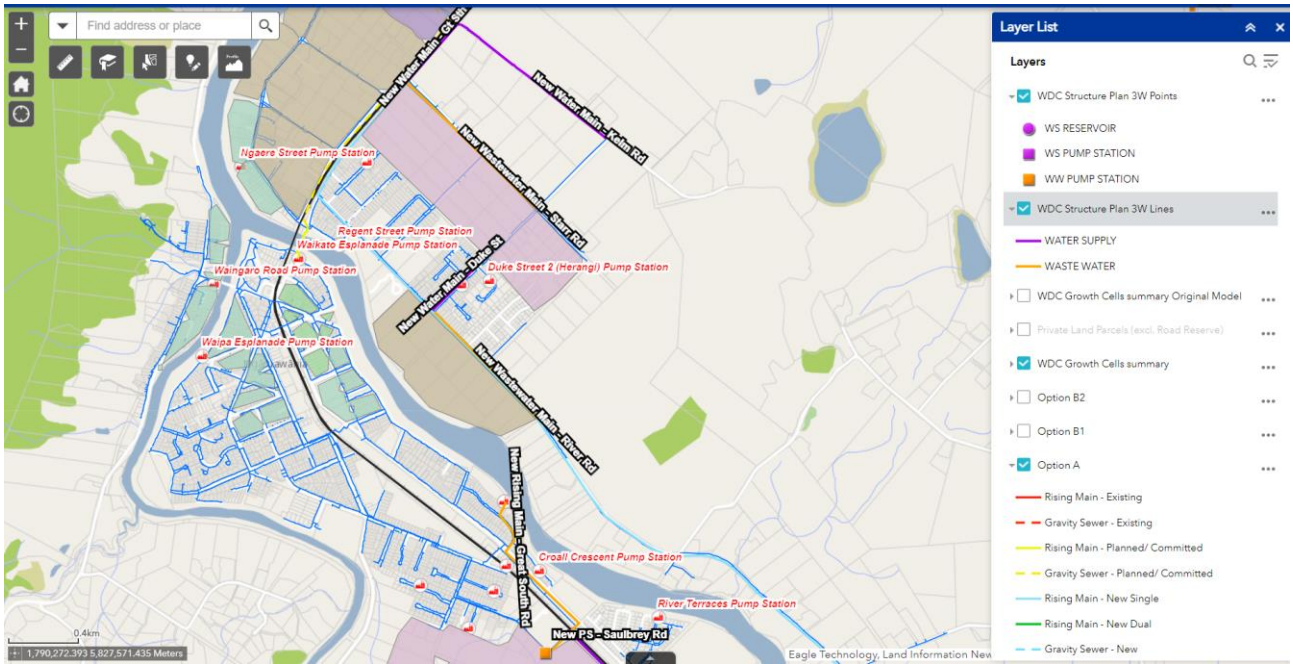



Figure 4-3: Ngaaruawaahia Growth Projects

### 4.2.3 Te Kowhai

The servicing strategy (BTW Company, 2022) identified key infrastructure required to connect all existing Te Kowhai properties and the new growth areas (including Air Park) to a reticulated wastewater system. This built on the DBC project recommendations.

The proposed infrastructure includes the key items described below in addition to the transfer pump station (refer Northern Metro DBC):

- Trunk mains around Te Kowhai 17pprox..1900 m of 150mm diameter pipe.

## 4.3 Growth Cell Summary

The priority water and wastewater upgrades required to service each growth cell have been outlined in Table 4-5. This list is the major network upgrades only and does not include the internal servicing of the cells.

Table 4-5: Growth Cell Summary

| Area | Indicative start date | Projects Required for Growth Cells | |
|---|---|---|---|
| | | Water | Wastewater |
| **Taupiri** | | | |
| Kainui Rd | 2030 | New reservoir and supply main (incl. booster pump station) | New PS and rising main to WWTP |
| Taupiri West Industrial | 2050 | Not included in 2022 modelling | New PS and rising main to WWTP |
| **Ngaaruawaahia / Hopuhopu** | | | |
| Infill west of Great South Rd | 2023-30 | Fireflow upgrades | Upgrades indicated in 2016 modelling. Model update required to confirm |
| Infill east of Great South Rd | 2023-30 | Fireflow upgrades | TBC following model update |
| River Rd | 2050 | None | Extend WW gravity main along River Rd |
| Saulbrey Rd | 2023-30 | None | New PS and rising main to Thomas St |
| Starr Rd | 2030 | Duke St water main upgrade | New gravity main along Starr Rd |
| Galbraith St | 2023 | None | None |
| Business Park (adjacent to Ngaaruawaahia WWTP) | 2030 | None | Will connect up to new WW main to WWTP, connection location TBC |
| Hopuhopu | 2025 | New reservoir and supply main | Free up capacity in existing network through new Taupiri rising main |
| Kelm Rd | Not in Waikato 2070 | Refer HAL report | Not allowed for |
| **Horotiu** | | | |
| Kernott Rd | 2020 | TBC once demand confirmed and modelling undertaken<br>Horotiu Stage 2 watermain upgrade likely to be required | Transfer PS and rising main from Horotiu to Pukete (or alternatively Ngaaurawaahia WWTP) |
| Horotiu Industrial Park | 2023 | TBC once demand confirmed and modelling undertaken<br>Horotiu Stage 2 watermain upgrade likely to be required | Transfer PS and rising main from Horotiu to Pukete (or alternatively Ngaaurawaahia WWTP) |

| Area | Indicative start date | Projects Required for Growth Cells | |
|---|---|---|---|
| | | Water | Wastewater |
| **Te Kowhai** | | | |
| TK Central | 2030 | Supply line from Horotiu, new TK reservoir and trunk mains | Transfer pump station to Horotiu with rising/gravity main, local trunk mains. Transfer PS and rising main from Horotiu to Pukete WWTP or Ngaaruawaahia WWTP. |
| TK Air Park | | | |
| TK West | 2030 | | |

# 5 Cost Estimates

## 5.1 Basis for Cost Estimating

Costs were developed using unit rates where available. Unit rates were provided by Beca quantity surveyors based on similar type of projects.

The following items have been included in the capital costs:

- Civil works
- Mechanical and electrical installation
- Instrumentation and control
- Project costs (Preliminary + General, contractor margins) – 20%
- Consultant fees (Investigation/Design/Engineering) – 13%
- Risk/contingency allowances – 30%
- Construction supervision and management/overhead costs – 10%
- Procurement costs – 3%

The following items have been excluded from the comparative capital costs:

- Legal fees
- Client insurances
- Escalation after 1st quarter 2023
- Goods and Services Tax.

At the time of writing, no Concept Design has been prepared for the proposed capital works. The estimates are based on the indicative alignments presented in this report. A conceptual design of the preferred options will need to be prepared to confirm the estimated capital and operating costs. We have allowed for an estimating tolerance to account for general unknowns in the design and for any discrepancies in the design information prepared to date. The cost estimates are deemed to be Class 5 estimates as per the AACE Cost Estimate Classification System and have an expected accuracy range of -30% / +50%.

Contingencies have been allowed for due to uncertainties which may impact design development and construction which include:

- Reinstatement required and service complications in more developed areas
- Installation for pipelines assumes in road with 0m-2.5m installation trench depth, gravity pipes in certain sections may require more depth.

## 5.2 Capital Cost Estimates

Table 5-1 summarises the capital cost for the upgrades required to service growth over the next 30 years. The detail is provided in Appendix B. The costs for the new wastewater mains to be implemented as part of the Metro Wastewater DBC project are taken from the Preferred Option Technical Report dated December 2022.

Table 5-1: Capital Cost Estimate for Growth Projects – Waikato 2070 Growth Zones

| Capital Project | Water | Wastewater |
|---|---|---|
| **Ngaaruawaahia/Horotiu** | | |
| OD180 Duke Street Watermain | $ 340,000 | |
| DN300 Starr Road Gravity Sewer | | $ 1,187,000 |
| OD160 Saulbrey Road Sewer Rising Main | | $ 866,000 |
| Saulbrey Road Sewer Pump Station | | $ 979,000 |
| Upgrade N-SPS and new SRM to Horotiu – Stage 1* | | $ 45,350,000 |
| Upgrade Horotiu POAL SPS and SRM to Pukete WWTP – Stage 1* | | $ 33,910,000 |
| **Taupiri/Hopuhopu** | | |
| OD315 Great South Road Watermain | $ 3,153,000 | |
| New Reservoir (location TBC) | $ 5,432,000 | |
| Taupiri to Ngaaruaawahia Sewer Pump Station and Rising Main (including emergency storage) – Stage 1* | | $ 11,140,000 |
| **Te Kowhai** | | |
| New Te Kowhai Reservoir – Stage 1 | $ 5,070,000 | |
| New Te Kowhai Reservoir – Stage 2 | $ 5,070,000 | |
| OD250 Ngaaruawaahia to Te Kowhai Watermain | $ 6,879,000 | |
| Te Kowhai Trunk Water Reticulation Mains | $ 6,379,000 | |
| Booster Pump Station, Valves, Hydrants, Chlorine Dosing | $ 3,327,000 | |
| OD250 Horotiu Watermain (Stage 2) | $ 2,006,000 | |
| Te Kowhai Trunk Sewer Reticulation Mains | | $ 1,494,000 |
| Te Kowhai SPS and Sewer Rising Main to Horotiu | | $ 9,590,000 |

Note * As per Metro WW DBC preferred option

# 6 Recommendations

The following items are recommended for further investigation or discussion:

- Consider a longer design horizon for the trunk watermain and sewer rising main connecting Te Kowhai and Horotiu. The structure plan considers growth cells up to 2050, but these assets may need to be sized for a longer design horizon.
- Review how future commercial/industrial zones in Taupiri, Ngaaruawaahia and Horotiu excluded in the HAL analysis will influence the future performance of the water network.
- Undertake wastewater model update to identify Infill zone impacts in Ngaaruawaahia.
- Confirm staging of Taupiri wastewater rising main and requirements for Hopuhopu development.

# 7 References

Beca. (2022). *Northern Metro Wastewater Detailed Business Case - Preferred Option Technical Report.*

BTW Company. (2022). *Te Kowhai Water Supply and Wastewater Servicing Options Assessment (Final Draft).*

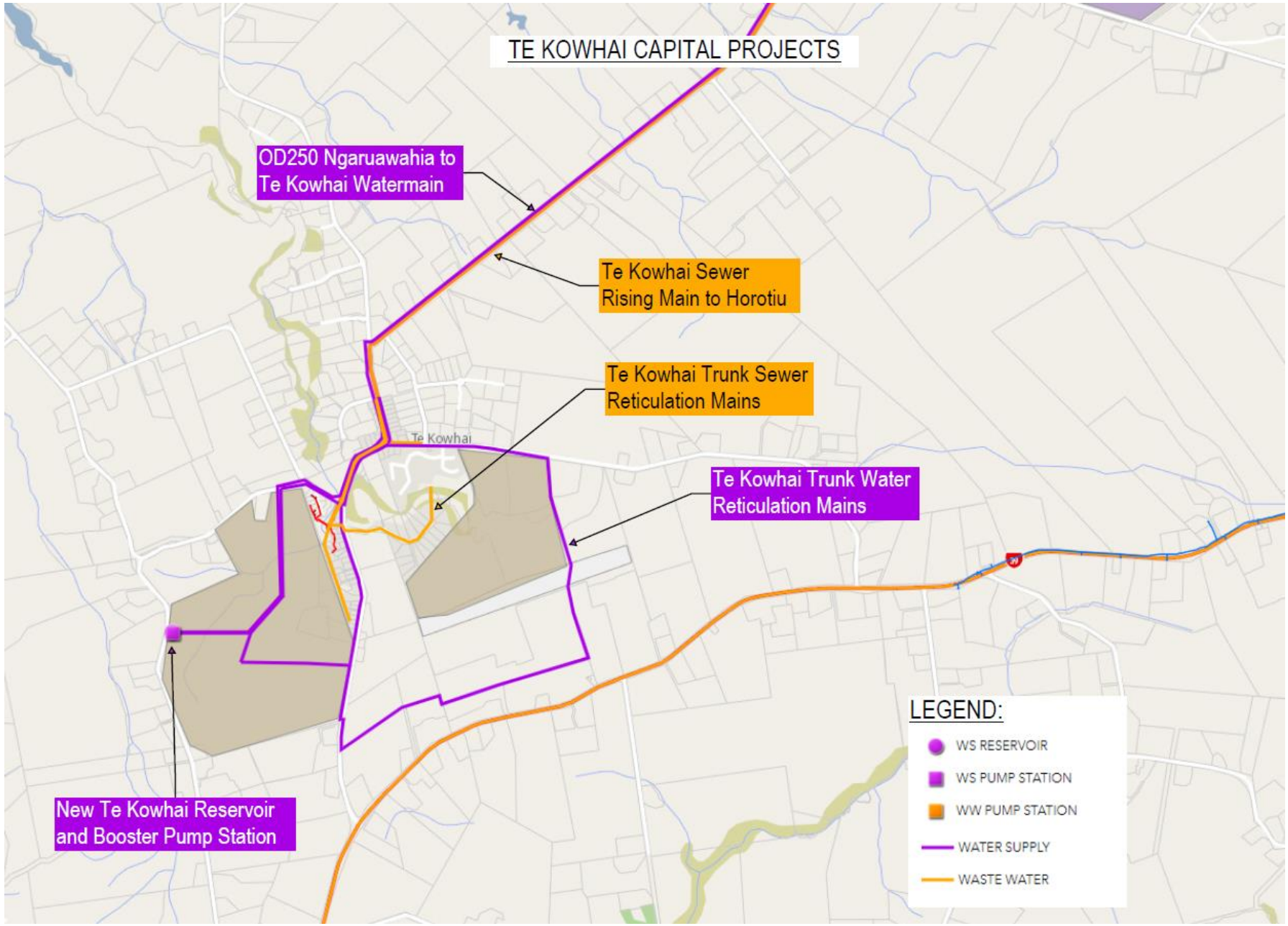
HAL. (2022). *Ngaruawahia-Huntly System performance & Options Report (Rev1).*

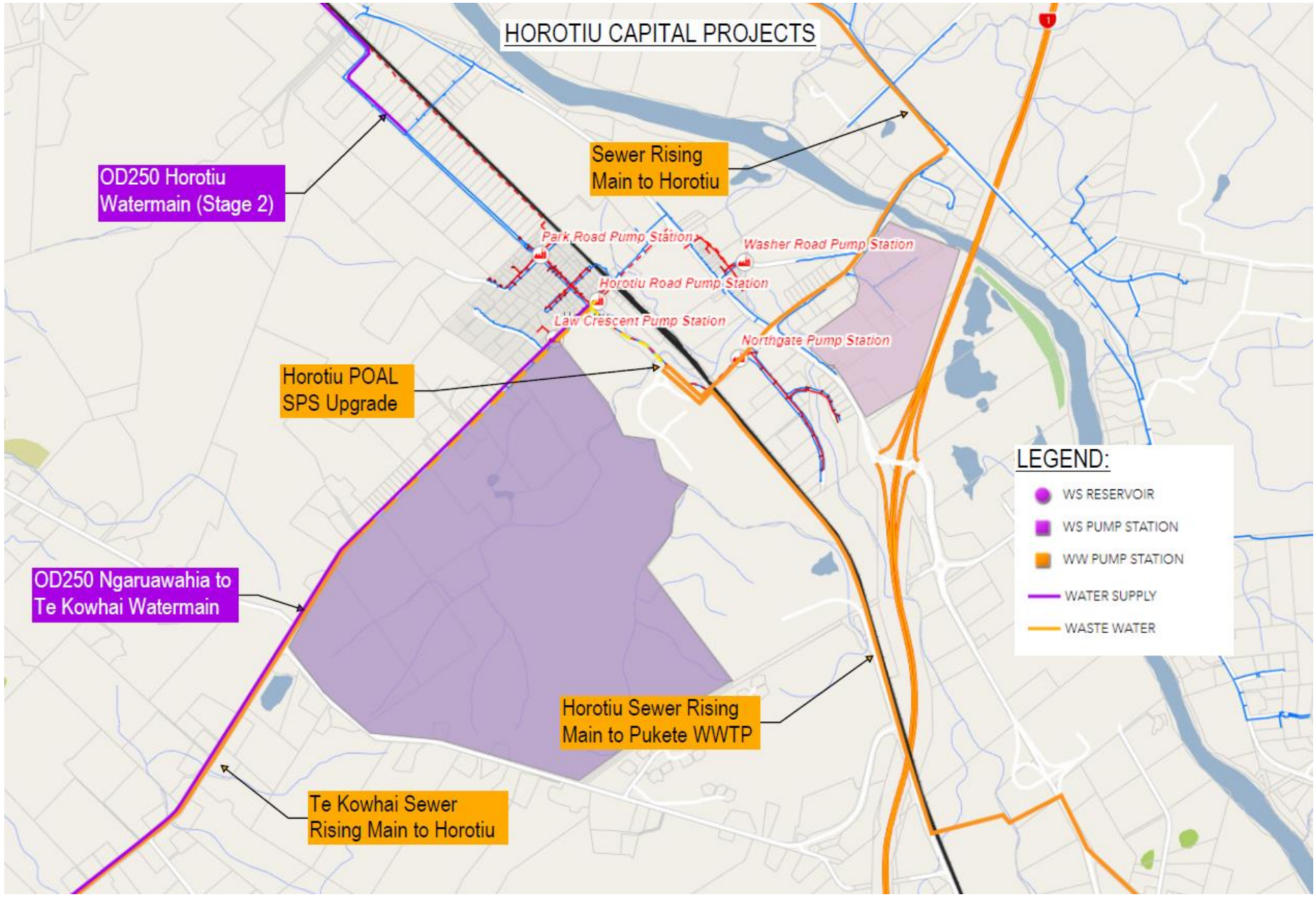
HAL. (2022). *Te Kowhai Water Servicing Strategy - Modelling Results (Aug 2022).*

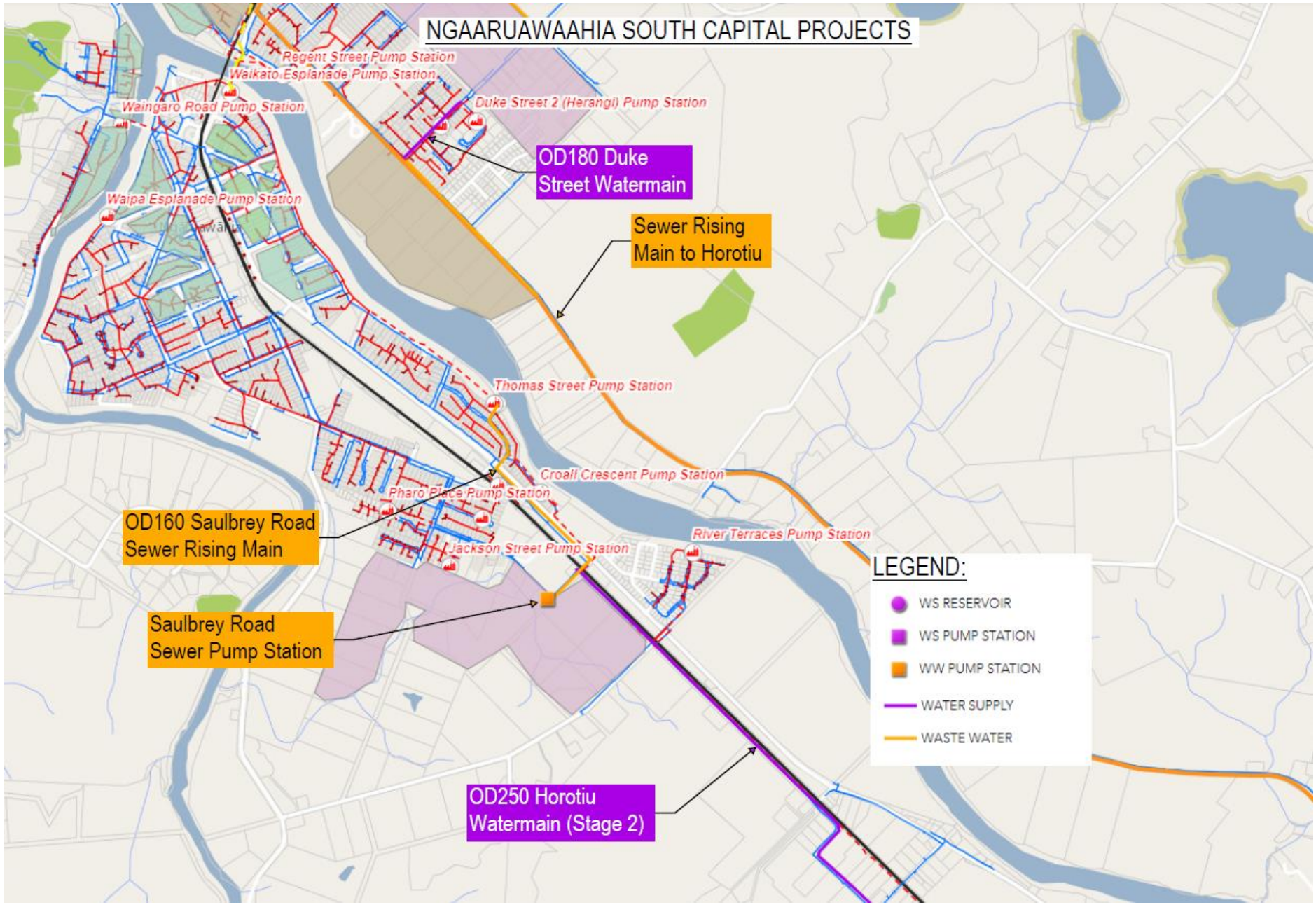
Jacobs. (August 2019). *Horotiu WW Options Analysis.*

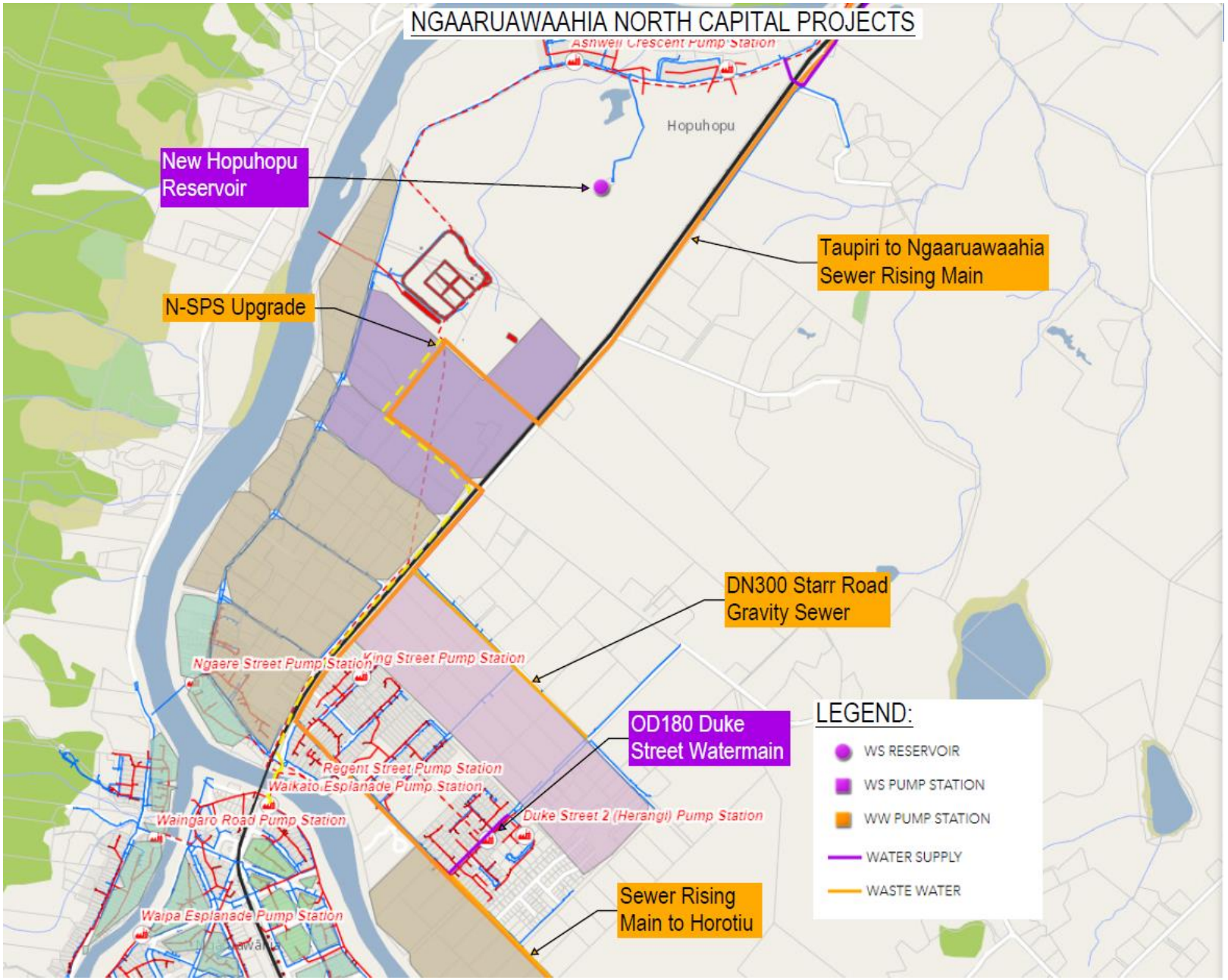
# A

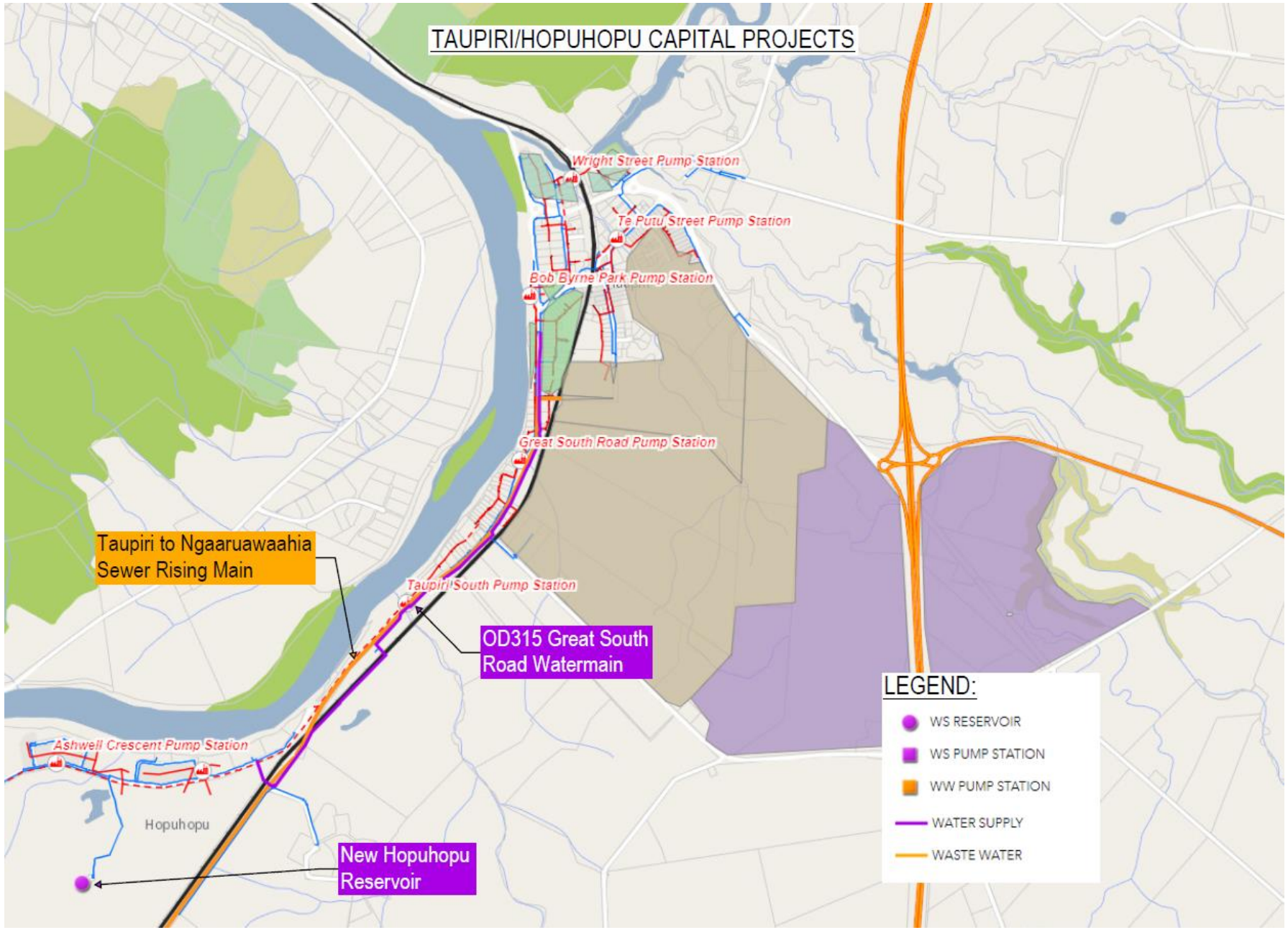
## Appendix A – Proposed Capital Projects


TE KOWHAI CAPITAL PROJECTS
OD250 Ngaruawahia to Te Kowhai Watermain
Te Kowhai Sewer Rising Main to Horotiu
Te Kowhai Trunk Sewer Reticulation Mains
Te Kowhai
Te Kowhai Trunk Water Reticulation Mains
New Te Kowhai Reservoir and Booster Pump Station
LEGEND:
WS RESERVOIR
WS PUMP STATION
WW PUMP STATION
WATER SUPPLY
WASTE WATER


HOROTIU CAPITAL PROJECTS
OD250 Horotiu Watermain (Stage 2)
Sewer Rising Main to Horotiu
Park Road Pump Station
Washer Road Pump Station
Horotiu Road Pump Station
Law Crescent Pump Station
Northgate Pump Station
Horotiu POAL SPS Upgrade
LEGEND:
WS RESERVOIR
WS PUMP STATION
WW PUMP STATION
WATER SUPPLY
WASTE WATER
OD250 Ngaruawahia to Te Kowhai Watermain
Horotiu Sewer Rising Main to Pukete WWTP
Te Kowhai Sewer Rising Main to Horotiu


NGAARUAWAAHIA SOUTH CAPITAL PROJECTS
Regent Street Pump Station
Waikato Esplanade Pump Station
Waingaro Road Pump Station
Duke Street 2 (Herangi) Pump Station
OD180 Duke Street Watermain
Waipa Esplanade Pump Station
Sewer Rising Main to Horotiu
Thomas Street Pump Station
Croall Crescent Pump Station
Pharo Place Pump Station
OD160 Saulbrey Road Sewer Rising Main
Jackson Street Pump Station
River Terraces Pump Station
Saulbrey Road Sewer Pump Station
LEGEND:
WS RESERVOIR
WS PUMP STATION
WW PUMP STATION
WATER SUPPLY
WASTE WATER
OD250 Horotiu Watermain (Stage 2)


NGAARUAWAAHIA NORTH CAPITAL PROJECTS
Ashwell Crescent Pump Station
Hopuhopu
New Hopuhopu Reservoir
Taupiri to Ngaaruawaahia Sewer Rising Main
N-SPS Upgrade
DN300 Starr Road Gravity Sewer
Ngaere Street Pump Station
King Street Pump Station
OD180 Duke Street Watermain
Regent Street Pump Station
Waikato Esplanade Pump Station
Waingaro Road Pump Station
Duke Street 2 (Herangi) Pump Station
Waipa Esplanade Pump Station
Sewer Rising Main to Horotiu
LEGEND:
WS RESERVOIR
WS PUMP STATION
WW PUMP STATION
WATER SUPPLY
WASTE WATER


TAUPIRI/HOPUHOPU CAPITAL PROJECTS
Wright Street Pump Station
Te Putu Street Pump Station
Bob Byrne Park Pump Station
Great South Road Pump Station
Taupiri South Pump Station
Ashwell Crescent Pump Station
Hopuhopu
Taupiri to Ngaaruawaahia Sewer Rising Main
OD315 Great South Road Watermain
New Hopuhopu Reservoir
LEGEND:
WS RESERVOIR
WS PUMP STATION
WW PUMP STATION
WATER SUPPLY
WASTE WATER

# B

Appendix B – Cost Estimates

| CAPITAL COST ESTIMATE - Ngaruawahia Water | | | | | | |
|---|---|---|---|---|---|---|
| **Project** | **Item** | **Description** | **Quantity** | **Units** | **Rate $** | **Subtotal $** |
| | | | | | | |
| *New Pipes - All PE100 PN12.5, in road, 1m cover* | | | | | | |
| CAP11 | 1 | OD180 PE100 PN12.5 along Duke Street (replaces DN100 AC) | 380 | m | $ 573 | $ 217,873 |
| CAP11 | 2 | OD180 PE100 PN12.5 along Great South Road (new) | 430 | m | $ 538 | $ 231,215 |
| CAP11 | 3 | OD125 PE100 PN12.5 along Kelm Road (replaces OD63 MDPE) | 1050 | m | $ 597 | $ 627,281 |
| CAP12 | 4 | OD315 PE100 PN12.5 along Great South Road (replaces DN150 PVC) | 2700 | m | $ 733 | $ 1,978,371 |
| CAP14 | 5 | New Hopuhopu reservoir (1500 m3) - assume steel | 1 | No. | $ 2,775,000 | $ 2,775,000 |
| | | | | | | |
| | | **Provisional Cost** | | | | |
| | | Provisional allowance for hydrants and valves (TBC with client) | 1 | PS | $ 305,474 | $ 305,474 |
| | | | | | | |
| | | **Net Construction Cost Estimate** | | | | **$ 6,135,214** |
| | | Main Contractor On-site overheads (P&G) | 20% | % | $ 6,135,214 | $ 1,227,043 |
| | | **Gross Construction Cost Estimate** | | | | **$ 7,362,257** |
| | | Design Development Contingency | 10% | % | $ 7,362,257 | $ 736,226 |
| | | Construction Contingency | 20% | % | $ 8,098,482 | $ 1,619,696 |
| | | **Total Construction Budget** | | | | **$ 9,718,179** |
| | | Professional Fees | 13% | % | $ 9,718,179 | $ 1,263,363 |
| | | Procurement Fees | 3% | % | $ 9,718,179 | $ 291,545 |
| | | Client-owned project costs | 10% | % | $ 7,362,257 | $ 736,226 |
| | | | | | | |
| | | **Total Expected Concept Capital Cost Estimate** | | | | **$ 12,010,000** |

| CAPITAL COST ESTIMATE - Ngaruawahia Wastewater | | | | | | |
|---|---|---|---|---|---|---|
| **Project** | **Item** | **Description** | **Quantity** | **Units** | **Rate $** | **Subtotal $** |
| | | | | | | |
| | 1 | Supply and install PE100 PN16 rising main DN280 PN16 | 4600 | m | | Refer Metro DBC |
| | 2 | Stage 1 PS - Supply and installation of 3.5m diameter, 5-6m deep pre-fabricated GRP wet well, including cover slab & McBerns type cover. Supply and installation of 3 x submersible sewage pumps; 45 kW - 57 L/s and 46m TDH. | 1 | No. | | Refer Metro DBC |
| | 3 | Emergency Storage; 474m3, allow for buried GRP tanks manifolded. | 1 | No. | | Refer Metro DBC |
| | 4 | Starr Rd 300mm Gravity Main PVC | 1200 | m | $ 626 | $ 751,752 |
| | 5 | Saulbrey Rd Rising main 160OD PE | 1050 | m | $ 540 | $ 567,242 |
| | 6 | Saulbrey Rd pump station - asssume small standard RITS PS 10 L/s | 1 | No. | $ 500,000 | $ 500,000 |
| | 7 | River Rd WW main extension - not costed as likely post 2050 | | | | |
| | | | | | | |
| | | **Provisional Cost** | | | | |
| | | None | | | | $ - |
| | | | | | | |
| | | **Net Construction Cost Estimate** | | | | **$ 1,818,994** |
| | | Main Contractor On-site overheads (P&G) | 20% | % | $ 1,818,994 | $ 363,799 |
| | | **Gross Construction Cost Estimate** | | | | **$ 2,182,792** |
| | | Design Development Contingency | 10% | % | $ 2,182,792 | $ 218,279 |
| | | Construction Contingency | 20% | % | $ 2,401,071 | $ 480,214 |
| | | **Total Construction Budget** | | | | **$ 2,881,286** |
| | | Professional Fees | 13% | % | $ 2,881,286 | $ 374,567 |
| | | Procurement Fees | 3% | % | $ 2,881,286 | $ 86,439 |
| | | Client-owned project costs | 10% | % | $ 2,182,792 | $ 218,279 |
| | | | | | | |
| | | **Total Expected Concept Capital Cost Estimate** | | | | **$ 3,561,000** |

| CAPITAL COST ESTIMATE - Te Kowhai Water | | | | | | |
|---|---|---|---|---|---|---|
| **Project** | **Item** | **Description** | **Quantity** | **Units** | **Rate $** | **Subtotal $** |
| | | | | | | |
| *New Pipes - All PE100 PN12.5, in road, 1m cover* | | | | | | |
| TK1 | 1 | New 17.5m Diam x 6m Height Te Kowhai Reservoirs - assume steel (2x 1,400 m3) | 2 | No. | $ 2,590,000 | $ 5,180,000 |
| TK2 | 2 | OD250 PE100 PN12.5 Ngaruawahia to Te Kowhai main along Horotiu Road | 7200 | m | $ 597 | $ 4,301,352 |
| TK3 | 3 | OD315 PE100 PN12.5 Trunk reticulation main | 1200 | m | $ 733 | $ 879,276 |
| TK4 | 4 | OD250 PE100 PN12.5 Trunk reticulation main | 1900 | m | $ 562 | $ 1,067,363 |
| TK5 | 5 | OD180 PE100 PN12.5 Trunk reticulation main | 4000 | m | $ 538 | $ 2,150,840 |
| TK6 | 6 | Booster pump station at new reservoir outlet 22L/s | 1 | No. | $ 820,000 | $ 820,000 |
| TK7 | 7 | Chlorine dosing system at Te Kowhai reservoir | 1 | No. | $ 75,000 | $ 75,000 |
| TK8 | 8 | OD250 PE100 PN12.5 along Horotiu Road | 2100 | m | $ 597 | $ 1,254,561 |
| TK9 | 9 | Flow control valve at Te Kowhai reservoir inlet | 1 | No. | $ 25,000 | $ 25,000 |
| | | | | | | |
| | | **Provisional Cost** | | | | |
| | | Provisional allowance for hydrants and valves (TBC with client) | 1 | PS | $ 965,339 | $ 965,339 |
| | | | | | | |
| | | **Net Construction Cost Estimate** | | | | **$ 16,718,731** |
| | | Main Contractor On-site overheads (P&G) | 20% | % | $ 16,718,731 | $ 3,343,746 |
| | | **Gross Construction Cost Estimate** | | | | **$ 20,062,477** |
| | | Design Development Contingency | 10% | % | $ 20,062,477 | $ 2,006,248 |
| | | Construction Contingency | 20% | % | $ 22,068,725 | $ 4,413,745 |
| | | **Total Construction Budget** | | | | **$ 26,482,470** |
| | | Professional Fees | 13% | % | $ 26,482,470 | $ 3,442,721 |
| | | Procurement Fees | 3% | % | $ 26,482,470 | $ 794,474 |
| | | Client-owned project costs | 10% | % | $ 20,062,477 | $ 2,006,248 |
| | | | | | | |
| | | **Total Expected Concept Capital Cost Estimate** | | | | **$ 32,726,000** |

| CAPITAL COST ESTIMATE - Te Kowhai Wastewater | | | | | | |
|---|---|---|---|---|---|---|
| **Project** | **Item** | **Description** | **Quantity** | **Units** | **Rate $** | **Subtotal $** |
| | | | | | | |
| | 1 | DN225 PN16 PE rising main | 4500 | m | | Refer Metro DBC |
| | 2 | DN250 PN10 PE Gravity main | 1400 | m | | Refer Metro DBC |
| | 3 | DN450 PN10 PE Gravity main | 450 | m | | Refer Metro DBC |
| | 4 | Stage 1 Pump Station - Supply and installation of 3 x submersible sewage pumps; 22 kW - 25 L/s and 54m TDH. | | No. | | Refer Metro DBC |
| | 5 | Emergency Storage; 265m3, allow for buried GRP tanks manifolded. | | No. | | Refer Metro DBC |
| | 6 | Trunk wastewater mains within township 150mm NB PVC (incl manholes) | 1900 | m | $ 522 | $ 991,382 |
| | | | | | | |
| | | **Net Construction Cost Estimate** | | | | **$ 991,382** |
| | | Main Contractor On-site overheads (P&G) | 20% | % | $ 991,382 | $ 198,276 |
| | | **Gross Construction Cost Estimate** | | | | **$ 1,189,658** |
| | | Design Development Contingency | 10% | % | $ 1,189,658 | $ 118,966 |
| | | Construction Contingency | 20% | % | $ 1,308,624 | $ 261,725 |
| | | **Total Construction Budget** | | | | **$ 1,570,349** |
| | | Professional Fees | 13% | % | $ 1,570,349 | $ 204,145 |
| | | Procurement Fees | 3% | % | $ 1,570,349 | $ 47,110 |
| | | Client-owned project costs | 10% | % | $ 1,189,658 | $ 118,966 |
| | | | | | | |
| | | **Total Expected Concept Capital Cost Estimate** | | | | **$ 1,941,000** |

## Northern Business Case - Pumping and Conveyance

### Comparative Concept Cost Estimate Summary

A

| Ref | Description | Capital Costs - Option A | | |
|---|---|---|---|---|
| | | Most Likely Estimate | P95 Estimate | Timing Assumptions |
| **1.0** | **Conveyance** | | | |
| 1.1 | Te Kowhai to Horotiu | $9,590,000 | $10,770,000 | Construct 2030-31 |
| 1.2 | Horotiu to Ngaruawahia (stage1) | | | Construct 2030-31 |
| 1.3 | Horotiu to Ngaruawahia (stage 2) | | | Construct 2060-61 |
| 1.4 | Taupiri to Ngaruawahia WWTP (stage 1) | $11,140,000 | $12,660,000 | Construct 2030-31 |
| 1.5 | Taupiri to Ngaruawahia WWTP (stage 2) | $7,090,000 | $8,320,000 | Construct 2060-61 |
| 1.6 | Ngaruawahia to Horotiu (stage1) | $45,350,000 | $51,870,000 | Construct 2030-31 |
| 1.7 | Ngaruawahia to Horotiu (stage 2) | $5,250,000 | $6,000,000 | Construct 2060-61 |
| 1.8 | Horotiu to Pukete WWTP (All northern flows - stage1) | $33,910,000 | $38,670,000 | Construct 2030-31 |
| 1.9 | Horotiu to Pukete WWTP (All northern flows - stage 2) | $5,810,000 | $6,650,000 | Construct 2060-61 |
| 1.10 | Horotiu to Pukete WWTP (Te Kowhai and Horotiu only -stage1) | | | Construct 2030-31 |
| 1.11 | Horotiu to Pukete WWTP (Te Kowhai and Horotiu only - stage 2) | | | Construct 2060-61 |
| | **TOTAL ESTIMATE - Rounded** | **$118,140,000** | **$134,940,000** | |
| | Construct 2030-31 | **$99,990,000** | **$113,970,000** | |
| | Construct 2060-61 | **$18,150,000** | **$20,970,000** | |
| | % civil and structural | **95%** | **95%** | |

**General Estimate Exclusions**

0.0 Goods and services Tax (GST).
0.1 Incurred costs to date.
0.2 Fast track or accelerated programme.
0.3 Work outside normal working hours.
0.4 Costs associated with staging of the works.

0.5 **Project Specific Exclusions**

0.6 Cost escalation and impact of Forex rate changes.
0.7 Property costs including land purchases and easements.
0.8 Contaminated ground and hazardous materials.
0.9 Relocating existing services. Subject to further investigations
1.0 Power supply network upgrades. Pump station estimates assume sufficient capacity is available at site boundary.
1.1 Ground improvements and piling beneath pump station and other structures.
1.2 Architectural treatment to exterior of buildings and structures.
1.3 Landscaping to proposed pump station sites. Estimates includes allowances for restoring surfaces disturbed by construction works with topsoil and grass.
1.4 Costs of impacts associated with extraordinary global events (such as the current COVID-19 outbreak).

1.5 **Assumptions**

1.6 All quantities and dimensions are approximate and are subject to design development.
1.7 The basis of the estimate is the concept design information prepared by the Beca design team. This includes details for the pipelines and pump stations and approximate scheme alignment plans.
1.8 Elements of cost included within this estimate are based on costs from similar projects and other Beca cost benchmarks.
1.9 We assume that projects will be undertaken by a single 'Main Contractor' through a single contract for the project.
2.0 We assume that a robust tendering process will be followed and that a minimum of 3 sub-contractor tenders (where possible) are received for the project as part of the agreed procurement process.
2.1 We assume that all works are carried out during normal daytime working hours.
2.2 We assume that the Contractor will have unobstructed access to the whole site throughout the construction phase.
2.3 All base prices are current to 3rd quarter 2022. No allowance for future cost escalation has been included in the estimate.
2.4 The allowances for Professional Fees are high-level indicative allowances only and have not been based on a detailed work breakdown structure.

2.5 **Expected Estimate Range:**

2.6 Estimate range is an indication of the degree to which the final cost outcome for a given project will vary from the estimated cost – it is not an additional Contingency. Range is expressed as a +/- percentage range around the point of estimate after the application of contingency, with a stated level of confidence that the actual cost outcome would fall within this range. As the level of project definition increases and the tender date draws nearer, the expected range of the estimate tends to improve, as indicated by a tighter +/- range.

2.7 The estimates are deemed to be Class 5 estimates in terms of the AACE Cost Estimate Classification System guidelines. The probable accuracy range of the estimate is likely to be no better than -30% to +50%.

2.8

2.9 **Risks**

3.0 Risks with a potential cost effect include:

3.1 Design development.

3.2 Foreign exchange rates cost risk.

3.3 General cost escalation for plant, labour, and materials.

3.4 Cost associated with sequencing or staging of the works.

3.5 Ground conditions and ground water levels and temporary work requirements; geotechnical requirements.

3.6 Integration with exisiting infrastructure and working around existing services.

3.7 Property costs, specifically land purchase and access (easements etc.).

3.8 Costs of impacts associated with extraordinary global events (such as the current COVID-19 outbreak).

3.9 **General Considerations and Limitations.**

4.0 These estimates are solely for our Client's use for the purpose for which they were intended in accordance with the agreed scope of work. They may not be disclosed to any person other than the Client and any use or reliance by any person contrary to the above, to which Beca has not given its prior written consent, is at that person's own risk.

4.1 The high-level cost estimates presented in this section have been developed solely for the purpose of comparing and evaluating competing options. They are sufficiently accurate to serve this purpose. We recommend that they are not used for budget-setting purposes as common elements between options may have been omitted and/or the works not fully scoped. A functional design should be undertaken if a budget estimate is required.

**CONCEPT STAGE COST ESTIMATE**

**Northern Business Case - Pumping and Conveyance**

**Option A: Te Kowhai to Horotui**

**Supply and Installation of PE Pipe, pump station and associated equipment and fittings.**

| | | | | | | Quantity | | | Rate $ | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Item** | | **Unit** | **Quantity** | **Rate** | **Total - Most Likely** | **Min** | **ML** | **Max** | **Min** | **ML** | **Max** | **Most Likely $** |
| **1.0** | **WASTEWATER RISING MAIN** | | | | | | | | | | | |
| 1.1 | Supply and install PE100 PN16 rising main generally trenched 0-2.0m deep; including, but not limited to: welding, excavation, bedding, backfilling, and reinstatement outside road. | | | | | | | | | | | |
| 1.1A | DN225 PN16 | m | 4,500 | $ 325 | $ 1,462,500 | 4,050 | 4,500 | 4,950 | $ 293 | $ 325 | $ 406 | $ 1,462,500 |
| 1.2 | Extra over for additional deeper trenching 2-3m deep. | m | 900 | $ 90 | $ 81,000 | 810 | 900 | 990 | $ 81 | $ 90 | $ 113 | $ 81,000 |
| 1.3 | Extra over item to reinstate sealed road. | m | 700 | $ 170 | $ 119,000 | 630 | 700 | 770 | $ 153 | $ 170 | $ 213 | $ 119,000 |
| 1.4 | Extra over item to reinstate berm/unsealed road. | m | 3,800 | $ 30 | $ 114,000 | 3,420 | 3,800 | 4,180 | $ 27 | $ 30 | $ 38 | $ 114,000 |
| 1.5 | Air Valve. Assume offline configuration and located in an above-ground chamber at the side of the road. | each | 8 | $ 12,000 | $ 96,000 | 8 | 8 | 9 | $ 10,800 | $ 12,000 | $ 15,000 | $ 96,000 |
| 1.6 | Isolation Valve. Assume direct buried. | each | 6 | $ 9,000 | $ 54,000 | 6 | 6 | 7 | $ 8,100 | $ 9,000 | $ 11,250 | $ 54,000 |
| 1.7 | Scour Valve. Assume offline configuration and located in a below-ground chamber at the side of the road. | each | 8 | $ 14,000 | $ 112,000 | 8 | 8 | 9 | $ 12,600 | $ 14,000 | $ 17,500 | $ 112,000 |
| 1.8 | Hydrostatic testing of wastewater pipeline. | LS | 1 | $ 27,000 | $ 27,000 | 1 | 1 | 1 | $ 24,300 | $ 27,000 | $ 33,750 | $ 27,000 |
| 1.9 | Allowance for minor stream crossing | No | 1 | $ 10,000 | $ 10,000 | 0 | 1 | 2 | $ 9,000 | $ 10,000 | $ 12,500 | $ 10,000 |
| 1.10 | Allowance for major stream crossing | No | 0 | $ 100,000 | $ - | 0 | 0 | 1 | $ 90,000 | $ 100,000 | $ 125,000 | $ - |
| 1.11 | Allowance for bridge crossing | No | 0 | $ 150,000 | $ - | 0 | 0 | 1 | $ 135,000 | $ 150,000 | $ 187,500 | $ - |
| 1.12 | Allowance for railway crossing | No | 0 | $ 50,000 | $ - | 0 | 0 | 1 | $ 45,000 | $ 50,000 | $ 62,500 | $ - |
| | **Subtotal - Wastewater Rising Main** | | | **$ 2,075,500** | | | | | | | | |
| **2.0** | **WASTEWATER GRAVITY MAIN** | | | | | | | | | | | |
| 2.1 | Supply and install PE100 PN10 rising main generally trenched 0-2.0m deep; including, but not limited to: welding, excavation, bedding, backfilling, and reinstatement outside road. | | | | | | | | | | | |
| 2.1A | DN250 PN10 | m | 1,400 | $ 400 | $ 560,000 | 1,260 | 1,400 | 1,540 | $ 360 | $ 400 | $ 500 | $ 560,000 |
| 2.1B | DN450 PN10 | m | 450 | $ 647 | $ 291,150 | 405 | 450 | 495 | $ 582 | $ 647 | $ 809 | $ 291,150 |
| 2.2 | Extra over for additional deeper trenching 3-6m deep. | m | 100 | $ 355 | $ 35,500 | 90 | 100 | 110 | $ 320 | $ 355 | $ 444 | $ 35,500 |
| 2.3 | Extra over item to reinstate sealed road. | m | 1,400 | $ 170 | $ 238,000 | 1,260 | 1,400 | 1,540 | $ 153 | $ 170 | $ 213 | $ 238,000 |
| 2.4 | Extra over item to reinstate berm/unsealed road. | m | 450 | $ 30 | $ 13,500 | 405 | 450 | 495 | $ 27 | $ 30 | $ 38 | $ 13,500 |
| 2.5 | 1050mm dia manholes (assume one every 150 m plus at bends) | each | 17 | $ 10,000 | $ 170,000 | 17 | 17 | 18 | $ 9,000 | $ 10,000 | $ 12,500 | $ 170,000 |
| 2.6 | New discharge structure ; allow 1200mm dia manhole with DN500 knife gate valve and extended spindle | LS | 1 | $ 30,000 | $ 30,000 | 1 | 1 | 2 | $ 27,000 | $ 30,000 | $ 37,500 | $ 30,000 |
| 2.7 | Green dome odour control at discharge structure | each | 1 | $ 15,000 | $ 15,000 | 1 | 1 | 1 | $ 13,500 | $ 15,000 | $ 18,750 | $ 15,000 |
| | | | | | | 1 | 0 | 1 | $ - | $ - | $ - | $ - |
| | **Subtotal - Wastewater Gravity Main** | | | **$ 1,353,150** | | | | | | | | |
| **3.0** | **WASTEWATER PUMP STATION** | | | | | | | | | | | |
| | **New Pump Station** | | | | | | | | | | | |
| 3.1 | Supply and installation of 2m diameter, 5-6m deep pre-fabricated GRP wet well, including cover slab & McBerns type cover. Assumes some local gravity network to be intercepted | LS | 1 | $ 320,000 | $ 320,000 | 1 | 1 | 1 | $ 288,000 | $ 320,000 | $ 480,000 | $ 320,000 |
| 3.2 | Supply and installation of 3 x submersible sewage pumps; 22 kW - 25 L/s and 54m TDH. | LS | 1 | $ 73,000 | $ 73,000 | 1 | 1 | 1 | $ 65,700 | $ 73,000 | $ 109,500 | $ 73,000 |
| 3.3 | Supply and installation of valve chamber including 3 x non-return valves, 3 x isolation valves, DN100. | LS | 1 | $ 110,000 | $ 110,000 | 1 | 1 | 1 | $ 99,000 | $ 110,000 | $ 165,000 | $ 110,000 |
| 3.4 | Emergency Storage; 265m3, allow for buried GRP tanks manifolded. | LS | 1 | $ 795,000 | $ 795,000 | 1 | 1 | 1 | $ 715,500 | $ 795,000 | $ 993,750 | $ 795,000 |
| 3.5 | Electrical installation. Including supply and installation of local cabinet/MCC, supply and installation of level instrumentation, power and comms cabling and ducts from main switchboard, emergency generator connection, and flowmeter in chamber. | LS | 1 | $ 140,000 | $ 140,000 | 1 | 1 | 1 | $ 126,000 | $ 140,000 | $ 210,000 | $ 140,000 |
| 3.6 | Civil site works including a small controls building. | LS | 1 | $ 200,000 | $ 200,000 | 1 | 1 | 1 | $ 180,000 | $ 200,000 | $ 300,000 | $ 200,000 |
| 3.7 | Supply and install of permanent standby generator | LS | 1 | $ 50,000 | $ 50,000 | 1 | 1 | 1 | $ 45,000 | $ 50,000 | $ 75,000 | $ 50,000 |
| 3.8 | Commissioning of pump station. | LS | 1 | $ 10,000 | $ 10,000 | 1 | 1 | 1 | $ 9,000 | $ 10,000 | $ 15,000 | $ 10,000 |
| | **Subtotal - Wastewater Pump Station** | | | **$ 1,698,000** | | | | | | | | |
| | **Subtotal - Net Construction Cost Estimate** | | | | **$ 5,126,650** | | | | | | | |
| **4.0** | **MAIN CONTRACTOR OVERHEAD COSTS** | | | | | | | | | | | |
| 4.1 | **On-site Overheads:** | | | | | | | | | | | |
| 4.1A | Pipelines | 15% | 15% | $ 3,428,650 | $ 514,298 | 13% | 15% | 20% | $ 3,428,650 | $ 3,428,650 | $ 3,428,650 | $ 514,298 |
| 4.1B | Pump Stations | % | 25% | $ 1,698,000 | $ 424,500 | 20% | 25% | 30% | $ 1,698,000 | $ 1,698,000 | $ 1,698,000 | $ 424,500 |
| 4.1C | Traffic management | m | 6,350 | $ 50 | $ 317,500 | 6350 | 6350 | 6350 | $ 20 | $ 50 | $ 60 | $ 317,500 |
| | Check: | % | 9% | | | | | | | | | |
| 4.2 | **Off-site Overheads:** | | | | | | | | | | | |
| | Main Contractor Off-site Overheads and Profit Margin is included in the rates. | LS | 1 | | included | | | | $ - | $ - | $ - | $ - |
| | **Subtotal - Main Contractor Overheads** | | 25% | **$ 1,256,298** | | | | | | | | |
| | **Subtotal - Gross Construction Cost Estimate** | | | | **$ 6,382,948** | | | | | | | |
| **5.0** | **FEES** | | | | | | | | | | | |
| 5.1 | Professional Fees for design and MSQA - Pipelines | % | 8% | $ 4,268,849 | $ 341,508 | 6% | 8% | 10% | $ 4,268,849 | $ 4,268,849 | $ 4,268,849 | $ 341,508 |
| 5.2 | Professional Fees for design and MSQA - Pump Stations | % | 15% | $ 2,114,099 | $ 317,115 | 12% | 15% | 17% | $ 2,114,099 | $ 2,114,099 | $ 2,114,099 | $ 317,115 |
| 5.3 | Client project-related internal costs | % | 8% | $ 6,382,948 | $ 510,636 | 7% | 8% | 9% | $ 6,382,948 | $ 6,382,948 | $ 6,382,948 | $ 510,636 |
| 5.4 | Consenting costs | % | | $ 6,382,948 | excluded | | | | $ 6,382,948 | $ 6,382,948 | $ 6,382,948 | $ - |
| 5.5 | Procurement costs | % | 2% | $ 6,382,948 | $ 127,659 | 1% | 2% | 3% | $ 6,382,948 | $ 6,382,948 | $ 6,382,948 | $ 127,659 |
| | **Subtotal - Fees** | | 20% | **$ 1,296,917** | | | | | | | | |
| **6.0** | **PROPERTY COSTS** | | | | | | | | | | | |
| 6.1 | Property costs - land purchase | LS | 1 | | excluded | 0 | 0 | 0 | $ 100,000 | $ - | $ 300,000 | $ - |
| 6.2 | Property costs - easements | LS | 1 | | excluded | 0 | 0 | 0 | $ 20,000 | $ - | $ 70,000 | $ - |
| | **Subtotal - Property Costs** | | | **$ -** | | | | | | | | |
| | **Subtotal** | | | | **$ 7,679,865** | | | | | | | |
| **7.0** | **RISK ALLOWANCES** | | | | | | | | | | | |
| 7.1 | Allowance for Design Development Contingency | % | 20% | $ 6,382,948 | $ 1,276,590 | 10% | 20% | 30% | $ 6,382,948 | $ 6,382,948 | $ 6,382,948 | $ 1,276,590 |
| 7.2 | Allowance for Construction Phase Risk Contingency | % | 10% | $ 6,382,948 | $ 638,295 | 8% | 10% | 20% | $ 6,382,948 | $ 6,382,948 | $ 6,382,948 | $ 638,295 |
| 7.3 | FOREX risk supply costs | % | 10% | $ 6,382,948 | excluded | 2% | 10% | 15% | $ 6,382,948 | $ 6,382,948 | $ 6,382,948 | $ - |
| 7.4 | General cost escalation | % | 10% | $ 6,382,948 | excluded | 7% | 10% | 15% | $ 6,382,948 | $ 6,382,948 | $ 6,382,948 | $ - |
| | **Subtotal - Risk Allowances** | | 30% | **$ 1,914,884** | | | | | | | | |
| | Rounding | LS | 1 | -$ 4,749 | -$ 4,749 | | | | | | | |
| | **Total Expected Estimate** | **Most Likely** | | | **$ 9,590,000** | | | | | | | |
| | | | | Check: | $ 9,590,000 | | | | | | | |

| Summary | Estimate | % of Base |
|---|---|---|
| Base Estimate | 8,100,000 | |
| Most Likely Estimate (P50) | 9,590,000 | 118% |
| P95 Confidence Level Estimate | 10,770,000 | 133% |
| Maximum Estimate | 13,800,000 | 170% |

**CONCEPT STAGE COST ESTIMATE**

**Northern Business Case - Pumping and Conveyance**

**Option A: Taupiri to Ngaruawahia WWTP (2041)**

**Supply and Installation of PE Pipe, pump station and associated equipment and fittings.**

| | | | | | | Quantity | | | Rate $ | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Item** | | **Unit** | **Quantity** | **Rate** | **Total - Most Likely** | **Min** | **ML** | **Max** | **Min** | **ML** | **Max** | **Most Likely $** |
| **1.0** | **WASTEWATER RISING MAIN** | | | | | | | | | | | |
| 1.1 | Supply and install PE100 PN16 rising main generally trenched 0-2.0m deep; including, but not limited to: welding, excavation, bedding, backfilling, and reinstatement outside road. | | | | | | | | | | | |
| 1.1A | DN280 PN16 | m | 4,600 | $ 430 | $ 1,978,000 | 4,140 | 4,600 | 5,060 | $ 387 | $ 430 | $ 538 | $ 1,978,000 |
| 1.2 | Extra over for additional deeper trenching 2-3m deep. | m | 1,000 | $ 160 | $ 160,000 | 900 | 1,000 | 1,100 | $ 144 | $ 160 | $ 200 | $ 160,000 |
| 1.3 | Extra over item to reinstate sealed road. | m | 2,300 | $ 180 | $ 414,000 | 2,070 | 2,300 | 2,530 | $ 162 | $ 180 | $ 225 | $ 414,000 |
| 1.4 | Extra over item to reinstate berm/unsealed road. | m | 2,300 | $ 30 | $ 69,000 | 2,070 | 2,300 | 2,530 | $ 27 | $ 30 | $ 38 | $ 69,000 |
| 1.5 | Air Valve. Assume offline configuration and located in an above-ground chamber at the side of the road. | each | 8 | $ 15,000 | $ 120,000 | 8 | 8 | 9 | $ 13,500 | $ 15,000 | $ 18,750 | $ 120,000 |
| 1.6 | Isolation Valve. Assume direct buried. | each | 6 | $ 10,000 | $ 60,000 | 6 | 6 | 7 | $ 9,000 | $ 10,000 | $ 12,500 | $ 60,000 |
| 1.7 | Scour Valve. Assume offline configuration and located in a below-ground chamber at the side of the road. | each | 8 | $ 16,000 | $ 128,000 | 8 | 8 | 9 | $ 14,400 | $ 16,000 | $ 20,000 | $ 128,000 |
| 1.8 | Hydrostatic testing of wastewater pipeline. | LS | 1 | $ 26,000 | $ 26,000 | 1 | 1 | 1 | $ 23,400 | $ 26,000 | $ 32,500 | $ 26,000 |
| 1.9 | Allowance for minor stream crossing | No | 2 | $ 10,000 | $ 20,000 | 0 | 2 | 2 | $ 9,000 | $ 10,000 | $ 12,500 | $ 20,000 |
| 1.10 | Allowance for major stream crossing | No | 0 | $ 100,000 | $ - | 0 | 0 | 0 | $ 90,000 | $ 100,000 | $ 125,000 | $ - |
| 1.11 | Allowance for bridge crossing. Railway over pass - assume 50m x DN300 SS pipe with 4 x SS ballows | No | 1 | $ 140,000 | $ 140,000 | 1 | 1 | 1 | $ 126,000 | $ 140,000 | $ 175,000 | $ 140,000 |
| 1.12 | Allowance for railway crossing - assume 15m x DN350 steel sleeve (micro tunneled/ pipe jacked) | No | 2 | $ 100,000 | $ 200,000 | 1 | 2 | 1 | $ 90,000 | $ 100,000 | $ 125,000 | $ 200,000 |
| | **Subtotal - Wastewater Rising Main** | | | **$ 3,315,000** | | | | | | | | |
| **2.0** | **WASTEWATER PUMP STATION** | | | | | | | | | | | |
| | **New Pump Station** | | | | | | | | | | | |
| 2.1 | Supply and installation of 3.5m diameter, 5-6m deep pre-fabricated GRP wet well, including cover slab & McBerns type cover. Assumes some local gravity network to be intercepted | LS | 1 | $ 420,000 | $ 420,000 | 1 | 1 | 1 | $ 378,000 | $ 420,000 | $ 630,000 | $ 420,000 |
| 2.2 | Supply and installation of 3 x submersible sewage pumps; 45 kW - 57 L/s and 46m TDH. | LS | 1 | $ 260,000 | $ 260,000 | 1 | 1 | 1 | $ 234,000 | $ 260,000 | $ 390,000 | $ 260,000 |
| 2.3 | Supply and installation of valve chamber including 3 x non-return valves, 3 x isolation valves, DN200. | LS | 1 | $ 110,000 | $ 110,000 | 1 | 1 | 1 | $ 99,000 | $ 110,000 | $ 165,000 | $ 110,000 |
| 2.4 | Emergency Storage; 474m3, allow for buried GRP tanks manifolded. | LS | 1 | $ 1,200,000 | $ 1,200,000 | 1 | 1 | 1 | $ 1,080,000 | $ 1,200,000 | $ 1,500,000 | $ 1,200,000 |
| 2.5 | Electrical installation. Including supply and installation of local cabinet/MCC, supply and installation of level instrumentation, power and comms cabling and ducts from main switchboard, emergency generator connection, and flowmeter in chamber. | LS | 1 | $ 155,000 | $ 155,000 | 1 | 1 | 1 | $ 139,500 | $ 155,000 | $ 232,500 | $ 155,000 |
| 2.6 | Civil site works including a small controls building. | LS | 1 | $ 200,000 | $ 200,000 | 1 | 1 | 1 | $ 180,000 | $ 200,000 | $ 300,000 | $ 200,000 |
| 2.7 | Supply and install of permanent standby generator | LS | 1 | $ 80,000 | $ 80,000 | 1 | 1 | 1 | $ 72,000 | $ 80,000 | $ 120,000 | $ 80,000 |
| 2.8 | Commissioning of pump station. | LS | 1 | $ 10,000 | $ 10,000 | 1 | 1 | 1 | $ 9,000 | $ 10,000 | $ 15,000 | $ 10,000 |
| | **Subtotal - Wastewater Pump Station** | | | **$ 2,435,000** | | | | | | | | |
| | **Subtotal - Net Construction Cost Estimate** | | | | **$ 5,750,000** | | | | | | | |
| **3.0** | **MAIN CONTRACTOR OVERHEAD COSTS** | | | | | | | | | | | |
| 3.1 | **On-site Overheads:** | | | | | | | | | | | |
| 3.1A | Pipelines | % | 15% | $ 3,315,000 | $ 497,250 | 13% | 15% | 20% | $ 3,315,000 | $ 3,315,000 | $ 3,315,000 | $ 497,250 |
| 3.1B | Pump Stations | % | 25% | $ 2,435,000 | $ 608,750 | 20% | 25% | 30% | $ 2,435,000 | $ 2,435,000 | $ 2,435,000 | $ 608,750 |
| 3.1C | Traffic management | m | 4,600 | $ 50 | $ 230,000 | 4600 | 4600 | 4600 | $ 20 | $ 50 | $ 60 | $ 230,000 |
| | Check: | % | 7% | | | | | | | | | |
| 3.2 | **Off-site Overheads:** | | | | | | | | | | | |
| | Main Contractor Off-site Overheads and Profit Margin is included in the rates. | LS | 1 | | included | | | | $ - | $ - | $ - | $ - |
| | **Subtotal - Main Contractor Overheads** | | 23% | **$ 1,336,000** | | | | | | | | |
| | **Subtotal - Gross Construction Cost Estimate** | | | | **$ 7,086,000** | | | | | | | |
| **4.0** | **FEES** | | | | | | | | | | | |
| 4.1 | Professional Fees for design and MSQA - Pipelines | % | 8% | $ 4,085,233 | $ 326,819 | 6% | 8% | 10% | $ 4,085,233 | $ 4,085,233 | $ 4,085,233 | $ 326,819 |
| 4.2 | Professional Fees for design and MSQA - Pump Stations | % | 15% | $ 3,000,767 | $ 450,115 | 12% | 15% | 17% | $ 3,000,767 | $ 3,000,767 | $ 3,000,767 | $ 450,115 |
| 4.3 | Client project-related internal costs | % | 8% | $ 7,086,000 | $ 566,880 | 7% | 8% | 9% | $ 7,086,000 | $ 7,086,000 | $ 7,086,000 | $ 566,880 |
| 4.4 | Consenting costs | % | | $ 7,086,000 | excluded | | | | $ 7,086,000 | $ 7,086,000 | $ 7,086,000 | $ - |
| 4.5 | Procurement costs | % | 2% | $ 7,086,000 | $ 141,720 | 1% | 2% | 3% | $ 7,086,000 | $ 7,086,000 | $ 7,086,000 | $ 141,720 |
| | **Subtotal - Fees** | | 21% | **$ 1,485,534** | | | | | | | | |
| **5.0** | **PROPERTY COSTS** | | | | | | | | | | | |
| 5.1 | Property costs - land purchase | LS | 1 | | excluded | 0 | 0 | 0 | $ 100,000 | $ - | $ 300,000 | $ - |
| 5.2 | Property costs - easements | LS | 1 | | excluded | 0 | 0 | 0 | $ 20,000 | $ - | $ 70,000 | $ - |
| | **Subtotal - Property Costs** | | | **$ -** | | | | | | | | |
| | **Subtotal** | | | | **$ 8,571,534** | | | | | | | |
| **6.0** | **RISK ALLOWANCES** | | | | | | | | | | | |
| 6.1 | Allowance for Design Development Contingency | % | 20% | $ 8,571,534 | $ 1,714,307 | 10% | 20% | 30% | $ 8,571,534 | $ 8,571,534 | $ 8,571,534 | $ 1,714,307 |
| 6.2 | Allowance for Construction Phase Risk Contingency | % | 10% | $ 8,571,534 | $ 857,153 | 8% | 10% | 20% | $ 8,571,534 | $ 8,571,534 | $ 8,571,534 | $ 857,153 |
| 6.3 | FOREX risk supply costs | % | 10% | $ 8,571,534 | excluded | 2% | 10% | 15% | $ 8,571,534 | $ 8,571,534 | $ 8,571,534 | $ - |
| 6.4 | General cost escalation | % | 10% | $ 8,571,534 | excluded | 7% | 10% | 15% | $ 8,571,534 | $ 8,571,534 | $ 8,571,534 | $ - |
| | **Subtotal - Risk Allowances** | | 36% | **$ 2,571,460** | | | | | | | | |
| | Rounding | LS | 1 | -$ 2,994 | -$ 2,994 | | | | | | | |
| | **Total Expected Estimate** | **Most Likely** | | | **$ 11,140,000** | | | | | | | |
| | | | | Check: | $ 11,140,000 | | | | | | | |

| Summary | Estimate | % of Base |
|---|---|---|
| Base Estimate | 9,230,000 | |
| Most Likely Estimate (P50) | 11,140,000 | 121% |
| P95 Confidence Level Estimate | 12,660,000 | 137% |
| Maximum Estimate | 15,470,000 | 168% |

**CONCEPT STAGE COST ESTIMATE**
**Northern Business Case - Pumping and Conveyance**
**Option A: Taupiri to Ngaruawahia WWTP (2061)**
**Supply and Installation of PE Pipe, pump station and associated equipment and fittings.**

| Item | | Unit | Quantity | Rate | Total - Most Likely | Quantity Min | Quantity ML | Quantity Max | Rate $ Min | Rate $ ML | Rate $ Max | Most Likely $ | Estimator Comments | Reviewer Comments | Modified Hong Kong Govt. ERA Method: Base Est $ (Min. Qty x ML Rate) | Av. Risk (Most Likely) $ | Max Risk $ (Max. Qty x Max. Rate) | Risk Spread $ (Max. - Average) | Spread Square $ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1.0** | **WASTEWATER RISING MAIN** | | | | | | | | | | | | | | | | | | |
| 1.1 | Supply and install PE100 PN16 rising main generally trenched 0-2.0m deep; including, but not limited to: welding, excavation, bedding, backfilling, and reinstatement outside road. | | | | | | | | | | | | | | | | | | |
| 1.1A | DN200 PN16 | m | 4,600 | $ 312 | $ 1,435,200 | 4,140 | 4,600 | 5,060 | $ 281 | $ 312 | $ 390 | $ 1,435,200 | | | $ 1,291,680.00 | $ 1,435,200.00 | $ 1,973,400.00 | $ 538,200.00 | $ 289,659,240,000.00 |
| 1.2 | Extra over for additional deeper trenching 2-3m deep. | m | 1,000 | $ 90 | $ 90,000 | 900 | 1,000 | 1,100 | $ 81 | $ 90 | $ 113 | $ 90,000 | | | $ 81,000.00 | $ 90,000.00 | $ 123,750.00 | $ 33,750.00 | $ 1,139,062,500.00 |
| 1.3 | Extra over item to reinstate sealed road. | m | 2,300 | $ 180 | $ 414,000 | 2,070 | 2,300 | 2,530 | $ 162 | $ 180 | $ 225 | $ 414,000 | | | $ 372,600.00 | $ 414,000.00 | $ 569,250.00 | $ 155,250.00 | $ 24,102,562,500.00 |
| 1.4 | Extra over item to reinstate berm/unsealed road. | m | 2,300 | $ 30 | $ 69,000 | 2,070 | 2,300 | 2,530 | $ 27 | $ 30 | $ 38 | $ 69,000 | | | $ 62,100.00 | $ 69,000.00 | $ 94,875.00 | $ 25,875.00 | $ 669,515,625.00 |
| 1.5 | Air Valve. Assume offline configuration and located in an above-ground chamber at the side of the road. | each | 8 | $ 15,000 | $ 120,000 | 8 | 8 | 9 | $ 13,500 | $ 15,000 | $ 18,750 | $ 120,000 | Assume 1 per km, rounded up to next whole number | | $ 120,000.00 | $ 120,000.00 | $ 168,750.00 | $ 48,750.00 | $ 2,376,562,500.00 |
| 1.6 | Isolation Valve. Assume direct buried. | each | 6 | $ 10,000 | $ 60,000 | 6 | 6 | 7 | $ 9,000 | $ 10,000 | $ 12,500 | $ 60,000 | Assumed to be direct buried. | | $ 60,000.00 | $ 60,000.00 | $ 87,500.00 | $ 27,500.00 | $ 756,250,000.00 |
| 1.7 | Scour Valve. Assume offline configuration and located in a below-ground chamber at the side of the road. | each | 8 | $ 16,000 | $ 128,000 | 8 | 8 | 9 | $ 14,400 | $ 16,000 | $ 20,000 | $ 128,000 | | | $ 128,000.00 | $ 128,000.00 | $ 180,000.00 | $ 52,000.00 | $ 2,704,000,000.00 |
| 1.8 | Hydrostatic testing of wastewater pipeline. | LS | 1 | $ 26,000 | $ 26,000 | 1 | 1 | 1 | $ 23,400 | $ 26,000 | $ 32,500 | $ 26,000 | | | $ 26,000.00 | $ 26,000.00 | $ 32,500.00 | $ 6,500.00 | $ 42,250,000.00 |
| 1.9 | Allowance for minor stream crossing | No | 2 | $ 10,000 | $ 20,000 | 0 | 2 | 2 | $ 9,000 | $ 10,000 | $ 12,500 | $ 20,000 | | | $ - | $ 20,000.00 | $ 25,000.00 | $ 5,000.00 | $ 25,000,000.00 |
| 1.10 | Allowance for major stream crossing | No | 0 | $ 100,000 | $ - | 0 | 0 | 0 | $ 90,000 | $ 100,000 | $ 125,000 | $ - | | | $ - | $ - | $ - | $ - | $ - |
| 1.11 | Allowance for bridge crossing. Railway over pass - assume 50m x DN250 SS pipe with 4 x SS ballows | No | 1 | $ 140,000 | $ 140,000 | 1 | 1 | 1 | $ 126,000 | $ 140,000 | $ 175,000 | $ 140,000 | | | $ 140,000.00 | $ 140,000.00 | $ 175,000.00 | $ 35,000.00 | $ 1,225,000,000.00 |
| 1.12 | Allowance for railway crossing - assume 15m x DN250 steel sleeve (micro tunneled/ pipe jacked) | No | 2 | $ 100,000 | $ 200,000 | 1 | 2 | 2 | $ 90,000 | $ 100,000 | $ 125,000 | $ 200,000 | | | $ 100,000.00 | $ 200,000.00 | $ 250,000.00 | $ 50,000.00 | $ 2,500,000,000.00 |
| | **Subtotal - Wastewater Rising Main** | | | **$ 2,702,200** | | | | | | | | | | | | | | | |
| **2.0** | **WASTEWATER PUMP STATION** | | | | | | | | | | | | | | | | | | |
| | **New Pump Station** | | | | | | | | | | | | | | | | | | |
| 2.1 | Supply and installation of 3.5m diameter, 5-6m deep pre-fabricated GRP wet well, including cover slab & McBerns type cover. Assumes some local gravity network to be intercepted | LS | 0 | $ 420,000 | $ - | 1 | 0 | 1 | $ 378,000 | $ 420,000 | $ 630,000 | $ - | Assume pump station wet well structural dimensions similar to the new Clyde PS. | | $ 420,000.00 | $ - | $ 630,000.00 | $ 630,000.00 | $ 396,900,000,000.00 |
| 2.2 | Supply and installation of 3 x submersible sewage pumps; 63 kW - 84 L/s and 50m TDH. | LS | 1 | $ 300,000 | $ 300,000 | 1 | 1 | 1 | $ 270,000 | $ 300,000 | $ 450,000 | $ 300,000 | | | $ 300,000.00 | $ 300,000.00 | $ 450,000.00 | $ 150,000.00 | $ 22,500,000,000.00 |
| 2.3 | Supply and installation of valve chamber including 3 x non-return valves, 3 x isolation valves, DN150. | LS | 0 | $ 110,000 | $ - | 1 | 0 | 1 | $ 99,000 | $ 110,000 | $ 165,000 | $ - | | | $ 110,000.00 | $ - | $ 165,000.00 | $ 165,000.00 | $ 27,225,000,000.00 |
| 2.4 | Emergency Storage; 215m3, allow for buried GRP tanks manifolded. | LS | 1 | $ 600,000 | $ 600,000 | 1 | 1 | 1 | $ 540,000 | $ 600,000 | $ 750,000 | $ 600,000 | | | $ 600,000.00 | $ 600,000.00 | $ 750,000.00 | $ 150,000.00 | $ 22,500,000,000.00 |
| 2.5 | Electrical installation. Including supply and installation of local cabinet/MCC | LS | 1 | $ 60,000 | $ 60,000 | 1 | 1 | 1 | $ 54,000 | $ 60,000 | $ 90,000 | $ 60,000 | | | $ 60,000.00 | $ 60,000.00 | $ 90,000.00 | $ 30,000.00 | $ 900,000,000.00 |
| 2.6 | Civil site works including a small controls building. | LS | 0 | $ 200,000 | $ - | 1 | 0 | 1 | $ 180,000 | $ 200,000 | $ 300,000 | $ - | | | $ 200,000.00 | $ - | $ 300,000.00 | $ 300,000.00 | $ 90,000,000,000.00 |
| 2.7 | Commissioning of pump station. | LS | 1 | $ 10,000 | $ 10,000 | 1 | 1 | 1 | $ 9,000 | $ 10,000 | $ 15,000 | $ 10,000 | | | $ 10,000.00 | $ 10,000.00 | $ 15,000.00 | $ 5,000.00 | $ 25,000,000.00 |
| | **Subtotal - Wastewater Pump Station** | | | **$ 970,000** | | | | | | | | | | | | | | | |
| | **Subtotal - Net Construction Cost Estimate** | | | | **$ 3,672,200** | | | | | | | | | | | | | | |
| **3.0** | **MAIN CONTRACTOR OVERHEAD COSTS** | | | | | | | | | | | | | | | | | | |
| 3.1 | **On-site Overheads:** | | | | | | | | | | | | | | | | | | |
| 3.1A | Pipelines | % | 15% | $ 2,702,200 | $ 405,330 | 13% | 15% | 20% | $ 2,702,200 | $ 2,702,200 | $ 2,702,200 | $ 405,330 | | | $ 351,286 | $ 405,330 | $ 540,440 | $ 135,110 | $ 18,254,712,100 |
| 3.1B | Pump Stations | % | 25% | $ 970,000 | $ 242,500 | 20% | 25% | 30% | $ 970,000 | $ 970,000 | $ 970,000 | $ 242,500 | | | $ 194,000 | $ 242,500 | $ 291,000 | $ 48,500 | $ 2,352,250,000 |
| 3.1C | Traffic management | m | 4,600 | $ 50 | $ 230,000 | 4600 | 4600 | 4600 | $ 20 | $ 50 | $ 60 | $ 230,000 | | | $ 230,000 | $ 230,000 | $ 276,000 | $ 46,000 | $ 2,116,000,000 |
| | Check: | % | 9% | | | | | | | | | | | | | | | | |
| 3.2 | **Off-site Overheads:** | | | | | | | | | | | | | | | | | | |
| | Main Contractor Off-site Overheads and Profit Margin is included in the rates. | LS | 1 | | included | | | | $ - | $ - | $ - | $ - | | | $ - | $ - | $ - | $ - | $ - |
| | **Subtotal - Main Contractor Overheads** | | 24% | **$ 877,830** | | | | | | | | | expect around 15-20% P&G for pipeline, 20-25% for pump station works. | Watermain and Wastewater main tenders ranged from 11% - 16% for pipeline works | | | | | |
| | **Subtotal - Gross Construction Cost Estimate** | | | | **$ 4,550,030** | | | | | | | | | | | | | | |
| **4.0** | **FEES** | | | | | | | | | | | | | | | | | | |
| 4.1 | Professional Fees for design and MSQA - Pipelines | % | 8% | $ 3,348,154 | $ 267,852 | 6% | 8% | 10% | $ 3,348,154 | $ 3,348,154 | $ 3,348,154 | $ 267,852 | | | $ 200,889 | $ 267,852 | $ 334,815 | $ 66,963 | $ 4,484,054,045 |
| 4.2 | Professional Fees for design and MSQA - Pump Stations | % | 15% | $ 1,201,876 | $ 180,281 | 12% | 15% | 17% | $ 1,201,876 | $ 1,201,876 | $ 1,201,876 | $ 180,281 | | | $ 144,225 | $ 180,281 | $ 204,319 | $ 24,038 | $ 577,802,382 |
| 4.3 | Client project-related internal costs | % | 8% | $ 4,550,030 | $ 364,002 | 7% | 8% | 9% | $ 4,550,030 | $ 4,550,030 | $ 4,550,030 | $ 364,002 | To be provided by Client. | | $ 318,502 | $ 364,002 | $ 409,503 | $ 45,500 | $ 2,070,277,300 |
| 4.4 | Consenting costs | % | | $ 4,550,030 | excluded | | | | $ 4,550,030 | $ 4,550,030 | $ 4,550,030 | $ - | To be provided by Client. | | $ - | $ - | $ - | $ - | $ - |
| 4.5 | Procurement costs | % | 2% | $ 4,550,030 | $ 91,001 | 1% | 2% | 3% | $ 4,550,030 | $ 4,550,030 | $ 4,550,030 | $ 91,001 | To be provided by Client. | | $ 45,500 | $ 91,001 | $ 136,501 | $ 45,500 | $ 2,070,277,300 |
| | **Subtotal - Fees** | | 20% | **$ 903,137** | | | | | | | | | | | | | | | |
| **5.0** | **PROPERTY COSTS** | | | | | | | | | | | | | | | | | | |
| 5.1 | Property costs - land purchase | LS | 1 | | excluded | 0 | 0 | 0 | $ 100,000 | $ - | $ 300,000 | $ - | Allowance only. Subject to further investigation. | | $ - | $ - | $ - | $ - | $ - |
| 5.2 | Property costs - easements | LS | 1 | | excluded | 0 | 0 | 0 | $ 20,000 | $ - | $ 70,000 | $ - | Allowance only. | | $ - | $ - | $ - | $ - | $ - |
| | **Subtotal - Property Costs** | | | **$ -** | | | | | | | | | | | | | | | |
| | **Subtotal** | | | | **$ 5,453,167** | | | | | | | | | | | | | | |
| **6.0** | **RISK ALLOWANCES** | | | | | | | | | | | | | | | | | | |
| 6.1 | Allowance for Design Development Contingency | % | 20% | $ 5,453,167 | $ 1,090,633 | 10% | 20% | 30% | $ 5,453,167 | $ 5,453,167 | $ 5,453,167 | $ 1,090,633 | | | $ 545,317 | $ 1,090,633 | $ 1,635,950 | $ 545,317 | $ 297,370,272,871 |
| 6.2 | Allowance for Construction Phase Risk Contingency | % | 10% | $ 5,453,167 | $ 545,317 | 8% | 10% | 20% | $ 5,453,167 | $ 5,453,167 | $ 5,453,167 | $ 545,317 | | | $ 436,253 | $ 545,317 | $ 1,090,633 | $ 545,317 | $ 297,370,272,871 |
| 6.3 | FOREX risk supply costs | % | 10% | $ 5,453,167 | excluded | 2% | 10% | 15% | $ 5,453,167 | $ 5,453,167 | $ 5,453,167 | $ - | | | | | | | |
| 6.4 | General cost escalation | % | 10% | $ 5,453,167 | excluded | 7% | 10% | 15% | $ 5,453,167 | $ 5,453,167 | $ 5,453,167 | $ - | | | | | | | |
| | **Subtotal - Risk Allowances** | | 36% | **$ 1,635,950** | | | | | | | | | | | | | | | |
| | Rounding | LS | 1 | $ 883 | $ 883 | | | | | | | | | | | | | | |
| | **Total Expected Estimate** | **Most Likely** | | | **$ 7,090,000** | | | | | | | | | | **$ 6,547,353** | **$ 7,089,117** | **$ 10,999,186** | **$ 3,910,070** | **$ 1,511,915,361,993** |
| | | | | Check: | $ 7,090,000 | | | | | | | | | | Base | Most Likely | Maximum | Sq.Root of Sum | **$ 1,229,600** |

| Summary | Estimate | % of Base |
|---|---|---|
| Base Estimate | 6,550,000 | |
| Most Likely Estimate (P50) | 7,090,000 | 108% |
| P95 Confidence Level Estimate | 8,320,000 | 127% |
| Maximum Estimate | 11,000,000 | 168% |

| Summary | Estimate | % of Base | |
|---|---|---|---|
| Base Estimate | 6,550,000 | | |
| Most Likely Estimate (P50) | 7,090,000 | 108% | Over ML |
| P95 Confidence Level Estimate | 8,320,000 | 127% | 117% |
| Maximum Estimate | 11,000,000 | 168% | |

**CONCEPT STAGE COST ESTIMATE**

**Northern Business Case - Pumping and Conveyance**

**Option A: Ngaruawahia to Horotui (2041)**

**Supply and Installation of PE Pipe, pump station and associated equipment and fittings.**

| | | | | | | Quantity | | | Rate $ | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Item** | | **Unit** | **Quantity** | **Rate** | **Total - Most Likely** | **Min** | **ML** | **Max** | **Min** | **ML** | **Max** | **Most Likely $** |
| **1.0** | **WASTEWATER RISING MAIN** | | | | | | | | | | | |
| 1.1 | Supply and install PE100 PN16 rising main generally trenched 0-2.0m deep; including, but not limited to: welding, excavation, bedding, backfilling, and reinstatement outside road. | | | | | | | | | | | |
| 1.1A | DN500 PN16 | m | 10,400 | $ 838 | $ 8,715,200 | 9,360 | 10,400 | 11,440 | $ 754 | $ 838 | $ 1,048 | $ 8,715,200 |
| 1.1B | DN315 PN16 | m | 10,400 | $ 514 | $ 5,345,600 | 9,360 | 10,400 | 11,440 | $ 463 | $ 514 | $ 643 | $ 5,345,600 |
| 1.2 | Extra over for additional deeper trenching 2-3m deep. | m | 2,100 | $ 320 | $ 672,000 | 1,890 | 2,100 | 2,310 | $ 288 | $ 320 | $ 400 | $ 672,000 |
| 1.3 | Extra over item to reinstate sealed road. | m | 1,600 | $ 360 | $ 576,000 | 1,440 | 1,600 | 1,760 | $ 324 | $ 360 | $ 450 | $ 576,000 |
| 1.4 | Extra over item to reinstate berm/unsealed road. | m | 19,200 | $ 60 | $ 1,152,000 | 17,280 | 19,200 | 21,120 | $ 54 | $ 60 | $ 75 | $ 1,152,000 |
| 1.5 | Air Valve. Assume offline configuration and located in an above-ground chamber at the side of the road. | each | 18 | $ 15,000 | $ 270,000 | 18 | 18 | 19 | $ 13,500 | $ 15,000 | $ 18,750 | $ 270,000 |
| 1.6 | Isolation Valve. Assume direct buried. | each | 22 | $ 10,000 | $ 220,000 | 22 | 22 | 23 | $ 9,000 | $ 10,000 | $ 12,500 | $ 220,000 |
| 1.7 | Scour Valve. Assume offline configuration and located in a below-ground chamber at the side of the road. | each | 18 | $ 16,000 | $ 288,000 | 18 | 18 | 19 | $ 14,400 | $ 16,000 | $ 20,000 | $ 288,000 |
| 1.8 | Hydrostatic testing of wastewater pipeline. | LS | 1 | $ 100,000 | $ 100,000 | 1 | 1 | 1 | $ 90,000 | $ 100,000 | $ 125,000 | $ 100,000 |
| 1.9 | Allowance for minor stream crossing | No | 1 | $ 20,000 | $ 20,000 | 0 | 1 | 1 | $ 18,000 | $ 20,000 | $ 25,000 | $ 20,000 |
| 1.10 | Allowance for major stream crossing | No | 0 | $ 100,000 | $ - | 0 | 0 | 0 | $ 90,000 | $ 100,000 | $ 125,000 | $ - |
| 1.11 | Allowance for bridge crossing | No | 1 | $ 2,500,000 | $ 2,500,000 | 1 | 1 | 1 | $ 2,250,000 | $ 2,500,000 | $ 3,125,000 | $ 2,500,000 |
| 1.12 | Allowance for railway crossing - assume 10m x DN550 steel sleeve (micro tunneled/ pipe jacked) | No | 1 | $ 80,000 | $ 80,000 | 1 | 1 | 1 | $ 72,000 | $ 80,000 | $ 100,000 | $ 80,000 |
| 1.13 | Allowance for railway crossing - assume 10m x DN400 steel sleeve (micro tunneled/ pipe jacked) | No | 1 | $ 80,000 | $ 80,000 | 1 | 1 | 1 | $ 72,000 | $ 80,000 | $ 100,000 | $ 80,000 |
| | **Subtotal - Wastewater Rising Main** | | | **$ 20,018,800** | | | | | | | | |
| **2.0** | **WASTEWATER PUMP STATION** | | | | | | | | | | | |
| | **New Pump Station** | | | | | | | | | | | |
| 2.1 | Supply and installation of 4m diameter, 5-6m deep pre-fabricated GRP wet well, including cover slab & McBerns type cover. Assumes some local gravity network to be intercepted | LS | 0 | $ 450,000 | $ - | 1 | 0 | 1 | $ 405,000 | $ 450,000 | $ 675,000 | $ - |
| 2.2 | Supply and installation of 3 x submersible sewage pumps; 186 kW - 209 L/s and 54m TDH. | LS | 1 | $ 470,000 | $ 470,000 | 1 | 1 | 1 | $ 423,000 | $ 470,000 | $ 705,000 | $ 470,000 |
| 2.3 | Supply and installation of valve chamber including 3 x non-return valves, 3 x isolation valves, DN250 | LS | 0 | $ 115,000 | $ - | 1 | 0 | 1 | $ 103,500 | $ 115,000 | $ 172,500 | $ - |
| 2.4 | Emergency Storage; 1719m3, allow for buried GRP tanks manifolded. | LS | 1 | $ 3,400,000 | $ 3,400,000 | 1 | 1 | 1 | $ 3,060,000 | $ 3,400,000 | $ 4,250,000 | $ 3,400,000 |
| 2.5 | Electrical installation. Including supply and installation of local cabinet/MCC, supply and installation of level instrumentation, power and comms cabling and ducts from main switchboard, emergency generator connection, and flowmeter in chamber. | LS | 1 | $ 200,000 | $ 200,000 | 1 | 1 | 1 | $ 180,000 | $ 200,000 | $ 300,000 | $ 200,000 |
| 2.6 | Civil site works including a small controls building. | LS | 0 | $ 200,000 | $ - | 1 | 0 | 1 | $ 180,000 | $ 200,000 | $ 300,000 | $ - |
| 2.7 | Supply and install of permanent standby generator | LS | 1 | $ 80,000 | $ 80,000 | 1 | 1 | 1 | $ 72,000 | $ 80,000 | $ 120,000 | $ 80,000 |
| 2.8 | Commissioning of pump station. | LS | 1 | $ 10,000 | $ 10,000 | 1 | 1 | 1 | $ 9,000 | $ 10,000 | $ 15,000 | $ 10,000 |
| | **Subtotal - Wastewater Pump Station** | | | **$ 4,160,000** | | | | | | | | |
| | **Subtotal - Net Construction Cost Estimate** | | | | **$ 24,178,800** | | | | | | | |
| **3.0** | **MAIN CONTRACTOR OVERHEAD COSTS** | | | | | | | | | | | |
| 3.1 | **On-site Overheads:** | | | | | | | | | | | |
| 3.1A | Pipelines | % | 15% | $ 20,018,800 | $ 3,002,820 | 13% | 15% | 20% | $ 20,018,800 | $ 20,018,800 | $ 20,018,800 | $ 3,002,820 |
| 3.1B | Pump Stations | % | 25% | $ 4,160,000 | $ 1,040,000 | 20% | 25% | 30% | $ 4,160,000 | $ 4,160,000 | $ 4,160,000 | $ 1,040,000 |
| 3.1C | Traffic management | m | 20,800 | $ 50 | $ 1,040,000 | 20800 | 20800 | 20800 | $ 20 | $ 50 | $ 60 | $ 1,040,000 |
| | Check: | % | 5% | | | | | | | | | |
| 3.2 | **Off-site Overheads:** | | | | | | | | | | | |
| | Main Contractor Off-site Overheads and Profit Margin is included in the rates. | LS | 1 | | included | | | | $ - | $ - | $ - | $ - |
| | **Subtotal - Main Contractor Overheads** | | 21% | **$ 5,082,820** | | | | | | | | |
| | **Subtotal - Gross Construction Cost Estimate** | | | | **$ 29,261,620** | | | | | | | |
| **4.0** | **FEES** | | | | | | | | | | | |
| 4.1 | Professional Fees for design and MSQA - Pipelines | % | 8% | $ 24,227,113 | $ 1,938,169 | 6% | 8% | 10% | $ 24,227,113 | $ 24,227,113 | $ 24,227,113 | $ 1,938,169 |
| 4.2 | Professional Fees for design and MSQA - Pump Stations | % | 15% | $ 5,034,507 | $ 755,176 | 12% | 15% | 17% | $ 5,034,507 | $ 5,034,507 | $ 5,034,507 | $ 755,176 |
| 4.3 | Client project-related internal costs | % | 8% | $ 29,261,620 | $ 2,340,930 | 7% | 8% | 9% | $ 29,261,620 | $ 29,261,620 | $ 29,261,620 | $ 2,340,930 |
| 4.4 | Consenting costs | % | | $ 29,261,620 | excluded | | | | $ 29,261,620 | $ 29,261,620 | $ 29,261,620 | $ - |
| 4.5 | Procurement costs | % | 2% | $ 29,261,620 | $ 585,232 | 1% | 2% | 3% | $ 29,261,620 | $ 29,261,620 | $ 29,261,620 | $ 585,232 |
| | **Subtotal - Fees** | | 19% | **$ 5,619,507** | | | | | | | | |
| **5.0** | **PROPERTY COSTS** | | | | | | | | | | | |
| 5.1 | Property costs - land purchase | LS | 1 | | excluded | 0 | 0 | 0 | $ 100,000 | $ - | $ 300,000 | $ - |
| 5.2 | Property costs - easements | LS | 1 | | excluded | 0 | 0 | 0 | $ 20,000 | $ - | $ 70,000 | $ - |
| | **Subtotal - Property Costs** | | | **$ -** | | | | | | | | |
| | **Subtotal** | | | | **$ 34,881,127** | | | | | | | |
| **6.0** | **RISK ALLOWANCES** | | | | | | | | | | | |
| 6.1 | Allowance for Design Development Contingency | % | 20% | $ 34,881,127 | $ 6,976,225 | 10% | 20% | 30% | $ 34,881,127 | $ 34,881,127 | $ 34,881,127 | $ 6,976,225 |
| 6.2 | Allowance for Construction Phase Risk Contingency | % | 10% | $ 34,881,127 | $ 3,488,113 | 8% | 10% | 20% | $ 34,881,127 | $ 34,881,127 | $ 34,881,127 | $ 3,488,113 |
| 6.3 | FOREX risk supply costs | % | 10% | $ 34,881,127 | excluded | 2% | 10% | 15% | $ 34,881,127 | $ 34,881,127 | $ 34,881,127 | $ - |
| 6.4 | General cost escalation | % | 10% | $ 34,881,127 | excluded | 7% | 10% | 15% | $ 34,881,127 | $ 34,881,127 | $ 34,881,127 | $ - |
| | **Subtotal - Risk Allowances** | | 36% | **$ 10,464,338** | | | | | | | | |
| | Rounding | LS | 1 | $ 4,535 | $ 4,535 | | | | | | | |
| | **Total Expected Estimate** | **Most Likely** | | | **$ 45,350,000** | | | | | | | |
| | | | | Check: | $ 45,350,000 | | | | | | | |

| Summary | Estimate | % of Base |
|---|---|---|
| Base Estimate | 38,430,000 | |
| Most Likely Estimate (P50) | 45,350,000 | 118% |
| P95 Confidence Level Estimate | 51,870,000 | 135% |
| Maximum Estimate | 64,400,000 | 168% |

**CONCEPT STAGE COST ESTIMATE**

**Northern Business Case - Pumping and Conveyance**

**Option A: Ngaruawahia to Horotui (2061)**

**Supply and Installation of PE Pipe, pump station and associated equipment and fittings.**

| | | | | | | Quantity | | | Rate $ | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Item** | | **Unit** | **Quantity** | **Rate** | **Total - Most Likely** | **Min** | **ML** | **Max** | **Min** | **ML** | **Max** | **Most Likely $** |
| **1.0** | **WASTEWATER RISING MAIN** | | | | | | | | | | | |
| 1.1 | Supply and install PE100 PN16 rising main generally trenched 0-2.0m deep; including, but not limited to: welding, excavation, bedding, backfilling, and reinstatement outside road. | | | | | | | | | | | |
| 1.1A | DN500 PN16 | m | 0 | $ 838 | $ - | 0 | 0 | 0 | $ 754 | $ 838 | $ 1,048 | $ - |
| 1.1B | DN315 PN16 | m | 0 | $ 514 | $ - | 0 | 0 | 0 | $ 463 | $ 514 | $ 643 | $ - |
| 1.2 | Extra over for additional deeper trenching 2-3m deep. | m | 0 | $ 320 | $ - | 0 | 0 | 0 | $ 288 | $ 320 | $ 400 | $ - |
| 1.3 | Extra over item to reinstate sealed road. | m | 0 | $ 360 | $ - | 0 | 0 | 0 | $ 324 | $ 360 | $ 450 | $ - |
| 1.4 | Extra over item to reinstate berm/unsealed road. | m | 0 | $ 60 | $ - | 0 | 0 | 0 | $ 54 | $ 60 | $ 75 | $ - |
| 1.5 | Air Valve. Assume offline configuration and located in an above-ground chamber at the side of the road. | each | 0 | $ 15,000 | $ - | 0 | 0 | 0 | $ 13,500 | $ 15,000 | $ 18,750 | $ - |
| 1.6 | Isolation Valve. Assume direct buried. | each | 0 | $ 10,000 | $ - | 0 | 0 | 0 | $ 9,000 | $ 10,000 | $ 12,500 | $ - |
| 1.7 | Scour Valve. Assume offline configuration and located in a below-ground chamber at the side of the road. | each | 0 | $ 16,000 | $ - | 0 | 0 | 0 | $ 14,400 | $ 16,000 | $ 20,000 | $ - |
| 1.8 | Hydrostatic testing of wastewater pipeline. | LS | 0 | $ 100,000 | $ - | 1 | 0 | 0 | $ 90,000 | $ 100,000 | $ 125,000 | $ - |
| 1.9 | Allowance for minor stream crossing | No | 0 | $ 20,000 | $ - | 0 | 0 | 0 | $ 18,000 | $ 20,000 | $ 25,000 | $ - |
| 1.10 | Allowance for major stream crossing | No | 0 | $ 100,000 | $ - | 0 | 0 | 0 | $ 90,000 | $ 100,000 | $ 125,000 | $ - |
| 1.11 | Allowance for bridge crossing | No | 0 | $ 1,500,000 | $ - | 0 | 0 | 0 | $ 1,350,000 | $ 1,500,000 | $ 1,875,000 | $ - |
| 1.12 | Allowance for railway crossing - assume 10m x DN550 steel sleeve (micro tunneled/ pipe jacked) | No | 0 | $ 80,000 | $ - | 0 | 0 | 0 | $ 72,000 | $ 80,000 | $ 100,000 | $ - |
| 1.13 | Allowance for railway crossing - assume 10m x DN400 steel sleeve (micro tunneled/ pipe jacked) | No | 0 | $ 80,000 | $ - | 0 | 0 | 0 | $ 72,000 | $ 80,000 | $ 100,000 | $ - |
| | **Subtotal - Wastewater Rising Main** | | | **$ -** | | | | | | | | |
| **2.0** | **WASTEWATER PUMP STATION** | | | | | | | | | | | |
| | **New Pump Station** | | | | | | | | | | | |
| 2.1 | Supply and installation of 2.5m diameter, 5-6m deep pre-fabricated GRP wet well, including cover slab & McBerns type cover. Assumes some local gravity network to be intercepted | LS | 1 | $ 340,000 | $ 340,000 | 1 | 1 | 1 | $ 306,000 | $ 340,000 | $ 510,000 | $ 340,000 |
| 2.2 | Supply and installation of 3 x submersible sewage pumps; 78 kW - 61 L/s and 73m TDH. | LS | 1 | $ 320,000 | $ 320,000 | 1 | 1 | 1 | $ 288,000 | $ 320,000 | $ 480,000 | $ 320,000 |
| 2.3 | Supply and installation of valve chamber including 3 x non-return valves, 3 x isolation valves, DN200 | LS | 1 | $ 115,000 | $ 115,000 | 1 | 1 | 1 | $ 103,500 | $ 115,000 | $ 172,500 | $ 115,000 |
| 2.4 | Emergency Storage; 543m3, allow for buried GRP tanks manifolded. | LS | 1 | $ 1,400,000 | $ 1,400,000 | 1 | 1 | 1 | $ 1,260,000 | $ 1,400,000 | $ 1,750,000 | $ 1,400,000 |
| 2.5 | Electrical installation. Including supply and installation of local cabinet/MCC, supply and installation of level instrumentation, power and comms cabling and ducts from main switchboard, emergency generator connection, and flowmeter in chamber. | LS | 1 | $ 200,000 | $ 200,000 | 1 | 1 | 1 | $ 180,000 | $ 200,000 | $ 300,000 | $ 200,000 |
| 2.6 | Civil site works including a small controls building. | LS | 1 | $ 200,000 | $ 200,000 | 1 | 1 | 1 | $ 180,000 | $ 200,000 | $ 300,000 | $ 200,000 |
| 2.7 | Supply and install of permanent standby generator | LS | 0 | $ 80,000 | $ - | 1 | 0 | 1 | $ 72,000 | $ 80,000 | $ 120,000 | $ - |
| 2.8 | Commissioning of pump station. | LS | 1 | $ 10,000 | $ 10,000 | 1 | 1 | 1 | $ 9,000 | $ 10,000 | $ 15,000 | $ 10,000 |
| | **Subtotal - Wastewater Pump Station** | | | **$ 2,585,000** | | | | | | | | |
| | **Subtotal - Net Construction Cost Estimate** | | | | **$ 2,585,000** | | | | | | | |
| **3.0** | **MAIN CONTRACTOR OVERHEAD COSTS** | | | | | | | | | | | |
| 3.1 | **On-site Overheads:** | | | | | | | | | | | |
| 3.1A | Pipelines | % | 15% | $ - | $ - | 13% | 15% | 20% | $ - | $ - | $ - | $ - |
| 3.1B | Pump Stations | % | 25% | $ 2,585,000 | $ 646,250 | 20% | 25% | 30% | $ 2,585,000 | $ 2,585,000 | $ 2,585,000 | $ 646,250 |
| 3.1C | Traffic management | m | 0 | $ 50 | $ - | 0 | 0 | 0 | $ 20 | $ 50 | $ 60 | $ - |
| | Check: | % | 0% | | | | | | | | | |
| 3.2 | **Off-site Overheads:** | | | | | | | | | | | |
| | Main Contractor Off-site Overheads and Profit Margin is included in the rates. | LS | 1 | | included | | | | $ - | $ - | $ - | $ - |
| | **Subtotal - Main Contractor Overheads** | | 25% | **$ 646,250** | | | | | | | | |
| | **Subtotal - Gross Construction Cost Estimate** | | | | **$ 3,231,250** | | | | | | | |
| **4.0** | **FEES** | | | | | | | | | | | |
| 4.1 | Professional Fees for design and MSQA - Pipelines | % | 8% | $ - | $ - | 6% | 8% | 10% | $ - | $ - | $ - | $ - |
| 4.2 | Professional Fees for design and MSQA - Pump Stations | % | 15% | $ 3,231,250 | $ 484,688 | 12% | 15% | 17% | $ 3,231,250 | $ 3,231,250 | $ 3,231,250 | $ 484,688 |
| 4.3 | Client project-related internal costs | % | 8% | $ 3,231,250 | $ 258,500 | 7% | 8% | 9% | $ 3,231,250 | $ 3,231,250 | $ 3,231,250 | $ 258,500 |
| 4.4 | Consenting costs | % | | $ 3,231,250 | excluded | | | | $ 3,231,250 | $ 3,231,250 | $ 3,231,250 | $ - |
| 4.5 | Procurement costs | % | 2% | $ 3,231,250 | $ 64,625 | 1% | 2% | 3% | $ 3,231,250 | $ 3,231,250 | $ 3,231,250 | $ 64,625 |
| | **Subtotal - Fees** | | 25% | **$ 807,813** | | | | | | | | |
| **5.0** | **PROPERTY COSTS** | | | | | | | | | | | |
| 5.1 | Property costs - land purchase | LS | 1 | | excluded | 0 | 0 | 0 | $ 100,000 | $ - | $ 300,000 | $ - |
| 5.2 | Property costs - easements | LS | 1 | | excluded | 0 | 0 | 0 | $ 20,000 | $ - | $ 70,000 | $ - |
| | **Subtotal - Property Costs** | | | **$ -** | | | | | | | | |
| | **Subtotal** | | | | **$ 4,039,063** | | | | | | | |
| **6.0** | **RISK ALLOWANCES** | | | | | | | | | | | |
| 6.1 | Allowance for Design Development Contingency | % | 20% | $ 4,039,063 | $ 807,813 | 10% | 20% | 30% | $ 4,039,063 | $ 4,039,063 | $ 4,039,063 | $ 807,813 |
| 6.2 | Allowance for Construction Phase Risk Contingency | % | 10% | $ 4,039,063 | $ 403,906 | 8% | 10% | 20% | $ 4,039,063 | $ 4,039,063 | $ 4,039,063 | $ 403,906 |
| 6.3 | FOREX risk supply costs | % | 10% | $ 4,039,063 | excluded | 2% | 10% | 15% | $ 4,039,063 | $ 4,039,063 | $ 4,039,063 | $ - |
| 6.4 | General cost escalation | % | 10% | $ 4,039,063 | excluded | 7% | 10% | 15% | $ 4,039,063 | $ 4,039,063 | $ 4,039,063 | $ - |
| | **Subtotal - Risk Allowances** | | 38% | **$ 1,211,719** | | | | | | | | |
| | Rounding | LS | 1 | -$ 781 | -$ 781 | | | | | | | |
| | **Total Expected Estimate** | **Most Likely** | | | **$ 5,250,000** | | | | | | | |
| | | | | Check: | $ 5,250,000 | | | | | | | |

| Summary | Estimate | % of Base |
|---|---|---|
| Base Estimate | 4,660,000 | |
| Most Likely Estimate (P50) | 5,250,000 | 113% |
| P95 Confidence Level Estimate | 6,000,000 | 129% |
| Maximum Estimate | 7,380,000 | 158% |

**CONCEPT STAGE COST ESTIMATE**

**Northern Business Case - Pumping and Conveyance**

**Option A: Horotui to Pukete WWTP (2041)**

**Supply and Installation of PE Pipe, pump station and associated equipment and fittings.**

| | | | | | | Quantity | | | Rate $ | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Item** | | **Unit** | **Quantity** | **Rate** | **Total - Most Likely** | **Min** | **ML** | **Max** | **Min** | **ML** | **Max** | **Most Likely $** |
| **1.0** | **WASTEWATER RISING MAIN** | | | | | | | | | | | |
| 1.1 | Supply and install PE100 PN16 rising main generally trenched 0-2.0m deep; including, but not limited to: welding, excavation, bedding, backfilling, and reinstatement outside road. | | | | | | | | | | | |
| 1.1A | DN610 PN16 | m | 5,500 | $ 1,124 | $ 6,182,000 | 4,950 | 5,500 | 6,050 | $ 1,012 | $ 1,124 | $ 1,405 | $ 6,182,000 |
| 1.1B | DN315 PN16 | m | 5,500 | $ 514 | $ 2,827,000 | 4,950 | 5,500 | 6,050 | $ 463 | $ 514 | $ 643 | $ 2,827,000 |
| 1.2 | Extra over for additional deeper trenching 2-3m deep. | m | 1,100 | $ 460 | $ 506,000 | 990 | 1,100 | 1,210 | $ 414 | $ 460 | $ 575 | $ 506,000 |
| 1.3 | Extra over item to reinstate sealed road. | m | 600 | $ 440 | $ 264,000 | 540 | 600 | 660 | $ 396 | $ 440 | $ 550 | $ 264,000 |
| 1.4 | Extra over item to reinstate berm/unsealed road. | m | 4,900 | $ 80 | $ 392,000 | 4,410 | 4,900 | 5,390 | $ 72 | $ 80 | $ 100 | $ 392,000 |
| 1.5 | Air Valve. Assume offline configuration and located in an above-ground chamber at the side of the road. | each | 10 | $ 35,000 | $ 350,000 | 10 | 10 | 11 | $ 31,500 | $ 35,000 | $ 43,750 | $ 350,000 |
| 1.6 | Scour Valve. Assume offline configuration and located in a below-ground chamber at the side of the road. | each | 10 | $ 40,000 | $ 400,000 | 10 | 10 | 11 | $ 36,000 | $ 40,000 | $ 50,000 | $ 400,000 |
| 1.7 | Hydrostatic testing of wastewater pipeline. | LS | 1 | $ 100,000 | $ 100,000 | 1 | 1 | 1 | $ 90,000 | $ 100,000 | $ 125,000 | $ 100,000 |
| 1.8 | Allowance for minor stream crossing | No | 0 | $ 10,000 | $ - | 0 | 0 | 1 | $ 9,000 | $ 10,000 | $ 12,500 | $ - |
| 1.9 | Allowance for major stream crossing | No | 0 | $ 100,000 | $ - | 0 | 0 | 1 | $ 90,000 | $ 100,000 | $ 125,000 | $ - |
| 1.10 | Allowance for bridge crossing | No | 0 | $ 150,000 | $ - | 0 | 0 | 0 | $ 135,000 | $ 150,000 | $ 187,500 | $ - |
| 1.11 | Allowance for railway crossing | No | 0 | $ 200,000 | $ - | 0 | 0 | 0 | $ 180,000 | $ 200,000 | $ 250,000 | $ - |
| | **Subtotal - Wastewater Rising Main** | | | **$ 11,021,000** | | | | | | | | |
| **2.0** | **WASTEWATER PUMP STATION** | | | | | | | | | | | |
| | **New Pump Station** | | | | | | | | | | | |
| 2.1 | Supply and installation of 5m diameter, 6-7m deep pre-fabricated GRP wet well, including cover slab & McBerns type cover. Assumes some local gravity network to be intercepted | LS | 1 | $ 610,000 | $ 610,000 | 1 | 1 | 1 | $ 549,000 | $ 610,000 | $ 915,000 | $ 610,000 |
| 2.2 | Supply and installation of 3 x submersible sewage pumps; 138 kW - 304 L/s and 32m TDH. | LS | 1 | $ 360,000 | $ 360,000 | 1 | 1 | 1 | $ 324,000 | $ 360,000 | $ 540,000 | $ 360,000 |
| 2.3 | Supply and installation of valve chamber including 3 x non-return valves, 3 x isolation valves, DN400. | LS | 1 | $ 125,000 | $ 125,000 | 1 | 1 | 1 | $ 112,500 | $ 125,000 | $ 187,500 | $ 125,000 |
| 2.4 | Emergency Storage; 2565m3, allow for buried GRP tanks manifolded. | LS | 1 | $ 5,100,000 | $ 5,100,000 | 1 | 1 | 1 | $ 4,590,000 | $ 5,100,000 | $ 6,375,000 | $ 5,100,000 |
| 2.5 | Electrical installation. Including supply and installation of local cabinet/MCC, supply and installation of level instrumentation, power and comms cabling and ducts from main switchboard, emergency generator connection, and flowmeter in chamber. | LS | 1 | $ 200,000 | $ 200,000 | 1 | 1 | 1 | $ 180,000 | $ 200,000 | $ 300,000 | $ 200,000 |
| 2.6 | Civil site works including a small controls building. | LS | 1 | $ 200,000 | $ 200,000 | 1 | 1 | 1 | $ 180,000 | $ 200,000 | $ 300,000 | $ 200,000 |
| 2.7 | Supply and install of permanent standby generator | LS | 1 | $ 80,000 | $ 80,000 | 1 | 1 | 1 | $ 72,000 | $ 80,000 | $ 120,000 | $ 80,000 |
| 2.8 | Commissioning of pump station. | LS | 1 | $ 10,000 | $ 10,000 | 1 | 1 | 1 | $ 9,000 | $ 10,000 | $ 15,000 | $ 10,000 |
| | **Subtotal - Wastewater Pump Station** | | | **$ 6,685,000** | | | | | | | | |
| | **Subtotal - Net Construction Cost Estimate** | | | | **$ 17,706,000** | | | | | | | |
| **3.0** | **MAIN CONTRACTOR OVERHEAD COSTS** | | | | | | | | | | | |
| 3.1 | **On-site Overheads:** | | | | | | | | | | | |
| 3.1A | Pipelines | % | 15% | $ 11,021,000 | $ 1,653,150 | 13% | 15% | 20% | $ 11,021,000 | $ 11,021,000 | $ 11,021,000 | $ 1,653,150 |
| 3.1B | Pump Stations | % | 25% | $ 6,685,000 | $ 1,671,250 | 20% | 25% | 30% | $ 6,685,000 | $ 6,685,000 | $ 6,685,000 | $ 1,671,250 |
| 3.1C | Traffic management | m | 11,000 | $ 60 | $ 660,000 | 11000 | 11000 | 11000 | $ 20 | $ 50 | $ 60 | $ 550,000 |
| | Check: | % | 6% | | | | | | | | | |
| 3.2 | **Off-site Overheads:** | | | | | | | | | | | |
| | Main Contractor Off-site Overheads and Profit Margin is included in the rates. | LS | 1 | | included | | | | $ - | $ - | $ - | $ - |
| | **Subtotal - Main Contractor Overheads** | | 23% | **$ 3,984,400** | | | | | | | | |
| | **Subtotal - Gross Construction Cost Estimate** | | | | **$ 21,690,400** | | | | | | | |
| **4.0** | **FEES** | | | | | | | | | | | |
| 4.1 | Professional Fees for design and MSQA - Pipelines | % | 8% | $ 13,501,067 | $ 1,080,085 | 6% | 8% | 10% | $ 13,501,067 | $ 13,501,067 | $ 13,501,067 | $ 1,080,085 |
| 4.2 | Professional Fees for design and MSQA - Pump Stations | % | 15% | $ 8,189,333 | $ 1,228,400 | 12% | 15% | 17% | $ 8,189,333 | $ 8,189,333 | $ 8,189,333 | $ 1,228,400 |
| 4.3 | Client project-related internal costs | % | 8% | $ 21,690,400 | $ 1,735,232 | 7% | 8% | 9% | $ 21,690,400 | $ 21,690,400 | $ 21,690,400 | $ 1,735,232 |
| 4.4 | Consenting costs | % | | $ 21,690,400 | excluded | | | | $ 21,690,400 | $ 21,690,400 | $ 21,690,400 | $ - |
| 4.5 | Procurement costs | % | 2% | $ 21,690,400 | $ 433,808 | 1% | 2% | 3% | $ 21,690,400 | $ 21,690,400 | $ 21,690,400 | $ 433,808 |
| | **Subtotal - Fees** | | 21% | **$ 4,477,525** | | | | | | | | |
| **5.0** | **PROPERTY COSTS** | | | | | | | | | | | |
| 5.1 | Property costs - land purchase | LS | 1 | | excluded | 0 | 0 | 0 | $ 100,000 | $ - | $ 300,000 | $ - |
| 5.2 | Property costs - easements | LS | 1 | | excluded | 0 | 0 | 0 | $ 20,000 | $ - | $ 70,000 | $ - |
| | **Subtotal - Property Costs** | | | **$ -** | | | | | | | | |
| | **Subtotal** | | | | **$ 26,167,925** | | | | | | | |
| **6.0** | **RISK ALLOWANCES** | | | | | | | | | | | |
| 6.1 | Allowance for Design Development Contingency | % | 20% | $ 26,167,925 | $ 5,233,585 | 10% | 20% | 30% | $ 26,167,925 | $ 26,167,925 | $ 26,167,925 | $ 5,233,585 |
| 6.2 | Allowance for Construction Phase Risk Contingency | % | 10% | $ 26,167,925 | $ 2,616,793 | 8% | 10% | 20% | $ 26,167,925 | $ 26,167,925 | $ 26,167,925 | $ 2,616,793 |
| 6.3 | FOREX risk supply costs | % | 10% | $ 26,167,925 | excluded | 2% | 10% | 15% | $ 26,167,925 | $ 26,167,925 | $ 26,167,925 | $ - |
| 6.4 | Allowance for gravity section via microtunnelling/extra lift station (P95 only) | % | 10% | $ 26,167,925 | excluded | 7% | 10% | 15% | $ 26,167,925 | $ 26,167,925 | $ 26,167,925 | $ - |
| | **Subtotal - Risk Allowances** | | 36% | **$ 7,850,378** | | | | | | | | |
| | Rounding | LS | 1 | $ 1,697 | $ 1,697 | | | | | | | |
| | **Total Expected Estimate** | **Most Likely** | | | **$ 34,020,000** | | | | | | | |
| | | | | Check: | $ 33,910,000 | | | | | | | |

| Summary | Estimate | % of Base |
|---|---|---|
| Base Estimate | 28,250,000 | |
| Most Likely Estimate (P50) | 33,910,000 | 120% |
| P95 Confidence Level Estimate | 38,670,000 | 137% |
| Maximum Estimate | 47,330,000 | 168% |

**CONCEPT STAGE COST ESTIMATE**

**Northern Business Case - Pumping and Conveyance**

**Option A: Horotui to Pukete WWTP (2061)**

**Supply and Installation of PE Pipe, pump station and associated equipment and fittings.**

| | | | | | | Quantity | | | Rate $ | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Item** | | **Unit** | **Quantity** | **Rate** | **Total - Most Likely** | **Min** | **ML** | **Max** | **Min** | **ML** | **Max** | **Most Likely $** |
| **1.0** | **WASTEWATER RISING MAIN** | | | | | | | | | | | |
| 1.1 | Supply and install PE100 PN16 rising main generally trenched 0-2.0m deep; including, but not limited to: welding, excavation, bedding, backfilling, and reinstatement outside road. | | | | | | | | | | | |
| 1.1A | DN610 PN16 | m | 0 | $ 1,124 | $ - | 0 | 0 | 0 | $ 1,012 | $ 1,124 | $ 1,405 | $ - |
| 1.1B | DN315 PN16 | m | 0 | $ 514 | $ - | 0 | 0 | 0 | $ 463 | $ 514 | $ 643 | $ - |
| 1.2 | Extra over for additional deeper trenching 2-3m deep. | m | 0 | $ 460 | $ - | 0 | 0 | 0 | $ 414 | $ 460 | $ 575 | $ - |
| 1.3 | Extra over item to reinstate sealed road. | m | 0 | $ 440 | $ - | 0 | 0 | 0 | $ 396 | $ 440 | $ 550 | $ - |
| 1.4 | Extra over item to reinstate berm/unsealed road. | m | 0 | $ 80 | $ - | 0 | 0 | 0 | $ 72 | $ 80 | $ 100 | $ - |
| 1.5 | Air Valve. Assume offline configuration and located in an above-ground chamber at the side of the road. | each | 0 | $ 35,000 | $ - | 0 | 0 | 0 | $ 31,500 | $ 35,000 | $ 43,750 | $ - |
| 1.6 | Scour Valve. Assume offline configuration and located in a below-ground chamber at the side of the road. | each | 0 | $ 40,000 | $ - | 0 | 0 | 0 | $ 36,000 | $ 40,000 | $ 50,000 | $ - |
| 1.7 | Hydrostatic testing of wastewater pipeline. | LS | 0 | $ 100,000 | $ - | 0 | 0 | 0 | $ 90,000 | $ 100,000 | $ 125,000 | $ - |
| 1.8 | Allowance for minor stream crossing | No | 0 | $ 10,000 | $ - | 0 | 0 | 0 | $ 9,000 | $ 10,000 | $ 12,500 | $ - |
| 1.9 | Allowance for major stream crossing | No | 0 | $ 100,000 | $ - | 0 | 0 | 0 | $ 90,000 | $ 100,000 | $ 125,000 | $ - |
| 1.10 | Allowance for bridge crossing | No | 0 | $ 150,000 | $ - | 0 | 0 | 0 | $ 135,000 | $ 150,000 | $ 187,500 | $ - |
| 1.11 | Allowance for railway crossing | No | 0 | $ 200,000 | $ - | 0 | 0 | 0 | $ 180,000 | $ 200,000 | $ 250,000 | $ - |
| | **Subtotal - Wastewater Rising Main** | | | **$ -** | | | | | | | | |
| **2.0** | **WASTEWATER PUMP STATION** | | | | | | | | | | | |
| | **New Pump Station** | | | | | | | | | | | |
| 2.1 | Supply and installation of 3m diameter, 6-7m deep pre-fabricated GRP wet well, including cover slab & McBerns type cover. Assumes some local gravity network to be intercepted | LS | 1 | $ 380,000 | $ 380,000 | 1 | 1 | 1 | $ 342,000 | $ 380,000 | $ 570,000 | $ 380,000 |
| 2.2 | Supply and installation of 3 x submersible sewage pumps; 45 kW - 80 L/s and 40m TDH. | LS | 1 | $ 260,000 | $ 260,000 | 1 | 1 | 1 | $ 234,000 | $ 260,000 | $ 390,000 | $ 260,000 |
| 2.3 | Supply and installation of valve chamber including 3 x non-return valves, 3 x isolation valves, DN200. | LS | 1 | $ 110,000 | $ 110,000 | 1 | 1 | 1 | $ 99,000 | $ 110,000 | $ 165,000 | $ 110,000 |
| 2.4 | Emergency Storage; 662m3, allow for buried GRP tanks manifolded. | LS | 1 | $ 1,700,000 | $ 1,700,000 | 1 | 1 | 1 | $ 1,530,000 | $ 1,700,000 | $ 2,125,000 | $ 1,700,000 |
| 2.5 | Electrical installation. Including supply and installation of local cabinet/MCC, supply and installation of level instrumentation, power and comms cabling and ducts from main switchboard, emergency generator connection, and flowmeter in chamber. | LS | 1 | $ 200,000 | $ 200,000 | 1 | 1 | 1 | $ 180,000 | $ 200,000 | $ 300,000 | $ 200,000 |
| 2.6 | Civil site works including a small controls building. | LS | 1 | $ 200,000 | $ 200,000 | 1 | 1 | 1 | $ 180,000 | $ 200,000 | $ 300,000 | $ 200,000 |
| 2.7 | Supply and install of permanent standby generator | LS | 0 | $ 80,000 | $ - | 0 | 0 | 1 | $ 72,000 | $ 80,000 | $ 120,000 | $ - |
| 2.8 | Commissioning of pump station. | LS | 1 | $ 10,000 | $ 10,000 | 1 | 1 | 1 | $ 9,000 | $ 10,000 | $ 15,000 | $ 10,000 |
| | **Subtotal - Wastewater Pump Station** | | | **$ 2,860,000** | | | | | | | | |
| | **Subtotal - Net Construction Cost Estimate** | | | | **$ 2,860,000** | | | | | | | |
| **3.0** | **MAIN CONTRACTOR OVERHEAD COSTS** | | | | | | | | | | | |
| 3.1 | **On-site Overheads:** | | | | | | | | | | | |
| 3.1A | Pipelines | % | 15% | $ - | $ - | 13% | 15% | 20% | $ - | $ - | $ - | $ - |
| 3.1B | Pump Stations | % | 25% | $ 2,860,000 | $ 715,000 | 20% | 25% | 30% | $ 2,860,000 | $ 2,860,000 | $ 2,860,000 | $ 715,000 |
| 3.1C | Traffic management | m | 0 | $ 60 | $ - | 0 | 0 | 0 | $ 20 | $ 50 | $ 60 | $ - |
| | Check: | % | 0% | | | | | | | | | |
| 3.2 | **Off-site Overheads:** | | | | | | | | | | | |
| | Main Contractor Off-site Overheads and Profit Margin is included in the rates. | LS | 1 | | included | | | | $ - | $ - | $ - | $ - |
| | **Subtotal - Main Contractor Overheads** | | 25% | **$ 715,000** | | | | | | | | |
| | **Subtotal - Gross Construction Cost Estimate** | | | | **$ 3,575,000** | | | | | | | |
| **4.0** | **FEES** | | | | | | | | | | | |
| 4.1 | Professional Fees for design and MSQA - Pipelines | % | 8% | $ - | $ - | 6% | 8% | 10% | $ - | $ - | $ - | $ - |
| 4.2 | Professional Fees for design and MSQA - Pump Stations | % | 15% | $ 3,575,000 | $ 536,250 | 12% | 15% | 17% | $ 3,575,000 | $ 3,575,000 | $ 3,575,000 | $ 536,250 |
| 4.3 | Client project-related internal costs | % | 8% | $ 3,575,000 | $ 286,000 | 7% | 8% | 9% | $ 3,575,000 | $ 3,575,000 | $ 3,575,000 | $ 286,000 |
| 4.4 | Consenting costs | % | | $ 3,575,000 | excluded | | | | $ 3,575,000 | $ 3,575,000 | $ 3,575,000 | $ - |
| 4.5 | Procurement costs | % | 2% | $ 3,575,000 | $ 71,500 | 1% | 2% | 3% | $ 3,575,000 | $ 3,575,000 | $ 3,575,000 | $ 71,500 |
| | **Subtotal - Fees** | | 25% | **$ 893,750** | | | | | | | | |
| **5.0** | **PROPERTY COSTS** | | | | | | | | | | | |
| 5.1 | Property costs - land purchase | LS | 1 | | excluded | 0 | 0 | 0 | $ 100,000 | $ - | $ 300,000 | $ - |
| 5.2 | Property costs - easements | LS | 1 | | excluded | 0 | 0 | 0 | $ 20,000 | $ - | $ 70,000 | $ - |
| | **Subtotal - Property Costs** | | | **$ -** | | | | | | | | |
| | **Subtotal** | | | | **$ 4,468,750** | | | | | | | |
| **6.0** | **RISK ALLOWANCES** | | | | | | | | | | | |
| 6.1 | Allowance for Design Development Contingency | % | 20% | $ 4,468,750 | $ 893,750 | 10% | 20% | 30% | $ 4,468,750 | $ 4,468,750 | $ 4,468,750 | $ 893,750 |
| 6.2 | Allowance for Construction Phase Risk Contingency | % | 10% | $ 4,468,750 | $ 446,875 | 8% | 10% | 20% | $ 4,468,750 | $ 4,468,750 | $ 4,468,750 | $ 446,875 |
| 6.3 | FOREX risk supply costs | % | 10% | $ 4,468,750 | excluded | 2% | 10% | 15% | $ 4,468,750 | $ 4,468,750 | $ 4,468,750 | $ - |
| 6.4 | General cost escalation | % | 10% | $ 4,468,750 | excluded | 7% | 10% | 15% | $ 4,468,750 | $ 4,468,750 | $ 4,468,750 | $ - |
| | **Subtotal - Risk Allowances** | | 38% | **$ 1,340,625** | | | | | | | | |
| | Rounding | LS | 1 | $ 625 | $ 625 | | | | | | | |
| | **Total Expected Estimate** | **Most Likely** | | | **$ 5,810,000** | | | | | | | |
| | | | | Check: | $ 5,810,000 | | | | | | | |

| Summary | Estimate | % of Base |
|---|---|---|
| Base Estimate | 4,950,000 | |
| Most Likely Estimate (P50) | 5,810,000 | 117% |
| P95 Confidence Level Estimate | 6,650,000 | 134% |
| Maximum Estimate | 8,110,000 | 164% |

DRAFT

# NGAARUAWAAHIA AND TAUPIRI CPTED ASSESSMENT

Prepared for Waikato City Council
by Beca Ltd (Beca)
28 April 2023

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## REVISION HISTORY

| REVISION NUMBER | PREPARED BY | DESCRIPTION | DATE |
|---|---|---|---|
| A | Emily Zheng<br>Annette Jones | For Client Review - CPTED Assessment | 28.04.2023 |
| | | | |

## DOCUMENT ACCEPTANCE

| ACTION | NAME | SIGNED | DATE |
|---|---|---|---|
| Prepared by | Emily Zheng<br>Annette Jones | | 28.04.2023 |
| Reviewed by | Rebecca Cray | | 28.04.2023 |
| Approved by | Annette Jones | | 28.04.2023 |
| on behalf of Beca Ltd | | | |


This report has been prepared by Beca on the specific instructions of Waikato District Council ("Client"). It is solely for our Client's use for the purpose for which it is intended in accordance with the agreed scope of work. The decision to proceed with any of the recommendations made in this report is a commercial decision for the Client, and Beca does not guarantee the safety or security of persons or property. Any use or reliance by any person contrary to the above, to which Beca has not given its prior written consent, is at that person's own risk.

# 1 INTRODUCTION

## 1.1 PURPOSE OF THIS REPORT

This report provides a summary of observed safety issues in Ngaruaawaahia and Taupiri as an input to the Town Concept Plan. WDC's Vision of creating "Liveable, thriving, and connected communities" is achieved with safety being one of the underlying urban design principles. The issues identified through a day and night visit are outlined in terms of quick wins as well as informing prioritised implementable projects.

**Figure 1. Wider context map**

## NGAARUAWAAHIA

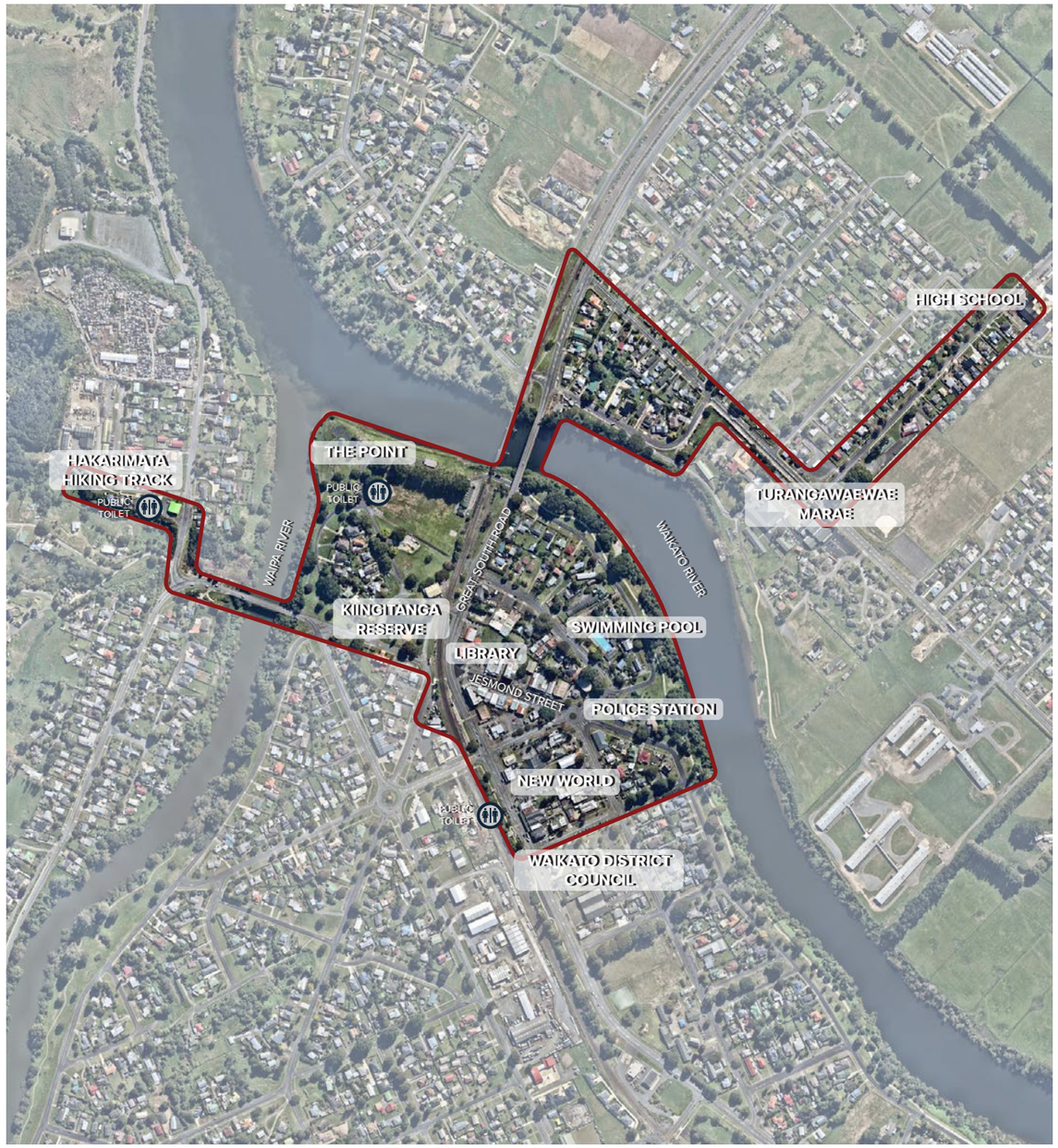



**Figure 2. Map of Ngaaruawaahia**

— Scope of assessment

## TAUPIRI

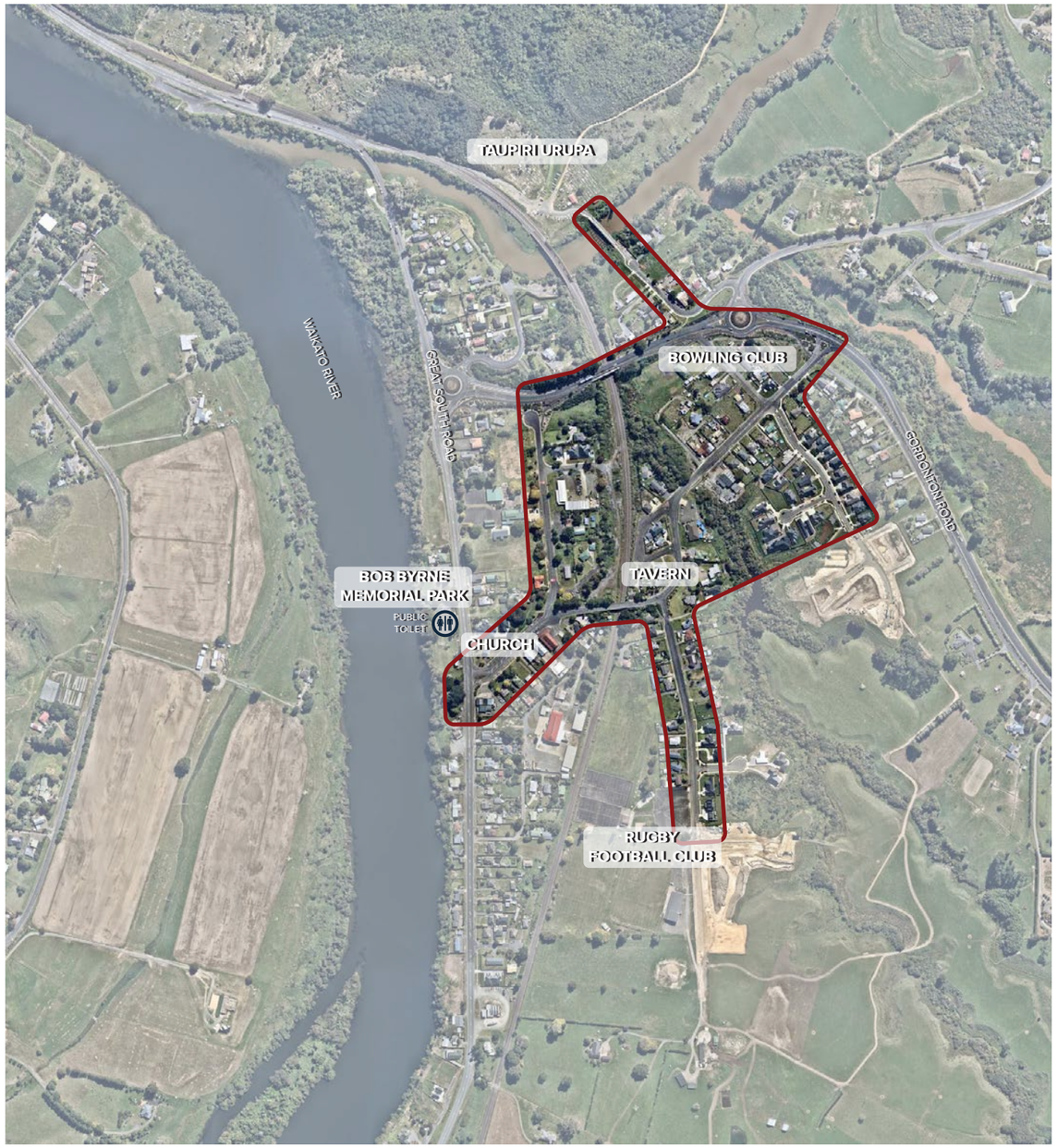



**Figure 3. Map of Taupiri**

## 1.2 OVERVIEW OF CPTED

Crime Prevention through Environmental Design (CPTED) has emerged as one of the most used and effective methods of reducing opportunities for crime.

The fundamental idea of CPTED is to combine local knowledge and CPTED principles to design environments in ways that reduce or prevent the incidence of crime. One of the most important concepts behind CPTED is that crimes against people are less likely to occur if other people are present, thereby creating passive surveillance. Another important CPTED philosophy is that the perception of crime or danger is as valid as the actual occurrence of it. A place may not necessarily pose a threat to safety, but if it looks unpleasant or threatening, people will avoid it, thus generating greater potential for actual crime to occur.

In 2005, the Ministry of Justice prepared National Guidelines for CPTED, titled 'Crime Prevention through Environmental Design in New Zealand'. These guidelines outline seven qualities for safer places, which form the basis for the Ngaaruawaahia and Taupiri CPTED assessment:

### 1. ACCESS: SAFE MOVEMENT AND CONNECTIONS

Places with well-defined routes, spaces and entrances that provide for convenient and safe movement without compromising security.

### 2. SURVEILLANCE AND SIGHTLINES: SEE AND BE SEEN

Places where all publicly accessible spaces are overlooked, and clear sightlines and good lighting provide maximum visibility.

### 3. LAYOUT: CLEAR AND LOGICAL ORIENTATION

Places laid out to discourage crime, enhance perception of safety and help orientation and way-finding.

### 4. ACTIVITY MIX: EYES ON THE STREET

Places where the level of human activity is appropriate to the location and creates a reduced risk of crime and a sense of safety at all times by promoting a compatible mix of uses and increased use of public spaces.

### 5. SENSE OF OWNERSHIP: SHOWING A SPACE IS CARED FOR

Places that promote a sense of ownership, respect, territorial responsibility and community.

### 6. QUALITY ENVIRONMENTS: WELL DESIGNED, MANAGED AND MAINTAINED ENVIRONMENTS

Places that provide a quality environment and are designed with management and maintenance in mind to discourage crime and promote community safety in the present and the future.

### 7. PHYSICAL PROTECTION: USING ACTIVE SECURITY MEASURES

Places that include necessary, well designed security features and elements.

## 1.3 SCOPE OF ASSESSMENT

As outlined in Section 1.2 there are several factors that contribute to safety and perceptions of safety. There are three mitigation approaches to managing the physical environment in ways that will reduce the opportunities for crime. These are described as either **natural, organised** or **mechanical**. Natural looks at how the human and physical resources are used and accommodated; organised covers the introduction of labour-intensive security (e.g guards, wardens, police, neighbourhood security patrols); mechanical encompasses the introduction of capital or hardware intensive security (e.g. integrated locking systems, CCTV, lighting).

This assessment focuses on the modifications that can be made to the physical environment based on CPTED aspects observed (see table below). Best-practice recommendations are also outlined to inform the Ngaaruawaahia Town Concept Plan - some of these features already exist in the town and can be replicated. As this is a high-level overview specific studies such as a full lighting level assessment and the evaluation of active measures such as CCTV do not form part of this assessment.

The following table outlines the aspects that strengthen the safety and perception of safety in a town centre context (for this assessment the organised and mechanical aspects in red are discussed at high level only)

| CPTED aspects observed | Mapping against the seven CPTED principles |
|---|---|
| Concealment opportunities - dead ends, blind corners, entrapment areas | 1. Access: Safe movement and connections |
| Natural ladders - ability to climb onto rooves, areas where access actively discouraged | 1. Access: Safe movement and connections |
| Passive surveillance – direct lines of sight | 2. Surveillance and sightlines: See and be seen |
| Clear sightlines – unimpeded by planting or solid fences | 2. Surveillance and sightlines: See and be seen |
| Lighting - appropriate location and consistency/ colour | 2. Surveillance and sightlines: See and be seen |
| Legibility through wayfinding i.e., signage, other elements | 3. Layout: Clear and logical orientation |
| Land use | 4. Activity mix: Eyes on the street |
| Definition of public and private space | 5. Sense of ownership: Showing a space is cared for |
| Landscape maintenance | 5. Sense of ownership: Showing a space is cared for |
| Community empowerment/ connecting with multi agency initiatives | 5. Sense of ownership: Showing a space is cared for |
| Graffiti | 6. Quality environments: Well designed, managed and maintained environments |
| Active surveillance – CCTV, patrols | 7. Physical protection: Using active security measures |

## 1.4 CPTED ASSESSMENT AND ENGAGEMENT PROCESS

Prior to the CPTED survey a desktop review of background safety information including crime statistics sourced from police.govt.nz and other publicly available reports was undertaken.

Initial confirmation on the scope and outcomes of the CPTED assessment was followed by site walkovers (day and night) with identified stakeholders. The purpose of these walkovers was to identify key issues drawing on a range of perspectives and discussion of recommended design responses and drawing on knowledge from those who know each place well overlaid with CPTED knowledge.

The study area included public streets and reserves in Ngaaruaawahia Town Centre plus environs and Taupiri Village. The study did not extend into private carparks, laneways, and private properties, however, some observations have been made where these impact on the sense of safety in public spaces.

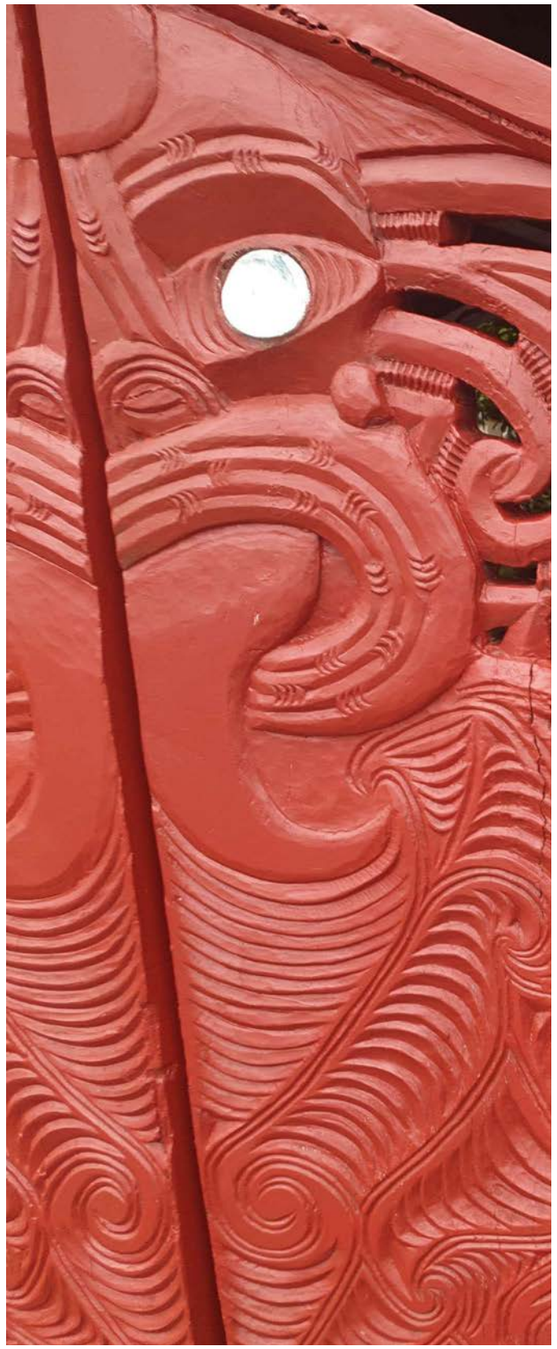
The process for the Ngaaruawaahia and Taupiri CPTED followed the following key steps:

- Site familiarisation and desktop analysis, including relevant background material
- Site visits for day and evening CPTED assessment (28/03/2023)

Attendees were:

Janet Gibb – Councillor
Eugene Patterson – Councillor
Elsa Snyders – Waikato District Council - Planning
Fletcher Bell – Waikato District Council - Planning
Kelly Tapine – Waikato District Council - Administration
John Stapleford – NZ Police representative
Kiri Morgan - Ngaaruawaahia Community Board Chair
Jack Ayers - Ngaaruawaahia Community Board Member
Kelvin Forsman – Economic Development Advisor
Joanne Morley - Taupiri Community Board Chair
Howard Lovell - Taupiri Community Board Member
Cheryl Maskell – Ngaaruawaahia Librarian (spoken to on the site visit)
Annette Jones – CPTED specialist (Beca)
Emily Zheng – Urban Designer (Beca)

- The following sections of this CPTED report include:
  - Crime background information
  - CPTED walkover observations
    - Positive CPTED features observed that can be replicated
    - Issues observed - lack of passive surveillance, blank walls or entrapment areas, wayfinding and signage, low levels or no lighting, maintenance issues.
    - Easy win maintenance issues
      - Graffiti observed on the site walkover
      - Vegetation obstructing sightlines
    - CPTED considerations for the Ngaaruawaahia Town Concept Plan



# 2 BACKGROUND INFORMATION

The following assessments were reviewed to provide a background to this assessment.

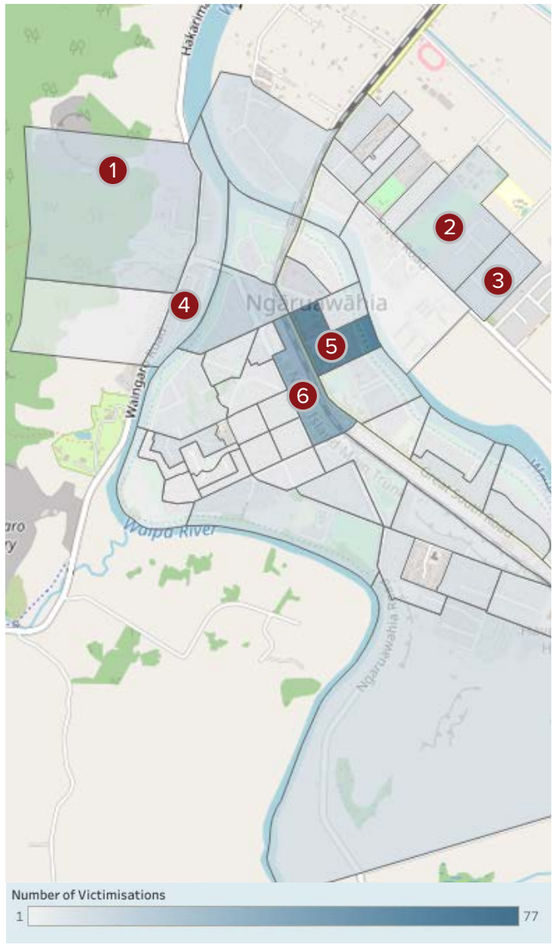
## 2.1 CRIME STATISTICS

### NGAARUAWAAHIA

Information on recorded crime is available on the police.govt.nz. This captures detailed information about where and at what times of the day and week crime victimisations occur and can be filtered from National, regional and down to meshblock level.

The crime statistics indicate the key reported risk is in the Ngaaruawaahia Town Centre area. In this instance, meshblock are smaller divisions of the town centre with their own specific crime reporting. According to the figures opposite, occurrences happen throughout the week with increased incidents noon to evening, particularly on Mondays, Thursdays, Fridays, Saturdays, and Sundays when shops close late afternoon.

The majority of reported crimes are theft and related offences (the physical removal of an object that is capable of being stolen without the consent of the owner) within zone 5 and 6. These zones correlate with the main town centre precinct.




*Note: Victimisations where the time of the day or the day of week are unknown are excluded from the table*

**Figure 4. Crime statistics for Ngaaruawaahia from 1st March 2022 to 31st February 2023.Sourced from: https://www.police.govt.nz/about-us/publications-statistics/data-and-statistics/policedatanz/victimisation-time-and-place**

1 Occurrence hour and day of the week

| Hour | Sun | Mon | Tue | Fri | Sat | Total |
|---|---|---|---|---|---|---|
| 2 | | | 2 | | | 2 |
| 4 | | | 1 | | | 1 |
| 5 | | | | 1 | | 1 |
| 10 | | 1 | | | | 1 |
| 12 | 2 | | | | | 2 |
| 15 | | | | | 1 | 1 |
| 19 | | | 1 | | | 1 |
| Total | 2 | 1 | 4 | 1 | 1 | 9 |

2 Occurrence hour and day of the week

| Hour | Sun | Mon | Fri | Total |
|---|---|---|---|---|
| 5 | 1 | | | 1 |
| 13 | | 1 | 1 | 2 |
| Total | 1 | 1 | 1 | 3 |

3 Occurrence hour and day of the week

| Hour | Sun | Thu | Fri | Sat | Total |
|---|---|---|---|---|---|
| 9 | 1 | | | | 1 |
| 11 | | | | 1 | 1 |
| 14 | 2 | | | | 2 |
| 15 | 1 | | | | 1 |
| 17 | | 2 | | | 2 |
| 23 | | | 1 | | 1 |
| Total | 4 | 2 | 1 | 1 | 8 |

4 Occurrence hour and day of the week

| Hour | Sun | Mon | Tue | Wed | Fri | Total |
|---|---|---|---|---|---|---|
| 1 | | 1 | | | | 1 |
| 2 | 1 | | | | | 1 |
| 12 | 1 | | | | | 1 |
| 16 | | | | | 1 | 1 |
| 20 | | | | 1 | | 1 |
| 21 | | | 1 | | | 1 |
| Total | 2 | 1 | 1 | 1 | 1 | 6 |

5 Occurrence hour and day of the week

| Hour | Sun | Mon | Tue | Wed | Thu | Fri | Sat | Total |
|---|---|---|---|---|---|---|---|---|
| 7 | | | 1 | | | 1 | | 2 |
| 8 | | 2 | 1 | 1 | 1 | | | 5 |
| 9 | 1 | 1 | 1 | | | | | 3 |
| 10 | | | 2 | | 1 | | | 3 |
| 11 | | 2 | | 1 | 1 | 1 | 2 | 7 |
| 12 | | 2 | | 1 | 1 | 1 | 1 | 6 |
| 13 | 1 | 1 | 1 | | 1 | 1 | | 5 |
| 14 | | | 3 | 2 | | 1 | | 6 |
| 15 | 1 | 1 | | | 2 | | 1 | 5 |
| 16 | | 1 | 1 | 1 | | 1 | 2 | 6 |
| 17 | 2 | | 2 | | 2 | | | 6 |
| 18 | | 1 | | | | 1 | | 2 |
| 19 | | 1 | | 1 | | 2 | 2 | 6 |
| 20 | | | | | | 1 | | 1 |
| 21 | | | | | | | 1 | 1 |
| 22 | | | | | | 1 | | 1 |
| 23 | | 2 | | 1 | | | | 3 |
| Total | 5 | 14 | 12 | 8 | 9 | 11 | 9 | 68 |

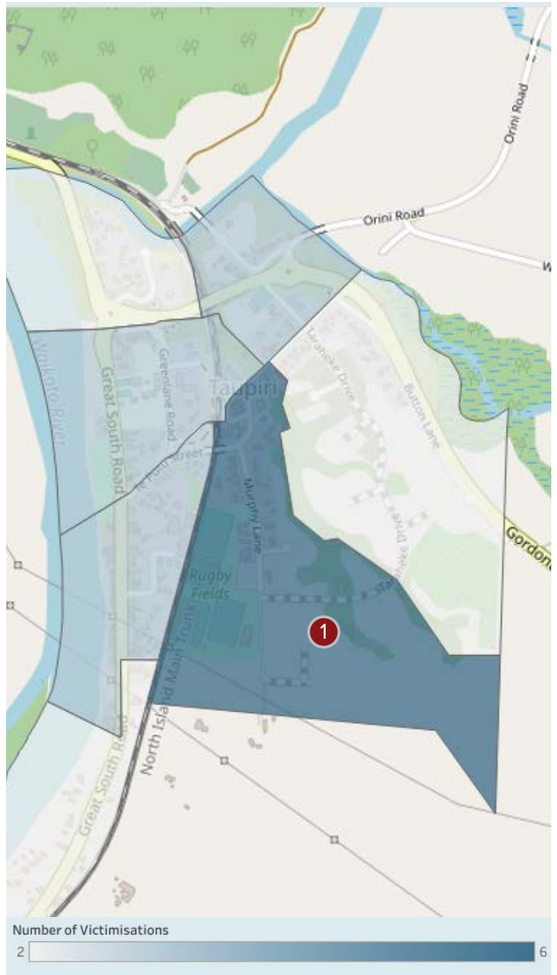
6 Occurrence hour and day of the week

| Hour | Sun | Mon | Wed | Thu | Fri | Sat | Total |
|---|---|---|---|---|---|---|---|
| 0 | | | | | | 1 | 1 |
| 2 | 1 | | | | | | 1 |
| 3 | | 1 | | | | | 1 |
| 4 | | | | 1 | | 1 | 2 |
| 6 | | | | | 1 | 1 | 2 |
| 7 | 1 | | | | | 1 | 2 |
| 8 | | | | | 1 | | 1 |
| 10 | | | | | 1 | | 1 |
| 12 | 1 | | 2 | | 1 | 1 | 5 |
| 13 | | | | 2 | | | 2 |
| 14 | | | | | | 1 | 1 |
| 15 | | 1 | 1 | | 1 | 1 | 4 |
| 16 | 1 | | | | 2 | | 3 |
| 17 | 1 | 2 | | | 1 | 2 | 6 |
| 18 | | 1 | | 1 | | 2 | 4 |
| 19 | | 2 | | 1 | | | 3 |
| 20 | | | | 1 | | 1 | 2 |
| 21 | | | 1 | | | | 1 |
| Total | 5 | 7 | 4 | 6 | 8 | 12 | 42 |

## TAUPIRI

The crime statistics indicate reported risks in Taupiri. According to the figures opposite, occurrences happen throughout the week with increased incidents late afternoon to evening.

The majority of reported crimes are theft and related offences (the physical removal of an object that is capable of being stolen without the consent of the owner) within zone 1. The area of higher incidence includes the local shops and sports facility that is a local destination.




*Note: Victimisations where the time of the day or the day of week are unknown are excluded from the table*

All zone statistics

Occurrence hour and day of the week

| Hour | Sun | Mon | Tue | Wed | Thu | Sat | Total |
|---|---|---|---|---|---|---|---|
| 7 | 2 | | | | | | 2 |
| 14 | | | 1 | 1 | | 1 | 3 |
| 15 | | | | | | 1 | 1 |
| 16 | 1 | | 2 | 1 | | | 4 |
| 18 | | | | | | 2 | 2 |
| 19 | | | | 1 | | | 1 |
| 20 | | | | | 1 | | 1 |
| 21 | | | | | | 1 | 1 |
| 22 | | 1 | | | | | 1 |
| Total | 3 | 1 | 3 | 3 | 1 | 5 | 16 |

1 Occurrence hour and day of the week

| Hour | Wed | Sat | Total |
|---|---|---|---|
| 15 | | 1 | 1 |
| 16 | 1 | | 1 |
| 18 | | 2 | 2 |
| 21 | | 1 | 1 |
| Total | 1 | 4 | 5 |

**Figure 5. Crime statistics for Taupiri from 1st March 2022 to 31st February 2023.Sourced from: https://www.police.govt.nz/about-us/publications-statistics/data-and-statistics/policedatanz/victimisation-time-and-place**

## 2.2 NGAARUAWAAHIA CCTV

A CCTV map was provided by Waikato District Council prior to the site walkover. There was discussion that the camera positioned at the end of Jesmond Street was not connected at the time of the walkover. These cameras are aligned to the higher locations of reported crime in Ngaaruawaahia town centre.

CCTV is not available for Taupiri.

**Figure 6. CCTV locations - Ngaaruawaahia**

# 3 CPTED ASSESSMENT - NGAARUAWAAHIA

## 3.1 SUMMARY

This section summaries the findings of the daytime and nighttime site visit. It outlines positive CPTED aspects that can be drawn on for best practice responses. In addition locations where issues were identified during the site visits are outlined with recommendations for potential improvement.

**Figure 7. Market area on Jesmond Street**

## 3.2 POSITIVE CPTED FEATURES

1 The Point:

a The mural on the hall alongside the Waikato River shows little sign of graffiti and is a good strategy for buildings that provide a blank canvas and have little passive surveillance. It is noted that the wall facing the park has been a target of graffiti and has been painted out to a height of approximately 3m. This indicates that this side could be a graffiti target – the only difference being that the western wall is potentially more recent and painted by Graham Hoete.

b The interpretation panels providing historical context are well located and maintained considering they are over 10 years old. No graffiti was observed on these installations and other locations in the town centre. While general maintenance is required to the facing panels where there has been water ingress, the durable design and materials could be replicated.

c Landscaping with feature trees being limbed up providing for clear views. This was complimented with lighting located on main access routes. While the luminaires looked to lack maintenance with missing glass panels the lighting was functional at night.

2 Kiingitanga Reserve: Well-lit along Waingaro Road the preferred route. Omission of lighting within the reserve discourages users to take this route at night-time, reducing risks. Some lighting within the Reserve was observed but not working at the time of visit.

3 Hakarimata: The toilets were clean, well located and well-lit and this type of facility could be replicated in community areas. Pedestrian lighting was provided on the residential side of the street with residents being the main users after hours.

4 Jesmond Road:

a As a main street there are features that demonstrate a high level of care and maintenance. This includes the quality of the pavers which are a high-cost item and appear to have weathered well, the unified low level and brightly coloured planting along the main street (refer to Figure 7 image on the previous page), quality street furniture (lighting, bins), well-lit environment with white fluorescent tube lights under canopies and laneways.

b ATMs along Jesmond Street are located to reduce opportunity for concealment and loitering, maximizing sight lines and visibility. Seating is avoided in close vicinity to ATMs reducing opportunity for users to be observed.

c The mural along the wall at the market area shows no graffiti, a good strategy for blank walls with little passive surveillance (refer to Figure 7).

5 Bollards: Use of timber bollards along the Regent Street green space provides a clear definition between public and private property and deters graffiti activity as there is no horizontal element.

6 Durham Precinct area: The precinct area is a quality space that is highly visible to passersby - and a good level of amenity (seating, bins, lighting).

7 Turangawaewae Marae: The Marae does not provide views out over the street, however this is consistent with the role within Ngaaruawaahia. It is noted that there is a level of care, maintenance, and detail along this edge.

8 Community connection – there is a high level of community spirit and commitment to making the town feel safe.

9 Laneways closed off with fences - public private definition; area between Breaking Bread Café and Two Rivers Early Learning Village on Great South Road.

10 Walkway along the river - trees and foliage are a set distance from the pedestrian path reinforcing a sense of security and there are houses providing passive survelliance over the cycleway. Although the walkway under the rail line does not have a clear line of sight there isn't a sense of any hiding spots or dead ends. Unauthorised areas are clearly fenced off with razor wire limiting access to the rail bridge.

11 Low level planting shows a well maintained environment and contributes to a perception of a cared for town centre environment.

12 There are examples such as the ambulance station which have well considered lighting that provides amenity for pedestrians as well as having a security function.

13 Bus stop with no hidden walls facilitating clear sightlines and allow pedestrians to move through.

**Figure 8. Mapping of positive CPTED features - Ngaaruawaahia**

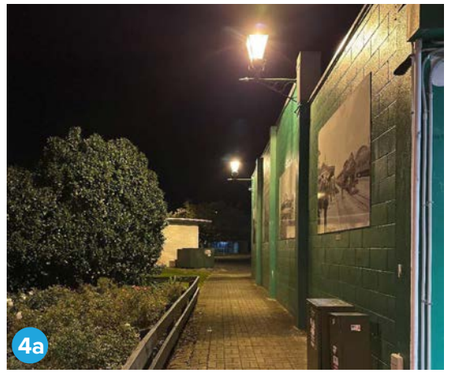
1a

1b

1c

3

Cash
Westpac
4a

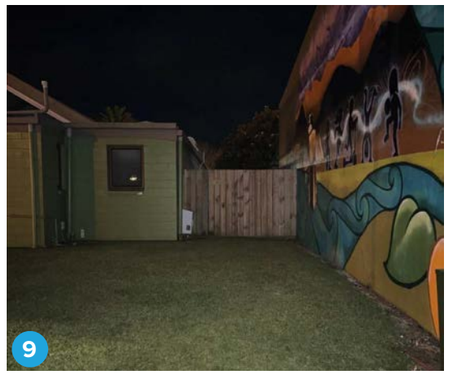

4a

first credit union
atm
4b

5

The
Marketplace
6

7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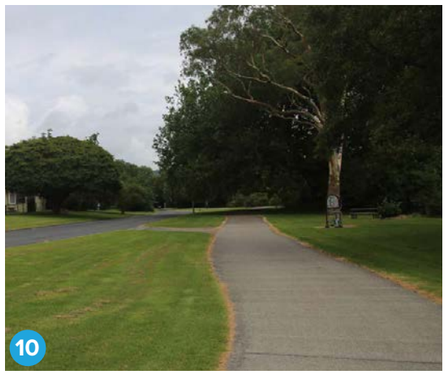
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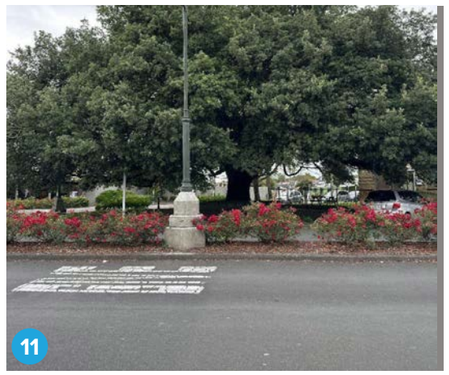
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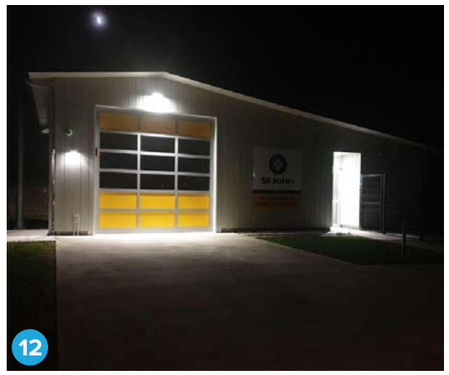

12

13

## 3.3 ASSESSMENT DETAILS

The CPTED assessment addresses the issues under the following aspects:

**CPTED aspects observed**

- Natural ladders - ability to climb onto rooves, areas where access actively discouraged
- Passive surveillance – direct lines of sight
- Clear sightlines – unimpeded by planting or solid fences
- Lighting - appropriate location and consistency/ colour
- Legibility through wayfinding i.e., signage, other elements
- Land use
- Landscape maintenance
- Graffiti

**Figure 9** shows the summary of observed issues and contains a photo reference map locating the photos as set out in table form on the following pages and broken down into the following categories:

### ISSUE

This describes the issue identified in terms of CPTED aspects and principles outlined previously.

### LOCATION & PHOTOGRAPH

A unique number (x) has been placed on the map to indicate the location of the observation. A photograph is provided to clarify the issue.

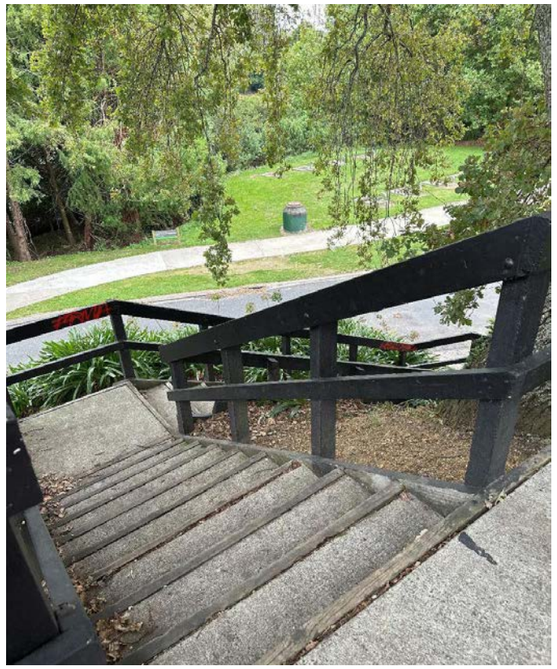
### BEST PRACTICE RESPONSE

A proposed intervention to address the identified issue. In some cases a precedent photo of the proposed intervention is provided as an example solution to a common problem.

### PRIORITY

Priority is separated into two categories:

- **Extremely High:** the intervention is recommended to be implemented as a top priority.
- **High / Better Practice:** the intervention will provide a strong improvement.



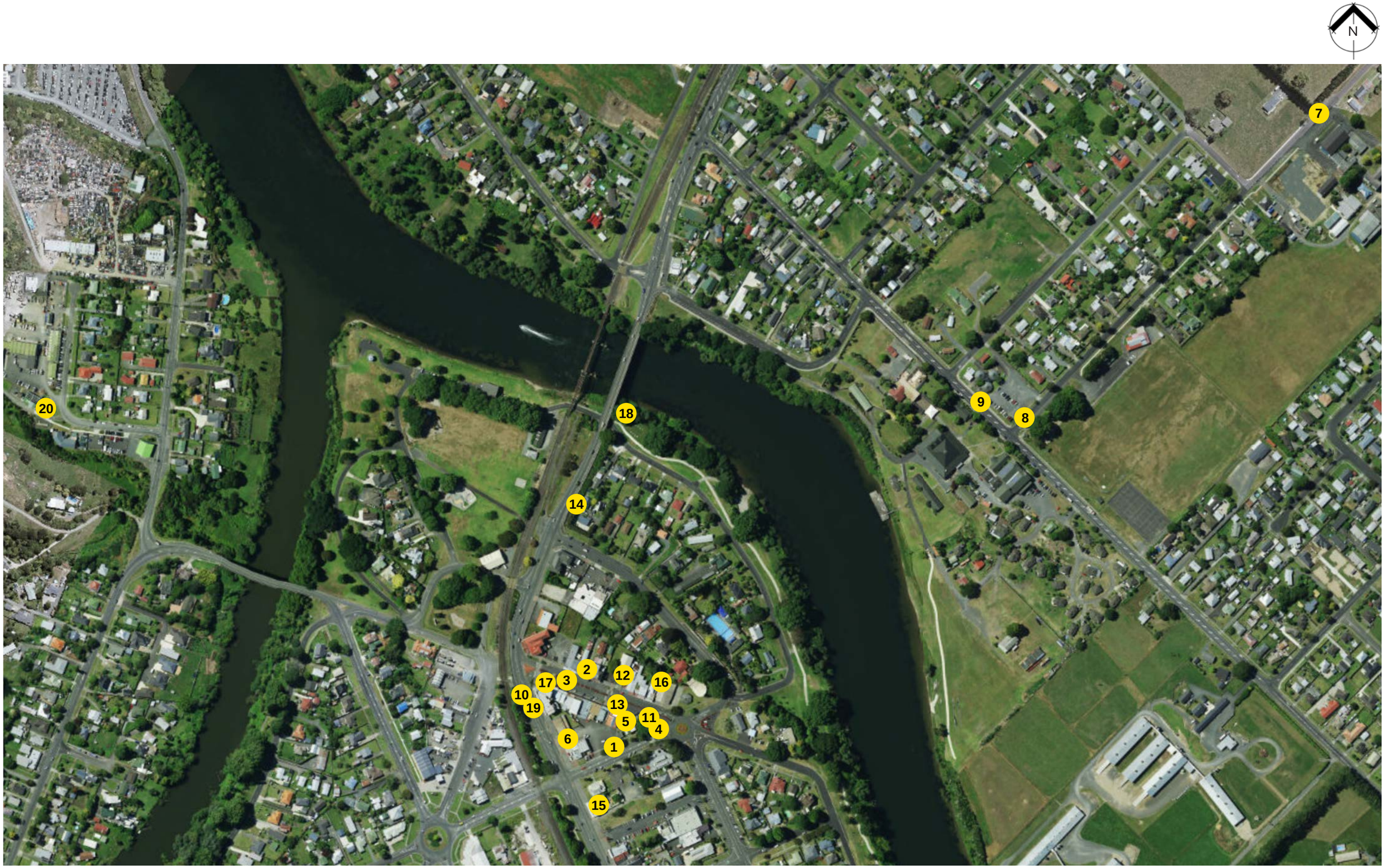



**Figure 9. Mapping of CPTED issues - Ngaaruawaahia**

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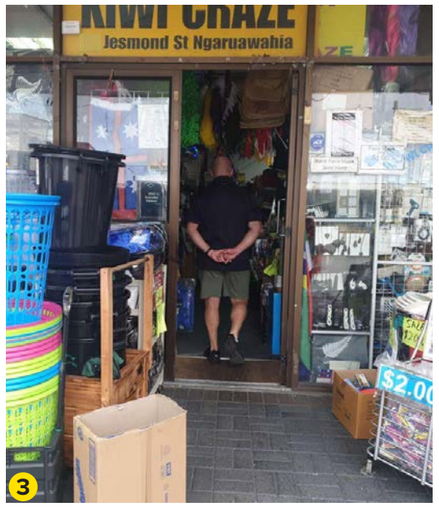
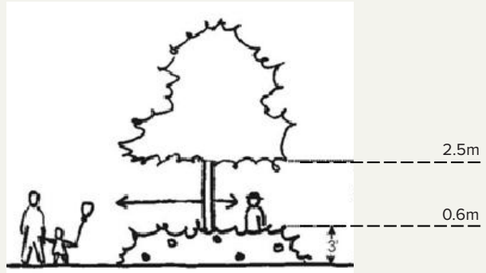
| ISSUE | LOCATION & PHOTOGRAPH REFERENCE | BEST PRACTICE RESPONSE | PRIORITY |
|---|---|---|---|
| **Natural ladders**<br><br>There are natural ladders behind Great South Road - owners to evaluate if this is an issue for access onto rooves etc. The bins can also be a place for people to hide behind at night. | <br> | This is an example where rubbish locations are placed in a well-lit location and away from potential climbing opportunities.<br> <br>Precedent Image: Hurstmere, Takapuna Auckland | EXTREMELY HIGH |
| **Passive surveillance**<br><br>Shops have posters and screens obstructing views on Jesmond St. | <br><br>  <br> | Removal of posters to open sightlines into the shops and provide eyes onto the street.<br><br>Any roller doors on Great South Rd – suggest could paint in consistent design<br> <br><br>Precedent Image: Otara, Auckland | HIGH/ BEST PRACTICE |

**Figure 10. Summary of observed CPTED issues - Ngaaruawaahia**

| ISSUE | LOCATION & PHOTOGRAPH REFERENCE | BEST PRACTICE RESPONSE | PRIORITY |
|---|---|---|---|
| **Clear sight lines (vegetation)**<br><br>There are areas where vegetation is overgrown with incursion onto the footpath or there is a low canopy obstructing sightlines.<br><br>i.e. Paterson Park, stairs that connect the bridge and cycleway. All areas where this is identified are at the end of this section. | <br> <br> | Trees (in all areas) should be canopy-lifted, allowing sight lines to be maintained. Trimming of trees surrounding to open sight lines.<br><br>CPTED best practice stipulates a vegetative clearance between 0.6m to 2.5m (refer diagram below).<br><br>Trim lower limbs of trees to provide a clear trunk and improve visual connection.<br><br>  | EXTREMELY HIGH |
| **Lighting**<br><br>The space between the buildings along Great South Road has dark unlit areas which leads to a varying pedestrian experience (well lit to no lighting in the gaps). Pedestrian paths alongside the rail line on Great South Road are well lit but obscured by the tree canopy with resulting patchy lighting.<br><br>Along the rail line and in front of Ngaaruawaahia High School there is no lighting. | <br> <br> | Conduct a review of the lighting (on the night of the walkover lights were being replaced) and an arborist review to determine where trees are blocking lighting at ground level.<br><br>Along the canopies of Great South Road and Jesmond Road shops lighting is effective with no obstruction.<br><br> | EXTREMELY HIGH |
| **Legibility through wayfinding**<br><br>Lack of signage to connect the town centre to Te Awa Cycle Trail, along the Waikato River edge, bridge and to the Hakarimata Ranges walkway. | <br> | Consider a suite of signage that would assist pedestrians in identifying natural amenities, attractions and navigating around the town centre, i.e., consistent signage directing people to toilets, schools, library, and other public facilities. Ensure signage is clear and appropriately placed.<br><br> | HIGH/ BEST PRACTICE |

| ISSUE | LOCATION & PHOTOGRAPH REFERENCE | BEST PRACTICE RESPONSE | PRIORITY |
|---|---|---|---|
| **Land use**<br><br>There are streetscape gaps along Jesmond Street, the old Waipa Hotel and carpark. In addition the former Plunket building is closed and unoccupied with no passive surveillance provided.<br><br>Buildings with blocked or opaque film on the windows also reduce the potential for passive surveillance to contribute to a sense of safety for people on the street. | | Focus on land uses that activate the street and consider consolidation based on the economic projection for retail demand.<br><br>Consider uses that extend beyond daytime hours to provide more presence on the street, supplementing existing restaurant facilities.<br><br>There is an opportunity for the Plunket area to become a destination location and create an area integrated with pedestrian access. | EXTREMELY HIGH |
| **Landscape maintenance**<br><br>Market area on Jesmond Street needs care and a tidy up. The use of the space and the function is unclear when not in use. | | There were discussions on the site visit about providing a covered area. Using the existing structure will require an engineer's review to determine whether the existing timber can support an additional load, or if a completely new structure is needed. | HIGH/<br><br>BEST PRACTICE |
| **Graffiti**<br><br>A number of graffiti tags were observed around the town i.e. Turangawaewae Marae, bridge, transformer boxes.<br><br>The presence of graffiti contributes to a lower level of perceived safety. | | Address the issue using one of the following methods:<br><br>- Identify who the asset owner is of the elements that are commonly targeted for graffiti. Implement more regular reporting and maintenance. It was noted that several elements are not Waikato Disctrict Council assets and lowers the percepted of quality environment.<br>- Plant dense foliage at the base to restrict access to the wall.<br>- Paint the wall using one of the precinct's theme colours from the agreed palette.<br>- Consider commissioning a mural artist where locations are identified that are a consistent target.<br>- Identify through the community if the taggers are from the wider area and reach out through the Police, community for effective ways to lower the incidence.<br><br> <br>Precedent Image: The Point, Ngaaruawaahia | EXTREMELY HIGH |

# 4 CPTED ASSESSMENT - TAUPIRI

## 4.1 SUMMARY

This section summaries the findings of the daytime and nighttime site visit. It outlines positive CPTED observations made during site visits and makes recommendations for improvement.

**Figure 11. Taupiri Christ Church on Te Putu Street**

## 4.2 POSITIVE CPTED FEATURES

1 Great South Road: Well-maintained hedges and fences with a high level of passive surveillance onto the street.

2 Residential streets: The open street frontage and permeable or low fencing supports a community feel with streets observed by residents.

3 Quality of landscaping - new subdivision

4 Tavern: Clear wayfinding to communicate a detour around the Tavern.

5 High level of community engagement - on the visit a number of people were interested in the site walkover and keen to provide observations which reflected a high level of community connection. Comments raised led to a question of a higher level of unreported crime, however as this was anecdotal it can't be quantified.

6 Community areas - well looked after i.e., Taupiri Bowling Club and sports facilities indicating a high level of community pride and ownership in Taupiri.

7 Focus area near the hall and the superette – an opportunity for land use to agglomerate around this area to include health, and other community uses.

**Figure 12. Mapping of positive CPTED features - Taupiri**

## 4.3 ASSESSMENT DETAILS

The CPTED assessment addresses the issues under the following aspects:

**CPTED aspects observed**

- Concealment opportunities - dead ends, blind corners, entrapment areas
- Lighting - appropriate location and consistency/ colour
- Legibility through wayfinding i.e., signage, other elements
- Graffiti

**Figure 13** shows the summary of analysis and contains a photo reference map locating the photos and issues as set out in table form on the following pages and broken down into the following categories:

### ISSUE

This describes the issue identified in terms of CPTED principles, under the key themes outlined above.

### LOCATION & PHOTOGRAPH

A unique number (x) has been placed on the map to indicate the location of the proposed intervention. A photograph is provided to clarify the issue and provide a quick reference for action in the future.

### BEST PRACTICE RESPONSE

A proposed intervention to address the identified issue. In some cases a precedent photo of the proposed intervention is provided as an example solution to a common problem.

### PRIORITY

Priority is separated into two categories:

- **Extremely High:** the intervention is recommended to be implemented as a top priority.
- **High / Better Practice:** the intervention will provide a strong improvement.

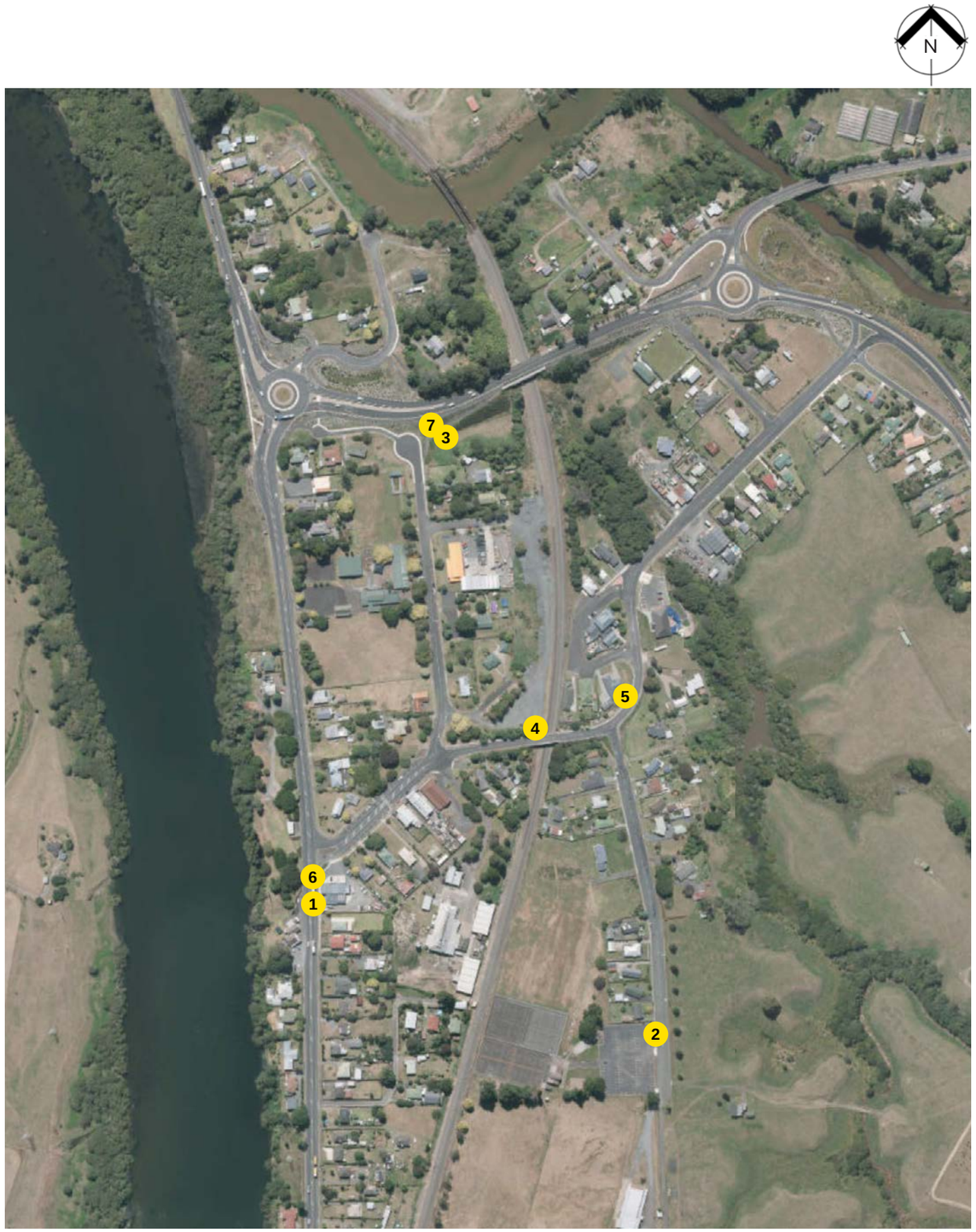



**Figure 13. Mapping of CPTED issues - Taupiri**

| ISSUE | LOCATION & PHOTOGRAPH REFERENCE | BEST PRACTICE RESPONSE | PRIORITY |
|---|---|---|---|
| **a. Concealment opportunities**<br><br>Areas of possible entrapment including blind corners) should be avoided to improve the sense of safety and reduce opportunity for crime that is unobserved. | <br>1 | Increase lighting, consider gating areas where there is deep recess if this is an area where there is a level of heightened risk. Receiving wider feedback form users is important to establish whether change is warranted. | HIGH/<br>BEST PRACTICE |
| **e. Lighting**<br><br>The underpass under Gordonton Road and the Rugby Field carpark are not sufficiently illuminated after dark. | <br>2<br> <br>3 | Install more pedestrian scale lighting and provide a wider localised area for the Rugby field parking. | EXTREMELY HIGH |
| **f. Legibility through wayfinding**<br><br>Wayfinding with area severed by roads and no easy pedestrian access to each quarter - there is a need to discuss the lack of access to recreational and community facilities with several people wanting to age in place and use mobility scooters. | <br>4<br> <br>5 | Increase signage and pedestrian amenity to assist the community to safely access natural amenities, bus stops attractions and navigating around the neighborhood, i.e., consistent signage directing people to schools, community facilities, and other public facities. Ensure signage is clear and appropriately placed. | HIGH/<br>BEST PRACTICE |
| **I. Graffiti**<br><br>Large number of graffiti dotted around the town i.e Marae, bridge, transformer boxes.<br><br>The presence of graffiti contributes to a lower level of perceived safety. | <br>6<br> <br>7 | Address the issue using one of the following methods:<br><br>- Plant dense foliage at the base to restrict access to blank walls.<br><br>- Paint the wall using one of the precinct's theme colours from the agreed palette.<br><br>- Consider commissioning a mural artist to paint a mural.<br><br>- Identify through the community if the taggers are from the wider area and reach out through the Police, community for effective ways to lower incidences. | EXTREMELY HIGH |

**Figure 14. Summary of observed CPTED issues - Taupiri**

# 5 QUICK WINS

Quicks wins are a set of actions identified for Ngaaruawaahia and Taupiri that can be taken in the short term to reduce opportunities for crime. These short-term actions are not dependent on other actions and are relatively low cost with a high benefit.

## 5.1 GRAFFITI

Firstly, cleanup of graffiti tagged on private property or various asset owners. Consistently track the rate of removal by undertaking an audit walkover and have plans in plan to remove graffiti within 24 hours of it appearing.

Materials should utilise anti-graffiti protection and/or appropriate surfacing to assist in maintaining a clean, high amenity environment.

Note the images taken are representative from the site visit and do not include all evidence of graffiti.

Figure 15. Mapping of graffiti - Ngaaruawaahia

Figure 16. Mapping of graffiti - Taupiri

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## 5.2 TRIMMING OF VEGETATION

A number of areas have overgrown vegetation that encroaches on footpaths around residential streets and high pedestrian movement areas. In Ngaaruawaahia the staircase at the bridge, and pedestrian crossing in front of Work and Income are two locations. In Taupiri, this was seen at the underpass at Murphy Lane and entry to the bridge leading to the urupa.

Other instances include large tree canopies that obscure light poles and limit illumination onto the pedestrian path and roads.

It is recommended to trim vegetation over footpaths and tree canopies as well as that which obscures lighting. This should be included in the maintenance regime to ensure views are not impeded and maximise passive surveillance and safety. Prioritisation should be at higher pedestrian movement areas - The Point, riverside, bridge, Jesmond Street, Great South Road, Market Street, High School, and Turangawaewae Marae.

Note the images taken are representative from the site visit and do not include all evidence of overgrown vegetation.

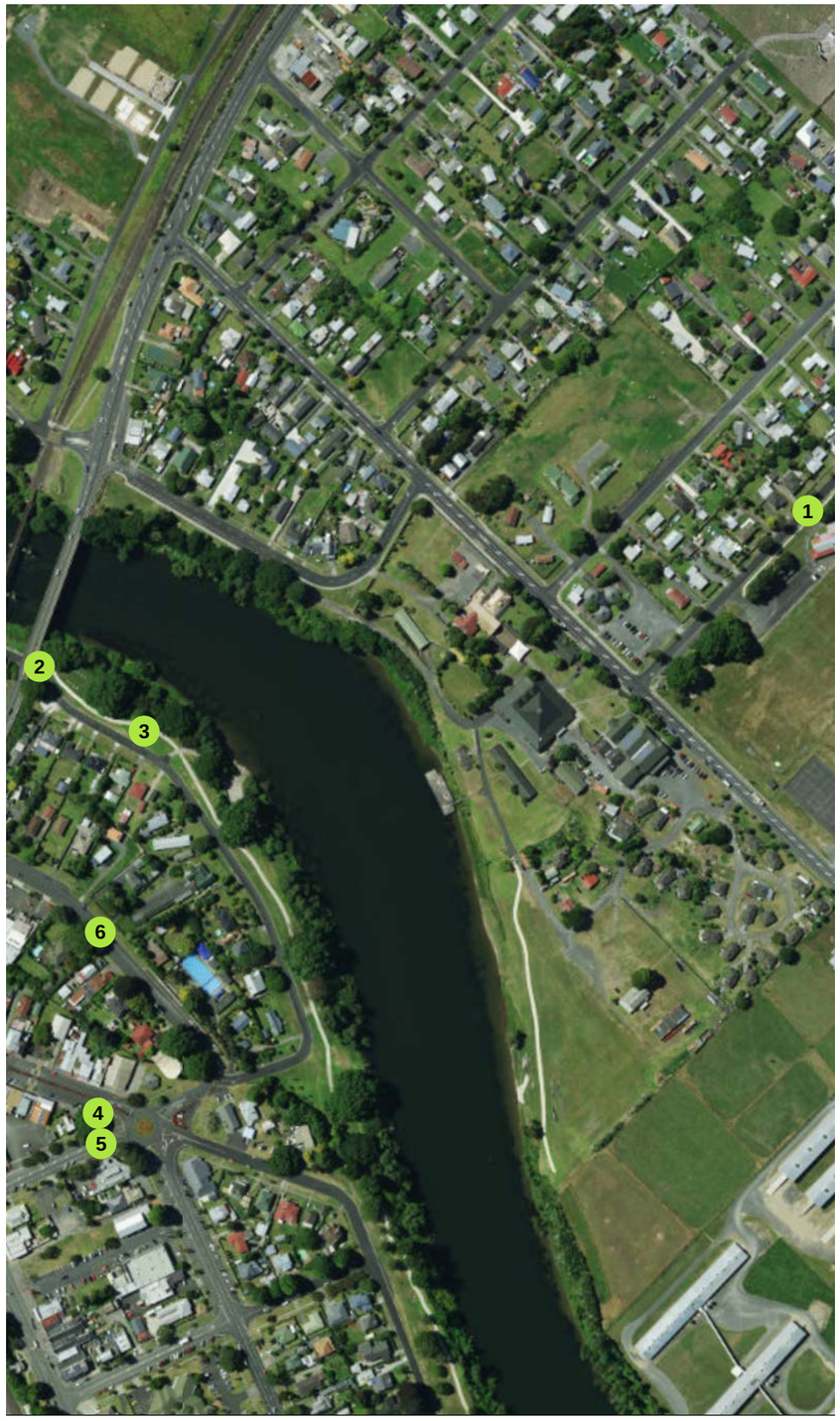


Figure 17. Mapping of overgrown vegetation - Ngaaruawaahia

Figure 18. Mapping of overgrown vegetation - Taupiri

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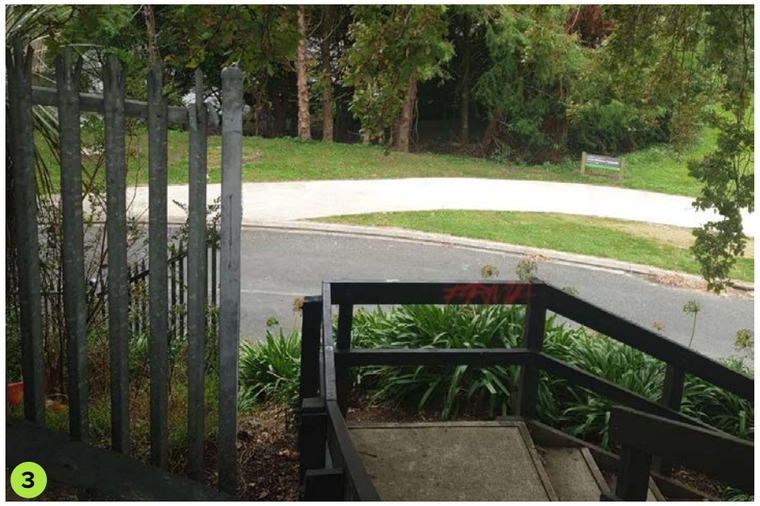

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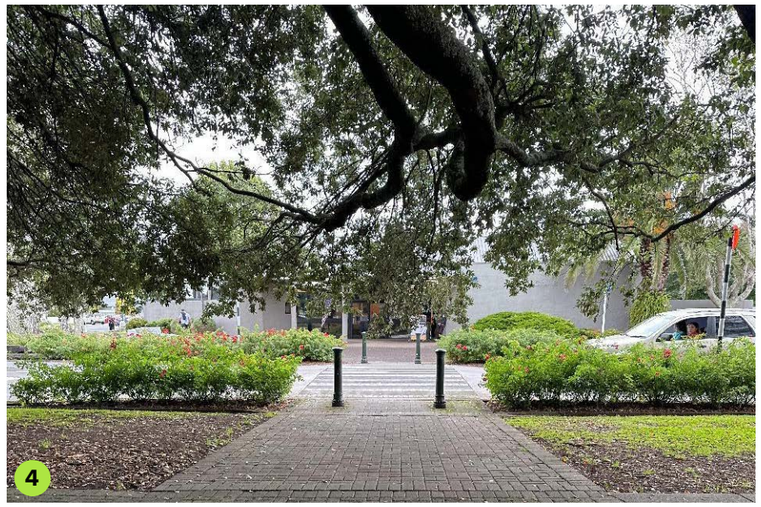

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## 5.3 OTHER QUICK WINS

- Light bulbs that are not working should be replaced. All street and pedestrian lighting should have a consistent colour. Consider LEDs to maximise safety and sustainability.

- The inclusion of mirrors and lights to be inserted into dark or blind corners.
  - Ngaaruwaahia: Staircase at the base of the bridge, along the Railway
  - Taupiri: Underpass and Rugby Field carpark

- Provide wayfinding signage at connections to accessways, walking and cycling route especially guiding users to safely cross the railway crossing and bridge. Wayfinding and signage should provide cues so that a cyclist/ pedestrian can make a clear judgement about the best route to take.

**Figure 19. Ngaaruwaahia - Kiingitanga Reserve**

# 6 CPTED CONSIDERATIONS FOR THE NGAARUAWAAHIA TOWN CONCEPT PLAN

Figure 20. Ngaaruawaahia - Durham Precinct

Figure 21. Ngaaruawaahia - Jesmond Street market area

The following place based considerations are proposed to be integrated as part of the Ngaruaawaahia Town Concept Plan:

- Consolidate gaps in the streetscape and reactivate vacant sites along Great South Road and Jesmond Street.
- Consolidate uses and bring in more active activities after hours along Jesmond Street and Great South Road.
- Bring wayfinding into Jesmond Street and provide a connection to the Te Awa cycleway and Hakarimata Ranges. In addition wayfinding to Taupiri urupa and around Gordonton underpass
- Improve the area next to Plunket so it becomes a focus area and destination (north facing)
- Build on existing street furniture - potential for these to reflect a sense of place.
- Market area at Jesmond Street - inclusion of a sheltered areas to encourage more active use of the space
- Consider the positive passive surveillance contribution that is made by the occupants of campervans at the Point
- Engage with youth to ground-truth perception of safety issues identified on the site walkover.

Ngaaruawaahia, Hopuhopu & Taupiri

# Urban Design Assessment

JANUARY 2024

**FOR CONSULTATION**

Beca

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

Revision History
Project Number: 4671678

Document Acceptance

| Action | Name | Signed | Date |
|---|---|---|---|
| Prepared by | Elaine Chen<br>Emily Zheng<br>Sam Foster | | 19/01/2024 |
| Reviewed by | Annette Jones | | 19/01/2024 |
| Approved by | Annette Jones | | 19/01/2024 |

on behalf of Beca Ltd.

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# Introduction

Waikato District Council is undertaking a review of the Ngaaruawaahia and Surrounds Structure Plan, which includes the villages of Taupiri and Hopuhopu. This Urban Design Assessment is to support the development of the updated structure plan and recognise, and reflect the changes that have occurred in the area since 2014.

Over the last 9 years, the Waikato district and this area has seen strong growth, and the completion of significant infrastructure projects such as the Waikato Expressway (SH1) and the Te Awa River Ride cycle route.

This Urban Design Assessment considers the changes that have occurred in the district, the community aspirations that have been identified and communicated through other spatial projects such as the town Blueprints, and opportunities that future investment in the region and the district, such as transport projects identified in the Hamilton-Waikato Metro Spatial Plan, will bring. The report has been informed by the findings of technical transportation and economics assessments, and the Tāngata Whenua Statement and Engagement Report that have been carried out independently of this report.

The Assessment has been developed with input from a range of partners, stakeholders and the community, with aspirations and ideas shared through a number of surveys and open days, reflecting the passion and investment in the success of these towns and villages. The Assessment is carried out at different scales. Firstly, it considers the wider context of opportunities and interventions in relation to Ngaaruawaahia, Taupiri and Hopuhopu; recognising that Waikato-Tainui will manage and deliver the masterplan for Hopuhopu. Secondly it focuses into the Ngaaruawaahia town centre, with location specific key moves, recommendations and investments identified.

## Mana Whenua input

Ngaaruawaahia, Hopuhopu and Taupiri are significant places for Mana Whenua. This Urban Design Assessment is part of a suite of documents that have been prepared to develop the Ngaaruawaahia and Surrounds Structure Plan.

As part of this process, Waikato District Council have commissioned an independent Tāngata Whenua Statement and Engagement Report prepared by Te Huia Ltd which involves Mana Whenua Engagement. They have also undertaken separate engagement with Mana Whenua regularly throughout the project.

Waikato District Council have also undertaken separate engagement and consultation through various forums as part of the wider structure plan process. These forums included surveys, focus group sessions, and attendance at public events where the urban design inputs were shared. The feedback received from these engagements has informed the development of this Assessment.

## Purpose

The purpose of this Assessment is to identify the urban design outcomes and opportunities for Ngaaruawaahia, Hopuhopu and Taupiri. This will contribute to the development of the wider Ngaaruawaahia, Taupiri and Hopuhopu Structure Plan and Ngaaruawaahia Town Centre Plan. The Assessment identifies key moves and investment opportunities to improve the liveability, strengthen the towns identity and supporting public realm investment as these areas continue to grow.

This Assessment presents a framework of opportunities for the Waikato District Council, the community, and other stakeholders to plan and invest in their future. Its goal is to create vibrant communities where people can live, work, and thrive. Some projects outlined in this Assessment may require further investigation, along with detailed costings, designs, and consultation prior to implementation.

This Assessment will undergo regular reviews to ensure its relevance and allow the Council to seize opportunities as they arise. Some of the projects identified will require substantial investment and collaboration with other entities for successful implementation. Additionally, certain opportunities will be carried out by other parties, while the Waikato District Council will assume a supportive and enabling role when appropriate.

## Approach and methodology

This plan has been developed with input from a wide range of stakeholders and partners over the past year. Mana Whenua and the community have helped to identify issues and opportunities for Ngaaruawaahia, Hopuhopu and Taupiri. The Assessment identifies the vision for the area over the next 30 years. This was developed in collaboration between Waikato District Council and the Project Steering Group, which included representatives from a range of partners and stakeholders.

To support the vision, a set of outcome principles has been developed. These principles articulate the vision and serve as a framework for assessing investment outcomes and opportunities. The themes covered by these principles include Connected Communities, Identity, Natural Environment and Growth and Economy.

The Assessment includes a contextual analysis of Ngaaruawaahia, Hopuhopu and Taupiri. This analysis examines various aspects such as cultural significance, land use, transportation and connections, economics, Crime Prevention Through Environmental Design (CPTED), natural environments, and climate change. The purpose of this analysis was to gain insight into the challenges and opportunities present in these towns. The findings from this analysis formed the basis for the initial round of community consultation and engagement. Through this process, we aimed to understand the perspectives and experiences of those living in these communities. By combining these exercises, we were able to identify opportunities and constraints across all three towns.

The opportunities identified as part of the previous exercise were grouped into themes consistent with the outcome principles identified above:

- Connected Communities
- Identity
- Natural Environment
- Growth and Economy

A second round of consultation and engagement with stakeholders and the community was conducted to gather feedback on the projects. This feedback was used to determine the level of community support for each project, as well as identify lower priority or unsupported projects. The combined feedback was then utilised to identify key moves and investments recommended for each town, along with their proposed prioritisation over the short, medium and long term.

### Development of Vision and Principles for Ngaaruawaahia, Hopuhopu and Taupiri

The vision and principles for Ngaaruawaahia, Hopuhopu and Taupiri were developed for the document with the "Structure Plan Reference Group" over two sessions to ensure thorough discussion and input from all participants. It was determined that due to the close relationship between the three towns, they should be covered by the same vision and principles.

The overarching vision for Waikato District Council is "*We work together as a district to build liveable, thriving and connected communities as our district grows.*" This process served as the foundation for developing a more place-specific vision for the three townships. By engaging with the community and seeking their input on their desired future for Ngaaruawaahia, Hopuhopu, and Taupiri, we were able to establish an overarching vision that reflects the aspirations and direction of these towns.
It was important that the towns were understood together and acknowledge the relationships between them. The vision speaks to the rich history of the area and the opportunities of the townships, linked through the Waikato Awa and landscape; "*To create opportunities for the communities of Ngaaruawaahia, Hopuhopu, and Taupiri and their descendants, connected through the landscape, the awa, and collective yet unique histories.*"

The following guiding principles articulate the vision in more detail. From initial consultation and surveys undertaken by Council, technical inputs and discussion with the reference group, it was determined that Cultural Values should be woven into these themes, rather than being a separate set of principles.

From these discussions, four themes emerged relating to Identity and History, Connectivity, Natural Environment and Growth. The design principles are supported by articulating design outcomes that provide clear outcomes that are anticipated to occur as a result of the vision and principles.

The design principles and outcomes are:

**Connected Communities:** Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.

- Create clear and accessible connections to places people want to go.
- Support easy and safe to access by active modes and public transport.
- Deliver resilience and respond to a changing climate.
- Provide places for people to meet and connect.
- Investments in our towns to enable us all to reduce our carbon footprint.

**Identity:** Strengthen the strong sense of identity and character of the place.

- Weave the presence of the rich natural landscape into the local context.
- Share the rich history of place.
- Respond respectfully to culturally significant sites and landscapes.
- Recognise and celebrate Kiingitanga.

**Natural Environment:** Celebrate and connect communities to blue-green networks and significant cultural areas supporting recreational use and preserve local identity.

- Protect and enhance our natural environment.
- Provide residents of our towns easy access and connection to the natural environment.
- Bring the natural environment into and through our towns.

**Growth and Economy:** Support projected growth with well-connected services, amenities and commercial opportunities to fit the needs of the community.

- Focus on the development of a strong commercial core in our towns.
- Invest in the infrastructure to support access to, and enjoyment of the town/village centre.
- Enable and support the development of key sites to encourage increased vibrancy, vitality and amenity in the town/village centre.

To Auckland
N
HUNTLY
Lake Waahi
Taupiri Maunga
Mangawara Stream
TAUPIRI
Waikato River
Taupiri Marae
HOPUHOPU
Hakarimata Ranges`
7 minutes from Taupiri to Ngaaruawaahia
NGAARUAWAAHIA
Tuurangawaewae Marae
GORDONTON
North Island Main Trunk
Waikato River
Te Puroa
Waipaa River
HOROTIU
TE KOWHAI
Tawatahi River
HAMILTON
LEGEND
Vegetated landcover
State Highway
Local Road
North Island Main Trunk (Railway)
Rivers
Marae
Paa
SCALE 1:100,000

## Vision for district

We work together as a district to build liveable, thriving and connected communities as our district grows.

## Our Vision

**To create opportunities for the communities of Ngaaruawaahia, Hopuhopu, and Taupiri and their descendants, connected through the landscape, the awa, and collective yet unique histories.**

# Principles

## Connected Communities

Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.

## Identity

Strengthen the strong sense of identity and character of the place.

## Natural Environment

Celebrate and connect communities to blue-green networks and significant cultural areas supporting recreational use and preserve local identity.

## Growth and Economy

Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.

# Outcomes

- Create clear and accessible connections to places people want to go.
- Support easy and safe to access by active modes and public transport.
- Deliver resilience and respond to a changing climate.
- Provide places for people to meet and connect.
- Investments in our towns to enable us all to reduce our carbon footprint.

- Weave the presence of the rich natural landscape into the local context.
- Share the rich history of place.
- Respond respectfully to culturally significant sites and landscapes.
- Recognise and celebrate Kiingitanga.

- Protect and enhance our natural environment.
- Provide residents of our towns easy access and connection to the natural environment.
- Bring the natural environment into and through our towns.

- Focus on the development of a strong commercial core in our towns.
- Invest in the infrastructure to support access to, and enjoyment of the town/village centre.
- Enable and support the development of key sites to encourage increased vibrancy, vitality and amenity in the town/village centre.

# Te Ture Whaimana o Te Awa o Waikato

**Tooku awa koiora me oona pikonga he kura tangihia o te maataamuri.**

*The river of life, each curve more beautiful than the last.*

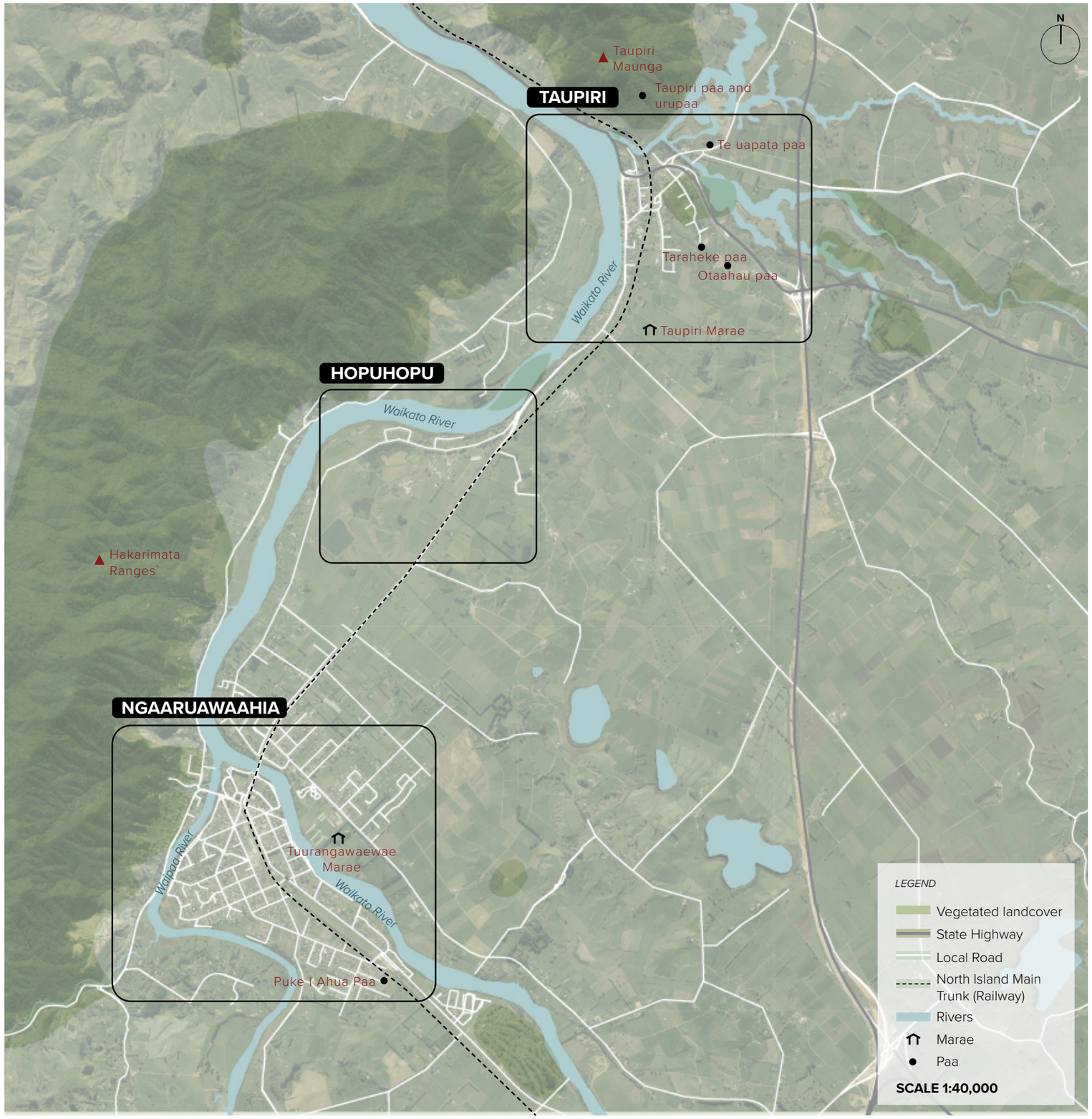
*- Kiingi Taawhiao, the second Maaori King*

Te Ture Whaimana o Te Awa o Waikato, the Vision and Strategy for the Waikato River, is the primary policy document for the Waikato River Catchment. It acknowledges the degradation of the river and aims to restore and safeguard its health and well-being. The document also emphasises the importance of the relationship between Waikato-Tainui and the Waikato River, encompassing economic, social and spiritual aspects.

The Vision and Strategy aims to restore and protect the community's relationship with the Waikato River, ensuring appropriate access while safeguarding and enhancing the river's health and well-being.

Further, the Vision and Strategy seeks to recognise and protect waahi tapu sites of significance to Waikato-Tainui and River iwi to promote cultural, spiritual and historic relationship with the Waikato River.

The Waikato River plays a vital role as the defining feature of the area, connecting the three towns and fostering a strong sense of identity for each of them. The Urban Design Assessment takes into account the input from Mana Whenua obtained through the Mana Whenua consultation process. It also considers the Vision and Strategy, aiming to use urban design outcomes to support the achievement of the Vision and Strategy, particularly in terms of celebrating the Waikato and Waipaa Rivers, acknowledging culturally significant sites to Mana Whenua, and promoting interaction with the River corridors. These considerations are integral to the design principles and have guided the development of key moves and desired outcomes.



# Strategic Context

### Regional Context

The Waikato Region spans over 25,000 square kilometres, extending from Pukekura (Bombay Hills) and Te Puuaha o Waikato (Port Waikato) in the north to Mt Ruapehu in the south. It covers a vast area of the North Island, stretching from Mokau on the west coast to the Coromandel Peninsula in the east. The Waikato district is situated in the northern part of the Waikato region, encompassing the area north and west of Hamilton, as well as reaching up to Pokeno in the north. It is bordered by Hauraki and Matamata-Piako districts towards the east.

Early settlement of the area focused on the coast and alongside the rivers. Some of these settlements have developed into today's towns, including Ngaaruawaahia. Ngaaruawaahia sits within the Waikato district, on the confluence of the Waipaa and Waikato Rivers. It is an important location for Maaori, being the seat of Kiingitanga, the Maaori King. Hopuhopu is located approximately 4km north of Ngaaruawaahia. Taupiri village is located at the foot of Taupiri Maunga, and connects to SH1 via the Taupiri interchange.

Ngaaruawaahia is a rural service town, previously located on State Highway 1. In 2013, the town was bypassed by the Ngaaruawaahia Section of the Waikato Expressway. It is the home of Waikato District Council and connects with the surrounding towns of Huntly, Horotiu and Taupiri. Further afield it connects to Hamilton City, providing access to further education and employment opportunities. Auckland is 108km to the north. This relationship with nearby towns and cities provide opportunities to strengthen connections to these places, and enable people to access the amenities and offerings of the wider catchment.

This location within the Waikato puts Ngaaruawaahia, Hopuhopu and Taupiri in the 'Golden Triangle', the area between the major cities of Auckland, Hamilton and Tauranga, which contains around 50% of New Zealand's population and economic output. It is signaled to be the focus of future growth in NZ. This location, provides opportunities for future growth of the town and surrounds.

Situated on the banks of the Waikato River, Ngaaruawaahia is incorporated into the Hamilton-Auckland Corridor Plan and is recognised as part of the broader Hamilton Metropolitan area. The Auckland-Hamilton Corridor Plan designates priority development areas for this region, which involve conducting precinct planning to identify Transit Oriented Development prospects, enhancing transportation links between Ngaaruawaahia, Hopuhopu, and Taupiri, and implementing urban area modifications to support growth.

### Subregional Context

As identified in the regional scale, the townships of Ngaaruawaahia, Hopuhopu and Taupiri have a close sub-regional relationship with the neighbouring Hamilton City and Waipaa district. These relationships are particularly apparent in the strategic documents of the Auckland – Hamilton Corridor Plan, the Waikato focused, Hamilton-Waikato Metro Spatial Plan (MSP) and the Future Proof Growth Strategy. These documents consider the inter-relationships between district and towns, with a focus on providing for growth and connecting these areas by all modes of transport.

Future Proof highlights the anticipated growth of Ngaaruawaahia and surrounds, projecting these areas to accommodate nearly 20% of the districts growth to 2050, with the district anticipated to grow by 58% over this time. Growth is likely to present infrastructure and funding challenges.

The MSP identifies Ngaaruawaahia as a node for future rapid transit investment, which is expected to enable growth to occur around a future rapid transit station. Hopuhopu and Taupiri are expected to be serviced by a frequent transport network, providing connections between, to and from destinations along the future transit corridor, providing residents frequent, efficient access to employment, amenity and recreation opportunities.

Future Proof anticipates that future development in Ngaaruawaahia and Taupiri will be 30-50 dwellings/ha in defined intensification areas and 20-25 dwellings/ha in greenfield locations. Current analysis suggests that there is sufficient capacity to meet residential and business demand.

### Local Context

Previous work has been undertaken through the Local Area Blueprints, which included Ngaaruawaahia and Taupiri. These identified key moves for future investment and investigation in the towns across the Waikato district.

The top priority initiatives identified for Ngaaruawaahia included:

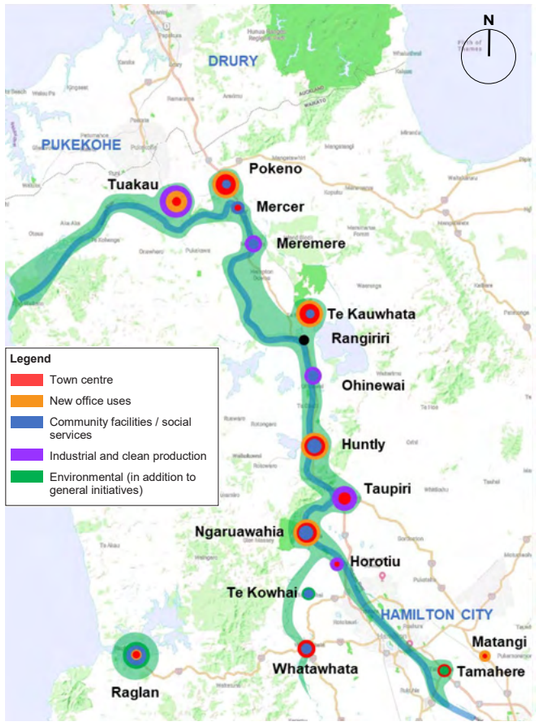
- Progress opportunities for a new community hub
- Undertake strategic conversations around Council-owned land and halls for reinvigoration of community assets.
- Produce a planting plan and social space at Te Mana o Te Rangi reserve.
- Work with relevant entities to support the strategy for youth initiatives.
- Undertake initiatives to ensure tidy commercial and industrial street frontages.
- Provide longer distance walking and cycling connections to Taupiri, Te Otamanui, Glen Massey, and the eastern side of the Waikato River to Horotiu.
- Promote local cultural tourism by local iwi.
- Build a strong identity based on the Waikato and Waipaa River corridors.

The top priority initiatives for Taupiri included:

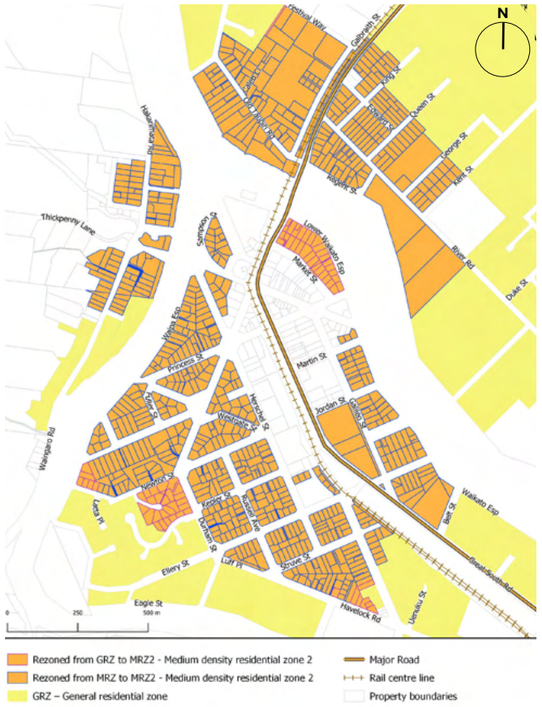
- Deliver pedestrian crossings throughout the township to ensure safer movements throughout the community.
- Support when appropriate the upgrade of the local dairy to a supermarket, as the population grows.
- Develop a town centre plan to address fragmentation and services required to support employment and residential growth. Also consider the impact of a new service centre at the interchange and the new entrance into Taupiri from the Expressway (now completed).
- Allow for the continuation of the Te Awa River Ride cycle route.
- Investigate the opportunity for industrial land.

Waikato 2070 is the district's Growth and Economic Development Strategy. This identifies the planned growth areas for residential, commercial and industrial and town centres across the district in the short, medium and long term. For Taupiri and Ngaaruawaahia, it identifies areas for residential, and commercial development out to 30 years.

Recently, Waikato District Council has notified Variation 3 to the Proposed District Plan in response to requirements to incorporate Medium Density Residential Standards into the plan and provide for intensification. It identifies enabling medium density housing in and around the town centre. The extent of the zoning is to be confirmed through the plan change process.




Waikato Blueprint opportunity




Ngaaruawaahia proposed zoning

# Technical Inputs

The Urban Design Assessment is an important part of several technical contributions that will inform the update to the Ngaaruawaahia and Surrounding Areas' Structure Plan. Where relevant, these other contributions have been taken into account in the Urban Design Assessment. If not directly included in the Assessment, they are considered within the larger structure plan document, which covers all these aspects collectively.

The following is a summary of the technical inputs that have been considered as part of the development of the Urban Design Assessment.

## Tāngata Whenua Statement and Engagement Report

Te Huia Natural Resources Ltd (Te Huia Ltd) developed a Tāngata Whenua Statement and Engagement Report with the support of Waikato-Tainui, Taupiri Marae, Tuurangawaewae Marae, Taupiri Marae and Ngaati Tamainupoo to inform the Ngaaruawaahia, Hopuhopu, Taupiri Structure Plan and Ngaaruawaahia Town Centre Plan.

This area is the heart of the Kiingitanga and is of special significance to Waikato-Tainui featuring significantly in identity of the tribe. Tuurangawaewae Marae, Ngaati Tamainupoo and Taupiri Marae are tāngata whenua and are at the centre of the report. Therefore at the outset, Te Huia Ltd sought, and gratefully received, formal support from them to facilitate engagement and prepare the report. The report expresses their values, narratives and koorero, their sites and areas of significance and their outcomes and aspirations to inform the structure and town centre plan.

The engagement approach was distinct, as Te Huia Ltd and the Waikato District Council wanted the engagement, waananga and research to be delivered and facilitated by tāngata whenua. Furthermore, that tāngata whenua will be remunerated for their contributions, acknowledging the time and information shared. Te Huia Ltd collated information shared by tāngata whenua and sought the expertise of GMD Consultants to assist with the preparation of the report in a manner that can be implemented by the Council and respectful of information shared. Tāngata whenua hosted and facilitated online and in-person hui with their beneficiaries to consider what their respective spaces should look like in the future. The information provided in the full report is given with their blessing in the hope that their aspirations are reflected in the Ngaaruawaahia, Hopuhopu, Taupiri Structure Plan and Ngaaruawaahia Town Centre Plan and subsequent designs.

**Proposed Tāngata Whenua Outcomes**

The workshops facilitated by tāngata whenua are presented in the *Tāngata Whenua Statement and Engagement Report*. Taupiri and Tuurangawaewae generated outcomes proposed in the report through workshops and marae hui. Ngaati Tamainupoo also held workshops and facilitated a survey amongst is tribal members. In general, the outcomes proposed reflected aspirations for a future community and its taonga.

The general themes proposed to the structure and town centre plans included:

- Recognition of the significance of the Waikato River through cultural expression opportunities, improvement of its relationship with tāngata whenua, improved access, restoration and environmental improvements and adherence to the advancement of Te Ture Whaimana o te Awa o Waikato;
- Recognition of the significance of Taupiri Maunga and protection of its integrity, cultural viewshafts and shifting of North Island Main Trunk Line;
- Support the growth of tribal assets proposed around marae and in particular the tribal developments for Hopuhopu, for commercial, education and sporting purposes;
- Improving connectivity to communities and regional spaces. Creating attractions to bring in visitors;
- Provide for cultural expression, symbolism and signage that reflects the historic significance of Taupiri, Hopuhopu and Ngaaruawaahia;
- Realising the needs and aspirations of tāngata whenua regarding community facilities, commerce, goods and services, and enjoyment of recreational reserves; and
- Protection of sites of significance including the addition of sites to the plan.

The Mana Whenua Engagement Report presents full details of the narratives and information shared, including outcomes drawn from workshops and surveys. These broad outcomes relevant to urban design have been considered as part of the development of the Urban Design Assessment and have helped inform the urban design outcomes identified in this report.

## Transport

Land use changes and growth will place increasing demand on the transport network, change is necessary to support the town centre and manage these effects.

In summary:

- Traffic volumes are projected to increase over the coming years with Great South Road experiencing substantial growth. Left unchecked, this would be inconsistent with desired outcomes for Ngaaruawaahia town centre.
- New road connections and intersection upgrades are required to enable development in growth areas.
- Safety at rail level crossings will increasingly become a focus. Some existing level crossings are recommended for upgrades or closure to traffic in the coming years.
- Investment in walking and cycling infrastructure is recommended to improve accessibility and safety, and reduce car dependency.

A range of projects is proposed to improve connections between key areas and improve access to sustainable transportation modes.

The staging of the proposed investments is as follows:

- The short-term plan includes creating a low-speed, accessible Ngaaruawaahia town centre and addressing safety concerns, while achieving the key moves for walking and cycling in the town centre.
- In the medium term, the focus is on improving walking and cycling connectivity along with new road connections and intersection upgrades to support growth.
- The long-term vision includes a transport hub in Ngaaruawaahia to support high-frequency bus services and expanded walking and cycling networks.

## Retail economics

The retail catchments of Ngaaruawaahia and Taupiri are expected to continue to grow at a steady pace over the next 30 years. The retail catchments are the areas connected to the townships that are likely to visit these centres to spend money. The current estimated population within the retail catchments of Ngaaruawaahia is 13,950 people. This is anticipated to grow to between 17,500 and 20,000 people by 2053, based on medium to high growth projections. This is a significant increase of up to 44% and could result in an additional 700 new dwellings in the area under the high growth scenario.

With future investment in improved transport connections to Hamilton signaled, it is anticipated that the high growth scenario better represents the future population scenario. This growth brings economic and housing opportunities to the area.

The Taupiri catchment is also growing and is expected to increase from about 800 people to a population of around 1350 people by 2053, an increase of approximately 73%, about 500 households.

The analysis shows that the current centres have a lot of potential to support growth and increased spending. Currently a large amount of spending happens outside Ngaaruawaahia, mostly in Hamilton. There is a significant opportunity for the town centre to retain a higher proportion of the catchments spending in the town centre by improving the customer experience and feel of the centre. Property Economics identifies that there is a need for public and private investment focused on the Jesmond Street core retail area to create a more attractive town centre and catalyse the revitalisation of the area.

This could include projects like streetscape improvements and the redevelopment of the site that previously contained the Waipaa Hotel as a catalyst development.

Importantly, the report identifies that there is no need to extend the commercial zoning of the town centre.

Taupiri is currently a small retail centre and is spread out. The existing service centre on SH1 also captures a portion of the market. No further commercial zoning is required in Taupiri, however a focus on revitalising the core through public and private investment would benefit the centre and the town.

## Ngaaruawaahia and Taupiri CPTED Assessment

The Crime Prevention Through Environmental Design (CPTED) Assessment provided a summary of safety issues observed in Ngaaruawaahia and Taupiri during the day and night, aiming to gather input for the development of the Urban Design Assessment.

A desktop review of safety information, including crime statistics, was conducted. Site walkovers with stakeholders were performed on March 28, 2023, to identify key issues and discuss design recommendations. The study focused on public streets and reserves in Ngaaruawaahia town centre and Taupiri Village.

The findings from this Assessment are crucial for prioritising implementable projects and ensuring that the Urban Design Assessment incorporates measures to create safer and more secure environments for residents and visitors.

Based on the National Guidelines for CPTED in New Zealand, the Assessment focused on seven qualities for safer places:

1. Access: Safe movement and connections.
2. Surveillance and sightlines: See and be seen.
3. Layout: Clear and logical orientation.
4. Activity mix: Eyes on the street.
5. Sense of ownership: Showing a space is cared for.
6. Quality environments: Well designed, managed and maintained environments.
7. Physical protection: Using active security measures.

The findings highlight positive CPTED aspects that can be drawn upon for best practice responses and quick wins. They also prioritise implementable projects while emphasising the importance of CPTED principles in creating safer environments. These findings have informed the recommendations for improvement in the Ngaaruawaahia Urban Design Assessment.

## Climate Change and Sustainability

A broad consideration of climate change and sustainability was undertaken to help inform the development of the urban design inputs.

The key affects of climate change that need to be considered include:

- More extreme weather events.
- Warmer summers and more hot days.
- Milder winters.
- Seasonal rainfall shifts.
- More concentrated rainfall, with higher likelihood of flooding.
- Increased drought risk over spring and summer.

The Waikato District Council Climate Policy identifies the following responses to climate change:

Mitigation (emission reduction)

- Support and encourage community to reduce green house gas emissions.
- Promote and encourage conservation and enhancement of natural environments.

Adaptation

- Support the community, in partnership with others, in preparing for the likely and potential effects of climate change.

Priority Actions

- Minimise waste, pollution and energy use.
- Protect the environment and biodiversity.
- Promote low emission transport options including electric, hybrid, active transportation modes.

These responses and the identified affects have informed the design principles and the identification of urban design outcomes and key moves.

# Engagement Summary

## Mana Whenua Engagement Process

To support the development of the wider structure plan process, an independent Cultural Assessment was undertaken by Te Huia Ltd, which involved Mana Whenua Engagement.

Waikato District Council have also undertaken separate engagement and consultation through a number of forums as part of the wider structure plan process including surveys, focus group sessions and attendance at public events, where the urban design inputs were shared, and feedback provided that has informed the development of this document.

## Community Engagement Summary

Working in partnership with Waikato District Council, community engagement has occurred over an 8 month period beginning in March 2023.

Public engagement and consultation has been undertaken via a number of forums both online and in person throughout this period. These consisted of community open days, Council led reference group meetings consisting of Councilors, Mana Whenua representatives and Community Board Members and also a web based social pinpoint campaign.

A Mana Whenua and wider community survey was undertaken by Council prior to the start of the project and helped to provide some background for subsequent consultation particularly around community identity and cultural aspirations.

Prior to open days, Council were at attendance for the Waikato-Tainui Games in February.

The first series of community open days were held in early March in Ngaaruawaahia, Hopuhopu and Taupiri. Large format maps were pinned up, allowing the community to take part in identifying opportunities and issues as well as thoughts and suggestions on ideas for the future of their community. Council also gathered Mana Whenua input from the Tuurangawaewae Regatta in March after the open days. The feedback was used to inform key outcomes and a project list.

A second series of community open days were held in September in Ngaaruawaahia and Taupiri. Again large format maps were pinned up, this time with key outcomes identified as projects and feedback posters allowing the community to show their support for specific projects. At the same time these key outcomes and projects maps were also made available via Social Pinpoint, allowing the community opportunity to provide feedback online through their mobile phones, tablets and computers. Additionally, a youth session was held at Ngaaruawaahia High School on the 21 September. Furthermore, Council consulted with Tuurangawaewae, Taupiri Marae and Waikato-Tainui to seek their feedback and input.

The feedback from the second series of consultation formed the basis of the implementation framework. Working closely with Council, each of the projects were categorised and tagged with level of complexity, time frames for implementation and delivery lead.

Key themes arising through the engagement included:

- Future walking and cycling facility across the Waikato River.
- Create a legible and safe walking and cycling loop for both Ngaaruawaahia and Taupiri centres.
- Redevelopment of the corner site in Ngaaruawaahia.
- Upgrading toilets and provide shelter and seating at Paterson Park.
- Support in both Ngaaruawaahia and Taupiri to celebrate sites of cultural significance and protect waahi tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities.
- Development of a reserve site masterplan for Te Mana o Te Rangi that expresses and represents hapuu koorero through signage, planting and artwork.

## Engagement Timeline

**Over all of the platforms we had around 1105 individual votes received**

**We had 141 projects**

**5 open day sessions in Ngaaruawaahia, Hopuhopu and Taupiri in March and September**

## Social Pinpoint Statistics

- Over **890** page visits
- **620** votes
- **47** comments

| CATEGORY | UP VOTE | DOWN VOTE |
|---|---|---|
| CONNECTED COMMUNITY | 198 | 27 |
| NATURAL ENVIRONMENT | 135 | 7 |
| IDENTITY | 192 | 33 |
| GROWTH AND ECONOMY | 25 | 3 |

Community Open Day at Ngaaruawaahia War Memorial Hall

Social Pinpoint Campaign in September 2023

**Together for tomorrow:**
**Shaping our Community's Future!**

Join us at the Ngaaruawaahia, Hopuhopu, and Taupiri

# Structure Plan and Town Centre Plan drop-in

Last year we asked you to share your aspirations and concerns for Ngaaruawaahia, Hopuhopu and Taupiri. We have heard your voices and would now like to share some possible project ideas with you! Come along and help prioritise the proposed project ideas for your community.

**When:**

| **Ngaaruawaahia** | **Taupiri** |
|---|---|
| 5:30pm - 7:30pm<br>Tuesday 26<br>September | 5:30pm - 7:30pm<br>Thursday 28<br>September |

**Where:**

| | |
|---|---|
| Ngaaruawaahia War<br>Memorial Hall<br>5 Galileo St | Taupiri War<br>Memorial Hall<br>16 Greenlane Rd |

Can't attend in person? We've got online feedback options. Your input is valuable to us and we want to ensure that everyone's voice is heard. **Visit our website below for more details, or scan the QR code. Link live from 18 September - 6 October.**

**Contact us**
0800 492 452
info@waidc.govt.nz
**shape.waikatodistrict.govt.nz/ourplan**

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

Community Open Day poster

## Who we are

The current population of the Waikato district is 90,100. This number is expected to grow by 35% by 2050, resulting in a population of approximately 121,554.

Ngaaruawaahia holds significant cultural importance as the site of Tuurangawaewae Marae, the seat of the Maaori King. This cultural significance is reflected in its demographics, with Ngaaruawaahia having a higher average population of Maaori compared to the wider Waikato district. The anticipated growth in Ngaaruawaahia could see a population of approximately 8,965 residents by 2050.

Hopuhopu, which is located nearby, has the smallest population among the three settlements. Growth in Hopuhopu will be facilitated by the Waikato-Tainui Masterplan for the site, which includes residential development.

Taupiri, known for its iconic maunga and historic Maaori burial grounds, also has a diverse mix of ethnicities but maintains a strong Maaori presence. Rapid population growth is anticipated for Taupiri by 2050 with an increase of 79.7%, adding 555 people to its population.

## How we travel

A large proportion of residents in Ngaaruawaahia and Taupiri rely on cars for their daily commute, with 4.1% of Ngaaruawaahia residents and 1.8% of Taupiri residents utilising active modes of travel. The use of public transportation is low, accounting for 2.2% combined usage in these two locations.

However, when it comes to school travel, there is a higher percentage of students using active modes of travel like walking and cycling, as well as taking the bus (typically the school bus). This can be assumed to be due to many students living within close proximity to their schools.

These statistics highlight the importance of investing in safe and well-connected active mode infrastructure for both leisure and commuting purposes. This is particularly crucial for the younger population, as they have increased ability to utilise active modes of transport.

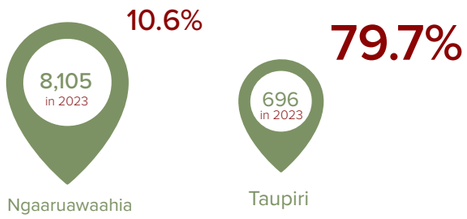
## SNAPSHOT OF THE REGION

# 2050

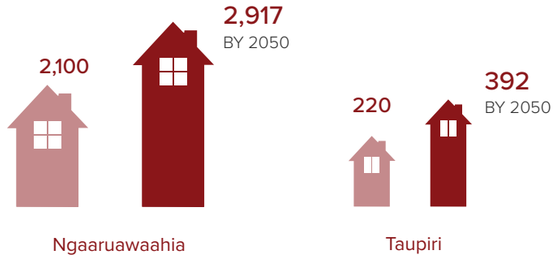
*Data is based on the 2018 Census data and LTP projections. Taupiri Census data includes the Hopuhopu region.*

### Population

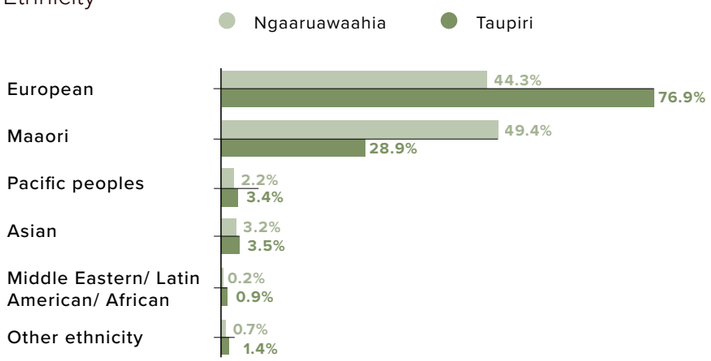
INCREASE IN POPULATION BY 2025



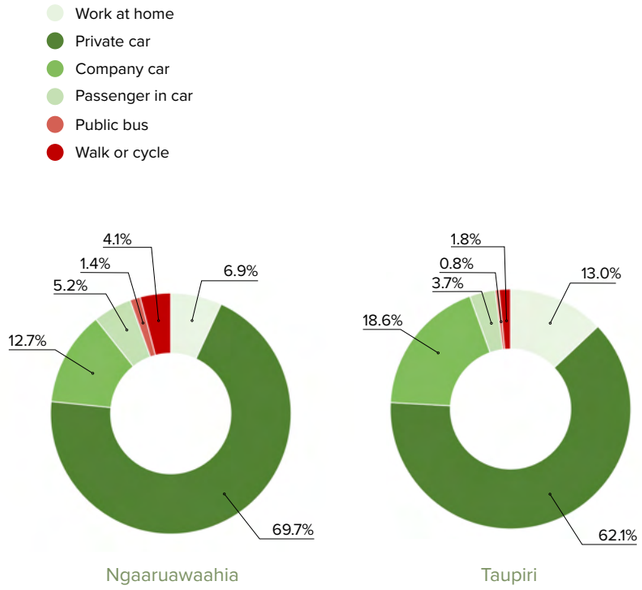

### Households



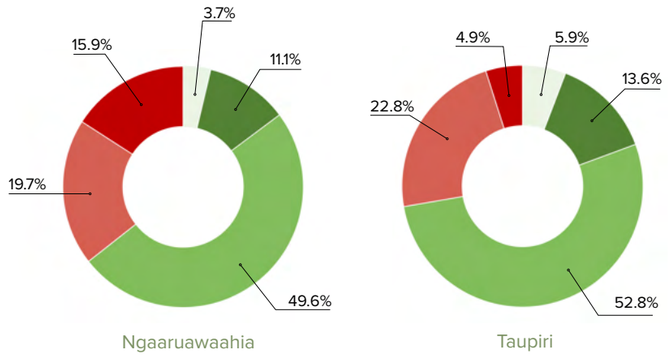

### Ethnicity




### Getting to work




### Getting to education



# Ngaaruawaahia

View of Jesmond Street in Ngaaruawaahia

# Local Context

Ngaaruawaahia is the largest of the three towns in the study area, a role that it will retain. It is located on the confluence of the Waikato and Waipaa Rivers, emphasised by the well known open space reserve “The Point”.

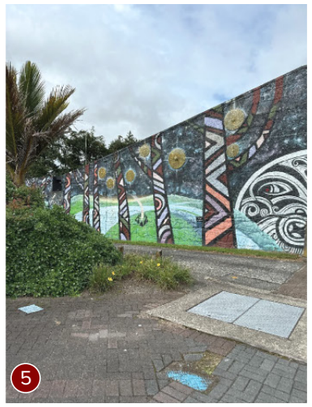
A significant place for Mana Whenua, Ngaaruawaahia is the home of Kiingitanga, and the Tuurangawaewae Marae. The area has a strong cultural heritage and history, with significant sites such as the Puke-i-aahua Paa in and around the town.

The town has a good level of access and is connected via Great South Road, previously SH1 and is bisected by the North Island Main Trunk (NIMT). Access to the rail is a significant opportunity and long term investment across the region brings the opportunity of frequent transport to Hamilton and Auckland in the future.

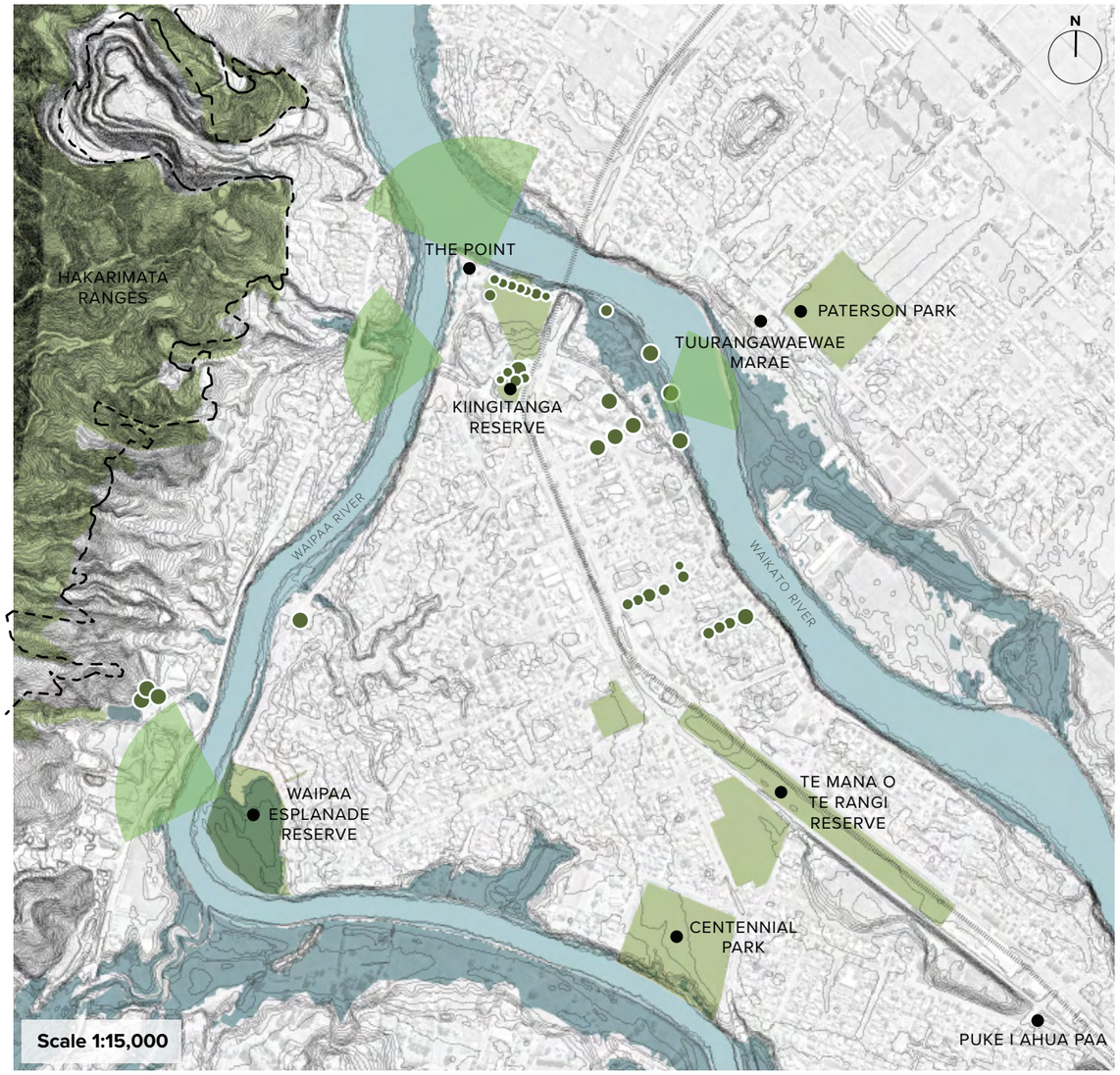
The town centre of Ngaaruawaahia is under performing. This presents an opportunity to improve and enhance the amenity of the town centre, building off the resident population, future growth and the visitors that are attracted to the area through assets like the Te Awa River Ride and the Hakarimata Ranges. The entrepreneurial spirit of the town can be seen in the Durham Precinct which contains pop-up eateries and shops, showcasing how these type of activities can thrive when provided the opportunity.

Growth is anticipated in the town and areas have been identified for intensification close to the town centre. New areas will be identified as part of the update to the structure plan.

## Site photos



# Site Analysis



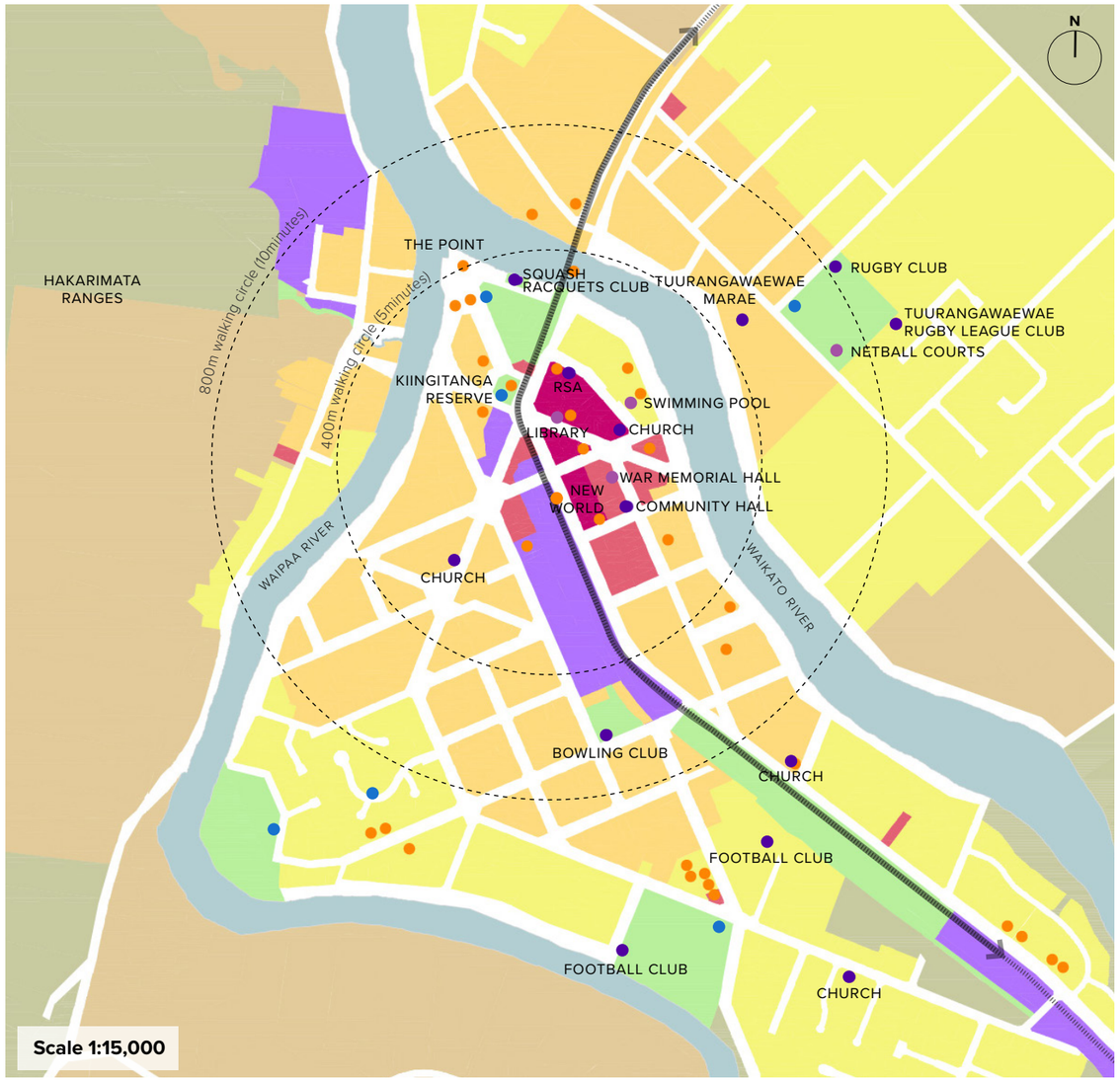

## Natural features

Ngaaruawaahia has a relatively low elevation, with an average height of 30 metres above sea level. To the east of the town, the topography is relatively flat with small ridges and valleys. To the west the Hakarimata Ranges rises in elevation from the river providing panoramic views of the region. Heading south from Ngaaruawaahia, the landscape transitions into the Waikato Plains, which are vast low-lying plains.

Key natural features of the area are the Waipaa and Waikato Rivers and the Hakarimata ranges. Large areas of flooding has been identified along the banks of the Waipaa River and along the gullies of the land east of the Waikato River.

LEGEND

- Flood zones
- River
- Open space
- Notable Trees
- Viewshafts




## Existing site features and land use

Development in Ngaaruawaahia extends from the entry to the town from the south to the joining of the Waikato and Waipaa Rivers. There is a small area of urbanisation to the north-west over the Waipaa River and a larger area of residential development to the north-east of the Waikato River.

Commercial development is focused in the town centre, however there are areas of industrial and commercial land use to the west of the NIMT and to the south.

Residential intensification is signaled within a walkable catchment of the town centre, which will increase the number of people with good access to the town centre.

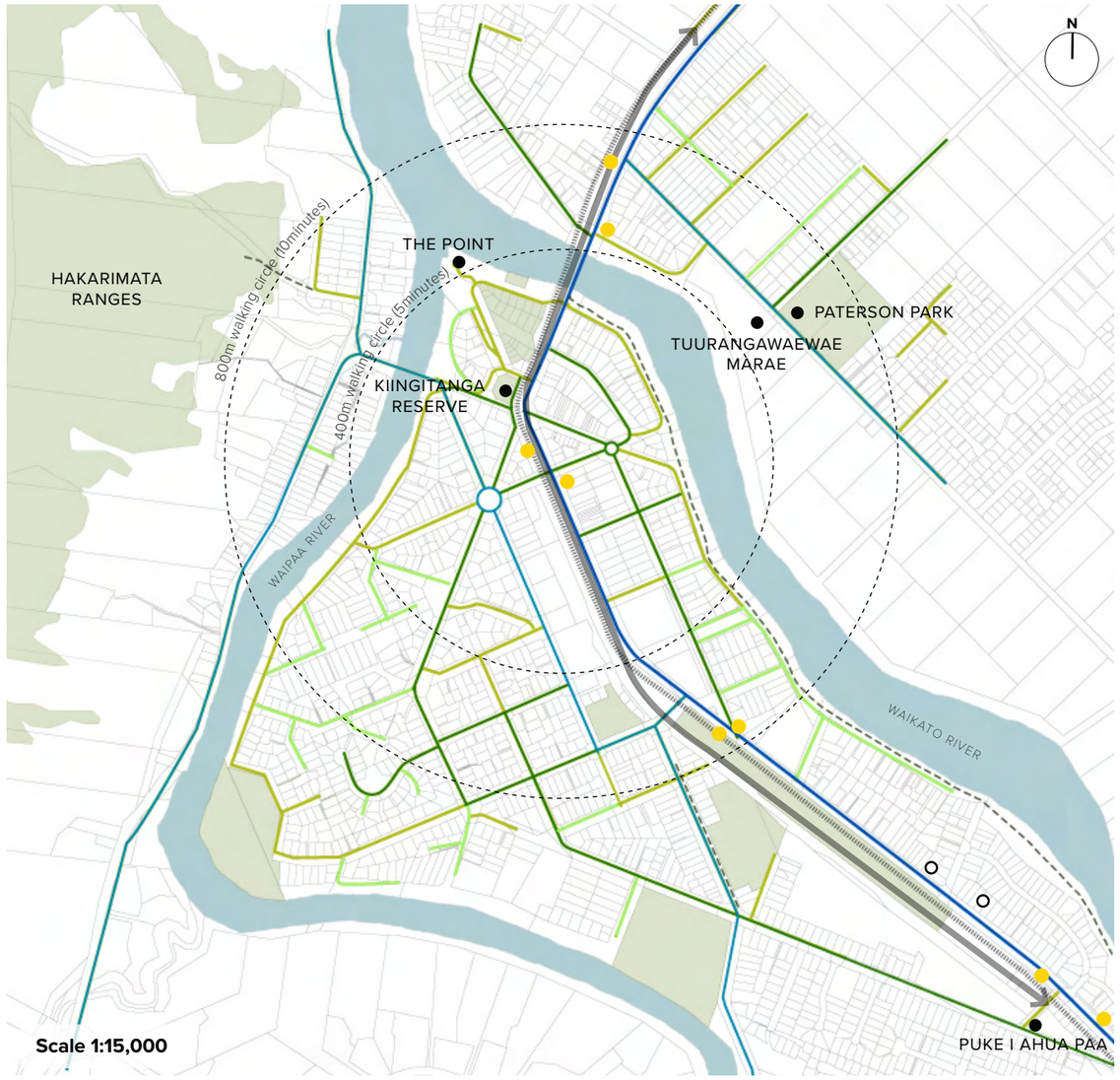
The 800m walking circle shows the distance that can generally be covered by a 10 minute walk, meaning that a large area of the town is within a walkable distance of the town centre.

LEGEND

- Railway (NIMT)
- Non Council-owned community facilities
- Council-owned community facilities
- Historic heritage areas (District Plan)
- Playground

Land use

- Business - Town Centre
- Business - Industry
- Residential - Suburban Zone
- Rural Country Living Zone
- Open space




## Access and cycle connections

Ngaaruawaahia is bisected by the major corridors of Great South Road (previously SH1) and the NIMT. These create a barrier for east-west access within the town, and make direct access for people walking or on bikes to the town centre difficult, with limited safe crossing locations.

The Te Awa River Ride is a popular scenic cycling and walking trail in New Zealand spanning 65km from Lake Karapiro and terminating at Ngaaruawaahia. The trail features various access points, rest areas, and amenities. The two bridges crossing the Waipaa and Waikato River have a narrow footpath but no provision for cycling to connect to the western and northern areas. There is limited cycle facilities throughout the local network.

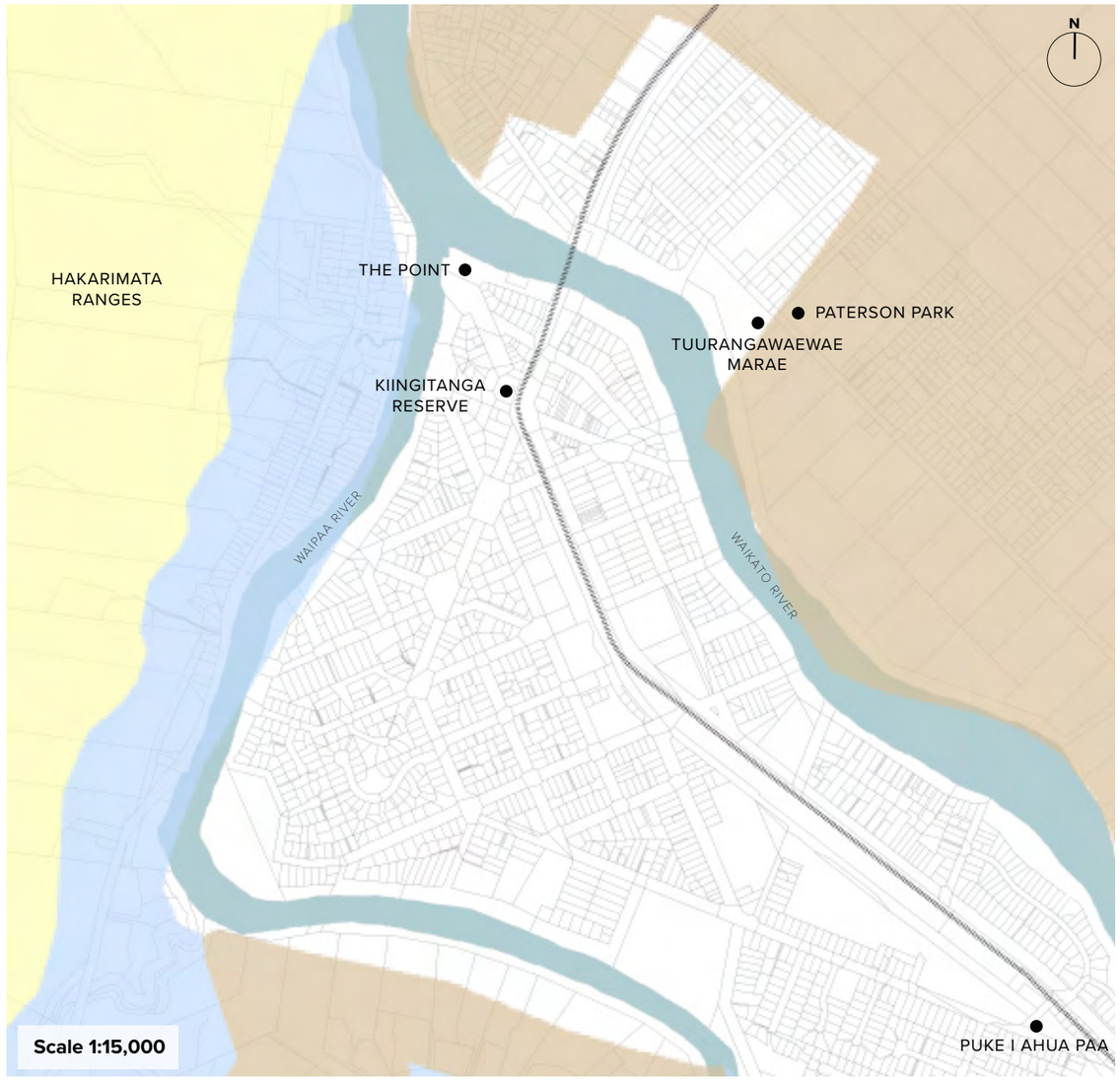
There is a regional bus service running along Great South Road connecting Ngaaruawaahia to Hamilton and other nearby towns. Currently there is no 'within-town' bus services serving Ngaaruawaahia.

LEGEND

- Railway
- Bus stop
- Cycle path

Road classification

- Arterial
- Primary Collector
- Secondary Collector
- Access
- Low volume




## Soil drainage

Areas to the north of the Waikato River and south of the Waipaa River are characterised by lowland plains. A large stretch along the western bank of the Waipaa River is poorly drained.

There are a number of sites of contamination particularly along Great South Road, where there was previously an old land fill. The history of these sites create challenges for their reuse and puts significant constraints on their future development opportunities.

LEGEND

- River

Soil Drainage

- Very Poorly Drained
- Poorly Drained
- Moderately Well Drained
- Well Drained

# Identification of Opportunities

Opportunities have been identified for the three settlements of Ngaaruawaahia through a multi-staged approach. They are a combination of:

- The contextual analysis.
- A spatial analysis undertaken through a desktop assessment.
- A site visit in combination with Council staff, Elected Members and Community Board representatives.
- Input received from technical reports.
- Inputs received by Council through community surveys.
- Feedback received from the community via online engagement and community open day event held in Ngaaruawaahia, Hopuhopu and Taupiri. These sought to understand the issues experienced by the community, and opportunities seen by those that live, work and play in the three towns to improve the liveability of these places.

The opportunities for investment have been grouped under the headings of the design principles, noting that some opportunities will align with multiple design principles.

The opportunities were grouped into themes relating to:

- Connected Communities

  Opportunities relating to transport and accessing the places people want to get to, such as the town centre and key destinations like Tuurangawaewae Marae.

- Identity

  Opportunities related to telling the history, and highlighting the identity, of Ngaaruawaahia, Hopuhopu and Taupiri.

- Natural Environments

  Opportunities related to improving access to, and the quality of, the natural environment.

- Growth and Economy

  Opportunities related to enhancing commercial activity and supporting future growth.

The following pages provide a summary of the opportunities identified through this process. Some of the opportunities sit outside of the remit of Waikato District Council, however were recorded to fully understand the issues and opportunities seen by the community. These opportunities have been assessed and considered by Council as part of this process and have informed the key moves and outcomes. Not all opportunities have been progressed.

View of rail bridge over Waikato River

# Ngaaruawaahia - Wider Town Opportunities

## Connected Communities

Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.

1. Extend the Te Awa River Ride cycle route from Ngaaruawaahia via Hopuhopu, with links to Taupiri Maunga summit track and urupaa. There is a desire to promote Ngaaruawaahia as a destination (part of a cultural and heritage tourism route) incorporating the Hakarimata Ranges, Waipaa and Waikato Rivers.
2. Connect the town centre with the Waikato River and Te Awa River Ride cycle route.
3. Identify a site along Great South Road for a Te Huia stop (Hamilton to Auckland Rail service).
4. Provide safer east west active mode connections across Great South Road and NIMT.
5. Improve active mode connections across the Great South Road bridge to connect to the wider community.
6. Establish walking and cycling path along Old Taupiri Road.
7. Improve walking and cycling along Waingaro Road bridge.
8. Provide traffic calming initiatives along Hakarimata Road to reduce speeding issues.
9. Provide a pedestrian access point to Waipaa River from Hakarimata Road.
10. Establish signage to the Hakarimata Ranges.
11. Opportunity to reroute freight movement.
12. Strengthen connections between the Waipaa Esplanade Walkway to The Point.

## Identity

Strengthen the existing identity and character of the place.

1. Celebrate areas of cultural significant such as the Kiingitanga Reserve, the Point, Hakarimata Ranges, Tuurangawaewae Marae and House through wayfinding, artwork and storytelling.
2. The Waikato River is well-used for the annual Waka Ama event held in March. Opportunities for riverside recreation, access, river edge improvements and viewing areas toward Marae.
3. Opportunity to highlight the riverside heritage features of the flour mill.
4. Opportunity for additional amenities such as a seating and picnic tables at Te Mana o Te Rangi Reserve.
5. Opportunity for additional seating, upgrade of toilets and playground at Paterson Park
6. Emphasise entry to Tuurangawaewae House.
7. Establish township gateways as a way of physical markers to signify the town's entrance and exit points.

Other opportunities

- Identify locations for youth facilities such as a basketball courts.

## Natural Environment

Connect communities to blue-green networks and provide recreational activities and opportunities.

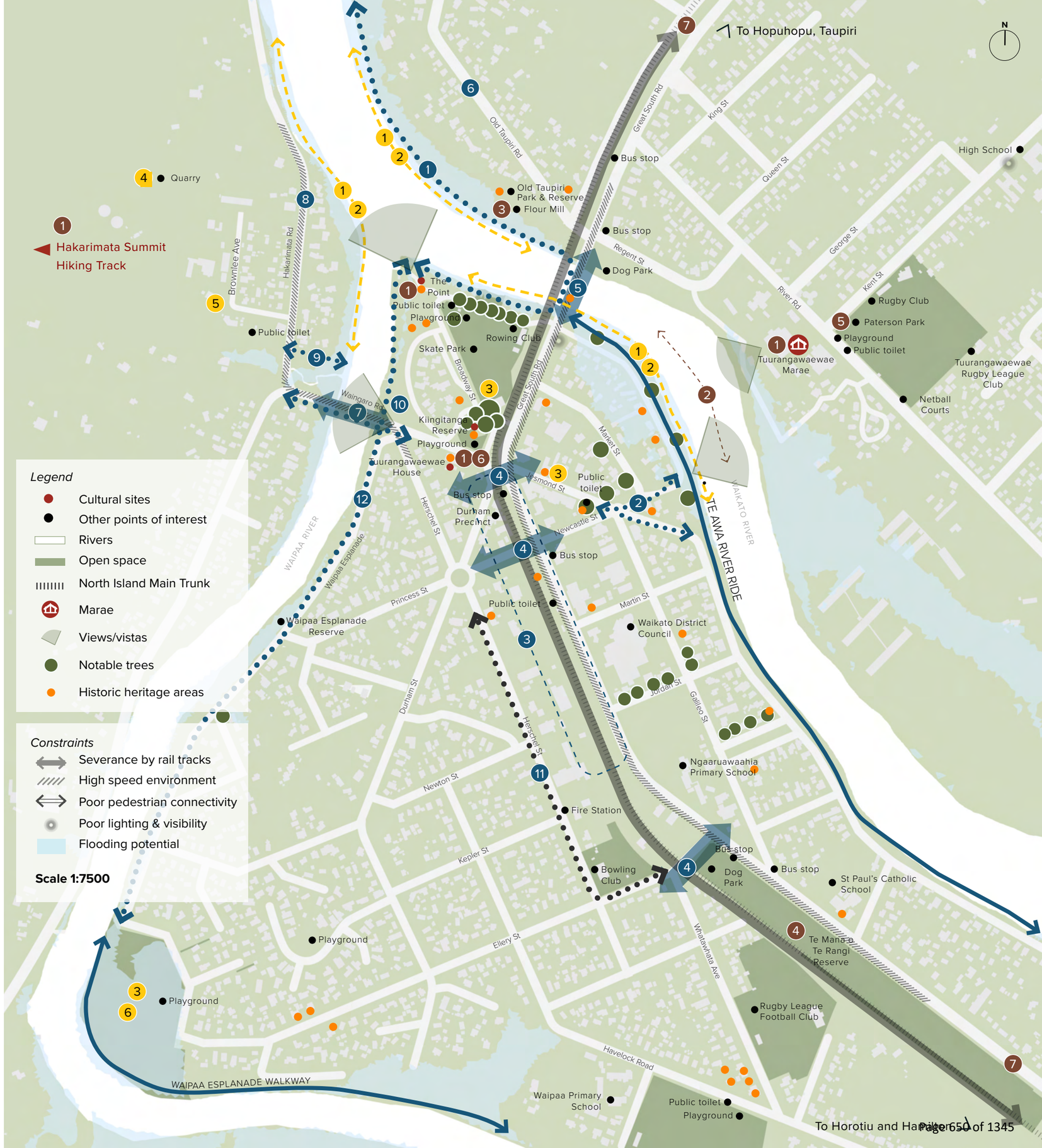
1. Provide community amenities to the riverside such as viewing platforms, shelters and community gathering spaces.
2. Native re-vegetation of riverside to improve water quality, biodiversity and pest control.
3. Identify locations for community gardens and community nurseries.
4. Rehabilitate old quarry back to native bush with the potential for recreation uses.
5. Provide secure bike parking at Hakarimata Reserve.
6. Provide additional community amenities to utilise this open space.

Other opportunities

- Identify opportunities for additional open spaces for the northern community.

## Growth and Economy

Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.



# Ngaaruawaahia - Town Centre Opportunities

## Connected Communities

Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance

1. Create a high quality pedestrian experience along Jesmond Road with reduced speeds and pedestrian prioritised movement.
2. Provide a clear pedestrian link from bridge down to edge of the Waikato River.
3. Improve the Jesmond Street five leg roundabout at the eastern end with a pedestrian and cycling focused solution.
4. Provide a safe and prioritised pedestrian and cycling connection.
5. Review of on street parking, there are carparks too close to zebra crossing obstructing visibility.
6. Upgrade intersection at Old Taupiri Rd and Regent St.
7. Clear sightlines and visibility at New World carpark entry points.
8. Increase visibility turning out of Martin Street.
9. Maximise active mode connectivity through roundabout to improve access to Durham Street Precinct.
10. Improve visibility at the corner of Waingaro Road and Herschel Street.

Other opportunities

- Create a wayfinding and signage strategy and plan that reinforces key cultural sites, routes and amenities.

## Identity

Strengthen the existing identity and character of the place

1. Kiingitanga Reserve and Tuurangawaewae House are significant cultural sites that deserve recognition by way of protection and preservation.
2. Provide visual cues across the North Island Main Trunk by improving the back/service areas of Durham Street buildings and edge of Kiingitanga Reserve with landscape treatment and art.
3. Opportunity for a rest point with bike parking and e bike charging stations at The Point and along Waikato River.
4. Market area at Jesmond Street - inclusion of shelter to encourage more active use of the space.
5. Proposed masterplan for The Point with recreational facilities, extended Te Awa River Ride cycle route/walkway and carparking.
6. Key corner site - opportunity for mixed use community functions such as library, meeting rooms and retail.

Other opportunities

- Design guidelines around town centre appearance and improved existing retail and commercial frontages with canopies, street furniture, seating, planting etc. Involve local schools in painting murals to built a sense of ownership within the community.
- Opportunity for story telling, signage and expression of cultural narratives through township - specific places to be investigated.
- Consolidate community facilities where possible, consider relocation or land swap.

## Natural Environment

Connect communities to blue-green networks and provide recreational activities and opportunities

1. Protect existing trees and look to provide upgraded seating, bins and other amenities.

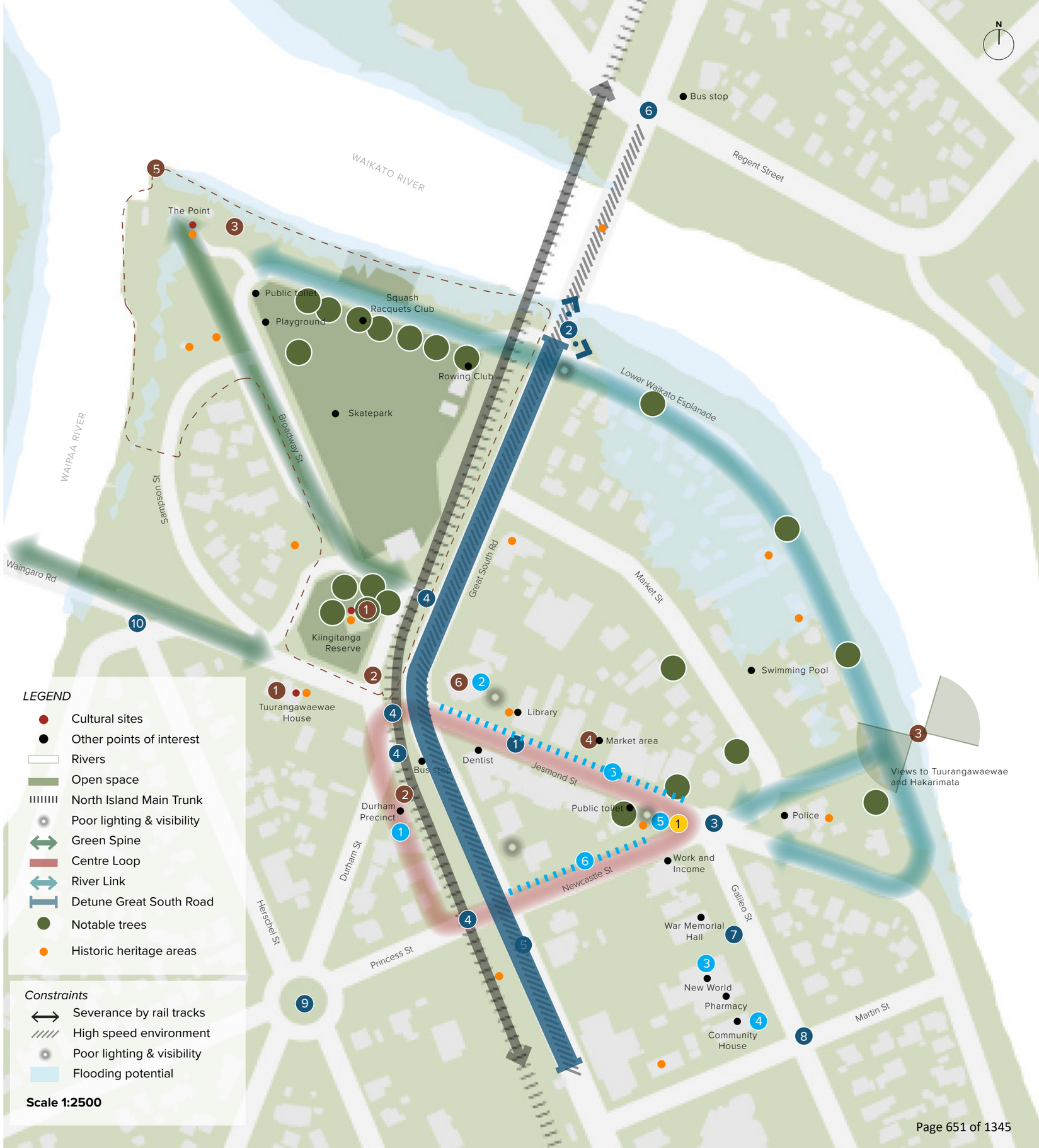
Other opportunities

- Consider inclusion of water sensitive design initiatives such as rain gardens, planted medians, permeable paving, swales and drought resistant planting.

## Growth and Economy

Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community

1. Future proof Durham Precinct.
2. Redevelop the corner site with opportunities to combine with other community uses.
3. Consider future expansion of New World as a anchor tenant and catalyst.
4. Opportunity to relocate Community House to accommodate and enable growth of community services.
5. Redevelop Plunket building for future community use.
6. Consolidate gaps in the streetscape and reactivate vacant sites with functions that provide active uses after hours.



# Town Centre Edge Conditions

A high quality public realm is made up of a number of qualities that engages with pedestrians.
The three main qualities investigated here are:

- Permeability
- Transparency
- Built to Boundary

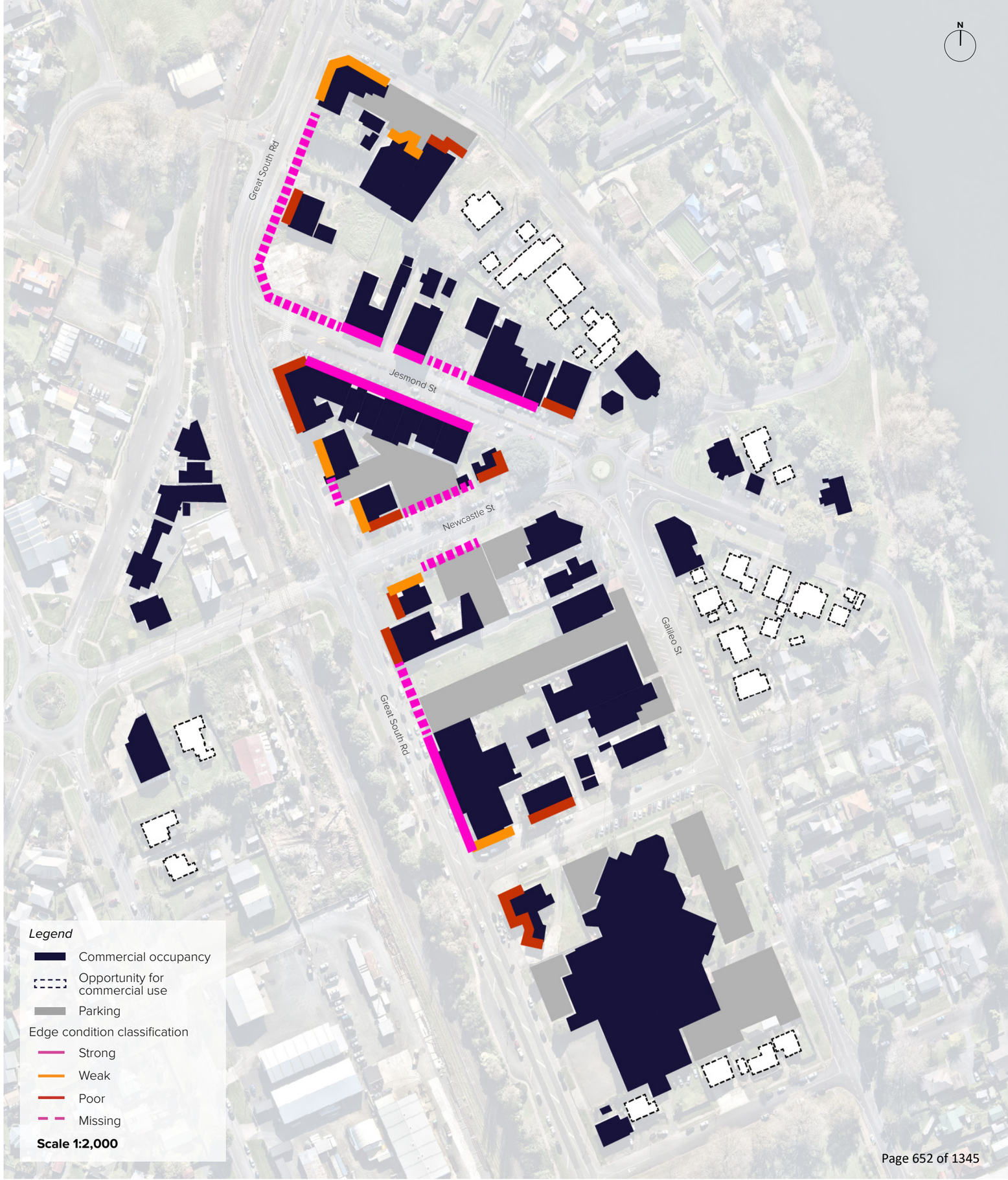
Permeability looks at the provision of pedestrian access points at street frontage. Transparency involves the visual extension of the public space in to the private space and is particularly important for retail uses where they rely on visual cues to draw in passing pedestrians.

The public/private interfaces of the Ngaaruawaahia and Taupiri town centre streetscapes have been visually evaluated based on the above qualities and identified on the plans below as strong, weak, poor or missing edge conditions.

A building frontage that illustrates all three of the above characteristics is identified as having a strong edge condition and a building frontage with just one as poor.

The key frontages identified in the District Plan for Ngaaruawaahia are Jesmond Street and Great South Road from Jesmond to Martin Street. The frontages are fragmented and a mix of strong, weak and poor. A key area of improvement is the built form at the intersection of Jesmond and Great South Road, the two corner sites are gateways and bookends to the main street and will be a significant contributor to the quality of the streetscape. The town centre is also characterised by a large amount of mid block parking, resulting in large gaps along these key street frontages.

View of Jesmond Street in Ngaaruawaahia



# Key Moves & Outcomes

The opportunities identified were shared with the community across two open days and through online engagement, where feedback and support was gathered. The opportunities were also assessed against the agreed Outcome Principles for the project, providing a basis for assessment.

The feedback received relating to the opportunities identified were considered together to confirm the key moves and outcomes for Ngaaruawaahia and how these are to be prioritised over the short, medium and long term. It was recognised that some of the projects are highly complex, will have associated cost, and will need further detailed investigation before they are able to be confirmed in the Long Term Plan for delivery.

The key moves and outcomes have been identified on the following maps. The anticipated prioritisation of these is addressed in the Implementation Section of the document. The key moves and outcomes have also been grouped into the design principles of:

- Connected Communities
- Identity
- Natural Environment
- Growth and Economy

Walking and cycling activities have been identified separately as inputs from the Transport Workstream.

View of The Point in Ngaaruawaahia

# Ngaaruawaahia - Wider Town

## Natural Environment

### Recreational opportunities

1. Undertake open space and playground assessment and investigate potential locations for parks to serve wider Ngaaruawaahia. Consider multi functional uses such as wetland, playground and community gardens.
2. Complete masterplan for The Point.

### Ecological opportunities

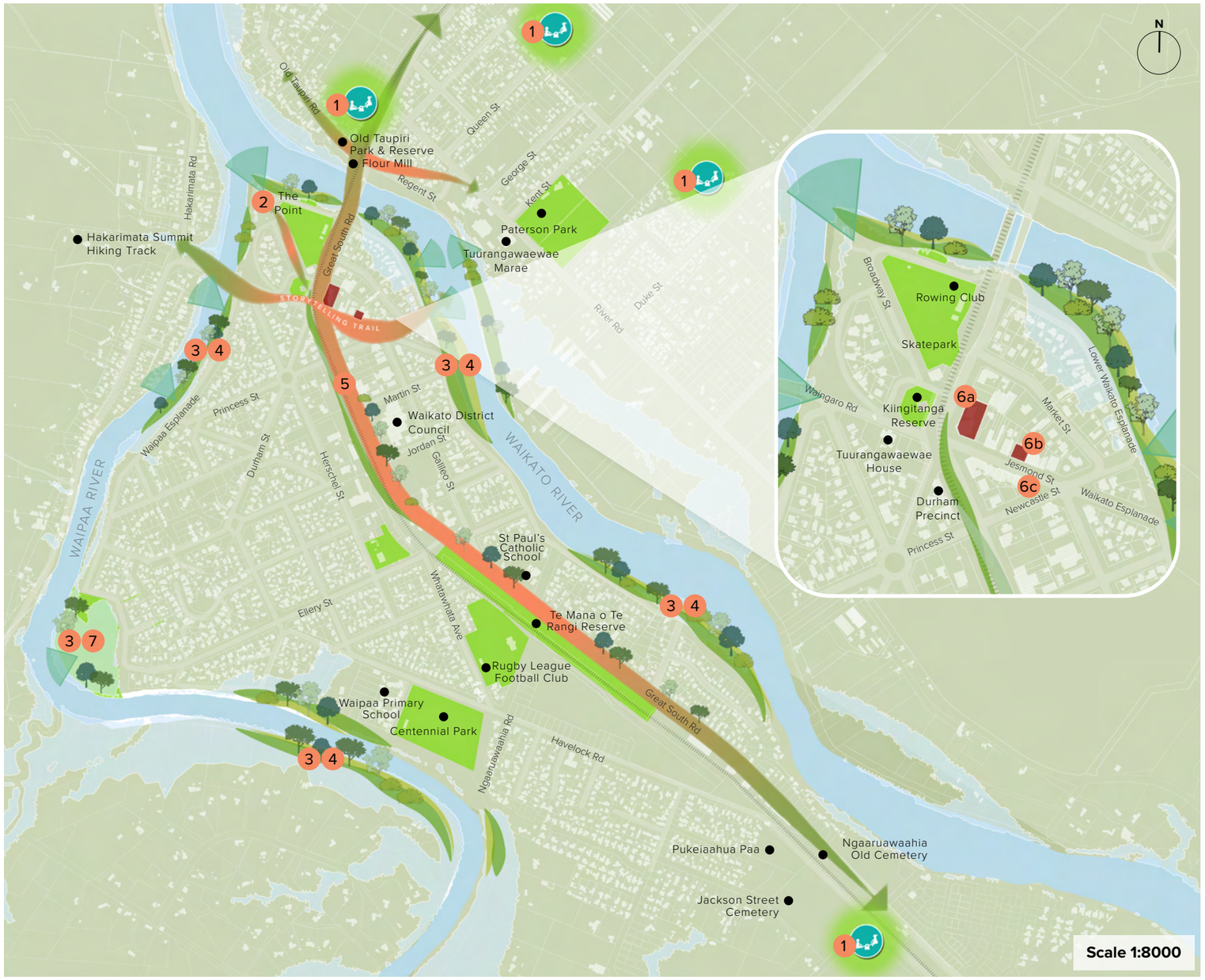
3. Improve resilience to localised flooding through a possible suite:
   - Increased permeable surfaces and attenuation planting.
   - Riverbank planting.
   - River edge terracing to protect recreation areas next to the river.
   - Greening of current paved spaces (swales).
   - Wetlands (to be confirmed through investigation).
   - Water sensitive urban design (to be confirmed through investigation).
4. Increase native tree cover and fruit trees in town.
5. Include additional street trees along Great South Road.

Other projects

- Improve native fauna habitat through education/interpretation and restoration of waterways (native fish, eels etc).
- Undertake a climate risk assessment.

## Growth and Economy

6. Key catalyst development sites:
   a. Corner of Great South Road and Jesmond Street.
   Community uses - Library, community hall, innovation hub, communal working hub.
   b. Investigate the use of the Chorus site at centre of Jesmond Street as a village green - Potential uses include urban community garden, urban play space and maintaining the weekend market.
   c. Redevelop Plunket building for future community use.



Playground

Urban play in Village Green

Mountain bike/pump track

Kids bike park

River access

Urban community garden

# Ngaaruawaahia - Town Centre

## Connected Communities

### Active mode opportunities

1. Extension of the Te Awa River Ride cycle route.
2. Create a clear walking and cycling recreation link from the Waikato River to the Waipaa River, linking Hakarimata Ranges through Kiingitanga Reserve, Jesmond Street and Waikato Esplanade.
3. Create a clear walking and cycling recreational loop to include Waipaa Esplanade Reserve, The Point, Regent Street/Old Taupiri Road, Lower Waikato Esplanade, Durham Precinct and Tuurangawaewae House.
4. Create a pedestrian and cycle connection between Te Awa River Ride cycle route (Belt Street), St Paul's Catholic School, Rugby League Club (Whatawhata Avenue), Centennial Park and the Waipaa River Trail.
5. New active mode connection over the Waikato River.
6. Upgrade active modes facilities over Waingaro Road bridge.
7. Create a gateway marker at 46 & 108 Great South Road.
8. Upgrade of corridors with active modes:
   - Jesmond Street.
   - Great South Road (Both directions - cycleway and footpath).
   - Hakarimata Road and Brownlee Avenue (shared path).
   - Waikato Esplanade (bi-directional cycleway and footpath).
   - Lower Waikato Esplanade (Both directions - cycleway and footpath).

### Intersection and roundabout upgrade

9. Improve the safety and visibility of intersections:
   - Great South Road and River Road.
   - Great South Road and Jesmond Street (proposed new roundabout).
   - Great South Road, Princess Street and Newcastle Street (signalisation under investigation).
   - Great South Road and Waingaro Road (proposed closure under investigation).
   - Great South Road and Market Street.
   - Waingaro Road and Herschel Street (traffic calming or mirrors).
   - Old Taupiri Road (south), Great South Road and Regent Street.
   - Martin Street and Galileo Street (still under investigation).
10. Improve the safety and visibility of Jesmond Street roundabout.

### Enhancing the corridor experience

11. Jesmond Street improvements:
    - Consider shared zones and additional informal crossings to improve pedestrian connections.
    - Additional informal crossings and streetscape upgrades. Integrate crossings with intersection upgrades and development sites.
12. Great South Road improvements:
    - Traffic calming and speed management.
    - Roadway art at existing pedestrian crossings.
    - Additional informal crossing points.
    - Beautify the streetscape with planted promenade.
    - Separated active modes corridor.
    - Formalise crossing on Galileo Street outside Ngaaruawaahia Primary School.
13. River Road:
    - Traffic calming and speed management.
    - Formalise crossings in front of Tuurangawaewae Marae.

### Transport Infrastructure

14. Locate Transport Hub to south of Durham Precinct (location under investigation).
15. Provide bike parking at the base of the Hakarimata Ranges and The Point.
16. Identify spaces for charging points for electric vehicles and bikes at Hakarimata Ranges, Jesmond Street and Durham Precinct.
17. Define and formalise car parks at the Paterson Park in front of the netball courts.

Wayfinding signage

Active modes bridge

Sheltered and protected bike parking

Separated active modes

Tactical urbanism at crossings

Bus hub

## Identity

### Amenities

1. Development of a reserve site masterplan for Te Mana O Te Rangi Reserve that expresses and represents hapuu koorero through signage, planting and artwork.
2. Upgrade toilets, provide shelter and seating at Paterson Park.
3. Provide rest stops, drinking fountains, bike parking, shelters and viewing platforms along the Waikato River (Lower Waikato Esplanade and Sampson Street).
4. Upgrade Waipaa Esplanade walkway trail with rest stops, lookouts, outdoor seating.
5. Create a wayfinding suite for key destinations including the following; Ngaaruawaahia town centre, Hakarimata Ranges, The Point and Waipaa Esplanade Walkway.
6. Celebrate sites of cultural significance and protect waahi tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities at Kiingitanga Reserve, The Point, Hakarimata Ranges, Tuurangawaewae Marae and House, Pukeiaahua Paa and The Flour Mill.
7. Placement of expressions (pou, koowhatu, native trees) to whakanoa (restore balance) to locations of colonial reminders.

### Maintenance/CPTED/Safety

9. Fix light bulbs that are not working along Great South Road.
10. Introduce mirrors and lights at staircase at the base of the bridge.
11. Trim overgrown vegetation at 3 Galileo Street, 3 Kent Street, The Point, Great South Road and Market Street.
12. Clean up of graffiti at 11 Jordan Street, 21 River Road, 3 Broadway Street, Great South Road bridge and along Great South Road.

Other projects

- Review and update the Commercial Design Guidelines.
- Undertake maintenance and repair of street lighting across the township.

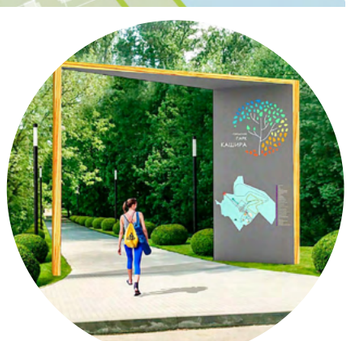
Cultural storytelling signage

Integrated narratives

Shelter and shade at parks

Viewing platform along river

Village green/Town Square


Integrated gateway and interpretive signage

# Ngaaruawaahia - Active Modes

### Active Modes

1. Future walking and cycling facility across Waikato River.
2. Improved walking and cycling connection to Hakarimata Ranges and Te Araroa.
3. Improved walking and cycling connection to Te Awa River Ride via Jesmond Street and Waikato Esplanade.
4. Upgrade Old Taupiri Road/Great South Road intersection (under investigation).
5. Upgrade Great South Road/Princess St intersection to better integrate with rail crossing. Potential signalisation and a raised intersection under investigation.
6. Proposed roundabout with raised platforms for pedestrians and cyclists (under investigation).
7. Safety improvements at existing roundabout (under investigation).
8. Jesmond Street upgrade. This could include providing safer facilities for active modes, increased space for pedestrians, or provision of more space next to shop frontages for outdoor dining (under investigation).
9. Remove existing zebra crossing when new crossings are provided at Princess St signals and Jesmond roundabout.
10. Provide raised platform at the existing zebra crossing to improve access to public toilets.
11. Closure of Waingaro Road intersection and level crossing.

# Artist Impressions of Key Moves

## Amenity upgrades to Paterson Park

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View of Hakarimata Ranges

# Hopuhopu

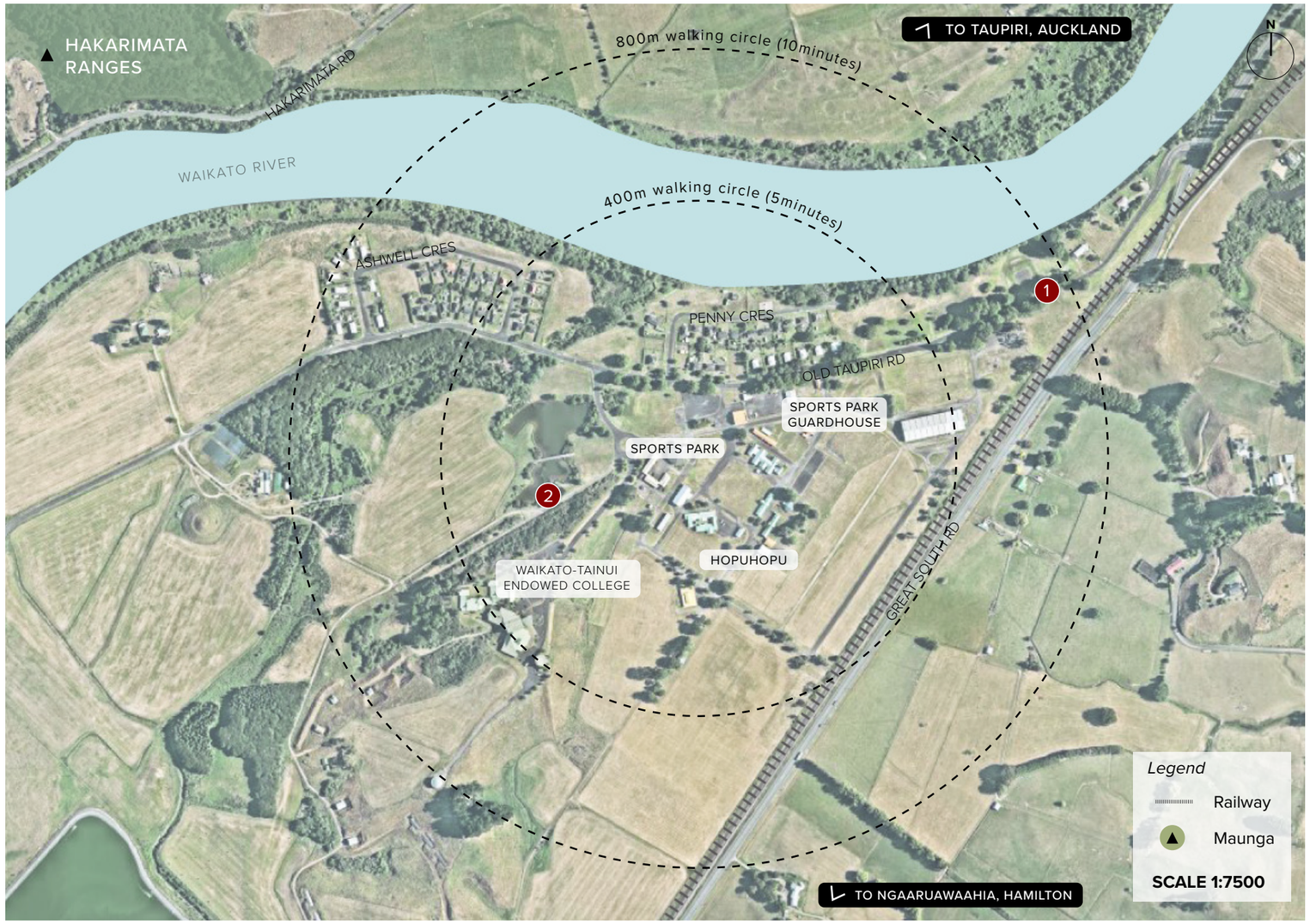
# Local Context

Hopuhopu played a crucial role in the raupatu (confiscation) Treaty settlement negotiations of 1989 until 1995 for Waikato-Tainui. Through the treaty settlement process, the land was returned to Waikato-Tainui. It is held under Te Wherowhero title, which was established as part of the Waikato Raupatu Claims Settlement Act 1995. The Te Wherowhero title land is held by Custodian Trustees for the benefit of all members of Waikato-Tainui.

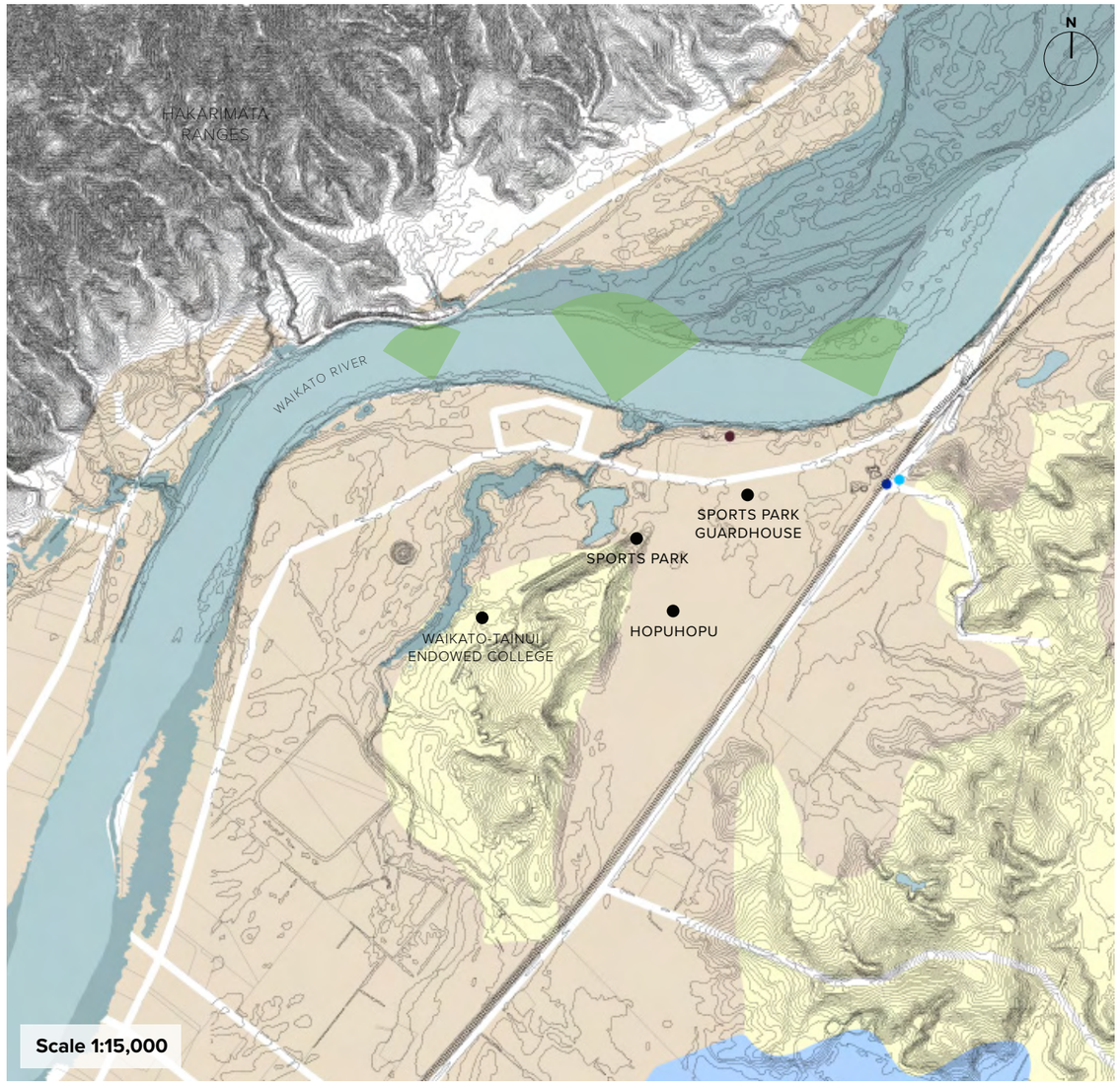
From 1922 until 1989, Hopuhopu served as an active military camp. As part of base closures within the New Zealand Defence Force, Hopuhopu ceased to be an active military camp.

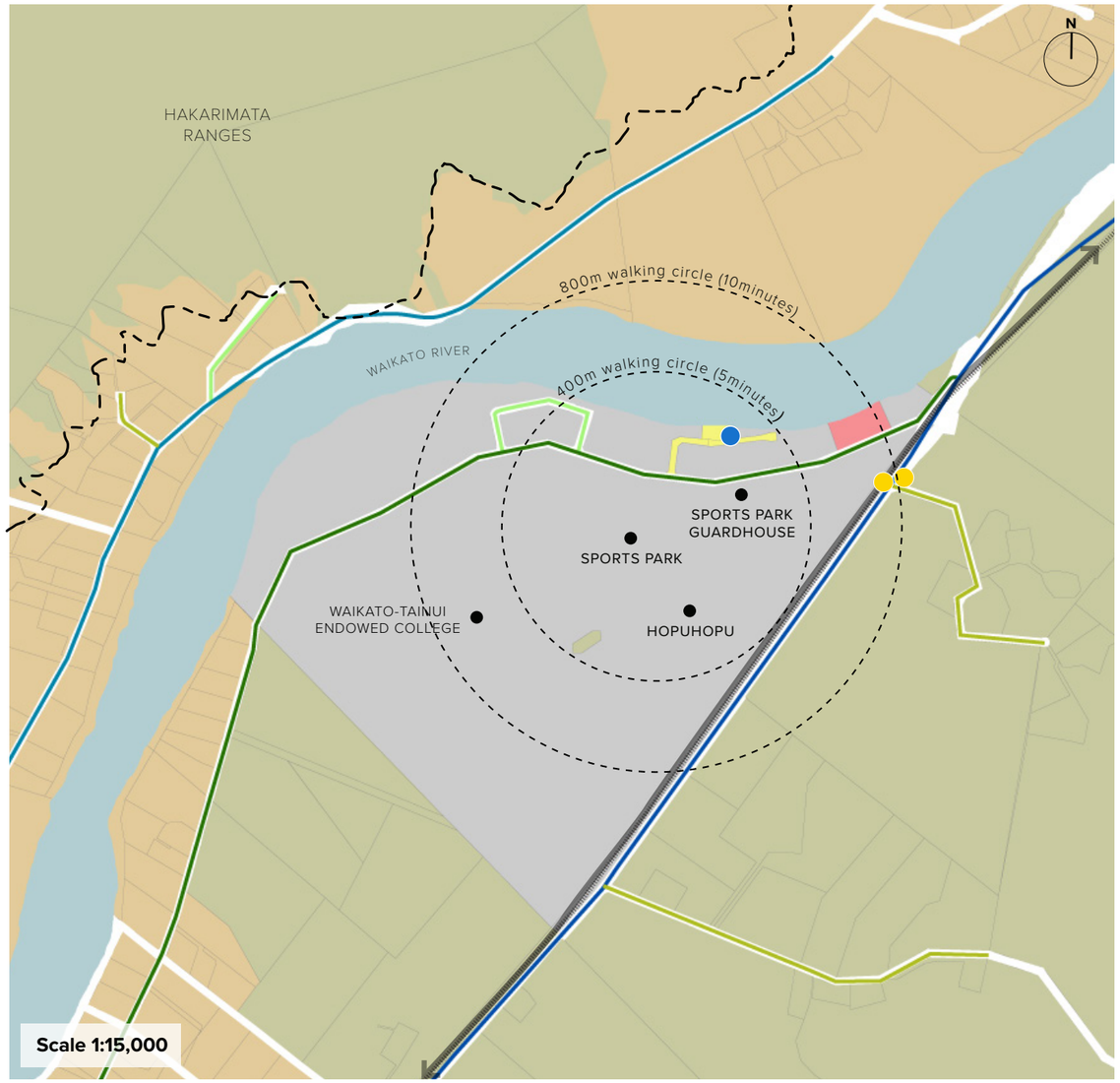
Waikato-Tainui have developed a masterplan for the Hopuhopu Innovation Hub, which includes housing, recreation, education, and nursery facilities. It also will be home to the Tribal Hub.

This plan seeks to support the development of the Hopuhopu Innovation hub, and focuses on how access to Hopuhopu from Ngaaruawaahia and Taupiri can be better facilitated.



# Site Analysis




## Natural features, soil drainage

Hopuhopu is relatively flat with an average height of 30 metres above sea level, with the Endowed College elevated above the lower areas. The College provides panoramic views of the Hakarimata Ranges and Waikato River. Key view points have also been identified along the Waikato River towards the Hakarimata ranges.

The landscape is characterised by lowland plains contributing to fertile and alluvial soil, influenced by the deposition of sediments carried by the Waikato River. Most of the area is relatively well drained.

LEGEND

- River

Soil Drainage

- Very Poorly Drained
- Poorly Drained
- Imperfectly Drained
- Moderately Well Drained
- Well Drained
- Viewshafts

## Existing site features, land use and access

The majority of Hopuhopu is zoned as Special Purpose. The site consists of various buildings, with the most significant one being the Waikato-Tainui Endowed College for Research and Development.

There are existing housing units along the Waikato River, storage and maintenance buildings, and a large portion of the area is dedicated to sports fields and open space.

Waikato-Tainui are currently developing the 170ha Hopuhopu Innovation Precinct over the next 20-30 years. The precinct will include housing, recreation, a nursery, education facilities, a tribal hub, business incubator and a whare taonga, to share the rich history of Waikato-Tainui.

The relationship of this document with Hopuhopu is to support the aspirations of Waikato-Tainui on this site and identify how access and connection to Ngaaruawaahia and Taupiri can be provided that strengthen the connection between these three towns.

LEGEND

- Railway
- Bus stop
- Playground

Road classification

- Arterial
- Primary Collector
- Secondary Collector
- Access
- Low volume

Land use

- Rural Country Living Zone
- Open space
- Special Purpose Zone

# Identification of Opportunities

Opportunities have been identified for the settlement of Hopuhopu through a multi-staged approach. These have focused on how the development of Hopuhopu by Waikato-Tainui can be supported through connectivity and access. The opportunities are a combination of:

- The contextual analysis.
- A spatial analysis undertaken through a desktop assessment.
- A site visit in combination with Council staff, Elected Members and Community Board representatives.
- Input received from technical reports.
- Inputs received by Council through community surveys.
- Feedback received from the community via online engagement and community open day event held in Ngaaruawaahia, Hopuhopu and Taupiri. These sought to understand the issues experienced by the community, and opportunities seen by those that live, work and play in the three towns to improve the livability of these places.

The opportunities for investment have been grouped under the headings of the design principles, noting that some opportunities will align with multiple design principles.

The opportunities were grouped into themes relating to:

- Connected Communities

  Opportunities relating to transport and accessing the places people want to get to, such Ngaaruawaahia and Tuurangawaewae Marae, and Taupiri and the Taupiri Urupaa.

- Identity

  Opportunities related to telling the history, and highlighting the identity, of Ngaaruawaahia, Hopuhopu and Taupiri.

- Natural Environment

  Opportunities related to improving access to, and the quality of, the natural environment.

- Growth and Economy

  Opportunities related to enhancing commercial activity and supporting future growth.

The following pages provide a summary of the opportunities identified through this process. Some of the opportunities sit outside of the remit of Waikato District Council, however were recorded to fully understand the issues and opportunities seen by the community. These opportunities have been assessed and considered by Council as part of this process and have informed the key moves and outcomes. Not all opportunities have been progressed.

View on Old Taupiri Road

# Hopuhopu Opportunities

## Connected Communities

Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.

1. Extend the Te Awa River Ride cycle route from Ngaaruawaahia through Hopuhopu with the inclusion of wayfinding, rest stops and improved facilities along the river.
2. Provide safe and prioritised active mode connections between Ngaaruawaahia and Taupiri that is located off the main road. Consider safety, directness and visibility.
3. Upgrade and bus shelters and improve access to bus stops on Great South Road.
4. Review bus routes and bus stops down Old Taupiri Road in response to anticipated growth of the settlement, providing residents better access to public transport.

## Identity

Strengthen the existing identity and character of the place.

1. A boulevard of trees line Old Taupiri Road as you enter the Hopuhopu area from the north-east. There is opportunity for a physical marker and a similar boulevard to be planted on the west as gateways into the township.
2. Enable continued development of cultural and visitor activities in collaboration with Waikato-Tainui that reflects the heritage of the area.

## Natural Environment

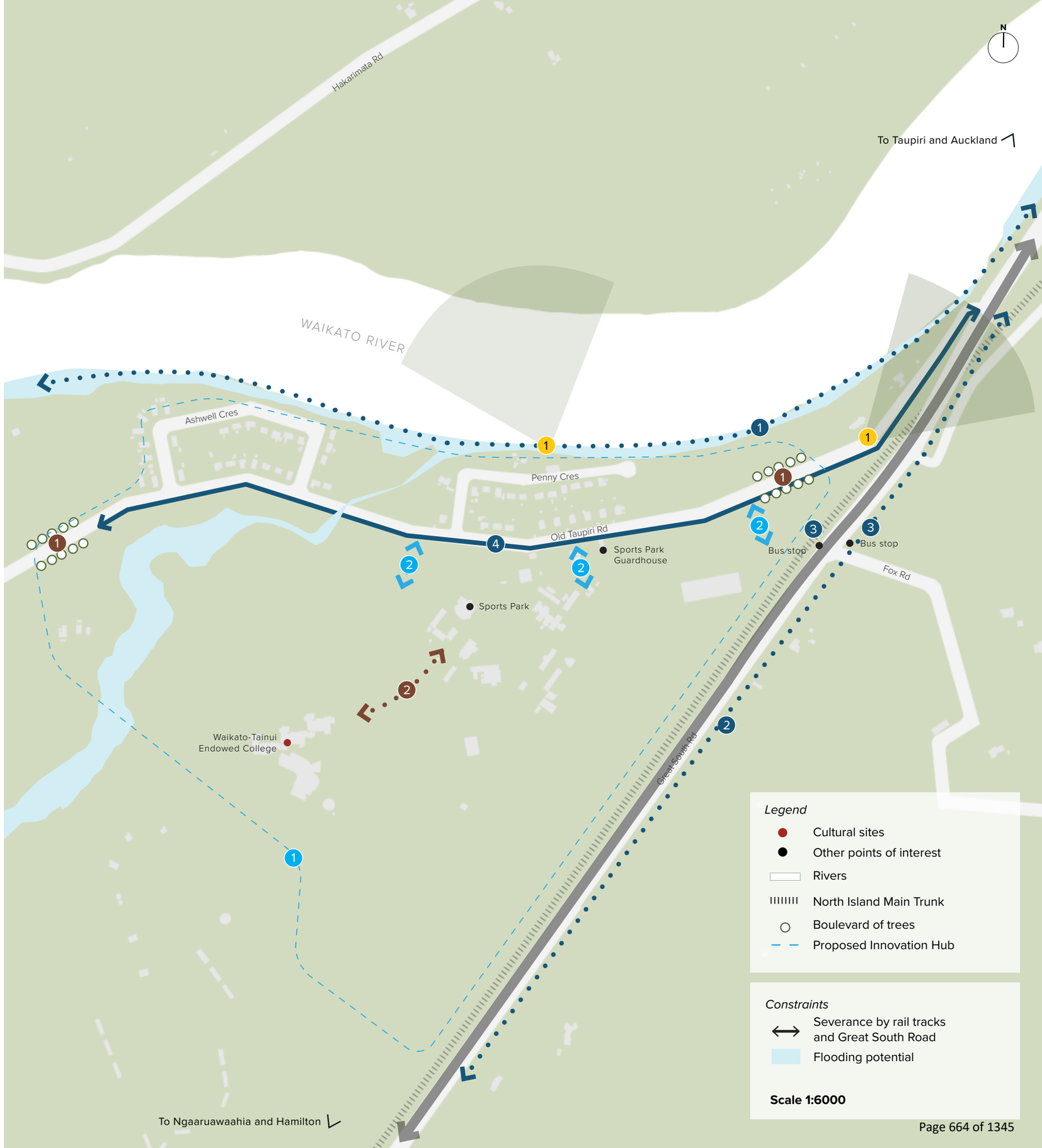
Connect communities to blue-green networks and provide recreational activities and opportunities.

1. Opportunities to open up view corridors to significant natural features such the Waikato River, Taupiri Maunga and Hakarimata Ranges.

## Growth and Economy

Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.

1. Future Hopuhopu Innovation Hub which will include residential, commercial, education and recreational functions.
2. Proposed entry points.



# Key Moves & Outcomes

The opportunities identified were shared with the community across two open days and through online engagement, where feedback and support was gathered. The opportunities were also assessed against the agreed Outcome Principles for the project, providing a basis for assessment.

The feedback received relating to the opportunities identified were considered together to confirm the key moves and outcomes for Hopuhopu and how these are to be prioritised over the short, medium and long term. It is recognised that some of the projects are highly complex, will have associated cost, and will need further detailed investigation before they are able to be confirmed in the Long Term Plan for delivery.

The key moves and outcomes have been identified on the following maps. The anticipated prioritisation of these is addressed in the Implementation Section of the document. The key moves and outcomes have also been grouped into the design principles of:

- Connected Communities
- Identity
- Natural Environments
- Growth and Economy

Walking and cycling activities have been identified separately as inputs from the Transport Workstream.

## Hopuhopu

### Connected Communities

**Active mode opportunities**

1. Extension of the Te Awa River Ride through Hopuhopu with the inclusion of rest stops and formal and informal viewing areas.
2. Create a safe and clear active mode connection between Ngaaruawaahia and Taupiri along Great South Road (separated cycleway).

**Enhancing the pedestrian experience**

3. Establish a boulevard of trees as a gateway marker into Hopuhopu.
4. Protect existing trees/boulevard.
5. Provide bus shelters and a new pedestrian crossing for existing and future bus stops. Explore the re-location of bus stops to a location within Hopuhopu that does not require users to cross Great South Road and the NIMT and provides better access to public transport for residents.

**Intersection and roundabout upgrade**

6. Improve the safety and visibility of the Old Taupiri (north)/Great South Road intersection (under investigation).

### Identity

7. Support the development of the Waikato-Tainui Masterplan for Hopuhopu.

Rest stop and viewing area

Upgraded bus shelters

Riverside shared path

Tree boulevard

View of Te Putu Street

# Taupiri

# Local Context

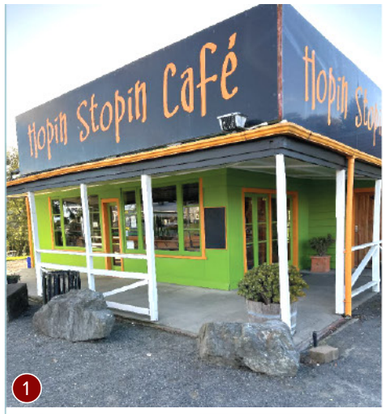
Taupiri Village is located at the foot of Taupiri Maunga, a significant site for Waikato-Tainui. Adjacent to the Waikato River, and the Mangawara Stream, the village has a population of approximately 560 people, with strong growth anticipated to occur in the area.

There are a number of paa sites in and near the village and the area is significant to Mana Whenua.

The town is located on Great South Road, previously SH1 and Gordonton Road (SH1B). With the opening of the Huntly Bypass Taupiri is no longer the main transport route through the Waikato, however still remains a busy route providing access to the south of Huntly. The North Island Main Trunk Line bisects the town, creating a barrier to east-west movement particularly for people walking and people on bikes.

There are small areas of commercial activity within the village, focused on Te Putu Street. The Taupiri interchange, accessed via Gordonton Road, provides some convenience retail for residents.

## Site photos



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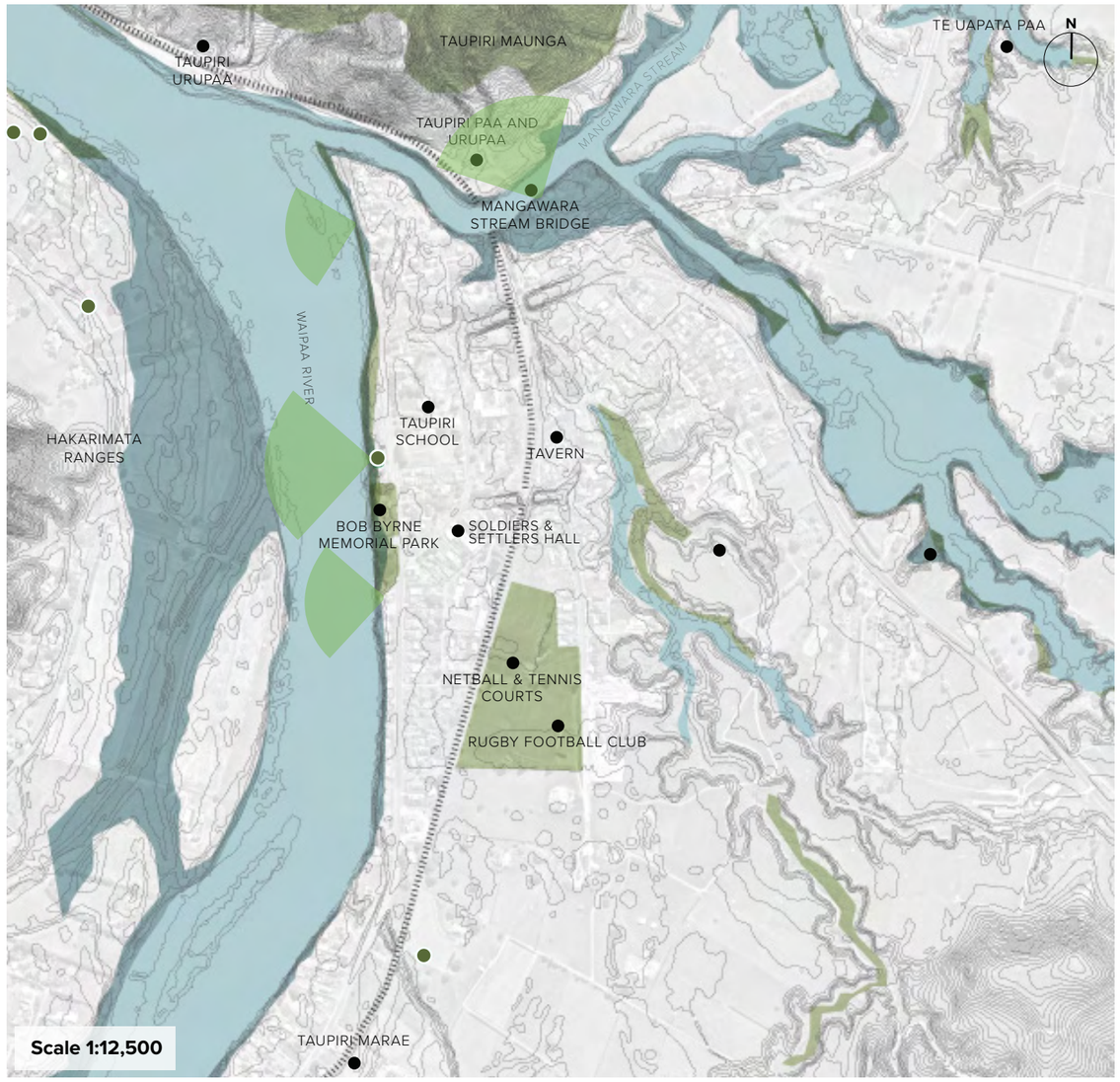
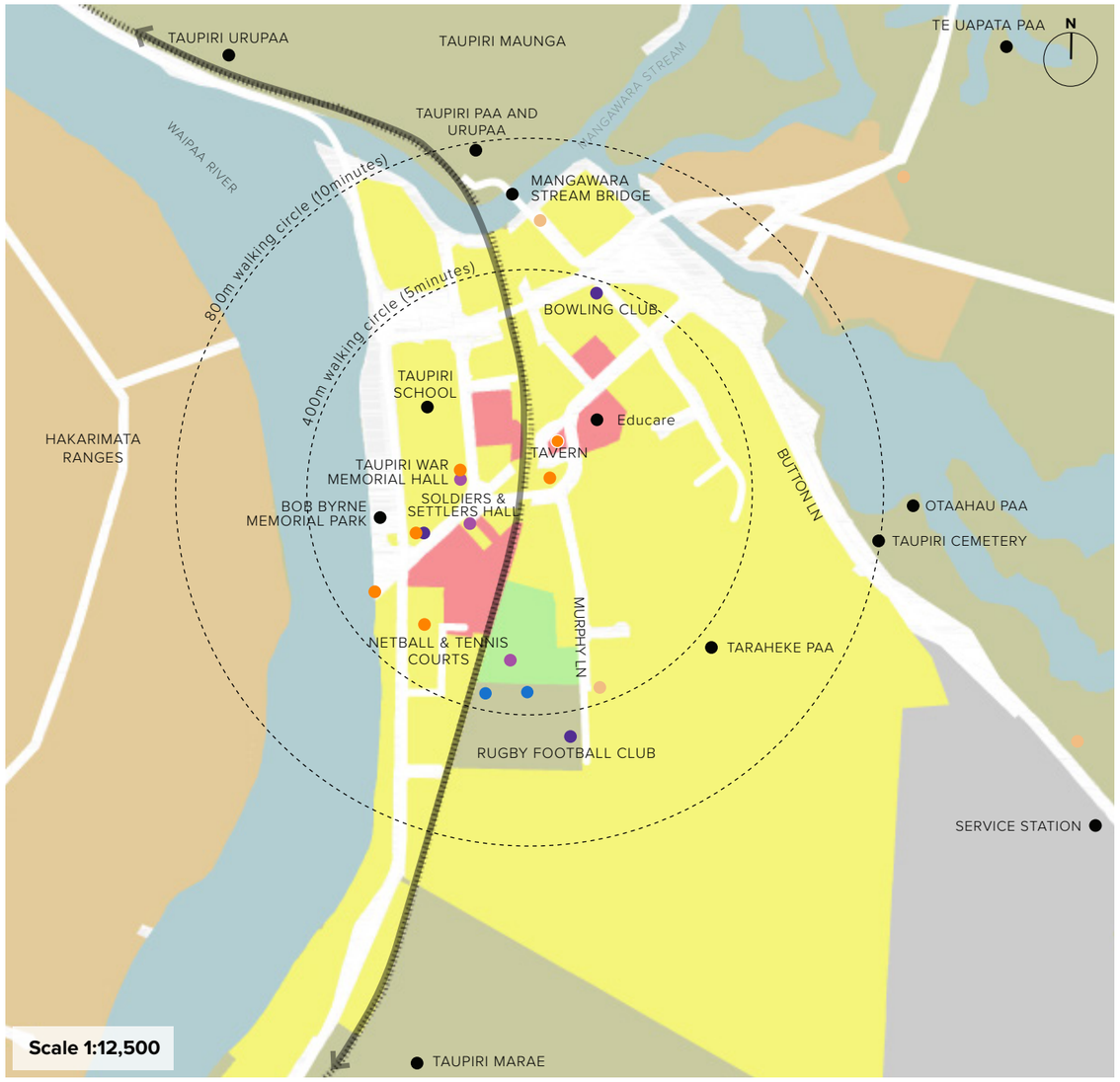
# Site Analysis




## Natural features

Taupiri is relatively flat with an average height of about 30 metres above sea level.

To the north, one of the prominent features is the iconic Taupiri Mountain, a Maaori paa and urupaa with strong historical significance. The area is characterised by greenery, agricultural fields, and the Waipaa River and its tributaries and waterways.

LEGEND

- Flood zones
- River
- Open space
- Notable Trees
- Viewshafts

## Existing site features and land use

The Proposed District Plan has identified new residential areas between Murphy Lane and Button Lane to facilitate future growth.

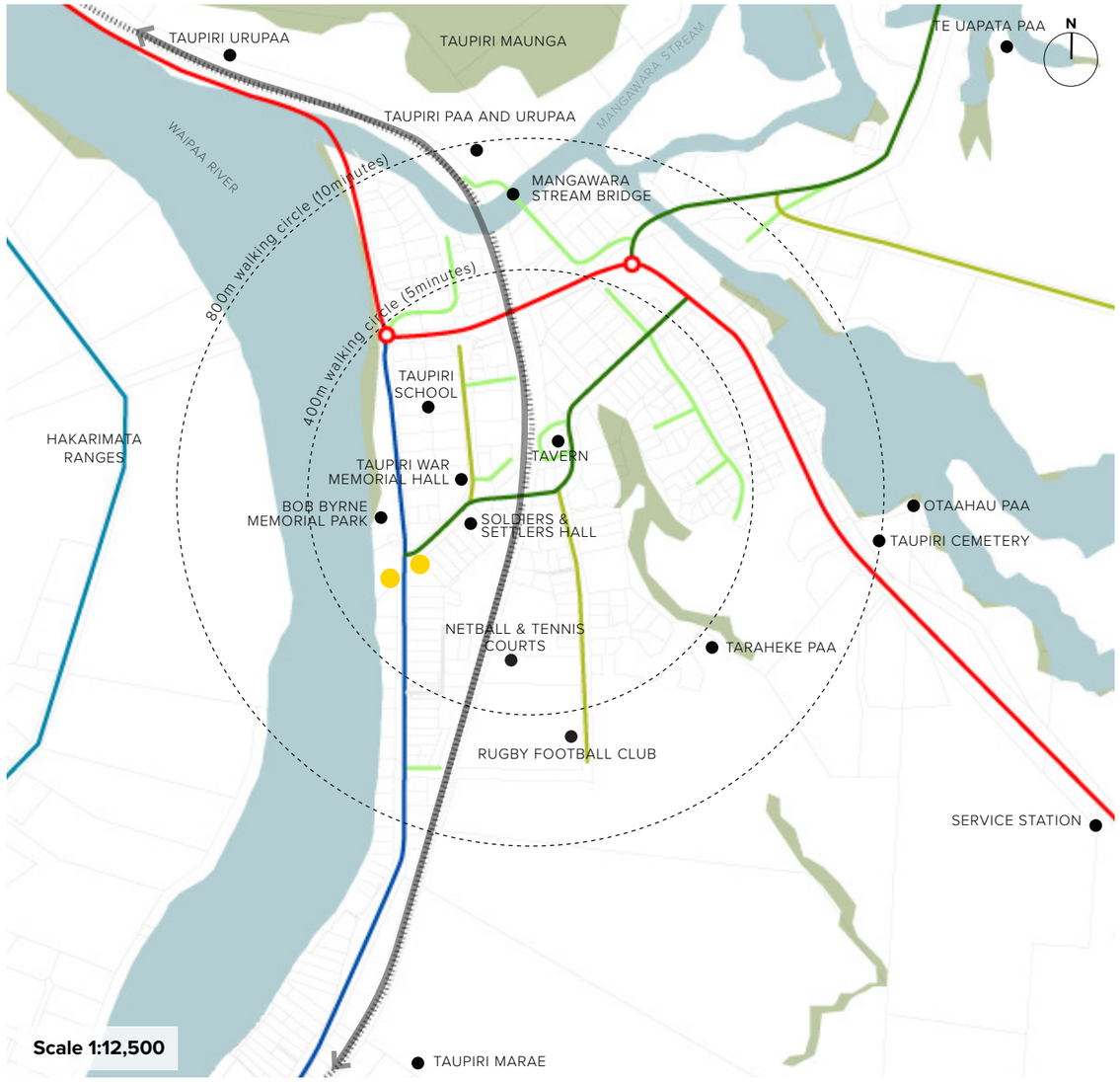
The upgrade of services should be carefully identified and planned to support both employment and residential growth within a walkable catchment of the Township. By focusing on urban forms of growth primarily in towns and villages and encouraging compact urban development, residents have the opportunity to “live, work, and play” in their local area.

LEGEND

- Railway (NIMT)
- Non Council-owned community facilities
- Council-owned community facilities
- Historic heritage areas
- Playground
- Paa site entry

Land use

- Business - Centre Zone
- Residential
- Open space
- Future Urban Zone




## Access and cycle connections

Taupiri has strong north/south connections with the road network running parallel to the Waikato River and the NIMT. East/west connections are limited to where the current network crosses the NIMT at Gordonton Road to the north and Te Putu Street to the south.

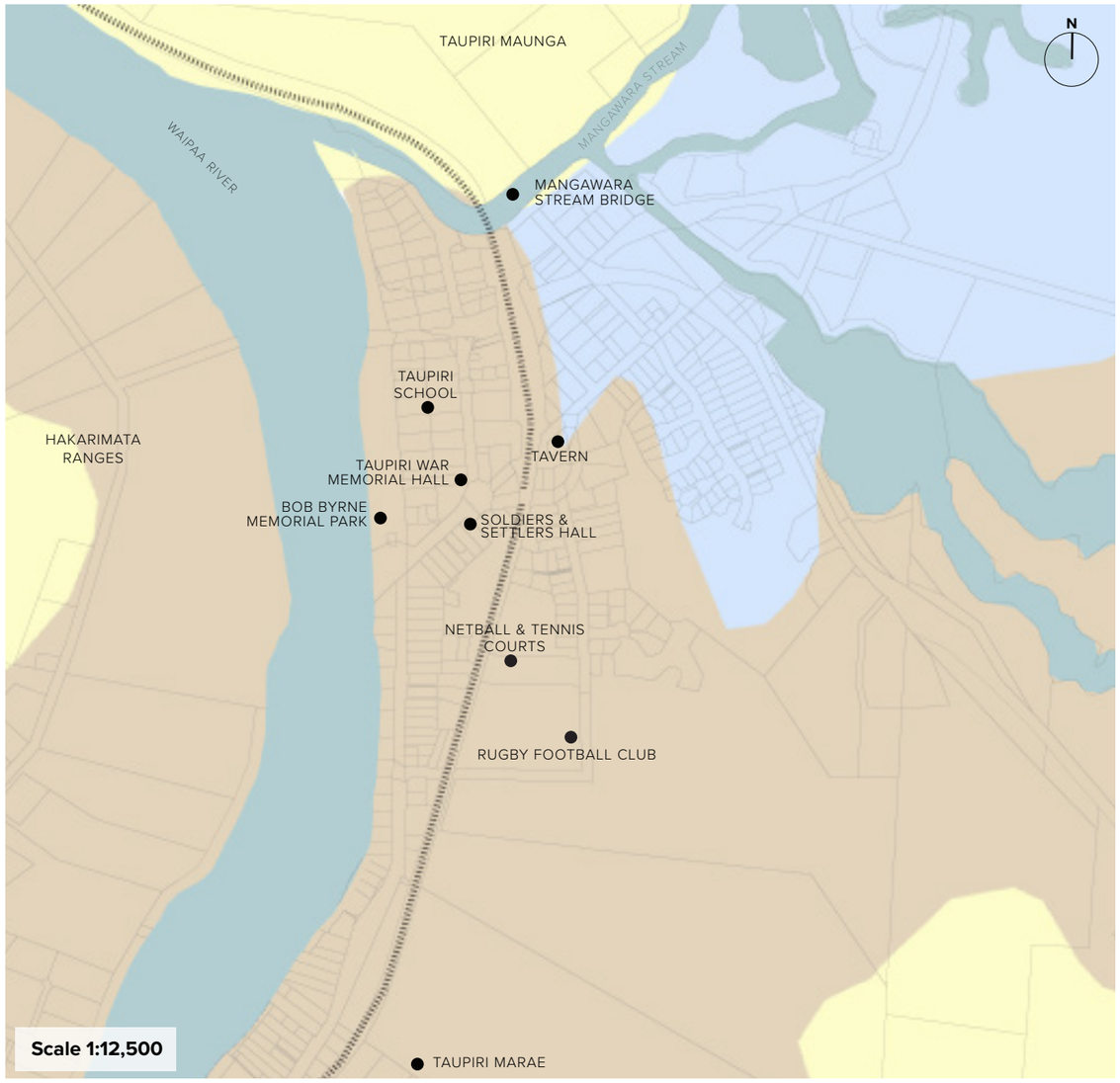
Walking and cycling facilities are limited and generally constrained. There are underpasses for pedestrian access under Gordonton Road and Te Putu Street that are of a poor standard. There are no east/west connections to the south of Te Putu Street.

LEGEND

- Railway (NIMT)
- Bus stop

Road classification

- Arterial
- Primary Collector
- Secondary Collector
- Access
- Low volume




## Soil drainage

Taupiri is mainly characterised by lowland plains to the south of the Maunga. Large areas of land to the south of the Managawara Stream has drainage issues and is prone to flooding.

Large areas of contaminated land has been identified within the township particularly in the new residential development area between Murphy lane and Button lane.

LEGEND

Soil Drainage

- Imperfectly Drained
- Moderately Well Drained
- Well Drained

# Identification of Opportunities

Opportunities have been identified for the settlement of Taupiri through a multi-staged approach. The opportunities are a combination of:

- The contextual analysis.
- A spatial analysis undertaken through a desktop assessment.
- A site visit in combination with Council staff and Elected Members.
- Input received from technical reports.
- Inputs received by Council through community surveys.
- Feedback received from the community via online engagement and community open day event held in Ngaaruawaahia, Hopuhopu and Taupiri. These sought to understand the issues experienced by the community and opportunities seen by those that live, work and play in the three towns to improve the livability of these places.

The opportunities for investment have been grouped under the headings of the design principles, noting that some opportunities will align with multiple design principles.

The opportunities were grouped into themes relating to:

- Connected Communities

  Opportunities relating to transport and accessing the places people want to get to, such Ngaaruawaahia and Tuurangawaewae Marae, and Taupiri and the Taupiri Urupaa.

- Identity

  Opportunities related to telling the history, and highlighting the identity, of Ngaaruawaahia, Hopuhopu and Taupiri.

- Natural Environments

  Opportunities related to improving access to, and the quality of, the natural environment.

- Growth and Economy

  Opportunities related to enhancing commercial activity and supporting future growth.

The following pages provide a summary of the opportunities identified through this process. Some of the opportunities sit outside of the remit of Waikato District Council, however were recorded to fully understand the issues and opportunities seen by the community. These opportunities have been assessed and considered by Council as part of this process and have informed the key moves and outcomes. Not all opportunities have been progressed.

View of Taupiri Maunga from Great South Road

# Taupiri Opportunities

## Connected Communities

Promote safe, efficient and attractive active mode connections to encourage walkability and reduce car dominance.

1. Opportunity to extend the Te Awa River Ride cycle route from Ngaaruawaahia via Hopuhopu to Taupiri, with link to the Taupiri Maunga summit track and urupaa.
2. Provide safe walking and cycling connections to the service station precinct on Gordonton Road.
3. Create safe and visible pedestrian and cycling connections between Taupiri Marae and Hopuhopu.
4. Provide a safe crossing facility at Great South Road bus stop.
5. Review layout of the Great South Rd and Gordonton Rd roundabout to improve visibility and safety.
6. Provide signage to Taupiri urupaa along Watts Grove.
7. Create safer crossings at Te Putu St from Educare to the footpath across the road.
8. Upgrade active modes facilities on Te Putu Street bridge.
9. Improve the connection at Taupiri School, currently a kea crossing but no formal pedestrian crossing. Maneuvering & on-street parking outside Taupiri School is limited.
10. Improve the safety of Murphy lane/Te Putu St intersection visibility.
11. Upgrade stairs to the urupaa.
12. Provide interim CPTED solutions at the two underpass - Te Putu Street and Greenlane Rd and consider future alternative crossing solutions.
13. Detune Great South Road to enable better cross connectivity and minimise severance to the river.
14. Provide north-south connections through the new growth area between Taupiri Marae and Murphy Lane.
15. Improve safety and visibility of Button Lane and Gordonton Road intersection.

## Identity

Strengthen the existing identity and character of the place.

1. Utilise the river as a future transportation route and/or ecotourism opportunity with fishing/ river kai activities to tie-in with local community.
2. Opportunity for storytelling to improve connections, outcomes & protection of areas of cultural significance. E.g. Puke I Ahua, Taupiri Maunga, paa sites, urupaa.
3. Establish a community focal point on the eastern side of the rail tracks that reflects the local "village" identity.
4. Establish a riverside focal point that connects between the Hopin Stopin cafe, Bob Bryne Memorial Park and Te Putu Street commercial functions.
5. Improve lighting in targeted areas such as the Rugby Football Club.

## Natural Environment

Connect communities to blue-green networks and provide recreational activities and opportunities.

1. Taupiri Maunga, Waikato River, Urupaa, Hakarimata Ranges, Flaxmill and several heritage sites are the assets that make Taupiri unique. These should be celebrated and promoted through story telling, way finding and iconic sculptures.
2. Upgrade pathways to include wayfinding, shelter, and rest stops to support riverside recreational use along the Waikato River and adjacent reserves. Consider other benefits such as weed/pest control and re-vegetation for river ecosystem restoration.
3. Initiatives to restore kiwi habitat at Taupiri Maunga.

## Growth and Economy

Support projected growth with well connected services, amenities and commercial opportunities to fit the needs of the community.

1. Opportunity to consider local convenience to service new growth area closer to the Taupiri Marae.
2. Opportunity for future industrial uses around service station precinct on Gordonton Road.
3. The existing Taupiri Rugby Football Club are well used with the desire for another sports/ community hub targeted for the youth.
4. Opportunity for new community amenities within township i.e. Supervalue, post office, afterschool care and Educare.

Other opportunities

- Future proof for the aging population in Taupiri with the provision of appropriate accommodation and amenities.
- Identify and provide high quality open spaces to service future growth.

# Town Centre Edge Conditions

A high quality public realm is made up of a number of qualities that engages with pedestrians.

The three main qualities investigated here are:

- Permeability
- Transparency
- Built to Boundary

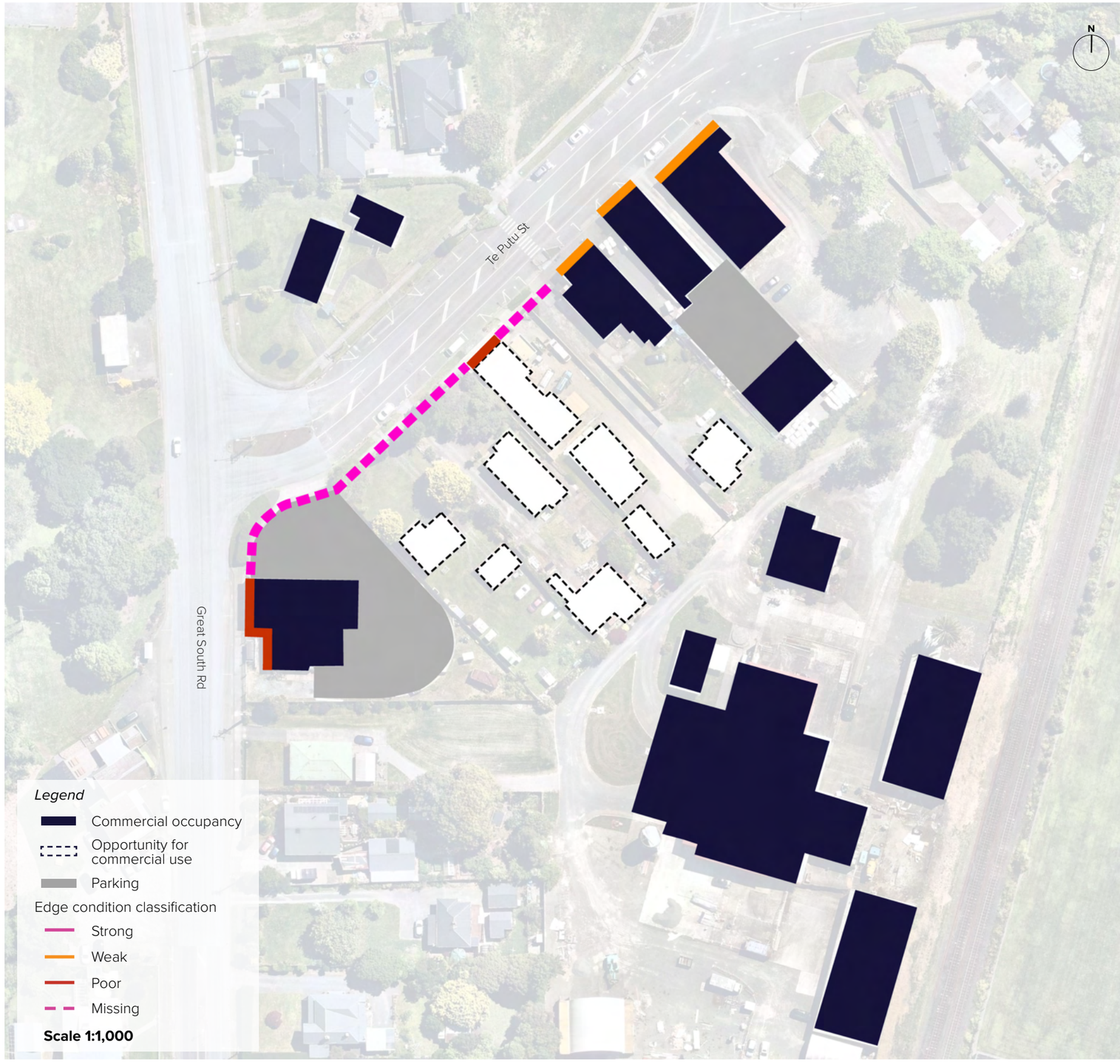
Permeability looks at the provision of pedestrian access points at street frontage. Transparency involves the visual extension of the public space in to the private space and is particularly important for retail uses where they rely on visual cues to draw in passing pedestrians.

The public/private interfaces of the Taupiri town centre streetscapes have been visually evaluated based on the above qualities and identified on the plans below as strong, weak, poor or missing edge conditions.

A building frontage that illustrates all three of the above characteristics is identified as having a strong edge condition and a building frontage with just one as poor.

The edge condition along the main street of Taupiri is characterised by weak and missing frontages. Future opportunity to consolidate the centre with commercial development that is built to the boundary should be encouraged.

View of Te Putu Street in Taupiri



View at Te Putu Street in Taupiri

# Key Moves & Outcomes

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The feedback received relating to the opportunities identified were considered together to confirm the key moves and outcomes for Taupiri and how these are to be prioritised over the short, medium and long term. It is recognised that some of the projects are highly complex, will have associated cost, and will need further detailed investigation before they are able to be confirmed in the Long Term Plan for delivery.

The key moves and outcomes have been identified on the following maps. The anticipated prioritisation of these is addressed in the Implementation Section of the document. The key moves and outcomes have also been grouped into the design principles of:

- Connected Communities
- Identity
- Natural Environments
- Growth and Economy

Walking and cycling activities have been identified separately as inputs from the Transport Workstream.

View of Bob Byrne Memorial Park

# Taupiri Township

## Connected Communities

### Active mode opportunities

1. Extension of the Te Awa River Ride to Taupiri with the inclusion of rest stops and viewing areas.
2. Create a clear walking and cycling loop from town centre - Great South Road, Te Putu Street, Onslow Avenue, Gordonton Road and segregating off to Watts Grove to connect to Taupiri paa and urupaa.
3. Other active mode connections:
   a. Upgrade Te Putu Street and bridge.
   b. Taraheke Paa, Taupiri Marae and Great South Road with a connection over rail (under investigation).
   c. Investigate pedestrian and cycle overbridge of railway connecting Great South Road to sports fields.
4. Create a wayfinding suite for key destinations including the urupaa, Taupiri Maunga, Te Putu Street, historic waka landing, Bob Byrne Memorial Park and sports field.
5. Create gateway markers into Taupiri.

### Enhancing the pedestrian experience

6. Great South Road improvements:
   - Create more pedestrian connections with additional crossings including existing bus stops.
   - Short term tactical urbanism at existing pedestrian crossings.
   - Beautify the streetscape with green promenade and provision for active modes.
7. Te Putu Street improvements:
   - Beautify the streetscape.
   - Traffic calming measures.
   - Upgrade pedestrian crossings.
   - Safe access to The Crescent.
   - Provide a pedestrian crossing outside of the childcare facility.
   - Roadway art at Te Putu Street and Great South Road intersection.

### Intersection and roundabout upgrade

8. Improve the safety and visibility of intersections:
   - Gordonton Road and Te Putu Street.
   - Murphy Lane and Te Putu Street.
   - Great South Road and Te Putu Street to connect to Bob Byrne Memorial Park.
   - Greenlane Road and Te Putu Road.
9. Improve the pedestrian safety and visibility of Gordonton Road and Great South Road roundabout (under investigation).

Streetscape beautification

Wayfinding

Te Awa River Ride extension

Protected cycleway on Great South Road

Raised pedestrian crossing

Traffic calming with planted buildouts

## Identity

### Amenities

1. Investigate the use of Council-owned facilities within Taupiri and consider additional community needs or commercial development that could be accommodated.
2. Celebrate sites of cultural significance and protect waahi tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities (Taupiri Mountain,urupaa, historical waka landing site, Taraheke paa, Taupiri Marae, and Te Uapata paa, key transport nodes i.e. roundabouts).
3. Provide formal viewing areas and storytelling boards for waka landings beside existing carpark/boat ramp. In particular for major Tangi processions from Tuurangawaewae Marae to the urupaa.
4. Upgrade and provide signage to public toilets.
5. Upgrade bus stops and shelters.
6. New bi-lingual "Welcome to Taupiri" sign.

### Maintenance/CPTED/Safety

7. Introduce mirrors, art and wayfinding at Murphy Lane and Greenlane Road underpasses.
8. Provide lighting at the Rugby Field carpark/Murphy Lane.
9. Trim overgrown vegetation at Murphy Lane and Greenlane Road underpass, Te Putu Street and urupaa bridge.
10. Clean up of graffiti at Murphy Lane underpass and along Great South Road.

Other projects

- Identify opportunities and locations for cultural expression and symbolism.
- Upgraded suite of street furniture including rubbish bins, drinking fountains and seating.
- Undertake maintenance and repair of street lights across the township.

## Natural Environment

### Recreational opportunities

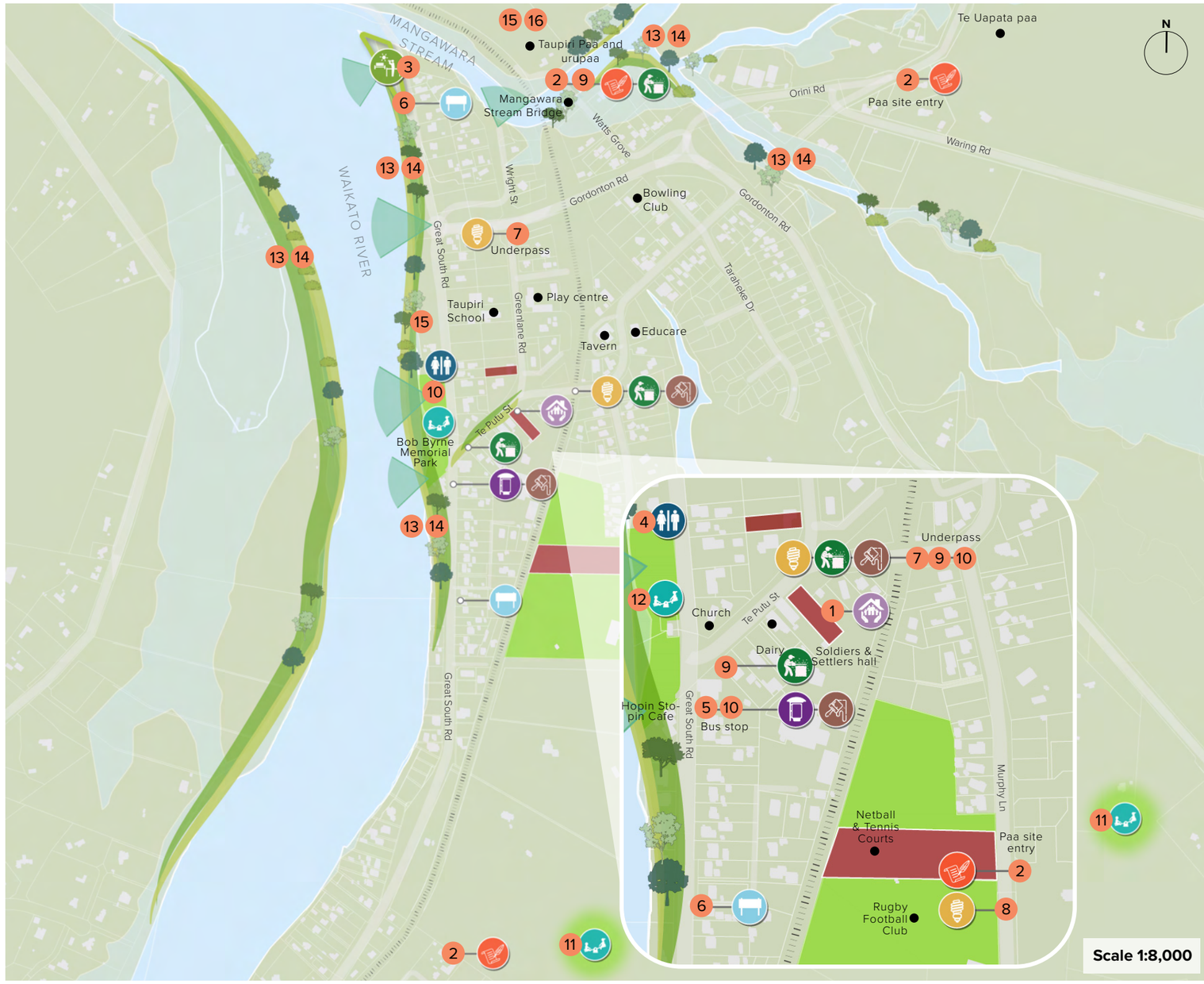
11. Investigate potential locations for playgrounds to serve wider Taupiri (Gordonton Road and Kainui Road).
12. Upgrade Bob Byrne Memorial Park with nature play and improved connections north and south to the Hopin Stopin Cafe.

### Ecological opportunities

13. Improve the resilience to localised flooding through:
    - Increased permeable surfaces and attenuation planting. ·
    - Riverbank planting.
    - River edge terracing to protect recreation areas next to the river.
14. Increase native tree and fruit trees in town – Urban Ngahere (Forest), to attract native birds into township.
15. Native tree restoration for Taupiri Maunga.
16. Pest and predator management plan on Taupiri Maunga.

Other projects

- Improve native fauna habitat through education/interpretation and restoration of waterways (native fish, eels etc).



Riverside seating

Storytelling and cultural narratives

Underpass

Village feel

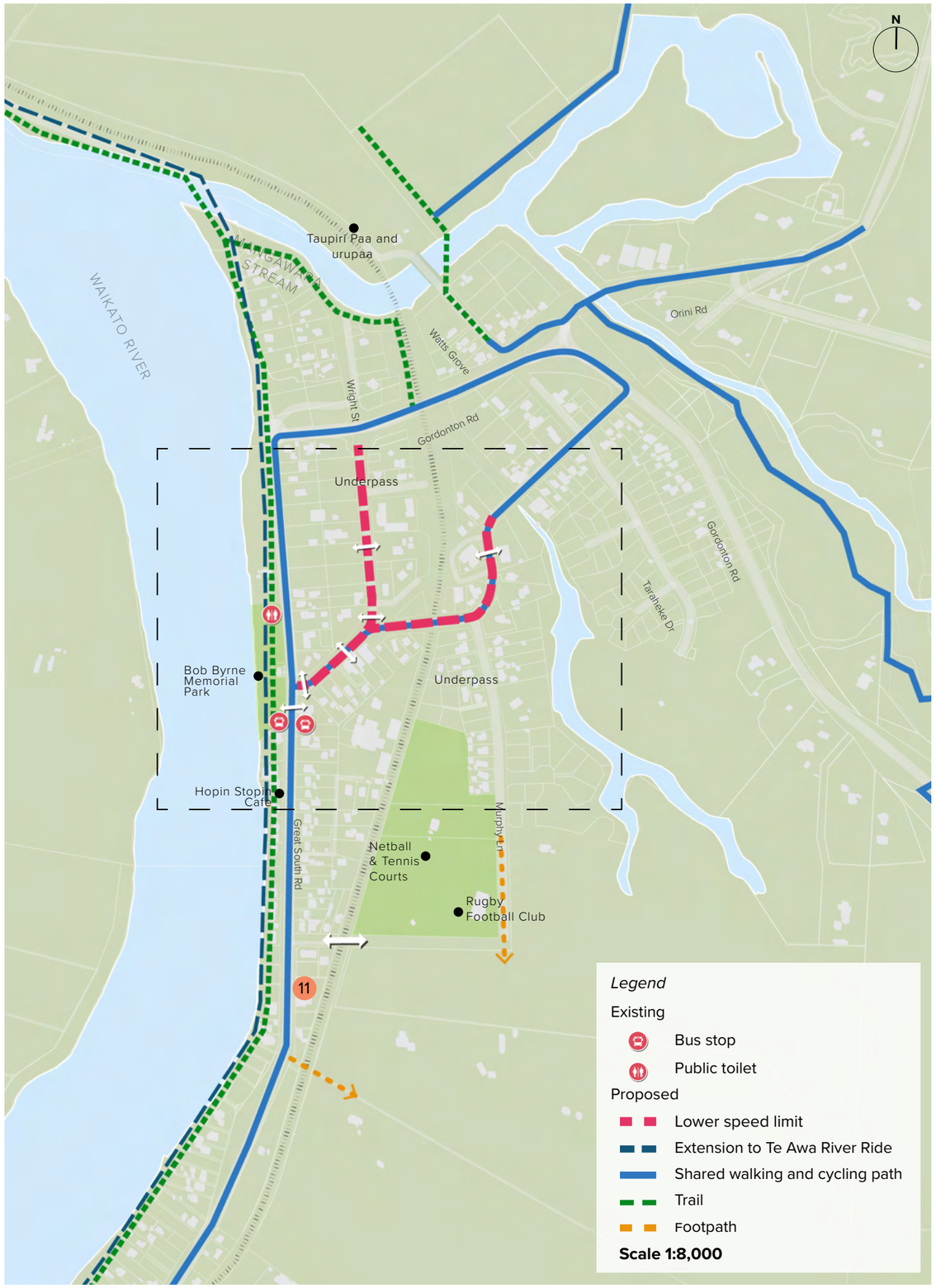
Nature play at Bob Byrne Memorial Park

Separated cycleway on Great South Road

# Taupiri - Active Modes

### Active Modes

1. Provide raised platform at existing zebra crossing.
2. Investigate options to reallocate space on Te Putu Street. This could include removing the flush median to provide space for wider footpaths, cycleways and changes to on-street parking.
3. Investigate new pedestrian crossing at Te Putu Street intersection using existing island. Could provide a staged crossing on raised platforms.
4. Investigate new crossing of Great South Road to improve access to existing bus stops.
5. Investigate footpath widening on the approach to the pedestrian underpass.
6. New raised crossing outside childcare and extend existing footpath to new crossing.
7. Investigate options to improve pedestrian safety when crossing The Crescent. Review kerblines and provide kerb build-outs to reduce the crossing distance.
8. Provide raised platform at existing crossing outside the school. Investigate shared paths along Greenlane Road to encourage walking and cycling to school.
9. Provide angle parking within existing berm north of the school.
10. Investigate new raised crossing at Te Putu St/Greenlane Road intersection to support a continuous route along Te Putu Street.
11. Investigate pedestrian and cycle overbridge of railway at Lovell Ave connecting Great South Road to Murphy Lane via sports fields.



# Artist Impressions of Key Moves

## Amenity upgrades to Bob Byrne Memorial Park

## Enhance Te Putu Street pedestrian experience

# Implementation

View of Hakarimata Range walkway in Ngaaruawaahia

# Implementation Approach

### How this plan is to be implemented

The Ngaaruawaahia, Hopuhopu and Taupiri Urban Design Assessment identifies a series of proposed projects and initiatives to support future growth and place shaping across Ngaaruawaahia, Hopuhopu and Taupiri. The projects and initiatives are intended to be progressed across short, medium and long term time frames with a range of stakeholders and partners as outlined below.

The key moves and outcomes identified will go from being aspirational opportunities, to being funded and delivered when funding and partners have been identified. This will involve partnering and engaging further with key stakeholders including Mana Whenua, the community, local community organisations and businesses, and key landowners within Ngaaruawaahia, Hopuhopu and Taupiri. Waikato District Council consider that it is important to continue to work in collaboration with community partners in all significant Council projects.

To support the implementation of the Urban Design Outcomes, it is recommended that a detailed implementation plan for each of the opportunities is developed, identifying key outcomes to be achieved, those responsible for delivery, project costs, and timeframes.

### Role of Waikato District Council

Waikato District Council plays a key role in realising the future vision for Ngaaruawaahia, Hopuhopu and Taupiri, as depicted in this Assessment. This role may range from direct investment in public works to advocating for positive changes to encourage investment (such as with the NZ Transport Agency/Waka Kotahi, local businesses and investors.)

The Council will also need to engage with the Mana Whenua, community and key stakeholders to advocate for public and private initiatives that assist to achieve the outcomes and projects identified across the three towns.

### Funding implications

The Long Term Plan (LTP) is the Council's main budgetary tool for the current 10-year period. This Plan provides a longer term capture of community aspirations and thereby informs the LTP.

Some of the actions are already budgeted for in the LTP, or are business as usual. Actions that need new funding will require advocacy to become new LTP initiatives. It is important to note that the availability of funding from the Council for proposed projects is not guaranteed. Funding and prioritisation will be determined as part of the LTP and Annual Plan process.

This plan can be used as a tool to assist in decision making on funding priorities. There are multiple ways that the projects and initiatives identified in this document can be achieved other than the LTP.

These include:

- Community led actions
- Fundraising
- Funding/grants
- Private investment and development

### Monitoring and review

The Ngaaruawaahia, Hopuhopu, and Taupiri Urban Design Assessment is intended to be a living document responsive to changes. Similarly, flexibility is needed because some actions require further work such as additional consultation, feasibility testing, detailed design, and/or funding. The Council should undertake reviews of the plan periodically and in line with LTP processes. Keeping the document 'live' and up to date will help achieve the outcomes desired by the stakeholders, or will identify if projects should be reconsidered in relation to new information being available.

Projects and initiatives have been grouped as short term, medium and long term projects. Implementation of the projects will be managed through the Long Term Plan and Annual Plan process.

### Implementation Table

The following table identifies the key moves and outcomes that have been identified through this document. It considers the alignment with the outcome principles, the project complexity and likely timeframe required to implement the projects.

The table provides a tool for future identification and prioritisation of investment across the three townships across the short, medium and long term.

**View of Holy Trinity Anglican Church in Ngaaruawaahia**

# Implementation Framework

## Ngaaruawaahia

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **NATURAL ENVIRONMENT** | | | | | | |
| 2. Complete masterplan for The Point. | ✓ | | | ✓ | | |
| 3. Improve resilience to localised flooding through a possible suite: | | | | | | |
| · Increased permeable surfaces and attenuation planting. | ✓ | ✓ | ✓ | | | ✓ |
| · Riverbank planting. | ✓ | ✓ | ✓ | | | ✓ |
| · River edge terracing to protect recreation areas next to the river. | ✓ | ✓ | ✓ | | | ✓ |
| · Greening of current paved spaces (swales). | ✓ | ✓ | ✓ | | | ✓ |
| · Wetlands (tbc). | ✓ | ✓ | ✓ | | | ✓ |
| · Water sensitive urban design (tbc). | ✓ | ✓ | ✓ | | | ✓ |
| **CONNECTED COMMUNITIES** | | | | | | |
| 1. Extension of the Te Awa River Ride cycle route. | | | ✓ | | | ✓ |
| 4. Create a pedestrian and cycle connection between Te Awa River Ride cycle route (Belt Street), St Paul's Catholic School, Rugby League Club (Whatawhata Avenue), Centennial Park and the Waipaa River Trail. | | | ✓ | | | ✓ |
| 5. New active mode connection over the Waikato River. | | | ✓ | | | ✓ |
| 6. Upgrade active modes facilities over Waingaro Road bridge. | | | ✓ | | | ✓ |
| 7. Create a gateway marker at 46 & 108 Great South Road. | ✓ | | | ✓ | | |
| 8. Upgrade of corridors with active modes: | | | | | | |
| · Jesmond Street. | | | ✓ | | ✓ | |
| · Great South Road (Both directions - cycleway and footpath). | | ✓ | | | ✓ | |
| · Hakarimata Road and Brownlee Avenue (shared path). | ✓ | | | ✓ | | |
| · Waikato Esplanade (bi-directional cycleway and footpath). | ✓ | | | ✓ | | |
| · Lower Waikato Esplanade (Both directions - cycleway and footpath). | ✓ | | | ✓ | | |
| 9. Improve the safety and visibility of intersections: | | | | | | |
| · Great South Road and River Road. | | ✓ | ✓ | | | ✓ |
| · Great South Road and Jesmond Street (proposed new roundabout). | | ✓ | ✓ | | | ✓ |
| · Great South Road, Princess Street and Newcastle Street (signalisation under investigation). | | ✓ | ✓ | | | ✓ |
| · Great South Road and Waingaro Road (proposed closure under investigation). | | ✓ | ✓ | | | ✓ |
| · Great South Road and Market Street. | | ✓ | ✓ | | | ✓ |
| · Waingaro Road and Herschel Street (traffic calming or mirrors). | | ✓ | | | ✓ | |
| · Old Taupiri Road (south), Great South Road and Regent Street. | ✓ | | | | | ✓ |
| · Martin Street and Galileo Street (still under investigation). | | ✓ | ✓ | | | ✓ |
| 10. Improve the safety and visibility of Jesmond Street roundabout. | | ✓ | ✓ | | | ✓ |
| 11. Jesmond Street improvements: | | | | | | |
| · Consider shared zones and additional informal crossings to improve pedestrian connections. | | | ✓ | | ✓ | |
| · Additional informal crossings and streetscape upgrades. Integrate crossings with intersection upgrades and development sites. | | | ✓ | | ✓ | |

## Ngaaruawaahia

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| 12. Great South Road improvements: | | | | | | |
| · Traffic calming and speed management. | | ✓ | | | ✓ | |
| · Roadway art at existing pedestrian crossings. | | ✓ | | | ✓ | |
| · Additional informal crossing points. | | ✓ | | | ✓ | |
| · Beautify the streetscape with planted promenade. | | ✓ | | | ✓ | |
| · Separated active modes corridor. | | ✓ | | | ✓ | |
| · Formalise crossing on Galileo Street outside Ngaaruawaahia Primary School. | ✓ | ✓ | | ✓ | | |
| 13. River Road: | | | | | | |
| · Traffic calming and speed management. | | ✓ | | | ✓ | |
| · Formalise crossings in front of Tuurangawaewae Marae. | | ✓ | | | ✓ | |
| **IDENTITY** | | | | | | |
| 5. Create a wayfinding suite for key destinations including the following; Ngaaruawaahia town centre, Hakarimata Ranges, The Point, Waipaa Esplanade Walkway, Te Awa River Ride cycle route and proposed extension. | ✓ | | | ✓ | | |
| 6. Celebrate sites of cultural significance and protect waahi tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities at: | | | | | | |
| · Kiingitanga Reserve. | ✓ | | | | ✓ | |
| · The Point. | ✓ | | | | ✓ | |
| · Hakarimata Ranges. | ✓ | | | | ✓ | |
| · Tuurangawaewae Marae. | ✓ | | | | ✓ | |
| · Tuurangawaewae House. | ✓ | | | | ✓ | |
| · Pukeiaahua Paa. | ✓ | | | | ✓ | |
| 7. Placement of expressions (pou, koowhatu, native trees) to whakanoa (restore balance) to locations of colonial reminders. | | ✓ | | | ✓ | |

**View of Great Street Road in Ngaaruawaahia**

## Hopuhopu

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **CONNECTED COMMUNITIES** | | | | | | |
| 1. Extension of the Te Awa River Ride cycle route through Hopuhopu with the inclusion of rest stops and formal and informal viewing areas. | | | ✓ | | | ✓ |
| 2. Create a safe and clear active mode connection between Ngaaruawaahia and Taupiri along Great South Road (separated cycleway). | | | ✓ | | ✓ | |
| 3. Establish a boulevard of trees as a gateway marker into Hopuhopu. | | ✓ | | | ✓ | |
| 6. Improve the safety and visibility of the Old Taupiri (north)/Great South Road intersection (under investigation). | | ✓ | | | ✓ | |
| **BUSINESS AS USUAL** | | | | | | |
| 4. Protect existing trees/boulevard. | ✓ | | | ✓ | | |
| 5. Provide bus shelters and a new pedestrian crossing for existing and future bus stops. | ✓ | | | ✓ | | |

View of Hakarimata Ranges

## Taupiri

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **CONNECTED COMMUNITIES** | | | | | | |
| 1. Extension of the Te Awa River Ride cycle route to Taupiri with the inclusion of rest stops and viewing areas. | | | ✓ | | | ✓ |
| 2. Create a clear walking and cycling loop from town centre - Great South Road, Te Putu Street, Onslow Avenue, Gordonton Road and segregating off to Watts Grove to connect to Taupiri paa and urupaa. | | ✓ | | | ✓ | |
| 3. Other active mode connections: | | | | | | |
| · Upgrade Te Putu Street and bridge. | | | ✓ | | | ✓ |
| · Taraheke Paa, Taupiri Marae and Great South Road with a connection over rail (under investigation). | | | ✓ | | | ✓ |
| · Investigate pedestrian and cycle overbridge of railway connecting Great South Road to sports fields. | | | ✓ | | | ✓ |
| 4. Create a wayfinding suite for key destinations including the urupaa, Taupiri Maunga, Te Putu Street, Bob Byrne Memorial Park and sports field. | | ✓ | | ✓ | | |
| 5. Create gateway markers into Taupiri. | | ✓ | | ✓ | | |
| 6. Great South Road improvements: | | | | | | |
| · Create more pedestrian connections with additional crossings including existing bus stops. | | | ✓ | | | ✓ |
| · Short term tactical urbanism at existing pedestrian crossings. | | | ✓ | | | ✓ |
| · Beautify the streetscape with green promenade and provision for active modes. | | | ✓ | | | ✓ |
| 7. Te Putu Street improvements: | | | | | | |
| · Beautify the streetscape. | | | ✓ | | ✓ | ✓ |
| · Traffic calming measures. | | | ✓ | | ✓ | ✓ |
| · Upgrade pedestrian crossings. | | | ✓ | | ✓ | ✓ |
| · Safe access to The Crescent. | | | ✓ | | ✓ | ✓ |
| · Provide a pedestrian crossing outside of the childcare facility. | | | ✓ | | ✓ | ✓ |
| · Roadway art at Te Putu Street and Great South Road intersection. | | | ✓ | | ✓ | ✓ |
| 8. Improve the safety and visibility of intersections: | | | | | | |
| · Gordonton Road and Te Putu Street. | | ✓ | ✓ | | ✓ | |
| · Murphy Lane and Te Putu Street. | | | ✓ | | | ✓ |
| · Great South Road and Te Putu Street to connect to Bob Byrne Memorial Park. | | | ✓ | | | ✓ |
| · Greenlane Road and Te Putu Road. | | ✓ | ✓ | ✓ | | |
| 9. Improve the pedestrian safety and visibility of Gordonton Road and Great South Road roundabout (under investigation). | | | ✓ | | ✓ | ✓ |
| **IDENTITY** | | | | | | |
| 2. Celebrate sites of cultural significance and protect waahi tapu sites through a suite of bi-lingual signage, art work trails, cultural expression and storytelling opportunities (Taupiri Mountain,urupaa, historical waka landing site, Taraheke paa, Taupiri Marae, and Te Uapata paa). | ✓ | | | | ✓ | |
| 3. Provide formal viewing areas and storytelling boards for waka landings beside existing carpark/boat ramp. In particular for major Tangi processions from Tuurangawaewae Marae to the urupaa. | ✓ | | | | ✓ | |
| 5. Upgrade bus stops and shelters. | | ✓ | ✓ | ✓ | | |
| 6. New bi-lingual “Welcome to Taupiri” sign. | ✓ | | | ✓ | | |
| **Other projects** | | | | | | |
| · Identify opportunities and locations for cultural expression and symbolism. | | ✓ | | | ✓ | |

## Taupiri

| Project | Prioritisation | | | Complexity | | |
|---|---|---|---|---|---|---|
| | Short term 1-3 years | Medium term 3-10 years | Long term 10+ years | Low | Medium | High |
| **NATURAL ENVIRONMENT** | | | | | | |
| 13. Improve the resilience to localised flooding through: | | | | | | |
| · Increased permeable surfaces and attenuation planting. | ✓ | ✓ | ✓ | | | ✓ |
| · Riverbank planting. | ✓ | ✓ | ✓ | | | ✓ |
| · River edge terracing to protect recreation areas next to the river. | ✓ | ✓ | ✓ | | | ✓ |
| 14. Increase native tree and fruit trees in town – Urban Ngahere (Forest), to attract native birds into township. | ✓ | | | ✓ | | |
| **BUSINESS AS USUAL** | | | | | | |
| 7. Introduce mirrors, art and wayfinding at Murphy Lane and Greenlane Road underpasses. | ✓ | | | ✓ | | |
| 8. Provide lighting at the Rugby Field carpark/Murphy Lane. | ✓ | | | ✓ | | |

View of Taupiri Maunga and Church

View of Tuurangawaewae House

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Te Kaunihera aa Takiwaa o Waikato

Simmons & Associates Ltd.

# NGARUAWAHIA & ENVIROS ARCHAEOLOGICAL HERITAGE

***Taupiri, Ngaruawahia, Glen Massey & Te Kowhai***

*Alexy Simmons & Malcolm Hutchinson* *June 2014*

# EXECUTIVE SUMMARY

The intended outcome of the archaeological assessment was to identify archaeological sites in the part of Waikato District affected by the Ngaruawahia and Enviros Structure Plan. Based on the scale of the research the focus was on producing an overview report that could be used as a basis for archaeological management.

The primary method used to identify archaeological sites was a table top study that included: historical research; compilation of recorded archaeological site data; and geo-referencing of historic aerial photographs and plans. This information was used to build a predictive model or perspective on where pre-1900 sites should be and types of sites. The predicted site information was reviewed through the analysis of recent aerial photographs, Lidar data, and brief drive through visits in the study area. (Private property was not accessed.)

The comparative assessment of the structure plan growth areas indicates that both recorded and unrecorded archaeological sites are located in the proposed development areas. A substantial number of the potential pre-1900 archaeological sites are garden sites identified by geo-referencing. Historical research also indicated that two of the Church Missionary Society Mission Station sites were not recorded, nor the flour mill sites at Taupiri and Hopuhopu.

A number of specific heritage issues have been presented in the final report chapter along with management options. Among the recommended options is the preparation of archaeological site records for a number of unrecorded sites:

- Maori garden sites;
- Kaitotehe Mission Station, Hopuhopu Mission Station;
- Taupiri and Hopuhopu flour mills; and
- Catholic Church site and graveyard at Taupiri;

It is recommended this report be used as the starting point for understanding, discussing and managing Ngaruawahai and Enviro's archaeological heritage for present and future generations.

*-Dr Alexy Simmons & Mr Malcolm Hutchinson, June 2014*

Kaitotehe once occupied the gorse-covered ridge in the foreground, with the fertile gardens stretching towards the Waikato.

*Kaitotehe and the gardens of Hoepo. Across the Waikato River, Taupiri Mountain (Phillips 1995, p.116).*

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# CHAPTER ONE NGURUAWAHIA & ENVIROS

## Introduction

The Nguruawahia and Enviros structure plan area features both Maori and European pre-1900 archaeological sites (Figure 1).[1] This archaeological heritage document was prepared to inform future growth decisions and the management of archaeological heritage sites. The desired outcome of informed decision making about community growth is the preservation of the district's archaeological heritage so it is retained for future generations and used to enrich the lives of current generations.

Simmons and Associates Ltd. were asked to focus on four places: Taupiri, Ngaruawahia, Glen Massey, and Te Kowhai. This also involved research on the areas in between: Taupiri to Ngaruawahia; Ngaruawahia to approximatley Horotiu; Ngaruawahia to Glen Massey and Ngaruawahia to Te Kowahi.

The archaeological focus was on four main phases in the district: Maori land use at contact; effects of European traders and missionaries; the Waikato Campaign of the New Zealand Wars; and the changes post-campaign European settlement created. All four phases involve physical modification of the landscape. Earthworks, deposits

and artefacts all form the archaeological record of Maori and European land use prior to 1900. The phases mark distinct cultural patterns—ways of conducting daily life or social rules and beliefs.

---

[1] On 19 May 2014 the Heritage New Zealand Pouhere Taonga Act 2014 came into effect. Under that act an a*rchaeological site* means, subject to section 40(3),—
(a)any place in New Zealand, including any building or structure (or part of a building or structure), that—
(i)was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and
(ii)provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and
(b) includes a site for which a declaration is made under section 41(1).

*Figure 1 Include a map showing the study area.*

The archaeological sites in the Ngaruawahia Enviros area provide information about these phases in the Waikato. The sites are not isolated. They form an archaeological landscape that provides information about human behaviour in the past. For

example Maori garden sites area associated with pa, villages, gathering sites, eel traps in streams, bird capture areas, and other types of places used by the garden makers. Pre-1900 European farms are composed of house, farm buildings, fields, stock holding pens, roads, etc. The commonality is both Maori and European sites provide a perspective on how people lived in the district in the past based on land use.

The Nguruawahia Enviros archaeological study focused on specific information--where a site is located, as well as contextual information—the site as a part of the district's story. The text that follows discusses the research methods used to compile information about Nguruawahia Enviros archaeological heritage.

## Research Methodology

The archaeological research included a literature and record review to provide background information for a visit to the district to follow up on the potential sites identified.[2] For the purposes of the archaeological research an archaeological site was defined per the Heritage New Zealand Pouhere Taonga Act 2014 as defined in footnote 1.

Under the Act both recorded and unrecorded pre-1900 archaeological sites are protected. This definition includes pre-1900 standing structures. The Pouhere Taonga Act regulates effects to archaeological sites. It is unlawful to destroy, damage, or modify an archaeological site without an authority from Heritage New Zealand.

The table top study included: compiling all the records available for the area held in the New Zealand Archaeological Association (NZAA) site file in February 2014; a historic map search to identify maps that provide information about pre-1900 places and land division; a review of old aerial photographs of the district; compiling LiDAR data for the district to identify potential pa sites or to assess possible site locations; historical research to provide information about pre-1900 archaeological sites; information sharing with the Maori cultural heritage researcher; and the built heritage researchers.

[2] The agreed brief did not include the preparation of site records.

The information collected is compiled in three chapters: the history of the area prior to approximately 1900[3] from an archaeological perspective; the recorded archaeological sites in the area; and historic survey plans and aerial photographs of the area. This information provided the basis for a predictive model of site locations and informed the site visit. The model and the results of site visit are included in Chapter 5. Chapter 6 provides archaeological management options based on the archaeological research carried out and summarised in Chapters 2 through 5.

[3] Post 1900 information was included about Glen Massey because Glen Massey was settled after 1900.

# CHAPTER 2 HISTORY; AN OVERVIEW OF PRE-1900 ARCHAEOLOGICAL SITES

## Introduction

This history has been prepared from an archaeological perspective and compiled chronologically and thematically. The focus is on the historical information about pre-1900 archaeological sites associated with Maori and Europeans in the study area.

The chapter is divided into four main phases of history in the study area--Maori land use at contact; European traders and missionaries; the Waikato Campaign of the New Zealand Wars; and post-campaign European settlement. The focus is on the identification of unrecorded archaeological sites and the value and significance of both unrecorded and recorded archaeological sites.[4] The information presented is based on European descriptions.[5] The phases overlap with the activities of the Taupiri Mission Station and Reverend Benjamin Ashwell continuing through the war years.

A cultural report is being prepared as a separate document to present the Maori cultural history of Ngaruawahia and Enviros. It is likely the Maori cultural assessment will present other historical information and may also identify other heritage values for many of the places discussed in this chapter and other chapters.

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[4] Recorded archaeological sites are the sites included in the New Zealand Archaeological Association site record scheme at the time this report was prepared. The outcome of the report will be the identification of additional sites which may be added to the scheme in due course.

[5] It is acknowledged that the observations are separated by many years and contain obvious recorder bias. Despite this acknowledged constraint journal entries, diaries, narratives, and images do provide descriptive information that would not otherwise be available about the Ngaruawahia and Enviors area.

## Land Use Prior to European Contact

In 1835 Henry Williams described a Church Missionary Society expedition into the Waikato. They stopped to see Captain Kent, a trader residing (opposite Taupiri) who had a trading post at Ngaruawahia. Henry Williams and James Hamlin were on their way to Ngaruawahia to speak with Te Wherowhero Potatau about establishing a mission a Manukau and peace with the Thames people. On the river not far from Ngaruawahia Williams commented they over took Nate (sic Ngati) Po in several canoes who were going to Ngaruawahia[6] to attend a grand council (Williams in Rogers 1961, p.428). *"According to the early Waikato trader Charles Marshall it [the pa at Ngaruawahia] was conjointly erected by all the Waikato Tribes at the end of 1833"* (Wilkes 2000, p. 2; S14/31). Reverend William Williams commented in 1834 that Ngaruawahia pa had a population of 200 men, women and children (Wilkes 2000, p. 2; S14/31). (See NZAA site records on the disc in the report pocket).

Henry Williams described Ngaruawahia in 1835:

> *"The pa stands on the junction of the Waipa and the Horotiu; below this it takes the name of Waikato and runs nearly 200 miles to the entrance. The country around is very beautiful." (Williams in Rogers 1961, p.428)*

No mention is made of Taupiri pa by the missionaries nor did they hold any special meetings with Maori at the pa opposite Taupiri. (A place that would become Kaitotehe Mission Station and Tukupoto school.) Ngaruawahia was obviously the seat of pa at the time. During the journey Henry Williams noted many large unoccupied pa with strong defensive ditches and banks.

John Johnson travelled through the area in 1846 and wrote:

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[6] The pa there was known as Ngaruawahia pa not Pikiarero/ Oika pa (S14/31). The names Pikiarero or Oika pa were identified based on a military plan that was misinterpreted, Pikiarero pa is in Taranaki. Owen Wilkes (2004) corrected this error in a New Zealand Archaeological Association file scheme update in 2004, but it has remained a persistent error because of the number of historical references to the pa and the lack of distribution of the correction information and how it is presented in the site file. The site number S14/31 is now associated only with rifle pits, actually a trench, which protected Tawhiao's capital S14/182. The rifle trench has been identified under the skate park which caps one segment of it.

> *"if a portion of it [the land] is elevated above the rest it is generally crowned by a deserted pa whose mound, for they are always surrounded by an artificial earthen rampart and ditch, look like the remains of some old redoubts, on an English battle field. There are a number of these old pas on every projecting knoll on the left bank . . . They show also the former existence of a large concentrated population which has partly disappeared under the scourge of age and disease."* (New Zealander 3 November 1847, p.2)

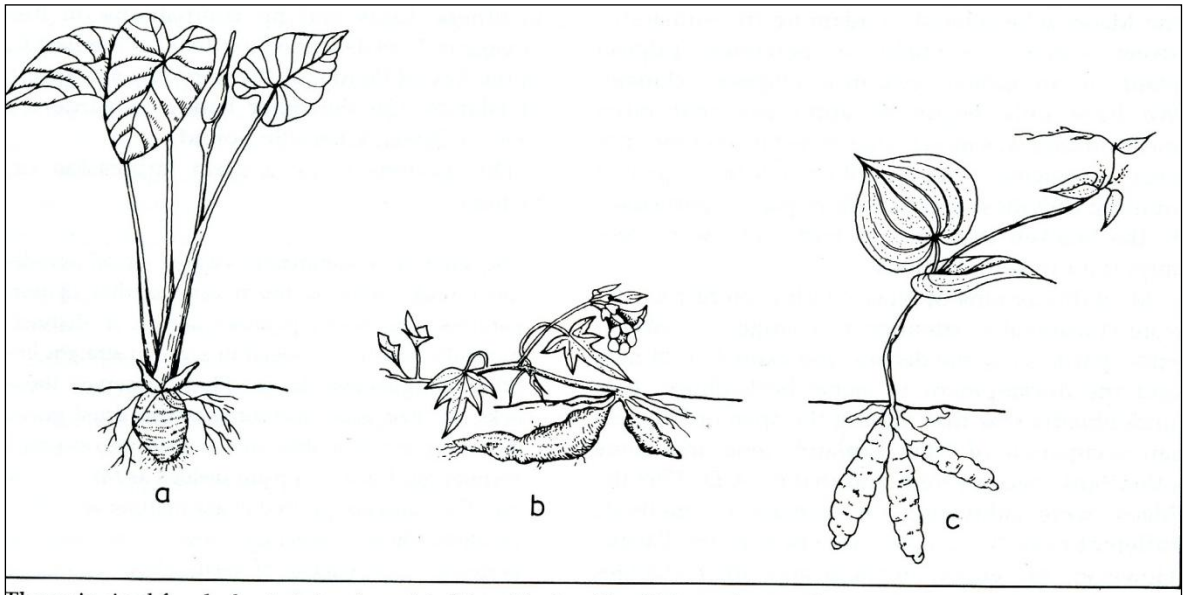
Many of the pa Johnson passed during his travels down the Waikato and Waipa will be identified in Chapter 3.

**Maori Agriculture**

In the Ngauruawahia and Enviros area the land modification activities associated with gardening are very evident even today. Pick (1968) note that there was a saying used by the tribes of the Waikato to praise the cultivator:

> *"He Toa Taua he toa Pahekeheke he toa mahi he toa pumau,' (The fame of the warrior is transient, but the fame of the food producer is enduring)." (Pick 1968, p.111)*

In the Waikato Maori focused on growing kumara (*Ipomea batatas*), taro (*Colocasia antiquorum*) and yam (*Dioscorea alata*) (Figure 2). Gourd or hue (*Lagenaria vulgaris*) was also grown. These cultivars were paired with collected plant species and fish, shell fish, eels and birds to fill out the larder. The area was particularly rich in eels and bird species because of the forest and marsh environments.




The principal food plants introduced to New Zealand by Polynesian settlers. a, taro; b, kumara; c, yam.

*Figure 2 Food Plants Introduced by Early Polynesian Settlers.*

Associated with the garden sites were living areas, frequently pa. Seasonal camps were also established adjacent to the gardens during the cultivation period. The Reverend William Yates wrote of the Waikato in 1830:

> *". . . Here, as in other parts of the island, when the natives are not living in fortifications for security, they were found to be residing in detached villages; at a few miles distant from the others; their cultivations being still more scattered…"( Yates 1835, p.208 in Clarke 1977, p.209)*

The Reverend William Williams observed about the Waikato tribes:

> *"… the banks on either side of the river from about fourteen miles from Ngaruawahia pa are lined with cultivations for nearly the whole distance, though for the most part they have few inhabitants except in the planting season." (Journal 3/1/1834, p. 349 in Clark 1977, p.209)*

Paramount Chief Te Wherowhero was observed supervising the planting of kumara in October 1844. Williams remarked that a number of people were working on the cultivations; when he returned a month later he estimated a thousand people were assembled at the kumara grounds. The experience in organized seasonal cultivation provided a good basis for success with new cultigens introduced by missionaries and traders (e.g. wheat, maize, and potatoes).

Maori cultivation followed a seasonal pattern. Early ethnographers Archdeacon Philip Walsh (1902) and Elsdon Best (1925)[7] observed the land was prepared for cultivation in the late autumn when the weather was dry and the soil suitable for working. The work was carried out in conjunction with the harvest of fern root (aruhe) and the time when it was at its best. Fires were used to clear the bush at the edge of forests killing the standing trees overtime and removing the obstacles to cultivation (Walsh 1902, p.14-15).

The process of breaking in the ground involved the removal of large roots and stumps. The various tasks were carried out in different parts of the cleared area. The ko was used by men to break up the virgin ground by turning the sod over (Figure 3). Women and children followed breaking up the clods with small wooden

[7] Best's comments appear to derive from Walsh's observations.

instruments and "*clawing out the fern-root and rubbish with their fingers*" (Walsh 1902, p. 15).

*Figure 3 Men using ko's (Best 1979, cover illustration).*

Walsh noted:

> *"The only object for the deep digging was to get rid of the root and clear the land from the fern, which would otherwise shoot up and injure the growing crop.' (Walsh 1902, p. 16) "Every principal man would have one or more plots of his own." (Best 1925, p. 185)*

For the planting of kumera Walsh, Best and Colenso noted: once the soil was worked up fine and cleaned it was formed in to little round hills, called tupuke;[8] "tupuke, about 9 inches [22.86 cm] high and 20 inches [50.80 cm] to 24 inches [60.96 cm] in

[8] Other names for the mounds were tukari, ahu and tuahu (Best 1925, p.150).

diameter, set quite close together" (Walsh 1902, p.16). The bulk of the ground is not dug, just the puke (Best 1925, p.165) (Figure 4 through Figure 6).

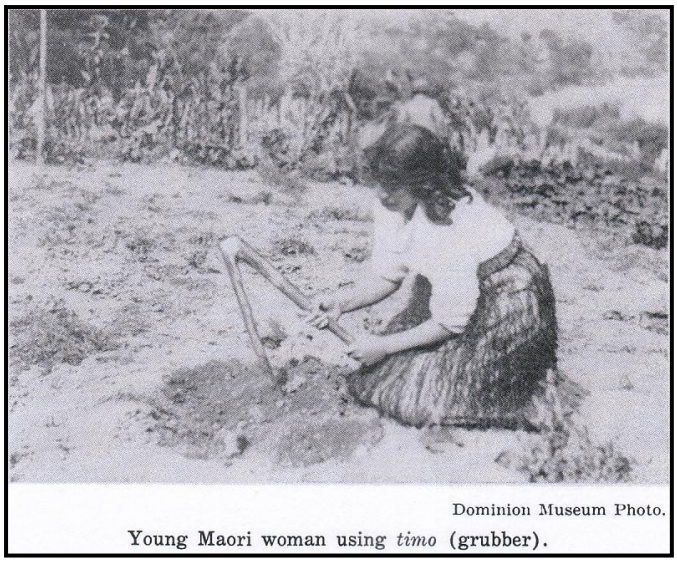



*Figure 4 Working a garden. (Best 1925, p. 93; Best 1931, p.8a).*

*Figure 5 Archaeological evidence of Maori gardening, the base of tupuke at Lot 5, 9 Kernot Road, view west; surface at 24 centimeters below surface. (Simmons, A. 2013c, p.15)*

*Figure 6 Bowl shaped hollow (BSH) or tupuke remains (Simmons 2005).*

Colenso observed:

> *"the kumara or sweet potato was planted with much ceremony and regularity in little hillocks in selected dry ground, facing the sun, carefully prepared and heavily gravelled with fresh gravel from some pit or bed of a neighbouring stream, this annual gravelling of the kumara grounds was alone a heavy service." (Colenso in Best 1925, p.138)*

Along the Waikato and Waipa gravel was obtained by digging into the under layer of gravelly soils deposited by historic floods and changes in the course of the Waikato River. The hinerua gravels, a product of Mt Taupo's eruption, provided aeration, heat and would have served as an obstacle to the growth of long thin kumara roots. The gravelly layer was usually evident at 50 centimetres to 1 meter below the ground surface. When the gravelly material was removed large circular craters were left—borrow pits. These are still evident today in many of the fields along the Waikato and Waipa Rivers (Figure 7).

*Figure 7 Borrow pits near Horotiu Bridge; S14/164.*

The gardens were located near rivers, but not necessarily on the lowest flood plain, or water ways. Archaeological investigation of the Maori garden sites revealed that the introduced sand/gravel, charcoal, and other organic material were mixed into the parent soil at the garden sites. Soil Scientist David Lowe observed:

> *"These soils typically have over thickened, charcoal-bearing soils to which gravels and sands have been added, these being excavated from adjacent small quarries or 'borrow pits' in the Hinuera Formation." (Lowe 2010, p. 7).*

Other Maori gardening strategies identified by archaeologists involved the use of sheet mulching—the creation of a layer of modified soil not the discrete bowl shaped hollow tupuke described in the previous text (Hoffman 2011 and 2013).

Ethnologist Eldon Best noted: *"The taro was always planted in patches by itself, and not among or near kumara."* (Best 1979, p.238) This observation has been contradicted by starch analysis of soil samples from a Maori garden site at Taupiri (S14/158). The analysis provides evidence that both kumara and taro were cultivated at the same site (Horrocks 2011). The garden sites will be discussed more in the next chapter on archaeology.

## European Contact; Traders, Missionaries, Artists and Explorers

European contact in the Ngaruawahia Enviros area in the 1820s through 1850s brought rapid change to the region. This included changes in economic focus, new technology, and new ideas and belief systems—including the Christian religious

philosophies of the Anglicans, Methodists, and Catholics. Many of the contacts between tangata whenua were brief, e.g. transitory explorers, travellers and artists. Other Europeans came to the Waikato region and established residences and businesses. The ranks of the traders included several who stayed, married and established family links with Waikato people.

The more permanent Europeans in the central Waikato, Ngaruawahia and Enviros area, were the missionaries. They established mission stations and schools. They trained lay ministers to preach in outlying villages. Their philosophical intent was to create a change in the cultural belief system and way of life. For example the Church Missionary Society strongly supported the idea of dressing students in European clothing as part of the conversion process.

**The Traders**

The first Europeans to establish themselves in the region were the traders who identified economic opportunities in the Waikato basin--spars, flax, pork and potatoes. Local tangata whenua were entrepreneurs and experienced traders. Trade with the Europeans had economic benefits for them and provided a method for obtaining goods they desired.

John Rodolphus Kent (Amukete) is believed to be the first European trader to live in the Waikato. He was not the only trader in the region. Several traders were located at the lower end of the Waikato, at Port Waikato and later near Tuakau.[9] Kent eventually settled in the Ngaruawahia area. He had a trading post at 'The Point' (Ngaruawahia) and a residence opposite Taupiri Mountain.

Captain Kent, or Amukete as his Maori friends referred to him, was an officer in the Royal Navy who served the government of New South Wales as a ship master (Ross 1979a, p.35; Te Ara-The Encyclopedia of New Zealand 2012). He resigned from military service in 1826 and turned to employment with private ship owners involved in trade to New Zealand. He put into the Hokianga in 1826 and established the first New Zealand trading post at Koutu Point and purchased 1000 acres there in exchange for muskets, powder and other goods (Ross 1979a).

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[9] Other traders included: Captain Payne at Port Waikato 1829; Charles Marshall at Port Waikato 1830 and later near Tuakau; Mr Lonsdale at Raglan harbour in 1833; the other traders mentioned in the text and a previous footnote; and probably other less well known traders.

In 1828 he moved to Kawhia to trade with the Waikato Maori and ceased to be closely associated with Hokianga. He met Te Wherowhero, a high chief of the Waikato tribes and developed a close relationship cemented by Kent's marriage to Parengaipa (probably Te Wherowhero's niece) (Ross 1979b, p.28).[10] The Kawhia flax trade was lucrative and protected by secrecy about the location. In 1829 he brought over John Cowell, a rope maker and four other traders.[11] When Kent's wife Parengaipa died he married Tiria in 1831 (Tiria a close relative of Te Wherowhero (some sources describe her as Te Wherowhero's daughter) (Ross 1979b, p.28).

From 1827 to 1837 Kent traded goods for New Zealand spars, flax, pork and potatoes. The cargo loads of New Zealand items were shipped to Sydney Australia. The returning vessels brought tradable commodities:

> *"muskets, bayonets, bullet moulds, cartridge paper, cartouche boxes, plenty of gun powder. Besides the deadly stores, there were axes, knives, iron pots, coloured fabric prints, pipes and tobacco, blankets and cotton handkerchiefs." (Ross 1979b, p.28)*

The flax trading posts, like the one at Kawhia and later at Ngaruawahia, featured long flax store houses where the dressed flax was hung to dry. The stores were open on the sides with a raupo roof. The one at Kawhia was 100 feet long (Ross 1979b). The dry flax was packed into casks for shipping. The flax was purchased initially for a musket to a ton, later the price rose to two muskets a ton. The price of muskets in Sydney were around £2 10s and dressed flax sold for £5 in the early years of the trade. The price later rose, in 1828 the flax sold for £38 to £40 a ton and by 1830 £45 a ton was paid by the British Government.

The flax trade affected the local economy. Men focused on cutting the flax in the swamps and carrying it to the villages for the women to process. The focus of Maori labour on flax harvest and processing would have affected the amount of time available for food cultivation and preparation. The procession of material goods, such as axes, iron pots and blankets would have also created changes in the traditional customs of people in the Waikato region.

In 1834 after many years of trading and various appointments—captain (ship master), supercargo, agent, trading master and interpreter—Kent retired to

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[10] Kelly (1949) states: "Kent also settled at Heahea [Kawhia] and married Amohia, the daughter of high chief Te Wherowhereo." (Kelly 1949, p.424)

[11] The others were George Thomas, Edward Meurant, William Risdon, and George Thomas Howe (Howe 1976, p.14).

Kaitotehe across the river from Taupiri. Kaiotehe was one of the villages at which Te Wherowhero resided. Kent continued to trade during his later years. He based his flax trading activities in Ngaruawhia; the centre of the trade network for the Waikato.[12] By 1836 Kent was ill with gout, as noted by James Hamlin, a Church Missionary Society catechist who visited him at Kaitotehe (opposite Taupiri). He died six months later in January 1837.

## Missionaries and Mission Stations

During the 1830s and 1840s the Church of England Missionary Society (CMS) began to establish a presence in the Waikato region. In February 1839 the Reverend Benjamin Yates Ashwell (Potaenui) made a visit to places along the Waikato and Waipa Rivers on his way to Archdeacon Brown's Te Papa Mission Station at Tauranga (Cowan 1934) (Figure 8). He visited all the kainga he encountered on the way and preached the gospel. This would be the first of many visits to villages in the Waikato. During his trip he observed large kumara cultivations at Taupiri on both sides of the river, but noted Ngaruawahia was not occupied at that time (Cowan 1934, p.5-6). Ashwell's observations provide an indication of the fertility of the Waikato and the willingness of the native population to provide an audience for religious teachings.

In July 1839 Robert Maunsell with the aid of his wife Susan established a mission station at Maraetai (Waikato Heads) that consisted of two raupo huts (Garrett 1991, p.81). Benjamin and Harriet Ashwell, joined the Maunsells at Maraetai. They had previously assisted the Maunsell's at Moeatoa on the southern Maunkau. The Maraetai station drew large congregations numbering in the hundreds. Benjamin Ashwell made many trips from the station into the interior to deliver sermons.

[12] Ngaruawahia is often noted as the place Kent resided. He probably had houses at Kaitotehe and Ngaruawahia.

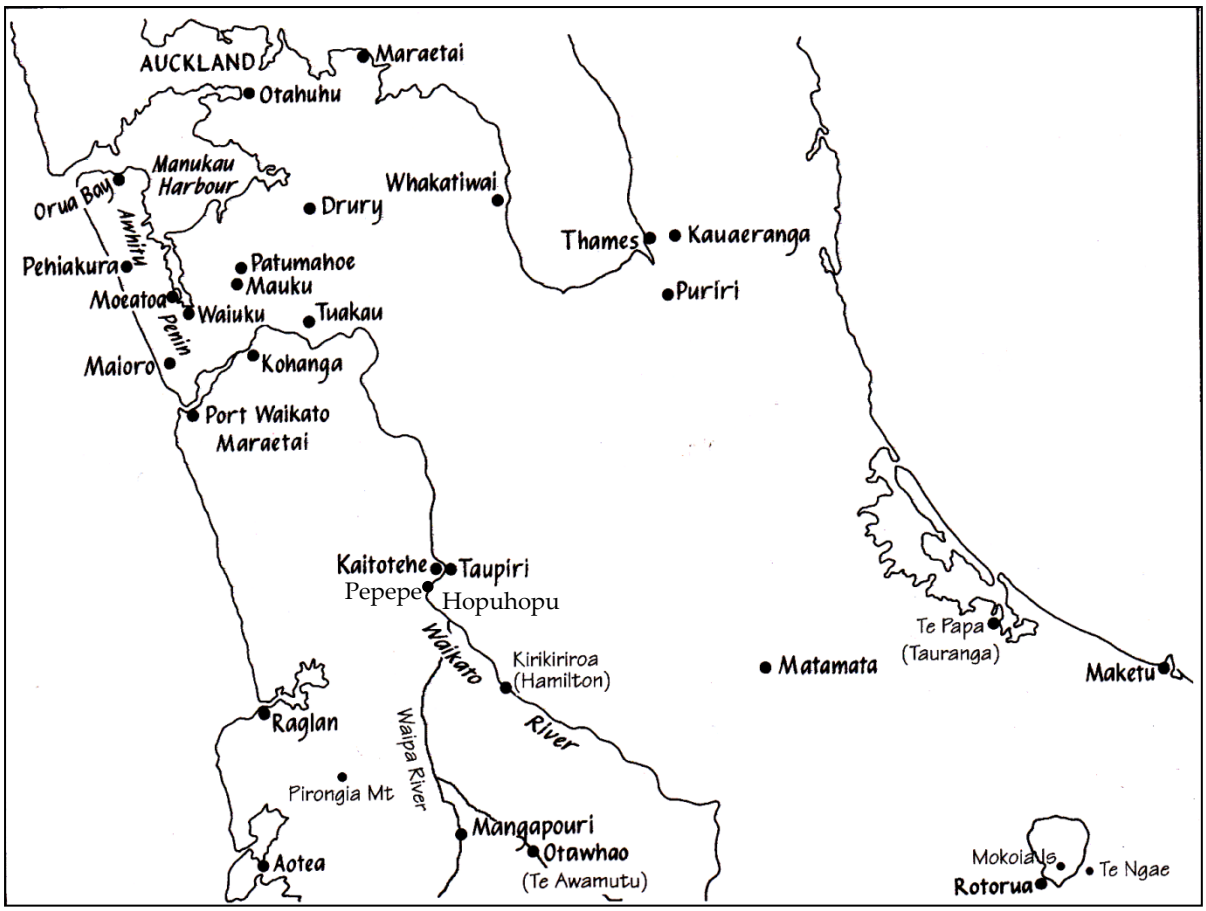


*Figure 8 Main places in the Waikato associated with the Church Missionary Society (Tagg 2003, p.4).*

Ashwell has been described as being somewhat temperamental, possibly due to his health (Tagg 2003, p.10) (Figure 9). In 1839 after a less than favorable start he was apparently well received at villages throughout the Waikato. He established a mission station at Otawhao (Te Awamutu). Otawhao would later become a significant station in the mission network when Reverend John Morgan took up residence in early 1843. In the same year Benjamin and Harriet Ashwell opened a mission station at Pepepe, on the Waikato River south of Taupiri (Figure 8).

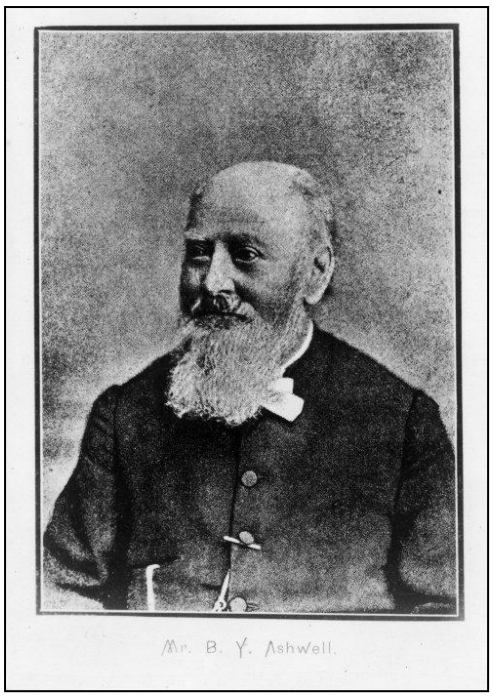


*Figure 9 Benjamin Yates Ashwell circa 1870. Photographer unidentified. (Ref: 1/2-050083-F. Alexander Turnbull Library, Wellington, New Zealand.http://natlib.govt.nz/records/23195126.)*

Prior to establishing the station at Pepepe Benjamin Ashwell and Harriet made a visit to the mission in Thames. He wrote:

> *"I now discontinued my Missionary visits to Otawhao. . . at the request of my brethren, visited the western bank of the Thames. In February [1843], I visited with my wife [and child] the villages on that bank. We were much pleased at the state of the small pa at Orere, and delighted to find a good girls' school under a native teacher named Martha. She had been taught at a neighbouring Mission Station." (Ashwell in Tagg 2003, p.59)*

The girls' school would serve as a model for the schools Reverend Ashwell established in the Waikato; beginning with the school at Pepepe.

**Pepepe Mission Station, 1843**

Ashwell's recollections state that in September 1843: *"I said farewell to my much esteemed Christian brother at Waikato Heads, and proceeded with my family to form the Church Mission Station at Taupiri [Pepepe]."* (Ashwell in Tagg 2003, p.60) [13] The Pepepe

[13] There has been considerable confusion in the many histories produced about the Taupiri mission stations about the dates they were established and where they were located. Two reliable sources

Mission Station would become one of several stations referred to as the Taupiri stations in Ashwell's central Waikato district.[14] Ashwell's territory *"comprised the Waikato as far as Port Russell, including Whangamarino, and extending to Whatawhata, on the Waipa and Kirikiroa. . . about 70 miles and. . .30 villages"* (Tagg 2003, p.18).[15] Benjamin and Harriet would serve as missionaries in the Waikato for most of their lives. He travelled frequently from village to village and had houses for his use at Pukatea, Whatawhata, and Kirikiriroa (Watson 1981, p.26).

Pepepe was about midway between Taupiri and Ngaruawahia. Pepepe, was a Ngati Mahuta pa associated with Kakeha during the 1700s and the site of a battle with Ngati Raukawa who besieged the pa (Phillips 1989a p. 85).

Kaitotehe, Ashwell's second Mission Station site and Pepepe are illustrated on a plan prepared Leslie Kelly in 1940 (Figure 10). The Pepepe Mission Station was across the river from Hopuhopu (Hopu Hopu).

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indicate Pepepe Mission Station was established in 1843 and was the first of Ashwell's three stations. Tagg (2003) states: "In September 1843, Ashwell and his family left Waikato Heads to form the Church Mission Station at Taupiri near the pa of Te Wherowhero Potatau and roughly mid-way between Robert Maunsell's station at Waikato Heads and John Morgan's Otawhao. Their first station was at Pepepe, where the Maoris gave 100 acres of land for a school." (Tagg 2003, p.17).

Robert Maunsell reported in a letter dated 2 February 1843 that Mr and Mrs Ashwell had gone to Kaitotehe [pa] near Taupiri, the scared mountain, to establish a new station near Te Wherowhero's pa (Garrett 1991, p. 110).

According to Murphy and Grinter the Pepepe Taupiri mission was established in 1842 (Murphy and Grinter 1978, p.10).

Drummond (1964) also notes the school at Pepepe on the west bank near Ngaruawahia was founded in 1842.

The Souvenir of the seventy-fifth anniversary reunion of the Taupiri School (1953) states the school across the river from Taupiri was established in 1835.

James Cowan (1934) states "in September of 1843, Mr Ashwell established himself permanently at the spot described at the beginning of this article, the great Taupiri bend." (Cowan 1934, p. 9)

[14] Murphy and Grinter (1978) noted: "at least three mission houses and one school built, i.e. four sites." (Murphy and Grinter 1978, p.10 footnote) The historical references concerning when Pepepe mission station was established cite a variety of different dates as discussed in the previous footnote. The names Pepepe, Taupiri and Kaitotehe mission station also appear to have become interchanged in the descriptions of the mission stations and schools over the years. The station at Kaitotehe was also referred to as the Tukupoto.

[15] Also see Norris 1956,p.7 for a detailed description of some of Ashwell's soujourns.

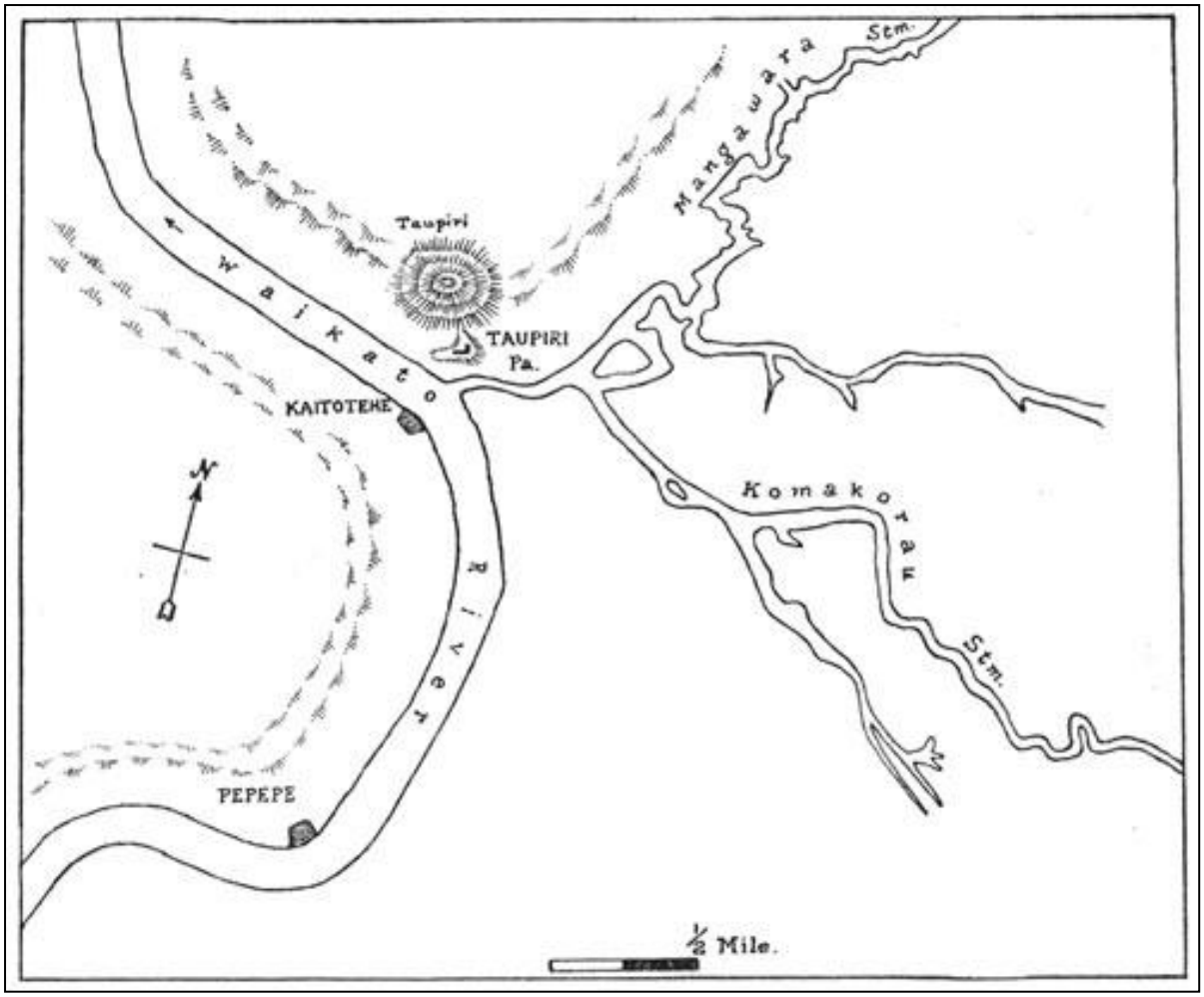


*Figure 10 Plan prepared by Leslie G Kelly (1940, p.151) showing the Maori villages of Kaitotehe and Pepepe.*

Kelly noted the two villages were visible from the ramparts of the old pa on Taupiri and communication was kept up between the places by a system of signals (Kelly 1940, p.151).

Figure 11 and Figure 12 show the station at Pepepe, Taupiri in 1843 and 1844. Drummond observed the 1844 engraving by Angas shows the Ashwell's raupo cottage on the slope of Pepepe pa (Drummond 1964, p.17). The use of Pepepe Mission Station as the main Taupiri station was short lived. In 1846 the Ashwell's established another mission station at Kaitotehe. According to historian Alison Drummond an adult school was operated at Pepepe, with a type of crèche for very young child attached to it (Drummond 1964, p.17). Her text suggests the Pepepe adult school was being run concurrently with the Kaitotehe school.

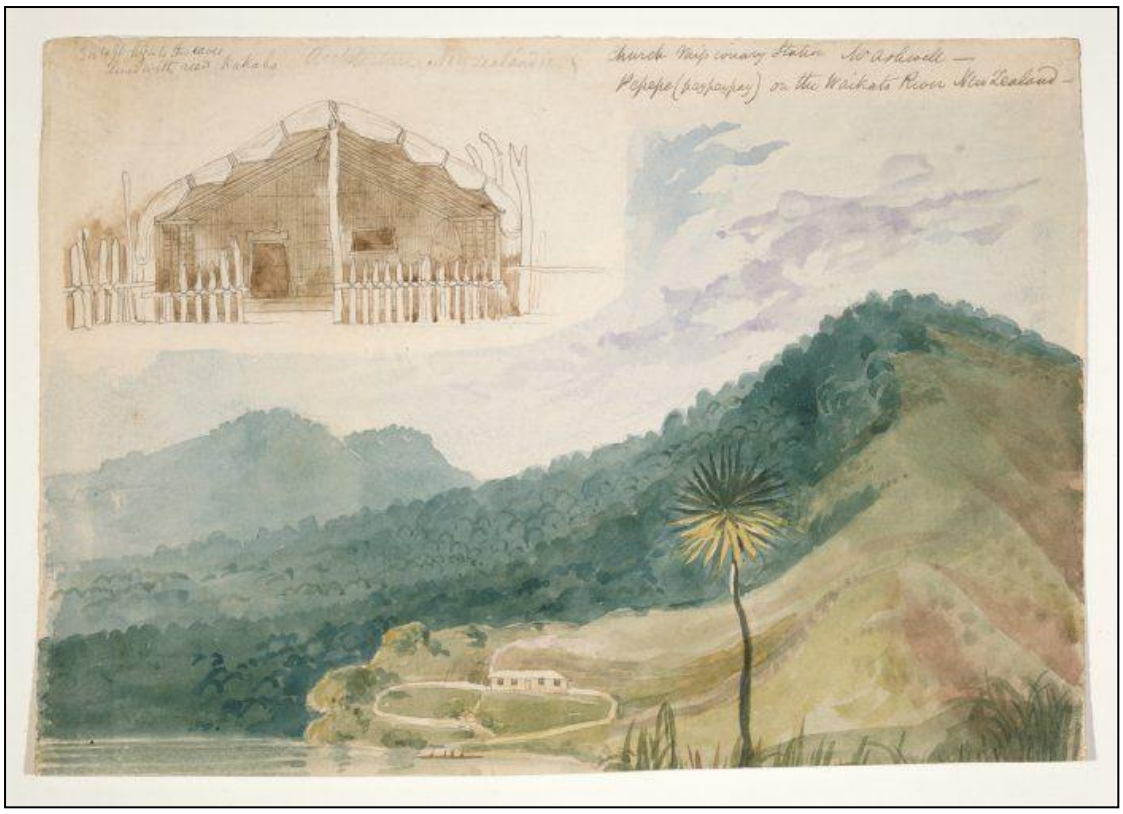

*Figure 11 Church Missionary Station, "Mr Ashwell-Pepepe (paypaypay) on the Waikato River New Zealand, 1843." (Ashworth, E. Ref. A-208-002 Alexander Turnbull Library, Wellington, New Zealand. http://mp.natlib.govt.nz/detail/?id=20342&l=mi.)*

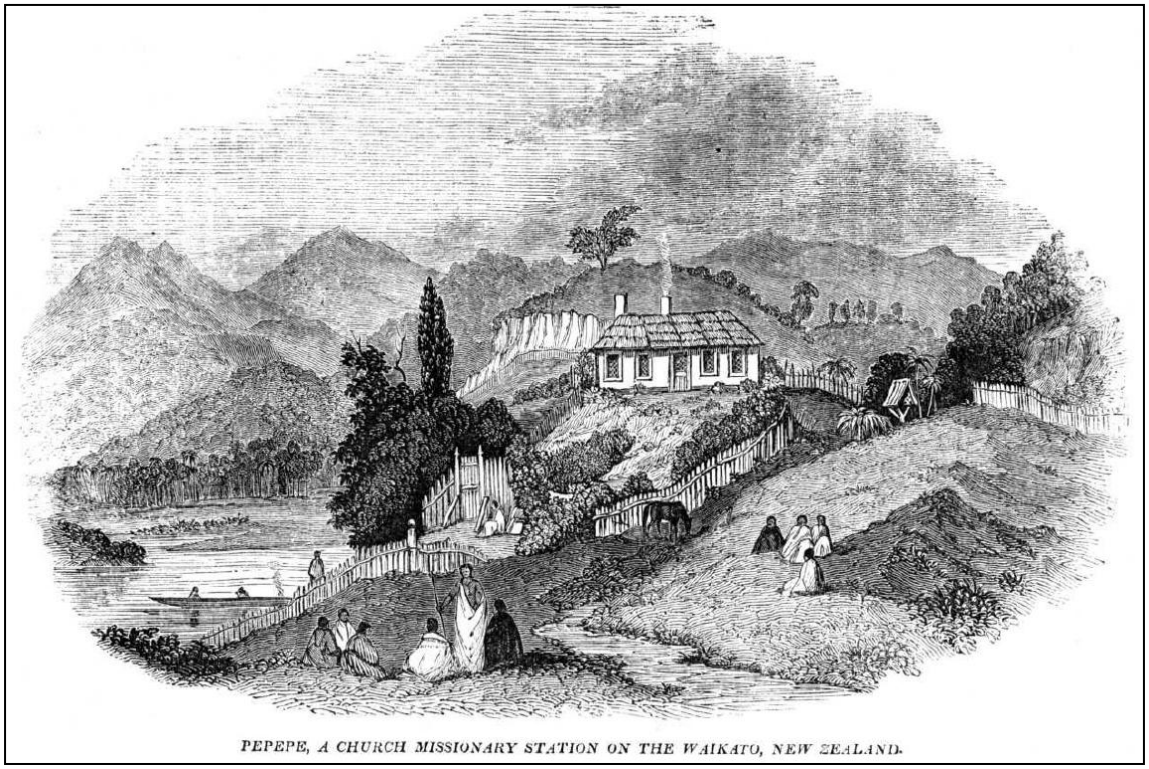


*Figure 12 The station at Pepepe in 1844, engraving by G.F. Angas who visited the station in 1844.*

Angas described Pepepe Mission Station in his journal,

> *"It's as lovely and secluded spot as it is possible to imagine. The little cottage built of raupo with its white chimneys, and its garden full of flowers--of sweet English flower, roses, stocks, and mignonette—was snugly perched on an elevated plateau overhanging the Waikato River; and the access to it was by a small bridge thrown across a glen of tree ferns, with a small steam murmuring below." (Angas 2011, p.37)*

The Pepepe station was legally granted 133 acres in 1853, ten years after the land was made available by local Maori (Figure 13). According to Old (1994) the crown grant was made to the Church of England to be used to support the education of Maori, Europeans and Pacific Islanders (Old 1994, p.19).[16] The land was cultivated to assist in the stations self sufficiency.

In 1869 the school land at Pepepe was described as over grown and having no permanent buildings ever erected on the land (AJHR 1869 Appendix A no5, p.4).

[16] The land was a grant made by tangata whenua to the New Zealand government for educational purposes.

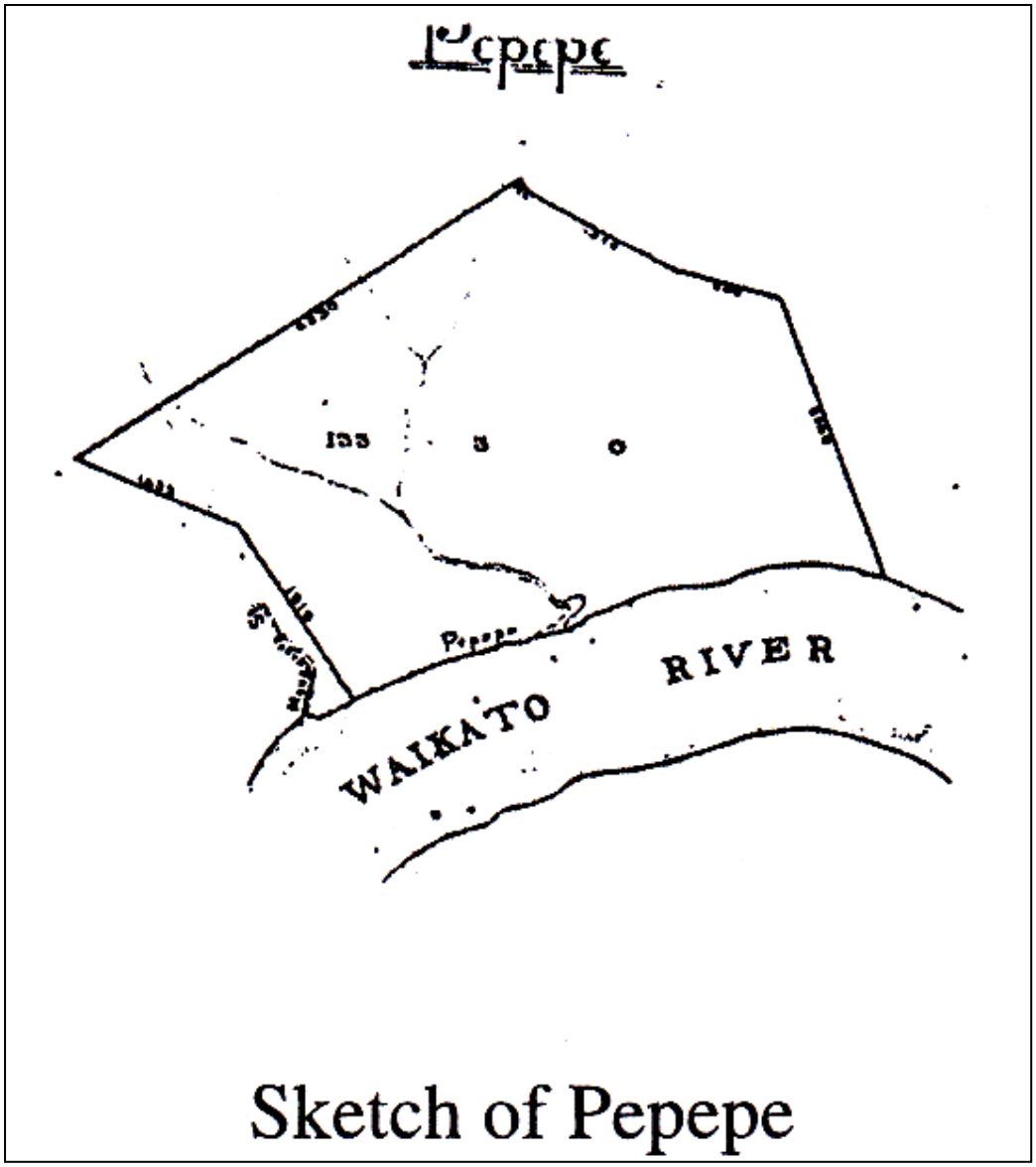


*Figure 13 Pepepe Estate (Old 1994, p.19).*

(Note this plan does not appear to match the location indicated by Kelly in the previous figure. This suggests Kelly's location was the location of the Maori village of Pepepe and the Mission Station land grant was further up river on the bend of the river. Near Waham Road, approximately opposite Ashwell Cresent. )

**George French Angas, Artist and Traveller in the mid-1840s**

The mid-1840s was a time period in which interest in the Waikato had increased. One of the most noted artists to visit the area was George French Angas. During his 1844 visit George French Angas also described Kaitotehe pa. He noted it was on the left bank of the Waikato River, two miles from Pepepe. Angas describe the walk from 'Kaitote pah' [sic Kaitotehe] to Pepepe.

> *"A walk across the country of about two miles again brought us to a bend of the river, where we arrived at the Church Missionary Station of Pepepe, the residence of Mr Ashwell. . . our walk was a very wet one, through swampy flax and fern, and we were obliged to cross one swamp on the shoulders of the natives." (Angas 2011, p.36)*

In the *Landmarks of Tainui* Phillips (1989b) commented:

> *"the village of Kaitotehe was established as a landmark of Tainui in the days of Wharetipeti and Tapuae to guard the fertile gardens of Hoepo. Eventually a pa was built there and named Tukupoto became the home of Potatau te Wherowhero." (Phillips 1989, p. 114)*

Figure 14, is Angas's well known painting of Kaitotehe pa which was reproduced as a lithograph.

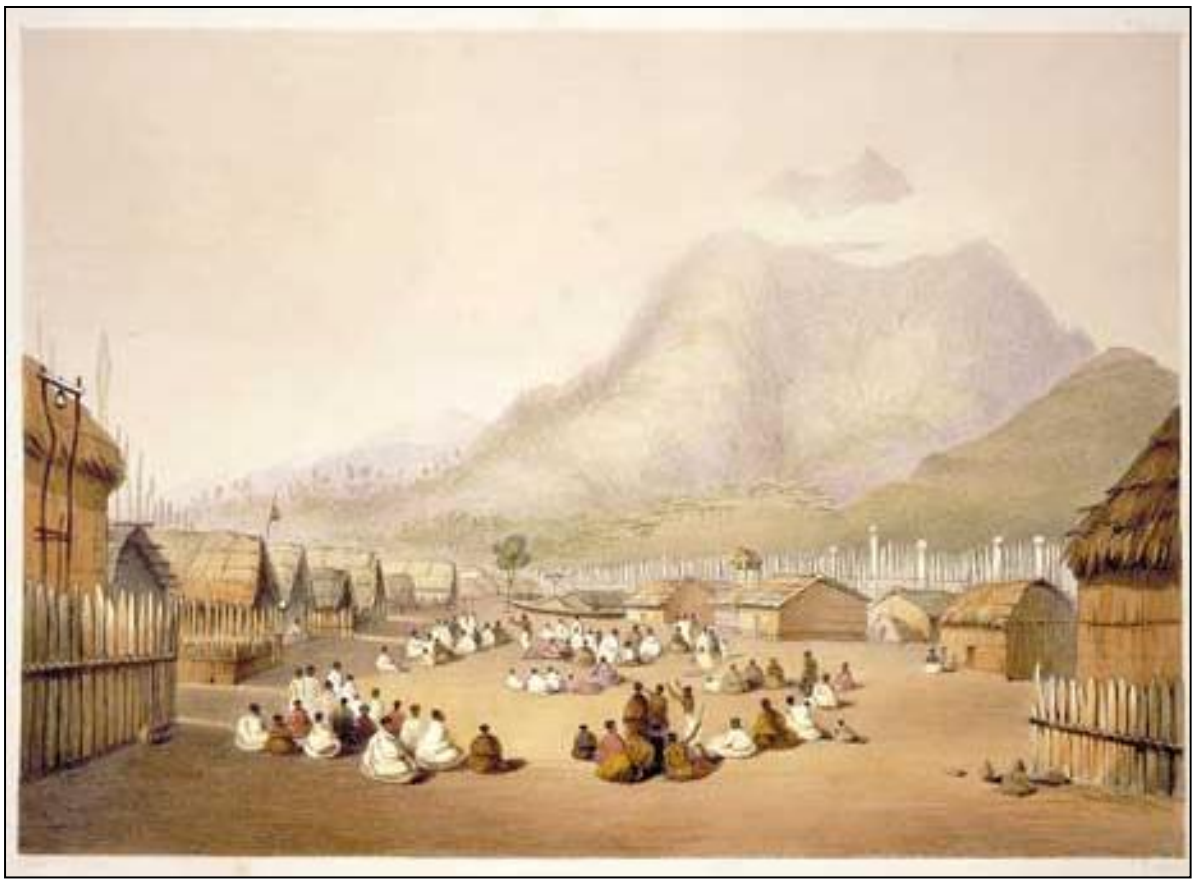

*Figure 14 Lithograph of Kaitotehe pā near Taupiri is based on an 1844 painting by George French Angas. (http://www.TeAra.govt.nz/en/artwork/27071/kaitotehe-pa.)*

It shows a large complex of buildings grouped around a central marae (courtyard), with tall palisades around the perimeter. Kaitotehe was for a time the home of the chief Pōtatau Te Wherowhero, who became the first Māori king.

During Angas's visit to Kaitotehe pa [Tukupoto pa] in 1844 he observed:

> *"the pa [Kaitotehe] consists of an open quadrangle, with houses ranged on each side in the primitive style, the whole surrounded by a lofty palisade of wooden posts, having an entrance at each end. At one end of the pah stands a chapel, built of tohi tohi grass, by the Christian portion of the inhabitants: and Te Whero Whero, though not professing Christianity himself, frequently attends the worship held here by the missionary." (Angas 2011, p.36)*

He also described the gardens of Hoepo at Kaitoteke:

> *"Numerous whatas, or elevated repositories, are scattered about this district; and the natives have extensive cultivations of potatoes, kumeras, Indian corn, and occasionally wheat. There was not a single native at Kaitote on our arrival; in company with their chief, they were all at their extensive kumera grounds on the Waipa, at a place call Whata Whata." (Angas 2011, p.35)*

Angas' art work and journal excerpts were published in 1847 in London under the title, *Savage Life and Scenes in Australian and New Zealand*, Volume II. The publication was enlivened by his sketches, paintings, and lithographs (Figure 15).

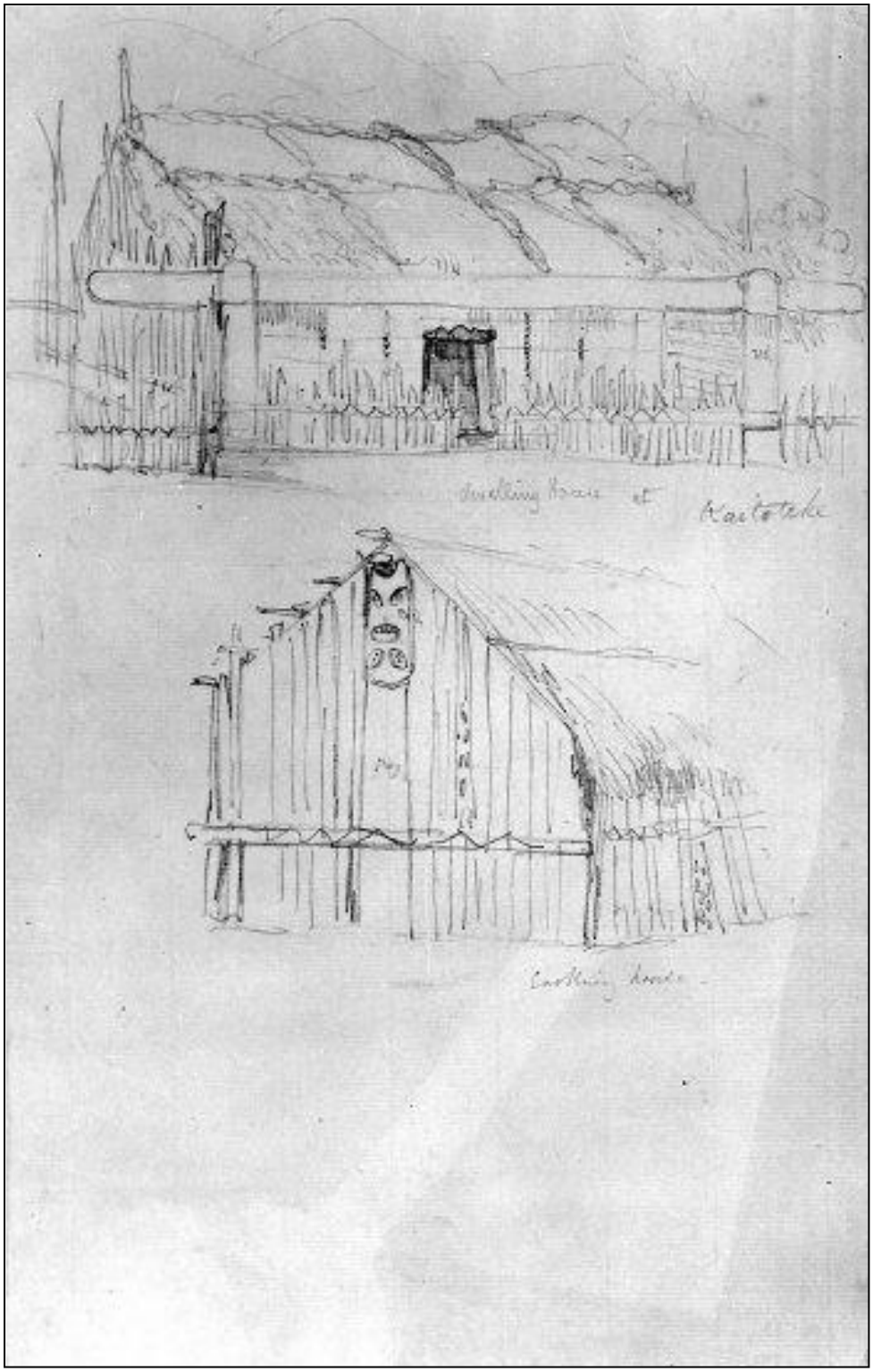


*Figure 15 Sketches of a dwelling house at Kaitoteke and a cooking house [November 1844]. (Angas, George French (1844) Reference Number: A-020-033-2. Object #25459, Alexander Turnbull Library, http://mp.natlib.govt.nz/search/?f=placeid$90900&l=en.)*

## The Taupiri Mission Stations; Pepepe, Tukupoto (Kaitotehe), and Hopuhopu

In 1846, three years after establishing the Pepepe Mission Station, Ashwell moved the centre of his missionary work to a new station at Kaitotehe opposite Taupiri Mountain and the mouth of the Maungawhara River. According to historian Alison Drummond (1964) the station was relocated to Kaitotehe because "a gift of land was made to the mission by some of the Chiefs of Kaitotehe."[17] (Drummond 1964, p.17) The relocation may have also been inspired by the excellent location—four pa were located at Kaitotehe, making the station a centre of missionary activities in the Waikato and an excellent location for a school. Ashwell opened a school at Tukupoto in mid-1846. He commented on the opening:

> *"As regards the Taupiri school, which I commenced May 10, 1846 with the valuable assistance of my native teacher Heta Tarawhiti (now an ordained priest of the Church of England)[18], at the end of the year our scholars had increased to nineteen." (Ashwell in Tagg 2003, p.69)*

**John Johnson' Visit to Kaitotehe and down to Whatawhata**

John Johnson visited Kaitotehe in 1846, (after Ashwell had established a Mission Station there). Observations from his visit were published in the *New Zealander* on 30 October 1847 as "Notes From a Journal" and included in Nancy Taylor's (1959) book *Early Travellers in New Zealand*. (Some of his journal commentary was presented in an earlier subsection on pa sites along the Waikato and Waipa Rivers.)

On reaching Kaitotehe Johnson commented:

> *"This flat is occupied by several pas, which we successively passed, all going under the name of Kaitotehe, the principal one just opposite to Taupiri. . . We landed a Kaitotehe, and after arranging for the board and lodging of our Natives, repaired to the house of Mr Ashwell, the resident Missionary, from who on our disembarking, we had received a hospitable invitation." (New Zealander 30 October 1847, p.2)*

He described the Kaitotehe mission house as a commodious and comfortable house:

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[17] "Te Wherowhero had given Ashwell 400 acres of fine land." (Garrett 1991, p.183)

[18] Te Kauri Marae history of Reverend Heta Kereru Trawhiti notes: Heta become a notable Anglican priest. He was recommended for priest training at St Stephens in 1858 and ordained a priest by Bishop Selwyn at St Paul's Auckland in1866. (Te Kauri Marae 2014, p. 1-2)

> *"a short distance in rear of the pa, on a piece of ground made over to the Mission by the Natives . . .the fruit trees in his garden were in a flourishing condition, particularly the cherry trees, which were loaded with fruit." (New Zealander 30 October 1847, p.2)*

During his stay Johnson accompanied Reverend Ashwell to the native chapel (on the 27 December 1846):

> *"[The chapel] is a neat raupo building of some size. The congregation, about one hundred in number, behaved very decorously, and afterwards chatechising (sic) took place in which the converts shewed considerable knowledge of the scriptures." (New Zealander 30 October 1847, p.2)* (Figure 16 )

*Figure 16 Reverend Benjamin Yate Ashwell's church, Taupiri mission station, Waikato. The church was believed to have been constructed in 1846. (Nicholl, Spencer Perceval Talbot, 1863 or 1864, PA1-f-046-09-1. Alexander Turnbull Library. http://natlib.govt.nz/records/23237039.)*

He described the ground around Kaitotehe pa as a rich alluvium. He noted crops of kumera, maize, and potatoes—*"the latter was in a very languishing state, in consequence of the long drought."* (*New Zealander* 30 October 1847, p.2)

Johnson continued upriver for two miles and noted the Kaitotehe flat terminated at Ngatihouroua pa where there was an extensive planting of maize around the pa. The occupants of the pa told him they were erecting a mill next year. One of his journal entries states:

> *"The hills as we ascended, abutted occasionally boldly on the river, clothed with beautiful woods at other points receded to give place to alluvial flats and terraces from twenty to fifty acres in extent, all under a rude cultivation." (New Zealander 3 November 1847, p.2)*

He reached Ngaruawahia and noted: "Ngaruawahia would seem the spot in every respect well-adapted either for a settlement or a military post, if, unhappily such should be required." (*New Zealander* 3 November 1847, p.2) He continued up the Waipa River, apparently without stopping at Ngaruwahia.

Eventually Johnson's party reached the pa at Wata Wata (sic Whata Whata), twenty five miles from Kaitotehe. They paid a visit to Te Wherowhero at his whare on the left bank. It was late spring/ early summer a time for cultivating crops at garden sites along the Waipa River.

**Other Kaitotehe Mission Station Visitors**

The Reverend Richard Taylor visited the mission station at Kaitotehe the following year. Taylor drew an image of the mission house during his 1847 visit (Figure 17).

*Figure 17 Mr Ashwell's house at Kaitotehe on the Waikato. May 31, 1847. (Taylor, Richard, Sketchbook. 1835-1860. Ref: E-296-q-077-1. Alexander Turnbull Library, Wellington, New Zealand.http://natlib.govt.nz/records/23024859.)*

The mission stations at Pepepe and Kaitotehe are among the best documented in the Waikato based on the images deposited in public archives. Taylor documented the station again during his brief visit in late January through early February 1851. When the Reverend Richard Taylor visited the Mission Station at Kaitotehe in 1851 He captured an image in his sketch book of an extensive station that included Ashwell's house and several other houses (Figure 18).

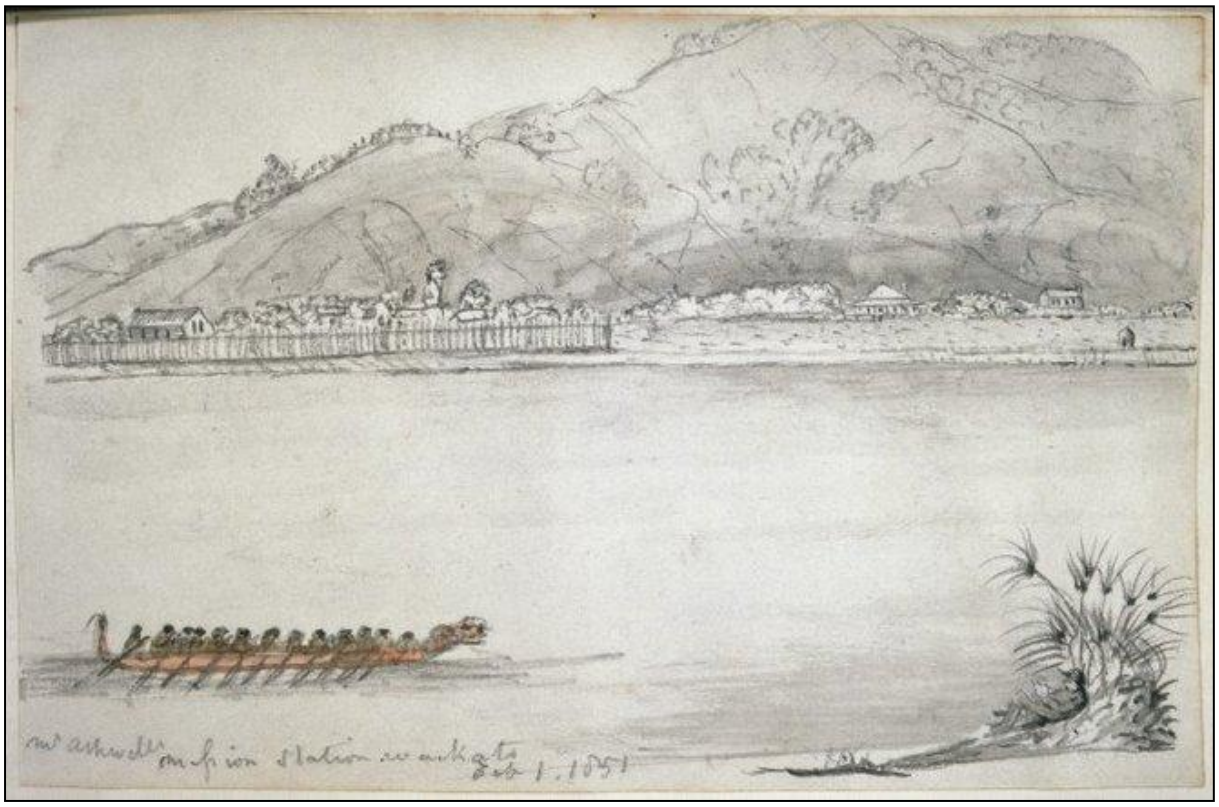

*Figure 18 Mr Ashwell's mission station, Waikato. Feb 1, 1851. (Taylor, R. Sketchbook. 1835-1860. Ref: E-296-q-089-1. Alexander Turnbull Library, Wellington, New Zealand. http://natlib.govt.nz/records/23212877.)*

**Tukupoto School at Kaitotehe**

Benjamin Ashwell had a strong interest in establishing native schools and religious principals, an interest that would result in the establishment of a system of schools in the district. The Tukupoto (Taupiri) mission school, as it was known in government reports, began on 10 May 1846 by the end of the year there were nineteen students and by 1857 the school had 112 boarders—forty-nine girls, forty-seven boys, and sixteen adults (Ashwell in Tagg 2003, 69). Figure 19 is Bruno Hamel's 1859 in photograph of the station and school. It provides a more accurate image of the setting and buildings than the previous drawings.

*Figure 19 Photograph of Taupiri Mission Station, 1859. The mission house with the school for native girls on the left. (Hamel, B. 1859 Record ID: 30976, http://www.teara.govt.nz/en/1966/ashwell-benjamin-yates.)*

**Mission Schools**

Benjamin Ashwell established a schedule of daily activities designed to regulate the students day at his mission schools. These are described in his Recollections of a Waikato Missionary (Ashwell in Tagg 2003, p. 48-79). The schedules along with European clothing, food and other practices were part of the Christian education.

The students went to prayers and Bible-class for an hour at 6 am in summer and 7 am in winter. The time was signaled by a bell. Bible-class was followed by breakfast at 8 am in summer, 9 am in winter and school an hour later. The students were instructed in reading, native and English grammar, geography, history, writing, arithmetic, and singing. The day was broken by dinner at 1 pm in summer and 2 pm

in winter.[19] After the mid-day meal the girls sewed and boys did farm work until 5pm. Tea, a lighter meal, was eaten at 6 pm followed by the elder girls knitting and reading classes for other students. The day ended with prayers at about 8.00.

The students and teachers associated with the school in 1859 are shown proudly displaying some of their sewing and weaving in Figure 20.

*Figure 20 Rev Benjamin Yates Ashwell's mission school at Taupiri, photographed in 1859 by Bruno Hamel. (Ref: PA1-o-207-06. Alexander Turnbull Library, Wellington, New Zealand.http://natlib.govt.nz/records/22307579)*

The children lived on "potatoes and flour, with pork, fish, and fruit occasionally (AJHR 1861, No 4 p. 4). The sustainability of the station was an ongoing problem. Ashwell noted in his journal:

> *28 July 1851 [Kaitotehe CMS Station Waikato River] "I am not without anxiety as to the future support of our institution in consequence of (1st) the increasing price of provisions from the extended commerce of the Natives of this District with Auckland.*

[19] The main meal, dinner in the middle of the day is not unusual in the mid-1800s. The time for dinner was changing, but an evening dinner time was associated with the upper class in England. A large mid-day meal was still the common practice for labourers.

> *The traders are constantly coming up the Waikato to purchase wheat, flour, Pork etc. The Society have only nine acres of very indifferent land at this station, therefore nothing can be done in the way of Agriculture. Had we land I have no doubt the Governor (who is exceedingly anxious to promote Agriculture) would render me the same assistance which he does to my Bretheren Messrs Maunsell and Morgan—Viz a Plough, horses and wages for a ploughman, which greatly assists the schools…..the School is considerably in debt in consequence of the erection of wings to the school room, viz. a dormitory and dining room." (Ashwell 1851-1859, p. 212-213) (*Figure 21*).*

A government grant of £212 was provided to the school in 1854 and £200 in 1855 for the scholars' maintenance, clothing and instruction. Ashwell commented on student costs on May 27 1855: *"the average expense of each scholar is 7.10 pounds."*[20] (Ashwell 1855, p.265)

The government estimated per scholar as £6 and 8 shillings in the 1856 report to the New Zealand House of Representatives. Almost a pound less than Ashwell noted—indicating a substantial shortfall existed at his station and possibly others. The children's parents were supposed to subsidize their education. Six months later he wrote on November 20, 1856 *"a few baskets of potatoes not amounting to 10 pounds per annum is the utmost given towards the support of the children of this institution"* Ashwell 1851-1859, p.269)

The school inspection report of 1856 noted the farming operations were limited at Tukupoto (Taupiri) because the institution was a girl's school. The inspector noted *"the girls also made fancy mats*[21] *and knit stockings; the proceeds of sale are passed to the credit of the school account. Propriety and regularity seemed to pervade the whole establishment."* (The House of Representatives, Native Education Correspondence, Appendix A No.7, 1856, p.23). Despite this negative report about aspects of the school the New Zealand government provided £300 in 1856 to Tukupoto School for cultivation and improvement of the estate granted to the school by the natives.

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[20] The newspaper reported the cost of a scholar was £4 5s in 1852 which may be a misprint (New Zealand Spectator and Cook's Strait Guardian 14 September 1852, p.4).

[21] "They made door mats of native flax, which are intended for sale in aid of the school. Some of these mats are in very neat patterns; the fibre of the flax is left in some parts in aits natural state whilst other parts are dyed either a rich brow, produced by the bark of the Tanikaha, or black from the Hinau." (New Zealand Spectator and Cook's Strait Guardian 14 September 1852, p.4) Some of the mats may be shown in Figure 20.

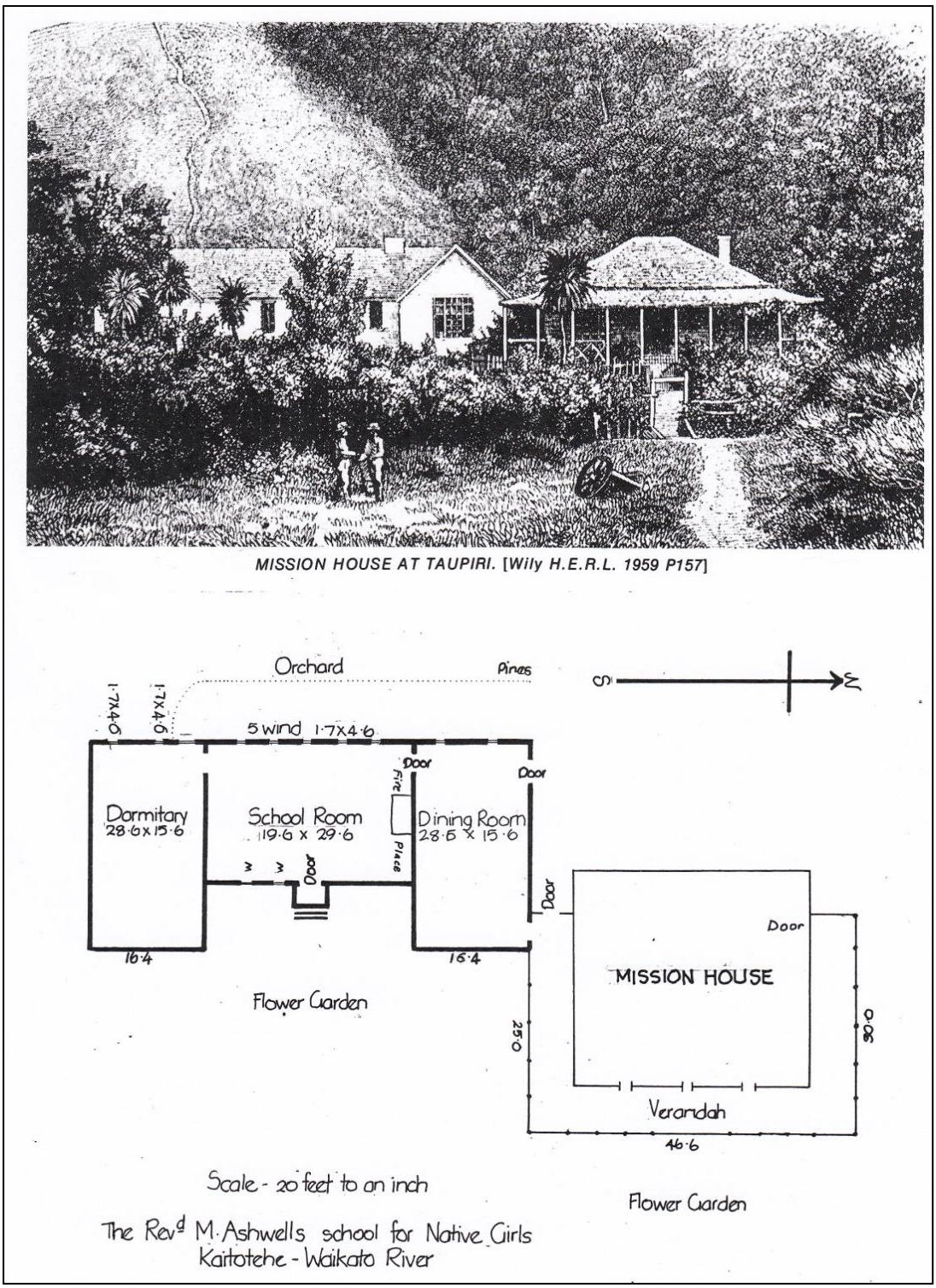



*Figure 21 Native girls school and mission house at Kaitotehe. (Murphy and Grinter 1978, p. 11.)*

*The girls slept in iron bedsteads, two to bead and washed in a shed outside* (AJHR 1861 Appendix E, No. 4, p.4).

Lieutenant Russell's inspection report in 1858 noted the girls' dormitory and boys raupo huts in the rear were well planned but were unlined and cold in winter and leaked. He noted a deficiency in shelving, tables and forms in the girls' school. He observed

> *"[the diet] consisted of ground wheat made into porridge for breakfast and supper—varied sometime by bread or boiled maize—and potatoes and pumpkins or other vegetables for dinner. The food was good of its kind and in sufficient quantities, but the supply of animal food is very small, and indeed almost nominal. . .there is a great want of proper cooking utensils, as well as of those for cleaning—washing—food—personal cleanliness, & c. . .a decent appearance is maintained." (Russell 1858, p.63)*

**Hopuhopu (Hopu Hopu) School**

In 1853 Te Ngaungau hapu and Heta Kereru Tarawhiti gifted the Church of England 1,385 acres at Hopuhopu for the usage toward education and religion (Figure 22) (Te Kauri Marae 2014, p.1). The Maori owners also paid £300 for the construction of a flour mill. The school was apparently opened at Hopuhopu by 1857, based on Lieutenant Russell's school inspection report.[22] (It is probable that it opened several years earlier based on the date of the gift.)

Inspector Russell noted the land at Hopuhopu consisted of one third indifferent and one third swamp that could be reclaimed.

> *"Ashwell has lately enclosed (by contract) 400 acres which he hopes to have lay down in grass for sheep or cattle if funds can be provided. A tolerably good house has been erected here for the Teachers and boys employed upon the farm, out of funds furnished by the Bishop, and Mr Ashwell's most anxious desire is to remove the [Pepepe] Mission Station [house] from its isolation and unprofitable position to this Farm which he conceives, if stocked and furnished with the necessary implements, would soon make the school self supporting." (Russell 1858, p.63)*

[22] "Ashwell reported that the natives had given him 1385 acres opposite Pepepe for the support of the school, and said that the permanent maintenance of the Taupiri (boarding) school must depend on its success under cultivation." (Auckland Star 21 June 1905, p.2)

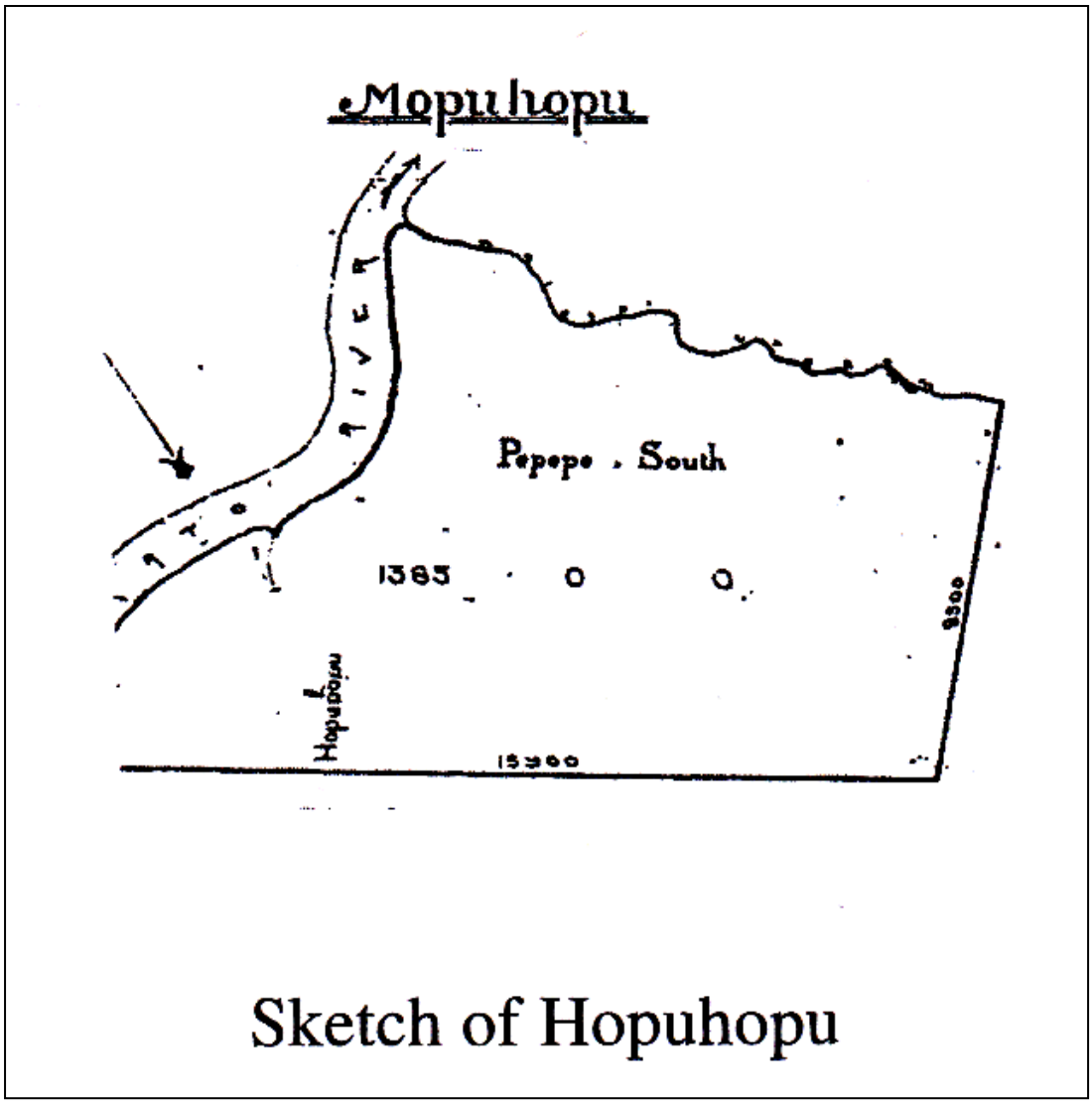



*Figure 22 Hopuhopu (Hopu Hopu), 1385 acres (Old 1994, p.19)*

The Church of England Board administered the government grant to the school of £6 and 10 shillings per student and £50 towards each teacher's salary. This created a shortfall in maintenance of the scholars, as already noted. The Ashwell mission schools were reliant on the students as agricultural workers to sustain the institutions. Some of the boys who were trained in ploughing were 'out farmed' to help feed the pupils and stave off the mission station debts (Petrie 2006, p.87).

By 1861 the Reverend Heta Tarawhiti was in charge of Hopuhopu and Reverend Ashwell visited daily (when he was at home). The boys went to Taupiri on Sundays and Fridays for religious instruction. The station opposite Taupiri Mountain (Tukupoto or Taupiri) continued to be the main mission station.

The school inspector noted the boys slept in a dormitory with iron bedsteads at Hopuhopu, usually sleeping together for warmth. The report also stated the number of students at the schools had decreased since the onset of the war in Taranaki—most of the boys at Hopuhopu had left in February 1861.

***The Taupiri Mission Schools Teachers'***

Ashwell's vision of Christian education at the mission station schools was shared by others who served as teachers. Among the teachers were notable teachers like Heta Kereru Tarawhiti (Figure 23) and his wife and Elizabeth Colenso.

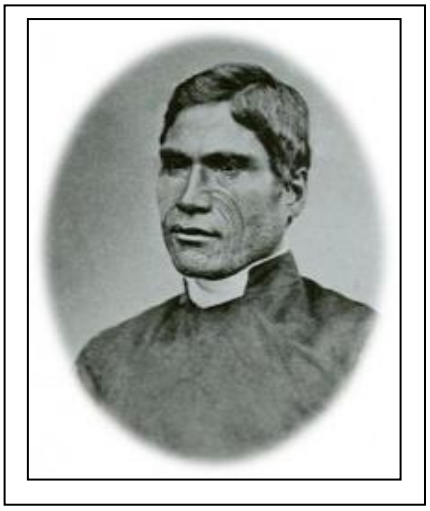


*Figure 23 Heta Kereru Tarawhiti (Tarawhitit 2005, http://www.naumaiplace.com/site/te-kauri/home/page/554/heta-tarawhiti/#)*

Heta joined Reverend Ashwell at Taupiri Mission School, Kaitotehe in 1846 as a lay preacher (Te Kauri Marae 2014, p.1). Ashwell commented:

> *"Heta or Seth [Tarawhiti]. . . became my fellow labourer and fellow minister. . . During twenty long years of trial and difficulty, Heta has never failed me." (Ashwell in Tagg 2003, p.65)*

Heta's years with Ashwell formed the beginning of a long career as a church missionary. As previously noted he was put in charge of the Hopuhopu school in 1861. He eventually became principal of the Taupiri mission schools in 1879 when Ashwell retired.

Another teacher that contributed to the success of the schools was Elizabeth Fairburn Colenso. She was assigned to the school after many unhappy years of marriage to

William Colenso. She was an excellent teacher, fluent in Maori. Elizabeth served as a teacher at Taupiri for seven years (1854 to 1861)(Ross 2005, p.2). Elizabeth and Harriet Ashwell ran the school. In 1861 Elizabeth left with her daughters Fanny and Latty for England where she remained until 1866. Upon on her arrival in New Zealand with her daughter Fanny in 1867 she was notified that Harriet Ashwell was dying.

She and Fanny returned to Kaitotehe at the request of the Ashwells. Elizabeth remained at Taupiri teaching, working in the parish and playing the organ at services. Harriet died on 13 February 1867 (Tagg 2003, p.38).

After her death Benjamin Ashwell asked Elizabeth and Fanny to look after his house while he returned to England. Fanny wrote *"So there we lived for two years, teaching in the Sunday School, working in the Parish, and I was organist for the church"* (Simcox 1940 p.38 in Ross 2005, p.4). Elizabeth's work at the mission station school was highly praised by Benjamin Ashwell.

**Acculturation and Salvation**

Benjamin Ashwell like many of his fellow Church Missionary Society missionaries actively introduced and encouraged Maori to adopt European beliefs and customs. This was particularly demonstrated through the introduction of European material goods and practices: clothing; foods, cooking processes and dinning rituals; agricultural practices; reading and writing English; and of course religious practices. Ashwell noted his successes and disappoints in the adoption of European customs by his flock. He observed:

> *Nov 20, 1856 "one of the native teachers when sent back to his village from the mission station where he had been staying for two years was anxious to adopt European customs he took with him many European articles, knives, forks, spoons, plates, etc. No sooner then he arrived then his friends began to beg one, for a knife, another for a cup, etc, etc, and in less than a month his whole stock of European articles were exhausted, and shortly after the teachers house could not be distinquished (sic) from the others (Ashwell p.267-268)*
>
> *Christmas day [1857] "the dinner was set three times that all might partake of it according to European custom—twenty stewards with white aprons were waiting, filling the cups and panakins with tea our only beverage. Our fare consisted of roast pork plum pudding and bread and butter and tea in abundance. I was glad to find all*

*our scholars anxious for salt, which the natives are beginning to think a necessary more then 1000 loaves were baked for the occasion." (Ashwell 1851-59, pg 300-301)*

## Maori Agriculture in the 1850s

Ashwell was not entirely in support of Maori agri-business as a mechanism to assist in sustaining the schools, unlike Reverend John Morgan at Te Awamutu. Ashwell made periodic comments in his journal and letters about the expenditure of money on farm and milling equipment and risk. He also lamented about the lack of money for tuition because of Maori agri-business.

Ashwell's comments provide insight into changes in Maori agricultural practices in the Waikato. The changes in cultivation methods are indicative of a shift in economic focus on the market opportunities provided by the growing Auckland population and an increase in expertise and technology. Ashwell grumbled:

*May 27, 1855 "the natives are becoming more sensible of the benefits of education for their children. But mills, horses, ploughs, etc absorb their money and they are not willing to pay for the education of their children." (Ashwell 1851-1859, p.266)*

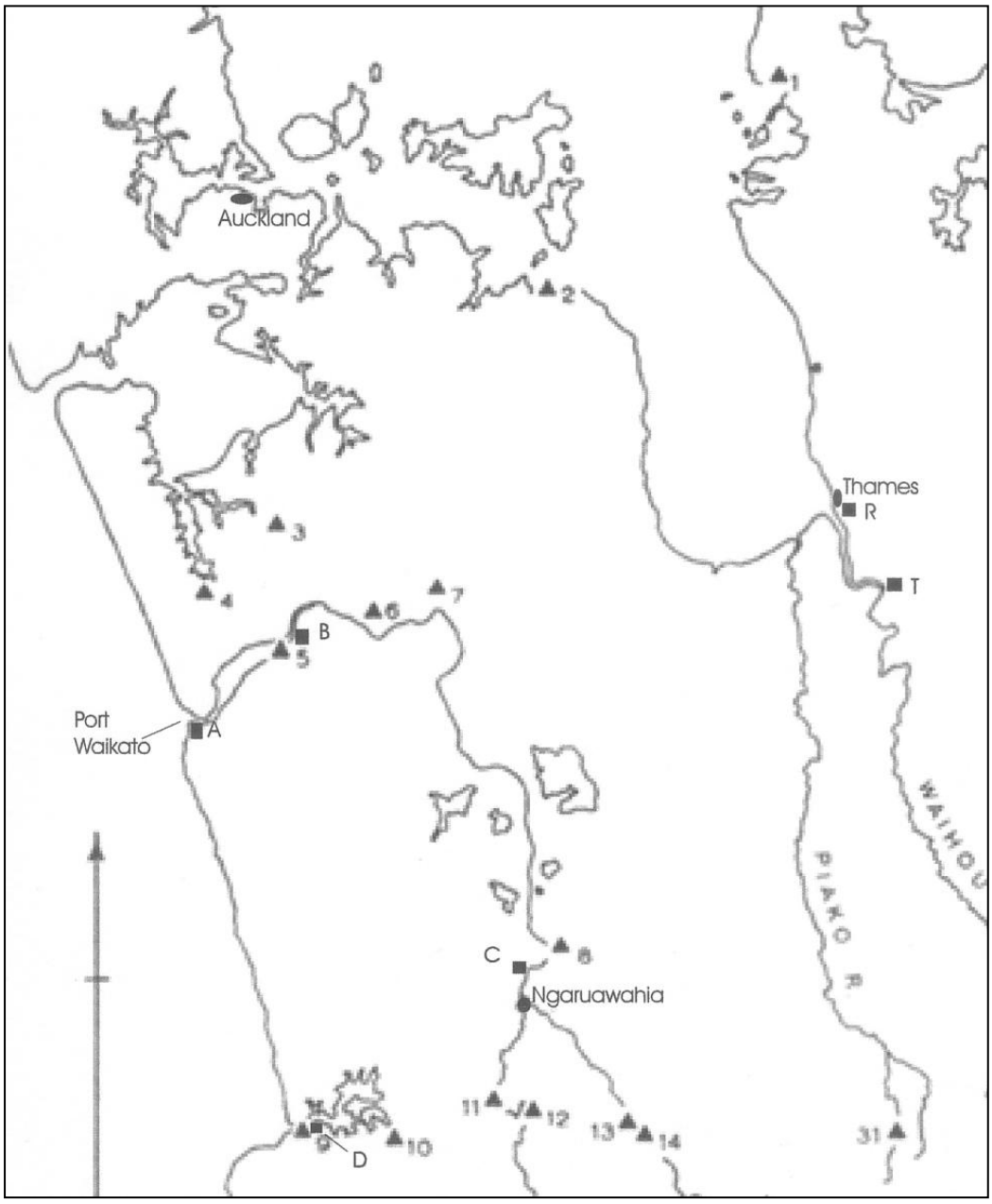
He expressed concern about the risk of over capitalizing.

*November 20, 1856 "Most of the districts are overburdened already with debt, water mills, ploughs, horses, barns, coasting vessels, etc etc. (sic) have yet to be paid for by many of the tribes. Accidents are by no means infrequent, vessels lost, mills broken, etc. One opposite this station [at Taupiri] which has cost 400 pounds is entirely useless. On the east coast one tribe lost last winter, four coasting vessels valued between one and two thousand pounds." (Ashwell 1851-59, p. 268)*

The Auckland market had been a source of income for the Waikato people for many years as is evident in Table 1. The growth in the quantity of foodstuffs conveyed to Auckland is also apparent. The table suggests flour milling and wheat production was at its height in 1855-56, the time when Ashwell lamented about the trading and the Taupiri flour mill. Figure 24 shows the location of flour mills in the Ngaruawahia and Enviro area. The figure does not include the flour mill at Hopuhopu.

*Table 1 Waikato tribe produce brought to Onehunga and Commercial Bay by canoe and cutter from 1852- 1ST Quarter of 1858* (Compiled from Williamson 1865, pp. 1-20 in Appendix to the Journals of the House of Representatives Session I , E-12).

| **FOODS** | **1852** | **1853** | **1854** | **1855** | **1856** | **1857** | **1858 1ST QUARTER** | **SUB TOTAL** |
|---|---|---|---|---|---|---|---|---|
| kits of potatoes | 179 | 1462 | 55 | 1266 | 1120 | 1296 | 863 | 6241 |
| kits of kumeras (sic) | 14 | 1 | 4 | 4 | 10 | 9 | | 42 |
| kits of onions | 13 | 17 | | 66 | 75 | 63 | 52 | 286 |
| kits of cabbage | | | | 20 | 88 | 76 | | 184 |
| kits of pumpkins | 7 | | | | | | | 7 |
| kits of maize | 381 | 307 | 12 | 142 | 347 | 921 | 5 | 2115 |
| kits of peaches | 35 | 18 | | 66 | 138 | 500 | 104 | 861 |
| kits of melons | 33 | | | | | | | 33 |
| kits of apples | 16 | 1 | | | 45 | 33 | | 95 |
| kits of grapes | 132 | | | | | | | 132 |
| kits of gooseberries | | | 30 | | | 50 | | 80 |
| kits of quinces | 3 | | | | | | | 3 |
| pounds of honey | | | | | | 50 | | 50 |
| dozens of eggs | | | | | | 25 | | 25 |
| flour | 62 ton | 29 ton | 8 tons | 2 tons | 40 1/2 tons | 40 1/2 tons | 1 ton | 183 tons |
| bushels of wheat | 1674 | 1418 | 2408 | | 3552 | 3902 | 1340 | 14294 |
| bags of wheat | | | | 629 | | 16 | | 645 |
| pigs | 472 | 439 | 236 | 211 | 317 | 464 | 61 | 2200 |
| goats | 6 | 4 | | 19 | | 6 | | 35 |
| fowls | 103 | 134 | 12 | 36 | 13 | 97 | | 395 |
| ducks | 3 | | | | | | | 3 |
| geese | | | | | | | | |
| turkeys | | | | | | | | |
| tons of fish | 7 | 1 1/4 | 25 | 12 | | | | 45.25 |
| bundles of fish | | | | | 1073 | 650 | 360 | 2083 |




**Mission Stations**

A-Maraetai (CMS)

B-Kohanga (CMS)

C-Kaitotehe (Tukopoto, Taupiri) (CMS)

**Flour Mills**

3-Patumahoe
4-Waiuku
5-Kohanga
6-Tuakau
7-Mangatawhiri
8-Kaitotehe (Taupiri)
9-Whangaroa
10-Waitetuna
11-Karakariki
12-Whatawhata
13-Kirikiriroa

The mills are indicated by triangles and the numbers. The mission stations are indicated by letters and squares.

*Figure 24 Mission stations and flour mills in the Waikato and Bay of Plenty 1830-1860s. (Compiled by Hargreaves 1961, p.230).*

In the late 1850s Ashwell 's journal documents his success--the continued rise in the education of native children. He also includes disparaging comments about agri-business developments along the Waipa and Waikato Rivers.

> *July 21 1859 "With in (sic) the last eighteen months seven boarding schools for native children kept by experienced native teachers have sprung up within the Taupiri District—and more than 100 native children are taught and boarded at the expense of their parents. . .Thus ships , flour mills, etc are or were for a season quite the rage. Each little petty tribe must have a mill. Even now it is very much the case. Two good mills would grind all the wheat on the Waipa and Waikato rivers and there are now six already erected and another to be built in a few months. (Ashwell 1851-59, p. 313-314)*

Ashwell may have been an astute observer of the results of the adoption of European practices. He also noted that despite the planting of commercially viable crops and use of labour-saving equipment traditional cultural practices continued. For example the shifting of cultivation locations instead of applying manure to the land—instead scrub was burnt to create new cultivation sites.

Seasonal patterns of food cultivation and collection were also still followed. Cultivars grown for personal use indicated species preferences that relate to customary cuisine. *"Maori tastes continued to favour potatoes, kumara, taro, turnips, cabbage, pumpkin, marrow, maize, watermelons and peaches"* (Leach 1984, p.106). Wheat, one of the grains the missionaries focused on along with corn and potatoes become an agricultural crop because of the failure of other crops according to Garrett: *"Maori enthusiasm for wheat arose from the failure through exhaustion of many of their potato grounds."* (Garrett 1991, p.170)

Some crops like maize corn (kanga or kopakipaki) became the basis for new Maori recipes—kaanga kopiro (fermented corn). The maize was processed by anaerobic fermentation, a technique traditionally applied to the processing of hinau fruits at various places in New Zealand (Leach 1984, p.101). The mature dry cobs of maize were placed in a basket and in the water for several weeks until soft. *"The fermented grains were then scraped off the cobs and formed into cakes for roasting in the embers or steaming in the umu [oven]."* (Leach 1984, p.101)

## The Taupiri Mission Schools and the Rumblings of Conflict

The May 3rd 1863 inspection of the Taupiri school listed 37 scholars at the establishment—5 men, 4 women, 12 boys, and 16 girls. Mrs Ashwell's health was reported as failing and the school was lacking her vigilant care (Appendix to the Journal of the House of Representatives 1863, Appendix E No.9, p.5). The report noted the the school buildings were extensive but not well planned and some were showing signs of decay. The buildings were noted as including: girls dormitory, dining hall and school room; 3 raupo whares; a wooden store; and a large building of rude construction used as a cooking house. Inspector Henry Taylor also commented the buildings and improvements at Hopuhopu, 2 miles further up the river, were falling into decay (Appendix to the Journal of the House of Representatives 1863, Appendix E No.9, p.5). He was critical of the lack of supervision although there was a conscientious native teacher who filled in for Reverend Ashwell.

Benjamin Ashwell was still in the District in June 1863 when the government press at Otawhao was seized by a Ngatimaniapoto chief. He withdrew to Auckland shortly after that and lived for a time with his family in Parnell. Ashwell was engaged as a Chaplain for the colonial forces and visited the military posts on the Great South Road. For example he was at St John's Redoubt Papakura, Drury, Shepherd's Bush, Queens Redoubt, Whangamarino Creek, etc. In February 1864 he wrote from Taupiri about the Waikato conflict.

### Preamble to the Conflict and Ashwell's Perspective

Ashwell recognized the individuality of tribes and their cultural differences and practices. He believed in the Christian way of life as the first priority followed by civilization, education, law and order. In the early 1850s Benjamin Ashwell expressed concerned about the European land purchases and dissent among Maori about pressure from the Colonial government for land sales. He supported the presence of Resident Magistrate system and the use of local courts to adjudicate native issues and concerns. When Magistrate Fenton was removed from the Waikato in 1858 he expressed his disappointment.

Ashwell did not support the King movement which grew in popularity in the middle Waikato from 1862 onward. Although he understood the reason, e.g. in September 1861 most of the Waikato tribes were declared by the New Zealand Government as resistant to the British government.

## The Government, King Movement and the Waikato Campaign of the New Zealand Wars

The Waikato tribes were eventually united under a Maori King who was determined to establish an independent Maori government in New Zealand. The colonial governments responded—at the beginning of 1862 soldiers began building a road between Drury and the Waikato River; the Great South Road. In May of the same year Lieutenant-General Duncan Cameron established a headquarters south of Auckland at Pokeno. Queen's Redoubt would become the main supply post at the onset of the invasion of the Waikato (Figure 25). *"It was the largest earth-walled fortification built by British forces in New Zealand"* (Ritchie 2001, p. 6). During 1862 through 1863 fighting between Maori and British and Colonial forces was renewed in Taranaki and it was suspected other tribes were involved.

Governor General Sir George Grey alleged the Waikato Kingites were involved in the fighting. On 9 July 1863 Governor Grey ordered that all Maori living between Auckland and the Waikato should be expelled south of the Waikato River unless they swore allegiance to Queen Victoria (Belish 1986, p.133). Grey's proclamation provided no time for King Tawhiao and the other Maori chiefs to respond. The government was warned that if British and Colonial troops crossed the tribal boundary (aukati) north of Meremere on Mangatawhiri Stream a war would ensue. Later the government established an aukati line south of the Puni River in southern Waikato. The aukati line would eventually become the boundary line between the post campaign colonial settlements and Maori land (or 'the King Country').

On 11 July 1863 Governor Grey declared he was going to send armed forces into the Waikato, an act that was probably intended to provoke the Waikato Maori, many of whom were not interested in conflict with the colonial government. Grey's challenge was backed by a weak military force; *"on July 11, 1863 there were less than 4,000 troops in Auckland Province available for the invasion."* (Belich 1986, p.125) On 12 July General Cameron ordered the 14th Regiment south across the Mangatawhiri River into the Waikato. Five days later, on the 17th of July, fighting broke out on Koheroa ridge.

*Figure 25 The locations of redoubts and villages associated with the Waikato Campaign of the New Zealand Wars (Simmons 2013d).*

The invasion of the Waikato had begun. It was fuelled by a rapid increase in troops, both Imperial regulars and colonial forces, including the militia. During the course of the conflict the number of Imperial troops varied, in January 1864 there were 10,000 Imperial regulars. On 1 May 1864 there was a peak of 11,355 Imperial troops of whom three quarters served in the Waikato (Belich 1986, p.126). The Waikato campaign was staged from posts south of Auckland to Orakau in the southern Waikato and affected both coasts and the Firth of Thames. The battle front moved from Queen's Redoubt at Pokeno, south east and west.

General Cameron was a strategist and ensured campaign success by creating multiple supply routes through the establishment of redoubts and posts along the Firth of Thames and Port Waikato and other port cities on the west coast. Three redoubts were established south of Queen's Redoubt adjacent to Mangatawhiri stream. Mangatawhiri stream became the access point for supply transport during the next stages of troop movements into the Waikato. The force focused on taking Whangamarino where Maori involved in the engagement on Koheroa ridge occupied an old pa. By 14 August 1863 Cameron's troops' held the pa and established a redoubt nearby. The 'rebel force' had shifted across Whangamarino swamp to Meremere pa (Figure 26). By November 1 Cameron's forces occupied Meremere pa and Maori forces had shifted to Rangiriri pa. Twenty days later British soldiers commenced attack on Rangiriri pa. The battle proved to be the bloodiest battle since the commencement of the campaign. Cameron's men eventually secured Rangiriri when Maori laid down their arms.

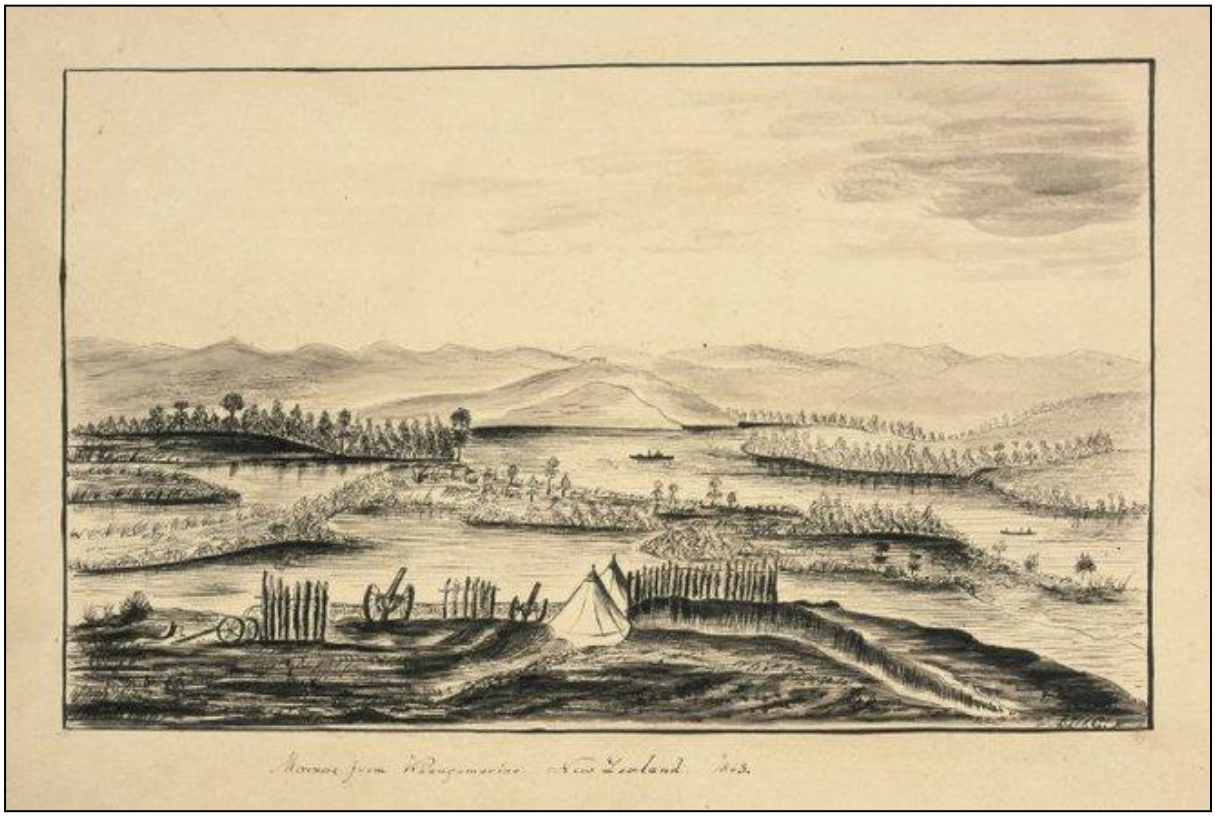


*Figure 26 Meremere from Whangamarino, 1863. (Carbery, A.T. Ref: E-248-q-082. Alexander Turnbull Library, Wellington, New Zealand. http://natlib.govt.nz/records/23115754*

Each time the troops were moved, the last position was secured and used as a base of operations. The flat bottomed river boats served them well—moving troops and supplies down the Waikato River (Figure 27).

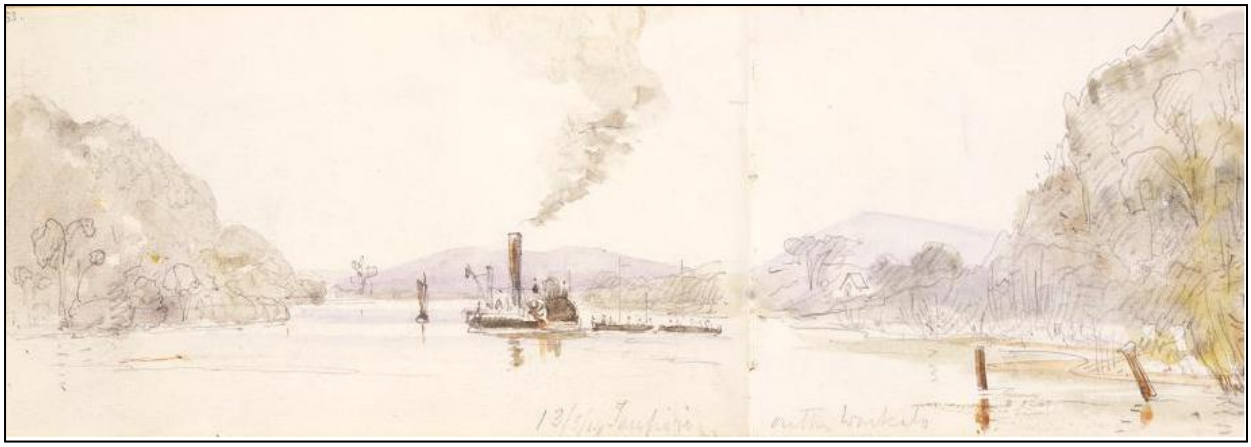


*Figure 27 Looking along the Waikato River, with a rear wheel paddle steamer, probably the Koheroa, in the middle distance, two canoes alongside it. Taupiri on the Waikato. 13/3/64. (Williams, Edward Arthur 1824-1898 :[Sketchbook of English and New Zealand scenes] 1860 - 1864. Ref: E-349-053/054. Alexander Turnbull Library, Wellington, New Zealand. http://natlib.govt.nz/records/22720015)*

***Troop Movements; Taupiri to Ngaruawahia***

From Rangiriri, Cameron moved south to Ngaruawahia, the abandoned village of the Maori king. They occupied sites along the way including Taupiri and Taupiri Mission Stations. Private Edward Tedder of the 40th Regiment noted:

> *December 4 "struck our tents and proceded (sic) to a place named Taupiri 9 miles further up river and pitched our tents on top of a steep hill commanding a view of the country round. . .a small village being on the opposite bank of the river a potato party was sent across to get some for our dinner tomarrow (sic)." (Tedder 1863: December 4)*

The Kaitotehe mission station opposite Taupiri was maintained by Heta Tarawhitii, Ashwell's Maori Deacon during the conflict. A newspaper correspondent on board the Pioneer noted:

> *"The beautiful and picturesque dwelling of Mr Ashwell comes in view, on the right bank, surrounded with cultivations, and groves of peach trees. The house itself is built with great taste, with the church alongside it, and several outbuildings and whares immediate about it. The garden gate opens upon the river, and her Bishop Selwyn was standing with three natives, who had been left in charge of the house. . . there were four*

*horse running on the property, and . . .several sheep there also, which have been handed over to the Commissariat for the use of the troops. . . Beyond Mr Ashwell's is another missionary station at Hopuhopu where there is a very pretty little church of raupo with a few whares just about it." (Daily Southern Cross, December 1863, p.5)*

Heth refused to leave when the Kaitotehe station was occupied by the British and Colonial military as a headquarters. The commodore's tent was pitched in the field in front of Ashwell's house at Kaitotehe (Tagg 2003, p.37). The church at Kaitotehe was photographed in 1863 or 64 during the occupation (Figure 16). Ashwell did not abandon the station or his co-worker Heta. He visited monthly.

Cameron used the gunboat Pioneer to carry out reconnaissance of Ngaruawahia on 8 December 1863 following the battle at Rangiriri Pa. He found the village deserted. He returned to Rahuipukeko and immediately sent 400 men from the 65th and 40th Regiments under Colonel Wyatt to Ngaruawahia as an occupying force.

Private Tedder recorded in his journal the movement of the 40th Regiment:

*"December 8, 1863 [going to Ngaruawahia] about 7 miles up we came suddenly on a lovely little place surrounded by peach trees with a neat little church peeping out between the trees and a large flock of sheep feeding." (Tedder 1863: December 8)*

He does not record crossing the Waikato River, therefore his description of the number of a large flock of sheep may indicate they paused at Hopuhopu and not Kaitotehe. He also makes no mention of the mission house and school building.

**Ngaruawahia; Cameron's Headquarters**

When the troops arrived the Kings village at Ngaruawahia was abandoned. The Daily Southern Cross correspondent noted the village was on a level flat at the junction of the Waipa and Horotiu [Waikato] Rivers. The fortifications at the site were described as including rifle pits along the river banks for some distance facing the river and on the banks of the Waipa a half finished redoubt. The redoubt was described as being 30 yards square and surrounded by a ditch, cut diagonally with a parapet behind. The soldiers found part of a plan of an intricate linked entrenchment, but no semblance of the design in the fortifications at Ngaruawahia (Figure 28).

*Figure 28 Greaves 1864 Plan of the Point (in blue and pink) overlaid on an aerial photograph (Simmons 2004). (Note: Maori cultivations associated with S14/182 & S14/31 and used as a military camp associated with S14/181.)*

A letter was also left on the wharenui requesting the whares not be destroyed and the grave of Potatou be held as sacred. A sentry was posted to ensure the Potatou's tomb was not broken into (Figure 29).

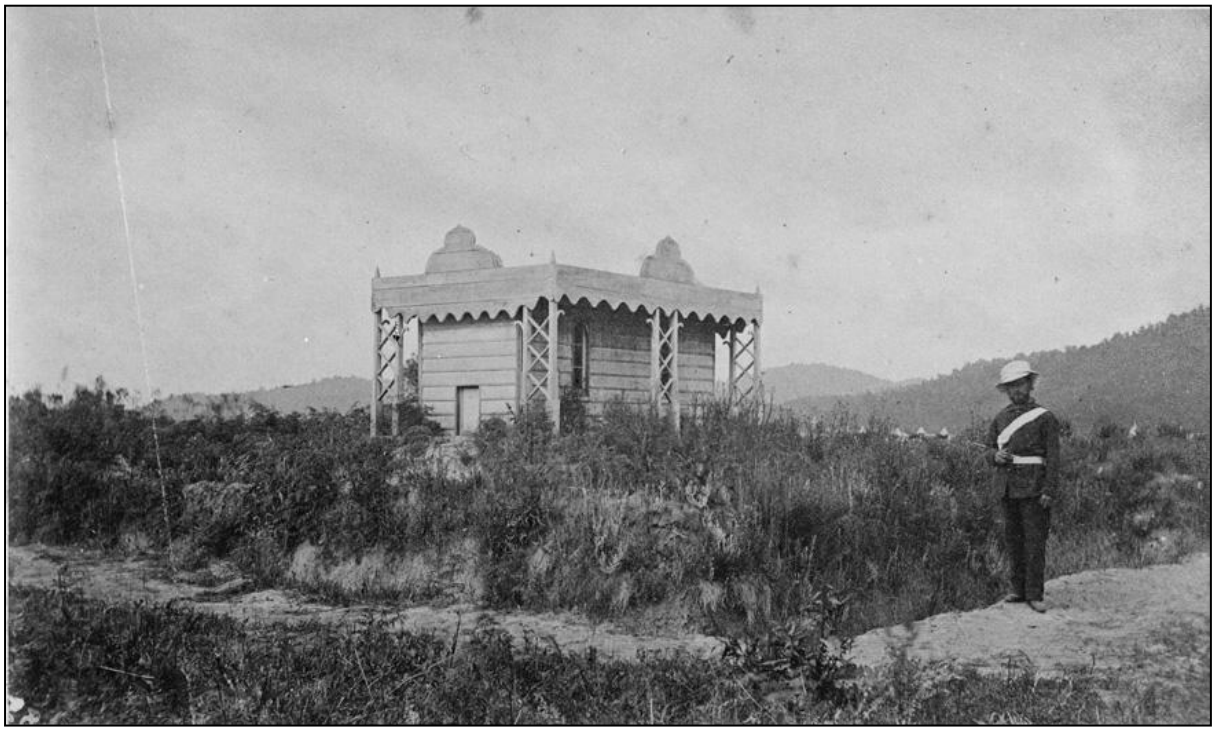


*Figure 29 Potatau Te Wherowhero's tomb at Ngaruawahia, 1864, Beer, D.M. 1864, J.D 'Sir George Grey Special Collections, Auckland Libraries, 4-1164)*

The newspaper correspondent travelling with the troops noted:

> *"[At Ngaruawahia] directly opposite the point, at about fifty yards from the beach, stands the flag-staff . . . the bones of King Potatau the 1st are here reposing in their last resting place, which is a small wooden building, about 12 by 16, with a balcony in front ornamented in the modern gothic style of European architecture; there are two small windows in the building; inside is the coffin in the head of which is a small pane of glass. The place of the ex-king is near the beach and building the good old Maori style , it measures about 40 feet by 20 feet, is beautifully thatched, and line with small reeds tastefully tied together. . .Besides the Kings there are several well-built whares—among them the printing office, the runanga, and houses of his ministers. The press has been taken away. . . The number of whares in all is about 40." (Daily Southern Cross, 31 December 1863, p.5)*

Ngaruawahia, which was named Queenstown (and later Newcastle) by the British and Colonial force provided access to both the Waipa and Waikato Rivers. Cameron's force rapidly established a headquarters camp at Ngaruawahia over a period of a few days; on 9 December 250 men of the 40th Regiment arrived (Figure 30). By the end of 1863 three thousand militiamen were in Ngaruawahia (Latta 1980).

'Queenstown' would as a staging base for the movement of British and colonial troops into the southern Waikato). The rivers were the primary transportation corridors for troops and supplies.

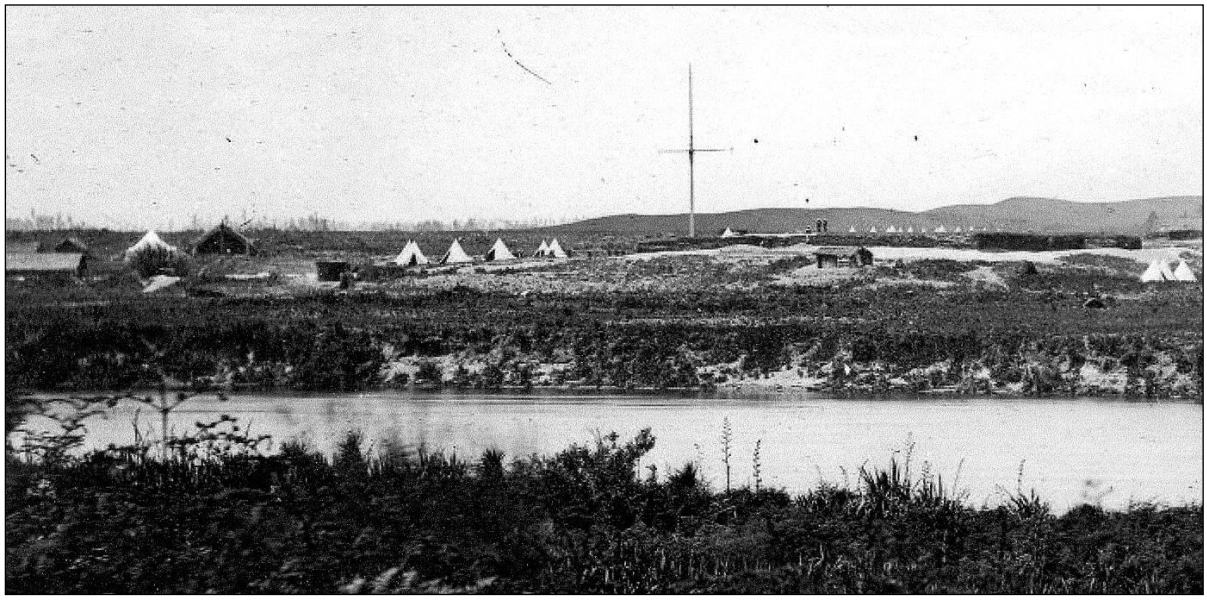


*Figure 30 Military Camp and Maori Whares at The Point, 1864.*
*(http://mp.natlib.govt.nz/detail/?id=12405&recordNum=17)*

The newspaper correspondent also described cultivations at the site.

> *"A great deal of land on both sides [or the river] is in cultivation, being planted with potatoes, Indian corn, & c. Te potatoes are not very large, but still very acceptable. Besides the land already planted some has been ploughed up and lies in fallow."* (*Daily Southern Cross*, 31 December 1863, p.5)

The potatoes were of interest to not just the newspaper man. Private Tedder wrote:

> *"December 8 (1863) arrived at Ngaruawahia. . . large flag staff in front of the royal whare floated the British ensign. . . We were soon landed and pitched our tents in line with No 10 in the centre of a large potato field and before long the whole Regiment was at it with shore paddles sticks and all sorts of impromptu tools rooting out the Leive's (sic leavings?) and boiling and baking was the order of the day for the next two or three hours." (Tedder 1863, December 8)*

The 40th were not allowed time to linger over their roast potatoes. They were immediately put to work building a redoubt at Ngaruawahia.

> *"December 9 (1863) We are to build a large redoubt here and there is to be a township laid and so I believe we remain here for some days . . . there being only a small redoubt on the bank of the Waipa and a single line of rifle pits extending from River to River in front of the Kings Palace as it is called. There is a good many large whares about the place and any amount of cultivations. The most remarkable feature about the place is Old Patataus (sic) tomb or mausoleum . . . we have plenty of good rations and any amount of potatoes to be got for the digging so for the present we are in clover." (Tedder 1863, December 9)*

The camp at Ngaruawahia (Newcastle) provided a base for Cameron to re-group his force and plan his advance (Figure 31). A signal look out station was established on Taupiri Mountain and a road is describing as running from the river beach up to the top if the mountain (Daily Southern Cross, 31 December 1863, p.5). Note the telegraph line in Figure 31, below. The telegraph lines and posts are to the left of a barracks building and cross the river near the canoes. Communications was a priority during the campaign—as was the supply system.

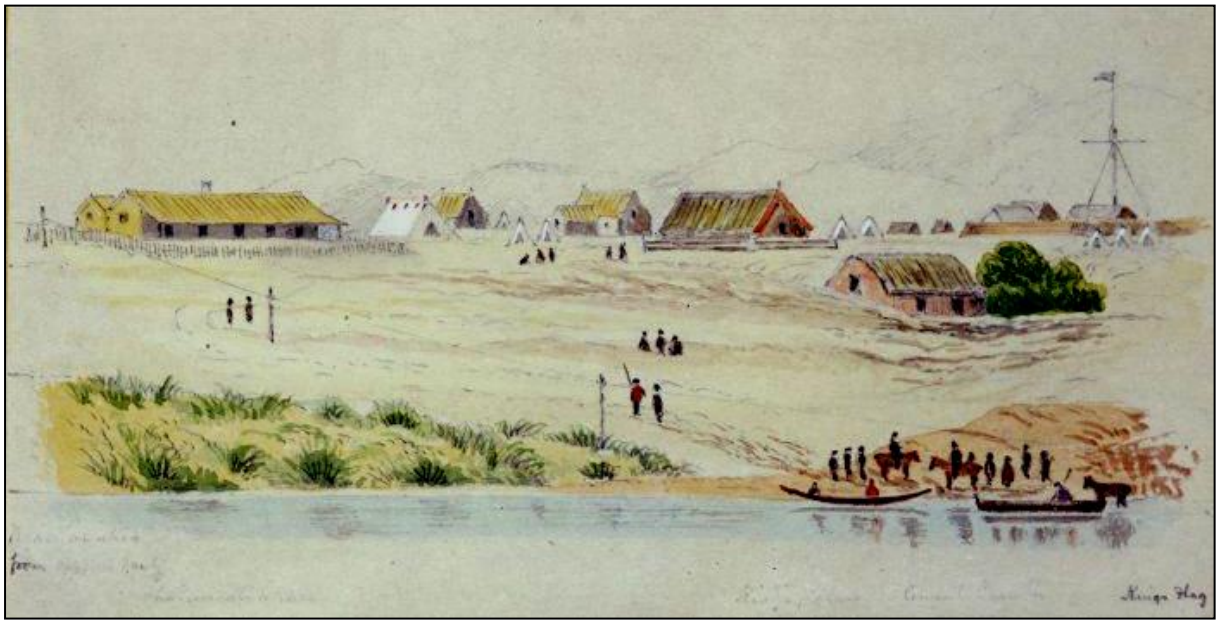


*Figure 31 Ngaruawahia from the opposite bank. The General's headquarters, Maori King's palace and council chambers, Maori Kings flagstaff, and structures associated with the army of occupation. (Hamely, J.O.23 1864, E-047-q-009, Alexander Turnbull Library).*

[23] Joseph Osbertus Hamely was an officer of the Royal Artillery. He commenced service in the Ordinance Department. He would have been trained in estimating weapon firing ranges and

Ngaruawahia (Newcastle) played an important role in the river based supply system during the invasion of the lower Waikato. Port Waikato was established as a major supply depot. Supplies were transported to 'The Point' (between the rivers) at Ngaruawahia and conveyed up the Waipa or Waikato Rivers. Military food rations, camp equipment, and ammunition flowed through Ngaruawahia. Many regiments passed through the camp over the years of operation including the Royal Irish 12th Regiment, Figure 32.

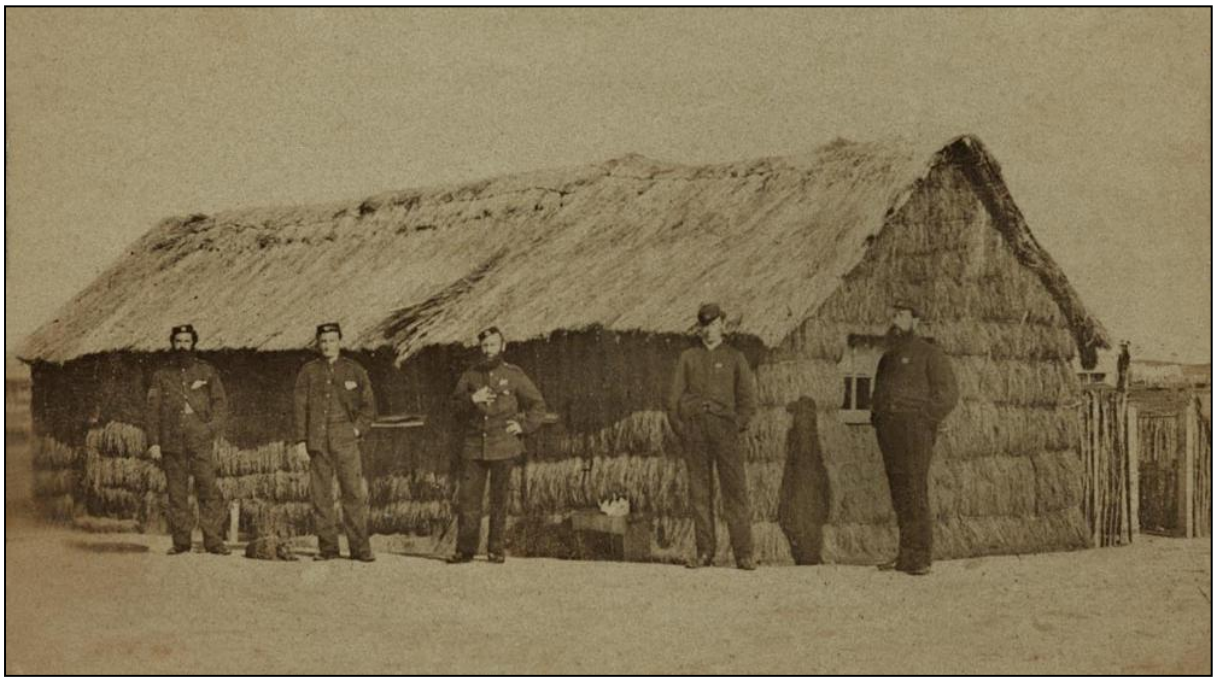


*Figure 32 Military Quarters 12th Royal Irish Ngaruawahia 1864. Non-commissioned officers of the 12th (19th) Royal Irish Regiment standing outside a whare serving as military quarters at Ngaruawahia. The officers are named as Sergeant Moore, Sergeant Smith, Sergeant Furnish, Lieutenant Thomas, Sergeant Major Kenny. (Sir George Grey Special Collections, Auckland Libraries, 589-154.)*

In mid or late December 1863 troops were being shifted south from Ngaruawahia down the Waipa River to Whatawhata. The move was in response to reports of rebel Maori activity in the lower Waikato.

The redoubt at 'The Point' was nearly finished by Christmas. It was described as being large and very strong and superseding Queens Redoubt as an important

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identifying targets. This may have included the preparation of range cards or drawings. A range card is a sketch or diagram of the terrain that a weapon is assigned to cover by fire. It shows possible target areas and terrain features plotted in relation to a firing position. The information on a range card is used for planning and controlling fire.

military position (*Daily Southern Cross*, 31 December 1863, p.5). Friendly Maori arrived from Whatawhata on 23 December bringing pigs, turkey's fowls, eggs and milk for sale. The General remained at Ngaruawahia for Christmas.

From Whatawhata Cameron's force advanced five miles to Tuhikaramea on 1 January 1864 (Belich 1986, p.161). Seven thousand men were south of Ngarauwahia in January 1864 creating a heavy demand on supply transport. The key to transport during this phase of the campaign was the Waikato and Waipa Rivers and Cameron's fleet of flat bottomed river boats.

The military occupation of Ngaruawahia included several phases from the initial camp (1863), to redoubt construction and supply line support (1863-1865), and finally Waikato Force Headquarters (1865-1867), Figure 33.

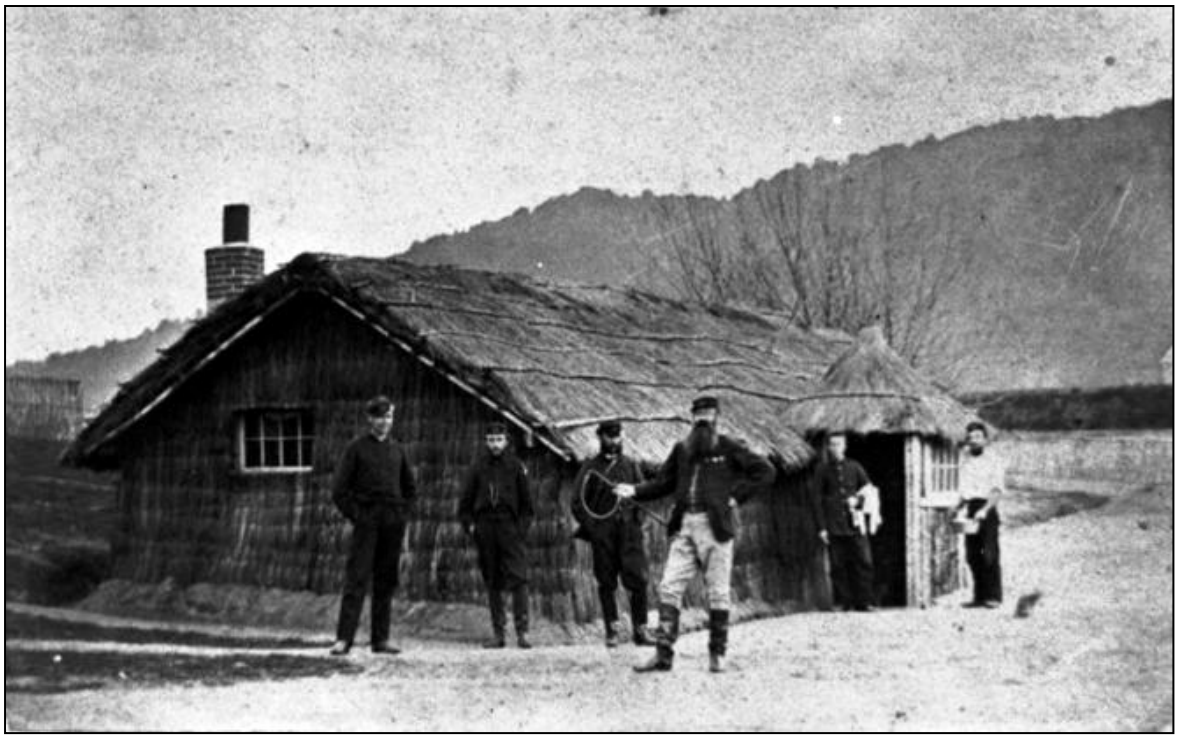
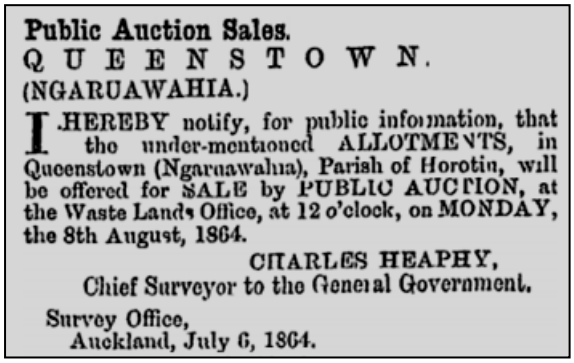


*Figure 33 Soldiers of the 12th Regiment alongside a raupo building at Ngaruawahia, 1 August 1865. From left Sergeants Moore, Smith, and Furness, Adgt. Thomas [with whip], S/M Kenny (Lennard, L. M. 1865, ½-082116-F, Alexander Turnbull Library).*

The second military fortification constructed at 'The Point' was constructed by the Armed Constabulary (A.C.).[24] The other walls were composed of sod and fern and the inside building was constructed of brick—*"by the timeit was finished, part of the outer wall had fallen down, and the whole wall was shortly afterwards leveled, leaving the brick building standing"* (Bruce Herald 9 July 1980, p.5). After the war was over this building was used as a jail/ gaol.[25] The gaol, and by inference the redoubt was at the north end of Herschel Street, south of the British ('English') Redoubt shown on Figure 28. The redoubts and fort at the point were located on higher ground in areas that have been developed for residential housing since before the turn of the century.

## Town of Queenstown (Ngaruawahia) Land Sale

The town of Queenstown (Ngaruawahia which was later called Newcastle) was laid out in 1863 by government surveyors. In mid April 1864 Mr H Hanson Turton was appointed by the government to investigate Native Titles at Ngaruawahia prior to sale of the township. A public notice was issued for sale of the town by public auction on 8 August 1864, but the sale was delayed and the newspapers carried various editorials relating to the sale.

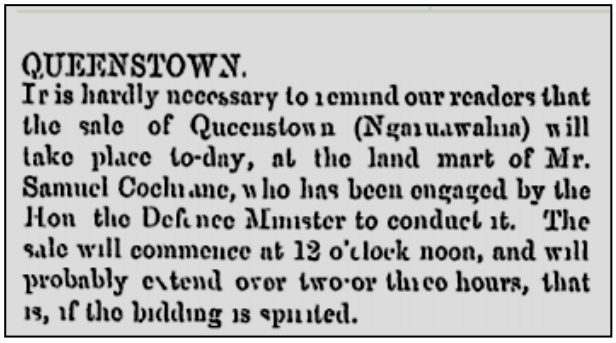


**Public Auction Sales.**
Q U E E N S T O W N.
(NGARUAWAHIA.)

I HEREBY notify, for public information, that the under-mentioned ALLOTMENTS, in Queenstown (Ngaruawahia), Parish of Horotiu, will be offered for SALE by PUBLIC AUCTION, at the Waste Lands Office, at 12 o'clock, on MONDAY, the 8th August, 1864.

CHARLES HEAPHY,
Chief Surveyor to the General Government.

Survey Office,
Auckland, July 6, 1864.



QUEENSTOWN.

It is hardly necessary to remind our readers that the sale of Queenstown (Ngaruawahia) will take place to-day, at the land mart of Mr. Samuel Cochrane, who has been engaged by the Hon the Defence Minister to conduct it. The sale will commence at 12 o'clock noon, and will probably extend over two or three hours, that is, if the bidding is spirited.

*Figure 34 Daily Southern Cross 7 July 1864, p.2. (left) and Daily Southern Cross 9 September 1864, p.4. (right).*

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[24] The Armed Constabulary of New Zealand 1867 - 1871.The Armed Constabulary of New Zealand was formed by Act of Parliament in 1867, with constables used as both soldiers and sworn police. Constables also became involved in road and bridge building and swamp draining, while still doing police work. In 1877 the Provincial Police were amalgamated with the Armed Constabulary the whole Force being re-named the New Zealand Constabulary. http://www.aucklandlibraries.govt.nz/EN/heritage/familyhistory/militaryhistory/armedconstabulary/Pages/armedconstabulary.aspx

[25] The location of the goal is noted in an 1882 surveyors' Field book #422 p. 33 and referred to on site record S14/190.

The sale on 9 September 1864 was apparently successful based on the number of section owners' names that are listed on the 1863 plan, SO 57. Some of the new settlers were soldiers of the 3rd Regiment of the Waikato Militia. They were provided with farms across the Waipa River near Ngaruawahia (*New Zealand Herald* 29 May 1923, p.2).

The town continued to be occupied by the military following the sale of sections. The town name was changed from Queenstown to Newcastle during the military occupation. A summary of the invasion and occupation is included as Figure 35.

**General chronology of the invasion and occupation of the Waikato by British and Colonial troops:**

**-1863-64 Active campaign by British forces assisted by the Waikato militia and Forest Rangers.**

**-1865-67 Military occupation by both British and Colonial forces. The withdrawal of British troops commences with most regiments transferred from New Zealand by 1866. Waikato militiamen assigned their land grants. Soldiers of the 3rd Regiment of the Waikato Militia were assigned land grants near Ngaruawahia, Taupiri, Te Kowhai, and at Cambridge.**

***The New Zealand government enacts legislation to create the Armed Constabulary in 1867 and begins to enrol constables.***

**-1867-86 The Armed Constabulary occupation Ngaruawahia with assistance from militiamen under the terms of their enlistment and volunteer cavalry.**

*Figure 35 Summary of Waikato invasion and occupation forces.*

## Taupiri; Mission Stations and Schools--1865 and After

In June 1865 following the active phase of the war in the upper Waikato Ashwell increased his stays in the upper Waikato to three Sundays each month somewhere in his district (Tagg 2003, p.37). After the death of his daughter in 1865 he travelled to Taupiri with the Reverends Volkner and Grace. When he returned to Auckland he learned of Volkner's death and Grace's capture and was shocked. He withdrew from active Church Missionary Society service and focused on chaplaincy work in Auckland for a period of time (Tagg 2003, p.38). Eventually he returned to Kaitotehe.

As I already noted following his wife's death in mid-February Benjamin applied for leave. He sailed to England with his surviving daughter Sarah in April 1867, leaving Elizabeth Colenso and her daughter at the Kaitotehe Mission Station. The Ashwell's returned to New Zealand a year later.

***Hopuhopu Mission Station; Reverends Pritt and Ashwell***

The Reverend Longsdale Pritt was assigned the duty of visiting clergyman to the Upper Waikato in May 1867. According to the testimony of the Reverend Robert Burrows to the commission of inquiry into trust estates for religious purposes:

> *The Reverend Longsdale Pritt leased the house and five acres at Hopuhopu and also 100 acres in aid of the school. The school with accommodation for a master was added to by Mr Pritt and used as his dwelling house. The Reverend Pritt moved the school building from the station at Kaitotehe for use as a school building at Hopuhopu. Pritt also erected dormitories for pupils and several out buildings for farming purposes and cleared 20 to 30 acres of formerly cultivated land that was over grown. Pritt estimated the cost of the building and clearing was £400, which was expended from his own money* (*Appendix to the Journal of the House of Representatives* 1869: Appendix A No.5, p.4).

Benjamin Ashwell served the missionary society in Auckland during this period and periodically visited the Taupiri mission stations. In May 1868 he married Maria Brothers. Maria was forty years old and had been a matron at the Taupiri school.

In 1871 Reverend Longsdale Pritt was made Archdeacon of the Waikato (*New Zealand Herald* 9 November 1885, p.2). Reverend Pritt apparently moved to Hamilton to take up the post. Ashwell returned to the Waikato and served as minister at Hopuhopu in 1872 and lived in the old school house (former boys' dormitory and

school masters accommodation) (Tagg 2003, p.39). Heta remained at Kaitotehe and erected a new chapel.

Ashwell's stay at Hopuhopu was brief—in July 1873 Ashwell returned to Auckland.[26] (Possibly due to declining health and the small native population left in the area.) During this period his longtime friend Heta was invited to establish a new ministry at Kaipiha on the edge of the King Country (Tagg 2003, p.39).[27]

Benjamin Ashwell continued in religious service and periodically visiting the Waikato and Kaipiha. He finally retired in late April 1883 after 49 years of Church Missionary Society service.

The buildings at the Hopuhopu station were in poor condition by the mid-1880s due to the lack of maintenance. On 15 March 1886 the old mission station at Hopuhopu burned down. In a commentary on the Mission Station schools in the Waikato the Auckland Star noted:

> *"For about ten years the [Taupiri mission] schools were maintained by the product of the soil, by grants from the government, and by the help from friends of the Mission. About 300 men, women and children were being educated in this way [in the Waikato] under the supervision of the Archdeacon and the Reverends Ashwell and Morgan." (Auckland Star 21 June 1905, p.2)*

In 1902 efforts were made to re-establish the former mission and school at Hopuhopu. The Reverend Nikora Tautau moved onto the estate to oversee the process. In 1910 the Reverend Hare Maihi Ruarangi (also known as C or H Marsh) was curate for Maori work in the Huntley Parish (Waikato Museum n.d.). *"At Hopuhopu Mission Station, he recorded that he had 1 church, 1 vicarage, 15 other Service places. . ."* (Waikato Museum n.d., p.2) This would indicate the Reverand Tautau had constructed a church and vicarage on the property after 1902 to replace the destroyed mission station buildings.

***Hopuhopu Military Camp***

The use of Hopuhopu as a military camp may have altered some of the historic fabric from the mission period (Figure 36 and Figure 37). Hopuhopu camp was used to prep recruits for two wars. A soldier noted:

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[26]"In 1879 Rev AShwell retires leaves Waikato permanently for Auckland . Heta is made Principile of the school and church." (Te Kauri Marae 2014, p.3)

[27] Tagg does not note the date. Accroding to Hone Nuku Tarawhiti: "In 1877 Heta leaves Taupiri for a new ministry in Pirongia. The land block is called Pourew-o-te-Tonga." (Te Kauri Marae 2014, p.2)

*"Into Hopuhopu they tramped; and what they saw of Hopuhopu they didn't like much. That was not altogether surprising. Hopuhopu, though fair enough by 1914 standards, wasn't too good by the changed standards of 1939. The bell tents, dug out from stores where they had lain for years, were by no means waterproof. The cookhouses were inconvenient and outdated. You had to line up for a wash, and rip your whiskers off in cold water. The whole camp had been hurriedly patched up on the outbreak of war to hold nearly twice the numbers it was designed for." (Dawson 1945, p.1)*

*Figure 36 The cooking tents at Hopuhopu military camp, n.d.. (Hamilton City Council Library, HCL 03833).*

How much earthworks was carried to construct the camps is not known, but there is a reasonable potential that evidence of the old Mission Station buildings remains in the ground. It is assumed that the station buildings were located near the river bank.[28] The areas of Hopuhopu near the river have not had a substantial amount of modification based on the information provided by Figure 37 and a visual assessment made during a field visit.

[28] No maps have been identified of the Hopu Hopu Mission Station. A plan was prepared for Reverend Morgan's Mission Station at Te Awamutu so it is likely that plans may exist for Pepepe, Kaitotehe and Pepepe Mission Stations.

*Figure 37 Hopuhopu Military Camp, north of Ngaruawahia Jan 1953. (Whites Aviation Ltd :Photographs. Ref: WA-32158-F. Alexander Turnbull Library, Wellington, New Zealand. http://natlib.govt.nz/records/23507348.)*

## European Settlement at Taupiri

Other changes were taking place at Taupiri. The active phase of the War was over and the men of the militia were being struck off active service and assigned their farm and country allotments as required under the conditions of their enrollment. The militia men drew their farm allotments in the late 1860s including farms near Taupiri (Figure 38). Private's received a farm section of 50 acres and a town section of 1 acre. Officers received larger farm sections. Some of the land was in swamp and

this problem was eventually dealt with but not to the satisfaction of the soldiers—the rule was if half of a private's fifty acres were swamp he must accept it.

*Pepepe* *Hopuhopu* *Taupiri Mountain* *(Note Kaitotehe across from Taupiri Mountain.)*

*Figure 38 Military Settlements in the Waikato,mid-1860s, NZ Map 4314, showing the farm sections (Sir George Grey Special Collections, Auckland Libraries, NZ Map 4314, http://www.aucklandcity.govt.nz/dbtw-wpd/exec/dbtwpub.dll?)*

During the war the military had a post on Taupiri Mountain and mined coal north of Taupiri. In the late 1860s an Armed Constabulary camp was established on the banks of the Mangawara River at Taupiri (Murphy and Grinter 1978, p.14). A travelling reporter that visited in 1875 noted Taupiri had been proclaimed a township. He went on to describe the new bridge, soldiers' camp and Taupiri's commercial district:

> *"A bridge now spans the Maungawara Creek, marking the line of an excellent road leading into the interior of the Waikato. Near the bridge is to be seen a breastwork thrown up by the Engineer Volunteer Militia, whose huts and tents within give the place quite a lively appearance. Further up the road is the residence of Captain H.T. Rowe, officer commanding the above force, and three stores kept by Messrs. Bradley, Brown, and Lovell; the last named, has nearly completed extensive alterations, so that his store (the pride of Taupiri) can now successfully vie with any in the district."(New Zealand Herald 11 February 1875, p. 3)*

*Figure 39 The bridge over the Mangawara Stream at Taupiri, photographed in 1866 by Daniel Manders Beere. (Daniel Manders, 1833-1909 :Negatives of New Zealand and Australia. Ref: 1/2-096123-G. Alexander Turnbull Library, Wellington, New Zealand. http://natlib.govt.nz/records/23101595)*[29]

By the early 1870s Taupiri was forming into a small town with a few businesses, albeit the nearby town of Ngaruawahia dominated the region. In about 1871 William H.N. Lovell, a local entrepreneur and his wife Rosanna[30] established a store and accommodation house on the Waikato River bank as illustrated on an 1882 plan (Figure 40).

The Lovell's accommodation house was the first hotel in Taupiri. The Lovell's business was located to take advantage of traffic on the Great South Road and the Gordonton Road and the railway which reach Taupiri in 1877 (Figure 41). Lovell's business would also have benefited from river traffic that stopped at the Taupiri wharf.

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[29] The date listed on the figure above may be incorrect based on the *New Zealand Herald 11 February 1875, p. 3* newspaper article that discusses the bridge.

[30] Rosanna Esther Lovell was the daughter of the late Mr. A. Ralph, pioneer, and originally owner, of the Huntly coal mines.

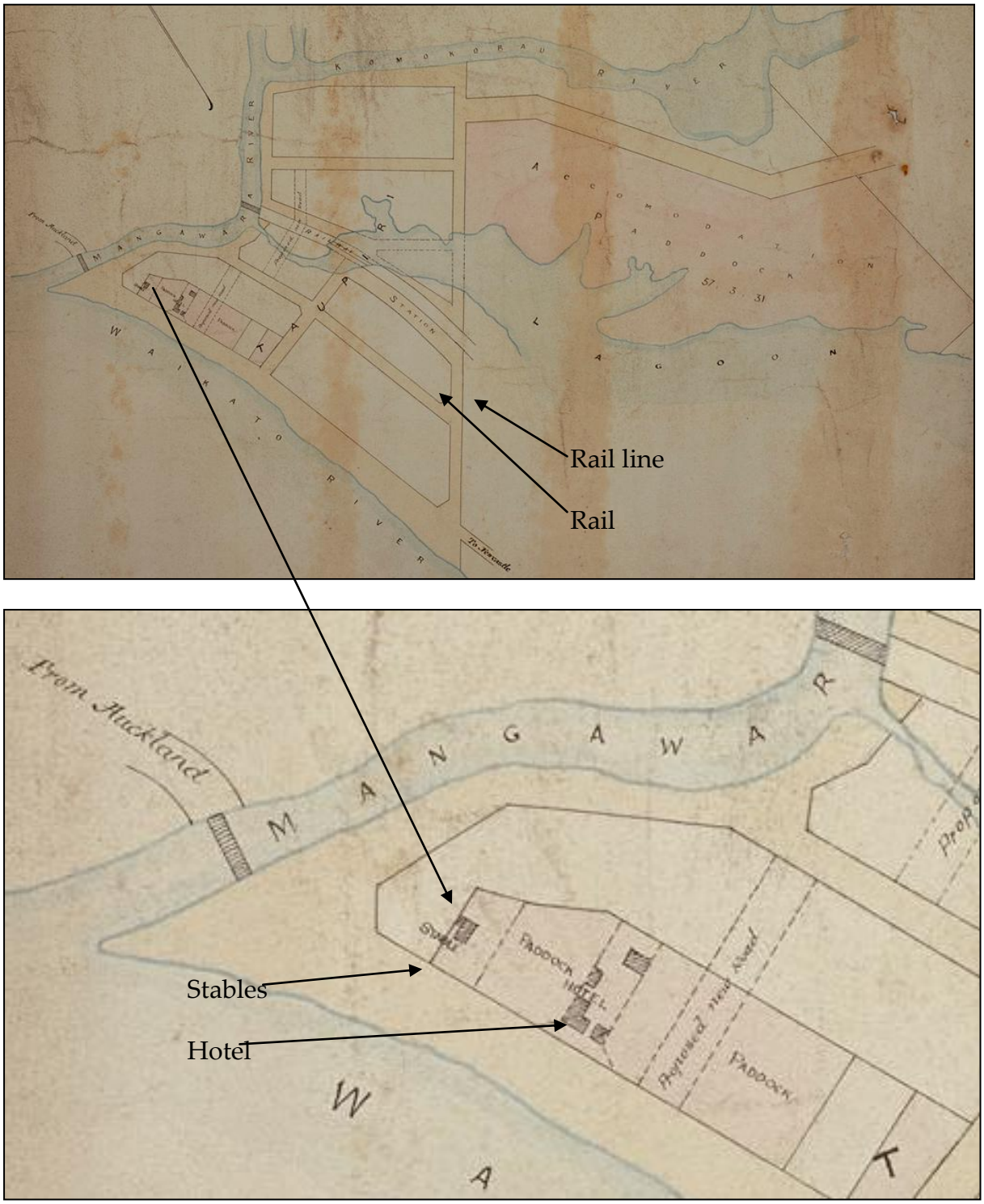



*Figure 40 Premises of W.H. Lovell, Taupiri, 1882. Proposed roads in Taupiri, with the landholding and buildings of Mr W. H. M. Lovell—stables, hotel, store, etc. (Sir George Grey Special Collections, Auckland Libraries, NZ Map 4140, http://www.aucklandcity.govt.nz/dbtw-wpd/exec/dbtwpub.dll)*

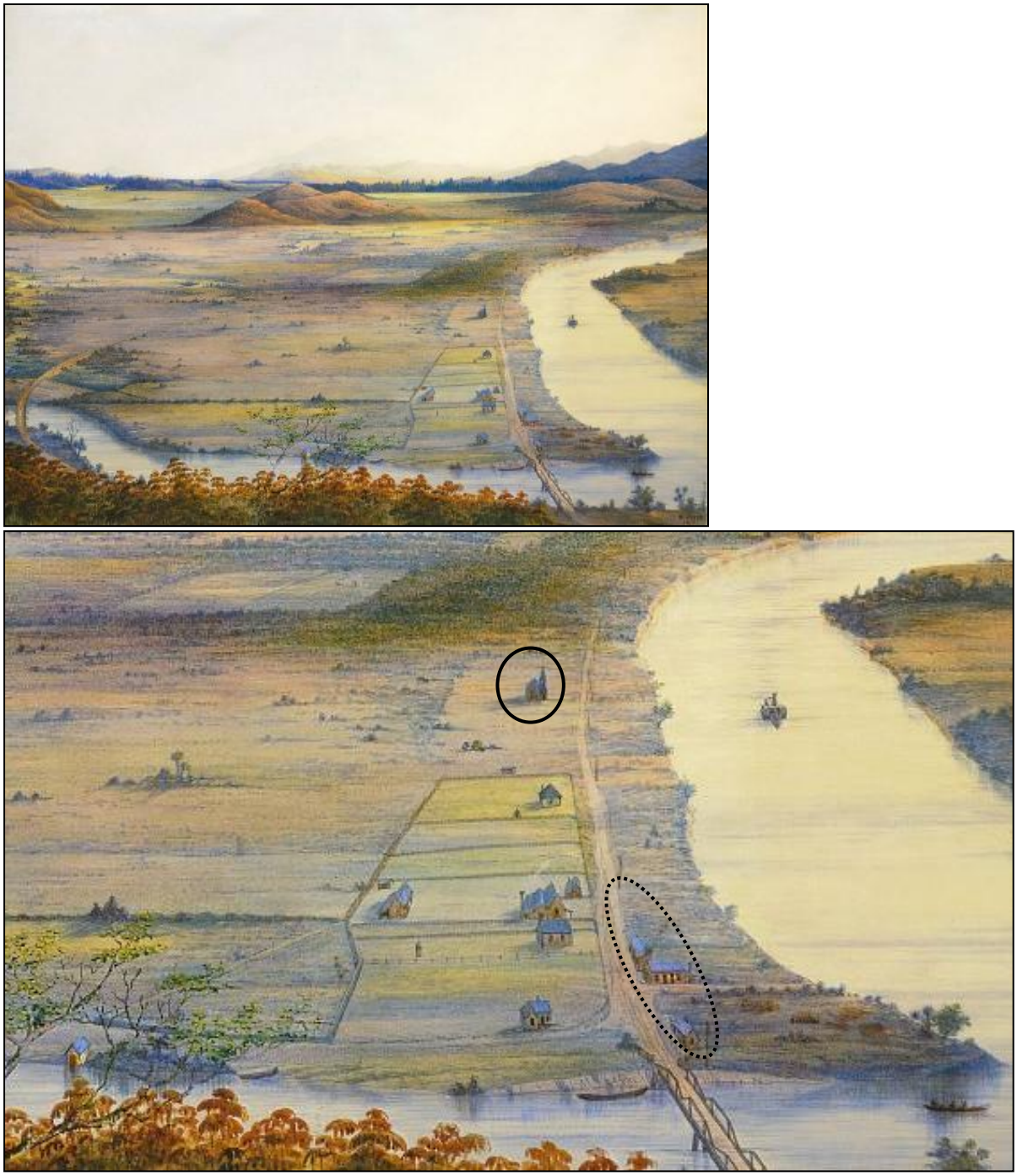


*Figure 41 View of Taupiri village and plain from the top of Little Taupiri Hill, 1876. (Sharpe, A. 1951/10/D, 0/204, OCM 2322; Auckland Art Gallery, gift of the Rev Charles Palmer, 1951)*

Lovell's buildings are circled—stables, accommodation house and store. The building configuration in the painting differs from the 1882 plan (the previous figure). Anglican church is in the approximate middle of the painting to the left of the river boat [circled with a solid line].

The wharf was constructed in 1875 by Messrs. Brittan and McVee. They also constructed the railway bridge. The railway station was opened in 1877. The railway was interested in Taupiri as a source of ballast rock. The railway station was downgraded to a flag station in 1895 or 96 (Waikato Times 12 December 1895, p.3, Scoble, 2010 p.120).

In 1881 Lovell renewed his hotel license and built a shop in Taupiri for the sale of groceries and sundries. William Lovell also focused on acquiring property in Taupiri, both town sections and farm land. By April 1882 Lovell owned 591 acres in or near central Taupiri (Lynch 1989, p.112).

In May 1882 he leased the Taupiri Hotel to Alfred W Ellis, but shortly afterwards the hotel and 1871 store were destroyed by fire. On 29 May 1883 the Lovell's reopened their store (Innes 1989, p.112).[31]

In 1884 William Lovell commenced construction of a new 17 room hotel close to the Railway station, post office and armed constabulary camp (Innes 1989, p.112).[32] The Taupiri hotel was opened in early 1885. In May 1890 William Lovell died of congestion of the lungs. Mrs Lovell, took over management of the hotel and her family of seven children. William's will appointed Rosanna and Margaret Schlinker (his mother-in-law) as executors of his estate. Under the terms of the will Rosanna had to remain unmarried to receive the rent income and other profits.

The railway station has been removed, but a hotel has remained on the site, albeit it has been modified over the years. Figure 42 shows the changes made to the front of the building.

[31] The store was apparently a different venture than the 1881 shop.

*Figure 42 Lovell's Taupiri Hotel near the railway station. (Top preparing for a hunt, ca 1890s and bottom, 2014). (Murphy and Grinter 1978, p.14 and Simmons May 2014)*

A comparison of the two photographs (above) indicates two wings were added to the front of the building, but it appears the original ground floor entry has been retained along with other elements.

### *Other Businesses in Taupiri*

Other town based businesses came to Taupiri a bit later. A butcher, Mr Arthur Waring commenced business in 1891. In 1894 Charles Gleeson opened a bakery and confectionery under the management of his son. Charles Gleeson (senior) was an experienced baker with a business in Huntly. The business continued into the 1950s under different ownership. In the mid 1890s a Post Office was established in a railway cottage by Mr W Mellings the station master. It had been preceded by a post office at the Kaitotehe Mission Station from about 1860 through 1868.

The business community was never large but was sufficient to serve the needs of the community. Much of the agricultural land near Taupiri was taken up by large estates which were generally self-sufficient.

Taupiri's first saw mill was established in 1888 by George F. Mellars. When the timber on his land holdings of a 1000 acres and in the general area of Taupiri was cut out in 1899 he turned to fax milling. Bailey and Bollard also owned a sawmill at Taupiri prior to 1900. The Bailey and Bollard mill continued into the early 1900s.

**Taupiri School**

An application was made for a district school in 1876. By February 1877 tenders were called for the construction of a one room school with attached porch. The first school session opened on 18 February 1878 under George E Thom, an early settler at Taupiri.

Mr Thom received an annual salary of £100. The school roll was 19 pupils in the report to the House of Representatives but 4 on the actual school register and 6 the following year (Murphy and Grinter 1978, p.22). In about 1881 a teachers residence and a horse paddock were added to the school property. By the late 1880s the school was enlarged, the chimney removed and central heating installed (Murphy and Grinter 1978, p.23). In the years that followed additional building work was carried out to enlarge the school in 1900, 1907, and so on. In 1964 the old teacher's residence was removed (Murphy and Grinter 1978, p.27).

The history of the school documented by Murphy and Grinter for the 1978 Taupiri School Centenary indicates that despite many changes over the years the old school is still at the core of the new school.

**Churches**

***St Mary's Roman Catholic Church, Taupiri***

The site for St. Mary's Church, Taupiri, was procured from the Government in the mid-1870s (Golden 1922) (Figure 43). It was located on historic Lot 49, now Lots 1 and 2, DP 26858 (Kellaway 2006, p.1).

*Figure 43 Catholic Church site near the northern end of Wright Street. (The church site is marked with a monument and plaque.)*

At the time the church was constructed there were only four Catholic families at Taupiri—the Lovells,[33] the Hogans, the Timmonses, and the Hacketts. Their children were few at the time and very young. The necessary monies for construction were raised by means of concerts and subscriptions. Mr. William Lovell, though a non-Catholic, managed a concert, which raised £20 and others contributed money and labour (Golden 1922). The total cost—including fencing and gate—was £101 7s 1d.

[33] Rosanna Lovell, formerly Rosanna Ester Ralph was a Catholic or Irish decent. Her husband William Lovell was not a Catholic.

The building measured 30 feet by 18 feet (Golden 1922). Father John Golden blessed and opened the building towards the end of 1876. Father Golden (1922) commented, Early Mass was celebrated in Taupiri and late Mass at Ngaruawahia.

The Catholic Church was captured in a painting by Alfred Sharpe in 1876 (Figure 44). The church is also pictured in a 1901 photograph taken from Taupiri Mountain that appeared in the Auckland Weekly Newspaper. The church has some small houses or whares nearby in 1901 (Figure 45). No buildings are shown adjacent to the church in Sharpe's painting.

The church was surrounded by a small cemetery. It reportedly contained the graves of five people who were buried close to the church (Kellaway 2006, p.1). "Michael O'Halloran who died May 30th 1879, is noted to be in the cemetery." (Kellaway 2006, p.1) (The small white objects/ specs on the stream side of the church, Figure 45, but the quality of the digital image is too poor to confirm this.)

In 1904 sparks from the train-engine ignited rubbish which had accumulated about the building, and the church was reduced to a heap of ashes (Golden 1922 and Watson 1981). The Catholic Church was not rebuilt on the site. The site is marked by a monument and plaque near the street (Figure 46).

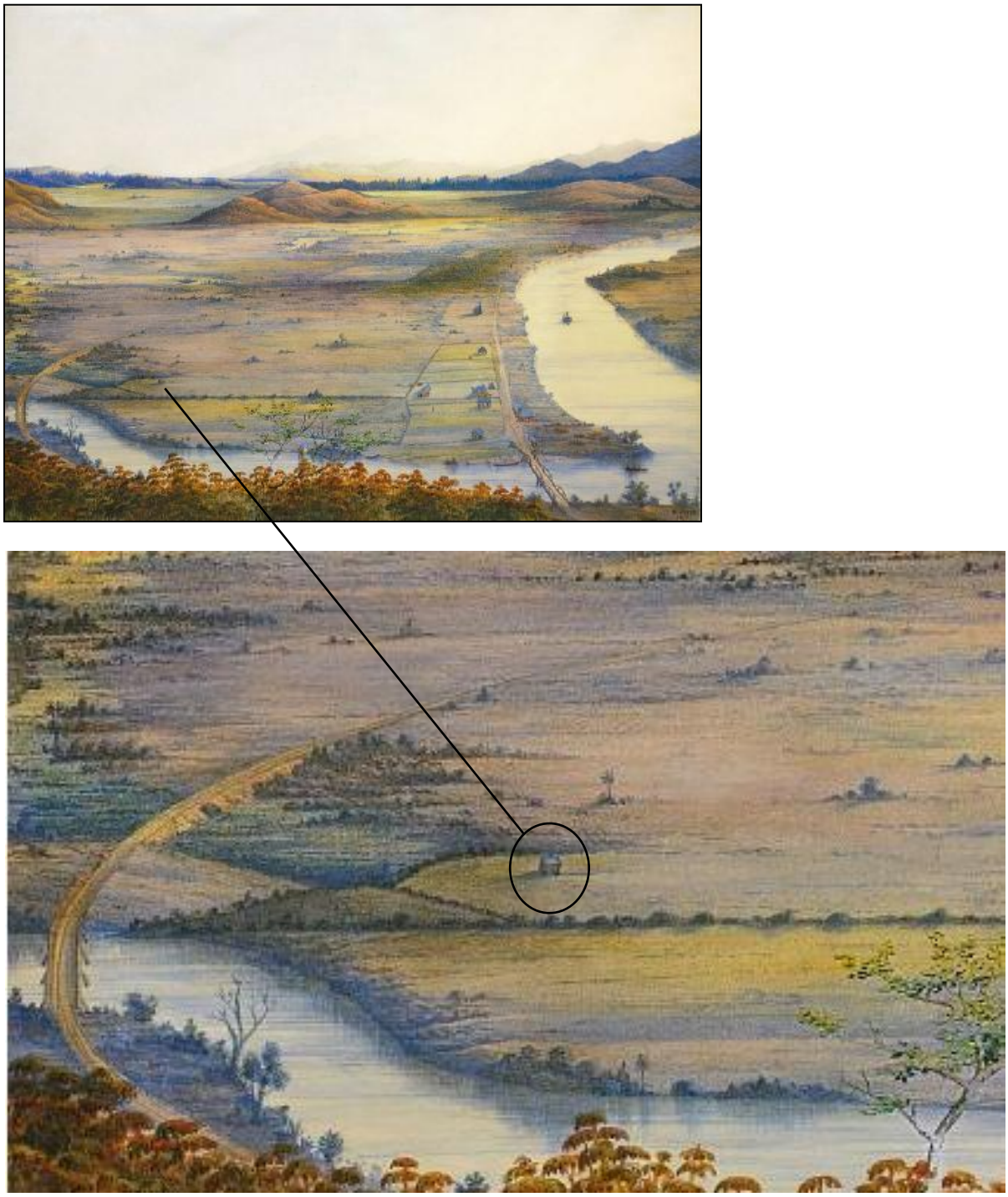


*Figure 44 View of Taupiri village and plain from the top of Little Taupiri Hill, 1876 showing the Catholic Church. (Sharpe, A.,1876, ref. no. 1951/10/D, 0/204, OCM 2322; Auckland Art Gallery, gift of the Rev Charles Palmer, 1951.)*

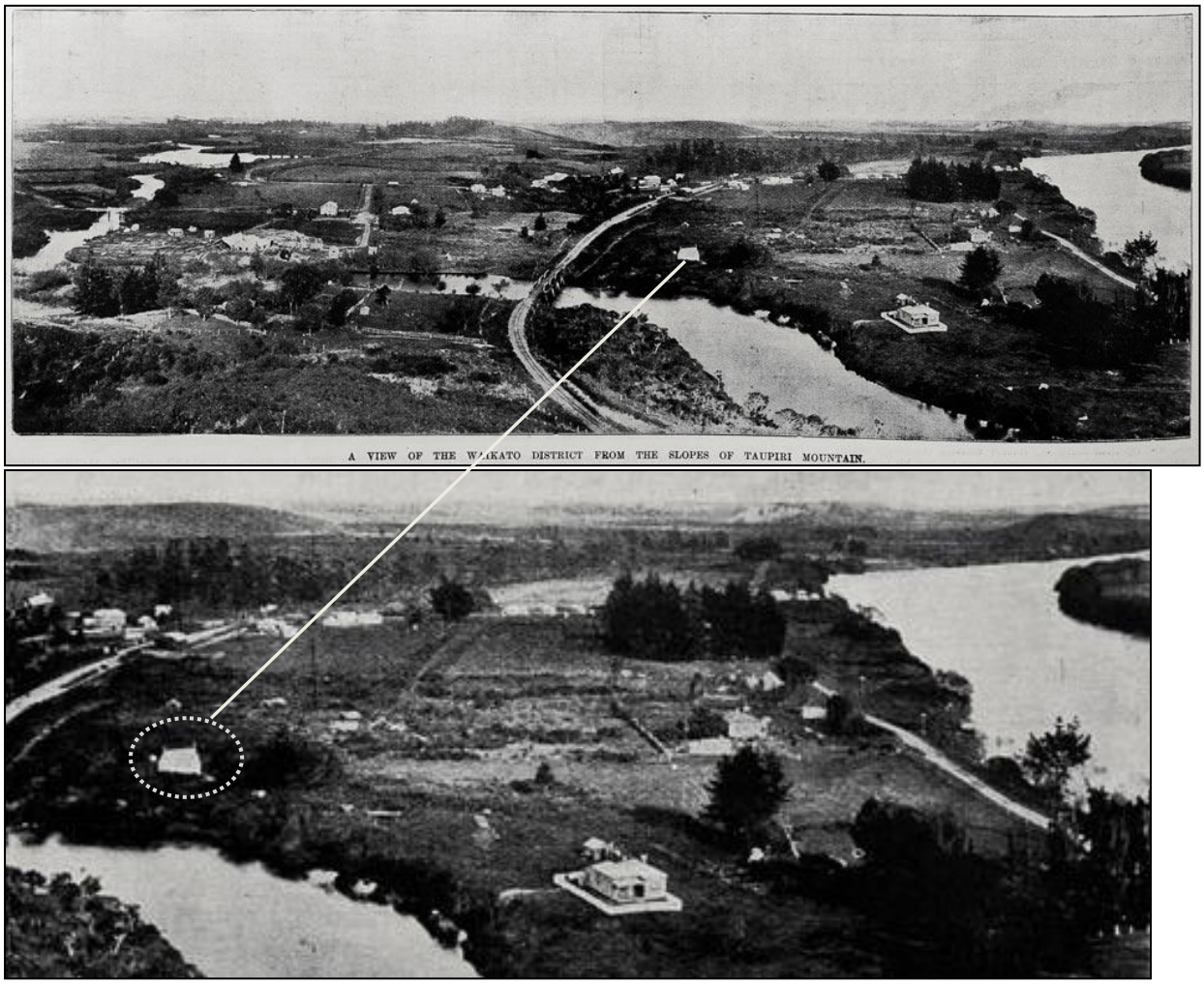



*Figure 45 A view of the Waikato district from the slopes of Taupiri Mountain, 1901. (Auckland Weekly News 31 May 1901, p. 4, Sir George Grey Special Collections, Auckland Libraries, AWNS-19010531-4-4 http://www.aucklandcity.govt.nz/dbtw-wpd/exec/dbtwpub.dll)*

Top frame is the complete view. The 1st Roman Catholic Church is circled. The railway line is to the left of the church and four whares are nearby.

*Figure 46 Catholic Church Site marker, "site of the first Catholic Church in Taupiri 1876 with surrounding graves." (Simmons, May 2014)*

The extent of the graveyard is not known. Additional research to identify a historic plan of the property or archival research might provide more information about the location of the church and graves.

***Anglican Church, Taupiri***

An Anglican Church was opened at Taupiri in early October 1875 by Reverend Benjamin Ashwell (Waikato Times 7 October 1875).[34] Sixty to seventy people attended the opening. It was constructed by subscription and only three quarters of the money required to pay for the construction had been raised by the time it opened. Alfred Sharpe captured the 1st Anglican Church in his 1876 painting of Taupiri township (Figure 41).

The Reverend Ashwell acted as minister to all who wish to attend services in Taupiri, Kaitotehe and Hopuhopu when he was in the district. A newspaper correspondent who visited Taupiri reported:

> *"[I made a] visit to the peach groves on the other side of the Waikato River belonging to Mr Heta Tarawhita, who very kindly allows anyone to take as many peaches and cherries as they like. His daughter, Miss Mary Palmer, keeps the Government school for Maori children. . . I arrived just in time for church, the service was conducted by the Rev. B.Y. Ashwell, and the congregation consisted of Maories and Europeans."(New Zealand Herald 11 February 1875, p. 3)*

The 1875 church was replaced in 1905 by the current Anglican church—Christ Church (Figure 47). The 1905 Anglican Church, above, was designed by local architect Thomas H. White who resided at Ferndale. Newspaper advertisements indicate he conducted his business from his Ferndale property for many years.

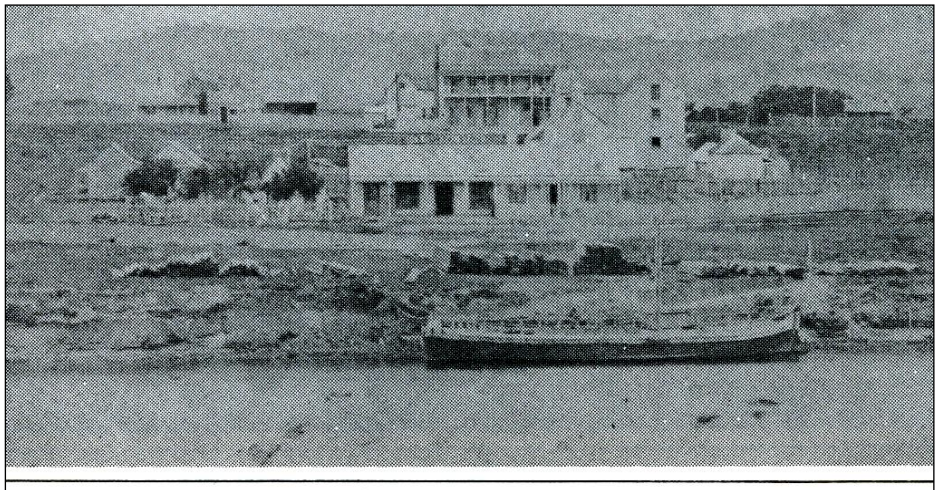
[34] Ashwell was no longer based in the Waikato, but did make periodic visits.

*Figure 47 1905 Anglican Church on 1875 church site (Simmons, May 2014).*

## Ngaruawahia; Commercial and Residential Growth; mid-1860s through 1900s

Ngaruawahia (Newcastle) town's commercial and residential area grew up at 'the point' (a flood terrace) between the Waipa and the Waikato River's below Fort Newcastle. The town was established in close proximity to the busy river traffic essential to its survival. In the early days of European settlement in the Waikato the navigable rivers were the main highways for the transport of supplies and people. The town was a bustling port for paddle steamers that plied the Waipa and Waikato Rivers serving the towns of Hamilton, Cambridge, and Pirongia with a regular boat service. The river system was instrumental in the establishment and maintenance of the soldier-settler towns that grew up in the wake of the Waikato Land Wars.

Ngaruawahia was the regional centre for commerce in the central and lower Waikato. Charles Bell's store at the Point is shown in 1865 in Figure 48. Bell kept a store at the Point, on the Waikato River, and advertised his store as being opposite the Wharf. Bell sold goods that included: groceries, flour, brandy, rum, whiskey, old Tom, Geneva, port wine, sherry wine, ginger wine, cordials, bottled ale, bottled porter, and building material (Latta 1980). Orders could be dispatched via the Waikato or Waipa River.



*NEWCASTLE 1865. Bell's store in the foreground.*

*Figure 48 Photograph of 'The Point' during the establishment of the town (from Latta 1980:58) (Note fort on high ground right edge of photo and the two story Delta Hotel behind Innes brewery.)*

The Bank of New Zealand (BNZ) on section 49 (Figure 49) was the only business opened in 1865 adjacent to the main road.[35] Rail lines, a station and other public facilities would be established near the main road in the ensuing years, but in the 1860's the rivers were the main transportation corridors not the poorly constructed and maintained road.

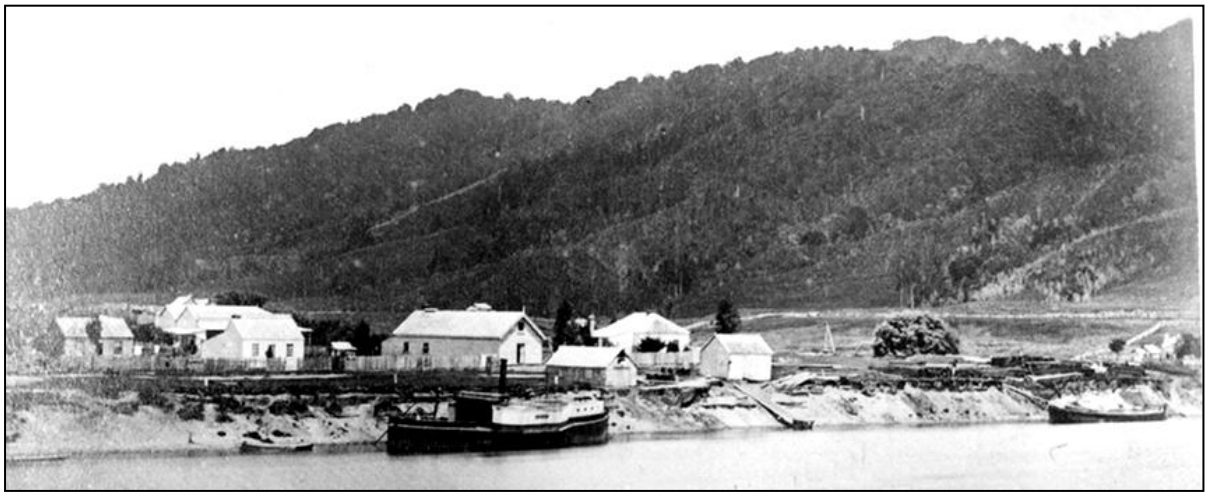


*Figure 49 Ngaruawahia, the river town. The Bluenose and Lily docked. Looking south across the Waikato River, 1875. (Sir George Grey Special Collections, Auckland Libraries, 4-3795.)*

The pattern of establishing early BNZ's adjacent to the main road, often in area where there were no other commercial buildings, is apparent in other early Waikato towns (e.g. Hamilton). What usually followed was the establishment of other commercial buildings near the bank over a period of a few years. This potential shift of the commercial centre of Ngaruawahia was forestalled by withdrawal of the troops and reassignment of the bank manager, Mr Hume, to a post in Hamilton in 1868. The BNZ building became a residence and was occupied by a brewery employee Mr Andrew Douglas.[36]

The town at the point grew rapidly in 1870s based on the number of businesses and residences evident in (Figure 50 through Figure 52). The photographs provide a visual impression of the booming town. In 1872 the Waikato Times established an office in Ngaruawahia.

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[35] The BNZ featured a manager's residence--a feature of banks at that time.
[36] The BNZ was demolished in 1909 and replaced by a new bank building in 1911.

*Figure 50 Ngaruawahia 1876-77. Looking south from the north bank of the Waikato River to the punt landing; showing Ngaruawahia with the Delta Hotel, (left), Fitzpatrick's store, (centre background), and Royal Mail Hotel, (right). (Sir George Grey Special Collections, Auckland Libraries, 4-3798; Auckland Library.)*

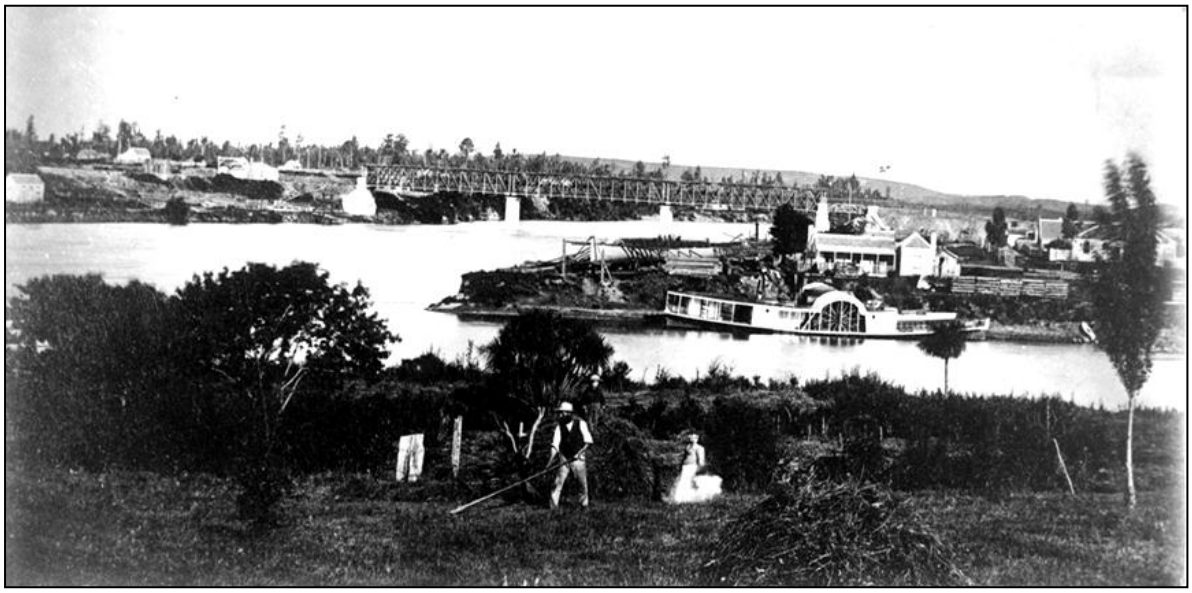


*Figure 51 Looking east across Waipa River towards Ngaruawahia, 1876-77. Flour mill on the far left. (Photograph archive text states: "shows the railway bridge and the paddle steamer 'Quickstep'? or 'Waipa'? at the wharf; photo caption states 1875 steamer Waipa" (Sir George Grey Special Collections, Auckland Libraries, 4-3799.)*

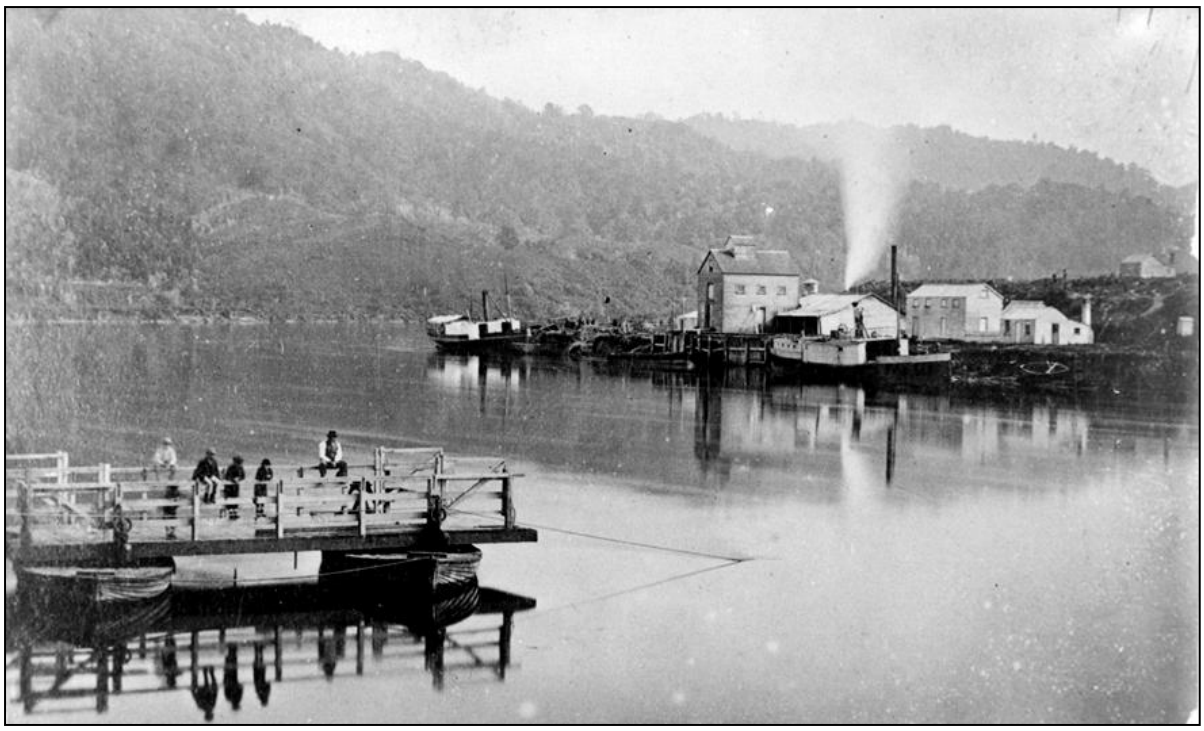


*Figure 52 Robert Lambs flour mill at Ngaruawahia with the Bluenose tied up and the punt tied up in the foreground, 1875. (Looking north west across the Waikato River from Ngaruawahia to the mill. (Mill was opened in 1874 and sold in 1883 to the Waikato Steam Navigation Company.37) (Sir George Grey Special Collections, Auckland Libraries, 4-3794.)*

'The Point' remained the commercial and residential heart of Ngaruawahia in the 1870s (Figure 53). The businesses included: a shipping office & workshop, building yard, blacksmith, wheelwright, store, stables, and hotels. According to local historian Albert Latta (1980) the great flood of 1875 brought an end to the riverside town.

> *"Many buildings were shifted to higher ground close to the railway lines. Others crumbled and were dismantled. A few of the houses remained as long as the 1930's." (Latta 1980, p.59)*

[37] The mill burnt down in about 1883 and was rebuilt in brick and reinforced concrete. The mill closed in 1890 and was used briefly as a fellmongers business, a improvised public hall for social functions, and the Walsh Brothers flaxmill in 1898 (Watson and Walsh 1969, p.21-22).

*Figure 53 Ngaruawahia at the Turn of the Century (Latta 1980, p.63). (Note: Some of the buildings date to 1865).*

The establishment of the railway on the upper terrace in 1877 increased commercial interest in the area and sparked the steady growth of Ngaruawahia's new commercial centre over a thirty-year period. The rivers were still an important transportation corridor. In 1877 a railway siding was laid to a wharf on the Waipa (Figure 54). Finally in September 1898 the bridge across the Waipa River was completed connecting the town to the west bank.

*Figure 54 The Point circa 1885; Waikato River and Railway Shed (railway terminus). (Alexander Turnbull Library 1/2-096172-G http://mp.natlib.govt.nz/detail/ )*

**Ngaruawahia Primary School**

The first school, like many small settlements in the Waikato, was started in the home of a private individual. *"Mrs Lestrange, the wife of a retired army officer opened a school in her home near where the band rotunda is."* (Latta 1980, p.225). A year later after the death of Mrs Lestrange the role of teacher was taken on by Mrs Hoskings who taught from her home in Market Street.

By May 1873 a school had been established in a room of the Military Hospital at the corner of Market and Jesmond Streets. This was again a temporary location. After many requests to the Education Board Mr L.P. Harris, owner of the Delta Hotel, arranged for a 15 metre x 6 metre kauri building to be moved onto the school reserve and requested compensation of £100. The Board granted money for the building and the first school building was opened under headmaster T.W. Scott. (See Figure 53 for location.)

There were concerns about the location of the school near the railway line and attempts made to locate a more suitable site. In July 1882 parcel of Crown land was identified and became the site of the Ngaruawahia School. In 1885 a 1400 square foot school building was constructed on the site. The old school was demolished in 1966. The area was leveled to create a playground and sports field.

**Ngaruawahia Churches**

When General Cameron arrived at Ngaruawahia he discovered one of the whares at the Kings village belonged to a Roman Catholic priest. *"It was divided into small apartments and was ornamented characteristically with a little kitchen garden."* (Ngaruawahia Primary: 125 years 1869-1994, p.4) Father Anthony, nephew to Bishop Pompallier, was their pastor. His whare was on the banks of the Waipa (Father Golden, 1922 at https://sites.google.com/site/4th9coro/home-Coromandel/some-old-waikato-days).

***Roman Catholic Church***

Ngaruawahia was served by the Benedictine priests. In 1872 a wooden church was constructed in Herschel Street, close to the railway line (Figure 55). It was located on the western side of the railway station. The church was 40 ft by 20ft, painted, but not lined. The church and land were eventually sold to allow extension of the railway yards. The church was apparently demolished and not moved to another site (Latta 1980).

*Figure 55 Catholic Church [ca 1910] (Green & Colebrook, Price, William Archer, 1866-1948, Collection of post card negatives, Alexander Turnbull Library, 1/2-001600-G, http://natlib.govt.nz/records .)*

***Anglican Church***

The first Anglican Church of the Holy Trinity was built by the soldiers of the 12th Regiment (Figure 56). The church plans were drawn out by Private Shepherd of the Royal Engineers. Around the church are the graves of many of the soldiers who helped in its erection (Cyclopedia of New Zealand 1902, p.714). It was opened by Bishop Selwyn in 1864 Reverend Benjamin Ashwell was present at the opening. The church was West end of Market Street (see Figure 53 for the location). It was deteriorating by 1902 and demolished. It was replaced in 1914.

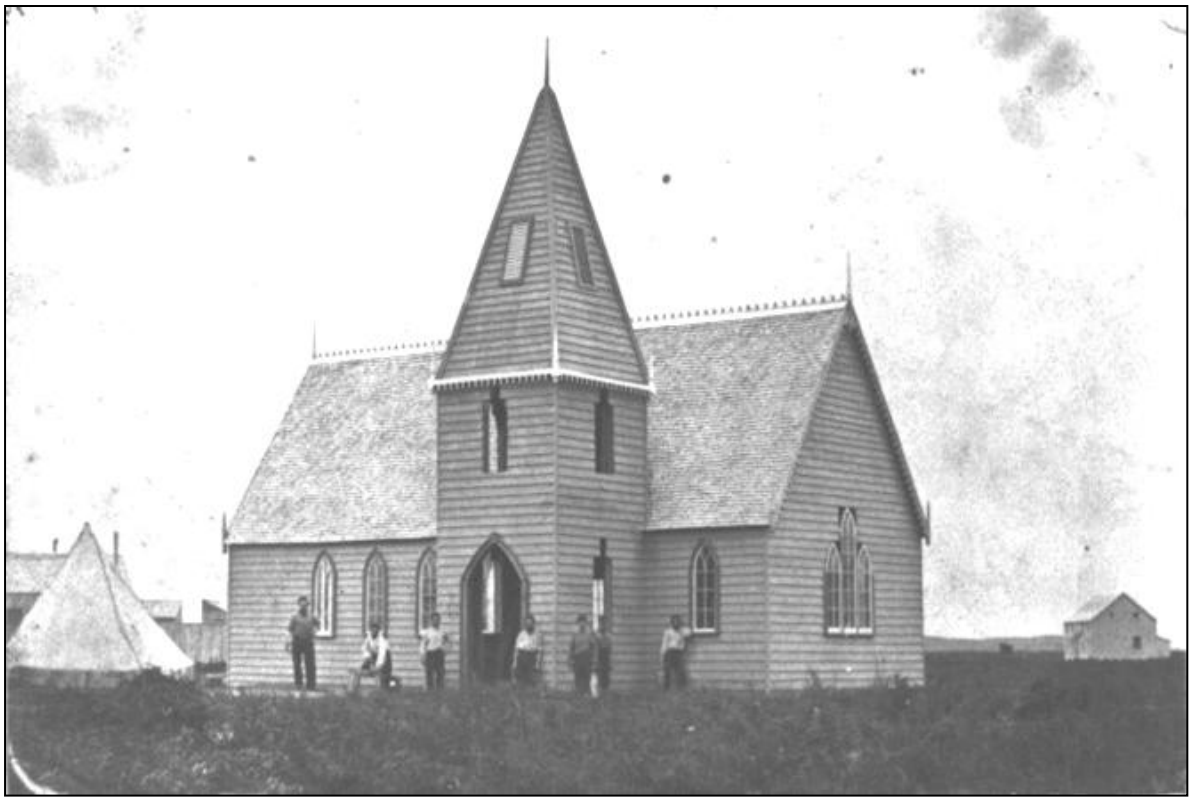


*Figure 56 Anglican Church, Ngaruawahia 1864. (Lennard, L M :Photographs of Ngaruawahia in 1864, Alexander Turnbull Library, 1/2-082119-F, http://natlib.govt.nz/records.)*

***Presbyterian Church***

Presbyterian services were held in Ngaruawahia by Reverend R.T. Norrie in about 1864, but no church was erected until almost ten years later. On 9 December 1875 the Presbyterians opened their church at the corner of Durham and Jesmond Streets opposite the Octagon and adjacent to the Maori Parliament Building (Latta 1980). The church was described as being large enough to seat 150 worshippers (Figure 57). (See Figure 53 for the location.)

The Presbyterian congregation apparently opposed the building of the Parliament and acquired a new site in Galileo Street gifted by Mr T Patterson. The congregation purchased a redundant Krangahake Knox Presbyterian church in 1919. It was cut into sections and railed to Ngaruawahia and erected on the Galileo site now occupied by the Union Church (Watson 1981, p.58). The Durham Street church and site were sold.

*Figure 57 The first Presbyterian Church constructed in 1875, Ngaruawahia [ca 1910] By: Green & Colebrook, Price, William Archer, 1866-1948, Collection of post card negatives, Alexander Turnbull Library, 1/2-001599-G, http://natlib.govt.nz/records .)*

***Methodist Church***

The first Methodist Church was located on Newcastle Street. It was opened on 15 January 1888 and was destroyed by fire 14 years later (Latta 1980). A new church was constructed in 1907 (Watson 1981, p.110) (Figure 58). In 1962 the Methodist's acquired the corner of State Highway one to Galileo Street and entered into discussions about a combined church (Latta 1980). In 1972 the Union Parish was formed with the Presbyterians and the Methodists vacated their old church property. The land was sold to the National Bank (Latta 1980, p.220)

*Figure 58 The second Wesleyan Church at Ngaruawahia, 1910. The church was constructed in 1907 (Watson 1981, p.110). (Green & Colebrook - Photograph taken by G & C Ltd. Price; William Archer, 1866-1948, Collection of post card negatives. Alexander Turnbull Library 1/2-000174-G. http://natlib.govt.nz.)*

**Other Buildings and Changes over Time in Ngaruawahia**

Meeting of the Waters (Latta 1980) provides a more detailed history of the Ngaruawahia than can be provided in this summary focused on identifying archaeologically sensitive areas. The plan of buildings in the town at the turn of the century prepared by Mr Latta (1980, p.63) illustrates many of the general locations of pre-1900 structures and the town activity areas. Ngaruawahia was not static over the years most of the buildings have been removed (Figure 59). Many of these places exist as archaeological sites under existing buildings.

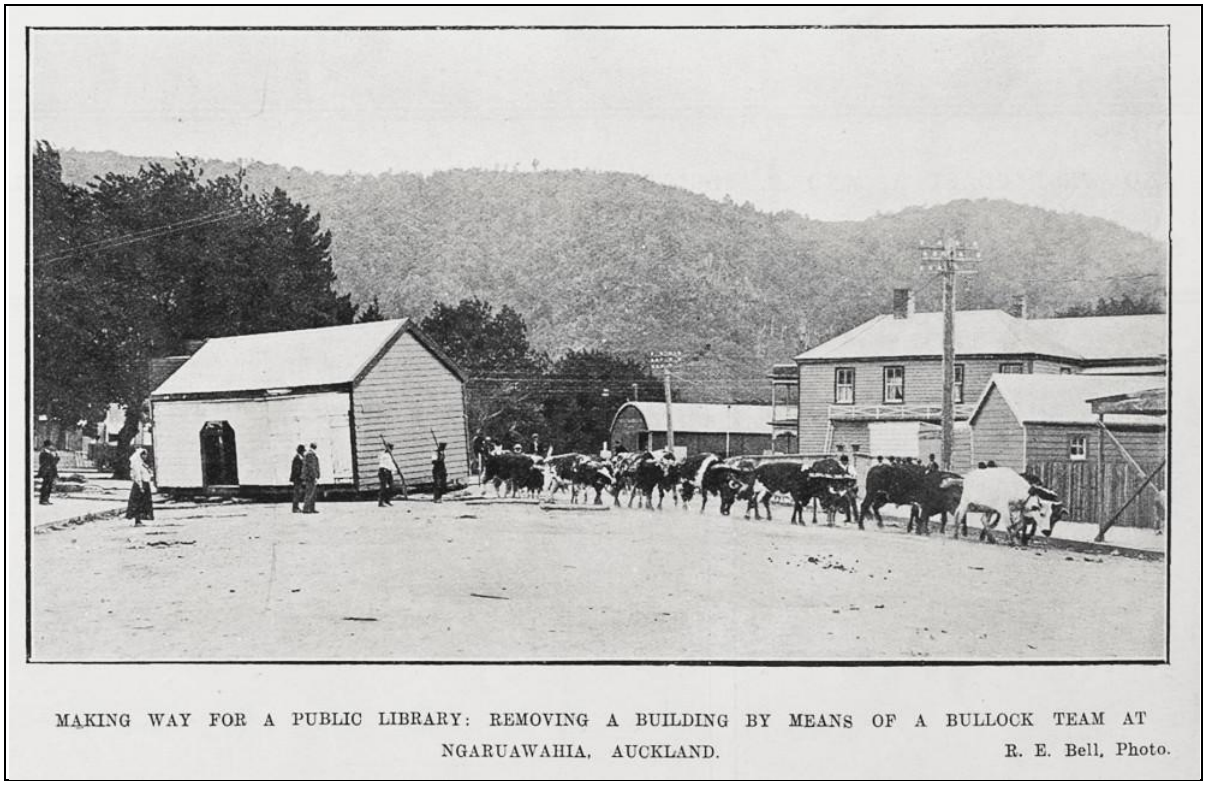



*Figure 59 Moving buildings Ngaruawahia, 1911. Bell, R.E. Auckland Weekly News 9 November 1911, p.10. Sir George Grey Special Collections, Auckland Libraries, AWNS-19111109-10-8, http://www.aucklandcity.govt.nz/dbtw-wpd/exec/dbtwpub.dll?)*

The Latta plan, Figure 53 is only indicative and not conclusive as is evident when historic plans are examined, but does provide information that would not otherwise be available. Figure 60 shows an excerpt from Latta's plan and a survey plan for the same areas. Chapter 4 on geo-referencing will illustrate the importance of examining more than one reference to identify potential archaeological sites.

The town between the Waipa and Waikato Rivers was again badly affected by a flood in 1907. Property owners that hadn't moved after the flood of 1875 moved to higher ground. Today the old town is a well used reserve. It still retains evidence of the Maori village, military camp, and town in the many archaeological features and deposits that are buried under the grass. Over the years Waikato District Council has arranged for a archaeologist to monitor earthworks in the domain and record the information exposed and provide reports on the findings. This resulted in the discovery of a section of a rifle trench under the skate park in 2004 and during the 2014 upgrade.

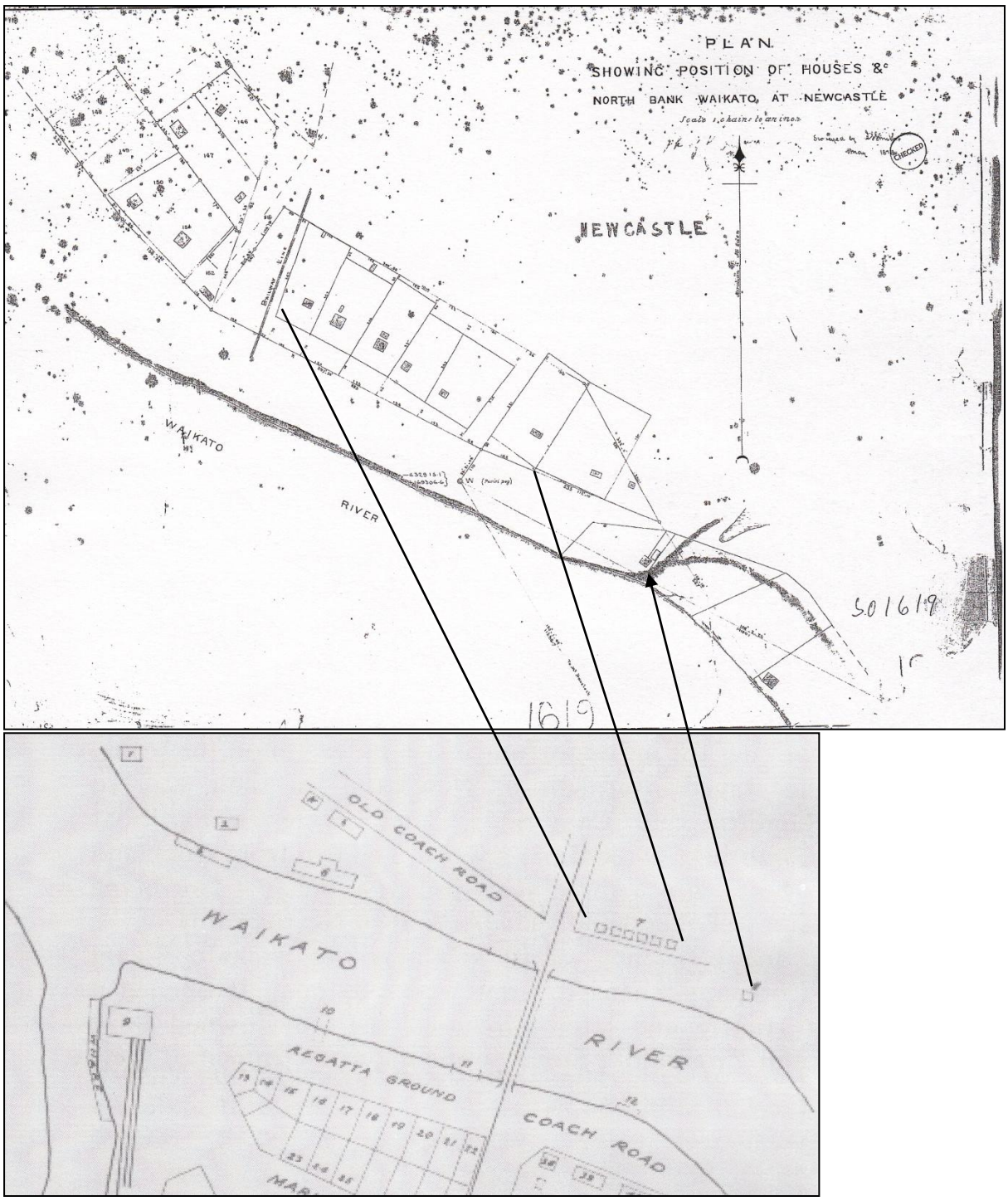



*Figure 60 Comparison of Latta plan and SO 1619 (1879); number 7 military houses and number 1 Bone Mill.*

(Note the Bone Mill may be the building in the lower right on plan SO 1619.) Latta's plan provides a good indication of where pre-1900 structures were located, but was not intended to be a detailed plan of pre-1900 structures.

## Te Kowhai

Maori settlement and pre-European agriculture in the Te Kowhai area focused on the Waipa River. John Johnson observed in 1846 during his travel up the Waipa from Ngaruawahia to Whatawhata:

> *"if any portion of it [the land] is elevated above the rest it is generally crowned by a deserted pa whose mounds, for they are always surrounded by an artificial earthen rampart and ditch. . .there are also a number of these old pas on every projecting knoll on the left bank. . . they show also the former existence of a large concentrated population, which has partly disappeared under the scourge of war and disease, or now that peace is restored, have scattered themselves over the face of the country." (New Zealander 3 November 1847, p.2)*

Te Kowhai is divided into north and south by the Te Otamanui Lagoon—a significant wetland area (Figure 61) (Harris 1990, p.3).

This and other wetland areas and creeks were used by Maori for foraging—the wetlands were food repositories. Eels were plentiful and trapped in the creeks that drained the inland Repo Maire (tree swamp) (Harris 1990, p.3). Along the eastern bank of the Waipa River in the Te Kowhai area, as Johnson noted, there were important pa—Waikeri, Tangirau, Te Puru (Bluenose),[38] and Morehaki (near Bedford Road) (Harris 1990, p.3). Bluenose and Tangirau, along with Otamaori and Karakariki were occupied by Maori into the 1900s (Auckland Star 3 February 1893, p.3). These were not the only notable pa in the area.

Historian Carl Norris noted there were white traders at Te Kowhai. They focused on the salted pork trade.

> *"They buy it [pork] alive from the natives at a penny half-penny per pound, salt it, and dry it and sell it in Auckland for a shilling and sixpence a pound." (F.W. Mackenzie 1853 in Norris 1956, p. 5)*

No references were found during the research to other European settlers at Te Kowhai prior to the Waikato Campagin of the New Zealand Wars, although the mission station at Karakariki may have been occupied from time to time by a European Methodist Missionary and it is likely the Reverend Benjamin Ashwell

[38] Te Puru was named Bluenose for the trading vessel that sunk there (Harris 1990, p.3).

would have visited villages in the area, but Ashwell did not have a house at Te Kowhai. (He had a house at Whatawhata.)

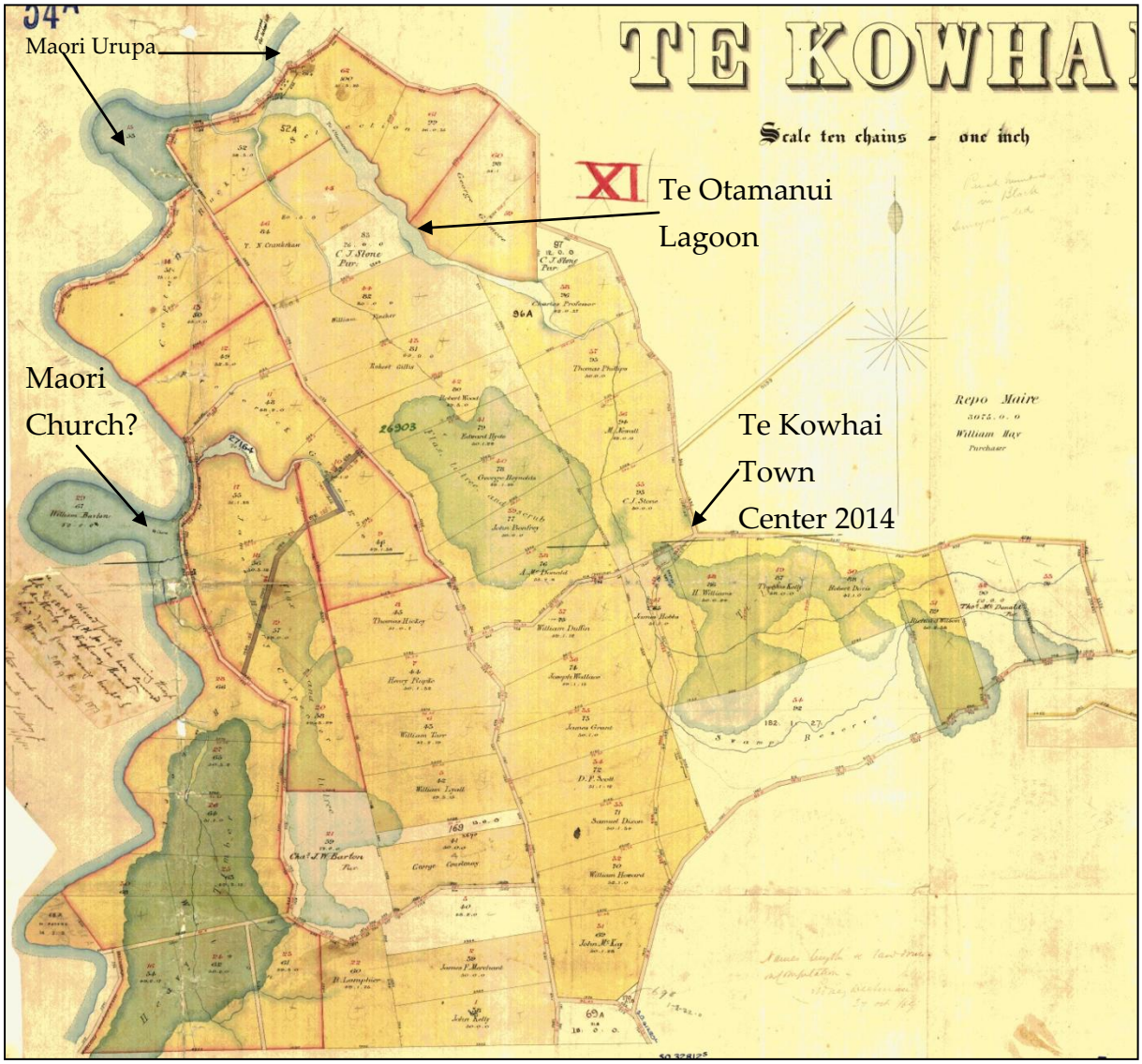



*Figure 61 Te Kowhai, SO 54A 1873; Indicating several areas that appear to have been set aside as Maori land. (The church location is the approximate location shown as St Stephen's Church site in 1903 on a plan drawn by Ray Taylor, see Figure 66.)*

**European Settlement at Te Kowhai**

Following the active phase of the Waikato Campaign of the New Zealand Wars (1863-64) the Te Kowhai area was divided in to 50 acre blocks for allocation to a company of the 3rd Regiment of Waikato Militia. The blocks of land are illustrated on Figure 61. The land was described as being rich and fertile, "but the gullies and creeks are destitute of bridges and there was no means of mutual support" if the militiamen were called to serve (Wellington Independent 4 December 1869, p.6).

A few parcels were apparently set aside as Maori reserve land based on the coloration on SO54A, one had a Maori Church under the care of Methodist Maori Minister William Barton, and other parcel had an urupa and Pukehemu pa (Figure 62).[39]

William Barton was a native minister who worked at various Methodist stations in the Waikato. In August 1864 he was at Whatawhata. His son Andrew and daughter Martha, who were trained at Three Kings Wesleyan Maori Institute Auckland, were teaching school at Karakariki (Otago Witness 20 August 1864, p.1). In 1865 the school report noted the school at Karakariki was under the supervision of William Barton. The school had fourteen Maori boarders with most of the teaching being carried out by Martha Barton (AJHR 1865, Appendix E no.3 , p. 6).

[39] It is assumed he was in charge of the church because his name appeared on SO 54A.

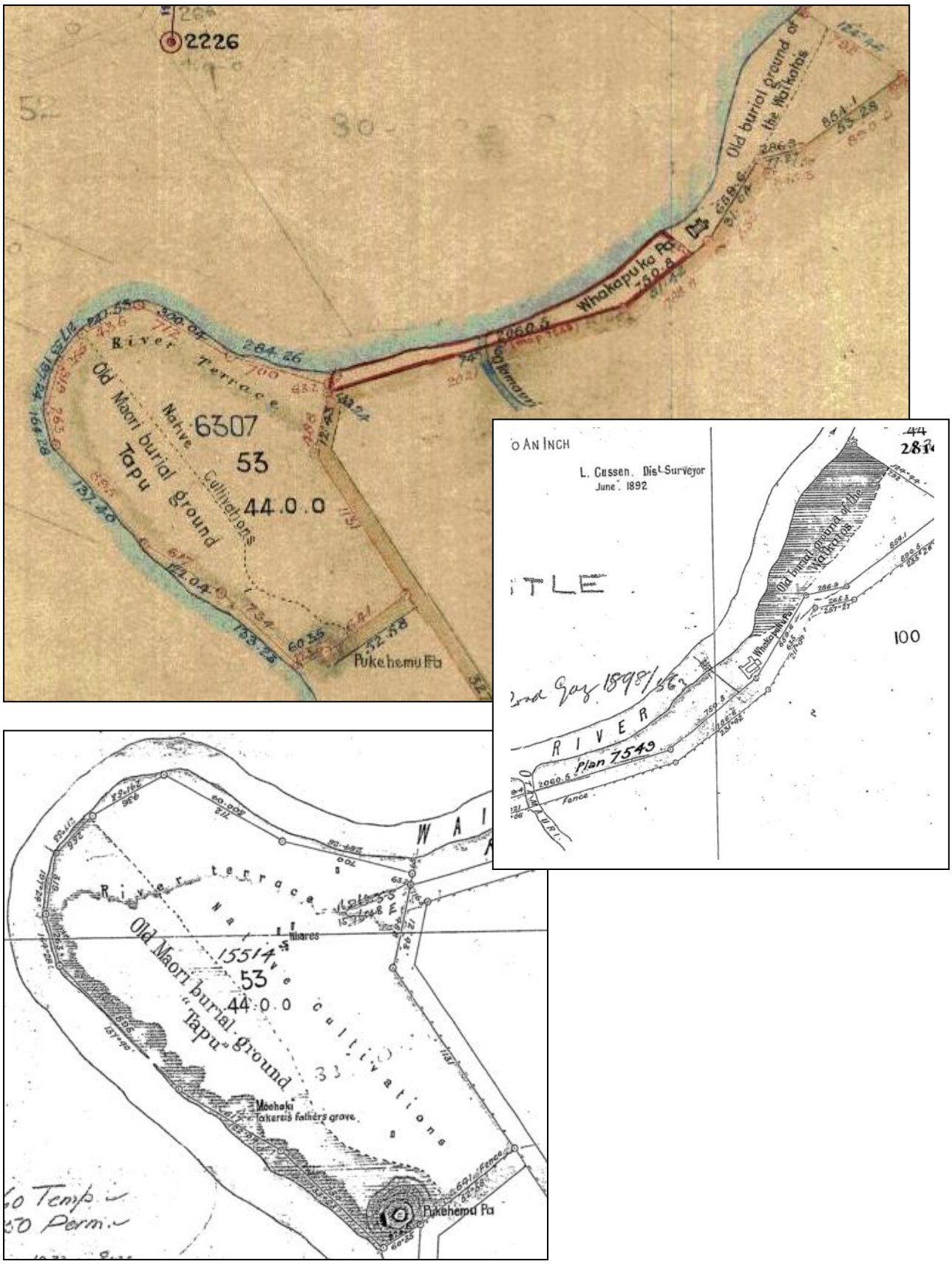



*Figure 62 SO 2465 1892; Pukehemu Pa, Whakapuka Pa, two old urupa, and a cultivation area. The urupa on section 53 contains Moehaki Takerei's father's grave.*

***Te Kowhai On the Move***

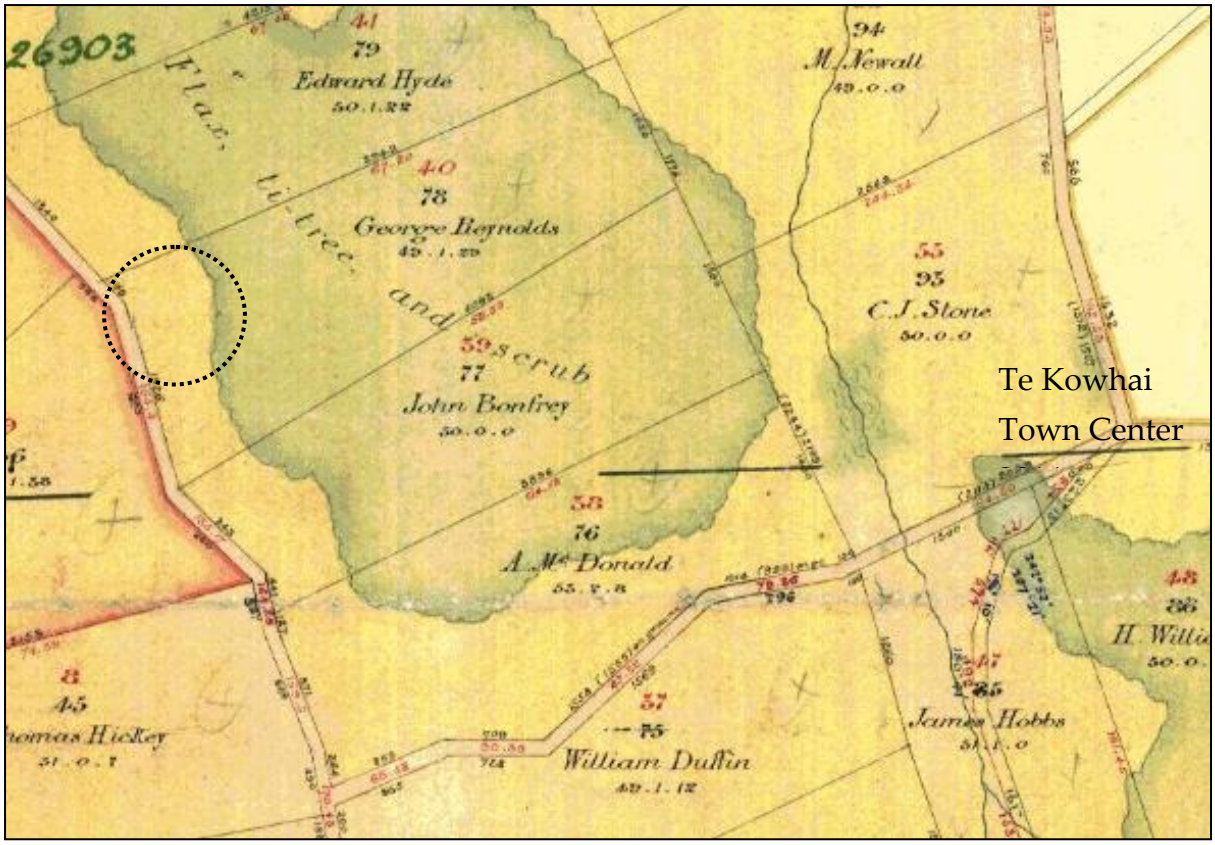
Te Kowhai settlement was originally located west of the current township to take advantage of the Waipa River as a transportation corridor. With the establishment of the rail link between Auckland and Hamilton in 1877 the town shifted eastward toward Horotiu and use of river transport rapidly decreased.

***Te Kowhai School***

The residents of Te Kowhai were interested in providing a local school for their children in the 1880s, but despite considerable lobbying a school was not established until 1890. The first school was at Stones Corner. The Bycroft family donated the use of the school room—the 12 ½ feet x 16 feet front room of an empty house (Te Kowahi Jubilee Committee 1950, p.3 and Harris 1990, p.3). Unfortunately use of the property as a school was short lived. The property was transferred to C. J. Stone who requested other arrangements be made for use of the property as a school.

Part of Lot 78, near the corner of Bedford and Richardson Roads was selected as a site for the Te Kowhai school (Harris 1900, p.5) (Figure 63). In 1893 tenders were accepted from Mr Stoup for the erection of a school and a teacher's house for £427 (Te Kowahi Jubilee Committee 1950, p.4). The 1990 school history reports the tenders were £73 school and £254 teacher's house (Harris 1990, p.5).

The school site was not entirely satisfactory. Harris noted some of the problems—the land was low, wet and many of the children had to cross a stream on the way to school (Harris 1990, 5).




The approximate location indicated by the broken circle, above and below is based on the description in *Te Kowahi School and District* 1890-1990, by Marjorie Harris (Ed.) 1990, p.5 and plan by Ray Taylor, p. 48 and Figure 65).

*Figure 63 School constructed on lot 78 in 1893 (top). The lot includes notations that indicate 70 percent is covered in flax, ti-tree, and scrub. The site was not considered centrally located and was wet (Harris 1990, p.5).*

Mrs John Bycroft donated lot 86 adjacent to the center of Te Kowhai for a school site. Mr Petrie the chief inspector of recommended relocation of the school onto lot 86, a mile from the current location of the school (Te Kowhai Jubilee Committee 1950,

p.4). In December 1899 tenders for removal were advertised. Mr Stoup again won the school tender.40 He shifted the school on to lot 86 for £55 in early 1900 (Te Kowhai Jubilee Committee 1950, p.4 and Harris 1990, p.5-6) (Figure 64). Figure 65 shows the school locations.

The old school was moved and dismantled in the 1960s and a new classroom block erected on the site (Harris 1990, p.15).[41]

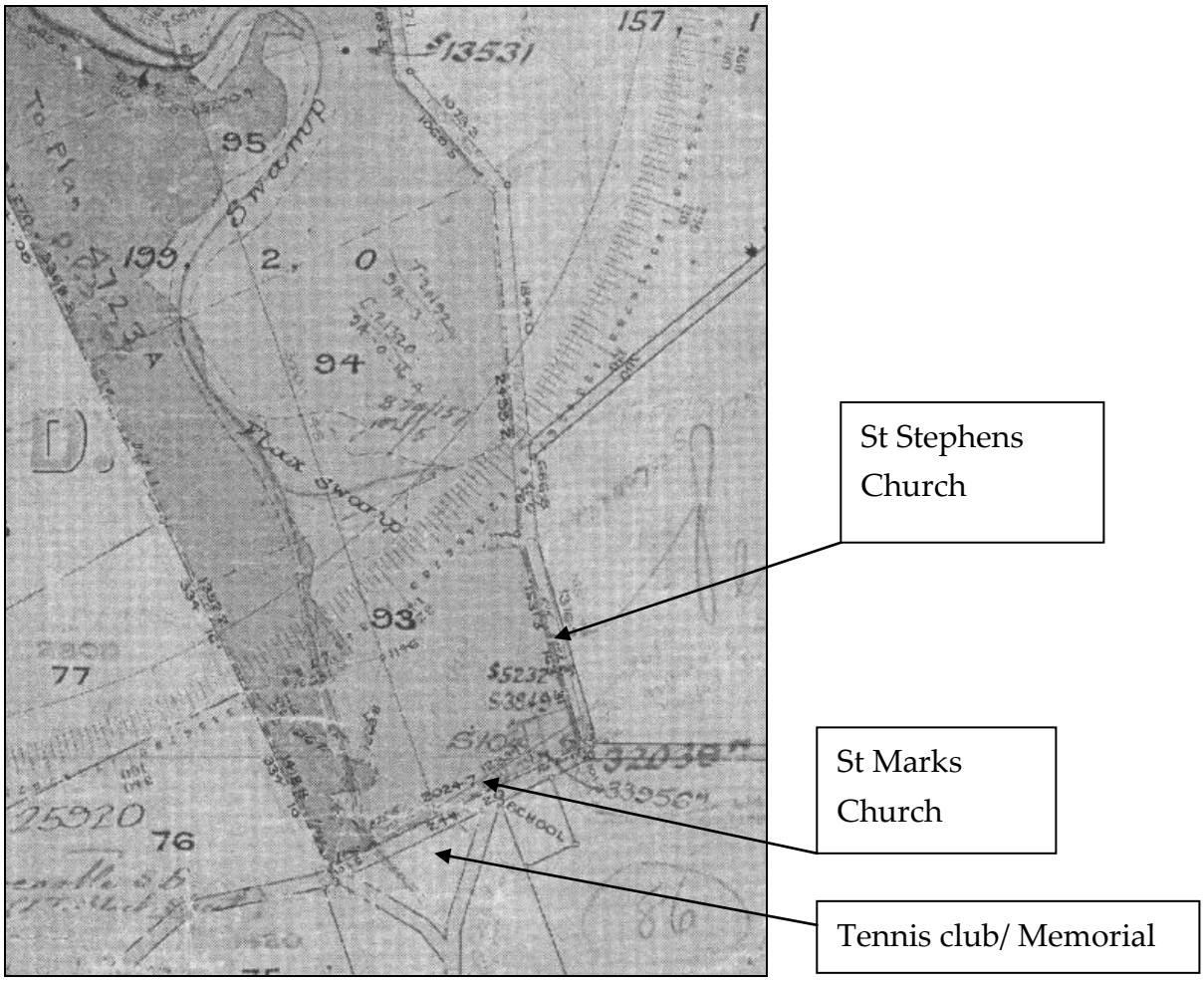
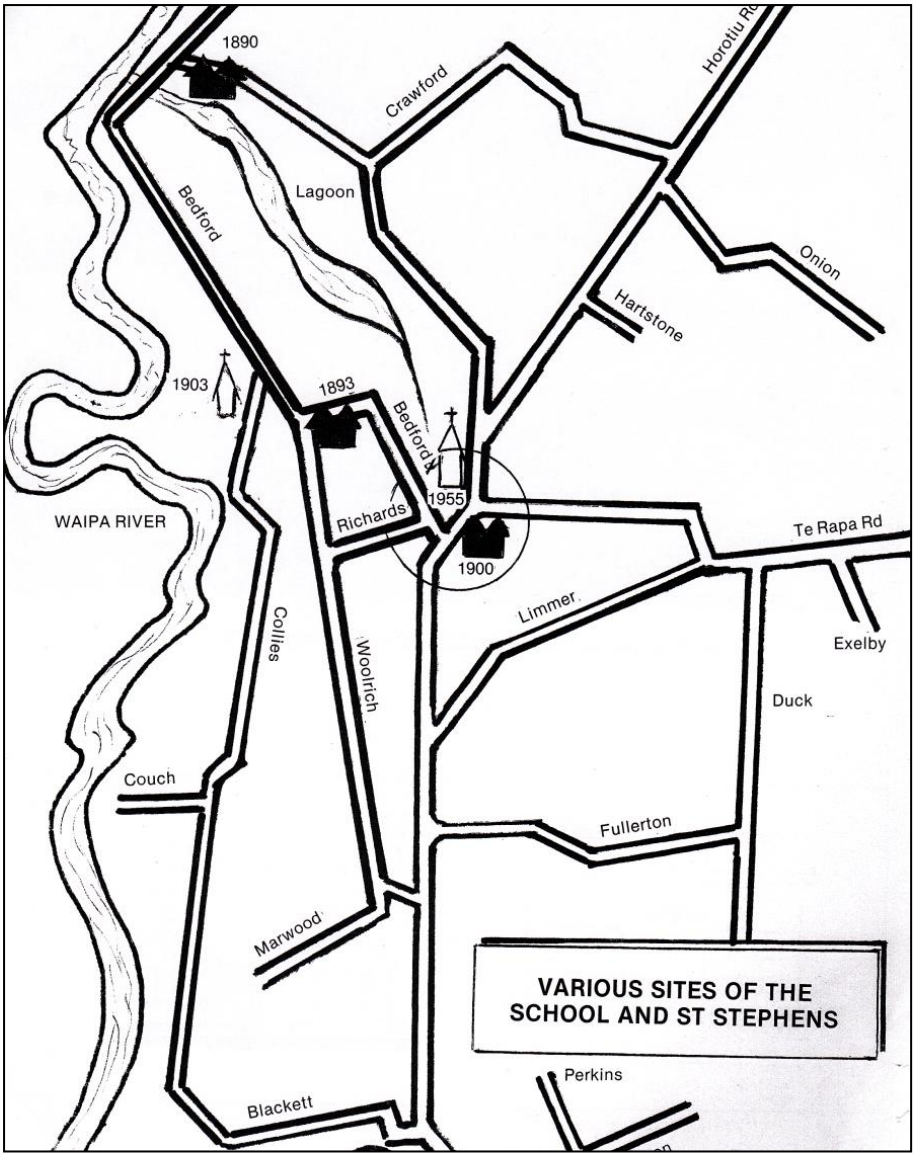



*Figure 64 Deposited Plan 2948, 1903. Showing the location of buildings in Te Kowhai.*

*(Note: The historic road pattern has changed. There is no road immediately north of the tennis club. The school is included as a plan notation and is still at this location. The school was moved to this location (lot 86) in 1900.)*

[40] The teacher's house was not included in the tender request (Harris 1990, p.6).
[41] Based on the period when the school was removed and a new block constructed it is likely mass earthworks removed most if not all of the archaeological evidence of the school.




Drawn by Ray Taylor

*Figure 65 Te Kowhai School and St Stephens Church sites (Harris 1990, p.48).*

**Te Kowhai a Rural Farming Community in 1890**

Te Kowhai was a rural farming community. A travelling correspondent commented:

> *"No settlement has been made along this road, the land being of a broken and barren nature. . .Upon reaching Bonfrey's hill a splendid view of the country is obtained, and the changes and improvements upon the various farms which lie spread out before the observer are very clearly seen. . . The old road has a fine mansion upon it and is farmed by Mr Hunt, the old house fronting the Waipa, formerly the residence of Mr James Stone, being the present Te Kowahi School." (Waikato Times 16 April 1891, p.4)*

The correspondent also noted that across the river were Maori houses and plantations. He noted: *"The natives have a good crop this year at Karakariki, a first class crop of oats being reped by Bartons"* (*Waikato Times* 16 April 1891, p.4)

Crops prior to 1900 included potatoes, sweedes, wheat and oats (Magner 1983, p.91). Dairy was also a focus. *"The first Te Kowhai Creamery was built by Messrs Reynolds and Company on a site about half way between the present factory houses—the junction of Bedfords Road and the main Ngaruawahia to Whatawhata Road"* (Magner 1983, p. 93). The Te Kowhai creamery opened in early September 1894 (*Waikato Times* 8 September 1894, p.8). Milk was brought to the factory and the cream separated (Figure 66). In 1896 the firm was sold to the New Zealand Dairy Association (Magner 1983, p.93). The Dairy industry has continued to be at the heart of Te Kowhai's development as a rural town.

*Figure 66 Te Kowhai Creamery, the 1890s. The first manager, Mr Thomas Ashford is outside the Creamery (Magner 1983, p.88).*

***Flooding of Farmland***

Farms in the Te Kowhai area were affected by flooding in 1876 and 1893. The 1893 flood particularly affected Maori farmers. The newspaper reported:

> *"Amongst the greatest suffers by it [the flooding of the Waipa River] are the Maoris of Karakariki, Bluenose, Tangirau, Otamaori and Whatawhata villages. Thes Maoris have lost all their crops and are absolutely destitute. All their potatoes, oats and wheat as well as vegetable crops are destroyed, especially those growing on the flats. . . a number of Maori whares were quite covered with water and a portion of the river ooze was consequently deposited inside these houses" (Auckland Star 3 February 1893, p.3).*

The newspaper called for charity for the Maori affected by the flood and published figures listing the number affected at each village based on the report of Abraham Barton son of the late Reverend Mr Barton and Rawhiri Hemi, Chief of Bluenose and Tangirau. The villages were sizable—*"Bluenose 60 men, women, and children; Karakariki 45; Tangirau 40; Otamaori 20; total 165" Auckland Star* 3 February 1893, p.3). Contributions of money and seeds were to be made to the Star Office.

***Maori Reserve Land***

Te Kowhai's history includes various debates over the years about school building and creamery locations. In 1894 complaints were made about the crown land occupied by Maori on the Waipa River adjacent to the river landing and the access road to the landing.

> *"A Government reserve, which latter also takes in a considerable length of the river frontage . . . very fertile land suitable for cropping purposes. For some years past the natives have been cropping portions of this land but of late are taking the extreme step of fencing in the whole block, thereby cutting off the settlers' means of access t the river, the native plea being the Tawhiao had given the land to them. . . fear is the later will plant potatoes right across the old track." (Waikato Times 20 October 1984, p.2*

A petition was sent to the Newcastle Road Board. They contacted the Commissioner of Crown Lands who responded as follows:

> *"Section 53, parish of Horotiu is a gazette Maori burial ground,and there can be no objection to any Maories simply living upon the ground, but they have no right of obstruction . . .you should remove any obstruction on the road leading to the wharf. . . If you want a clear title to the wharf road you should take it under the Public Works Act." (Waikato Times 1 November 1894, p.3)*

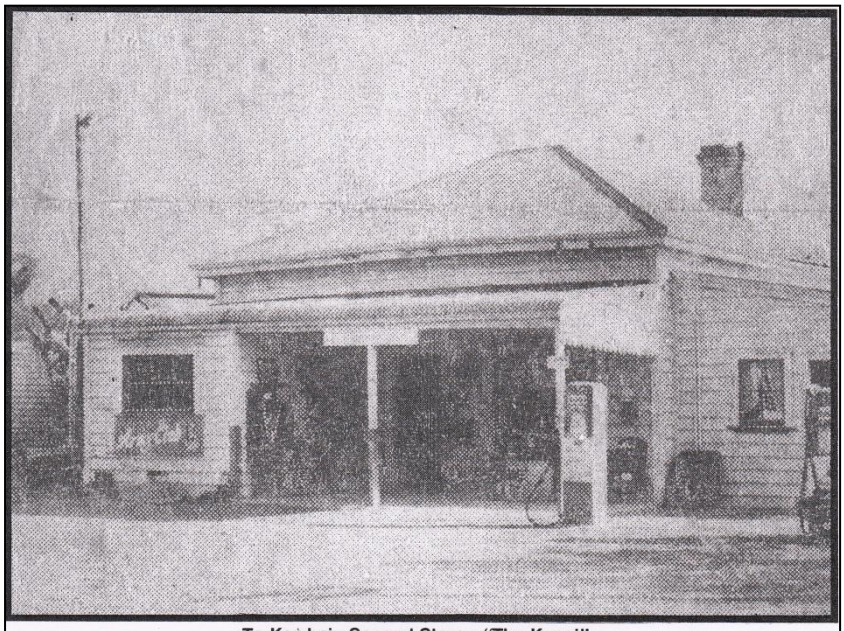
**Te Kowhai Post 1900; Center of a Farm Community**

The current town of Te Kowhai is still centered at the intersection of Te Kowahai Road with Horotiu Roads this configuration was well established by 1903 (Figure 64). The existing buildings in Te Kowahai are all post 1900.

Among the notable older buildings is St Marks Methodist Church, which was originally, named Victoria Church. St Marks was originally located at Waitekauri, and opened in September 1901 (Te Kowhai Jubilee Committee 1950). The church was purchased by the local Methodist congregation in 1909; cut into sections and sent by rail from Waitekauri to Te Kowhai (Figure 67). St Stephen's Anglican Church was opened in 1903 on Collies Road Te Kowhai (Figure 65). The church was moved to its current site in 1955. A community hall was constructed in 1904-05 and replaced after 45 years of use.

*Figure 67 Saint Marks Methodist Church, Te Kowahi (May 2014).*

The first store and post office was established by Mr William Henderson in about 1904, based on A Thousand Years of Wisdom, Mr Magner's (1983) history of the area. It was located north of the dairy factory in a small building, 8 feet square (Magner 1981, p.130). A few groceries and candy were sold. After Mr Henderson died (circa 1905), a new store was opened by Mr Norm Nicol—called Te Kapai (Figure 68).



**Te Kowhai : Second Store : "The Kapai"**
**Looking more like a house than the general grocery and hardware store at Te Kowhai, this building is being demolished after serving the district for more than 50 years. The old store, built shortly after the turn of the century, is to make way for a modern grocery and hardware business. On the extreme left can be seen the start of the demolition work.**
— Waikato Times photograph —

*Figure 68 The Kapai, store prior to demolition (Magner 1983, p.131).*

## Glenn Massey

Glen Massey was founded after 1900. The area was part of the land confiscated following the Waikato Campaign of the New Zealand Wars which was granted to soldier and other blocks open for settlement by purchase. Te Akatea, about 3 kilometers from Glen Massey on the road to Waingaro was settled in the 1880's under a government scheme to settle families on small pieces of land. Twenty-two of these families formed the settlement of Te Akatea (Bovill 1990, p.55). A small post office was established there in 1887 with mail delivered by horse back and later the coach to Waingaro landing (Bovill 1990, p.55).

In 1888 Mr J. Guy requested, on behalf of the residence, that the Education Board establish a school at the settlement (Bovill 1990, p.1). Several years passed before a positive response was received. In 1892 a school was opened on the old Te Akatea clay works site (Bovill 1990, p.1). The first teacher, Frank McGrath, taught at Te Akatea Monday through Wednesday and Waingaro Thursday and Friday. Later the teacher of both schools worked a six day week.

***Clay and Coal***

In the early 1900's at Te Akatea clay and coal were identified as resources that could be easily exploited. The clay was used for brick making. An attempt at starting a China clay and porcelain company was not successful (Bovill 1990, p.59). The coal fields in the area was recognized in 1908 and in 1912 the Waipa Collieries came into being and the focus shifted down the valley to a flat that would become Glen Massey (Bovill 1990, p.1).

A railway was constructed by the Waipa Railway and Colliery Company in 1912 to carry coal from the mines to Ngaruawahia. The line was considered an engineering feat at the time (Bovill 1990, p.72). It featured 22 bridges and 2 viaducts. There was also a passenger stop at the shops in Glen Massey. Figure 69 through Figure 73 show the rail line, coalfield and residential area.

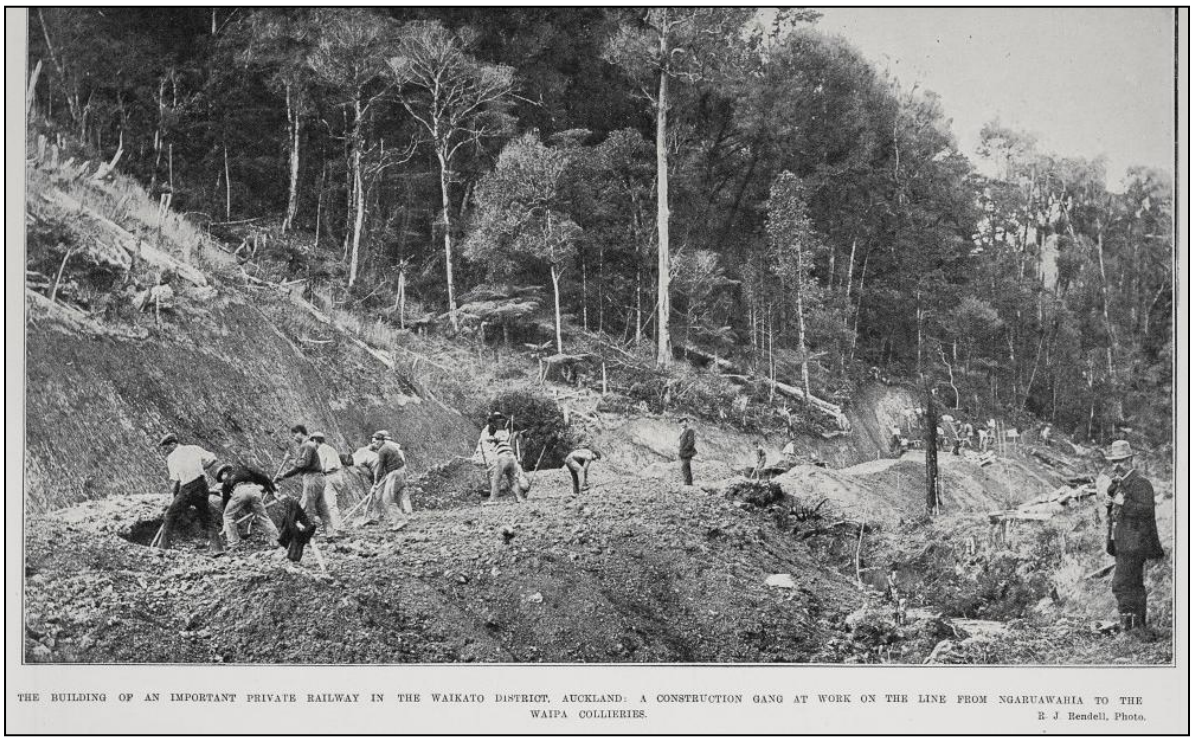



*Figure 69 Railway line construction to the Waipa Collieries. (Rendell R. J., Auckland Weekly News19 September 1912, p.3; Sir George Grey Special Collections, Auckland Libraries, AWNS-19120919-3-1.)*

*Figure 70 The new town of Glen Massey. Cottages built for employees of the Waipa Collieries. (Auckland Weekly News 9 July 1914 p48, Sir George Grey Special Collections, Auckland Libraries, AWNS-19140709-48-9.)*

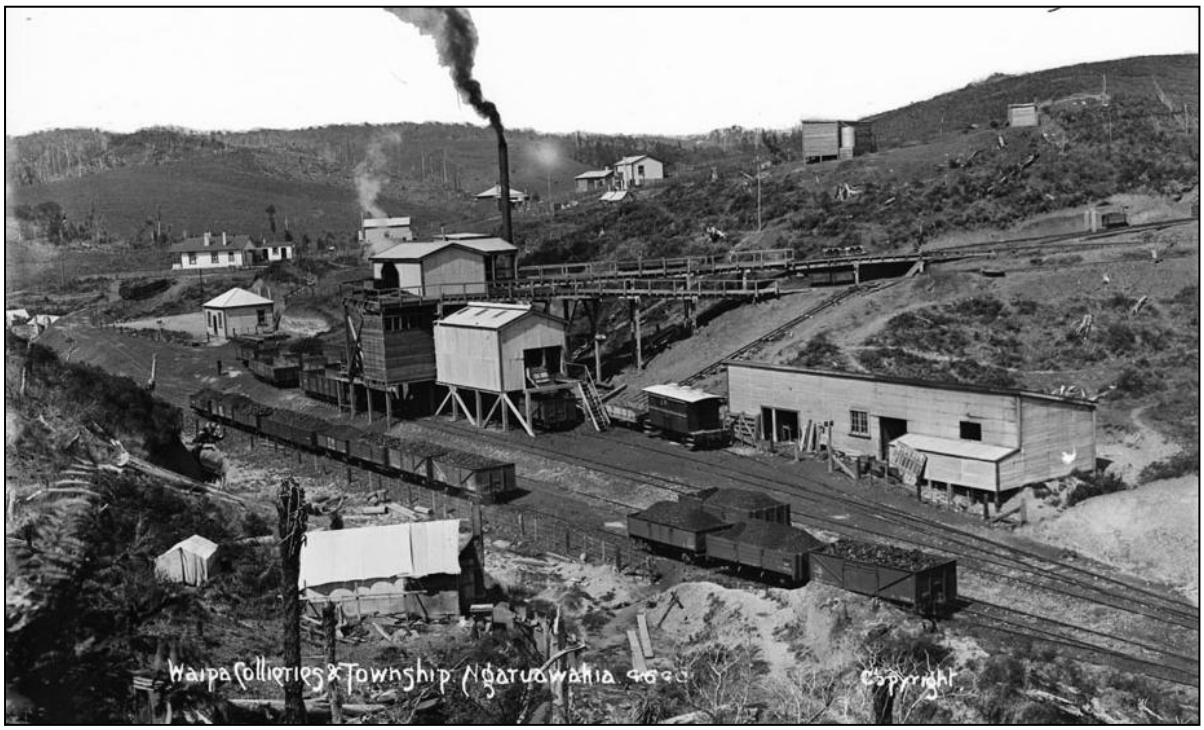



*Figure 71 Waipa Collieries and Township. (Radcliffe, F. G., Sir George Grey Special Collections, Auckland Libraries, 35-R965)*

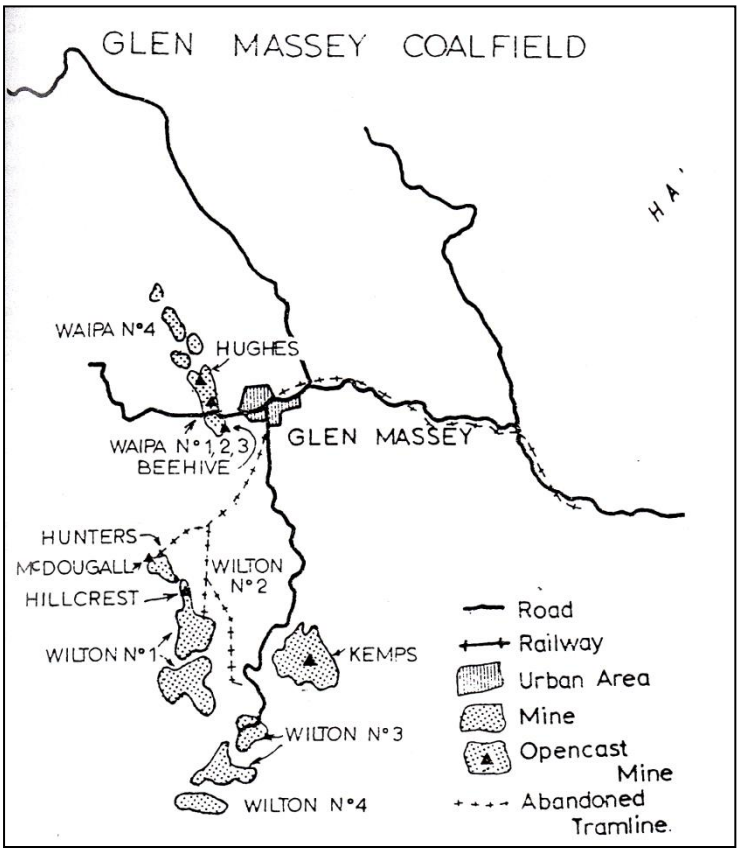



*Figure 72 Glen Massey coal field. (Bovill 1990, p.76*

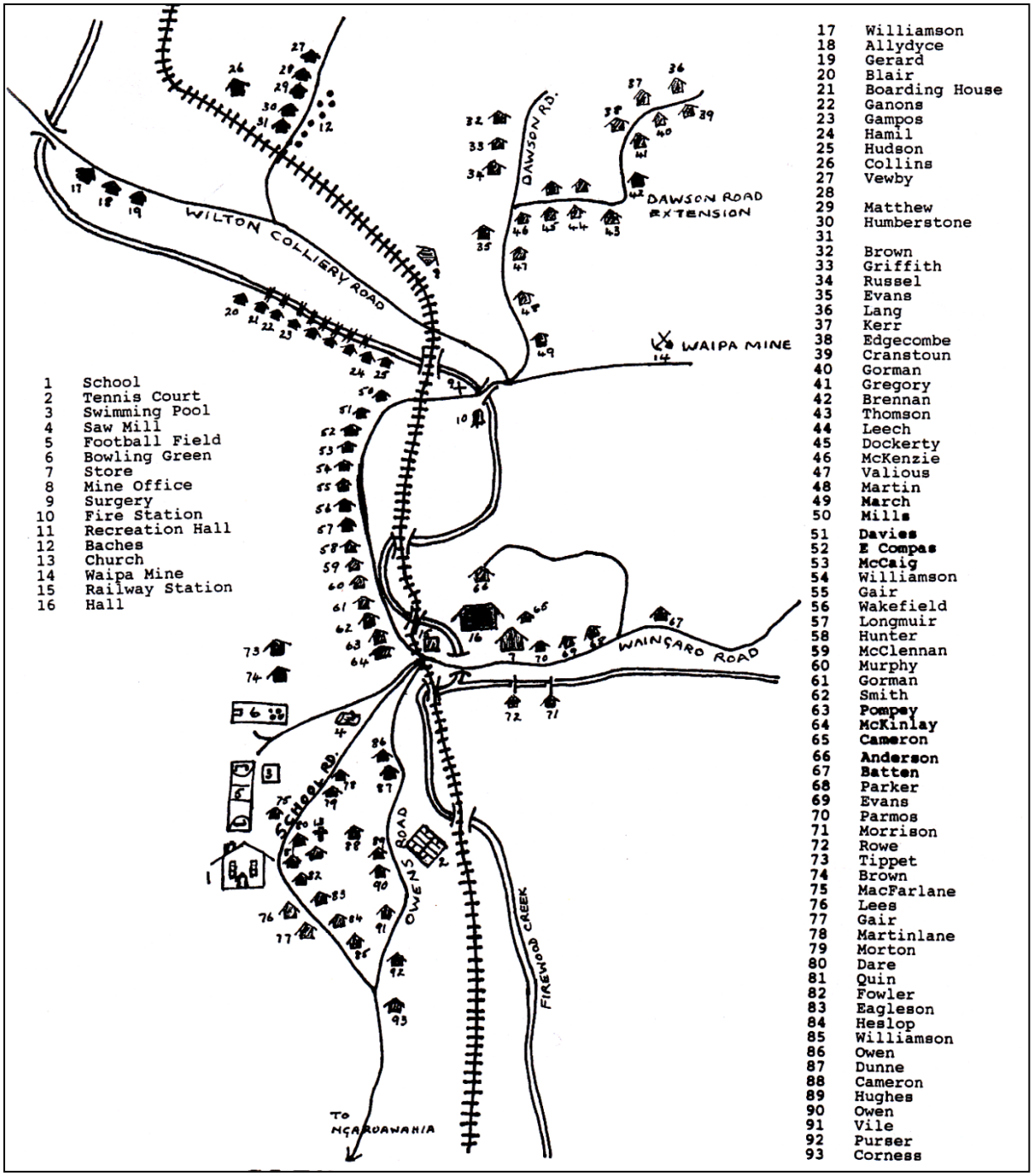



*Figure 73 Glen Massey Village, 1950's. (Bovill 1990,p. 90)*

## Summary

The Ngaruawahai and Enviros area was a rich fertile environment. Maori created large pa and gardens that reflect the size of the population prior to European contact. Among the first Europeans that made their way into the central Waikato were traders and missionaries. The traders identified resource opportunities—salt pork and flax—in the late 1820s. The flax trade was a source of revenue for both European traders and Maori for almost ten years.

Trading establishments were based at Te Kowhai and Ngaruawahia. The Te Kowhai traders focus was salt pork for the Auckland market. Salt pork was replaced by the trade in flax. Flax was exchanged by Maori for European goods—muskets, bayonets, bullet moulds, cartridge paper, cartouche boxes, plenty of gun powder; axes, knives, iron pots; coloured fabric prints, blankets and cotton handkerchiefs; pipes and tobacco. The flax trade created a change in the settlement pattern in the Waikato. Villages were at least temporarily located near the flax filled wet lands and labour focused on harvesting and processing flax. The best known trader in the area was Captain Kent. He had a trading post at Ngaruawahia and resided at Kaitotehe, opposite Taupiri Mountain, from the early 1830 until his death in 1837.

The Taupiri area continued to be a significant focus of activity in the central Waikato in the 1840s through 1850s. The Church Missionary Society established three mission stations in this area from 1843 on ward--Pepepe, Kaitotehe, and Hopuhopu. The stations were established through the willingness of local Maori to provide sites adjacent to their villages. They also gifted land for cultivation to help sustain the mission station school teachers and students.

The mission stations thrived because of the large Maori population they served. The influence of missionary Reverend Benjamin Yates Ashwell was evident throughout the area because of the village school system he established under his lay preachers. The Church Missionary Society was not the only religious organization in the Ngaruawahia and Enviros area. The Catholics had a priest located at Ngaruawahia pa who was there prior to the arrival of the invading British and Colonial force. The Methodists were also in the study area. They focused on the Te Kowhai area and the coast.

The Waikato Campaign of the New Zealand Wars in 1863 changed the central Waikato forever. The land of local Maori was confiscated as a result of the war brought an ever increasing population of Europeans to the area, in response to land development and commercial opportunities.

Te Akatea, about 3 kilometers from Glen Massey was occupied by Europeans in the 1880s under a government settlement scheme. Glen Massey is a post 1900 town founded on coal mining. The industrial heritage of Glen Massey is evident in modifications that are archaeological in character; for example the tram lines. Without the mines the works settlement of Glen Massey would not have been formed.

The Ngaruawahia and Enviros structure plan area has a rich and diverse archaeological history composed of:

- pre-contact pa, village, garden, urupa and other sites;
- contact period sites associated with traders and missionaries, e.g. schools, houses, flour mills, churches, etc.;
- war sites—the markers of the Waikato Campaign of the New Zealand Wars;
- pre-1900 European businesses, commercial and civic buildings, houses, farm structures, roads, bridges and rail lines, to name just a few types of post 1863 archaeological sites; and
- the post-1900 industrial heritage settlement of Glen Massey—a workers town and industrial sites.

# CHAPTER 3 RECORDED ARCHAEOLOGICAL SITES

## Introduction

The New Zealand Archaeological Association (NZAA) Site Recording Scheme was established in 1958 to "encourage the recording and surveying of archaeological remains". The objective of the scheme is to create simple but systematic files of information about archaeological sites (Prickett, 1999, p. 1-2).

For the purposes of the Site Recording Scheme an archaeological site is defined as any specific locality at which there is physical evidence for human occupation in the past that is, or may be able to be, investigated by archaeological techniques (Prickett, 1999, p. 1-2).

The Site Recording Scheme is the only national inventory of archaeological site information in New Zealand. There are currently over 63,000 site records listed in the scheme, and this number is growing all the time as professional archaeologists and interested amateurs add newly discovered sites.

Metadata describing archaeological records in the Site Recording Scheme have been kept electronically in the Central Index of New Zealand Archaeological Sites (CINZAS) since 1982 (Prickett 1999, p. 121). The CINZAS system records NZMS 260 map sheet number and site identifier, metric eastings and northings, site description, site type code, and codes for the condition, possible damage, responsible local body, and the date of the last recorded visit by an archaeologist.

In 2009 the Site Recording Scheme was presented as a website, making archaeological records available to members of the NZAA, local bodies, iwi and other organisations via the Internet. ArchSite contains copies of the CINZAS records as well as scans of the paper files.

The data for the present study were drawn from ArchSite. These include the aggregate fields listed in CINZAS, and the scanned copies of paper documents found in the site files.

### A note on recorded site locations

Before conversion to electronic recording with ArchSite, locations for archaeological sites were given in grid references for the NZ Map Grid 1949, from NZMS 260 topographic map sheets. These references specify a location to the nearest 100 m, and it was common practice to give the coordinates for the south west corner of a 100 m

square which contains the site. Reported point locations are therefore sometimes seen to be considerable distances from the actual archaeological remains.
This can be illustrated by the location given in converted eastings and northings for the NZTM coordinate system for Smith's house, R12/284, as shown in Figure 74.

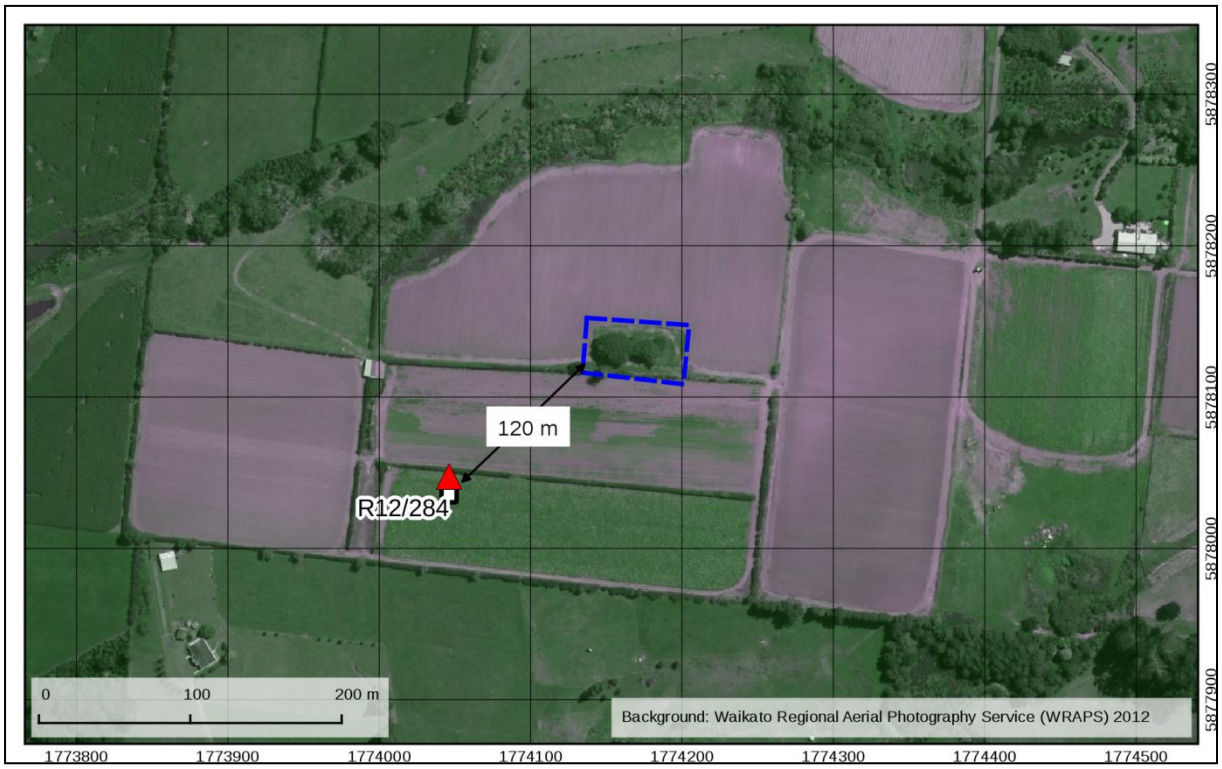



*Figure 74 Illustrating the difference between a site's recorded location and the actual location as depicted on air photography from 2012.*

## Archaeological site typologies

There is no internationally recognised typology for archaeological sites. This is a reflection of the fact that archaeology is often regionally unique. For example, a common type of New Zealand site is the Maori fortification or pa. These may bear a superficial resemblance to prehistoric fortifications in other parts of the world but are, in fact, unique to New Zealand because they were created by the Maori tradition, with its genesis in Pacific Polynesian material culture, and access to mineral resources, foods and other materials particular to this place.
The method of classifying sites most commonly used in New Zealand is by what type of archaeological features are present or visible. Thus, many sites are classified

as "Midden/oven" or "Pit/terrace" on the basis that these were the visible features when the site was first visited by an archaeologist.
The Site Recording Scheme has 51 different site types listed, although some of these might be considered as sub-types of a larger category—there are six listed classes for "mining", for example. The site types are listed in Appendix 1.

The CINZAS data include codes for a variety of site types, which are classified into larger categories. A type may appear in more than one category. For example, pa are listed under "General", "Defensive" and under their own category "Pa". The "Midden" category includes codes for: middens; ovens and middens; middens, ovens and terraces; middens, ovens and pits; and middens and pits. There are 14 categories for prehistoric sites, and 12 for historic ones.
What type a site is recorded under is to a large extent left up to the opinion of the recording archaeologist. The quality of such information varies considerably, with some archaeologists completing comprehensive surveys and providing detailed descriptions, site plans and photographs, while others give a brief description, little more than a note as to the existence of archaeological features at the location. Many sites in the Site Recording Scheme have not been revisited since the original recording was made, and many records can be somewhat vague as to the nature and content of the site.

Some sites fit easily into obvious types. Pa, for example, or the later style of fortifications known as redoubts (there are redoubt structures associated with the Imperial British Army, the Colonial Armed Constabulary and with Maori). These usually comprise defensive earthworks and can often be seen in air photography—indeed, the largest proportion of prehistoric pa in the Waikato region were first identified from historic aerial photographs.
Maori horticulture is another type of site common in the Waikato which falls easily into a particular category. These sites may also be identified in remotely-sensed data as in this region they are marked by the presence of borrow pits—large, subcircular depressions in the landscape from which the Maori were quarrying sand and gravel to mix with the soils.This is discussed in more detail below.
It is also clear from reading the files that some sites within the study area have been misclassified. Where this has been the case, sites have been reclassified based on information found in the scanned copies of the paper files.

## Site typology, Ngaruawahia and Environs

A group of sites from the NZAA Site Recording Scheme were chosen based on their location within a 5 km boundary of centres at Ngaruawahia, Glen Massey, Horotiu and Te Kowhai. The selection process yielded 65 archaeological site records (Appendix 1) Figure 75.

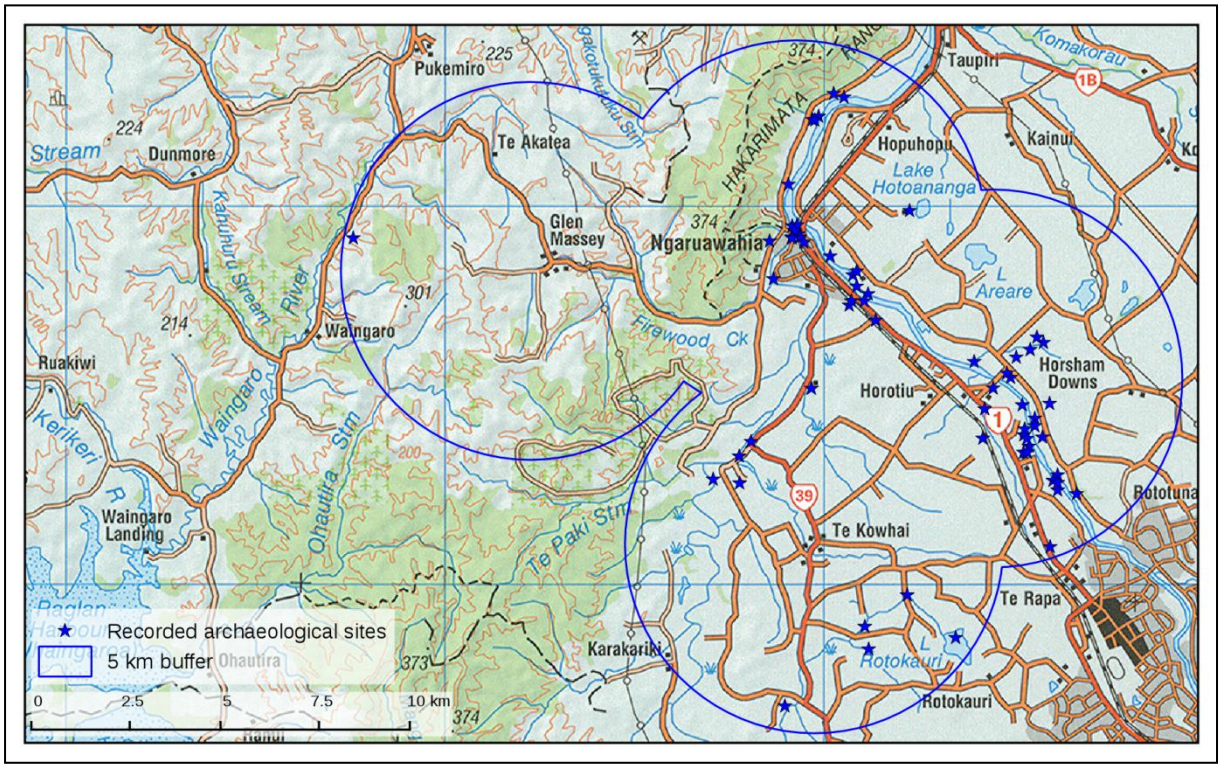



*Figure 75 Detail from NZ Topo250 sheet 5 Auckland showing the location of 65 recorded archaeological sites selected for study. The blue line represents five kilometres from centres in Ngaruawahia, Glen Massey, Horotiu and Te Kowhai.*

These 65 sites represent 12 site types, from "Artefact find" to "Transport/ communication". Table 2 lists the selected sites by site type, with the number of sites of each type within the selection.

*Table 2 Number of sites by type in selection.*

| nzaa_type | count |
|---|---|
| Artefact find | 6 |
| Burial/ cemetery | 2 |
| Fishing | 1 |
| Historic - domestic | 1 |
| Maori horticulture | 23 |
| Midden/Oven | 2 |
| Military (non-Maori) | 6 |
| Pa | 16 |
| Pit/Terrace | 4 |
| Shipwreck | 1 |
| Transport/ communication | 2 |
| Unclassified | 1 |
| (12 rows) | |
| Total | 65 |

By far the largest number of sites in the selection are of the type "Maori horticulture", with 23 of 65 site records. This is followed by sites of type "Pa", with 15 records. In the middle-Waikato basin, the predominant form of prehistoric archaeology is the Maori horticulture type and the closely associated fortified pa.

**The pa and the gardens**

Pa are often the most visible archaeological sites in the area. They occupy prominences on hills and ridges, and can be found on the escarpments formed by the entrenched Waikato River and its major tributary gullies. As a group, they were defended structures with ditch and bank earthworks, and often took advantage of defensive possibilities in the local landscape, by being built against river scarps and in swampy lakes.

Most pa on the Waikato and Waipa rivers occur in proximity to mapped garden soils or clusters of borrow pits, indicating their relationship with the horticulture sites.

Prehistoric horticulture sites are highly visible in this region in comparison with those known in other parts of New Zealand, because of the modified soils which are enriched with sand and gravel quarried from the underlying alluvium. The quarrying has left a large number of sub-circular depressions in the landscape, called "borrow pits". These features can readily be seen on aerial photographs, and in more recent lidar-derived elevation data.

The modified soils were first mapped by soil scientists in the 1930s, who identified their anthropic origin, and called them "Maori-made soils" (Grange & Taylor 1939, p. 39). The made-soils were later classified as Tamahere sandy gravelly loam (McLeod 1984, p. 24). Figure 76 illustrates the extent of Maori-modified soils within the study area. Each of the light green shapes represents evidence of prehistoric horticultural activity and is a strong predictor of the presence of archaeological sites as defined in the *Heritage New Zealand Pouhere Taonga Act* 2014.

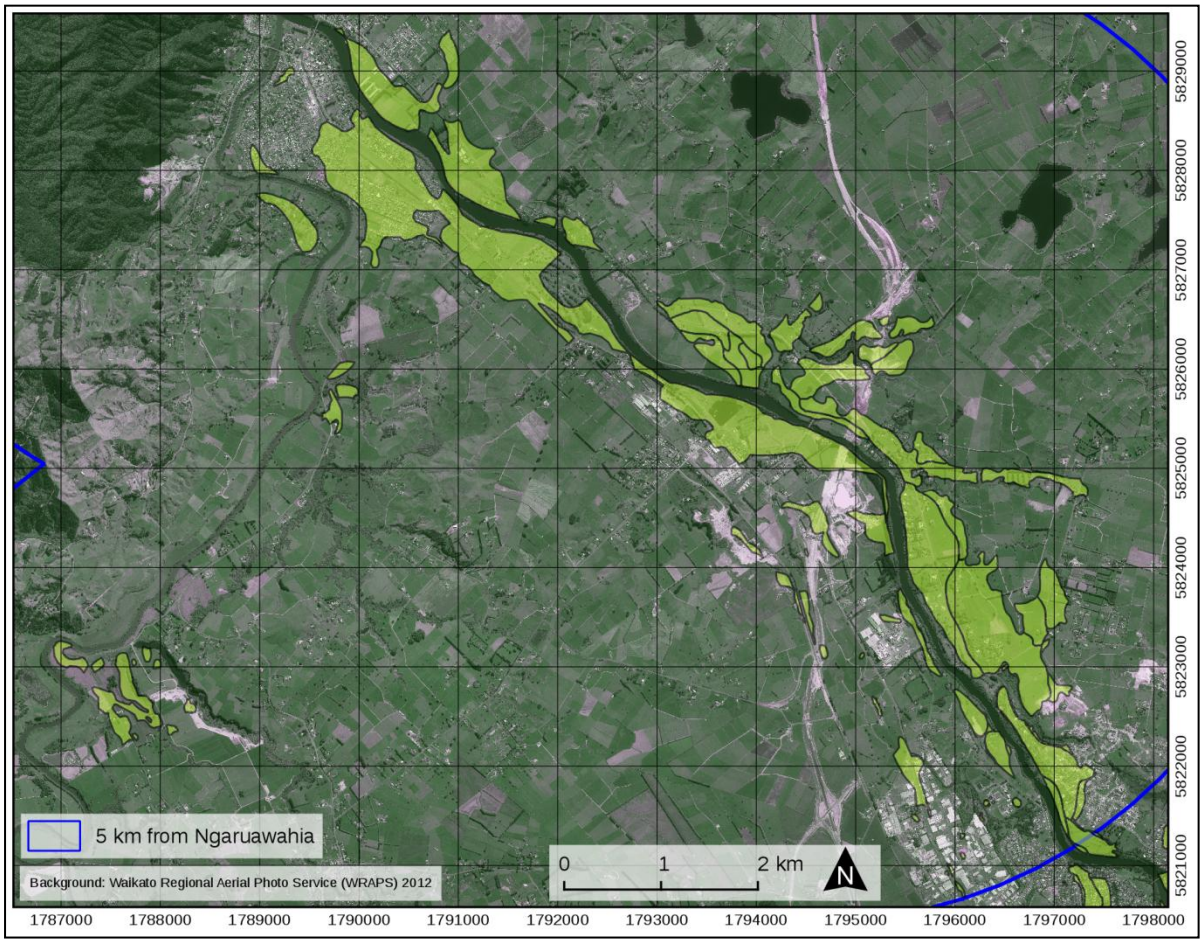



*Figure 76 Deposits of Tamahere sandy gravelly loam as identified by soil bureau scientists since 1939.*

The first sites of the type to be recorded in the NZAA scheme were made in the late 1960s, and a series of them were recorded from aerial photos in the 1980s. More recently, studies by Campbell (2012) and Gumbley & Hutchinson (2013) have revealed an entire archaeological landscape comprising wide tracts of modified soils and the borrow pits from which the alluvial sand and gravel were quarried. There

are now over 500 sites of type "Maori horticulture" recorded in the mid-Waikato basin between Hora Hora and Taupri.

It is known that Maori horticulture sites exist which have not been entered in the NZAA site recording scheme. Extensive areas of Tamahere sandy gravelly loam have been mapped by Grange & Taylor, and by McLeod, on both banks of the Waikato River from Pukete down to Ngaruawahia. Clusters of borrow pits have been spotted from historic and modern aerial photography, and from lidar-derived elevation data, in a corridor along the river. Borrow pits and modified soils are also known at a place along the Ngaruawahia Road by Saulbrey Road, and at Bedford Road close to Pukehemu Pa (S14/26), Figure 77.

*Figure 77 Detail from SN174/302/19, flown 16 April 1941, showing the pa S14/26 and an unrecorded Maori horticulture site indicated by borrow pits.*

Figure 77 is a detail from one of the 1943 aerial photographic survey frames. It shows a cluster of borrow pits near the centre of the image, between the road and the wooded gully. The pa S14/26 is indicated. This is in a bend in the Waipa River which also has deposits of Tamahere sandy gravelly loam indicated by Grange et al in their soil survey of 1939.

## Reclassification

During research for the current study it was noticed that several records have been misclassified. Four records (S14/9, S14/10, S14/11 and S14/49) have been marked "Deleted" because the information in them is insufficient to confirm the location of an archaeological site and the informant was later considered unreliable.

One site (S14/87) recorded as "Pa" has been reclassified to "Mission station".

The record S14/182, classified as "Military (non-Maori)", was found to describe a Maori village and has been reclassified as "Domestic" subclass "Kainga".

The site S14/187 has been reclassified from "Military (non-Maori)" to "Pa," subclass "Gunfighter".

The site S14/205, describing a British redoubt in Ngaruawahia which never existed, has been reclassified as "Deleted".

Table 3 lists the reclassified site types and a count of records of each type within the selection.

*Table 3 Number of sites by reclassified type in selection.*

| site_type | count |
|---|---|
| Artefact find | 6 |
| Burial | 1 |
| Deleted | 4 |
| Historic | 1 |
| Kainga | 1 |
| Maori horticulture | 23 |
| Midden/Oven | 2 |
| Military (non-Maori) | 3 |
| Mission station | 1 |
| Pa | 16 |
| Pit/Terrace | 4 |
| Shipwreck | 1 |
| Transport/ communication | 2 |
| (13 rows) | |
| Total | 65 |

The following section discusses the sites and site types represented in the sample.

**Artefact find**

The artefact find site type is used to record the location of an isolated artefact which has no discernible archaeological features or landforms associated with it.

Six artefact findspots are recorded in the Ngaruawahia study area. These record a prehistoric greenstone pendant (S14/29); decorative panels from a structure of some kind, discovered in a spoil heap (S14/89); an adze (S14/103); an adze found on the farm that is now the Te Rapa Dairy Factory (S14/114); a hoe waka or canoe paddle (S14/123) and a ko or digging stick (S14/124).

**Burial/cemetery**

The location of human remains are recorded as sites of type "Burial". These may be a formal cemetery or urupa, or isolated remains, usually bones.

King Potatau's tomb is recorded as archaeological site S14/188. This is in the Ngaruawahia Domain. The archaeological site S14/10 records the site of a battle between Taranaki and Waikato tribes on the east bank of the Waipa River where there is now a golf course.

The record for site S14/11 where a crouching skeleton was reportedly found contains a handwritten note to the effect that the informant was later found to be unreliable. This seems to be the same informant who supplied information for S14/10, casting doubt on the veracity of this record as a location where skulls had been found. Both have been reclassified to "Deleted".

**Deleted**

In addition to the three records reclassified as Deleted mentioned above, a site (S14/9) which had recorded hearsay evidence of fishing activity on the west bank of the Waikato River "3/4 of a mile north of Ngaruawahia" (Gorbey 1975, p. 1), has also been reclassified "Deleted". This record has the same handwritten annotation that the informant is unreliable as found on records S14/10 and S14/11.

Sites of type "Fishing" almost always refer to the remains of prehistoric fish traps and weirs made of stones.

**Domestic**

Originally classified as 'Historic - domestic' in the NZAA records, this site type relates to the remains of places where people conducted their daily lives. Most

common within the records are houses, but other structures such as huts, cottages and Maori whare are also recorded in this type category.

There are two sites of type "Domestic" in the selection, 53 Newcastle Street, Ngaruawahia (S14/186), the site of an historic cottage, the "Doctor's house", now used as a carpark; and the reclassified S14/182, a Maori kainga in the Domain near the Point. This latter record had formerly been classified as "Military (non-Maori).

**Maori horticulture**

There are 23 sites of type "Maori horticulture" recorded within the study area. These cluster along the Waikato River, with a few scattered Horotiu Bridge. It is known from soil survey and remote sensing data that more sites exist than are recorded.

Table 4 lists the sites of type Maori horticulture within the study area.
along a gully below the

*Table 4 Sites of type "Maori horticulture".*

| nzaa_id | site_type | recorded | recorded_by |
|---|---|---|---|
| S14/104 | Maori horticulture | 1986-01-06 | Morgan, P.H. |
| S14/105 | Maori horticulture | 1986-01-06 | Morgan, P.H. |
| S14/106 | Maori horticulture | 1986-01-06 | Morgan, P.H. |
| S14/111 | Maori horticulture | 1985-12-28 | Morgan, P.H. |
| S14/121 | Maori horticulture | | Leatherby, J. |
| S14/160 | Maori horticulture | 1993-03-03 | Ritchie, N. |
| S14/162 | Maori horticulture | 1993-06-09 | Ritchie, N. |
| S14/163 | Maori horticulture | 1993-06-18 | Ritchie, N. |
| S14/164 | Maori horticulture | 1994-03-21 | Ritchie, N. |
| S14/165 | Maori horticulture | 1994-08-24 | Barr, C. |
| S14/175 | Maori horticulture | 1997-04-01 | Hooker, R. |
| S14/177 | Maori horticulture | 2009-02-17 | Ritchie, N. |
| S14/179 | Maori horticulture | 2002-12-01 | Wilkes, O |
| S14/192 | Maori horticulture | 2004-07-25 | Walton, A. |
| S14/194 | Maori horticulture | 2010-09-08 | Campbell, M. |
| S14/195 | Maori horticulture | 2010-09-08 | Campbell, M. |
| S14/203 | Maori horticulture | 1997-09-20 | Wilkes, O |
| S14/221 | Maori horticulture | 2009-10-12 | Hoffmann, A. J. |
| S14/222 | Maori horticulture | 2009-10-12 | Hoffmann, A. J. |
| S14/242 | Maori horticulture | 2011-06-23 | Mallows, C. |
| S14/246 | Maori horticulture | 2011-07-28 | Keith, Sian |
| S14/247 | Maori horticulture | 2011-07-28 | Keith, Sian |
| S14/253 | Maori horticulture | 2011-10-11 | Gumbley, W. |

**Midden/oven**

A midden is a rubbish heap. In New Zealand archaeology, the term is commonly used to refer to pre-European Maori occupation rubbish and sites of this type are most commonly comprised of marine shellfish remains.

S14/110 is the only midden site recorded near Ngaruawahia (Figure 78). It is a hangi pit or cooking area, recorded as exposed by a bulldozer in 1985. It stands on the left bank of the Waikato River in an area of known but unrecorded prehistoric gardening.

*Figure 78 The midden/oven site S14/110. The green depicts tracts of Tamahere sandy gravelly loam as indicated on soil maps from 1939.*

Figure 78 above depicts polygons of Tamahere sandy gravelly loam (transparent green shapes) mapped by Grange et al in 1939.

**Military**

Sites of type "Military" mostly relate the activities of the British Army and associated European units, but S14/187, at the Waipa bridge at Ngaruawahia, is recorded as a "Maori redoubt".

Military-type sites in the collection are Fort Newcastle (S14/181), remains of which may survive along Broadway St; an Armed Constabulary redoubt (S14/190) on Herschel St, and a set of munitions magazines (S14/213) (. This last record, being of a site which dates to after 1900, does not fit the definition of an archaeological site in the Heritage New Zealand Pouhere Toanga Act 2014. The Site Recording Scheme has a slightly looser definition which does not account for the age of the site.

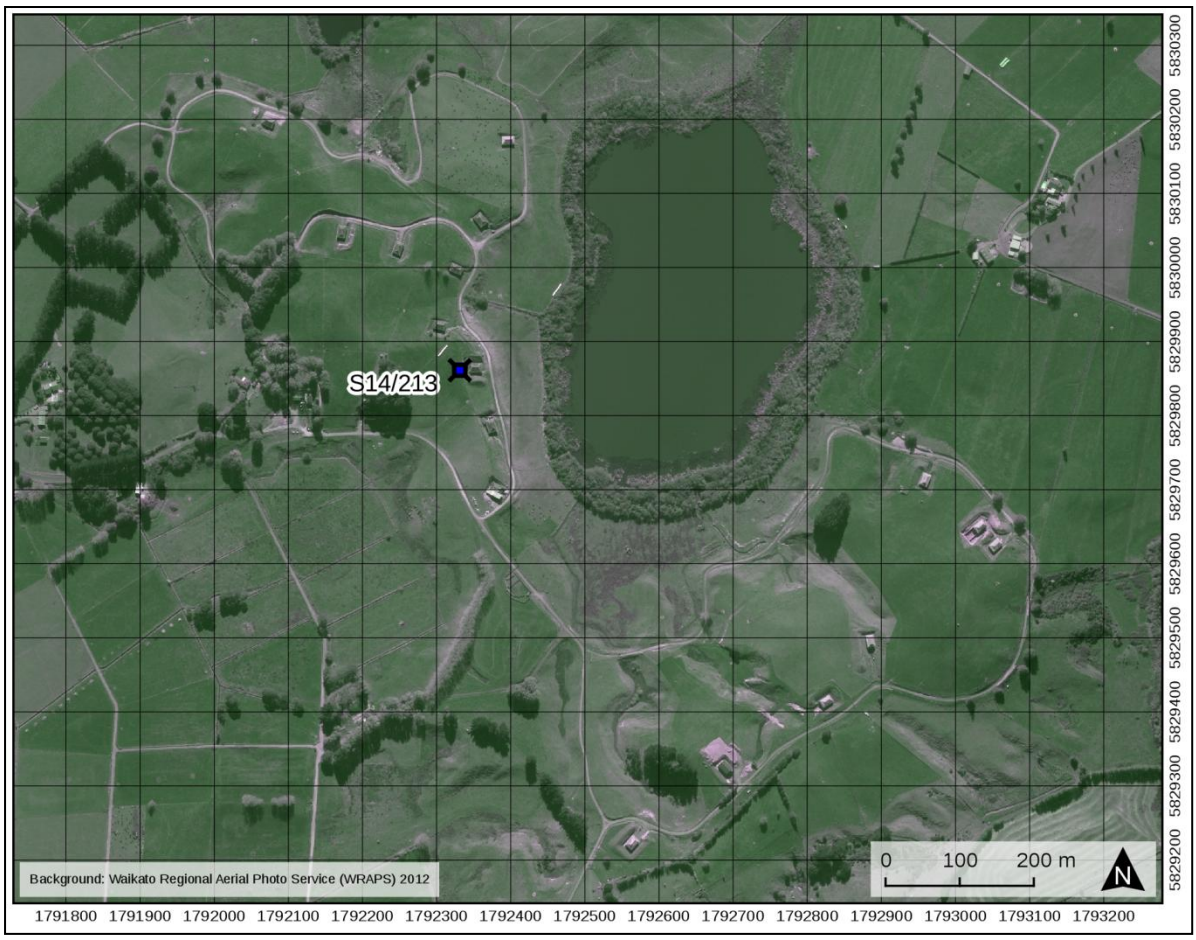



*Figure 79 The munitions magazines (S14/213) next to Lake Hotoananga. The background is aerial imagery from 2012.*

Figure 79 shows the munitions magazines on aerial imagery from 2012. The earthen revetments surrounding the store buildings are plainly evident, as is the distributed nature of the facility. There is another cluster of magazines to the south of this image.

One site (S14/187) is misclassified as "Military (non-Maori)", when the description written in Wilkes' record clearly states this is a Maori redoubt (Wilkes 1994, p. 1). This has been reclassified as a "Pa" subclass "Gunfighter".

**Mission station**

One site, S14/87, records the presence of the Pepepe Church Mission Station. This is on the true-left of the Waikato River, downstream from Ngaruawahia opposite Hopuhopu.

There is no classification in the NZAA Site Recording Scheme for "Mission station", and this record had been misclassified as a pa. Wilkes inserted a note on his research listing several historical sources for this mission.

**Pa**

Pa are the remains of fortified emplacements associated with Maori activity, both pre-historic, and from the period after European arrival. They commonly comprise earthworks including ditch and bank defences, and may include pits, platforms and other indications of domestic activity. Pa were commonly the centre of much activity, particularly the growing of kumera and other crops.

Sixteen pa are recorded in the study area, and five of them are named. These are Pukeiahua Pa (S14/2) on a ridge at the end of Couch Street, Ngaruawahia; Mangaharakeke Pa (S15/18) which is on land belonging to Fonterra at the Te Rapa Dairy Factory and is part of a complex of pa including S14/17 and S14/112; Pukehemu Pa (S14/26) on the banks of the Waipa River near Bedford Rd; Pikiarero Pa (S14/31), a gunfighter pa in the Ngaruawahia Domain; Whakapuku Pa (S14/122), on the Waipa River downstream of Pukehimu Pa.

The other sites of type "Pa" in the selection are S14/5, S14/8, S14/13 (pictured in Figure 80), S14/16, S14/50, S14/81 and S14/97.

*Figure 80 Unnamed pa (S14/13) shown in air photography from 2012. The ditch defending the point can be seen in this image.*

Figure 80 shows the pa S14/13 in a reasonable state of preservation with at least one ditch visible in modern aerial imagery. The transparent green shapes represent deposits of modified soils mapped my McLeod (1984), showing unrecorded Maori horticulture sites exist in this area east of the river near Hereford Drive.

**Pit/terrace**

An archaeological site of type "pit/terrace" records the existence of levelled ground commonly associated with pre-European Maori activity. These sites may also include depressions in the ground, which are often found amongst remains of domestic sites, and may have been used for storage of kumera crops.

Four sites of type "pit/terrace" are known in the area. These are R14/11, S14/12, S14/113 and S14/147. S14/12 is on the left bank of the Waipa River above Waingaro Road, opposite the Ngaruawahia domain; S14/113 has been affected by the Te Rapa Dairy Factory and S14/147 is opposite Hopuhopu (Hopuhopu) on the left bank of the Waikato River above Hakarimata Road.

S14/174, a row of three rectangular storage pits, is close to an unrecorded Maori horticulture site, indicated as shapes on the LRIS Raglan soil survey.

R14/11, below is the only archaeological site recorded within 5 km of Glen Massey, being isolated well to the west of the town in the Otuturu Stream a short distance off the Waingaro Road.

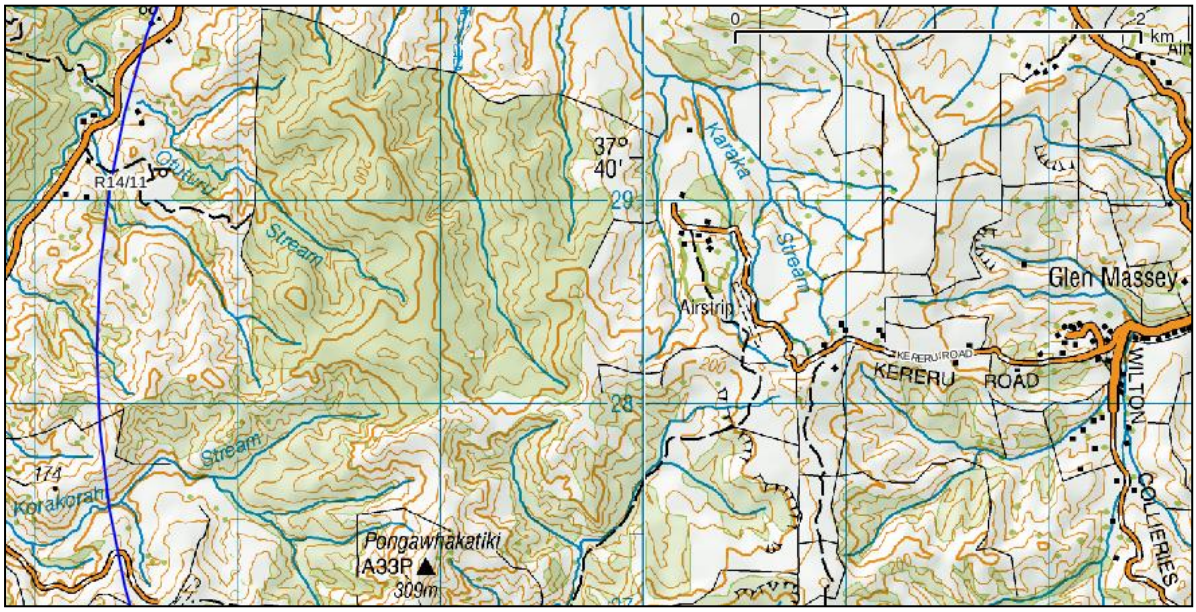



*Figure 81 Topographic map showing the Pit/terrace site R14/11, 5 km west of Glen Massey.*

**Shipwreck**

One shipwreck is recorded (S14/183). Lying in the bed of the Waikato River in the Point Domain, Ngaruawahia, this is a collection of timbers forming the hulk of a boat (Figure 82). Owen Wilkes, who recorded the site in 2000, believed it to be the wreck of the screw steamer *Alert*.

*Figure 82 Remains of a wooden riverboat, thought to be the steamer Alert exposed on the bank of the Waikato River at the Ngaruawahia Domain.*

The wreck was exposed during a visit in April 2014, and about 7-8 m of the bottom plating was visible, including sections of the keel and ribs, with iron fixtures protruding from them.

Although the wreck was measured and described by Wilkes in his site record (Wilkes 2000a, p. 1), there has been no comprehensive survey of these remains and no confirmation of Wilkes' suspicion of its identity. Because of its location, and periodic exposure during periods of low water, these wooden remains are vulnerable to decay from drying out, and from damage by vandals and souvenir-hunters.

**Transport/communication**

Roose's steamer wharf is recorded as archaeological site S14/184 in the Domain, on the Waipa River. The wharf was up near the point, close to the confluence with the Waikato River. There were timbers from the wharf photographed by Wilkes in 2000, but it is not known if they remain today (Figure 83).

*Figure 83 Wilkes' photograph of timbers from Roose's steamer Wharf. (Wilkes 2000b, p. 4)*

## Taupiri

An additional 19 site records from the Site Recording Scheme around Taupiri were examined. One mission station was recorded in this group, and two sites of type "Pit/Terrace". The rest were Maori horticulture (5) and pa (11).

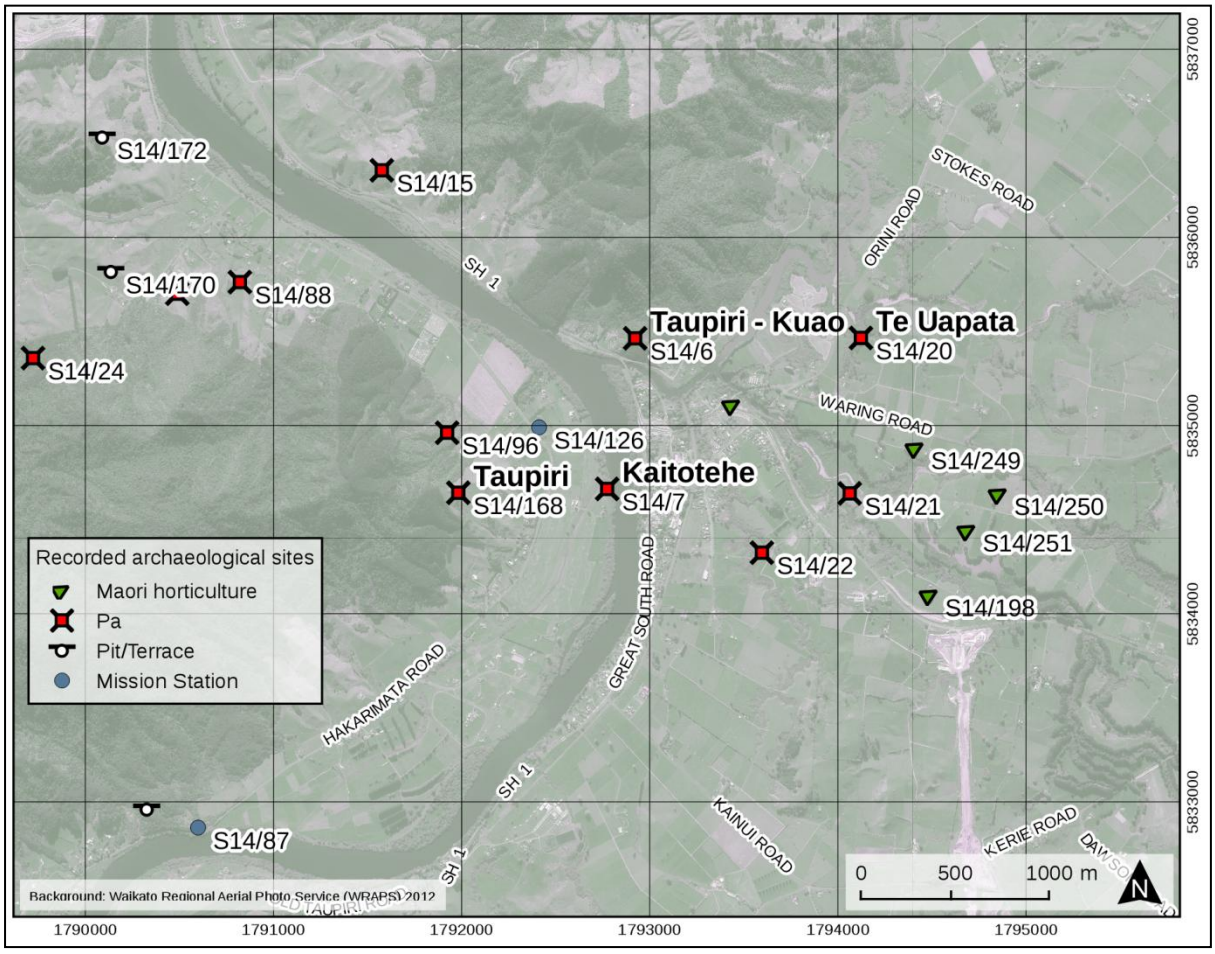



*Figure 84 Archaeological sites around Taupiri.*

Ashwells' Mission Station is recorded as S14/126, in a bend in the Waikato River opposite Taupiri. The other Mission Station in the collection is S14/87, the Pepepe Church. These two places are discussed extensively in previous chapters.

Eleven pa are recorded in the area, including five named ones. These are the Taupiri-Kuau Pa (S14/6) on a hillock at the foot of Taupiri mountain and another pa called Taupri (S14/68) across the river from it. Kaitotehe Pa (S14/7) is recorded on the left

bank of the river, opposite Taupiri Township. Te Uapata (S14/20) in the Whangamaire Stream, and Tarake (S14/22) in an unnamed stream south of Taupiri Township. There are three pa inland from Parker Road (S14/24, S14/88 and S14/171. S14/15 is on the right bank opposite Parker Road, and there are two more unnamed pa in the selection: S14/69 on a hill above the second Taupiri pa, and S14/21 in the Mangatoketoke Stream.

The recorded Maori horticulture sites around Taupiri are all clustered in the Whangamaire, Komakorau and Mangatoketoke Streams to the east of the town. More sites of this type are known than are recorded in Taupiri, as soil science maps show extensive tracts of modified soils along the left bank above Taupiri and in the valleys associated with the pa mentioned above. Prehistoric horticulture sites are known to exist along the banks of the Komakorau Stream as far as Sainsbury Road at Gordonton.

## New Zealand Historic Places Trust List of Selected Archaeological Sites in the Waikato District

In 2012 the New Zealand Historic Places Trust (NZHPT)[42] prepared a list of archaeological sites in the Waikato Region for consideration for scheduling in the District Plan. This was based on a 2009 report by Dr Rachel Darmody.

The region was divided into 29 areas representative of landscape features, and recorded archaeological sites were selected according to an assessment criteria which included condition, rarity, archaeological value, contextual value, amenity value and historic value. The assessment process used by NZHPT is illustrated in Figure 85.

Of the 29 areas, three fall within the present study area. These three areas list a total of 14 sites which correspond with those selected for the present study, Table 5. In the lower Waipa River list, only one site—the pa S14/81—is included in the present study area. The full list of sites is available in Coster (2012).

[42] Re-named Heritage New Zealand in May 2014.

*Table 5 List of NZHPT Select Archaoelogical Sites in the Ngaruawahia and Enviros Structure Plan Area*

| | |
|---|---|
| Lower reaches of the Waipa River | 1 |
| The Point | 8 |
| Te Rapa Dairy Factory | 5 |

**Assessment Criteria**

Six categories were used to assess the archaeological sites within the Waikato district based on the definition of historic heritage under the RMA and the suggested criteria for assessing historic heritage values in NZHPT's *Sustainable Management of Historic Heritage: Guide No. 3 District Plans* (McClean and Greig 2007). The criteria were also based on NZHPT's archaeological guidelines (NZHPT 2006), Tony Walton's assessment of archaeological values of historic places (Walton 1999, 2002) and Arczoo Archaeology's heritage assessment of the Tasman District (Greig 2007b).

Archaeological sites in the Waikato district have been assessed against the following criteria:

1. **Condition:** The current state of the archaeological site and whether there is archaeological evidence still present at the recorded location. Assessing whether the condition of the site has compromised its archaeological integrity.

2. **Rarity:** Identifying the uniqueness of the class of site and if it is represented by any other known examples (Walton 1999:13).

3. **Archaeological value:** The archaeological value is based on the potential of the site to provide evidence relating to the history of New Zealand. Diversity and representivity have been included in this category, to highlight sites that are unusual or diverse in form and those which are characteristic of given period or type. Also included are technology and scientific value.

4. **Contextual value:** This considers the importance of the site within the wider archaeological landscape and assesses its group value. Single sites may not necessarily be of high value individually, but when grouped together they form a significant archaeological landscape. This considers the relationship between the sites and their wider setting.

5. **Amenity value:** The visual, educational or recreational resource associated with the site determines its amenity value. Consideration has also been given to the ability for the public to access the site in terms of whether it is located on private property or on Crown land. This also includes the public's esteem for the site and commemorative values.

6. **Historic value:** Historical information associated with the site that may highlight aspects of the past or be associated with important events, such as the New Zealand Wars. It includes people, events and patterns.

Standard assessment sheets were used to systematically document each identified area, with provision for noting the quality of information used to make the assessment. The heritage criteria were not treated as mutually exclusive, as some archaeological sites displayed a range of overlapping values while others were strongly associated with only one.

*Figure 85 NZHPT Assessment Criteria; (Darmody 2009, p.5).*

## Summary

Although there are 65 recorded archaeological sites within the study area, 14 of which have been identified by NZHPT as significant sites, this does not represent a comprehensive inventory. Density of records in the Site Recording Scheme often says more about the places where archaeologists are actively working than the actual density of archaeological evidence. Chapter 2, for example includes Mission Station sites had substantial significance in the history of the district, but have not been recorded.

It is also known from remote-sensing data that there are more sites of the Maori horticulture type within the area than currently appear in the SRS. These unrecorded sites will be discussed in greater detail in the next chapter.

# CHAPTER 4 GEOGRAPHIC INFORMATION

## Introduction

Geography is an integral part of archaeology. Archaeological sites are always *somewhere*, and where they are in geographic space can inform interpretation of the archaeological evidence. Archaeologists have always been makers of maps, and in recent years Geographic Information Systems (GIS) software and the hardware powerful enough to operate it has become available and affordable to independent researchers. This is having an impact on the way archaeological sites are studied at small scales— the wider view, taking in aggregates of sites and interpreting the archaeological landscape.

A geographic information system is used to pull together a disparate collection of sources, and to synthesise data by interpreting and combining those sources. So historic maps can be overlaid against modern aerial imagery, and geological data from soil surveys can be viewed with a digital elevation model illustrating topography. All the factors which inform or influence the creation, preservation and subsequent decay of archaeological sites can be gathered together and seen on the screen. This greatly assists the process of building a predictive model of the archaeology of a region.

Some information comes already spatially-enabled, and much valuable and accurate geographic information is made available by Land Information New Zealand (LINZ) http://www.linz.govt.nz/ and Landcare Research (http:landcareresearch.co.nz/). Other sources have to be digitised and encoded with geographic coordinates before they can be introduced into the system.

Georeferencing is the process of allocating spatial coordinates to image data like aerial photographs and historic plans. This enables the images to be projected on a map, and the locations, size and area of objects indicated on the plan or photograph to be measured. The process is time-consuming, as ground control points must be identified on the image to be referenced, and co-located against another data layer. The New Zealand cadastral set is the standard layer for referencing aerial photos to,

and all photos and historic maps derived for this project have been referenced against this dataset.

Anywhere from three to over eighty ground control points must be identified before a software algorithm is run, combining the image data with the ground control points to produce an image file with the spatial coordinates encoded within it. This georeferenced file can now be visualised in a GIS, and objects within it should fall over their correct location in geographic space.

Georeferencing aerial photographs and historic survey plans can yield a wealth of archaeological information, as they often indicate the presence of structures which no longer exist. Any building erected in the past is likely to have left some archaeological footprint, even if it is just the holes left where the posts used to be.

## Aerial photography

Aerial photography has a long history in archaeology. Lieutenant Philip Henry Sharpe of the Royal Engineers Balloon Section was reportedly the first to take an aerial photograph of an archaeological site, when he photographed Stonehenge from a balloon in 1906 (Barber 2006).

During World War I the use of aerial photography for reconnaissance expanded greatly, and the first aerial cameras designed specifically for the purpose appeared. Techniques for determining scale and measuring objects on the photographs were also developed, and air photography became a crucial component of cartography (Blake Palmer, 1974, p. 233).

O. G. S. Crawford, an archaeologist and observer in the Royal Flying Corps, was an early proponent of the use of aerial photography for the purposes of archaeological prospection. In 1920 Crawford was appointed to the British Ordnance Survey, and began a long career of photographing British archaeological sites from the air.

In New Zealand, the value of aerial photography for mapping was realised by the 1930s (Jones 1994, p. 17), and the Government engaged the Air Force and private firms on systematic surveys of the country. One set of early surveys was flown over the greater Waikato Basin in 1942 and 1943.

The photographic surveys were conducted using large-format cameras and the results survive as prints in the library collections of the Waikato Regional Council and the University of Waikato.

*Figure 86 Detail from aerial photograph SN174/300/21 flown 16 April 1941.*

Figure 86 (above) a detail of an aerial photograph captured as part of one of these early surveys, illustrates the value of this type of photography to archaeologists. This depicts the Waipa River just south of Ngaruawahia. In the bottom right corner, on both sides of the Waipa River, we can see borrow pits visible as dimple-like depressions in the flat ground. It also shows the Glen Massey Line railway bridge and the rail corridor approaching it, as well as giving an indication of how much Ngaruawahia has expanded since 1941.

This print has a number of unfortunate flaws which the scanning process was unable to erase. The bright patch in the centre is an emulsion stain from the printing of the photograph. It has also been heavily annotated in coloured chinagraph pencil. The print was scanned as a monochrome image, so these annotations appear as shades of grey. Nevertheless, it is still valuable as a primary source for the accurate location of borrow pits and other archaeological features.

Broadly speaking there are two types of aerial photographs used by archaeologists; vertical and oblique. The terms refer to the direction of the camera, either pointing vertically down at the ground, or sideways to some degree. Both are useful for illustrating and mapping archaeological sites, but only vertical photographs can be georeferenced and displayed in a GIS.

**Orthorectified aerial imagery**

A new source of remote sensing data has recently become available to the researchers. This is the Waikato Regional Aerial Photography Service (WRAPS) orthorectified aerial imagery set.

This is a region-wide dataset of aerial photographs which have been processed into a seamless image without clouds and with most areas lit alike. This has the great benefit of being already spatially-encoded, so the time-costly process of georeferencing can be avoided.

## Historic Plans

A number of historic survey plans were sourced for the project, and georeferenced into the GIS. These were prepared by the British Military and later the Colonial Survey Office from soon after the British invasion of the Waikato valley in the early 1860s. In most cases, electronic scans of these large documents have been captured by Land Information New Zealand (LINZ).

Early survey plans are of particular interest to archaeologists because they often mark the locations of buildings, many of which may not be standing in modern times, but whose presence in the past is a strong predictor of archaeological evidence remaining in the location.

Figure 87 shows a Survey Office plan from 1881 with the modern cadastral dataset overlain as dark blue lines. The area depicted is the northern bank of the river at Ngaruawahia.

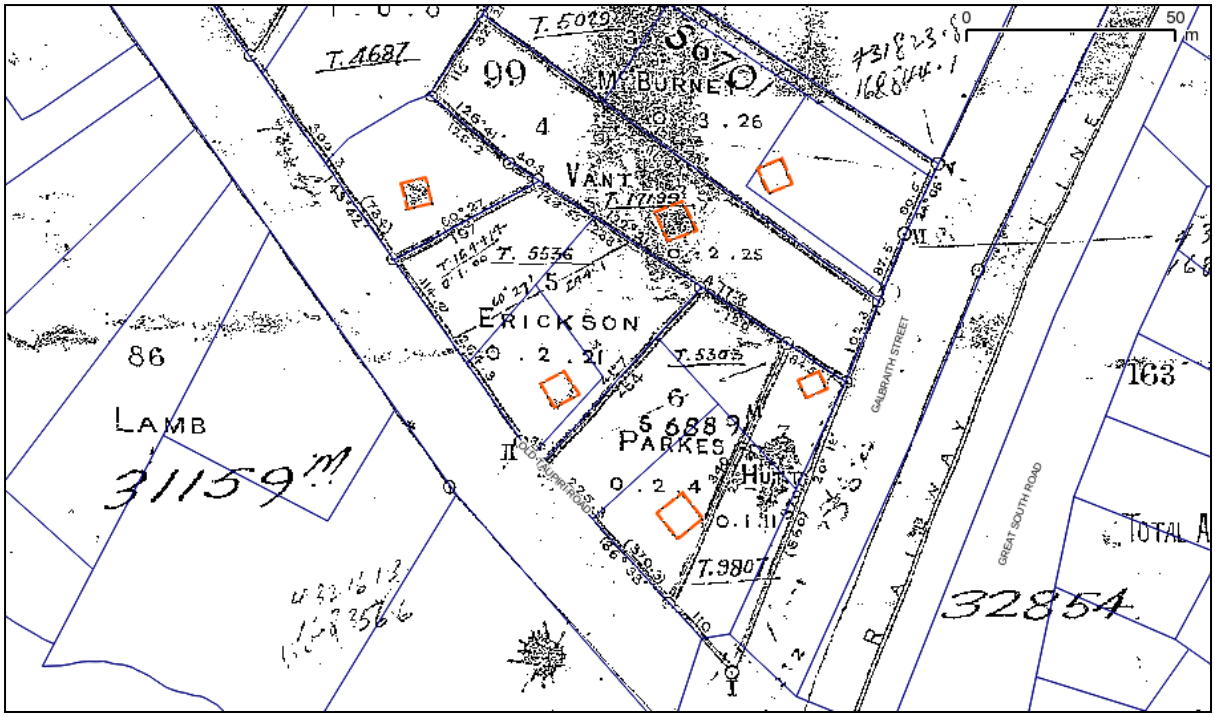



*Figure 87 Detail from historic plan DP 217 (1881).*

Six buildings on named lots can clearly be seen inscribed on the map (above)—these have been highlighted in red—and the georeferencing technique permits us to predict the archaeological remains of the buildings to within a few metres.

Indications of structures on maps and plans made before 1900 are clear evidence for the existence of archaeological sites. They can be mapped using a polygon layer in a GIS application, and populate an inventory of objects of archaeological interest.

## Elevation Data

A wide-coverage collection of 1 m resolution elevation data has also been examined for this project. This dataset is derived from airborne lidar measurements and models the shape of the landscape by having a grid of 1 m squares, each of which has an elevation value in metres above sea level encoded in it. This Digital Elevation Model (DEM) can be used to generate other useful spatial layers, such as contours down to 30 cm intervals, and hillshade images which help the viewer to visualise a landscape (Figure 88).

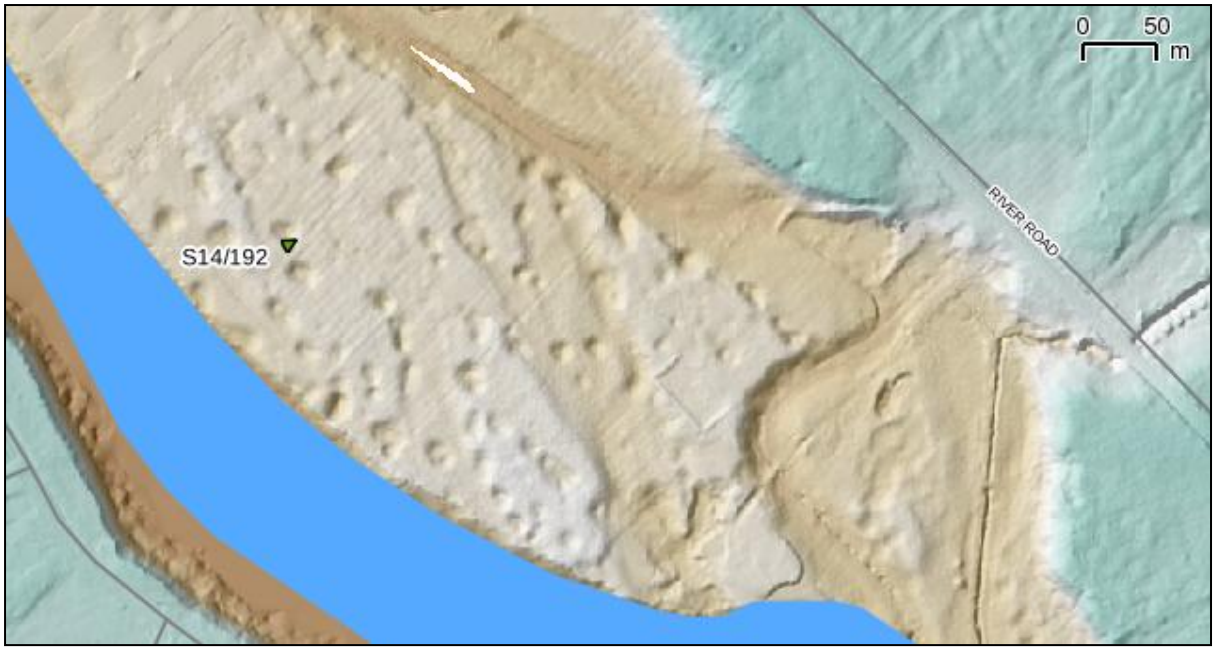



*Figure 88 An image derived from lidar elevation data showing a levee by the Waikato River heavily pitted with borrow pits. This archaeological site has been recorded as S14/192.*

The elevation data are valuable to archaeologists because they reveal subtle changes in the landscape which are the remains of past human activity. Borrow pits show up particularly well, but lidar is also helping to identify and map ground features in pa and other archaeological sites.

## Soil Maps

The predominant category of archaeological sites found in the mid-Waikato basin are the Maori horticulture sites marked by borrow pits and modified garden soils (Gumbley & Hutchinson, 2013). For this reason, maps compiled by the Soil Bureau at the Department of Scientific and Industrial Research (DSIR) offer a unique method for locating sites of this type.

The earliest soil maps available on which deposits of prehistoric modified soils are indicated are those made in the late 1930s by Grange, Taylor and others. Of particular interest is the sheet *Parts of Newcastle & Komakorau S. D's Waipa County* (Grange, Taylor et al 1935).

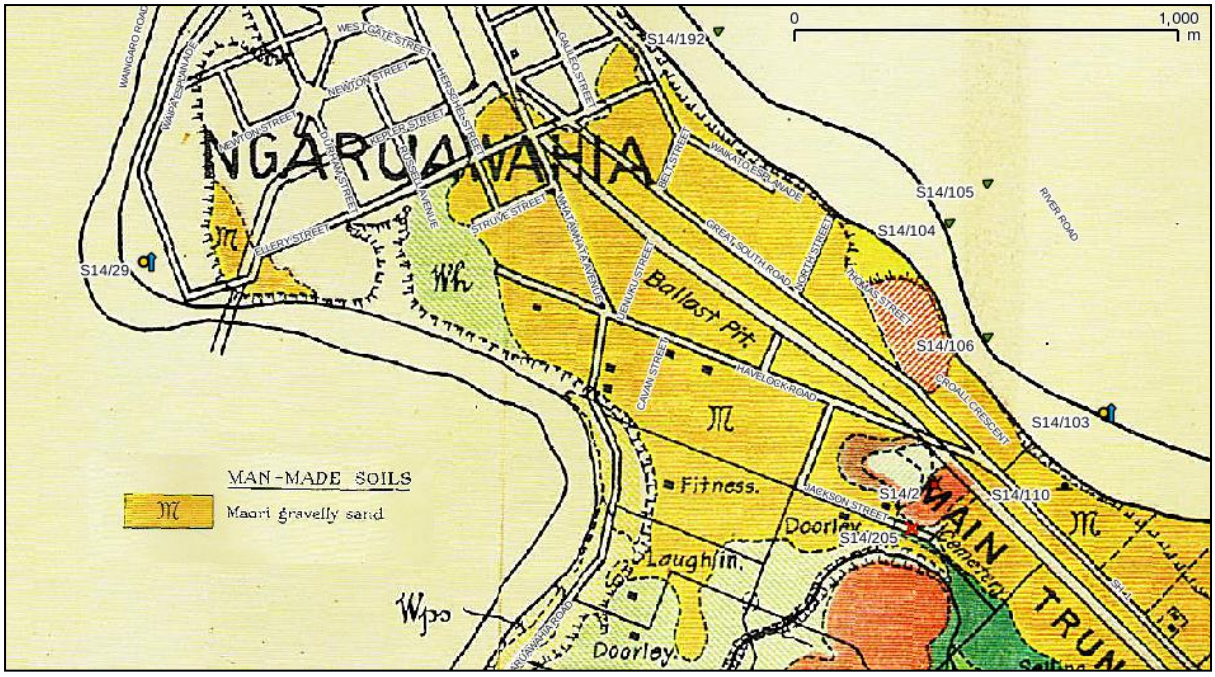



*Figure 89 Detail from the 1939 soil map showing Maori-made soils in south Ngaruawahia.*

Figure 89 is a detail from the Soil Bureau map sheet *Parts of Newcastle & Komakorau S. D's Waipa County* It shows a large deposit of "Maori gravelly sand"—the unit later classified as Tamahere sandy gravelly loam—covering an area south of the Point Domain in Ngaruawahia.

A later soil map covering the mid-Waikato basin was compiled by McLeod in 1984. The data on McLeod's unpublished map was converted by Landcare Research Ltd and made available as geospatial data on the Internet.

## Research Datasets

Datasets generated during previous and ongoing research by Gumbley and Hutchinson into Maori horticulture sites in the mid-Waikato basin were also accessed as primary sources.

A layer containing polygons of Tamahere sandy gravelly loam deposits extracted from the several regional sets of soil data, and by tracing polygons from the Grange & Taylor surveys of 1939, had been compiled as part of earlier research and was made available to this project. This single layer displaying all known deposits of archaeological soils in the mid-Waikato basin has formed the basic target for

identifying areas of likely prehistoric horticulture. The Tamahere loam layer has been compared to scanned and georeferenced versions of the McLeod map and found to be in general agreement.

An inventory of borrow pits is also in ongoing development, and has been used for this project. This is a spatial layer recording point locations for borrow pits which have been discovered from the examination of the set of georeferenced photographs flown in the 1940s, modern aerial imagery and lidar-derived elevation data. Although not complete, the borrow pit inventory is another layer of evidence concerning prehistoric Maori horticultural activity within the study area.

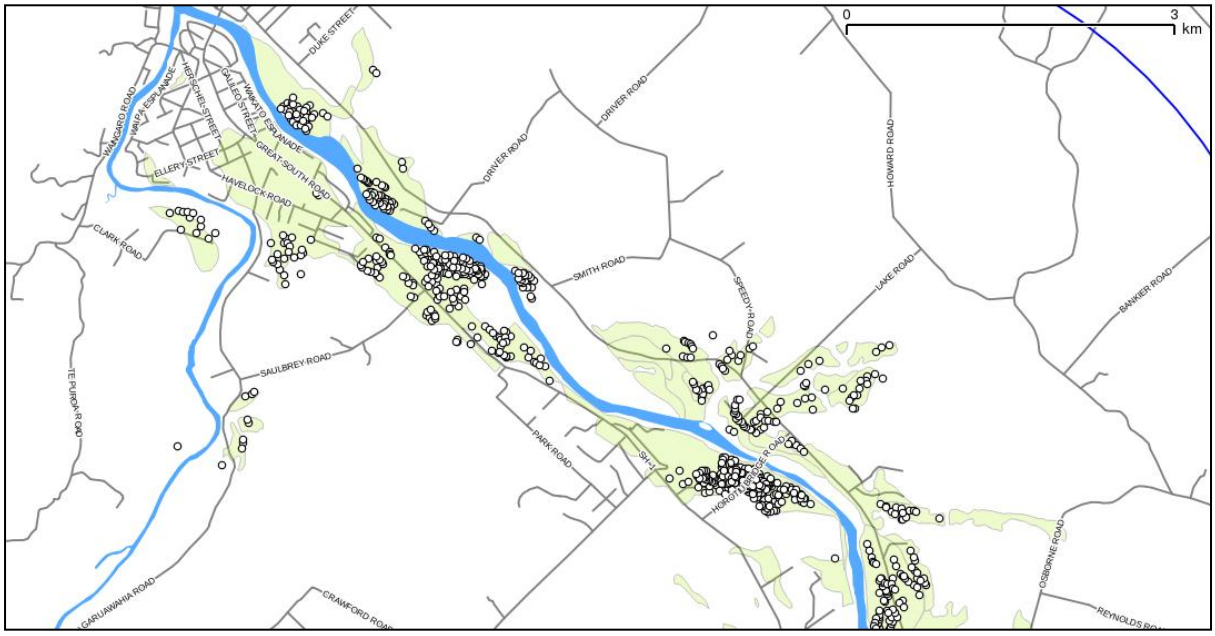



*Figure 90 Map representing the two research layers used in this project.*

Figure 90 illustrates the two research datasets used. The pale green shapes are deposits of Maori modified soils as extracted from s-map data and 1930s soil maps, while the white dots are borrow pits from the inventory, captured from historic and modern aerial photography and lidar data.

## Processing

In the case of aerial photography, paper prints from the Waikato Regional Council library collection were scanned at 1,200 dpi, and copies were made with the collar information at the edges of the frames cropped off. These cropped copies were then

referenced against the New Zealand cadastral layer sourced from Land Information New Zealand (LINZ) in the manner described above.

Similarly, digital copies of historic survey plans and soil maps were also referenced against the modern cadastral dataset and georectified image copies generated by the same method used on the photographs.

The resulting images were then imported into a GIS and visualised along with other data layers, including the set of recorded archaeological sites. Objects of interest, such as old houses, rail structures and redoubts were then identified, traced as polygons and accessioned into a database table for historic objects. This layer was then combined with data from other sources and interpreted to produce a layer indicating areas of archaeological sensitivity.

Some of the plans were only available in lower-resolution scanned images, and these can be difficult to read at large scales. The photographs also become blurry and detail is lost at scales much larger than 1:1,000.

Unfortunately, due to gaps in the collection held by the Waikato Regional Council, aerial photographs from the 1940s covering all of Glen Massey, most of Ngaruawahia and Horotiu were unavailable.

**The Product**

The culmination of the process of georeferencing source data in the form of aerial photos and survey plans, and then analysing them for potential archaeological sites, is the generation of two spatial layers. These are stored in a database system, but can be expressed as shapefiles.

The first is an inventory of all objects of interest from those multiple primary sources. Records on this layer retain the provenance of each object, so we can tell where the individual polygons come from.

The second is an interpretation, taking the historic objects inventory into account along with literature sources and archaeological records, combined with landform analysis, to make an informed guess as to which places are those where archaeological evidence is likely or possibly to be found.

A data archive is submitted with this report. This contains electronic copies of the files used to derive the two interpretative layers. These include the high-resolution scans of aerial photos and survey office plans, and the georeferenced copies created using the process described in this chapter. Appendix 5 describes the contents of this archive.

## Areas of Archaeological Sensitivity

### Unrecorded Maori Horticulture Sites Around Taupiri

There is a collection of unrecorded Maori Horticulture sites along the Waikato River at Taupri. These are indicated by deposits of modified soils from the soil maps, and by borrow pits seen in elevation data. Figure 91 shows clusters of borrow pits which have been discovered from examination of lidar elevation data.

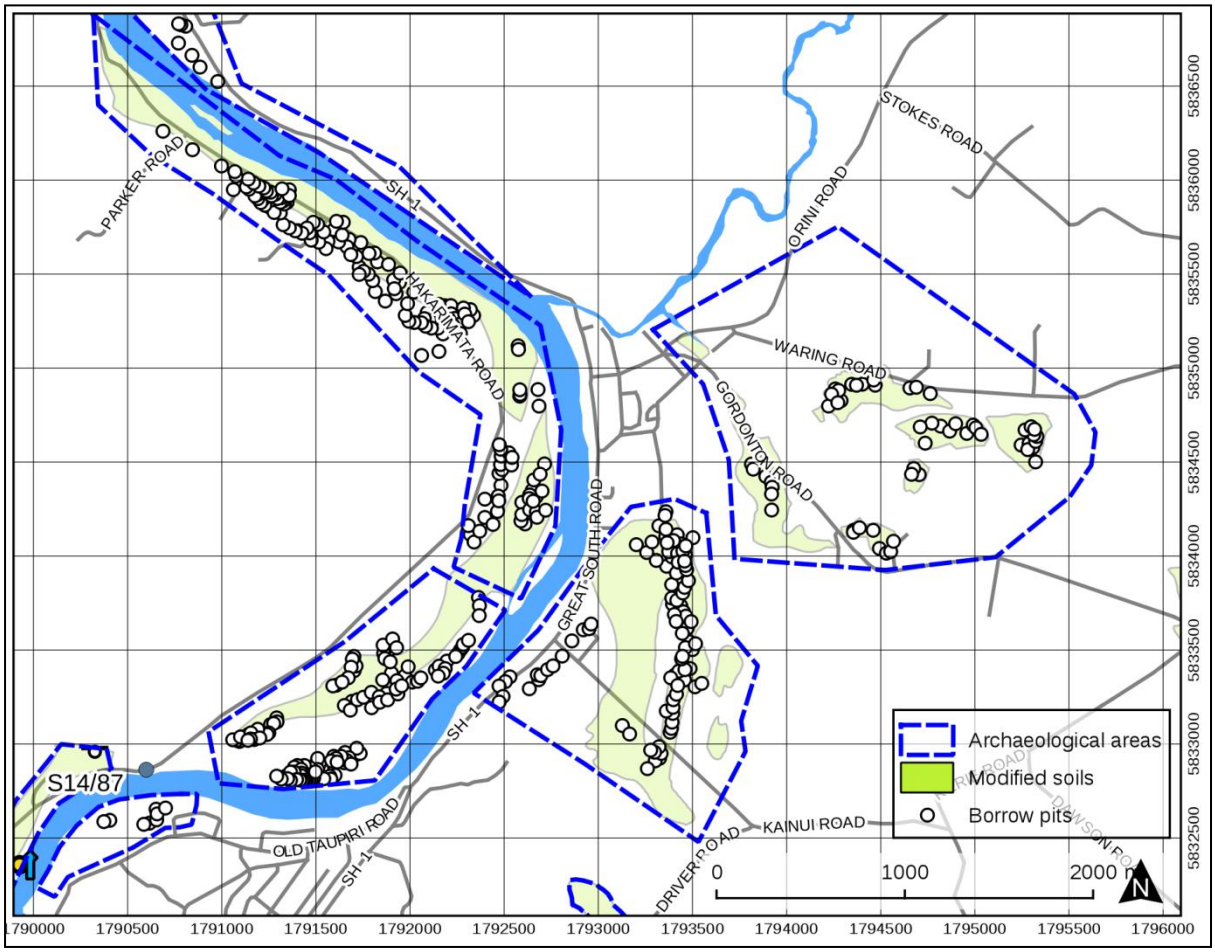



*Figure 91 Unrecorded Maori horticulture sites around Taupri.*

**The Point, Ngaruawahia**

There are nine recorded archaeological sites within the area bounded by the confluence of the Waipa & Waikato Rivers and Newcastle & Princess Streets. These include significant sites such as King Potatau's Tomb (S14/188) as well as his village (S14/182), two pa and two redoubts (S14/31, S14/187 and S14/181, S14/190), the remains of a wooden riverboat, possibly the *P. S. Alert* (S14/183), and the location of a historic house (S14/186). The remains of Roose's steamer wharf are also present within the precinct (S14/184). Figure 92 shows the locations of all nine archaeological sites recorded within the Point Domain and surrounds.

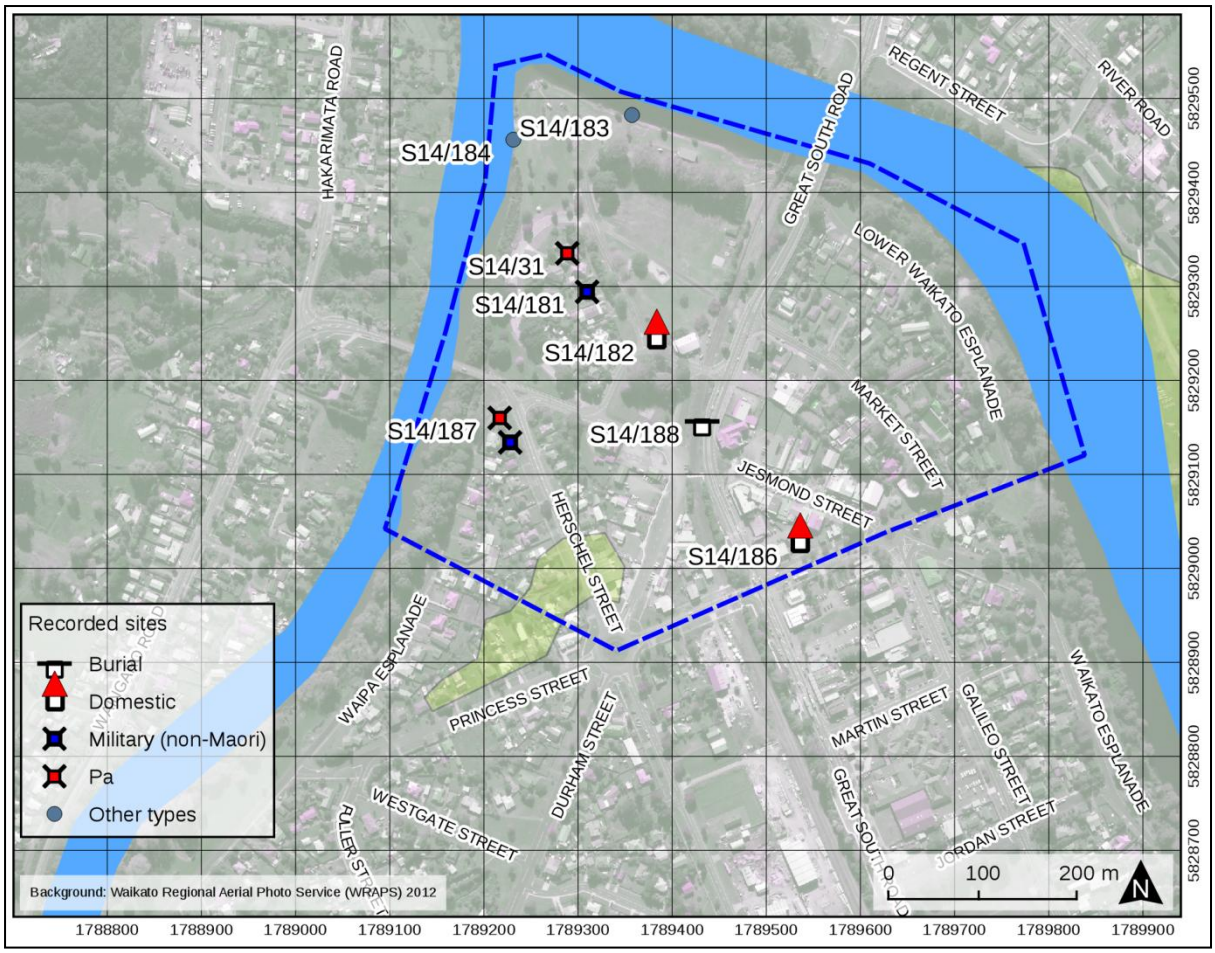



*Figure 92 The Point at Ngaruawahia, showing the location of recorded archaeological sites.*

It seems likely that there may be further unrecorded archaeological remains in this area. It is known to have had human occupation since before historic times and occupies an important strategic location at the confluence of two major rivers.

**Unrecorded Maori Horticulture, Driver Rd**

This is a deposit of Tamahere sandy gravelly loam marked on the McLeod map. About 14 Ha have been mapped in the Waireri stream at the northern end of Driver Rd.

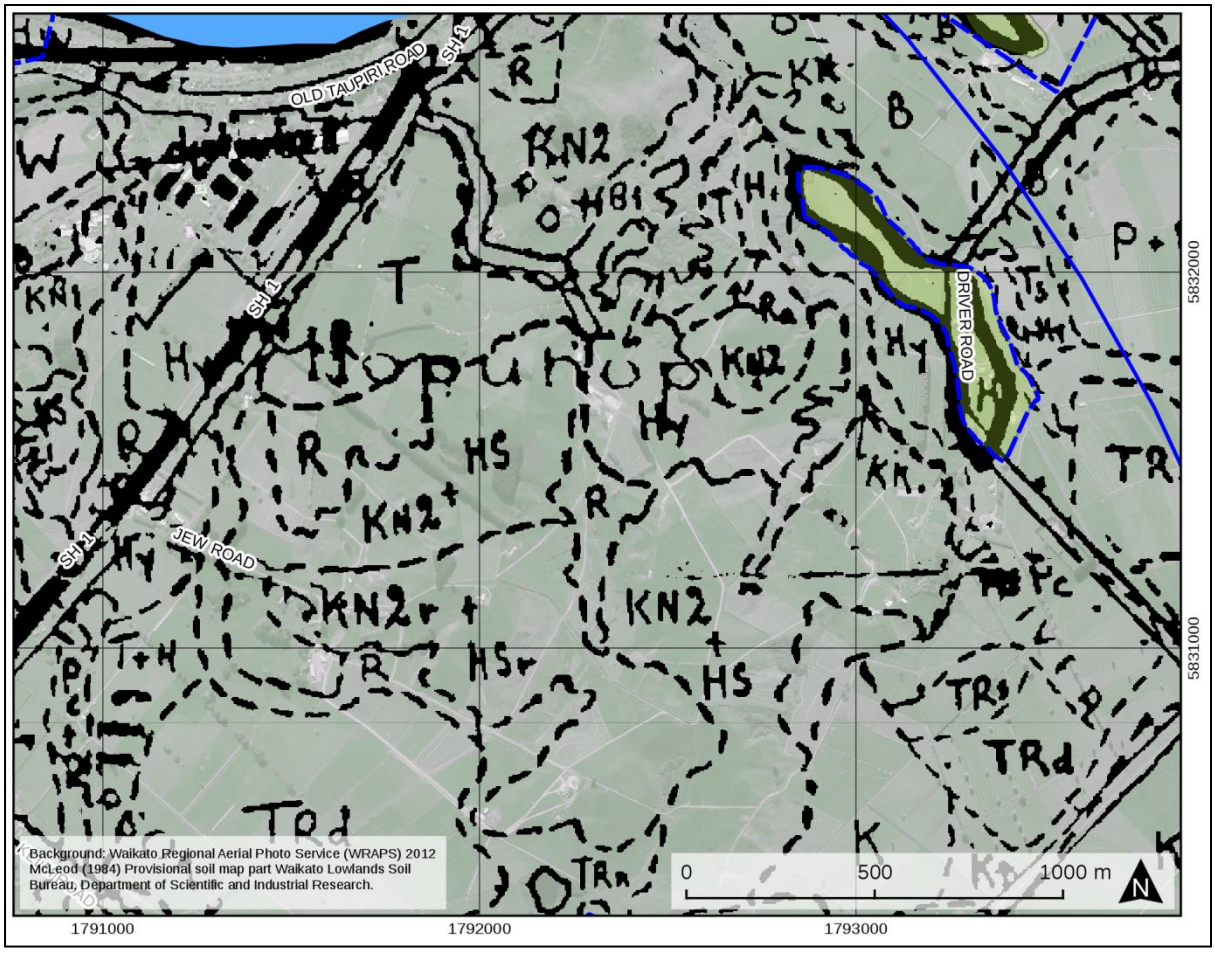



*Figure 93 Tamahere soil deposit at Driver Rd.*

Figure 93 shows the 1984 McLeod soil map overlaid on aerial imagery from 2012. Deposits of Tamahere sandy gravelly loam have been highlighted in green.

**Unrecorded Maori Horticulture, Hakarimata Rd**

This is a deposit of Tamahere sandy gravelly loam indicated on the Part Raglan soil dataset (Landcare Research n. d. b), accompanied by a cluster of borrow pits visible in lidar elevation data.

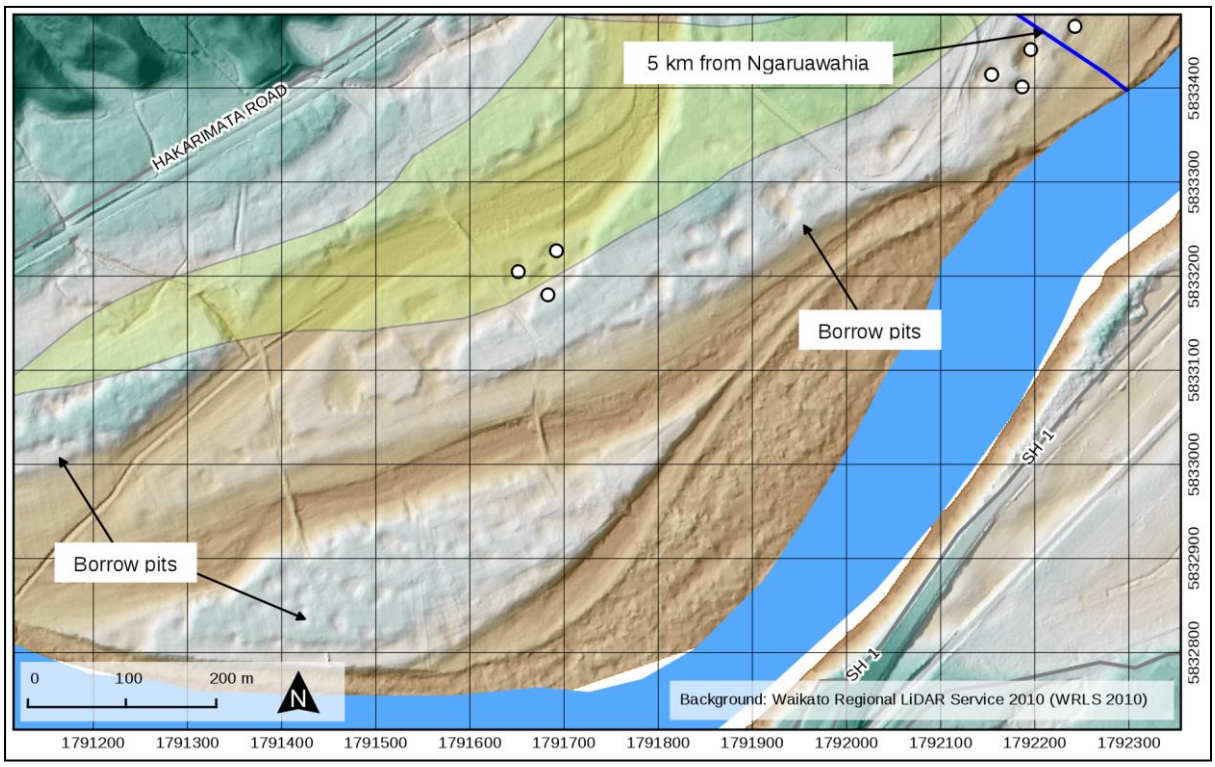



*Figure 94 An elevation map of the Waikato River north of Ngaruawahia.*

Figure 94 uses colour to display changes in elevation, and a hillshade to aid with landscape interpretation. This technique can reveal subtle features in the landscape which may not be visible on aerial photographs. It shows a set of river levees and swales formed on a floodplain approximately 800 m wide between the hills to the north and the live river channel to the south. The levee tops are heavily pitted with borrow pits, only some of which have been accessioned into the inventory (white dots). The pale green shape is a modified soil polygon from the s-map dataset (Landcare Research n. d. b). This is mapped at a much coarser scale than the rest of the data presented in the image, and in all likelihood would correspond to the pitted levee top adjacent to the south.

**Unrecorded Maori Horticulture, Old Taupri Rd & Hakarimata Rd**

This is a cluster of borrow pits in the inventory, and tracts of Tamahere sandy gravelly loam as indicated on the s-map Part Raglan layer (Landcare Research n. d. b).

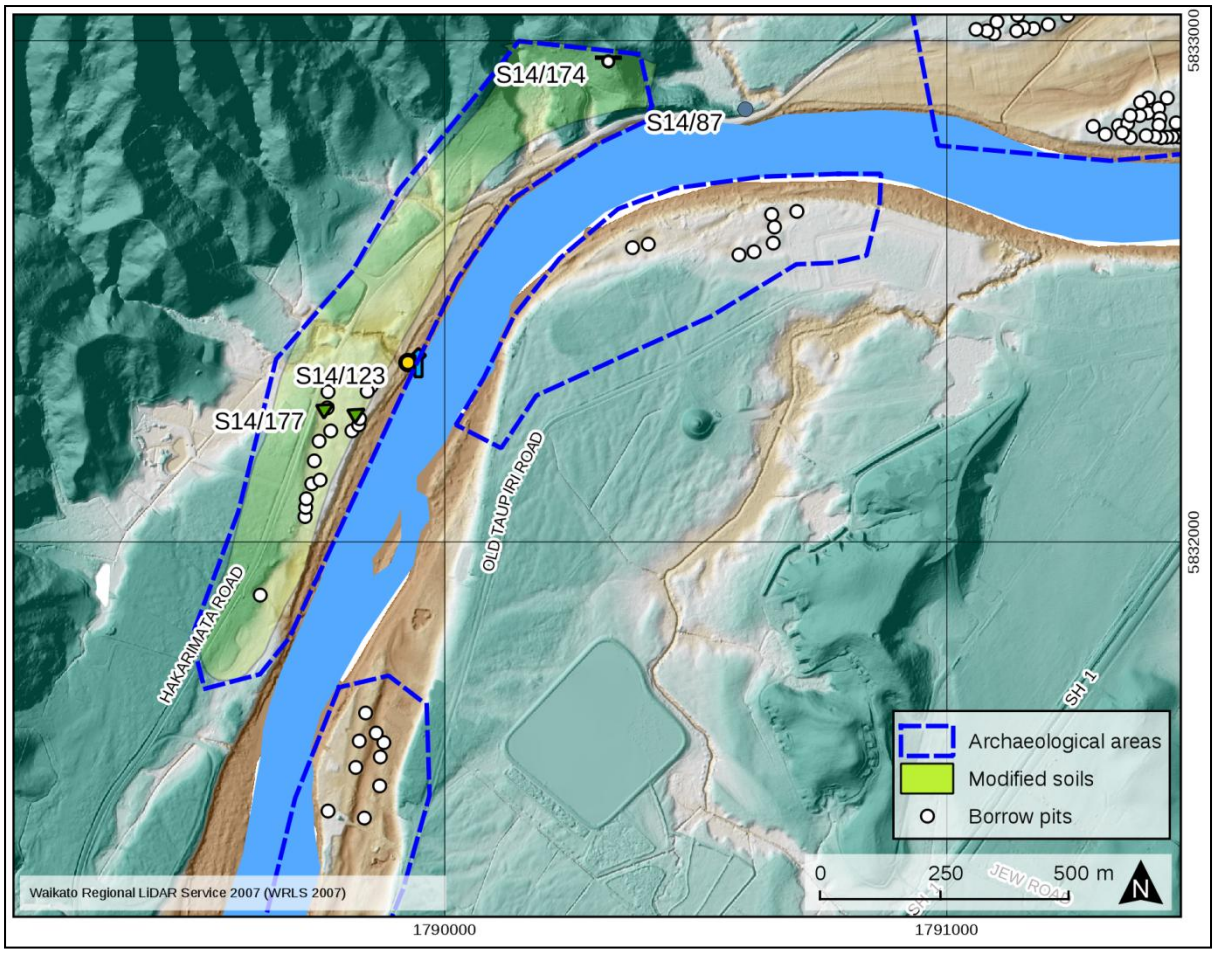



*Figure 95 Elevation map showing modified soil deposits and borrow pits from research data.*

Figure 95 shows a tract of modified soils and borrow pit locations from the inventory (white dots). These borrow pits were spotted on an aerial photograph in Google Earth, and can be discerned in the elevation data also. The bend in the river here is approximately 3.5 km downstream from the Point at Ngaruawahia.

**Unrecorded Maori Horticulture, Old Taupri Rd**

This is a dense cluster of borrow pits on a river terrace beside Old Taupri Rd, approximately 1 km downstream of the Point at Ngaruawahia (Figure 96). The borrow pits are so densely clustered together that it is difficult to tell one from another. This is an area not identified as having modified soils by the soil scientists.

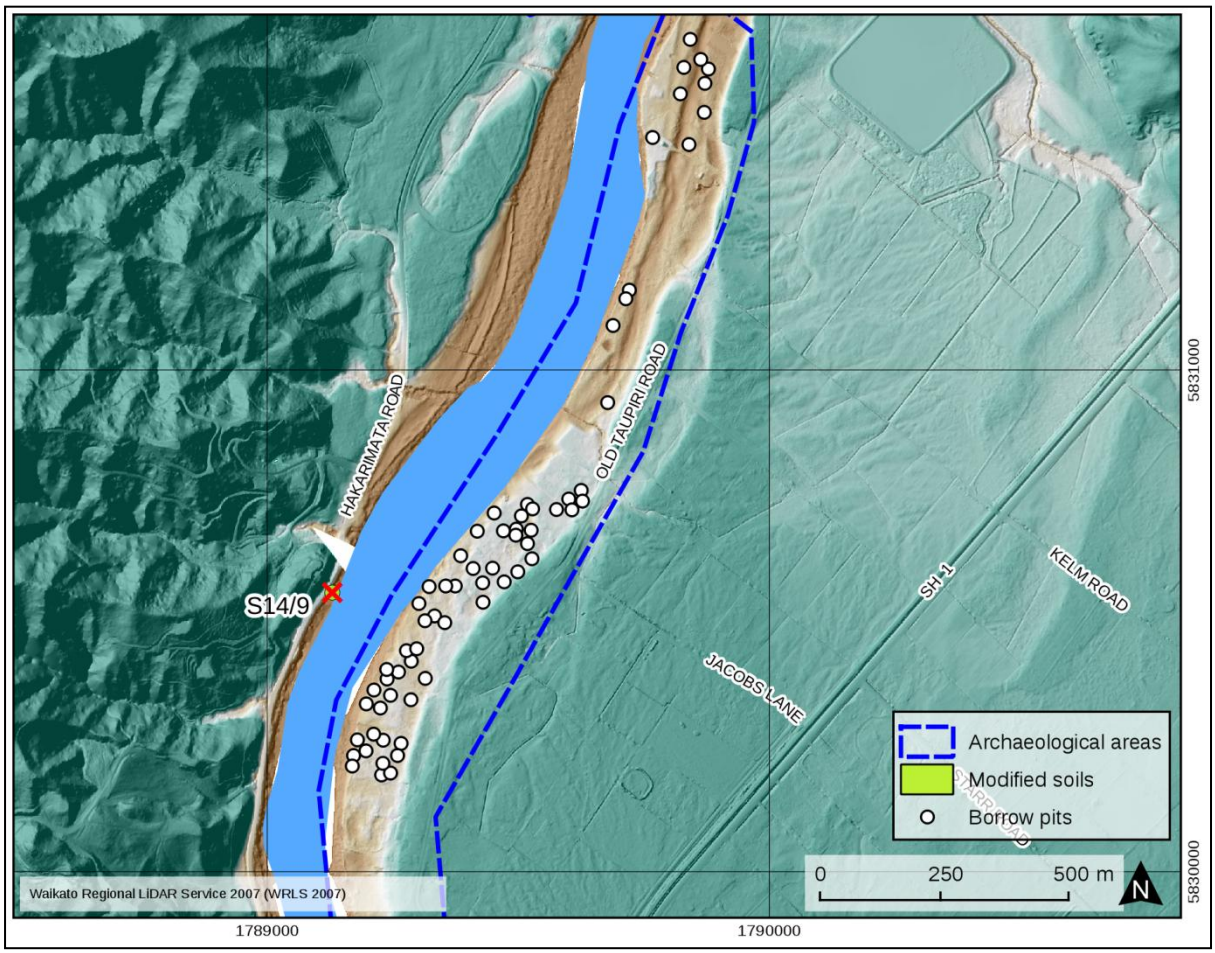



*Figure 96 Elevation map of a cluster of borrow pits on a river levee near Old Taupri Rd.*

**Unrecorded Maori Horticulture, Clark Road**

On the western side of the Waipa River, on the other side from Ngaruawahia, is an area of modified soils identified Part Raglan soil map (Landcare Research n. d. b).

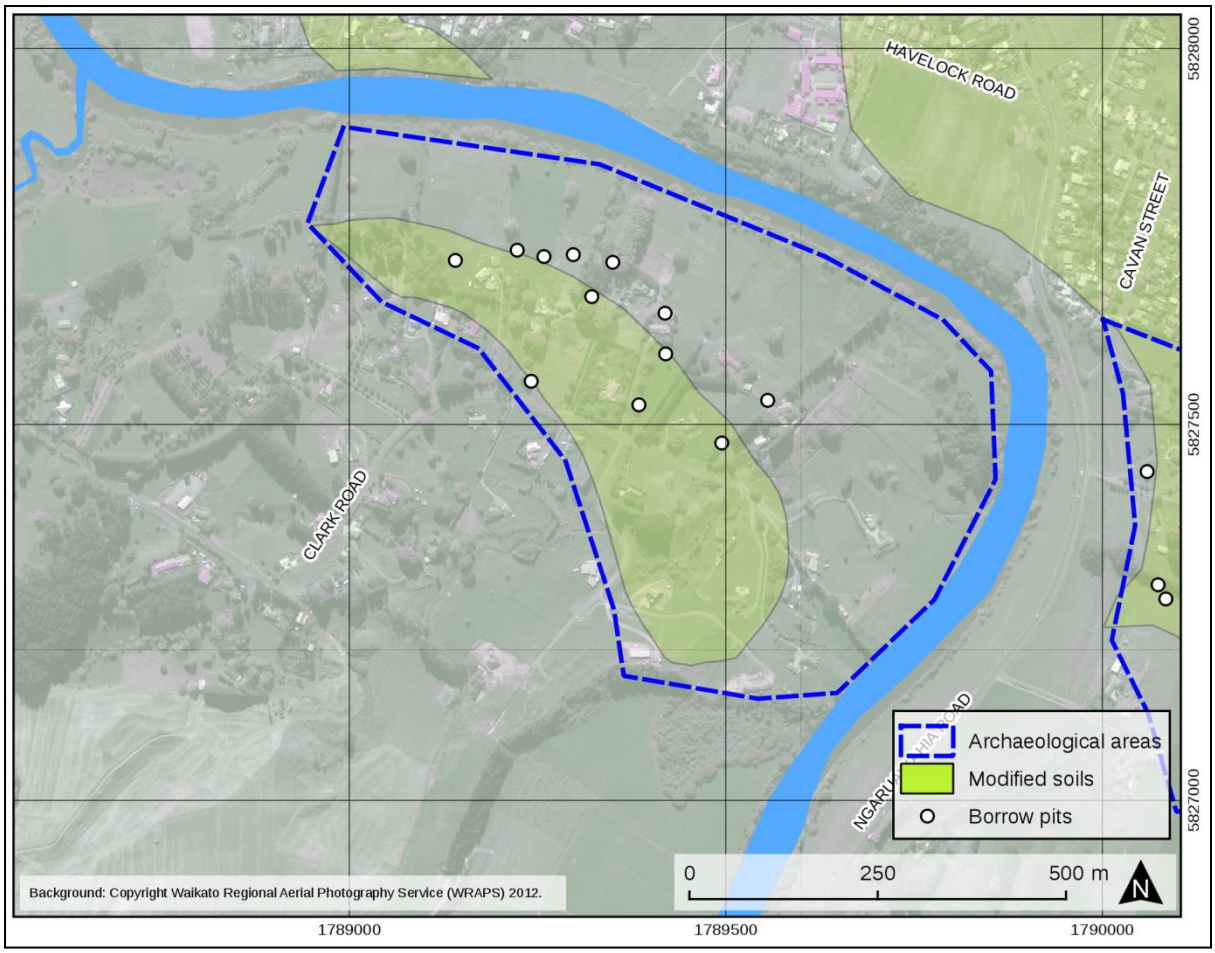



*Figure 97 An area of modified soils from soil maps, and borrow pits found in lidar data.*

**Unrecorded Maori Horticulture, South Ngaruawahia**

An area of modified soils was mapped here in 1939, and examination of the lidar elevation data reveals that some depressions suggestive of borrow pits remain. The presence of borrow pits is a close predictor of the survival of in-situ modified soils and the corresponding likely survival of archaeological features in subsurface contexts.

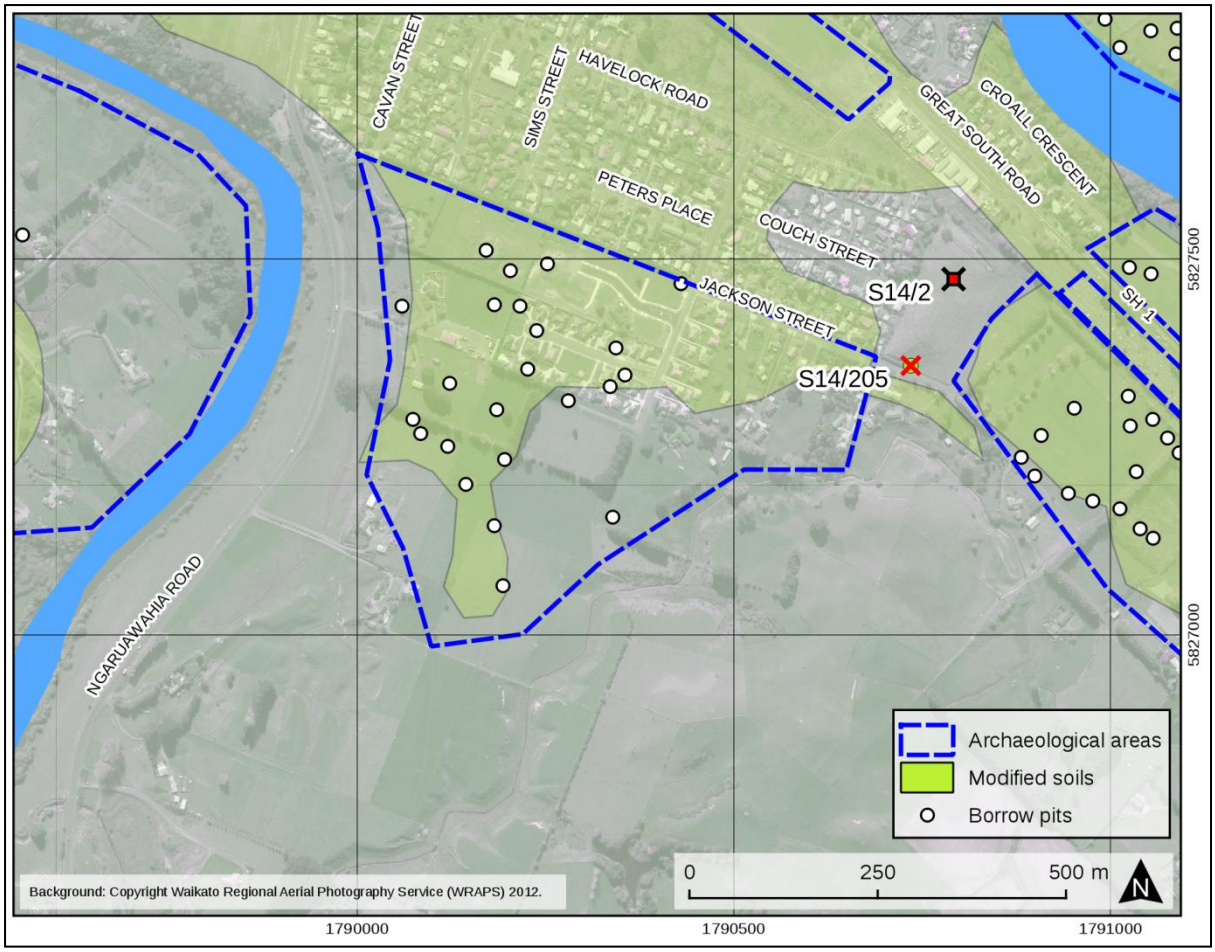



*Figure 98 Modified soils and borrow pits near the south of Ngaurawahia.*

Figure 98 shows the southern extent of Ngaruawahia with the Waipa River at the left. Areas of Tamahere loam soil deposit are shown in transparent green and surviving borrow pits identified in lidar elevation data with white dots.

**Recorded & Unrecorded Maori Horticulture Sites, Waikato River**

In the stretch of the Waikato River from the Horotiu bridge down to Ngaruawahia, eight areas of archaeological interest have been identified based on evidence for the existence of Maori horticulture sites in soil science maps, 1940s aerial photography, modern aerial imagery and lidar data.

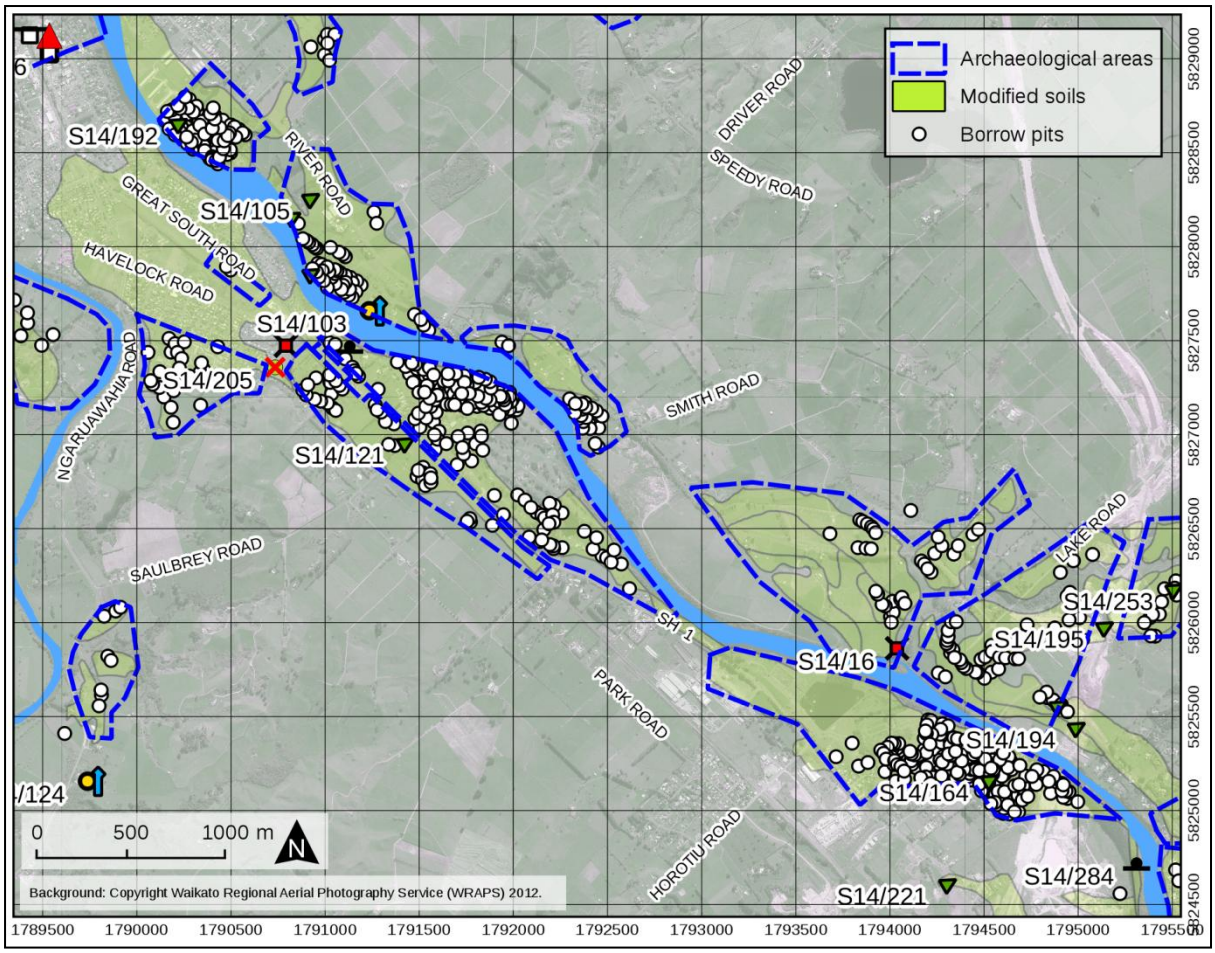



*Figure 99 The eight areas of archaeological interest identified along the Waikato River from Horotiu to Ngaruawahia.*

These cluster closely towards the river and include nine recorded archaeological sites of type "Maori horticulture"[43] and two pa[44].

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[43] Maori horticulture sites: S14/104, S14/105, S14/106, S14/121, S14/164, S14/192, S14/194, S14/195, S14/242 .

[44] Pa: S14/2, S14/16 .

**Unrecorded Maori Horticulture Site, Ngaruawahia Road**

This site lies on the eastern side of the Waipa River some 5 km upriver from its confluence from the Waikato.

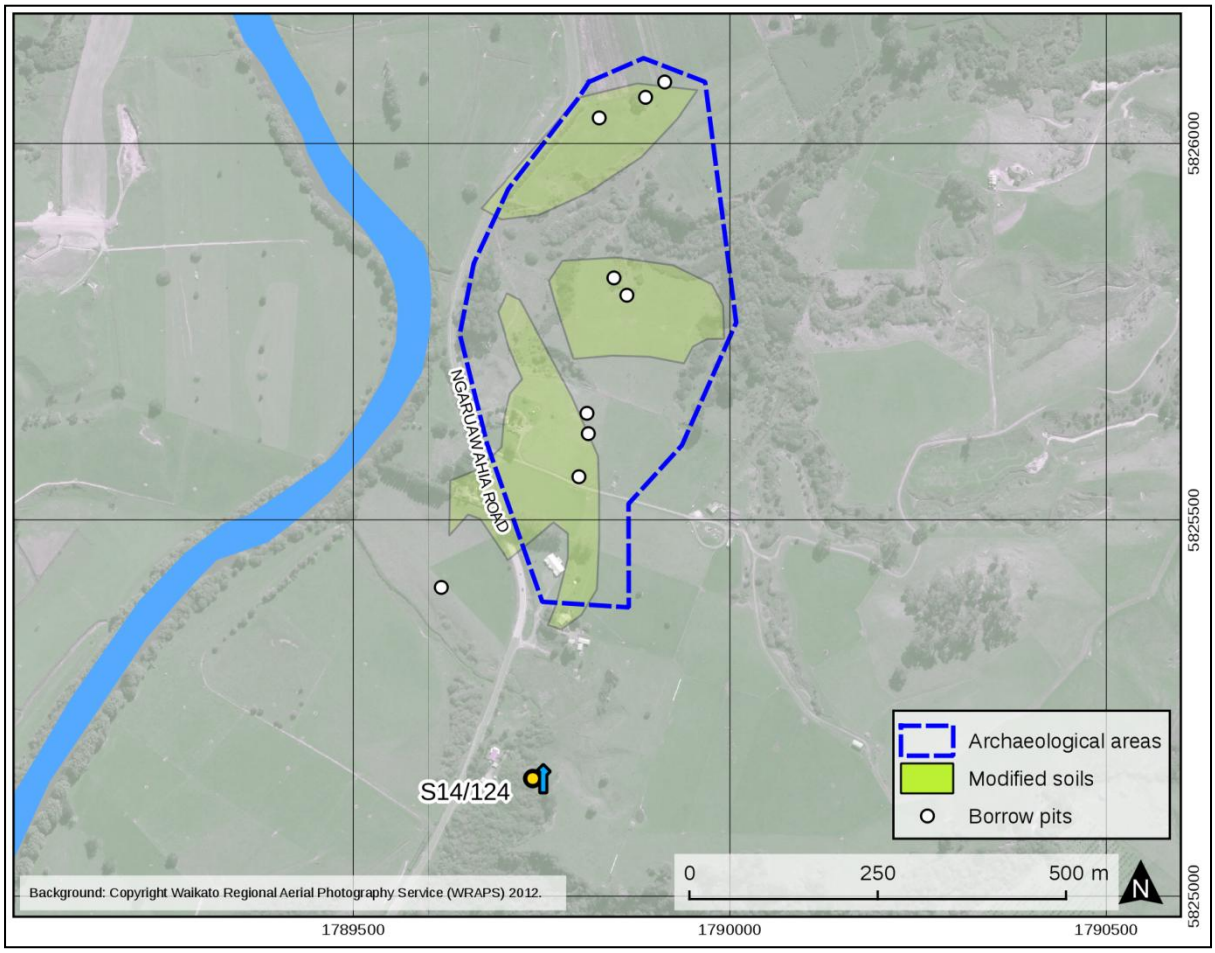



*Figure 100 Cluster of borrow pits from lidar data, and soil deposits from soil maps, on the Waipa River near Saulbrey Rd.*

**Unrecorded Maori Horticulture, Starr Road**

A tract of Tamahere sandy gravelly loam was identified by McLeod (1984) lying just south of Starr Road on the eastern side of the river. The likely survival of archaeological evidence is indicated by a cluster of borrow pits visible in the elevation data.

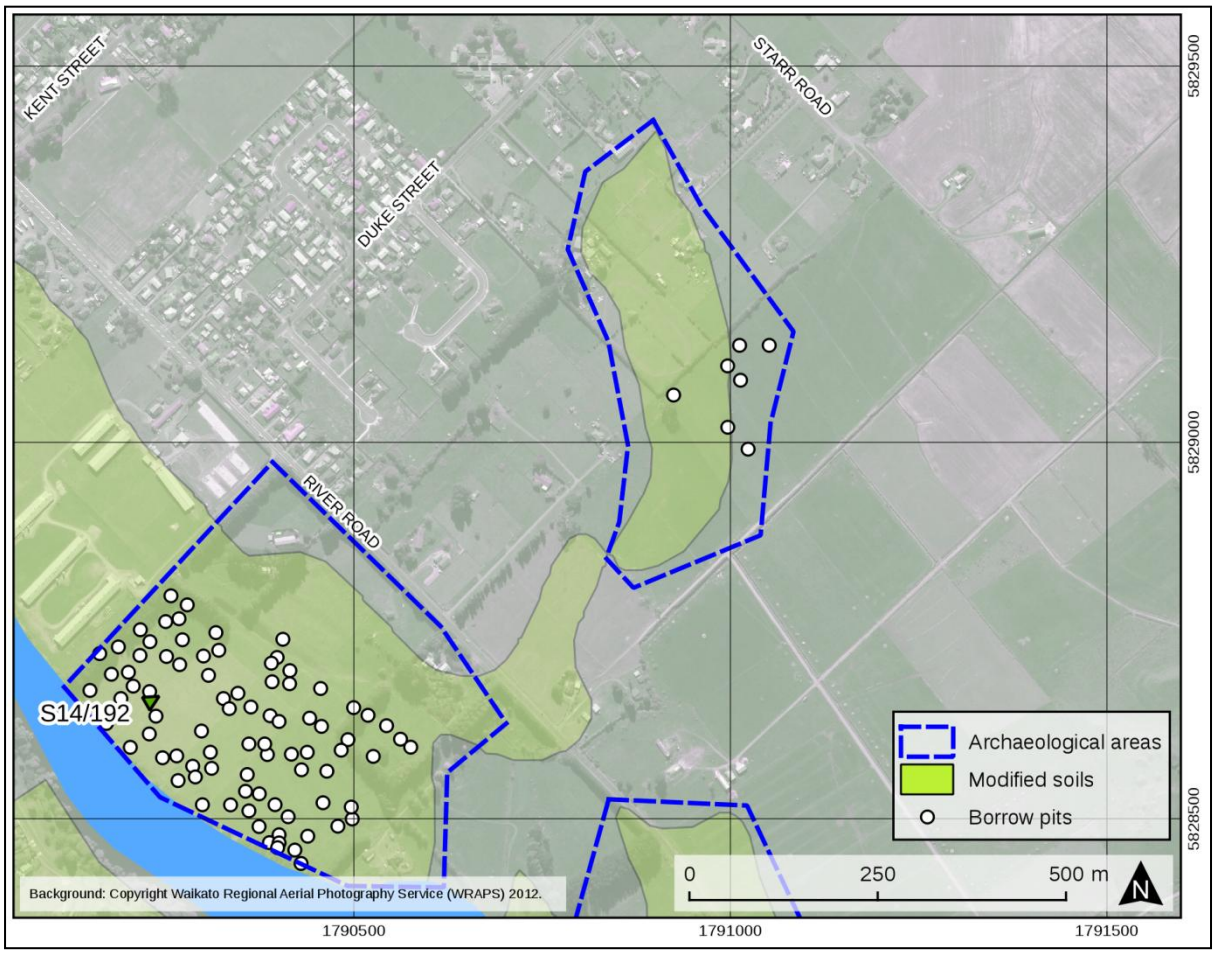



*Figure 101 Tract of modified soils and borrow pits identified in elevation data near Starr Road.*

**Pukehemu Pa Cluster, Bedford Road**

There is more historical evidence for this as a place of Maori horticulture than any other site in the study area. The river terraces nearly encircled by the Waipa River are mentioned in several historic plans and structures are shown on soil maps.

The site is annotated "Native Cultivations" and "Old Maori Burial Ground: Tapu" on SO 2465 (date unknown), on which Pukehemu Pa (S14/26) is also marked. It is mentioned again on SO 6307 (1892).

Grange & Taylor (1931) map several tracts of Maori-made soils and note the presence of Maori Huts on the Western side of Bedford Road.

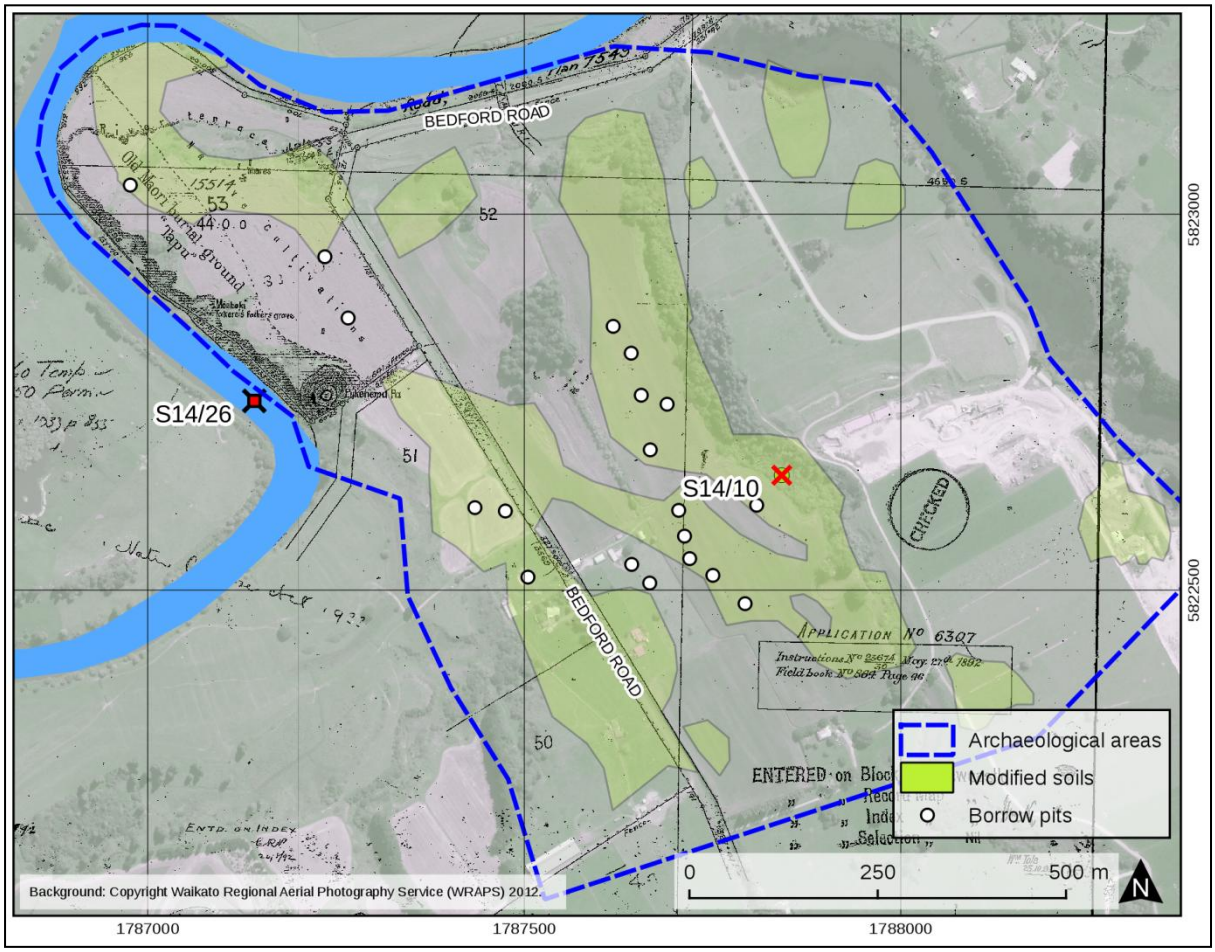



*Figure 102 Pukehimu Pa in a bend in the Waipa River.*

Figure 102 depicts the Pukehimu Pa area with the historic plan SO 6307 overlaid, showing annotations for the pa and burial ground, and the grave of Moehaki Takerei's Father.

**Possible Remnant Garden Site, Great North Rd, Ngaruawahia**

This is a rectangular piece of land between the Great South Road and Havelock Road in Ngaruawahia. Lidar elevation data reveals a dimpled and irregular surface suggestive of an intensively gardened area.

Figure 103 is a montage, combining shaded elevation data with aerial imagery from 2012. The transparent green shapes are Maori-made soils mapped by Grange and Taylor in 1939. This rectangle appears to be a survivor of a process of infill housing and urban encroachment, sandwiched between the old State Highway One (now the Great South Road), and the rail corridor.

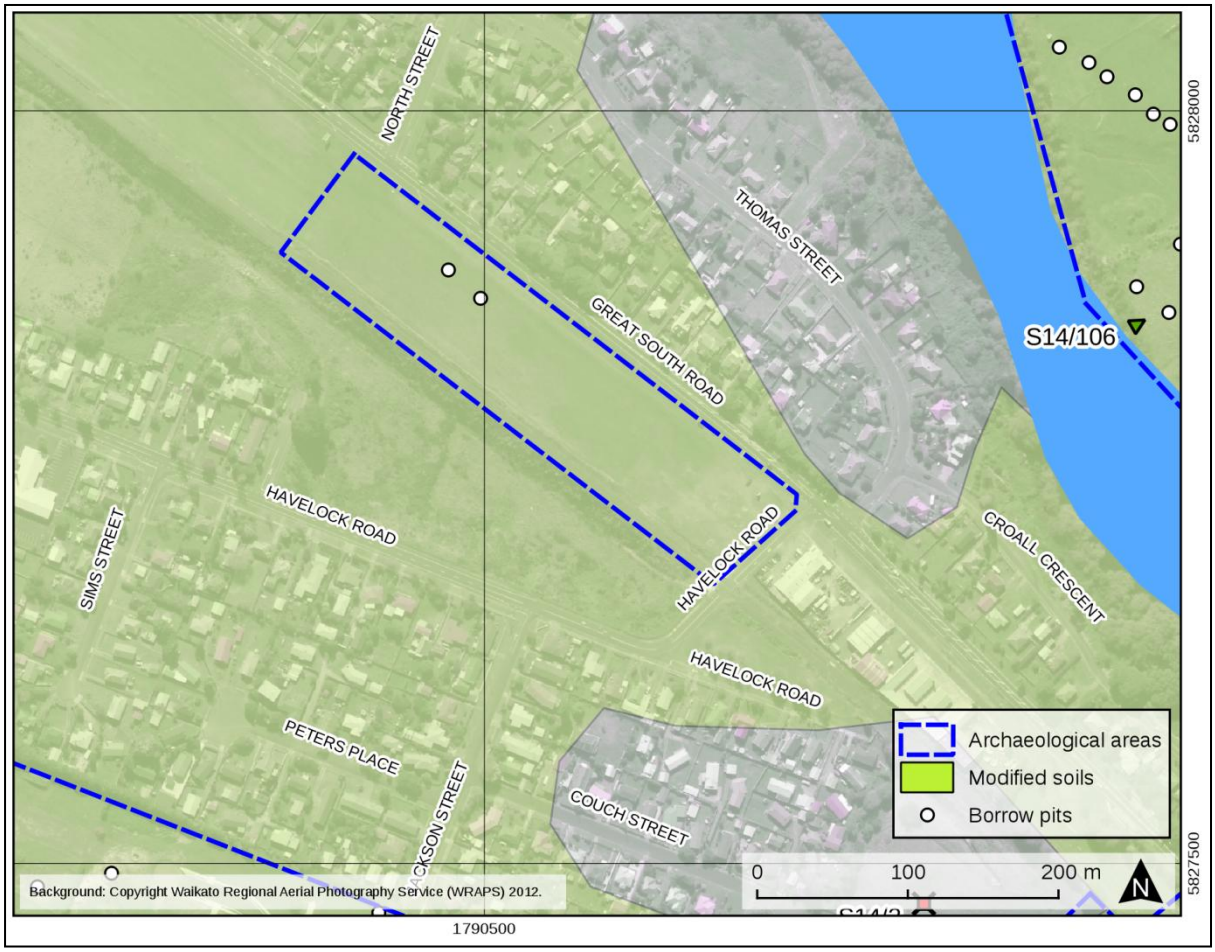



*Figure 103 The possible remnant garden surface between Havelock Road and Great South Road, Ngaruawahia.*

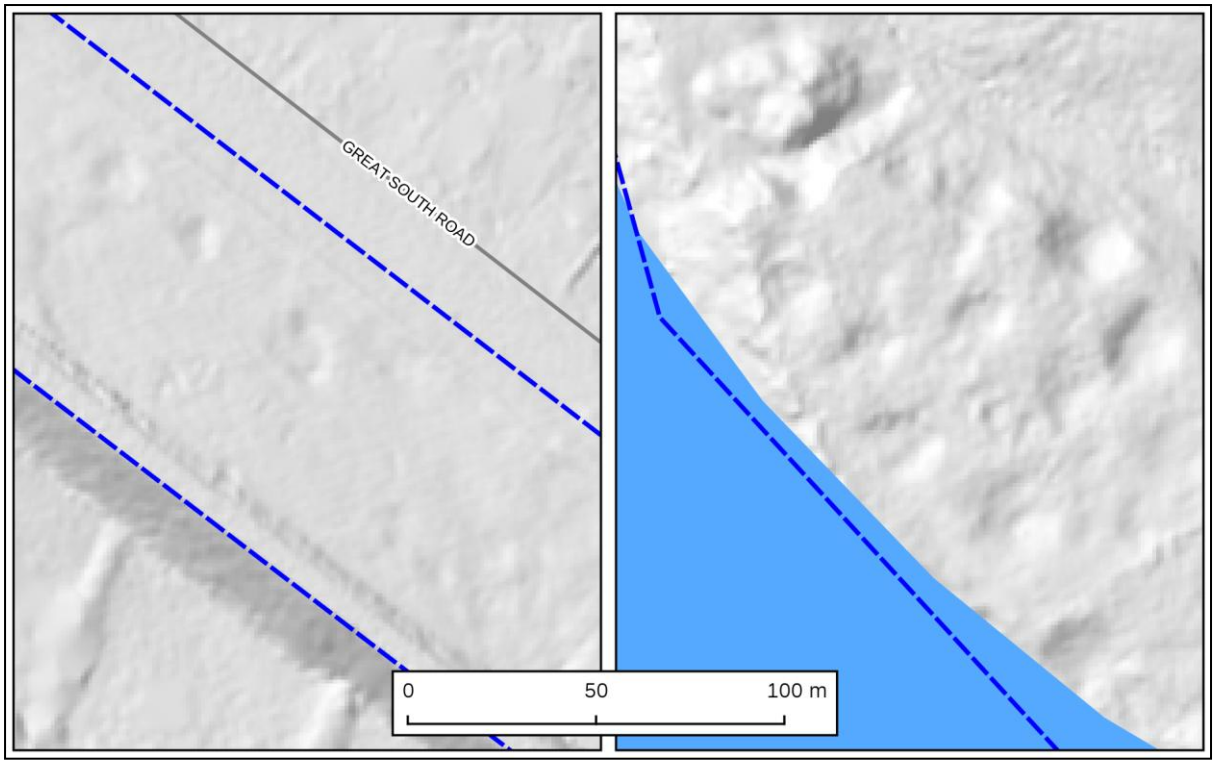



*Figure 104 The possible remnant garden surface in 1 m elevation data (left) compared with a known gardening area at the same scale (S14/106, right).*

Figure 104, above shows a comparison between the dimpled surface at this location with that of a known area of Maori horticultural practice. S14/106 is across the river from this location, some 500 m to the east. The dimpled areas near the top left corner of the image on the left are suggestive of borrow pits, although they are not as large as the ones on the right.

It is possible these features do not represent an intact archaeological surface. A programme of field-testing, in which soil profile pits are excavated, would allow the determination of whether modified archaeological soils remain in this location.

**Whakapuku Pa S14/118 & S14/122**

This is an area on the right bank of the Waipa River where two pa (Whakapuku Pa, S14/118 and S14/122) are recorded within 500 m of each other. Annotations on SO 6307 (1892) indicate that the area on the riverbank between them was a burial ground for Waikato people, and the same plan notes a complex shape for the pa itself.

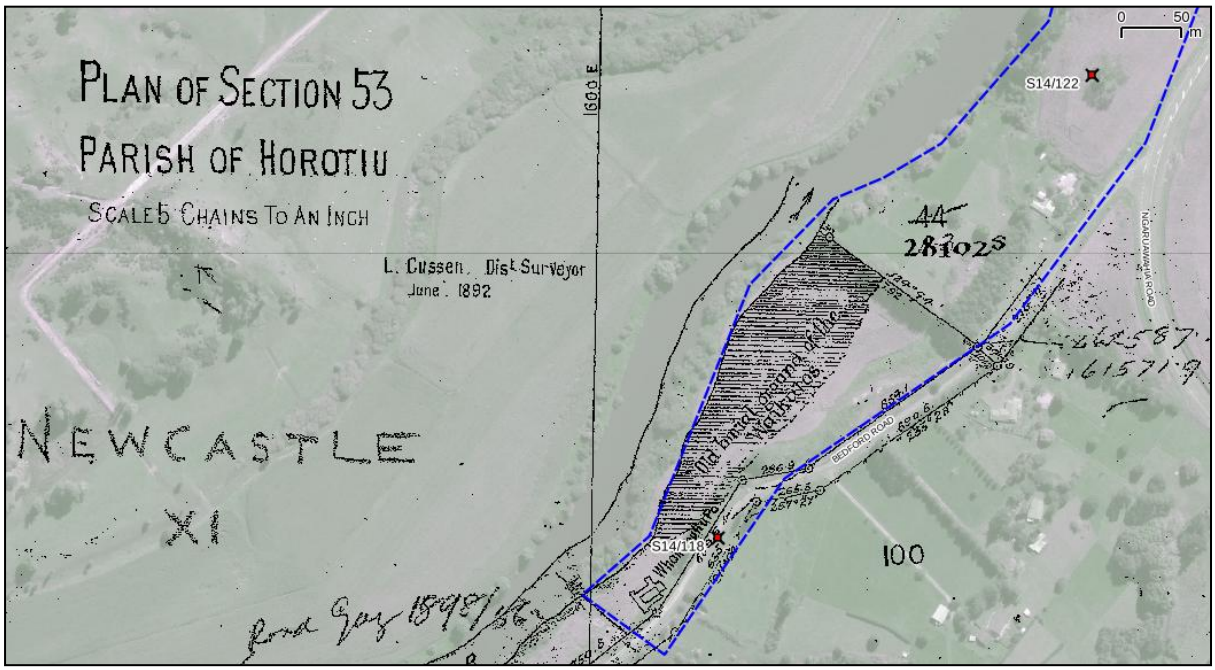



*Figure 105 Whakapuku Pa S14/118 and S14/122.*

Figure 105 shows the Survey Office plan SO 6307 overlaid on aerial photography from 2012. The dark area on the riverbank is marked "Old burial ground of the Waikatos".

Both records S14/118 and S14/122 are named "Whakapuku Pa" but it seems the earlier one is correct.

**The Munitions Magazines (S14/213)**

These are 19 munitions storage sheds built during World War 2, recorded as S14/213. These are strongly-built brick structures with earthen bunds built around them to contain any explosion. All 19 of them remain visible on modern aerial photography and lidar-derived elevations data.

*Figure 106 Wilkes' photograph of the munitions magazines of S14/213 dug into the hillsides.*

The figure above is a reproduction of one of Owen Wilkes' photographs, taken from his site record upgrade (Wilkes, 2000c). The site is accessed via Kelm Road. The magazines are entirely encompassed by Lot 1 DP 390490 and Lot 2 DP 401881.

**Other Recorded Archaeological Sites**

Several archaeological sites within the study area have been identified in the areas of archaeological interest layer, but have not been discussed in detail here. These are:

- Rotokauri Pa (S14/5) is a swamp pa on the shores of Lake Rotokauri. A small test excavation was conducted by Neil Laurie in 1973, the records for which may be at the Waikato Museum.
- Pa S14/81 is a pa occupying a gully scarp on the Waipa River 5 km south of Te Kowhai.
- Pa S14/8 and S14/50 are two gully pa located either side of Fullerton Road.

These sites are all discussed in detail in the NZAA records, appended to this report.

**The Glen Massey Area**

As stated in previous chapters, there are no recorded archaeological sites in or near Glen Massey. One is recorded (R14/11) 5 km west of the town.

A railway was built some time in the early 20th Century to service the mines at Glen Massey, and parts of the embankment are visible from Owen Drive and Wilton Colliers Road. The alignment is visible in parts of the WRAPS 2012 aerial photography dataset, and the Waipa River crossing and approach is visible on the one aerial photo frame from the 1940s surveys which was available at time of writing (SN174/300/21).

Attempts were made to trace the alignment from what remote sensing data is available, but without the 1940s aerial photo frame, the task could not be completed.

## Summary

A set of maps has been compiled illustrating 38 individual areas of archaeological sensitivity compiled from the research presented in this report (Appendix 3). These maps cover five sections.

**The Southern River Section (Map 2)**

This is an area similar to the northern river section in that both sides of the river are heavily populated with archaeological sites, both recorded and unrecorded.
Continuing intensification along River Road and in the commercial and industrial areas on the western side of the Waikato River will affect these archaeological sites.

**Ngaruawahia Section (Map 3)**

The Point and the Domain in Ngaruawahia are areas of concentrated historic and prehistoric activity, and as such is a place of dense archaeological sensitivity.

**The Northern River Section (Map 4)**

An examination of soil mapping data and a close scrutiny of lidar-derived elevation data has shown an almost continuous presence of Maori-modified soils and borrow pits along both sides of the Waikato River from Ngaruawahia to Taupiri.

These constitute evidence of the presence of archaeological sites as defined in the *Historic Places Act* 1993. Of this cluster of archaeological sites, only two have been recorded (S14/175, S14/177).

Any development along Hakarimata Road or Old Taupri Road is likely to affect these archaeological sites.

**The Waipa River Section (Map 5)**

There are two groups of archaeological sites along the banks of the Waipa River identified in this study. The northern one is an unrecorded Maori horticulture site close to the artefact find spot (S14/124).

The southern one is a cluster of recorded and unrecorded sites including three pa (S14/26, S14/118 and S14/122) with modified soil deposits and borrow pits nearby. The report of urupa and the individual burial of a named person on survey plans (SO 2465 and SO 6307) must be taken into consideration.

**Te Kowhai and Surrounds (Map 6)**

Although no archaeological sites are recorded in or around Te Kowhai, a scattering of individual gully pa are known, and these will almost certainly have unrecorded archaeological features associated with them.

# CHAPTER 5 PREDICTIVE MODEL AND FIELD VISIT

## Introduction

This chapter draws together information compiled in Chapters 2, 3, and 4 and uses this information to inform the field visit. Summarizing the information in the previous chapters provides what archaeologists refer to as a predictive model.

## Predictive Model

An archaeological predictive model is an evidence-based idea or set of ideas about the location and type of archaeological site(s) in a specific place or region. The information or data base for constructing a model includes facts about the physical environment, area prehistory, history, recorded archaeological sites, and human behavior.

The information compiled in Chapters 2 (history), 3 (recorded archaeological sites), and 4 (plans and aerial photographs) informed model construction--human use of the Ngaruawahia and Enviros landscape prior to 1900. For example historical information was compiled about Kaitotehe Mission Station which was not recorded in the New Zealand Archaeological Association (NZAA) site recording scheme. Geo-referencing resulted in the identification of Maori garden sites that were also not recorded in the NZAA site file.

The predictive model must also consider events and actions that overlay previous archaeological sites or affect them--taphonomic processes. The effects can be quite dramatic or minor and linked to the process of site decomposition. Robert Ascher (1961) described this process very aptly:

> "Every living community is in the process of continuous change with respect to the material which it utilizes. At any point in its existence some proportion of materials are falling into disuse and decomposing, while new materials are being added as replacements. In a certain sense a part of every community is becoming, but is not yet, archaeological data. The community becomes archaeological data when replacement ceases. What the archaeologist disturbs is not the remains of a once living community, stopped as it were, at a point in

> time; what he does interrupt is the process of decomposition" (Ascher 1961, p. 324).

Terrestrial archaeological sites are affected by man-made and natural effects as well as commensal creatures such as birds, rats and dogs. The preservation and decomposition of archaeological information can be affected by soil pH, climate, flooding, plant growth, human activities, etc. Many of the sites sampled have been affected by reuse and major land modifications. Ploughing, for example, can scatter archaeological remains and destroy shallow ephemeral features located near the surface, such as tent circles, building pilings, garbage pit deposits, etc.

Other events including fires and floods can also affect archaeological sites. Fires destroy some materials but they also preserve types of information that can be recovered using archaeological methods. Floods at 'The Point' resulted in the relocation of many early Ngaruawahia businesses and houses to the current (upper) town site. The removal of the town left behind the in-ground remains of the shops and houses. This information was capped by alluvial deposits left by the subsequent floods, including the 1907 flood.

In Taupiri, Ngaruawahia, and Te Kowhai many of the sites of earlier buildings have been modified prior to mass earth working machinery—bulldozers. Frequently buildings erected prior to 1940 or 50 cap the archaeological footprint of early building or other types of sites. One site in Ngaruawahia known as the Doctors House, at 53 Newcastle Street, was excavated in 2001 to create a parking lot (Figure 107). The site was monitored by an archaeologist during the work to record and recover information relating to the house and its occupants (Simmons 2001). The site no longer contains any archaeological information.

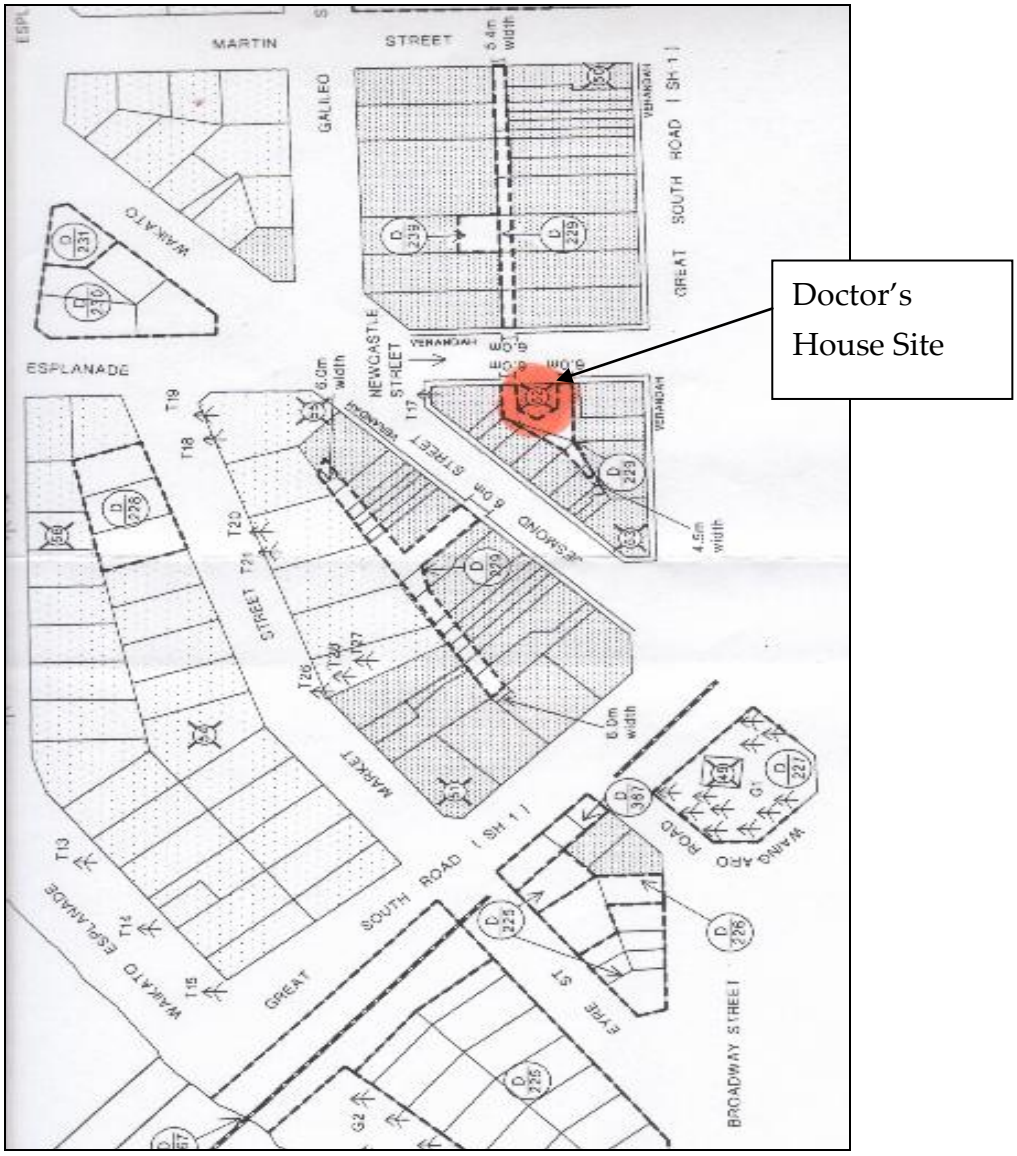



*Figure 107 Doctor's House site, 53 Newcastle Street.*

## Archaeologically Sensitive Areas; Unrecorded Sites

### Model Development

The information in Chapters 2 and 4 were compiled into an unrecorded site map. The geo-referencing work in Chapter 4 resulted in the location of several pre-1900 buildings on old survey plans. This information was matched with similar historical information. Other historical references could not be matched with plan notations or aerial photographs. This process of linking data from several types of sources is

essential to confirming information derived from a single historical source or secondary sources.[45] This is also the reason why field verification of potential sites is essential. For example a site visit may reveal evidence of major earthworks which would have destroyed the archaeological site.

The information was then used to inform the predictive model of unrecorded sites and referred to during the site visits in April and May 2014.

***Indentified Archaeologically Sensitive Areas***

The recorded archaeological site data Chapter 3 and the Geo-referencing Chapter 4 paired with some of the historical data (Chapter 2) provided an indication of areas that had a high potential for Maori land use. For example the Waikato river edge and upper terraces along the river were significant gardening areas. The river was also a significant transportation corridor for trade—an obvious location for Maori settlement.

Maps of the archaeologically sensitive areas were created and discussed in Chapter 4. The maps are included in Appendix 3.

## Field Visits

The field visits in April and May involved driving through the areas included in the Ngaruawahia and Enviros structure plan and visually sampling some of the places identified in Chapters 2 and 4.

In Chapter 2 some of the findings were presented, e.g. the site of the 1st Catholic Church at Taupiri and the Taupiri Hotel.

The regional centres visited are summarised in the following text.

[45] Unfortunately historical information errors can be presented multiple times in secondary sources.

**Taupiri**

Taupiri is bisected by multiple roadways and major highway work on the original Great South Road does not appear to have affected Lovell's early stable, store, and hotel site Figure 108 or the Catholic Church site and cemetery Figure 109. The second hotel adjacent to the railway line is also still on its original site (see Chapter 2).

Map 4140, 1882, Auckland Library

*Figure 108 Approximate location of Lovell's former stable, store, and hotel site.*

The Catholic Church and cemetery site is indicated by a marker and plaque adjacent to the street. The figure on the following page shows the approximate location of the church based on comparison with an historic photograph taken from the top of Taupiri Mountain in the early 1900s. Historic survey plans or church records may provide additional information about the building footprint and the cemetery.

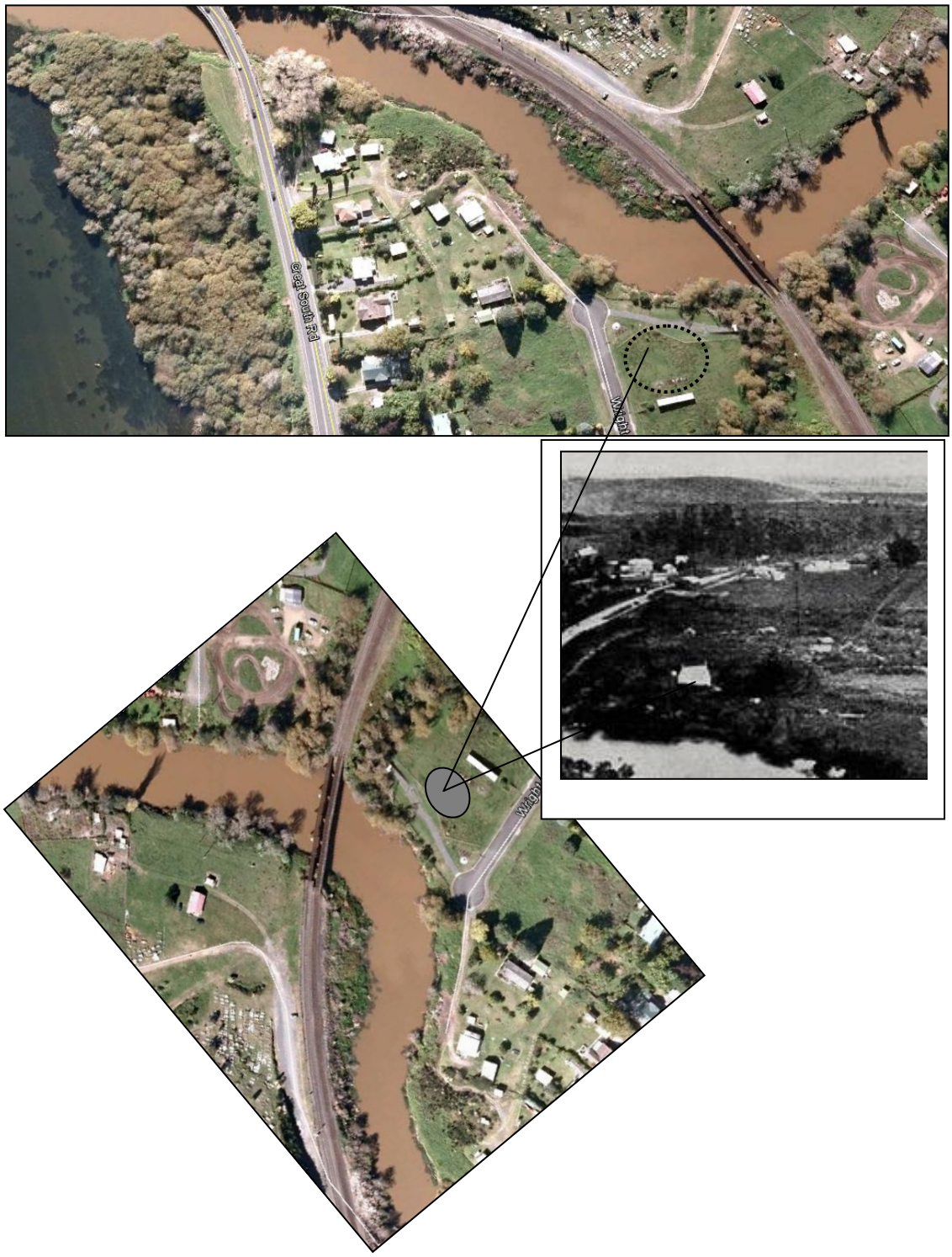



*Figure 109 Catholic Church and cemetery site based on the historic photograph. The cemetery surrounded the building.*

Near the former Catholic Church site is the railway bridge. Parallel to the existing rail bridge are trestle bridge support posts from the 1877 rail bridge (Figure 110).

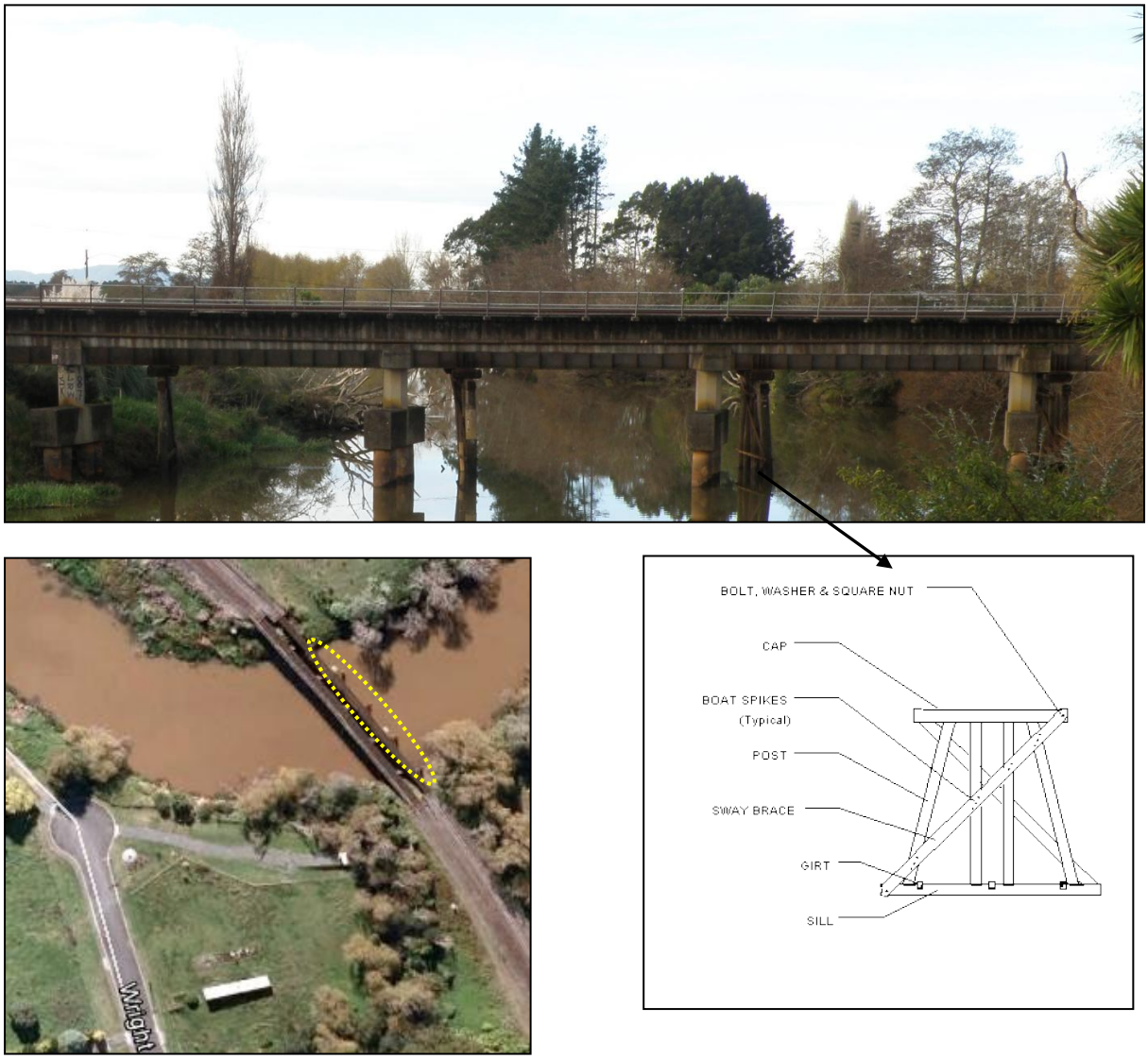



*Figure 110 Remains of the former trestle bridge parallel to the new rail bridge.*

Part of the pre-1900 Taupiri school may also exist on its original site, based on the information compiled in Chapter 2. The old bake house (bakery) is still *in situ* on a private property, albeit damaged by a bottle collector about fourteen years ago.[46]

[46] The bottle collector was convicted for damaging an archaeological site without a permit under the provisions of the Historic Places Act 1993.

The Kaitotehe Mission Station site (S14/126), opposite Taupiri may have been affected by residential development, but this cannot be determined without first identifying the site of the mission station buildings and conducting a field visit.

It is likely the remains of other pre-1900 structures in Taupiri are under or adjacent to existing houses. Any pre-1900 houses identified by the built heritage researchers are archaeological sites and will be regulated by the Heritage New Zealand Pouhere Toanga Act 2014.

**Hopuhopu**

Hopuhopu was already previously discussed. The actual location of the mission station buildings on this large site is not known. The use of the river as the major transportation highway when they were established would suggest the station was situated not far from the river bank. The mission station reportedly burnt in 1886, it is not known if this included all the structures on the site or not.

Until a plan is found or other information about the location of the structures it will remain difficult to identify their location and manage any effects.

Pepepe was not visited.

**Ngaruawahia**

Ngaruawahia has been a major centre of human occupation since pre-historic times. The historic references to extensive cultivations along the river bank are supported by historic air photographs, elevation data and soil science maps. The town's location on the confluence of two navigable rivers ensured its early prosperity from prehistory through the 1850s and into the European occupation.

Ngaruawahia has several particularly significant sites, Puke-i-aahua pa and the collection of sites at 'Point Reserve'. They represent various periods of occupation and types of uses. Both reserves have been interpreted and are community assets.

Use of Puke-i-aahua has been guided by a conservation and management plan and a local community committee. The site is available for public use because of the effort of the committee.

'The Point' is used by local residents of all ages throughout the day. It features equipment that facilitates both active and passive recreational use (Figure 111).

*Figure 111 Skatebowl being used for a photo opportunity (Simmons March 2014).*

Waikato District Council has arranged for archaeological assessment and mitigation work at the reserve in association with construction work carried out in the reserved since 2001.

The result has been the identification of new information about this heritage area. Recently during excavation work to construct phase II of the skatepark additional segments of a rifle trench were identified (Figure 112). The feature will be capped by the new segment of the skatepark. It will be preserved for future generations while allowing current generations of children to enjoy a snake-run.

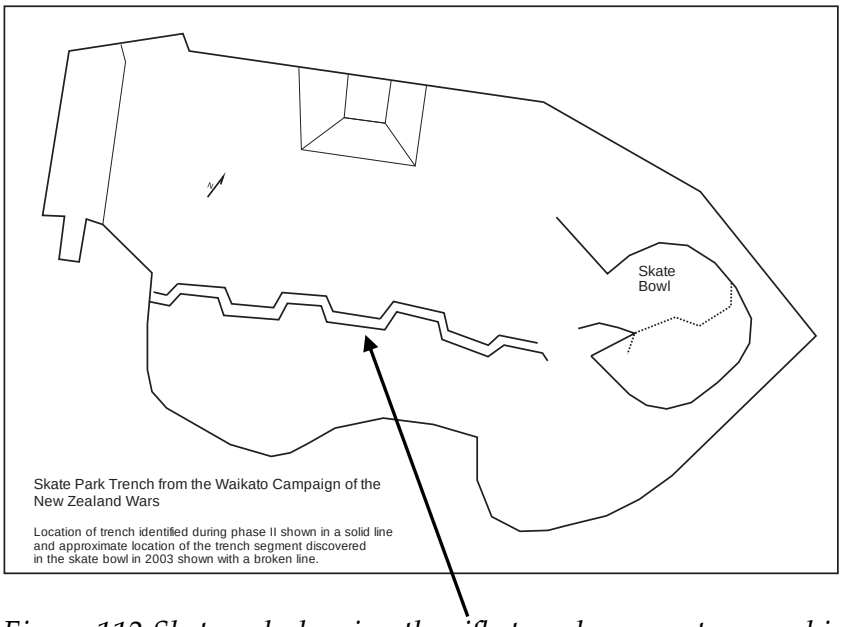



*Figure 112 Skatepark showing the rifle trench segment exposed in March 2014.*

**Te Kowhai**

Te Kowhai contains a number of significant pa, urupa, and cultivation areas. These are located on farm land and not in the residential areas of Te Kowhai.

The only pre-1900 building sites were the creamery and the 1893 school. The exact location of the creamery was not identified. The 1893 school site is currently a grassy paddock at the intersection of Bedford and Richardson Roads (Figure 113).

*Figure 113 Richardson and Bedford Road intersection, former 1893 school house site based on Watson in Harris 1990, p.48.*

**Glen Massey**

We drove extensively around Glen Massey but did not identify any unrecorded Maori archaeological sites. Community consultation may reveal additional information.

Glen Massey (Figure 114) is a post-1900 settlement and therefore not managed under the Heritage New Zealand Pouhere Toanga Act 2014. It does contain industrial heritage archaeological remains, in particular the railway line cut evident along the foot of the hills. Glen Massey's industrial heritage should be inventoried and managed as part of the community's built heritage. The mines provided the need for the workers settlement.

*Figure 114 Glen Massey, April 2014.*

## Summary

Each of the towns and regional centres has a unique archaeological heritage. The brief field visits to each area confirmed the information presented in Chapters 2, 3, and 4. The next Chapter provides some recommendations about issues that were identified and heritage management options.

# CHAPTER 6 ARCHAEOLOGICAL HERITAGE MANAGEMENT ISSUES AND OPTIONS

The intended outcome of this document, as was noted in the introduction is to provide an understanding of pre-1900 identifed physical locations used and occupied by Maori and Europeans that contain evidence of their stories in the form of archaeological sites. The focus in this chapter is on landuse planning methods that can be applied to manage, identify, investigate, protect or preserve archaeological heritage in the Ngaruawahia and Enviros area. Many of the recommendations are based on legal requirements associated with archaeological heritage management and protection.

## Relevant Legislation

Section 6 of the Resource Management Act 1991 recognises Maori heritage as a matter of national importance and the Resource Management Amendment Act of 2004 elevated all heritage to being a matter of national importance. Waikato District Council is required under the Act to have particular regard to the recognition and protection of the heritage values of sites, buildings, places or areas in management of the use and development of the district's natural and physical resources. This includes: identifying those heritage resources worth preserving and adopting suitable measures to secure the preservation of identified heritage resources. Provisions are included in the operative District Plan to attend to this responsibility.

In addition to the requirements of the Resource Management Act archaeological sites are protected and regulated under national legislation (the Historic Places Act 1993). As noted in Chapter 1. The Heritage New Zealand Pouhere Taonga Act 2014 all pre-1900 archaeological sites are protected regardless of whether they are recorded or not. Under that act an archaeological site means, subject to section 40(3),—

(a) any place in New Zealand, including any building or structure (or part of a building or structure), that—

(i) was associated with human activity that occurred before 1900 or is the site of the wreck of any vessel where the wreck occurred before 1900; and

(ii) provides or may provide, through investigation by archaeological methods, evidence relating to the history of New Zealand; and

(b) includes a site for which a declaration is made under section 41(1).

An archaeological authority is required from Heritage New Zealand to modify damage or destroy an archaeological site (including pre-1900 buildings).

## Heritage Issues and Options

**Issue: Management of Effects to Recorded Archaeological Sites**

Management of effects to archaeological sites in the Ngaruawahia and Enviros Structure Plan area.

**Options: Management of Effects to Recorded Archaeological Sites**

- Status quo. Use the existing heritage provisions of the operative Waikato District Plans to manage effects to any recorded or unrecorded archaeological sites in the Ngaruawahia and Enviros Structure Plan area as a result of development.

- Avoid effects to recorded sites noted in Chapter 3 by identifying the site boundaries and excluding the sites from development areas.

- Avoid effects to recorded sites noted in Chapter 3 by identifying the site and establishing planning rules that inform the property owner of the necessary sets required to avoid, remedy, or mitigate effects to sites.

- Avoid effects to recorded sites noted in Chapter 3 by identifying the sites on planning maps as an alert layer and advise they contact Heritage New Zealand if they wish to modify the site.

**Issue: Management of Effects to Un-Recorded Archaeological Sites**

Manage the long term preservation and conservation of unrecorded sites in areas that have a high probability for sites identified in Chapters 2, 3 and 4.

**Options: Management of Effects to Un-Recorded Archaeological Sites**

- Record the sites identified in Chapter 2 and Chapter 4 that have not been recorded.

- Implement an archaeological survey of the Structure Plan areas where intense development is proposed and the historical information and geo-referencing data indicates sites are likely. (This will ensure unrecorded archaeological sites are identified and managed.)

- Implement archaeological assessment and survey of areas where there is a high probability for unrecorded archaeological sites as indicated on the plans in Appendix 3 and the information presented in Chapters 2, 4, and 5.

**Issue: Heritage New Zealand's Selected Archaeological Sites.**

New Zealand Historic Places Trust, now Heritage New Zealand, has proposed sites and groups of sites for scheduling in the district plan as sites that merit special management consideration. Some of these sites located in the Ngaruawahia and Enviros Structure Plan Area. Other recorded and unrecorded sites may also merit consideration as special sites.

**Options: Heritage New Zealand's Selected Archaeological Sites.**

- Status quo. Continue to consider the Heritage New Zealand select recorded sites issue.

- Schedule the select recorded sites identified by Heritage New Zealand that are in the Ngaruawahia and Enviros Structure Plan area.

- Hold discussions and gather information to identify other unrecorded special sites.

**Issue: Managing Recorded Archaeological Sites in Reserves.**

Managing recorded archaeological sites in reserves can present challenges, like the exposure of the 'P S Alert' during a drought period at 'The Point' (Figure 115). One reserve, Puke-i-aahua Pa, Ngruawahia has a management plan that includes policies that ensure the long term conservation of the site.

*Figure 115 The remains of the 'Alert', exposed in April 2014.*

The exposed wood is deteriorating because of drying (it was previously submerged). It is also at risk of destruction through vandalism.

**Options: Management of Aarchaeological Sites in Reserves**

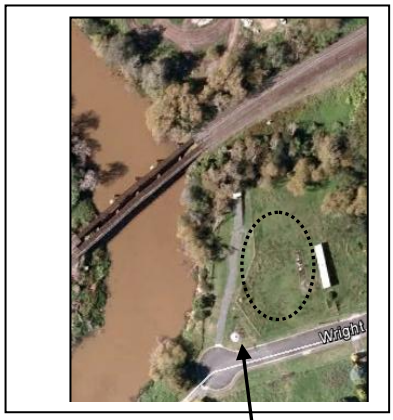
- Status quo. Use the existing heritage provisions of the operative Waikato District Plan to manage effects to archaeological sites in reserves.

- Develop management policies for sites in reserves throughout the district in consultation with Heritage New Zealand.

- Prepare conservation and management plans for reserves that contain archaeological sites.[47]

**Issue: Catholic church and cemetery Taupiri**

The exact location of the church and cemetery is not known. A marker is located adjacent to Wright Street. Historic photographs suggest the actual site was closer to the railway line.




*Church site marker*

*Rough road may be Wright Street*

*Figure 116 Catholic Church and cemetery location issue. (Probable site location is shown by the circle.)*

**Options: Catholic church and cemetery Taupiri**

- Survey plan and archival search to identify the location of the Catholic Church and cemetery site and provide information about the cemetery.

[47] A conservation and management plan was prepared for Puke-i-aahua Reserve in 2006 in cooperation with a working committee of local representatives and WDC Reserves Department staff members. (See Simmons 2006)

**Issue: Glen Massey's Industrial Heritage**

Glen Massey's industrial heritage is not pre-1900 and therefore not protected or managed under the Pouhere Toanga Act 2014. The industrial heritage is directly linked to buildings in the settlement like the abandoned shop pictured below (Figure 117).

*Figure 117 Abandoned shop in Glen Massey.*

Commercial and civic buildings like the one above were established to serve the mining community. Without the mines the community would not have developed.

**Options: Glen Massey's Industrial Heritage**

- Status quo. Use the existing heritage provisions of the operative Waikato District Plans to manage effects to any recorded or unrecorded archaeological sites in the Ngaruawahia and Enviros Structure Plan area.

- Carry out an archaeological survey project to record Glen Massey's industrial heritage.

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# APPENDIX 1

## NZAA site types

This is the list of unique values for site type held in the ArchSite database.

```
   nzaa_type
---------------------------
 Administrative
 Agricultural/ pastoral
 Art
 Artefact find
 Botanical evidence
 Burial/ cemetery
 Canoe building
 Cave/ rock shelter
 Cement/ lime works
 Commercial
 Educational
 Fishing
 Flax milling
 Flour milling
 Gum digging
 Health care
 Historic - domestic
 Historic - land parcel
 Hospital
 Hulk
 Industrial
 Maori horticulture
 Marae
 Memorial
 Midden/Oven
 Military (non-Maori)
 Mining
 Mining - chromite
 Mining - coal
 Mining - copper/ antimony
 Mining - gold
```

Mining - tin
Mission station
Pa
Pa - gunfighter
Pa - island/ swamp
Pit/Terrace
Power generation
Recreation
Religious
Sealing camp
Shipwreck
Source site
Source site - argillite
Timber milling
Traditional site
Transport/ communication
Unclassified
Whaling Station
Working area

# APPENDIX 2

## NZAA site records considered in the study

These are the site records within a 5 km radius of centres at Ngaruawahia, Glen Massey, Horotiu and Te Kowhai, with the reclassified site types and location coordinates given in the NZ Transverse Mercator projection. NZAA site records fro all sites discussed in the report are appended as an electronic document.

| nzaa_id | site_type | easting | northing |
|---|---|---|---|
| R14/11 | Pit/Terrace | 1777630 | 5829138 |
| S14/2 | Pa | 1790792 | 5827473 |
| S14/5 | Pa | 1793549 | 5818561 |
| S14/8 | Pa | 1791148 | 5818857 |
| S14/9 | Fishing | 1789130 | 5830556 |
| S14/10 | Burial | 1787842 | 5822653 |
| S14/11 | Burial | 1792268 | 5819691 |
| S14/12 | Pit/Terrace | 1788632 | 5829055 |
| S14/13 | Pa | 1796031 | 5824758 |
| S14/16 | Pa | 1794038 | 5825863 |
| S14/17 | Pa | 1795431 | 5823828 |
| S14/18 | Pa | 1795487 | 5823625 |
| S14/26 | Pa | 1787142 | 5822752 |
| S14/29 | Artefact find | 1788733 | 5828055 |
| S14/31 | Pa | 1789289 | 5829335 |
| S14/50 | Pa | 1791249 | 5818257 |
| S14/81 | Pa | 1789035 | 5816751 |
| S14/87 | Pa | 1790599 | 5832863 |
| S14/89 | Artefact find | 1796046 | 5820965 |
| S14/97 | Pa | 1796243 | 5822666 |
| S14/103 | Artefact find | 1791235 | 5827659 |
| S14/104 | Maori horticulture | 1790834 | 5828159 |
| S14/105 | Maori horticulture | 1790934 | 5828259 |
| S14/106 | Maori horticulture | 1790934 | 5827859 |
| S14/110 | Midden/Oven | 1791131 | 5827470 |
| S14/111 | Maori horticulture | 1796244 | 5822466 |
| S14/112 | Pa | 1795374 | 5824080 |
| S14/113 | Pit/Terrace | 1795350 | 5823926 |
| S14/114 | Artefact find | 1795442 | 5823465 |
| S14/118 | Pa | 1787830 | 5823364 |
| S14/121 | Maori horticulture | 1791436 | 5826959 |
| S14/122 | Pa | 1788141 | 5823748 |
| S14/123 | Artefact find | 1789927 | 5832358 |
| S14/124 | Artefact find | 1789738 | 5825156 |
| S14/160 | Maori horticulture | 1795641 | 5824365 |
| S14/162 | Maori horticulture | 1795842 | 5823866 |
| S14/163 | Maori horticulture | 1795641 | 5824165 |
| S14/164 | Maori horticulture | 1794539 | 5825164 |
| S14/165 | Maori horticulture | 1796744 | 5822367 |
| S14/174 | Pit/Terrace | 1790326 | 5832959 |

| | | | |
|---|---|---|---|
| S14/175 | Maori horticulture | 1789827 | 5832258 |
| S14/177 | Maori horticulture | 1789765 | 5832267 |
| S14/179 | Maori horticulture | 1796243 | 5822866 |
| S14/181 | Military (non-Maori) | 1789310 | 5829294 |
| S14/182 | Military (non-Maori) | 1789384 | 5829243 |
| S14/183 | Shipwreck | 1789357 | 5829482 |
| S14/184 | Transport/ communication | 1789231 | 5829456 |
| S14/186 | Historic - domestic | 1789536 | 5829027 |
| S14/187 | Military (non-Maori) | 1789217 | 5829160 |
| S14/188 | Burial | 1789432 | 5829156 |
| S14/190 | Military (non-Maori) | 1789228 | 5829134 |
| S14/192 | Maori horticulture | 1790233 | 5828658 |
| S14/194 | Maori horticulture | 1795000 | 5825445 |
| S14/195 | Maori horticulture | 1795150 | 5825980 |
| S14/203 | Maori horticulture | 1795342 | 5823465 |
| S14/205 | Unclassified | 1790735 | 5827358 |
| S14/213 | Military (non-Maori) | 1792331 | 5829861 |
| S14/221 | Maori horticulture | 1794316 | 5824613 |
| S14/222 | Maori horticulture | 1794266 | 5823837 |
| S14/242 | Maori horticulture | 1794902 | 5825559 |
| S14/246 | Maori horticulture | 1795697 | 5826512 |
| S14/247 | Maori horticulture | 1795869 | 5826369 |
| S14/253 | Maori horticulture | 1795518 | 5826181 |
| S14/254 | Transport/ communication | 1796121 | 5822721 |
| S14/284 | Midden/Oven | 1795310 | 5824720 |

Sites around Taupri

| nzaa_id | site_type | easting | northing |
|---|---|---|---|
| S14/6 | Pa | 1792922 | 5835463 |
| S14/7 | Pa | 1792774 | 5834663 |
| S14/15 | Pa | 1791576 | 5836356 |
| S14/20 | Pa | 1794123 | 5835465 |
| S14/21 | Pa | 1794063 | 5834639 |
| S14/22 | Pa | 1793596 | 5834324 |
| S14/24 | Pa | 1789722 | 5835358 |
| S14/88 | Pa | 1790821 | 5835762 |
| S14/96 | Pa | 1791923 | 5834961 |
| S14/126 | Mission station | 1792412 | 5834990 |
| S14/158 | Maori horticulture | 1793440 | 5835110 |
| S14/168 | Pa | 1791982 | 5834643 |
| S14/170 | Pit/Terrace | 1790135 | 5835816 |
| S14/171 | Pa | 1790488 | 5835700 |
| S14/172 | Pit/Terrace | 1790089 | 5836530 |
| S14/198 | Maori horticulture | 1794490 | 5834100 |
| S14/249 | Maori horticulture | 1794415 | 5834882 |
| S14/250 | Maori horticulture | 1794857 | 5834638 |
| S14/251 | Maori horticulture | 1794690 | 5834444 |

# APPENDIX 3

## Appendix 3 Maps

1. Overview of archaeological areas.
2. Archaeological areas along the Waikato River from Horotiu to Ngaruawahia.
3. Archaeological areas, Ngaruawahia and environs.
4. Archaeological areas along the Waikato River between Ngaruawahia and Taupri.
5. Archaeological areas along the Waipa River.
6. Archaeological areas, Te Kowhai and environs.

# Ngaruawahia Structure Plan
# Built Heritage Assessment

HERITAGE
CONSULTANCY
SERVICES

for Waikato District Council
by Heritage Consultancy Services

31 May 2014

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## Executive Summary

This report identifies built heritage resources within the Ngaruawahia Structure Plan area that embody the district's history and development and may be considered for protection and promotion by Waikato District Council.

As the basis for this assessment a concise history of the six settlements within the Structure Plan area has been prepared. This historical narrative establishes the backdrop against which the future development envisaged in the Structure Plan will take place. Each local history also underpins the recommendations made in this report regarding the identification, protection and promotion of built heritage resources within the Ngaruawahia Structure Plan area.

In addition to a prioritised list of built heritage items, including those previously and newly identified, a selected bibliography and the Waikato District Plan Historic Heritage Listing Criteria have been appended to this report.

The principal recommendations of this report are as follows:

- Consideration should be given to scheduling additional significant built heritage resources on the Waikato District Plan, as this is the best tool available to the council for the sustainable management of historic heritage resources.

- Implementation of a future Structure Plan for each locality should be monitored to ensure that it maintains and enhances the heritage values of the district, especially in regards to pre-World War II built heritage items and having regard to those resources on rural properties that might yet be identified through a closer engagement with property owners.

- Further engagement, with property owners, local residents, community groups and other key stakeholders, may identify additional built heritage resources that merit recognition and protection by way of scheduling on the District Plan. Equally some of the buildings listed in this report may be found, upon further investigation, to lack sufficient heritage significance to merit scheduling.

Figure 1: 'Great Christian Convention: Some of Those Who Attended the Annual Easter Camp at Ngaruawahia' *Auckland Weekly News* 27 April 1938. AWNS-19380427-54-1, Sir George Grey Special Collections, Auckland Libraries.

## Introduction

Ngaruawahia and its neighbouring villages have a rich history that encompasses pioneering settlement, the physical and cultural impacts of the Waikato War, and the construction of key social and industrial infrastructure. The Waikato and Waipa Rivers, as well as the North Island Main Trunk railway line, have influenced the physical and historic development of the district, and the buildings at Turangawaewae are of national cultural and architectural significance. Built heritage features contribute to the historic character of Ngaruawahia, Taupiri, Hopuhopu, Glen Massey, Te Kowhai and Horotiu; they create a visual connection to a past that is typical of many provincial New Zealand places but also particular to this landscape and its people.

The report presents a general historic overview for the whole area followed by a narrative about each settlement. While there are some aspects of the history that are specific to iwi, and these are being described in a separate report, it is understood that for much of the period the history and development described in this report is for the whole population, Maori and Pakeha.

## Methodology

This Built Heritage Assessment was commissioned by Waikato District Council to contextualise and assess the built heritage resources of the Ngaruawahia Structure Plan area.

This report addresses the following outputs requested of the consultant:

- Preparation of an historic overview of the Structure Plan area and identification of key themes, events, people and activities that contribute to community identity and sense of place.
- Summary of the existing built heritage items/areas that have been scheduled on the District Plan and/or registered by the NZ Historic Places Trust [now Heritage NZ] in recognition of their heritage value to local residents and the wider community.
- Identification of potential built heritage items/areas that may have sufficient significance to warrant scheduling on the District Plan in future and/or merit identification by way of interpretative signage etc.

This report establishes a historic context for the Ngaruawahia Structure Plan and a foundation document for any subsequent plan changes. It may provide information useful to the development of future design guidelines and urban design strategies for the Structure Plan area.

Project research has drawn upon published sources and archival documents, historic plans and photographs. Historical material relating to Ngaruawahia and district has been located within a number of local, regional and national repositories. Input was also gleaned from local informants at a meeting of the Ngaruawahia Local History Group on 22 April 2014.

Disclaimer: The fieldwork for this project was undertaken entirely from the public domain. While every attempt was made to drive along every street in Ngaruawahia, Taupiri, Hopuhopu, Glen Massey, Te Kowhai and Horotiu, it was not possible to view all the buildings within the Structure Plan area that might, on closer inspection, have built heritage significance.

## Authorship & Acknowledgements

This report has been prepared by Dr Ann McEwan and Lynette Williams. With thanks to Lindsay Griffiths, Barbara Landon, Glen Gray, and Graeme Crowther of the Ngaruawahia Local History Group, and Sheryl Paekau (Waikato District Council).

Figure 2: 'Ngaruawahia or Newcastle' surveyed by GW Williams in 1865 and J Tole in 1866; this edition redrawn 1879, possibly from SO 57. The plan shows the railway running through the town to a wharf on the Waipa and over a bridge on the Waikato, with the two tracks skirting the Octagon. NZ Map 4236, Sir George Grey Special Collections, Auckland Libraries.

## A History of Ngaruawahia & District

### Introduction

Ngaruawahia is the hub of a large area in which it serves a number of smaller settlements, including Taupiri, Hopuhopu, Glen Massey, Te Kowhai, and Horotiu. The district's villages do not have distinct boundaries and their environs merge with their rural setting. The histories of these places and the rural areas in-between have overall similarities but each was established for a distinct purpose during the 150 years since European governance was imposed. Only Ngaruawahia and Taupiri were intended from first survey to be 'urban' areas; Te Kowhai developed from a rural area with facilities added as the community required them; Glen Massey and Horotiu from particular industries requiring a workforce; and Hopuhopu, uniquely, from an Anglican Church mission grant that later provided a large open space handy to the Waikato River and North Island Main Trunk railway for acquisition by the government as a military training camp.

The entire area was part of the land confiscated from Tainui after the Waikato War. Ngaruawahia and Taupiri were set aside for town settlements, but generally the rest was surveyed into parcels suitable for grants to militiamen or Maori claimants. Initially the Glen Massey area was developed in the late 19th century under three special settlement schemes.

The Waikato and Waipa Rivers have determined the locations and, to some extent, the histories of Ngaruawahia, Taupiri, Hopuhopu and Te Kowhai. Ngaruawahia prospered from the river trade; so also to some extent did Taupiri as a port for rural areas to the east. The Great South Road and the North Island Main Trunk railway were pivotal for the development of Ngaruawahia, Taupiri, Horotiu, and, to a lesser extent, Hopuhopu.

The Structure Plan area is focussed on the Waikato and Waipa Rivers. Historically these rivers provided a means of transport and communication, they provided food and technological resources, and were used as boundary markers. Swamps and streams feeding into the rivers also provided resources; the plains either side provided gravels and soils suitable for cultivation of traditional crops such as kumara and introduced potato, wheat, corn, oats and fruit, such as peaches. The soils were suitable for European farming methods and domesticated animals and, once the swamps were drained, they were highly fertile. The generally flat to rolling landscape was easily transformed into a European pastoral environment with roads providing access.

Since colonial government was established in the Waikato, the area has come under the governance of several bodies: the Auckland Provincial Council, local highway and roads boards, Ngaruawahia Town Board, Raglan County Council (west side of the Waikato River up to Port Waikato) and Waikato County Council (east side of the river), before coming under the umbrella of Waikato District Council in 1989.

### Early European Inhabitants

Prior to the Waikato War of 1863-64 only a few Europeans had settled in the area: a handful of millwrights in the employ of iwi, some missionaries and traders. Europeans commonly travelled the rivers en route to other mission stations and trading posts: up the Waipa or over the hills to Whaingaroa (Raglan), Aotea and Kawhia or up the Waikato to Maungatautari or the Hauraki plains. Very little land had been alienated from iwi before the war, known parcels being those gifted to the Church Missionary Society at Hopuhopu, on the

east bank of the Waikato River, and Pepepe and Kaitotehe on the west bank. Land was under the control of various Tainui iwi until the confiscations following the cessation of the Waikato War in April 1864.

Missionaries entered the Waikato area in the 1830s, possibly the first being Rev AN Brown and James Hamlin who travelled through, en route to Whaingaroa, early in 1834. Henry Williams visited Ngaruawahia in 1835. Robert Maunsell established a mission station near the Waikato River mouth in 1839; other missionaries did likewise up the Waipa and around Kawhia, Aotea and Whaingaroa harbours.[1] John Morgan was established at Otawhao (Te Awamutu) from 1833.[2] In September 1842 Rev Benjamin Yate Ashwell established a station at Kaitotehe, Potatau Te Wherowhero's principal pa opposite Taupiri.[3] Ashwell had been Maunsell's assistant at Maraetai and was already familiar with the area, and the people were familiar with him and his family.

In 1844 the artist George French Angas painted Kaitotehe and noted the Christian chapel built by Kaitotehe people.[4] Angas then walked to Ashwell's first home on a point called Pepepe, 'which jutted out into the river about two miles from Kaitotehe' opposite Hopuhopu.[5] The broad fertile river flat between Kaitotehe and Pepepe had extensive cultivations of potatoes, kumara, Indian corn and wheat. Ashwell's cottage was painted by Angas, who described it in romantic terms as a raupo cottage set in a garden full of English flowers. Associated with the Pepepe mission station were a boys' school and a flourmill at Hopuhopu.[6]

An 1853 report describes Taupiri School as 'a highly ornamental and weather-boarded house … with a central school room and a wing on each side which contained the dormitory and a dining room'. Close by was a cottage in which the Europeans were accommodated (see Figs * and *). While the school was primarily for girls, young boys and adults were also taught there. In October 1852 there were 13 adults, 13 boys and 47 girls.[7] Ngati Whauroa chiefs had at that time appropriated 100 acres 'two miles away' as an endowment for the girls' school and a boys' school was to be built separately.[8] This referred to 133 acres at Pepepe and 1385 acres at Hopuhopu across the river. Rev and Mrs Ashwell's two daughters helped with teaching, as did Elizabeth Colenso and her daughter Fanny.[9]

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[1] http://www.teara.govt.nz/en/biographies/1m28/maunsell-robert
[2] http://en.wikipedia.org/wiki/John_Morgan_(missionary)
[3] CW Vennell and Susan Williams *Raglan County Hills and Sea; a Centennial History* (Auckland, 1976), p. 39.
[4] Ibid, p. 40.
[5] George French Angas, Series AA8/06, New Zealand Watercolours – 'New Zealanders Illustrated' South Australia Museum: http://archives.samuseum.sa.gov.au/aa8/AA8-06.htm
[6] Alison Drummond *Early Days in the Waikato* (Hamilton 1964), p. 17. This reference has not been verified; the mill referred to may have been opposite Kaitotehe i.e. at Taupiri.
[7] *New Zealand Spectator and Cook's Strait Guardian* 14 September 1853, p. 4.
[8] Ibid.
[9] Gladys Button *A History of Taupiri* (Taupiri 1995) p. 6.

Figure 3: 'Reverend Benjamin Yate Ashwell's church, Taupiri mission station, Waikato'. PA1-f-046-09-1, Spencer Perceval Talbot Nicholl photograph albums, Alexander Turnbull Library.

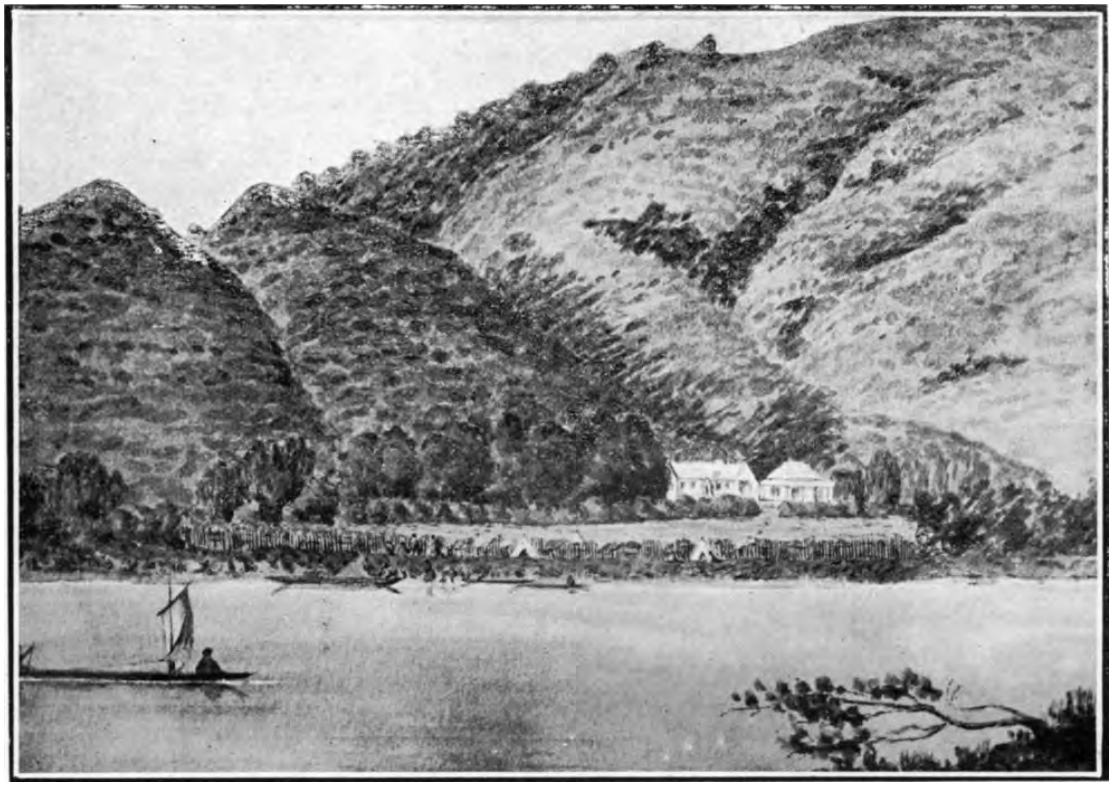

Figure 4: 'The Rev BY Ashwell's Mission Station, Kaitotehe, Waikato River'; a sketch made shortly before the war in 1863, by Lieut. (later Colonel) HS Bates of the 65th Regiment. Governor Grey's camp, on one of his Waikato expeditions, is shown on the riverbank. James Cowan *The Old Frontier* (Te Awamutu, 1922) p. 103.

Figure 5: 'Showing pupils posed outside the Kaitotehe Mission Station School at Taupiri', 1859. 7-A15830, Sir George Grey Special Collections, Auckland Libraries.

Ashwell left the mission station during the 1863-64 war; during this time the station was administered by Karaka Tarawhiti, the son of Rev Heta Tarawhiti.[10] Further up the Waipa River was another mission school, Karakariki, on the west side of the Waipa River. Martha Patene [Barton] and her brother ran the boarding school at the mission station (see Te Kowhai section).[11]

Several European traders were in the area before 1863, including John Kent who lived at Ngaruawahia in 1834 after being at Kawhia for some time. Kent's place was a mile up the Waipa from the Waikato River junction when he was visited by Brown and Hamlin.[12] Kent had married Tiria, daughter of Te Wherowhero in 1830.[13] Trader Charles Marshall was based near the Waikato heads; Randall and at least two others downstream from Taupiri, including George Weller at Onewhero prior to 1834; CL Strauss was at Whatawhata in 1859, Arthur Browne at Kirikiriroa [Hamilton] in 1853-54.[14] On his 1844 journey Angas met a large canoe whose occupants included two European 'pork traders' and, at a village further up the Waipa, he came across three Pakeha-Maori engaged in trading activities. George Skidmore, a trader, and William Newton, a farmer, were established near Ashwell's mission station.[15]

Maori traders were commonly seen on the river freighting produce, including pigs, flax, wheat, milled flour and fruit, to the markets in Auckland from the Kirikiriroa and Tamahere

[10] Button, p. 9.
[11] http://www.teara.govt.nz/en/methodist-church/page-1
[12] Vennell and Williams, p. 32.
[13] Latta, p. 4.
[14] *Auckland Government Gazette* 1853, 1854.
[15] Vennell and Williams, p. 71.

cultivations on the Waikato, and Te Awamutu, Pirongia and Rangiaowhia on the Waipa. At that time the Waikato River between Ngaruawahia and Maungatautari was known as the Horotiu.

Adventurers, explorers, geologists such as Ferdinand von Hochstetter, and government officials visited the area from time to time; Governor Sir George Grey visited King Tawhiao in 1863.

Figure 6: William Fox 'Potatau's place, Ngaruawahia, 1864'. WC-029, Alexander Turnbull Library.

**After the Waikato War**

Within the study area, there were no military engagements during the war of 1863-64 but its effects were felt through the loss of people, crops, possessions, land and mana. The Waikato War had depleted many Maori settlements as people went to lend their support at engagements such as Rangiriri, or retreated south up the Waipa after that battle. Imperial and colonial troops entered Ngaruawahia on 8 December 1863, symbolically hoisting a British flag and thereby establishing a major military base. In January 1864 the army proceeded up the Waipa River and established camps at Whatawhata and Te Rore and from there attacked Kingitanga supporters in their new strongholds further south. This generated considerable river traffic carrying supplies, bullocks, horses and troops. A crude road connecting Ngaruawahia to the southern camps ran close to the eastern bank of the Waipa and passed through the Te Kowhai area. The Hakarimata hills provided timber and firewood for the troops, and Maori cultivations, food stores and livestock such as goats and poultry were appropriated.

After the war ended the government pronounced the confiscation of a large tract of land, including all the land in the subject area, except for the mission land at Pepepe and Hopuhopu. Surveying the district was soon underway. The land in the Waikato-Waipa delta

from Ngaruawahia to Rukuhia was surveyed mostly into 50-acre parcels to be allotted to militiamen of the Fourth Regiment of Waikato Militia (usually referred to as the Fourth Waikatos) as part of their reward for service. This included the land immediately south of Ngaruawahia, including what became Horotiu and Te Kowhai, north to Kainui and almost to Taupiri. As well as these 50-acre parcels, larger parcels for officers were surveyed, such as a 300-acre parcel for Captain John Peter du Moulin on the west side of the Waipa, south of Ngaruawahia.[16] A strip along the west side of the Waipa and Waikato Rivers was surveyed as land grants for several Maori claimants; also land between Hopuhopu and Taupiri was mapped for this purpose. Two small areas were set aside as the prospective towns of Ngaruawahia and Taupiri, for sale to individuals.

Much of the land was unsuitable for farming, being swampy and/or inaccessible; many of the militiamen had no agricultural skills or interest in farming and sold up immediately or settled on their town sections in Hamilton. Many 50-acre allotments were amalgamated into larger parcels; investors from Auckland were quick to see opportunities for development and bought up the abandoned allotments, although some of the militiamen who had private incomes also accumulated land.

The Great South Road and the Ngaruawahia-Whatawhata Road were pushed through in the mid-1860s, punts operating to transport road traffic across the rivers until bridges could be built. The Great South Road was formed through to Hamilton by 1865 but was not suitable for wheeled traffic until 1870 and even then it was often impassable with thick mud. The North Island Main Trunk (NIMT) railway reached Hamilton in December 1877, a major achievement being the opening of the bridge over the Waikato River at Ngaruawahia in August 1877. The road and the railway lessened dependence on the rivers, although steamers and barges continued to be used for several decades.

Within the succeeding decades the extensive wetland south and southeast of Taupiri and between Horotiu, Pukete and Te Kowhai were systematically drained and brought into pasture. Dairying, beef, sheep, pigs, poultry and deer farming became established along with a few horse studs. Horticulture developed with vegetable production and fruit, also tomatoes and orchids in the Taupiri area. Flax was a major product in the late 19$^{th}$/early 20$^{th}$ centuries with several mills in the district, situated along the Waikato, Waipa and Mangawara Rivers. Peaches were plentiful into the 20$^{th}$ century from trees planted by Maori during the first years of European contact. Digging for kauri gum was another industry in the latter part of the 19$^{th}$ century. Timber was harvested from native forests for personal use to construct houses, farm buildings and fences, with some larger mills exporting to Auckland and overseas.

As the 20$^{th}$ century progressed, the individual settlements developed their own character and focus. Each of the following settlement sections will pick up the story of Ngaruawahia and its outlying villages.

[16] SO 526, QuickMap.

## Ngaruawahia

Ngaruawahia has long been a major settlement and strategic base for Waikato-Tainui and is particularly associated with the Kingitanga. It is highly significant as the place where the first Maori King, Potatau Te Wherowhero (1770-1860), was installed, lived and was buried. This significance was recognised by the colonial government; the raising of the Red Ensign on the King's flagpole at The Point by imperial forces on 8 December 1863 was a symbolic, and therefore provocative, act. It represented the beginnings of colonial settlement in the Waikato.

Figure 7: William Fox 'Potatau's tomb, Ngaruawahia, Waikato'. 82/54 Hocken Pictorial Collections, University of Otago, Dunedin. http://otago.ourheritage.ac.nz/items/show/5278

Descriptions of Ngaruawahia in late December 1863, soon after troops had raised the Red Ensign, mentioned extensive potato fields, a redoubt and a few whare.[17] The largest of the whare had been Tawhiao's residence; it measured 20 by 10 yards [18m x 9m] and had been taken over for the use of the 'officers of army and steamer'.[18] One notable architectural feature was Potatau's white-painted wooden tomb set in a ditched enclosure; other graves were located outside the enclosure. There was a long line of rifle pits and, about 200-300 metres up the Waipa, a small redoubt with defensive ditch and parapet. The Maori occupants had left in advance of the British and colonial forces' arrival. A force of 600 men occupied The Point and constructed a redoubt.[19] For the remaining months of the Waikato War Ngaruawahia served as a base for men and supplies and a field hospital assisted with the sick and wounded.

[17] *The Press* 26 December 1863, p. 3.
[18] Ibid.
[19] Ibid.

Figure 8: 'Sketch of Ngaruawahia' by Captain GR Greaves shows the Maori redoubt by the Waipa (lower edge), the British redoubt, and cultivations along the shore (coloured areas). Lithographed 1864. http://nla.gov.au/nla.map-ra148-14, National Library of Australia.

Figure 9: Soldiers of the 18th Royal Irish Regiment stationed at Ngaruawahia in 1864. 4-1394, Sir George Grey Special Collections, Auckland Libraries.

Ngaruawahia's position as the focal point for Waikato Maori continued despite the hostilities of the 1860s, and the government chose it as the venue for hui during several visits by the governor of the day. For example, a large hui was held in 1873 on the occasion of Governor Sir George Bowen's last visit before leaving the country; some 800 Maori attended what was described as a 'convivial' meeting.[20] The speeches were made from beside Potatau's tomb and it was at this meeting that it was resolved to erect a monument in his memory.[21] The monument, an 11-foot high obelisk of Carrara marble and Timaru bluestone, was eventually erected on 31 July 1897 in the Octagon (now Kingitanga Reserve). It commemorates several other chiefs as well as Potatau.[22] The erection of the Maori Parliament House in 1919, and the establishment in 1921 of Turangawaewae as the principal seat of the Kingitanga, consolidated Ngaruawahia's position as a Maori settlement of national importance.

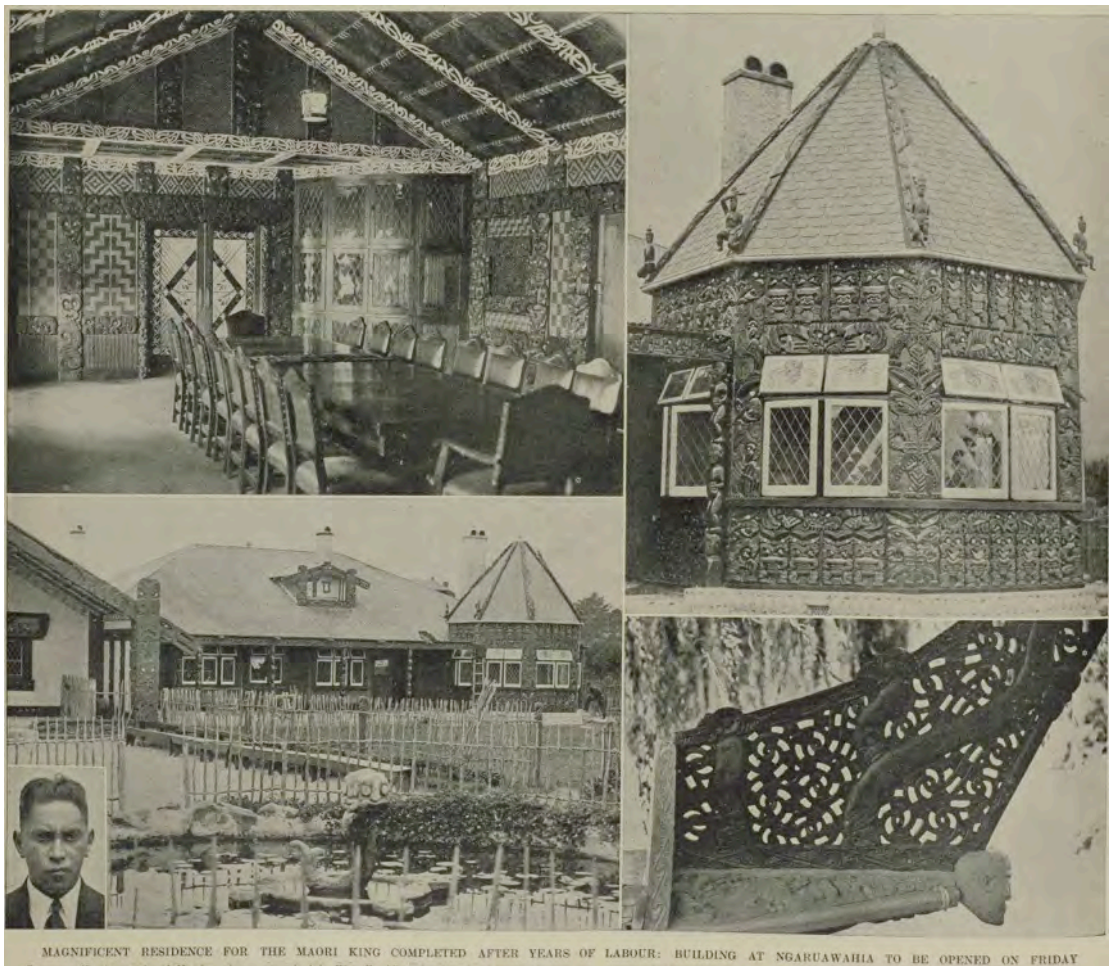


Figure 10: 'Magnificent Residence for the Maori King Completed After Years of Labour' *Auckland Weekly News* 16 March 1938. AWNS-19380316-46-2, Sir George Grey Special Collections, Auckland Libraries.

Ngaruawahia is situated at the junction of two major rivers; it was therefore of strategic importance for controlling traffic up into the Cambridge-Maungatautari area on the Waikato and past Pirongia to Puniu on the Waipa. Historically the area was rich and desirable thanks to the ample resources of the locale: nearby bush on the Hakarimata range; rivers, swamps, lakes and streams; fertile well-drained soils and a climate suitable for growing most traditional crops, as well as introduced ones. These same attributes led to the belief by

[20] *Auckland Star* 12 March 1873, p. 2.
[21] *Auckland Star* 14 March 1873, p. 2.
[22] *New Zealand Herald* 2 August 1895, p. 6.

colonial chroniclers that Ngaruawahia would become the capital of the Waikato or even New Zealand.[23]

That promise was not fulfilled, however, Hamilton soon taking over as the principal town in the Waikato. Rather, Ngaruawahia developed into a service town for surrounding areas, providing them with amenities and facilities, including a range of businesses, medical practices and institutions.

**Survey and Subdivision**

Surveyors began work within a few months of the end of the Waikato War and laid out the town with Great South Road aligned directly to the junction of the two rivers and with a small conceit of laying out the streets in a Union Jack pattern. A few of these sections were approximately a quarter-acre but some were much smaller and intended for commercial use. The first survey covered only the area from the rivers' junction to Newton Street.

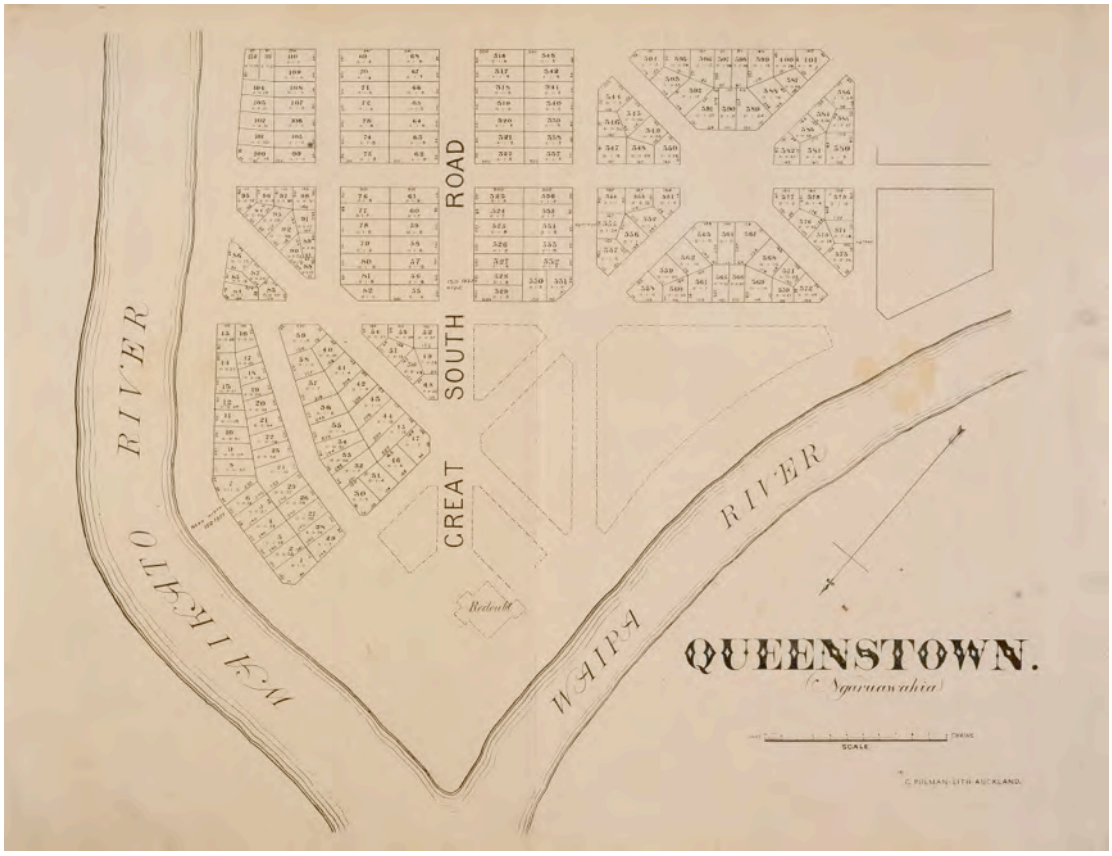


Figure 11: 'Queenstown. Ngaruawahia'. The earliest survey of the proposed township covered just the area to the north of Newton-Jordan Streets. North is to bottom left. Note the original alignment of Great South Road and the redoubt positioned close to the point at the end of the road. NZ Map 4498-22, Sir George Grey Special Collections, Auckland Libraries.

In mid-July 1864 it was announced that 'Ngaruawahia the Great' had become Queenstown and had 'been cut up into allotments, a large proportion of which are to be offered for sale on the 9th September'.[24] The sale had been deferred for a month to give Australian investors a better opportunity to buy. Plans of the allotments were available for consultation.[25] It was

[23] A Settler *The Waikato and Ngaruawahia, the Proposed New Capital of New Zealand* (Auckland 1863).
[24] *Hawke's Bay Herald* 19 July 1864, p. 2.
[25] *New Zealand Herald* 23 July 1864, p. 1.

considered important as 'one of the first fruits of the confiscation', indicative that 'the progress of settlement can no longer be delayed'.[26] About one-third of the town was offered for sale and it was very successful, attracting 'immense competition'.[27] The settlement was called Newcastle by the time of the sale but for a time went under all three names.

A further survey was undertaken in 1865-66, for the adjacent land to the south of Newton Street as far as Uenuku-Belt Roads; this consisted of quarter-acre sections with several parcels set aside as reserves, a cemetery, a school and church sites. Another survey, also in 1865-66, of the area immediately to the south again, was surveyed as 'Suburban Allotments at Newcastle'; this area extended to what is now Saulbrey Road and comprised parcels from five to ten acres.[28] On the north side of the Waikato River, the Town of Horotiu was laid out in similar-sized parcels.[29] Further lots were offered for sale in 1867, including 100 town lots; 20 in Newcastle North and 30 in Newcastle South.[30] In 1873 it was announced that suburban land was to be immediately cut up into suitable sections and offered for sale.[31]

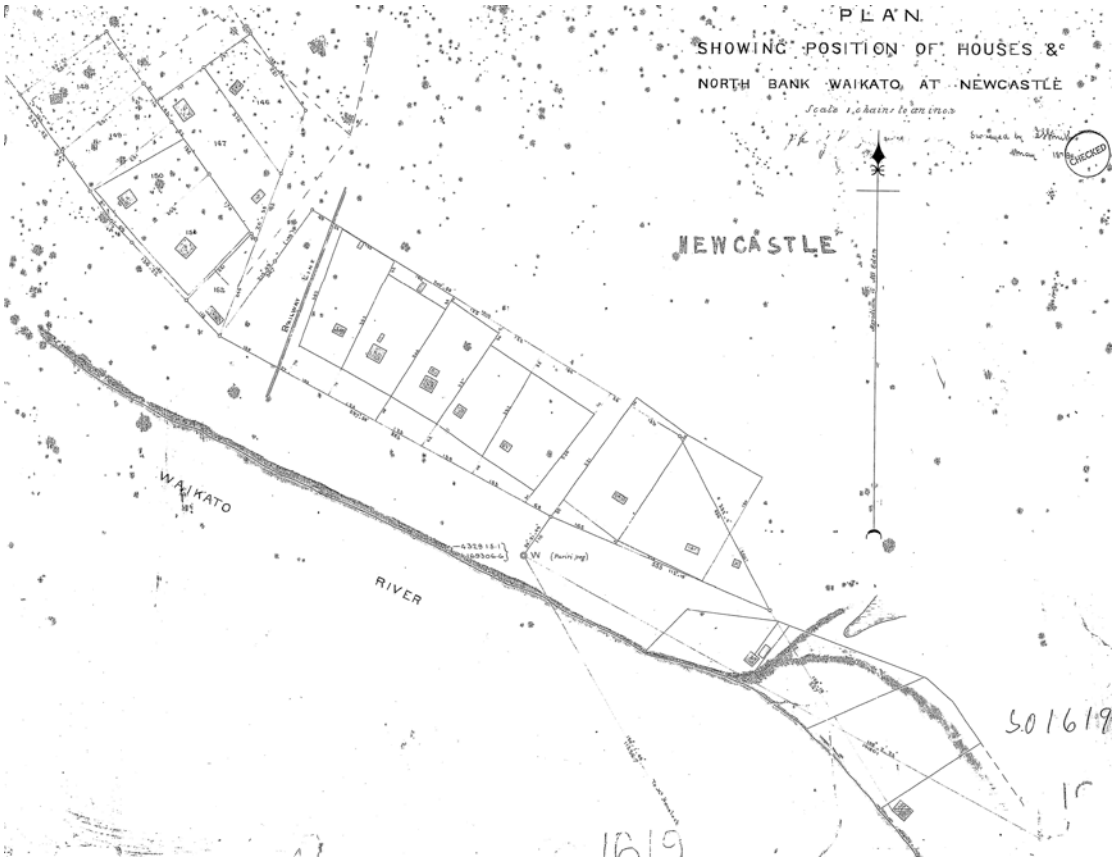


Figure 12: 'Plan showing position of houses etc, north bank Waikato at Newcastle', surveyed May 1878. At least a dozen houses (and a few outhouses) are shown along Regent Street and Old Taupiri Road and are indicated by numbers or letters. Those to the east of the railway line may be militia cottages. The building at lower right is probably the fellmongery. SO 1619, QuickMap.

[26] *Daily Southern Cross* 31 August 1864, p. 4.
[27] *Daily Southern Cross* 30 September 1864, p. 4.
[28] SO 56, QuickMap.
[29] SO 130, QuickMap.
[30] *Daily Southern Cross* 16 January 1867, p. 2.
[31] *Auckland Star* 14 March 1873, p. 2.

Further subdivisions occurred during the 20th century, either of Crown land or land set aside for reserves, or by making parcels smaller. As part of the government policy for making houses available for workers under the Workers' Dwellings Act 1905, eleven parcels in Barakat (formerly west end of Kepler), Ellery and Newton Streets were gazetted in 1912.[32] Only six houses were built and in 1925 the designation of three sections was revoked.[33] The two houses in Ellery Street and three in Newton Street still exist. Several other areas were later developed by the government for railway houses or as state housing subdivisions.

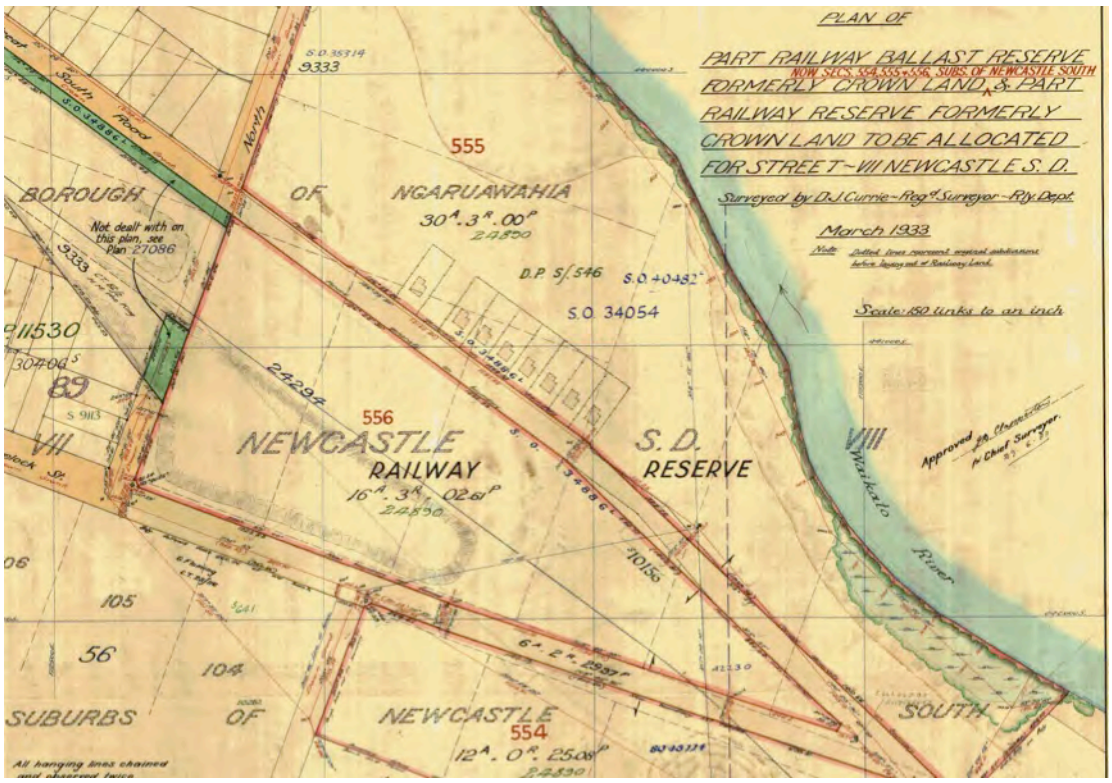

Figure 13: Plan of an area formerly designated as railway reserve, which shows eight railway workers' houses built along Great South Road. SO 27088, surveyed 1933. QuickMap.

**Transport**

Ngaruawahia prospered from its river trade, with many steamers and barges bringing goods and passengers to a wharf built on the Waipa River bank. Incoming supplies were re-distributed to local stores and residents, and local produce was shipped out. Most of the early businesses were situated at The Point, handy to the wharf.

Several steam boats operated freight and passenger services on the Waikato and Waipa Rivers. One proprietor was Mathew Walsh, in partnership with his brother James. The Waikato Steam Navigation Company at one time provided the only transport between Ngaruawahia and Mercer.[34] In 1866 WJ Young and Co. operated the *Waipa*, carting gum from Ngaruawahia to the Bluff (Mercer) as well as freight and passengers; higher rates were charged for officers.[35] In 1866 Young announced the use of steamers (rather than paddle-steamers) on the Waikato-Waipa run.[36]

[32] *New Zealand Gazette* 26 August 1912.
[33] *New Zealand Gazette* 1925 p. 862; SO 23332, QuickMap.
[34] *New Zealand Herald* 26 August 1930, p. 14.
[35] *Daily Southern Cross* 19 February 1866, p. 4.
[36] *Daily Southern Cross* 23 April 1866, p. 1.

Ngaruawahia's position at the junction of two large rivers also meant frequent flooding: most spectacularly in 1875, 1907, 1953 and 1998.

Figure 14: The self-propelled punt is shown crossing the Waikato River to the landing at The Point, date unknown. The Delta Hotel is prominent (centre top) on Great South Road; Holy Trinity Church can be seen on the skyline at upper left. ½-092945-F, Alexander Turnbull Library.

Figure 15: A view across the Waipa River to The Point shows the paddle steamer *Waipa* at the wharf and the road-rail bridge in the distance [mid-1870s?]. James D Richardson. 4-3799, Sir George Grey Special Collections, Auckland Libraries.

Whereas the construction of Great South Road, given its early unsuitability for wheeled traffic and heavy loads, did not affect the river trade, the coming of the railway reduced the flow of traffic on the river, being faster and more efficient with a direct route to Auckland and capacity for heavier loads. The rail bridge over the Waikato River at Ngaruawahia was

under construction by June 1875 and completed for the opening of the North Island Main Trunk (NIMT) line through Ngaruawahia on 13 August 1877.[37]

Figure 16: Daniel Manders Beere. A view of the railway bridge across the Waikato River, possibly 1880s. ½-096173-G, Alexander Turnbull Library.

Ngaruawahia's railway station was initially sited at the south end of town, but after much protest, and a petition in October 1877, another was built in the business district. Southbound trains stopped at the town station while northbound trains stopped at the southern station.[38] By 1897 the northern one was listed as the Ngaruawahia Station, the other referred to as the goods station. A new station had been built between these two sites by 1914. The private railway line to the mines at Glen Massey ran from the vicinity of this station, along Kepler Street, through the large reserve (now Te Wiata Lane area) to a bridge across the river near the end of Ellery Street.[39]

[37] Latta, p. 313.
[38] Ibid, p. 84
[39] SO 23332, QuickMap.

Figure 17: 'Railway Station, Ngaruawahia', date unknown. ½-001097-G, WA Price Collection, Alexander Turnbull Library.

Ngaruawahia's rail bridge over the Waikato River served road as well as rail traffic until 1931, when a rail-only bridge was opened just downstream.[40] A warrant authorising the construction of a traffic bridge over the Waikato River, to be built adjacent to the original rail bridge, was issued in July 1914. The costs were to be apportioned so that Waikato County Council paid 50%, Ngaruawahia Town Board 35%, Waipa County Council 10% and Raglan County Council 5%.[41] Construction was underway by March 1919, and the bridge was completed in the 1920-21 financial year.[42] However, it was too narrow for two-way traffic so use of the rail bridge for vehicles continued for traffic travelling in one direction only. For a period after construction of the new rail bridge (1931), there were three bridges side by side.

This situation continued into the mid-1950s, when the construction of a new steel road bridge was constructed and the two old bridges removed.

A bridge was constructed over the Waipa River in 1898; it was wooden and had a weight restriction of 25 cattle.[43] In December 1916 an impatient motorist stampeded a herd of cattle being taken over and the middle span of the bridge collapsed. A punt provided a river crossing until a new bridge was built in 1922.[44] The bridge's decking was treated with an asphalt preparation to give it a good gripping surface, but it couldn't cope with the loads

[40] Latta, p. 115.
[41] *New Zealand Herald* 31 July 1914, p. 8.
[42] Public Works Statement, Minister of Public Works. *Appendices to the Journal of the House of Representatives 1919, Session I, D-01* p. 24; *1921, Session II, D-01* p. 30.
[43] Latta, p. 117.
[44] Public Works Statement, Minister of Public Works. *Appendices to the Journal of the House of Representatives 1921, Session II, D-01* p. 30.

placed on it either; particularly after the opening of metal quarries on the western side meant an increase in laden trucks.[45] This bridge was in turn replaced in 1974.

Figure 18: A view looking upstream up the Waipa River shows the Waipa road bridge. The remains of the wharf are at left. ½ -000160-G Alexander Turnbull Library.

Several coaching firms offered passenger, mail and freight transport, either north-south on Great South Road to Raglan via Whatawhata or to the Waingaro Hot Springs and the Waingaro landing through Glen Massey. Quick's coach service and Cobb & Co. operated services from Auckland to Hamilton through Ngaruawahia.

Figure 19: Mail coach from Ngaruawahia to Raglan, 1912. ½-032301-F, Alexander Turnbull Library.

[45] *New Zealand Herald* 7 October 1922, p. 11.

**Town development**

By July 1864 it was reported that 'already [Ngaruawahia] is a place of some commercial importance' with several stores and branch offices of the Bank of New Zealand (BNZ) and the Bank of New South Wales.[46] The BNZ initially established its agency in a tent on the riverbank, opening for business on 13 May 1864.[47] Two months later tenders were called for the construction of a hospital at Ngaruawahia; there was to be accommodation for as many as 300 patients and it was under construction by January of 1865.[48] The two-storey structure was built at the end of Market Street, on Waikato Esplanade.

By January 1865 the Delta Hotel, with its 25 rooms, dining hall and parlour, had been built on a commanding position on The Point; close by were the Newcastle Hotel, the BNZ and several smaller shops and residences. On the river flat facing the Horotiu [Waikato] River a brewery was being built for WJ Young and Dawson with a 'pretty little verandah [sic] cottage' next door and next to that Simpson's large store.[49] On the government reserve were many buildings including a large iron store and other stores for the Commissariat; a carpenters' shop, transport offices, blacksmith's, post office and canteens. Still extant at The Point were the redoubt, huts and gardens, barracks, and stables. The wharf was already busy with 'quite a fleet of steamboats, barges etc'.[50] Across the Waikato was Gibbons' sawmill and 'a lemonade and sodawater manufactory'; on the west bank were the surveyors' camp, with 12 or 14 huts, a slab-built cottage belonging to Captain Simpson and a brickworks.[51]

Figure 20: A view across to The Point, late 1863-early 1864, with a paddle steamer towing a barge on the river in the foreground. 4-1396 Sir George Grey Special Collections, Auckland Libraries.

[46] *New Zealand Spectator and Cook's Strait Guardian* 20 July 1864, p. 2.
[47] Latta, p. 185
[48] *Daily Southern Cross* 20 July 1864, p. 1; 9 January 1865, p. 5.
[49] *Daily Southern Cross* 9 January 1865, p. 5.
[50] Ibid.
[51] Ibid.

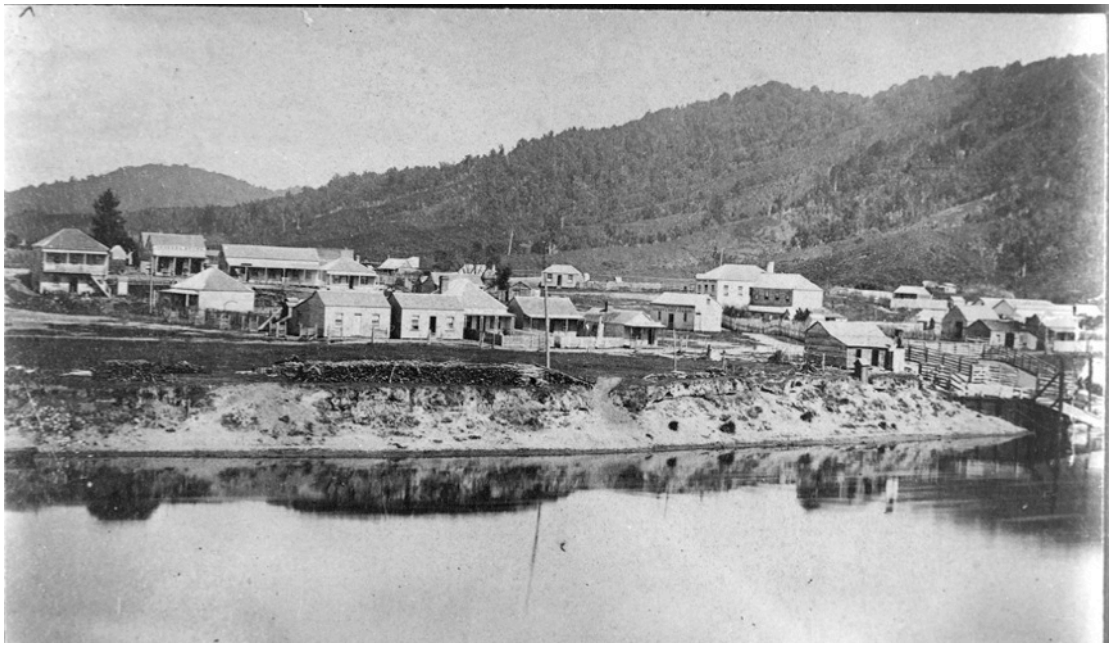

Figure 21: A view of The Point showing the dense cluster of shops, workshops and houses. Date unknown [c.1875?]. 4-3797, Sir George Grey Special Collections, Auckland Libraries.

By 1875 there were two hotels (the Delta and Central); two churches (Episcopal and Roman Catholic); a small brick gaol, George Edgecumbe's store, Charles Innes' large brewery, two stores kept by Fitzpatrick and Hubert, the offices of the Waikato Steam Navigation Co., and the barracks. Ngaruawahia was a 'busy thriving place, containing about seventy houses, a flourmill, boat-building yard etc'.[52] A map drawn in 1881 (see SO 2464 below) identifies some of these buildings, but many had been affected by the major flood in 1875, which caused several business and homeowners to shift to higher land.

Innes's brewery and malt house were situated on the bank of the Waikato, near the Delta Hotel. Unfortunately, a large mortgage and small market for his brew resulted in bankruptcy and Innes left for Te Awamutu in about 1875. The business continued under George Dickinson but was closed down in 1909.[53]

[52] *New Zealand Herald* 27 February 1875, p. 5.
[53] Latta, p. 189.

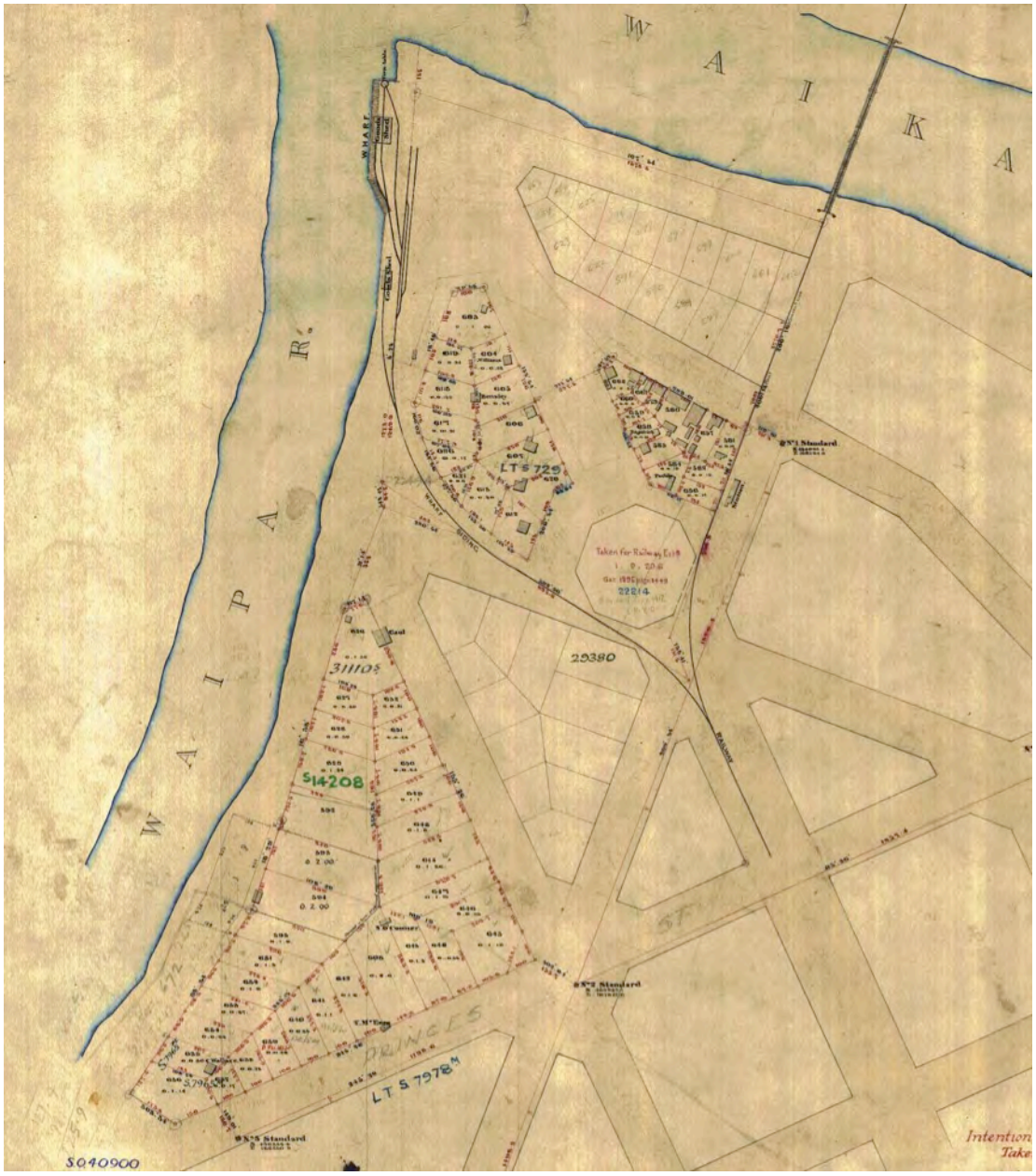


Figure 22: 'Portion of Town of Newcastle', SO 2464 (cropped), surveyed 1881. This plan shows several buildings at The Point including two goods sheds at the termini of railway lines, the gaol and other buildings that are probably houses. The area was being re-surveyed, possibly because several of the buildings encroached on to neighbouring properties. QuickMap.

A 'turn of the century' map reproduced in Latta's book *Meeting of the Waters* (see below) identifies a few of the buildings on the 1881 map, as well as some across the river. It shows several shops, houses, businesses, and the Waipa Hotel still extant on The Point and a few on the newer route of Great South Road leading to the bridge. The Delta Hotel was positioned opposite the railway station, taking advantage of the custom that the railway brought. Standing on the corner of Market Street and Great South Road facing the Waikato River bridge, the hotel has been on the same site since 1864.[54] The first hotel burnt down in 1899 but it was replaced in 1902 with a much larger building.[55]

[54] Latta p. 168.
[55] Ibid.

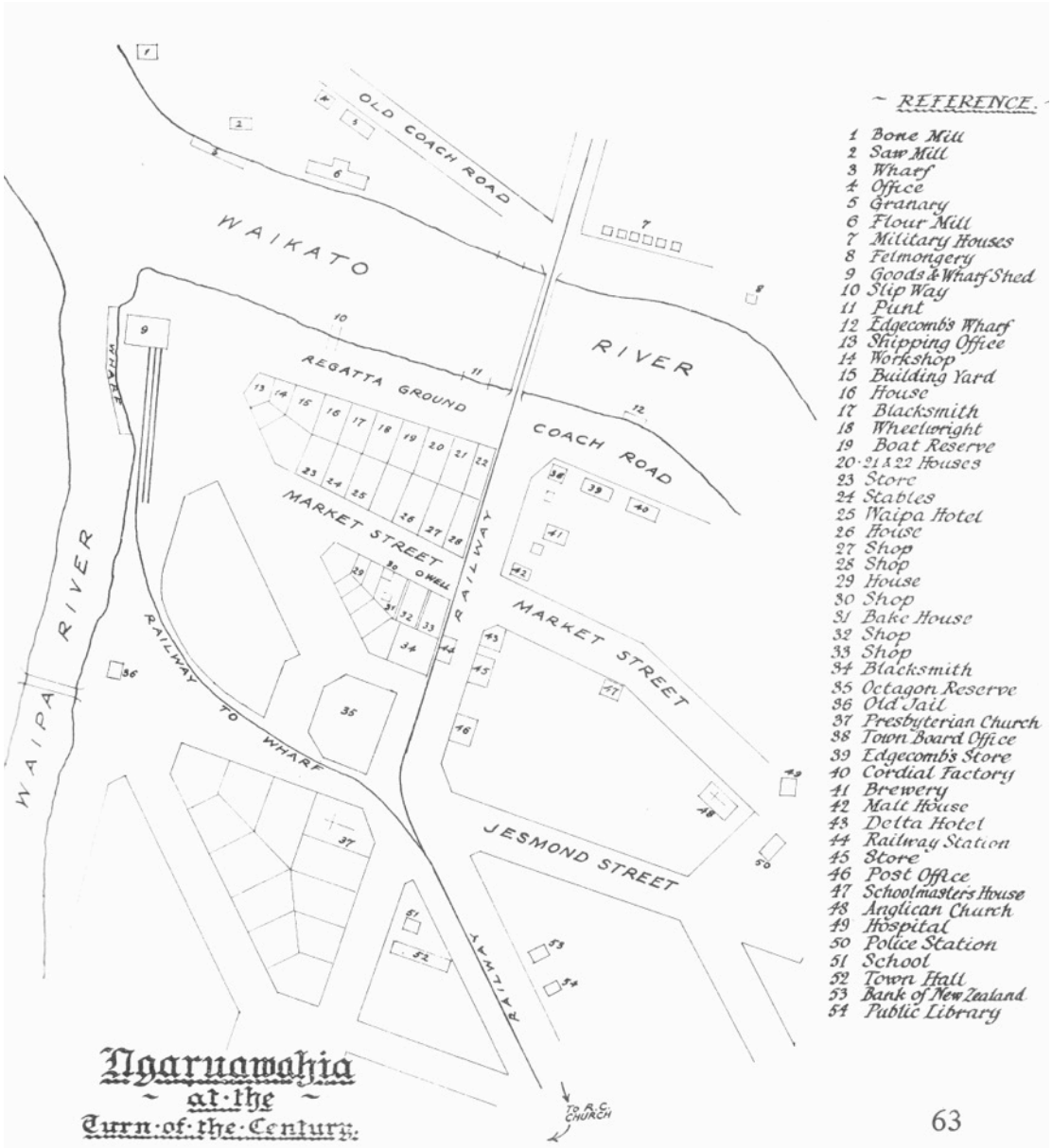


Figure 23: 'Ngaruawahia at the Turn of the Century' with buildings identified by number and then in the key at right. Reproduced from *Meeting of the Waters* p. 63.

By contrast the Waipa Hotel has seen several incarnations and locations: it began on The Point as either Young's, the Newcastle or Central Hotel, was later shifted up to the corner of Jesmond Street and Great South Road, was re-named the Royal Mail Hotel and then the Waipa.[56] The hotel burnt down in 1917 and was replaced with the present one.[57] In the early 20th century three private hotels also provided local accommodation: Perrin's boarding house (later known as Central Private Hotel), Jesmond House and Waingaro House. The 24-room Waingaro House was owned and run by Mrs TK McDonald from at least 1912 to 1919.[58] Perrin's was later cut in two and one part remains in town; Jesmond House was converted to shops and demolished in 1974, and Waingaro House was dismantled and removed.[59]

[56] Latta p. 166.
[57] *New Zealand Herald,* 22 March 1917, p. 4.
[58] *New Zealand Herald,* 14 August 1912, p. 2; 1 March 1919, p. 6.
[59] Latta p. 167, 169

Figure 24: Delta Hotel showing civilians and soldiers, possibly of the 12th Regiment, c. 1864-65. 1234-1, Sir George Grey Special Collections, Auckland Libraries.

In 1902 there were two hotels, four churches, a public school and a post and telegraph office.[60] Jesmond Street began to attract commercial interests from about 1908.[61]

Figure 25: Jesmond Street, c. 1915. In the centre are the premises of RS Fleming (The Novelty Depot) & RE Bell (draper). To the left is a boardinghouse. WA Price Collection, ½ 000955-G, Alexander Turnbull Library.

[60] *Cyclopedia of New Zealand; Auckland Provincial District* (Christchurch 1902) p. 713
[61] Latta p. 176

**Early industries**

One early store owner, Ralph Simpson, reported in 1866 that he was being kept busy by the trade from gum-diggers; as well as acting as their agent in getting the gum to Auckland, Simpson also supplied the diggers with provisions.[62] Large quantities of kauri gum were dug up in the vicinity of Ngaruawahia, mostly by Maori workers either on their own account or employed by European businessmen such as Isaac Coates.[63]

The settlement's original flourmill was built by RR Hunt after his arrival in Ngaruawahia in 1870; he reported in 1878 that 'I further got the company to build the steam powered mill still in operation'.[64] In December 1877 the Waikato Steam Navigation Company sent the paddle steamer *Rangiriri* to convey a wooden mill, which had belonged to Maori at Waerenga on Lake Waikare, to Ngaruawahia where it was erected beside the existing buildings.[65] Tenders were called for the erection of a concrete granary in 1878.[66] Architect TH White of Taupiri and Hamilton was the designer of the mill; his family history describes in detail the reinforcing technique used by White, in which imported Portland cement was laid over barbed wire with squares of metal wrapped around.[67] The building is believed to be one of the first uses of reinforced concrete in New Zealand.[68]

Figure 26: The brick flour mill and concrete granary built by the Waikato Steam Navigation Co., 1888. 4-3802, Sir George Grey Special Collections, Auckland Libraries.

The granary still exists on the north bank of the Waikato River, just downstream from the road and rail bridges, although the wooden floor of the second storey has disappeared. It was used for social gatherings from time to time and still later was used for storing canoes; for this purpose a wide doorway was made in the end wall. The wooden mill building burnt down and was replaced with a three-storey one of brick construction. Also alongside were other wooden granaries. The complex was bought in March 1883 by the Waikato Steam Navigation and Coal Mining Company but it ceased operation in 1889.[69] In 1908 the brick

[62] *Daily Southern Cross* 19 February 1866, p. 4.
[63] Ibid.
[64] *Waikato Times* 2 March 1878 cited by HCM Norris 'Ngaruawahia flour mill store' notes, Hamilton Libraries.
[65] *Waikato Times* 4 December 1877 cited by Norris.
[66] *New Zealand Herald* 22 June 1878 cited by Norris.
[67] HCM Norris 'Ngaruawahia flour mill store' notes, Hamilton Libraries.
[68] G Thornton *Cast in Concrete – Concrete Construction in New Zealand, 1850-1939* Auckland 1996, pp. 55, 57.
[69] Latta, p. 192.

mill and chimney were dismantled; the bricks were used in some of the first two shops in Jesmond Street.[70]

Local blacksmiths were needed in the era of horse transport and Paddy & Wallace advertised as agricultural implement makers in 1882.[71] In 1899 it was reported that Mathew Walsh, steamboat proprietor, was about to start a flax mill in Ngaruawahia, 'for which purpose he has secured one of the large sheds which formed part of the old flour mill.[72] Walsh carried on the flax mill until 1910.[73]

Figure 27: 'New Zealand's flax industry: the mill on the banks of the Waikato at Ngaruawahia', *Auckland Weekly News* 26 October 1905 p. 1. AWNS-19051026-1-2, Sir George Grey Special Collections, Auckland Libraries.

Messrs Laurie [Lowry] and Company operated a local bone mill from the 1870s.[74] It is shown as building No. 1 in the turn-of-the century map reproduced in *Meeting of the Waters* (see above), at the bend of the Waikato River as it turns north, about 1 km along Old Taupiri Road.[75] The premises consisted of an office and cottage for the manager and, on the riverbank, a large two-storey corrugated iron building with a large sliding roller door opening onto a landing stage.[76] The mill was later taken over by W Paterson and his brother and operated into the 20th century.[77]

[70] Latta, p.192.
[71] *Waikato Times* 8 July 1882, p. 3.
[72] *Auckland Star* 28 October 1899, p. 1.
[73] *New Zealand Herald* 26 August 1930, p. 14.
[74] *New Zealand Herald* 15 February 1892, p. 6.
[75] Latta, p. 63.
[76] Latta, p. 194.
[77] Latta, pp. 194-95.

The Waikato Fellmongery Company was formed at a meeting of settlers in Ngaruawahia in 1882, the site for the works not having then been decided.[78] The building is shown as No. 8 in the Latta map (see above), on the north bank of the Waikato River at roughly the end of Regent Street.[79] The provisional directors announced in May 1882 they had arranged to purchase 'Allotment 167 Suburbs of Ngaruawahia', and in July they advertised for tenders to build a wooden building, sweathouses and brick cistern.[80] A *Waikato Times* article published in December 1882 stated the fellmongery was the first company of its kind to be started in the Waikato, was about to increase its staff, and had just consigned a shipment of wool to London.[81] Nevertheless the company went into voluntary liquidation in 1885.[82]

The expansion of dairying in the latter decades of the 19th century, and Ngaruawahia's position on two rivers that flowed through rural districts, led to the establishment of dairy factories in the town. The first was Wesley Spragg's New Zealand Dairy Association's creamery on the bank of the Waipa just upstream from the bridge; this operated from 1886 to 1889.[83] Reynolds and Co. built a dairy factory on the bank of the Waipa at the site of the Catholic mission station. It was operating by 1889 after the assurance of supply from 350 cows.[84] The site had a supply of cold spring water, was shaded by willows and had a large cellar where cream could be stored in cool conditions.[85]

Figure 28: 'Waikato farmers bringing milk to the Ngaruawahia Dairy Factory, Auckland'. *Auckland Weekly News* 3 May 1901. AWNS-19010503-6-1, Sir George Grey Special Collections, Auckland Libraries.

[78] *Waikato Times* 18 March 1882, p. 3.
[79] Latta, p. 63.
[80] *Waikato Times* 30 May 1882, Page 2; *Waikato Times,* 8 July 1882, p. 3.
[81] *Waikato Times* 2 December 1882, p. 3.
[82] *New Zealand Herald* 24 March 1885, p. 1; *New Zealand Herald* 21 December 1887, p. 3.
[83] Latta, p. 201.
[84] *New Zealand Herald* 23 August 1889 p. 6. Latta (p. 201) states it was built in 1893.
[85] *New Zealand Herald* 21 May 1890, p. 6.

In 1893 Reynolds and Co. announced they had bought land on which to build a permanent butter factory and that building would start at once.[86] The new factory was a large, two-storey building and said to be the largest butter factory in the Southern Hemisphere.[87] The business was taken over by the New Zealand Dairy Association and then, after a business merger, by the New Zealand Co-operative Dairy Company.[88] The building burnt down in 1929, but was not re-built, operations instead shifting to the Taupiri dairy factory.[89]

Several brickworks also operated in Ngaruawahia; the longevity of one operating by January 1865 on the west bank of the Waipa (see above) is not currently known, nor of that run by Mr Booth on the Whatawhata road just outside the borough boundary in the 19th century.[90] Bricks from both these sources were used for construction in the early settlement. From 1923 to 1926 the Silico-Calcaire Brick and Tile Company turned out 13,000 bricks per day and supplied bricks for the construction of Auckland War Memorial Museum, St Paul's Convent School and the Masonic Lodge.[91] Other ventures included MJ McLean's Bricks Ltd plant on River Road which produced sand and lime, then sand and cement, bricks between 1947 and 1966. Ian Thorpe's glazed concrete block manufacturing plant in Herschel Street operated from 1965 to 1969; and Keith Clark's field tile and brick works on Great South Road, opposite the end of Saulbrey Road, were established c.1955-56.[92]

Figure 29: 'Teachers and pupils of Ngaruawahia Public School', *Auckland Weekly News* 21 August 1902. AWNS-19020821-11-4, Sir George Grey Special Collections, Auckland Libraries.

**Education**

The first school classes were held in the homes of Mrs Lestrange and Mrs Hoskings from 1869, then in a room in the hospital and other temporary accommodation until two immigrant cottages were placed on the school reserve in 1876.[93] In 1882 another piece of land was set aside by the Crown, but despite much agitation by Ngaruawahia residents, it

[86] *Auckland Star* 14 November 1893 p. 2.
[87] Latta, p. 202.
[88] *Auckland Star* 3 October 1896, p. 5.
[89] Latta, pp. 202-3; *Auckland Star* 13 July 1929, p. 7.
[90] Latta, p. 196.
[91] Ibid, pp. 196-97.
[92] Ibid.
[93] Ibid, p. 226.

was not until the end of 1885 that a purpose-built school was constructed on the site.[94] The school, which had two classrooms, opened on 26 January 1886.[95] Additions were made in 1908, 1917 and 1921, resulting in a seven-classroom building; this was demolished in 1964.[96] During the 1950s a new classroom block was built and in the 1970s further classrooms, an assembly hall and library block were added to the campus.[97]

A greatly expanding roll in the 1950s saw the building of a second primary school, Waipa Primary School; this was situated on the western side of the railway line and opened for the third term in 1957.[98] Bernard Fergusson School was opened in May 1965 in Duke Street, to service the needs of pupils in the expanding northeast.[99] Its official opening took place in the following year. It is now called Te Kura Kaupapa Maori o Bernard Fergusson.[100] Ngaruawahia High School opened in Kent Street in February 1963 with a roll of 209 pupils and with 12 teaching staff.[101]

**Churches**

Ngaruawahia has been well served by churches for the different denominations since the first church, Holy Trinity Anglican Church, was opened in 1864. Bishop Selwyn officiated at the ceremony that was also attended by Rev Ashwell.[102] The church was built by soldiers of the 12th Regiment. It was replaced by a new Holy Trinity Church in 1914 and again in February 1998.[103]

Figure 30: James Richardson, 'The second Holy Trinity Church built in 1914'. 4-6388, Sir George Grey Special Collections, Auckland Libraries.

[94] Latta, pp. 226-27.
[95] Kellaway, p. 64.
[96] Ibid. Latta (p. 228) states the buildings were demolished in 1967.
[97] Lata, pp.228-29.
[98] Latta, p. 233.
[99] Latta, pp. 234-5.
[100] http://www.bernardfergusson.school.nz/About+our+School/A+Brief+History.html
[101] Latta, p.236.
[102] Ibid, p. 209.
[103] Ibid, p. 211; Smith p. 72.

In 1861 Bishop Jean Baptiste Pompallier wrote to King Tawhiao informing him that he was sending a priest to Ngaruawahia; none other than his nephew, Antoine Pompallier. The latter set up a modest church in a whare on the bank of the Waipa, but he left there in 1863 in advance of the war.[104] The town's first Catholic church was built in Herschel Street on the western side of the railway line opposite the town hall; it opened in 1872 although Ngaruawahia did not have a resident priest until 1903.[105] On 16 November 1913 a new church, situated on the east side of Great South Road, was opened.[106] The old church was used a scout hall, then a coal depot, until it was burned down.[107]

Early in 1928 the Sisters of Our Lady of the Mission opened a convent on the corner of Belt Street and Great South Road and a erected a brick school with a roll of 60 pupils.[108] The convent, which had previously been a nursing home, was shifted to Hakarimata Road in the early 21st century.

The first Presbyterian church was opened in December 1875, on the corner of Durham and Jesmond Streets. In 1919 a church was opened for Presbyterian worship in Galileo Street; this had been brought from Karangahake in sections by horse-drawn wagons. It was removed in 1966 and replaced with a brick church; this became a Presbyterian and Methodist Union parish in 1972.[109]

Figure 31: The first Presbyterian Church, built 1875, as it appeared c.1910. ½-001599-G, Alexander Turnbull Library.

[104] Latta, p. 213-4.
[105] Ibid, p. 212, 214.
[106] Ibid, p. 215
[107] Ibid.
[108] Ibid, p. 215.
[109] Ibid, p. 217.

The Methodists opened a church in January 1888; this burned down in 1902 and was immediately replaced. The Church of Jesus Christ of the Latter-Day Saints opened a new church in Havelock Road in 1964.

**Civic and Social Infrastructure**

The town's first lockup and gaol were at The Point but in 1881 the police were stationed in the former army barracks opposite the east end of Market Street until these were demolished a few years later.[110] A police house was built on the site and remains there today. A police station was built alongside in 1957. Court hearings were held in the barracks, then in a building in Jesmond Street. After protest in 1883 regarding its condition, the government agreed to renovate the old school building and that was used as a courthouse until 1901, when the old post office was purchased and used. In 1950 court business shifted to Huntly, and the old courthouse was used by a Maori Pentecostal Mission group and then as a restaurant until at least the late 1970s.[111]

The first postal service was managed by the army stationed at The Point, but in October 1865 the Newcastle Post Office was opened. A new building was built in 1874.[112] In 1888 postal facilities were shifted to the railway station and then in 1909 a substantial two-storey building was opened in Jesmond Street, with a flat upstairs for the postmaster.[113]

Figure 32: The new post and telegraph office was opened on 4 December 1909. *Auckland Weekly News* 23 December 1923. AWNS-19091223-10-4, Sir George Grey Special Collections, Auckland Libraries.

[110] Latta p. 78.
[111] Latta p. 76.
[112] Latta p. 75.
[113] Latta p. 77.

Ngaruawahia's first town hall was built in 1886, situated in the block between Great South Road, Durham and Princess Streets. A second hall was built in 1899 on the same site but it was affected by the realignment of the railway line and had to be shifted.[114] A third town hall, designed in 1924 by Edgecumbe and White, architects of Hamilton, was sited on the main road. The tender of E [N?] Willoughby to build the new hall was accepted in April 1924; it was to be made of ferro-concrete and brick, at a cost of £8760, and accommodate over 800 people.[115] The hall, which had an impressive classical-style frontage that included two Ionic columns, was opened with a grand civic ball on 17 April 1925.[116] The building included council chambers, a film projection box, and supper room as well as a large hall space, and it was well used by many clubs and societies. It burnt down on 28 June 1986.[117]

Figure 33: 'The MacIntyre-Patterson wedding: the bridal party and guests at the Ngaruawahia Town Hall'. *Auckland Weekly* News 24 May 1901. AWNS-19010524-11-2, Sir George Grey Special Collections, Auckland Libraries.

Springs in Waipa Esplanade and Market Street supplied the town with fresh water. A dam in the Hakarimata range to supply fresh water to the town was being completed by early October 1922, although the trenches for the pipes were still being dug.[118] The water supply was officially turned on at a ceremony in Jesmond Street by the town's first Mayor, Herbert Sampson, in April 1923. Over the years the supply became insufficient to serve the growing township and further measures taken included pumping directly from the Waikato River and from a deep bore. More satisfactorily a new reservoir, with a water treatment plant, opened in 1965.[119]

[114] SO 16288, QuickMap; Latta, p. 103.
[115] *New Zealand Herald* 28 April 1924 p. 6.
[116] *Auckland Star* 18 April 1925, p. 8.
[117] Smith, p. 70.
[118] *New Zealand Herald* 7 October 1922, p. 11.
[119] Latta, pp. 106-10.

Like any town or city, Ngaruawahia also had its complement of clubs and societies, social events and festivities. The Point became the venue for outdoor recreation after most of the buildings on it were cleared away soon after the turn of the century. A band rotunda was built in 1912 by the Regatta Association and it became the focus of many events at the domain. It was completely renovated in 1998.[120]

Figure 34: Robert Stanley Fleming, 'Regatta Ground, Ngaruawahia, 1 August 1910'. ½-001607-G, Alexander Turnbull Library.

Figure 35: The band rotunda soon after it was built. The Waipa River bridge is visible in the distance on the right. WA Price Collection, 1/2-001611-G, Alexander Turnbull Library.

[120] News clipping supplied by Ngaruawahia local history group, dated17 December 1998.

Ngaruawahia is famous for its regatta on the Waikato River. Perhaps the earliest was in January 1867 when 'in addition to the usual Maori canoe races, there will be one confined exclusively to Europeans and another to Maori females'.[121] Other regattas were held from time to time, including a major one in 1892, but the first official regatta was held in 1896. Thereafter the regattas became annual events, and featured competitions, demonstrations, performances and ceremonial parades of waka. Today Turangawaewae is the main venue but activities can be viewed from the bridges and both banks of the Waikato.

Figure 36: James D Richardson 'A team in the canoe hurdles event at the regatta in 1899'. 4-8599, Sir George Grey Special Collections, Auckland Libraries.

Figure 37: 'Visitors to the Ngaruawahia Regatta', 17 March 1902. *Auckland Weekly News* 27 March 1902. AWNS-19020327-15-5, Sir George Grey Special Collections, Auckland Libraries.

[121] *Daily Southern Cross* 3 January 1867, p. 4.

Ngaruawahia commemorated World War I with the erection of a cenotaph at The Point in November 1922.[122] In what was described as a simple ceremony, the cenotaph was dedicated with the unveiling of the Union Jack, prayers, speeches, a performance by the 4th Waikato Band, a firing party from the local territorials, and 'a very large muster' of returned soldiers.[123] The monument was then handed over in trust to the borough council.

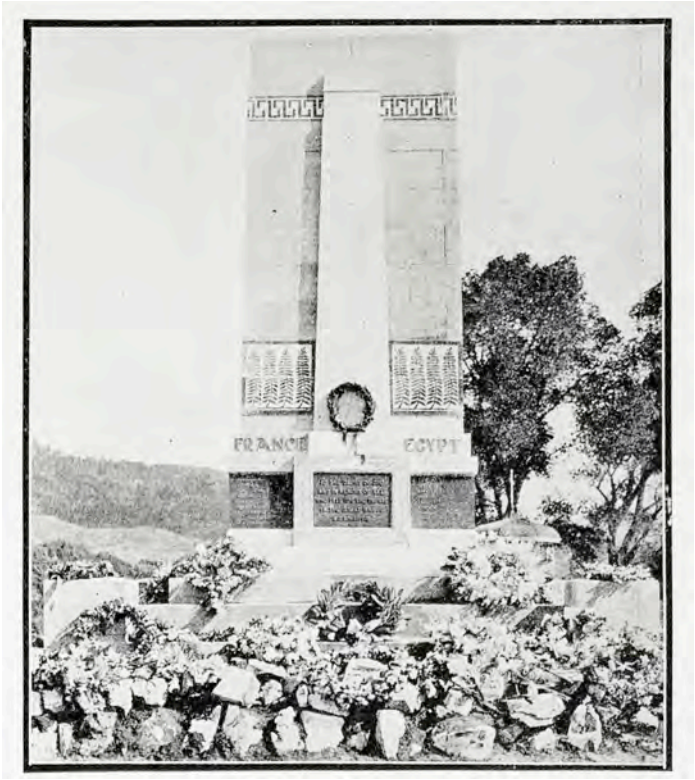


Figure 38: 'The cenotaph erected at The Point, Ngaruawahia, to the memory of soldiers of the district who gave their lives in the Great War'. *Auckland Weekly News* 23 November 1922. AWNS-19221123-47-2, Sir George Grey Special Collections, Auckland Libraries.

Five years later a New Zealand Wars memorial, in the form of a turret from the gunboat *P.S. Pioneer*, was presented to the community by the government.[124] It is also located at The Point.

A less visible memorial stands in a small fenced area on Old Taupiri Road; it is a monument to 'men who fell during the Maori Wars and whose names cannot be traced'.[125] Another related monument stands in Ngaruawahia Cemetery on Great South Road; this one marks the remains of thirteen British and colonial troops, the names of ten of whom are not known. The remains were shifted from their graves in the Octagon (recently renamed the Kingitanga Reserve) in mid-1882.[126]

A clock to commemorate the centenary of Ngaruawahia's founding was unveiled in Great South Road on 8 December 1963.

[122] *New Zealand Herald,* 14 November 1922, p. 6.
[123] Ibid..
[124] http://www.nzhistory.net.nz/media/photo/pioneer-turret-nz-wars-memorial-ngaruawahia
[125] Inscription on memorial.
[126] http://www.nzhistory.net.nz/media/photo/ngaruawahia-nz-wars-memorial

**Mid 20th-Century Onwards**

In 1865 Ngaruawahia's population was 3000, in 1868, after the military had left, it dropped to just 200, of whom fewer than 60 were adults.[127] From then population growth was very slow, reaching 245 in 1901, 478 in 1911 and 1120 in 1921.[128] By 1936 it was 1394, of which 169 were Maori.[129]

After World War II the Maori population in Ngaruawahia increased rapidly, at a faster rate than the Pakeha population; such that in 1956 it was 21% of the total compared with 13% in 1945. By 1963 Maori made up more than 30% of Ngaruawahia's population, in 1976 36%.[130] The town's overall population grew from 2150 in 1951 to 3200 in 1961, and nearly 4000 in 1971.[131] The 2006 census showed 5106 people living in Ngaruawahia, of whom 29% were under 15 years (higher than the New Zealand average), 11.4% were unemployed and 57.3% designated themselves as Maori.[132] By 2013 the population had increased by only 21 people, to 5127.[133]

In the 1950s housing for many families in Ngaruawahia was considered sub-standard and, as was the case throughout New Zealand, this prompted a vigorous government state housing scheme. At the same time sewerage disposal was either into septic tanks or collected by the nightsoil tractor and disposed of in pits just outside the borough boundary on River Road.[134] Several buildings in town, including two billiard halls and some shops, were considered dilapidated; most of the streets were not sealed and there were few permanent footpaths.[135]

By 1963 many changes had improved the appearance of the town with most of the Jesmond Street's shops being replaced and two new banks built. The first supermarket was built by 1977.[136] Many people now commuted to work, either in Hamilton, the armed services bases at Hopuhopu and Te Rapa, industrial plants at Te Rapa, Huntly and Horotiu, or the railways and nearby coal mines; this was possible as bus services improved and car ownership increased. The period 1984 to 1994 was one of tough economic times with the loss of several light industrial and manufacturing employment opportunities; businesses that closed included an eel processing plant, a footwear factory, a poultry farm and several shops.[137] In July 2002 the Bank of New Zealand closed its Ngaruawahia branch.[138]

The year 1995 might be described as a turning point for Ngaruawahia, as it was the year in which the Waikato Raupatu Claims Settlement was signed. Celebrations in the following year marked the centenary of the Regatta and were held over four days in mid-March, attracting 48,000 visitors and 3000 performers.[139] One of the event highlights was a parade of decorated waka taua (war canoes). More recently 2008 saw the signing of the Waikato River Claim Deed of Settlement.[140]

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[127] Latta, p. 48
[128] Ibid, p. 10.
[129] Ibid, p. 10.
[130] Ibid, pp. 5-6.
[131] Ibid, p. 8.
[132] Smith, p. 15-16.
[133] http://www.stats.govt.nz/Census/2013-census/profile-and-summary-reports/quickstats-about-a-place.aspx?request_value=13685&parent_id=13654&tabname=
[134] Latta, p. 9.
[135] Ibid, pp. 8-9.
[136] Ibid, p. 9.
[137] Smith p. 23.
[138] Ibid, p. 41.
[139] Ibid, p. 35.
[140] Smith, p. 47.

The death of Te Arikinui Dame Te Atairangikaahu on 15 August 2006, after 40 years as the leader of the Kingitanga, was commemorated in one of the largest tangihanga ever held. The funeral at the end of a week of mourning was televised to an audience of 430,000 people.[141] At the same time her son Tuheitia Paki was installed as the seventh Maori monarch and so Ngaruawahia's future remains firmly linked to its past.

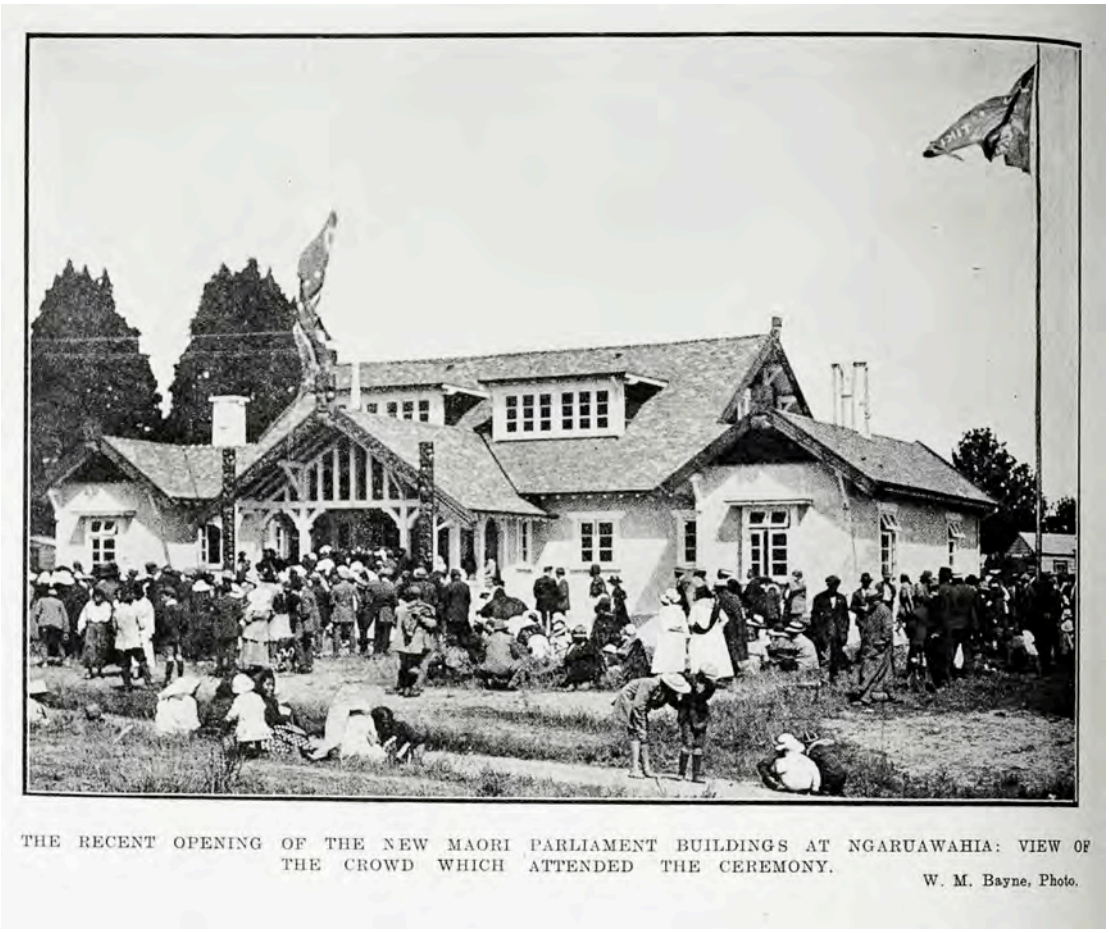


Figure 39: 'The recent opening of the new Maori Parliament Buildings at Ngaruawahia: View of the crowd which attended the ceremony' *Auckland Weekly News* 3 April 1919. AWNS-19190403-40-2, Sir George Grey Special Collections, Auckland Libraries.

[141] http://www.nzonscreen.com/title/tangi-for-te-arikinui-dame-te-atairangikaahu-2006

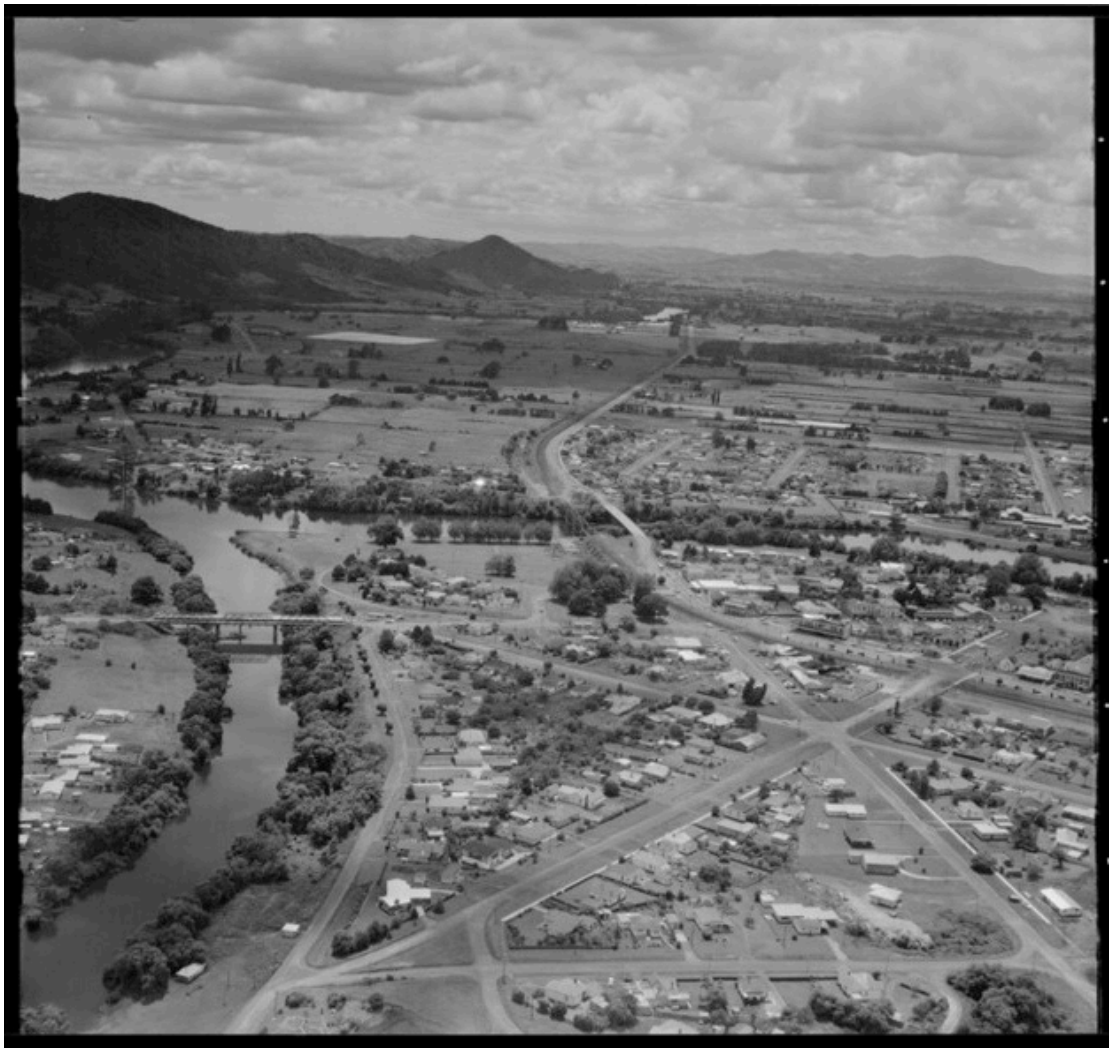

Figure 40: Looking north with Hopuhopu in the distance, road bridge over the Waipa and road and rail bridges over the Waikato, layout of part of the Union Jack street layout, 6 December 1972. WA-70869, Whites Aviation Collection, Alexander Turnbull Library.

## Taupiri

Taupiri's situation on the east bank of the Waikato River, at the junction of the Mangawara [aka Mangawhara] Creek with Taupiri Mountain on the northern side of the junction, is of major cultural and spiritual significance to Tainui. Te Wherowhero's pa Kaitotehe was on the opposite bank of the Waikato and it was here that Rev Benjamin Ashwell established his mission station in 1842. To the east and south of Taupiri was an extensive swamp; several streams, including the Komakorau, Mangamutu, Mangaotoka and Wheiau, merge with the Mangawara at Taupiri forming flat islands vulnerable to flooding. As the Mangawara was navigable for some distance by canoe, Taupiri was thus a significant strategic position.

Figure 41: 'Maori camp at the foot of Mt Taupiri, shewing [sic] the burial ground of the Maori Kings', c. 1880. John Philemon Backhouse, E-053-010, Alexander Turnbull Library.

River traffic was sufficient even by 1863 to warrant the erection of a wharf at Taupiri, the exact location of which is not known. In January 1863 Te Taneti Paeturi was in charge of the wharf, taking a fee for getting horses and cattle across the river.[142] An additional wharf was constructed in 1874 and it used to load and offload passengers, freight and stock from the river with its considerable traffic of steamers and barges.

After the land confiscations of the post-war era, the area was surveyed and a small triangular area was set aside as the Township of Taupiri. Unlike other planned settlements in the Waikato at this time, however, it was not surveyed as one-acre town lots for militiamen. Te Putu Street [formerly Taupiri-Orini Road] formed the southern boundary of the township. Land to the south was subdivided into long narrow wedges with their western boundaries at the Waikato River; these were destined to be allocated to individual claimants through the Maori Land Court (see SO 138 below). Another grant of 135 acres to Te Taneti Paeturi formed their eastern boundaries. The land parcels ranged in size from 150 acres, the northern-most parcel allocated to George Thoms, to 35 acres. Land to the southeast in the

[142] *Daily Southern Cross* 18 February 1863, p. 4.

Komakorau area, plus a strip along the Waikato River north of the Mangawara, was surveyed into 50-acre parcels as grants to be allocated to militiamen of the Fourth Waikato Regiment. George Thoms received his Crown Grant on 24 November 1868, backdated to 13 March 1867; Thoms is described as 'a half caste' on land documents.[143] Militiamen received their grants from 1866, but many did not take them up; they were often amalgamated into larger, more economic, parcels.

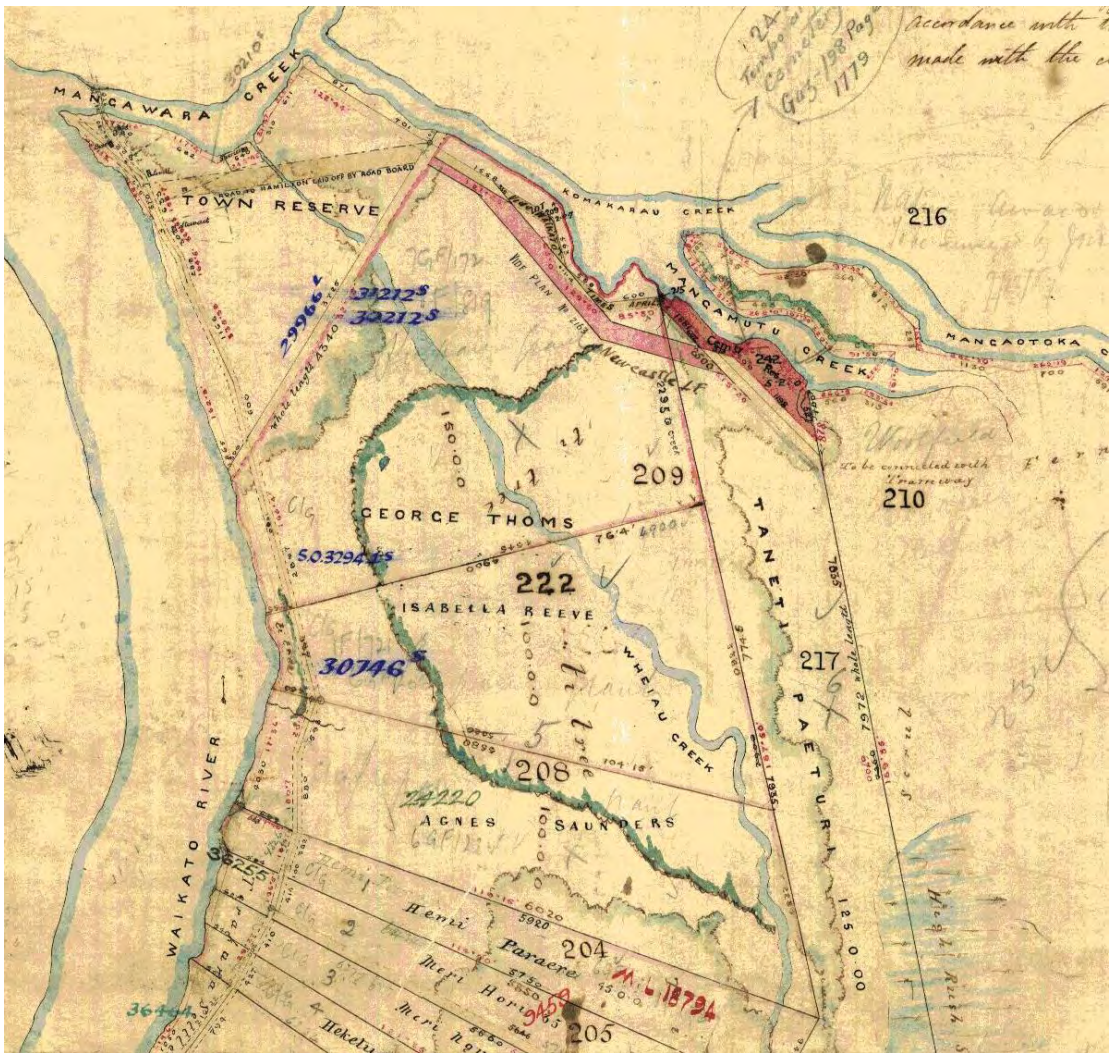


Figure 42: Detail from SO 138 'Plan of Lots Near Taupiri', surveyed in 1867. Within the Town Reserve are a few buildings with associated names: Lovell, Stewart and [B…], on the east side of Great South Road, and Spencer on the Mangawara; these names have been added later.

Ultimately drainage of the swamps, which began soon after European settlement and was still on-going in 1975, enabled more land to be brought into production and added to the prosperity of the district.[144]

[143] Application 5586, South Auckland Land District.
[144] David More *Between the River and the Hills: Waikato County 1876-1976* (Auckland, 1976) p. 357.

Figure 43: This detail from 'Plan of the military settlements in the middle Waikato district' shows the land parcels to the east of the Komakorau River and some of the area's extensive swamp. Note: North is to the left, Waikato River at lower left.) NZ Map 3632, Sir George Grey Special Collections, Auckland Libraries.

## Town development

Taupiri Township was surveyed into 87 sections in about 1867; by 1874 when the survey plan was ratified, a few sections had already been subdivided.[145] Most of the sections were approximately half an acre in size. The government held a sale of eleven parcels of confiscated lands in September 1874, with subsequent sales in later years.[146] Purchasers of the earliest parcels, which were in the northern-most town block, included Robert Bradley, William H Lovell and Fitzpatrick.[147]

[145] SO 405, QuickMap.
[146] *Waikato Times* 19 September 1874, p. 3
[147] *New Zealand Herald* 30 September 1874, p. 2

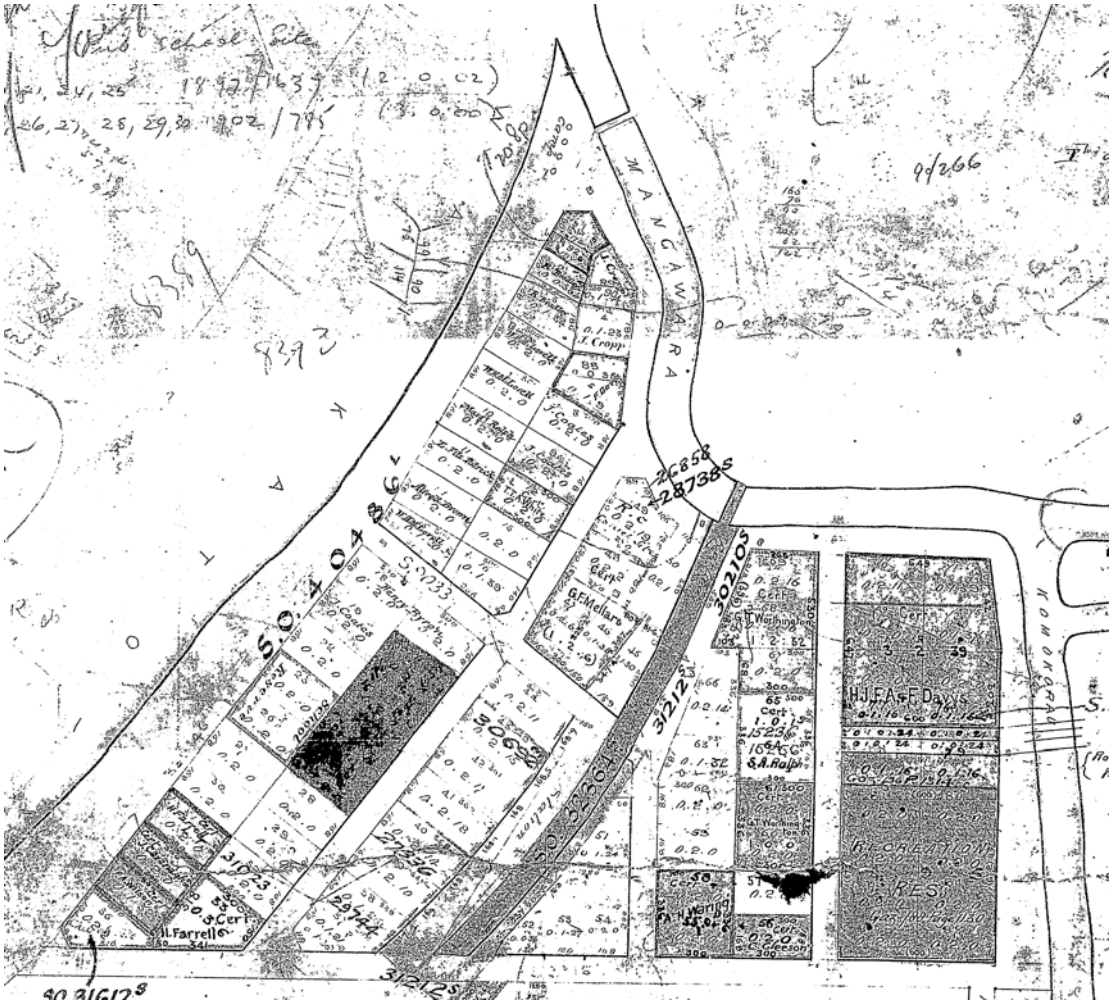

Figure 44: 'Taupiri Township', survey date c. 1867 [signed off in 1874]. SO 405, QuickMap. Te Putu Street runs along the lower edge; some of the darker area at right was later designated as recreation reserve; the NIMT is the broad dark line curving through from north to south. A building marked on Lot 6, which was purchased by Lovell, is believed to be his hotel.

When Thomas Henry White and his family arrived and settled on a farm just to the east of Taupiri in 1873, he built a large house he called 'Ferndale'; his daughter Clara recalled that only a few Maori and a few white people were living at Taupiri at that time and the Armed Constabulary had a camp near the hotel.[148] The first white women to settle in Taupiri were Mrs Stewart, whose husband was an interpreter, and Rosanna Ralph, common-law wife of William Lovell.[149] Rosanna Ralph was the daughter of Antony and Margaret Ralph, who owned coal mines in and around Huntly.[150] By 1879 William Lovell he owned a large proportion of the land in the township, having purchased allotments from the government as they became available. In November 1878 he bought the 150 acres belonging to George Thoms.[151]

[148] Drummond, p. 35.
[149] Ibid.
[150] In land documents Rosanna Ralph is variously Rose, Roseanna or Rosanna with surnames Lovell and Ralph. A Letter of Declaration by Rosanna Ester Ralph in Application 5586, South Auckland Land District, states her use of both surnames.
[151] Application 5586, South Auckland Land District.

Figure 45: 'Plan shewing [sic] position of premises at Taupiri belonging to Mr WHM Lovell', 1882. Te Putu Road is at centre (south) and to the south of that is an accommodation paddock of nearly 58 acres and the large lagoon of Wheiau Creek. NZ Map 4140, Sir George Grey Special Collections, Auckland Libraries.

Figure 46: A portion of the above map shows Lovell's buildings: stable (left), hotel with outbuildings (centre) and two paddocks on either side of the hotel. The road bridge and railway bridge over the Mangawara are shown. The 'proposed new road' became Gordonton Road. NZ Map 4140, Sir George Grey Special Collections, Auckland Libraries.

After William Lovell's death in 1890, Rosanna Lovell took over his land interests. She subdivided her land over several years and sold it as smaller lots. This included a narrow strip between Great South Road and the river, a strip surveyed into 16 quarter-acre sections along the east side of Great South Road and the south side of Te Putu Street, a half-acre section on the Great South Road-Te Putu Street corner, and a three-quarter acre section adjacent to the railway line in 1903.[152] In 1912 Rosanna Lovell and members of the White family owned most of the block between Great South Road and Wright Street.[153]

The town developed as a distribution centre for farmers and producers living in the Komakorau, Hukanui and Gordonton districts, as well as for travellers along the Great South Road and North Island Main Trunk railway line (NIMT). The first bridge crossing the Mangawara was erected by the Armed Constabulary and was further upstream from the current bridge; it has been rebuilt and re-sited at least three times.[154]

An alternative road to Hamilton, southeast from Taupiri via Gordonton, was formed soon after Pakeha settlement. The large estates 'Freshfield', owned by T.C. Williams and managed by EB Cox, and 'Woodlands', owned by the New Zealand Land Association, managed by John Gordon and others, were handy to Taupiri along the Hukanui/Gordonton Road. Produce from these farms and from others in the Orini district was brought through to Taupiri for freighting on the river or by rail. In 1883 a road was surveyed for the bridge over the Komakorau, to link up with Watts Grove-Onslow Avenue. Gordonton Road did not link up at that stage (see aerial photographs below).[155]

The NIMT runs through the middle of the township, routed over a bridge across the Mangawara upstream from the road bridge. In 1874 the Volunteer Engineer Militia were stationed at Taupiri; at least 70 men helped to build the bridge and railway.[156] Tenders for the construction of this bridge were called in September 1876.[157] Gravel for the railway was excavated from a quarry in the face of the hill.[158] One of the first steps in the rail construction was the building of a substantial wharf on the bank of the Waikato River onto which rails, rolling stock and construction materials could be offloaded; the wharf was constructed by Messrs Brittain and McVee and was under way by early February 1875.[159] The Waikato Steam Navigation Company built a barge, the 'Taupiri', especially for the purpose of transporting the heavy materials.[160] A sideline to the wharf was one of the first sections of rail built in Taupiri with an engine running on it by March 1876. A large quantity of rails and sleepers were stacked at Taupiri for the lines north and south.[161] The opening of the railway through to Ngaruawahia on 13 April 1877 was celebrated at Taupiri with a 'triumphal arch at the Mangawara bridge which did credit to the taste of the inhabitants of that rising township'.[162] Establishment of a railway station reinforced Taupiri's role as a communication hub. The station closed about 1960.

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[152] Deed C 76.
[153] DP 8393 October 1912.
[154] Button, p. 9.
[155] SO 3346, QuickMap.
[156] *Waikato Times* 10 January 1874, p. 2; *Daily Southern Cross,* 9 May 1874, p. 7.
[157] *New Zealand Herald* 12 September 1876, p. 1.
[158] *Waikato Times* 10 July 1875, p. 2.
[159] *Waikato Times* 9 February 1875, p. 2.
[160] *Waikato Times* 27 February 1875, p. 2.
[161] *Waikato Times* 14 March 1876, p. 2.
[162] *Waikato Times* 14 August 1877, p. 2.

Figure 47: 'A progressive Waikato coal centre; Taupiri township from the railway bridge' *Auckland Weekly News* 6 May 1909, p. 10. AWNS-19090506-10-3, Sir George Grey Special Collections, Auckland Libraries. The railway station is visible in the top middle of the photograph.

During the great flood of January 1907, when slips affected the road and rail north of Taupiri, Taupiri wharf was used as the accessible place for travellers who had been transferred onto steamers to get around the obstructions caused by the flood.

Roading layout has changed considerably over the years. Te Putu Street (Taupiri Road) was originally surveyed as a straight line; it was re-routed as a dog-leg to cross the railway line to avoid the station grounds and curved behind the hotel that had previously fronted onto it. Further changes occurred with the overhead bridge and the formation of The Crescent. Work began on the construction of the overhead bridge in 1937, but controversy over the dangerous western approaches meant further road changes were required.[163] An old shop and dwelling had to be removed to make room for construction.[164] A second overhead bridge was constructed when the Gordonton-Orini Road was developed as an alternative route through Taupiri for traffic coming from the north. Roads, or parts of roads, have been closed and others created as the needs of the town changed and traffic flows increased. The Crescent was created to access the railway station, post office and hotel. The construction of the Waikato Expressway in recent years has altered the town's layout further and changed traffic patterns.

Later businesses on Great South Road benefited from travellers stopping for refreshments or to catch the bus south to Hamilton and Ngaruawahia or north to Auckland.
The Waikato River was a main transport route for passengers and freight for the first few decades of European settlement, but as the roads improved and the railway service

[163] *Auckland Star* 2 February 1937, p. 5; *Auckland Star* 27 January 1938, p. 6; *Auckland Star* 22 July 1938, p. 8.
[164] *New Zealand Herald* 8 March 1939, p. 8.

developed, this lessened to being primarily a freight service. The Waikato Shipping Company and the Roose Shipping Company ran steamers and barges and used the wharf at Taupiri as a major stopping and loading place.[165] One of the ship captains was Billy Wade who lived in Taupiri.[166] The barges ceased regular operation in about 1970.

Figure 48: 'A view of the Waikato district from the slopes of Taupiri Mountain' *Auckland Weekly News* 31 May 1901 p. 4. Note the Catholic church just to the right of the rail bridge at the centre of this view. AWNS-19010531-4-4, Sir George Grey Special Collections, Auckland Libraries.

Taupiri's fortunes waxed and waned but in 1919 it was reported that the township and district 'seemed to be in for a period of boom, graduating into a permanent prosperity'.[167] At that time the population and school roll were increasing, land prices were high and 'prospective building sites were being guarded with jealous eyes'.[168] In 1922 Taupiri was described as 'a placid town' in 'a very pretty and restful part of a prosperous district', the centre of farming, sawmilling and flaxmilling.[169]

Despite the boosterism of the 1910s and early 1920s, the population was just 396 in 1939; in 1976, with a population of 670, Taupiri was nevertheless the second largest settlement in the Waikato County Council area.[170]

Aerial photographs (see below) show the slow in-filling of sections with houses and business premises while expanses of open land remain. The town retains a dispersed business area with small disparate clusters of shops and public facilities.

[165] http://www.teara.govt.nz/en/biographies/4r27/roose-caesar
[166] Button, p. 13.
[167] *Auckland Star* 28 October 1919, p. 6
[168] Ibid.
[169] *Auckland Star* 26 May 1922, p. 2.
[170] More, p. 356.

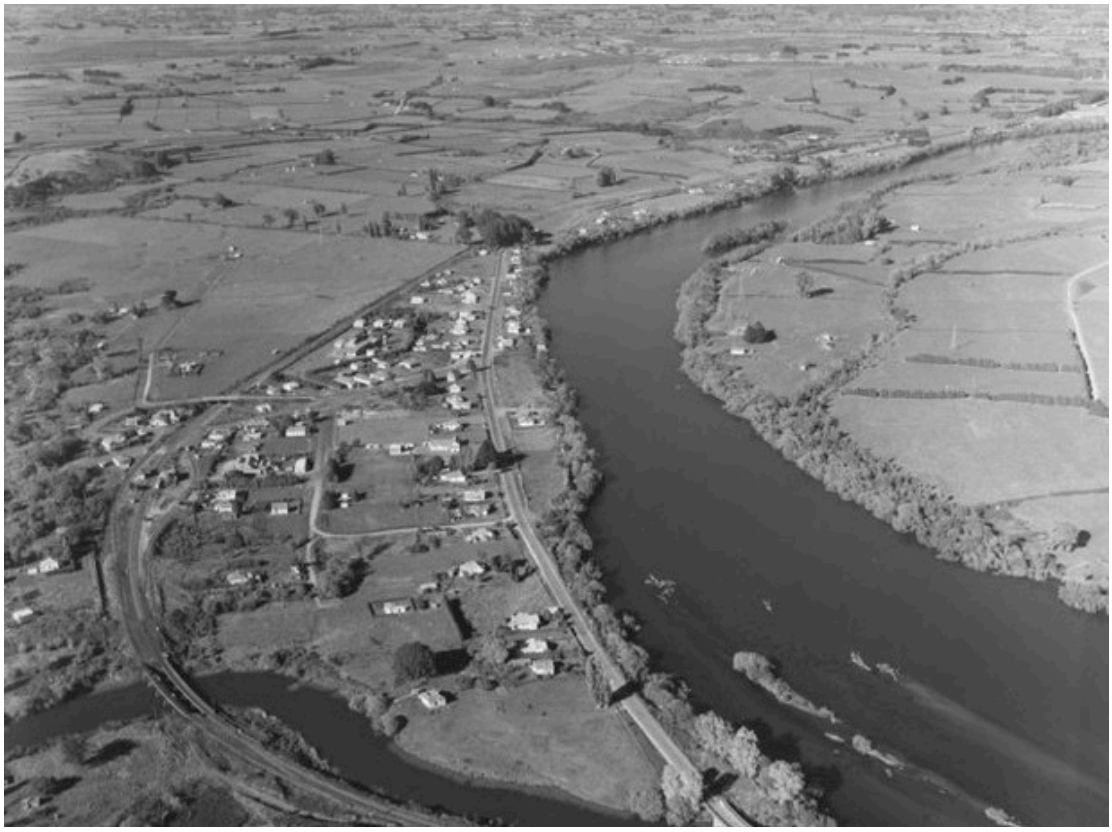

Figure 49: Aerial view of Taupiri 1 May 1951. WA-27815-F, Whites Aviation Collection, Alexander Turnbull Library.

Figure 50: Aerial view of Taupiri, 28 July 1964. WA-62367-G, Whites Aviation Collection, Alexander Turnbull Library.

**Businesses and Industry**

According to an 1853 account, there were then white traders at Taupiri who would buy pigs from local Maori, butcher them and salt the meat for sale in Auckland.[171] One of the first businesses established in Taupiri after the Waikato war was a store run by Karaka Tarawhiti in 1870.[172] Tarawhiti grew up on the mission station, which his father Rev Heta Tarawhiti helped run. He was later the native policeman for Taupiri, Huntly and Rangiriri (1879–80).[173]

William Lovell's store and accommodation house were established from about 1871, situated on the east side of Great South Road near the bridge. Lovell first applied for an accommodation and liquor license in March 1873, but it was not always plain sailing for him: in 1874 the objections of Rev Ashwell, 36 residents and 24 Maori led to the license being refused.[174] The Taupiri Hotel was run briefly, under lease, by Alfred Ellis in 1882-83; at that time it had eight rooms other than those for the use of the family.[175] In May 1884 Lovell applied to have the license shifted to a new 17-room hotel closer to the railway station.[176] The hotel was important in providing paddocking for people droving stock up the main road and both it and the store were venues for community meetings.[177] After Lovell's death in 1890, the hotel was managed by his widow Rosanna Lovell [Ralph]. The Taupiri Hotel burnt down on 12 December 1910, at which time it was leased to F.H. Bennett.[178] By the end of the following February a tender for the construction of a new hotel had been accepted.[179]

Figure 51: Taupiri Hotel in the flood of January 1907. Reproduced from *Taupiri School Centenary 1878-1978* p. 47. This building burnt down on 1910.

Lovell seems to have more than one store, as in November 1881 he was advertising for carpenters to build a shop.[180] A store owned by Lovell burnt down in 1882 (month not

[171] H.C.M. Norris *Armed Settlers* p. 5.
[172] Button, p. 10; http://www.naumaiplace.com/site/te-kauri/home/page/557/karaka-tarawhiti/
[173] http://www.naumaiplace.com/site/te-kauri/home/page/557/karaka-tarawhiti/
[174] *New Zealand Herald* 14 March 1873, p. 1; *Daily Southern Cross* 24 April 1874, p. 3.
[175] *New Zealand Herald* 3 April 1882, p. 6; *Waikato Times* 16 May 1882, p. 3; *New Zealand Herald* 16 July 1883, p. 8.
[176] *Waikato Times* 13 May 1884, p. 3.
[177] *Waikato Times* 9 March 1876, p. 2.
[178] *Bay of Plenty Times* 12 December 1910, p. 2.
[179] *New Zealand Herald* 28 February 1911, p. 8.
[180] *Waikato Times* 26 November 1881, p. 3.

specified) but by the end of January 1882 he was building a new and handsome store.[181] It opened in May 1883 with an 'evening entertainment' and a party which went on till daylight.[182] This may have been the store later known as Taupiri Tearooms [now Hopin Stopin] but this has not been established. Rosanne Lovell owned the land on which the tearooms/shop stood. This land was leased out to various people over the years, the first recorded being Jane Wilson in 1901. Wilson transferred the lease to John Mohr 'storekeeper' in 1905 so the building may have existed by then.[183] Mohr in turn transferred it to A Hamblin and Company in 1915, then to Ada Wilson in 1915.[184] The house and shop are marked on a 1919 plan.[185] The store has also been known as 'Welcome Inn' and has been a tearooms, general store, a boot and canvas repair shop and antique shop.

In 1874 George Edgecumbe of Ngaruawahia ran a delivery service to Taupiri in his spring-cart, offering meat, bread and groceries 'at Ngaruawahia prices'.[186] Robert Bradley was in business with RR Hunt, operating as the Waikato Carrying Company until August 1874.[187]

In 1893 it was reported that Taupiri 'was showing of advancement, a new store having been erected by Messrs Corbett and Graham and a smithy by Mr Moir'.[188] A year later a similar report stated that the town possessed a new store, smithy and bakery and that TH White was rumoured to be establishing a creamery.[189] The bakery was that of Gleeson and Sons, bakers and confectioners of Huntly, who established a branch bakery at Taupiri.[190] The first butcher was Arthur [Harry] Waring, who after four years working as a butcher for the Woodlands Estate, set up business in premises in Taupiri in 1891. The business passed from father to son to grandson before being bought by 'Country Touch' smallgoods. It closed in 1980.[191]

One commercial building that has had a varied history is the Taupiri Dairy. During the 1920s it housed a hairdressing and taxi service run by William and Daniel Young. In 1930 it was occupied by Sterling Stores, managed by EP Tapper. It was a billiard hall in the early 1930s, possibly run by Thomas Wade, and a milk bar in the 1940s, and later a TAB.[192] Two petrol stations and service garages operated in Taupiri for several decades during the mid-20th century; one on the corner of Te Putu Street and Great South Road was a passenger stop for buses travelling between Auckland and Hamilton.

A flax mill was established in the first years of European settlement, given that by 1870 the Taupiri Flax-mills, on the bank of the Waikato River, were for sale.[193] WW Cull owned the mill in 1872.[194] There were other flax mills in the vicinity of Taupiri, including one up the Komakorau Stream that was operated by a waterwheel.[195] George Mellars established Taupiri Sawmill in 1888, having bought 1000 acres in the vicinity. In 1899 he switched to flax

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[181] Button p. 10. Button also states the hotel was burnt down but this has not been substantiated. *Waikato Times* 28 January 1882, p. 2.
[182] *Waikato Times* 5 June 1883, p. 2.
[183] Application 5586, South Auckland Land District.
[184] SA233/285, SA304/145.
[185] DP 13107.
[186] *Waikato Times* 2 June 1874, p. 3.
[187] *Waikato Times* 13 August 1874, p. 3.
[188] *Waikato Times* 9 May 1893, p. 2.
[189] *Waikato Times* 21 June 1894, p. 5.
[190] *Cyclopedia of New Zealand – Auckland Provincial District* 1902 p. 711.
[191] Button, p. 23.
[192] Ibid; *Leighton's Auckland Provincial Directory 1930-31* (Auckland 1930). See also, DP 24798.
[193] *Daily Southern Cross* 22 October 1870, p. 2.
[194] *Waikato Times* 18 May 1872, p. 3.
[195] *Taupiri School Centenary 1878-1978* p. 16.

milling, buying flax supplied by local Maori.[196] In 1889 it was announced that a flax mill was to be started by 'a southern gentleman'.[197] Bartrum and Preston's flax mill was closed down for a few weeks in 1890 but started up again; the market at this time was unreliable.[198] In 1891 the 'Taupiri flax mill', owner unspecified, was stopped and everything was to be sold.[199] Aubrey & Co. had a flax mill at Taupiri at the time of the 1907 flood; it was flooded and a considerable amount of fibre washed away.[200] The mills employed many staff in addition to the bush gangs and flax harvesters in the field.

Figure 52: 'Auckland's timber industry: Taupiri Sawmill Company's works, Waikato', 1905. AWNS-19051123-10-1, Sir George Grey Special Collections, Auckland Libraries.

[196] *Cyclopedia of NZ* p. 711.
[197] *Waikato Times* 13 April 1889, p. 2.
[198] *Waikato Times* 7 June 1890, p. 2.
[199] *Auckland Star* 11 August 1891, p. 1.
[200] *New Zealand Herald* 21 January 1907, p. 6.

Figure 53: Bailey and Bollard's Taupiri Sawmill Co. mill and staff, date not known. Reproduced from *Taupiri School Centenary 1878-1978* p. 17.

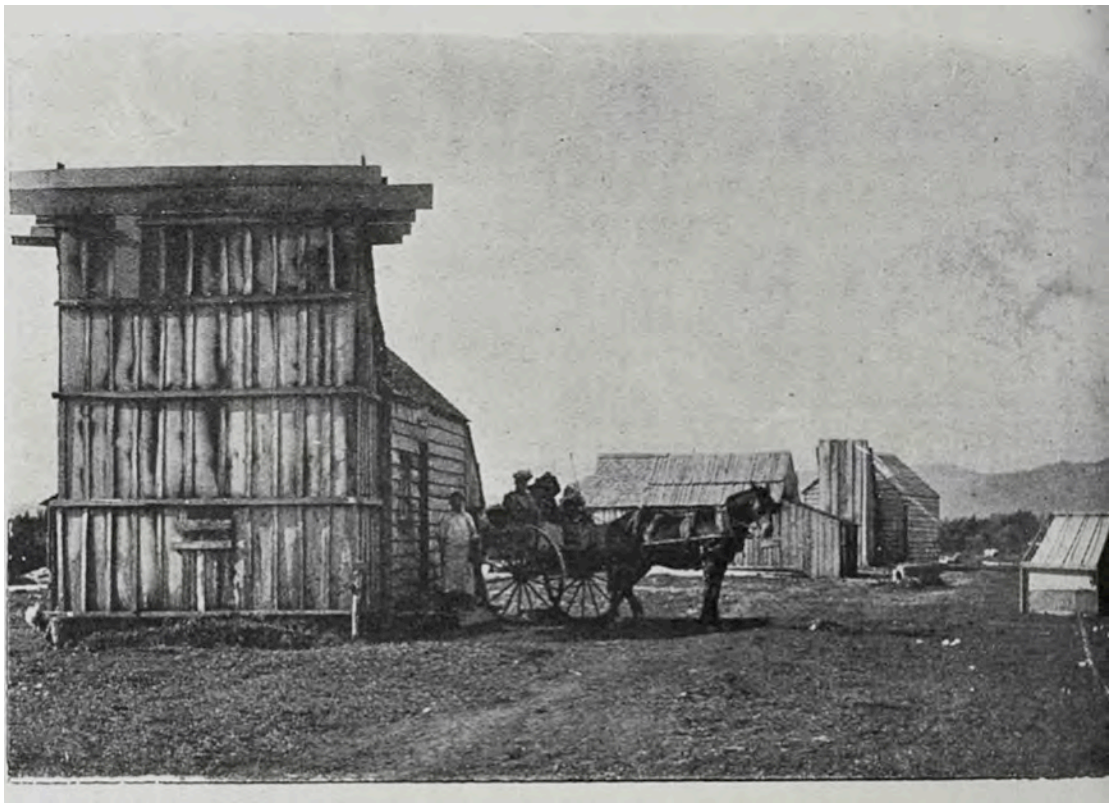

Figure 54: 'A bush camp, showing whares with wooden chimneys, Bayley [sic] and Bollard's bush, Taupiri', 1901. AWNS-19011107-6-3, Sir George Grey Special Collections, Auckland Libraries.

In 1899 Davys Bros disposed of their Taupiri sawmill business to John Bailey and Richard Bollard of Auckland.[201] The sawmill was just above the railway bridge, the site of Mellars' mill. Bailey and Bollard erected a new mill in 1901; some timber was used locally but most was exported to Auckland and Australia. The mill was 100 by 30 feet and three storeys high, the engine being housed in an adjacent building.[202] It was still operating in 1907 when the mill was flooded to a depth of a metre; the company taking advantage of the situation by securing about 500 logs flushed down the stream.[203] A mill belonging to the Northern Timber Company was burnt to the ground in April 1912, putting about 70 men out of work.[204] A smaller milling enterprise was run by F Hill, who advertised ti-tree firewood for sale by the ton to be put on the barge at Taupiri wharf.[205]

Blacksmiths were a necessity in the days of horses for transport, labour and farming: early blacksmiths in Taupiri were Green, Jim Murphy and, later, Mayberry.[206] William Dent established a business as saddler and harness maker at Taupiri in 1886.[207]

Local occupations listed in the 1910 post office directory included: flaxmillers (Brown Bros, Seifert & Co.), labourers and mill hands, farmers and bushmen, carpenters and contractors, as well as a horse dealer, an accountant, a bee farmer, and a surveyor. Bailey and Bollard were listed as sawmillers, William Collins as a brick maker, Francis Bennett as the proprietor of the Taupiri Hotel. George Briggs was the local saw doctor, Simon Dick and Robert Kay were creamery managers, and Edward Farrell a store keeper. John Geake and Arthur Waring were the village butchers, Charles Gleeson the baker, John Mohr another storekeeper, John Henderson the blacksmith, and Joseph Harris both the stationmaster and the postmaster.[208]

Isaac Coates of Hamilton had several gum-digging enterprises in the area and employed George Powell of Taupiri to cart the gum from his site at 'Woodlands' to Taupiri station and take stores back to the field camp.[209] He also worked gum on the Dilworth estate up the Mangawara and built a store there.[210]

By the end of 1872 farms were well-established, as evidenced by a 'For Sale' advertisement that described a 200-acre farm opposite Taupiri, the greater portion of which had been laid down in clover and mixed grasses with 20 acres in barley, oats and wheat, with a great supply of cherries and peaches; a seven-room house, papered and painted, went with the property.[211] The advertisement promoted it as a prospective dairy farm, foreseeing the rise in this industry.

In 1899 Taupiri farmers decided to ask Ambury and English to establish a creamery at Taupiri and three years later Wesley Spragg of the New Zealand Dairy Association negotiated to buy an acre opposite the school for a creamery.[212] It has not been established whether these ventures were successful but a creamery did exist in Taupiri by 1906 and possibly two were

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[201] *Auckland Star* 29 August 1899, p. 4.
[202] *Auckland Star* 11 September 1902, p. 2.
[203] More, p. 78-79.
[204] *Poverty Bay Herald* 9 April 1912, p. 5.
[205] *Waikato Times* 10 February 1877, p. 3.
[206] Button, p. 23.
[207] *Waikato Times* 1 June 1886, p. 3.
[208] *New Zealand Post Office Directory 1910.*
[209] Isaac Coates *On Record* p. 132.
[210] Ibid, p. 134.
[211] *Daily Southern Cross* 9 November 1872, p. 1.
[212] *Auckland Star* 4 May 1899, p. 2; *Auckland Star* 7 April 1902, p. 1.

in operation in 1910.[213] A creamery was to be established on the 'Freshfield' estate in 1906; this may be the current Candylands building.[214]

The Taupiri Dairy Company, a private company owned in 1921 by JB McEwan, established a butter factory at Taupiri but was forced to 'sell out its interests to the co-operatives in 1936 when it had more than 300 suppliers'.[215] In 1919 a survey plan for Zealandia Co-operative Milk Foods Ltd was drawn for the site later occupied by the NZCDC.[216] This company is presumably the same company as the Standard Dairy Company described in July 1922 as having a factory being erected on four acres in Taupiri ready to start production in the coming season.[217] It may be the dried milk factory being erected in 1919.[218]

After the destruction of the New Zealand Co-operative Dairy Company's Ngaruawahia butter factory in 1929 its replacement butter factory was built at Taupiri.[219] In the 1960s the NZCDC installed its first continuous butter-making plant here. Whey from the factory was pumped to the large Mountley stud piggery a few kilometres to the south, owned by AE Rogers and, later, Walter Risi. The dairy factory was still operating in 1976.[220] Coal from the Kupakupa Mine (Waikato Mine), a few kilometres towards Huntly on the west bank of the Waikato, produced sufficient coal to supply the dairy factory.[221] A hostel was part of the NZCDC campus. A railway siding was built for the butter factory; this allowed refrigerated export butter to be loaded onto rail wagons and taken directly to the port at Auckland.[222]

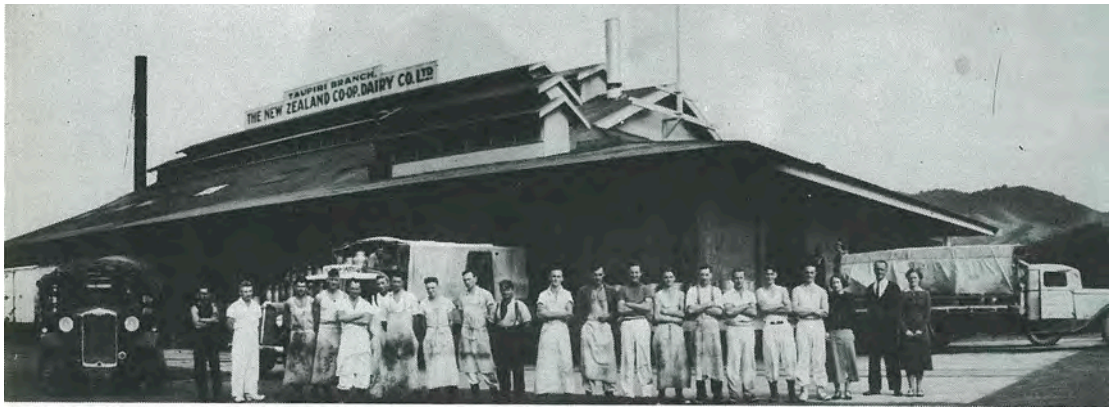


Figure 55: Staff at the Taupiri NZCDC factory, 1937. Reproduced from *Taupiri School Centenary 1878-1978* p. 20.

[213] *New Zealand Post Office Directory 1910*; *Auckland Star* 23 April 1906, p. 8.
[214] *Auckland Star* 23 April 1906, p. 8. Currently 75 Henry Road.
[215] More, p. 110-11.
[216] DP 13505.
[217] *Auckland Star* 21 July 1922, p. 2.
[218] *New Zealand Herald* 23 April 1919, p. 4.
[219] More, p. 112.
[220] Ibid.
[221] Vennell & Williams, p. 215.
[222] Button, p. 13.

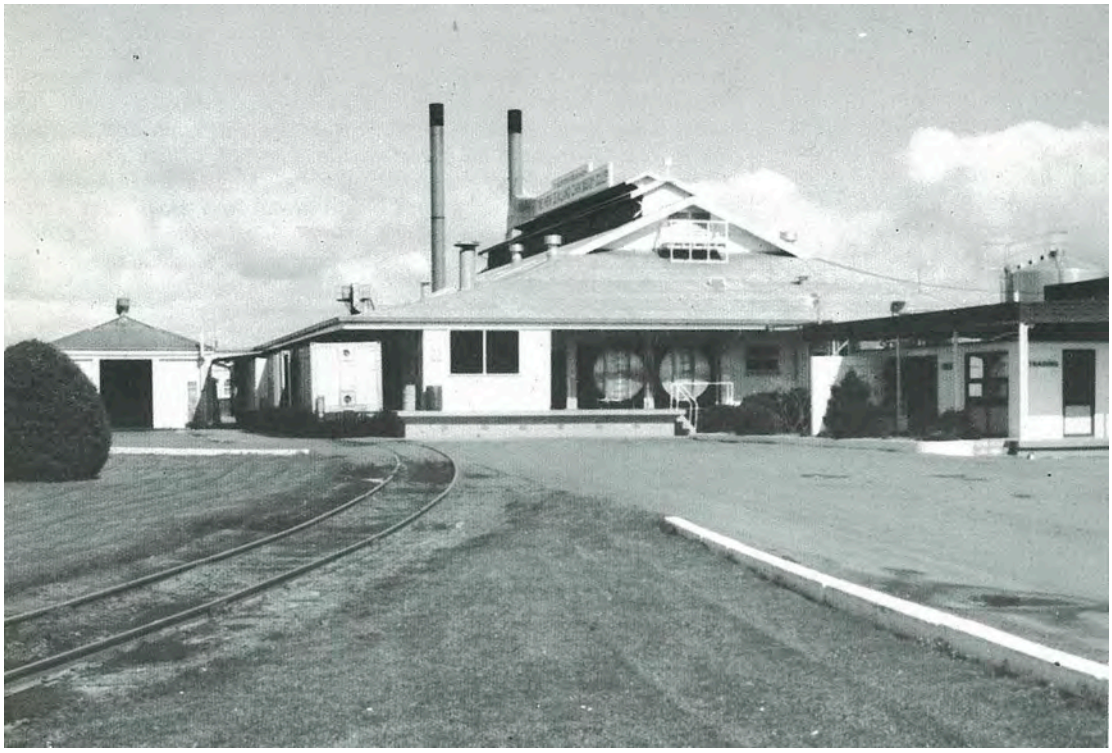

Figure 56: The NZCDC dairy factory in 1978. Reproduced from *Taupiri School Centenary 1878-1978* p. 20.

1n 1930, when Taupiri's population was 396, occupations were more varied, with a motor garage proprietor, butter maker, two school teachers as well as two school masters, two apiarists (one was Mrs Mabel Fow), two women listed as farmers amongst several male farmers, a road overseer, telegraphist, factory workers, storekeeper, baker, carpenter, quarry manager, miners, contractors, taxi driver, stock agent, railways clerk, railway porter, storekeepers, a carrier, billiard saloon proprietor (Thomas Wade) and river boat master (William Wade).[223] The directory listings in 1939 were very similar, with the addition of two confectioners and Cadman's Petrol Station; Wallace Supplies was operating in what are now the Hopin Stopin premises. RJ Powell listed the United Stores Ltd.[224]

Stock sales were held weekly or fortnightly at the saleyards on Gordonton Road from at least 1935 until they closed in 1960.[225]

**Community Facilities**

Apart from the urupa on Taupiri Mountain, another burial ground was established on the west side of the river in the vicinity of the mission station and church site. According to notes made by George White, the first Pakeha cemetery was on the west side of the river 'well behind' a large oak planted by Bishop Selwyn. White described this as a military cemetery, and that between 1880 and 1896 wooden crosses were standing on the graves. Buried there, according to White, were his father Thomas Henry White, Mona White, 'Mrs Shorthouse an English lady the mother of Mrs TH White', here also 'soldier natives etc during the Maori wars'. [226] This cemetery on Hakarimata Road is marked now by a tree and

[223] *Leighton's Auckland Provincial Directory 1930-31* (Auckland 1930).
[224] *Leighton's Auckland Provincial Directory 1939-40* pp. 769-70.
[225] Button p. 30; *New Zealand Herald*, 19 February 1935, Page 5
[226] George White papers, Hamilton City Libraries. In other sources it is recorded that TH White died and was buried at Opotiki.

three graves with railings and stone markers enclosed by a wooden fence. The cemetery may date from 1880.[227] Residents applied for a cemetery reserve on the east side of the river in 1898; this was situated on the Gordonton Road with the earliest known graves dating from 1901.[228]

Figure 57: The cemetery on the west side of the river shows two graves with railings and headstones. Reproduced from *Taupiri School Centenary 1878-1978* p. 13.

Taupiri School district was gazetted in July 1876 after a group of householders approached the Auckland Education Board. The building of a school was begun in 1877. A vocal and instrument concert was held in November 1877 in the schoolhouse to raise funds for liquidating the building fund.[229] Taupiri School opened on 18 February 1878; in 1879 there were 37 pupils, from the neighbouring farms as well as the township.[230] In 1901 there were 80 pupils on the roll, a headmaster and two pupil-teachers; in 1913 there were 113 pupils.[231] A teacher's residence adjoined the school. The school had a tennis court, which was much-used by the community, as was the swimming pool when that opened in 1940. As the roll expanded the local halls and library were used for classes, relocatable classrooms were added and then, in 1962, a four-room block was built as well as a new teacher's residence.[232] By 1978 the school had a roll of 212.

[227] Button, p. 10 states 1886; White 1880.
[228] *New Zealand Herald* 23 June 1898, p. 3; Taupiri Memorial Inscriptions, *New Zealand Cemetery Records, Waikato, King Country and Taupo* (CD-ROM, New Zealand Society of Genealogists, 2012)
[229] *Waikato Times* 15 November 1877, p. 3.
[230] Button, p. 16.
[231] *Cyclopedia of NZ* p. 711.
[232] Button, p. 16.

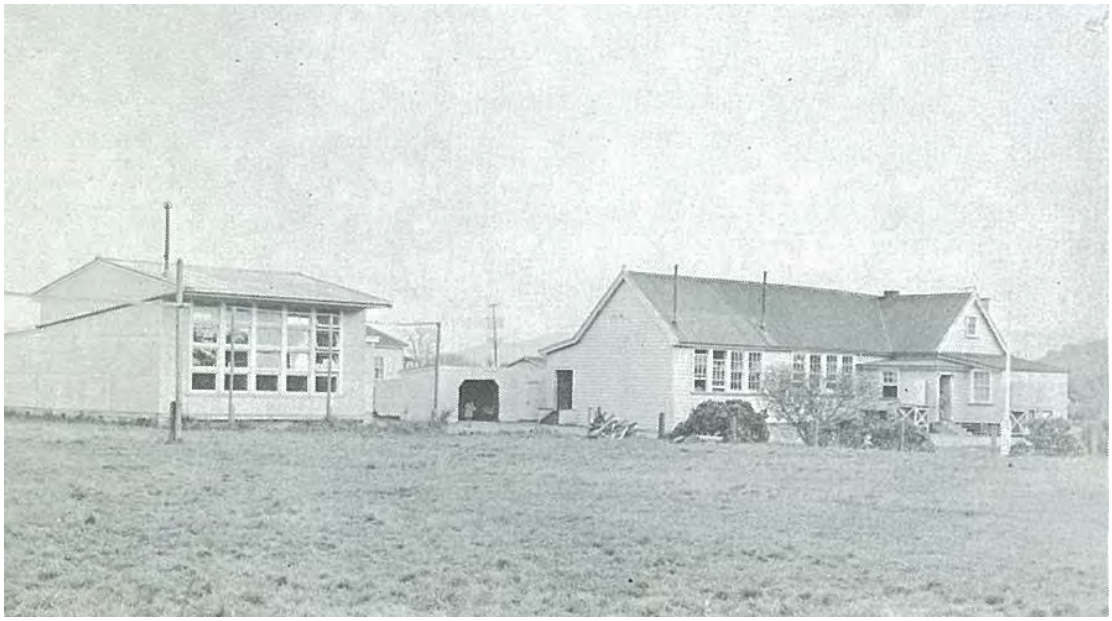

Figure 58: Taupiri School in 1953. Reproduced from *Taupiri School Centenary 1878-1978* p. 26.

Rev Ashwell operated a postal service at the mission station prior to the Waikato War. In 1872 a post office was established in Taupiri; in 1901 the post and telegraph office was being conducted from one of the local railway cottages and in 1910 the stationmaster was also the postmaster.[233] By 1901 a telephone service was connected with Huntly and a private telephone link with Woodlands Estate.[234] In 1917 a post and telegraph office was built adjacent to the railway station and across the road from the hotel.[235] A larger building was constructed in the 1930s for the post office and telephone exchange; this was renovated in 1987 but closed the following year.[236]

A recreation reserve on the eastern side of the township was gazetted in 1888.[237] The reserve, named Onslow Park, was a community facility for nearly 100 years, being administered by the Taupiri Domain Board. Some of the land was taken for roading in 1975 (Gordonton Road) and part has subsequently been sold into private ownership.[238] Onslow Park was used for community and school sports, picnics and shows. Sports events were organised as early as 1877.[239]

A hall owned by Rosanna Lovell was built on what is now The Crescent, adjacent to the post office. From at least 1894 the hall was a public venue for meetings, polling booths and entertainments.[240] In 1909 the Taupiri Flower Show and Home Industries Association held a very successful flower show in the hall, attracting over 500 visitors and exhibitors from the wider district.[241] The hall burnt down some time between 1912 and 1915. Another hall was built in 1921. Initially called the Founders' Hall or Henry Soldiers' Settlers' Hall and now known as the Soldiers and Settlers Hall, it was designed by FC Daniell of Hamilton.[242] It was used as a polling booth in 1923 but the official opening was undertaken by the Prime

[233] *Cyclopedia* p. 711; *Daily Southern Cross* 7 December 1872, p. 2; *New Zealand Post Office Directory 1910.*
[234] *Cyclopedia* p. 711.
[235] Button, p. 15.
[236] Ibid.
[237] *New Zealand Gazette* 1888 p. 1130; SO 3346.
[238] SO 51524; SO 50898.
[239] *Waikato Times* 15 December 1877, p. 3.
[240] *Waikato Times* 21 April 1894, p. 8; *Waikato Times* 14 December 1895, p. 12.
[241] *Auckland Star* 7 December 1909, p. 2.
[242] Plans in Waikato Museum Collection 1984/7/458.1-4.

Minister, the Rt Hon JG Coates in May 1927.[243] Film screenings were held in the hall from the 1920s through to 1960.[244] Activities in the hall included war relief work during World War II and indoor bowls matches.[245] Another hall was erected in 1952, the War Memorial Hall on the west side of Greenlane Road. The hall, designed by George Leigh of Hamilton, incorporates the Plunket rooms and was said to be the 'first public war memorial project to be completed in the Waikato'.[246] A roll of honour plaque was mounted on the wall of the lobby.

Community groups such as the Cemetery Board, Domain Board, Hall Committee, Taupiri Citizens and Progressive Association, and the Women's Institute were established and Taupiri had a branch of the Farmers' Union by 1917.[247] Sports clubs included croquet, bowling, Farmers' Sports Club, Old Girls' Basketball Club, rugby league and tennis.[248]

A Catholic church was established in Taupiri soon after a parcel of land (Allotment 49) was set aside in 1874 for a church and the northern portion set aside as a burial ground (Allotment 94). In 1877 a church was constructed on this land at the north end of Wright's Road [Greenlane Road]. The church was described as 'a handsome building for its size built in the gothic style and calculated to comfortably seat some 70 to 80 persons'.[249] This church burnt down in 1898, as did its successor on the same site.[250] The church is visible in 1946 and 1964 aerial photographs (see aerial views above). Taupiri's third Catholic church building was situated on the Gordonton Road.

The Church of England's Christ Church, on the corner of Te Putu Street and Great South Road, was opened in the late 1870s. Both it and its replacement, built in c. 1904, were designed by Thomas Henry White. White had architectural practices in Auckland and Hamilton, and farmed at Taupiri. Thirty graves are in the church grounds.

According to the reminiscences of Dorothy Button, Methodist and Presbyterian church services were held in the school and library until 1925 when a Mission Hall was built in Greenlane Road.[251] M Gleeson donated the land, the hall being situated on Allotment 38, north of the intersection of Te Putu Street with Green Lane.[252] A 1939 survey plan shows a church building to the north of the hall, straddling Allotments 33 and 34.[253]

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[243] *New Zealand Herald* 10 April 1923, p. 12; *Auckland Star* 21 May 1927, p. 7.
[244] Button, p. 27.
[245] Ibid, p. 26.
[246] Ibid, pp. 27-28 citing the *Waikato Times* 7 and 13 March 1952.
[247] *Leighton's* 1939; *New Zealand Herald* 16 March 1917, p. 6.
[248] *Leighton's* 1939.
[249] *Waikato Times* 10 April 1877, p. 2.
[250] Button p. 22; *Reserves and Other Lands Disposal Act 1936* http://legislation.knowledge-basket.co.nz/gpacts/public/text/1936/se/049se9.html
[251] Button, p. 22.
[252] DP 27336.
[253] DP 27336; the identity of this church is currently unknown.

Figure 59: 'Crowds outside church at Taupiri'. 4-6407, Sir George Grey Special Collection, Auckland Libraries. The 1870s [right] and c.1904 [left] church buildings are both visible.

## Hopuhopu

The area between northern Ngaruawahia and Taupiri, on the east side of the Waikato River, is generally known as Hopuhopu [Hopu Hopu]. One early recorded instance of the name was for land granted to the Church of England; some 1385 acres as a school reserve for the purpose of establishing a school for Maori children. The land had been given by tangata whenua to Rev Ashwell for the support of the school and was then granted to Bishop Selwyn by Governor Grey in 1853, for the maintenance of schools established under the superintendence of the Bishop.[254] The grant extended from the river to Lake Hotoananga and was defined on the north by Purakautahi Creek. It was opposite the Pepepe mission station; associated with the station was a boys' school and a flourmill at Hopuhopu.[255] The Hopuhopu Church of England Mission Estate 'was originally intended to provide a means for educating the Maoris. Prior to and subsequent to the Waikato war the land was so well managed that it nobly provided for its aims, and the school was widely patronised by the Waikatos'.[256]

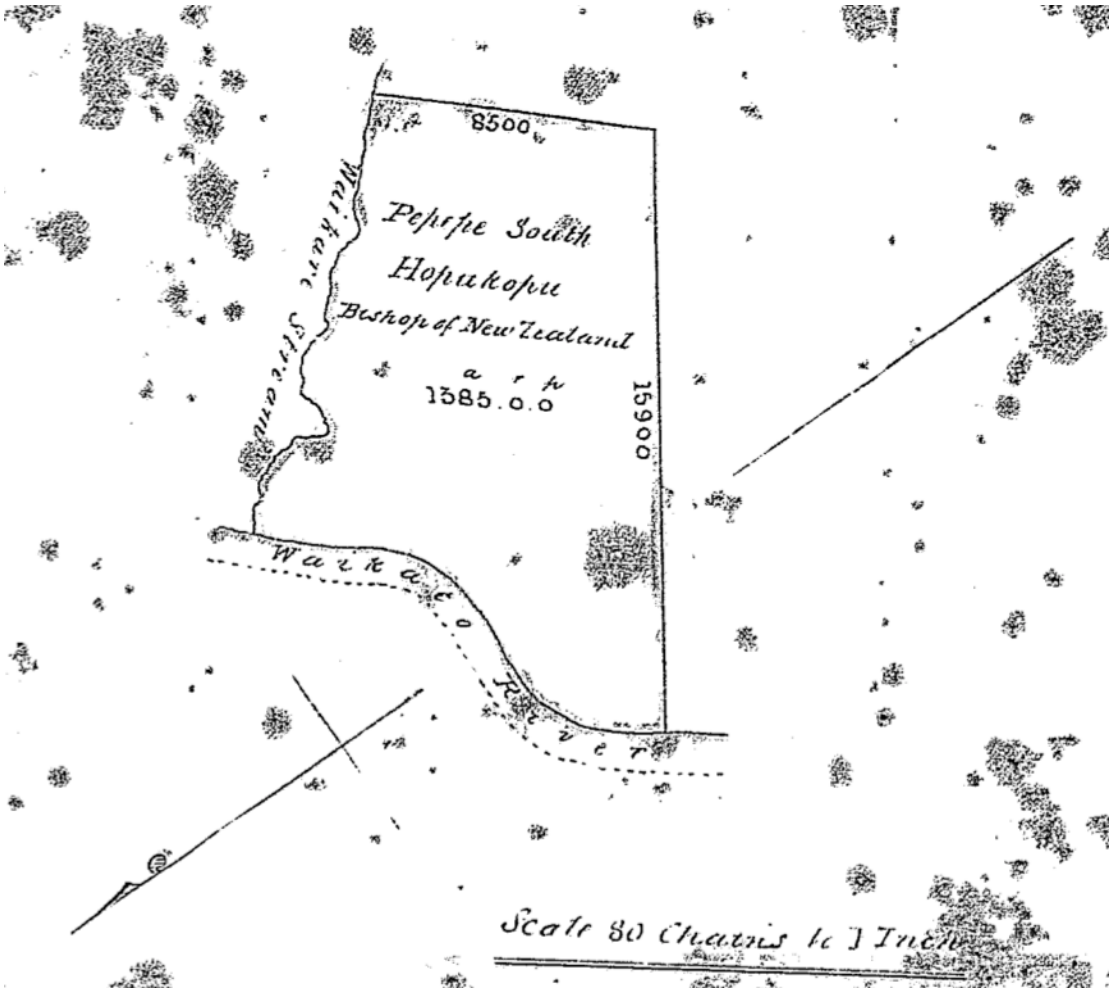

Figure 60: 'Church property Mangawhero Block', SO 131A. Undated. QuickMap. North at lower left.

[254] *New Zealand Herald* 9 March 1894, p. 3.
[255] Alison Drummond *Early Days in the Waikato* (Hamilton, 1964), p. 17. This reference has not been verified; the mill referred to may have been opposite Kaitotehe, i.e. at Taupiri.
[256] *New Zealand Herald* 21 February 1902, p. 3.

A later survey of the same parcel was produced in 1865 after the land confiscations. Great South Road followed the course of the river; this part of the road is now called Old Taupiri Road.

Figure 61: 'Plan of road line and river traverse between Mangawara and Ngaruawahia also of school reserve at Hopu Hopu', November 1865, SO 131. QuickMap. The Great South Road follows the course of the Waikato River; the line of the North Island Main Trunk has been added in red. The plan shows the 1385 acres granted to the Church of England, extending from the river to Lake Hotoananga and defined at north (left) by Purakautahi Creek and to the south (right) by the 200-acre allotments granted to Lieutenants Hamlin and Vickers. To the south (lower right) 'Horotiu Village' is marked.

Land to the east of the mission grant was surveyed into 50-acre allotments for militiamen of the 4th Waikato Regiment in 1865, but to the north-east was a 1000-acre allotment granted to Pirihira Tarawhiti, the wife of Rev Heta Tarawhiti.[257] Rev Tarawhiti was based at either the Pepepe or Kaitotehe mission stations after the war. To the south of the school reserve were two 200-acre allotments for officers of the British or colonial forces, Lieutenants Hamlin and Vickers. To the south of their land, and extending to the Waikato River's junction with the Waipa, 'Horotiu Village' was surveyed; this village did not eventuate, some of the small allotments being amalgamated into larger parcels suitable for farming and more recently, some being subdivided as residential lots (see SO 130 below).

[257] Pirihira Tarawhiti died in 1886, Rev. Heta Tarawhiti in 1898. *Waikato Times* 7 December 1886, p. 3; *Auckland Star* 5 September 1898, p. 5.

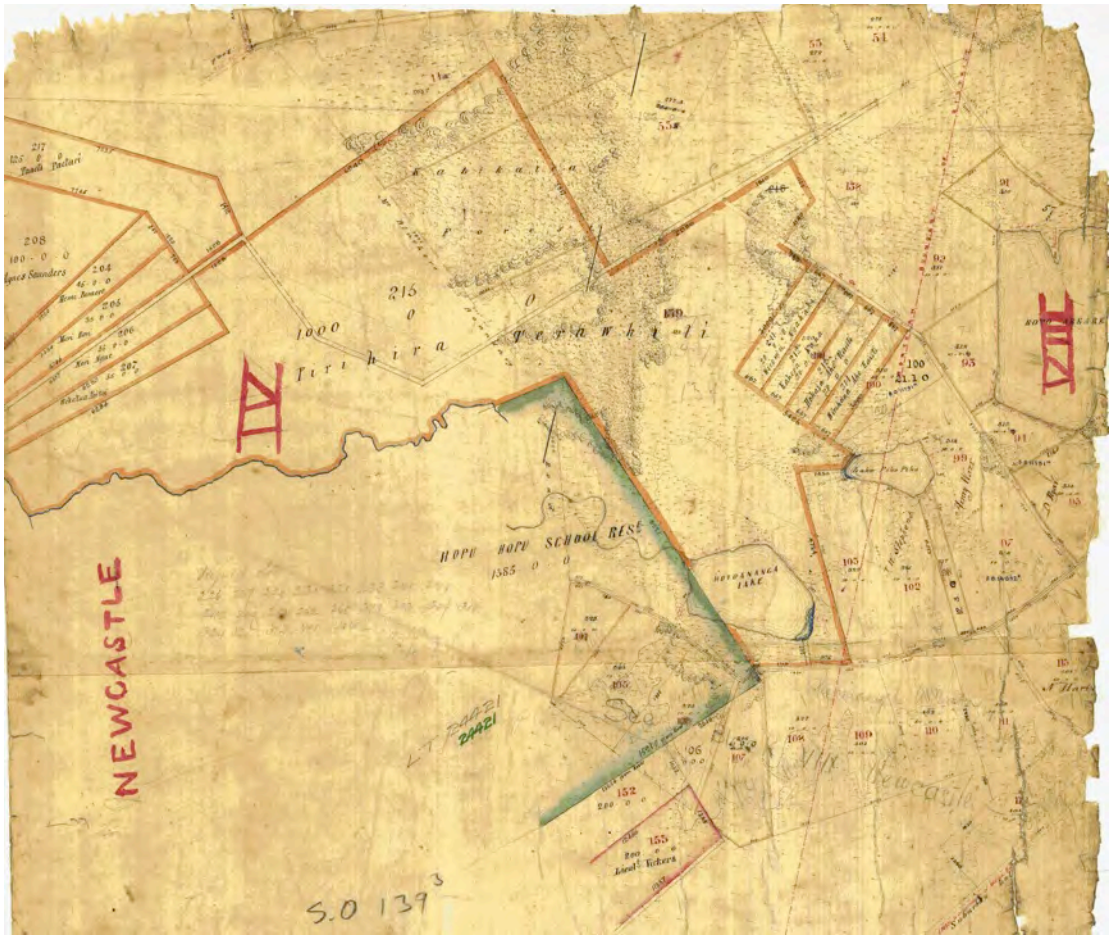


Figure 62: Part of 'Plan of 50 acre farms north of Pukete, Upper Waikato', SO 139, surveyed July 1865. QuickMap. The plan shows Hopuhopu mission land (lower left), Lakes Hotoananga and Pikopiko, a few of the 50-acre militia grants, as well as 20-acre and 35-acre grants to Maori; the 1000-acre grant to Pirihira Tarawhiti is also shown. North is approximately at top left.

After the Waikato War, Rev Ashwell returned to the mission station, with some accounts stating he lived on the Hopuhopu side of the river. It is apparent that by December 1864 a Maori settlement existed at Hopuhopu, 'a village a few miles down the river' from Ngaruawahia.[258] By May 1867, Rev Lonsdale Pritt was permanently located at Hopuhopu.[259] He may have preceded Ashwell as it was stated that Pritt was 'the first clergyman who ventured into the Waikato, stationed at Hopuhopu until 1871.[260] He died in 1885.[261]

However the mission school soon ceased to operate as it no longer had government funding.[262] In an 1872 'land for lease' advertisement, Hopuhopu is described as the mission station.[263] In 1873 there was a synod of Maori in connection with the Anglican Church, held at 'the Rev Mr Ashwell's residence' at Hopuhopu.[264] The report of this meeting of the Waikato and Waitemata Native Church Board stated the meeting was held 'in a small building close to Mr Ashwell's house at Hopuhopu. It was originally the schoolroom at

[258] *Daily Southern Cross* 21 December 1864, p. 5.
[259] *Daily Southern Cross* 11 May 1867, p.6.
[260] *Wanganui Herald* 31 October 1885, p. 2.
[261] Ibid.
[262] *Appendix to the Journals of the House of Representatives* 1905 Session I, G-05 p. viii.
[263] *Waikato Times* 31 December 1872, p. 3.
[264] *Waikato Times* 6 February 1873, p. 2.

Taupiri on the opposite side of the Waikato and has recently been fitted up as a chapel … and a small bell-turret with a suitable bell put up on the west gable'.[265]

A small cemetery for soldiers, believed to be Pakeha only, who had died during the Waikato War was established just to the south of the school reserve, on the east side of the Great South Road [Old Taupiri Road] and south of Jacobs Lane. In 1873 it was reported that the graveyard was fenced off but some headboards marking individual graves were in need of repair.[266] This cemetery remains fenced off, but the graves are not individually marked; instead a single obelisk monument erected by the government in 1914 is inscribed 'Here lie the remains of men who fell in the Maori wars and whose names cannot be traced'. It was gazetted as a cemetery reserve in 1916.[267]

Figure 63: 'Road through Hope Hope [sic] School Reserve', 1876, SO 130. QuickMap. The small red rectangle on the old road, just south of what is now Jacobs Lane, delineates the military burial ground. The road (in yellow) lies on the west side of the railway line.

[265] *Waikato Times* 8 March 1873, p. 2. The Taupiri location refers to Kaitotehe, opposite Taupiri.
[266] *Daily Southern Cross* 14 March 1873, p. 3.
[267] *New Zealand Gazette* 1916 p. 31.

A more direct route for Great South Road was surveyed in 1876, cutting through the Hopuhopu reserve.[268] However, the road was surveyed to lie on the west side of North Island Main Trunk (NIMT) railway line, which was constructed through the school reserve in 1877. This road was not formed but another survey was undertaken in 1910 to take land on the east side of the railway line as a road.[269] The riverside road was still called Great South Road at that time. The new alignment meant that the main road had to cross the railway at a marked dog-leg and became the site of many accidents. In 1937 an overhead bridge was constructed over the railway line, the project entailing also the lowering of the railway line.[270]

In October 1885 the Anglican church's General Trust Board granted a lease of the Hopuhopu estate for 21 years.[271] An 1889 report stated that about 500-acres of the estate had been leased out in three portions for a period of 21 years.[272]

In March 1886 the old mission station was burnt to the ground; at that time it was being used as a store by the lessee of the land, T McDonald.[273] In 1886 it was stated that: 'The old station was formerly, at different times, the residence of the Rev BY Ashwell, and the Venerable Archdeacon Pritt, but latterly had fallen considerably into decay'.[274] The fate of the original church has not been determined.

One of the farmers residing at Hopuhopu in 1892 was Robert James.[275] In 1898 'some twenty Austrians' arrived … to dig gum on the Mission land at Hopuhopu'; the land having recently been leased to a local resident.[276]

In 1894 there was still a Maori village at Hopuhopu; judging from a new report of a large hui to be held there.[277] By 1902 much of the Hopuhopu land had been neglected and 'gone out of cultivation', with the resultant loss of revenue to the church. Applications by Maori 'from any area' to utilise the land were approved by the Trust Board, provided that at least ten acres was cleared, terms being free for the first four years and one shilling per acre for the following 17 years.[278] At that time the Rev Nikora Tautau, honorary chaplain to King Mahuta, was resident on the estate, having been moved there in 1901.[279] Plans were underway to re-establish the former mission and school, with building to start early in 1902.[280] In 1903 Rev Hare Ruarangi (also known as Harry or Charles Marsh or Maihi) joined Rev Tautau at the mission station; Rev Tautau left there in 1905.[281]

In 1905 it was reported that the church had had difficulty in leasing out the land as ecclesiastical law allowed only for 21-year leases.[282] The Anglican Diocesan Registrar reported that income from leases of the Hopuhopu estate had been spent on educating local boys at St Stephen's School.[283]

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[268] SO 130, QuickMap.
[269] SO 17980, QuickMap.
[270] *Auckland Star* 20 December 1937, p. 8; *Auckland Star* 5 November 1936, p. 6.
[271] *Auckland Star* 15 October 1885, p. 4.
[272] *Auckland Star* 9 October 1889, p. 2.
[273] *Waikato Times* 16 March 1886, p. 2.
[274] Ibid.
[275] *New Zealand Herald* 15 February 1892, p. 6.
[276] *Auckland Star* 17 August 1898, p. 2.
[277] *Auckland Star* 28 February 1894, p. 4.
[278] *New Zealand Herald* 21 February 1902, p. 3.
[279] *Waiapu Church Gazette,* 1 October 1912, p. 45.
[280] *New Zealand Herald* 21 February 1902, p. 3.
[281] *New Zealand Herald* 6 October 1903, p. 7; *Waiapu Church Gazette,* 1 October 1912, p. 45.
[282] *New Zealand Herald* 21 June 1905, p. 7.
[283] *The Press* 20 June 1905, p. 6.

In 1909 twenty candidates from different parts of the Waikato were confirmed at the church at Hopuhopu.[284] A Maori conference in 1910 decided that a central district council was to be established at Hopuhopu; the erection of a large office, a church and a school was to be erected at an estimated cost of £2000 to be raised by the Maori community.[285]

Rev Ruarangi served the Maori Mission church at Hopuhopu until his death in 1913, when he succumbed to smallpox after nursing several Maori patients during an epidemic. His grave is near the main entrance gate to the Wananga at Hopuhopu. In 1917, after it was reported that the grave was neglected, a working party reportedly erected a cross of hardwood and iron nearly 18-feet high, covered the grave with concrete and erected a neat iron fence around it.[286] The grave was close to the site of the church; this was dismantled and burnt down in 1917. It is not established whether this was the original church from Ashwell's time. Ruarangi's house was burnt down soon after his death on the recommendation of the district health officer.[287]

A 1917 survey plan drawn for J Sager of the land south of the mission land shows a large orchard near the river, otherwise the land was in gorse, grass, a patch of native bush, wiwi swamp and manuka.[288]

The Anglican Trust Board continued to advertise land for lease; including two separate leases for Allotment 104 of 80 acres and 14 acres in 1922.[289] These parcels were to the east of the NIMT. In 1924 the board advertised a farm property of 41 aces for sale.[290]

**Military Training Camp**

In 1922 the government issued gazette notices advising the taking of land for the purposes of a camping ground to take effect from 1 April 1922.[291] The camp covered four parcels, each part of Allotment 104, totalling 346 acres and 32 perches. An Order in Council stated that portions of the land were occupied by buildings, gardens and orchards.[292] A plan surveyed for the Railway Department in 1921 shows the future camp as the roughly-triangular area west of and bounded by the NIMT, in part by the Old South Road [Old Taupiri Road] and in part by the Waikato River.[293] At that time the lessees of the church land to the west of the NIMT were JW Parker, Benjamin Stubbing, P Spencer and Graham; some of Parker's lease was not taken by the government.[294] The 'great military training camp' to be established was often referred to as the camping ground.[295]

[284] *Auckland Star* 13 October 1909, p. 3.
[285] *New Zealand Herald* 16 June 1910, p. 6.
[286] *Auckland Star* 7 November 1917, p. 4: grave
[287] *Waikato Times* 21 May 1985, p. 14.
[288] SO 11944, QuickMap.
[289] *New Zealand Herald* 15 March 1922, p. 14.
[290] *New Zealand Herald* 9 May 1924, p. 7.
[291] *New Zealand Gazette* 1922, pp. 716-17.
[292] Ibid, pp. 719-20.
[293] SO 22004, QuickMap.
[294] Ibid.
[295] *Auckland Star* 12 April 1924, p. 8.

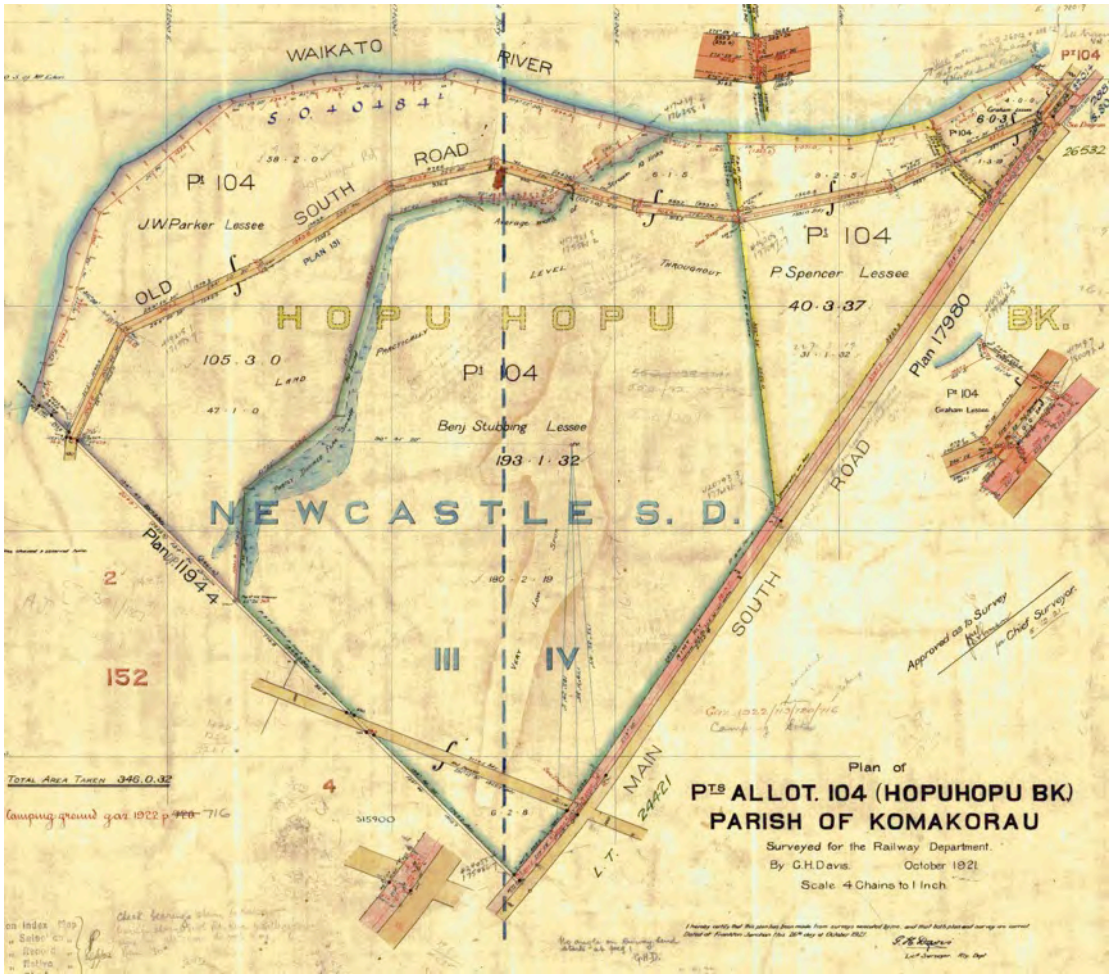


Figure 64: 'Plan of Pts Allot 104 (Hopuhopu BK) Parish of Komakorau', surveyed for the Railway Department, October 1921, SO 22004. The roughly-triangular parcel is shown divided into four for lessees Parker, Stubbing and Spencer, with Graham holding the small parcel in the north-eastern corner. The NIMT and Great South Road form the eastern boundary.

By April 1925 the land had already been used as a camp for trainees but it was still 'in the rough' and plans were being drawn up to convert it into 'a thoroughly equipped permanent military depot, to be officially known as the Ngaruawahia Mobilisation Base … [and] … the chief military magazine for the Dominion, and probably the greatest ordnance depot'.[296] Houses for officers were then under construction: these six concrete houses are situated on the north side of Old Taupiri Road.

A railway siding from the NIMT extended for half a mile into the camp, and from the terminus of that it was proposed to build a wooden tramway to the foot of the hill along the base of which the magazines were being built.[297] By April 1925 several of the ten magazines for the storage of ammunition and explosives were nearing completion. They were constructed of double walls of concrete, with inspection windows and were set into the hillside with spoil banked up to the height of the eaves, designed to break the force of any explosion. Five sheds were to be built beside the railway line; the largest of these was 500 x 40 feet.[298] Many more munitions stores were constructed later around Lakes Hotoananga and Pikopiko on the east side of Great South Road.

[296] *Auckland Star* 8 April 1925, p. 5.
[297] Ibid.
[298] *Auckland Star* 8 April 1925, p. 5.

Figure 65: 'Hopuhopu ammunition arsenal, near Ngaruawahia, Waikato', 31 October 1964. WA-63057-F, Whites Aviation Collection, Alexander Turnbull Library. Looking south-east with Lake Hotoananga at left, and Lakes Pikopiko and Areare in the distance. The structures shown are the munitions stores built on the east side of Great South Road.

By December 1925 the gorse and blackberry had been cleared and men were erecting concrete and wooden buildings in what was 'undoubtedly the most extensive military scheme … ever undertaken by the Defence Department'.[299] Two large mess rooms were under construction as an intake of 1200 men was expected in late January; between these two concrete buildings a cook house was to be built.[300] In addition to the first six houses, another seven-roomed house was to be built and ten 'accommodation cubicles' for single staff.[301] A 1938 aerial photograph shows six houses plus one larger one set further along the road; by 1953 there was an additional pair of houses to the west of the original six.[302]

Fresh water for the camp was pumped from the river via a settling tank up to an 80,000-gallon reservoir situated on top of the hill. From there the water was conveyed via a reticulation system over the entire camp area.[303] 'Special attention' was paid to a sewerage system, which took all drainage to the Waikato River. Food waste, including offal, was supplied to a local pig famer, possibly Albury Rogers whose farm was immediately to the east of the camp on Great South Road.[304]

[299] *Auckland Star* 12 December 1925, p. 10.
[300] Ibid.
[301] Ibid.
[302] See WA-55972-G, White's Aviation Collection, Alexander Turnbull Library.
[303] *Auckland Star* 12 December 1925, p. 10.
[304] *Auckland Star* 17 February 1928, p. 8.

In 1929 the Public Works Department handed over the camp to the Defence Department as most of the construction work, which included roads and a shelter belt, had been completed. Up to 80 workmen at a time had been employed on the project.[305]

Although initially praise was heaped on the camp for its clean and healthy environment, such was not the case in 1939 when influenza was rife. Tents leaked, mattresses and blankets were damp, and the camp hospital was full to overflowing despite many patients having been taken to Waikato Hospital.[306] By 7 November 1939, 60 patients had been taken to the hospital; three days later the number was 85.[307] Another flu outbreak in July 1940, when the special Railway and Forestry Units and non-commissioned officers of the Territorial Artillery Units were in camp, saw 50 soldier patients being removed to a temporary hospital at Hamilton West School, with many more in Waikato Hospital.[308] A measles outbreak in October 1940 again saw hospitalization of 52 soldiers and the camp placed under quarantine.[309]

In May 1941 construction began of a social hut of timber construction with a floor space of 1152-square feet, similar in design to recreation huts built at Trentham and Papakura and with 'all the necessary facilities to provide adequate comforts for the men'.[310] The camp was later to include tennis courts, a two-rink bowling green and cricket pitches.[311]

Figure 66: Hopuhopu Military Camp when the first volunteer Auckland contingent was in camp, *Auckland Weekly News* 4 October 1939 p. 45. AWNS-19391004-45-1, Sir George Grey Special Collections, Auckland Libraries.

[305] *Evening Post* 5 August 1929, p. 8.
[306] *Auckland Star* 2 November 1939, p. 6.
[307] *Auckland Star* 7 November 1939, p. 6; *Auckland Star* 10 November 1939, p. 3.
[308] *Auckland Star* 23 July 1940, p. 8.
[309] *Auckland Star* 24 September 1940, p. 3.
[310] *Auckland Star* 1 May 1941, p. 6.
[311] *Auckland Star* 12 December 1925, p. 10.

Figure 67: Specialists at Hopuhopu camp, date unknown. 3832, Hamilton City Libraries.

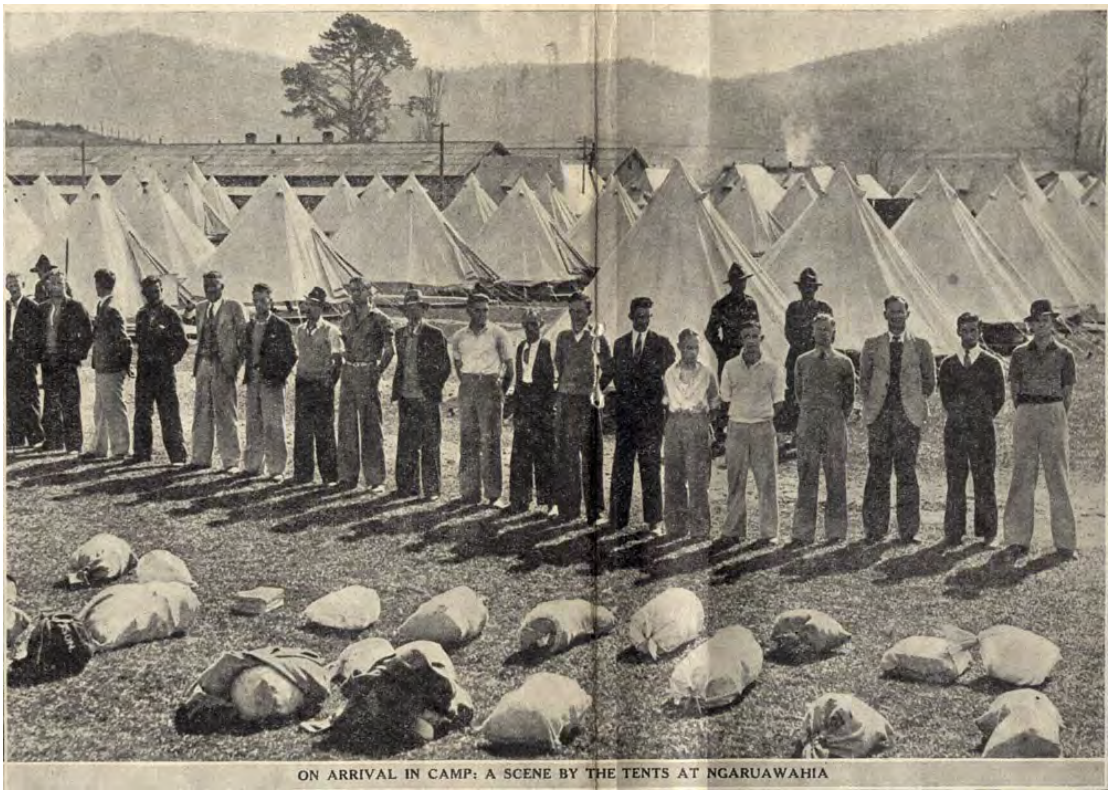


Figure 68: 'On arrival in camp: a scene by the tents at Ngaruawahia', *Auckland Weekly News* 16 April 1941 p. 30. AWNS-19410416-30-2, Sir George Grey Special Collections, Auckland Libraries.

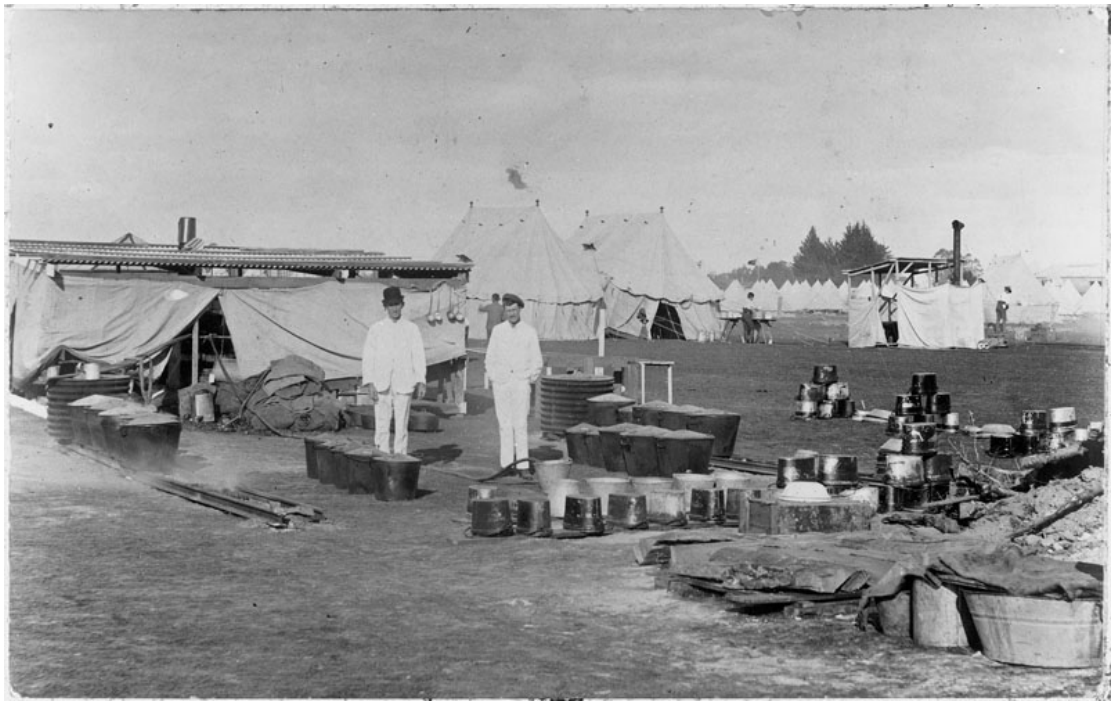

Figure 69: The cooking tents at Hopuhopu military camp, date unknown. 03833, Hamilton City Libraries.

Soon after the cessation of World War II the War Assets Realisation Board advertised the sale of 'office furniture, tents etc' from Hopuhopu.[312] At some time prior to 1961 Ashwell Crescent was formed and 15 state houses built at its northern end. More housing has since been added at its southern end.

Military training camps continued through to the 1980s, for regular and territorial forces and also civil defence units. Troops used the nearby stream to learn how to construct temporary bridges and used the river for managing pontoons and other craft.[313] In 1984 the camp expanded its facilities with the construction of a 500-square metre building to provide facilities for the 5th Signal Squadron, Royal New Zealand Signal Corps.[314] The building, which included offices and lecture rooms, was to be opened on 6 December 1984.

By coincidence, when the army decided in 1985 to look for a site on which to erect a church at Hopuhopu, the site selected was that of the old mission church. At that time there were 100 single soldiers and 57 families living at the camp.[315]

[312] *Auckland Star* 26 November 1945, p. 8.
[313] *Waikato Times* 19 November 1985, p. 3.
[314] *Waikato Times* 1 November 1984, p. 12.
[315] *Waikato Times* 21 May 1985, p. 14.

Figure 70: 'Hopuhopu Military Camp from the air', 20 April 1961. ATL WA-55339-F, Whites Aviation Collection, Alexander Turnbull Library. In the foreground is Ashwell Crescent, with the first 15 state houses at its northern end.

In March 1989 the government announced the pending closure of the camp as a result of the government's defence review, which shut down 13 military defence bases and camps throughout the country.[316] A total of 216 staff, 40 civilian and 176 military, were then employed at Hopuhopu and Te Rapa air force base, which was also to close.[317] On Saturday, 2 September 1989, 'a quarter guard of all soldiers from all corps at the camp, the band of the Royal Regiment of New Zealand Artillery and gunners from 4(G) Medium Battery RNZA combined to form a Beating of the Retreat at the formal closing of the camp. Dignitaries attending included Te Arikinui Dame Te Atairangikaahu and Te Rangatira Whatumoana Paki. The Chief of Staff Major-General Meldrum stressed the close ties that had formed between the military and the people of the area.[318] The closure was described as 'the end of a love affair' for Ngaruawahia, as the camp had been a great supporter of sports clubs, provided a military presence for civic functions and added colour and excitement to people's lives.[319] Ngaruawahia's mayor was concerned the closure would lead to a significant drop in commercial activity in the town.[320]

[316] *Waikato Times* 3 March 1989, p. 1.
[317] *Waikato Times* 19 May 1989, p. 1.
[318] *Hamilton Press* 13 September 1989, p. 7.
[319] *Waikato Times* 1 September 1989, p. 1.
[320] *Waikato Times* 3 March 1989, p. 1.

Lake Hotoananga is said to have been used by the Defence Department to dump unused or unwanted munitions and has proved to be a great fossicking ground for collectors who took out 'many car loads of stuff' until the army brought in diggers to clear it out.[321]

**Non-military Activities**

Land to the south and east of the mission grant was farmed as one large estate, known as 'Kainui', of nearly 2400 acres. This was owned by Thomas C Williams, son of Rev Henry Williams, until 1905 but was subdivided in 1911 by Messrs HE and SG Worsp into sixteen smaller parcels.[322] The land was advertised as being drained kahikatea swamp suitable for dairy farms, close to two creameries and only one mile from the Taupiri railway station.[323] The eastern side of this estate is now bordered by the Waikato Expressway.

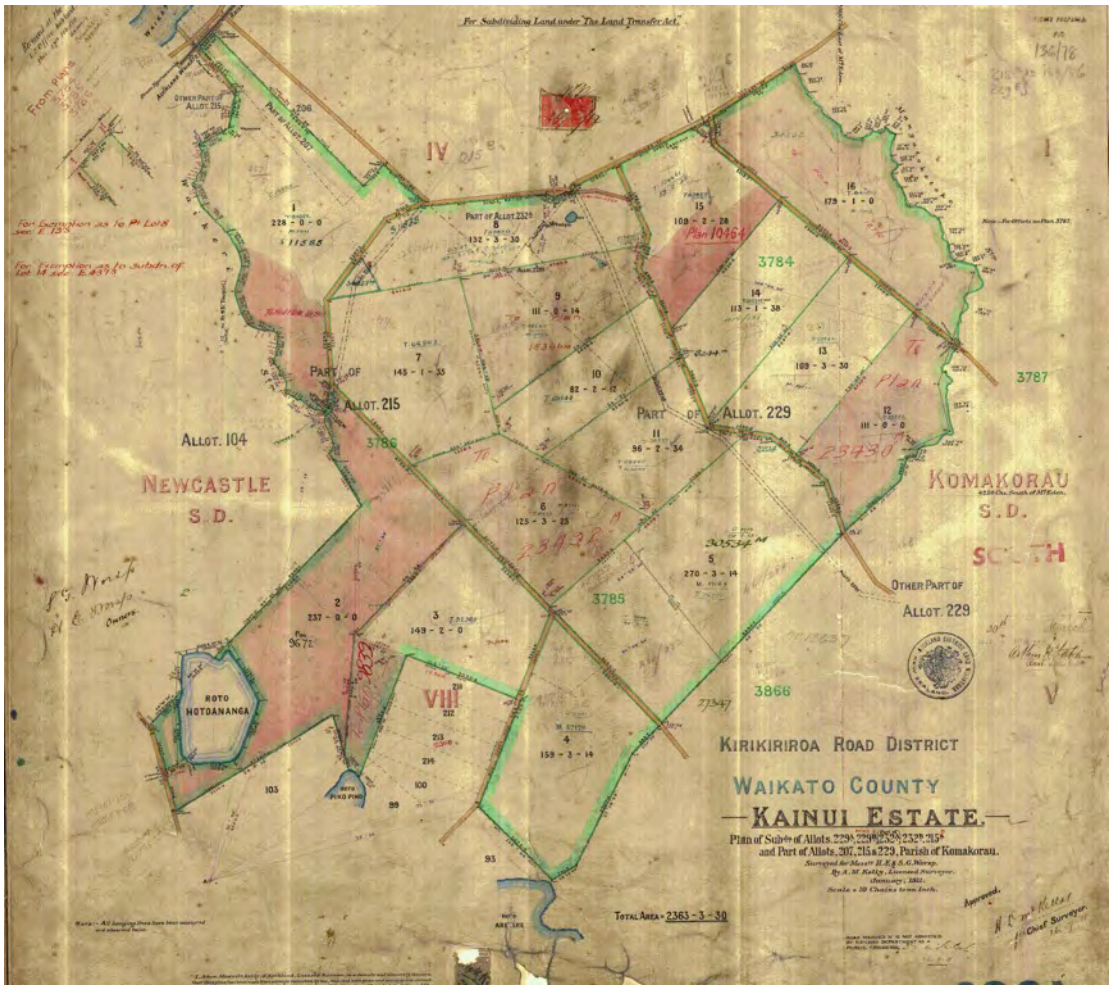


Figure 71: 'Kainui Estate' surveyed January 1911, DP 6931. QuickMap. Lakes Hotoananga, Pikopiko and Areare are shown on the southern edge of the estate.

The water supply established in 1922 for the military camp was upgraded in 1960, with a new treatment system, improved pumps and a larger reservoir built at the top of the hill within the camp. The water treatment plant, rising main and supply main were handed over

[321] http://rnzaf.proboards.com/thread/17395
[322] DP 6931, QuickMap.
[323] *New Zealand Herald* 18 March 1911, p. 12.

to the local council by the army when the camp was closed. The Taupiri community is served by 50% of the supply while the balance is used by Hopuhopu village and the college.[324]

The land around the southern half of Lake Hotoananga, originally gazetted for defence purposes, was gazetted for agricultural purposes in 1970 for use by the Ruakura Animal Research Centre.[325] In 1985 a quarantine farm was established in Kelm Road. The 150-hectare farm was to be used by the Ministry of Agriculture and Fisheries for an extensive programme of evaluating and breeding new sheep breeds introduced as embryos from Denmark and Finland. Yards, laboratories, offices and staff housing were constructed. Once the sheep arrived the farm was to be closed to visitors for four years.[326] The lambs arrived from the primary quarantine station on Somes Island, Wellington, on 17 December 1985.[327]

More recently the Hopuhopu mission estate was part of the Waikato Raupatu Settlement. Te Arikinui Dame Te Atairangikaahu opened the Tainui Endowed College on the site on 1 February 2000. The college was envisaged by Sir Robert Mahuta, the Founding Fellow and Principal Negotiator for the 1995 Waikato Raupatu Settlement, as both a memorial to the Raupatu and 'the means by which we will be able to produce a continual stream of leadership to take Maaori people through the next century'.[328]

In 2010 the college was re-named Waikato-Tainui College for Research and Development.[329] The college has modern accommodation units, conference and seminar facilities, and sports grounds. The Hopuhopu complex is the cultural, educational, recreational and administrative tribal base for Waikato-Tainui.[330] A large number of the military camp buildings and munitions stores remain on the campus.

[324] Waikato District Council 'Water and sanitary services assessment' 2002, p. 12.
[325] *NZ Gazette* 1970, p. 1025; SO 32172 surveyed 1943 and 1946.
[326] *Waikato Times* 27 November 1985, p. 36.
[327] *Waikato Times* 18 December 1985, p. 56.
[328] http://www.waikatotainui.ac.nz/
[329] Ibid.
[330] Ibid.

## Glen Massey

Land in the Glen Massey area was not subdivided for 50-acre militia grants, although it was part of the land confiscated after the Waikato War.[331] Instead the area was chosen for three separate government settlement schemes: Akatea Village Settlement, Firewood Creek Village Settlement, and grants made under the Naval & Military Settlers and Volunteers Land Act 1891. The discovery of coal in 1908 altered the course of development to establish Glen Massey as a settlement for mine workers.

The Akatea Village Settlement was not a village *per se* but rather a suite of land parcels of approximately 50-acres, intended to be developed as farms. An 1881 survey shows the settlement area extended northwest from near the junction of Wilton Collieries Road (formerly part of Kereru Road) with Waingaro Road (see SO 4609 below).[332] One house was marked on the 1881 map, on adjacent land, indicating that some settlement had already occurred in the area.[333]

By 1881 a road had been constructed from Huntly to Waingaro around the west side of the Hakarimata Range to give access to Te Akau station, the Waingaro hot springs and Raglan [Whaingaroa] Harbour. The Te Akatea land was inspected in 1886 as a proposed temperance settlement with the result that, in February 1887, 15 lots were advertised as being available on perpetual lease. [334] Some were taken up and occupied within the year, as in March 1888 one of the settlers was complaining about the state of the road and the lack of the promised punt to take them across the Waipa to Ngaruawahia.[335] The settlers had been promised two years' half-time work road-building and without that income settlers were said to be facing starvation.[336]

In 1887 the road from Ngaruawahia to Te Akatea was surveyed to connect with the Huntly-Waingaro road but it was not usable for wheeled vehicles.[337] The road ran beside Firewood Creek (also known as Mangaohe, Mangohe and Mangaowhe), which flows into the Waipa opposite Ngaruawahia. Further roads were surveyed as part of the subdivision of the vast area owned by the government. It was reported that by June 1888 twelve wooden houses had been built at Te Akatea, however access to the small settlement was difficult and one man had carried his building materials in on a wheelbarrow.[338] A school was built in Te Akatea in 1892.[339] The teacher divided his time with teaching at Waingaro School.

[331] SO 537, surveyed 1875, identifies the land south of Firewood Creek as government land.
[332] SO 4609, QuickMap.
[333] Ibid.
[334] *Waikato Times* 30 November 1886, p. 3; *Auckland Star* 15 February 1887, p. 3.
[335] *Waikato Times* 1 March 1888, p. 2.
[336] Ibid.
[337] *New Zealand Herald* 7 January 1887, p. 6.
[338] *Waikato Times* 19 June 1888, p. 2.
[339] Pam Bovill *Glen Massey School 75th Jubilee 1915-1990* p. 1.

Figure 72: 'Block VI Newcastle Survey District' SO 4609, surveyed 1881, shows the parcels of Akatea Village Settlement. The junction of Waingaro Road and Wilton Collieries/Kereru Road is at lower left with Kereru Road extending to the west (left) and Waingaro Road extending northwest. A track is shown going north from Kereru Road to a house (lower left). QuickMap.

Similarly Firewood Creek Village Settlement was not a closely settled planned village but an area of nine 50-acre parcels between Glen Massey and Ngaruawahia. It was surveyed in 1887 from land that had originally been surveyed in 1865 as one parcel of 494 acres (see SO 4610 below).[340] The parcels were accessed from Waingaro Road, which was then just a narrow track.[341] The sections, which were advertised for lease early in 1887, had been taken up by 27 January 1887.[342]

[340] SO 4610, QuickMap.
[341] *Waikato Times* 26 February 1887, p. 2.
[342] *Auckland Star* 13 January 1887, p. 4; *Waikato Times* 27 January 1887, p. 2.

Figure 73: 'Firewood Creek Village Settlement' June 1887, SO 4610. QuickMap. The sections are numbered 8, 87 to 93 and 96 from east to west. Firewood Creek and the Waingaro-Ngaruawahia Road run along the northern boundaries of the parcels. The north-south aligned road at right is Te Puroa Road. The small numbers along the top are the surveyor's bearings.

In 1893 the land to the west of Firewood Creek settlement, including what is now Glen Massey, was surveyed as grants to former British and colonial military and naval personnel who had served in New Zealand and who passed the criteria laid down under the Naval & Military Settlers and Volunteers Land Act 1891 (see SO 6686 below).[343] The parcels were of varying size, with some people owning up to 400 acres comprising several adjacent parcels. Landowners marked on the plan (approximately from west to east on the south side of Waingaro Road) were Tylden, McCall, Shaw, Wilson, Dawson and Strong, with Brodie, Arthur and Moore owning land further south. Morrow owned land on the north side of Firewood Creek; Ashbury, Blake, Sisam and Charman along Elgood Road.[344] The roads were unnamed but are now Wilton Collieries, Edgecombe, Kereru and Elgood Roads. It is not known whether any of these men took up their grants and settled on the land, or simply realised their asset. In 1898 access from Ngaruawahia was made easier with the construction of a bridge over the Waipa River.[345]

[343] SO 6686, QuickMap.
[344] All these surnames are listed on http://homepages.ihug.co.nz/~Sxmitch/Military.html as being successful petitioners under the Act.
[345] Latta, p. 117.

Figure 74: 'Plan of Sections 139 to 214 (Selected under the Naval & Military Settlers and Volunteers Land Act 1891)', 1893, SO 6686. Kereru Road is at top left; Wilton Collieries Road extends south from Kereru Road then west (lower left); the junction of Waingaro Road and Kereru/Wilton Collieries Road is mid-top; Waingaro Road extends east from there along the top edge of the parcels to its junction with Elgood Road (top right). The other forked road, extending south (lower middle), was not formed.

One of the settlers along Firewood Creek found a 20-foot seam of coal on his property in 1890 but it seems little was done about it in view of the district's inaccessibility.[346] The proximity of the extensive coal deposits in the Huntly field eventually encouraged further surveys for coal in the Te Akatea area. In 1908 coal deposits were being investigated on the properties of Messrs Runciman, Coad and Dawson, a number of 'promising outcrops and extensive faces' showing the extent of the sea.[347] Tests undertaken by the Mines Department showed the quality to be suitable for domestic use and located additional deposits. Small amounts were taken by horse and cart for use at Ngaruawahia dairy factory.[348] Coal extraction in the vicinity of Glen Massey continued over the next 50 years, the main players being the Waipa Coal Company (Waipa Railway and Collieries Co.), Wilton Collieries Ltd and the government.

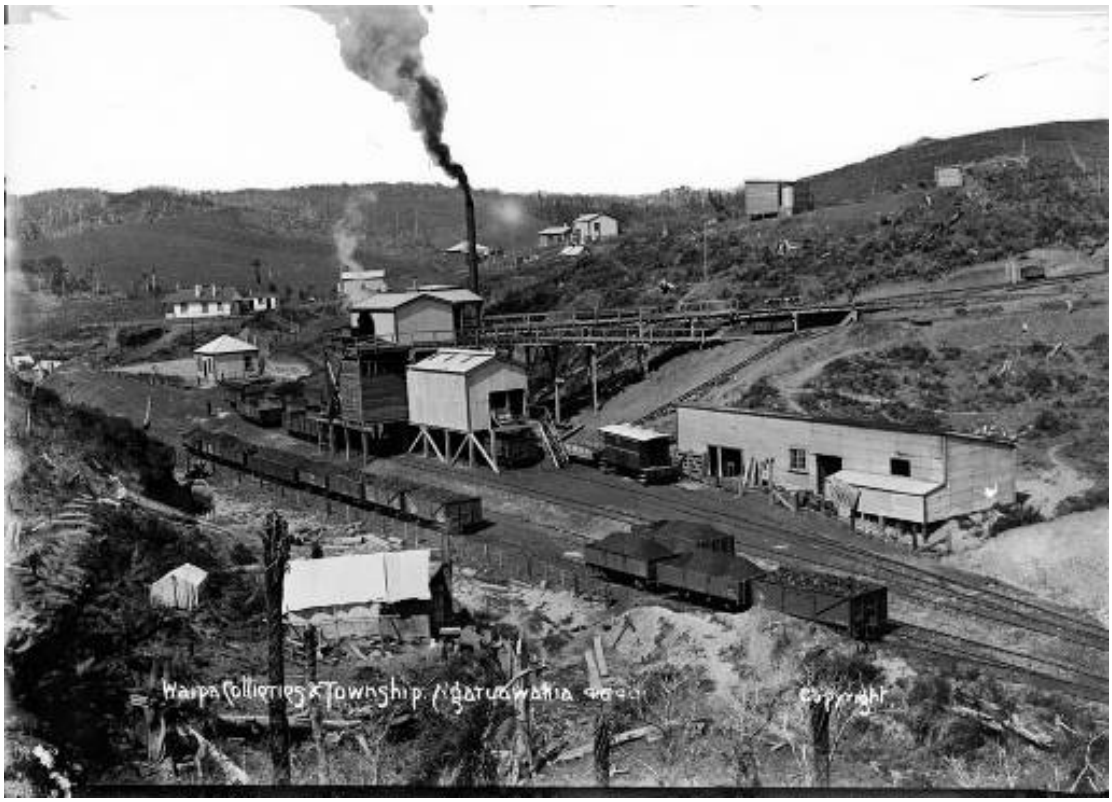


Figure 75: 'Waipa Collieries & Township'. Undated, c. 1920? 35-R965, Sir George Grey Special Collections, Auckland Libraries.

The first company to exploit the field, the Waipa Coal Company, which was also known as Waipa Railway and Collieries Company, was formed in 1909 and offered 80,000 shares at £1 each.[349] All the shares were taken up by May 1914 when the Waipa mine opened.[350] The company held mining rights over 2500 acres near Te Akatea in addition to an option over a further 5000 acres.[351]

[346] *Waikato Times* 4 February 1890, p. 2
[347] *Marlborough Express* 11 July 1908, p. 2
[348] Bovill, p. 1.
[349] *Manawatu Standard* 13 January 1910, p. 5.
[350] *Auckland Star* 10 November 1909, p. 3; *Wanganui Chronicle* 20 May 1914, p. 6.
[351] *Auckland Star* 12 March 1912, p. 2.

**PROSPECTUS.**

ABRIDGED PROSPECTUS

# WAIPA RAILWAY AND COLLIERIES LIMITED.

CAPITAL:

**£80,000 IN 80,000 SHARES OF £1 EACH.**

1,500 SHARES, FULLY-PAID-UP, TO BE ALLOTTED TO THE NGARUAWAHIA COAL COMPANY, LIMITED, AND 78,500 SHARES ARE NOW OFFERED TO THE PUBLIC AS UNDER:—

2/ PER SHARE ON APPLICATION.

1/ PER SHARE ON ALLOTMENT.

ALL SHARES SUBSCRIBED PRIOR REGISTRATION OF COMPANY WILL CARRY CUMULATIVE PREFERENTIAL DIVIDEND, AT THE RATE OF 6 PER CENT PER ANNUM, FOR THREE YEARS.

PROVISIONAL DIRECTORS:

T. S. WESTON, Solicitor, Wellington.
DR. C. P. KNIGHT, Solicitor, Wellington.
H. G. WILLIAMS, Sheepfarmer, Masterton.
C. STEWART, Merchant, Wellington.
W. M. HANNAY, Gentleman, Wellington.
G. McHATTIE, Settler, Masterton.

PROVISIONAL MANAGING DIRECTOR:

W. M. HANNAY.

(Late General Manager Wellington and Manawatu Railway Company, Limited).

INTERIM SECRETARY:

H. D. VICKERY, 41, Ballance-st., Wellington.

THE OBJECTS of Company are briefly, to work on royalty the Te Akatea (Waikato Coalfields (Area 1,774 Acres), and to construct railway six miles in length to connect the collieries with Main Trunk Rail way line. In addition to above, option held over a further 5,121 Acres. Royalties in respect of 1,774 Acres, 9d per ton on large coal SOLD; 3d per ton on slack SOLD. In respect of 5,121 Acres, 9d per ton.

THE PROPERTY.—Mr John Hayes, late Inspecting Engineer to N.Z. Government, and Mr J. P. Maxwell, M. Inst. C.E., formerly N.Z. Railway Commissioner, have reported on property. Coal seams are exposed on rising ground, which will permit of much "level free" working. Mining timber and clay is on the property.

This Company purchases all mining rights, lands, railway concessions, etc., owned by Ngaruawahia Coal Company, Ltd., the consideration being £1,000 cash, and 1,500 fully paid-up shares.

QUANTITY OF COAL.—The reports indicate evidence of three seams. Estimated quantity from main seam alone (after liberal allowance of over 35 per cent for loss in working), 22,500,000 sale tons, which will provide for over 100 years' working. The railway to be constructed is six miles long. The experts report no engineering difficulties of moment to encounter.

The Vendors are F. Laurenson, jun. and N. W. Bell, both of Wellington, who are selling options to Company, and Tramway Concessions granted to them from the Raglan County Council and the Ngaruawahia Town Board. They are to receive 3d per ton out of the royalty of 9d on large coal. The minimum subscription is 45,000 Shares.

For full particulars and prospectus, apply to the Brokers:—

J. T. HENDRY, Exchange-lane, Auckland.
ARTHUR GEDDES, 27, Fort-st., Auckland.

Figure 76: Advertisement *Auckland Star* 10 November 1909, p. 3. PapersPast.

Tenders for the construction of bridges and the railway from Ngaruawahia to Te Akatea [Glen Massey] were called in February 1911; Messrs Donald McLean & Co of Wellington were the successful engineers.[352] Work began on 20 January 1912, although the ceremonial first sod of the Waipa Railway and Colliery Company's line was turned at Ngaruawahia by Premier Sir Joseph Ward on 12 March 1912.[353] The work required that the Ngaruawahia railway station be altered and about a ¼ mile of sidings added.

By April 1913 good progress had been made with the earthworks for the formation of the railway line, but construction of the bridge over the Waipa River was delayed.[354] The railway was of standard gauge so that loaded trucks could be switched onto the Main Trunk Railway at Ngaruawahia. The railway cost £45,000; it included six miles of track, 24 bridges and a 380-foot long wooden viaduct over Firewood Creek.

Figure 77: 'Conveying the coal from the mine to the bins: trucks travelling on an endless cable tramway at the Waipa Collieries, near Ngaruawahia'. *Auckland Weekly News* 30 July 1914, p. 4. AWNS-19140730-45-3, Sir George Grey Special Collections, Auckland Libraries.

The potential for a large mining enterprise requiring a residential work force was soon recognised and a series of surveys, of land adjoining the Waingaro Road and around the junction of what became Wilton Collieries Road and Keruru [Dawson's] Road, resulted in the subdivision of small parcels suitable for residential lots. These provided land for the mine workers and promoted the development of the township.

In February 1912 the first subdivision of land for housing, at what is now Glen Massey but was then known as Te Akatea, was undertaken. This was for the Fowler Brothers (WR and George) to create a nearly three-acre strip of land on the east side of Wilton Collieries Road (not then named).[355] The same parcel was apparently sold soon after to HH Gould and Arthur Fausett, as in February 1913 they undertook a subdivision of the same parcel, as

[352] *New Zealand Herald* 17 February 1911, p. 7.
[353] *The Dominion* 8 March 1912, p. 4; *Auckland Star* 12 March 1912, p. 2.
[354] *Auckland Star* 12 April 1913, p. 9.
[355] DP 7918, QuickMap.

'Town of Te Akatea Extension No.1'.[356] The subdivision created eleven sections of just over ¼ acre each, south from the junction of Waingaro Road and Wilton Collieries Road. Gould & Fausett were sawmillers of Ngaruawahia and it is presumed their interest was speculative.[357]

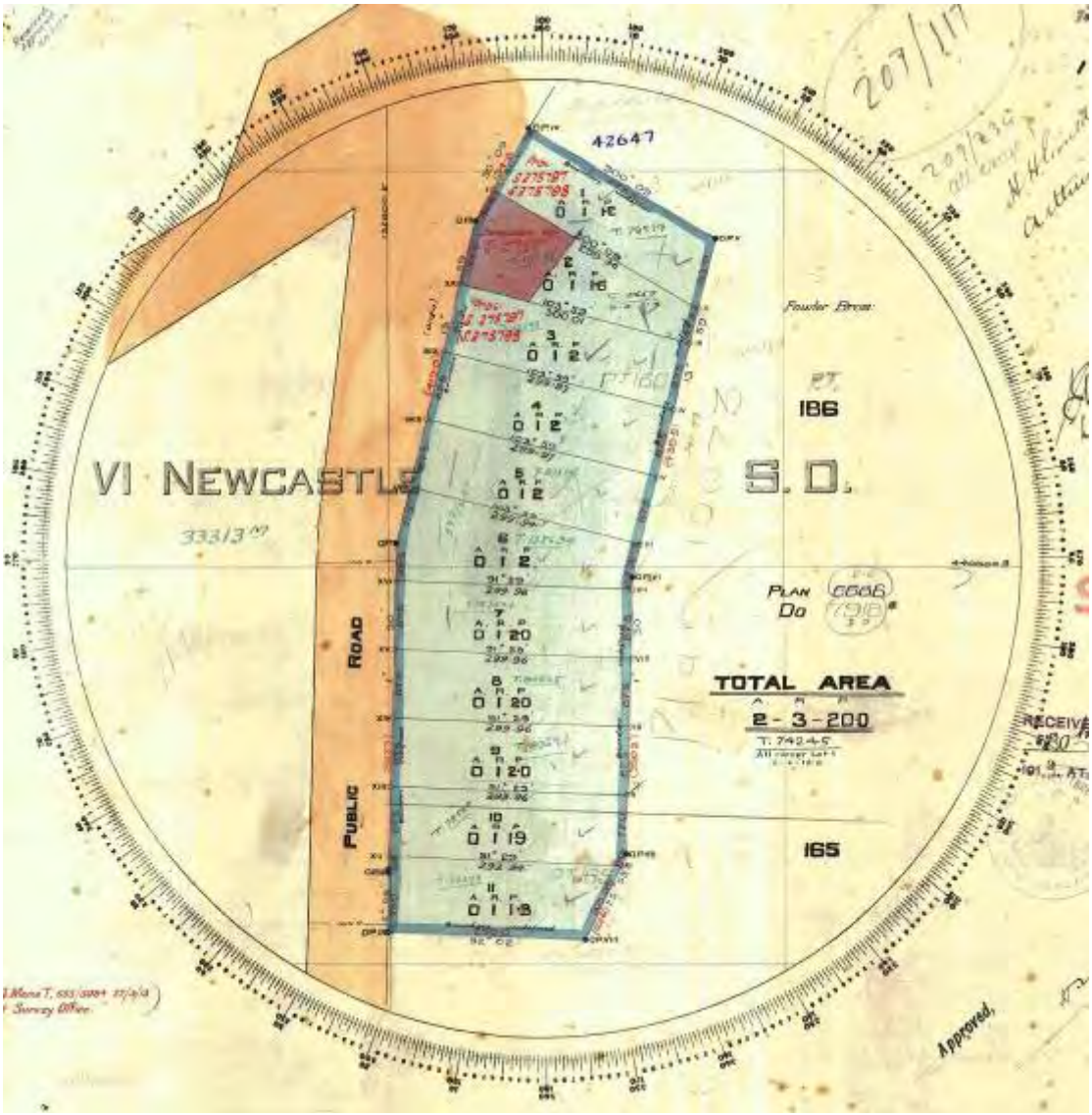


Figure 78: Part of 'Town of Te Akatea Extension No.1' drawn February 1913, DP 8495. The road at left is Wilton Collieries Road. The boarding-house at 79 Wilton Collieries Road is on Lot 11, the southern-most parcel.

In the first three months of 1914 further subdivisions followed, each being labelled 'Town of Te Akatea Extension'. Extensions 2 and 3 were for Messrs Runciman and Coad. Extension No. 2 was undertaken in February 1914 along Kereru Road (then known as Dawson Road); 30 c.¼-acre sections and three larger parcels were surveyed (see DP 9256 below).[358] Access to some of the sections was provided by a right of way road, now Edgecombe Drive. Extension No. 3, surveyed January 1914, created ten residential parcels of less than ¼ acre each (see DP 9281 below).[359] One building shown on Lot 1 (DP 9286), the southernmost lot, still exists on the property.

[356] DP 8495, QuickMap.
[357] *New Zealand Herald* 12 October 1912, p. 4.
[358] DP 9256, QuickMap.
[359] DP 9281, QuickMap.

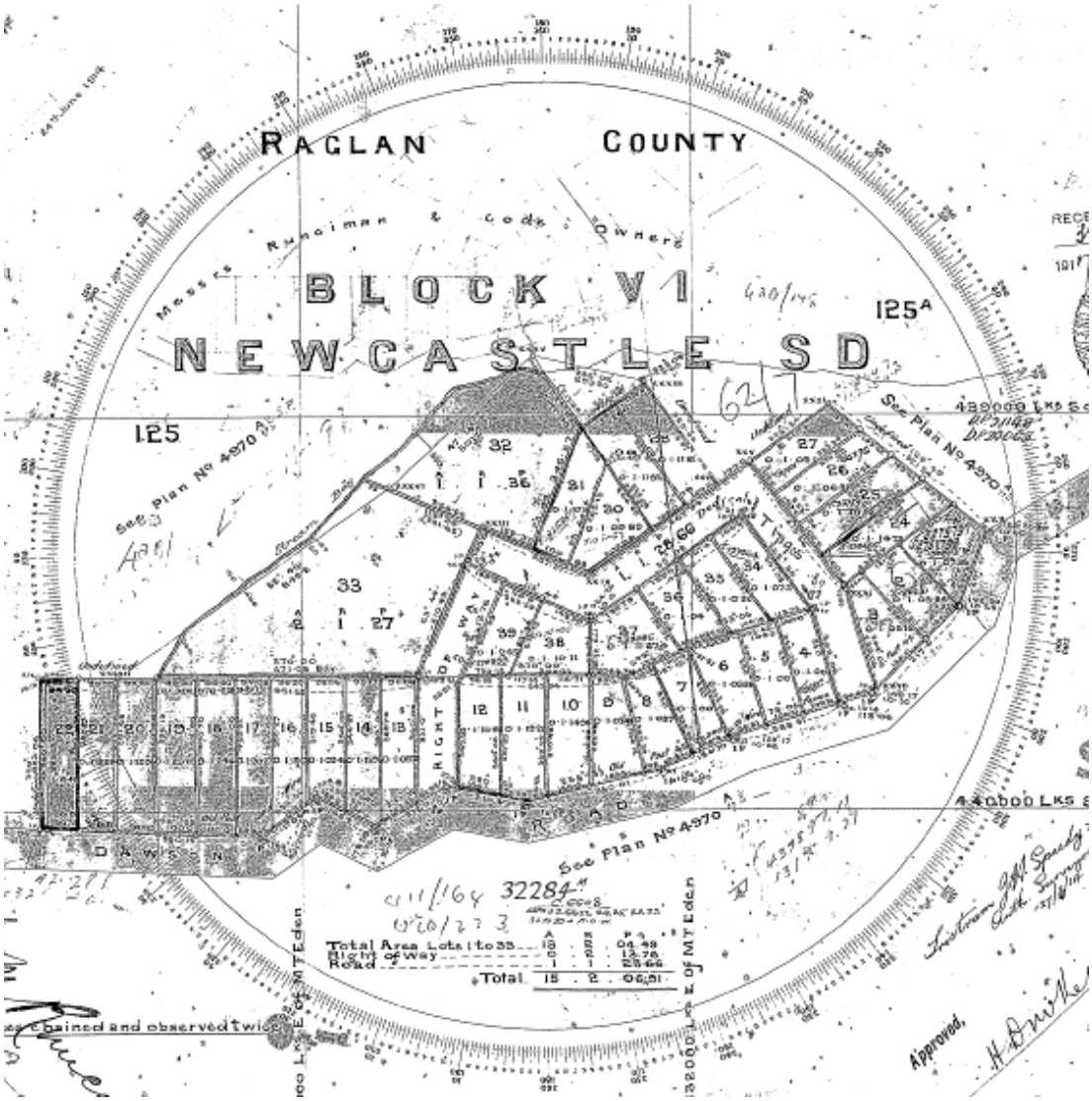


Figure 79: Part of 'Town of Te Akatea Extension No.2' drawn February 1914, DP 9256. QuickMap. The road along the southern edge is Kereru Road, the zigzag road Edgecombe Drive. The parcels to the west of the right of way have since been amalgamated.

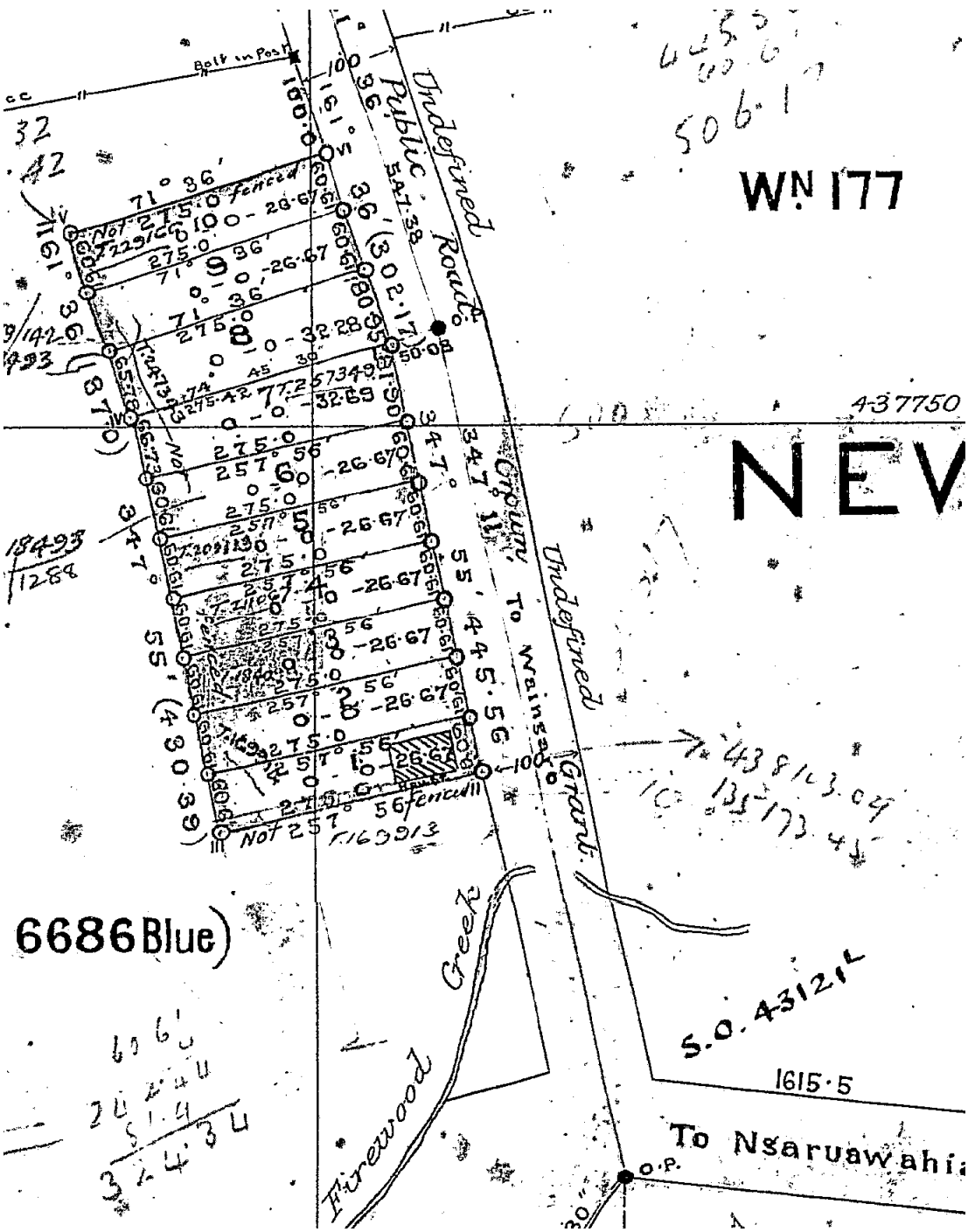


Figure 80: Part of 'Town of Te Akatea Extension No. 3', drawn January 1914, DP 9281. QuickMap. The building shown on Lot 1 is the house at 929 Waingaro Road.

Extension No. 4 and 5 (one survey) was undertaken for the Fowler Brothers and covered the land on the north side of Waingaro Road before it turns north to Waingaro. In February 1915 Fowler Bros and Laurenson & Co had a survey done for the south side of the main road. Termed 'Town of Te Akatea Extension No.6' this was the largest of the subdivisions, creating 67 allotments of approximately ¼ acre and two of one acre, on the south side of Waingaro Road (see DP 10154 below).

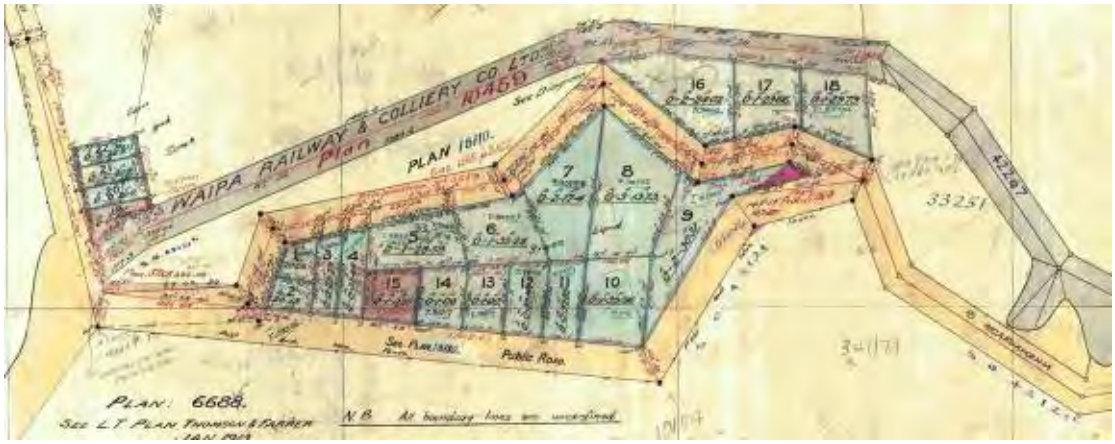


Figure 81: Part of 'Township of Te Akatea Extension Nos. 4 & 5' drawn March 1914, shows the subdivision of the area encircled by Owen Drive and Waingaro Road. DP 9316, QuickMap.

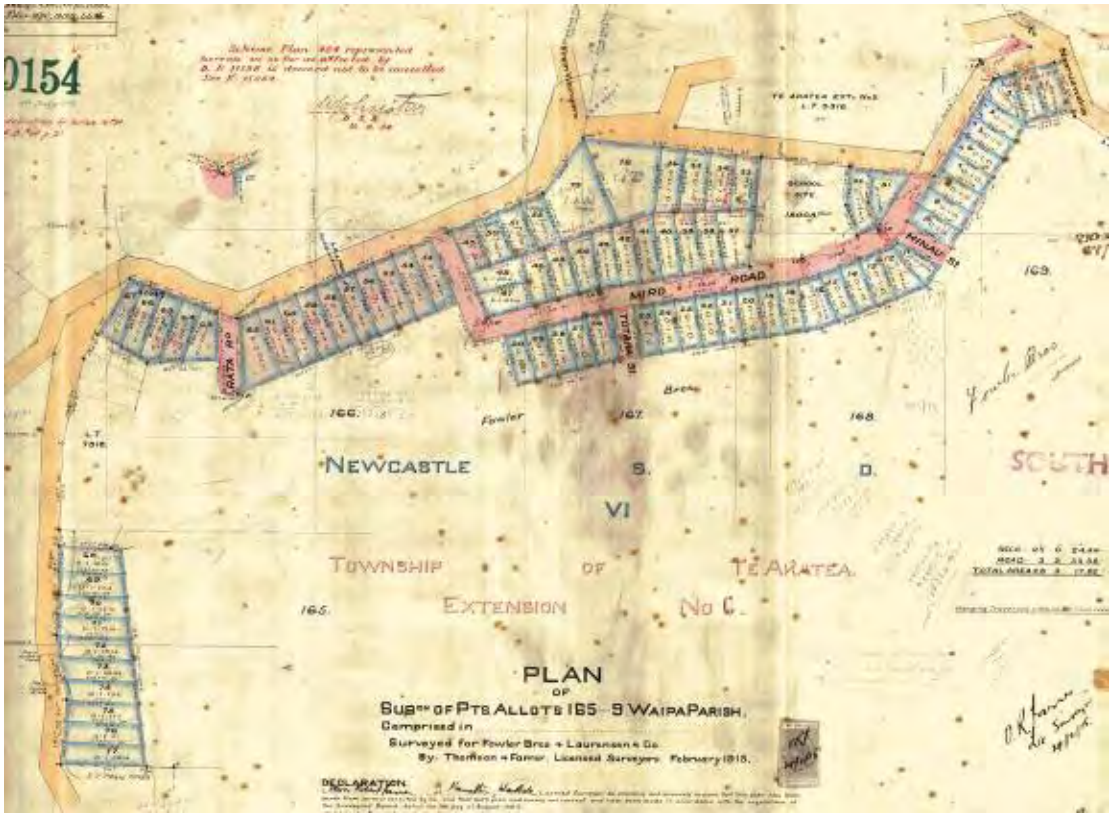


Figure 82: Part of 'Township of Te Akatea Extension No.6', surveyed February 1915, DP 10154. The road coloured pink and marked Miro Road does not exist today but it formed the southern boundary of the school site, which is shown as a larger parcel at upper right. Wilton Collieries Road is at left; Extension No. 1 (see above) adjoins the north edge of the southern set of parcels. QuickMap.

The survey and development of these small residential parcels encouraged the growth of the Glen Massey settlement with houses, a few shops, a hall, school and other amenities. By February 1914 'miners' houses are being arranged for' and it was predicted that 'within a few months a small township will spring up at Te Akatea'.[360] Several of the modest houses built during this period still exist. A number of the small residential parcels surveyed in 1913-15 no longer remain but have been amalgamated into larger farm holdings.

[360] *New Zealand Herald* 9 February 1914, p. 4.

To cap off a busy period of survey and settlement, by May 1914 the locality had been re-named Glen Massey, after Premier William Massey; Te Akatea being reserved for the district to the north-west.[361] The population grew and included families as well as single men. Many of the miners and their families came from the West Coast mines, some from Scotland or Australia.

The mine officially opened in May 1914, by which stage there were already 50 men working in and around it.[362] Some were erecting machinery, others building workmen's cottages, offices and other buildings. An advertisement placed in January 1914 stated that as 200 to 300 men would be employed within the mine there was an excellent opportunity for establishing an accommodation house.[363] The boarding-house, at 79 Wilton Collieries Road, was built by January 1915.[364]

Figure 83: 'Pioneers of a new town: cottages built for employees of the Waipa Collieries at Glen Massey near Ngaruawahia'. *Auckland Weekly News* 9 July 1914. AWNS-19140709-48-9, Sir George Grey Special Collections, Auckland Libraries.

A site for a school was chosen and in 1914 classes were held on the site, in a marquee while the building was being erected.[365] The two-roomed school opened on 1 February 1915.[366] By 1929 the population, and numbers of children, had grown so much that a third classroom was added to the school.[367]

[361] *Wanganui Chronicle* 20 May 1914, p. 6. See also http://www.nzhistory.net.nz/politics/premiers-and-pms/trivia
[362] Ibid.
[363] *New Zealand Herald* 13 January 1914, p. 12.
[364] *Ohinemuri Gazette* 1 February 1915, p. 3.
[365] The two-acre parcel was gazetted for a school site in 1915 (NZG 1915, p.598 cited on SO 18008).
[366] Bovill, p. 3; JW Kellaway *Education 150; From Schoolhouse to Classpace in the Waikato-Bay of Plenty* (Hamilton, 1981) p. 153.
[367] Bovill, p. 3.

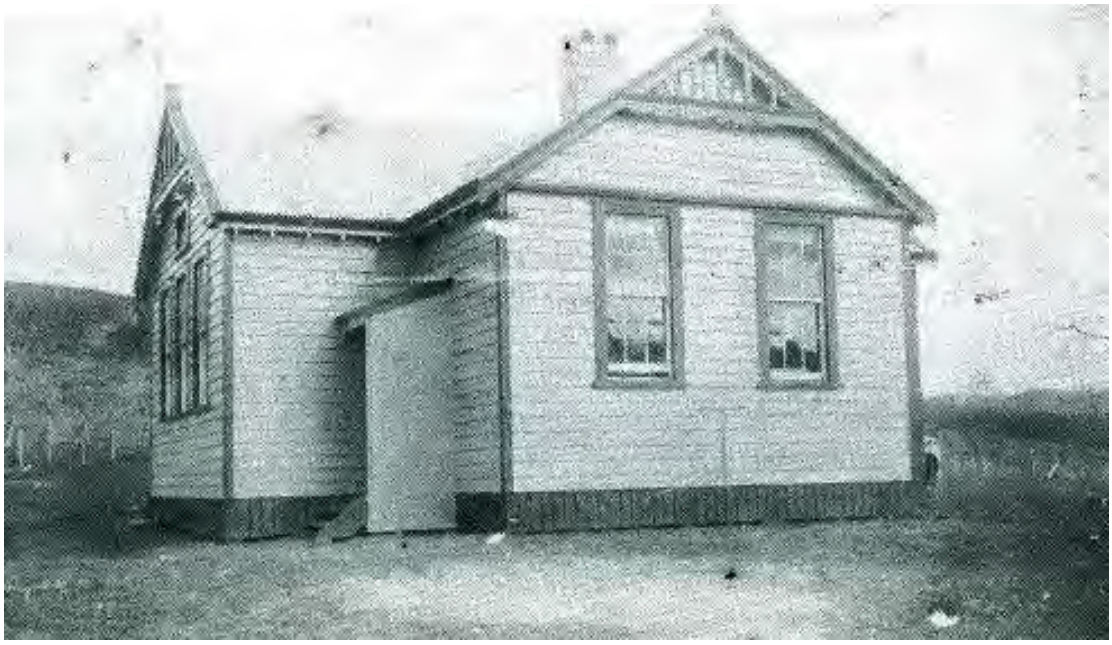

Figure 84: 'The first school building, 1915'. Reproduced from Bovill, p. 3.

Figure 85: Glen Massey School, 1950s. Reproduced from Bovill, p. 4.

At a public meeting in January 1915 it was decided to erect a town hall; this was built on the west side of the junction of Wilton Collieries Road and Waingaro Road.[368] The building is no longer extant.

[368] *New Zealand Herald* 30 January 1915, p. 5.

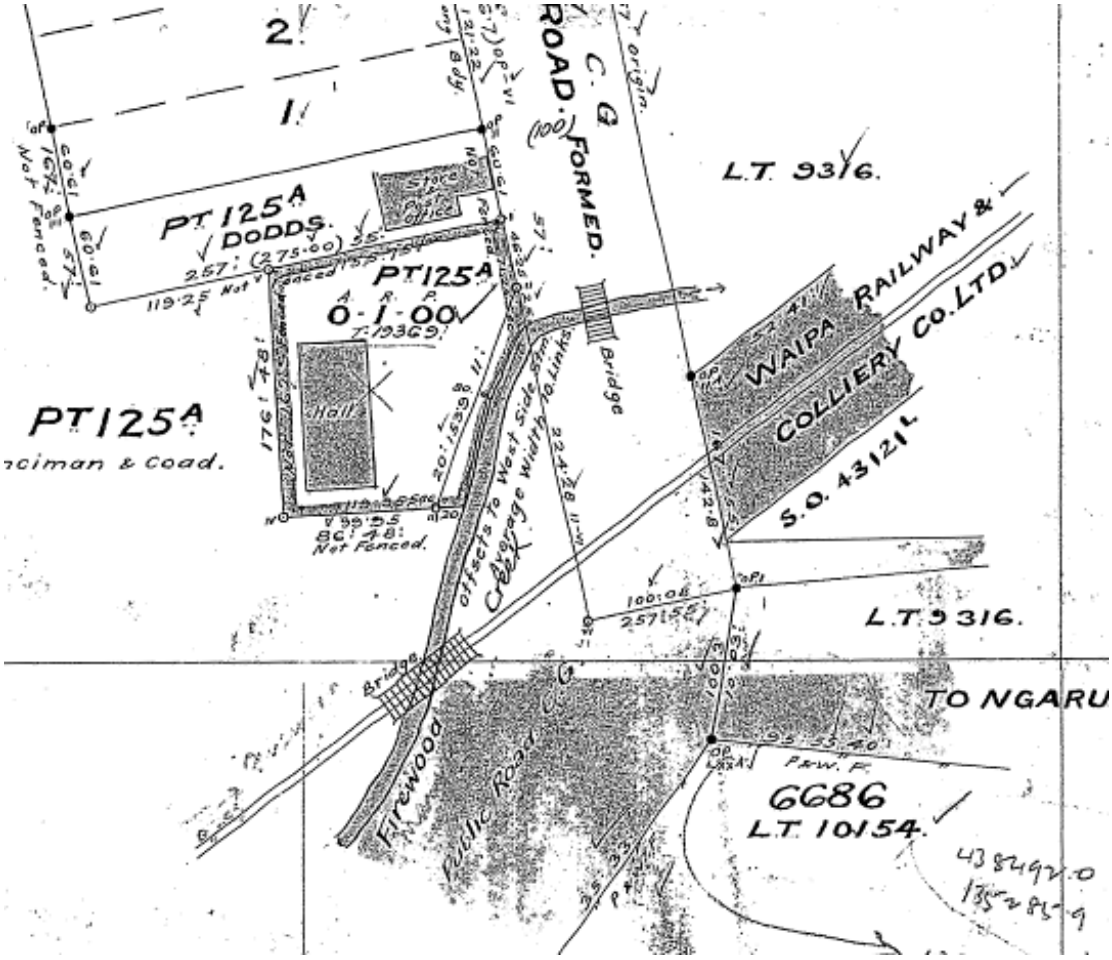


Figure 86: DP 18720, drawn March 1925 for the Glen Massey Hall Association, shows the intersection of Waingaro Road and Wilton Collieries Road with the hall, store-post office and the Waipa Railway and Colliery Co. railway.

Figure 87: 'Glen Massey hall, store and post office'. Photo courtesy of Gerald Bull, reproduced from Jones, p. 157.

A small medical centre was built at the south end of the village on Wilton Collieries Road. The building still exists at 45 Wilton Collieries Road, but the date of its construction is not currently known. A doctor came from Ngaruawahia once a week and a Plunket nurse once a fortnight. Two local women were trained as midwives and could assist when required; one of these was 'Granny' Henderson who ran the local boarding house for six or seven men.[369]

Figure 88: 'Glen Massey Medical Centre 1996'. Photo courtesy of Nancy Tippett, reproduced from Jones p. 128.

From at least 1915 a few shops had been established at the settlement: Fowler Brothers were butchers at Glen Massey and Ngaruawahia and in 1917 there were two other local butchers: WF Parker and H Collins, both of whom also had shops at Ngaruawahia.[370] Hamblin & Co. General Storekeepers advertised as supplying groceries, drapery, hardware, boots and shoes.[371] MT Macdonald, who had a store in Te Akau, 'established a chain of stores at Glen Massey, Waingaro and Te Akau and later went into the business of motorised transport of stock and goods for the area'.[372] Jack 'Bullocky Jack' Evans and Macdonald started with horse-drawn vehicles and in later years introduced motor-driven solid-tyre trucks and, later still, diesel motored trucks with pneumatic tyres.

The railway operated a passenger service as well as carrying freight, which was a popular way to travel to Ngaruawahia. The railway station was on the west side of the junction of Wilton Collieries Road with Waingaro Road.

In 1915 a church was built, completed in one day by farmers and miners working together. Originally opened as a Methodist church, it became interdenominational, was then used by the Buffalo Lodge, and was finally shifted across to the school grounds for use as the hall in 1979.[373]

[369] Gwyneth Jones *The End of an Era: the History of the Coalmines and Village of Glen Massey and the Surrounding Districts* (Tauranga, 2010) p. 129.
[370] *Maoriland Worker* 20 October 1915, p. 2; *Maoriland Worker* 21 February 1917, p. 2.
[371] Ibid, 21 February 1917, p. 2.
[372] CW Vennell & Susan Williams *Raglan County Hills and Sea: a Centennial History 1876-1976* (Auckland, 1976) p. 173.
[373] Jones, pp. 100, 102.

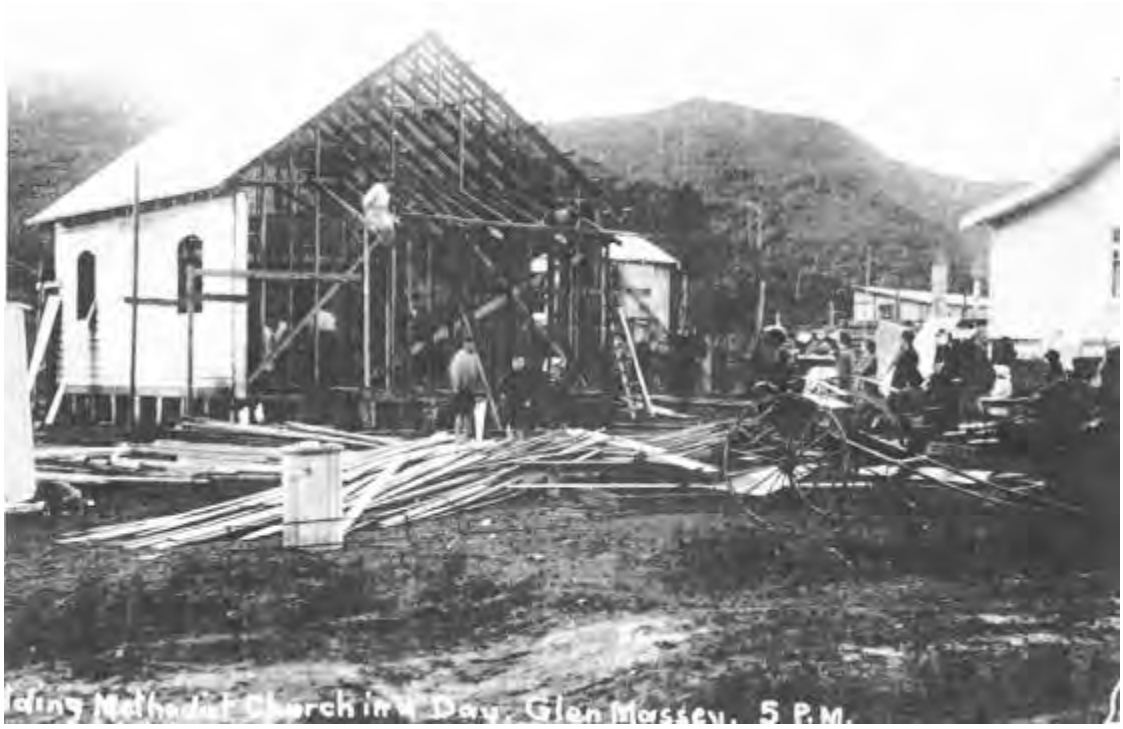

Figure 89: 'Building the Methodist Church in 1915'. Auckland War Memorial Museum, reproduced from Jones p. 100.

A small number of non-mining industries were also established at Glen Massey: these included a sawmill owned by MT MacDonald and operated by Fletcher Owen. It operated into the 1950s.[374] The mill was situated on the south side of the intersection of Wilton Collieries Road and Waingaro Road. In 1916 a 30-foot thick deposit of china clay deemed suitable for the manufacture of insulators and glazed tiles was found at Glen Massey.[375] The deposit was exploited by the China Clay and Porcelain Company, floated in 1924. That same year the company exhibited articles made from the clay at the Empire Exhibition at Wembley.[376] The company produced four types of bricks, two red and two white, also roof tiles and plumbing wares. Bricks from this works were incorporated into the house built for Johnny Foster in Waingaro Road in 1929.[377] Despite its initial success, the company was placed in liquidation in March 1930.[378]

By November 1929 Waipa Railway and Collieries was considered 'one of the most successful of the smaller collieries in the Dominion'. Nevertheless it too went into liquidation in 1930.[379]

Another coal mining company had been established, in November 1929, to mine deposits to the north of Glen Massey. The new company, Wilton Collieries Ltd, purchased a half-share in the Waipa Coal Company's railway and rolling stock, which at that time served the Waipa Company's mine at Glen Massey.[380] Wilton Collieries intended to lay down a light railway to connect their mine with the Waipa line and the northern end of their mine would thus be opened up. This would project involved purchasing a property on the route, which would in

[374] Jones, pp. 87-89.
[375] *Hawera & Normanby Star* 16 March 1916, p. 4.
[376] Jones, pp. 74-78.
[377] Ibid, pp. 134-35; Heather Preston (current owner) telephone conversation with Lyn Williams, April 2014.
[378] Jones, p. 81,
[379] *Auckland Star* 19 November 1929, p. 9; *Evening Post* 3 September 1937, p. 12.
[380] *Auckland Star* 4 October 1929, p. 4.

turn supply timber for the construction. Having the northern end of the mine open reduced travel times for miners coming from their homes in Glen Massey.[381] Coal to the railway was hauled from the several Wilton mines 'by a series of long endless rope surface haulages supplemented at times by motor trucks'.[382]

In March 1933, train driver William McLean was killed when the train he was driving went out of control at the mine and hurtled down the track. McLean could have jumped free but chose to stay on board signalling for others to get clear. After a distance of five miles the train left the line on a curve close to the Firewood Creek bridge and plunged into the gully, killing McLean.[383]

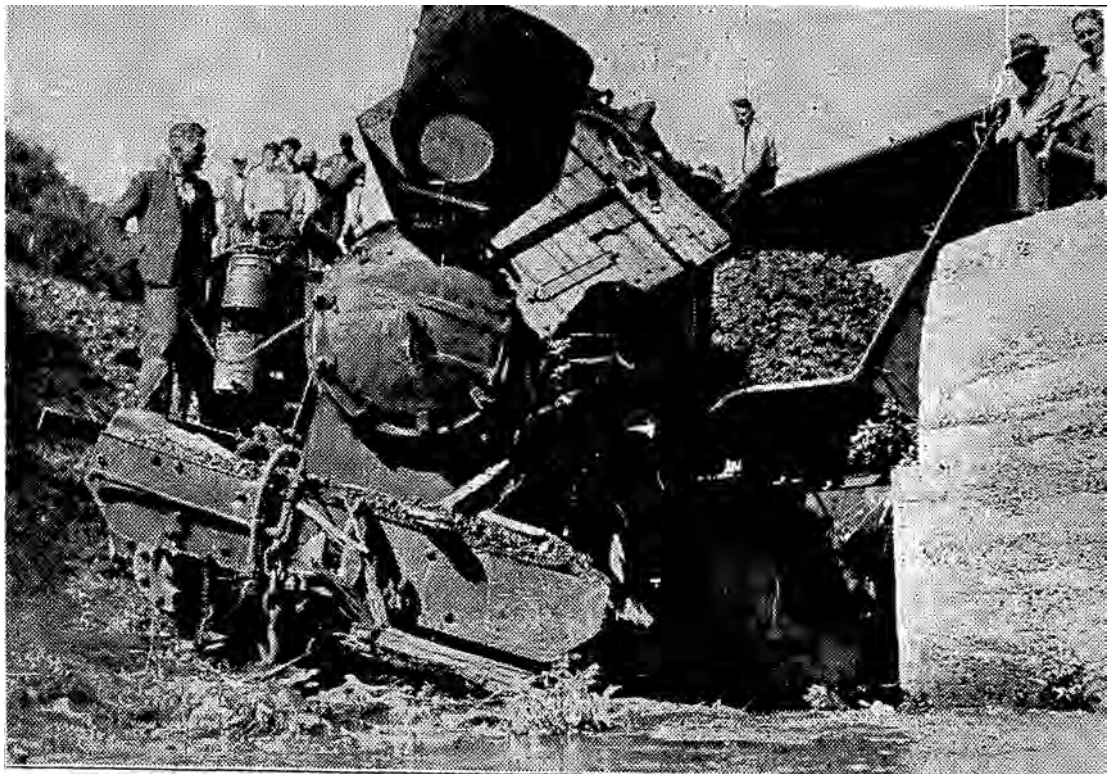

Figure 90: Quarry train fatality at Glen Massey. *Evening Post* 30 March 1933, p. 9. PapersPast.

In 1944 the State purchased Wilton Collieries Ltd along with the railway line, all the miners' houses and other buildings, which were vested in the Mines Department.[384] The Railway Department operated the railway until the mine and railway were closed on 19 May 1958.[385] By 1962 the line had been ripped up and soon after 'the railway bridge across the Waipa river and viaduct had disappeared'.[386]

By 1975 three million tonnes of coal had been extracted from underground mines, largely the Waipa and Wilton, and 300,000 tonnes from opencast pits.[387] Only one large company operated at any one time: Waipa Mine from 1914 to 1930 and Wilton Mines from 1930 to May 1958. Smaller operations were Beehive, Kemps and Hillcrest state opencast mines

[381] *Auckland Star* 4 October 1929, p. 4.
[382] D Kear & DR Petty *Waikato Coalfields: Glen Massey Coalfield. New Zealand Geological Survey Miscellaneous Series Maps 7 (Geology) and 8 (Mining), and notes.* (DSIR Wellington, 1975), p. 4.
[383] *Evening Post* 28 March 1933, p. 9.
[384] *Evening Post* 17 October 1944, p. 6.
[385] Latta pp. 87, 316.
[386] Ibid, p. 87.
[387] Kear and Petty, p. 3.

(1944 to 1950), Hunters (1952 to 1960), Hughes Bros. (1962 to 1969) underground mines, and McDougall's Opencast Mine still operating in 1973.[388]

With the mining over, the lack of employment meant the area's prosperity and population diminished. Farming continued at Te Akatea, up Wilton Collieries and Dawson's Roads, along the Waingaro Road to the north and east and along Elgood Road; some of these farms had been long-established.[389] By 1960 the school roll had dropped from its 1957 peak of 146 pupils to just 64; in 1984 the roll was 47, rising later to 76 children.[390] The store closed in 1963 and the post office in 1984.[391] In 2002 the village's population stood at 165.

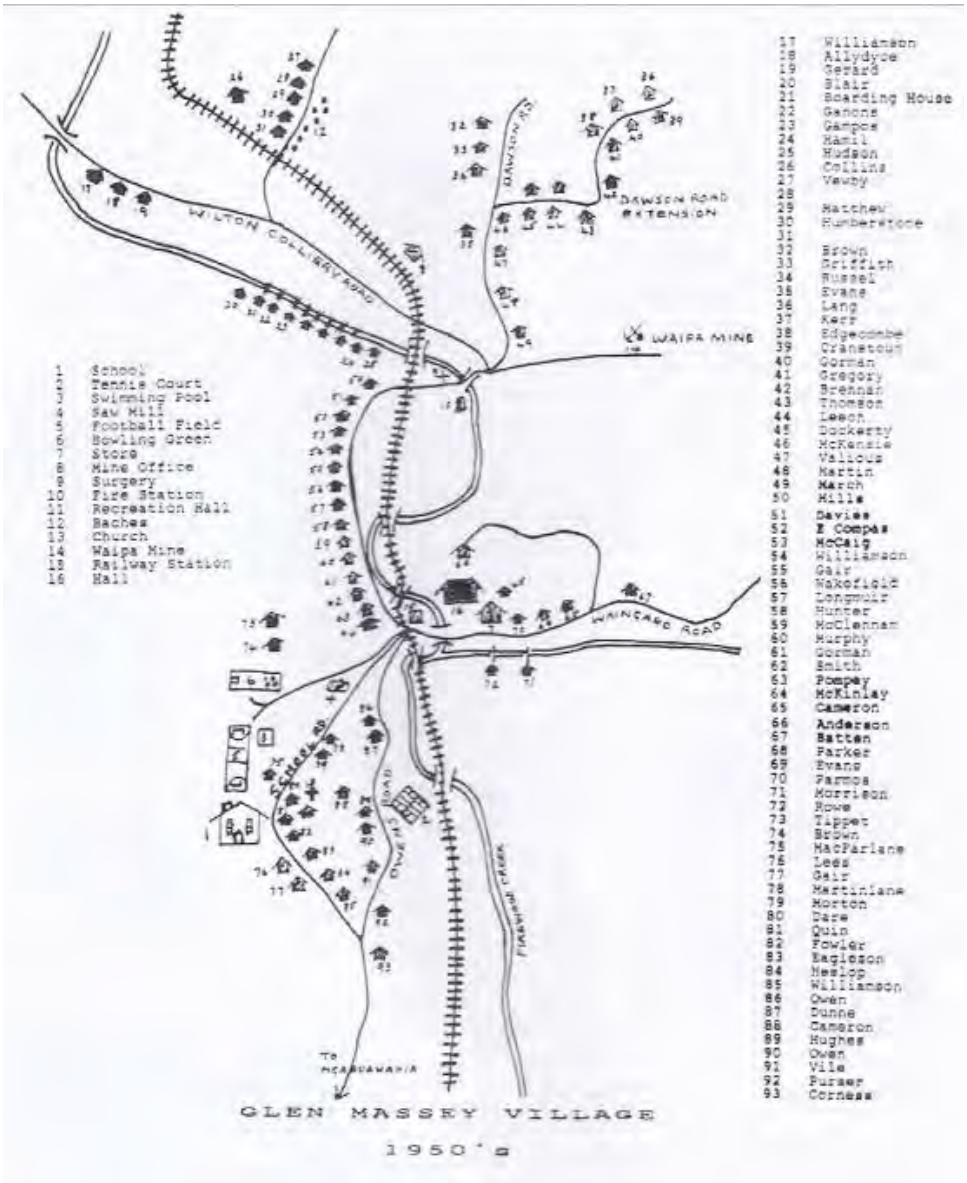


Figure 91: Glen Massey Village in the 1950s, reproduced from Jones p. 169. North is to the right.

[388] Kear & Petty p. 7. Kear & Petty give a detailed account of the history and geology of each coal seam and mining operation.
[389] See map reproduced in Jones, p. 147.
[390] Jones, p. 105.
[391] Ibid, p. 99.

## Te Kowhai

The Te Kowhai area was settled by Maori prior to the Waikato War, with pa, kainga, cultivations and urupa, mostly close to the Waipa River, recorded in traditional knowledge, historical accounts, archaeological sites and early maps.[392] There was sufficient population for the establishment of a mission school, Karakariki, on the west side of the Waipa River in May 1859. Martha Patene [Barton] and her brother ran the boarding school at the mission station.[393] Before the war wheat and corn were grown and a flourmill was established.

Although very few Europeans settled in the area prior to 1864, the Waipa River saw considerable traffic of European traders, explorers and missionaries and their entourages en route to the hinterland. One of the earliest accounts is that of Rev AN Brown who, with James Hamlin, travelled through the area to Whaingaroa (Raglan) Harbour early in 1834; Brown described landing at Te Kowhai, a settlement on the west bank of the river, and proceeded from there on foot on an established track across the ranges.[394]

The artist George French Angas travelled through the area in 1844, visiting the Maori settlements of Whakapaku, Noterau, Ko Ngahokowhitu and Hopetui along the Waipa; he left paintings and descriptions of the people and places.[395] In 1853 a trader was established at Te Kowhai, but his name and exact location are not known.[396] The resident magistrate Francis Fenton visited Karakariki in 1857 with the chief Takarei of Whakapaku, which was situated on the east side of the Waipa River.[397]

In the 1850s William Ward established a pitsaw mill at Karakariki, 'while, at Te Kowhai, John Parkes and John Walsh were similarly occupied'.[398] One of these mills may have been the one marked 'Blue Nose' on the west bank of the Waipa in an 1865 survey.[399]

Some of the land near Te Kowhai was surveyed after the Waikato War into 50-acre parcels to be granted to militiamen of the Fourth Waikato Regiment as part of their reward for service. Land on the western side of the river was similarly surveyed.[400]

As was the case elsewhere in the Waikato, many militiamen either did not take up their grants or sold them off within the first few years. Access was poor, often the land was too swampy or otherwise not workable, and the government did not make good on its promises of paid employment, equipment and seed. Many allotments were amalgamated with other parcels to create a more economic unit, sometimes by militiamen-settlers and sometimes by Auckland entrepreneurs. A Te Kowhai example of the former was Charles JW Barton, who was granted 79 acres for his service as an ensign in the Auckland Militia but later purchased further land.[401] Auckland businessman CJ Stone, a director of the New Zealand Insurance Company and the Bank of New Zealand, purchased several parcels.[402] William Hay purchased

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[392] For example SO 4265, QuickMap.
[393] http://www.teara.govt.nz/en/methodist-church/page-1
[394] CW Vennell and Susan Williams *Raglan County* p. 31
[395] http://archives.samuseum.sa.gov.au/aa8/AA8-06.htm citing Angas's diary.
[396] HCM Norris *Armed Settlers* p. 5.
[397] John Eldon Gorst *The Maori King* pp. 68-69 http://nzetc.victoria.ac.nz//tm/scholarly/tei-GorMaor-t1-body-d6.html
[398] Vennell and Williams, p.71.
[399] SO 54, QuickMap.
[400] SO 526, QuickMap.
[401] ER Doolin. 'Barton, Charles John Wright', from the *Dictionary of New Zealand Biography* Te Ara - the Encyclopedia of New Zealand, updated 4-Jun-2013.
URL: http://www.TeAra.govt.nz/en/biographies/3b14/barton-charles-john-wright
[402] SO 54A, QuickMap.

the 3075 acres of 'repo maire', the large swamp that lay on the eastern side of Te Kowhai. This was on-sold to Gillies and Street within a few years.[403]

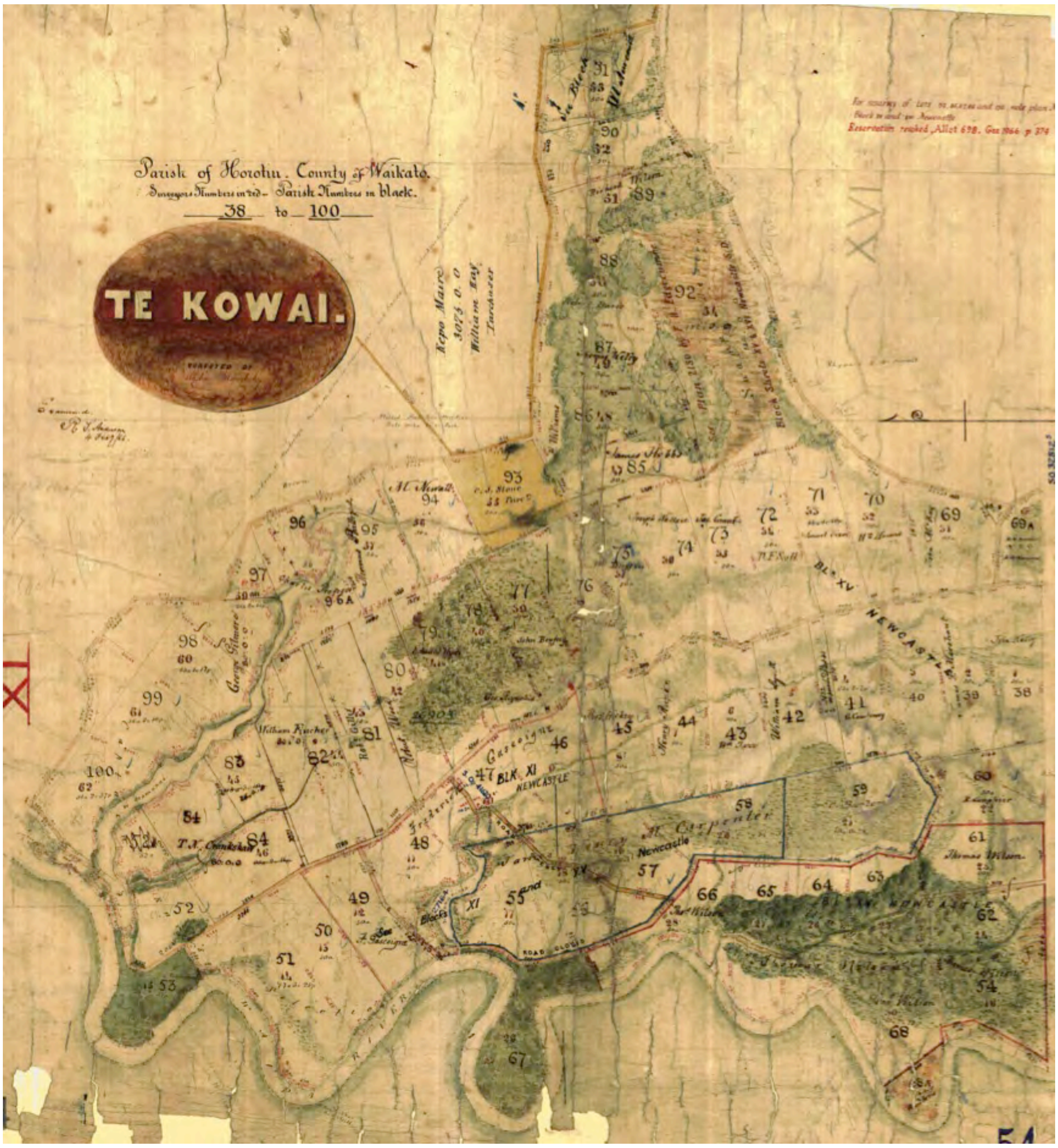


Figure 92: 'Te Kowhai', SO 54, 1865. QuickMap. North is to left, the Waipa River follows a sinuous path along the lower edge. 'Blue Nose Saw Mill' is noted opposite Allotment 51 (lower left). Allotment 67 (lower middle) was granted to William Barton and a church building is marked on his land. Major Thomas Wilson's selection was the large area of bush adjacent to the Waipa River (lower right).

[403] SO 345, surveyed 1868, QuickMap.

Figure 93: 'Survey of 50-acre lots south of Newcastle on the Waikato River', SO 53B surveyed 1865, shows land to the north-east as far as the Waikato River (left-hand side adjoins SO 53 A). Horotiu Road is running along left-hand edge of allotments to meet Great South Road at Horotiu (top left).

Figure 94: SO 53A, surveyed 1865, shows land to the east as far as the Waikato River. (SO 53B adjoins on right-hand side.) The area that developed as the village is at middle lower edge at the junction of Te Kowhai Road and Ngaruawahia Road.

Another name for part of the area was Te Koao, but this may have applied only to the properties owned by Major Thomas Wilson and Charles Barton in the south-west of the district.[404] There is no foundation to the theory that the name Te Kowhai is derived from Mr A Corbett's naming of his store, the first in the district.[405] The store was in an old house owned previously by WH Wyman, who called his farm 'Te Kowhai'.[406]

Te Kowhai's first European settlers relied on river transport for freight and passenger services, the roads being poorly formed for many years. People on the west side of the river used a punt to cross over, as even after the Whatawhata bridge was built in 1881 the punt provided quicker east-west access for people, stock and freight than going around by road. Some of the roads surveyed were never formed; conversely some that were formed have since been closed. Bedford Road is believed to be along the line of a Maori ara (track).[407]

After the Waikato War, Karakariki was re-occupied, the school again being run by Martha Patene, daughter of William Barton who was 'the main chief and a Methodist minister'.[408] When the school was visited by W Rolleston on 6 January 1867, four boys and nine girls, three of who were Barton's children, were pupils; all were living with their parents in adjacent cottages. William Barton was granted a 50-acre parcel (Allotment 67) on the east bank; a church building was marked on the survey map. A 26-acre parcel (Pt Allotment 57, SO 52A) on the west bank was set aside as a school reserve with a landing assigned to Anaru Putene [Patene or Barton] and others; this was opposite William Barton's parcel.[409]

Initially there was no village or close settlement and the school and church were sited to the west of the current village. The area that developed as the village is at the junction of Te Kowhai Road, Bedford Road and Ngaruawahia Road. Part of the village area was within the extensive swamp called repo maire. An early hostelry or halfway house existed [date unknown] on 'John Bonfrey's hill', on what is now Richards Road.[410]

Initially the area had mixed farms, some dairy, beef and sheep but mostly cropping: wheat, oats, potatoes and swedes. When JJ Bycroft advertised his 40-acre farm for sale in 1897, it had a large apple orchard of 14 acres, presumably a commercial enterprise.[411] In February 1893 huge floods in the Waipa caused devastation to the cultivations along the river. Local farmer Patrick Corboy appealed for public assistance for the Maori inhabitants of Karakariki, Bluenose, Tangirau, Otamaori and Whatawhata as their crops of oats, wheat and potatoes had been destroyed.[412]

Carpenter & Byron were farming at Te Kowhai by 1872 and also ran a fellmongery business in the vicinity of Bedford Road and the Waipa River.[413] In 1876 they advertised as wanting sheep skins.[414] The fellmongery was advertised for sale in 1881, by which time they also had a business at Ngaruawahia.[415]

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[404] DP 128, surveyed 1881, QuickMap; *Waikato Times* 9 December 1879, p. 2; *Taranaki Herald* 28 May 1883, p. 2.
[405] *Waikato Times* 9 January 1961 p.9.
[406] *Te Kowhai School Diamond Jubilee* (Te Kowhai, 1950), unpaginated.
[407] Centennial Committee, *Te Kowhai School and District 1890-1990* (Hamilton, 1990) p. 4.
[408] *Appendix to the Journals of the House of Representatives* A No. 3, Enclosure No. 7 in No. 1 'Papers Relative to Native Schools', June 1867.
[409] SO 52A, QuickMap.
[410] *Te Kowhai School and District 1890-1990* p. 4. SO 54 shows Bonfrey was granted Allotment 77; current address approximately 47 Richards Rd.
[411] *New Zealand Herald* 25 November 1897, p. 1.
[412] *Auckland Star* 3 February 1893, p. 3.
[413] *Waikato Times* 28 May 1872, p. 3.
[414] *Waikato Times* 9 November 1876, p. 3.
[415] *Waikato Times* 17 November 1881, p. 3.

A few dairy herds were established by the 1880s, but the nearest accessible creamery was at Ngaruawahia. Some farmers took their milk to Ngaruawahia by road, while others loaded it on to one of the river steamers, which ran a daily service, and received the skim milk back in the afternoon. A creamery was started at Te Kowhai in 1892.[416] A concrete building used by Bycroft as a dairy was a candidate as the creamery but instead a new building was constructed on the west side of Horotiu Road, by the junction with Bedford Road.[417]

Figure 95: 'Te Kowhai Creamery, 1909'. A 302, Arthur Ninnis Breckon Collection, Auckland War Memorial Museum Library.

Reynold & Co.'s creamery ran at a loss: in 1895 it had only ten suppliers for November, even though in July they had been promised the milk from 211 cows.[418] In 1896 the New Zealand Dairy Association took over Reynolds & Co.[419] A new creamery was established in 1907, approximately 100 yards south of the old one;[420] casein manufacture started there after World War I.[421] The New Zealand Co-operative Dairy Co. took over the NZDA in 1920. In 1939-40 when there were 33 suppliers to the Te Kowhai plant and cheese was manufactured; the output was greatly increased two years later with 80 suppliers.[422] After World War II casein was again produced, as well as cheese.[423] After the 1953-54 season the company decided to build houses for its workers, with the result that staff were accommodated in seven company houses and three state houses. Following the advent of

[416] HCM Norris *Settlers in Depression* (Hamilton, 1964), p. 211.
[417] DP 1620, QuickMap.
[418] *Waikato Times* 10 August 1895, p. 5; *Waikato Times* 20 July 1895, p. 6; *New Zealand Herald* 24 December 1895, p. 6.
[419] *Waikato Times* 9 January 1961, p. 9.
[420] WL Magner *A Thousand Years of Wisdom from a Hundred Years of History* (Te Kowhai, 1983), p. 94.
[421] *Waikato Times* 9 January 1961, p. 9.
[422] *Waikato Times* 9 January 1961, p. 9.
[423] Magner, p. 94

milk tanker collection in the 1958-59 season, the number of suppliers increased to 70 in the 1959-60 season.[424]

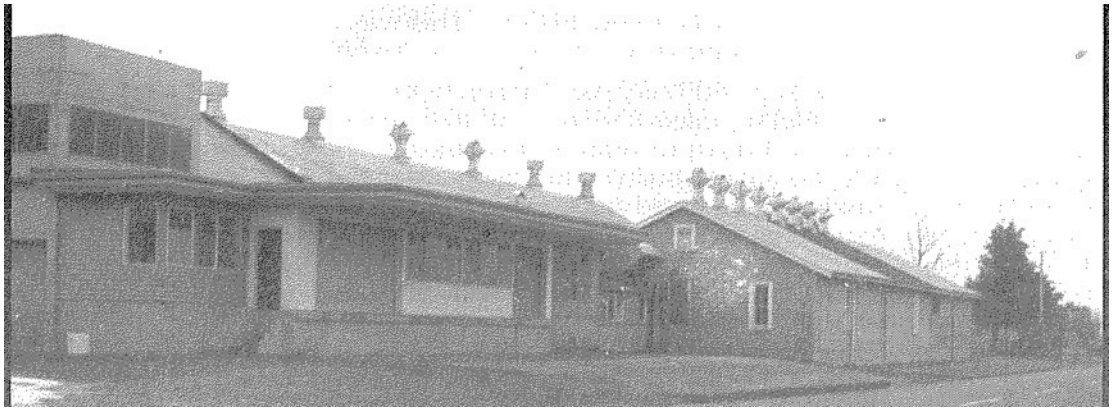

Figure 96: The Te Kowhai dairy factory in 1983'. Reproduced in WL Magner *A Thousand Years of Wisdom from a Hundred Years of History* p. 93.

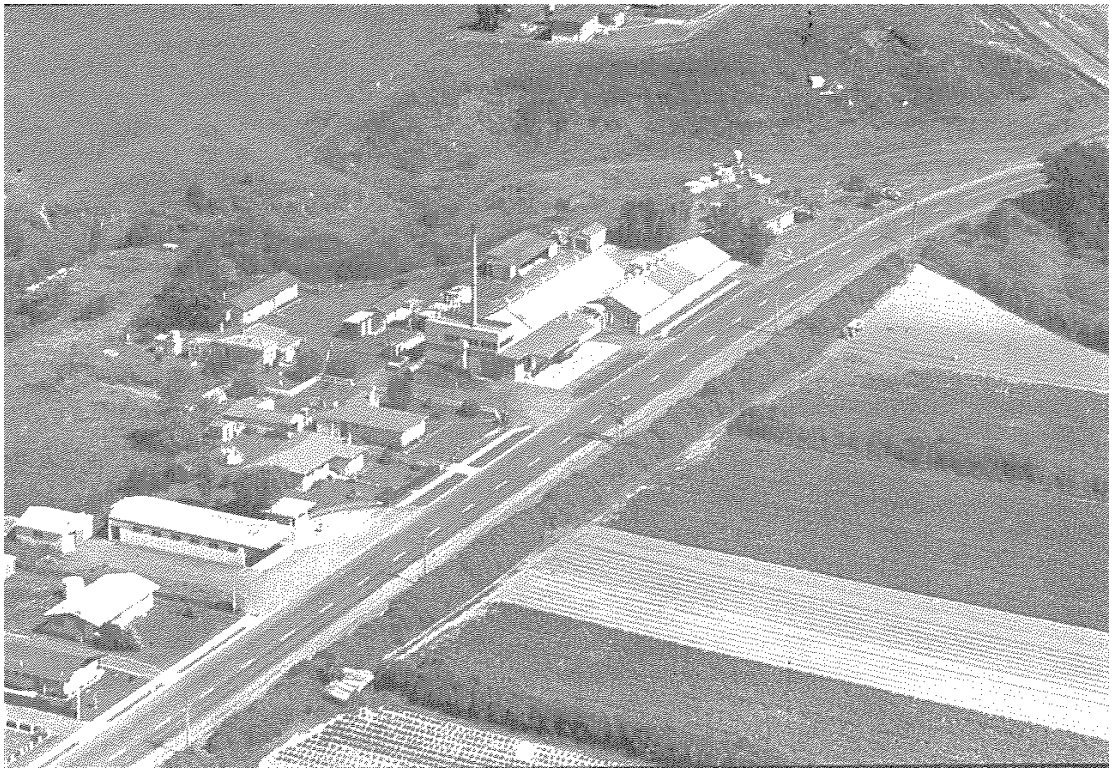

Figure 97: 'Aerial view of the Te Kowhai dairy factory c.1983'. Reproduced in Magner, p. 94.

In the early 1900s HD Bedford introduced paspalum to the area as it was believed that the grass would produce good pasture on poor swampy soils.[425] Bedford had a farm at Te Kowhai and another at Ruakura on which he experimented with sowing ratios and cultivation techniques.[426] In 1905 it was reported that Bedford had sown 40 acres on one of his farms with the seed and had not only pastured his cows on it but also taken off a crop of hay.[427] Today paspalum is classified as a weed grass.

[424] Ibid.
[425] 'Te Kowhai has become flourishing farming district', *Waikato Times* 9 January 1961, p. 9; *North Otago Times* 25 November 1905, p. 2.
[426] *Bay Of Plenty Times* 20 September 1905, p. 2.
[427] *West Coast Times* 27 October 1905, p. 4.

Figure 98: 'Gathering Paspalum seed on Mr HD Bedford's Strathmore farm, Ngaruawahia, Auckland.' *Auckland Weekly News* 4 July 1907, p. 2. AWNS-19070704-2-1. Sir George Grey Special Collections, Auckland Libraries.

In January 1879, prompted by the fact that there were 29 children within a radius 'of little over a mile', residents asked for a school to be established at Te Kowhai.[428] However it was not until 1890 that a teacher was appointed; the first classes were held in June 1890 in the front room of an empty house provided by Messrs Bycroft.[429] In 1892 school classes were being held in the creamery.[430] The location for a proper school building was debated acrimoniously for over a year, but finally Peter Kay's section was accepted and tenders were called for the erection of a school building and teacher's dwelling in May 1893.[431] The lowest tender, that of William Stoupe, was accepted.[432] The buildings were in the course of erection within the month.[433]

The school opened in early November 1893 with 19 children under the care of Miss Ella Wills.[434] However the site was damp, the adjacent stream had to be crossed by children from the eastern farms and many considered it not central enough. Emma Bycroft subsequently donated a site she had inherited from her father CJ Stone and in 1900 Mitchell and Watt, the Auckland Education Board's architects, advertised for tenders to move the school building.[435] The school became a meeting place for community groups and church services as well as education.[436] Additional land was acquired by the Education Board in 1905.[437] Extensions were made to the building in 1906 and 1920 and the school and its roll have continued to grow.[438] A major change occurred in 1965 when the old three-room block was jacked up and

[428] *Te Kowhai School Diamond Jubilee* np.
[429] Ibid.
[430] *New Zealand Herald* 23 November 1892, p. 3.
[431] *New Zealand Herald* 2 May 1893, p. 1. Peter Kay had acquired Bonfrey's Allotment 77 by 1900 (DP 2309).
[432] *New Zealand Herald* 10 May 1893, p. 3.
[433] *New Zealand Herald* 29 June 1893, p. 6.
[434] *New Zealand Herald* 14 November 1893, p. 3; *Te Kowhai School Diamond Jubilee* np.
[435] *Auckland Star* 23 December 1899, p. 2.
[436] *Auckland Star* 27 April 1894, p. 3.
[437] DP 3391, surveyed 1904-05, QuickMap.
[438] *New Zealand Herald* 22 September 1906, p. 8.

shifted 40 metres away so that a new block could be built on the site. When that block opened in 1966 the old building was demolished.[439]

Figure 99: 'School group 1925.' Reproduced from *Te Kowhai School Diamond Jubilee* (Te Kowhai, 1950). The original school building with its additions is visible behind the pupils and staff.

Advances in community facilities in the period 1900-1910 included the construction of two churches. The Church of England was established in Te Kowhai in 1902 as part of a scattered parish with its headquarters at Huntly but with its own church building and local vicar. Archdeacon W Calder laid the foundation stone on 3 December on land in Collie Road presented by Howarth Sager.[440] The architect was Grainger Ward of Huntly, Mr Pettigrew the builder, and the church was realised with local contributions of the stone font and soft furnishings.[441] Bishop Neligan dedicated the newly built church in June 1903.[442]

Around the turn of the 20th century the Wesleyan minister based in Hamilton held services at Te Kowhai.[443] The Methodists acquired a church building in 1909, relocated from Waitekauri where it had been built in 1901.[444] The church was cut into sections under the supervision of Hamilton architect FC Daniell, transported by rail and road from Waihi, and re-erected at Te Kowhai on land donated by W Harris.[445] It was opened on 4 July 1909, by the Rev HL Blamires.[446] Known as St Mark's Union Church, it now serves the local Presbyterian and Methodist congregations; having become part of Ngaruawahia Union Parish in February 1972.[447]

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[439] *Te Kowhai School and District 1890-1990* p. 16.
[440] *Waikato Times* 9 January 1961 p. 9; *New Zealand Herald* 24 June 1903, p. 7.
[441] *New Zealand Herald* 24 June 1903, p. 7. The church is listed on the WDC District Plan as Historic Heritage Item 92, Map 38.
[442] *New Zealand Herald* 24 June 1903, p. 7.
[443] *Cyclopedia of New Zealand – Auckland Provincial District* 1902, p. 743; *Waikato Times* 8 December 1894, p. 8.
[444] *Te Kowhai School Diamond Jubilee* np.
[445] *Te Kowhai School Diamond Jubilee* np; Waikato Museum collection 1984/7/303 architectural plan.
[446] *Waikato Times* 9 January 1961, p. 9.
[447] http://www.methodist.org.nz/files/docs/mcnz%20admin%20office/insurance%20property/part%20two%20-%20methodist%20church%20properties%20in%20cv's%20in%20decade%20groupings.pdf

In the first decade of the 20th century, advances in dairying made this industry more popular and contributed to the cutting up of the large Bycroft estate of 1000 acres, which extended east from the river around both sides of Otamanui lagoon and the Orbell swamp, from the school to Te Rapa railway station.[448] The smaller farms that resulted led to more-intensive farming and an increase in population.[449]

In 1913 architect Frederick Daniell, representing the Hamilton Chamber of Commerce, attended a meeting of the Farmers' Club to encourage people to sign up to the district's new telephone system; it was anticipated there would be 18 subscribers around Te Kowhai.[450] In 1914 Bedford was one of the first farmers to sign up for the party-line system of telephone connections.[451]

Horse racing was a popular local sport; meetings were held by the Maori community at Te Kowhai in 1889, with Hori Takerei advertising the programme for the Te Kowhai Racing Club's meeting on 28 May.[452] The Te Kowhai Farmers' Club flourished, an orchestra was established and a public hall built.[453] The Methodist church added a hall beside their church in 1951. After the construction of the Memorial Hall, Te Kowhai became an important social centre, with many Hamilton functions being held in the hall as well as local ones.[454] The hall was opened on 26 November 1955.

Very few businesses operated at Te Kowhai: 'Curly' Holmes established Te Kowhai Motors in 1948, and in about 1958 a new store and post office was built south of the dairy factory.[455]

Figure 100: Te Kowhai store and post office about 1957. *Waikato Times* reproduced from *Te Kowhai School and District 1890-1990* p. 32.

[448] Magner, p. 91.
[449] *Waikato Times* 9 January 1961 p.9.
[450] *New Zealand Herald* 3 September 1913, p. 6.
[451] *New Zealand Herald* 18 May 1914, p. 10.
[452] *Waikato Times* 21 May 1889 p. 3.
[453] Magner, p. 91.
[454] *Waikato Times* 9 January 1961 p.9.
[455] *Te Kowhai School and District 1890-1990* p. 47.

From the 1950s Te Kowhai began to be more intensively developed for residential purposes. An early subdivision of three ¼-acre lots on Horotiu Road occurred in 1950.[456] In 1956 a survey was undertaken by the government to cut off a quarter-acre section from part of the NZCDC land; it was gazetted for state housing purposes in 1957.[457] Nine lots, with some back from the road with right-of-way access in the fashion of the day, were subdivided in Horotiu Road in 1974.[458]

The dairy factory closed in March 1975 and the buildings were demolished; the factory's 19-metre high chimney was finally lowered in May 1986.[459] More recent farming activities in the area have included goat farming, watermelon cultivation and other horticulture, while milk from local dairy farms is now taken to Te Rapa. Many residents now commute to work in Hamilton.

A larger subdivision along Bedford-Horotiu Road occurred in 1984 with 17 small lots created.[460] The concrete footings of the dairy factory, still *in situ*, were at the south end of that subdivision. In 1997 Willow Brook Lane was surveyed to provide a new road and 20 house lots.[461] The other change in land holdings from the 1970s was the creation of small 'lifestyle' blocks along Horotiu Road, east of Te Kowhai, Bedford Road to the west and Ngaruawahia Road to the north. Some Te Kowhai farms have been subdivided to create parcels ranging from 0.5 to 4.5 hectares. Perrinpark Retirement Village was established in 1979; the village has 73 homes with communal facilities.[462]

[456] DPS 104, QuickMap.
[457] *New Zealand Gazette* 1957 p. 572; SO 38098, QuickMap.
[458] DPS 19803, QuickMap.
[459] *Waikato Times* 10 May 1986 p. 12.
[460] DPS 37095, QuickMap.
[461] DPS 79615, QuickMap.
[462] http://www.perrinpark.co.nz/

## Horotiu

The name Horotiu traditionally referred to the stretch of the Waikato River between Cambridge and Ngaruawahia plus the plains on either side, which were extensively cultivated for their rich soils and deposits of pumice sand and gravels. Surveyors in the 1860s used the name for the land area between the parishes of Pukete and Ngaruawahia. Horotiu was later applied to the small settlement on Great South Road, a few kilometres south of Ngaruawahia. For the purposes of this report the Horotiu section encompasses the neighbouring rural areas west to the junctions of Crawford Road and Onion Road with Horotiu Road, north to the golf course and south to the Bern Road area.

In the first decades of European settlement, Horotiu was predominantly rural with a few service businesses, small industries, a school and the railway station; both of the latter buildings were shifted closer to Horotiu Road in the early 20th century. In the 1860s to 1870s the area was also known as Pukete and this was the name applied to the first railway station and school. The establishment of the Horotiu Freezing Works in 1915-16 altered the character and identity of the area and resulted in a larger population, albeit a transitory one. Horotiu's close proximity to Ngaruawahia meant a strong relationship with that larger settlement. Recent impacts upon Horotiu have been the northern expansion of Hamilton's light industrial zone, and the opening of the Waikato Expressway; the latter has had the effect of diverting traffic away from Horotiu. The land use to the west remains rural but with smaller lifestyle blocks.

This land was surveyed as 50-acre allotments to be granted to militiamen-settlers of the 4th Waikato Regiment. As with other areas, not all the land was granted and not all militiamen settled their land. Parcels were bought by entrepreneurs, men who had capital to drain the swamp areas and develop the land into pasture and cropping. Several parcels were aggregated, such as those acquired by Knorp and Latham to the west of Great South Road; they called their farm 'Horotiu Estate'.

Militiaman Alexander Campbell acquired 200 acres in addition to his 50-acre grant. His house was called 'Pleasant Grove'. Campbell was at that time Captain of the *Bluenose* and *Lillie*, boats on the river.[463] To the south, hotelier Lewis Bassiere Harris purchased several adjacent allotments and added these to his militiaman's grant, to make a total of 757 acres (306 hectares) extending from just south of Horotiu Bridge Road to Pukete Road. He called his farm 'Harrisville'. Harris also owned and ran the Halfway Hotel, also known as the Horotiu Hotel, located in the vicinity of the junction of Pukete Road with Great South Road.

[463] Notes, photo reference card 2413, Hamilton City Libraries.

Figure 101: 'Pleasant Grove' 3 miles south of Ngaruawahia; Alexander and Sarah Campbell are depicted standing on the veranda with baby Marcellene on a chair, c. 1868. 2413, Hamilton City Libraries.

Great South Road was surveyed through the area in 1864-65 but the surface was not suitable for wheeled traffic. The first journey by coach from Auckland to Hamilton was undertaken by Governor Sir George Bowen in 1868, but such a trip was not common until Quick's coaches began a two-day round-trip service in 1870.[464] Harris's Halfway House was a stopping place for changing horses along the route. The river was, however, the main transport route for many years.

Construction of the NIMT between Ngaruawahia and Hamilton began in 1875 and was opened through to Hamilton [Frankton] in December 1877. A railway station, called Pukete, was built in 1877, but it was positioned near Bern Road to the south. Landowner William Washer offered land for a station closer to Horotiu and in 1879 the station was shifted adjacent to Horotiu Road.[465]

Major landowners by the late 19th/early 20th centuries included Washer, Robert Duxfield, Henry Hinton, THH Hinton, and John Diver. Diver and Duxfield had bought portions of Knorp and Latham's property.

At least two general stores existed in Horotiu in the early 20th century: one on the main road was run by LN (possibly Leo Norman) Rust and Carl Olsen, the partnership beginning in about 1922. Rust and Olsen both boarded with the Moors family in the attached dwelling at the rear of the store. Rust and Alfred Moors were in-laws and Moors was the business's accountant. Olsen was believed to be either Swedish or Danish; he was well-liked but caused a scandal in 1925 when he shot 14-year-old Molly Moors, with whom he was in love, and then himself.[466] A few weeks earlier he had been the driver in a car accident that killed Bruce

[464] PJ Gibbons *Astride the River* (Hamilton, 1977), p. 54.
[465] *Horotiu School 1879-1962; Souvenir Brochure.* Unpaginated.
[466] *New Zealand Truth* 9 May 1925, p. 5.

and Winifred Graham.[467] Bruce Graham had been the stationmaster at Horotiu but worked for Rust and Olsen in the store at the time of the accident. After the tragedies Rust continued to run the store, as in 1927 he advertised for a keen active, well-trained young assistant for his country store.[468] It is likely that it was this store that burnt down in 1938. It was described as an eight-roomed building that had been a store, along with an adjacent building. By the time of the fire the store had been converted into flats.[469]

The other store was on Horotiu Road, on the west side of the railway. The settlement's first post office opened on 1 September 1907 with the name of Horotiu and it was operated in the railway station building by railway employees until 1915. After that it was located in the local store, or in the small building adjacent, on Horotiu Road.[470]

A creamery was established in about 1905 by Ambury and English. It was adjacent to the railway line on the south side of Horotiu Road.[471] A house for the creamery manager was built nearby.[472] The creamery was still operating in 1939 as the creamery manager was listed in that year's business directory.[473]

Figure 102: 'Horotiu Creamery', date unknown. Reproduced from *Horotiu School Centenary 1879-1979* p. 15.

[467] *Auckland Star* 7 May 1925, p. 10.
[468] *New Zealand Herald* 24 January 1927, p. 1.
[469] *Auckland Star* 22 August 1938, p. 3.
[470] Joan Stanley *Horotiu School Centenary 1879-1979* (Hamilton, 1979), p. 15.
[471] *Horotiu School 1879-1962; Souvenir Brochure.*
[472] Stanley, p. 15.
[473] *Leighton's Directory 1939* p. 563.

In 1894 Isaac Coates obtained gum-digging rights on Latham and Knorp's property, built a store and gum store and employed Maori workers.[474] The field was evidently quite profitable for a time.

A bone mill was situated opposite the freezing works on the riverbank, but it burnt down in 1916 when owned by Jamieson Brothers.[475] George Jamieson had been in partnership with Thomas Newell, this partnership dissolving in 1914.[476] In 1915 Jamieson advertised for a slaughterman to assist in the boiling down works.[477] He was still advertising for the same position after the fire and was listed in the 1939 directory.[478]

At the Butter Prices Investigation Committee in 1920 James Jamieson testified to the hardship he had on his 181 acres at Horotiu, with 11 children to care for.[479] His farm was called 'Pine Dale'. George Jamieson had a large successful piggery and hosted a display of pig-rearing to a group of Australian visitors in 1930.[480]

Henry Hinton and G Hall each quarried pumice deposits on their farms and exported it to Australia, possibly for use as an insulator in refrigerators.[481] Pearson Sandsoap Company railed the pumice sand to its factory in Auckland and also supplied their Sydney-based factory.[482]

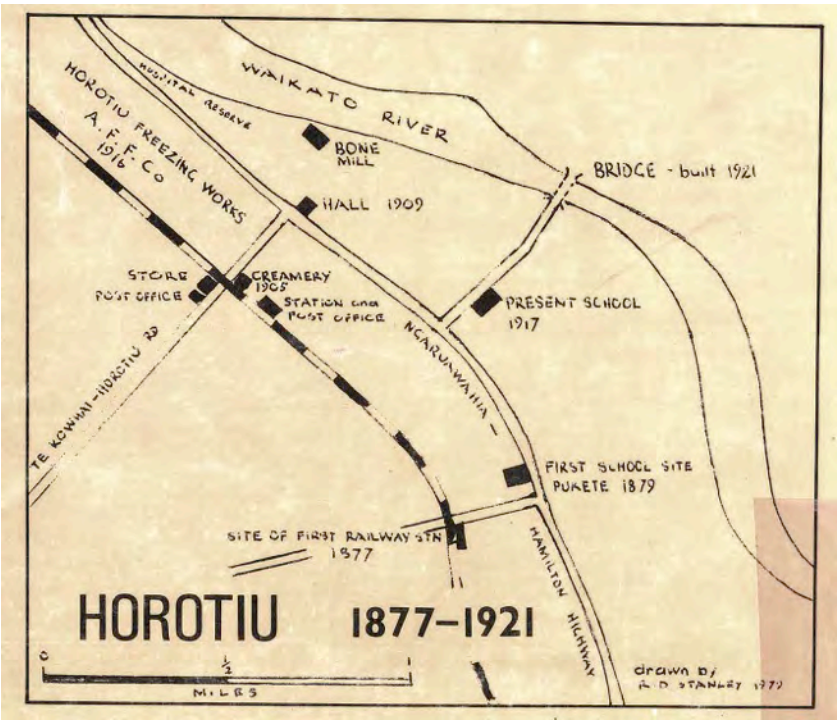


Figure 103: 'Horotiu 1877-1921' drawn by RD Stanley. Reproduced in *Horotiu School Centenary 1879-1979.*

[474] Stanley, p. 15.
[475] *Auckland Star* 18 February 1916, p. 4.
[476] *New Zealand Herald* 14 November 1914, p. 1.
[477] *New Zealand Herald* 7 July 1915, p. 1.
[478] *New Zealand Herald* 4 July 1917, p. 1.
[479] *Evening Post* 30 September 1920, p. 4.
[480] *New Zealand Herald* 28 February 1930, p. 14.
[481] Stanley, p. 16. See also Carl Walrond. 'Rock, limestone and clay - Phosphate, sulfur and pumice' *Te Ara - the Encyclopedia of New Zealand* updated 13-Jul-12 URL: http://www.TeAra.govt.nz/en/rock-limestone-and-clay/page-9
[482] Stanley, p. 16.

In order to relieve the pressure on the Southdown Freezing Works, the Auckland Farmers' Freezing Company (AFFCO) looked for land further south. Horotiu was ideal for its access to Great South Road, the NIMT and a plentiful water supply. The company signed an agreement to build a new works with the Waikato Farmers' Freezing Company on 12 May 1914.[483] Construction began in April 1915, by June the beef chilling room was half built, fences were being erected and stockyards laid out, and by mid-October the buildings were almost completed.[484] With projected storage capacity of 70,000 carcasses the works would be the same size as Southdown. They were to be the most-up-to-date works in the Dominion, with modern equipment and processing methods.[485] The contractors were W Philcox and Son, engineer T Simpson.[486] The freezing works at Horotiu opened on 17 January 1916.[487] By then 27 men had been employed with the expectation that 150 men would be given employment.[488] Additional storage was added to the plant during 1916.[489]

By August 1916 the works were reported as having a killing capacity of 3000 sheep or 200 cattle per day. By that date too there were a large number of buildings on the site, as can be seen in a photograph printed that month in the *Auckland Weekly News* (see below). AFFCO also owned land for pasturing stock on the east side of the Great South Road. A pumping station drew water from the river to supply the works.[490]

Figure 104: 'Horotiu Works, in Waikato District' *Auckland Weekly News* 10 August 1916, p.46. AWNS-19160810-46-4, Sir George Grey Special Collections, Auckland Libraries.

Strikes at the Horotiu works occurred during World War I, the Depression and World War II. One of the first was in March 1917 when Michael Cusack, who worked at the allied Southdown freezing works in Auckland, was charged with sedition, following a speech he gave to Horotiu workers. Cusack had allegedly incited the freezing workers to strike, which had 'a tendency to interfere with the supply of frozen meat required for His Majesty for purposes in connection with the present war'.[491] The Horotiu workers went on strike at a time when £1.5 million of frozen meat was awaiting shipment for the troops overseas. In January 1937 another strike saw freezing workers lock themselves in to the factory, an action unprecedented in New Zealand's industrial history.[492] At issue was the company's lack of recognition of the new 40-hour working week and lack of overtime payments for work done over the 40 hours.

[483] *New Zealand Herald* 18 January 1916, p. 7.
[484] *Auckland Star* 1 June 1915 p. 11; *New Zealand Herald* 23 October 1915, p. 5.
[485] *New Zealand Herald* 8 January 1916, p. 5.
[486] *New Zealand Herald* 18 January 1916, p. 7.
[487] Ibid.
[488] Ibid.
[489] *New Zealand Herald* 4 December 1916, p. 7.
[490] Lot 1 Pt Allotment 101, DP 10996, QuickMap.
[491] *New Zealand Herald* 8 March 1917, p. 6.
[492] https://unitenews.wordpress.com/tag/1937-freezing-works-occupation/

During the railway workers' strike in April 1924, considerable quantities of butter were received at the freezing works, graded by staff sent from Auckland and then readied for export.[493]

Accommodation at the works was provided by a boarding house, where c. 130 men lived in 1915, and single men's huts.[494] Many workers commuted to the works from Hamilton and Ngaruawahia, special buses being laid on.

Figure 105: 'Horotiu Freezing Works, Waikato River', taken May 1939. WA-55992-G, Whites Aviation Collection, Alexander Turnbull Library.

In 2005 the works were extensively refurbished and the plant rebuilt, to become one of the largest beef slaughtering and processing plants in New Zealand.[495] On the same site is AFFCO Horotiu's Rendering Plant, which processes a range of protein meals and tallows, which are exported to Asia.[496]

[493] *New Zealand Herald* 30 April 1924, p. 10.
[494] *New Zealand Herald* 19 October 1915, p. 1.
[495] http://www.affco.co.nz/indexcdbd.html
[496] Ibid. Note: the AFFCO Archives (1898-2002) have been deposited in the Hamilton City Libraries, reference MSC 269.

Figure 106: 'Freezing works, Horotiu', taken May 1951. WA-27822-F, Whites Aviation Collection, Alexander Turnbull Library.

Soon after the works development was announced, local landowners near the site chosen for the freezing works opened up parts of their land for residential development. In 1915 and 1916 surveys, identified as 'Township of Horotiu Extension', were undertaken. In August 1915 RD Duxfield surveyed 28 acres on the northern side of the works, between the NIMT and Great South Road, into 25 lots of approximately one acre each. In October 1915 he opened up land on the western side of the NIMT as 32 one-acre or 1½-acre sections and 12 roughly five-acre sections; Park Road and Anzac Street were thus created.[497] In January 1916 Duxfield had a large block of nearly 30 acres subdivided as 69 ¼- and ½-acre sections plus four acres of roads, including Birdwood Road, Divers Road and part of Park Road.[498] This subdivision was bordered by Horotiu Road and the NIMT. The 1916 survey plan shows one house already existing with a large shed nearby; the house, which still exists at 172 Park Road, may have been Duxfield's home.[499]

[497] DP 10677, DP 11096, QuickMap.
[498] DP 10993, QuickMap.
[499] The location of Duxfield's house has not been researched.

Figure 107: DP 10993, showing a house on Lot 51 and neighbouring shed on Lot 48, dated January 1916, QuickMap.

The 69 allotments of Duxfield's 'Horotiu Park Estate' were offered for sale in March 1916.[500] At that time Lot 2 had been bought for a post office and construction was about to begin. In addition to the house sections were 25 larger lots plus 12 holding paddocks and Duxfield's dairy farm, to be offered in two sections of 75 and 73 acres, including the six-roomed homestead with detached men's room. Anzac Street in Horotiu was then called Duxfield but the name was changed in c.2000.

William Turner surveyed part of his farm on the eastern side of Great South Road into 13 sections in 1915.[501] Turner was also responsible for opening up eleven ½-acre residential sections along Horotiu Bridge Road, then known as Hinton Road, opposite the school in 1919.[502]

In 1916 Thomas Hinton and John Diver surveyed part of their land along the northern side of Horotiu Road as 'Town of Horotiu Extension No. 5': comprising 42 sections mostly half an

[500] *New Zealand Herald* 11 March 1916, p. 3.
[501] DP 10717, QuickMap.
[502] DP 13135, QuickMap.

acre in size and separated by four side roads.[503] One house with nearby cowshed stood on a 1½-acre property; this was on Hinton's portion of the land and may have been his farmhouse. The house still exists at 108 Horotiu Road.

Most of the sections were not taken up and some were subsequently amalgamated. There are very few houses from that era remaining in Horotiu; one house at 170 Park Road is likely to have been built as a result of this subdivision.

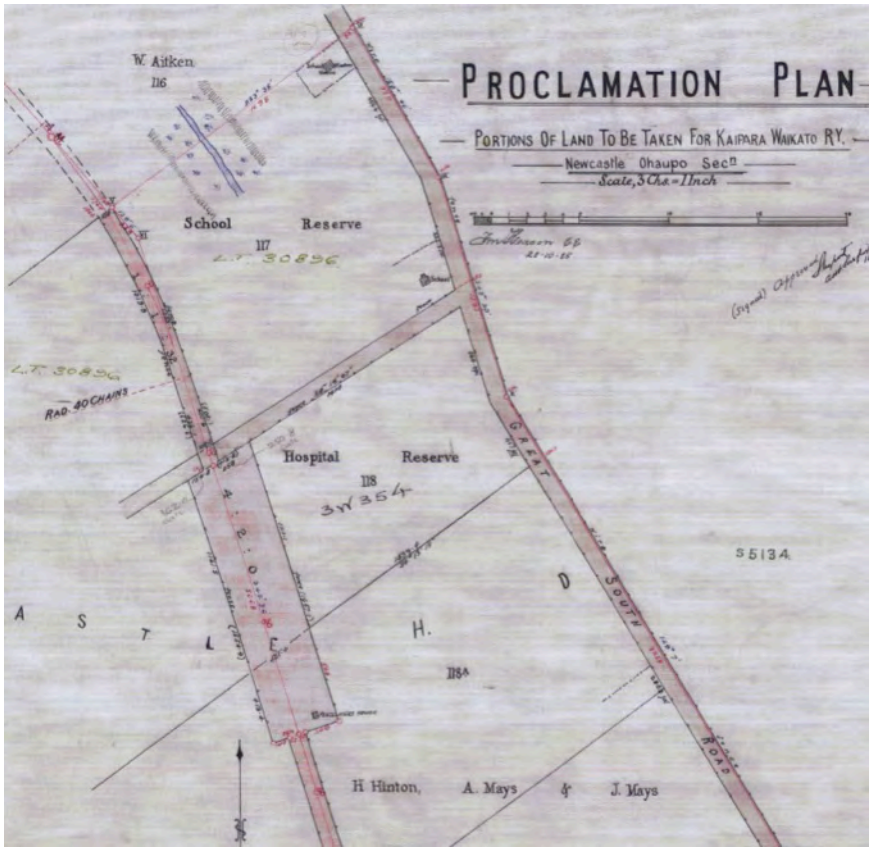


Figure 108: Part of SO 3987 (1885) showing the NIMT [Kaipara-Waikato Railway] at left, Great South Road at right, and Bern Road across the middle. Three buildings are shown: in the broader section of railway land is the platelayer's house, by the road junction is the school and further north (top) is the schoolmaster's house.

Petitions by local residents for the establishment of a school began in 1877, as by then there were between 50 and 60 children in the district, but it was not until 1878 that a site on Great South Road just north of Bern Road was chosen.[504] The Auckland Education Board called for tenders for the construction of the school in December 1878.[505] The school, known as Pukete School, opened at the beginning of June 1879 with 33 children on the roll.[506] Thirteen children lived on the east side of the river and had to cross over by means of a punt; Waikato and Waipa councils shared the cost of the wire cable and Mrs Walsh donated the punt.[507] A five-roomed teacher's residence was built further north on Great South Road in 1880.[508] The house was used for the purpose until 1940.[509]

[503] DP 11517, QuickMap.
[504] Stanley, p. 2.
[505] E.g. *Waikato Times* 5 December 1878, p. 3
[506] Stanley, p. 2.
[507] Stanley, pp. 2, 3.
[508] Stanley, p. 3.
[509] Ibid.

The Pukete schoolhouse burnt down in mid-1909 and for a while the twelve pupils were taught in Hinton's barn, then in a room of the teacher's house.[510] After the hall was built in 1909 classes were held in that.[511] In 1917 the Education Board purchased three acres of land surveyed off from William Turner's farm bordering Hinton's Road (now Horotiu Bridge Road).[512] Tenders were called in November-December 1916 for the construction of a two-roomed building designed by Education Board architect John Farrell.[513] With the opening of the freezing works the number of school children in the district had risen dramatically to 61 children in 1915; the roll was at 128 in 1922.[514] Further increases led to the use of the hall again and then the addition of another room to the schoolhouse in 1940 and a new teacher's residence on the adjacent paddock.[515] The school roll stayed relatively stable, at 124, in 1977. New facilities including a library unit were added as the need arose. The school currently has a roll of about 200.[516]

Figure 109: Horotiu School in 1940. Reproduced from *Horotiu School Centenary 1879-1979* p. 7.

A major development for Horotiu was the opening of the Horotiu Bridge in 1921. Hamilton engineers and surveyors Thomson and Farrer called tenders for the erection of the single-arch reinforced concrete bridge in 1918.[517] The councils on either side, Waipa and Waikato, contributed to its cost.[518] The bridge gave easier access for farmers on the east side of the river wanting to get stock to the works. It also made it easier for children to get to the school and provided an additional route for travellers between Ngaruawahia and Hamilton or points east. The single-lane bridge was replaced with one more suited to increased traffic needs, work beginning in November 2000.[519]

In 1915 architect FC Daniell drew plans for a Methodist church for Horotiu, but it has not been established whether it was built.[520] A church was built for the Church of England (date not known) on Great South Road, and was in use as a playcentre in 1979. The first New

[510] *Horotiu School* 1962. Unpaginated.
[511] Stanley p.5
[512] DP 12221
[513] *New Zealand Herald* 18 November 1916, p. 6.
[514] Stanley pp. 5, 6.
[515] *Horotiu School* 1962.
[516] https://horotiuschool.wikispaces.com/Information
[517] *New Zealand Herald* 26 October 1918, p. 4.
[518] *New Zealand Herald*, 28 October 1919, p. 6.
[519] *Hamilton Press* 8 Nov. 2000, p. 12.
[520] Waikato Museum Collection, Hamilton.

Zealand Sikh temple was opened in 1977 on Great South Road just to the south of Horotiu.[521]

The settlement's public hall was opened by the Horotiu Institute Association with a grand inaugural concert and ball held on 3 November 1909.[522] For many years the hall was used for meetings, badminton, indoor bowls, flower shows, movie screenings, social events, political rallies, a playcentre and by the Plunket Society.[523] It now houses the Splashy pottery business.

Current recreational providers in the area include the Ngaruawahia Golf Club, on the north side of Horotiu; to the south on the river bank is Hinterland/Paintball Hamilton. The Horotiu to Pukete section of Te Ara walkway and cycleway along the western side of the river, which starts from Horotiu Bridge Road, opened in 2013 and has become very popular.

In 1952 memorial gates were erected at the entrance to the school listing the names of those who served overseas and others who died while on active service.[524]

The New Zealand Pumice Co. (Director W Rickman) owned land on the east side of Great South Road in 1951.[525] Before World War II, in the 1939, HA Kernott is listed in the business directory for the pumice works.[526] Other occupations listed then were predominantly associated with the freezing workers and farmers, but there was also a storekeeper (DP van Kaneria), a horse trainer (Robert Wright), carrier (Allan Hutchison), a few railway employees, the creamery manager (J Cummings), teacher (Dan McPherson), and the bone mill proprietor (George Jamieson).[527] The settlement had a post and telegraph service and a money order and savings bank. In 1959, in addition to the previous occupations, a tearooms and store were listed, a wood and coal merchant and a photographer (Henry J Varcoe).[528]

Today, on the south side of Horotiu is a small industrial area that is increasing in size with such developments as Northgate Industrial Park on the west side of Great South Road. Keith Hay Homes has been located on the east side of the main road since 1956. Other industries include Holcim Concrete Products, SD European (mechanics and automotive dismantlers), Hanes Engineering, Machinery and Marine (new and used equipment and tools), Riverlea Sands (sand, pea metal processor), Perry Resources, Horticultural Transport, and Prestige Building Removals. Immediately outside the study area is Fonterra's Te Rapa Dairy Factory, a major industry providing employment to local people.

The Horotiu Food Centre on the corner of Washer Road continues the well-established tradition of providing a grocery store for locals and travellers.

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[521] http://www.teara.govt.nz/en/photograph/27161/sikh-gurdwara
[522] Stanley, p. 16.
[523] R. Davis 'Local Activities' in *Horotiu School Centenary 1879-1979* p. 17.
[524] Stanley, p. 7.
[525] DPS 1667 (1951), QuickMap.
[526] *Leighton's Directory 1939* p. 564.
[527] *Leighton's Directory 1939* p. 563-64.
[528] *Wise's Auckland Provincial Directory 1959*

Figure 110: A view looking over Horotiu towards the north-west with the school in the foreground, pre-1979. Reproduced from *Horotiu School Centenary 1879-1979.*

## Identification of the Built Heritage Resources of Ngaruawahia & District

The heritage resources of any community are diverse in nature and may be valued for a wide variety of reasons. Whilst some might be offered protection under the auspices of the Resource Management Act, the Reserves Act, the NZ Historic Places Act, the Waikato Regional Policy Statement and/or the Waikato District Plan, others rely on efforts by community groups and individuals for their conservation.

The community plans for Ngaruawahia (2009-2019), Taupiri (2008-2018), Glen Massey (2007-2017) and Te Kowhai (2011-2021) all identify a vision or outcome related to pride in and preservation of the district's heritage.[529] Waikato District Council will play a role in achieving this vision, both through undertaking its regulatory responsibilities and by modelling best practice through the management of its own heritage assets.

Note: Where this report identifies buildings erected before 1900 the sites on which they stand should be considered as having potential archaeological value under the terms of the Historic Places Act.

Figure 111: Foundation stone, Taupiri War Memorial Hall. A McEwan, 5 March 2014.

[529] http://www.waikatodistrict.govt.nz/Documents/Plans/Community-plans.aspx

## Ngaruawahia Structure Plan – Built Heritage Assessment

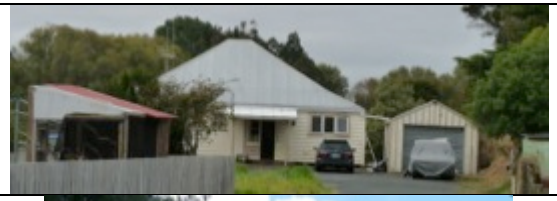
### Ngaruawahia

Scheduled items – Waikato District Plan - Appendix C – Historic Heritage

| | | | |
|---|---|---|---|
| 108 [A] | Turangawaewae House | 2 Eyre Street, Ngaruawahia | |
| 109 [A] | Potatau Monument | Broadway Street, Ngaruawahia | |

| | | | |
|---|---|---|---|
| 110 [A] | War Memorial / Cenotaph | The Point, Waipa Esplanade, Ngaruawahia | |
| 111 [A] | Pioneer gun turret | The Point, Waipa Esplanade, Ngaruawahia | |
| 112 [A] | Band rotunda | The Point, Waipa Esplanade, Ngaruawahia | |

| | | | |
|---|---|---|---|
| 113 [A] | Delta Tavern | 2 Market Street, Ngaruawahia | |
| 114 [A] | Bakery | 108 Great South Road, Ngaruawahia | |
| 115 [A] | Villa | 13 Market Street, Ngaruawahia | |

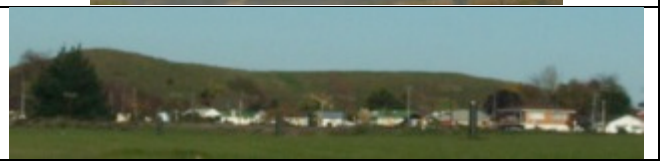
| | | | |
|---|---|---|---|
| 116 [A] | Former Doctor's house | 11A Luff Place, Ngaruawahia [relocated from 53? Newcastle Road]<br><br>Should this building still be scheduled in view of its relocation and alterations? **Review**. |  |
| 117 [A] | House | 2 Old Taupiri Road, Ngaruawahia | |
| 118 [A] | Former flour mill [granary or store] | 1A Old Taupiri Road, Ngaruawahia<br><br>Condition of this NZHPT Category 1 historic place is alarming. Suggest an application to the Lottery Grants Board for conservation of the building and surrounds should be made by WDC, with input & support from Heritage New Zealand (formerly NZHPT). | |

| | | | |
|---|---|---|---|
| 119 [A] | St Paul's Catholic Church | Cnr Belt & Great South Road, Ngaruawahia<br><br>See architectural drawings collection, Waikato Museum. | |
| 120 [B] | Police house & cell block | 10 Waikato Esplanade, Ngaruawahia | |
| 121 [B] | Four Square building | 14 Jesmond Street, Ngaruawahia | |

| | | | |
|---|---|---|---|
| 122 [B] | House | 13 Lower Waikato Esplanade, Ngaruawahia | |
| 124 [B] | ‘Melrose’ house | 3 Carlton Avenue, Ngaruawahia | |
| 125 [B] | House | 14 Galileo Street, Ngaruawahia | |

| | | | |
|---|---|---|---|
| 126 [B] | House | 638 [?] Hakarimata Road, Ngaruawahia<br><br>Former Convent of Our Sisters of the Missions, Ngaruawahia [1928?] – relocated [date unknown]. **Review** heritage values of building on new site to determine whether it should be retained on the DP. | |
| 127 [B] | House | 26 Waikato Esplanade, Ngaruawahia | |
| 128[B] | Old bridge & abutments | Lower Waikato Esplanade, Ngaruawahia | |
| 129 [B] | House | 5 Broadway Street, Ngaruawahia | |

| | | | |
|---|---|---|---|
| 130 [B] | House | 44 Ellery Street, Ngaruawahia<br><br>1915 workers' dwelling – see SO 23332. NZ Gazette 1912 p. 2604. | |
| 131 [B] | House | 46 Ellery Street, Ngaruawahia<br><br>1915 workers' dwelling – see SO 23332. NZ Gazette 1912 p. 2604. | |
| 132 [B] | Railway cottage | 184 Great South Road, Ngaruawahia | |

| | | | |
|---|---|---|---|
| 133 [B] | Railway cottage | 188 Great South Road, Ngaruawahia | |
| 134 [B] | Railway cottage | 198 Great South Road, Ngaruawahia | |
| 135 [B] | Railway cottage | 200 Great South Road, Ngaruawahia | |
| 135A [B] | Puke I Ahua Pa | Havelock Hill, Ngaruawahia<br><br>Refer to Cultural Heritage / Archaeological Heritage Structure Plan reports. |  |

| | | | |
|---|---|---|---|
| 135B [B] | Grants Chambers | Cnr Great South Road & Jesmond Street, Ngaruawahia | |

Listed items – Heritage New Zealand's List of Historic Places:

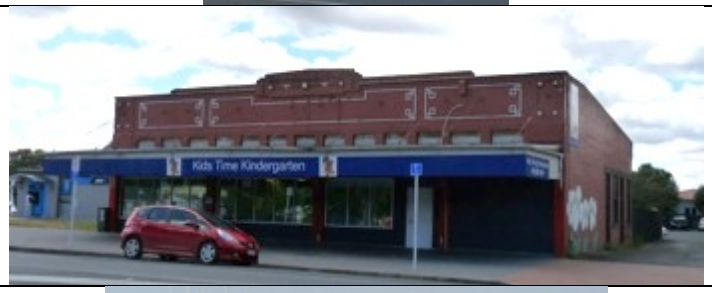
| | | | |
|---|---|---|---|
| 4170 | Turangawaewae House | 2 Eyre Street, Ngaruawahia | Category 1 |
| 4258 | War Memorial / Cenotaph | The Point, Waipa Esplanade, Ngaruawahia | Category 2 |
| 756 | Pioneer gun turret | The Point, Waipa Esplanade, Ngaruawahia | Category 2 |
| 4257 | Band rotunda | The Point, Waipa Esplanade, Ngaruawahia | Category 2 |
| 4459 | Delta Tavern | 2 Market Street, Ngaruawahia | Category 2 |
| 4248 | Bakery | 108 Great South Road, Ngaruawahia | Category 2 |
| 4256 | Motel [Villa] | 11 [13?] Market Road, Ngaruawahia | Category 2 |
| 4250 | Doctor's house [relocated] | 11 Luff Place, Ngaruawahia [relocated] | Category 2 |
| 4259 | House | 2 Old Taupiri Road, Ngaruawahia | Category 2 |
| 734 | Former flour mill [granary] | 1A Old Taupiri Road, Ngaruawahia | Category 1 |
| 4246 | St Paul's Catholic Church | Cnr Belt & Great South Road, Ngaruawahia | Category 2 |
| 4255 | House | 13 Lower Waikato Esplanade, Ngaruawahia | Category 2 |
| 6704 | Puke I Ahua Pa | Havelock Hill, Ngaruawahia | Category 2 |
| 4251 | Grants Chambers | Cnr Great South Road & Jesmond Street, Ngaruawahia | Category 2 |

Additional items identified by the *Waikato Heritage Study* for Waikato District Council et al by Dinah Holman [November 1997]:

| | | | |
|---|---|---|---|
| House | Belt Street, Ngaruawahia | Street #? | |
| House | Eyre Street, Ngaruawahia | Street #? | |
| Waipa Hotel | Cnr Great South Road & Jesmond, Ngaruawahia | This building should be scheduled, for both its intrinsic heritage significance and for its contextual historic relationship to the Delta Hotel. | |
| Former power station | Herschel Street, Ngaruawahia | See SO 22534. Transferred to Boy Scouts Assn in 1957 – recommend assessment for scheduling. | |
| House | Market Street, Ngaruawahia | Street #? | |
| House | Princess Street, cnr Durham Street, Ngaruawahia | Street #? Possibly former Central Hotel – see below | |
| House | Waikato Esplanade, Ngaruawahia | Street #? | |

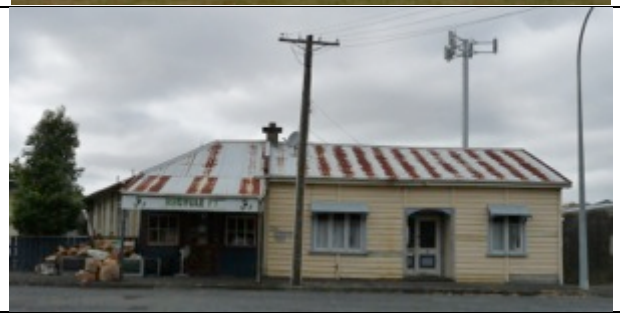
Potential scheduled built heritage items [in addition to those listed above]:

| | | | | |
|---|---|---|---|---|
| Masonic Lodge | 18-20 Herschel Street, Ngaruawahia | 1912. Warren & Blechynden, Architects – 1916 proposed additions to Lodge Te Marama, No. 186. Plans Waikato Museum. | | |
| Building | 22 Herschel Street, Ngaruawahia | Former railway station building? Construction of interest. | | |
| Plunket Rooms | Cnr Jesmond & Newcastle Streets, Ngaruawahia | | | |

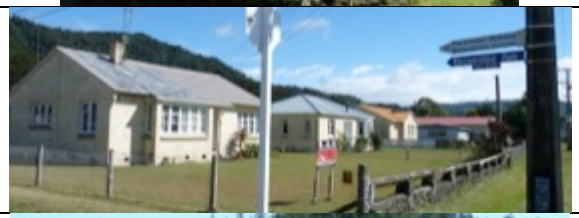
| | | | |
|---|---|---|---|
| Centennial Memorial Clock tower | Great South Road, Ngaruawahia | 1963. ARP Garry, architect; RE Goodall, builder. | |
| Commercial building | 76 Great South Road, Ngaruawahia | |   |
| Former Central Private Hotel / Perrin Boarding House | Cnr Durham & Princess Streets, Ngaruawahia | Part of the Perrin boarding house, relocated from near saleyards [Latta, p. 169] | |

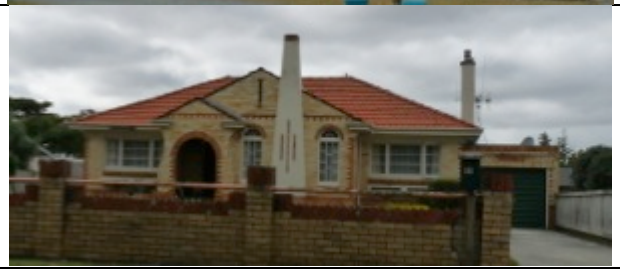
| | | | |
|---|---|---|---|
| Mahinarangi and Turongo House | River Road, Ngaruawahia | 1935-38. See D Brown *Maori Architecture* pp. 105-110. | |

Other buildings of interest / note:

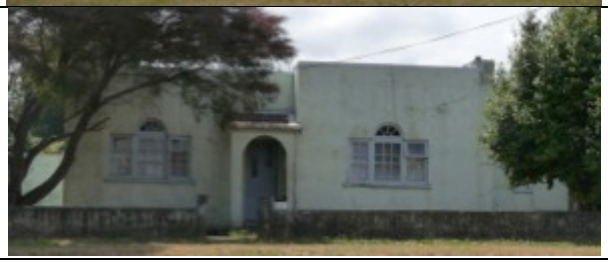
| | | | |
|---|---|---|---|
| House | 19 Newton Street, Ngaruawahia | | |
| Building | 6 Durham Street, Ngaruawahia | |  |

| | | | |
|---|---|---|---|
| House | 67 Ellery Street, Ngaruawahia | Including gateposts with trefoil decoration. C. 1910? Former Cavanagh house. | |
| House | 21 North Street, Ngaruawahia | Area surveyed 1909 by Thomas Davis, DP 4854. | |
| Building | 25 Newton Street, Ngaruawahia | Former Buffalo Lodge? [local history informants] | |
| War Memorial Hall | Galileo Street, Ngaruawahia | E Care-Cottrell, architect. 1955-17. | |

| | | | |
|---|---|---|---|
| House | 180 Saulbrey Road, Ngaruawahia | | |
| House | 81 Waingaro Road, Ngaruawahia | See also # 132 – single storey bungalow | |
| State houses | 3, 5 & 7 Hakarimata Road, Ngaruawahia | |  |
| Villa | 161 Hakarimata Road, Ngaruawahia | • Possible relocation? | |

| | | | |
|---|---|---|---|
| Brick bungalow | 329 Hakarimata Road, Ngaruawahia | Note fence and gate with initials in bent wire. c. 1929. | |
| Villa | 1 Old Taupiri Road, Ngaruawahia | Mill manager's house? | |
| Villa | 21 Ngaruawahia Road, Ngaruawahia | c.1915? former Goodall residence. | |
| House | 11 Waipa Esplanade, Ngaruawahia | c. 1945 |  |

| | | | |
|---|---|---|---|
| House | 1 Herschel Street, Ngaruawahia | Garage on property overlooking Herschel Street believed to be former goal [local history informants], but the building does not support this reading. | |
| Houses | 2 & 3 Princess Street, Ngaruawahia | 19th century [c. 1880?] houses, previously owned by W Walsh. See SO 2722 & 24294. | |
| House | 17 Waikato Esplanade, Ngaruawahia | c. 1935? Section owned 1912 by J Cavanagh. | |

| | | | | |
|---|---|---|---|---|
| School building | Ngaruawahia Primary School, Galileo Street, Ngaruawahia | Assess age and significance. | | |
| House | 37 Waikato Esplanade, Ngaruawahia | | | |
| House | 9 Broadway Street, Ngaruawahia | | | |
| Former Catholic presbytery | 126 Great South Road, Ngaruawahia | | |  |

| | | | |
|---|---|---|---|
| Bungalows | 30, 32, 34, 36 & 38 Whatawhata Avenue, Ngaruawahia | c. 1910. Originally 7 houses in the 'set', one relocated to Hakarimata Road and 1 burned down, leaving 5 [local history informants]. See DP 6825. | |

Built heritage / historic character qualities:

- Impact of river and railway on historic development and modern-day layout
- Nationally significant buildings embodying Maori architectural practices and concepts
- Diverse range of heritage and historic character buildings
- residential buildings that contribute to the historic character of the town include colonial cottages & villas, bungalows, government [state and NZR] housing, and post-war bungalows
- a modest number of architecturally designed buildings, but notable buildings are predominantly examples of the vernacular forms of colonial classicism and Gothic Revival
- Much of the housing overlooking the esplanades and the cross-streets between Belt and Martin Streets is of a pre-WWII vintage and contributes to the town's historic character and amenity values – promotional efforts such as self-guided walking tours or the formation of a vintage homes group might be considered to encourage retention and maintenance

**Taupiri**

Scheduled items – Waikato District Plan - Appendix C – Historic Heritage:

| | | | |
|---|---|---|---|
| 138 [B] | Former Wharf | 60 Great South Road, Taupiri | |
| 139 [B] | House | 4 Te Putu Street, Taupiri | |

| | | | |
|---|---|---|---|
| 141 [A] | Taupiri Tavern | 1 The Crescent, Taupiri | |
| 142 [A] | Christ Church | 1 Te Putu Street, Taupiri | |
| 144 [A] | House | 65 Great South Road, Taupiri<br><br>What heritage values does this building possess that warrants its 'A' ranking? Typical return bay villa with Category 2 NZHPT ranking. **Review.** | |

| | | | |
|---|---|---|---|
| 145 [B] | Rev Ashwell's Mission | Pepepe Trust, Hakarimata Road<br>732 Hakarimata Road, Taupiri<br><br>Extent of scheduling? This item has three map entries [Policy Map 20] – each parcel of land / heritage feature should be individually listed for accuracy of identification and ease of management.<br>Does the item include the former Taupiri Cemetery graves?<br>In conjunction with Notable Trees # 153, 154 & 155 [Waikato District Plan Appendix F], the graves should also be identified and protected on the former mission.<br>It is thought that there are also graves beyond the enclosed area under the tree [local history informants]. | |
| 146 [B] | Graves | Wright Street, Taupiri<br><br>Site marked by plaque set into a rock, which indicates former site of Catholic Church [1876]. Date of memorial unknown. Has potential heritage value in itself. | |
| 147 [B] | Graves by Christ Church | 1 Te Putu Street, Taupiri | |

Listed items – Heritage New Zealand's List of Historic Places:

| | | | |
|---|---|---|---|
| 4306 | Christ Church (Anglican) | 1 Te Putu Street, Taupiri | Category 2 |
| 4307 | Taupiri Tavern | The Crescent, Taupiri | Category 2 |
| 4308 | Villa | 65 Great South Road, Taupiri | Category 2 |

Potential scheduled built heritage items and areas [in addition to those listed above]:

| | | | |
|---|---|---|---|
| Hopin Stopin Café and retail buildings | 60-62 Great South Road, Taupiri | This building was registered by NZHPT, but is no longer. It was also included in the Holman Study [1997]. All three buildings were extant by November 1946 and the earliest may date from c. 1893. The retail group is in close proximity to the former wharf [WDC DP item # 138] and it makes a notable contribution to the streetscape. See DP 13107, dated August 1919, in which café is marked as a house and the former antiques shop as a shop. | |
| Soldiers & Settlers Hall | 12 Te Putu Street, Taupiri | 1921, FC Daniell, Architect. Plans held Waikato Museum. | |

| | | | |
|---|---|---|---|
| WWII Memorial Hall & Plunket Rooms | 18 Greenlane Road, Taupiri | 1952. G Leigh, Architect. | |
| Former Taupiri Post Office | 3 The Crescent, Taupiri | | |

<u>Other buildings of interest / note:</u>

| | | | |
|---|---|---|---|
| Taupiri Dairy | 8 Te Putu Street, Taupiri | Former billiards hall?<br>Shown on DP 24798, dated August 1933. | |

| | | | | |
|---|---|---|---|---|
| Commercial building | 33 Te Putu Street, Taupiri | Possible former butchery? | | |
| Houses | Te Putu Street, Taupiri | Including numbers 42 [top] & 39 [bottom].<br><br>Historic character of houses in Te Putu Street East may be worthy of protection and/or promotion | | <br> |

| | | | |
|---|---|---|---|
| Taupiri Bowling Club | 7 [?] Onslow Avenue, Taupiri | | |
| Former NZCDC Dairy Factory | 14 [?] Te Putu Street, Taupiri | Est. 1929? | |
| Former railway/dairy factory workers' houses [?] | 2 & 3 Factory Lane, Taupiri | | |
| Bungalow | 2 Wright Street, Taupiri | Former dairy factory manager's residence? See DP 26858, dated 4 December 1936. Property owned by Taupiri Dairy Coy Ltd at this time. | |

| | | | |
|---|---|---|---|
| Villa | 174 Great South Road, Taupiri | Landmark house at southern entry to village.<br><br>Note: QV & QuickMap gives street number as 170. | |

Building noted for information purposes only:

| | | | |
|---|---|---|---|
| Former Tamahere Hall / Wharenui & ablution block | ,Taupiri Marae, Taupiri | Hall from Tamahere School grounds relocated to Taupiri Marae in c. January 2012. See https://www.youtube.com/watch?v=5E58ZuGq1ao | |

Built heritage / historic character qualities:

- Dispersed civic / commercial centre
- Impact of river and railway on historic development and modern-day layout
- Proximity of village to Taupiri Mountain and 19th century Anglican Maori mission site
- Diverse range of heritage and historic character buildings

**Hopuhopu**

Scheduled items – Waikato District Plan - Appendix C – Historic Heritage:

| | | | |
|---|---|---|---|
| 145 [B] | Rev Ashwell's Mission | Tainui Land, Hopuhopu<br><br>• Extent of scheduling? This item has three map entries [see Policy Map 20] – each parcel of land / heritage feature should be individually listed for accuracy of identification and ease of management<br>• It appears this entry should be renamed Rev Ruarangi's Grave [1913]. | |

Listed items – Heritage New Zealand's List of Historic Places:

Nil

Potential scheduled built heritage items and areas [in addition to those listed above]:

| | | | |
|---|---|---|---|
| Former military camp | Hopuhopu | A comprehensive survey of the former Hopuhopu Military Camp is recommended. The Holman report [1997] recognised the 'important legacy of World War II military heritage in the Waikato', including that of Hopuhopu.<br><br>The survey should include the staff housing on the north side of Old Taupiri Road and the ammunition stores east of Great South Road. | |

| | | | |
|---|---|---|---|
| Waikato Wars Memorial | Old Taupiri Road, Hopuhopu | 1914 | |

Other buildings/features of interest / note:

| | | | |
|---|---|---|---|
| Former AE Rogers house | 5113 Great South Road, Hopuhopu | Bungalow and garden setting. Former Mount Ley pig stud. Clarify address. | |
| Former Lomas house | Old Taupiri Road, Hopuhopu | Check street number. Previously located in Lake Crescent, Hamilton. 1954 home of Alan and Heather Lomas. Relocated and rebuilt on new site in 2013-14. Noted for information only. | |

## Glen Massey

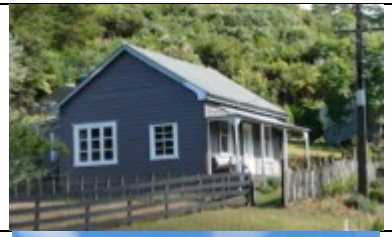
Scheduled items – Waikato District Plan - Appendix C – Historic Heritage

| | | | |
|---|---|---|---|
| 20 [B] | Glen Massey School | 897 Waingaro Road, Glen Massey<br><br>Recommend this listing be more restricted – to just original/oldest school building? Opened 1 February 1915, extended 1929 +. | |
| 21 [B] | Former boarding house | 79 Wilton Collieries Road, Glen Massey. Built 1914. | |
| 22 [B] | House | 859 Waingaro Road, Glen Massey | |

Listed items – Heritage New Zealand's List of Historic Places:

Nil

Potential scheduled items:

| | | | |
|---|---|---|---|
| Cottage | 929 Waingaro Road, Glen Massey | c. 1893? This house is marked on DP 9281, which was drawn in January 1914. |  |
| Former doctor's surgery [?] | 45 Wilton Collieries Road, Glen Massey | | |
| Former WJ Foster bungalow | 1237 Waingaro Road, Glen Massey | Archibald MacDonald, architect. Built with Glen Massey bricks. Completed 20 July 1930. | |

Built heritage / historic character qualities:

- 1915-17 development of residential area in conjunction with establishment of mine
- modest housing with slightly larger scale residences opposite the school
- note 1910s housing in Wilton Collieries Road

**Te Kowhai**

Scheduled items – Waikato District Plan - Appendix C – Historic Heritage:

| | | | |
|---|---|---|---|
| 92 [B] | St Mark's Union Church | 608 Horotiu Road / SH 39, Te Kowhai<br><br>FC Daniell – Methodist Church, Te Kowhai, 1908-09. Waikato Museum plans. Relocated from Waitekauri [1950 school history].<br>Note: Waikato Museum also holds plans by FC Daniell for a residence for James Colley, c.1920. | |

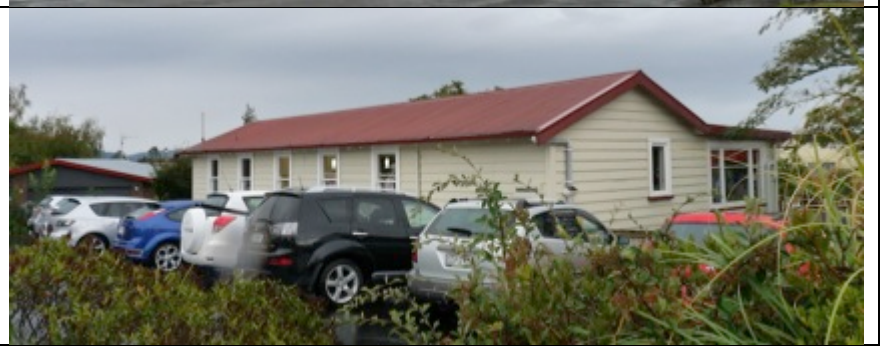
Listed items – Heritage New Zealand's List of Historic Places:

Nil

Potential scheduled built heritage items and areas [in addition to those listed above]:

| | | | |
|---|---|---|---|
| St Stephen's Anglican Church | Horotiu Road / SH 39, Te Kowhai | 1903. Relocated from Collie Road in 1956. Grainger Ward, architect. Mr Pettigrew, builder. | |

Other buildings of interest / note:

| | | | |
|---|---|---|---|
| Te Kowhai Memorial Hall | Horotiu Road / SH 39, Te Kowhai | 1954. White, Leigh & de Lisle, Architects. Extended and refurbished post-2004. | |
| Te Kowhai Kindergarten | 473 Bedford Road, Te Kowhai | Building has the appearance of an early- to mid-20th century public works shed. |  |

Built heritage / historic character qualities:

- Modest number of non-residential buildings associated with historic development of village.
- Village hub created by the Memorial Hall, Te Kowhai School and St Mark's Union Church is bisected by SH39.

**Horotiu**

Scheduled items – Waikato District Plan - Appendix C – Historic Heritage

| | | | |
|---|---|---|---|
| 106 [A] | Maori gardens | Kernott Road, Horotiu | • Refer to Cultural / Archaeological Heritage reports? |
| 107 [A] | Former Horotiu Hall | Great South Road, Horotiu | |

Listed items – Heritage New Zealand's List of Historic Places:

| | | | |
|---|---|---|---|
| 4324 | Horotiu Hall | 6177 SH1, Horotiu | Category 2 |

Additional items identified by the *Waikato Heritage Study* for Waikato District Council et al by Dinah Holman, dated November 1997.

| | | | |
|---|---|---|---|
| Horotiu Bridge | Horotiu Bridge Road, Horotiu | 1921. Demolished since 1997 – two new bridges in situ. | |

Potential scheduled built heritage items and areas [in addition to those listed above]:

| | | | |
|---|---|---|---|
| Horotiu Freezing Works | Great South Road, Horotiu | 1915-16<br><br>Recommend that the site be surveyed. Historic photograph at right, published in 1916, shows a large number of buildings on the site very soon after the works opened. | <br>HOROTIU WORKS, IN WAIKATO DISTRICT Killing capacity 3000 Sheep or 200 Cattle per day. Storage 115,000 60lb carcasses. |
| Railway cottage | 37 Horotiu Road, Horotiu | | |

Other buildings/features of interest / note:

| | | | |
|---|---|---|---|
| Memorial Gates | Horotiu School, 85 Horotiu Bridge Road, Horotiu | | |

| | | | |
|---|---|---|---|
| Methodist Church | Unknown location – still extant? | FC Daniell, Architect. 1915-16 Waikato Museum Collection | |
| Anglican Church | Unknown location – still extant? | E Care-Cottrell, Architect – alterations to church, 1958-59. | |

Built heritage / historic character qualities:

- Modest number of non-residential buildings associated with historic development of village.
- Dispersed settlement pattern influenced by highway and NIMT railway.
- Limited sense of arrival and departure points in the village.
- AFFCO Freezing Works are a major local landmark.

## Assessment of Effects

Strengths

*Ngaruawahia and the surrounding district have an interesting and diverse history, which connects with national stories, such as those of the 1860s Waikato War and the development of the railways. The history of the area also reflects the contributions made by individuals and families who helped to develop the district through their farming, light industrial, civic, religious and social activities.*

*The Waikato District Heritage Strategy identifies the value of historic heritage resources to the community and provides a framework for a coherent and comprehensive approach to the identification, protection and management of these resources.*

Weaknesses

*Rules pertaining to scheduled heritage items are not immediately accessible within either of the District Plans that Waikato Council presently has responsibility for.*

*The absence of a local history museum in Ngaruawahia means that there is no dedicated venue within which to promote the district's heritage places and stories.*

Opportunities

*In addition to acknowledging the history of the town and its outlying village settlements, the Ngaruawahia Structure Plan provides the opportunity, by means of the public notification, hearing and implementation process, to raise the profile of the district's heritage values.*

*Urban design strategies developed for the Structure Plan area can take account of the individual historical genesis of all six settlements within the Structure Plan area and consider planning, design and planting actions that acknowledge the history of the area.*

Threats

*Loss of built heritage items may result from intensification should a future planning framework fail to provide for the protection of listed items and their surroundings.*

*Extensive light industrial development could further erode the identity of Horotiu within the Te Rapa-Ngaruawahia corridor and the success of the Waikato Expressway could undermine the commercial viability of businesses located in Taupiri and Ngaruawahia's heritage and character building stock, thereby fostering a 'demolition by neglect' scenario in both places.*

## Recommended Heritage Planning Actions

Key recommendations to be considered as part of the Ngaruawahia Structure Plan and incorporated in to the subsequent District Plan Change are as follows:

1. *Additional heritage items should be added, by way of variation, to the Waikato District Plan in order to manage their conservation and continued use.*

2. *Within Ngaruawahia the Waipa and Waikato River Esplanades have multiple heritage values; a focused study of the esplanades is recommended to identify, protect and promote heritage values, including those embodied in residential buildings, in these critical areas.*

3. *Historical information pertaining to the Structure Plan should be lodged in the Ngaruawahia Library. The establishment of a Kete Waikato portal by the Waikato District Libraries would facilitate the sharing of heritage information with and amongst members of the community.*

4. *Information gleaned from the Structure Plan exercise should be used to assist in the formulation of Hopuhopu and Horotiu Community Plans, if and when such plans are drafted.*

5. *Implementation of the Structure Plan and consequent Plan Change should be monitored to ensure that it maintains and enhances the heritage values of each settlement area.*

6. *Reserve Management Plans should identify and promote the active management of historic heritage resources within council-owned reserves. Regardless of the classification of a particular reserve under the Reserves Act some may possess to historic heritage buildings, structures and/or features for which the council is responsible. Sound management of such resources allows the council to model best practice heritage conservation to other property owners.*

7. *In some parts of the district council's rohe groups of houses are currently scheduled on the District Plan, for example the Matangi dairy factory houses. There may be community interest in identifying similar groups or clusters of buildings within Ngaruawahia and elsewhere in the district that can be shown to have heritage value and/or make a contribution to character streetscapes in terms of their age, style, setting, and location.*

8. *A stand-alone Historic Heritage Chapter in a unitary District Plan, when one is developed in the future, would assist the owners of built heritage sites and structures to better understand the priority afforded to this resource management issue by council.*

9. *Several significant council-owned heritage sites (including the former flourmill granary in Ngaruawahia and all of the district's cemeteries) present both heritage conservation challenges and cultural 'tourism' opportunities. The former flourmill granary should be secured against vandalism and further deterioration and a Conservation Plan prepared to assist council in conserving this major built heritage asset.*

Figure 112: Interior of former flourmill granary or store, Ngaruawahia. A McEwan, 5 March 2014.

Figure 113: Ngaruawahia Cemetery. A McEwan, 12 March 2014.

## Conclusion

The Ngaruawahia Structure Plan provides Waikato District Council with an opportunity to consider how the history and heritage resources of the district might be used to maintain and enhance a sense of place and identity in Ngaruawahia, Taupiri, Hopuhopu, Glen Massey, Te Kowhai and Horotiu.

## Appendix 1: Selected Bibliography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*Te Kowhai District School, 1890-1950: Diamond Jubilee Reunion* (Te Kowhai, 1950)

*Te Kowhai School & District, 1890-1990: 'We Serve'* Hamilton, 1990)

Vennell, CW & Susan Williams *Raglan County Hills and Sea: a Centennial History 1876-1976* (Auckland, 1976)

Note: Hamilton Libraries holds a large collection of historic images relating to Ngaruawahia in particular, as well as some for Taupiri, Hopuhopu and Horotiu. The same institution also holds archives and information files about particular people, industries and buildings. Waikato Museum holds architectural plans of some structures in the district.

Figure 114: Rural letterboxes, Hakarimata Road, Ngaruawahia. A McEwan, 5 March 2014.

**Appendix 2: Waikato District Plan – Historic Heritage Listing Criteria**

# Appendix C: Historic Heritage

## C.A1 Criteria for Heritage Listings

The process of identifying and evaluating places of cultural heritage values requires criteria to ensure both consistency and objectivity. For every registered item there is a statement of significance for the item based on the evaluation criteria as follows:

- Historical
- Importance to the Community
- Aesthetic Appeal
- Rarity
- Architecture and use
- Technical
- Setting
- Context
- Cultural heritage value for present and future generations
- Integrity

Places have been listed as Category A or B, depending on the level of significance within each criterion and the number of criteria met. In general, although not always, the greater the number of criteria met, the higher the ranking. Every listed item will meet one or more of the criteria.

The list of heritage items in Table C1 is not the same as the NZ Historic Places Trust Register for Waikato District. It is a separate but parallel protection process.

Figure 115: Detail, Ngaruawahia Centennial Memorial Clock Tower. A McEwan, 5 March 2014

# Ngaaruawaahia, Taupiri, Hopuhopu, & Horotiu

## Transport Assessment

April 2024

flow
TRANSPORTATION SPECIALISTS

flow
TRANSPORTATION SPECIALISTS

**Project:** Ngaaruawaahia, Taupiri, Hopuhopu, & Horotiu
**Title:** Transport Assessment
**Document Reference:** P:\WADC (Waikato Dist Cncl)\001 Transport Assessment for Ngaruawahia, Hopuhopu and Taupiri\4.0 Reporting\R1D240405 Ngaaruawaahia Transport Assessment.docx
**Prepared by:** Gareth Davies, Sharmin Choudhury
**Reviewed by:** Michael Jongeneel

**Revisions:**

| Date | Status | Reference | Approved by | Initials |
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| 26 January 2024 | Final, Version B | R1B240126 | M Jongeneel | MJ |
| 22 February 2024 | Final, Version C | R1C240222 | M Jongeneel | MJ |
| 5 April 2024 | Final, Version D | R1D240405 | M Jongeneel | MJ |

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# EXECUTIVE SUMMARY

Flow has been commissioned by Waikato District Council (WDC) to conduct a transportation study for Ngaaruawaahia, Hopuhopu, Taupiri and Horotiu to understand how future growth until 2050 will affect the existing transport networks in these areas. Our assessment is divided into two parts: Part A (this report) focuses on traffic modelling and road network evaluation, while Part B assesses micromobility/walking/cycling connectivity within and to/from the townships.

Our study has been informed by:

- Forecast land use change, including population growth, industrial areas, new growth cells, and zoning changes. Notably, the collective population in the 4 townships is expected to double by 2050, with Taupiri in particular expected to see a significant population increase
- National and regional transport policies and plans. While private car travel is and will continue to remain the primary mode for the foreseeable future, strategic shifts toward more sustainable transport options are increasing at pace
- Outputs from the Waikato Regional Transport Model (WRTM)
- Reported crash histories

Our assessment has concluded the following:

- Although projected land use growth is expected to increase the number of vehicles in the 4 townships, the traffic modelling generally predicts the road network to continue to operate efficiently
- Key new road connections will be required to enable land use development. We have proposed indicative locations for these new roads in consultation with the WDC stormwater team
- Safety at rail level crossings will increasingly become a focus for the community. A number of existing level crossings are planned to be closed to traffic in the coming years, and this will place increasing pressure on the available crossings and adjacent intersections. We have identified and assessed the priority intersections to understand the nature and timing of these upgrades
- Traffic volumes are projected to increase over the coming years, with Great South Road experiencing substantial growth. Left unchecked, this would be inconsistent with desired outcomes for Ngaaruawaahia town centre to be a walkable, cyclable centre. Responding to this, we propose a range of interventions to improve safety and accessibility outcomes within the town centre
- Waka Kotahi's existing over-dimension route through Ngaaruawaahia is inappropriate, and we recommend that this be updated to use Great South Road. This requires further engagement with Waka Kotahi and the Heavy Haulage Association.
- We recommend investment in sustainable transport infrastructure, including
    - Severance by the North Island Main Trunk railway presents a challenge for walking, cycling, and micromobility. Limited cycling facilities exist within the townships, and investing in safe connections can reduce car dependency

- The current bus network will need to grow in step with the anticipated land use change, in order to meet the future needs of the growing communities. We recommend investment in building better public transport connections
- The existing rail network passes through Ngaaruawaahia, Hopuhopu and Taupiri but does not currently offer passenger rail services. There may be an opportunity to establish a transport hub in Ngaaruawaahia in the long term.

For the future transport network, we propose a range of projects to improve connections between key areas and improve access to sustainable transportation modes. We have staged the proposed investments across three time periods: short-term, medium-term, and long-term.

- The short-term plan includes creating a low-speed, accessible and equitable Ngaaruawaahia town centre and addressing safety concerns, while achieving the key move for an east-west walking and cycling route along Jesmond Street.
- In the medium term, the focus is on improving walking and cycling connectivity and handling increased traffic due to land use development.
- The long-term vision includes a transport hub in Ngaaruawaahia, which may include a train station, high-frequency bus services, expanded walking and cycling networks, and other transit improvements.

The proposals are presented in the table below:

**Table E1: Proposed investments**

| Short-term (0 – 5 years) | Medium term (5 – 15 years) | Long-term (15+ years) |
|---|---|---|
| **INTERSECTIONS** | | |
| Upgrade the existing **Great South Road intersection with Jesmond Street** to a roundabout to deliver connection to the town centre. | Upgrade the **Jesmond Street/Newcastle Street** intersection to manage cyclist and pedestrian safety and reduce speeds as well as deliver connection to the town centre | |
| Upgrade the **Great South Road intersection** with **Old Taupiri Road (south)** to roundabout | Upgrade the **Great South Road intersection** with **River Road** to roundabout | |
| Upgrade **Princess Street/GSR intersection** | Upgrade the **Market Street and Great South Road intersection** to reduce speeds through this intersection to help support the low-speed zone south of the intersection | |
| **LEVEL CROSSINGS** | | |
| Upgrade the pedestrian level crossing at **Jesmond Street** during the upgrade of the Jesmond Street intersections. | Upgrade the level crossing at **Old Taupiri Road, unless** north Ngaaruawaahia Hopuhopu is developed earlier | Upgrade level crossing at **Kainui Road, unless** the Taupiri development takes place prior. Then upgrade along with Taupiri development. |

**Table E1: Proposed investments**

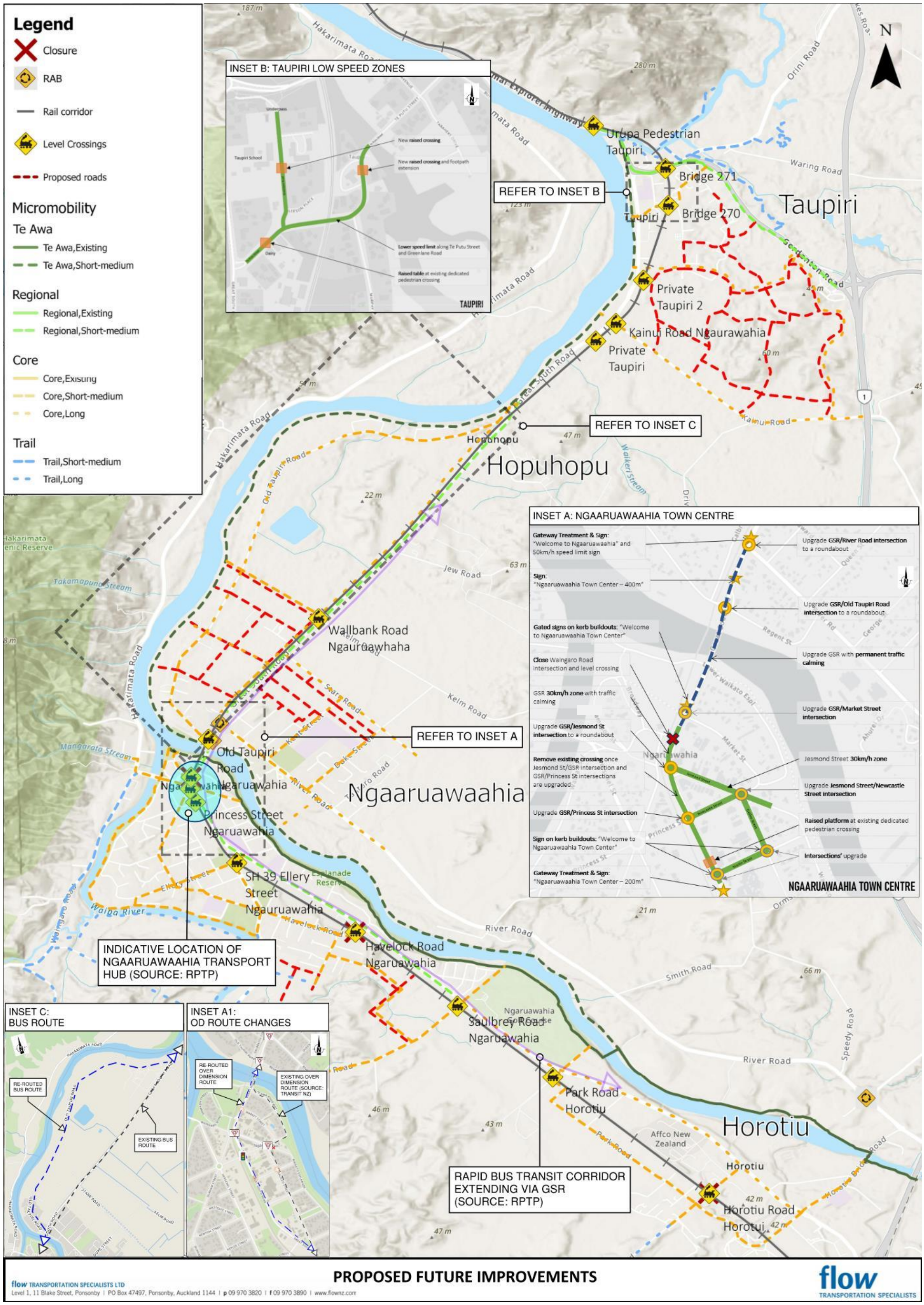
| Short-term (0 – 5 years) | Medium term (5 – 15 years) | Long-term (15+ years) |
|---|---|---|
| Closure of the **Horotiu Road** and level rail crossing following the completion of Kohia Drive, encouraging use of the grade separated crossing of the NIMT at Gateway Drive | | Close the level crossing at **Wallbank Road**, once growth cell is developed, providing access to Old Taupiri Road |
| Closure of the **Waingaro Road** level rail crossing to formalise the required heavy vehicle movements from the Waingaro Road Quarry and encouraging use of Princess Street (requires Princess Street/GSR intersection upgrade) | Upgrade the **Havelock Road** level crossing | Monitoring and review safety at the **Havelock Road** level crossing |
| Upgrade the level crossing at **Princess Street** when the level crossing at Waingaro Road, is closed | Upgrade the level crossing at **Saulbrey Road** | Monitoring and review safety at the **Saulbrey Road** level crossing |
| **NGAARUAWAAHIA TOWN CENTRE – OTHER IMPROVEMENTS** | | |
| Create a defined **entryway/town centre gateway** at the northern and southern extents with kerb buildouts, raised platforms and visual cues | Provide an **improved walking and cycling connection** across Great South Road and the NIMT to connect east and west Ngaaruawaahia | |
| Introduce a **speed limit of 30 km/h** for key town centre streets supported with engineering features | Provide an **improved walking and cycling connection** along Great South Road and across the Waikato River | |
| Provide a **low-speed environment** (30 km/h) within the town centre, including on sections of Great South Road, Market Street and Martin Street. | Traffic calming measures to be implemented on **Herschel Street** to discourage rat running via Herschel Street | |
| **Reroute the over-dimension vehicle route** along Great South Road | | |
| Undertake safety improvements to **existing pedestrian crossing points** of Great South Road within the town centre, either signalised crossings or raised zebra crossings. | | |

**Table E1: Proposed investments**

| Short-term (0 – 5 years) | Medium term (5 – 15 years) | Long-term (15+ years) |
|---|---|---|
| Interim traffic calming measures on sections of Great South Road through the town centre, using **tactical urbanism** to provide affordable yet effective traffic calming measures that support the low-speed limits, the low-speed environment | Provide more permanent traffic calming measures | |
| **TAUPIRI TOWN CENTRE** | | |
| Introduce a **lower speed limit** along Te Putu Street and Greenlane Road | | |
| Introduce some **raised platforms** to support lower speeds, especially at busier pedestrian crossing locations | | |
| **MICROMOBILITY, WALKING AND CYCLING ROUTES – Refer Part B Report** | | |
| **Regional** routes delivered in short to medium term | | |
| **Te Awa** routes delivered in short to medium term | | |
| Some **Core** routes | | Remainder **Core** Routes to the full extent shown in the Micromobility Assessment |
| Some **Trail** Routes | | Remainder **Trail** Routes to the full extent shown in the Micromobility Assessment |
| **PUBLIC TRANSPORT** | | |
| Work with WRC on infrastructure improvements to support bus services along Great South Road. | Work with WRC to deliver Bus Rapid Transit (BRT) to support land use development | Reinstate the train station at Ngaaruawaahia to align with the Hamilton to Auckland (H2A) Corridor Plan. |
| | | Upgrade the existing bus stops and enable the rapid transit route, aligning with the Hamilton Waikato Metropolitan Spatial Plan (HWMSP). |

All of the proposals for the study area are presented in the figure on the next page.

**Figure ES1: Proposed future improvements**



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# APPENDICES

APPENDIX A SAFETY ASSESSMENT AND EXISTING NETWORK ENVIRONMENT

APPENDIX B FUTURE NETWORK ENVIRONMENT

APPENDIX C INTERSECTION ASSESSMENT

APPENDIX D NIMT AT GRADE CROSSING REVIEW

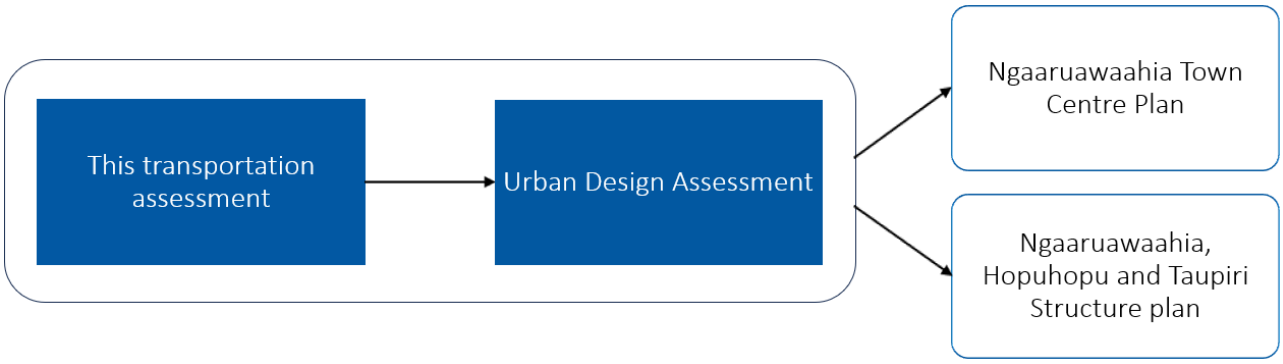
APPENDIX E INTERSECTION UPGRADES

APPENDIX F EXISTING TRANSPORT MAPS

# 1 THE PURPOSE OF THIS TRANSPORT ASSESSMENT

Waikato District Council (WDC) has commissioned Flow to undertake a transportation assessment for Ngaaruawaahia, Hopuhopu, and Taupiri to understand how the future growth (projected to 2050) will impact the existing roading and walking/cycling network in these areas. The findings and recommendations of this assessment will guide the Urban Design Assessment for these areas as shown in Figure 1. Both assessments will inform the development of the Ngaaruawaahia Town Centre Plan and the Ngaaruawaahia, Hopuhopu and Taupiri Structure Plan, which WDC is developing in parallel.

**Figure 1: Where this reports fits with other strategic documents**




This Transportation Assessment has two parts:

- **Part A** (this report) focuses on the traffic modelling and assessment of the road network projected for 2050 for Ngaaruawaahia, Hopuhopu, Taupiri, and Horotiu.
- **Part B** provides a high-level assessment of the Micromobility/Walking/Cycling connectivity within and to/from the various townships. This assessment takes into consideration the findings from Part A.

Together, both parts of the assessment provide a suite of transport interventions needed to achieve the structure plan and town centre strategy outcomes.

The transportation assessment takes into account that:

- the towns of Ngaaruawaahia, Taupiri, and Hopuhopu have experienced significant population growth beyond previous estimates, along with expanded industrial areas, new growth cells, and zoning/density changes.
- further population growth is beyond what was anticipated when the previous transport assessment was completed for the study area[1], in 2014.
- the changes in local traffic movements have also been noted since the completion of the Huntly and Hamilton Sections of the Waikato Expressway.

To ensure investment into infrastructure is aligned with and is sufficient to support the anticipated growth, we have considered two time periods being:

[1] Ngāruawāhia and Surrounds Structure Plan: Integrated Transportation Assessment, AECOM, September 2014

- Short-term investments are proposed to be delivered in 0-5 years
- Medium-term investments are proposed to be delivered in 5-15 years.
- Long-term investments are proposed to be delivered beyond 15 years.

# 2 THE STUDY AREA

The area considered for this transport assessment is shown in Figure 2. This includes all four communities of Ngaaruawaahia, Taupiri, Hopuhopu and Horotiu, bounded by the surrounding State Highway network to the east and Waikato River and Waipa River to the west.

**Figure 2 – Transport assessment study area**

# 3 THE STRATEGIC DIRECTION

To inform the transport assessment of the study area, we have considered a range of National, Regional and Local strategies as summarised in Table 1.

**Table 1: National, Regional and Local strategies used to inform this transport assessment**

| | |
|---|---|
| National | Government Policy Statement of land transport 2021-2031 |
| | National Land Transport Plan 2021-2024 |
| | Emissions Reduction Plan 2023 |
| | New Zealand Upgrade Programme – Transport |
| | Road to Zero |
| | Keeping Cities Moving: A Plan for Mode Shift |
| | Arataki Version 2 |
| Regional | Waikato Metro Spatial Plan |
| | Waikato Regional Land Transport Plan 2021-2051 |
| | Future Proof Sub-regional Growth Strategy |
| | Hamilton-Waikato Metro Area Mode Shift Plan 2020 |
| | Regional Public Transport Plan 2022-32 |
| Local | Waikato 2070 |
| | Waikato District Blueprints |
| | Connectivity Strategy 2023 |

## 3.1 Outcomes sought

The key takeaway from Waikato's transport strategies is that the urban areas of Waikato region have begun transitioning away from reliance on private car travel. Increasing investment in public transport, walking, cycling and micromobility unlocks opportunities for communities to get around using these modes.

This transition will not be a fast one, and private car travel is likely to continue to be the primary mode of travel for the next generation. Private car travel will still be necessary to meet the travel needs of these areas, while they are considered urban, they are historically rural communities.

The transport environment will need to support and move in step with this transition and support the development of alternative modes of transport. However, it is essential to recognise that transport by car remains a reality for most residents in the area, and for many of those travelling into Hamilton city and surrounding communities across the wider district.

## 3.2 Strategic context - National strategies and plans

Waka Kotahi's **Road to Zero**[2] outlines the Transport Agency's plan for reducing the number of deaths and serious injuries (DSI) on New Zealand's roads to zero. The study area recorded 20 DSI's over the past 5 years, with the past 10 years showing a **downward** trend.

Waka Kotahi's **Keeping Cities Moving**[3] outlines the Transport Agency's plan for reducing reliance on private car travel within New Zealand's growing cities. Private car travel currently accounts for 91% of the total distance travelled in main urban centres, and the plan acknowledges that this is unsustainable within constrained urban environments with growing populations. The plan's objective is to **improve wellbeing** in areas like Ngaaruawaahia, Taupiri, Hopuhopu, and Horotiu by growing the opportunity for people to travel by bike, on foot or by public transport.

The **National Policy Statement on Urban Development (NPS-UD)**[4] has required that policy statements and district plans enable realisation of development capacity for tier 1 urban environments and existing and planned rapid transit stops. Hamilton and the adjacent District Councils, including WDC, are collectively classed by the NPS-UD as a Tier 1 urban environment. Therefore, the study area's town centres are subject to the NPS-UD's rezoning requirements.

The Ministry for the Environment's **Te hau mārohi ki anamata: Aotearoa New Zealand's Emissions Reduction Plan**[5] sets a target to reduce the total vehicle kilometres travelled (VKT) by light vehicles 20% by 2035. Achieving a VKT reduction against a background of population growth and an increasing demand for travel, will require significant change in how the study area's transport system operates.

## 3.3 The strategic direction of Waikato's transport network

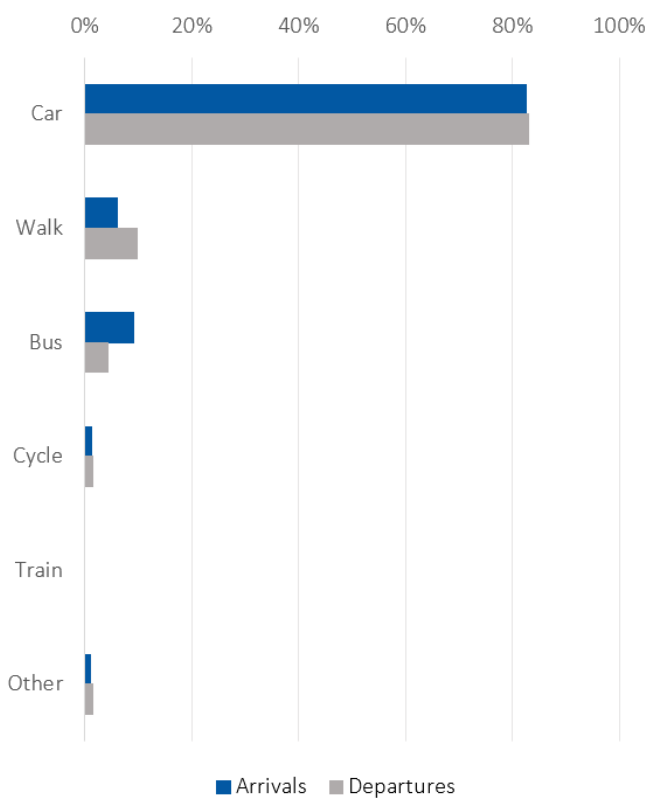
Ngaaruawaahia, Taupiri, Hopuhopu, and Horotiu's existing transport network has developed around private car travel, and this is reflected in existing travel behaviours. In 2018 travelling to work and school included

- 85% via car, truck, or van
- 6% by foot
- 1% by bike or rail
- and 7% by bus (of which this is entirely journey to school).

Figure 3 shows the arrival and departure modes of the study area based on Statistics New Zealand 2018 Census Journey to work and education data.

[2] Waka Kotahi. 2019. Road to Zero – New Zealand's Road Safety Strategy 2020-2030
[3] Waka Kotahi. 2019. Keeping cities moving – increasing the wellbeing of New Zealand's cities by growing the share of travel by public transport, walking and cycling
[4] New Zealand Government. May 2022. National Policy Statement on Urban Development 2020
[5] New Zealand Government. June 2022. Te hau mārohi ki anamata – Towards a productive, sustainable and inclusive economy. Aotearoa New Zealand's first emissions reduction plan

**Figure 3: Arrival and departure mode share**




Within the study area:

- 500 people travel into the area for work or school, 1,850 people live in the area and travel elsewhere for work & school, while a further 1,800 people both live & work/study within the area.
- people arrive from 26 different areas, the largest external origin being Huntly East (70 people — 3% of arrivals). The most common way to arrive is drive a private car, truck or van (83%).
- people depart to 27 different areas, the largest external destination being Te Rapa South (354 people — 10% of departures). The most common way to depart is drive a private car, truck or van (83%).

The above mode shares are set to change, with several strategic shifts in transport policy and investment beginning to take effect. The following set out the direction for these shifts:

- Waikato Regional Land Transport Plan 2021-2051
- Waikato Regional Public Transport Plan 2022-2032
- Future Proof Strategy, 2022
- Hamilton-Waikato Metro Area Mode Shift Plan, 2020
- Future Proof – Hamilton-Waikato Metro Spatial Plan and Hamilton to Auckland (H2A) Corridor Plan, 2021
- Future Proof – Hamilton-Waikato Metro Spatial Plan Transport Programme Business Case, 2022
- Waikato 2070 and Proposed District Plan
- Town centre urban design workstream currently being undertaken by WDC.

The **Waikato Regional Land Transport Plan 2021-2051**[6], sets the strategic vision for the Waikato region's transport network over the next 30 years. The region's strategic approach includes guidance on integrating land transport planning and investment in the Waikato region with a focus on

- Strategic corridors

[6] Waikato Regional Land Transport Plan (RLTP) 2021-2051

- Road safety
- Access and mobility.

The **Future Proof Strategy** is a 30-year growth plan for managing growth and development in the Hamilton, Waipā, Waikato, and Matamata-Piako regions. In 2022, the strategy was updated to include the **Hamilton to Auckland (H2A) Corridor Plan**. One of the H2A Corridor Plan's initiatives is the **Hamilton-Waikato Metropolitan Plan (Metro Spatial Plan).**

The Hamilton-Waikato Metro Spatial Plan proposes an integrated rapid public transport network for the Hamilton-Waikato metropolitan area (which includes the study area). This network will connect major growth centres and have a comprehensive active mode network to support it. The plan aims to guide future urban growth towards more sustainable, resilient, and affordable settlement patterns in or near public transport centres. These public transport centres are planned to be supported by well-connected arterial roads and active mode networks.

The **Metro Spatial Plan Transport Programme Business Case** proposes long-term plans for rapid transit corridors to promote compact urban form aspirations of the Hamilton-Waikato metropolitan area. It recommends gradual upgrades from bus service provision to bus lanes and bus priority to bus rapid transit outcomes as per demand. RT1, connecting Ngaaruawaahia, Hopuhopu and Horotiu to Rotokauri, Hamilton central, Hamilton airport and Ruakura, is one of the suggested rapid transit corridors.

The strategy highlights the role quality denser housing options will play in providing integrated land use to develop thriving communities.

Supporting Waikato's transition towards sustainable transport options and Keeping Cities Moving, is the **Hamilton-Waikato Metro Area Mode Shift Plan – 2020**[7]. This strategy's goals include

- shaping urban form
- making shared and active modes more attractive
- influencing travel demand and transport choices.

The strategy prioritises investment in a **frequent and fast bus network**, to create a public transport network that is competitive with cars. Supporting this investment will be investment in **active modes**, creating high quality and inclusive infrastructure that is suitable for all ages and abilities.

The implication of the investment in walking and cycling is that over time, Waikato's residents will have increasing opportunities to carry out trips on foot and on bikes. This in turn will reduce reliance on private car travel for some trips.

How the mode shift to public transport will be implemented in practice is presented in the **Waikato Regional Public Transport Plan 2022-2032**[8] **(RPTP).** This plan includes a Primary interchange at Ngaaruawaahia and a Key interchange at Horotiu. Potential for **bus rapid transit corridors** extending **via**

[7] Hamilton-Waikato Metro Area Mode Shift Plan
[8] Waikato Regional Public Transport Plan 2022-2032

**Great South Road** from Te Awa Lakes to Huntly is highlighted, as is passenger rail which would likely integrate with the Primary interchange in Ngaaruawaahia.

One driver of the RPTP is presented in the **Future Proof – Hamilton-Waikato Metropolitan Spatial Plan (HWMSP), Hamilton to Auckland (H2A) Corridor Plan**[9] and **Metro Spatial Plan Transport Programme Business Case.** The H2A Plan suggests Precinct Planning be used to help facilitate transit orientated development.

The recently released **Proposed Waikato District Plan** (Decisions Version) along with **Waikato 2070**[10] provides opportunity for:

- residential expansion of Ngaaruawaahia towards the west and south. Longer term, there are options to expand to the east, as well as the south-west. The town centre can develop medium-density residential with the potential for multiple levels and some intensification.
- residential expansion of Taupiri towards the south with industrial indicated east.
- Future urban zoning in Hopuhopu
- industrial development in Horotiu

The **Ngaaruawaahia, Taupiri and Hopuhopu Town Concept Plan** is being developed and will set out how the streets and public spaces of Ngaaruawaahia, Taupiri and Hopuhopu will change over time to create higher quality urban environments. This will change how residents and visitors get around and experience the town centres. On key streets, this will require a reduction in the space allocated to private cars and parking. The key moves in Ngaaruawaahia relevant to this transport assessment are:

- **Walking and Cycling:** Key key moves are to provide **north-south and east-west walking and cycling connections** along Great South Road providing a connection across the Waikato River and along Jesmond Street, crossing Great South Road and the North Island Main Trunk rail line at the western end and connecting into the Te Awa River Ride on the eastern end.
- **Transport Hub:** A longer-term key move is a **transport hub in Ngaaruawaahia**, either with the possibility of a train station or high-frequency bus services, with associated **park-and-ride** facilities. The long-term strategy would also provide more direct connections for buses to and from the transport hub whilst also completing a walking and cycling network to provide alternatives to cars.
- **Safety at Waingaro Road:** The high heavy vehicle movements via Waingaro Road rail level crossing presents a safety concern and closure of this crossing is anticipated.

The key moves in Taupiri relevant to this transport assessment are:

- Introduce a lower speed limit along Te Putu Street and Greenlane Road
- Introduce raised platforms to support lower speeds, especially at busier pedestrian crossing locations.

[9] Hamilton-Auckland Corridor Plan & Implementation Programme
[10] Waikato 2070 Waikato District Council Growth & Economic Development Strategy

## 3.4 Waikato's climate change response

WDC has acknowledged urgent need for response to climate change in 2017 and the **WDC Climate Response and Resilience Action Plan Framework**[11] is council's response to that declaration. The plan focuses on reducing emissions towards a carbon zero 2050. The transport component of the plan includes prioritising funding for public transport, walking, cycling, micromobility and Travel Demand Management programmes.

[11] WDC Climate Response and Resilience Action Plan

# 4 TRANSPORT MODELLING AND SPATIAL CONTEXT

We have used the Waikato Regional Transportation Model (WRTM) to inform this transport assessment. The model has been calibrated and validated to 2018 conditions with forecast models provided for 2031 and 2051 for daily, morning peak, inter peak, and evening peak periods.

Table 2 below provides the WRTM land use assumptions considered for this study compared to Waikato 2070 (W2070) forecasts for 2050. Comparing the base assumptions identifies a minor difference in spatial areas although this may also be attributed to the slight difference in base year.

**Table 2: Total population estimated used for this transport assessment**

| Growth Cells | WRTM 2018 | W2070 2020 | WRTM 2051 | W2070 |
|---|---|---|---|---|
| **Ngaaruawaahia** | 6,700 | 7,000 | 10,500 | 10,500 |
| **Hopuhopu** | 500 | Inc in above | Inc in above | Inc in above |
| **Taupiri** | 400 | 500 | 4,000 | 4,000 |
| **Total** | 7,600 | 7,500 | 14,500 | 14,500 |

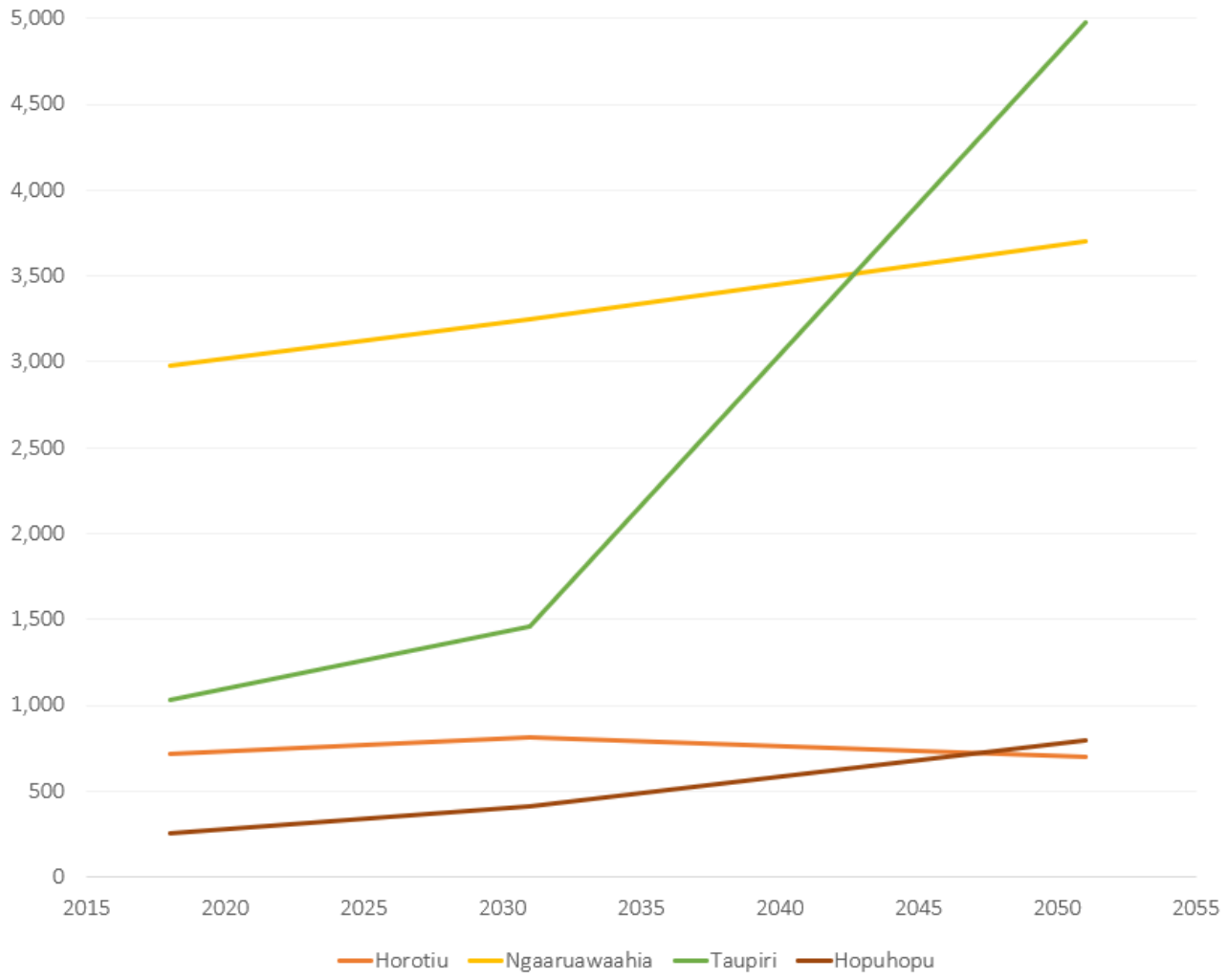
We have provided project specific land use updates to WRTM based on growth cell projections following consultation with WDC. Figure 6 indicates the location of the growth cells within the study area.

## 4.1 Growth cells and modelling assumptions

Consultation with WDC has highlighted the need for considerations for an updated forecast land use scenario for this study. The updated forecast population growth for the growth cells from 2018 to 2031 and 2051 population are shown in Figure 4.

These projections consider the fully realised development capacity of the growth cells within the study area to 2070 as requested by WDC. We have manually adjusted the identified growth cells in WRTM to align with WDC's aspirations.

**Figure 4: Updated population growth projections for this transport assessment**




Modest growth is anticipated for Horotiu, Ngaaruawaahia, and Hopuhopu from 2018 to 2051, while forecasts for Taupiri anticipate a significant increase in population over that period. This aligns with subdivision consents lodged for the area.

# 5 REVIEW AND FINDINGS OF THE TRANSPORT ENVIRONMENT

We outline in the sections below the review and findings of the transport modelling and assessment for these areas.

## 5.1 Surrounding land use and growth cells

Figure 5 overleaf shows the surrounding land use from the Proposed Waikato District Plan Zoning - Decisions Version.

The Proposed District Plan aligns with the growth cells identified by Waikato 2070 in Ngaaruawaahia and Taupiri being zoned general residential zone (GRZ). Hopuhopu includes a special purpose zone which has been proposed through the PDP from Waikato-Tainui. Similarly, Horotiu is zoned for general industrial (GIZ) due to the expansion of the Ports of Auckland inland port.

**Figure 5: Proposed Waikato District Plan Zoning - Decisions Version[12]**

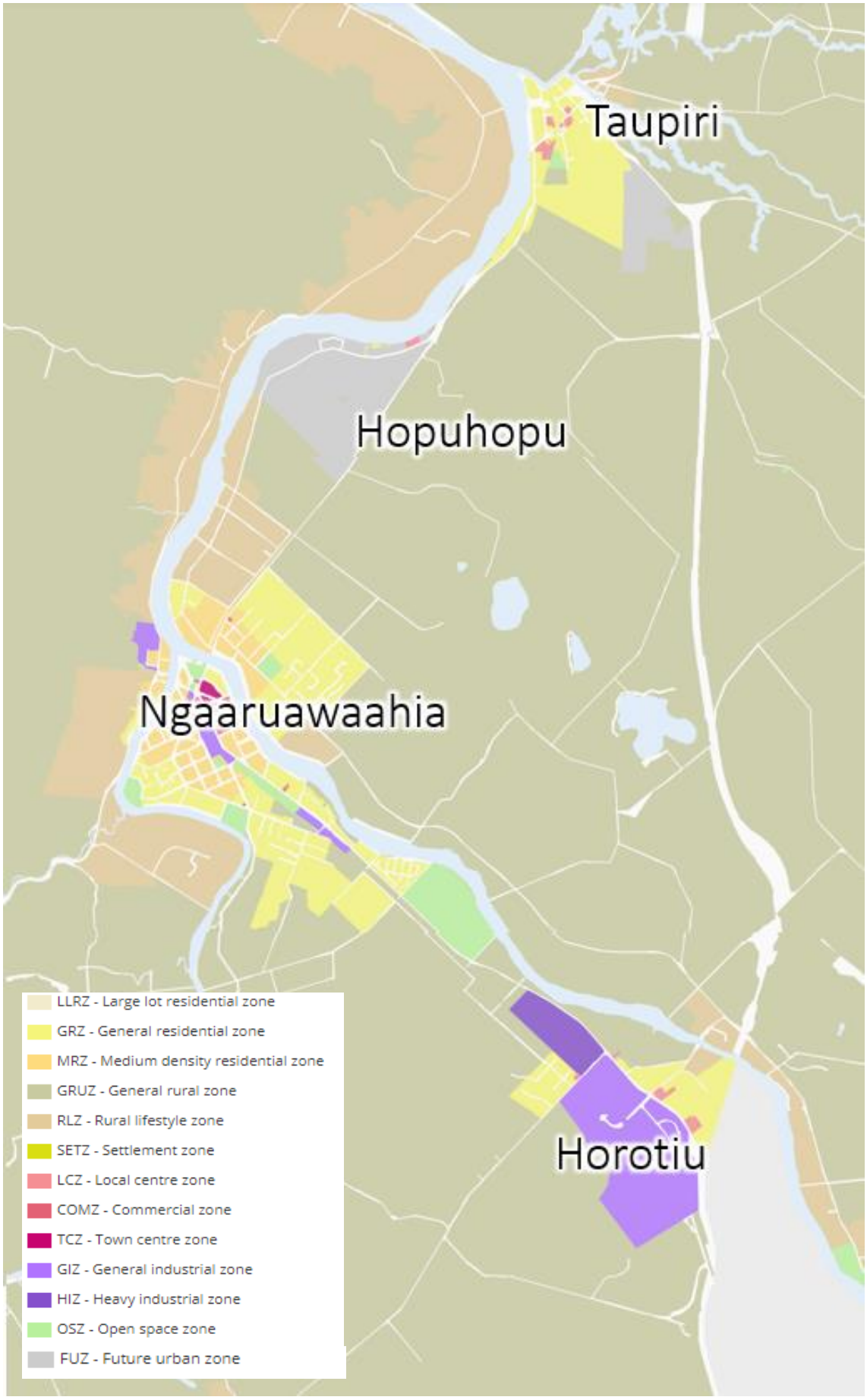
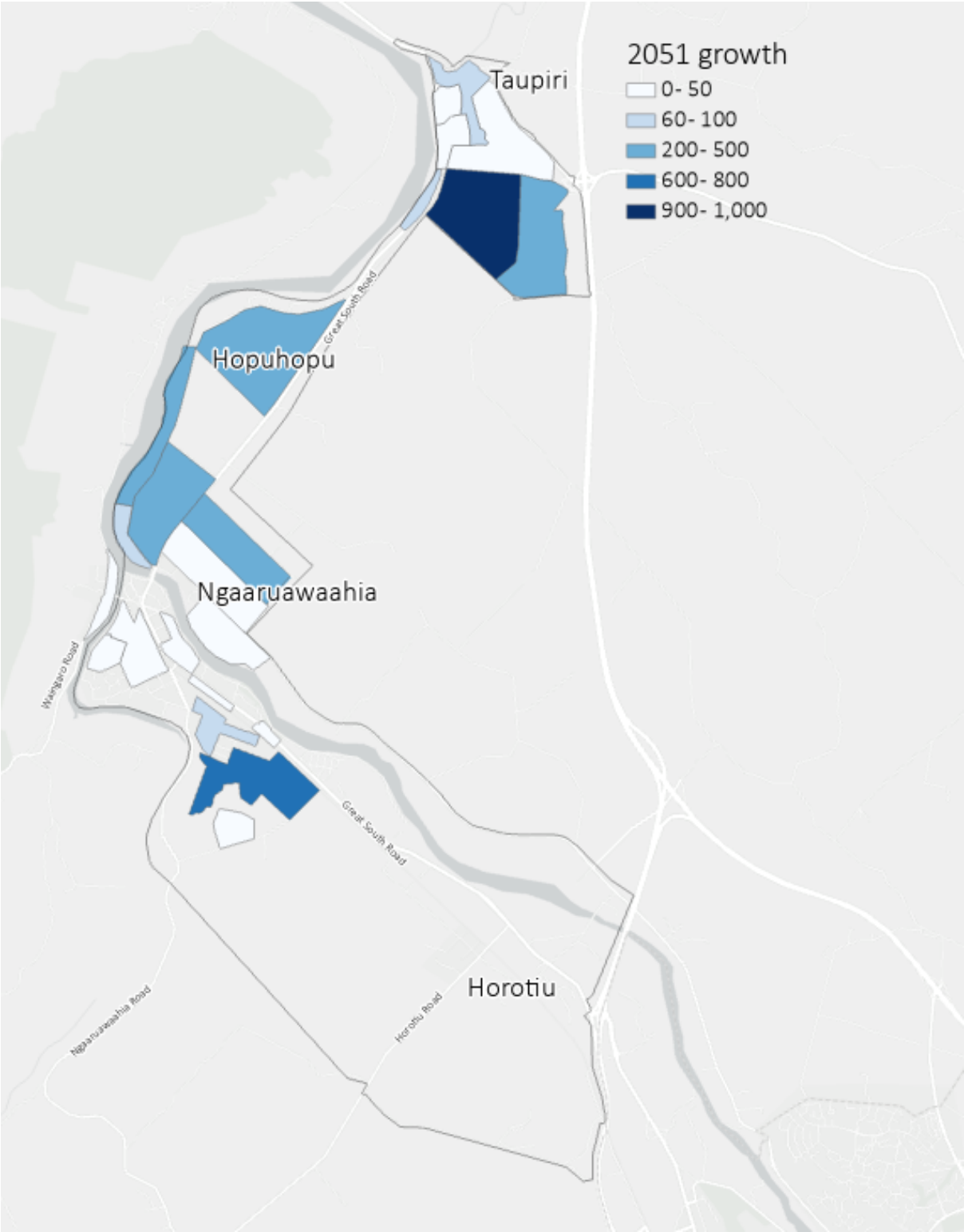


Figure 6 shows the locations and anticipated population of the growth cells for 2051.

**Figure 6: Growth cell anticipated population growth to 2051**




As mentioned previously, significant growth is expected within Taupiri to 2051. Although the indicative growth cell has excellent access to the State Highway network, it currently lacks appropriate public

[12] Accessed September 2023

transport, walking and cycling infrastructure. This infrastructure is crucial to align with the regional strategies set out in Section 3. There is an opportunity to ensure mode shift targets are achieved by setting a direction to invest in alternative infrastructure, such as building better public transport connections and improving walking and cycling infrastructure, to encourage people to use these modes of transportation instead of relying on private vehicles.

## 5.2 Increasing demand for car trips

The anticipated changes in land use are predicted to result in an increase in the volume of vehicles within the study area. Appendix B provides the full WRTM outputs, illustrating the growth in vehicle volumes. Although only minor changes to the proposed vehicle network were considered in the WRTM run, the outputs suggest that the network operates efficiently without significant intervention.

## 5.3 Place value considerations

Great South Road, south of Taupiri, was previously classified as an arterial road in the One Network Road Classification (ONRC). The ONRC has now reclassified Great South Road as a primary collector road. Similarly other roads in and around the Ngaaruawaahia town centre have been classified based on their movement function in the network.

Waka Kotahi's One Network Framework (ONF) classification considers both the movement and place value of a road segment. Within urban areas and particularly through town centre environments, such as Great South Road through Ngaaruawaahia, that place function can be significant. As a result, these roads need to be classified based on their place and movement function in the network. This will ensure that any future upgrades will assist in achieving the desired place value function of the roads.

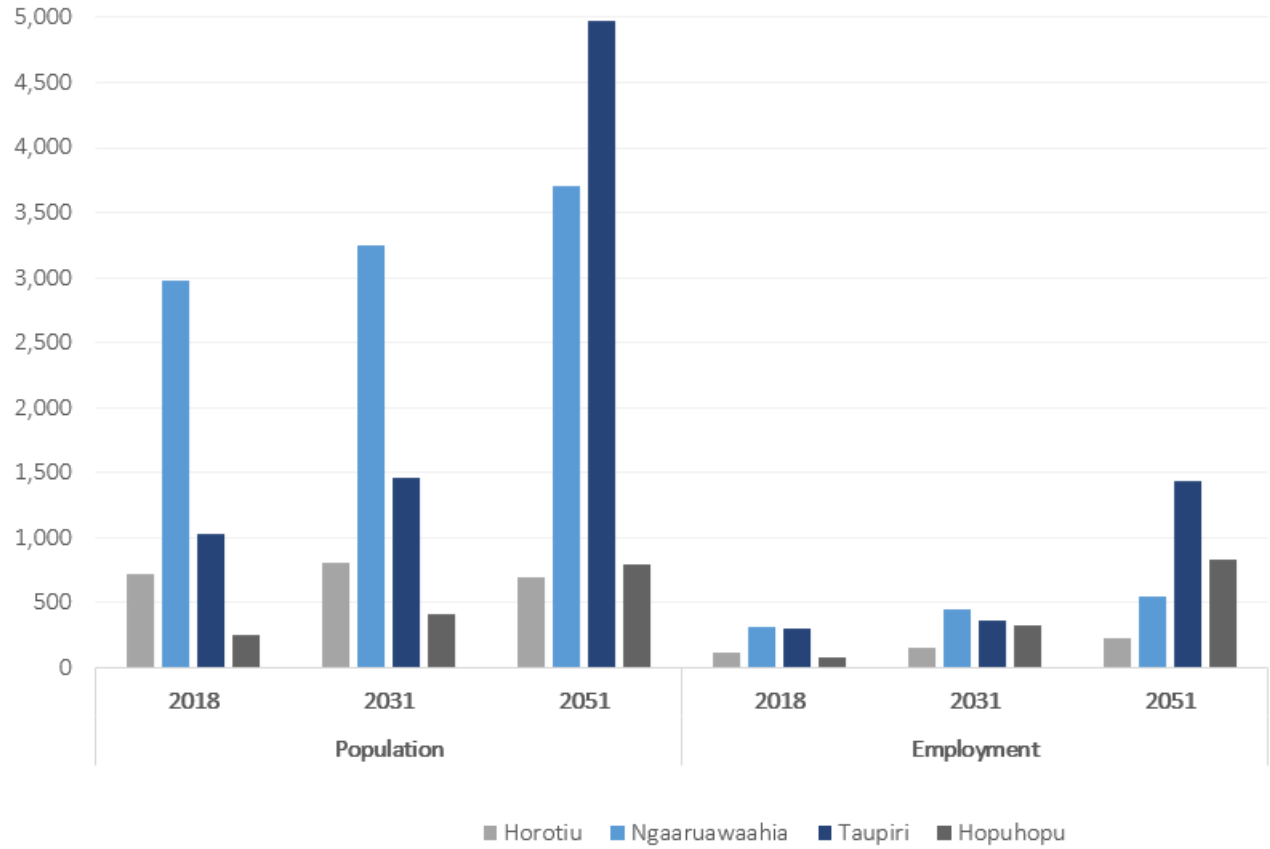
## 5.4 Population and employment growth

The population of Ngaaruawaahia, Taupiri, Hopuhopu, and Horotiu is currently around 7,500 people[13], and there has been significant growth over a short period of time with new dwelling building consents increasing year on year.

WDC projections suggest there will be continued rapid growth within growth cells (shown in Figure 6) with the population doubling within these areas from around 5,000 residents to approximately 10,000 residents by 2050. The projected growth in population and employment within the growth cells is summarised in Figure 7.

[13] Waikato 2070

**Figure 7: Population and employment growth cell projections based on the development scenario's WRTM zones**




The above indicates that Taupiri is projected to experience significant growth and have a larger population growth compared to the other townships within the study area.

## 5.5 The effect of traffic growth on the network

We reviewed the WRTM outputs and based on the traffic flows forecast by the model, identified that there will be an increase in volume on most roads due to growth. This notably includes:

- an increase on Great South Road south of River Road
- an increase on Herschel Street and Princess Street due to the proposed closure of the Waingaro Road level rail crossing to traffic
- a notable increase on Great South Road south of Saulbrey Road, and similarly a further increase south of Gateway Drive

However, we also noted that the model predicts a demand **reduction** in some areas (relative to the 2018 base model):

- the opening of the Waikato Expressway was expected to lead to a decrease in traffic north of Taupiri (and indeed, has)
- the new connection to Saulbrey Road will cause a reduction in traffic on Havelock Rd

Following the above, we found that the following are the key issues to consider regarding the general traffic movement in the network:

- existing daily traffic volumes are relatively low on Great South Road since the opening of the Ngaaruawaahia Section of the Waikato Expressway. However, they are predicted to increase by 20% in the next 5 to 10 years and 50% in the next 10 to 15 years due to the land use changes.
- without changes to the road network, traffic volumes would still be manageable on Great South Road. However, this would result in a very busy and vehicle dominated road, that may not be consistent with the desired place function within the town centre.

Providing traffic calming for cars and heavy vehicles as well as signalisation of intersections across level rail crossings is advisable both for safety and capacity reasons in the future.

See Appendix B for full WRTM outputs.

## 5.6 The effect of traffic growth on intersections

We have analysed the outputs from the WRTM, to identify the intersections where the Level of Service (LOS) for general traffic declines in 2031 and 2051, relative to today. Based on the LOS mapping, we found that:

- LOS for general traffic declines as we approach Hamilton City, which is observed in both morning and evening peak periods
- predicted LOS are impacted by rail crossing closures resulting in rerouting of trips.

It is worth noting that our assessment only considers vehicles, and that traffic volumes on Great South Road through Ngaaruawaahia and Taupiri have fallen significantly since the Ngaaruawaahia and Huntly sections of the Waikato Expressway were completed. In 2013, daily traffic volumes on Great South Road were in the order of 18,000 vehicles/day[14], and this has fallen to around 9,000 vehicles/day in 2023[15]. As a result, these intersections currently operate with surplus capacity and are likely to continue to perform well for general traffic for some time.

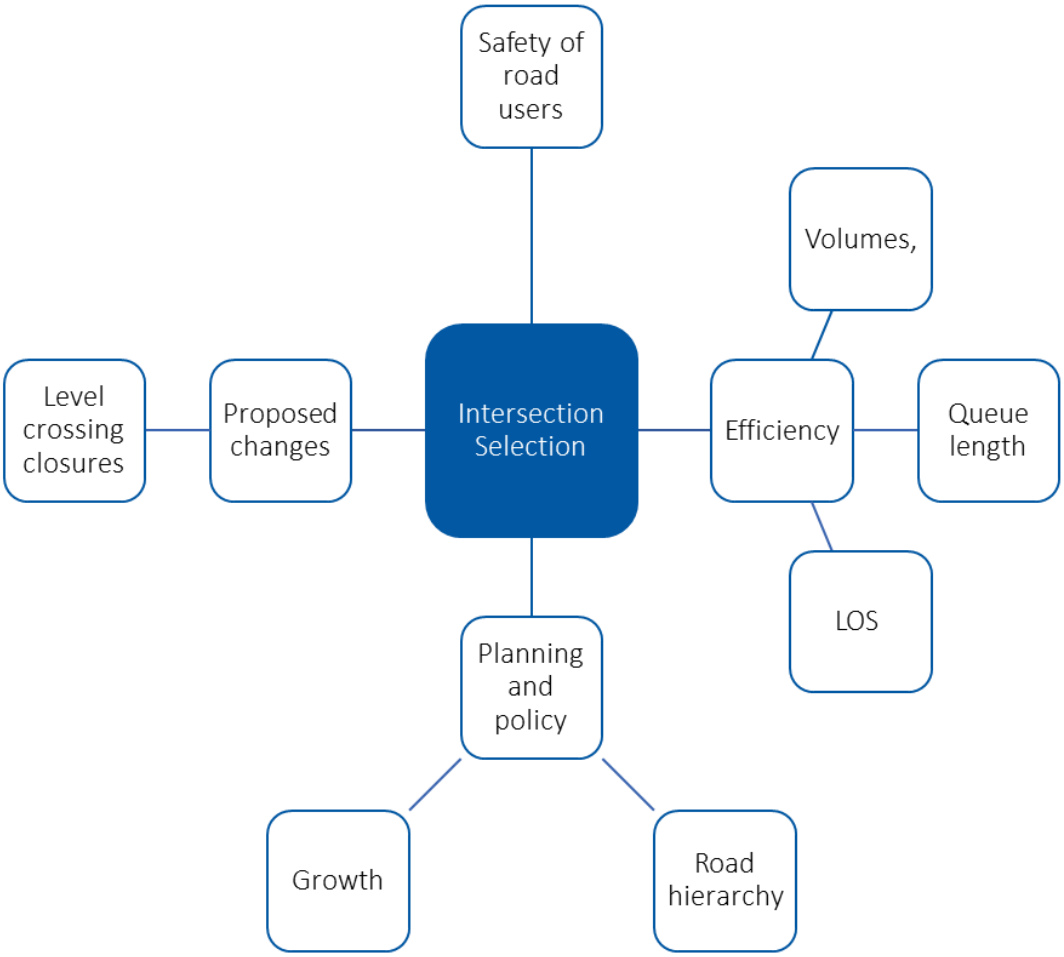
We have summarised in Figure 8 the considerations to identify the following intersections for further assessment:

- Princess St / Great South Road / Newcastle St due to queuing concern (level crossing safety) and traffic reassignment due the proposed closure of the Waingaro Road level crossing
- Old Taupiri Rd (south) / Great South Road due to queuing concern (level crossing safety) and increasing demand from residential development
- River Road / Great South Road
- Saulbrey Rd due to traffic reassignment based increasing demand from residential development and changes at rail level crossings

We presented to WDC the above set of intersections for traffic modelling.

[14] https://www.nzta.govt.nz/assets/resources/state-highway-traffic-volumes/docs/SHTV-2011-2015.pdf
[15] https://www.waikatodistrict.govt.nz/docs/default-source/services-and-facilities/roading/traffic-and-loading-_all-roads-nov16.pdf?sfvrsn=a471b6c9_18

**Figure 8: Considerations to detailed intersection assessment**




As Saulbrey Road is included in Council's long-term plan this intersection was not included in the intersection assessment. The Great South Road/ Old Taupiri Road (north) intersection was been included to confirm if the findings of the Hopuhopu Redevelopment's ITA regarding the efficiency of this intersection was still valid, using the latest WRTM traffic flows.

Traffic modelling has been carried out in SIDRA to assess the operation and performance of the above intersections, and inform transport improvements to ensure safety and efficiency outcomes are achieved.

Appendix E provides the detailed traffic modelling assessment for these intersections, as well as wider Multi Criteria Analyses (MCAs) of the impacts of each intersection treatment option.

## 5.7 Heavy vehicles – constraints and opportunities

We have reviewed the existing transport environment for heavy vehicles including Waka Kotahi's High Productivity Motor Vehicle (HPMV) and over-dimension routes. The following are the key considerations that we have identified regarding the heavy vehicle movement in the network:

- Great South Road is used by a small proportion of heavy vehicles on a daily basis (around 4%)[16]. These heavy vehicles are primarily to/from the industrial area and inland port at Horotiu, Waingaro Road Quarry, and to service local businesses within Ngaaruawaahia.
- Great South Road currently carries up to 350 heavy vehicles per day through the Ngaaruawaahia town centre
- The current over dimension route has not been updated since September 2002[17] – well before the completion of the Waikato Expressway.
    - The main route runs through the town centre via Galileo Street, Market Street, Lower Waikato Esplanade and Great South Road. This route appears to be a mapping error, as there is no connection between Lower Waikato Esplanade and Great South Road. The intended route may have been Market Street, but regardless, the implication is that several intersections along this route need to accommodate the swept path of large vehicles.
    - If this route is diverted to run via Great South Road, there would be opportunity for tighter intersections especially at the intersection of Newcastle Street and Jesmond Street.
- An existing consent requirement for the Waingaro Road Quarry requires trucks to access Great South Road via Princess Street, and this is reflected in a second over-dimension route for Ngaaruawaahia via Ellery Street, Herschel Street and Waingaro Road.
- Currently pre-approved HPMV routes include;
    - Great South Road from Taupiri to Hopuhopu, plus Gordonton Road
    - Within Ngaaruawaahia: Great South Road (south of Ellery Street), Ellery Street, Whatawhata Avenue, Ngaruawahia Road, Herschel Street and Waingaro Road.

For an assessment of traffic reassignment due to level rail crossing closures, refer to Appendix D. Existing over-dimension routes are included in Appendix F.

## 5.8 Buses – constraints and opportunities

We have identified the following key constraints and opportunities to consider for the bus network:

- Bus stop pairs are located along Great South Road in Ngaaruawaahia, Taupiri, and Horotiu. These bus stop pairs provide access to service route 21 and 44 (ie to Hamilton and Huntly/Pukekohe). The RPTP identifies Great South Road as a future Bus Rapid Transit (BRT) network with a key interchange at Horotiu and primary interchange at Ngaaruawaahia.
- As a minimum, investment in public transport will need to keep in step with the anticipated population growth. Greater investment will be required if mode shift and emission reduction outcomes are to be reached.

[16] Waka Kotahi's Mobile Road database
[17] Waka Kotahi Over dimension Route 6-2 Ngāruawāhia

- School buses are generally provided by the Ministry of Education, which encourages a relatively high mode share for journey to school trips. This helps to achieve equitable outcomes for the study area, but predominantly benefits rural residents and students travelling to Ngaaruawaahia High School from Taupiri and Horotiu.
- WDC has identified a safety issue concerning pedestrians, in particular children, from the Hopuhopu area who cross the railway track and Great South Road near the intersection of Old Taupiri Road (north) to access the bus stop on Great South Road. To address this issue, we recommend that the bus route is rerouted through Old Taupiri Road in the long term once Hopuhopu develops. This would eliminate the need for people to cross Great South Road and provide shorter first leg trips for Hopuhopu residents.

See Appendix A for more details on the existing bus network.

## 5.9 Rail – constraints and opportunities

The rail network in the study area has some key constraints and opportunities to consider:

- The North Island Main Trunk (NIMT) follows the Waikato River and hence passes through each community within the study area. As a result, there are level crossings in each community that can pose a safety risk. However, it also provides an opportunity to establish a Transport Hub in Ngaaruawaahia making rail services potentially accessible to people.
- Currently residents are unable to use existing rail services for travel purposes since passenger rail services are not currently available to these communities.
- Te Huia currently operates return trips twice daily on weekdays and once on Saturdays with the closest stops being Huntly and Rotokauri. The current journey time between Huntly and Britomart is around 2 hours. In the medium or long term, Te Huia could possibly stop in Ngaaruawaahia, particularly since the historic train station area is available within Kiwi Rail's designation. We recommend a future rail station be located close to Ngaaruawaahia town centre, to maximise the station's accessibility by walking, cycling and micromobility.
- However, if additional stations are to be established in other communities land acquisition will be required.

## 5.10 Micromobility – constraints and opportunities

The following are the key constraints and opportunities to consider regarding the walking, cycling and micromobility network:

- The NIMT represents a major severance for walking, cycling and micromobility trip.
- There are uncontrolled pedestrian crossings of the NIMT throughout the communities.
- There are limited cycling facilities in and around the communities, with the Te Awa River Ride between Ngaaruawaahia and Cambridge being the only high-quality, separated cycle route available.

- The WDC Connectivity Strategy (2023) outlines the existing and proposed cycling and walking trails in the Waikato District. The Strategy classifies these trails according to priority and function within the network.
- Current WRTM projections indicate that car mode share is anticipated to remain consistent, with traffic volumes increasing in step with increased land use development (in contrast to the National and Local strategies discussed in Section 3). However, providing safe walking and cycling connections within and between the townships will help reduce car dependency. This will lead to less vehicle-dominated urban areas and more people-focused streets.
- The Te Awa River Ride forms part of Te Araroa – New Zealand's national walking trail from north to south. It is a significant community asset, and we consider it likely that a proportion of visitors will walk and cycle into the communities, using the Te Awa River Ride.

See Part B for the Micromobility Assessment.

## 5.11 Spatial constraints and opportunities

Some of the existing urban streets within each township are relatively wide, with for example Great South Road being around 17 m wide through Ngaaruawaahia – an outcome from this road's former state highway function. Large paved areas of roads have a negative impact on the quality of our public places, and conflict with the outcomes sought by the Town Centre Plan. They result in large quantities of stormwater runoff, increase the temperature of urban areas, and reduce the opportunity for the Place function of streets.

There is an opportunity within each township to reallocate existing road space to better support the Place function, in turn enabling better and healthier use of public space. This approach is consistent with National, Regional and Local strategies aimed at improving the wellbeing of communities. Similarly, repurposing paved area as permeable and planted street area responds to both the Place function, and to our climate response.

## 5.12 Speed environment – constraints and opportunities

The existing road network encourages speeds that are often inconsistent with the adjacent land use, and are often inconsistent with current best practice. This is evidenced by crash statistics, where loss of control crashes account for over 40% of reported incidents. Many of the roads in the study area do not support higher travel speeds. Road to Zero encourages the reduction of speed limits to align with the existing road design, as well as engineering treatments to better match the road environment to the surrounding land use.

Following consultation with WDC, a particular focus on enabling key moves within Ngaaruawaahia town centre was suggested. We have considered the outcomes and recommendations to facilitate the outcomes sought by the Town Centre Plan in the Short-term transport changes in section 6.2.

Refer to Appendix B for details around how these suggestions were developed.

## 5.13 Key Links for vehicular movement – constraints and opportunities

The study area has several paper roads. We have proposed new transport connections using some of these paper roads, and amended the locations of some proposed connections based on consultation with the WDC stormwater team. In summary:

- the short term network includes various links within the Taupiri growth cells, with connections onto Gordonton Road through two roundabouts, and up to four connections onto Kainui Road (depending on the traffic volume generated, this may trigger and upgrade for the Kainui Road level rail crossing).
- the medium and long term network is likely to require upgrade of the Havelock Road and Saulbrey Road level crossings, particularly with the proposed connection into the southern Ngaaruawaahia growth cell.

Refer to Appendix B for the proposed key links for the study area.

## 5.14 Level Crossings – constraints and opportunities

We have reviewed the existing safety and operation of the rail level crossings over the 2010 to 2022 period. We note that:

- most incidents occurred before 2016 (16 of 23 incidents) and were non-fatal with most resulting in no injuries to drivers of vehicles or trains
- the most recent collisions were on Horotiu Road (2021) and Park Road (2022), with no injuries reported
- the level crossings at Waingaro Road and Horotiu Road can be closed without significant effects on the transport network, provided that improvements at Saulbrey Road and Princess Street are implemented[18].

See Appendix D for an assessment on traffic reassignment due to level rail crossing closures.

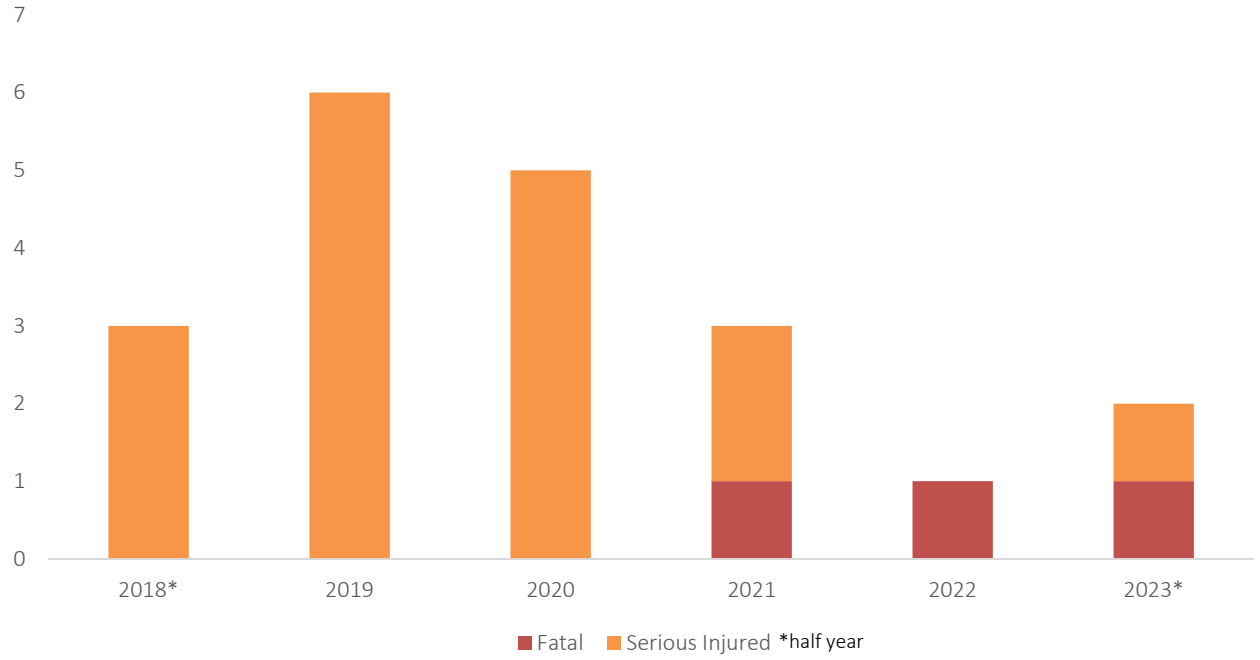
## 5.15 Safety Review

The safe system approach acknowledges that people make mistakes and are vulnerable in a crash. While mistakes are inevitable, deaths and serious injuries from road crashes are not. Notably, most of the crashes (93%) did not result in serious injuries or deaths. However, Road to Zero expects no deaths or seriously injuries should result from road crashes. The New Zealand target for 2030 is a 40% reduction in DSI translating to less than 2.5 DSI per year for the study area.

We examined the reported crash history between 2018 and 2023 and found that the number of reported injuries have been consistent over the last 5 years. There have been 20 deaths and serious injury (DSI) resulting from 19 incidents reported over the last 5 years, with around 4 reported each year.

[18] A LCSIA is required to determine the interventions needed to ensure the safe operation of the crossings following a traffic demand change using the crossings

**Figure 9: Reported DSI over the last 5 years**




Appendix A provides the locations and number of the DSI in the period 2018-2023 and a more information related to the safety assessment.

## 5.16 Waikato's changing transport focus

The form and function of Waikato's streets and wider transport system are changing:

- Waikato is increasingly investing in public transport, walking, cycling and Travel Demand Management, guided by local, regional and national level strategies and plans (see Section 2). Currently the region remains very reliant on private car travel, with cars accounting for 85% of trips to work and education, as of 2018[19]
- Waikato is transitioning from a mainly mono-modal region to a multimodal one, which will take time and require many small incremental steps along the way. There will also be a time lag, with travel behaviour change following behind infrastructure improvements. It takes time for people to change travel habits that have been established over a lifetime
- It is essential to note that travel by private car will continue to be a necessity for some time. The challenge is to manage cars to support the shift towards public transport, walking and cycling, while recognising the community's current travel needs.

[19] 2018 census travel to work and education data, for the Ngaaruawaahia Central, Ngaaruawaahia South, Ngaaruawaahia North and Taupiri-Lake Kainui area units

# 6 THE FUTURE TRANSPORT NETWORK

We recommend the transport network in Ngaaruawaahia, Taupiri, Hopuhopu, and Horotiu is progressively improved over time to support the urban design assessment of the town centre and future development in the area. To support the future transport network, we recommend a suite of proposed transport projects and their prioritisation. The suite of investments interventions is informed by the desire for connections between key origins and destinations, and the proposed modal priority on existing and future streets.

The Ngaaruawaahia, Taupiri and Hopuhopu Town Concept Plan aims to help ensure the communities continue to be a vibrant, people-focused community destination, and the transport assessment supports this plan. The proposed suite of investments is designed to promote alternatives to car use, aligned with local and national policies to reduce the carbon emissions from the transport sector and make active travel a safe and attractive option while improving the existing attractiveness of tourism in the area.

In addition to internal trips within the four communities, the townships currently have a high proportion of residents leaving town for work or education, particularly towards Hamilton. Therefore, a key priority for the future network is providing a reliable, high-frequency public transport service for commuters travelling to employment areas, providing an alternative to private car travel.

We present the proposed suite of transport investments with key movement plans and travel mode hierarchy. It is accompanied by a summary of the key transport considerations.

The following figures are presented:

- Figures 12 to 16 - Proposed future transport hierarchy
- Figure 17 - Proposed transport changes – short term (0 – 5 years)
- Figure 19 - Proposed transport changes – medium term (5 – 15 years)
- Figure 21 - Proposed transport changes – long term (15+ years)

## 6.1 Road classification

We propose that the roads, especially in and around the town centre are reclassified using the ONF based on their place and movement function in the network. This will ensure that any future upgrades will recognise that streets have an important place function alongside their traditional movement function.

As an interim step to inform our assessment, we have carried out a high level, approximate ONF classification of the existing road network using data available on Geographic Information Systems (GIS). This helped us identify the indicative future ONF classifications for roads and streets, based on forecast vehicle volumes and typical adjacent land use from the existing District Plan. Refer to figures on following pages for maps of that high level, approximate ONF classification.

The classifications are indicative only, based on data currently available, and should not be considered a final or conclusive ONF classification. The indicative classification for movement function using

volumes is based on the characteristics from Waka Kotahi shown in Figure 10 while place function is based on Figure 11.

**Figure 10 – ONF Movement classification characteristics**

| Considerations to determine Movement Significance | | Nature of Movement | Scale of People Movement (all modes) |
|---|---|---|---|
| M1 | Major | Mass movement of people and/or goods on roads or streets that are of major importance in urban areas, within and between regions or nationally. | Typically > 20,000 per day |
| M2 | Significant | Movement of people and/or goods on inter-regional routes or primary roads and streets linking main centres or significant destinations and travel hubs within a city/town or region. | 10,000 – 25,000 per day |
| M3 | Moderate | Movement of people and/or goods around a city, town or region | 3,000 – 12,000 per day |
| M4 | Minor | Local movement by people making short trips or connecting to connector roads | 300 – 4,000 per day |
| M5 | Low | Local movement by people going about their daily lives | Typically < 500 per day |

**Figure 11 - ONF Place classification characteristics**

| Place function ranking | Level of on-street activity | Typical adjacent land-use |
|---|---|---|
| P1 | • Very high on-street activity – very high numbers of pedestrians<br>• Very high numbers of people spending time in the location<br>• Major movement across the carriageway | High rise office blocks and apartments, central city shopping and entertainment, major commercial centres, streets with this level of place are most likely to be located within the CBD of major cities |
| P2 | • High/very high on-street activity – high numbers of pedestrians<br>• High numbers of people spending time in the location<br>• Significant movement across the carriageway | Office blocks, low rise apartments, entertainment venues, retail, commercial businesses, community facilities |
| P3 | • Medium to high on-street activity<br>• Some people spending time in the location<br>• Some movement across the carriageway | Office blocks and low-rise apartments, retail, entertainment venues, commercial/trade businesses, community facilities, industrial |
| P4 | • Low to medium on-street activity related to people going about their lives<br>• Limited movement across the carriageway | Residential, schools, community facilities, low intensity commercial/industrial |
| P5 | • Little discernible on-street activity | Mostly rural except for State Highways (motorways/ expressways) in urban areas |

The figures overleaf map the high level, approximate ONF classification. Note that these maps have been generated automatically using the available, open-source GIS data. Accordingly, not every public street is represented on this map.

**Figure 12: Proposed transport network and indicative road hierarchy (long term) for the study area**

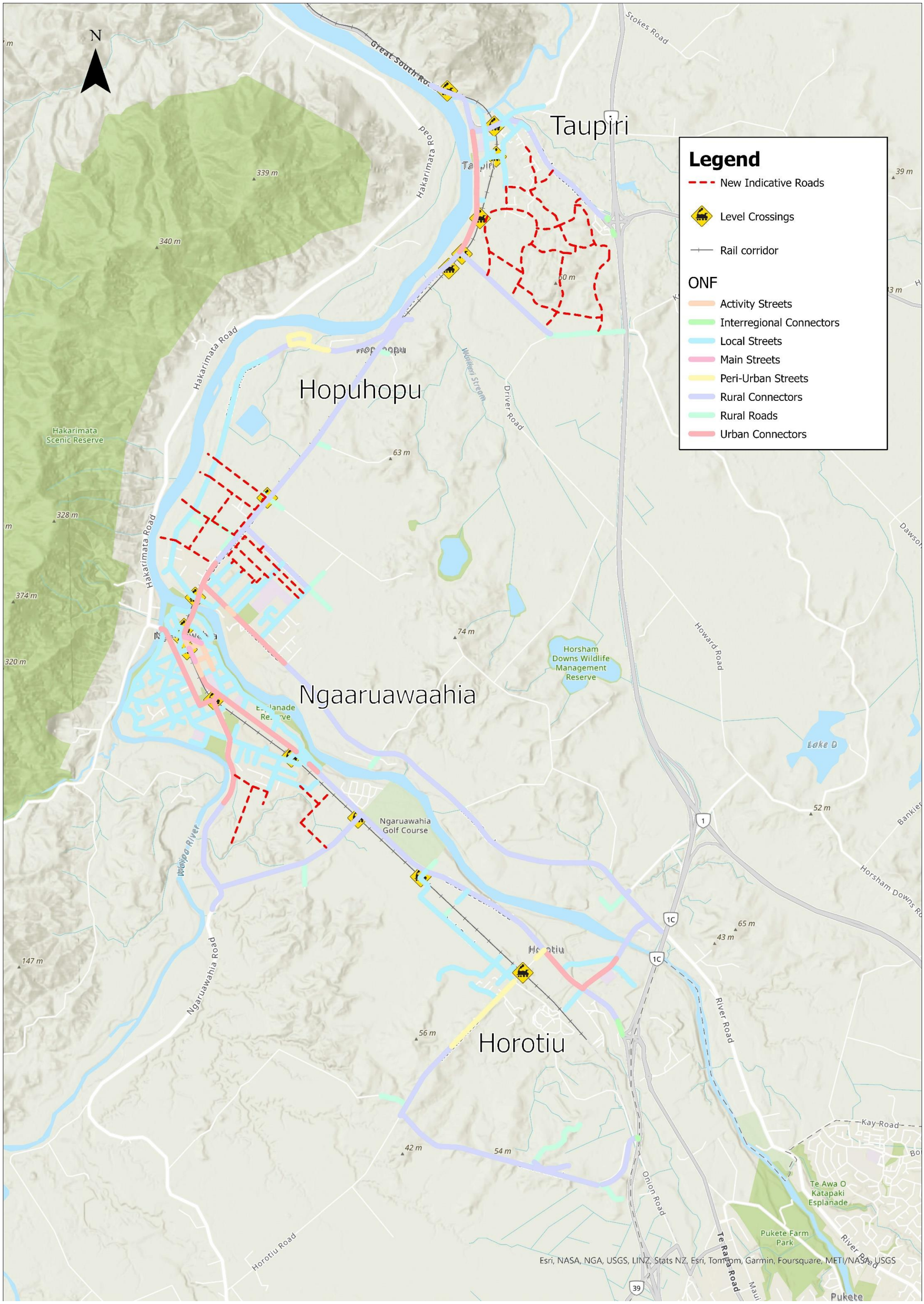


**Figure 13: Proposed transport network and indicative road hierarchy (long term) for Taupiri**

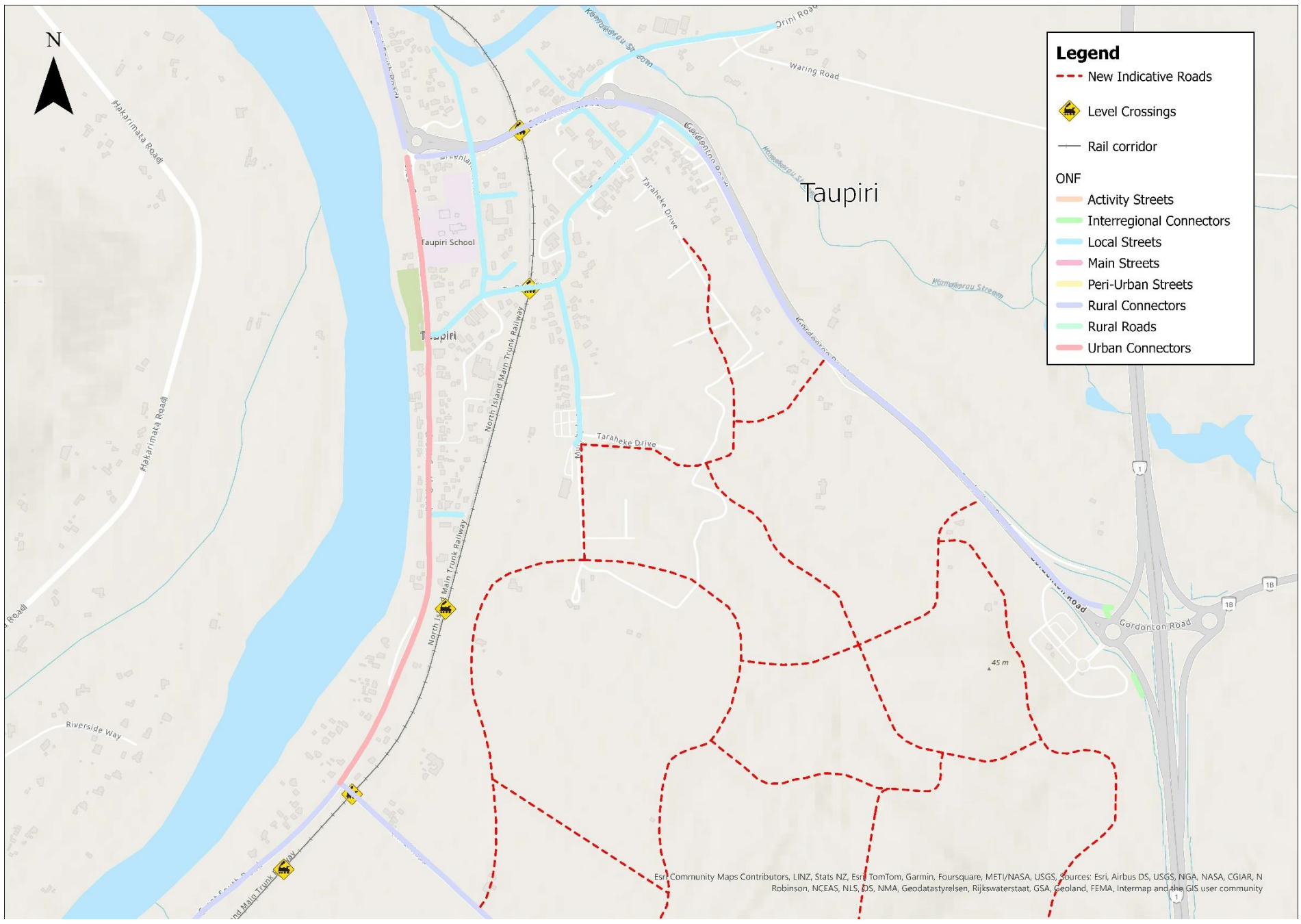



**Figure 14: Proposed transport network and indicative road hierarchy (long term) for Ngaaruawaahia**

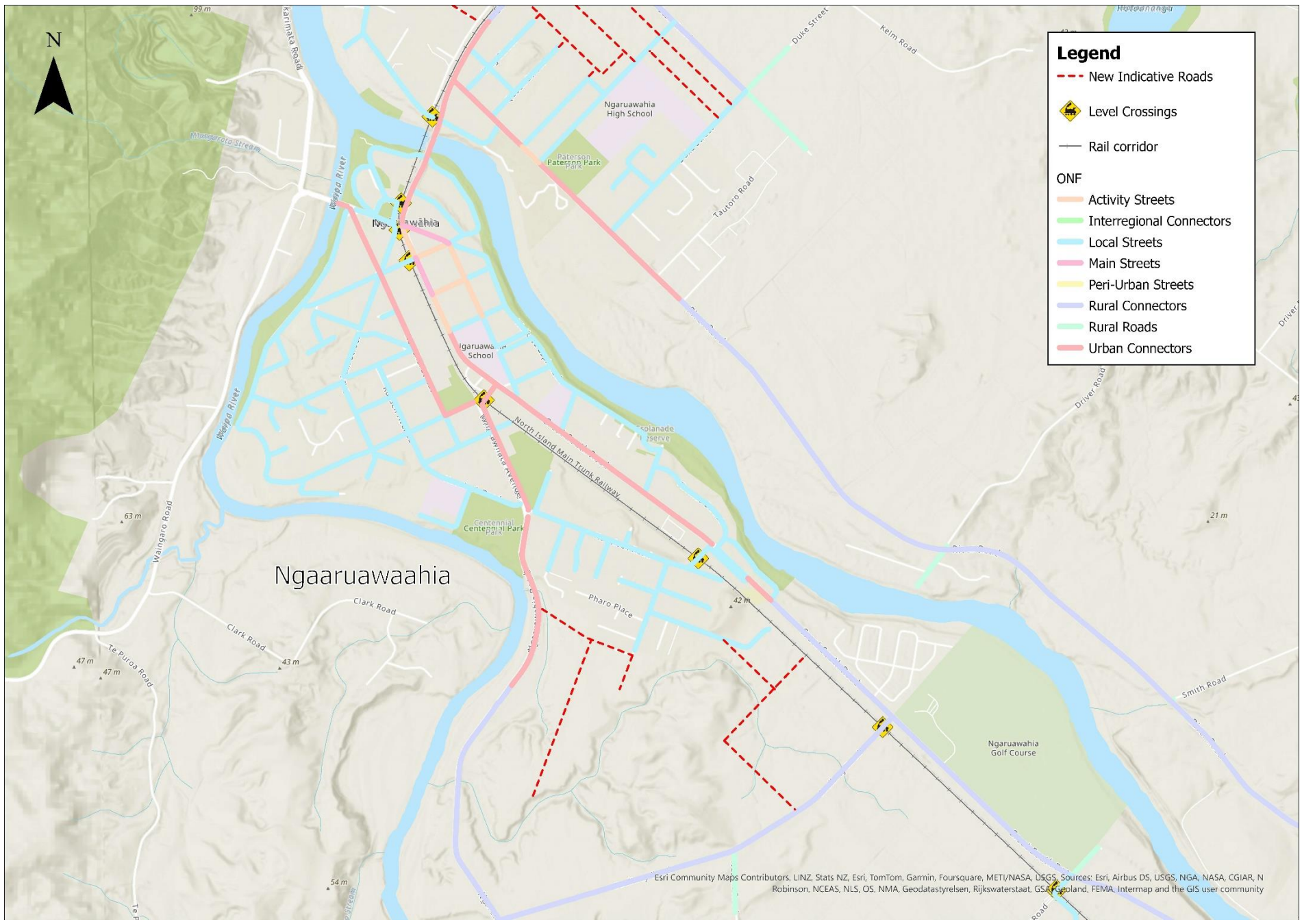


**Figure 15: Proposed transport network and indicative road hierarchy (long term) for Hopuhopu**

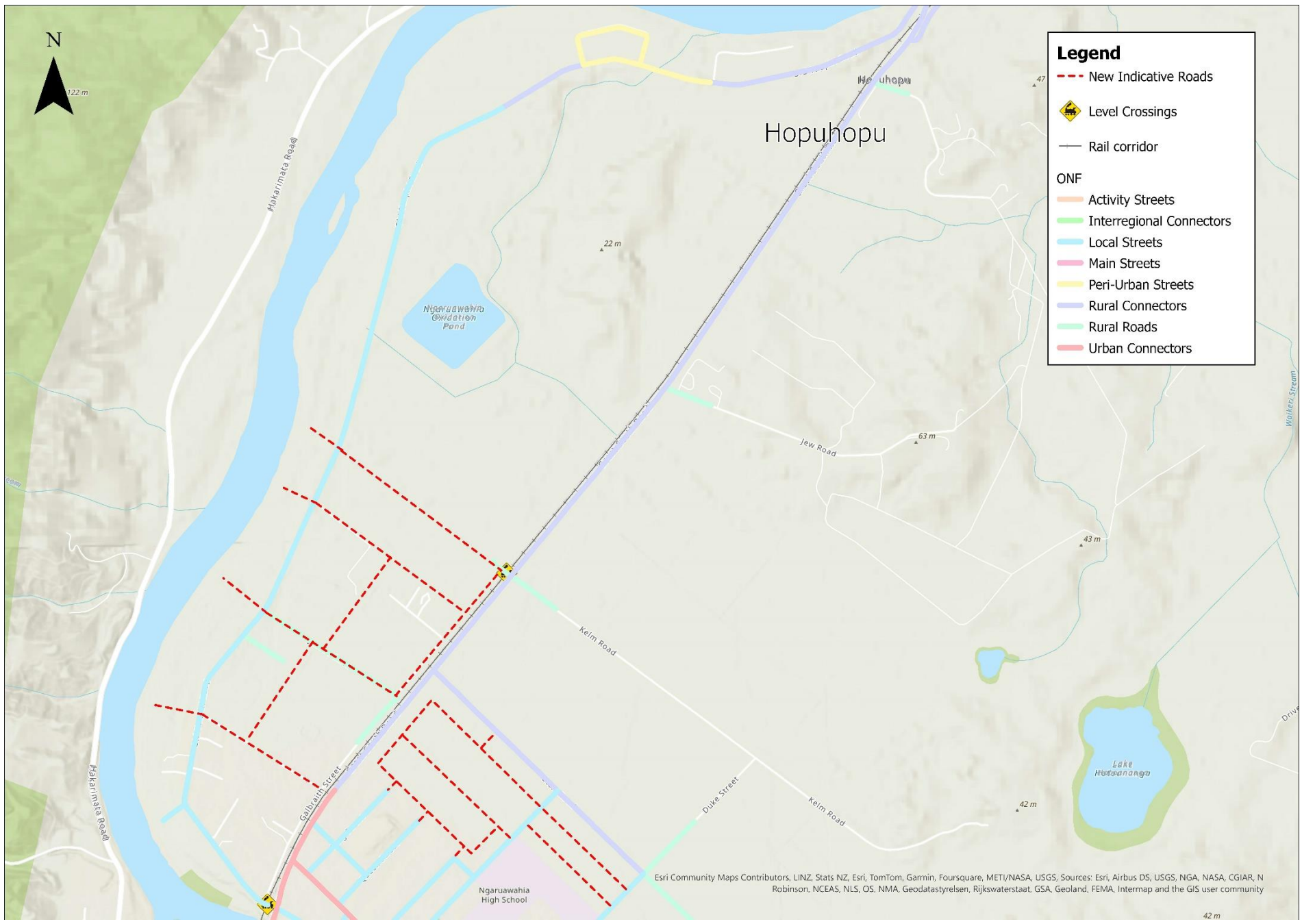
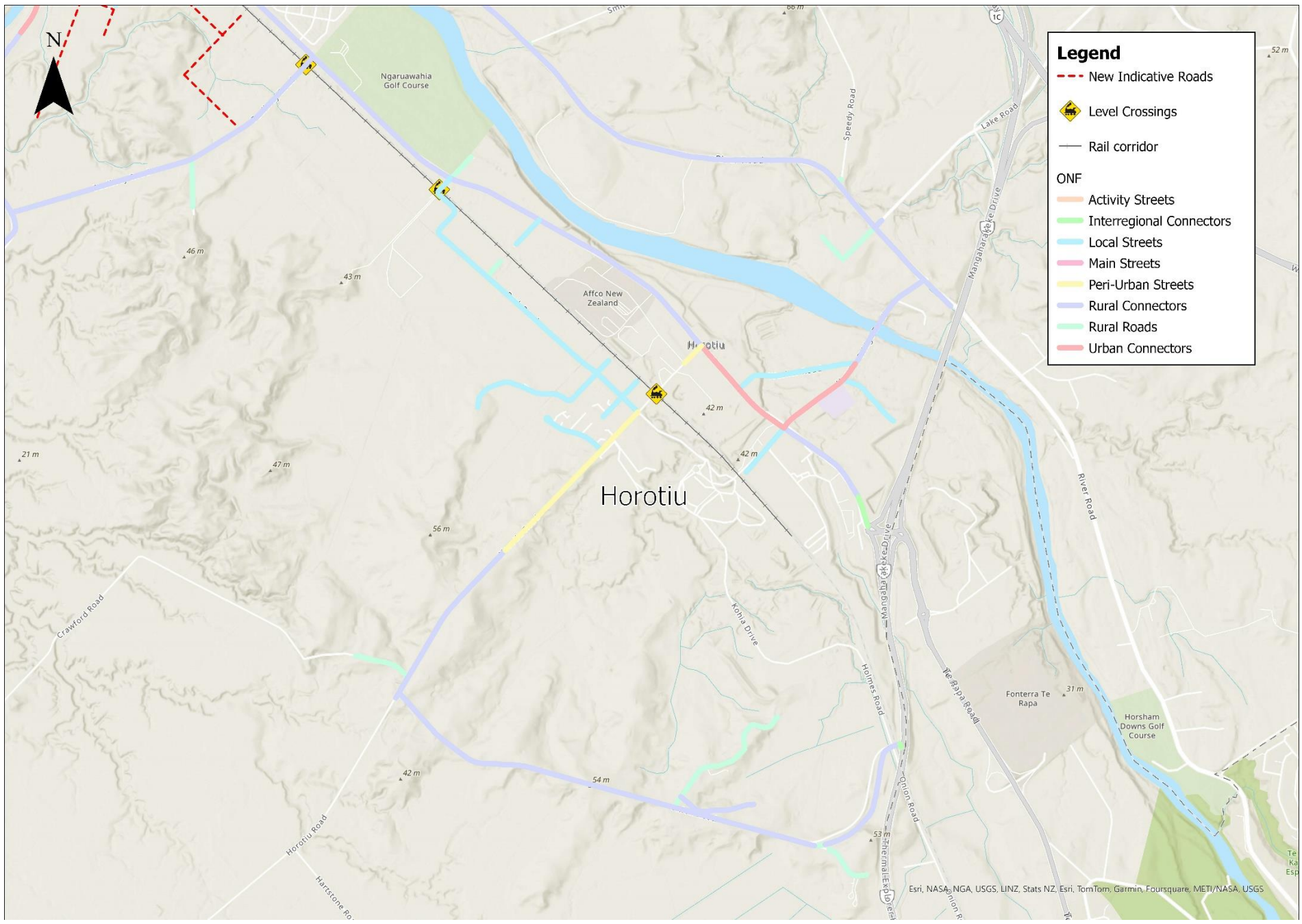



**Figure 16: Proposed transport network and indicative road hierarchy (long term) for Horotiu**



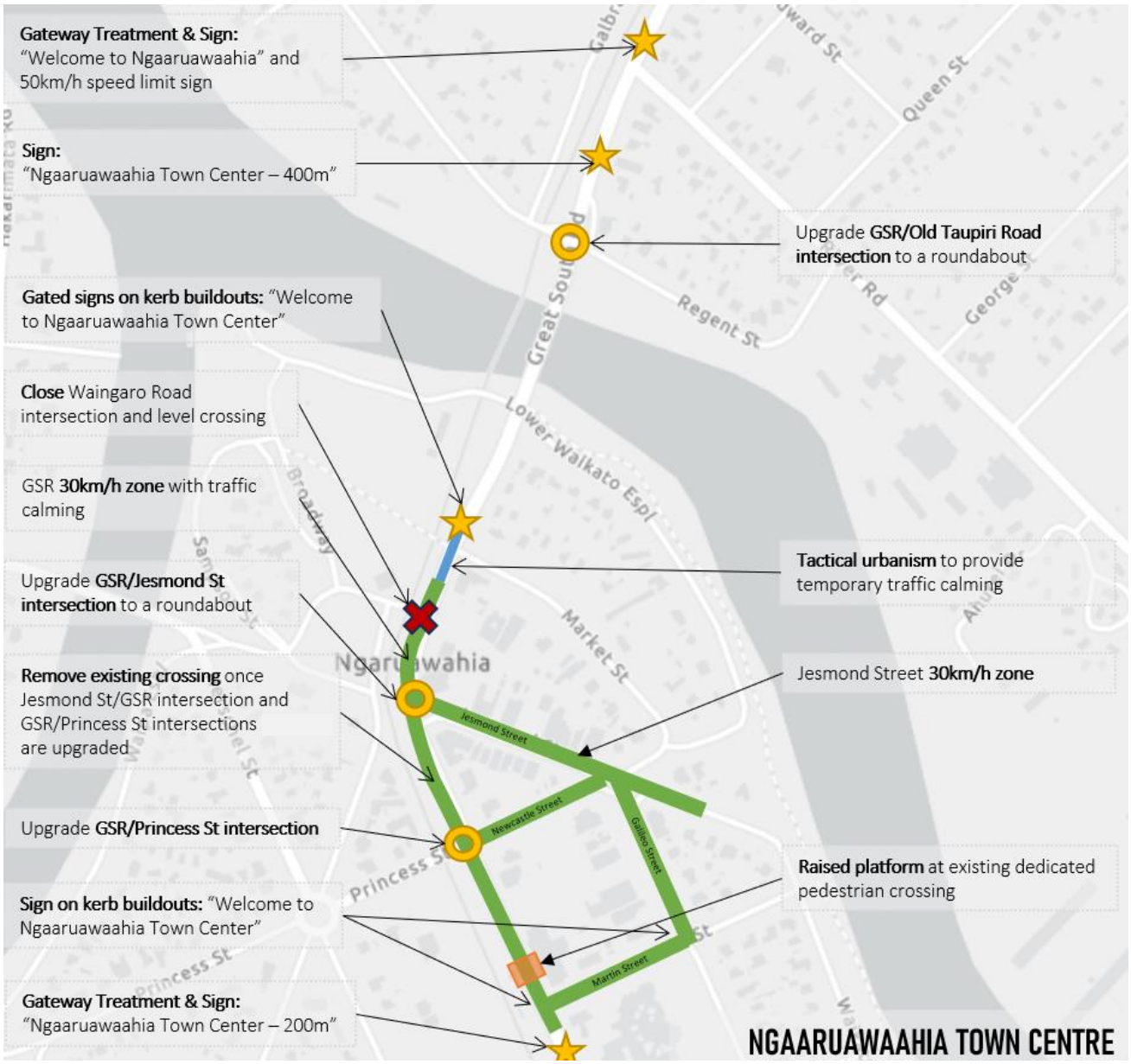
Waka Kotahi's ONF classification is an ongoing process that Waka Kotahi is still improving and providing more guidance on. Waka Kotahi's full ONF classification process generally requires extensive stakeholder engagement to confirm the classifications. The indicative ONF classifications shown in the figure above may be used as starting points for these conversations.

## 6.2 Short term transport changes (0 – 5 years)

### 6.2.1 Ngaaruawaahia Town Centre

Figure 14 below indicates the proposed transport links in the short term (0 – 5 years) for Ngaaruawaahia. The key changes in the short term are providing a low-speed environment (30 km/h) and closing the unsafe level rail crossing at Waingaro Road.

**Figure 17: Transport Strategy - Short term (0 – 5 years) for Ngaaruawaahia**



The key transport related changes in the **short term** include:

- providing a low-speed environment (30 km/h) within the town centre, including on sections of Great South Road, Market Street and Martin Street.
- the low-speed environment with the town centre should include:
  - a defined entryway/town centre gateway at the northern and southern extents with kerb buildouts, raised platforms and visual cues
  - using tactical urbanism to provide interim traffic calming measures on the approach to the town centre. For the short term, this will support the low speed limits, the low speed environment of the town centre, and upgraded intersection of Jesmond Street and Great South Road, until the traffic calming features are extended and made permanent.
  - a speed limit of 30 km/h (the extent of this may include streets in addition to Great South Road, Market Street, Newcastle Street, Galileo Street, and Martin Street, and would be more effective if supported by physical measures)
  - safety improvements to existing pedestrian crossing points of Great South Road within the town centre, either signalised crossings or raised zebra crossings.
  - upgrade the existing Great South Road intersection with Jesmond Street to a roundabout, including raised pedestrian crossings on all legs to align with urban design key move from the River Ride to The Point. Includes upgrade to pedestrian level crossing. Options assessment and proposed design are in Appendix E
- upgrading the intersection of Old Taupiri Road (south) and Great South Road to a signalised intersection. The options assessment and proposed design layout is provided in Appendix E.
- upgrading of the intersection of Great South Road with Princess Street
- closure of the Waingaro Road level crossing to formalise the required heavy vehicle movements from the Waingaro Road Quarry and improve vehicle safety by encouraging use of Princess Street.
- closure of the Horotiu Road level crossing following the completion of Kohia Drive, directing traffic to use the grade separated crossing of the NIMT at Gateway Drive
- reroute the over dimension vehicle route along Great South Road (as opposed to the current route which runs through intersection of Jesmond Street and Newcastle Street in the town centre). This will require engagement with the Heavy Haulage Association and possibly some modifications along Great South Road to provide the required[20] heavy vehicle envelope.
- work with WRC on infrastructure improvements to support bus services along Great South Road.

Other changes to the local transport network are expected to support residential growth and these are generally confirmed at the time of subdivision. For example, review of a subdivision on Galbraith St identified that due to the narrow width of Galbraith St and safety concerns at the Galbraith Street /Old Taupiri Road intersection that the scale of residential development should be limited to prior to construction of Festival Way providing an alternative link to Old Taupiri Road and severing Galbraith Street. These changes would limit the number of vehicle movements at the Galbraith Street /Old Taupiri

[20] New Zealand Heavy Haulage Association set out requirements for OD routes

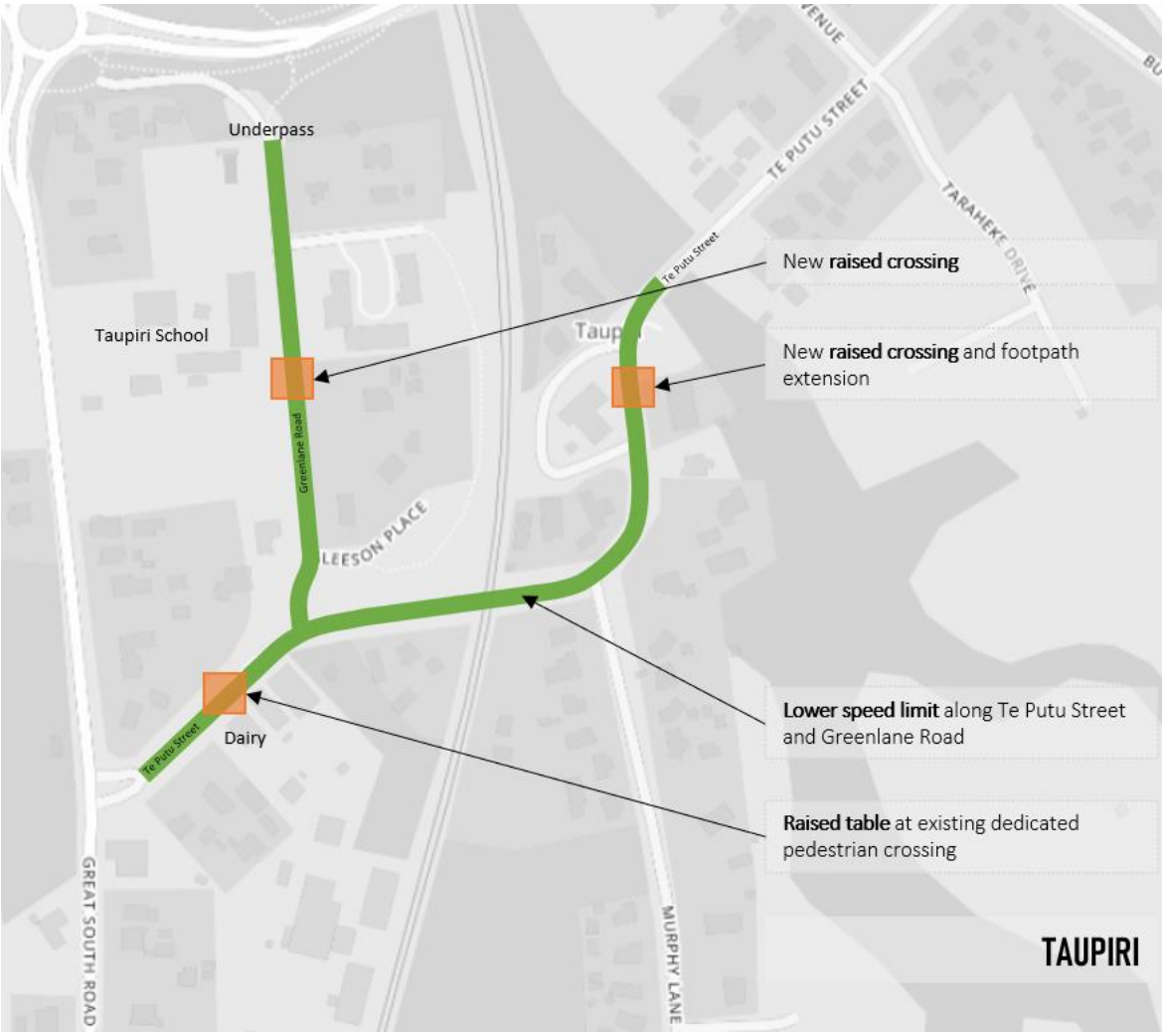
Road intersection which is located adjacent to the rail level crossing. Construction of Festival Way provides a transport connection that supports wider residential development of the area.

### 6.2.2 Taupiri

Figure 18 below indicates the proposed transport links in the short term (0 – 5 years) for Taupiri. The key changes in the short term are:

- providing a lower-speed limit along Te Putu Street and Greenlane Road as well as
- introducing some raised platforms to support lower speeds, especially at busier pedestrian crossing locations.

**Figure 18 - Transport Strategy – Short term (0 – 5 years) for Taupiri**




## 6.3 Medium term transport changes (5 – 10 years)

Figure 19 and 20 below indicates the proposed transport links in the medium term (5 – 10 years).

The key move in the medium term is to improve walking and cycling connectivity of the communities. This will help reduce traffic volumes, improve amenity in the town centres and reduce the risk of crashes in the future as both traffic volumes and walking and cycling trips increase. Improving the safety of vehicles using level rail crossings is included in the medium term.

In the medium term, key pedestrian and cycling trails are proposed with links east-west and north-south creating a walking and cycling trail network around the communities.

**Figure 19: Transport Strategy - Medium term (5 – 10 years)**

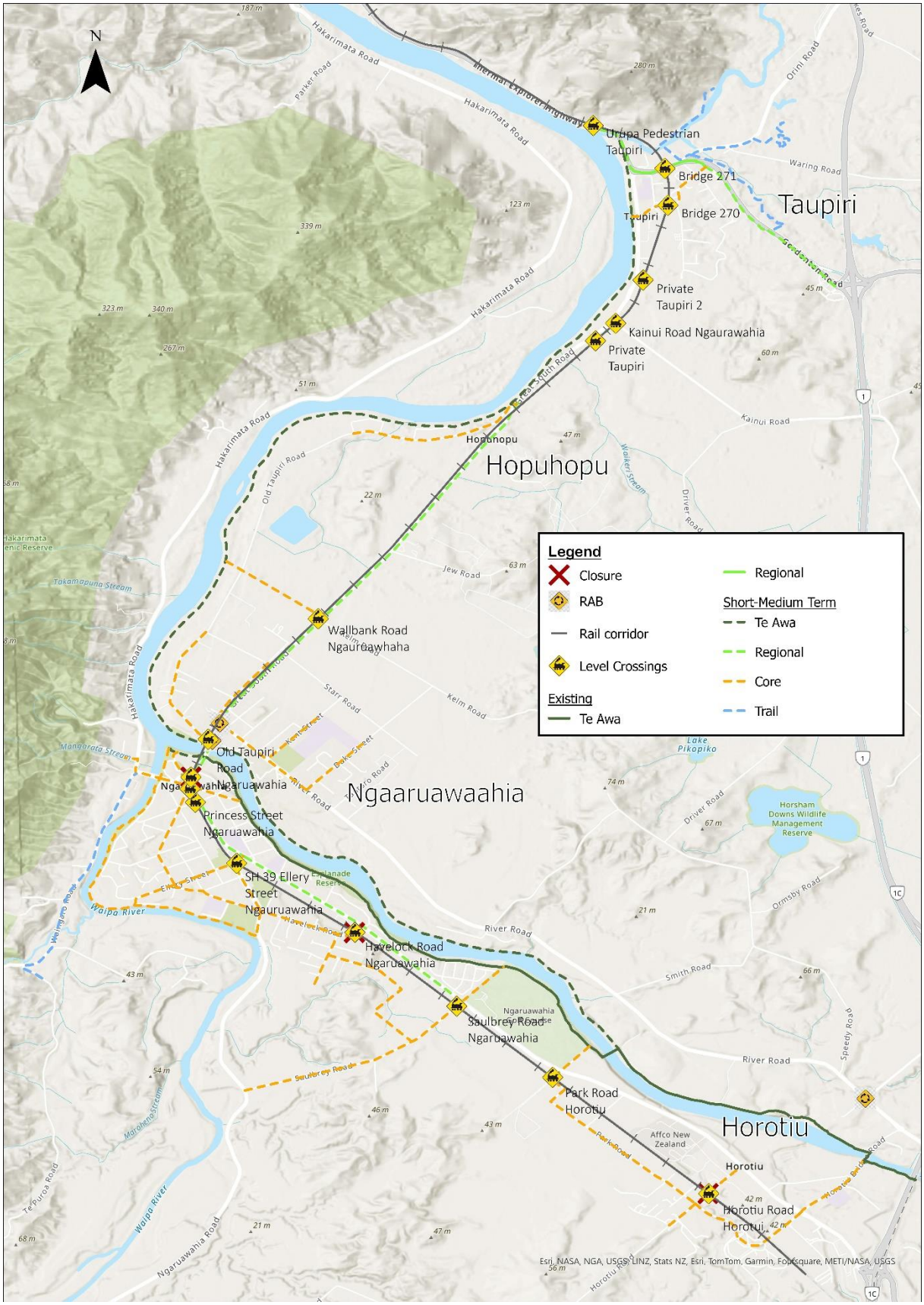
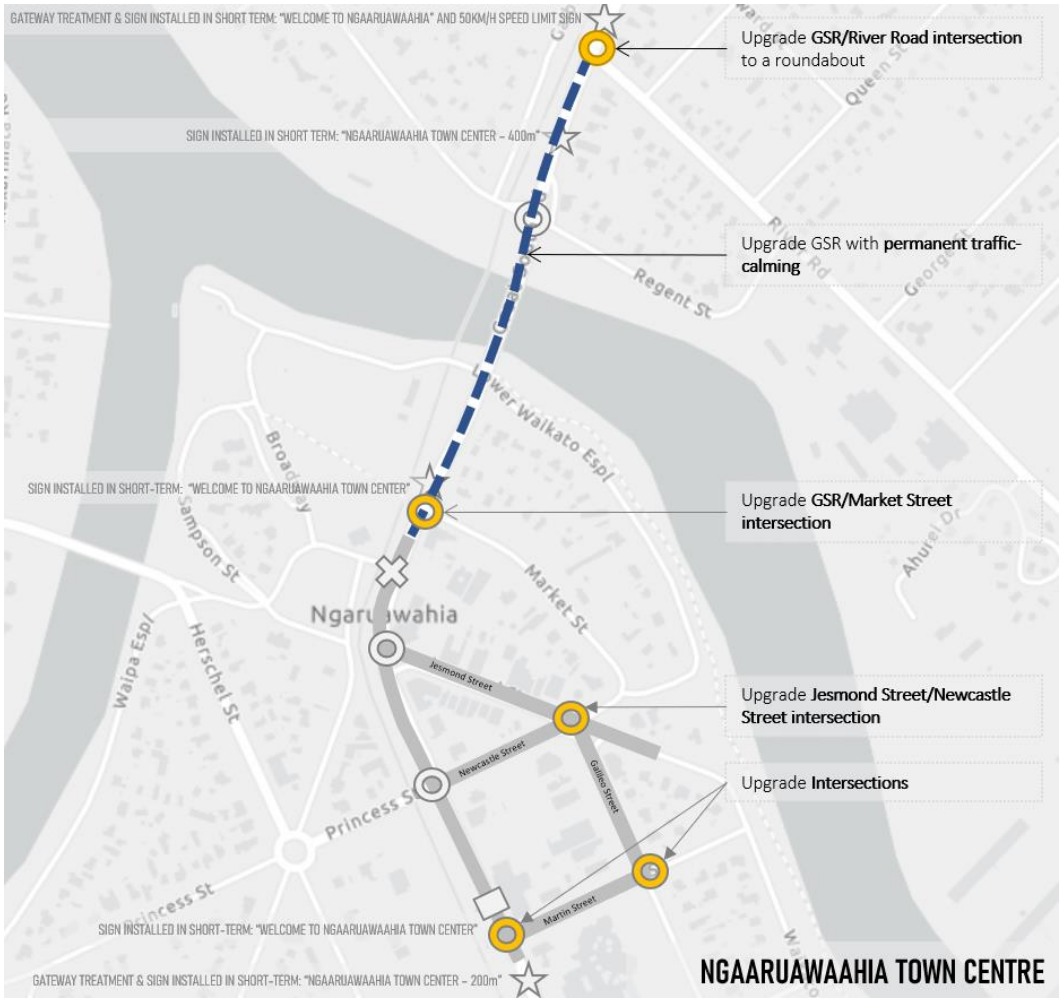


**Figure 20 - Ngaaruawaahia Town Centre Transport Strategy - Medium term (5 - 10 years)**




The following is a summary of the key transport related changes in the medium term:

- existing daily traffic volumes on Great South Road are predicted to increase by 50% in the next 10 to 15 years. In response to this, we recommend
    - providing an improved walking and cycling connection across Great South Road and the NIMT to connect east and west Ngaaruawaahia
- upgrade the **Great South Road/River Road intersection** to a roundabout. This will improve the gateway treatment of Ngaaruawaahia. The proposed design layout is provided in Appendix E.
- upgrade the roundabout at the **Jesmond Street/Newcastle Street intersection** to manage cyclist and pedestrian safety and reduced speeds as well as deliver on the east-west connection. The options assessment and proposed design layout is provided in Appendix E.
- upgrade the intersection at **Market Street and Great South Road** to reduce speeds through this intersection to help support the low-speed zone south of the intersection
- upgrade the **Saulbrey Road** level crossing to align with the planned growth of southwest Ngaaruawaahia.
- upgrade the **Havelock Road** level crossing

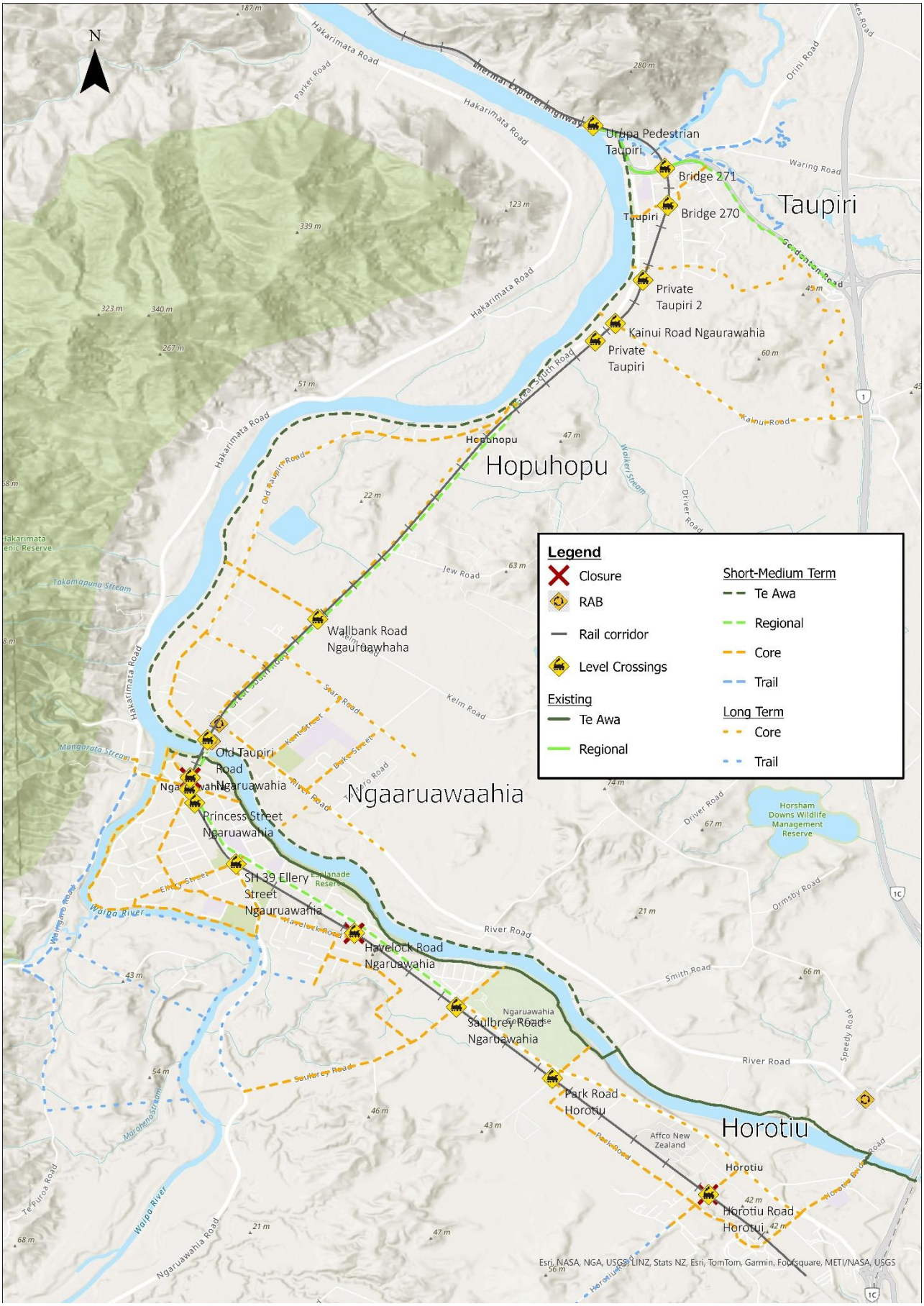
- upgrade the level crossing at **Old Taupiri Road, unless** north Ngaaruawaahia Hopuhopu is developed earlier
- provide an **improved walking and cycling connection** along Great South Road and across the Waikato River
- provide traffic calming measures on **Herschel Street** to discourage rat-running via Herschel Street
- provide more **permanent traffic calming measures** along Great South Road leading into the Ngaaruawaahia town centre.
- work with WRC to deliver Bus Rapid Transit (BRT) to support land use development

## 6.4 Long term transport changes (10+ years)

The key move in the long term is a transport hub in Ngaaruawaahia, providing access to the proposed BRT network. We have considered the appropriateness of a Park and Ride facility, but consider that Ngaaruawaahia would be better suited to a 'town centre' type rapid transit station in the centre of the town, with quality walking and cycling links. Park and ride facilities are more suited to rapid transit stations on the urban fringe, such as at Taupiri interchange. The long term strategy would also provide more direct connections for buses to and from the transport hub while also completing walking and cycling network to provide alternatives to cars.

Figure 21 indicates the proposed transport links in the long term (10+ years).

**Figure 21: Transport strategy - Long term (10+ years)**



## 6.5 Summary of proposed transport changes

A summary of the key transport related changes in the long term includes the following:

- provide an expanded walking and cycling network to the full extent shown in the Micromobility Assessment.
- monitor and review safety at the Havelock Road level crossing.
- upgrading the existing bus stops and enable the rapid transit route, aligning with the Hamilton Waikato Metropolitan Spatial Plan (HWMSP).
- reinstate the train station at Ngaaruawaahia to align with the Hamilton to Auckland (H2A) Corridor Plan.
- upgrade level crossing at Kainui Road, unless the Taupiri development takes place prior. Then upgrade along with Taupiri development.
- close the level crossing at Wallbank Road, once the growth cell is developed, providing access to Old Taupiri Road

The proposals per time period are presented in the table below:

**Table 3: Proposed investments**

| Short-term (0 – 5 years) | Medium term (5 – 15 years) | Long-term (15+ years) |
|---|---|---|
| **INTERSECTIONS** | | |
| Upgrade the existing **Great South Road intersection with Jesmond Street** to a roundabout to deliver connection to the town centre. | Upgrade the **Jesmond Street/Newcastle Street** intersection to manage cyclist and pedestrian safety and reduce speeds as well as deliver connection to the town centre | |
| Upgrade the **Great South Road intersection** with **Old Taupiri Road (south)** to roundabout | Upgrade the **Great South Road intersection** with **River Road** to roundabout | |
| Upgrade **Princess Street/GSR intersection** | Upgrade the **Market Street and Great South Road intersection** to reduce speeds through this intersection to help support the low-speed zone south of the intersection | |
| **LEVEL CROSSINGS** | | |
| Upgrade the pedestrian level crossing at **Jesmond Street** during the upgrade of the Jesmond Street intersections. | Upgrade the level crossing at **Old Taupiri Road, unless** north Ngaaruawaahia Hopuhopu is developed earlier | Upgrade level crossing at **Kainui Road, unless** the Taupiri development takes place prior. Then upgrade along with Taupiri development. |

**Table 3: Proposed investments**

| Short-term (0 – 5 years) | Medium term (5 – 15 years) | Long-term (15+ years) |
|---|---|---|
| Closure of the **Horotiu Road** and level rail crossing following the completion of Kohia Drive, encouraging use of the grade separated crossing of the NIMT at Gateway Drive | | Close the level crossing at **Wallbank Road**, once growth cell is developed, providing access to Old Taupiri Road |
| Closure of the **Waingaro Road** level rail crossing to formalise the required heavy vehicle movements from the Waingaro Road Quarry and encouraging use of Princess Street (requires Princess Street/GSR intersection upgrade) | Upgrade the **Havelock Road** level crossing | Monitoring and review safety at the **Havelock Road** level crossing |
| Upgrade the level crossing at **Princess Street** when the level crossing at Waingaro Road, is closed | Upgrade the level crossing at **Saulbrey Road** | Monitoring and review safety at the **Saulbrey Road** level crossing |
| **NGAARUAWAAHIA TOWN CENTRE – OTHER IMPROVEMENTS** | | |
| Create a defined **entryway/town centre gateway** at the northern and southern extents with kerb buildouts, raised platforms and visual cues | Provide an **improved walking and cycling connection** across Great South Road and the NIMT to connect east and west Ngaaruawaahia | |
| Introduce a **speed limit of 30 km/h** for key town centre streets supported with engineering features | Provide an **improved walking and cycling connection** along Great South Road and across the Waikato River | |
| Provide a **low-speed environment** (30 km/h) within the town centre, including on sections of Great South Road, Market Street and Martin Street. | Traffic calming measures to be implemented on **Herschel Street** to discourage rat running via Herschel Street | |
| **Reroute the over-dimension vehicle route** along Great South Road | | |
| Undertake safety improvements to **existing pedestrian crossing points** of Great South Road within the town centre, either signalised crossings or raised zebra crossings. | | |

**Table 3: Proposed investments**

| Short-term (0 – 5 years) | Medium term (5 – 15 years) | Long-term (15+ years) |
|---|---|---|
| Interim traffic calming measures on sections of Great South Road through the town centre, using **tactical urbanism** to provide affordable yet effective traffic calming measures that support the low-speed limits, the low-speed environment | Provide more permanent traffic calming measures | |
| **TAUPIRI TOWN CENTRE** | | |
| Introduce a **lower speed limit** along Te Putu Street and Greenlane Road | | |
| Introduce some **raised platforms** to support lower speeds, especially at busier pedestrian crossing locations | | |
| **MICROMOBILITY, WALKING AND CYCLING ROUTES – Refer Part B Report** | | |
| **Regional** routes delivered in short to medium term | | |
| **Te Awa** routes delivered in short to medium term | | |
| Some **Core** routes | | Remainder **Core** Routes to the full extent shown in the Micromobility Assessment |
| Some **Trail** Routes | | Remainder **Trail** Routes to the full extent shown in the Micromobility Assessment |
| **PUBLIC TRANSPORT** | | |
| Work with WRC on infrastructure improvements to support bus services along Great South Road. | Work with WRC to deliver Bus Rapid Transit (BRT) to support land use development | Reinstate the train station at Ngaaruawaahia to align with the Hamilton to Auckland (H2A) Corridor Plan. |
| | | Upgrade the existing bus stops and enable the rapid transit route, aligning with the Hamilton Waikato Metropolitan Spatial Plan (HWMSP). |

# APPENDIX A Safety assessment and existing network environment

## SAFETY REVIEW

We have undertaken a high-level crash assessment for the study area using Waka Kotahi's Crash Analysis System (CAS) for the period between 30 June 2018 and 1 July 2023. Figure A1 shows the CAS search extent and heat map of reported incidents.

**Figure A1: CAS search extent**

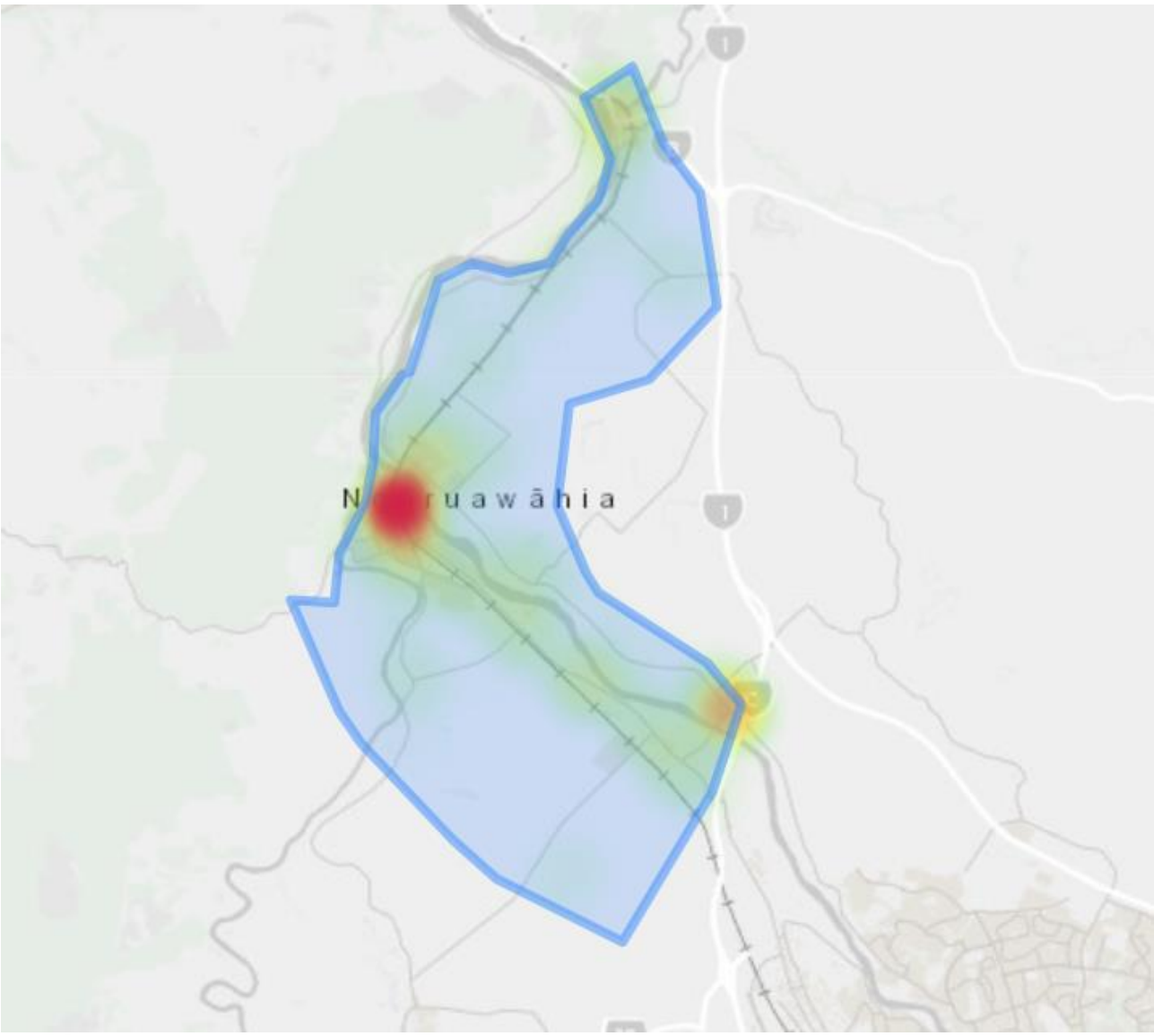



Figure A1 shows most incidents occur in Ngaaruawaahia while a notable amount occurred in Taupiri and north-east of Horotiu.

A total of 258 incidents were reported resulting in 488 injuries and included:

- 3 (1%) fatal crashes.
- 16 (6%) serious injury crashes.
- 84 (33%) minor injury crashes.
- 155 (60%) non-injury crashes.

## Deaths and serious injuries

The safe system approach acknowledges that people make mistakes and are vulnerable in a crash. While mistakes are inevitable, deaths and serious injuries from road crashes are not. Notably, most of the crashes (93%) did not result in serious injuries or deaths.

Figure A2 shows where the 19 Death and Serious Injury (DSI) incidents occurred within the study area resulting in 20 deaths or serious injury.

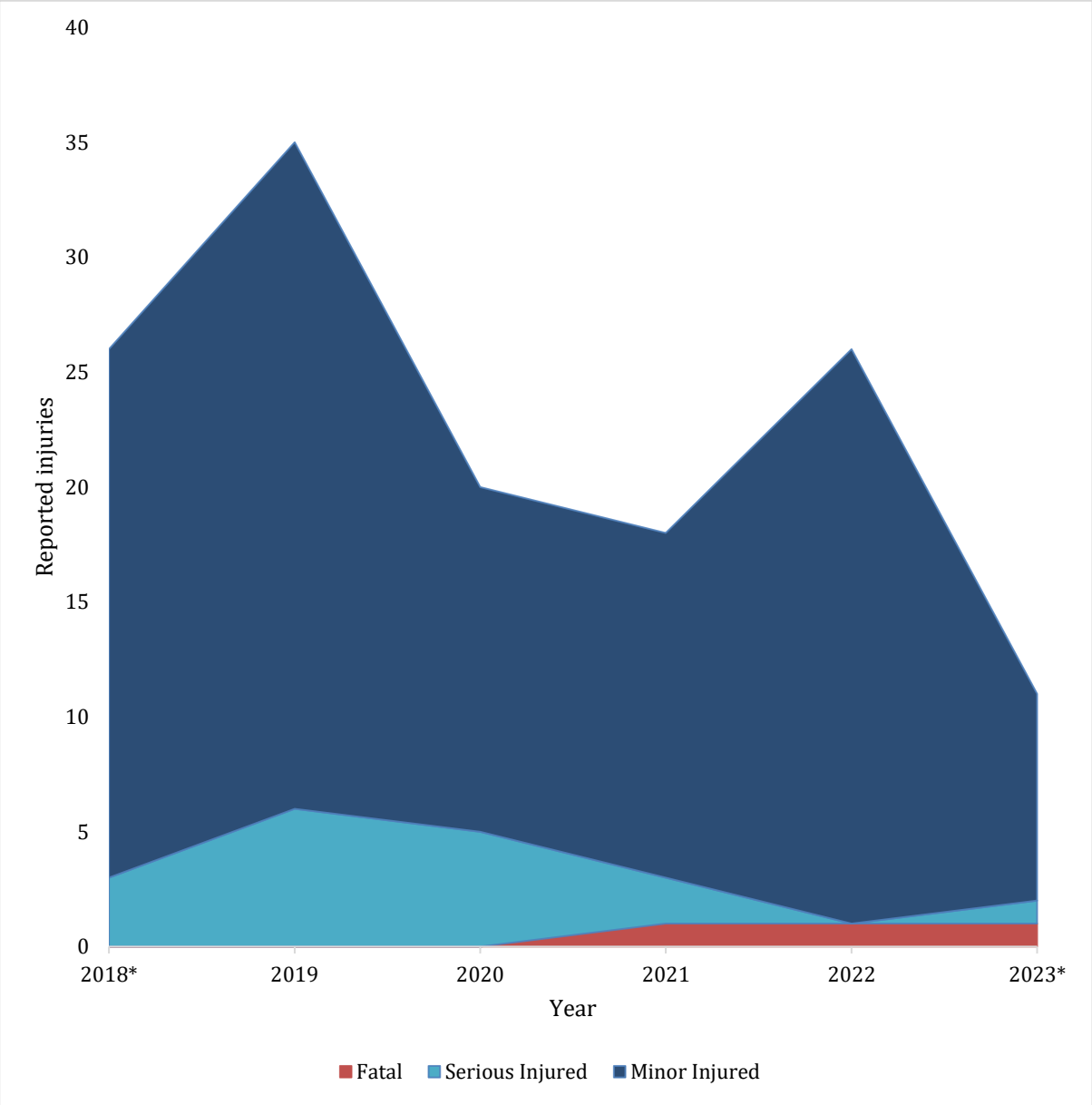
**Figure A2: DSI's within the study area**

Most incidents are at intersections along Great South Road, particularly at intersections:

- Newcastle Street / Princess Street / Great South Road
- River Road / Horotiu Bridge Road (noting this was upgraded to a roundabout in 2021 and not had an incident since)
- River Road / Sullivan Road

Figure A3 shows the total number of injuries resulting from the crashes per year.

**Figure A3: Reported injuries per year**




The DSI crash numbers by crash type included:

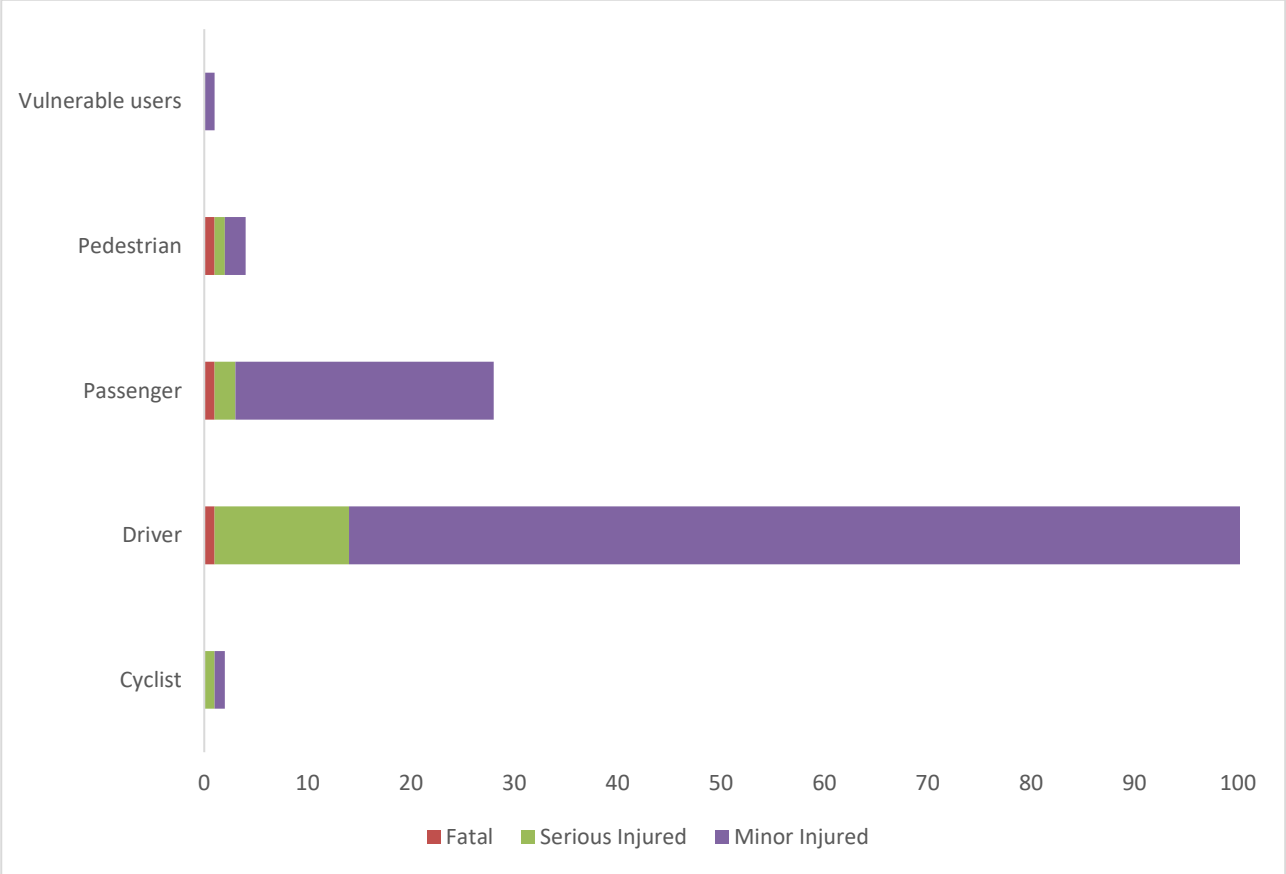
- 2 (11%) overtaking crashes.
- 3 (16%) straight road lost control / head on crashes.
- 4 (21%) bend – lost control / head on crashes.

- 2 (11%) rear end / obstruction crashes.
- 6 (32%) crossing / turning crashes.
- 2 (11%) pedestrian related crashes.

## Injuries by mode

We have considered injuries by mode and shown these in Figure A4.

**Figure A4: Injuries by mode**



# EXISTING ENVIRONMENT[21]

## Travel patterns

We have considered Statistics New Zealand 2018 Census[22] data to determine the existing travel patterns and mode share of the study area.

**Figure A5: Departures from the study area**

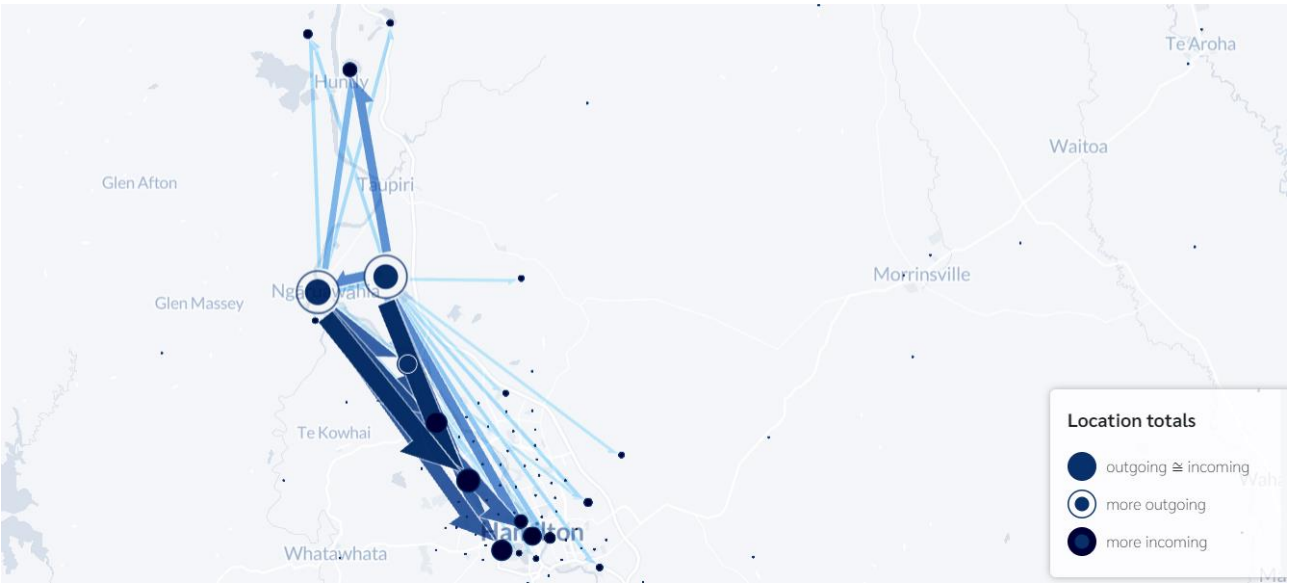
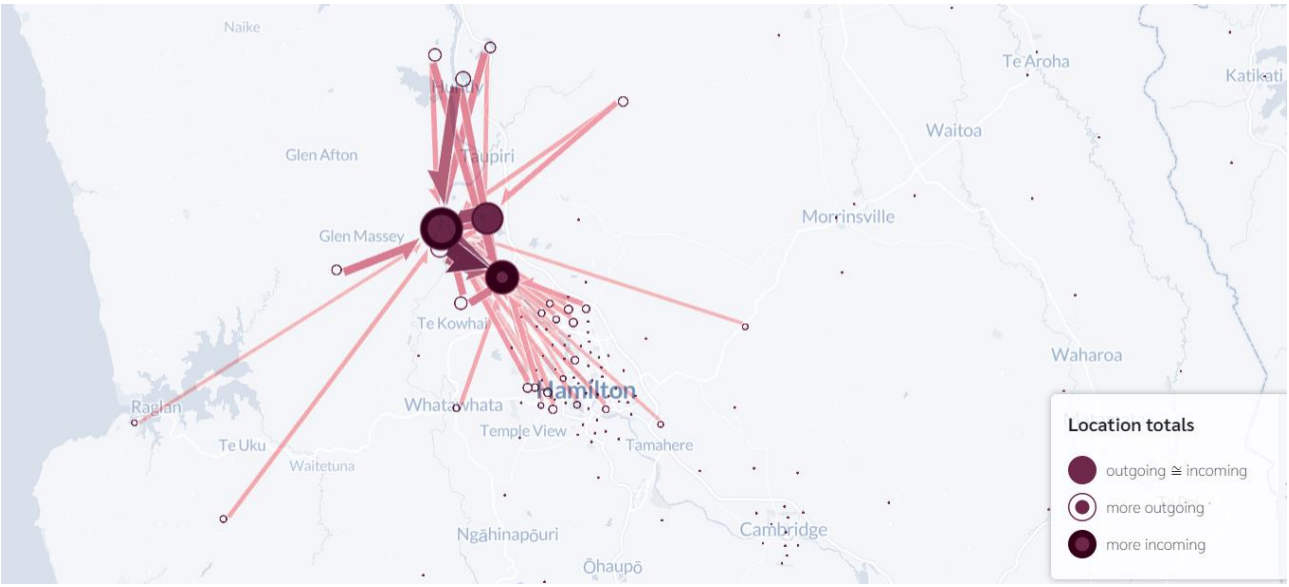
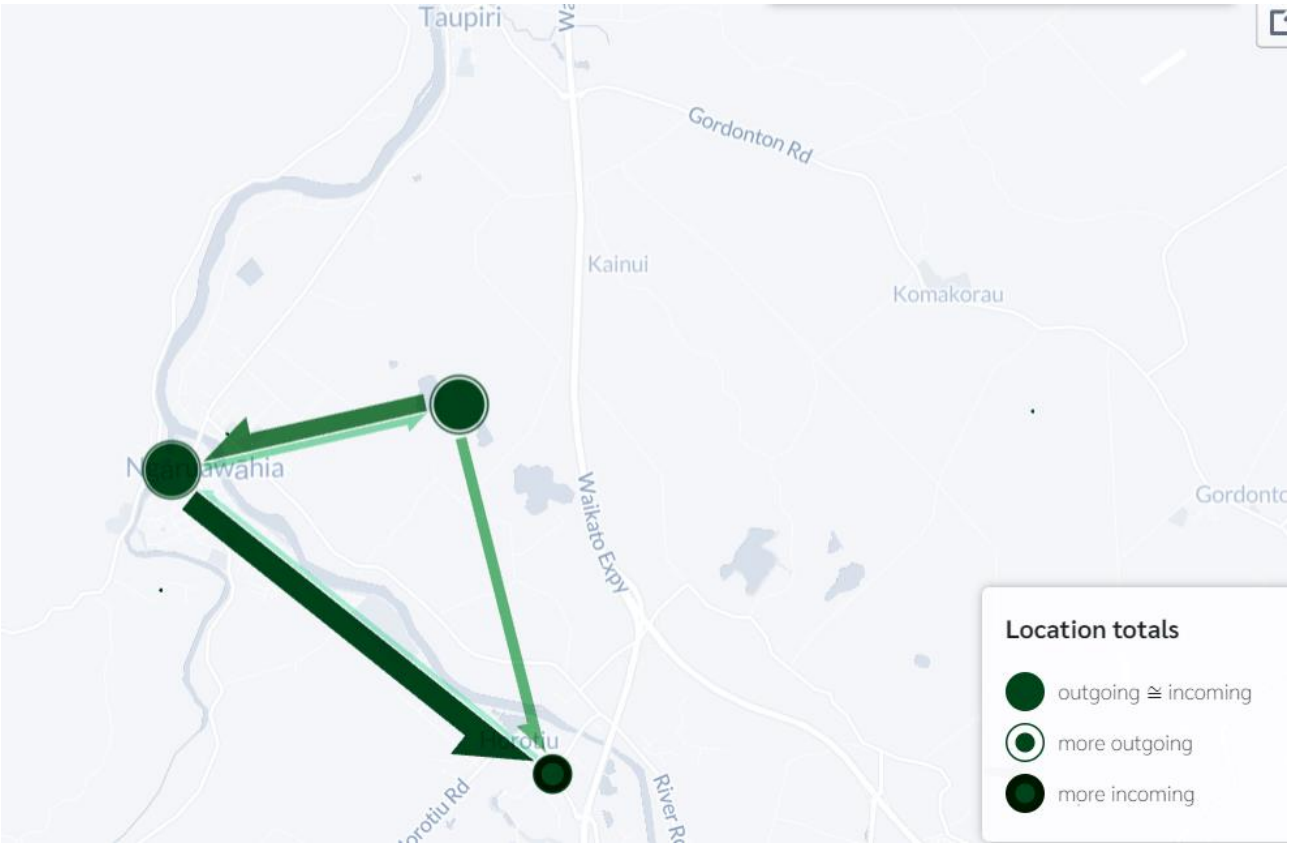



**Figure A6: Arrivals to the study area**




[21] Figures for the existing environment have been retrieved from the Waikato RLTP 2021-2051
[22] Ngāruawāhia Central, Taupiri-Lake Kainui, Horotiu SA2 via NZ Commuter Flows 2018

**Figure A7: Internal trips within the study area**




The Census data suggests that

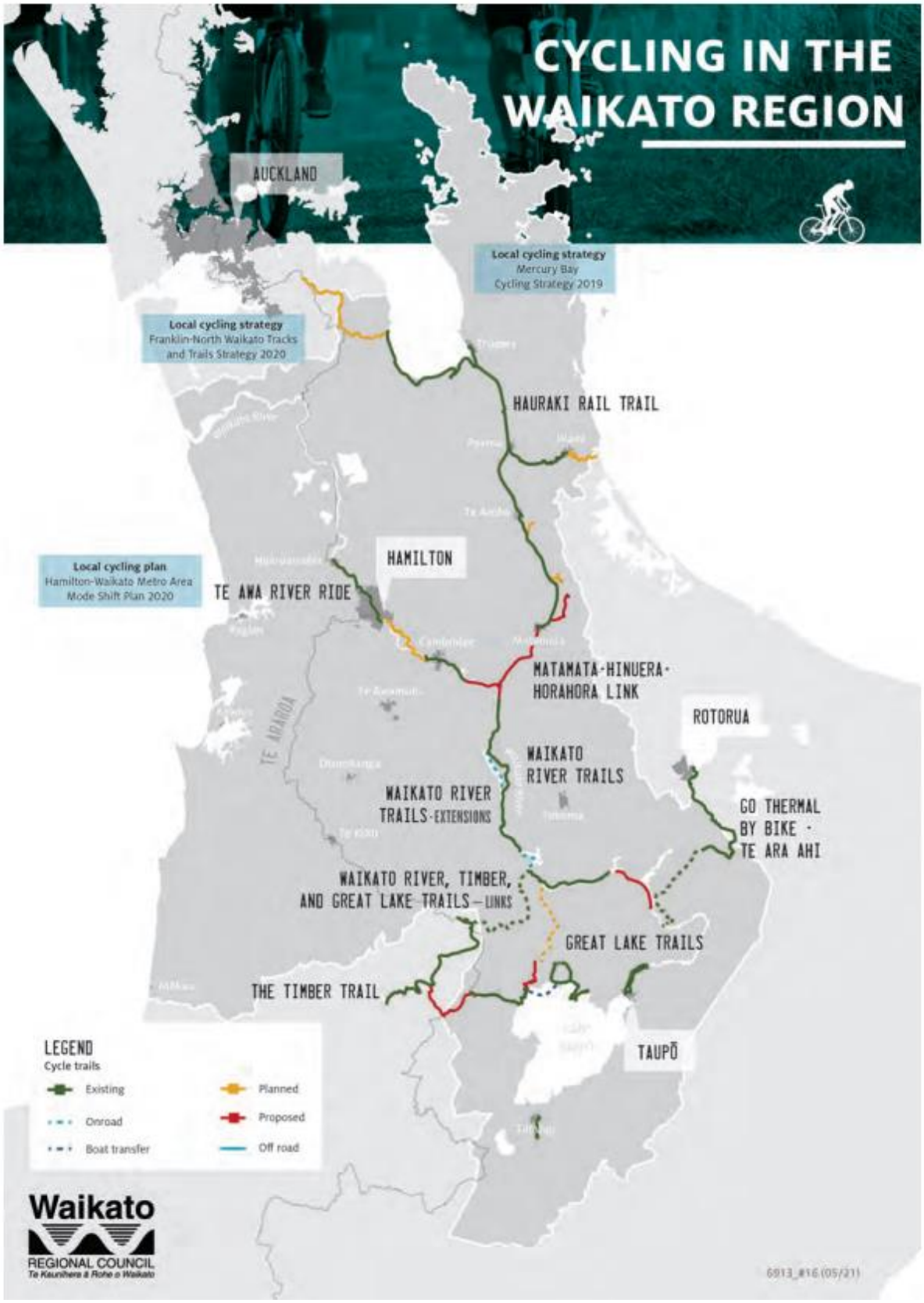
- a large proportion of trips are internal and likely to be walkable/cyclable.
- people leaving mostly travel towards Hamilton City.
- people mostly come to the study area from Huntly.

## Walking and cycling

Most public realm infrastructure incudes walking paths within urban areas. Connections between the townships are sparse and limited to vehicles while exiting connections are catered towards regional connections.

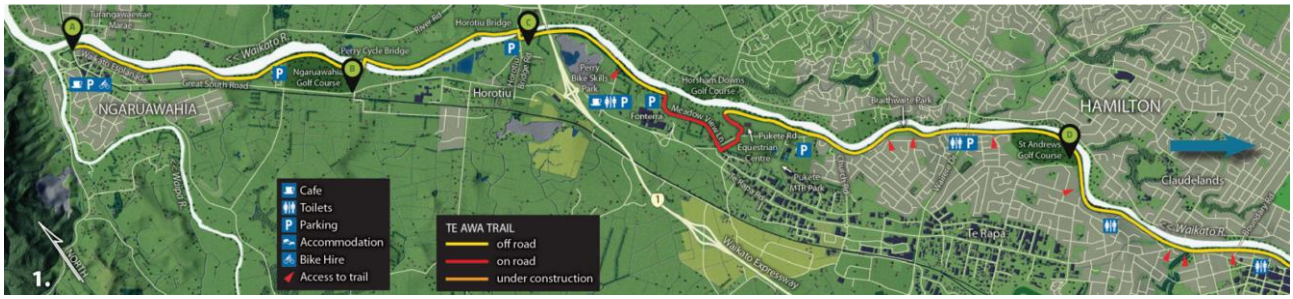
Figure A8 shows the regional cycling network.

**Figure A8: Waikato regional cycling network**




Identified in the regional cycling network is the Te Awa River Ride. While its purpose is predominantly for recreation, it provides a high level of service separated cycling route from Ngaaruawaahia to Hamilton. The route is shown in Figure A9.

**Figure A9: Te Awa River ride**




## Public transport

Figure A8 shows the regional public transport network. The network relies on a bus network shown in Figure A11. The Te Huia passenger rail service travels through the study area.

**Figure A10: Regional Public Transport network**

**Figure A11: Hamilton City bus network[23]**

Figure A12 shows the Ngaaruawaahia bus network node.

**Figure A12: Hamilton City bus network - Ngaaruawaahia**

## Vehicles and freight

The study areas roading network is extensive, linking the communities internally but also regionally with excellent access to the State Highway network via interchanges at Taupiri and Horotiu. Figure A13 shows the regional roading network while Figure A14 shows the freight network including annual average daily heavy vehicle counts.

**Figure A13: Regional roading network**

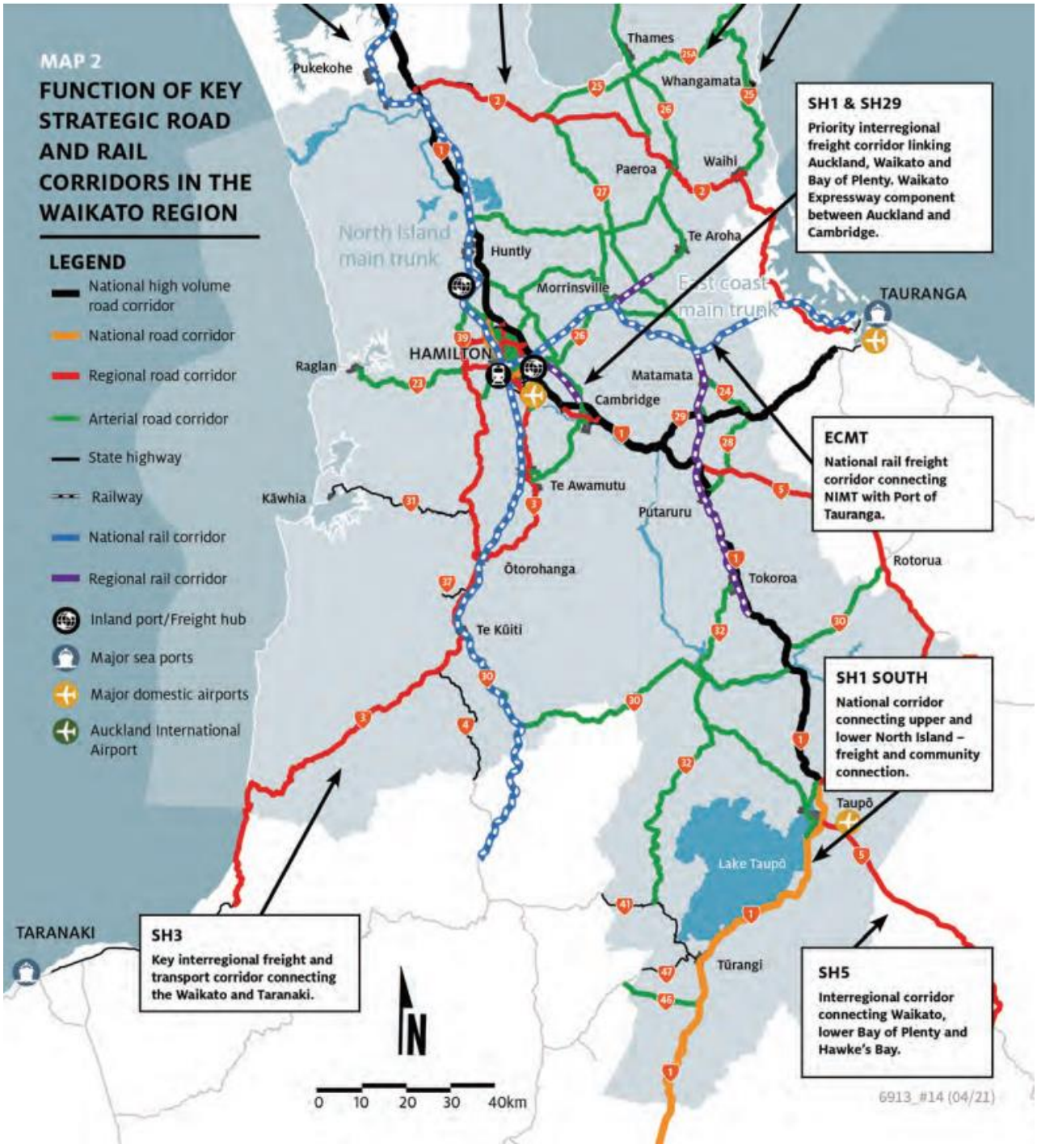


**Figure A14: Regional freight network**

## Road classification

The network within the study area has two classification systems for roading. Waikato District Plan road hierarchy and Waka Kotahi's One Network Framework Classification (ONFC).

### 6.5.1 Waikato District Plan Classification

The Waikato District Plan roading classification is summarized in Table A1.

**Table A1: Waikato District Plan roading classification**

| Category | Function |
|---|---|
| **National routes** | Motorways, Expressways and Principal state highways that: form a strategic network of national importance provide for the collection and distribution of goods significant to the national economy rural roads that typically provide for more than 2,500 vehicle movements per day (vmpd) the through traffic function predominates. |
| **Regional arterial roads:** state highways not included in National Routes category roads giving access to important tourist areas or centres of large populations roads linking different transport modes roads providing significant intraurban links. | State Highways and Roads that: form a strategic network of regional importance provide for the collection and distribution of goods significant to the regional economy rural roads that typically provide for more than 2,500 vehicle movements per day (vmpd) include rest areas the through traffic function predominates |
| **Arterial roads:** links between residential, commercial, industrial or recreational land use activities provide alternative links between centres of population or are significant for the movement of goods or produce within the district. | Roads that: form a strategic network of district importance provide for the collection and distribution of goods significant to the district's economy. rural roads that typically provide for less than 2,500 vehicle movements per day (vmpd) the through traffic function needs to be balanced against the property access function |
| **Collector roads:** provide links between local roads and arterials. | Roads that: provide locally preferred routes between or within areas of population or activities provide alternative routes to arterials are sealed and are of road geometry aligned with operational safety standards required for the traffic volumes on each section the through traffic function needs to be balanced against the property access function. |
| **Local Roads** | Roads whose primary function is property access. |
| **Scenic and tourism routes** | Roads that are scenic and/or provide preferred connections between tourist locations and: sealed increased traffic services (signage) rest areas. |
| **Culsdesac and noexit roads** | Roads that do not provide a vehicular thoroughfare between roads, and whose primary function is property access. |

### 6.5.2 ONRC

Waka Kotahi's ONFC is shown in Figure A15.

**Figure A15: ONFC**

## Existing network operation

We have considered the base 2018 WRTM outputs to inform the existing network operation. Figure A16 shows the morning peak period LOS while Figure A17 shows the evening peak period LOS.

**Figure A16: WRTM base 2018 morning peak LOS**

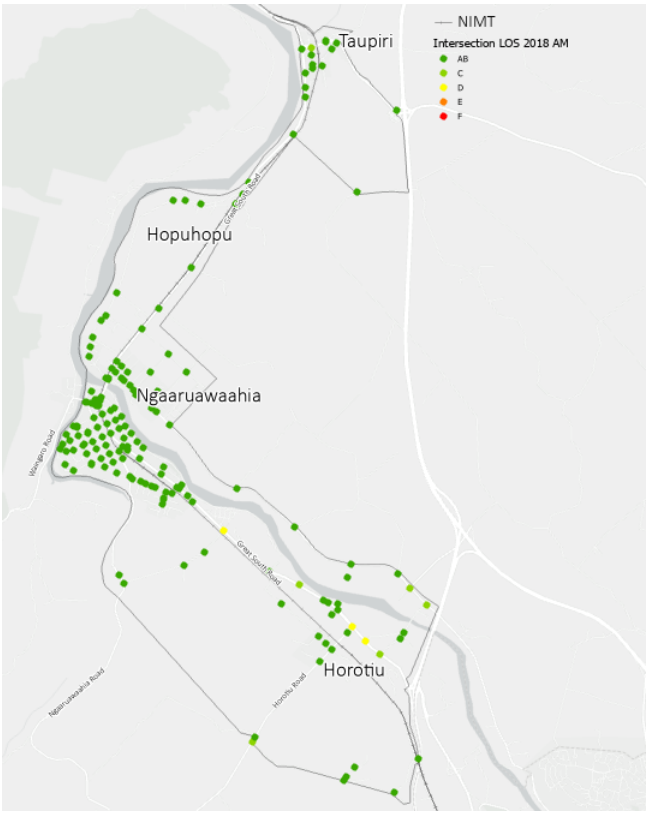



**Figure A17: WRTM base 2018 evening peak LOS**

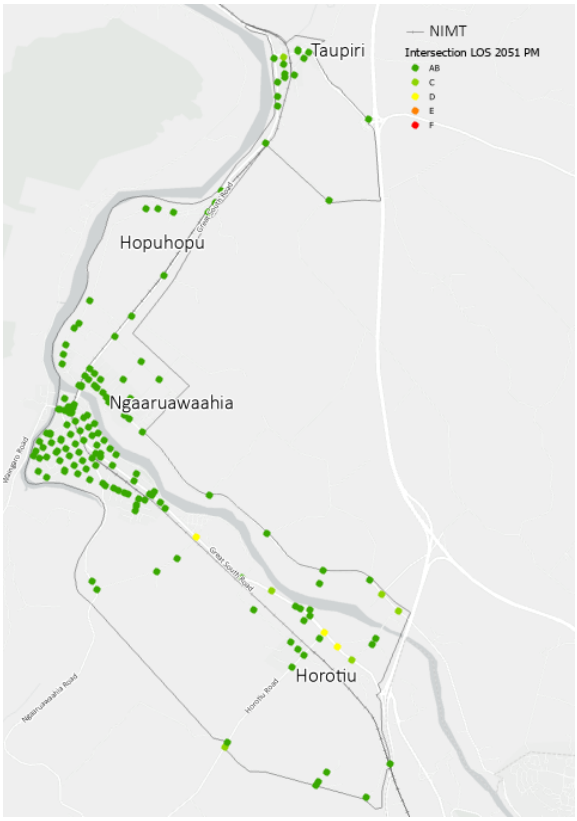
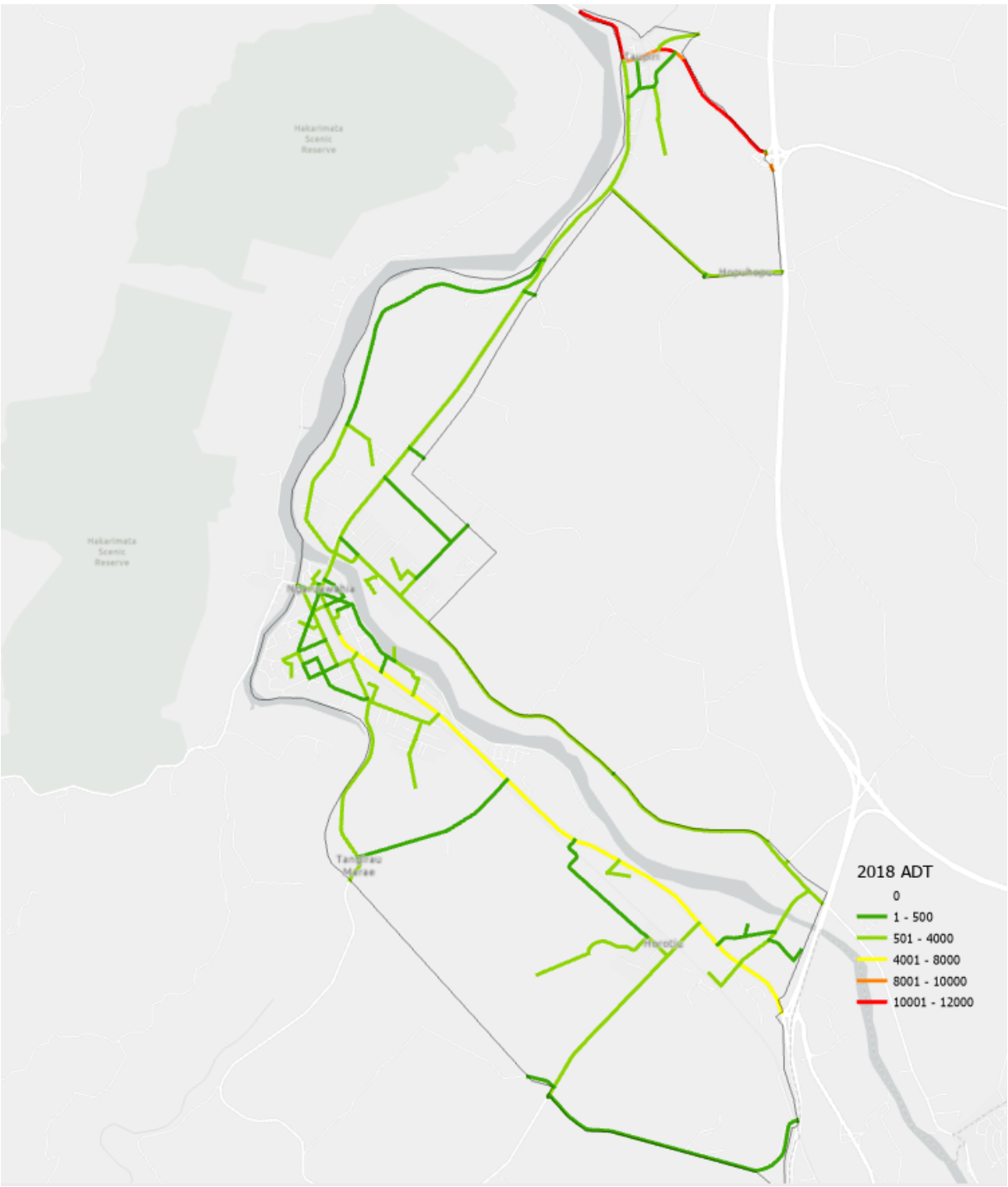


Figure A18 shows the annual daily traffic in 2018 from the WRTM outputs. Future years' modelling outputs are subsequently presented in Appendix B.

**Figure A18: WRTM base 2018 daily vehicle volumes**




The operation of the existing road network

- has changed with progressive opening of the Waikato Expressway (Te Rapa 2012, Ngaaruawaahia 2013, Hamilton 2022) and
- has relatively low volumes since the opening of the Ngaaruawaahia Section providing an opportunity to reutilize the network

- operates at LOS C and above with some exceptions during peak periods.

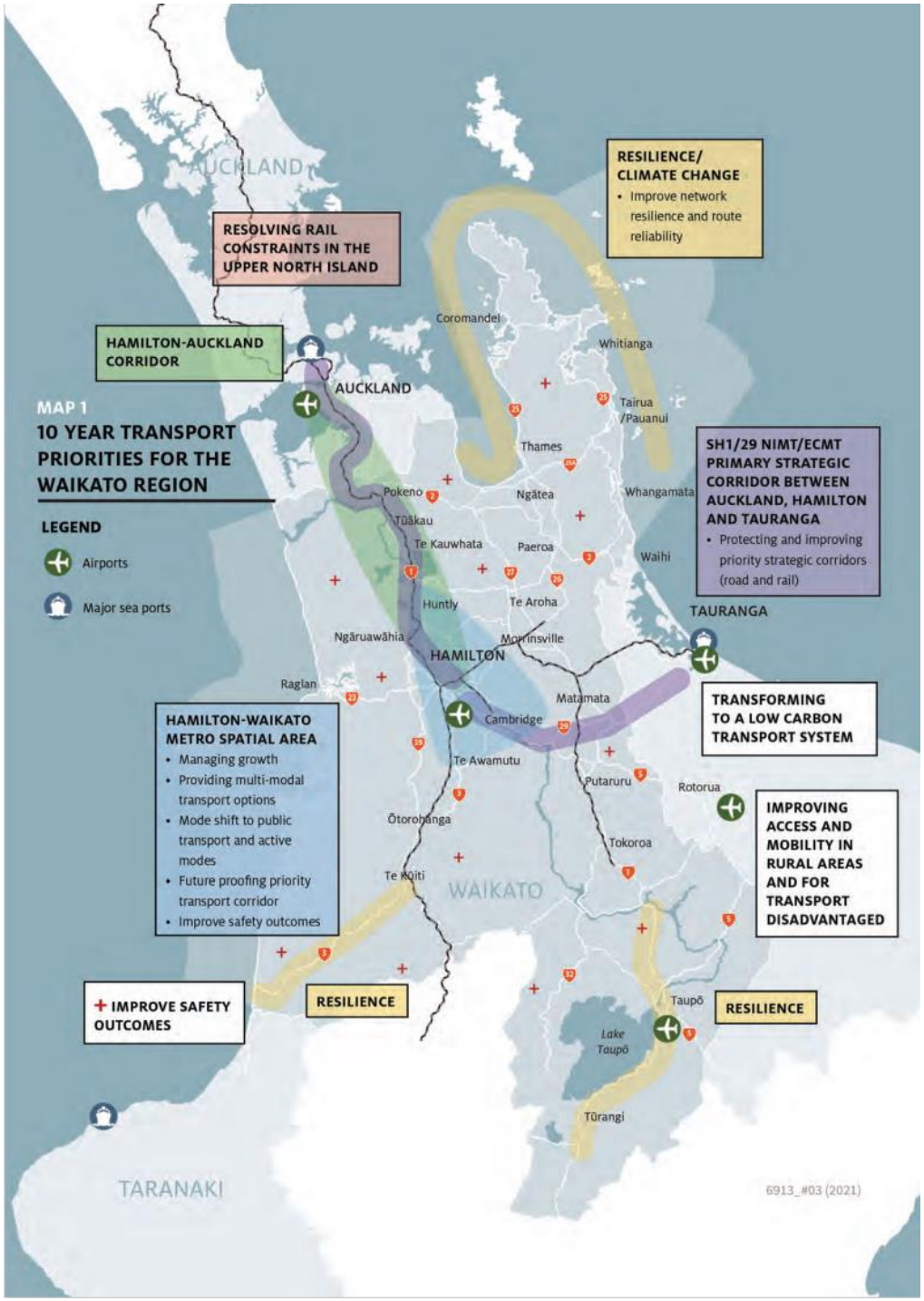
# APPENDIX B Future network environment

# THE CHANGING TRANSPORT NETWORK FOCUS

To inform the transport assessment of the study area, we have considered a range of National, Regional and Local strategies. A summary of these is provided in the main report with figures for each strategy provided in this Appendix.

## Waikato Regional Land Transport Plan (RLTP) 2021-2051

**Figure B1: Waikato RLTP at a glance**



## Future Proof – Hamilton Waikato Metro Spatial Plan Transport Programme Business Case 2022

**Figure B2: Hamilton Waikato Metro Spatial Plan Transport Programme Business Case at a glance**

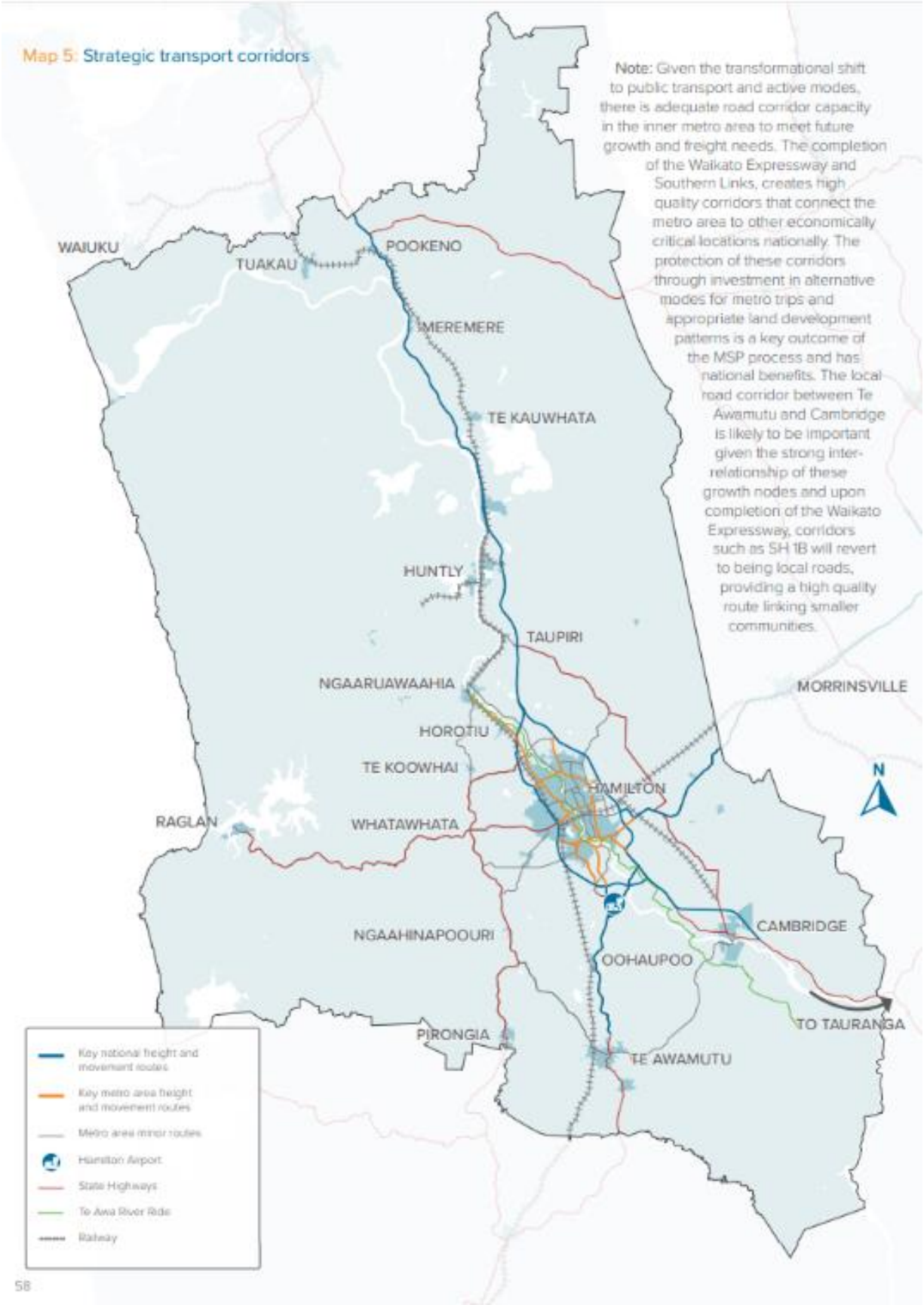

Map 5: Strategic transport corridors
Note: Given the transformational shift to public transport and active modes, there is adequate road corridor capacity in the inner metro area to meet future growth and freight needs. The completion of the Waikato Expressway and Southern Links, creates high quality corridors that connect the metro area to other economically critical locations nationally. The protection of these corridors through investment in alternative modes for metro trips and appropriate land development patterns is a key outcome of the MSP process and has national benefits. The local road corridor between Te Awamutu and Cambridge is likely to be important given the strong inter-relationship of these growth nodes and upon completion of the Waikato Expressway, corridors such as SH 1B will revert to being local roads, providing a high quality route linking smaller communities.
WAIUKU
TUAKAU
POOKENO
MEREMERE
TE KAUWHATA
HUNTLY
TAUPIRI
NGAARUAWAAHIA
MORRINSVILLE
HOROTIU
TE KOOWHAI
HAMILTON
RAGLAN
WHATAWHATA
CAMBRIDGE
NGAAHINAPOOURI
OOHAUPOO
TO TAURANGA
PIRONGIA
TE AWAMUTU
N
Key national freight and movement routes
Key metro area freight and movement routes
Metro area minor routes
Hamilton Airport
State Highways
Te Awa River Ride
Railway
58

**Figure B3: Hamilton Waikato Metro Spatial Plan Transport Programme Business Case public transport network**

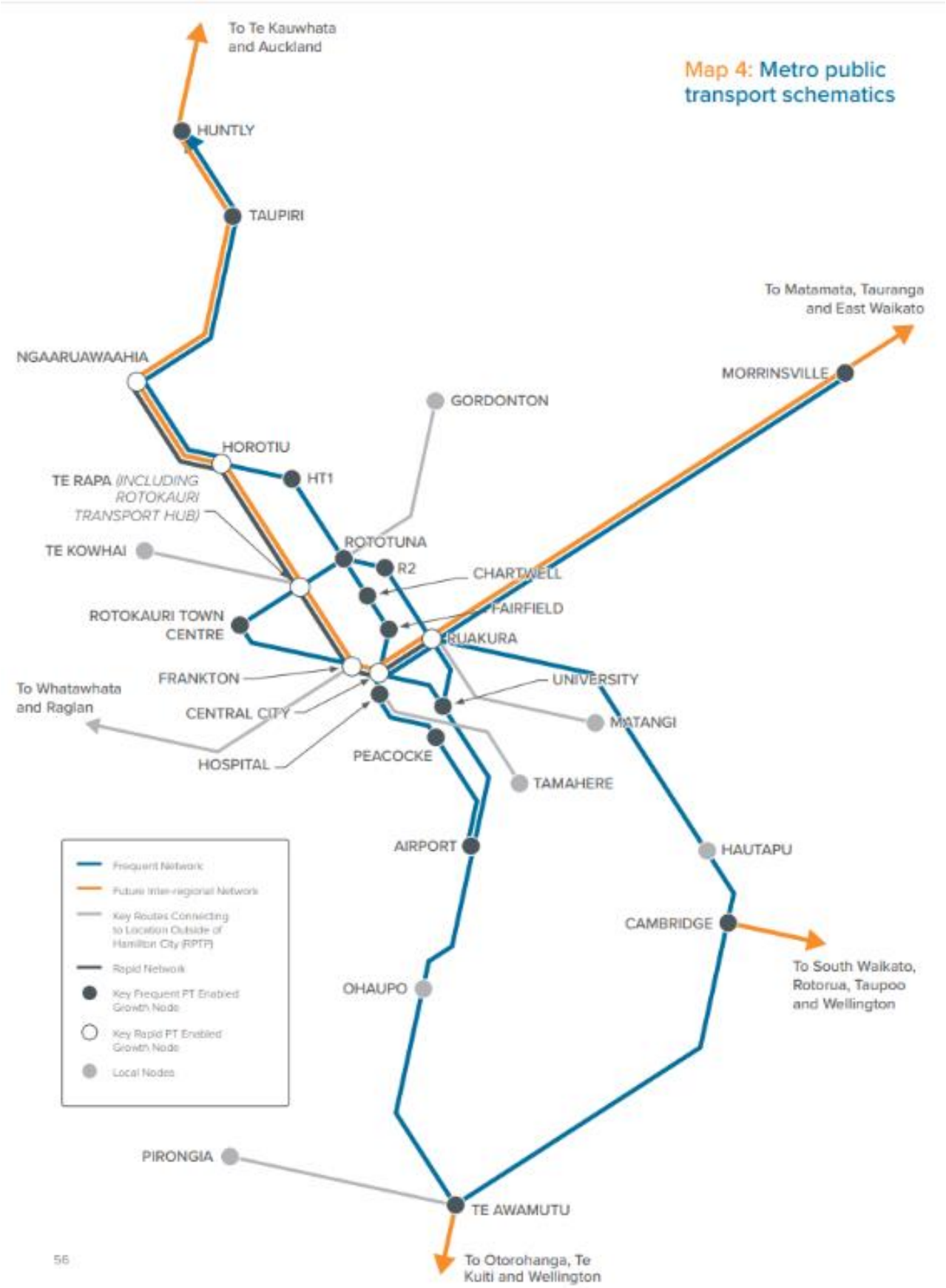
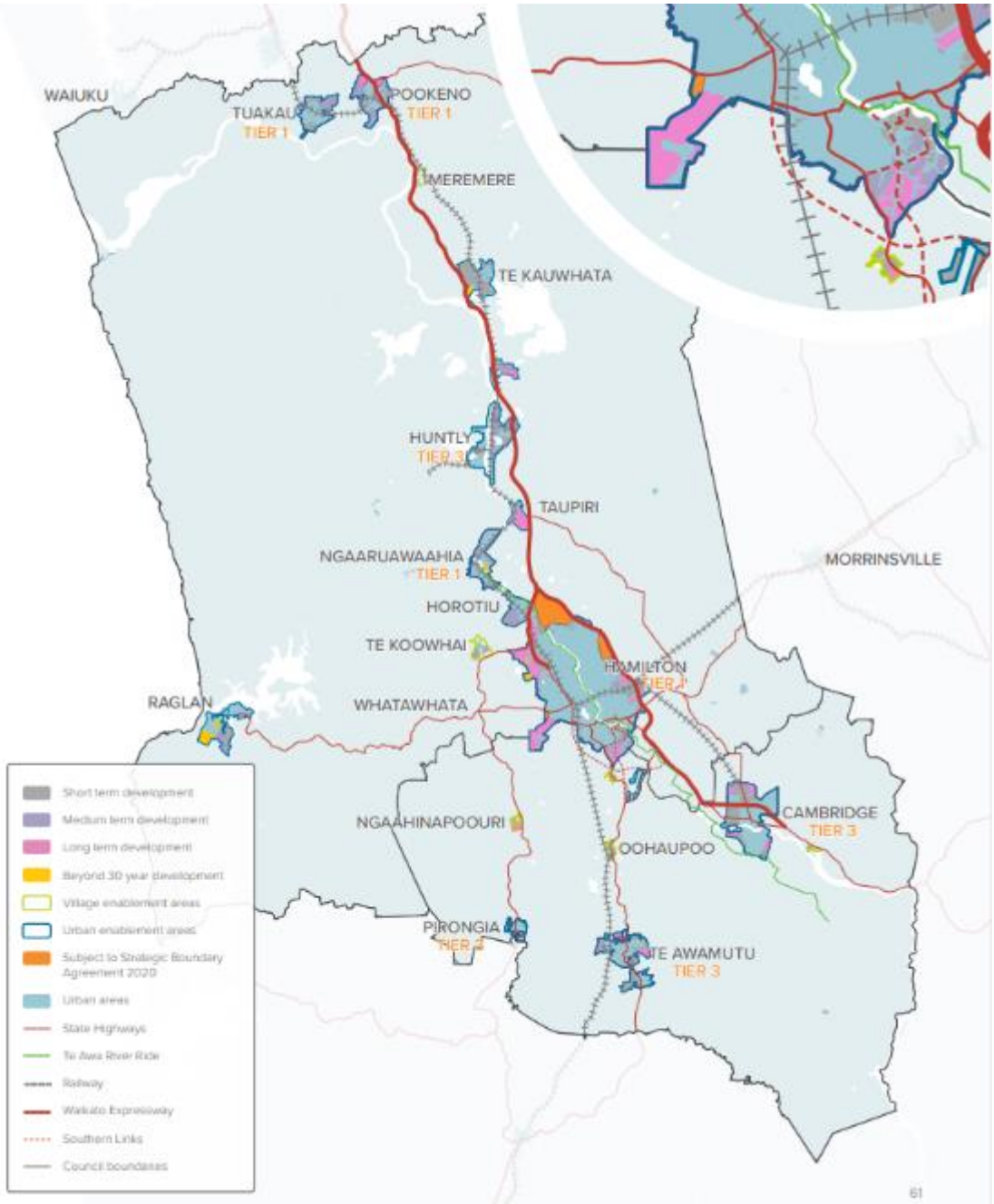


**Figure B4: Hamilton Waikato Metro Spatial Plan Transport Programme Business Case future urban zones**



## Hamilton-Waikato Metro Area Mode Shift Plan

**Figure B5: Hamilton Waikato Metro Spatial Plan Transport Programme Business Case space considerations**

### Corridor efficiency – best use of scarce resource

**People carrying potential**

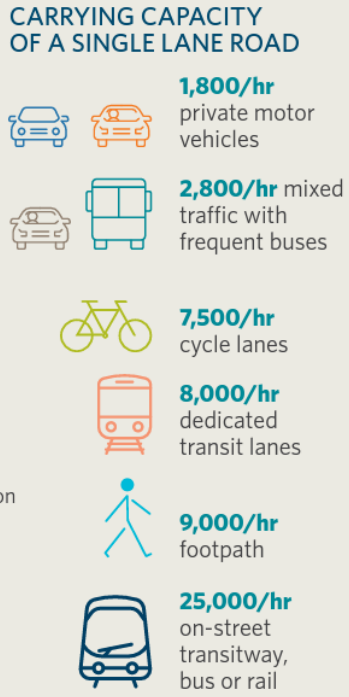
Road corridor space is a scarce resource, particularly in existing urban areas. Making best use of this resource to move people is a key feature of urban and transport planning.

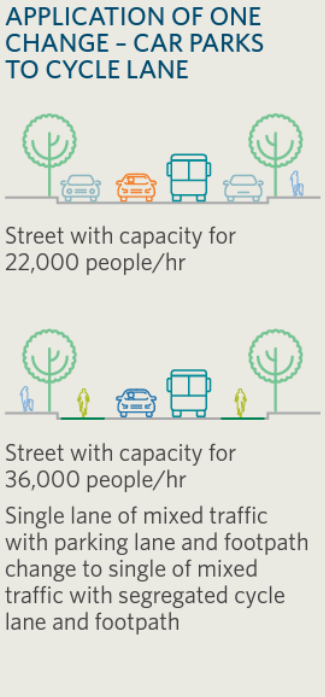
Recent planning documents and local spatial planning exercises have identified a desire to increase jobs and housing density in key locations. This requires a change in how we use the existing transport space to deliver this growth.

The first figure to the right shows the person carrying capacity of a single lane (3.5m) for various modes. This illustrates that car modes are the least efficient for carrying people.

The next figure shows the change in person carrying capacity of a corridor if a parking lane is switched to provide a cycle lane.

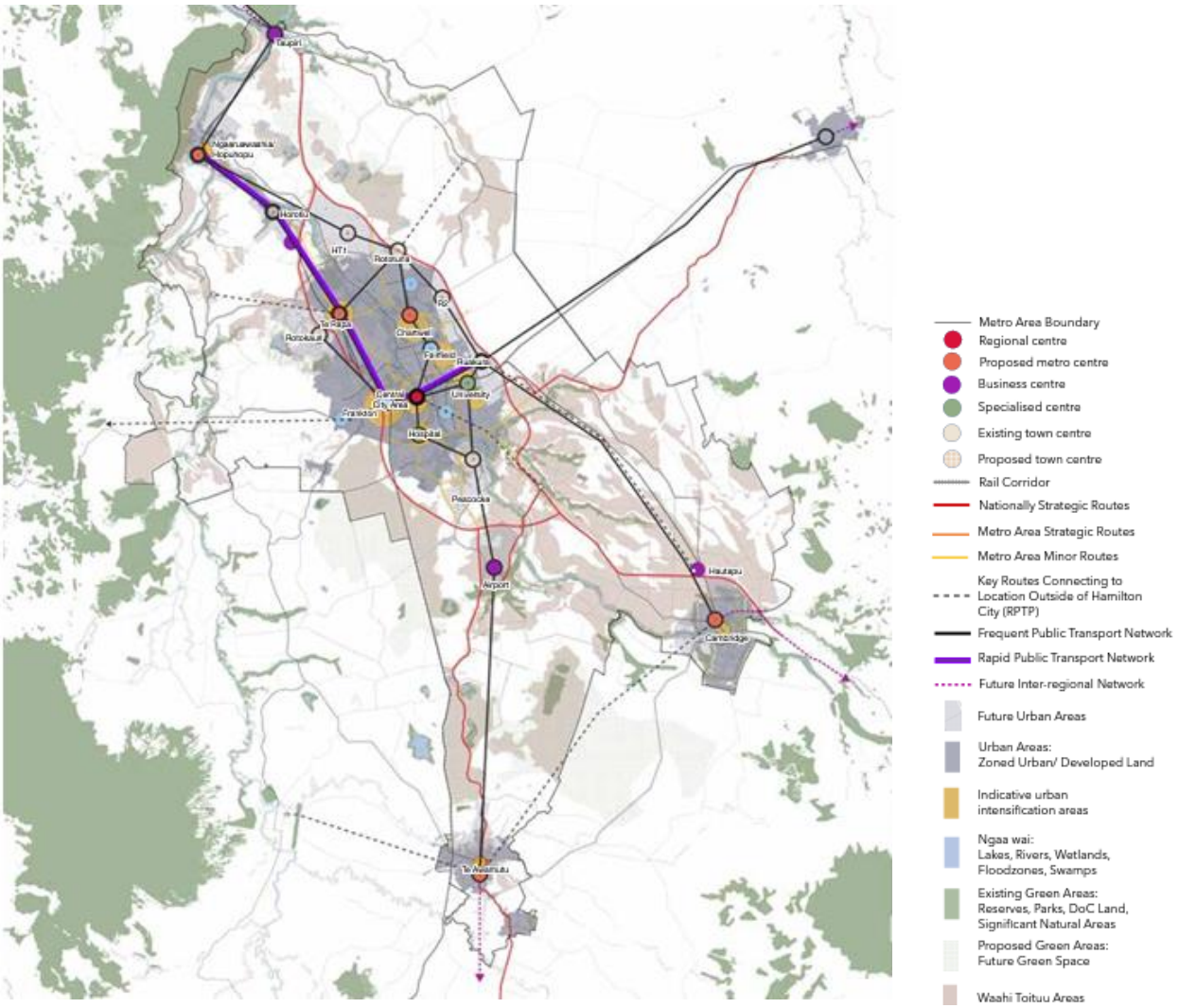
Most cities have only limited levels of pedestrianisation but many have consciously removed through traffic; instead focussing on serving the needs of people who need to access the urban core. Understanding that interventions that improve access for other modes can very often assist in naturally reducing through movements without significant impacts on access for private cars.



## Hamilton Waikato Metro Spatial Plan (MSP)

**Figure B6: Hamilton Waikato MSP**



## Waikato Regional Public Transport Plan 2022-2032

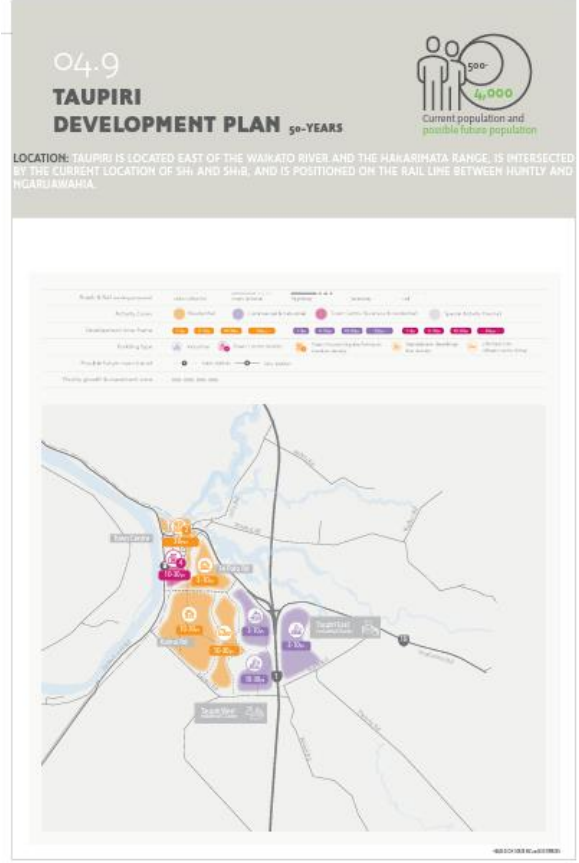
**Figure B7: Waikato RPTP**

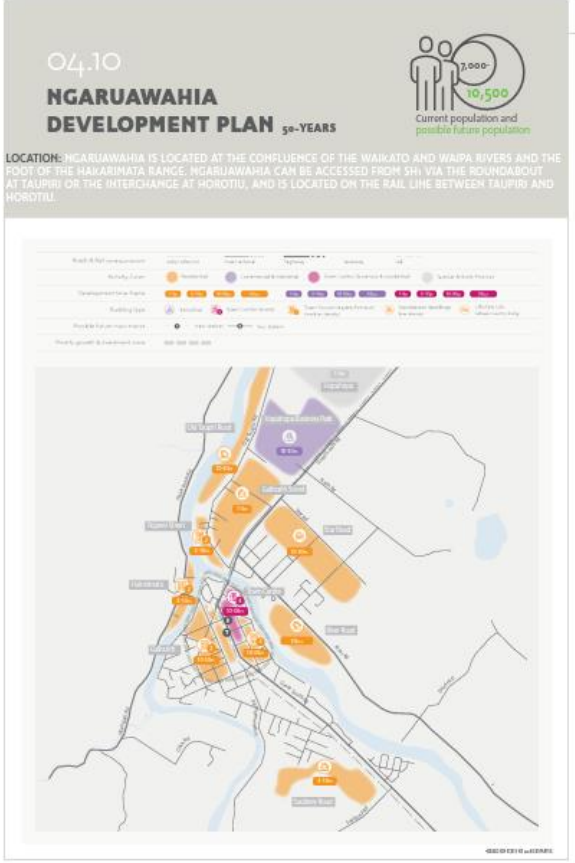
## Hamilton-Auckland Corridor Plan & Implementation Programme

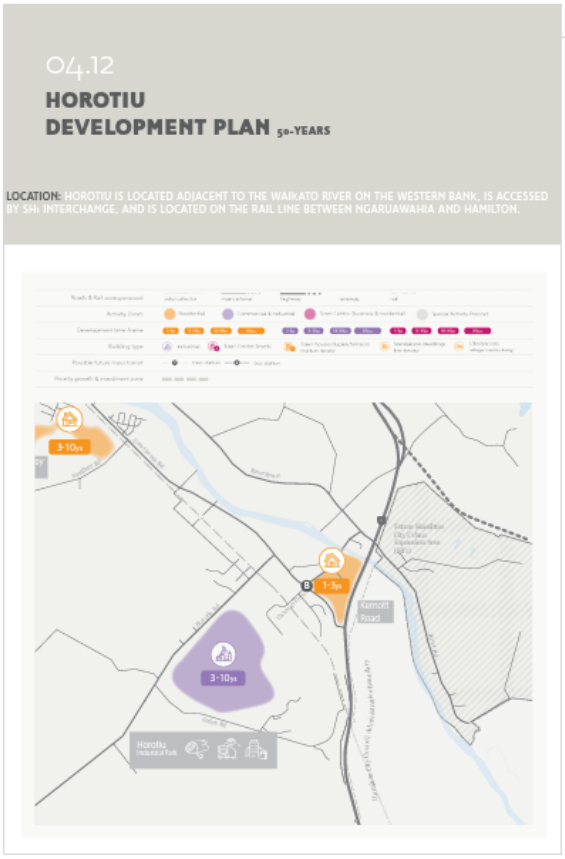
**Figure B8: H2A Corridor Plan**

## Waikato 2070 Growth & Economic Development Strategy

**Figure B9: Waikato 2070 growth and economic development strategy for Ngaaruawaahia, Taupiri and Horotiu**



## ANTICIPATED POPULATION GROWTH

**Figure B10: 2030 population development capacity**

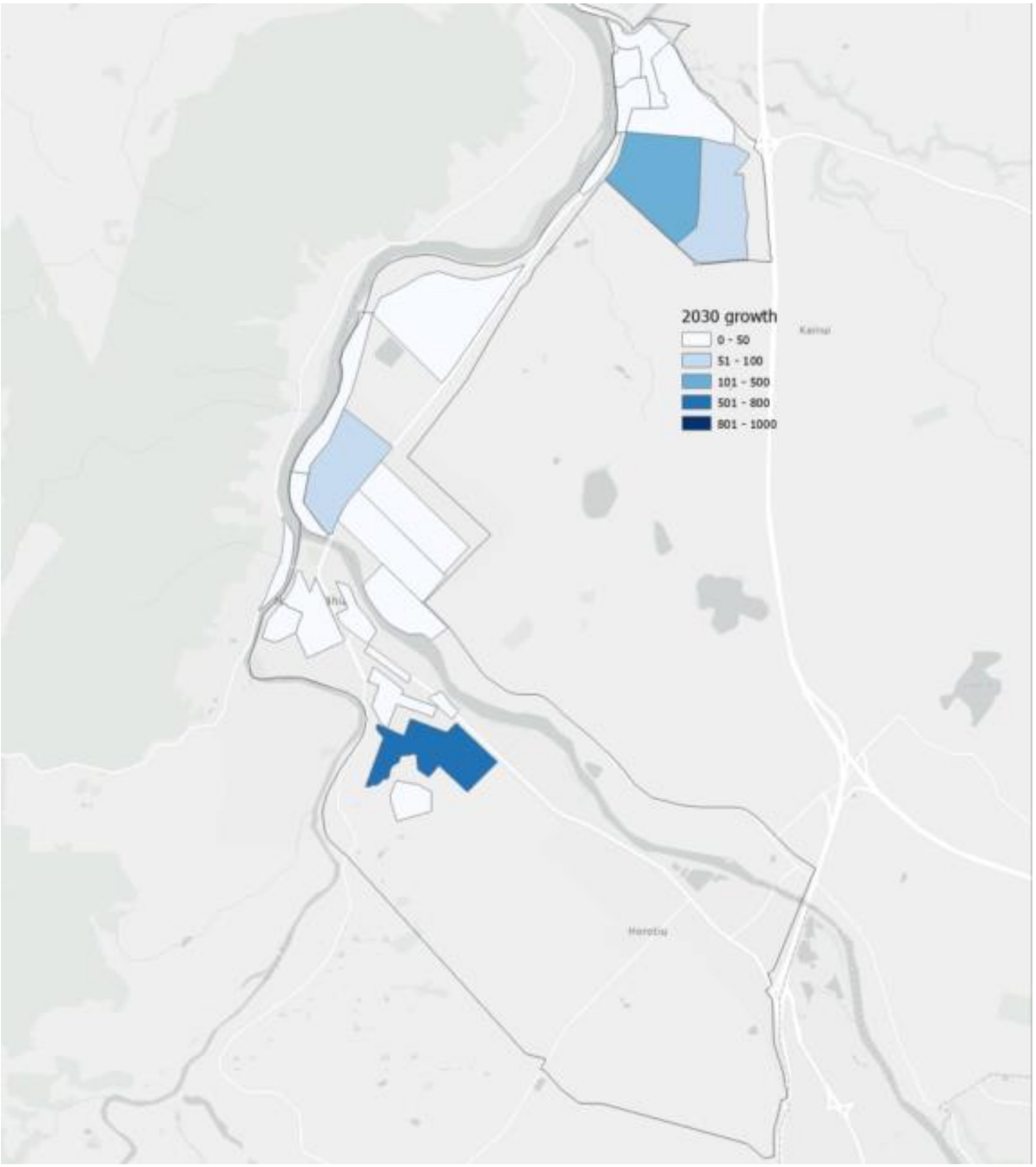
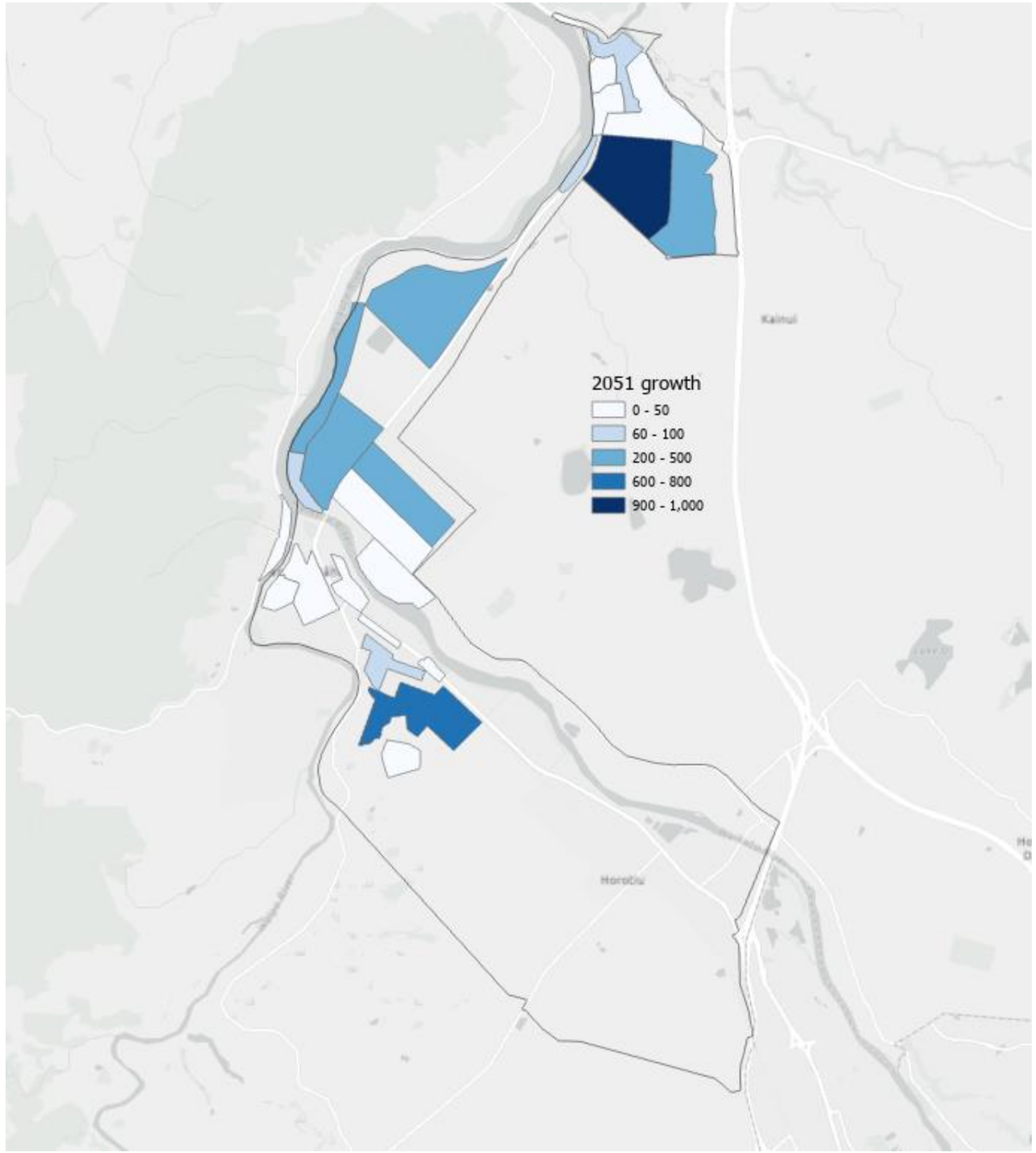



**Figure B11: 2050 population development capacity**



# WRTM FORECAST MODEL OUTPUTS

## Daily flows

**Figure B12: 2031 daily forecast flows**

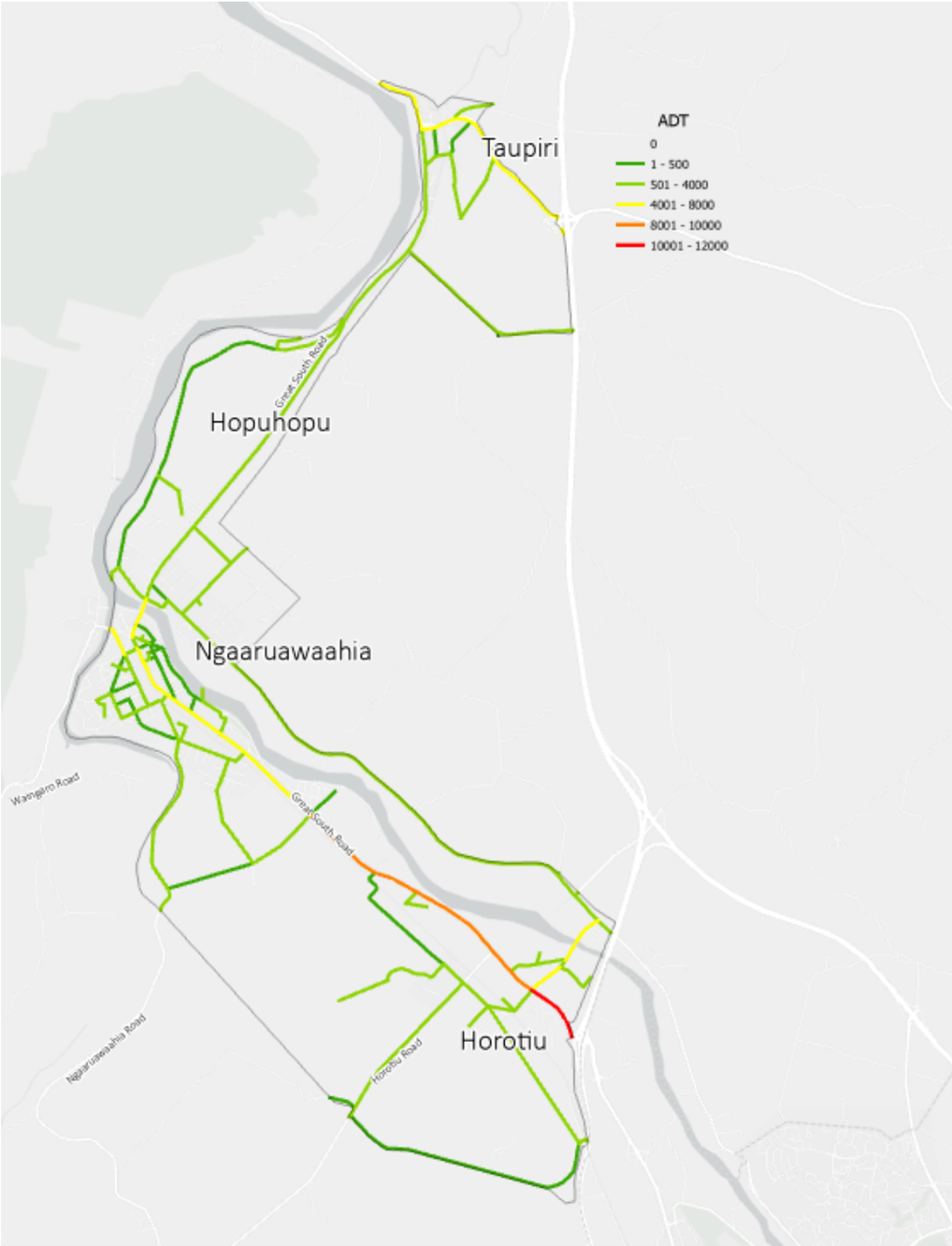
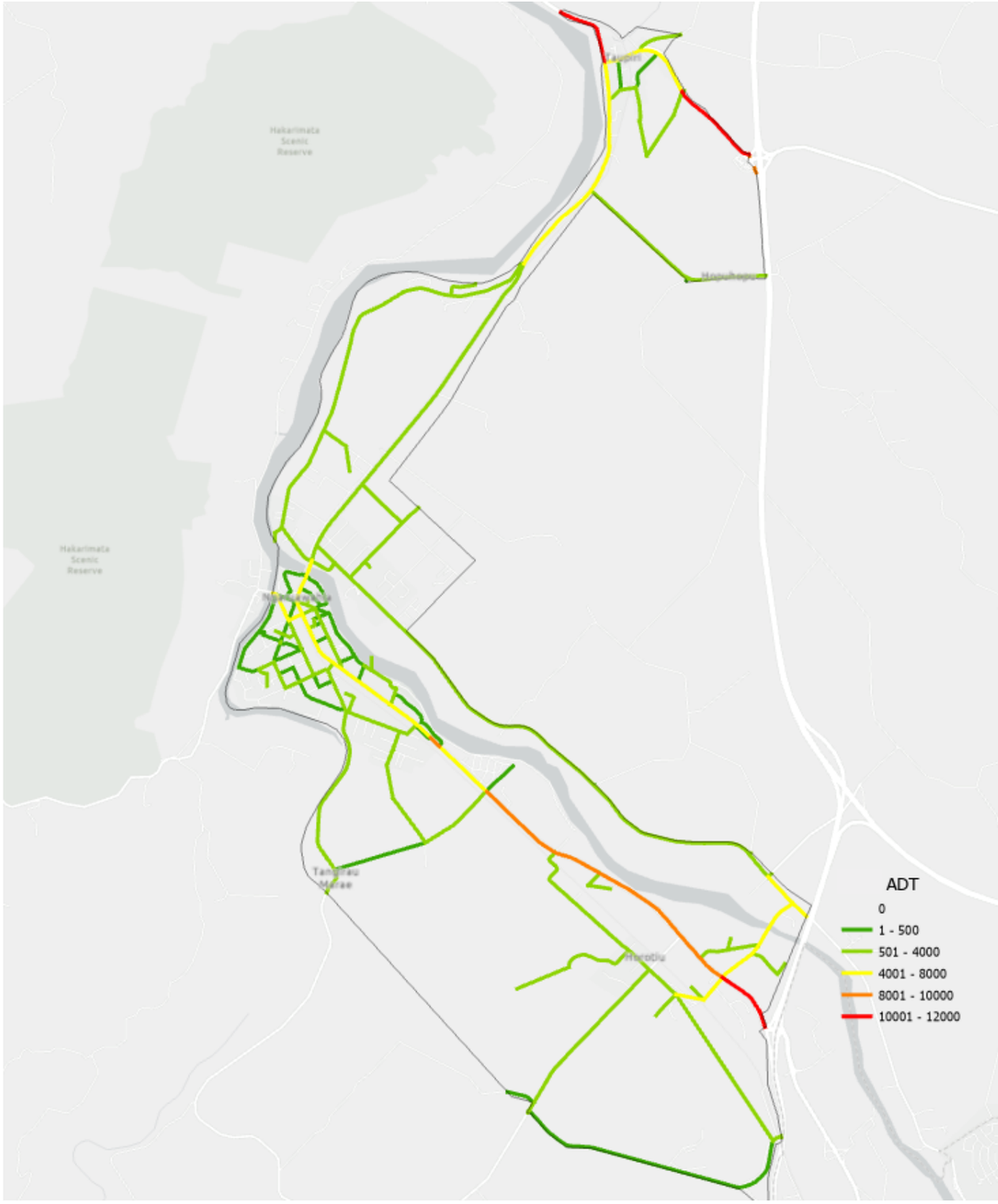



**Figure B13: 2051 daily forecast flows**



Compared to 2018 we note

- Increases in volume on most roads due to land use changes, including:
- Increase on Great South Road south of River Rd
- Increase on Herschel St/Princess St due to Waingaro Rd closure
- Large increase on Great South Road south of Saulbrey Rd
- Large increase south of Gateway Drive
- Demand reduction north of Taupiri due to Waikato Expressway opening.
- Demand reduction on Havelock Rd due to new connection to Saulbrey Rd.

## Intersection Level of Service

**Figure B14: 2031 morning peak period LOS**

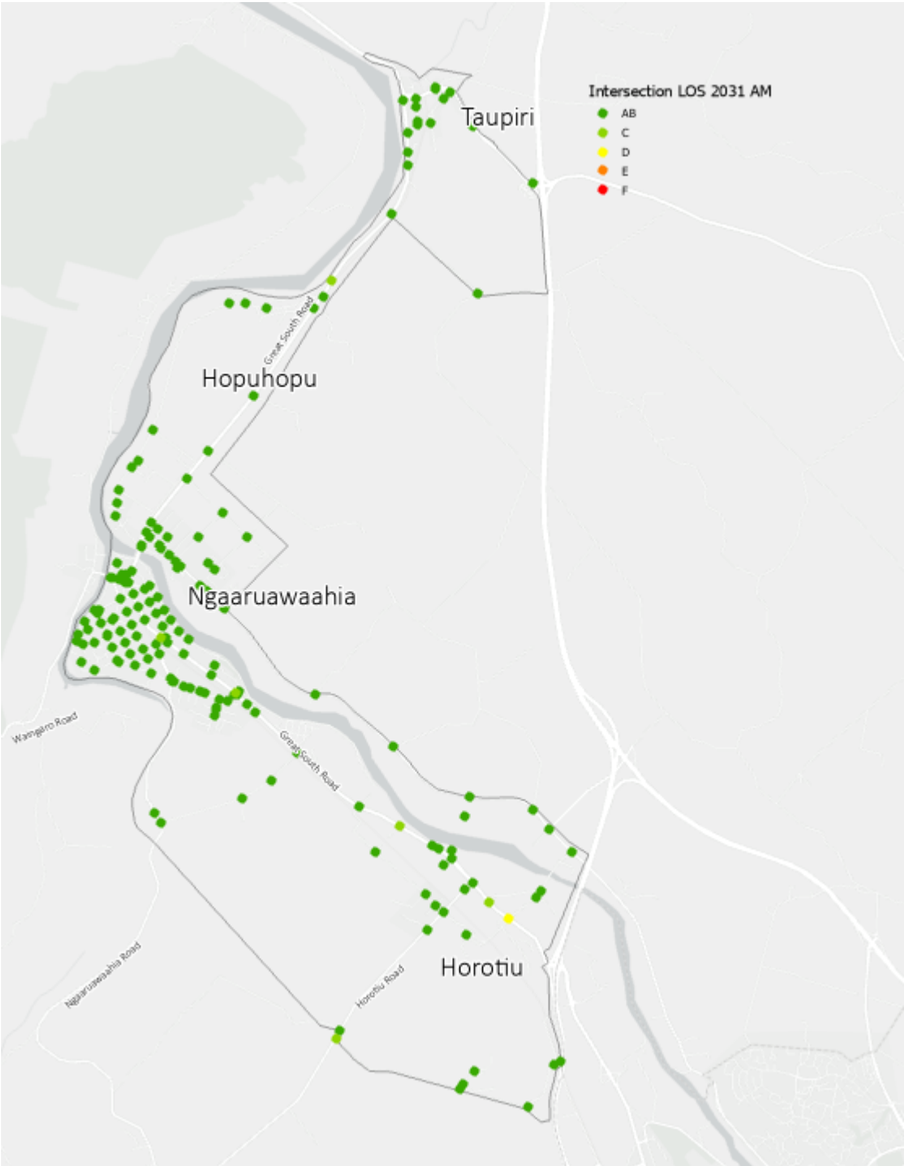



**Figure B15: 2051 morning peak period LOS**

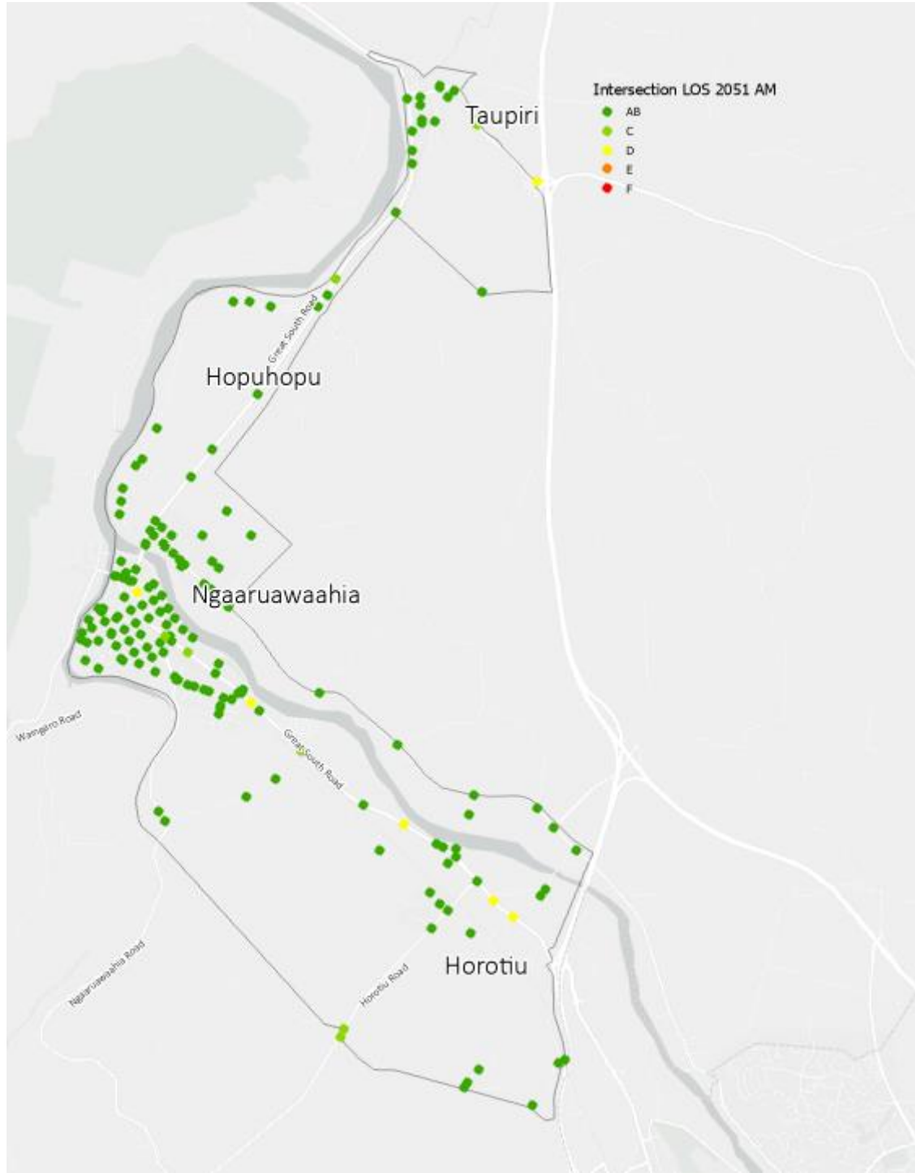


**Figure B16: 2031 evening peak period LOS**

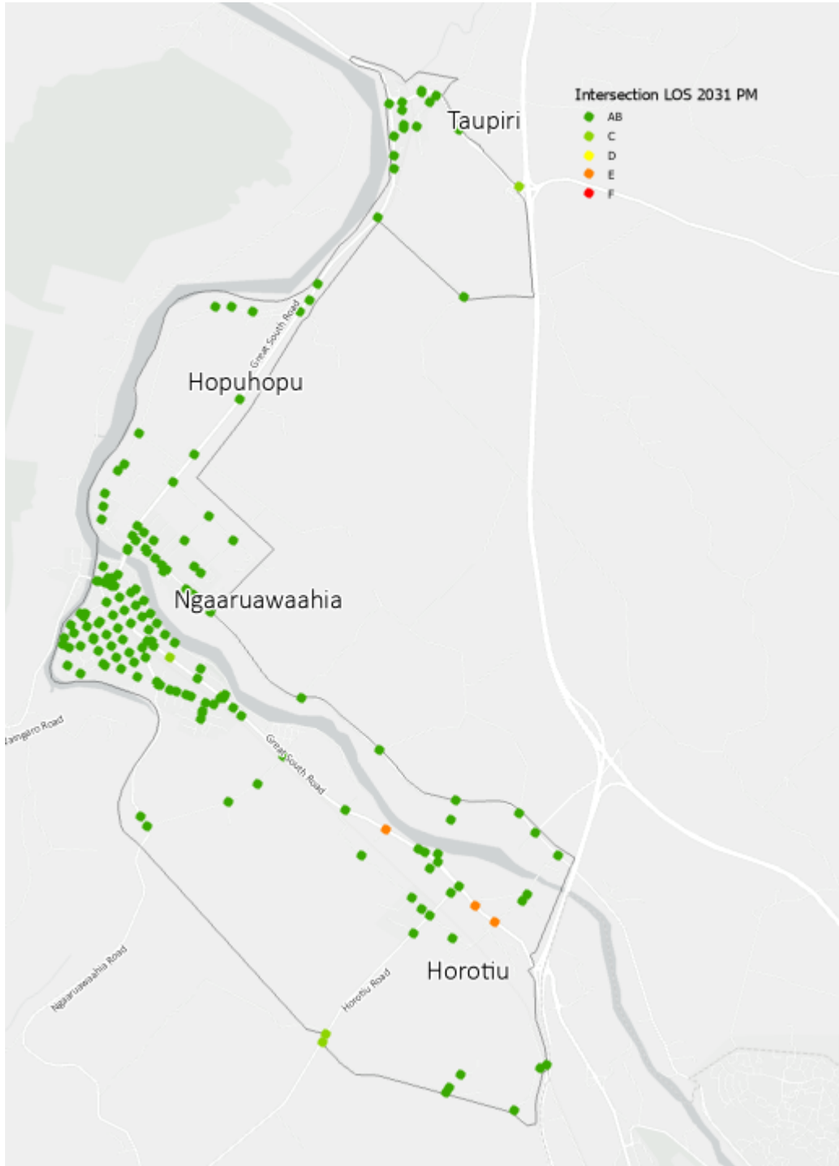
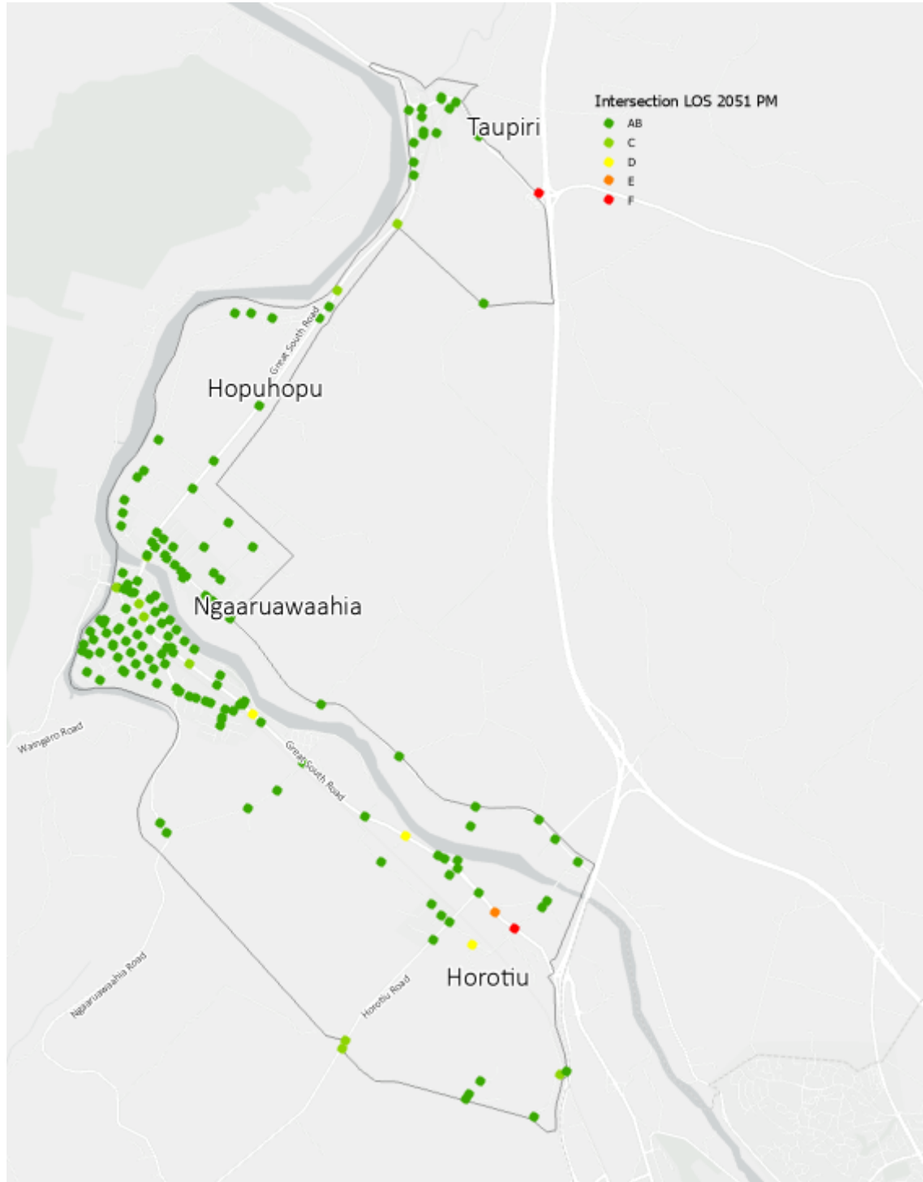



**Figure B17: 2051 evening peak period LOS**




The 2031 and 2051 LOS outputs from WRTM suggest

- As we approach Hamilton City, efficiency degrades (observed in both peaks)
- This is exacerbated with rail crossing closures north
- That completion of the Waikato Expressway has reduced traffic through Ngaaruawaahia and Taupiri and Great South Road is likely to perform well

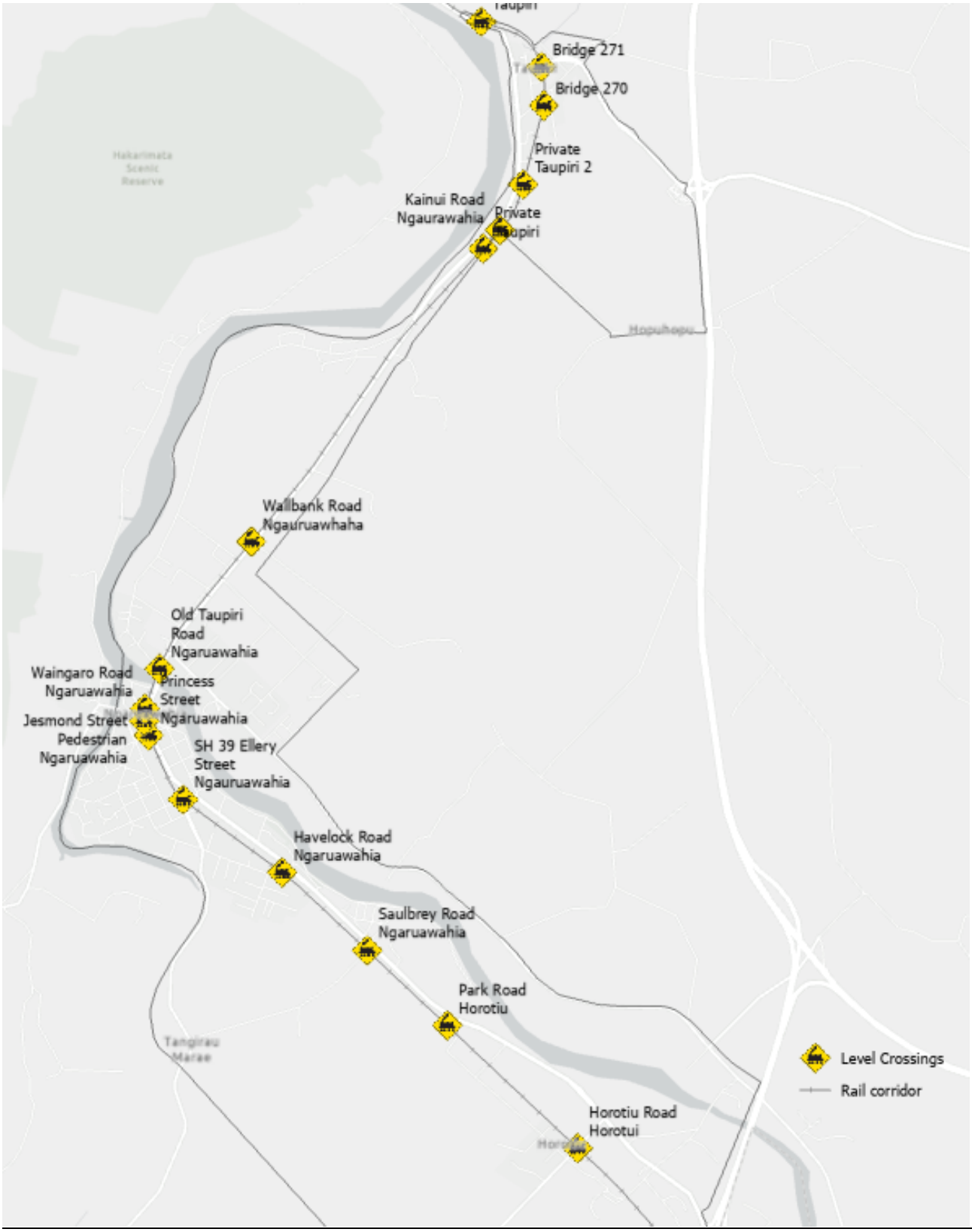
# APPENDIX C intersection assessment

# APPENDIX D NIMT at grade crossing review

# RAIL LEVEL CROSSING REVIEW

The North Island Main Trunk (NIMT) railway runs through the entire study area. Figure D1 shows the 12 level crossings, including 2 dedicated pedestrian crossings, 8 vehicle and pedestrian crossings, and 2 private crossings. The figure below indicates the level crossings within the study area.

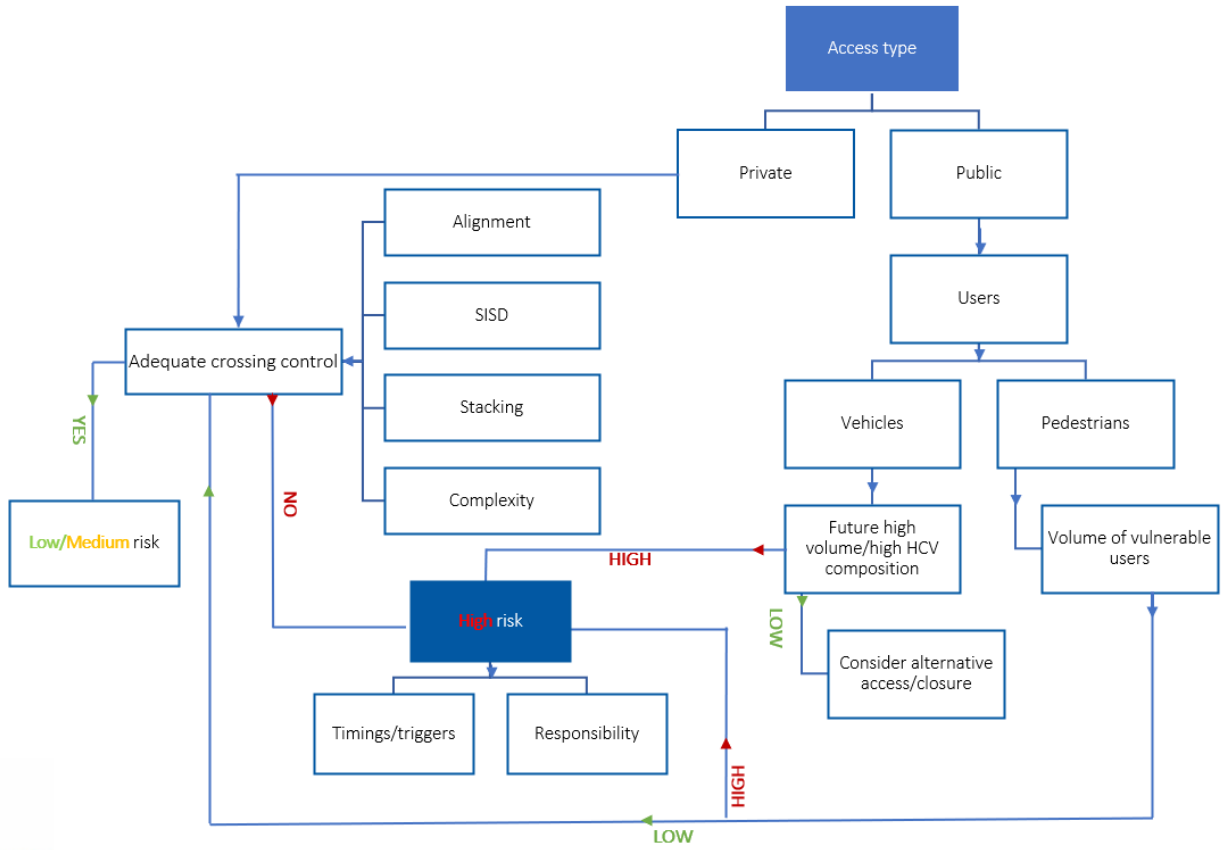
**Figure D1: Rail level crossings within the study area**



## Level crossing assessment criteria

Our assessment has followed an amended simplified Level Crossing Safety Impact Assessment (LCSIA) methodology, including additional considerations for this study as summarised in Figure D2.

**Figure D2: Level crossing assessment summary**




Our approach broadly considered the following assessment criteria

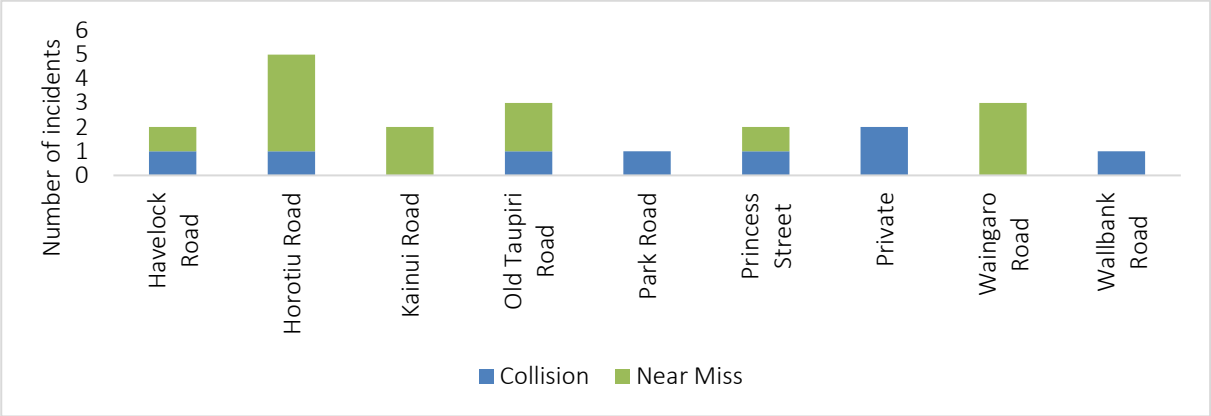
- Existing incidents and operation
- Future use and operation

## Level crossing safety review

### 6.5.3 Existing reported incidents

Figure D3 shows the reported incidents for each level crossing between 2010 and 2022.

**Figure D3: Reported incidents, 2010-2022**




We note

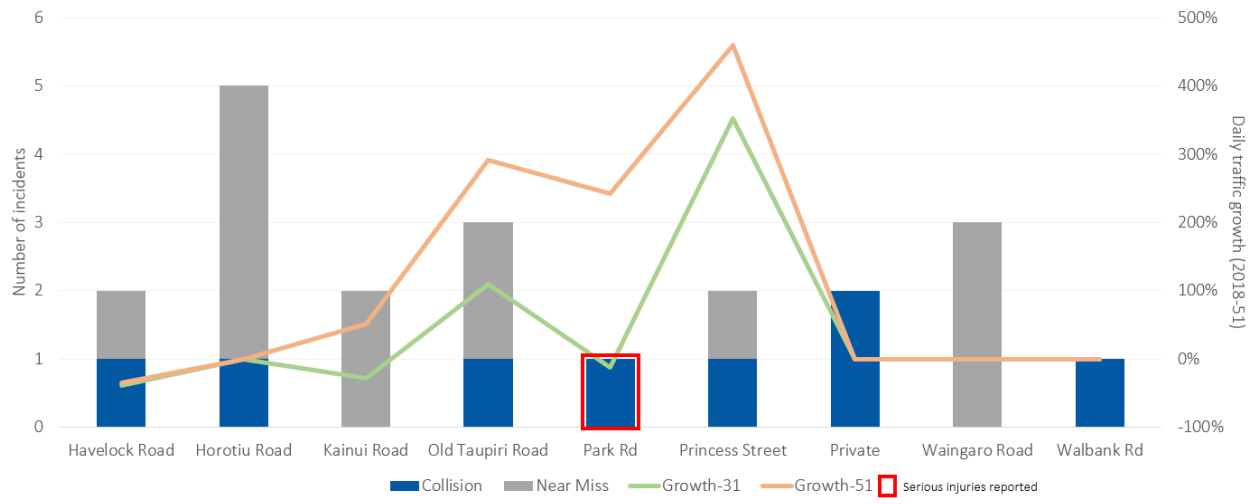
- Most incidents occurred before 2016 (16 of 23)
- All collisions have been non-fatal, with most resulting in no injuries to drivers of vehicles or trains
- A recent (2018) collision on Princess Street resulted in serious injuries
- In the most recent collisions on Horotiu Road (in 2021) and Park Road (in 2022), no injuries were reported
- The level crossing on Private access related to the Taupiri Urupa access, where 2 collisions were reported, with no injuries

### 6.5.4 Future exposure

Future exposure was considered using the future volume outputs from WRTM. The finding is summarised in Figure D4 below. We considered the growth in daily traffic from 2018 to 2031 and 2051. The model suggests that traffic volumes at

- The Old Taupiri Road level crossing could expect flows to double in 2031, while tripling to 2051
- The Park Road level crossing would triple by 2051
- The Princess Street level crossing would quadruple by 2051, based on the assumption that the Waingaro Road level crossing is closed
- The Havelock Road, Horotiu Road, and Wallbank Road level crossings would be stagnant from 2018.

**Figure D4: Future exposure and reported incidents**




Comparing the future exposure with the existing reported incidents, Havelock Road, Horotiu Road, Old Taupiri Road, Park Road, and Princess Street are likely to need investment to ensure the safe operation of the crossings continues.

We have summarised our assessment in Table D1 below.

**Table D1: Level crossing summary**

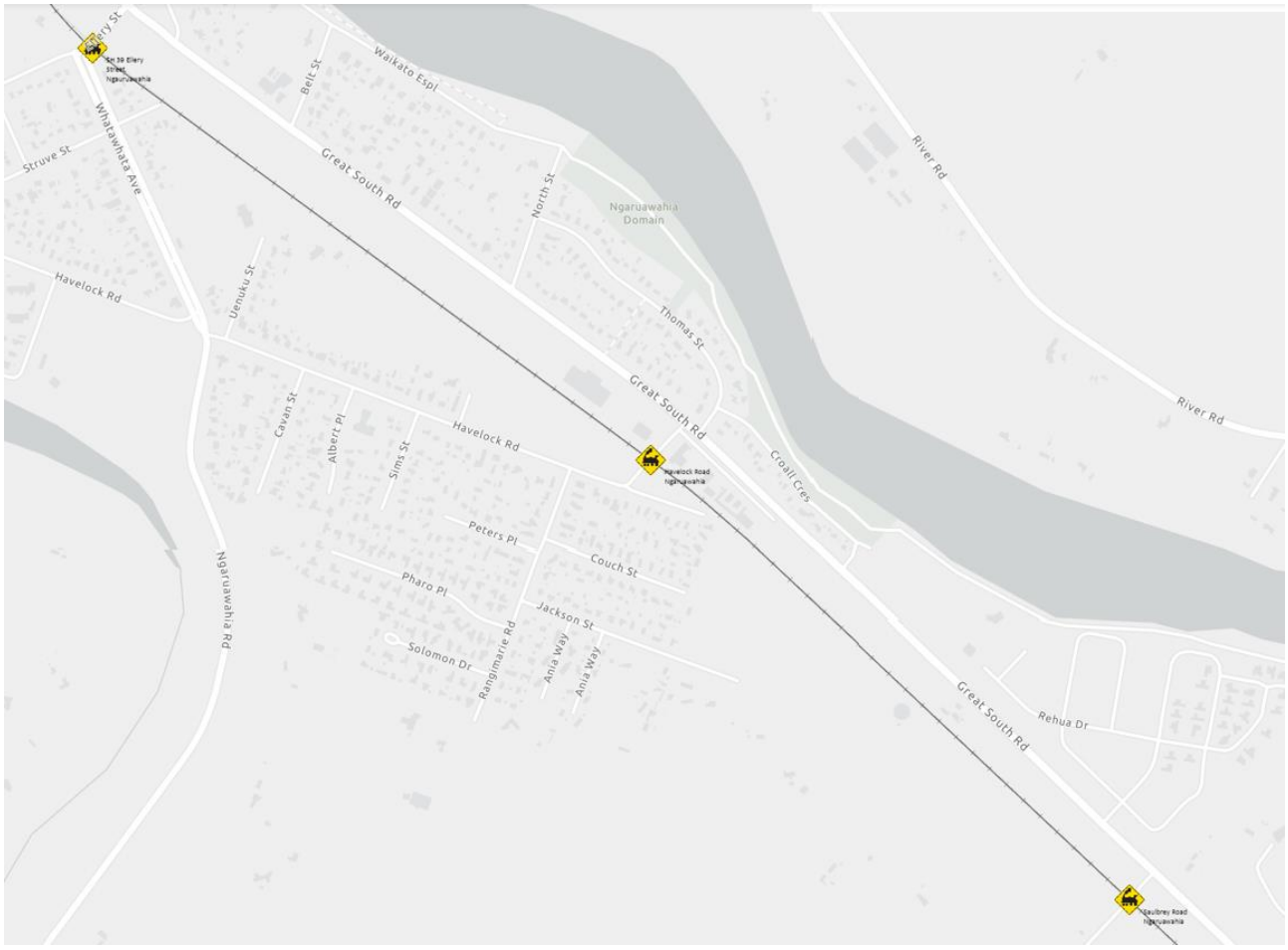
| Crossing name | Future Risk | Timing/triggers for treatment | Likely Treatment outcome |
|---|---|---|---|
| Urupa Pedestrian Taupiri | **Low** | No further upgrade required – access to Urupa now via new Watts Grove bridge | further upgrade required |
| Kainui Road Taupiri | **High** | Future growth cell at Taupiri likely around 2050. Consider upgrade to be a condition of consent for the Taupiri development. | **Upgrade** as exposure increases, particularly if employment growth in Taupiri occurs as anticipated, as that growth cell will have access via Kainui Rd |
| Wallbank Road Ngaaruawaahia | **Medium** | New road/growth cell developed, likely around 2050 | **Closure** once the north Ngaaruawaahia Hopuhopu growth cell is developed, access to utilise paper road |
| Old Taupiri Road Ngaruawahia | **High** | Concurrent growth, large relative vehicle volume increase, between 2030 and 2050 unless north Ngaaruawaahia Hopuhopu is developed earlier | Roundabout or signalised intersection |
| Waingaro Road Ngaaruawaahia | **None** | Within the next 5 years, due to concern of heavy vehicles using this crossing | **Closure.** Requires improvements at Princess Street level crossing. |
| Jesmond Street Pedestrian Ngaaruawaahia | **High** | During the upgrade of Jesmond/GSR | **Improved** pedestrian crossing |
| Princess Street Ngaaruawaahia | **High** | When the crossing at Waingaro Road is closed, a large increase in traffic is observed in WRTM. Timing: when Waingaro Road level crossing is closed. | **Improve** crossing as the Waingaro Rd closure will affect here, particularly for heavy vehicles from the quarry. Likely signalise Great South Road/ Princess Street/ Newcastle Street intersection. |
| SH 39 Ellery Street Ngaaruawaahia | **Low** | None – no reported incidents | Volumes are stable. |
| Havelock Road Ngaaruawaahia | **Low** | When Saulbrey Road growth cell develops ie prior to 2030 | **Monitor.** Review need for upgrades or closure in long term as growth occurs. |

| Crossing name | Future Risk | Timing/triggers for treatment | Likely Treatment outcome |
|---|---|---|---|
| Saulbrey Road Ngaaruawaahia | **High** | Large relative increase in traffic due to growth, prior to 2030. No reported incidents | **Upgrade** to be determined in conjunction with improvements at Saulbrey Road/ Great South Road intersection. |
| Park Road Horotiu | **Low** | Low growth around this crossing. Prior to 2030, likely for vehicles on Park Road to experience high wait time to turn right due to volume increase on GSR | **Monitor.** Review need for upgrades or closure in long term as growth occurs. |
| Horotiu Road Horotiu | **Medium** | Closure supported by new link to Gateway Drive | **Closure planned in short term** |

## Havelock / Great South Road level rail crossing closure

WDC requested Flow investigate the impact of closing Havelock / Great South Road level rail crossing. Figure D5 shows the connection between developments and Great South Road is supported by SH39 Ellery Street and Saulbrey Road.

**Figure D5: Havelock / Great South Road rail level crossing location**




Havelock Road has the following considerations:

- Current Access: Provides access from Great South Road to residential and industrial area
- Alternative access: Ellery Street is 1.4 km to the north, while Saulbrey Road is 1.3 km to the south
- Previously reported incidents were both in 2010 (1 near-miss and 1 non-fatal collision)
- Adjacent horizontal curve on Havelock Road has an advisory speed of 35 kph
- Street lighting is present
- The are half arm barriers, but the bells are inactive between 10:30 pm and 7:00 am
- There is some pedestrian fencing

Figure D6 shows the current street view towards Great South Road.

**Figure D6: Havelock Road street view**

### 6.5.5 Review of Traffic Reassignment

The assessment considered the following assumptions based on WRTM outputs:

- Most people using Havelock Road level crossing are turning right onto GSR or left from GSR
- Most traffic will use Saulbrey Road level rail crossing if Havelock Road is closed to vehicles. This requires a significant diversion until the adjacent growth cell is developed.
- WRTM suggests ADT reductions are anticipated from the 2031 forecast

The traffic redistribution methodology considered the following:

- Existing census and current forecast are used as a base distribution
- Traffic redistribution was used to determine (for each peak period and ADT)
    - the percentages inbound and outbound via Ellery Street
    - the percentages inbound and outbound via Saulbrey Road
- These percentages are summarised in Table D2 below.

**Table D2: 2031 traffic redistribution proportions (from WRTM centroid, links only)**

| | Southbound | | Northbound | |
|---|---|---|---|---|
| | Outbound | Inbound | Outbound | Inbound |
| **Morning peak** | 82% | 46% | 18% | 54% |
| **Evening peak** | 65% | 16% | 35% | 84% |
| **Daily** | 52% | 47% | 48% | 53% |

Traffic redistribution was determined by 2031 ADT changes from

- 2018 existing
- 2031 forecast

The 2031 reassignment based on closure is shown in Figure D7 for Saulbrey Road and Figure D8 for Ellery Road.

**Figure D7: Traffic reassignment effect on Saulbrey Road based on Havelock Road rail level crossing closure**

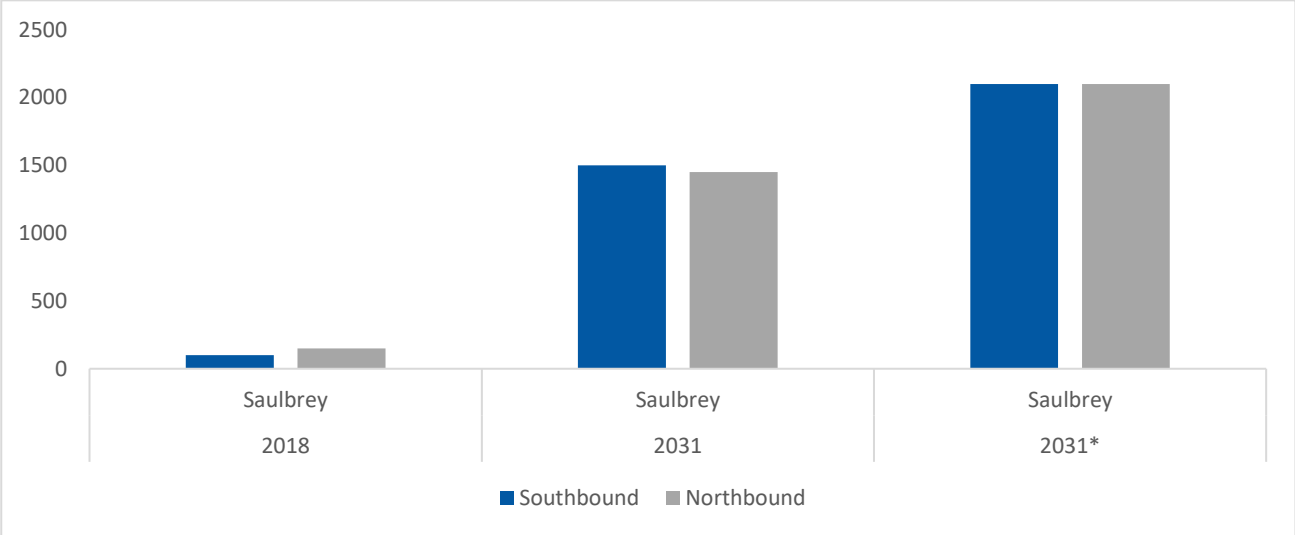
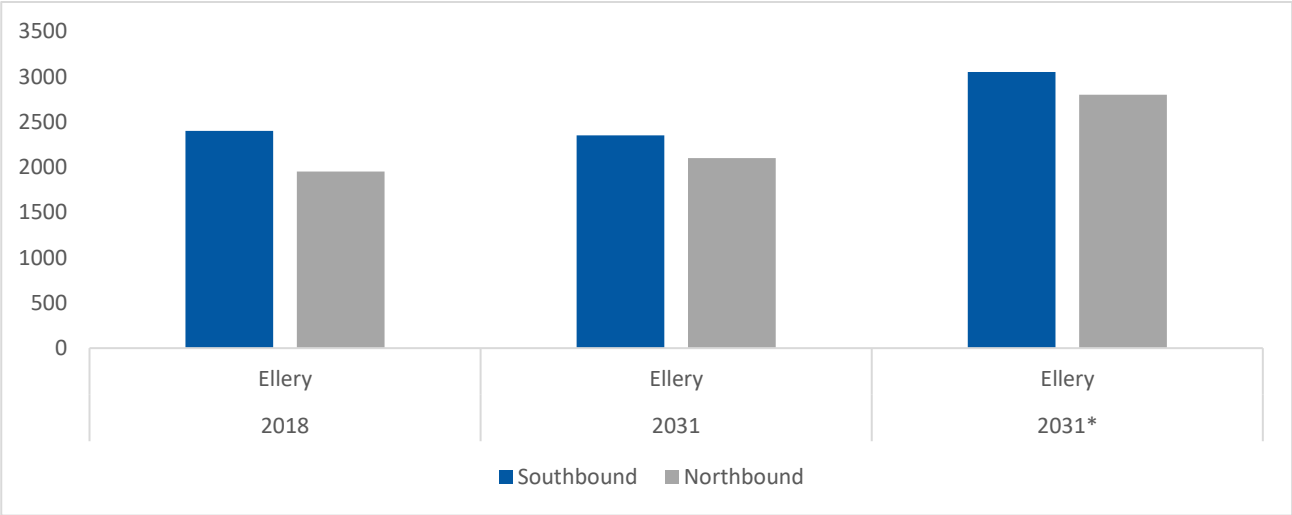
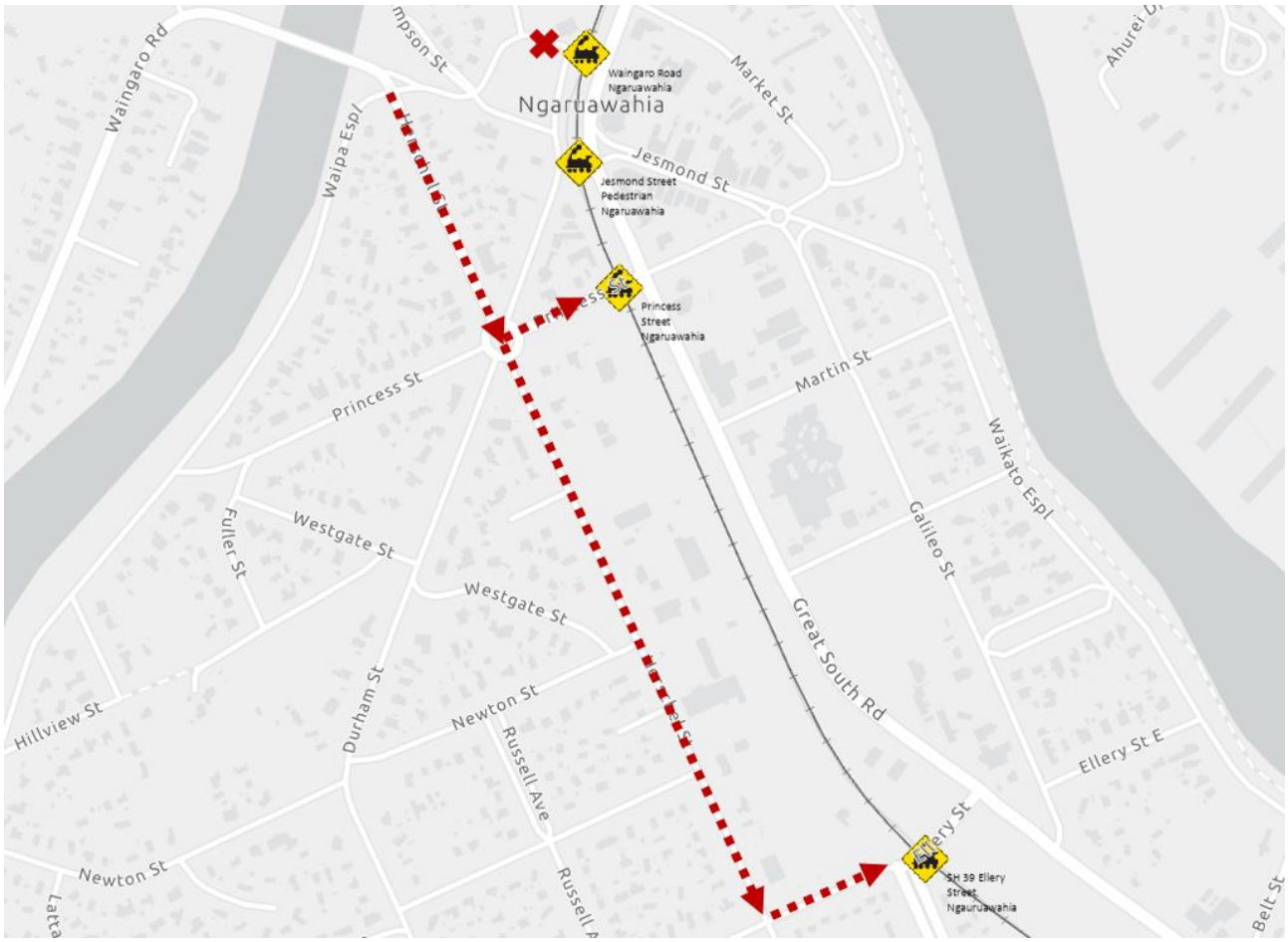



**Figure D8: Traffic reassignment effect on Ellery Road based on Havelock Road rail level crossing closure**



Wider network implications were considered following closure of the Waingaro Road level crossing in combination with the potential Havelock Road level crossing. Figure D9 shows the reassignment of traffic from Waingaro Road, distributed to Princess Street and Ellery Street.

**Figure D9: Traffic reassignment following Waingaro Road level crossing closure**




The assessment has taken into consideration the following:

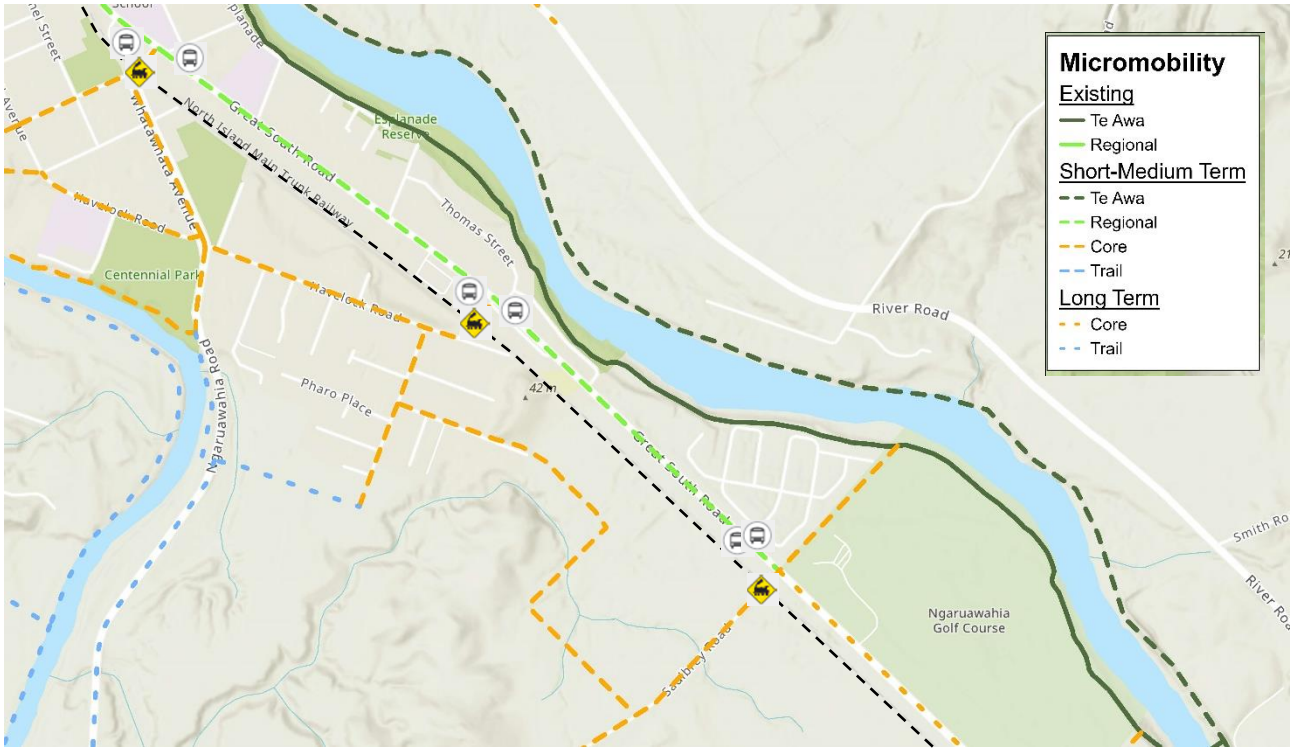
- The risk of rat running onto Ellery Street level crossing, if signals are provided at the intersection of Great South Road and Princess Street (in conjunction with the closure at Waingaro Rd)
- The possibility of mitigating the above risk by implementing traffic calming measures on Herschel Street

### 6.5.6 Review of impact of the closure on active modes

We have also considered the impact of the closure on active modes.

Figure 10 shows the existing and future walking and cycling as depicted in the micromobility study and the current bus stop pair on Great South Road.

**Figure 10: Existing and future micromobility network around the Havelock Road level crossing**




We find the following are key considerations for its closure and its effect on active modes:

- The pedestrian crossing provides access across the NIMT for a large walkable catchment
  - If the crossing is closed, it would significantly increase the walking distance to the nearest level crossing for a number of existing and future households
- A walking connection is particularly important for future growth cell to access Te Awa River Ride and nearby bus stops.

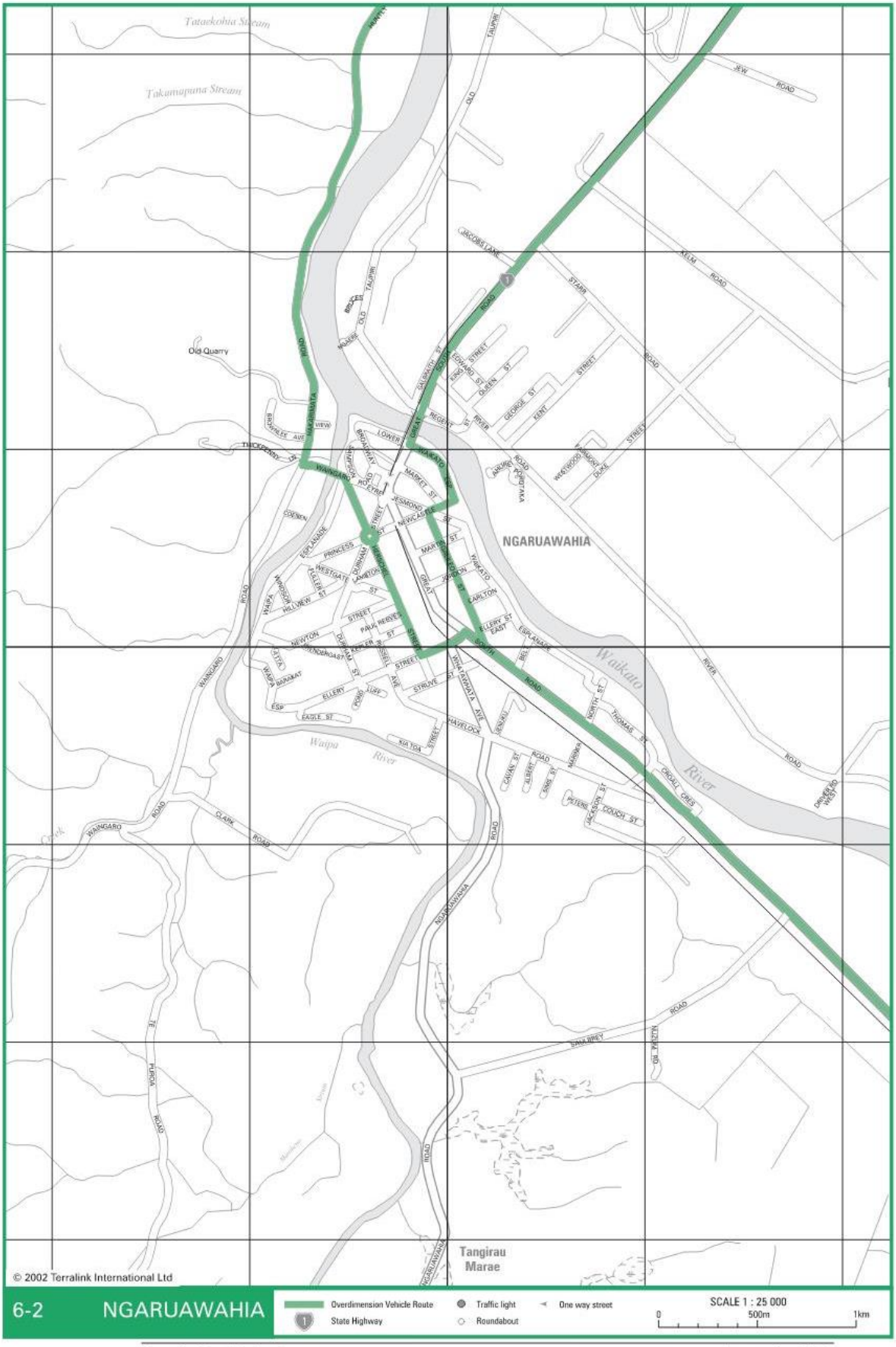
In summary we recommend:

- Monitoring safety at the Havelock Road level crossing. If the crossing is closed, the pedestrian access should be retained and upgraded.
- as part of the upgrade of Princess Street / Great South Road / Newcastle Street intersection, that traffic calming measures are implemented on Herschel Street to discourage rat running via Herschel Street.

# APPENDIX E Intersection Upgrades

# APPENDIX F Existing Transport Maps

**Figure 11: Existing over-dimension routes**




Transit New Zealand
Overdimension Vehicle Route Maps

September 2002
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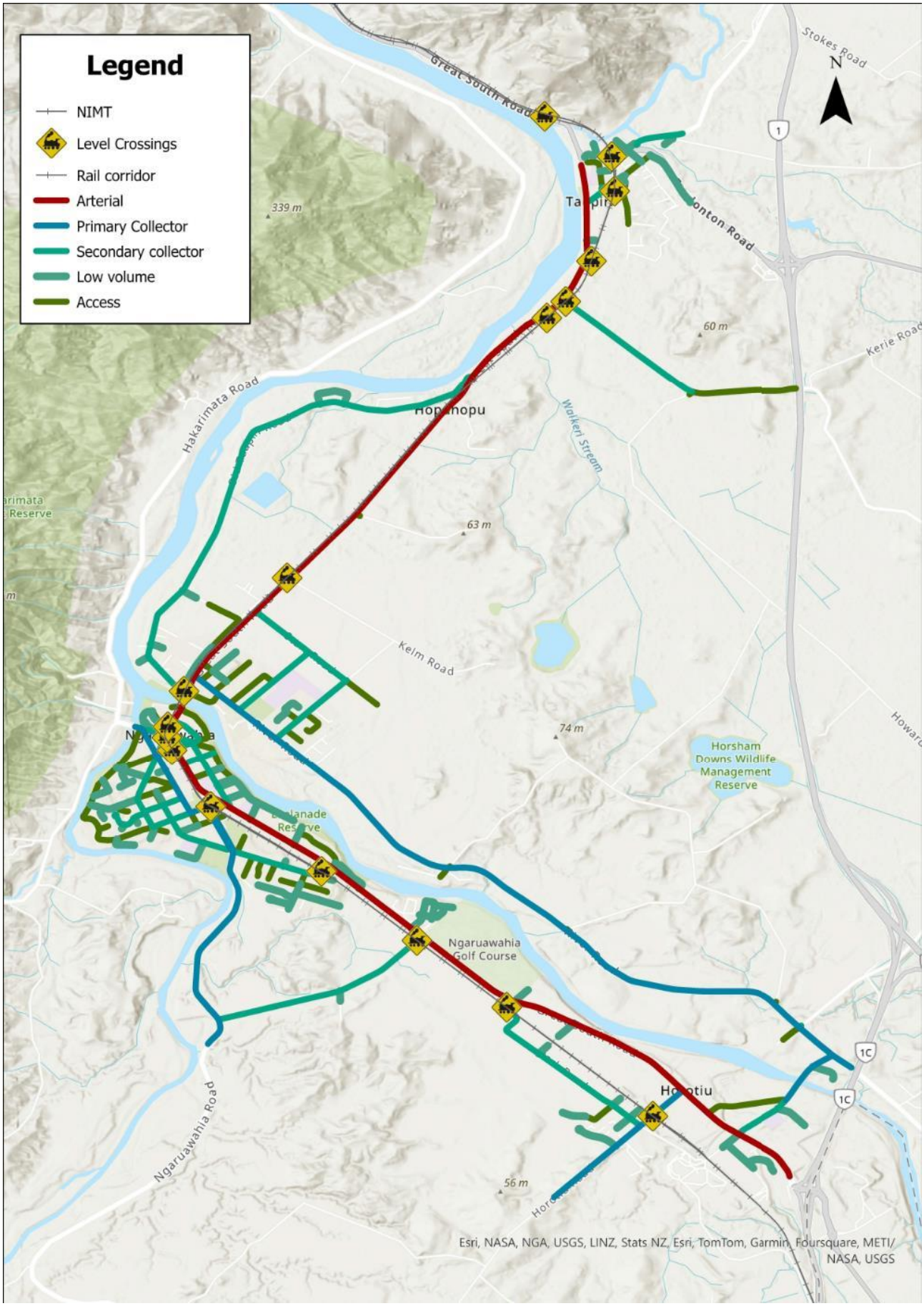
**Figure 22 - Existing transport hierarchy and existing rail level crossings**



# APPENDIX E Intersections' Upgrade

Appendix E-1

LOCATION MAP OF INTERSECTIONS DESIGNED

Appendix E-2

DESIGN PHILOSOPHY NOTE

Appendix E-3

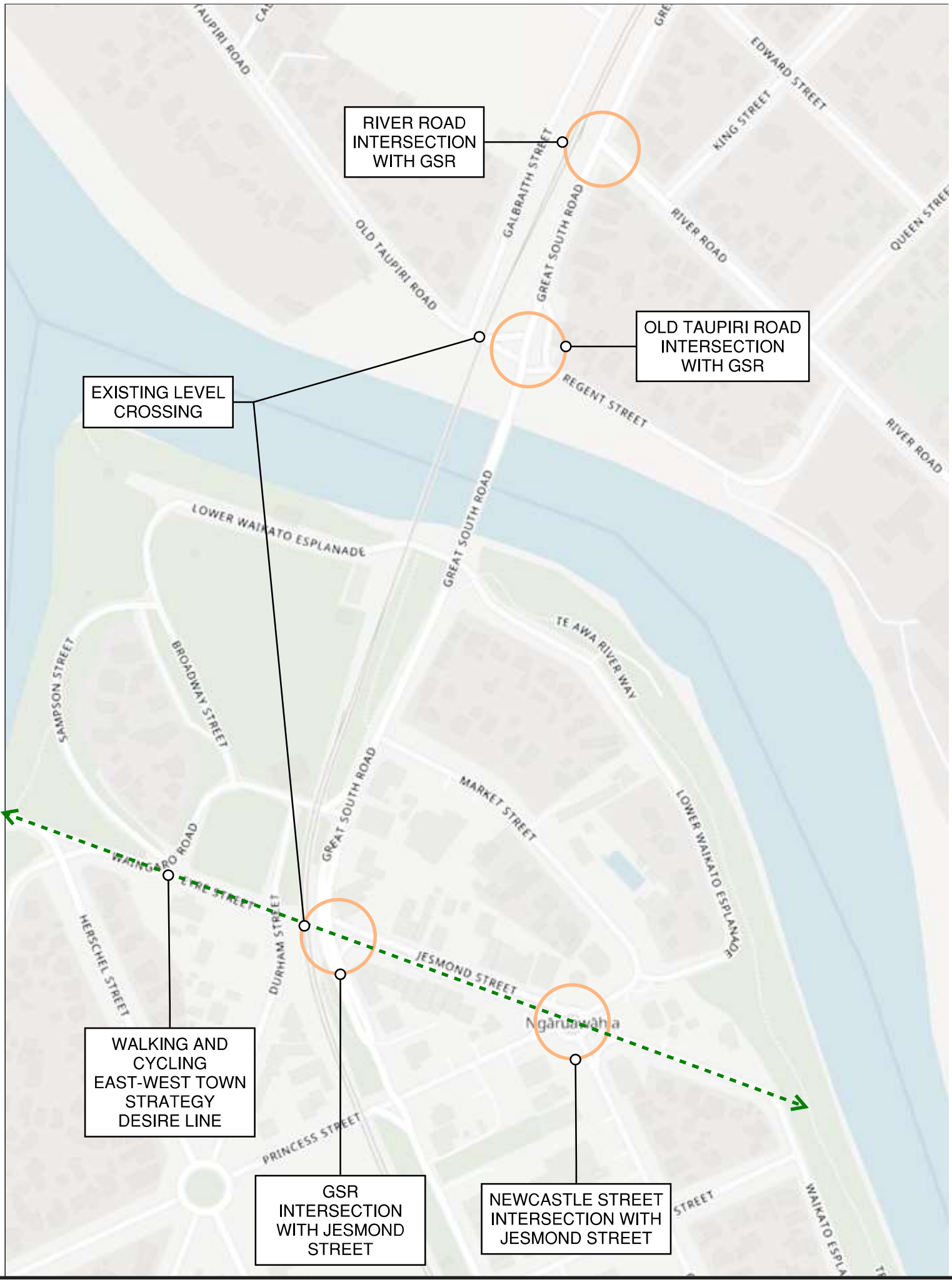
JESMOND STREET INTERSECTIONS WITH GREAT SOUTH ROAD AND NEWCASTLE STREET

Appendix E-4

GREAT SOUTH ROAD INTERSECTIONS WITH OLD TAUPIRI ROAD (SOUTH) AND RIVER ROAD

# Appendix E-1

## LOCATION MAP OF INTERSECTIONS DESIGNED




# LOCATION MAP

flow
TRANSPORTATION SPECIALISTS

# technical note

| | |
|---|---|
| **PROJECT** | **TRANSPORT ASSESSMENT FOR NGĀRUAWĀHIA, TAUPIRI AND HOPUHOPU** |
| **SUBJECT** | **DESIGN PHILOSOPHY MEMO FOR INTERSECTIONS' DESIGNS** |
| **TO** | **WAIKATO DISTRICT COUNCIL** |
| **FROM** | RONAK GUPTA |
| **REVIEWED BY** | SHARMIN CHOUDHURY |
| **DATE** | 6 NOVEMBER 2023 |
| **UPDATED** | 22 JANUARY 2024 – NOTES ON GSR INTERSECTION |

## 1 PURPOSE

The purpose of this note is to provide the design philosophy for the design of the following intersections:

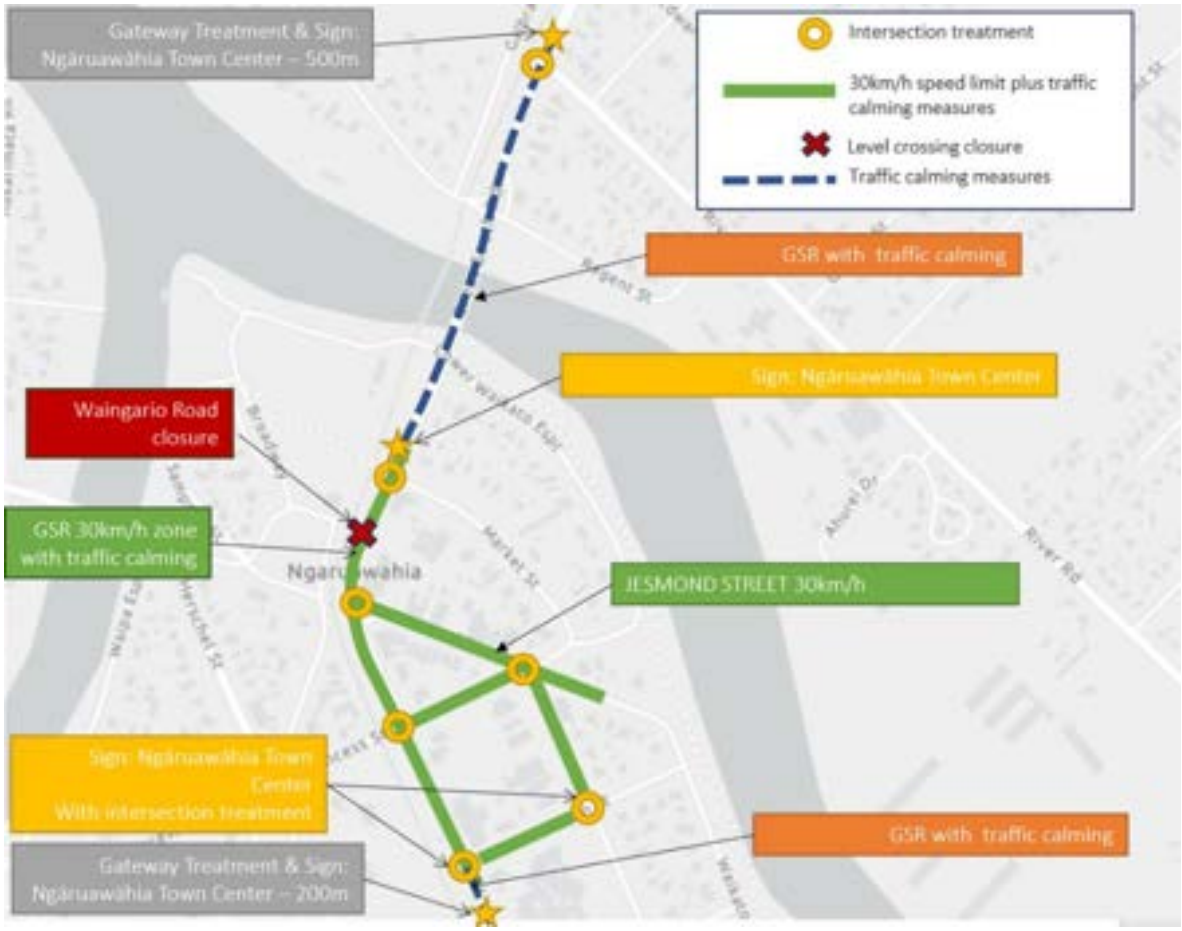
- Jesmond Street/Great South Road Intersection
- Jesmond Street/Newcastle Street/Market Street Intersection
- River Road/Great South Road Intersection
- Old Taupiri Road/Great South Road/Regent Street Intersection

## 2 SPEED ENVIRONMENT

The current speed limit across Great South Road and in Ngāruawāhia Town Centre is 50 km/h. There has been a recent change in speed limits to 30km/h on Jesmond Street. Our proposal aims to modify the speed environment in Ngāruawāhia Town Centre by implementing changes, as noted below as well as depicted in Figure 1 below:

- Introduce a **Gateway treatment** and signage on Great South Road, positioned approximately 500 meters north of the Market Street/Great South Road junction and 200 meters south of the Martin Street/Great South Road intersection. Additionally, signs indicating Ngāruawāhia Town Centre should be placed before these intersections.
- Implement **traffic calming measures** on Great South Road to the north of the Market Street/Great South Road junction, while maintaining a speed limit of 50 km/h. This will effectively reduce the approach speed of incoming traffic heading into Ngāruawāhia Town Centre.
- **Decrease the speed limit** to 30 km/h within Ngāruawāhia Town Centre, covering portions of Great South Road, Jesmond Street, New Castle Street, Martin Street, and Galileo Street.
- **Upgrade intersections** shown in Figure 1, with narrower approach lanes and raised tables on the approaches to these intersections.
- **The proposed upgrade to roundabouts** for the Great South Road intersections with River Road and Jesmond Street will help to strengthen the gateway treatments to Ngāruawāhia and its town centre.

**Figure 1: Proposed speed limit reduction**




# 3 HEAVY VEHICLE ROUTE

The current over dimension route in Ngāruawāhia primarily utilizes Great South Road but deviates onto Lower Waikato Esplanade, Market Street, and Galileo Street before reconnecting with Great South Road for a short distance. Notably, there is no direct connection from Great South Road to Lower Waikato Esplanade, therefore we assume the route was meant to connect from Great South Road to Market Street.

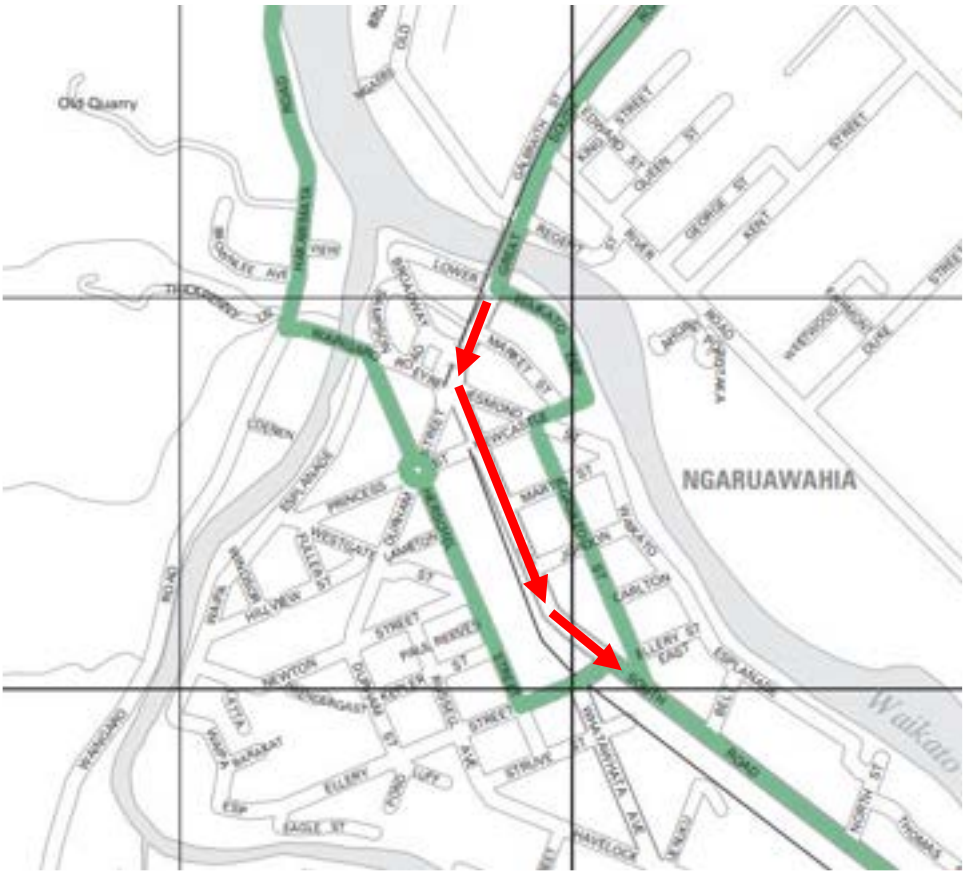
We suggest rerouting the over-dimension route via Great South Road, which will provide the opportunity for the town centre intersections to be tightened and made safer for people on foot and bikes.

Our proposal would simplify the route for over-dimension vehicles by keeping them on Great South Road without turning into smaller streets. However, Great South Road will need to be reviewed and upgraded to ensure that it is able to provide the envelope required for the over-dimension vehicles.

For the purpose of the intersections' upgrade design, WDC has asked Flow to assume that the over-dimension route will run through Great South Road and avoid the Newcastle Street/Jesmond Street/Market Street intersection. This will allow for the intersection design to better serve the needs of people on foot and bikes. We believe this change could lead to improved safety of the town centre.

Figure 2 below shows the existing over dimension route for Ngāruawāhia and the red arrows indicating the proposed new over dimension route.

**Figure 2: Over Dimension Route - Ngāruawāhia**




# 4 DESIGN STANDARDS

Table 1 below shows the design parameters used for the intersection designs.

**Table 1: Design parameters**

| Parameters | Minimum Standards | Design |
|---|---|---|
| Footpath Width | 1.5m[1] | 1.8 - 3.0m |
| Shared Path | 3.0m[2] | 3.0m |
| Cycle Lane Width | 1.5m[2] | 2.0m |
| Traffic lane Width | 3.2m[3] | 3.2m |
| Radius of Roundabout (50kmph) | 8.0m[4] | 3.5m |
| Radius of Roundabout (30kmph) | 5.0m[4] | 4.5m - 7.0m |

[1] RITS suggests referring to Table 3.2 NZS 4404
[2] RITS suggests referring to AUSTROADS 6A - Pedestrian and Cycle path & NZTA cycle network guidelines
[3] Austroads Part 3 – geometric Design 2021
[4] Guide to Road Design part 4B - Roundabouts

# 5 INTERSECTION 1 – JESMOND STREET/GREAT SOUTH ROAD

The current Jesmond Street/Great South Road intersection is a Stop controlled T-intersection with Great South Road being the main road. Great South Road has one lane in each direction with about 1.0m wide central island at the intersection. Vehicles cannot turn right into Jemond Street from Great South Road and vice versa. The existing layout of the intersection is shown in the figure below.

**Figure 3 - Great South Road/Jesmond Street intersection - Existing Layout**

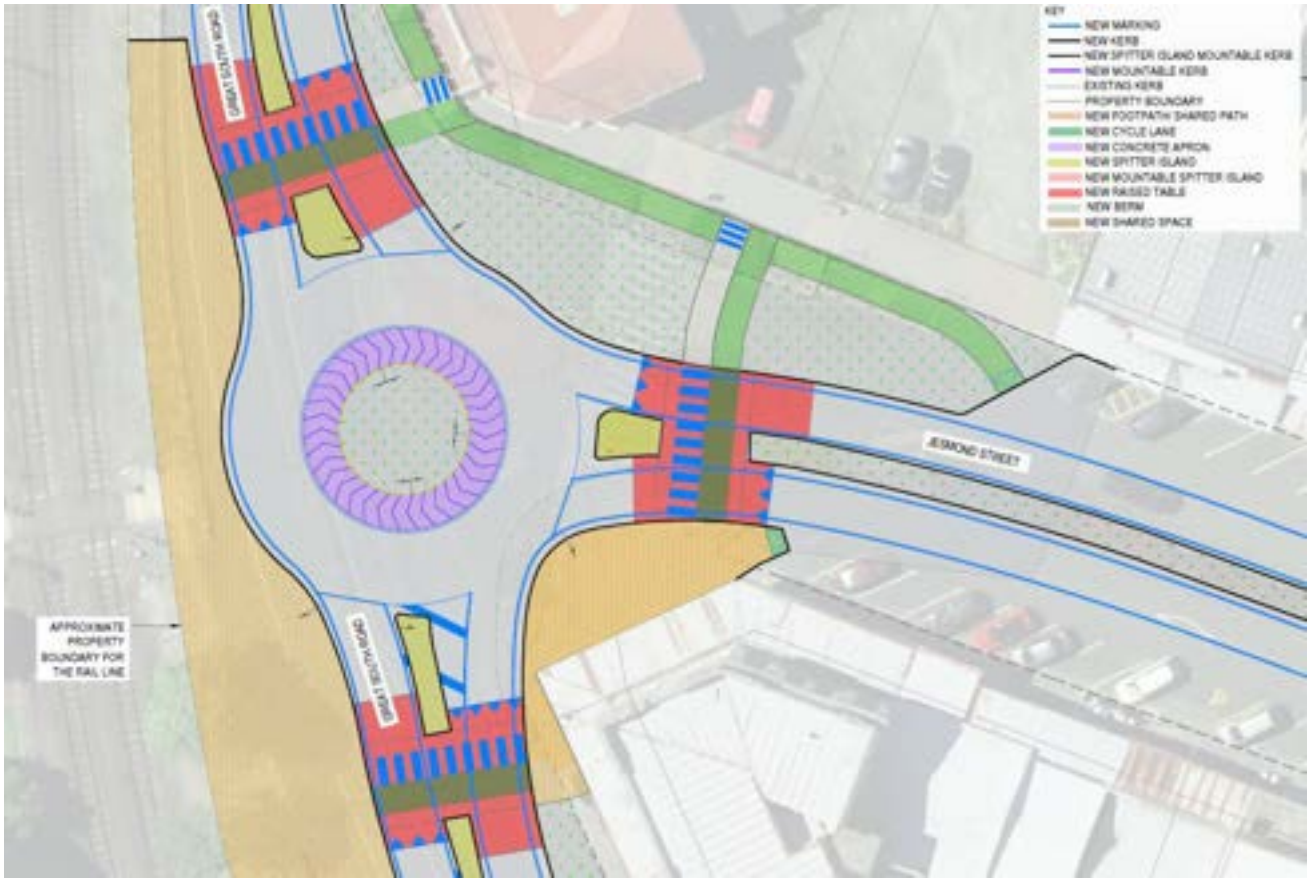
The proposed design upgrade to the intersection are outlined as below:

- Single Lane three-leg roundabout
- Raised pedestrian/cyclist crossing on all approaches to the intersection
- New cycle lane introduced from the eastern side of Great South Road connecting to Jesmond Street
- New Shared path introduced on the western side of Great South Road
- We propose that the level crossing on the western side of Great South Road is relocated further north and made wider with more safety features such as those
- The diameter of the roundabout is 14.0m, including a 2.5m wide apron provided for trucks to turn. A width of 5.0m is provided for the circulatory lane.
- 1 parking space was removed as part of the roundabout design. This loss is however offset by the proposed carpark on Waikato Esplanade
- As per the Regional Infrastructure Technical Specifications (RITS) and confirmation with WDC, the following are the design and check vehicles used for this intersection:

- North south movements along Great South Road
  - Design vehicle = semi-trailer
  - Check vehicle = B-train
- All other turning movements
  - Design vehicle = large rigid truck
  - Check vehicle = tour coach

- The tour coach will need to do a right-turn-U-turn to undertake a left turn from Jesmond Street to Great South Road.
- Figure 4 below shows the overview of the intersection design.

**Figure 4: Great South Road/Jesmond Street intersection upgrades**



# 6 INTERSECTION 2 – JESMOND STREET/MARKET STREET/GALILEO STREET/NEWCASTLE STREET

The current Jesmond Street/Market Street/Galileo Street/Newcastle Street intersection is a 5-leg roundabout with one approach and exit lane on each leg. Slip lanes are provided on Newcastle Street and Waikato Esplanade for left turns. The diameter of the roundabout is 16.0m with a circulatory lane width of 6.5m. The existing layout of the intersection is shown in the figure below.

**Figure 5 - Newcastle Street/Jesmond Street intersection - Existing Layout**

The proposed design upgrade to the intersection is outlined as below:

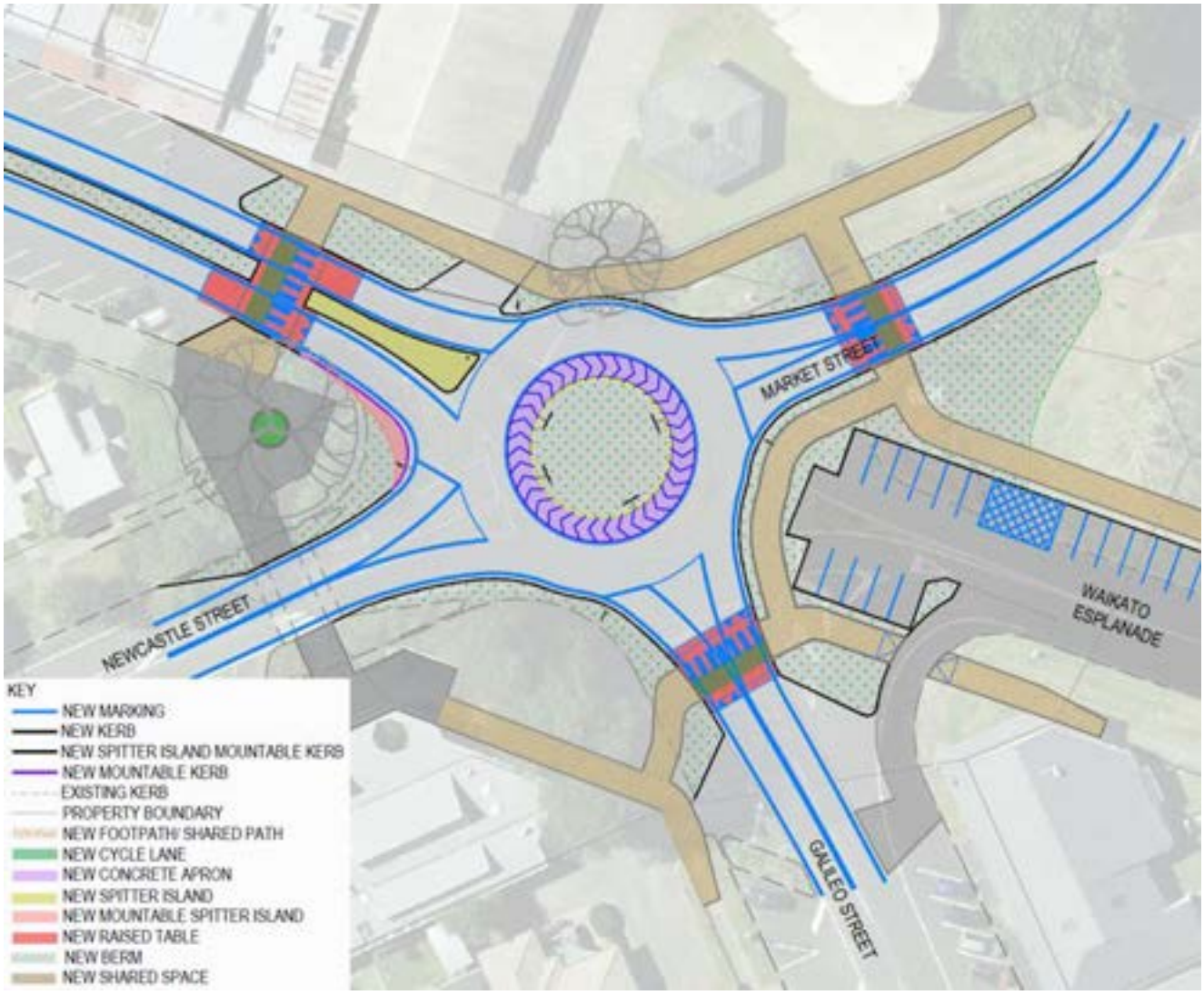
- Single Lane four-leg roundabout. Vehicular access to the intersection from Waikato Esplanade approach is closed.
- This design removes 8 existing parking spaces. The existing parking spaces between Market Street and Waikato Esplanade are proposed to be removed and planted with new berm. Few parking spaces are removed on Jesmond Street too as part of the roundabout design.
- The loss of a total of 9 parking spaces along Jesmond Street is offset with the proposed carpark on Waikato Esplanade which provides 16 new parking spaces. Access to the new carpark is via Waikato Esplanade.
- New Zealand Police Ngāruawāhia has an existing access in Waikato Esplanade. They have been provided access to the intersection via Galileo Street.
- New plants to be planted at between the roundabout and the Waikato Esplanade leg to provide a visual cue to vehicles at the roundabout regarding no access directly into Waikato Esplanade

- Raised pedestrian/cyclist crossings to be provided on the four legs of the intersection. The existing raised crossing on Newcastle Street to be widened to allow for a paired pedestrian and cycle crossing.
- A 3.0m wide shared path to be provided on all four approaches
- Existing footpaths to be widened to 3.0m on both sides of Newcastle Road
- The diameter of the roundabout is 19.0m, including a 2.5m wide apron provided for trucks to turn, with a circulatory lane width of 5.0m.
- All existing protected trees to be retained. The protected trees are shown in the figure below which has been extracted from the Notified Version

**Figure 6 - Protected Trees along Jesmond Street**

- As per Regional Infrastructure Technical Specifications (RITS), and confirmation with WDC, the following are the design and check vehicles used for this intersection:
    - For all movements except the left turn from Newcastle into Jesmond
        - Design vehicle = large rigid truck
        - Check vehicle = tour coach
    - Remove left turn slip lane from Newcastle into Jesmond and allow for left turns by
        - Design vehicle = medium rigid truck
        - Check vehicle = large rigid truck
    - A tour coach to be able to undertake a right/u-turn from Newcastle Street into Jesmond Street
- Tour coach will have to do a right-turn-U-turn to undertake a left turn from Newcastle Road to Jesmond Street.
- Figure 7 below shows the overview of the intersection design.

**Figure 7: Jesmond Street/Newcastle Street/Market Street/Galileo Street intersection upgrades**



# 7 INTERSECTION 3 – RIVER ROAD/GREAT SOUTH ROAD

The current River Road/Great South Road intersection is a Stop controlled T-intersection with Great South Road being the primary road. Great South Road has one lane in each direction with a 3.0m wide flush median. A right turn bay is provided on Great South Road for vehicles to turn right into River Road. The existing layout of the intersection is shown in the figure below.

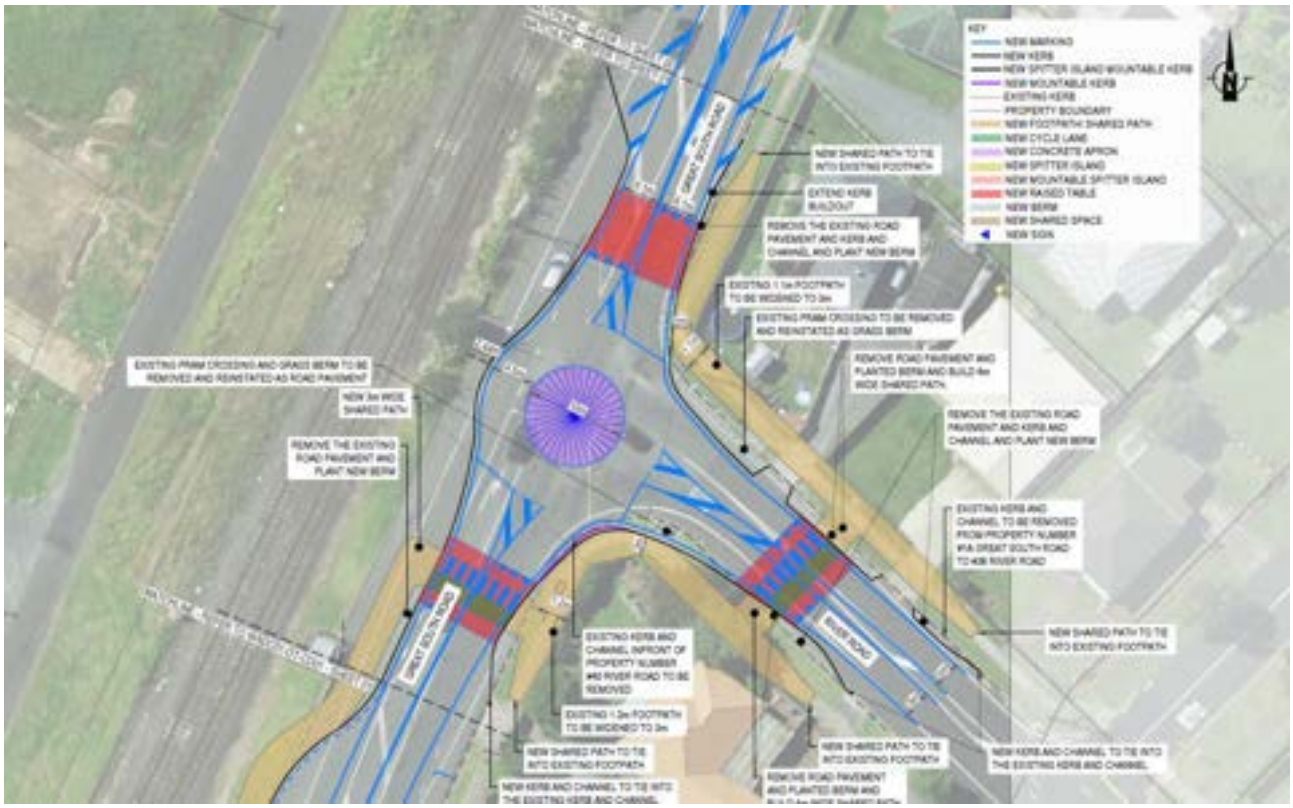
**Figure 8 - River Road / Great South Road intersection - Existing Layout**

The proposed design upgrade to the intersection is outlined as below:

- Single Lane three-leg roundabout.
- Few on-street parking spaces to be removed on River Road and Great South Road due to the re-alignment of the approach and exit lanes as part of the roundabout design
- Existing footpaths to be designed and pushed towards the property boundary on both corners of River Road
- Raised dedicated pedestrian crossings are provided on the south and east approaches which connect to the shared paths at the intersection. A raised speed platform is provided on the north approach.
- Speed limit to remain 50km/h but the approach speed will be reduced by adding in Traffic Calming and a gateway treatment north of the intersection, at the current location of the speed sign.
- The diameter of the central island is 10.0m, and a circulatory lane width of 4.0m. The central island is fully mountable to allow for large vehicle tracking
- All existing trees will be retained

- As per Regional Infrastructure Technical Specifications (RITS) and confirmation with WDC, the following are the design and check vehicles used for this intersection:
    - North south movements along Great South Road
        - Design vehicle = semi-trailer
        - Check vehicle = B-train
    - All turning movements
        - Design vehicle = large rigid truck
        - Check vehicle = semi-trailer

**Figure 9: Great South Road and River Road intersection Upgrade**



# 8 INTERSECTION 4 – GREAT SOUTH ROAD AND OLD TAUPIRI ROAD (SOUTH)

The current Old Taupiri Road (south) and Great South Road intersection is a stop-controlled intersection with Great South Road being the primary road. Great South Road has one lane in each direction with a 3.0m wide flush median. A right turn bay is provided on Great South Road for vehicles to turn right into Old Taupiri Road (south). There is a level crossing located on Old Taupiri Road, about 30m back from the intersection. The existing layout of the intersection is shown in the figure below.

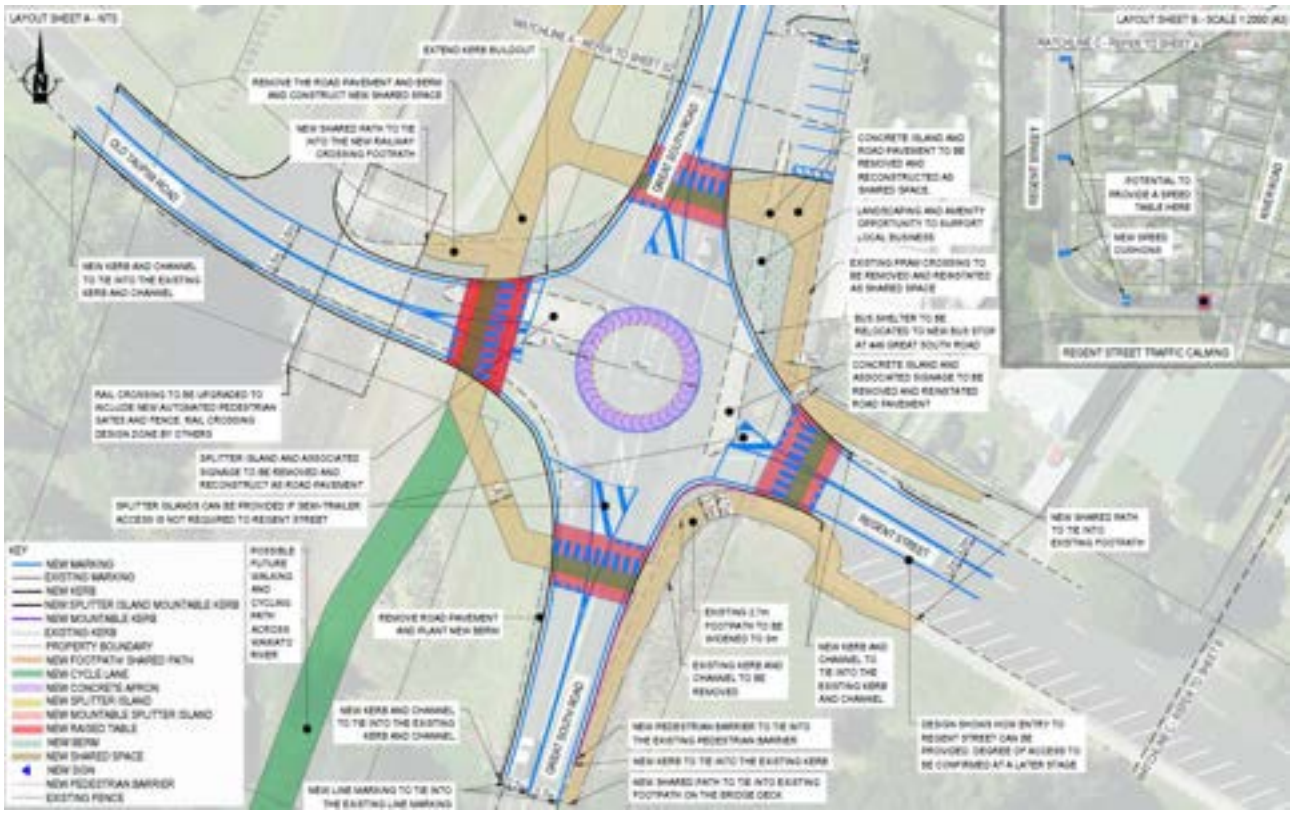
**Figure 10 - Old Taupiri Road / Great South Road intersection - Existing Layout**

The proposed design upgrade to the intersection is outlined as below:

- Single-lane roundabout. The diameter of the central island is 15.0m, including the apron provided for trucks to turn
- Walking and cycling connectivity has been provided across the intersection. Raised crossings are provided on all approaches which connect the shared paths at the intersection corners. The link between the shared paths to the possible future walking cycling bridge is shown.
- Parking in front of the shops has been relocated slightly north to provide space for the shared path as well as opportunity for urban design to improve amenity
- The option proposes undertaking a full safety upgrade of the level crossing (eg by installing barrier arms and pedestrian automated gates to prevent vehicle and pedestrian passage when a train is approaching or passing through).

- The proposed option aims to ensure it provides a safe level crossing while retaining much of the efficiency at the intersection.
- As per Regional Infrastructure Technical Specifications (RITS) and confirmation with WDC, the following are the design and check vehicles used for this intersection:
    - North south movements along Great South Road
        - Design vehicle = semi-trailer
        - Check vehicle = B-train
    - All turning movements
        - Design vehicle = large rigid truck
        - Check vehicle = semi-trailer

**Figure 11: Great South Road and Old Taupiri Road (south) intersection upgrade**



# Jesmond – GSR intersection

Task A-4

Appendix E-3.1

JESMOND STREET INTERSECTIONS WITH
GREAT SOUTH ROAD AND NEWCASTLE STREET

## OPTIONS AT GREAT SOUTH ROAD / JESMOND STREET INTERSECTION

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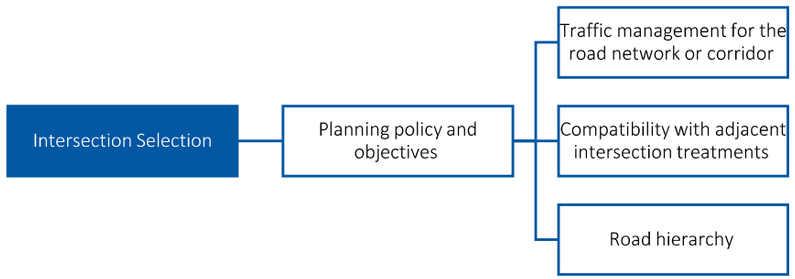
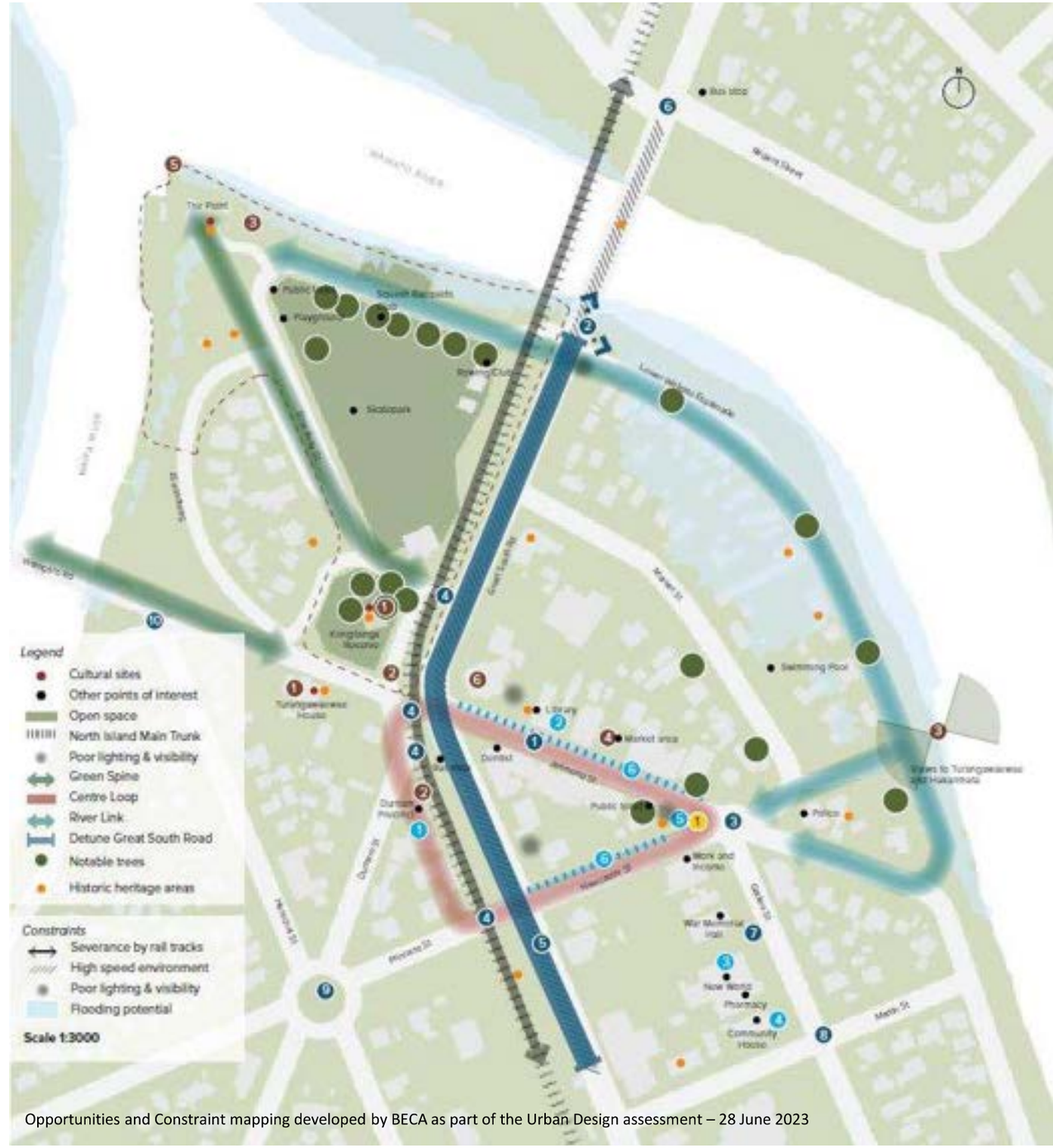
# MCA
## Key move priority




- Key moves considered highly important
- Traffic management of the corridor and surrounding network is summarised on the following slide




Opportunities and Constraint mapping developed by BECA as part of the Urban Design assessment – 28 June 2023

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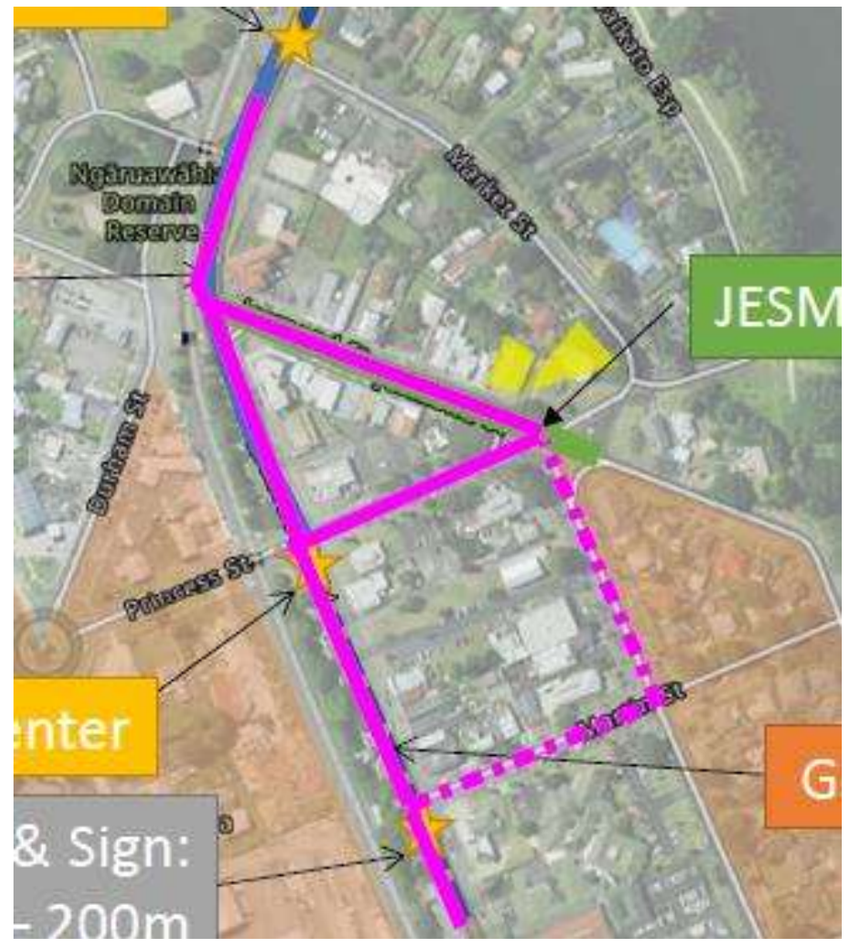
# Feedback from WDC's Speed Management Plan Team

- Extend the lower speed limit on Great South Road to Martin Street to cover the pedestrian crossing, public toilets and shops.
- Lower the speed limit on Newcastle Street from GSR to Galileo Street to match Jesmond Street.
- Also consider including Martin Street and the section of Galileo Street from Martin Street to Jesmond Street in the lower speed limit (dashed lines below).
- Some form of engineering features on GSR and Galileo Street south of Martin Street to support the proposed speed limit change.
  - Putting the existing zebra crossing on GSR outside the toilets onto a raised platform may be an option.
  - A small roundabout at the Martin/Galileo Street int would create a threshold on that approach and effectively enable the 'CBD' to be ring-fenced.

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# MCA
## Speed management policy

- Planning policy and objectives
  - Traffic management for the road network or corridor
  - Compatibility with adjacent intersection treatments

- Intersection treatment
- 30km/h speed limit plus traffic calming measures
- Traffic calming measures

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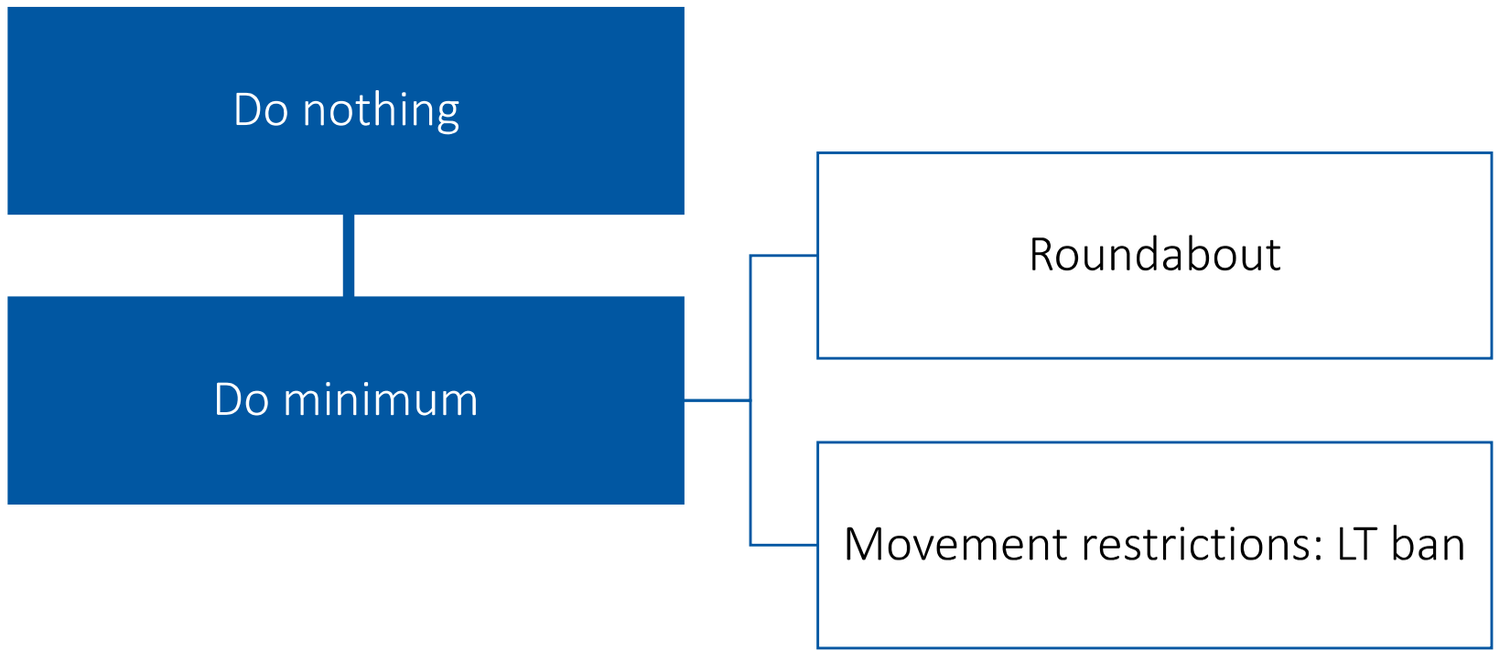
# Great South Road / Jesmond Street

## Intersection Options

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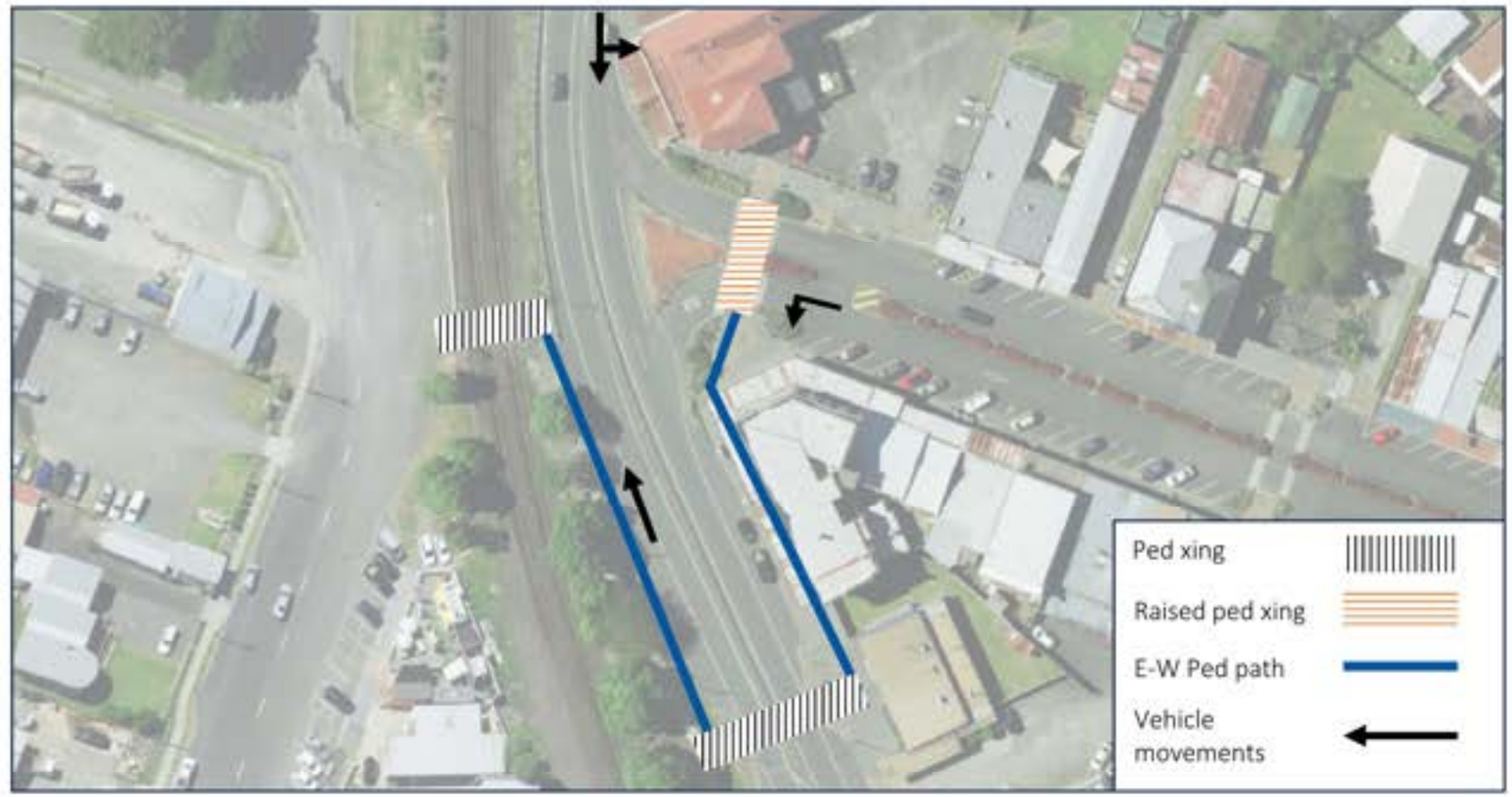
# Great South Road / Jesmond Street

Do nothing

- Assumed operating speed remains at around 50 km/hr
- No vertical calming provided
- Retain banned right turn access into and out of Jesmond Rd for vehicles
- Retain existing pedestrian crossings on GSR and NIMT railway which includes a convoluted trip for pedestrians accessing the west.

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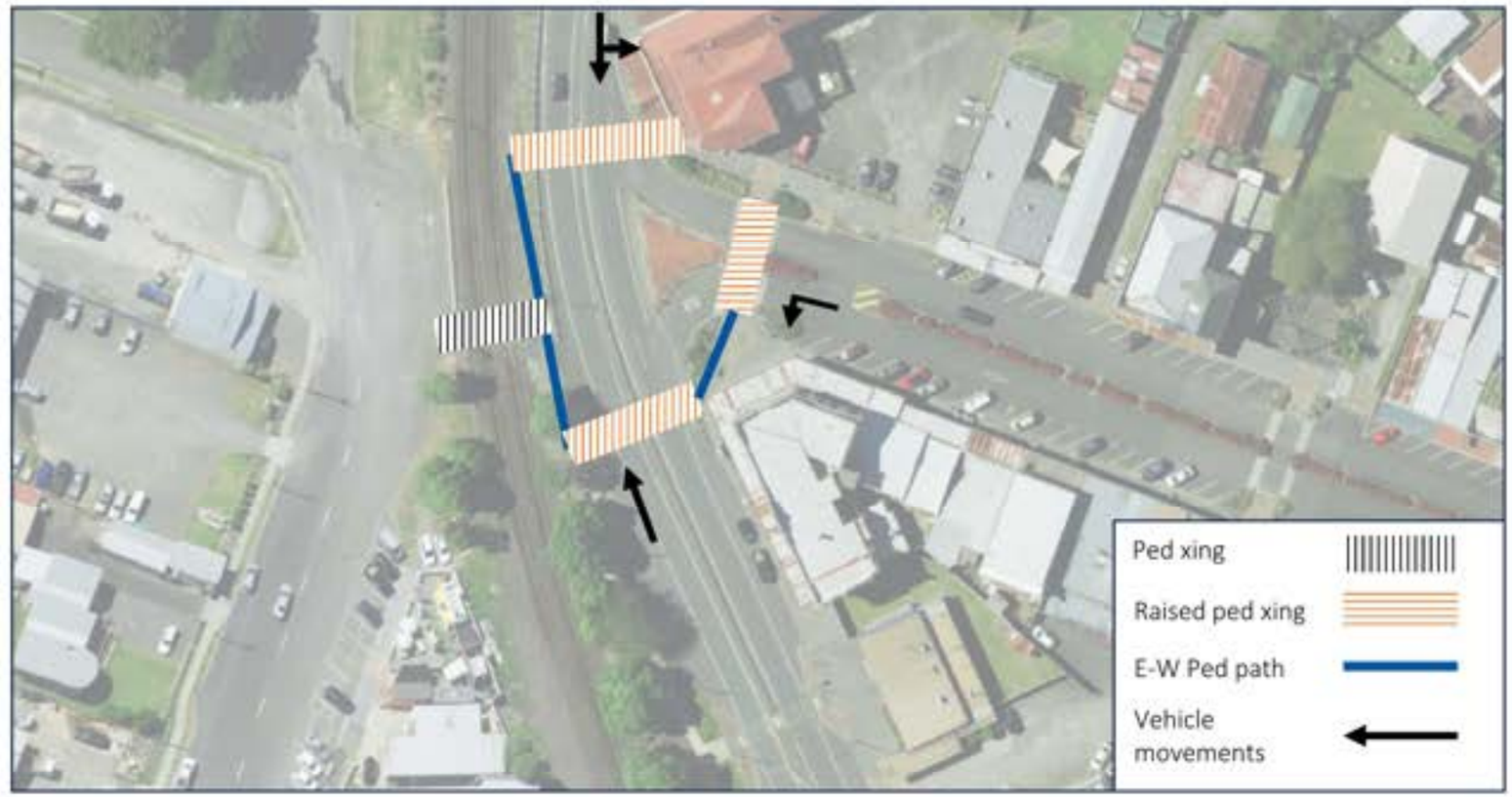
# Great South Road / Jesmond Street

Do minimum

- Raised ped xing aligned to level rail xing on GSR (speed is around 25-30 km/h)
- Raised ped xing on Jesmond (speed is around 15-25 km/h)
- Left out of Jesmond retained
- Right out and into Jesmond ban retained
- Retained turning head on Jesmond Street

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# Great South Road / Jesmond Street

Roundabout

- Assumed single lane RAB with approach speed is around 15-25 km/h
  - Horizontal calming (deflection)
  - Vertical calming on all approaches (raised tables)
- Introduce right-turn access into Jesmond Rd from GSR for vehicles
- Pedestrian refuge island on approaches
- Assumes SISD is achieved even if the required sightlines cut across the northeastern corner property
- Assumes available footprint is sufficient
- Removal of turning head to reduce conflicts

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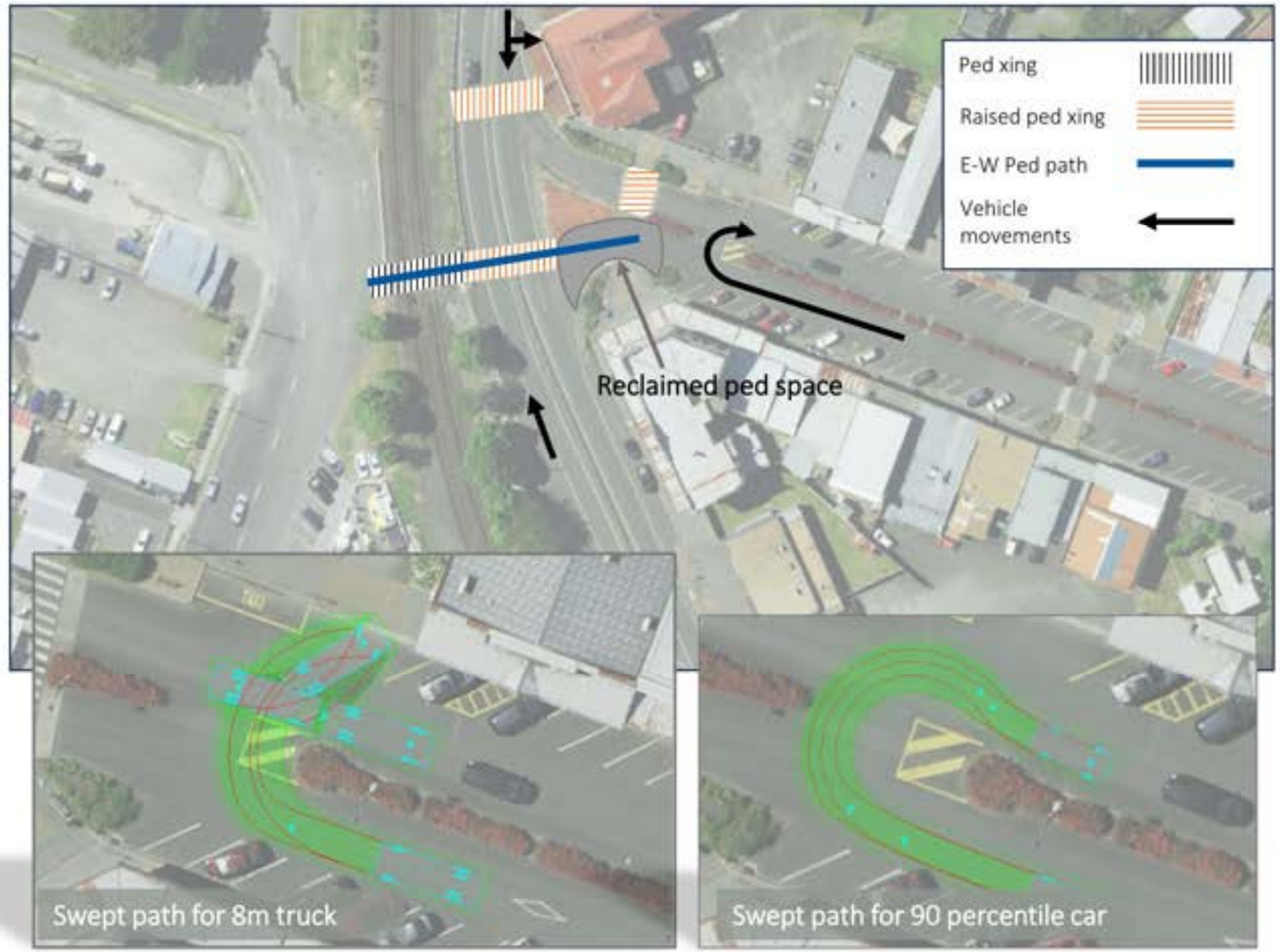
# Great South Road / Jesmond Street

Movement restrictions: Left Turn Ban

- Left turn out of Jesmond St banned
- Assumed approach speed is around 15-25 km/h
- Raised pedestrian crossing (unsignalised) is included at desire line to enable movement directly to the rail crossing
- Right turn ban into Jesmond Rd retained
- Less pedestrian delay due to the right turn ban.
- Retained turning head on Jesmond Street, which allows for cars to make u-turns, but 8m trucks would need to make at least a 2-point turn

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# Newcastle/Jesmond Intersection

VA-4

Appendix E-3.2

JESMOND STREET INTERSECTIONS WITH
GREAT SOUTH ROAD AND NEWCASTLE STREET

## OPTIONS AT NEWCASTLE STREET / JESMOND STREET INTERSECTION

flow
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# Newcastle Street / Jesmond Street

Do Nothing

- Assumed operating speed remains at around 40-50 km/hr
- No vertical calming provided
- Retain all slip lanes
- Retains the existing pedestrian crossing on Newcastle Street

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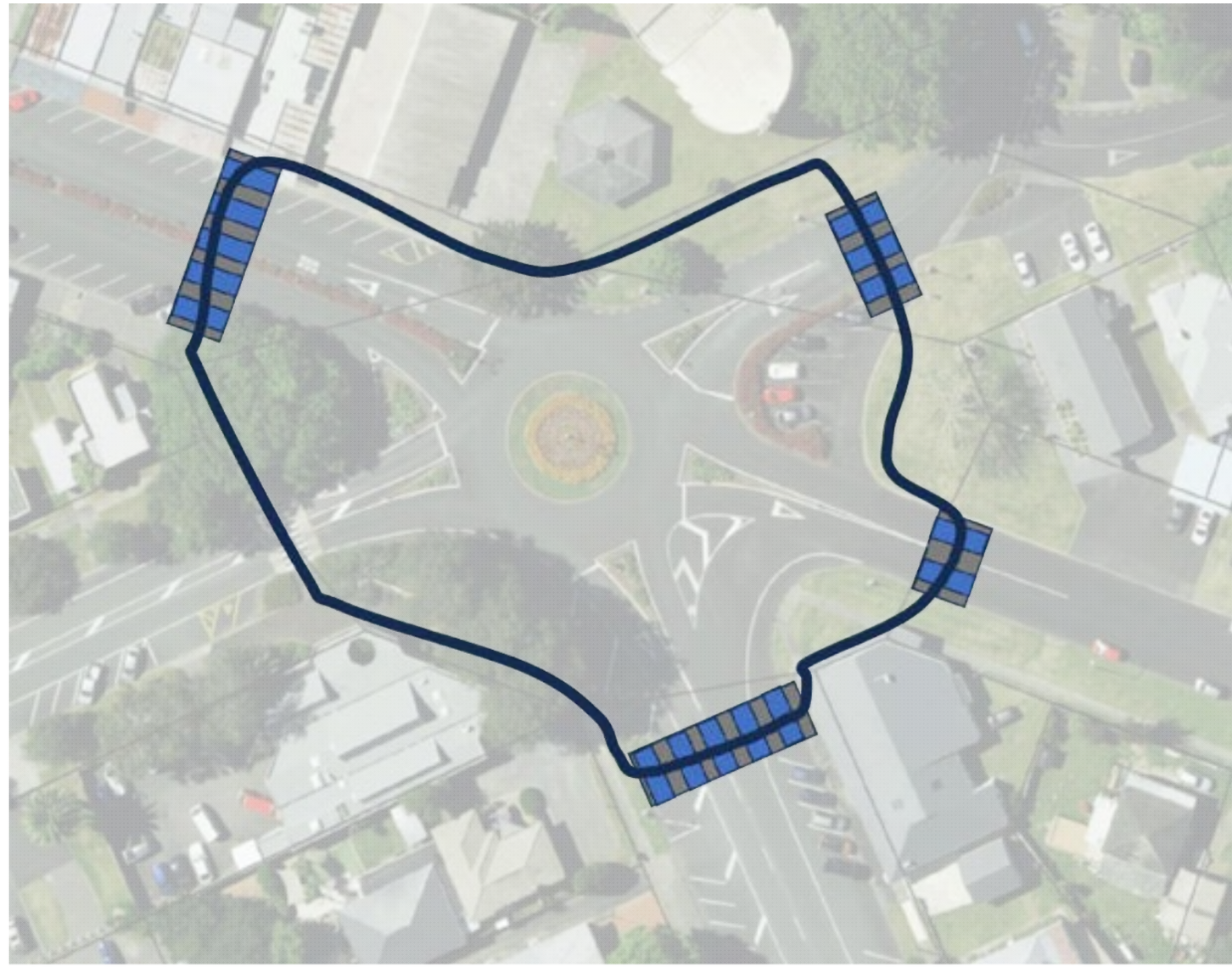
# Newcastle Street / Jesmond Street

Option 1

- Assumes operating speed reduces to around 30-40 km/h
- Introduces raised crossings on all approaches of the roundabout
- Widens existing footpaths to shared path widths and connects them to the raised pedestrian crossings at each corner.
- Retain all slip lanes
- Retains the existing pedestrian crossing on Newcastle Street



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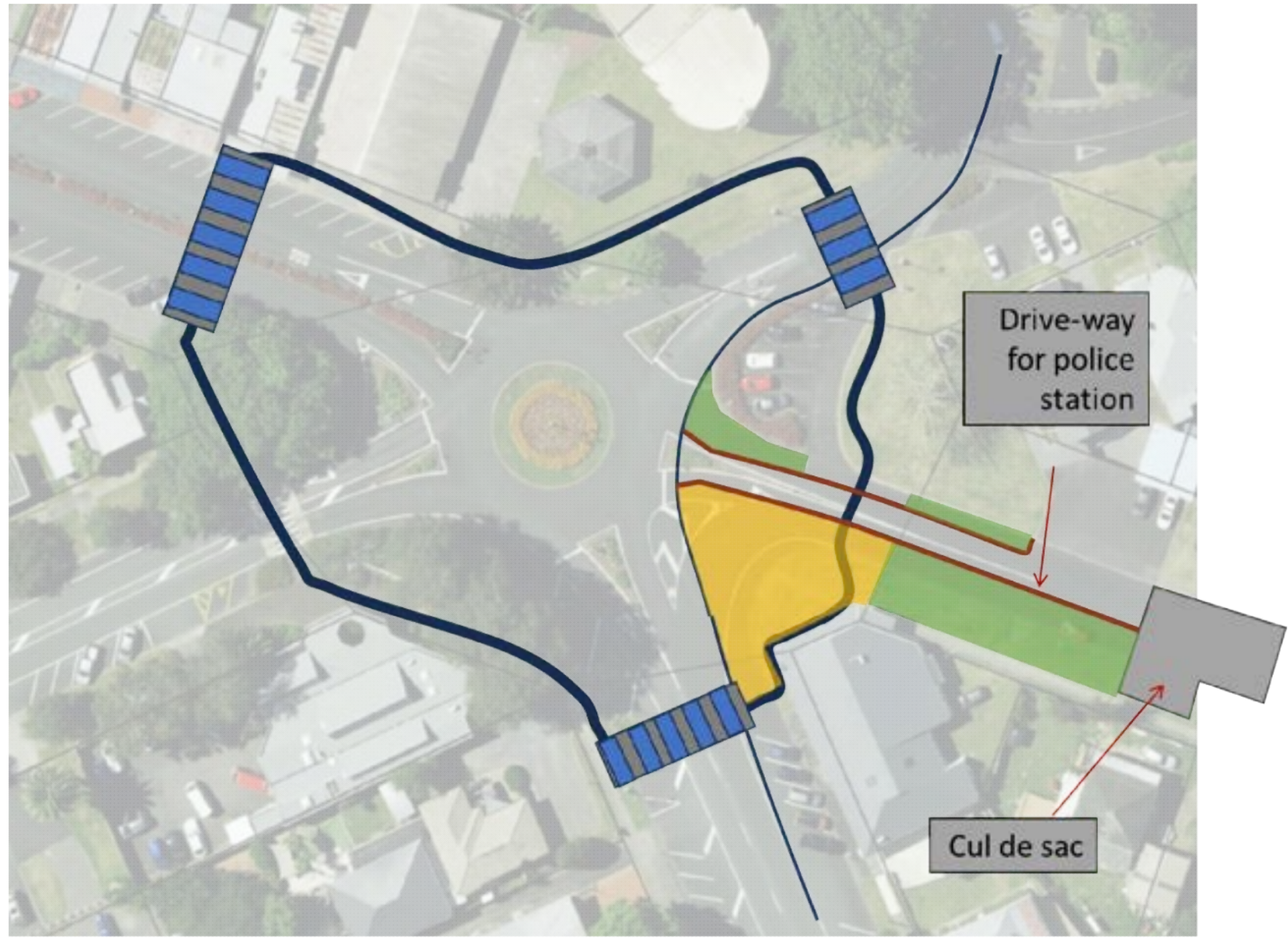
# Newcastle Street / Jesmond Street

Option 2

- Assumes operating speed reduces to around 30-40 km/h
- Introduces raised crossings on all approaches of the roundabout
- Widens existing footpaths to shared path widths and connects them to the raised pedestrian crossings at each corner.
- Removes the Waikato Esplanade Approach, including its slip lanes. Provides driveway access for the police station and an L-shaped turning head for the new cul-de-sac.
- Retains the existing pedestrian crossing on Newcastle Street

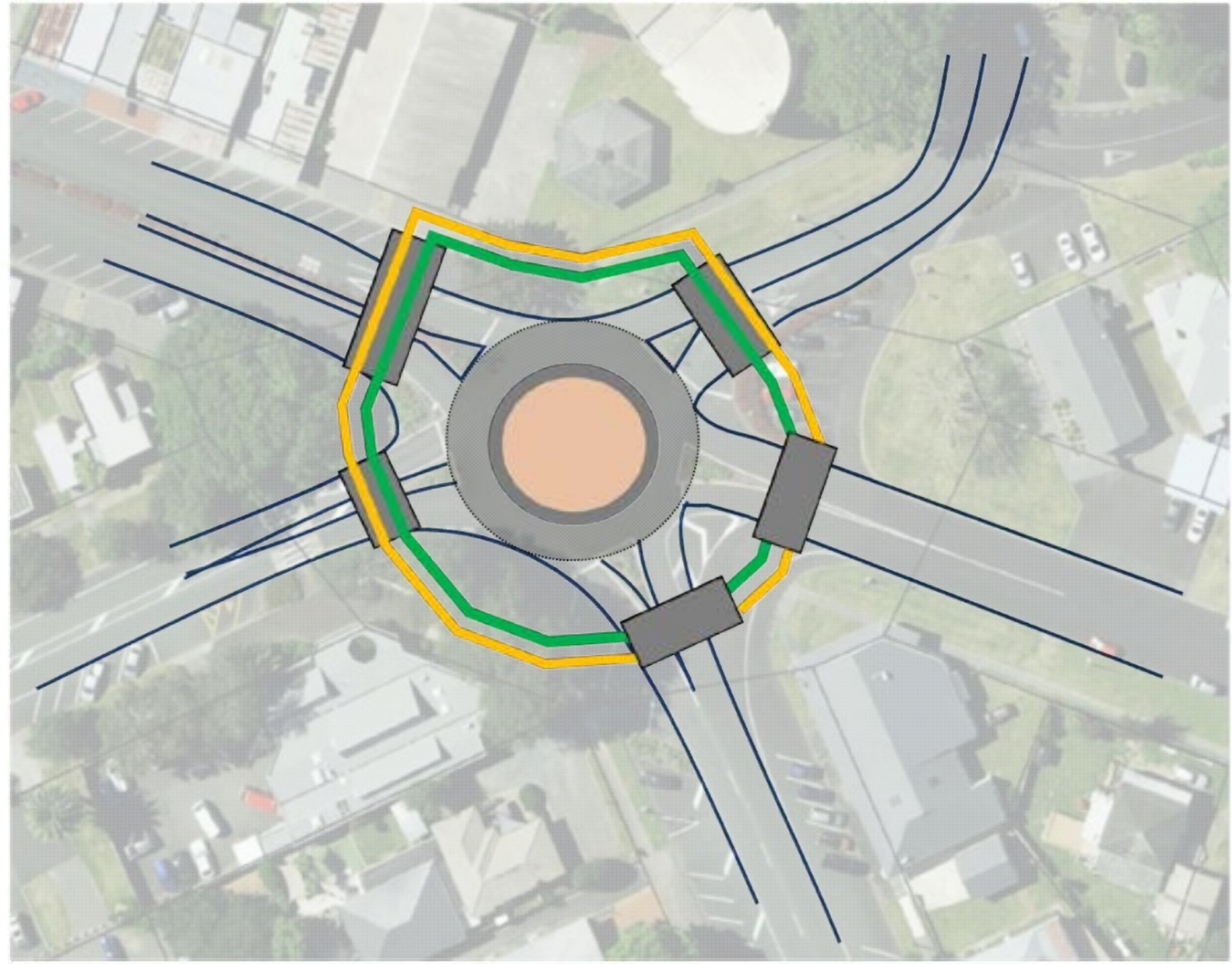



flow
TRANSPORTATION SPECIALISTS

# Newcastle Street / Jesmond Street

Option 3 –Dutch Roundabout

- Assumes operating speed reduces to around 30 km/h
- Tightens up the roundabout to enable separated circulatory pedestrian and cycle paths around the intersection
- Introduces raised crossings on all approaches of the roundabout
- Removes all slip lanes from all approaches



flow
TRANSPORTATION SPECIALISTS

Appendix E-3.3

# JESMOND STREET INTERSECTIONS WITH GREAT SOUTH ROAD AND NEWCASTLE STREET

# OPTIONS ASSESSMENT

# Jesmond – GSR intersection

Task A-4

Appendix E-3.3.1

JESMOND STREET INTERSECTIONS WITH
GREAT SOUTH ROAD AND NEWCASTLE STREET

## OPTIONS ASSESSMENT FOR GREAT SOUTH ROAD / JESMOND STREET INTERSECTION

flow
TRANSPORTATION SPECIALISTS

# THE MCA ASSESSMENT

| ASSESSMENT CRITERIA | | | OPTION: | Do nothing | | | | | Do minimum | | | | | Roundabout | | | | | Movement restrictions | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| Safety | To reduce deaths and serious injuries | Road safety risk assessment rating | Exposure | -1 | -1 | -1 | -3 | -3 | -1 | -1 | -1 | -3 | -3 | -2 | -2 | -2 | -2 | -2 | 2 | 2 | 2 | 2 | 2 |
| | | | Likelihood | 1 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 0 | 2 | 2 |
| | | | Severity | -5 | -5 | -1 | -1 | -1 | 3 | 3 | 3 | 2 | 2 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 3 | 3 |
| Amenity (travel quality and aesthetics) | Strategic direction of key move | Fit for purpose | Alignment with place and movement guide | -3 | -3 | 0 | -3 | -3 | 3 | 3 | 0 | 4 | 4 | 3 | 3 | 0 | 5 | 5 | 5 | 5 | 0 | 0 | 0 |
| | To provide quality travel options | Intensification and urban form | Encouragement of modes based on look and feel | -1 | -1 | 0 | 4 | 4 | 3 | 3 | 0 | 3 | 3 | 4 | -3 | 0 | 5 | 5 | 4 | 4 | 0 | -1 | -1 |
| | | Effects on biodiversity and other natural resources | Impacts on biodiversity, areas of sensitive natural and cultural interest | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 1 | 4 | 4 | 0 | 3 | 3 |
| Accessibility | Provide alternative mode options to private vehicles | Promotion of alternative modes | Achieve a high LOS for pedestrians and cyclists | -2 | -2 | 0 | 0 | 0 | 5 | 5 | 3 | 1 | 1 | 5 | 3 | 1 | 1 | 1 | 5 | 5 | 0 | 1 | 1 |
| | | | Accessibility for vulnerable users | -3 | -3 | 0 | 0 | 0 | 5 | 5 | 5 | 3 | 3 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 0 | 4 | 4 |
| | | Active mode and public transport mode share (combined) compared to private vehicles | Number of active mode and public transport trips (combined) compared to private vehicle trips | -2 | -2 | -1 | 0 | 0 | 4 | 4 | 2 | 2 | 2 | 4 | 4 | 2 | 2 | 2 | 4 | 4 | 3 | 2 | 2 |
| | Access to transport and mobility is equitable for all people | Walking, cycling and micromobility network coverage and useability | Extent to which option improves the walking, cycling and micromobility network coverage | -2 | -2 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 4 | 4 | 0 | 1 | 1 |
| | | Transport choice available for all people living in Ngāruawāhia to access the main street | Extent to which option improves alternative mode choice | -2 | -2 | 0 | 0 | 0 | 3 | 3 | 0 | 3 | 3 | 4 | 4 | 0 | 5 | 4 | 3 | 3 | 0 | -1 | -1 |
| | | Perception of safety (all users and vulnerable users) | Change in perception of safety and harm (all users and vulnerable users) | -2 | -3 | 0 | 4 | 4 | 5 | 5 | 1 | 3 | 3 | 5 | 5 | 3 | 5 | 5 | 5 | 5 | 4 | 1 | 1 |

# THE MCA ASSESSMENT

| ASSESSMENT CRITERIA | | | OPTION: | Do nothing | | | | | Do minimum | | | | | Roundabout | | | | | Movement restrictions | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| Mobility (travel time reliability, resilience of the route) | Maintain a reasonably consistent travel time for all modes (particularly freight) | Travel time to/from the main street | Reliability of alternative modes compared to general vehicles particularly for last leg walking trips | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | -1 | -1 | 4 | 4 | 1 | 5 | 5 | 5 | 5 | 1 | -2 | -2 |
| | | | Assessment of the impact on alternative routes | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | -4 | -4 | 4 | 4 | 0 | 5 | 5 | 2 | 2 | 0 | -4 | -4 |
| Cost/feasibility efficiency performance measures | Feasibility | Existing infrastructure used or reallocated to provide multimodal outcomes | Extent to which existing infrastructure can be used/reallocated to provide multimodal outcomes | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 0 | 0 | 0 | 5 | 5 | 5 | 5 | 5 |
| | | Engineering Feasibility | Assessment of constructability | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 4 | 4 | 4 | 3 | 0 | 4 | 4 | 5 | 5 | 0 | 5 | 5 |
| | | Economic Impact | Access to business and employment | -3 | -3 | 0 | -3 | -3 | 1 | 1 | 0 | -3 | -3 | 3 | 1 | 0 | 5 | 5 | 2 | 2 | 0 | -4 | -4 |
| | | Stakeholders | Assessment of likely stakeholder impact | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | -2 | 0 | 0 | 0 | 5 | 3 | 0 | 0 | 0 | -4 | -4 |
| | Cost | Cost | Assessment of capital cost of infrastructure improvements | 0 | 0 | 0 | 0 | 0 | -2 | -2 | 0 | -1 | -1 | -2 | -2 | 0 | -5 | -5 | -1 | -1 | 0 | -1 | -1 |
| | Impacts on Te Ao Māori | Impacts on Te Ao Māori | Assessment of impact on Te Ao Māori including areas of significance for Māori, Māori land and Kiatiakitanga | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 |
| | | Protection of land, water and taonga | Level of protection of land, water and taonga incorporating mātauranga Māori | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 |
| | | | SCORE | -25 | -27 | -3 | -2 | -2 | 62 | 62 | 22 | 19 | 19 | 66 | 52 | 16 | 55 | 52 | 73 | 73 | 19 | 12 | 12 |
| | | | Total, equal weights per measure | -59 | | | | | 184 | | | | | 241 | | | | | 189 | | | | |

# THE MCA ASSESSMENT

| ASSESSMENT CRITERIA | | | OPTION: | Do nothing | | | | | Do minimum | | | | | Roundabout | | | | | Movement restrictions | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| | | | Average, equal weights per objective | | | | | | | | | | | | | | | | | | | | |
| | | Safety | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | To reduce deaths and serious injuries | 1 | -1.67 | -2.00 | -0.67 | -1.33 | -1.33 | 1.67 | 1.67 | 1.67 | 0.67 | 0.67 | 1.67 | 1.67 | 1.67 | 2.33 | 2.33 | 3.33 | 3.33 | 2.00 | 2.33 | 2.33 |
| | | Amenity (travel quality and aesthetics) | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | Strategic direction of key move | 1 | -3.00 | -3.00 | 0.00 | -3.00 | -3.00 | 3.00 | 3.00 | 0.00 | 4.00 | 4.00 | 3.00 | 3.00 | 0.00 | 5.00 | 5.00 | 5.00 | 5.00 | 0.00 | 0.00 | 0.00 |
| | | To provide quality travel options | 1 | -0.50 | -0.50 | 0.00 | 2.00 | 2.00 | 3.00 | 3.00 | 0.00 | 1.50 | 1.50 | 3.50 | 0.00 | 0.00 | 3.00 | 3.00 | 4.00 | 4.00 | 0.00 | 1.00 | 1.00 |
| | | | | | | | | | | | | | | | | | | | | | | | |
| | | Accessibility | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | Provide alternative mode options to private vehicles | 1 | -2.33 | -2.33 | -0.33 | 0.00 | 0.00 | 4.67 | 4.67 | 3.33 | 2.00 | 2.00 | 4.67 | 4.00 | 2.33 | 2.67 | 2.67 | 4.67 | 4.67 | 1.00 | 2.33 | 2.33 |
| | | Access to transport and mobility is equitable for all people | 1 | -2.00 | -2.33 | 0.00 | 1.33 | 1.33 | 4.33 | 4.33 | 0.33 | 2.00 | 2.00 | 4.33 | 4.33 | 1.00 | 3.33 | 3.00 | 4.00 | 4.00 | 1.33 | 0.33 | 0.33 |
| | | Mobility (travel time reliability, resilience of the route) | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | Maintain a reasonably consistent travel time for all modes (particularly freight) | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.50 | 3.50 | 0.50 | -2.50 | -2.50 | 4.00 | 4.00 | 0.50 | 5.00 | 5.00 | 3.50 | 3.50 | 0.50 | -3.00 | -3.00 |
| | | Cost/feasibility efficiency performance measures | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | Feasibility | 1 | -0.75 | -0.75 | 0.00 | -0.75 | -0.75 | 2.75 | 2.75 | 1.25 | 1.00 | 1.00 | 3.00 | 1.75 | 0.00 | 3.50 | 3.00 | 3.00 | 3.00 | 1.25 | 0.50 | 0.50 |
| | | Cost | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -2.00 | -2.00 | 0.00 | -1.00 | -1.00 | -2.00 | -2.00 | 0.00 | -5.00 | -5.00 | -1.00 | -1.00 | 0.00 | -1.00 | -1.00 |
| | | Impacts on Te Ao Māori | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.50 | 2.50 | 0.00 | 0.00 | 0.00 | 3.00 | 3.00 | 0.00 | 0.00 | 0.00 | 3.00 | 3.00 | 0.00 | 0.00 | 0.00 |
| | | | | -10.25 | -10.92 | -1.00 | -1.75 | -1.75 | 23.42 | 23.42 | 7.08 | 7.67 | 7.67 | 25.17 | 19.75 | 5.50 | 19.83 | 19.00 | 29.50 | 29.50 | 6.08 | 2.50 | 2.50 |
| | | | Average, equal weights per objective | -26 | | | | | 69 | | | | | 89 | | | | | 70 | | | | |

# THE MCA ASSESSMENT - SENSITIVITY TESTING

| ASSESSMENT CRITERIA | | | OPTION: | | Do nothing | | | | | Do minimum | | | | | Roundabout | | | | | Movement restrictions | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Weighting | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| Safety | To reduce deaths and serious injuries | Road safety risk assessment rating | Exposure | 1 | -1 | -1 | -1 | -3 | -3 | -1 | -1 | -1 | -3 | -3 | -2 | -2 | -2 | -2 | -2 | 2 | 2 | 2 | 2 | 2 |
| | | | Likelihood | 1 | 1 | 0 | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 0 | 2 | 2 |
| | | | Severity | 1 | -5 | -5 | -1 | -1 | -1 | 3 | 3 | 3 | 2 | 2 | 4 | 4 | 4 | 5 | 5 | 4 | 4 | 4 | 3 | 3 |
| Amenity (travel quality and aesthetics) | Strategic direction of key move | Fit for purpose | Alignment with place and movement guide | 3 | -3 | -3 | 0 | -3 | -3 | 3 | 3 | 0 | 4 | 4 | 3 | 3 | 0 | 5 | 5 | 5 | 5 | 0 | 0 | 0 |
| | To provide quality travel options | Intensification and urban form | Encouragement of modes based on look and feel | 1 | -1 | -1 | 0 | 4 | 4 | 3 | 3 | 0 | 3 | 3 | 4 | -3 | 0 | 5 | 5 | 4 | 4 | 0 | -1 | -1 |
| | | Effects on biodiversity and other natural resources | Impacts on biodiversity, areas of sensitive natural and cultural interest | 0.5 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 3 | 3 | 0 | 1 | 1 | 4 | 4 | 0 | 3 | 3 |
| Accessibility | Provide alternative mode options to private vehicles | Promotion of alternative modes | Achieve a high LOS for pedestrians and cyclists | 1 | -2 | -2 | 0 | 0 | 0 | 5 | 5 | 3 | 1 | 1 | 5 | 3 | 1 | 1 | 1 | 5 | 5 | 0 | 1 | 1 |
| | | | Accessibility for vulnerable users | 1.5 | -3 | -3 | 0 | 0 | 0 | 5 | 5 | 5 | 3 | 3 | 5 | 5 | 4 | 5 | 5 | 5 | 5 | 0 | 4 | 4 |
| | | Active mode and public transport mode share (combined) compared to private vehicles | Number of active mode and public transport trips (combined) compared to private vehicle trips | 0.5 | -2 | -2 | -1 | 0 | 0 | 4 | 4 | 2 | 2 | 2 | 4 | 4 | 2 | 2 | 2 | 4 | 4 | 3 | 2 | 2 |
| | Access to transport and mobility is equitable for all people | Walking, cycling and micromobility network coverage and useability | Extent to which option improves the walking, cycling and micromobility network coverage | 0.5 | -2 | -2 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 4 | 4 | 0 | 1 | 1 |
| | | Transport choice available for all people living in Ngāruawāhia to access the main street | Extent to which option improves alternative mode choice | 0.5 | -2 | -2 | 0 | 0 | 0 | 3 | 3 | 0 | 3 | 3 | 4 | 4 | 0 | 5 | 4 | 3 | 3 | 0 | -1 | -1 |
| | | Perception of safety (all users and vulnerable users) | Change in perception of safety and harm (all users and vulnerable users) | 0.75 | -2 | -3 | 0 | 4 | 4 | 5 | 5 | 1 | 3 | 3 | 5 | 5 | 3 | 5 | 5 | 5 | 5 | 4 | 1 | 1 |
| Mobility (travel time reliability, resilience of the route) | Maintain a reasonably consistent travel time for all modes (particularly freight) | Travel time to/from the main street | Reliability of alternative modes compared to general vehicles particularly for last leg walking trips | 1.5 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 1 | -1 | -1 | 4 | 4 | 1 | 5 | 5 | 5 | 5 | 1 | -2 | -2 |
| | | | Assessment of the impact on alternative routes | 1 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | -4 | -4 | 4 | 4 | 0 | 5 | 5 | 2 | 2 | 0 | -4 | -4 |
| Cost/feasibility efficiency performance measures | Feasibility | Existing infrastructure used or reallocated to provide multimodal outcomes | Extent to which existing infrastructure can be used/reallocated to provide multimodal outcomes | 0.25 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 0 | 0 | 0 | 5 | 5 | 5 | 5 | 5 |
| | | Engineering Feasibility | Assessment of constructability | 0.5 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 4 | 4 | 4 | 3 | 0 | 4 | 4 | 5 | 5 | 0 | 5 | 5 |
| | | Economic Impact | Access to business and employment | 2 | -3 | -3 | 0 | -3 | -3 | 1 | 1 | 0 | -3 | -3 | 3 | 1 | 0 | 5 | 5 | 2 | 2 | 0 | -4 | -4 |
| | | Stakeholders | Assessment of likely stakeholder impact | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | -2 | 0 | 0 | 0 | 5 | 3 | 0 | 0 | 0 | -4 | -4 |
| | Cost | Cost | Assessment of capital cost of infrastructure improvements | 0.5 | 0 | 0 | 0 | 0 | 0 | -2 | -2 | 0 | -1 | -1 | -2 | -2 | 0 | -5 | -5 | -1 | -1 | 0 | -1 | -1 |
| | Impacts on Te Ao Māori | Impacts on Te Ao Māori | Assessment of impact on Te Ao Māori including areas of significance for Māori, Māori land and Kiatiakitanga | 1 | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 |
| | | Protection of land, water and taonga | Level of protection of land, water and taonga incorporating mātauranga Māori | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 |
| | | | SCORE | | -32 | -33.75 | -2.5 | -12 | -12 | 59.5 | 59.5 | 20 | 14.5 | 14.5 | 66 | 52 | 16.75 | 75.25 | 70.75 | 75.5 | 75.5 | 13.25 | -3.5 | -3.5 |
| | | | Total, unequal weights per measure | | -92 | | | | | 168 | | | | | 281 | | | | | 157 | | | | |

flow
TRANSPORTATION SPECIALISTS

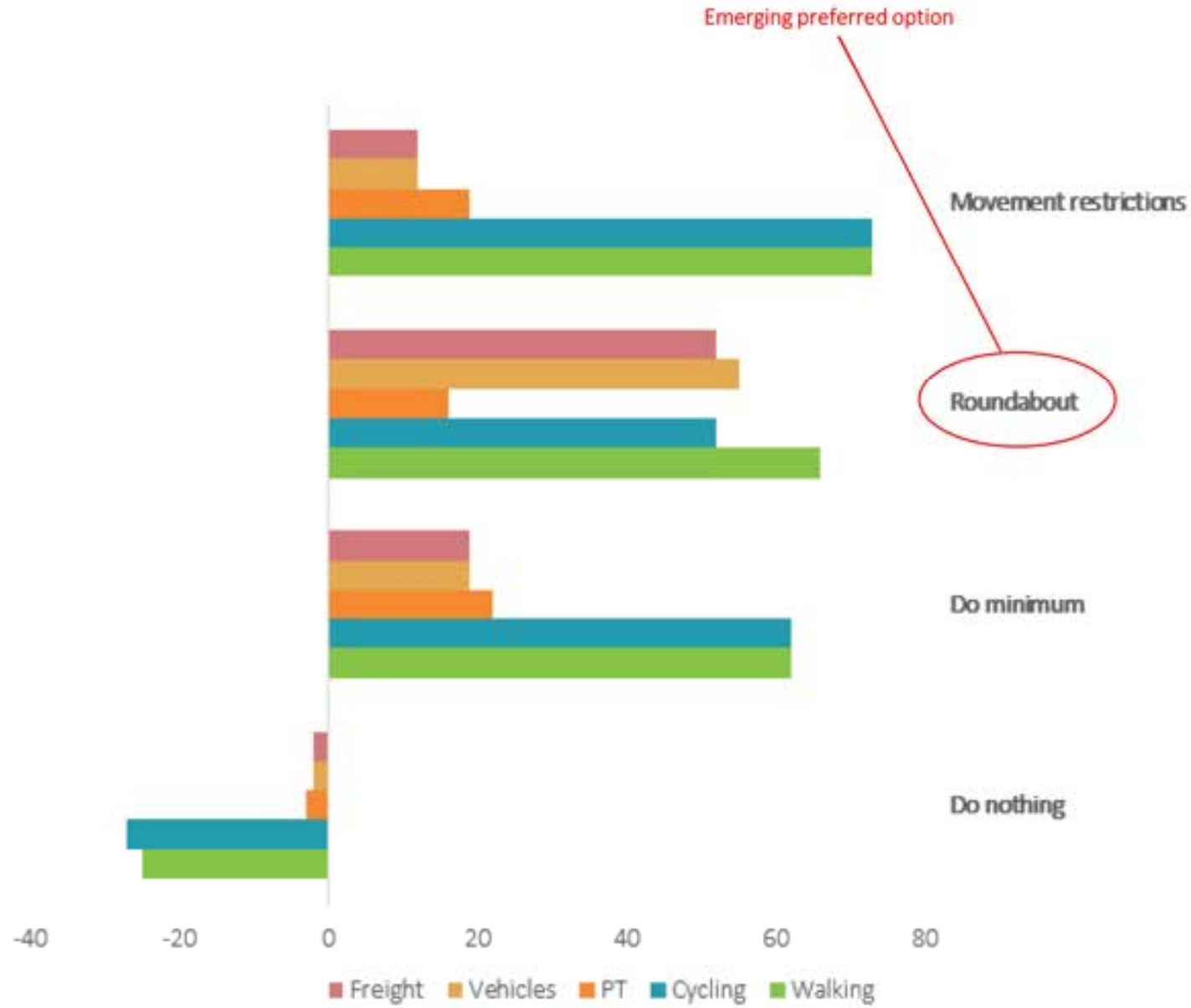
# THE MCA ASSESSMENT - SENSITIVITY TESTING

| ASSESSMENT CRITERIA | | | OPTION: | | Do nothing | | | | | Do minimum | | | | | Roundabout | | | | | Movement restrictions | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Weighting | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| | | | Average, unequal weights per objective | | | | | | | | | | | | | | | | | | | | | |
| | | | Safety | Weighting | | | | | | | | | | | | | | | | | | | | |
| | | | To reduce deaths and serious injuries | 2 | -1.67 | -2.00 | -0.67 | -1.33 | -1.33 | 1.67 | 1.67 | 1.67 | 0.67 | 0.67 | 1.67 | 1.67 | 1.67 | 2.33 | 2.33 | 3.33 | 3.33 | 2.00 | 2.33 | 2.33 |
| | | | Amenity (travel quality and aesthetics) | Weighting | | | | | | | | | | | | | | | | | | | | |
| | | | Strategic direction of key move | 2 | -3.00 | -3.00 | 0.00 | -3.00 | -3.00 | 3.00 | 3.00 | 0.00 | 4.00 | 4.00 | 3.00 | 3.00 | 0.00 | 5.00 | 5.00 | 5.00 | 5.00 | 0.00 | 0.00 | 0.00 |
| | | | To provide quality travel options | 1 | -0.50 | -0.50 | 0.00 | 2.00 | 2.00 | 3.00 | 3.00 | 0.00 | 1.50 | 1.50 | 3.50 | 0.00 | 0.00 | 3.00 | 3.00 | 4.00 | 4.00 | 0.00 | 1.00 | 1.00 |
| | | | Accessibility | Weighting | | | | | | | | | | | | | | | | | | | | |
| | | | Provide alternative mode options to private vehicles | 1 | -2.33 | -2.33 | -0.33 | 0.00 | 0.00 | 4.67 | 4.67 | 3.33 | 2.00 | 2.00 | 4.67 | 4.00 | 2.33 | 2.67 | 2.67 | 4.67 | 4.67 | 1.00 | 2.33 | 2.33 |
| | | | Access to transport and mobility is equitable for all people | 1 | -2.00 | -2.33 | 0.00 | 1.33 | 1.33 | 4.33 | 4.33 | 0.33 | 2.00 | 2.00 | 4.33 | 4.33 | 1.00 | 3.33 | 3.00 | 4.00 | 4.00 | 1.33 | 0.33 | 0.33 |
| | | | Mobility (travel time reliability, resilience of the route) | Weighting | | | | | | | | | | | | | | | | | | | | |
| | | | Maintain a reasonably consistent travel time for all modes (particularly freight) | 2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.50 | 3.50 | 0.50 | -2.50 | -2.50 | 4.00 | 4.00 | 0.50 | 5.00 | 5.00 | 3.50 | 3.50 | 0.50 | -3.00 | -3.00 |
| | | | Cost/feasibility efficiency performance measures | Weighting | | | | | | | | | | | | | | | | | | | | |
| | | | Feasibility | 2 | -0.75 | -0.75 | 0.00 | -0.75 | -0.75 | 2.75 | 2.75 | 1.25 | 1.00 | 1.00 | 3.00 | 1.75 | 0.00 | 3.50 | 3.00 | 3.00 | 3.00 | 1.25 | 0.50 | 0.50 |
| | | | Cost | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -2.00 | -2.00 | 0.00 | -1.00 | -1.00 | -2.00 | -2.00 | 0.00 | -5.00 | -5.00 | -1.00 | -1.00 | 0.00 | -1.00 | -1.00 |
| | | | Impacts on Te Ao Māori | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.50 | 2.50 | 0.00 | 0.00 | 0.00 | 3.00 | 3.00 | 0.00 | 0.00 | 0.00 | 3.00 | 3.00 | 0.00 | 0.00 | 0.00 |
| | | | | | -15.67 | -16.67 | -1.67 | -6.83 | -6.83 | 34.33 | 34.33 | 10.50 | 10.83 | 10.83 | 36.83 | 30.17 | 7.67 | 35.67 | 34.33 | 44.33 | 44.33 | 9.83 | 2.33 | 2.33 |
| | | | Average, unequal weights per objective | | -48 | | | | | 101 | | | | | 145 | | | | | 103 | | | | |

# Assessment update
## MCA scoring

The MCA assessment takes into account the following:

- Banning movements discourage use of vehicles while having a moderate impact to active modal choice,
- Slower vehicle speeds improve perception of safety,
- Reliability of alternative modes score well particularly where vehicle movement discouraged but active modes have improvement,
- Roundabout can provide more access opportunities for vehicles while banning movements restricts,
- Existing infrastructure can be used for banning movements options,
- Restricting vehicle movement will inspire opposition from businesses,
- Roundabout likely most expensive (may require land acquisition if site lines require improvement),
- Improved walking and cycling access to Turangawaewae House with limiting vehicle movements (improvement of safe options)
- the higher impact of a roundabout on land and runoff,
- the positive outcome of redistribution of land for people if road space for vehicles is reduced




GREAT SOUTH ROAD / JESMOND STREET INTERSECTION

# Assessment update
## MCA scoring

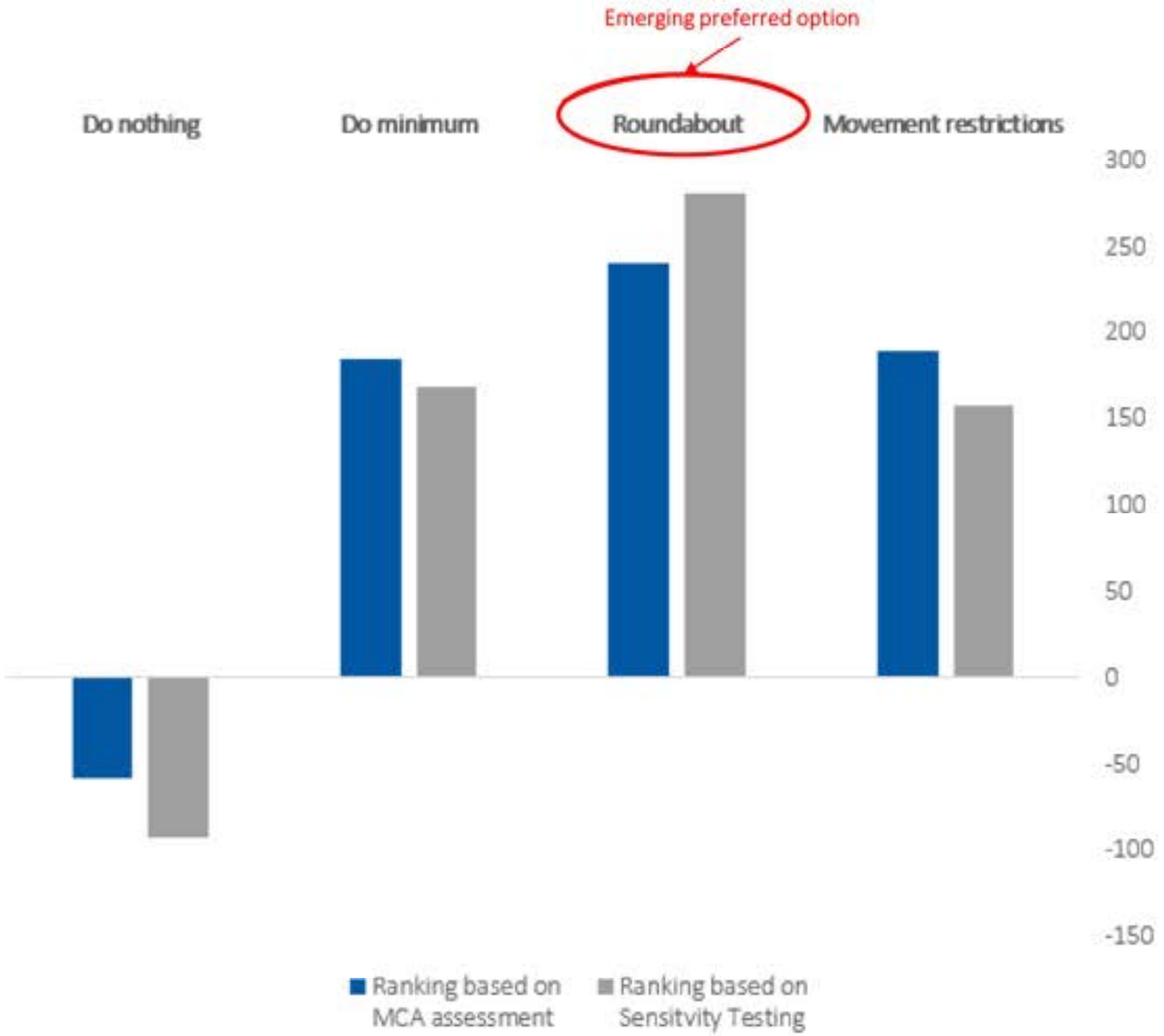
### THE MCA ASSESSMENT SUMMARY

The movement restrictions option was not considered further primarily due to potential push back from the businesses.

The do-minimum option and movement restrictions option scored similarly with good outcomes for walking and cycling but poor outcomes for vehicles, buses and freight.

The roundabout option provided more balanced outcomes for all modes which is important at this location given the competing demands. The place and movement functions of the intersection could be considered almost equal. The movement function comes from Great South Road being a primary route for general traffic, buses and trucks. The place function comes from Jesmond Street which is a main street with aspirations of building strong east-west walking and cycling desire lines.

The roundabout option was therefore selected and confirmed with WDC as the preferred option to be progressed to design.




flow
TRANSPORTATION SPECIALISTS

GREAT SOUTH ROAD / JESMOND STREET INTERSECTION

# Newcastle/Jesmond Intersection

VA-4

Appendix E-3.3.2

JESMOND STREET INTERSECTIONS WITH
GREAT SOUTH ROAD AND NEWCASTLE STREET

## OPTIONS ASSESSMENT FOR NEWCASTLE STREET / JESMOND STREET INTERSECTION

flow
TRANSPORTATION SPECIALISTS

# THE MCA ASSESSMENT

| ASSESSMENT CRITERIA | | | OPTION: | Do Nothing<br>Retain Existing | | | | | Option 1<br>Raised tables on each leg | | | | | Option 2<br>Option 1 plus close Waikato Esplanade to traffic | | | | | Option 3<br>Dutch style roundabout | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| Safety | To reduce deaths and serious injuries | Road safety risk assessment rating | Exposure | -3 | -3 | 0 | 0 | 0 | -1 | -1 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | -1 | -1 | 0 | 0 | 0 |
| | | | Likelihood | -5 | -5 | 0 | -1 | -1 | 3 | 3 | 0 | 2 | 2 | 4 | 4 | 0 | 4 | 4 | 4 | 4 | 0 | 4 | 4 |
| | | | Severity | -2 | -2 | 0 | 0 | 0 | 3 | 3 | 0 | 4 | 4 | 3 | 3 | 0 | 4 | 4 | 3 | 3 | 0 | 4 | 4 |
| Amenity (travel quality and aesthetics) | Strategic direction of key move | Fit for purpose | Alignment with place and movement guide | -2 | -2 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 2 | 2 | 3 | 3 | 0 | 3 | 3 |
| | To provide quality travel options | Intensification and urban form | Encouragement of modes based on look and feel | -4 | -5 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 1 | 0 | 4 | 4 | 0 | 3 | 0 |
| | | Effects on biodiversity and other natural resources | Impacts on biodiversity, areas of sensitive natural and cultural interest | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 |
| Accessibility | Provide alternative mode options to private vehicles | Promotion of alternative modes | Achieve a high LOS for pedestrians and cyclists | -1 | -1 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 |
| | | | Accessibility for vulnerable users | -5 | -5 | -5 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 |
| | | Active mode and public transport mode share (combined) compared to private vehicles | Number of active mode and public transport trips (combined) compared to private vehicle trips | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 |
| | Access to transport and mobility is equitable for all people | Walking, cycling and micromobility network coverage and useability | Extent to which option improves the walking, cycling and micromobility network coverage | -4 | -4 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 |
| | | Ability to connect to Te Awa Cycleway | Extent to which option improves the walking, cycling connection to the Te Awa Cycleway | -1 | -1 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 3 | 3 | 0 | 1 | 1 | 4 | 4 | 0 | 2 | 2 |
| | | Transport choice available for all people living in Ngāruawāhia to access the main street | Extent to which option improves alternative mode choice | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 1 | 0 | 3 | 3 | 2 | 2 | 0 | 5 | 5 | 4 | 3 | 0 |
| | | Access to the Police Station | Extent to which option allows the movement to and from the police station | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 0 | 2 | 2 | 3 | 3 | 0 | -1 | -1 | 5 | 5 | 0 | 3 | 1 |
| | | Perception of safety (all users and vulnerable users) | Change in perception of safety and harm (all users and vulnerable users) | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 3 | 3 | 4 | 3 | 0 | 4 | 3 | 4 | 3 | 0 | 4 | 3 |

# THE MCA ASSESSMENT



| ASSESSMENT CRITERIA | | | OPTION: | Do Nothing<br>Retain Existing | | | | | Option 1<br>Raised tables on each leg | | | | | Option 2<br>Option 1 plus close Waikato Esplanade to traffic | | | | | Option 3<br>Dutch style roundabout | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| Mobility | Ease of Access to the town centre for all walking and cycling and service delivery modes | Service delivery trucks | Impact on medium to large trucks' movement at this intersection to access the businesses on Jesmond Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | 0 | 0 | 0 | 0 | -2 | 0 | 0 | 0 | 0 | -2 |
| | | People on foot and people on bikes | Extent to which option improves the walking and cycling priority to access the town centre | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 |
| Cost/feasibility efficiency performance measures | Feasibility | Existing infrastructure used or reallocated to provide multimodal outcomes | Extent to which existing infrastructure can be used/reallocated to provide multimodal outcomes | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 4 | 4 | 4 | 4 | 0 | 3 | 3 | -2 | -2 | 0 | -3 | -3 |
| | | Engineering Feasibility | Assessment of constructability | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 4 | 4 | 4 | 4 | 0 | 4 | 4 | 0 | -1 | 0 | -5 | -4 |
| | | Economic Impact | Access to business and employment | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 2 | 0 | -2 | 0 | 4 | 4 | 0 | 4 | 4 |
| | | Stakeholders | Assessment of likely stakeholder impact | -2 | -1 | 0 | 2 | 0 | 2 | 1 | 0 | 1 | -2 | 3 | 2 | 0 | 0 | -2 | 4 | 4 | 0 | 1 | -2 |
| | Cost | Cost | Assessment of capital cost of infrastructure improvements | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 0 | -1 | -1 | -3 | -3 | 0 | -3 | -3 | -4 | -4 | 0 | -4 | -4 |
| | Impacts on Te Ao Māori | Impacts on Te Ao Māori | Assessment of impact on Te Ao Māori including areas of significance for Māori, Māori land and Kiatiakitanga | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 0 | 2 | 0 | 4 | 3 | 0 | 2 | 0 | 4 | 4 | 0 | 3 | 0 |
| | | | SCORE | -29 | -29 | -5 | 7 | 2 | 45 | 40 | 2 | 24 | 16 | 57 | 49 | 2 | 23 | 15 | 59 | 56 | 4 | 22 | 6 |
| | | | Total, equal weights per measure | -54 | | | | | 127 | | | | | 146 | | | | | 147 | | | | |

# THE MCA ASSESSMENT - SENSITIVITY TESTING

| ASSESSMENT CRITERIA | | | OPTION: | Do Nothing<br>Retain Existing | | | | | Option 1<br>Raised tables on each leg | | | | | Option 2<br>Option 1 plus close Waikato Esplanade to traffic | | | | | Option 3<br>Dutch style roundabout | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| Safety | To reduce deaths and serious injuries | Road safety risk assessment rating | Exposure | -3 | -3 | 0 | 0 | 0 | -1 | -1 | 0 | 0 | 0 | 1 | 1 | 0 | 2 | 2 | -1 | -1 | 0 | 0 | 0 |
| | | | Likelihood | -5 | -5 | 0 | -1 | -1 | 3 | 3 | 0 | 2 | 2 | 4 | 4 | 0 | 4 | 4 | 4 | 4 | 0 | 4 | 4 |
| | | | Severity | -2 | -2 | 0 | 0 | 0 | 3 | 3 | 0 | 4 | 4 | 3 | 3 | 0 | 4 | 4 | 3 | 3 | 0 | 4 | 4 |
| Amenity (travel quality and aesthetics) | Strategic direction of key move | Fit for purpose | Alignment with place and movement guide | -2 | -2 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 2 | 2 | 3 | 3 | 0 | 3 | 3 |
| | To provide quality travel options | Intensification and urban form | Encouragement of modes based on look and feel | -4 | -5 | 0 | 3 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 1 | 0 | 4 | 4 | 0 | 3 | 0 |
| | | Effects on biodiversity and other natural resources | Impacts on biodiversity, areas of sensitive natural and cultural interest | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 |
| Accessibility | Provide alternative mode options to private vehicles | Promotion of alternative modes | Achieve a high LOS for pedestrians and cyclists | -1 | -1 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 |
| | | | Accessibility for vulnerable users | -5 | -5 | -5 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 |
| | | Active mode and public transport mode share (combined) compared to private vehicles | Number of active mode and public transport trips (combined) compared to private vehicle trips | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 4 | 3 | 0 | 0 | 0 |
| | Access to transport and mobility is equitable for all people | Walking, cycling and micromobility network coverage and useability | Extent to which option improves the walking, cycling and micromobility network coverage | -4 | -4 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 |
| | | Ability to connect to Te Awa Cycleway | Extent to which option improves the walking, cycling connection to the Te Awa Cycleway | -1 | -1 | 0 | 0 | 0 | 2 | 2 | 0 | 1 | 1 | 3 | 3 | 0 | 1 | 1 | 4 | 4 | 0 | 2 | 2 |
| | | Transport choice available for all people living in Ngāruawāhia to access the main street | Extent to which option improves alternative mode choice | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 1 | 0 | 3 | 3 | 2 | 2 | 0 | 5 | 5 | 4 | 3 | 0 |
| | | Access to the Police Station | Extent to which option allows the movement to and from the police station | 0 | 0 | 0 | 3 | 3 | 3 | 3 | 0 | 2 | 2 | 3 | 3 | 0 | -1 | -1 | 5 | 5 | 0 | 3 | 1 |
| | | Perception of safety (all users and vulnerable users) | Change in perception of safety and harm (all users and vulnerable users) | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 0 | 3 | 3 | 4 | 3 | 0 | 4 | 3 | 4 | 3 | 0 | 4 | 3 |

# THE MCA ASSESSMENT - SENSITIVITY TESTING

| ASSESSMENT CRITERIA | | | OPTION: | Do Nothing<br>Retain Existing | | | | | Option 1<br>Raised tables on each leg | | | | | Option 2<br>Option 1 plus close Waikato Esplanade to traffic | | | | | Option 3<br>Dutch style roundabout | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| Mobility | Ease of Access to the town centre for all walking and cycling and service delivery modes | Service delivery trucks | Impact on medium to large trucks' movement at this intersection to access the businesses on Jesmond Street | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -2 | 0 | 0 | 0 | 0 | -2 | 0 | 0 | 0 | 0 | -2 |
| | | People on foot and people on bikes | Extent to which option improves the walking and cycling priority to access the town centre | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 4 | 4 | 0 | 0 | 0 |
| Cost/feasibility efficiency performance measures | Feasibility | Existing infrastructure used or reallocated to provide multimodal outcomes | Extent to which existing infrastructure can be used/reallocated to provide multimodal outcomes | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 4 | 4 | 4 | 4 | 0 | 3 | 3 | -2 | -2 | 0 | -3 | -3 |
| | | Engineering Feasibility | Assessment of constructability | 0 | 0 | 0 | 0 | 0 | 4 | 4 | 0 | 4 | 4 | 4 | 4 | 0 | 4 | 4 | 0 | -1 | 0 | -5 | -4 |
| | | Economic Impact | Access to business and employment | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 2 | 0 | -2 | 0 | 4 | 4 | 0 | 4 | 4 |
| | | Stakeholders | Assessment of likely stakeholder impact | -2 | -1 | 0 | 2 | 0 | 2 | 1 | 0 | 1 | -2 | 3 | 2 | 0 | 0 | -2 | 4 | 4 | 0 | 1 | -2 |
| | Cost | Cost | Assessment of capital cost of infrastructure improvements | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 0 | -1 | -1 | -3 | -3 | 0 | -3 | -3 | -4 | -4 | 0 | -4 | -4 |
| | Impacts on Te Ao Māori | Impacts on Te Ao Māori | Assessment of impact on Te Ao Māori including areas of significance for Māori, Māori land and Kiatiakitanga | 0 | 0 | 0 | 0 | 0 | 4 | 3 | 0 | 2 | 0 | 4 | 3 | 0 | 2 | 0 | 4 | 4 | 0 | 3 | 0 |
| | | | SCORE | -31.5 | -30.5 | -5 | 10.5 | 3.5 | 51.5 | 45.5 | 2 | 26.5 | 15.5 | 66 | 57 | 2 | 23 | 13 | 71.5 | 68.5 | 4 | 25.5 | 5.5 |
| | | | Total, equal weights per measure | -53 | | | | | 141 | | | | | 161 | | | | | 175 | | | | |

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# THE MCA ASSESSMENT - SENSITIVITY TESTING



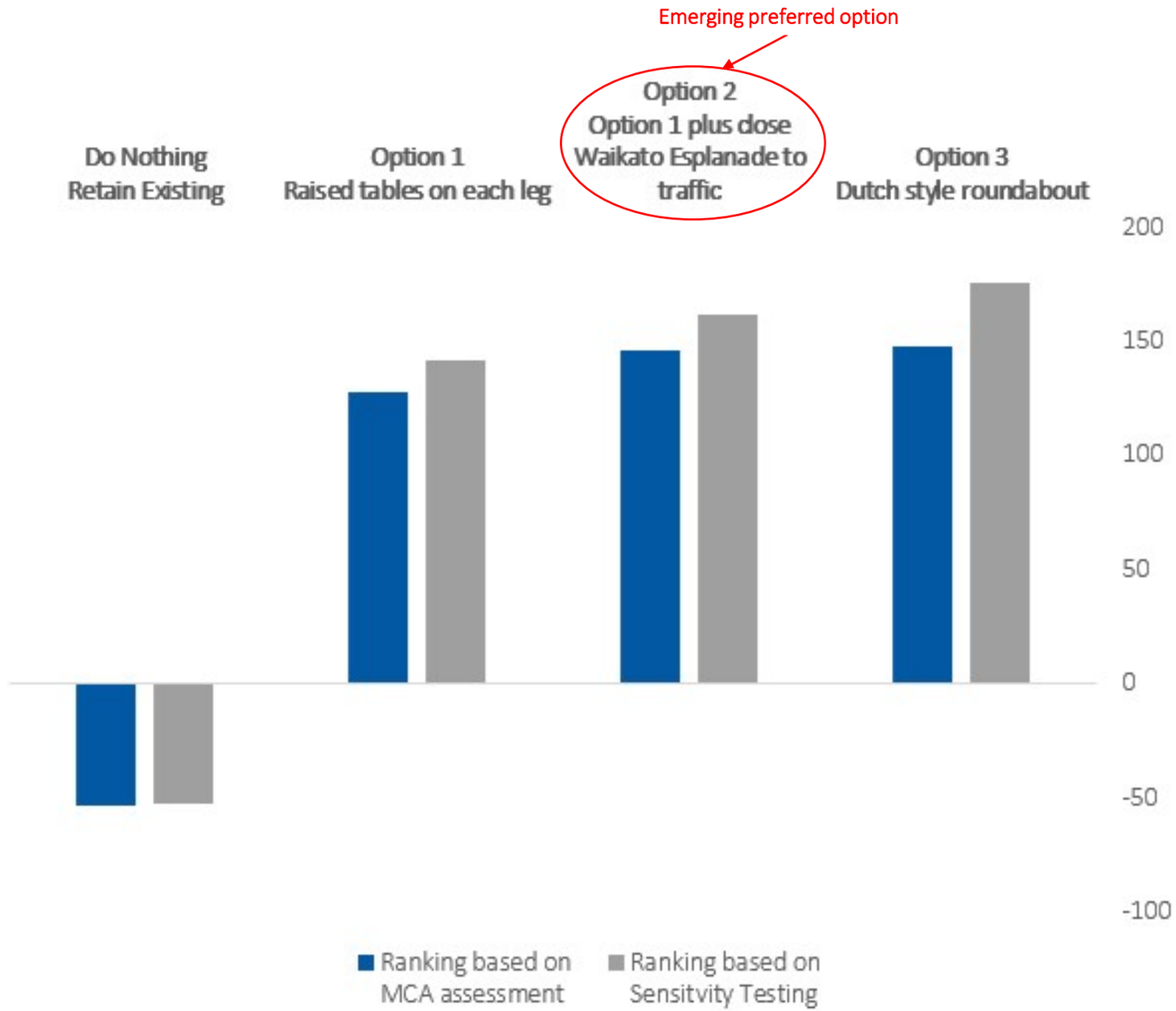
| ASSESSMENT CRITERIA | | | OPTION: | Do Nothing<br>Retain Existing | | | | Option 1<br>Raised tables on each leg | | | | Option 2<br>Option 1 plus close Waikato Esplanade to traffic | | | | Option 3<br>Dutch style roundabout | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | Vehicles | Freight | Walking | Cycling | Vehicles | Freight | Walking | Cycling | Vehicles | Freight | Walking | Cycling | Vehicles | Freight |
| Safety | To reduce deaths and serious injuries | Road safety risk assessment rating | Exposure | -1 | -1 | 0 | 0 | -1 | -1 | 0 | 0 | 1 | 1 | 2 | 2 | 1 | 1 | 2 | 2 |
| | | | Likelihood | -5 | -5 | -1 | -1 | 3 | 3 | 2 | 2 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| | | | Severity | -2 | -2 | 0 | 0 | 3 | 3 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 4 | 4 |
| Amenity (travel quality and aesthetics) | Strategic direction of key move | Fit for purpose | Alignment with place and movement guide | -2 | -2 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 3 | 3 | 3 | 3 |
| | To provide quality travel options | Intensification and urban form | Encouragement of modes based on look and feel | -4 | -5 | 3 | 0 | 2 | 0 | 0 | 0 | 3 | 2 | 1 | 0 | 4 | 4 | 3 | 0 |
| | | Effects on biodiversity and other natural resources | Impacts on biodiversity, areas of sensitive natural and cultural interest | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 3 | 3 | 0 | 0 |
| Accessibility | Provide alternative mode options to private vehicles | Promotion of alternative modes | Achieve a high LOS for pedestrians and cyclists | -2 | -3 | 0 | 0 | 3 | 3 | 0 | 0 | 3 | 3 | 0 | 0 | 4 | 4 | 0 | 0 |
| | | | Accessibility for vulnerable users | -5 | -5 | 0 | 0 | 2 | 2 | 0 | 0 | 3 | 2 | 0 | 0 | 4 | 4 | 0 | 0 |
| | | Active mode and public transport mode share (combined) compared to private vehicles | Number of active mode and public transport trips (combined) compared to private vehicle trips | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 3 | 2 | 0 | 0 | 4 | 3 | 0 | 0 |
| | Access to transport and mobility is equitable for all people | Walking, cycling and micromobility network coverage and useability | Extent to which option improves the walking, cycling and micromobility network coverage | -4 | -4 | 0 | 0 | 2 | 2 | 0 | 0 | 3 | 3 | 0 | 0 | 4 | 4 | 0 | 0 |
| | | Ability to connect to Te Awa Cycleway | Extent to which option improves the walking, cycling connection to the Te Awa Cycleway | -1 | -1 | 0 | 0 | 2 | 2 | 0 | 0 | 3 | 3 | 0 | 0 | 4 | 4 | 0 | 0 |
| | | Transport choice available for all people living in Ngāruawāhia to access the main street | Extent to which option improves alternative mode choice | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 0 | 3 | 3 | 2 | 0 | 5 | 5 | 3 | 0 |

# Assessment update

## MCA scoring

The MCA assessment takes into account the following:

- Exposure: The level of exposure remains the same for all options as the risks are the same.
- Likelihood: With the introduction of designated crossing facilities, the likelihood of incidents reduces.
- Severity: The severity of incidents decreases with traffic calming measures.
- Pedestrian friendly facilities: The more pedestrian-friendly facilities there are, the more attractive active modes of transportation will be. This will also decrease the attractiveness of cars.
- PT movement: There will be no public transportation movement through the intersection.
- Improved connection: Traffic calming and pedestrian facilities will improve the connection to other pedestrian-friendly facilities and walkways.
- Police service vehicles only: Option 3 will restrict movements to police service vehicles only (drive-way).
- Truck's preference: Trucks are likely to dislike speed tables.
- Improved access: Options 2-4 will improve walking and cycling access to the town center.
- Complexity: Constraints increase the complexity of design.
- Negative impact: Closing one of the approaches is likely to result in negative perceptions from businesses.
- Humps: Cars, especially freight (large trucks), are unlikely to like humps.
- Cost: Options become progressively more expensive.
- Impact of roundabout: The impact of a roundabout on land and runoff is higher.
- Redistribution of land: If road space for vehicles is reduced, there will be redistribution of land for people.




**NEWCASTLE STREET / JESMOND STREET INTERSECTION**

# Assessment update
## MCA scoring

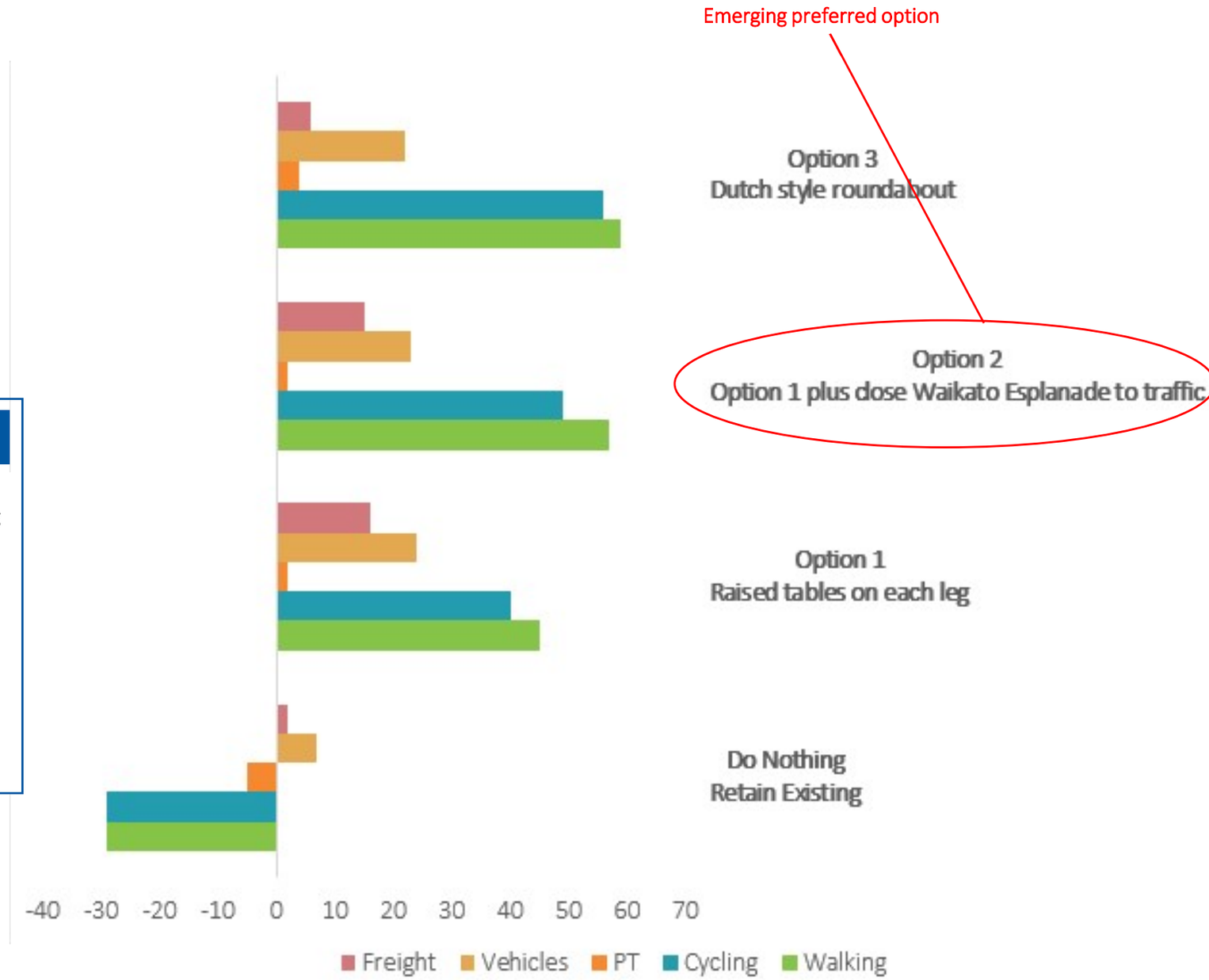
- MCA scores by mode

**THE MCA ASSESSMENT SUMMARY**

The dutch style roundabout was not considered further primarily due to feasibility issues. Given the number of approaches with two of them having slip lanes, a much larger roundabout is required to safely accommodate the five approaches. This would require more than the available road reserve space available.

Between option 1 and option 2, the option which proposes closing off Waikato Esplanade from accessing the intersection, Option 2, scored most favorably.

Option 2 was therefore selected and confirmed with WDC as the preferred option to be progressed to design.

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# Appendix E-3.4

## JESMOND STREET INTERSECTIONS WITH GREAT SOUTH ROAD AND NEWCASTLE STREET

# DESIGN OF PREFERRED OPTION

NGĀRUAWĀHIA, HOPUHOPU AND TAUPIRI TRANSPORTATION ASSESSEMENT

# JESMOND STREET INTERSECTIONS

## CONCEPT DESIGNS

Project No.: WADC001
Date: October 2023

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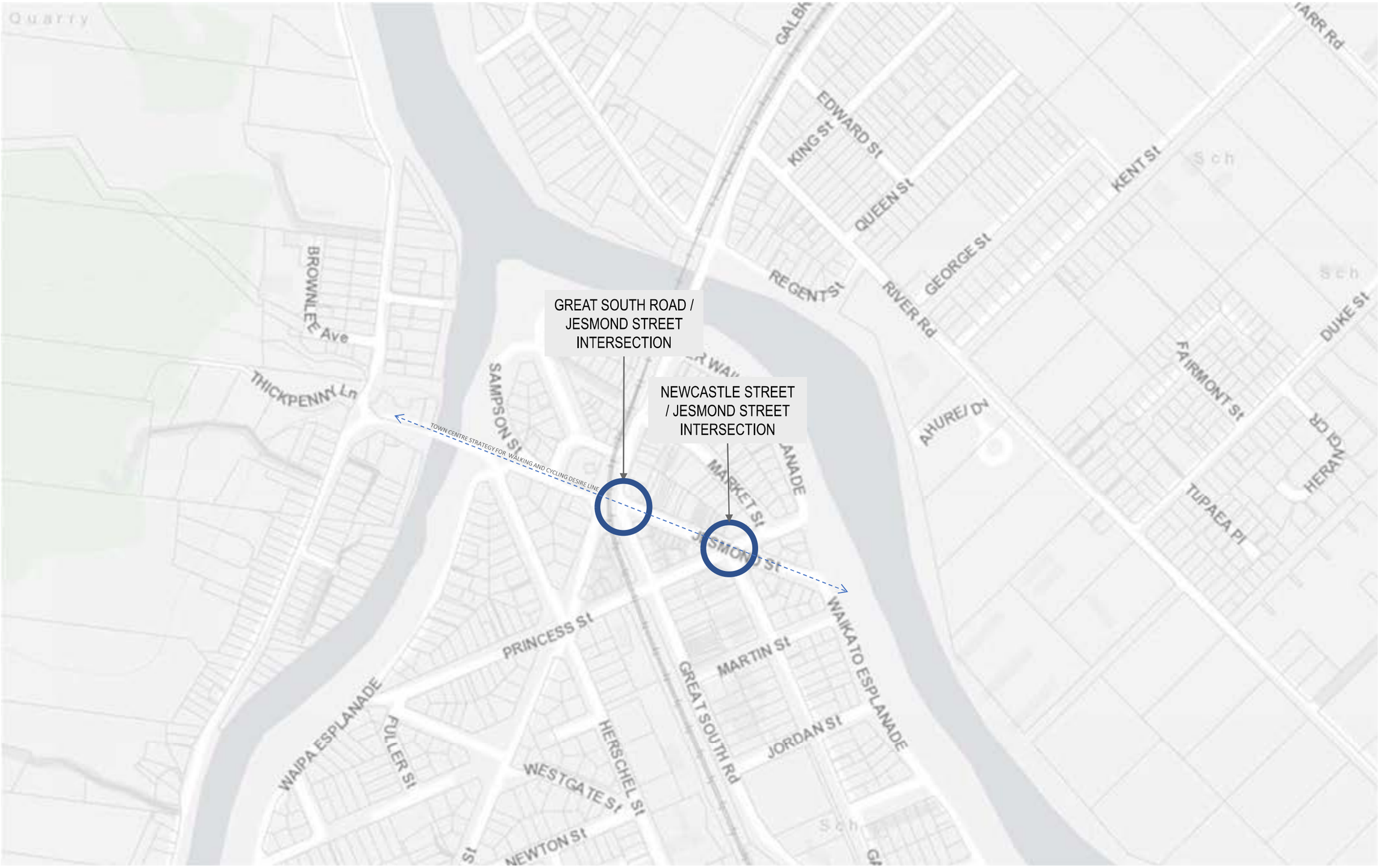
flow TRANSPORTATION SPECIALISTS LTD
Level 1, 11 Blake Street, Ponsonby | PO Box 47497, Ponsonby, Auckland 1144 | p 09 970 3820 | f 09 970 3890 | www.flownz.com




# LOCATION OF JESMOND STREET INTERSECTIONS

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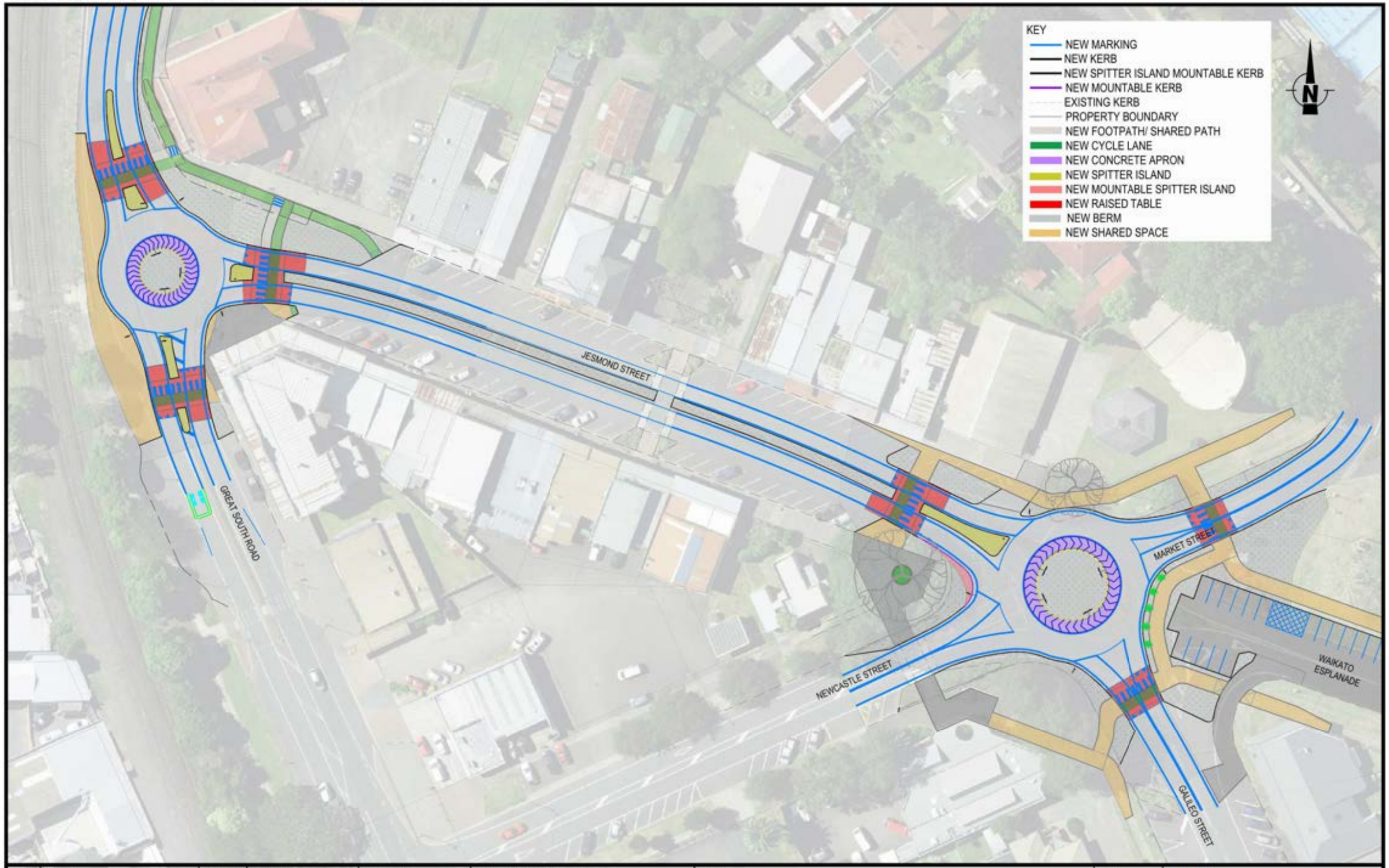
**flow** TRANSPORTATION SPECIALISTS




| REV | AMENDMENT | DATE OF ISSUE |
|---|---|---|
| A | First Issue | 03/10/2023 |
| B | Updated with dimensions | 13/10/2023 |

DESIGN: MWP | DRAWN: MWP
CHECKED: SC | DATE: 13/10/2023
SCALE: 0 – 20m
NOT TO SCALE

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET, NGĀRUAWĀHIA

CONCEPT DESIGN

SHEET TITLE: PROPOSED INTERSECTION LAYOUT JESMOND STREET INTERSECTIONS

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 01 of 14
REV: A

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Level 1, 11 Blake Street, Ponsonby, Auckland | PO Box 47497 Ponsonby
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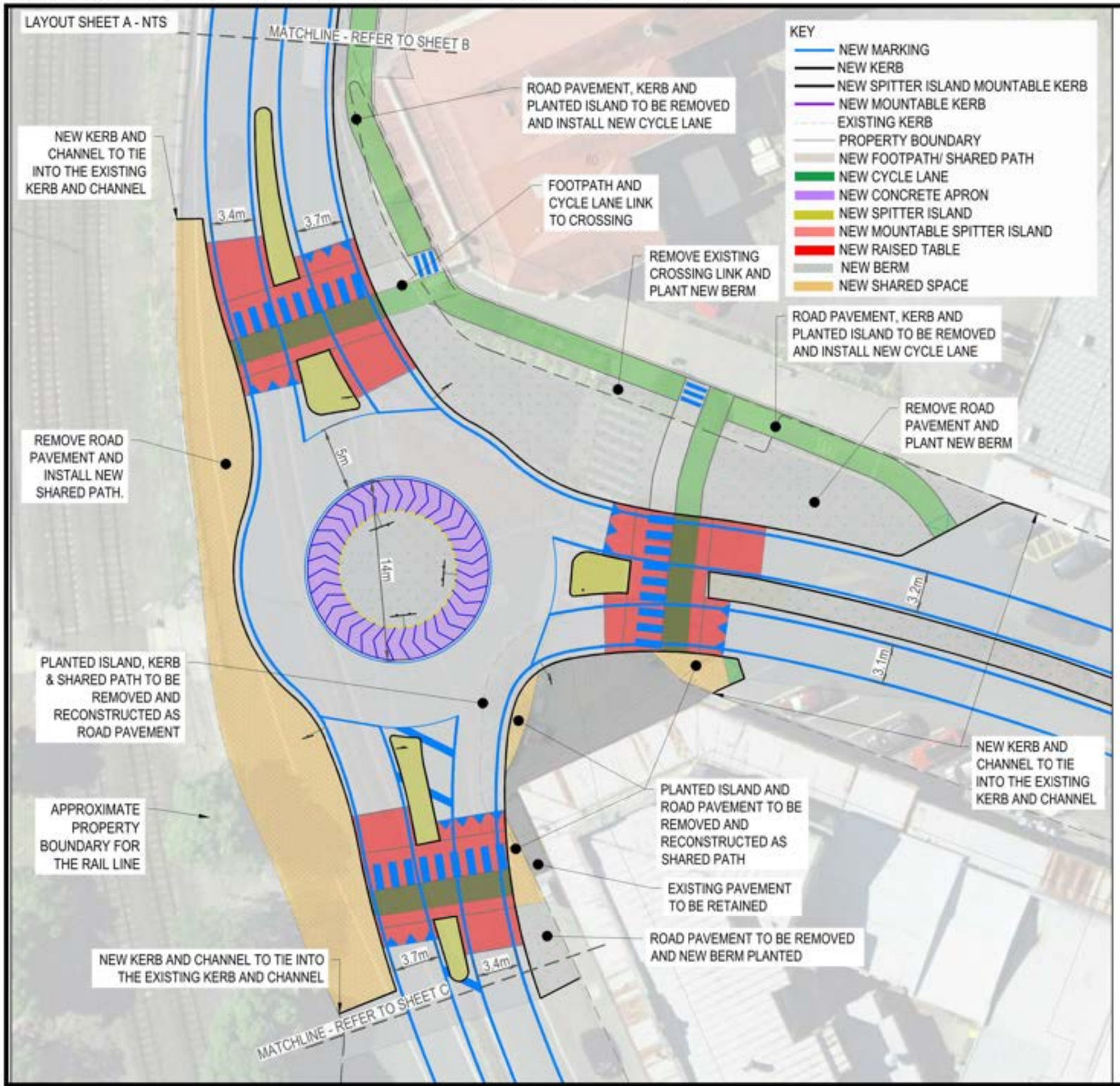


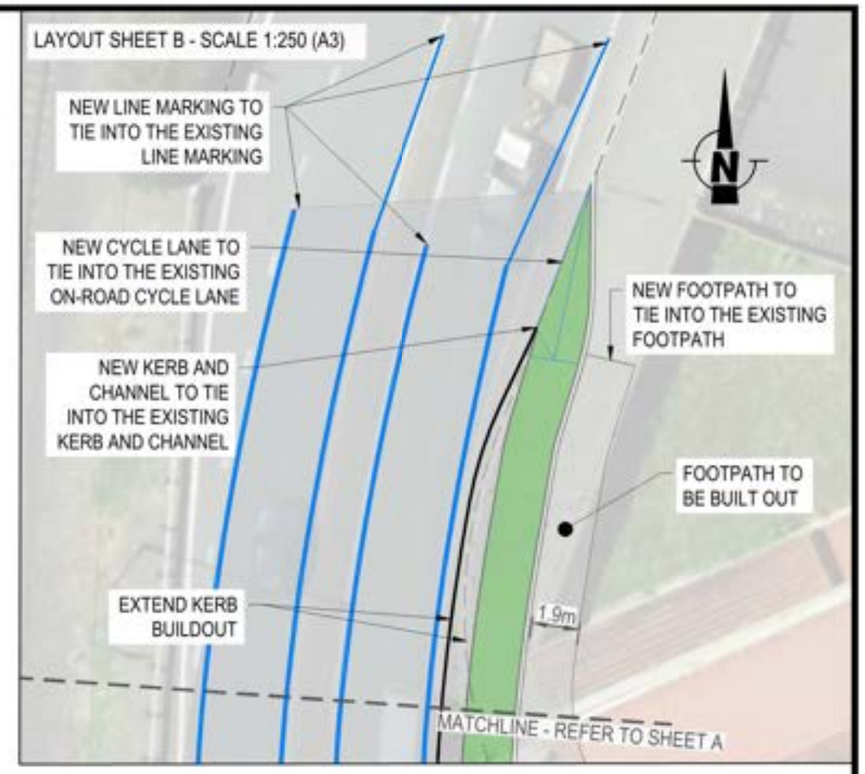


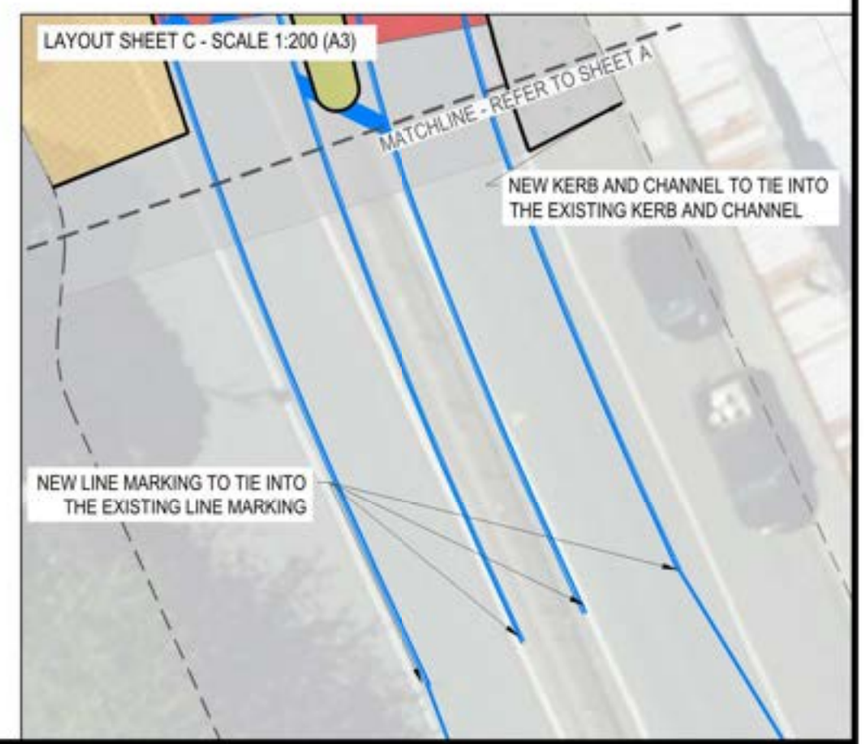


| REV | AMENDMENT | DATE OF ISSUE |
|---|---|---|
| A | First Issue | 03/10/2023 |
| B | Updated with dimensions | 13/10/2023 |

DESIGN: MWP | DRAWN: MWP
CHECKED: SC | DATE: 13/10/2023
SCALE: 0 – 10m NOT TO SCALE

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET,NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: GENERAL LAYOUT

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 02 of 14

REV: A

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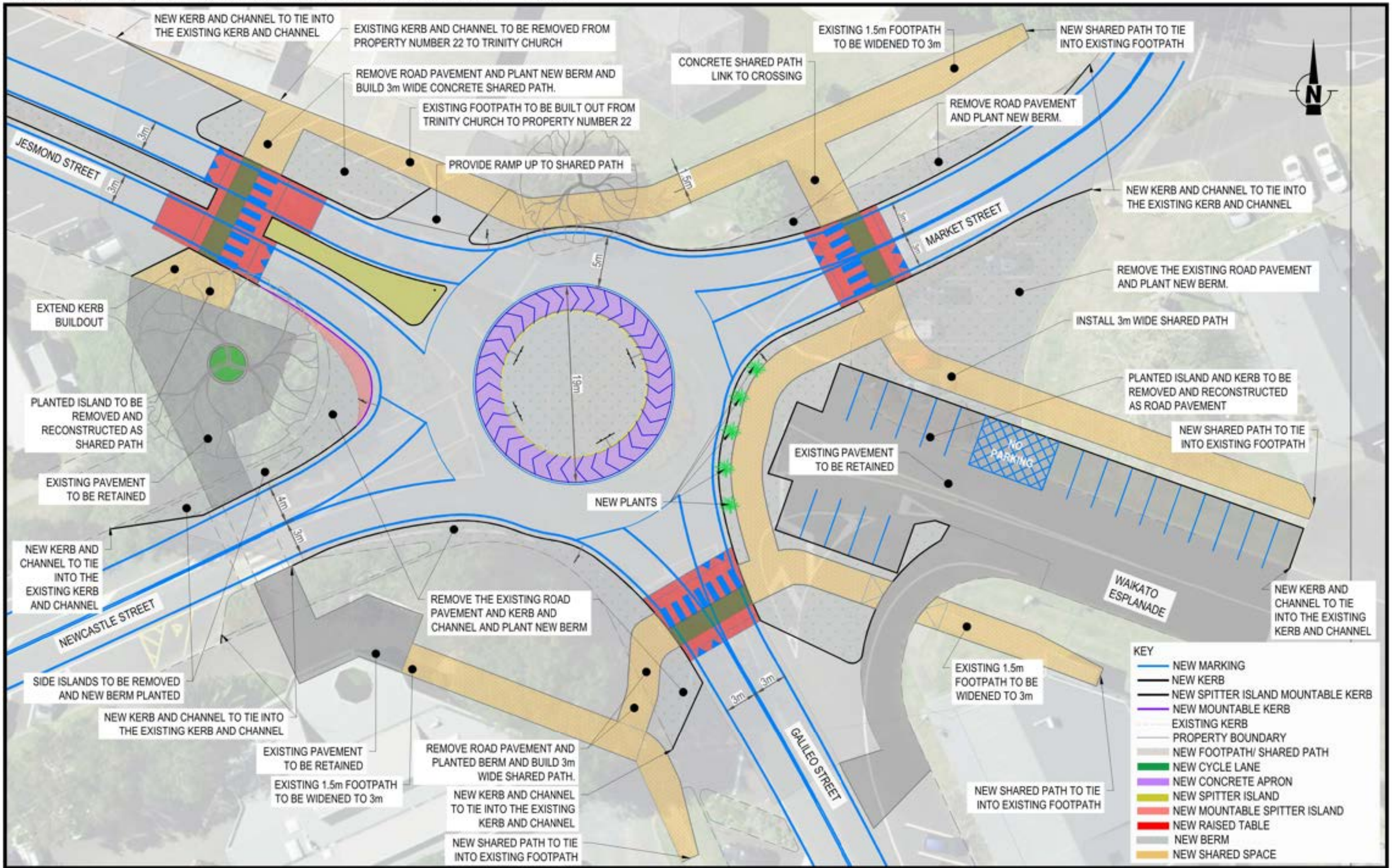


| REV | AMENDMENT | DATE OF ISSUE |
|---|---|---|
| A | First Issue | 03/10/2023 |
| B | Updated with dimensions | 13/10/2023 |

DESIGN: MWP | DRAWN: MWP
CHECKED: SC | DATE: 13/10/2023
SCALE: 0 – 10m NOT TO SCALE

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET, NGĀRUAWĀHIA

CONCEPT DESIGN

SHEET TITLE: GENERAL LAYOUT

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 03 of 14

REV: A

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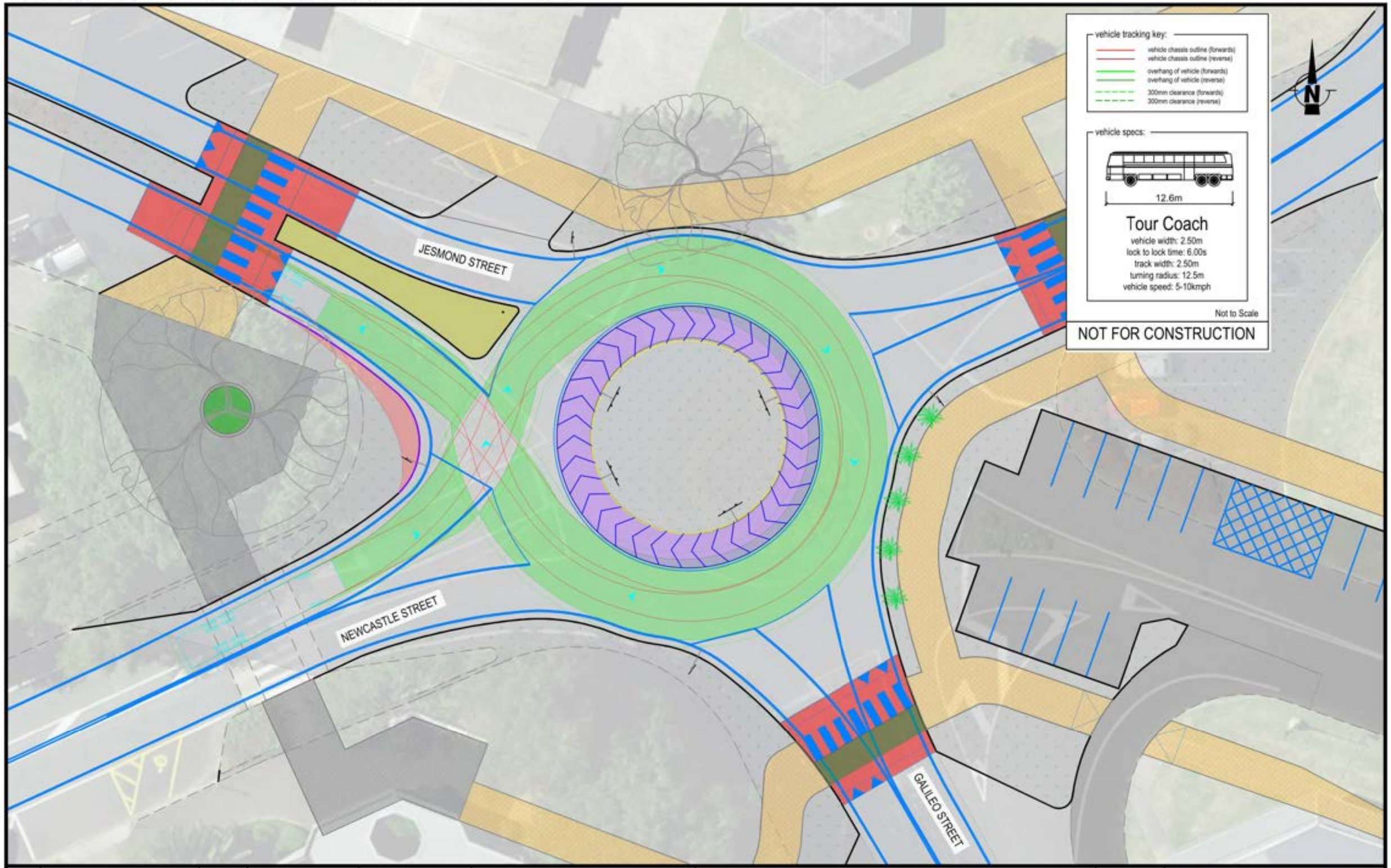


| REV | AMENDMENT | DATE OF ISSUE |
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| A | First Issue | 03/10/2023 |
| B | Updated with dimensions | 13/10/2023 |

DESIGN: MWP
DRAWN: MWP
CHECKED: SC
DATE: 13/10/2023
SCALE: 0 10m
1:250 @ A3

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET, NGĀRUAWĀHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 04 of 14

REV: A

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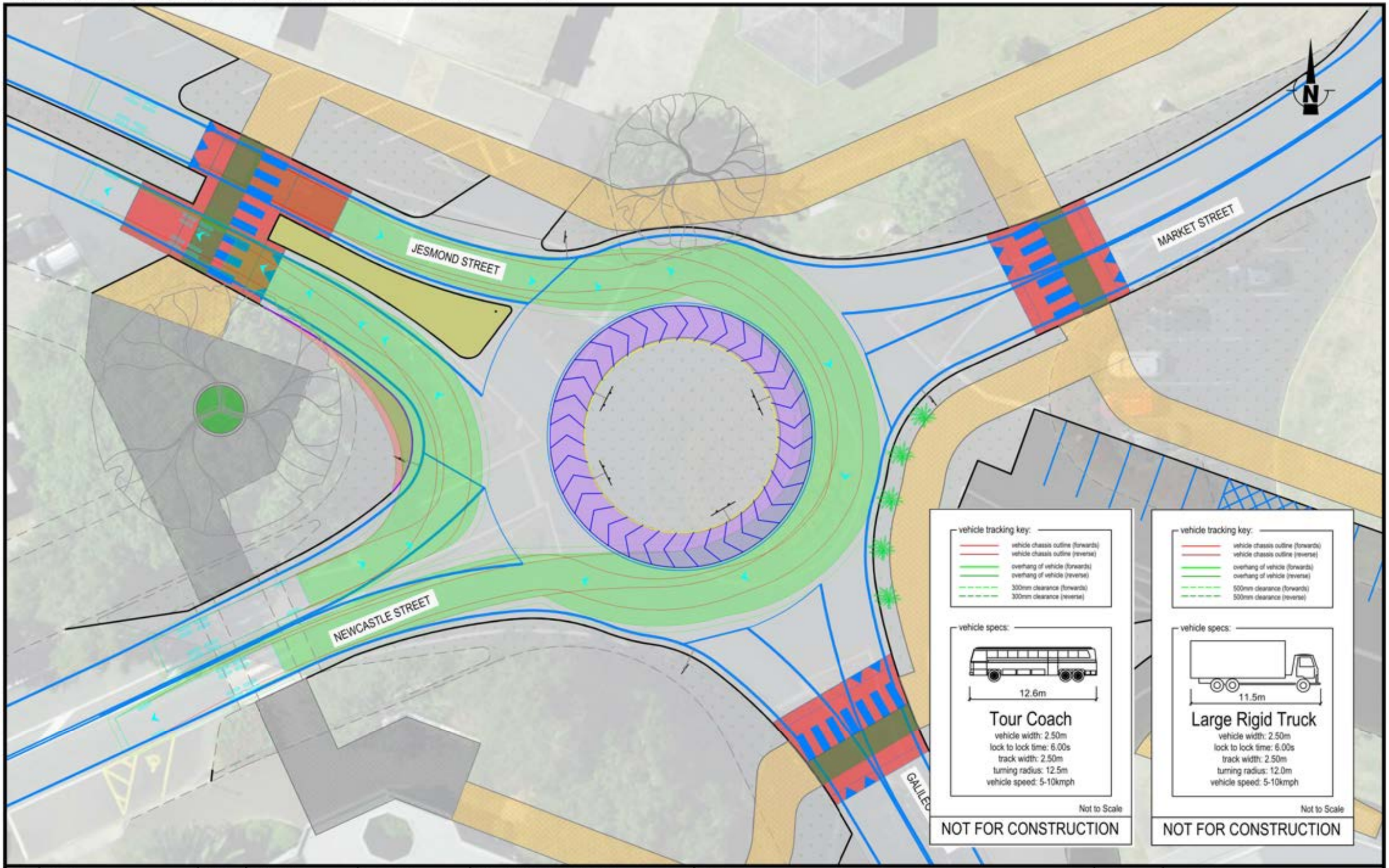


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|---|---|---|
| A | First Issue | 03/10/2023 |
| B | Updated with dimensions | 13/10/2023 |

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CHECKED: SC | DATE: 13/10/2023
SCALE: 0 – 10m, 1:250 @ A3

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET, NGĀRUAWĀHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 05 of 14
REV: A

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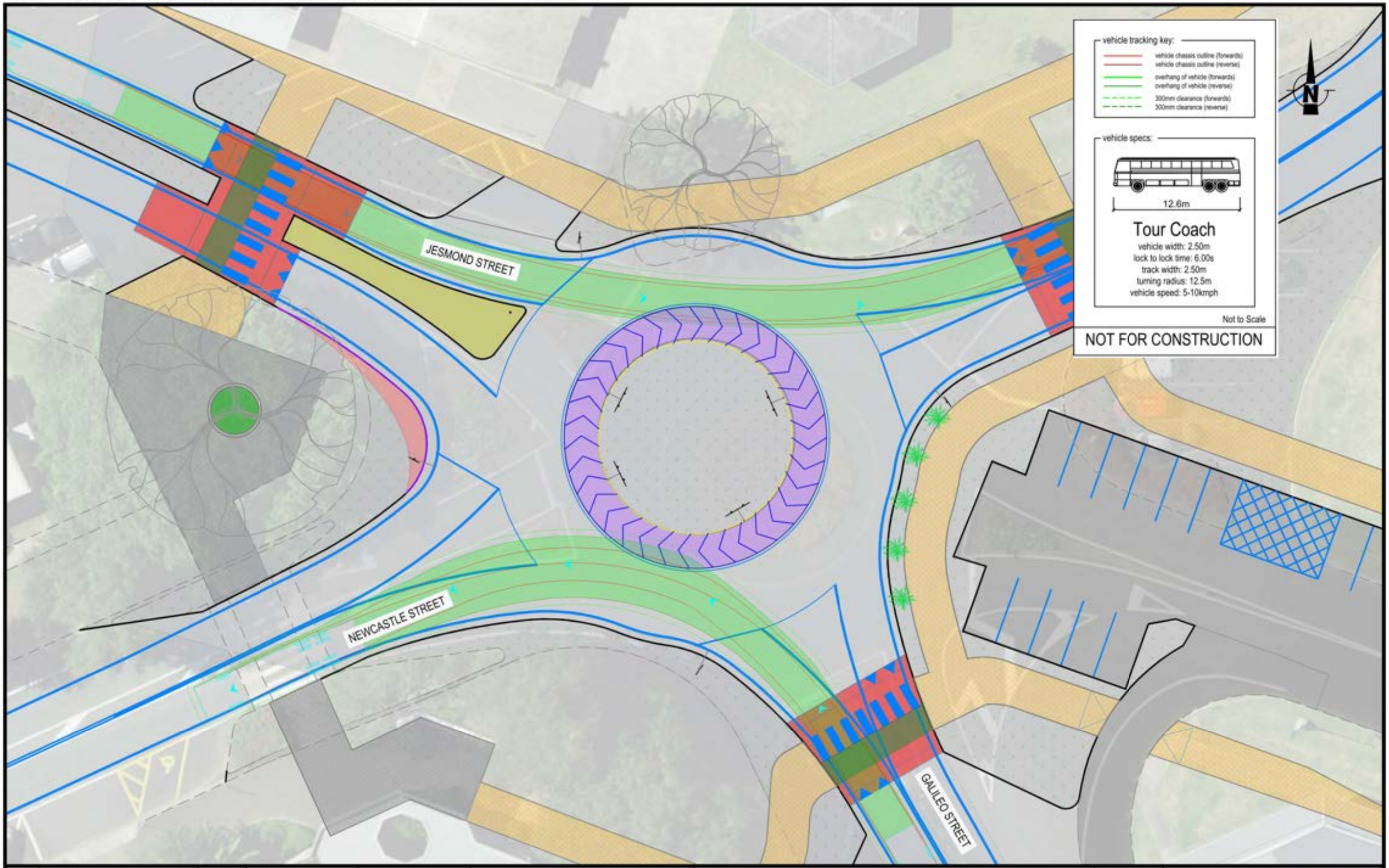


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SCALE: 0 – 10m, 1:250 @ A3

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET, NGĀRUAWĀHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 06 of 14
REV: A

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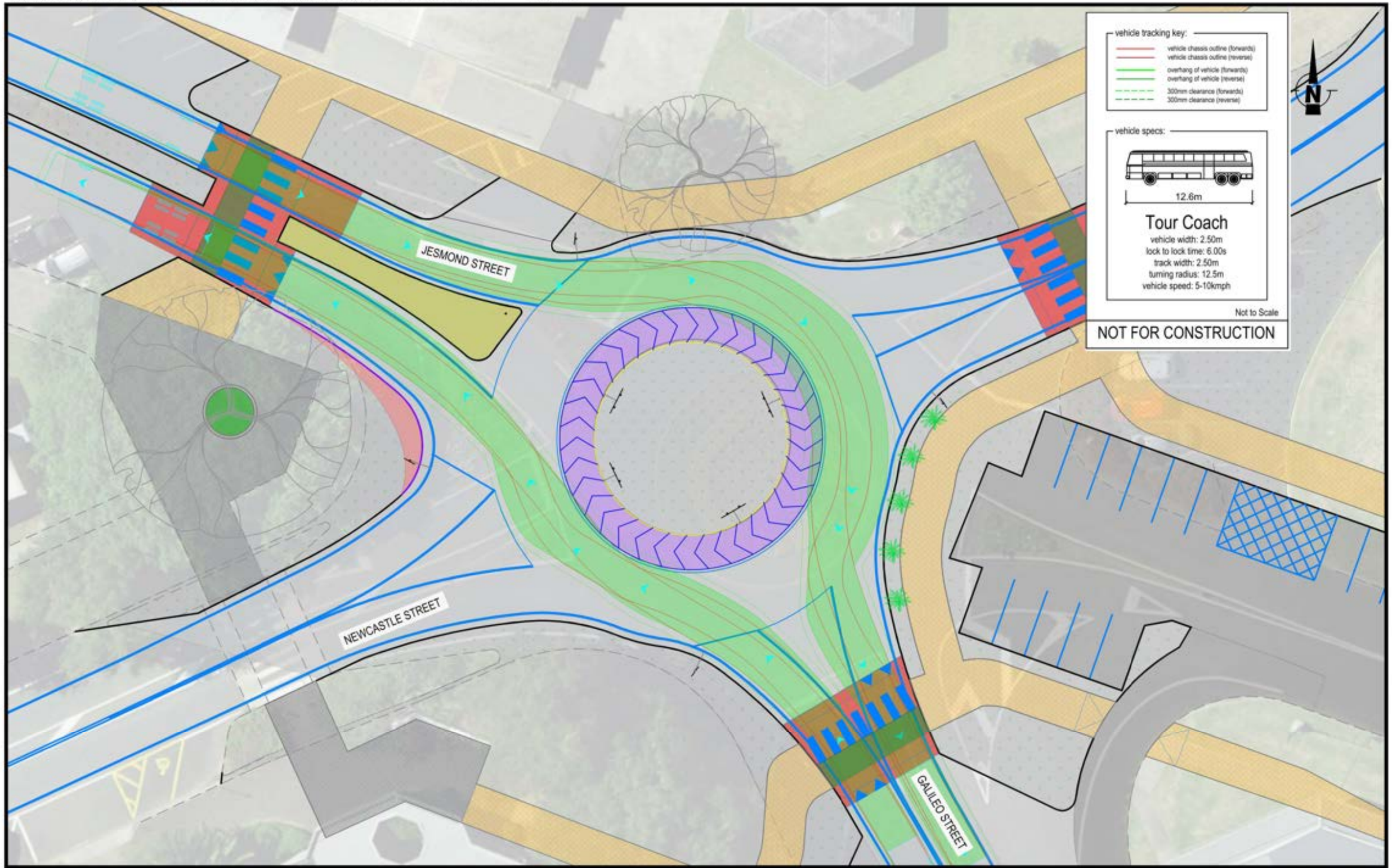


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SCALE: 0 10m
1:250 @ A3

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET, NGĀRUAWĀHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 07 of 14

REV: A

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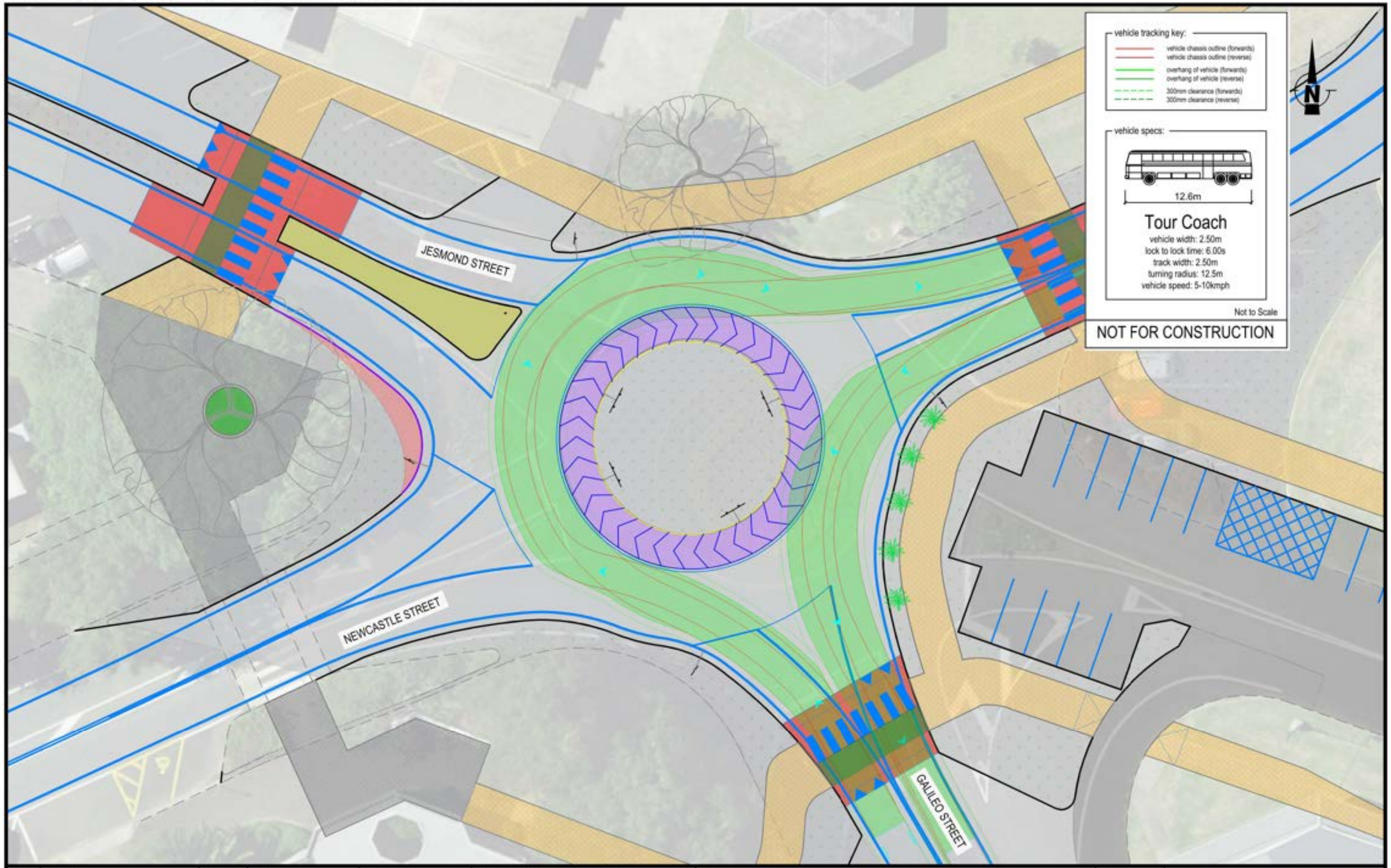


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| B | Updated with dimensions | 13/10/2023 |

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DATE: 13/10/2023
SCALE: 0 10m
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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET, NGĀRUAWĀHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 08 of 14

REV: A

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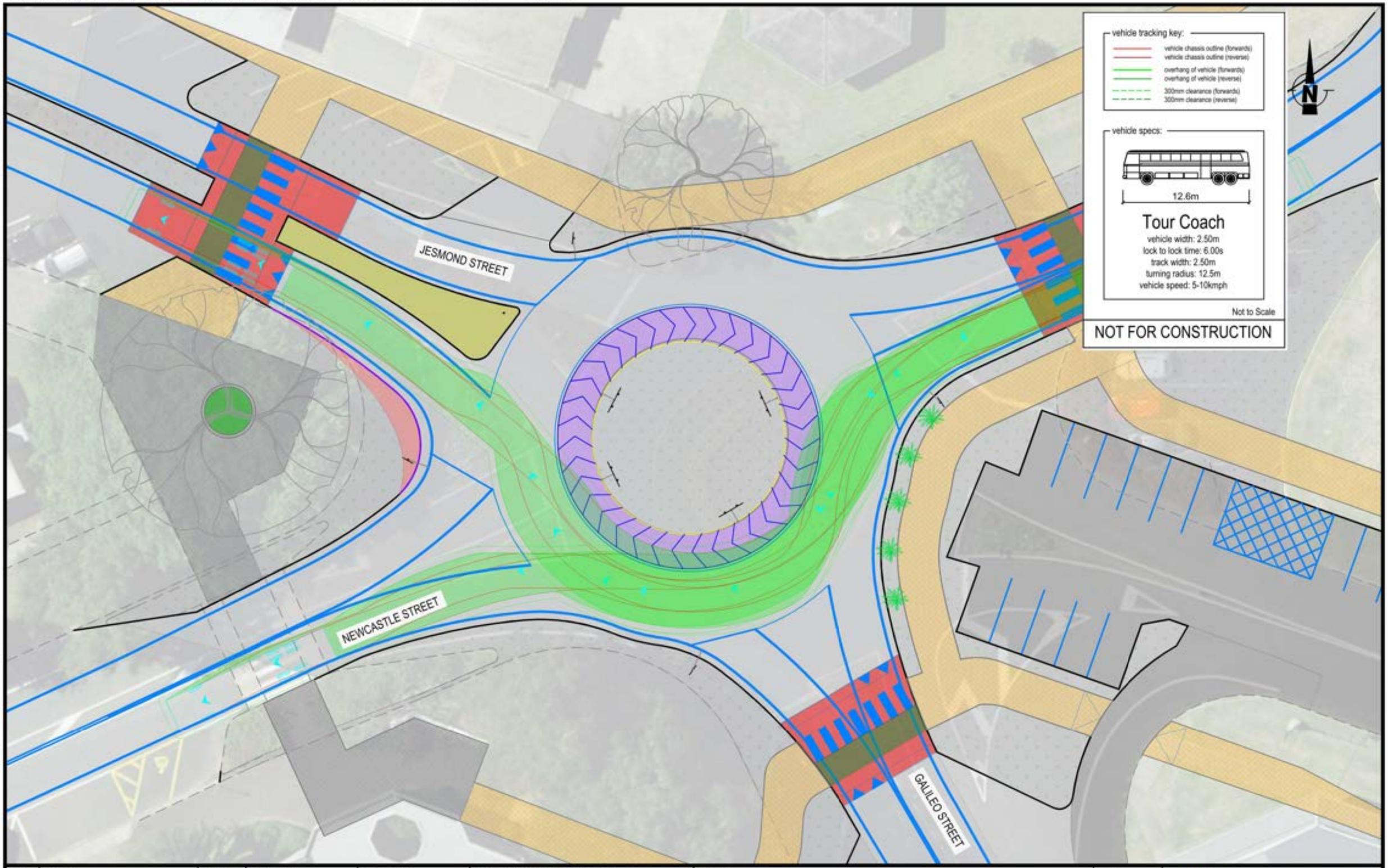


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DATE: 13/10/2023
SCALE: 0 10m
1:250 @ A3

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET, NGĀRUAWĀHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 09 of 14

REV: A

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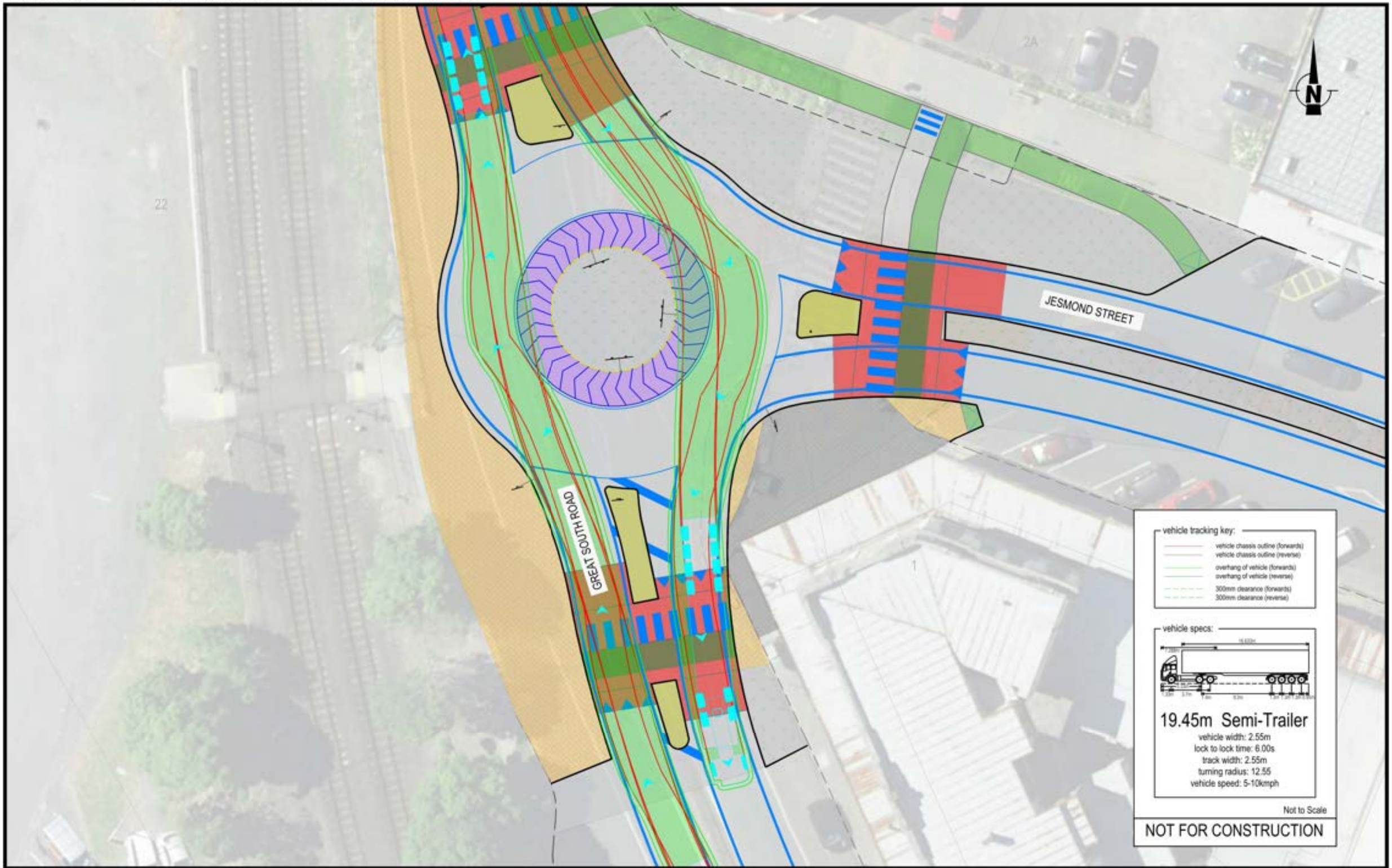


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SCALE: 0 – 10m
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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET,NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 10 of 14

REV: A

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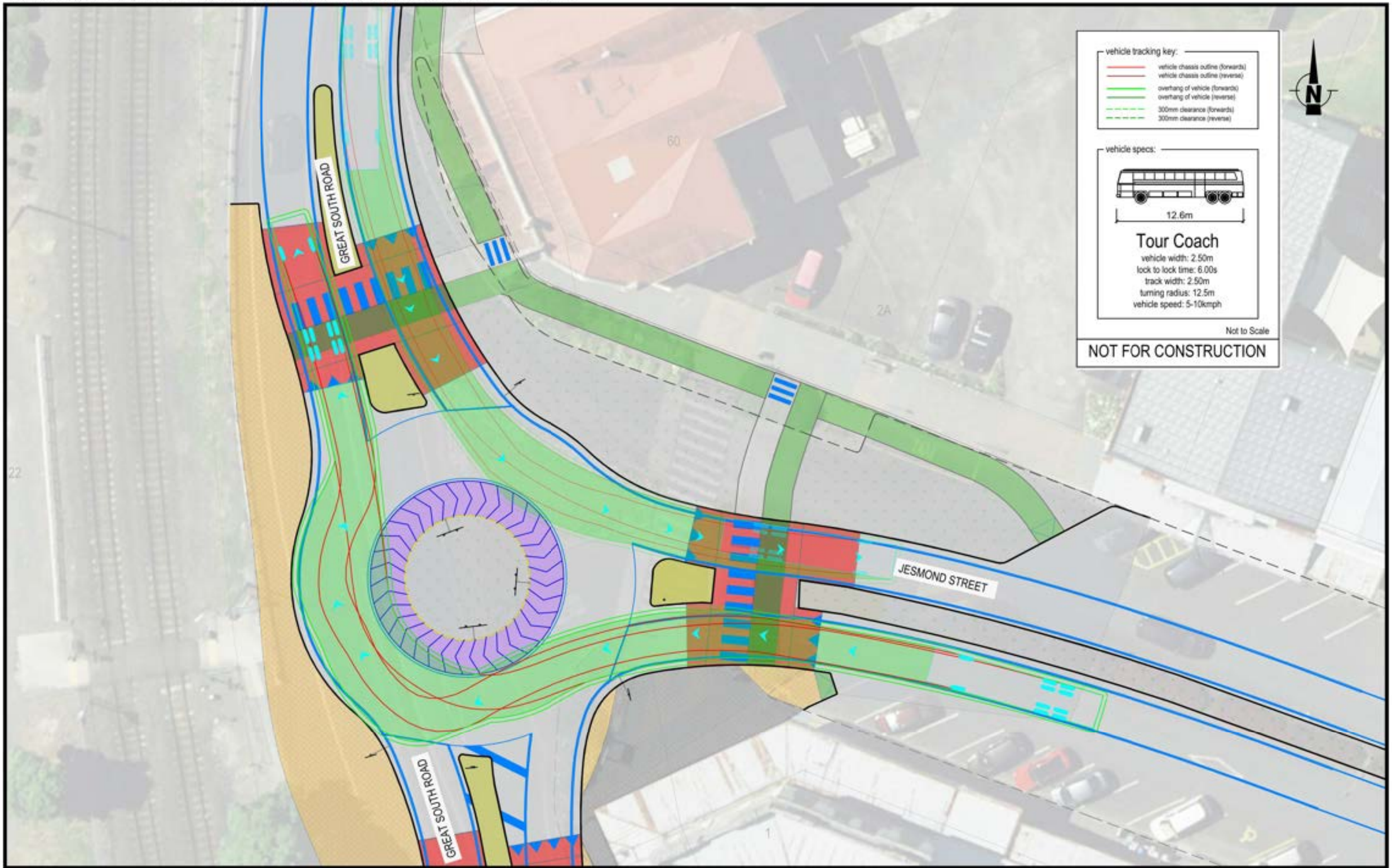


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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET,NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 11 of 14

REV: A

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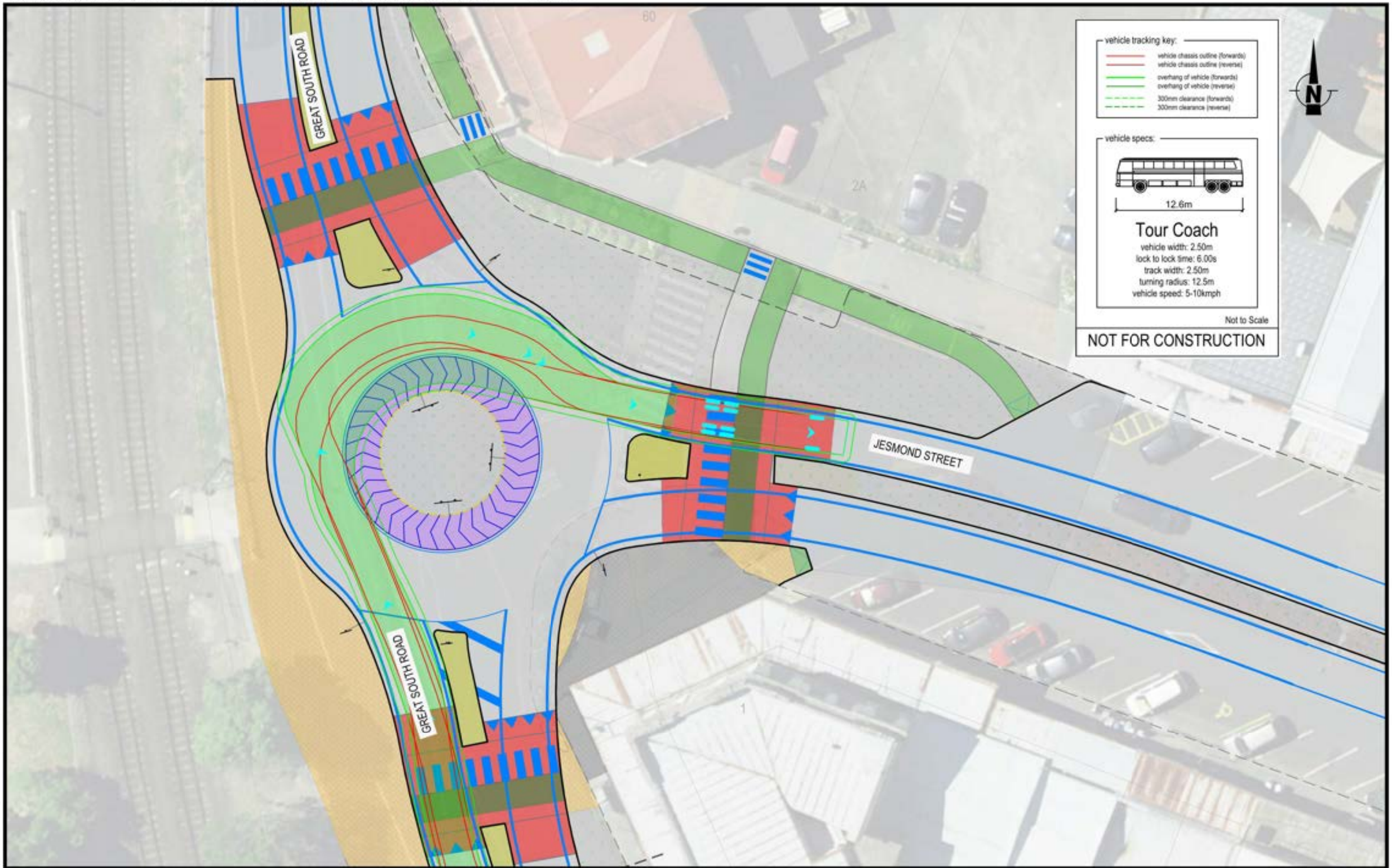


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DATE: 13/10/2023
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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET,NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 12 of 14

REV: A

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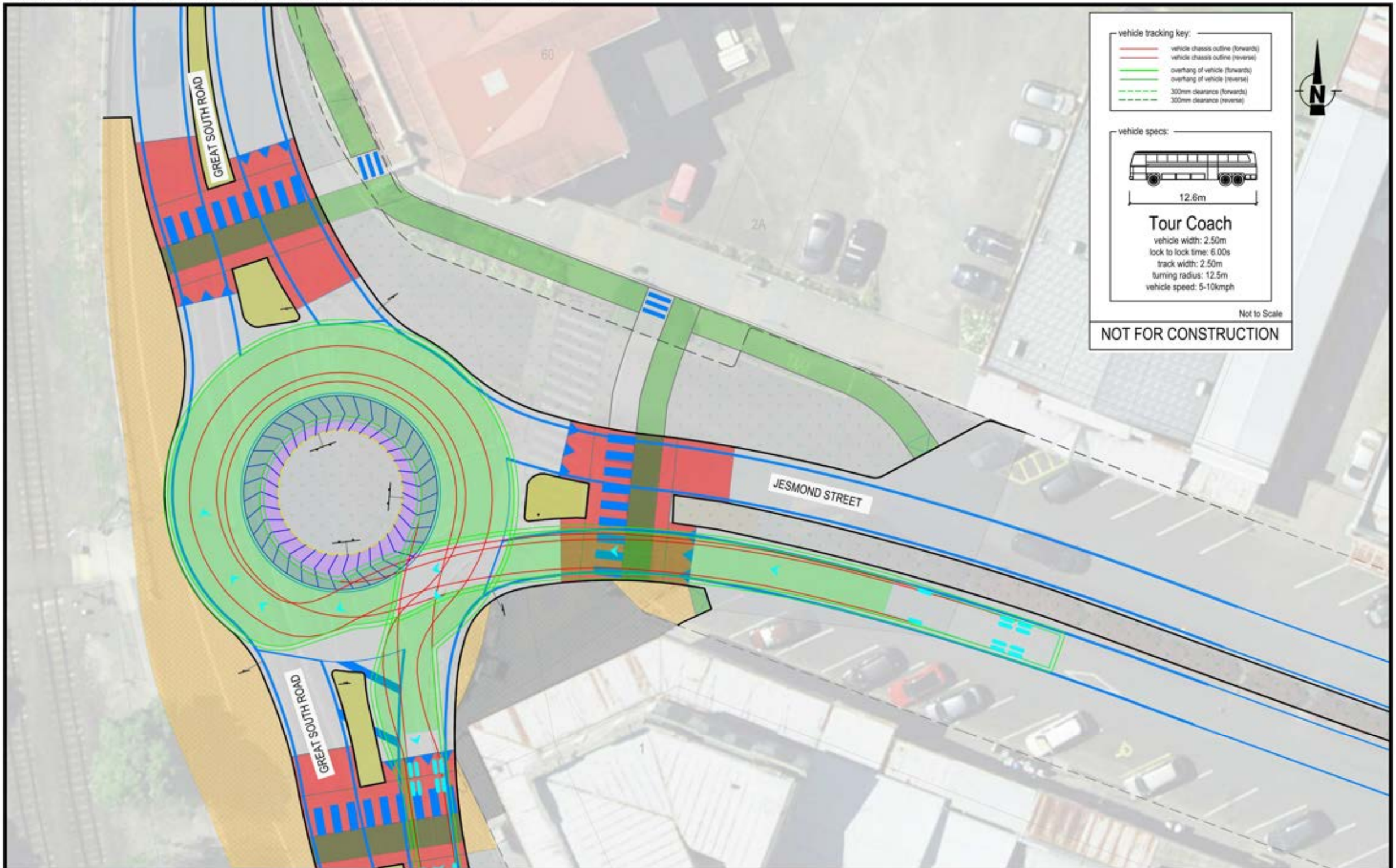


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DATE: 13/10/2023
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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET,NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 13 of 14

REV: A

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P:\WADC (Waikato Dist Cncl)\001 Transport Assessment for Ngaruawahia, Hopuhopu and Taupiri\5.0 Drawings\5.2 Our Drawings\[illegible]C01-JES-CD[illegible] 13/10/2023 4:08 pm

| REV | AMENDMENT | DATE OF ISSUE |
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1:250 @ A3

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: JESMOND STREET,NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-JES-CD01-B

SHEET: 14 of 14

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# Appendix E-3.5

## JESMOND STREET INTERSECTIONS WITH GREAT SOUTH ROAD AND NEWCASTLE STREET

## COST ESTIMATES

# Memorandum

| | |
|---|---|
| **To** | Sharmin Choudhury, Flow NZ |
| **From** | Morgan Raby, Alta |
| **Date** | 26 January 2024 |
| **Reference** | J000624 |
| **Subject** | Ngāruawāhia, Hopuhopu and Taupiri Transportation Assessment– Cost Estimate |

Dear Sharmin,

Alta has been engaged by Flow NZ to provide a cost estimate for the upgrade of two intersections in Ngāruawāhia, the Waikato region. Figure 1 below shows the plan view of the two intersections to be upgraded. On the left of Figure 1 is the Great South Road (GSR)/ Jesmond Street T intersection upgrade to a roundabout. On the right is the upgrade of an existing five-legged roundabout that intersects Jesmond Street, Newcastle Street, Market Street, Galileo Street and Waikato Esplanade.

Figure 1 – Overall site plan – GSR/ Jesmond St Intersection and the 5-legged Roundabout Proposed Upgrade

## In Brief

The scope of works covered by this estimate is listed below:

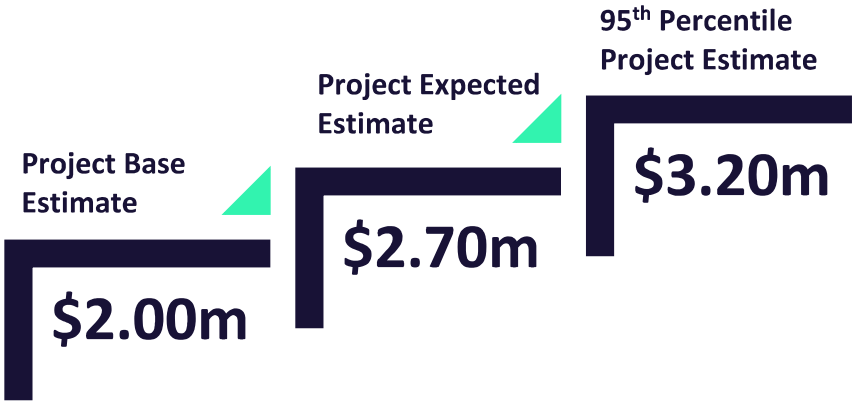
- Site Clearance
- Earthworks
- Utilities
- Stormwater

- Traffic Services
- Pavement
- Landscaping
- TTM & Temporary Works
- Preliminary and General
- Offsite Overheads

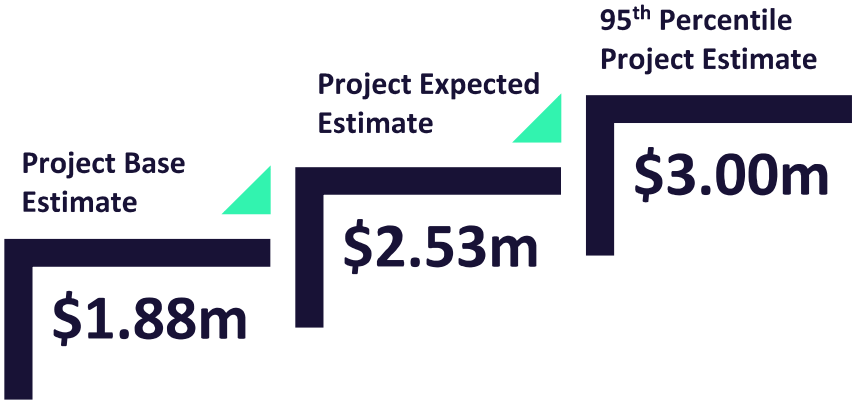
### Estimate Summary

The estimate was prepared based on the project brief provided by Flow NZ, concept design drawings, and Alta assumptions stated in this memorandum. The estimate has a base date of November 2023. All rates and prices are current as of November 2023 and no allowance has been made for any future cost escalation.

**Our project cost estimate for the GSR/ Jesmond Street Upgrade is:**




**Our project cost estimate for the Five-Legged Roundabout Upgrade is:**



### Project Base Estimate

Base Estimate is the sum of the elements that make up an estimate. It is the cost of the known work which excludes contingencies and escalation.

### Project Expected Estimate (p50)

The project expected estimate is the base estimate plus an allowance for contingency. It is the statistical mean of the project's estimated cost after including threat and opportunity risk costs.

### 95th Percentile Project Estimate (p95)

95th Percentile Project Estimate or Funding Risk allowance includes an additional provision for known/unknown risk between the Expected and 95th Percentile Estimates. This allowance is to cover the difference between the statistical mean and the statistical 95th percentile of threats and opportunities.

### Contingency

We have made allowance for contingency against each element of works which has then been calculated as a weighted average across the project.

The split between base estimate and contingency is noted in the assumptions below. Note that the cost estimate is aligned with the current concept design, and any significant change to the scope will not be covered in the current budget.

- We have applied a contingency of 35% to the Base Estimate to derive the expected estimate (P50).
- An additional 25% has been added to the expected estimate to derive the P95 Funding Risk Contingency estimate.

### Assumptions and Allowances

### Documents Provided

The estimate was developed based on the following information provided by Flow NZ:

- WADC01-JES-CD01-B Concept Design Drawings 1, 2 and 3.
- Cost estimate – Alta Queries and Flow responses, email dated 16.11.2023.
- Proposed rail crossing, email dated 21.11.2023.

### Site Clearance

- General site clearance has been allowed for, this involves removing debris, rubbish, and tidying up the work area prior to construction.
- All existing street furniture and lighting is assumed to be relocated rather than removed and replaced.
- Only one of the existing phone boxes at the GSR/ Jesmond St intersection will be relocated as it clashes with the proposed pedestrian crossing, the other phone box will remain as is.
- The existing guardrail at GSR/ Jesmond Street intersection, at the location of the proposed shared path, will be removed and a new terminal will be installed at the end of the shared path.

- It is assumed that all existing trees can remain, and an allowance has been made for the trimming of larger trees only.

### Earthworks

- All topsoil is assumed to be stockpiled on site and then spread from stockpile to complete the final landscaping.
- A small allowance, assumed to be 5% of the estimated total excavation has been allowed for contaminated land, and similarly 5% of the estimated total excavation has been allowed for undercut.

### Utilities

- An allowance has been made to locate and expose existing services during construction and relocate services due to clashes with the proposed design.
- An allowance has been made to adjust the lid heights of existing utility lids due to change in finished level of the proposed design.

### Stormwater

- No allowance has been made to upgrade existing pipework.
- Two existing catchpits are to be relocated; it is assumed that they can be tied into existing manholes and no allowance has been made for new manholes.
- Rodding eyes have been allowed per 100m of subsoil.

### Traffic Services

- Allowance has been made to install two new streetlights with beacon discs at each pedestrian crossing for the GSR/ Jesmond Street intersection.
- At the five-legged roundabout, an allowance has been made for two streetlights with beacon discs only at the Galileo Street pedestrian crossing. Due to existing street lighting, the remaining two crossings are assumed to have new beacon discs only.
- New road markings and the removal of existing road marking at both intersections has been included in this estimate.
- We have included an allowance for new signage, where required.
- At the GSR/ Jesmond Street intersection, an allowance has been made to construct a full safety upgrade at the existing rail crossing. This upgrade includes widening the existing crossing, tactiles, providing new automated pedestrian arms, fencing, signage, and new signals.

### Pavement

- New pavement has been allowed for the GSR/ Jesmond Street intersection only. Pavement makeup is assumed to be 300mm of Gap65 with 150mm of compacted AP40 basecourse and an asphalt topping.
- A small allowance has been made for testing and compacting the existing subgrade and to undercut for the construction of new pavement.
- Minor reshaping of the roundabout has been allowed at both intersections.
- Speed tables are assumed to be concrete.
- Pram crossings have been allowed at either end of each pedestrian crossing and as shown in the design drawings.
- Shared path paving is assumed to be standard brick paving.
- Cycleway makeup is 100mm of granular fill, with 50mm of AC10 green surfacing.

- Footpath makeup is 100mm of granular fill and a reinforced concrete topping.

### Landscaping

- Fencing has been allowed for the GSR/ Jesmond Street intersection; it has been detailed as per the Regional-Infrastructure-Technical-Specification (D3.8.9).
- An allowance has been made to maintain the landscaping throughout the estimated construction duration.
- The new tall plants shown in the five-legged roundabout design have been assumed to be low-cost hedge planting similar to Griselinia.
- A small lump sum has been allowed for new street furniture only, it is assumed that new bins and/ or seating will be required at the new shared space locations.

### Traffic Management and Temporary Works

- This item includes all temporary traffic management, traffic management crews, temporary traffic lights, VMS boards, barriers, signs, and fencing.
- Traffic management allowance is based on an assumed construction programme of 3.5 months per intersection. The traffic management crew make up is assumed to be 1 STMS, 2 TCs, and 1 TMA.

### Non-Construction Costs

- Non-construction costs are estimated as a percentage of the total construction direct costs.
- Preliminary and general equates to 18% of the direct costs.
- We have applied 12.5% uplift on all direct costs for off-site overheads and profit.

**Yours sincerely,**

**Morgan Raby**
**Alta Consulting Ltd**
**022 388 5300**

Reviewed by: Tim Lancaster

# Appendix A – Estimate Schedule

# Project Estimate - Form B

**Project Name: Ngāruawāhia, Hopuhopu, Taupiri – Cost Estimate**

**GSR/ Jesmond Intersection Summary**

**IBE**

**Indicative Business Case Estimate**

| Item | Description | Base Estimate | Contingency | Funding Risk Contingency |
|---|---|---|---|---|
| A | **Total Property Cost** | Nil | Nil | Nil |
| | **Project Development Phase** | | | |
| | **- Consultancy Fees** | $ 151,400.00 | $ 53,000.00 | $ 37,900.00 |
| | **- WDC Managed Costs** | $ 60,600.00 | $ 21,200.00 | $ 15,200.00 |
| B | **Total Project Development** | **$ 212,000.00** | **$ 74,200.00** | **$ 53,100.00** |
| | **Pre-Implementation Phase** | | | |
| | **- Consultancy Fees** | $ 90,800.00 | $ 31,800.00 | $ 22,700.00 |
| | **- WDC Managed Costs** | $ 60,600.00 | $ 21,200.00 | $ 15,200.00 |
| C | **Total Pre-implementation** | **$ 151,400.00** | **$ 53,000.00** | **$ 37,900.00** |
| | **Implementation Phase** | | | |
| | **Implementation Fees** | | | |
| | **- Consultancy Fees** | $ 75,700.00 | $ 26,500.00 | $ 18,900.00 |
| | **- WDC Managed Costs** | $ 45,400.00 | $ 15,900.00 | $ 11,400.00 |
| | **Sub Total Base Implementation Fees** | **$ 121,100.00** | **$ 42,400.00** | **$ 30,300.00** |
| | **Physical Works** | | | |
| 1 | Site Clearance | $ 70,600.00 | $ 24,700.00 | $ 17,700.00 |
| 2 | Earthworks | $ 13,265.00 | $ 4,600.00 | $ 3,300.00 |
| 3 | Utilities | $ 92,500.00 | $ 32,400.00 | $ 23,100.00 |
| 4 | Stormwater | $ 33,350.00 | $ 11,700.00 | $ 8,300.00 |
| 5 | Traffic Services | $ 218,580.00 | $ 76,500.00 | $ 54,600.00 |
| 6 | Pavement | $ 391,985.00 | $ 137,200.00 | $ 98,000.00 |
| 7 | Landscaping | $ 88,900.00 | $ 31,100.00 | $ 22,200.00 |
| 8 | TTM & Temporary works | $ 250,700.00 | $ 87,700.00 | $ 62,700.00 |
| 9 | Preliminary and General & Offsite Overheads | $ 354,000.00 | $ 123,900.00 | $ 88,500.00 |
| | **Sub Total Base Physical Works** | **$ 1,513,880.00** | $ 529,800.00 | $ 378,400.00 |
| D | **Total for Implementation Phase** | **$ 1,635,000.00** | **$ 572,000.00** | **$ 409,000.00** |
| E | **Project Base Estimate** (A+B+C+D) | **$ 1,998,000.00** | | |
| | **Project Base Estimate (rounded)** | | | |

| | | | |
|---|---|---|---|
| F | **Contingency** (Assessed/Analysed) | (A+B+C+D) | **$ 699,200.00** |
| G | **Project Expected Estimate** | (E+F) | **$ 2,697,000.00** |
| | **Project Expected Estimate (rounded)** | | |
| Total Property Cost Expected Estimate | | | **Nil** |
| Project Development Phase Expected Estimate | | | **$ 286,000.00** |
| Pre-implementation phase Expected Estimate | | | **$ 204,400.00** |
| Implementation Phase Expected Estimate | | | **$ 2,207,000.00** |

| | | | |
|---|---|---|---|
| H | **Funding Risk Contingency** (Assessed/Analysed) | (A+B+C+D) | **$ 500,000.00** |
| I | **95th percentile Project Estimate** | (G+H) | **$ 3,197,000.00** |
| | **95th percentile Project Estimate (rounded)** | | |
| Total Property Cost 95th percentile Estimate | | | **Nil** |
| Project Development Phase 95th percentile Estimate | | | **$ 339,000.00** |
| Pre-implementation Phase 95th percentile Estimate | | | **$ 242,000.00** |
| Implementation Phase 95th percentile Estimate | | | **$ 2,616,000.00** |

| | |
|---|---|
| **Date estimate prepared** | **Base Date (Nov-23)** |
| **Estimate prepared by Morgan Raby** | **Signed** |
| **Estimate internal peer review by Tim Lancaster** | **Signed** |
| **Estimate external peer review by** | **Signed** |
| **Estimate accepted by FlowNZ** | **Signed** |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Ngāruawāhia, Hopuhopu, Taupiri – Cost Estimate** | | | | | | | |
| | **Construction Costs** | | | | | | | |
| **Item** | **Road** | **Task** | **Description** | **Quantity** | **Unit** | **Rate** | **Net Construction Total** | **Comments** |
| A | **Jesmond Street/ GSR intersection** | | | | | | $ 1,159,909.40 | |
| 1.1 | | Site Clearance | | | | | $ 70,600.00 | |
| 1.1.1 | | | General Site Clearance | 2,500.00 | m2 | $ 2.50 | $ 6,250.00 | Entire Area general clearance |
| 1.1.2 | | | Kerb removal | 165.00 | m | $ 40.00 | $ 6,600.00 | |
| 1.1.3 | | | Relocation of existing street light | 2.00 | each | $ 3,500.00 | $ 7,000.00 | |
| 1.1.4 | | | Relocation of existing street furniture | 1.00 | each | $ 25,000.00 | $ 25,000.00 | Chairs, signs, bike rack, bollards, drinking fountain |
| 1.1.5 | | | Relocation of existing phone box | 1.00 | each | $ 3,000.00 | $ 3,000.00 | |
| 1.1.6 | | | Removal of traffic signage | 1.00 | each | $ 1,500.00 | $ 1,500.00 | |
| 1.1.7 | | | Removal of road pavement | 30.00 | m2 | $ 140.00 | $ 4,200.00 | Cut to waste |
| 1.1.8 | | | Remove existing median fencing | 80.00 | m | $ 30.00 | $ 2,400.00 | |
| 1.1.9 | | | Breakout and dispose existing traffic island | 191.00 | m2 | $ 50.00 | $ 9,550.00 | |
| 1.1.10 | | | Remove existing guardrail | 35.00 | m | $ 60.00 | $ 2,100.00 | Including one terminal |
| 1.1.11 | | | Tree trimming | 2.00 | each | $ 1,500.00 | $ 3,000.00 | |
| 1.2 | | Earthworks | | | | | $ 13,265.00 | |
| 1.2.1 | | | Erosion and Sediment Controls | 1.00 | LS | $ 5,000.00 | $ 5,000.00 | |
| 1.2.2 | | | Topsoil Strip to stockpile | 42.00 | m3 | $ 60.00 | $ 2,520.00 | |
| 1.2.3 | | | Cut to Waste | 31.50 | m3 | $ 110.00 | $ 3,465.00 | |
| 1.2.4 | | | E/O Contaminated | 4.00 | m3 | $ 300.00 | $ 1,200.00 | Assumed 5% of excavation |
| 1.2.5 | | | E/O undercut | 4.00 | m3 | $ 270.00 | $ 1,080.00 | Assumed 5% of excavation |
| 1.3 | | Utilities | | | | | $ 92,500.00 | |
| 1.3.1 | | | Hydrovac | 150.00 | m | $ 150.00 | $ 22,500.00 | |
| 1.3.2 | | | Lid Adjustments | 5.00 | each | $ 2,000.00 | $ 10,000.00 | 1 lid for every 30m |
| 1.3.3 | | | Existing Services Allowance | 100.00 | m | $ 100.00 | $ 10,000.00 | Protection |
| 1.3.4 | | | Relocation of existing services | 1.00 | LS | $ 50,000.00 | $ 50,000.00 | Relocation clashes |
| 1.4 | | Stormwater | | | | | $ 33,350.00 | |
| 1.4.1 | | | Pipework - 225mm | 15.00 | m | $ 400.00 | $ 6,000.00 | |
| 1.4.2 | | | New catchpit | 2.00 | each | $ 5,500.00 | $ 11,000.00 | |
| 1.4.3 | | | Subsoil | 205.00 | m | $ 70.00 | $ 14,350.00 | |
| 1.4.4 | | | Rodding eyes | 2.00 | each | $ 1,000.00 | $ 2,000.00 | |
| 1.7 | | Traffic Services | | | | | $ 218,580.00 | |
| 1.7.1 | | | New Linemarking | 1,000.00 | m | $ 25.00 | $ 25,000.00 | Change to linear metre of carriageway |
| 1.7.2 | | | Removal existing linemarking | 1.00 | LS | $ 5,000.00 | $ 5,000.00 | |
| 1.7.3 | | | Green surfacing | 288.00 | m2 | $ 60.00 | $ 17,280.00 | |
| 1.7.4 | | | Signage | 1.00 | LS | $ 10,000.00 | $ 10,000.00 | |
| 1.7.5 | | | Street lighting with beacon disc | 6.00 | ea | $ 7,500.00 | $ 45,000.00 | |
| 1.7.6 | | | New guardrail terminal and tie in. | 1.00 | LS | $ 2,800.00 | $ 2,800.00 | |
| 1.7.7 | | | Electrical cable | 50.00 | m | $ 150.00 | $ 7,500.00 | |
| 1.7.8 | | | Ducting | 50.00 | m | $ 120.00 | $ 6,000.00 | |
| 1.7.9 | | | Full safety upgrade at rail crossing | 1.00 | LS | $ 100,000.00 | $ 100,000.00 | Widened, new automated pedestrian arms and signals. |
| 1.8 | | Pavement | | | | | $ 391,985.00 | |
| 1.8.1 | | | Test and Compact existing Subgrade | 80.00 | m2 | $ 15.00 | $ 1,200.00 | |
| 1.8.2 | | | E/O Undercut allowance | 1.60 | m3 | $ 800.00 | $ 1,280.00 | 10% of area assumed 200mm depth |
| 1.8.3 | | | New Pavement | 53.00 | m2 | $ 210.00 | $ 11,130.00 | Makeup is 300mm of GAP65 with 150mm compacted AP40 basecourse |
| 1.8.4 | | | Minor reshaping at roundabout | 1.00 | LS | $ 10,000.00 | $ 10,000.00 | |
| 1.8.5 | | | Cycleway - Granular | 219.00 | m2 | $ 120.00 | $ 26,280.00 | Allowance of 100mm depth |
| 1.8.6 | | | Cycleway - AC | 219.00 | m2 | $ 60.00 | $ 13,140.00 | 50mm AC10 |
| 1.8.7 | | | Cyclepath ramps | 3.00 | ea | $ 200.00 | $ 600.00 | |
| 1.8.9 | | | Footpath | 34.00 | m2 | $ 120.00 | $ 4,080.00 | Allowance for 100mm granular depth with concrete topping |
| 1.8.10 | | | Shared Path Paving | 340.00 | m2 | $ 150.00 | $ 51,000.00 | Assumed standard brick pavers |
| 1.8.11 | | | Speed Tables | 354.00 | m2 | $ 450.00 | $ 159,300.00 | Concrete speed table |
| 1.8.12 | | | Kerb and Channel | 203.00 | m | $ 120.00 | $ 24,360.00 | Including along new shared path, as shown in drawings |
| 1.8.13 | | | New Mountable kerb | 156.00 | m | $ 135.00 | $ 21,060.00 | |
| 1.8.14 | | | Traffic splitter islands | 79.00 | m2 | $ 155.00 | $ 12,245.00 | |
| 1.8.15 | | | Grassed traffic island | 214.00 | m2 | $ 165.00 | $ 35,310.00 | |
| 1.8.16 | | | Concrete apron at roundabout | 100.00 | m2 | $ 120.00 | $ 12,000.00 | |
| 1.8.17 | | | Driveways | - | m2 | $ 175.00 | $ - | |
| 1.8.18 | | | Chequer plates at pram crossings | 6.00 | ea | $ 1,500.00 | $ 9,000.00 | |
| 1.10 | | Landscaping | | | | | $ 88,900.00 | |
| 1.10.1 | | | Street Furniture | 1.00 | each | $ 5,000.00 | $ 5,000.00 | Additional bins |
| 1.10.2 | | | Fencing | 65.00 | m | $ 250.00 | $ 16,250.00 | |
| 1.10.3 | | | New grassed berm | 370.00 | m2 | $ 45.00 | $ 16,650.00 | Planting area dimensions |
| 1.10.4 | | | Tactiles | 90.00 | m2 | $ 500.00 | $ 45,000.00 | Based on the number of Pram crossings |
| 1.10.5 | | | Maintenance | 3 | month | $ 2,000.00 | $ 6,000.00 | |
| 1.11 | **TTM & Temporary works** | | | | | | $ 250,700.00 | |
| 1.11.1 | | | TM crew | 74.00 | days | $ 2,541.00 | $ 188,034.00 | Level 2/3 - STMS + 2 TC +1 driver + 1 TMA , assumed total duration 3.5 months |
| 1.11.2 | | | TM crew - night | 12.00 | days | $ 3,049.20 | $ 36,590.40 | Level 2/3 - STMS + 2 TC +1 driver + 1 TMA - @1.2 x rate |
| 1.11.3 | | | Fencing | 1.00 | LS | $ 5,000.00 | $ 5,000.00 | |
| 1.11.4 | | | Barrier - crowd control | 1.00 | LS | $ 5,000.00 | $ 5,000.00 | |
| 1.11.5 | | | Temporary Traffic lights | 30 | days | $ 150.00 | $ 4,440.00 | 40% of project duration |
| 1.11.6 | | | VMS boards | 37 | days | $ 45.00 | $ 1,665.00 | 2 VMS 50% of project duration |
| 1.11.7 | | | Temporary works | 1.00 | LS | $ 10,000.00 | $ 10,000.00 | |
| 1.12 | **P&G and Offsite Overheads** | | | | | | $ 354,000.00 | |
| 1.12.1 | | | P&G total | | | | $ 209,000.00 | |
| 1.12.2 | | | Offsite overheads | | | | $ 145,000.00 | |

# Project Estimate - Form B

**Project Name: Ngāruawāhia, Hopuhopu, Taupiri – Cost Estimate**
**Five-legged Roundabout Summary**

IBE

**Indicative Business Case Estimate**

| Item | Description | Base Estimate | Contingency | Funding Risk Contingency |
|---|---|---|---|---|
| A | **Total Property Cost** | Nil | Nil | Nil |
| | **Project Development Phase** | | | |
| | **- Consultancy Fees** | $ 142,000.00 | $ 49,700.00 | $ 35,500.00 |
| | **- WDC Managed Costs** | $ 56,800.00 | $ 19,900.00 | $ 14,200.00 |
| B | **Total Project Development** | **$ 198,800.00** | **$ 69,600.00** | **$ 49,700.00** |
| | **Pre-Implementation Phase** | | | |
| | **- Consultancy Fees** | $ 85,200.00 | $ 29,800.00 | $ 21,300.00 |
| | **- WDC Managed Costs** | $ 56,800.00 | $ 19,900.00 | $ 14,200.00 |
| C | **Total Pre-implementation** | **$ 142,000.00** | **$ 49,700.00** | **$ 35,500.00** |
| | **Implementation Phase** | | | |
| | **Implementation Fees** | | | |
| | **- Consultancy Fees** | $ 71,000.00 | $ 24,900.00 | $ 17,800.00 |
| | **- WDC Managed Costs** | $ 42,600.00 | $ 14,900.00 | $ 10,700.00 |
| | **Sub Total Base Implementation Fees** | **$ 113,600.00** | **$ 39,800.00** | **$ 28,500.00** |
| | **Physical Works** | | | |
| 1 | Site Clearance | $ 131,500.00 | 46,000 | 32,900 |
| 2 | Earthworks | $ 27,400.00 | 9,600 | 6,900 |
| 3 | Utilities | $ 115,500.00 | 40,400 | 28,900 |
| 4 | Stormwater | $ 73,500.00 | 25,700 | 18,400 |
| 5 | Traffic Services | $ 97,300.00 | 34,100 | 24,300 |
| 6 | Pavement | $ 317,500.00 | 111,100 | 79,400 |
| 7 | Landscaping | $ 90,000.00 | 31,500 | 22,500 |
| 8 | TTM & Temporary works | $ 235,500.00 | 82,400 | 58,900 |
| 9 | Preliminary and General & Offsite Overheads | $ 332,000.00 | 116,200 | 83,000 |
| | **Sub Total Base Physical Works** | **$ 1,420,200.00** | **$ 497,000.00** | **$ 355,200.00** |
| D | **Total for Implementation Phase** | **$ 1,534,000.00** | **$ 537,000.00** | **$ 384,000.00** |
| E | **Project Base Estimate** (A+B+C+D) | **$ 1,875,000.00** | | |
| | **Project Base Estimate (rounded)** | | | |

| | | | |
|---|---|---|---|
| F | **Contingency** (Assessed/Analysed) | (A+B+C+D) | $ 656,300.00 |
| G | **Project Expected Estimate** | (E+F) | $ 2,531,000.00 |
| | **Project Expected Estimate (rounded)** | | |
| Total Property Cost Expected Estimate | | | Nil |
| Project Development Phase Expected Estimate | | | $ 268,000.00 |
| Pre-implementation phase Expected Estimate | | | $ 191,700.00 |
| Implementation Phase Expected Estimate | | | $ 2,071,000.00 |

| | | | |
|---|---|---|---|
| H | **Funding Risk Contingency** (Assessed/Analysed) | (A+B+C+D) | $ 469,000.00 |
| I | **95th percentile Project Estimate** | (G+H) | $ 3,000,000.00 |
| | **95th percentile Project Estimate (rounded)** | | |
| Total Property Cost 95th percentile Estimate | | | Nil |
| Project Development Phase 95th percentile Estimate | | | $ 318,000.00 |
| Pre-implementation Phase 95th percentile Estimate | | | $ 227,000.00 |
| Implementation Phase 95th percentile Estimate | | | $ 2,455,000.00 |

| | |
|---|---|
| **Date estimate prepared** | **Base Date (Nov-23)** |
| **Estimate prepared by Morgan Raby** | **Signed** |
| **Estimate internal peer review by Tim Lancaster** | **Signed** |
| **Estimate external peer review by** | **Signed** |
| **Estimate accepted by FlowNZ** | **Signed** |

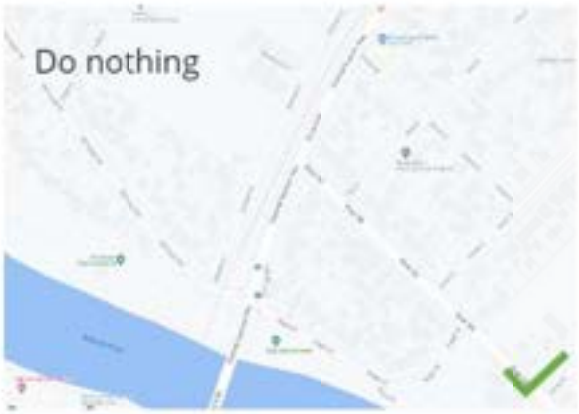
*Note:* (1) These estimates are exclusive of escalation and GST.
(2) Refer to Section 6.6 for guidance on rounding.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| B | **Roundabout** | | | | | | $ 1,088,083.40 | |
| | | | | | | | | |
| 1.1 | | Site Clearance | | | | | $ 131,500.00 | |
| 1.1.1 | | | General Site Clearance | 3,760.00 | m2 | $ 2.50 | $ 9,400.00 | Entire Area general clearance |
| 1.1.2 | | | Relocation of existing street light | 5.00 | no | $ 3,500.00 | $ 17,500.00 | |
| 1.1.3 | | | Kerb removal | 280.00 | m | $ 35.00 | $ 9,800.00 | |
| 1.1.4 | | | Relocation of existing street furniture | 1.00 | LS | $ 5,000.00 | $ 5,000.00 | |
| 1.1.5 | | | Removal of road pavement | 500.00 | m2 | $ 140.00 | $ 70,000.00 | Cut to waste |
| 1.1.6 | | | Breakout and dispose existing traffic island | 335.00 | m2 | $ 50.00 | $ 16,750.00 | |
| 1.1.7 | | | Tree trimming | 2.00 | each | $ 1,500.00 | $ 3,000.00 | |
| | | | | | | | | |
| 1.2 | | Earthworks | | | | | $ 27,400.00 | |
| 1.2.1 | | | Erosion and Sediment Controls | 1.00 | LS | $ 10,000.00 | $ 10,000.00 | |
| 1.2.2 | | | Topsoil Strip to Waste | 90.00 | m3 | $ 60.00 | $ 5,400.00 | |
| 1.2.3 | | | Cut to Waste | 67.50 | m3 | $ 110.00 | $ 7,425.00 | |
| 1.2.4 | | | E/O Contaminated | 8.00 | m3 | $ 300.00 | $ 2,400.00 | Assumed 5% of excavation |
| 1.2.5 | | | E/O undercut | 8.00 | m3 | $ 270.00 | $ 2,160.00 | Assumed 5% of excavation |
| | | | | | | | | |
| 1.3 | | Utilities | | | | | $ 115,500.00 | |
| 1.3.1 | | | Hydrovac | 230.00 | m | $ 150.00 | $ 34,500.00 | |
| 1.3.2 | | | Lid Adjustments | 8.00 | each | $ 2,000.00 | $ 16,000.00 | 1 lid for every 30m |
| 1.3.3 | | | Existing Services Allowance | 150.00 | m | $ 100.00 | $ 15,000.00 | Protection |
| 1.3.4 | | | Relocation of existing services | 1.00 | LS | $ 50,000.00 | $ 50,000.00 | Relocation clashes |
| | | | | | | | | |
| 1.4 | | Stormwater | | | | | $ 73,500.00 | |
| 1.4.1 | | | Pipework - 225mm | 30.00 | m | $ 400.00 | $ 12,000.00 | 15m each catchpit, potentially need an additional MH |
| 1.4.2 | | | New catchpit | 6.00 | each | $ 5,500.00 | $ 33,000.00 | |
| 1.4.3 | | | Subsoil | 350.00 | m | $ 70.00 | $ 24,500.00 | |
| 1.4.4 | | | Rodding eyes | 4.00 | each | $ 1,000.00 | $ 4,000.00 | |
| | | | | | | | | |
| 1.7 | | Traffic Services | | | | | $ 97,300.00 | |
| 1.7.1 | | | New Linemarking | 1,140.00 | m | $ 25.00 | $ 28,500.00 | |
| 1.7.2 | | | Removal of existing linemarking | 1.00 | LS | $ 7,500.00 | $ 7,500.00 | |
| 1.7.3 | | | Green surfacing | 55.00 | m2 | $ 60.00 | $ 3,300.00 | At speed tables |
| 1.7.4 | | | Signage | 1.00 | LS | $ 10,000.00 | $ 10,000.00 | |
| 1.7.5 | | | Street Lighting with beacons | 2.00 | ea | $ 7,500.00 | $ 15,000.00 | |
| 1.7.6 | | | Pole with belisha beacon | 4.00 | ea | $ 1,500.00 | $ 6,000.00 | |
| 1.7.7 | | | Electrical cable | 100.00 | m | $ 150.00 | $ 15,000.00 | |
| 1.7.8 | | | Ducting | 100.00 | m | $ 120.00 | $ 12,000.00 | |
| | | | | | | | | |
| 1.8 | | Pavement | | | | | $ 317,500.00 | |
| 1.8.1 | | | Pram Crossings | 2.00 | each | $ 700.00 | $ 1,400.00 | |
| 1.8.2 | | | Shared Path Paving | 340.00 | m2 | $ 150.00 | $ 51,000.00 | Assumed standard brick pavers |
| 1.8.3 | | | Shared path tie in | 6.00 | ea | $ 4,000.00 | $ 24,000.00 | |
| 1.8.4 | | | Speed Tables | 240.00 | m2 | $ 450.00 | $ 108,000.00 | |
| 1.8.5 | | | Minor reshaping at roundabout | 1.00 | LS | $ 10,000.00 | $ 10,000.00 | |
| 1.8.6 | | | Kerb and Channel | 316.00 | m | $ 120.00 | $ 37,920.00 | |
| 1.8.7 | | | New Mountable kerb | 20.00 | m | $ 135.00 | $ 2,700.00 | |
| 1.8.8 | | | K&C tie in | 7.00 | ea | $ 600.00 | $ 4,200.00 | |
| 1.8.9 | | | Traffic splitter island | 43.00 | m2 | $ 160.00 | $ 6,880.00 | |
| 1.8.10 | | | Grassed traffic island | 255.00 | m2 | $ 170.00 | $ 43,350.00 | |
| 1.8.11 | | | Concrete apron at roundabout | 147.00 | m2 | $ 120.00 | $ 17,640.00 | |
| 1.8.12 | | | Driveways | 2.00 | ea | $ 700.00 | $ 1,400.00 | Remediate after construction |
| 1.8.13 | | | Chequer plates at pram crossings | 6.00 | ea | $ 1,500.00 | $ 9,000.00 | |
| | | | | | | | | |
| 1.10 | | Landscaping | | | | | $ 90,000.00 | |
| 1.10.1 | | | Street Furniture | 1.00 | each | $ 5,000.00 | $ 5,000.00 | |
| 1.10.2 | | | Planting - new tall plants | 30.00 | m2 | $ 75.00 | $ 2,250.00 | lowest cost hedge planting eg Griselinia, conifers, etc |
| 1.10.3 | | | Grassed berm | 705.00 | m2 | $ 45.00 | $ 31,725.00 | |
| 1.10.4 | | | Tactiles | 90.00 | m2 | $ 500.00 | $ 45,000.00 | Based on the number of Pram crossings |
| 1.10.5 | | | Maintenance | 3 | month | $ 2,000.00 | $ 6,000.00 | |
| | | | | | | | | |
| | | | | | | | | |
| 1.11 | **TTM & Temporary works** | | | | | | $ 235,500.00 | |
| 1.11.1 | | | TM crew | 74.00 | days | $ 2,541.00 | $ 188,034.00 | Level 2/3 - STMS + 2 TC +1 driver + 1 TMA, assumed total duration 3.5 months |
| 1.11.2 | | | TM crew - night | 7.00 | days | $ 3,049.20 | $ 21,344.40 | Level 2/3 - STMS + 2 TC +1 driver + 1 TMA - @1.2 x rate |
| 1.11.3 | | | Fencing | 1.00 | LS | $ 5,000.00 | $ 5,000.00 | |
| 1.11.4 | | | Barrier - crowd control | 1.00 | LS | $ 5,000.00 | $ 5,000.00 | |
| 1.11.5 | | | Temporary Traffic lights | 30 | days | $ 150.00 | $ 4,440.00 | 40% of project duration |
| 1.11.6 | | | VMS boards | 37 | days | $ 45.00 | $ 1,665.00 | 2 VMS 50% of project duration |
| 1.11.7 | | | Temporary works | 1.00 | LS | $ 10,000.00 | $ 10,000.00 | |
| | | | | | | | | |
| 1.12 | **P&G** | | | | | | $ 332,000.00 | |
| | | | | | | | | |
| 1.12.1 | | | P&G total | | | | $ 196,000.00 | |
| 1.12.2 | | | Offsite overheads | | | | $ 136,000.00 | |
| | | | | | | | | |
| | | | | | | | | |
| | **TOTAL** | | | | | | $ 2,933,992.80 | |

Appendix E-4.1

# GREAT SOUTH ROAD INTERSECTIONS WITH OLD TAUPIRI ROAD (SOUTH) AND RIVER ROAD

# OPTIONS ASSESSMENT



## THE OPTIONS

For the options assessment, we agreed with WDC, that the intersections designs will assume the speed management strategy for GSR is in place.

The following options for the Old Taupiri Road/GSR intersection were agreed with WDC for options assessment:

**Option 1** - Old Taupiri Road will operate as a left-in left-out intersection. Galbraith Street will be closed at the end of the existing urban area. River Road intersection with Great South Road will be upgraded to a roundabout.

The level crossing will be retained as existing. However there will be less exposure due to removal of right turn from Great South Road.

There will be a slight increase in travel distance with the removal of the right turn into Old Taupiri Road. For people exiting River Road and wanting to enter into Old Taupiri Road (south), the SIDRA assessment assumes that 50% traffic will use Old Taupiri Road(North) & GSR Road Intersection, and the remaining 50% will travel straight on Great South Road, loop around the Jesmond/GSR roundabout and turn left at GSR-Old Taupiri Road and Regent Road intersection. Therefore, this option relies on the Jesmond Street intersection with Great South Road, to be upgraded to a roundabout, to avoid scenarios where people undertake undesirable/ unsafe u-turns or long diversions.

**Option 2** - The intersection will be signalised. Galbraith Street will be closed at the end of the existing urban area. River Road intersection with Great South Road will be upgraded to a roundabout.

The level crossing will be included into the signalised intersection and therefore is expected to significantly improve the safety at the level crossing compared to the existing scenario.

**Option 3a** - proposes to remove vehicular access at Old Taupiri Road and provide an access from Galbraith Road to the River Road intersection. River Road intersection with Great South Road will be upgraded to a roundabout. This will close the level crossing at Old Taupiri Road and introduce a new one opposite the River Road intersection.

The team considered that Option 3a would replicate the existing safety concerns at the Great South Road/Old Taupiri Road intersection, albeit at a new location, with higher overall traffic volumes and therefore higher risk. Kiwirail are also very unlikely to allow a new level crossing on their network, even if it replaced an existing level crossing. For these reasons, Option 3a was considered to have a **fatal flaw**.

**Option 3** - proposes to upgrade the Old Taupiri Road intersection to a roundabout. Galbraith Street will be closed at the end of the existing urban area. River Road intersection with Great South Road will be upgraded to a roundabout

# THE MCA ASSESSMENT

| ASSESSMENT CRITERIA | | | OPTION: | Do Nothing<br>Retain Existing | | | | | Option 1<br>River Road roundabout<br>Old Taupiri RT in RT out ban<br>Close Galbraith St | | | | | Option 2<br>River Road roundabout<br>Old Taupiri signals<br>Close Galbraith St | | | | | Option 3<br>River Road roundabout<br>Old Taupiri roundabout<br>Close Galbraith St | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| Safety | To reduce deaths and serious injuries | Road safety risk assessment rating | Exposure | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 0 | 3 | 0 | -3 | -3 | 0 | 1 | 0 | -2 | -2 | 0 | 1 | 0 |
| | | | Likelihood | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 |
| | | | Severity | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 |
| | | Safety at the rail level crossing | Improvements to the safe operation of the Old Taupiri Rd rail level crossing | 0 | 0 | -2 | -2 | 0 | 0 | 0 | 2 | 2 | 0 | 5 | 5 | 4 | 4 | 0 | 0 | 0 | 2 | 2 | 0 |
| Amenity (travel quality and aesthetics) | Strategic direction of key move | Fit for purpose | Alignment with place and movement guide | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 |
| | To provide quality travel options | Efficiency of the transport network | Impact on increased travel distance/time | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -4 | -1 | -1 | -1 | -2 | -2 | -2 | 2 | 2 | -1 | -1 | -1 |
| | | Sustainability | Impacts on emissions | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -3 | -3 | 0 | 0 | -2 | -3 | -3 | 0 | 0 | 0 | 0 | 0 |
| Accessibility | Provide alternative mode options to private vehicles | Promotion of alternative modes | Achieve a high LOS for pedestrians and cyclists | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 |
| | | | Accessibility for vulnerable users | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 |
| | | Active mode and public transport mode share (combined) compared to private vehicles | Number of active mode and public transport trips (combined) compared to private vehicle trips | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | -1 | 0 | 3 | 3 | 0 | 0 | 0 |
| | Access to transport and mobility is equitable for all people | Walking, cycling and micromobility network coverage and useability | Extent to which option improves the walking, cycling and micromobility network coverage | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 |
| | | Ability to connect to Te Awa Cycleway | Extent to which option improves the walking, cycling connection to the Te Awa Cycleway | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| | | Transport choice available for all people living in Ngāruawāhia to access the main street | Extent to which option improves alternative mode choice | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 1 | 0 | 2 | 1 | 0 | -2 | 0 |
| | | Intersection operation | SIDRA outputs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | -3 | -3 | -4 | -4 | -4 | 0 | 0 | -1 | -1 | -1 |

# THE MCA ASSESSMENT

| ASSESSMENT CRITERIA | | | OPTION: | Do Nothing<br>Retain Existing | | | | | Option 1<br>River Road roundabout<br>Old Taupiri RT in RT out ban<br>Close Galbraith St | | | | | Option 2<br>River Road roundabout<br>Old Taupiri signals<br>Close Galbraith St | | | | | Option 3<br>River Road roundabout<br>Old Taupiri roundabout<br>Close Galbraith St | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| | | Perception of safety (all users and vulnerable users) | Change in perception of safety and harm (all users and vulnerable users) | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 5 | 5 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 |
| Mobility | Ease of Access to the town centre for all modes | Vehicle routing | Impact on vehicles accessing Old Taupiri Road Sth | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -4 | -5 | -5 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 3 | 3 |
| | | People on foot and people on bikes | Extent to which option improves the walking and cycling priority to access the town centre | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 |
| Cost/feasibility efficiency performance measures | Feasibility | Existing infrastructure used or reallocated to provide multimodal outcomes | Extent to which existing infrastructure can be used/reallocated to provide multimodal outcomes | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | -2 | -2 | -2 | -2 | -2 | -3 | -3 | -3 | -3 | -3 |
| | | Engineering Feasibility | Assessment of constructability | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | -2 | -2 | -2 | -2 | -2 | -4 | -4 | -4 | -4 | -4 |
| | | Economic Impact | Access to business and employment | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | -1 | -1 | 2 | 2 | 0 | 2 | 2 | 2 | 2 | 0 | 2 | 2 |
| | | Stakeholders | Assessment of likely stakeholder impact | 0 | 0 | 0 | 0 | 0 | 1 | 1 | -3 | -5 | -3 | 4 | 4 | 0 | -1 | -1 | 3 | 3 | 3 | 3 | 3 |
| | Cost | Cost | Assessment of capital cost of infrastructure improvements | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | -1 | -1 | -3 | -3 | -3 | -3 | -3 | -3 | -3 | -5 | -5 | -5 |
| | Impacts on Te Ao Māori | Impacts on Te Ao Māori | Assessment of impact on Te Ao Māori including areas of significance for Māori, Māori land and Kiatiakitanga | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| | | | SCORE | 0 | 0 | -2 | -2 | 0 | 17 | 16 | 5 | 0 | 0 | 29 | 27 | -1 | 4 | -1 | 24 | 23 | 5 | 10 | 9 |
| | | | Total, equal weights per measure | -4 | | | | | 38 | | | | | 58 | | | | | 71 | | | | |

# THE MCA ASSESSMENT

| ASSESSMENT CRITERIA | | | OPTION: | Do Nothing<br>Retain Existing | | | | | Option 1<br>River Road roundabout<br>Old Taupiri RT in RT out ban<br>Close Galbraith St | | | | | Option 2<br>River Road roundabout<br>Old Taupiri signals<br>Close Galbraith St | | | | | Option 3<br>River Road roundabout<br>Old Taupiri roundabout<br>Close Galbraith St | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| | | | Average, equal weights per objective | | | | | | | | | | | | | | | | | | | | |
| | | Safety | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | To reduce deaths and serious injuries | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.67 | 0.67 | 2.33 | 3.33 | 2.33 | 1.00 | 1.00 | 1.33 | 1.67 | 1.33 | 1.00 | 1.00 | 2.00 | 2.33 | 2.00 |
| | | Amenity (travel quality and aesthetics) | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | Strategic direction of key move | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 4.00 | 4.00 | 4.00 |
| | | To provide quality travel options | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -1.00 | -3.50 | -2.00 | -0.50 | -0.50 | -2.00 | -2.50 | -2.50 | 1.00 | 1.00 | -0.50 | -0.50 | -0.50 |
| | | Accessibility | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | Provide alternative mode options to private vehicles | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 2.33 | 2.33 | 0.00 | -0.33 | 0.00 | 2.67 | 2.67 | 0.00 | 0.00 | 0.00 |
| | | Access to transport and mobility is equitable for all people | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.80 | 0.20 | 0.20 | 0.20 | 1.80 | 1.40 | -0.20 | 0.00 | -0.20 | 1.80 | 1.60 | 0.60 | 0.20 | 0.60 |
| | | Mobility | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | Ease of Access to the town centre for all modes | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.50 | -2.00 | -2.50 | -2.50 | 1.50 | 1.50 | 0.00 | 1.50 | 1.50 | 1.50 | 1.50 | 0.00 | 1.50 | 1.50 |
| | | Cost/feasibility efficiency performance measures | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | Feasibility | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.50 | 1.50 | 0.25 | -0.50 | 0.00 | 0.50 | 0.50 | -1.00 | -0.75 | -0.75 | -0.50 | -0.50 | -1.00 | -0.50 | -0.50 |
| | | Cost | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -3.00 | -3.00 | -3.00 | -3.00 | -3.00 | -3.00 | -3.00 | -5.00 | -5.00 | -5.00 |
| | | Impacts on Te Ao Māori | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 |
| | | | | 0 | 0 | 0 | 0 | 0 | 5 | 4 | 0 | -2 | -1 | 8 | 7 | -2 | 1 | 0 | 8 | 8 | 0 | 3 | 3 |
| | | | Average, equal weights per objective | 0 | | | | | 6 | | | | | 14 | | | | | 23 | | | | |

# THE MCA ASSESSMENT - SENSITIVITY TESTING

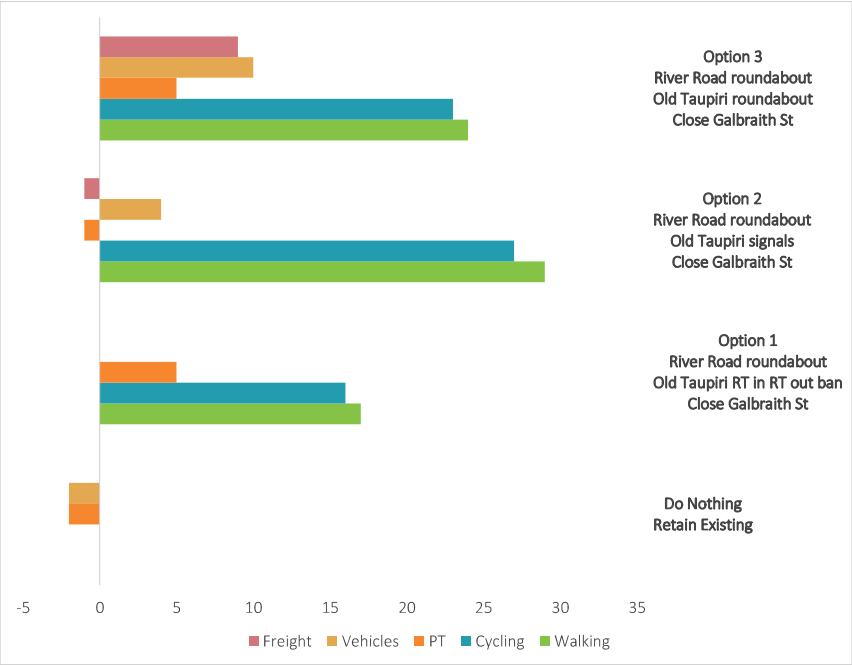
| ASSESSMENT CRITERIA | | | OPTION: | Do Nothing<br>Retain Existing | | | | | Option 1<br>River Road roundabout<br>Old Taupiri RT in RT out ban<br>Close Galbraith St | | | | | Option 2<br>River Road roundabout<br>Old Taupiri signals<br>Close Galbraith St | | | | | Option 3<br>River Road roundabout<br>Old Taupiri roundabout<br>Close Galbraith St | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| Safety | To reduce deaths and serious injuries | Road safety risk assessment rating | Exposure | 0 | 0 | 0 | 0 | 0 | -1 | -1 | 0 | 3 | 0 | -3 | -3 | 0 | 1 | 0 | -2 | -2 | 0 | 1 | 0 |
| | | | Likelihood | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 |
| | | | Severity | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 4 | 4 | 4 | 3 | 3 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 |
| | | Safety at the rail level crossing | Improvements to the safe operation of the Old Taupiri Rd rail level crossing | 0 | 0 | -2 | -2 | 0 | 0 | 0 | 2 | 2 | 0 | 5 | 5 | 4 | 4 | 0 | 0 | 0 | 2 | 2 | 0 |
| Amenity (travel quality and aesthetics) | Strategic direction of key move | Fit for purpose | Alignment with place and movement guide | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 4 | 4 |
| | To provide quality travel options | Efficiency of the transport network | Impact on increased travel distance/time | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -4 | -1 | -1 | -1 | -2 | -2 | -2 | 2 | 2 | -1 | -1 | -1 |
| | | Sustainability | Impacts on emissions | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -3 | -3 | 0 | 0 | -2 | -3 | -3 | 0 | 0 | 0 | 0 | 0 |
| Accessibility | Provide alternative mode options to private vehicles | Promotion of alternative modes | Achieve a high LOS for pedestrians and cyclists | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 |
| | | | Accessibility for vulnerable users | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 |
| | | Active mode and public transport mode share (combined) compared to private vehicles | Number of active mode and public transport trips (combined) compared to private vehicle trips | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | -1 | 0 | 3 | 3 | 0 | 0 | 0 |
| | Access to transport and mobility is equitable for all people | Walking, cycling and micromobility network coverage and useability | Extent to which option improves the walking, cycling and micromobility network coverage | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 |
| | | Ability to connect to Te Awa Cycleway | Extent to which option improves the walking, cycling connection to the Te Awa Cycleway | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| | | Transport choice available for all people living in Ngāruawāhia to access the main street | Extent to which option improves alternative mode choice | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 1 | 0 | 2 | 1 | 0 | -2 | 0 |

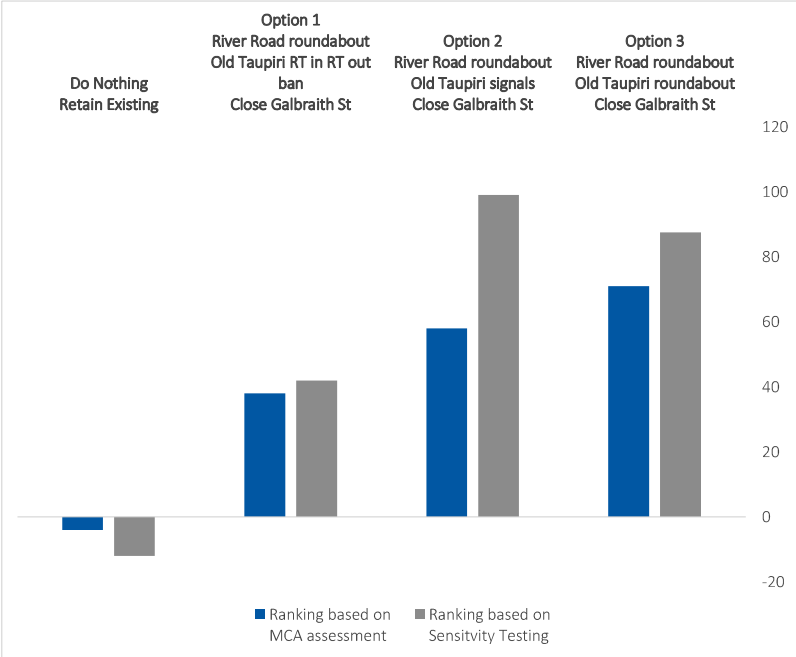
# THE MCA ASSESSMENT - SENSITIVITY TESTING

| ASSESSMENT CRITERIA | | | OPTION: | Do Nothing<br>Retain Existing | | | | | Option 1<br>River Road roundabout<br>Old Taupiri RT in RT out ban<br>Close Galbraith St | | | | | Option 2<br>River Road roundabout<br>Old Taupiri signals<br>Close Galbraith St | | | | | Option 3<br>River Road roundabout<br>Old Taupiri roundabout<br>Close Galbraith St | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| | | Intersection operation | SIDRA outputs | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | -3 | -3 | -4 | -4 | -4 | 0 | 0 | -1 | -1 | -1 |
| | | Perception of safety (all users and vulnerable users) | Change in perception of safety and harm (all users and vulnerable users) | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | 5 | 5 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 |
| Mobility | Ease of Access to the town centre for all modes | Vehicle routing | Impact on vehicles accessing Old Taupiri Road Sth | 0 | 0 | 0 | 0 | 0 | 0 | 0 | -4 | -5 | -5 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 3 | 3 |
| | | People on foot and people on bikes | Extent to which option improves the walking and cycling priority to access the town centre | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 3 | 3 | 0 | 0 | 0 |
| Cost/feasibility efficiency performance measures | Feasibility | Existing infrastructure used or reallocated to provide multimodal outcomes | Extent to which existing infrastructure can be used/reallocated to provide multimodal outcomes | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | -2 | -2 | -2 | -2 | -2 | -3 | -3 | -3 | -3 | -3 |
| | | Engineering Feasibility | Assessment of constructability | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 2 | 2 | 2 | -2 | -2 | -2 | -2 | -2 | -4 | -4 | -4 | -4 | -4 |
| | | Economic Impact | Access to business and employment | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | -1 | -1 | 2 | 2 | 0 | 2 | 2 | 2 | 2 | 0 | 2 | 2 |
| | | Stakeholders | Assessment of likely stakeholder impact | 0 | 0 | 0 | 0 | 0 | 1 | 1 | -3 | -5 | -3 | 4 | 4 | 0 | -1 | -1 | 3 | 3 | 3 | 3 | 3 |
| | Cost | Cost | Assessment of capital cost of infrastructure improvements | 0 | 0 | 0 | 0 | 0 | -1 | -1 | -1 | -1 | -1 | -3 | -3 | -3 | -3 | -3 | -3 | -3 | -5 | -5 | -5 |
| | Impacts on Te Ao Māori | Impacts on Te Ao Māori | Assessment of impact on Te Ao Māori including areas of significance for Māori, Māori land and Kiatiakitanga | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 1 |
| | | | SCORE | 0 | 0 | -6 | -6 | 0 | 19.5 | 18.5 | 7 | -0.5 | -2.5 | 43 | 41 | 6 | 11 | -2 | 26.5 | 25.5 | 9.5 | 15.5 | 10.5 |
| | | | Total, equal weights per measure | -12 | | | | | 42 | | | | | 99 | | | | | 87.5 | | | | |

# THE MCA ASSESSMENT - SENSITIVITY TESTING

| ASSESSMENT CRITERIA | | | OPTION: | Do Nothing<br>Retain Existing | | | | | Option 1<br>River Road roundabout<br>Old Taupiri RT in RT out ban<br>Close Galbraith St | | | | | Option 2<br>River Road roundabout<br>Old Taupiri signals<br>Close Galbraith St | | | | | Option 3<br>River Road roundabout<br>Old Taupiri roundabout<br>Close Galbraith St | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Metric | Objective | Key Performance Indicator | Measure | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight | Walking | Cycling | PT | Vehicles | Freight |
| | | | Average, equal weights per objective | | | | | | | | | | | | | | | | | | | | |
| | | Safety | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | To reduce deaths and serious injuries | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.67 | 0.67 | 2.33 | 3.33 | 2.33 | 1.00 | 1.00 | 1.33 | 1.67 | 1.33 | 1.00 | 1.00 | 2.00 | 2.33 | 2.00 |
| | | Amenity (travel quality and aesthetics) | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | Strategic direction of key move | 2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 4.00 | 4.00 | 4.00 |
| | | To provide quality travel options | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -1.00 | -3.50 | -2.00 | -0.50 | -0.50 | -2.00 | -2.50 | -2.50 | 1.00 | 1.00 | -0.50 | -0.50 | -0.50 |
| | | Accessibility | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | Provide alternative mode options to private vehicles | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 2.33 | 2.33 | 0.00 | -0.33 | 0.00 | 2.67 | 2.67 | 0.00 | 0.00 | 0.00 |
| | | Access to transport and mobility is equitable for all people | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.80 | 0.20 | 0.20 | 0.20 | 1.80 | 1.40 | -0.20 | 0.00 | -0.20 | 1.80 | 1.60 | 0.60 | 0.20 | 0.60 |
| | | Mobility | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | Ease of Access to the town centre for all modes | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.50 | 0.50 | -2.00 | -2.50 | -2.50 | 1.50 | 1.50 | 0.00 | 1.50 | 1.50 | 1.50 | 1.50 | 0.00 | 1.50 | 1.50 |
| | | Cost/feasibility efficiency performance measures | Weighting per objective | | | | | | | | | | | | | | | | | | | | |
| | | Feasibility | 1.5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.50 | 1.50 | 0.25 | -0.50 | 0.00 | 0.50 | 0.50 | -1.00 | -0.75 | -0.75 | -0.50 | -0.50 | -1.00 | -0.50 | -0.50 |
| | | Cost | 2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -1.00 | -1.00 | -1.00 | -1.00 | -1.00 | -3.00 | -3.00 | -3.00 | -3.00 | -3.00 | -3.00 | -3.00 | -5.00 | -5.00 | -5.00 |
| | | Impacts on Te Ao Māori | 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 | 1.00 | 1.00 | 0.00 | 1.00 | 1.00 |
| | | | | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | -2 | -1 | 8 | 7 | -2 | 0 | 0 | 8 | 8 | -1 | 2 | 2 |
| | | | Average, equal weights per objective | | | 0 | | | | | 7 | | | | | 13 | | | | | 18 | | |




## THE MCA ASSESSMENT SUMMARY

Traffic modelling was undertaken to understand the impact of the options on the intersection's efficiency. The results of the SIDRA analysis (provided in Appendix C) was used to inform the MCA scoring. Safety at the level crossing was taken into account when scoring the safety criterion for each option. Option 1 assumes the proposed roundabout at the Jesmond Street intersection with Great South Road, is already in place thereby avoiding scenarios where people undertake undesirable/ unsafe u-turns or long diversions.

The chart on the right indicates that the Roundabout option at intersection with Old Taupiri Road scores higher. The score per mode shown on the left chart, indicates that the roundabout option scores better for Freight, Cars, and Buses than the signalised option.
However, the sensitivity test where safety at the level crossing is weighted higher, the signalised option performs better.

Primarily the issues with the signalised option is the delays for the  Freight, Cars, and Buses compared to a roundabout which is typical with signalised options. The existing layout and the signalised intersection are predicted to operate close to capacity in the 2051 peak period.

On contrary, the roundabout performs very well even at 2051. Therefore the emerging preferred option could be a roundabout at Old Taupiri Road intersection, with a full safety upgrade of the level crossing (eg barrier arms which go down each time there is a train passing, as well as pedestrian electric gates, etc). An LCSIA may be undertaken to identify the upgrade attributes required for the level crossing.

Appendix E-4.2

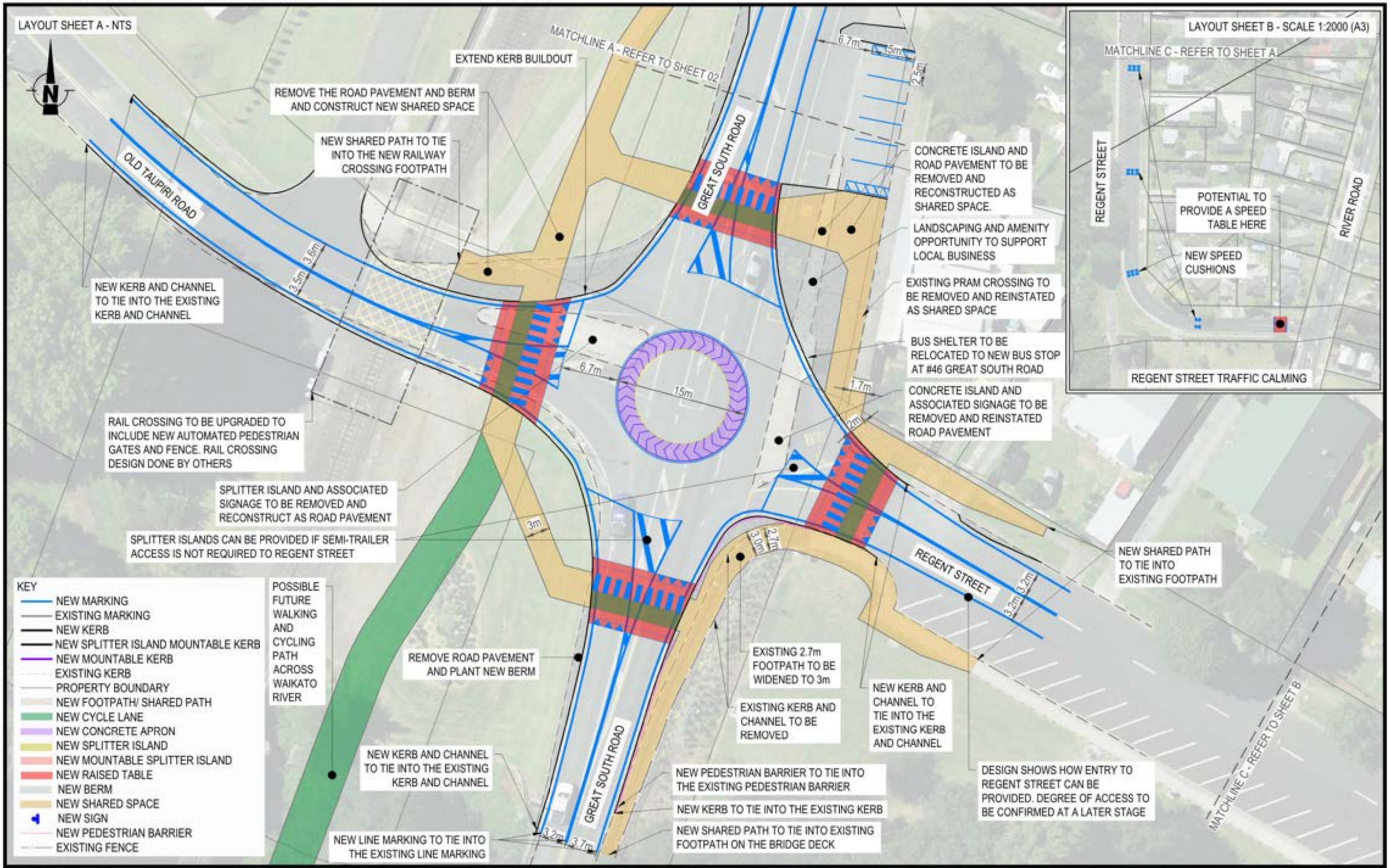
# GREAT SOUTH ROAD INTERSECTIONS WITH OLD TAUPIRI ROAD (SOUTH) AND RIVER ROAD

# DESIGN OF PREFERRED OPTIONS

# Appendix E-4.2.1

## GREAT SOUTH ROAD INTERSECTION WITH OLD TAUPIRI ROAD (SOUTH)

# DESIGN OF PREFERRED OPTION




| REV | AMENDMENT | DATE OF ISSUE |
|---|---|---|
| A | First Issue | 24/11/2023 |
| B | Includes Comments & Regent Street Traffic Calming | 25/01/2024 |

DESIGN: MWP | DRAWN: MWP
CHECKED: SC | DATE: 10/11/2023
SCALE: 0 – 20m NOT TO SCALE

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: OLD TAUPIRI ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: GENERAL LAYOUT

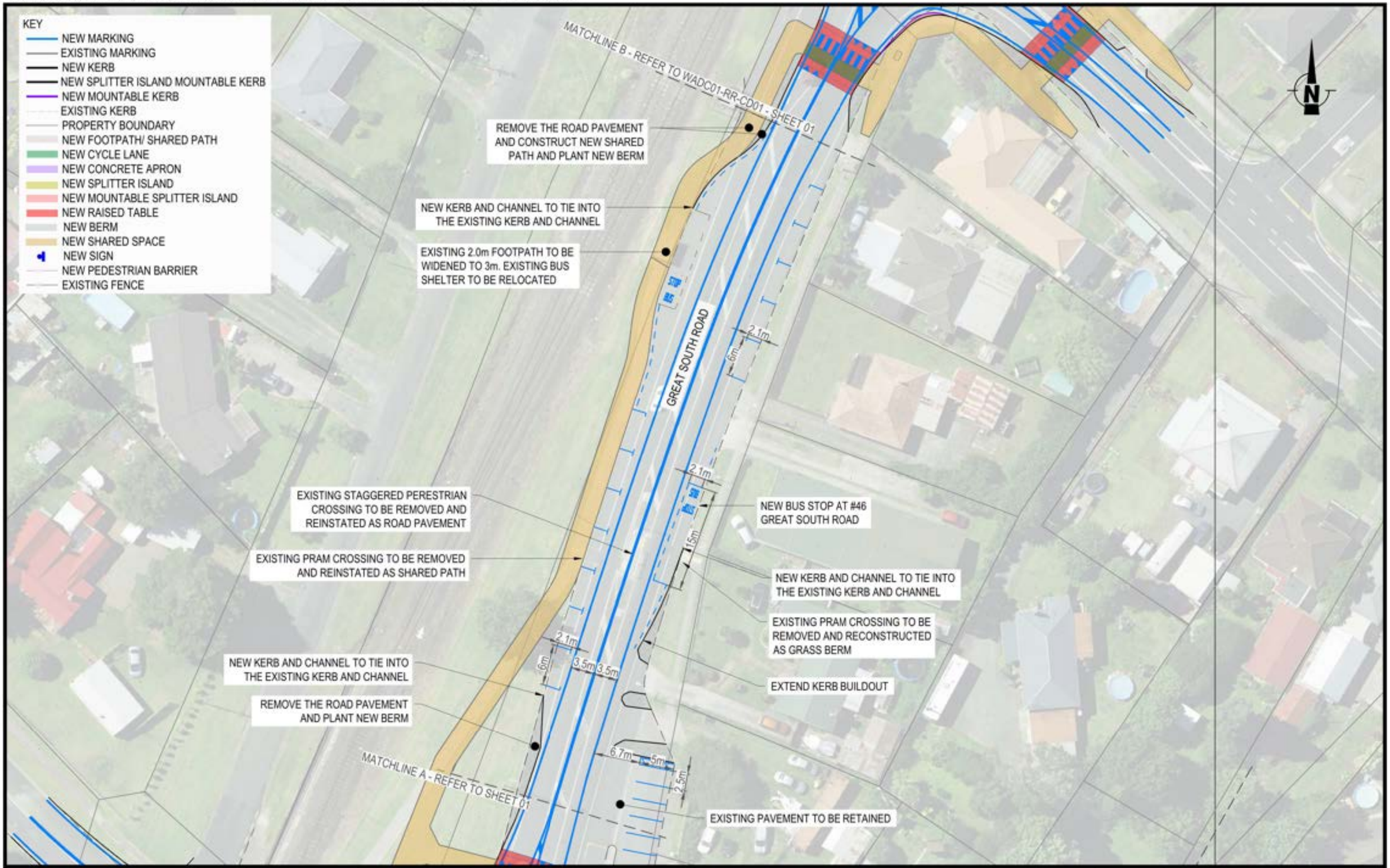
DRAWING NUMBER: WADC01-OT-CD01-A-

SHEET: 01 of 12

REV: B

flow TRANSPORTATION SPECIALISTS
Level 1, 11 Blake Street, Ponsonby, Auckland | PO Box 47497 Ponsonby
p 09 970 3820 | f 09 970 3890 | www.flownz.com

P:\WADC (Waikato Dist Cncl)\001 Transport Assessment for Ngaruawahia, Hopuhopu and Taupiri\5.0 Drawings\5.2 Our Drawings\CONCEPT LAYOUT\WADC01-OT-CD01-A-Model Tab\C3D Model.dwg 25/01/2024 2:31 pm




| REV | AMENDMENT | DATE OF ISSUE |
|---|---|---|
| A | First Issue | 24/11/2023 |
| B | Second Issue - Includes Comments | 25/01/2024 |

DESIGN: MWP | DRAWN: MWP
CHECKED: SC | DATE: 10/11/2023
SCALE: 0 — 20m
1:500 @ A3

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: OLD TAUPIRI ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: GENERAL LAYOUT

DRAWING NUMBER: WADC01-OT-CD01-A-

SHEET: 02 of 12

REV: B

flow
TRANSPORTATION SPECIALISTS
Level 1, 11 Blake Street, Ponsonby, Auckland | PO Box 47497 Ponsonby
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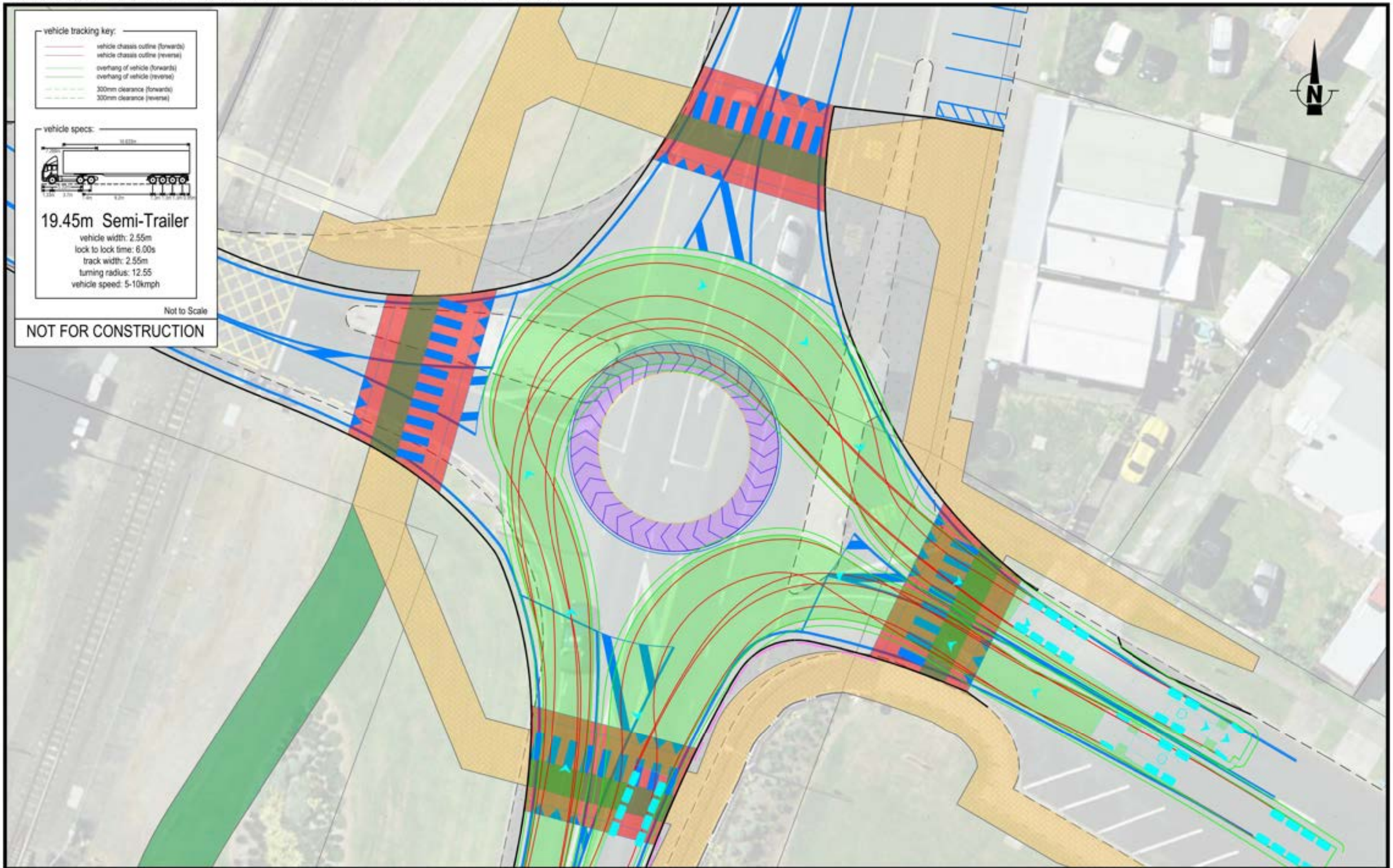
P:\WADC (Waikato Dist Cncl)\001 Transport Assessment for Ngaruawahia, Hopuhopu and Taupiri\5.0 Drawings\5.2 Our Drawings\[illegible]C01-OT-CD01-A-[illegible]C3D Model.dwg 25/01/2024 2:31 pm




| REV | AMENDMENT | DATE OF ISSUE |
|---|---|---|
| A | First Issue | 24/11/2023 |

DESIGN: MWP | DRAWN: MWP
CHECKED: SC | DATE: 10/11/2023
SCALE: 0 — 10m
1:250 @ A3

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: OLD TAUPIRI ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-OT-CD01-A-

SHEET: 03 of 12

REV: A

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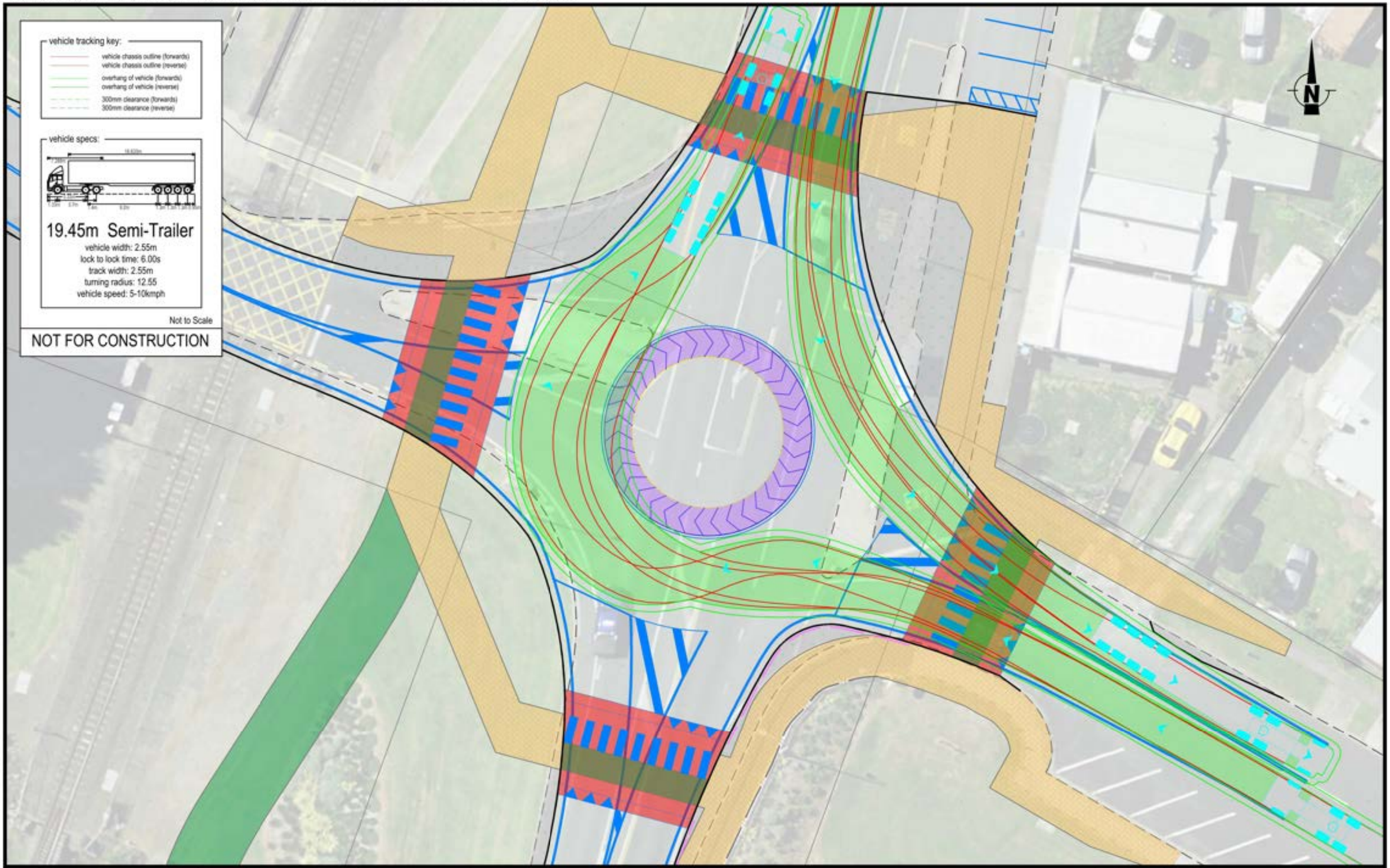


| REV | AMENDMENT | DATE OF ISSUE |
|---|---|---|
| A | First Issue | 24/11/2023 |

DESIGN: MWP | DRAWN: MWP
CHECKED: SC | DATE: 10/11/2023
SCALE: 0 – 10m
1:250 @ A3

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: OLD TAUPIRI ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-OT-CD01-A-

SHEET: 04 of 12

REV: A

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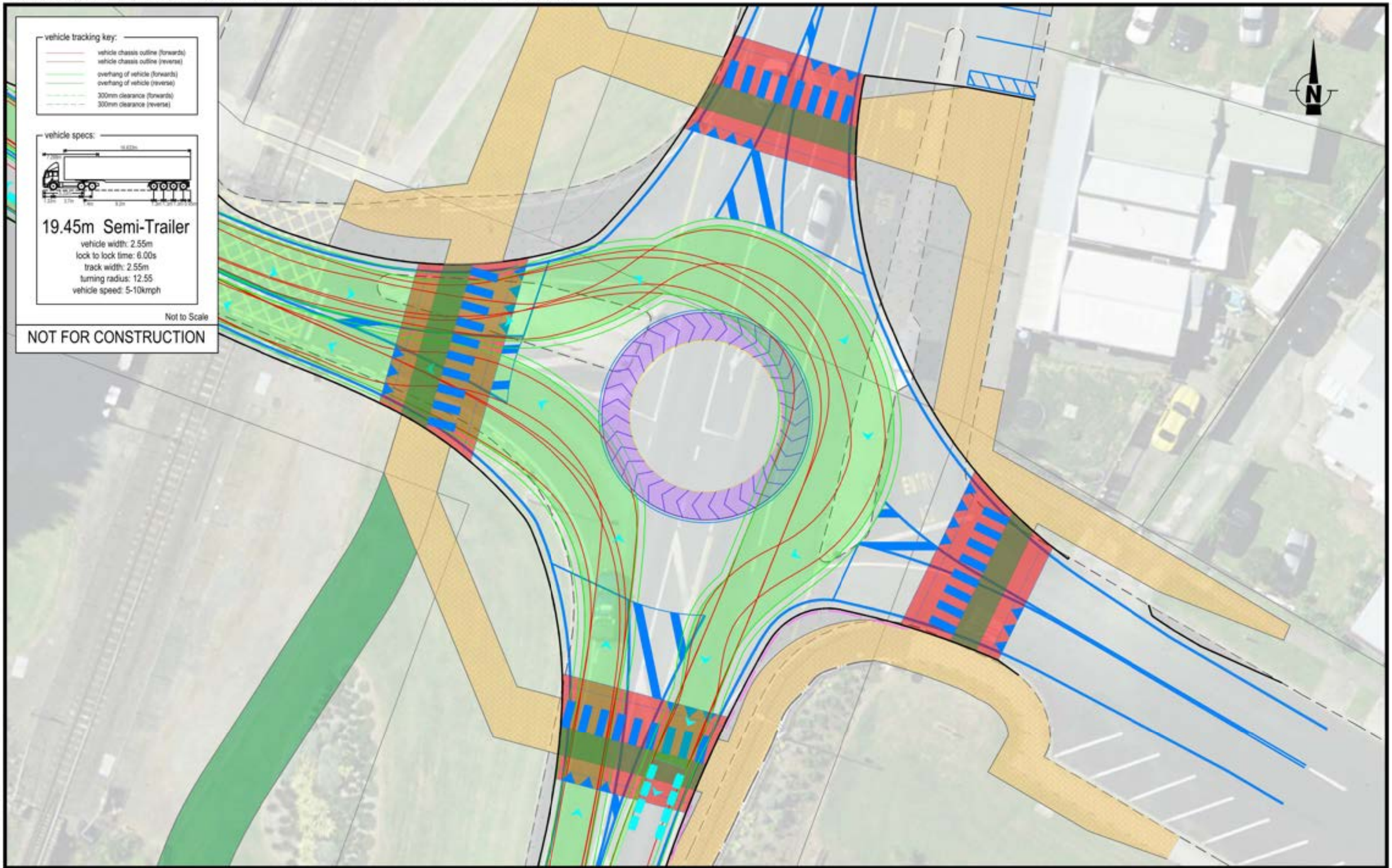


| REV | AMENDMENT | DATE OF ISSUE |
|---|---|---|
| A | First Issue | 24/11/2023 |

DESIGN: MWP | DRAWN: MWP
CHECKED: SC | DATE: 10/11/2023
SCALE: 0 — 10m
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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: OLD TAUPIRI ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-OT-CD01-A-

SHEET: 05 of 12

REV: A

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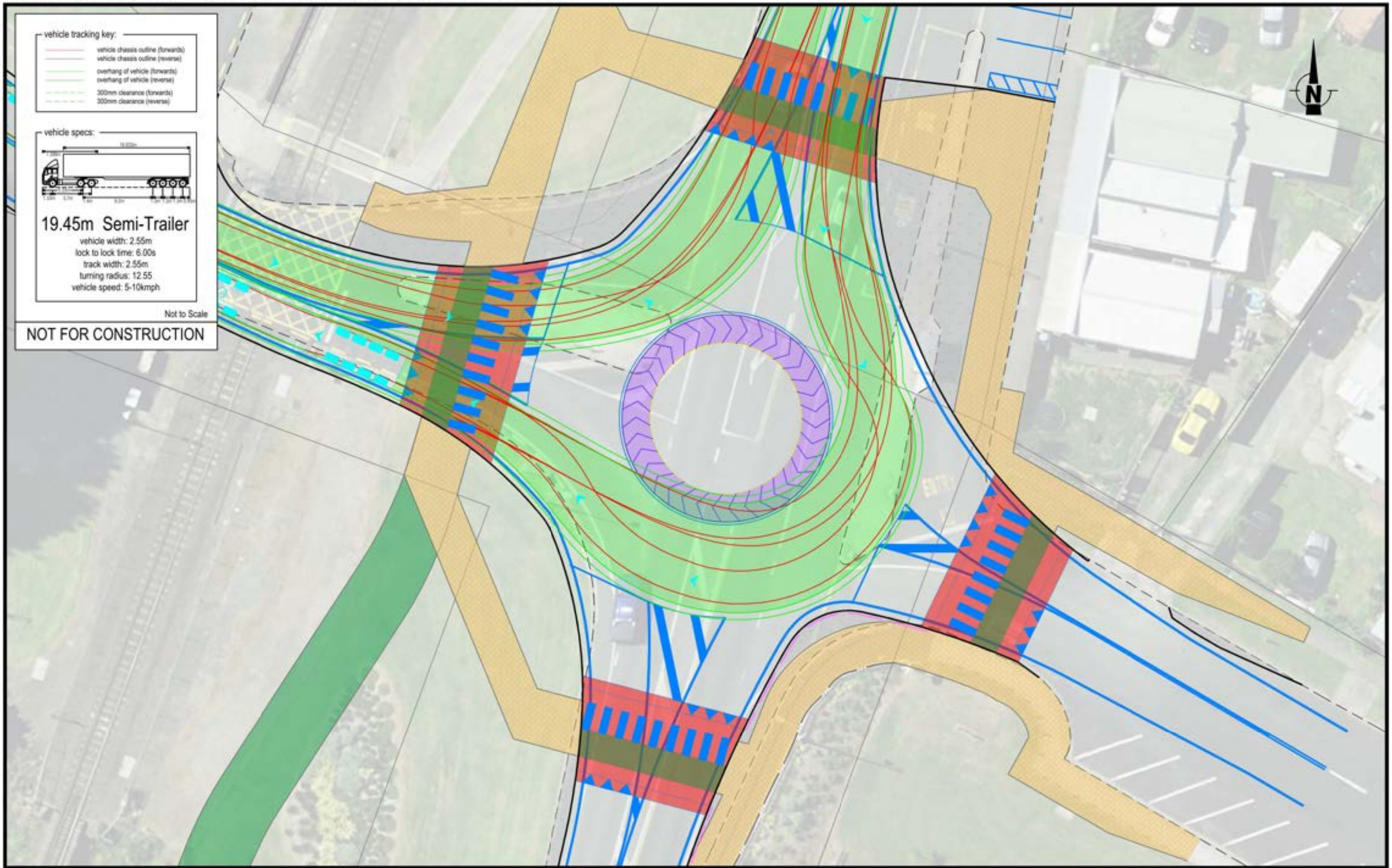


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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: OLD TAUPIRI ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-OT-CD01-A-

SHEET: 06 of 12

REV: A

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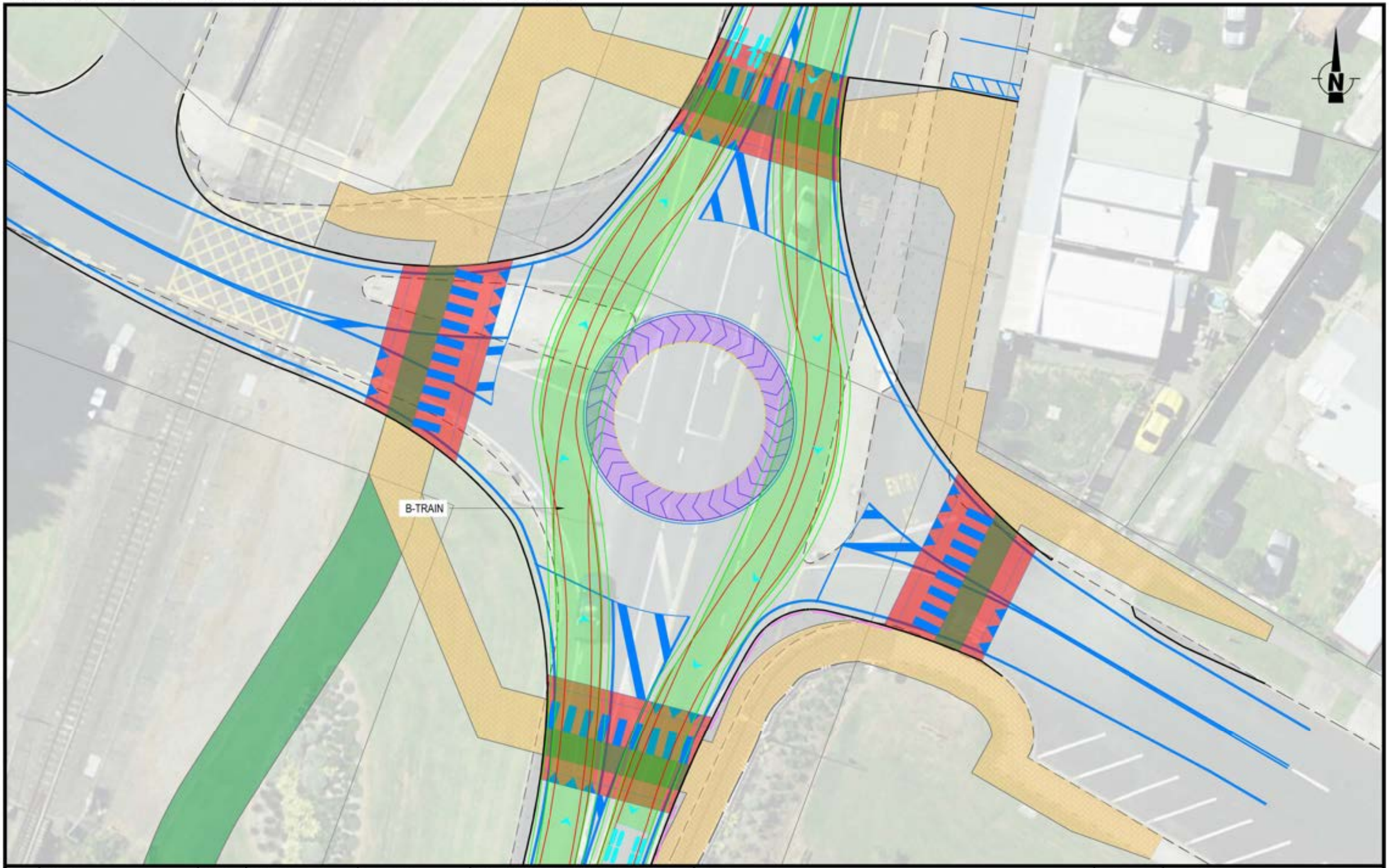


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SCALE: 0 — 10m
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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: OLD TAUPIRI ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-OT-CD01-A-

SHEET: 07 of 12

REV: A

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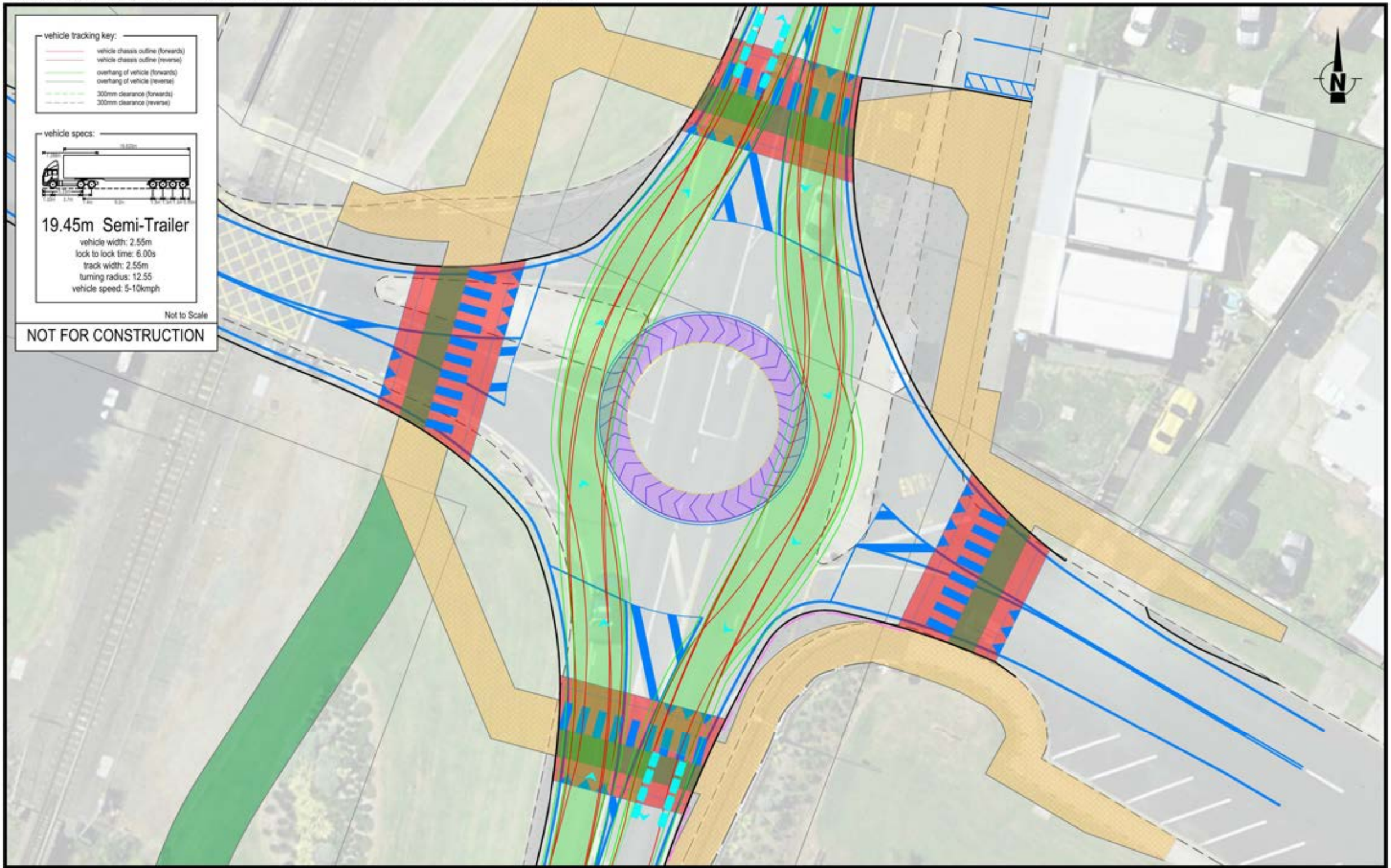


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| A | First Issue | 24/11/2023 |

DESIGN: MWP | DRAWN: MWP
CHECKED: SC | DATE: 10/11/2023
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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: OLD TAUPIRI ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-OT-CD01-A-

SHEET: 08 of 12

REV: A

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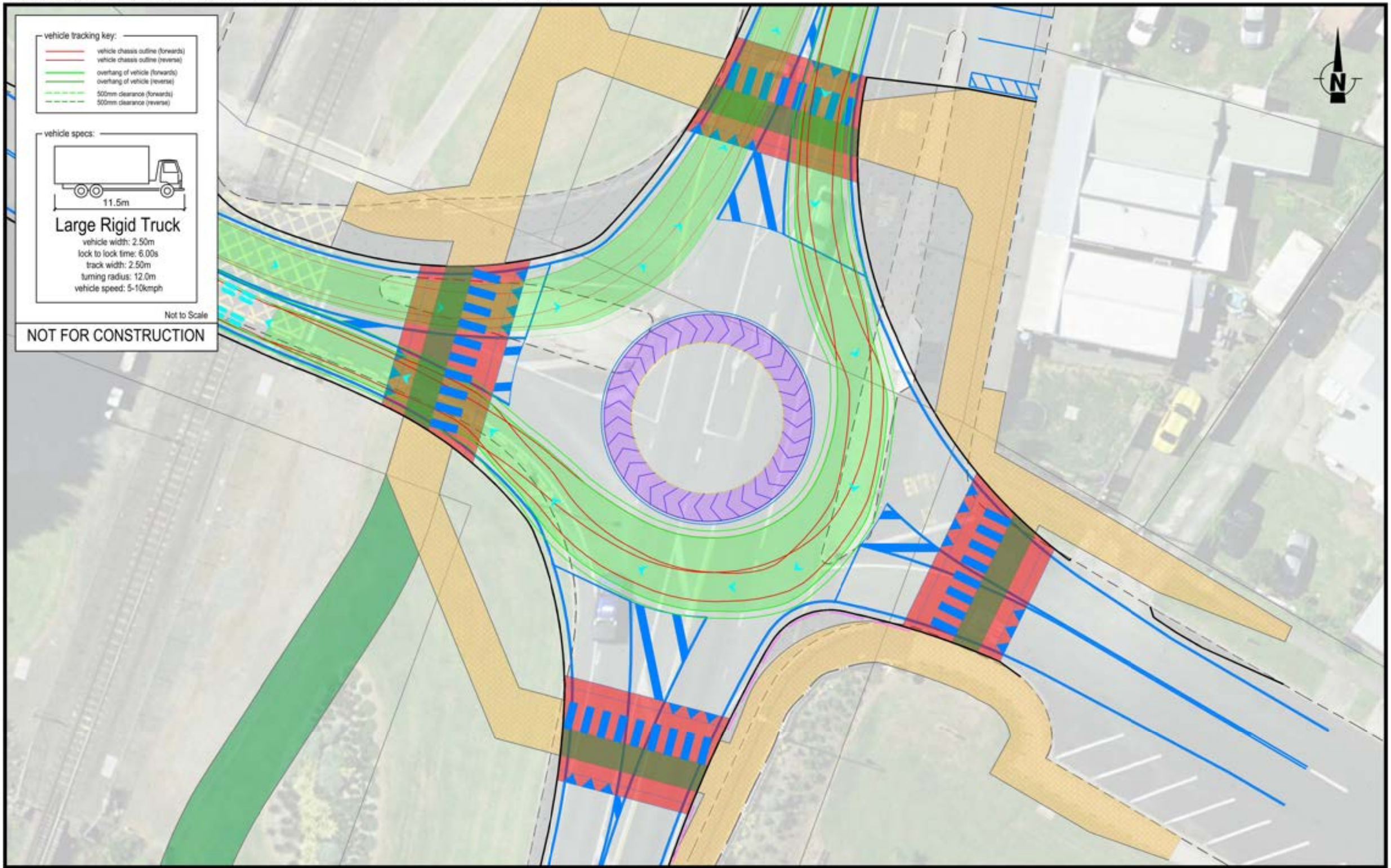


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| A | First Issue | 24/11/2023 |

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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: OLD TAUPIRI ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-OT-CD01-A-

SHEET: 09 of 12

REV: A

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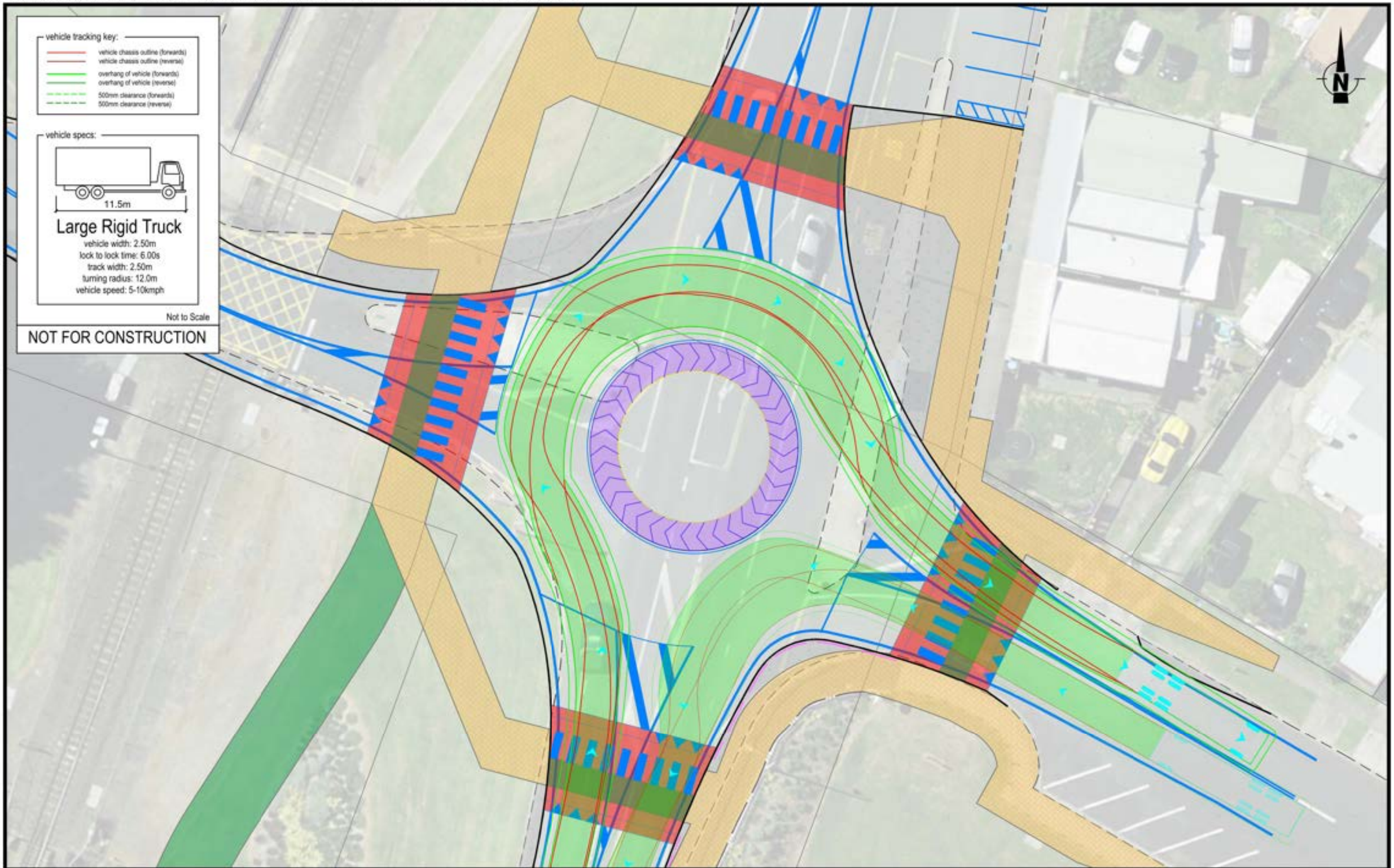


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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: OLD TAUPIRI ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-OT-CD01-A-

SHEET: 10 of 12

REV: A

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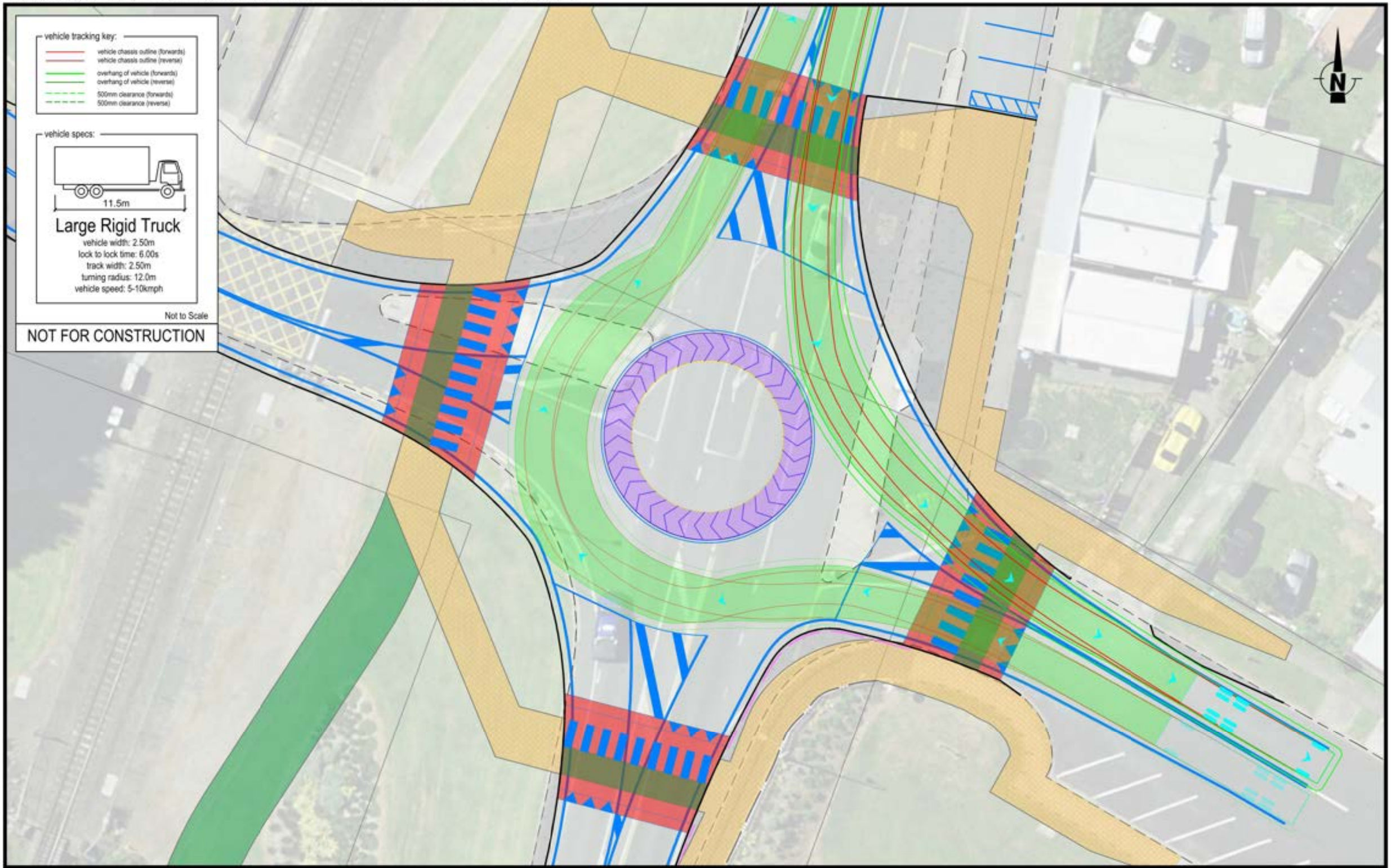


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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: OLD TAUPIRI ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-OT-CD01-A-

SHEET: 11 of 12

REV: A

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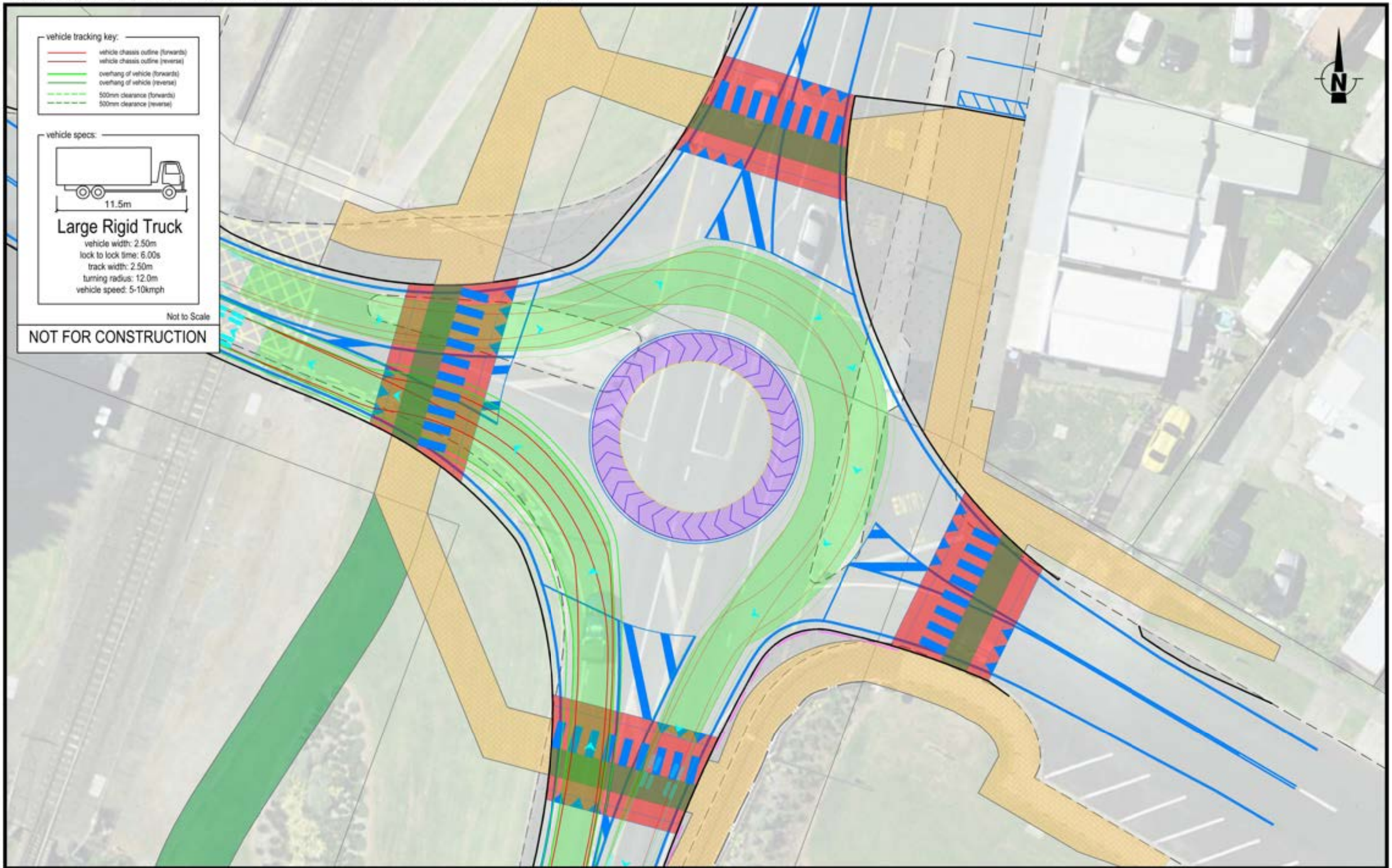
P:\WADC (Waikato Dist Cncl)\001 Transport Assessment for Ngaruawahia, Hopuhopu and Taupiri\5.0 Drawings\5.2 Our Drawings\[illegible]C01-OT-CD01-A-[illegible]C3D Model.dwg 25/01/2024 2:32 pm

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SCALE: 0 — 10m
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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: OLD TAUPIRI ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-OT-CD01-A-

SHEET: 12 of 12

REV: A

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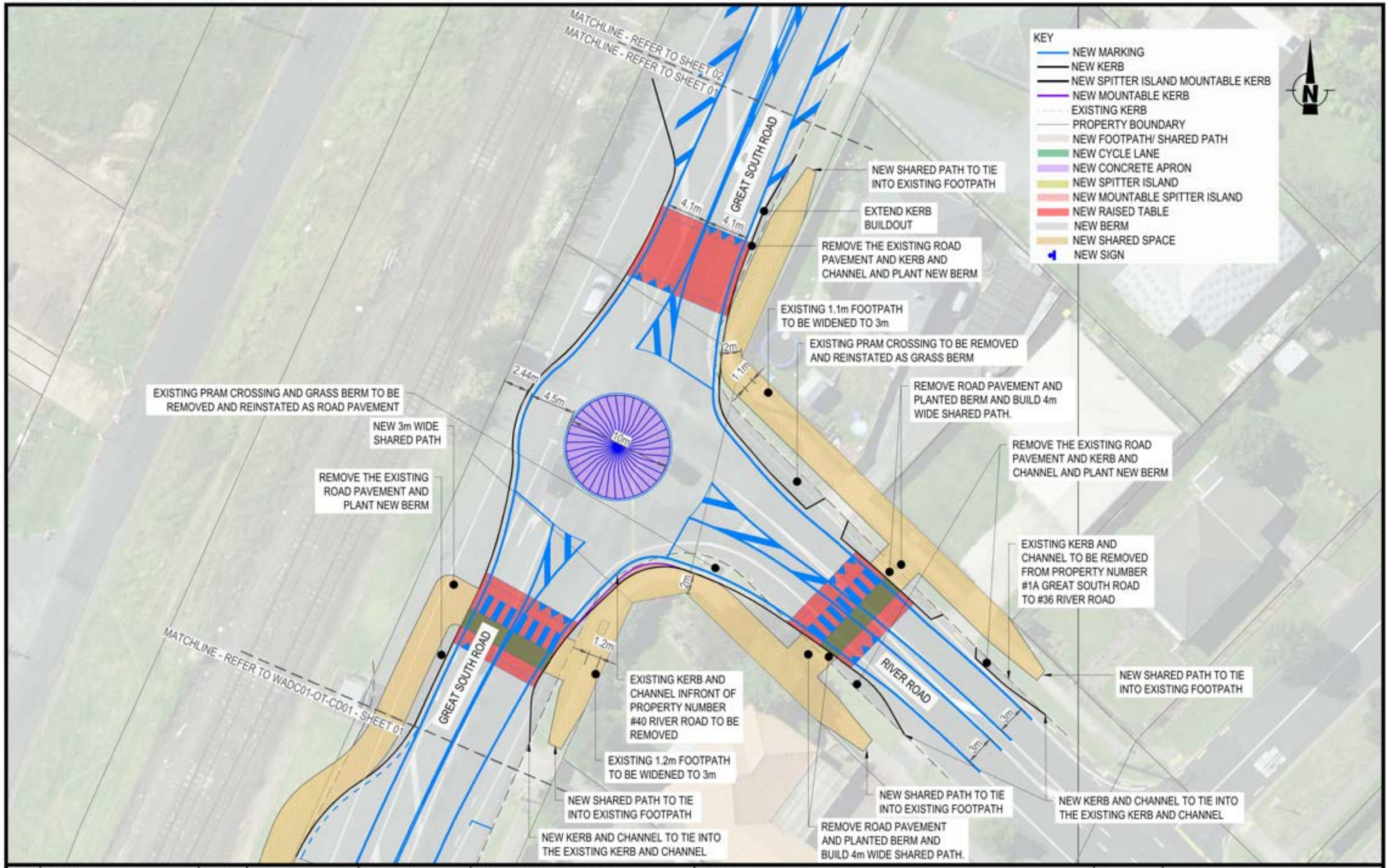
# Appendix E-4.2.2

## GREAT SOUTH ROAD INTERSECTION WITH RIVER ROAD

# DESIGN OF PREFERRED OPTION

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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: RIVER ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: GENERAL LAYOUT

DRAWING NUMBER: WADC01-RR-CD01-A-

SHEET: 01 of 08

REV: A

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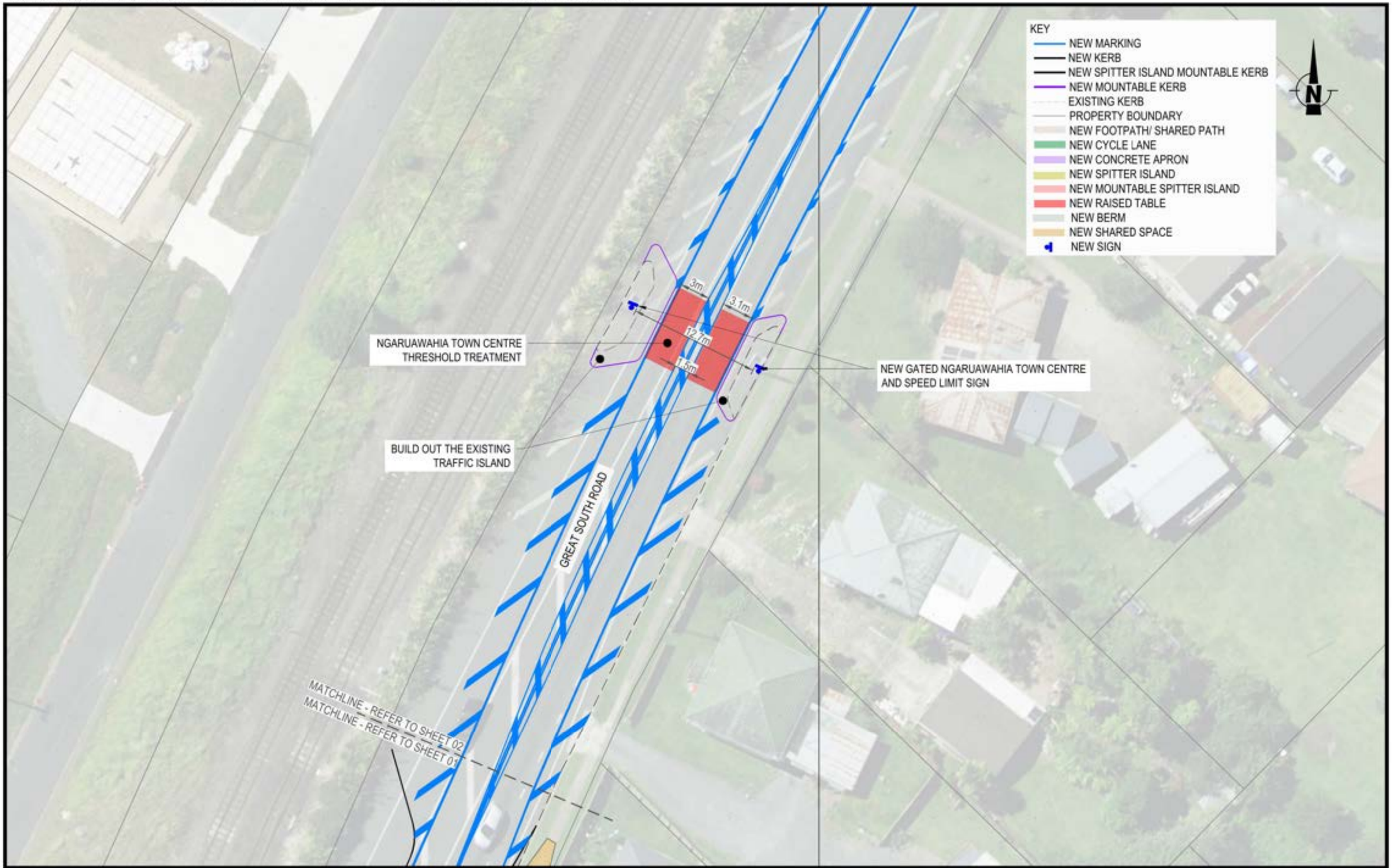


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CHECKED: SC | DATE: 10/11/2023
SCALE: 0 – 20m NOT TO SCALE

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: RIVER ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: GENERAL LAYOUT

DRAWING NUMBER: WADC01-RR-CD01-A-

SHEET: 02 of 08

REV: A

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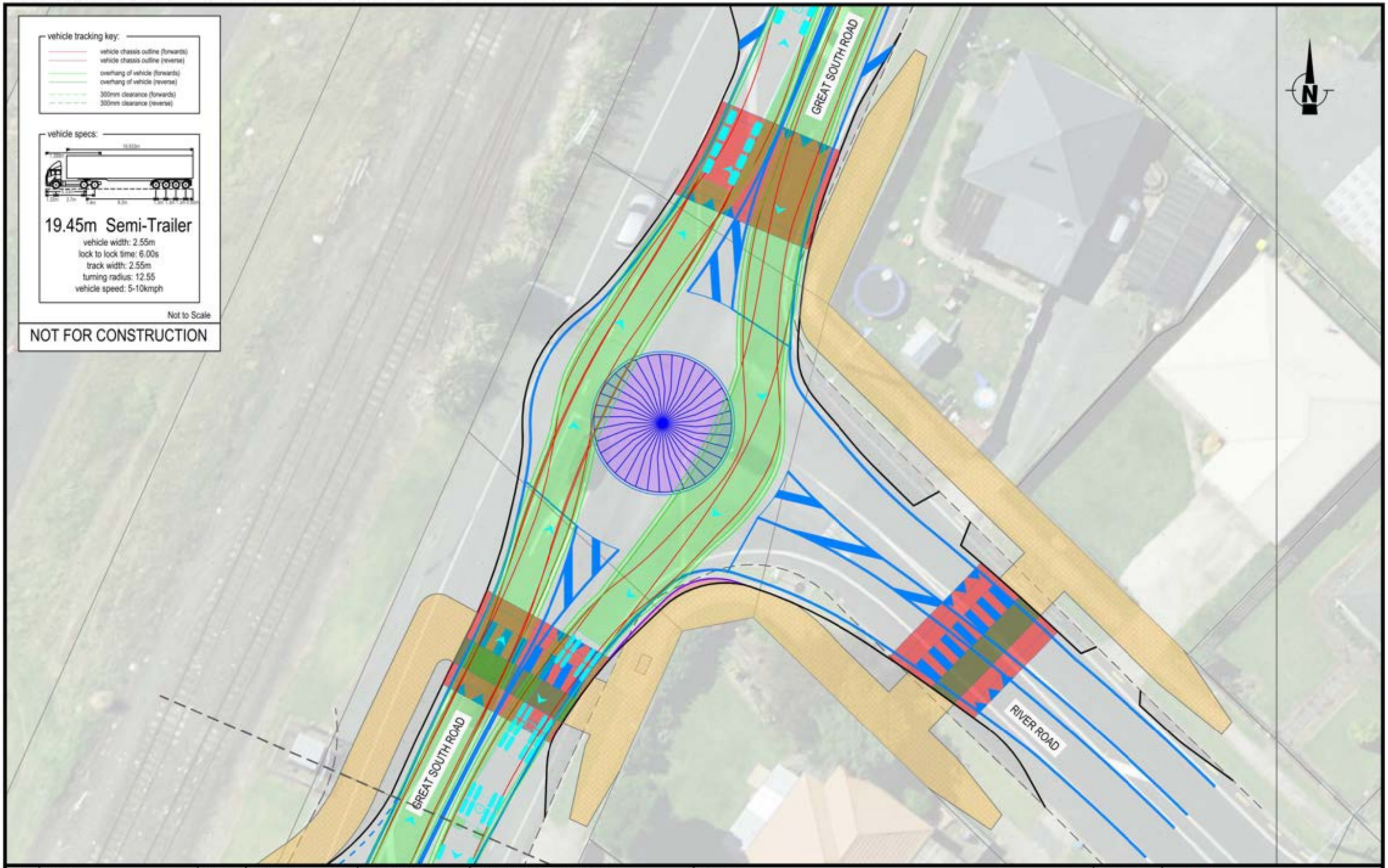


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DESIGN: MWP | DRAWN: MWP
CHECKED: SC | DATE: 10/11/2023
SCALE: 0 — 10m
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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: RIVER ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-RR-CD01-A-

SHEET: 03 of 08

REV: A

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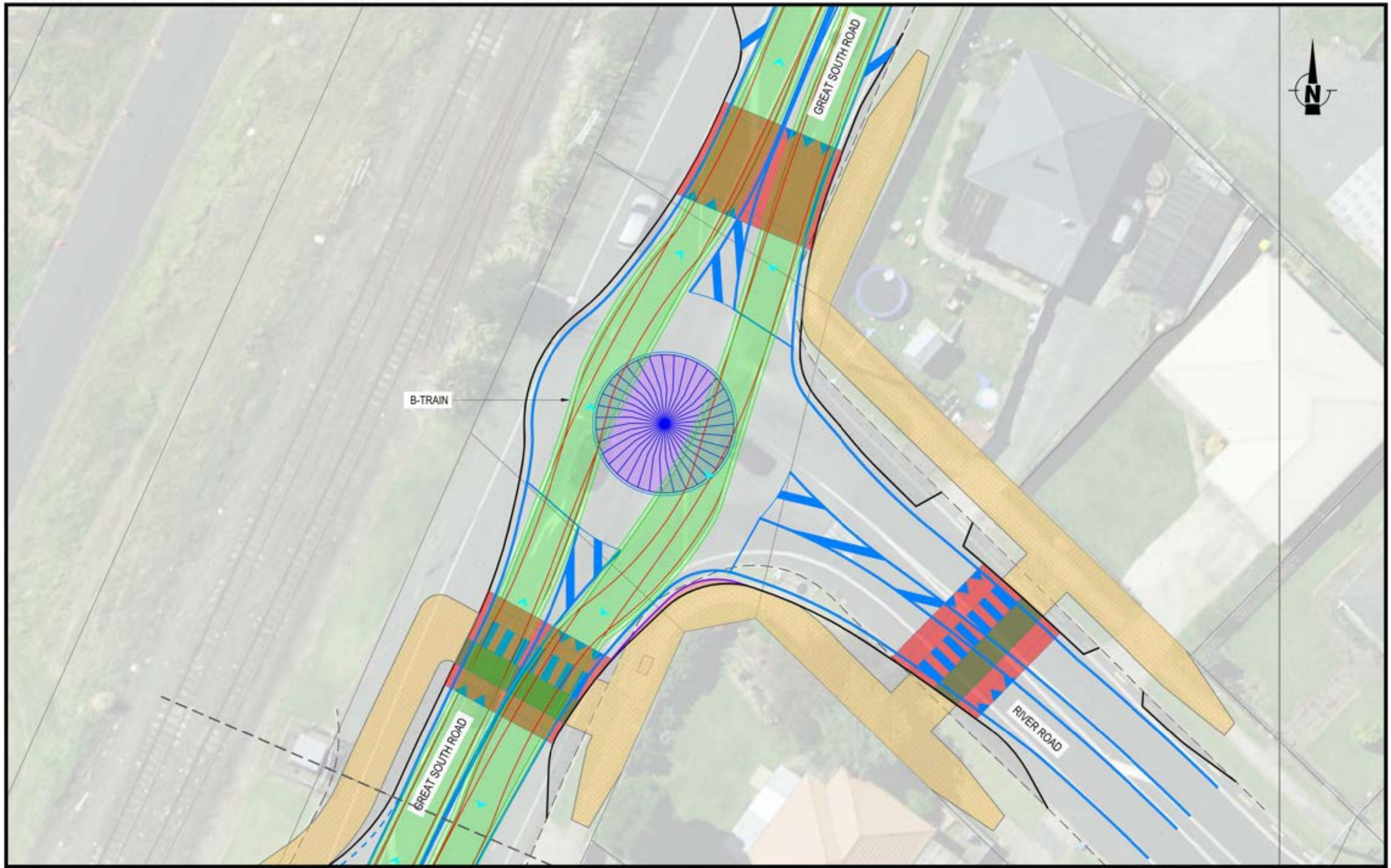


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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: RIVER ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-RR-CD01-A-

SHEET: 04 of 08

REV: A

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vehicle tracking key:

- vehicle chassis outline (forwards)
- vehicle chassis outline (reverse)
- overhang of vehicle (forwards)
- overhang of vehicle (reverse)
- 500mm clearance (forwards)
- 500mm clearance (reverse)

vehicle specs:




## Large Rigid Truck

vehicle width: 2.50m
lock to lock time: 6.00s
track width: 2.50m
turning radius: 12.0m
vehicle speed: 5-10kmph

Not to Scale

NOT FOR CONSTRUCTION

vehicle tracking key:

- vehicle chassis outline (forwards)
- vehicle chassis outline (reverse)
- overhang of vehicle (forwards)
- overhang of vehicle (reverse)
- 300mm clearance (forwards)
- 300mm clearance (reverse)

vehicle specs:

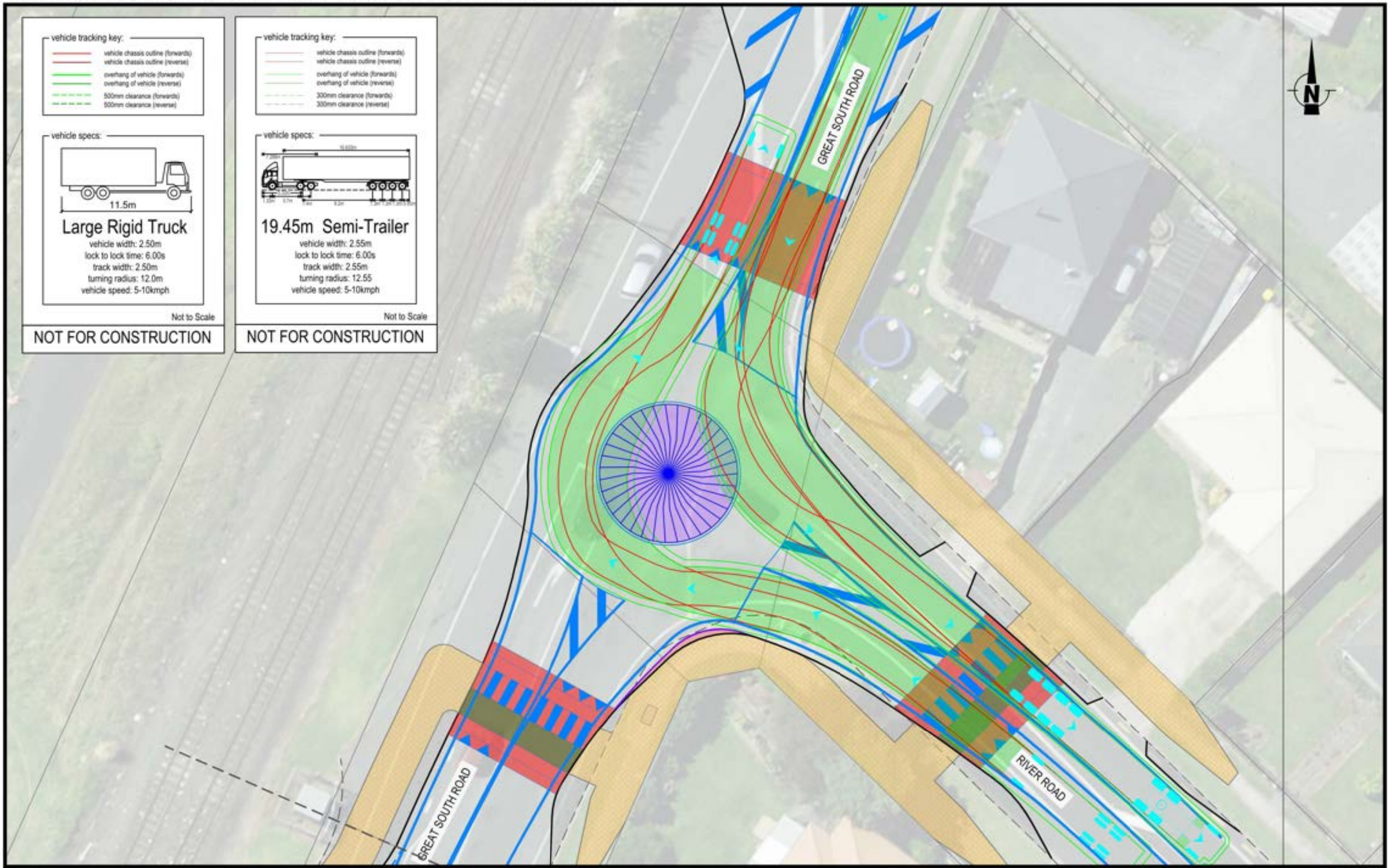


## 19.45m Semi-Trailer

vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 12.55
vehicle speed: 5-10kmph

Not to Scale

NOT FOR CONSTRUCTION

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CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: RIVER ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-RR-CD01-A-

SHEET: 05 of 08

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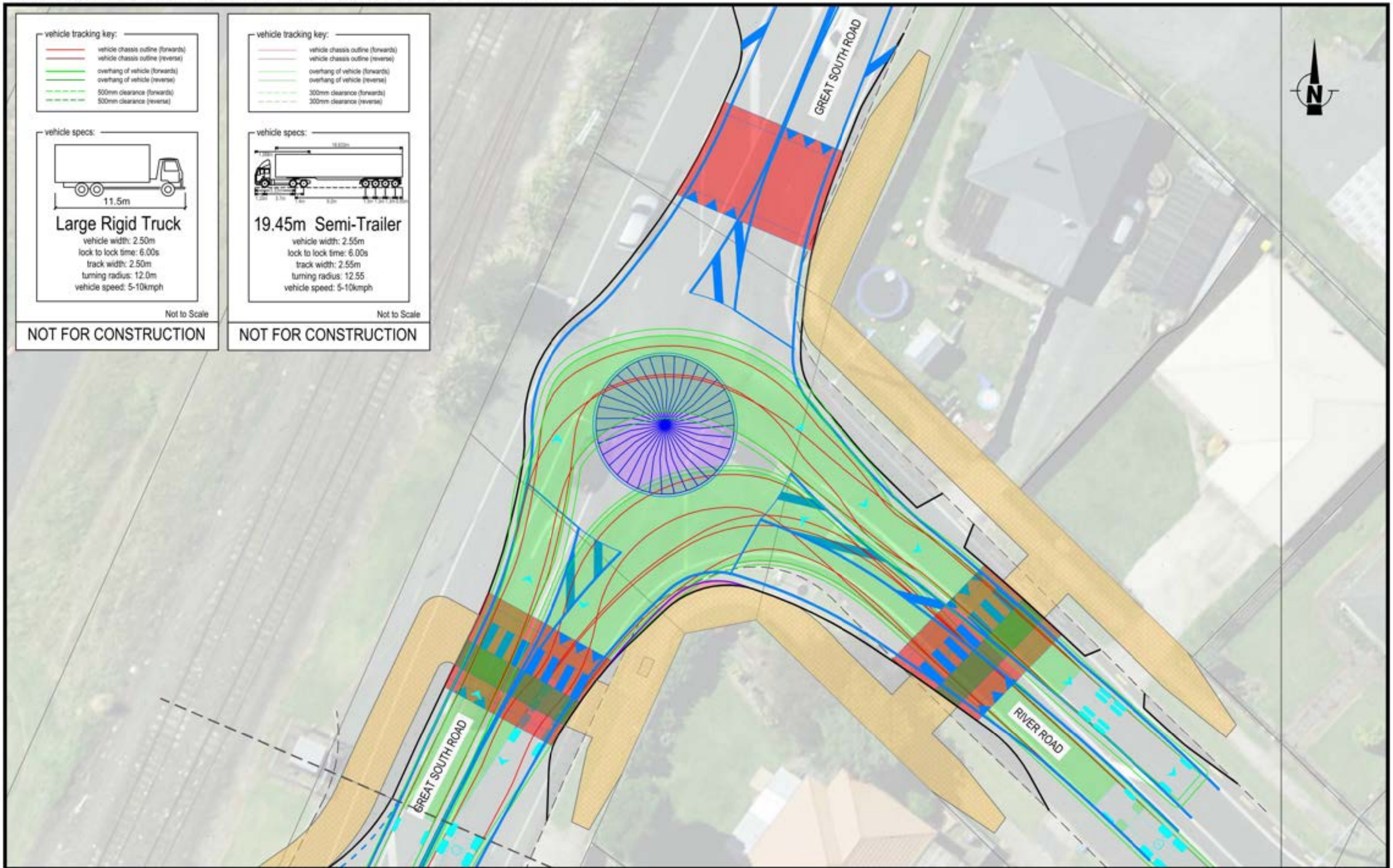


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SCALE: 0 – 10m, 1:250 @ A3

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: RIVER ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-RR-CD01-A-

SHEET: 06 of 08

REV: A

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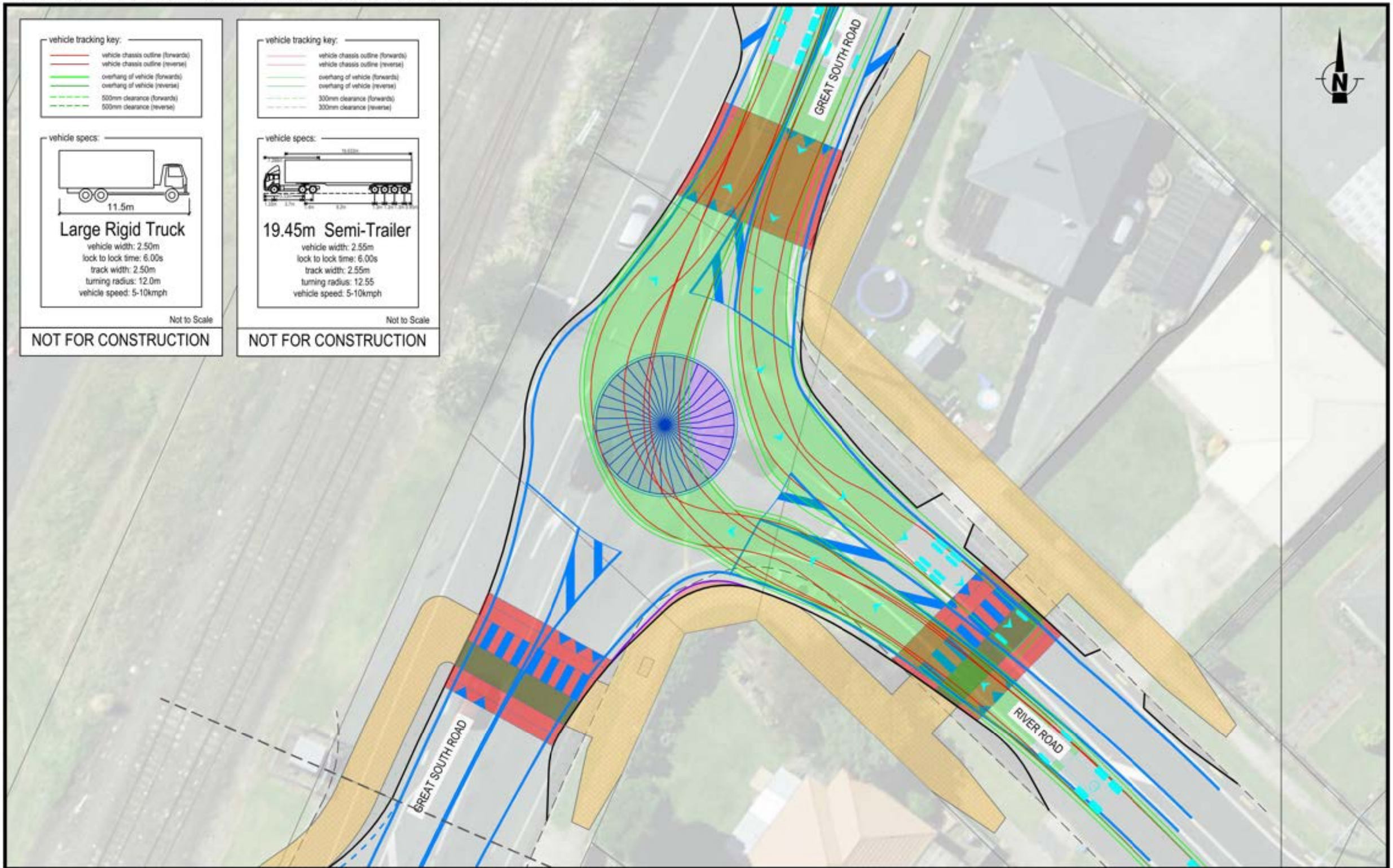


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1:250 @ A3

CLIENT: WAIKATO DISTRICT COUNCIL
PROJECT: TRANSPORT ASSESSMENT OF NGĀRUAWĀHIA, HOPUHOPU & TAUPIRI
LOCATION: RIVER ROAD, NGARUAWAHIA

CONCEPT DESIGN

SHEET TITLE: VEHICLE TRACKING

DRAWING NUMBER: WADC01-RR-CD01-A-

SHEET: 07 of 08

REV: A

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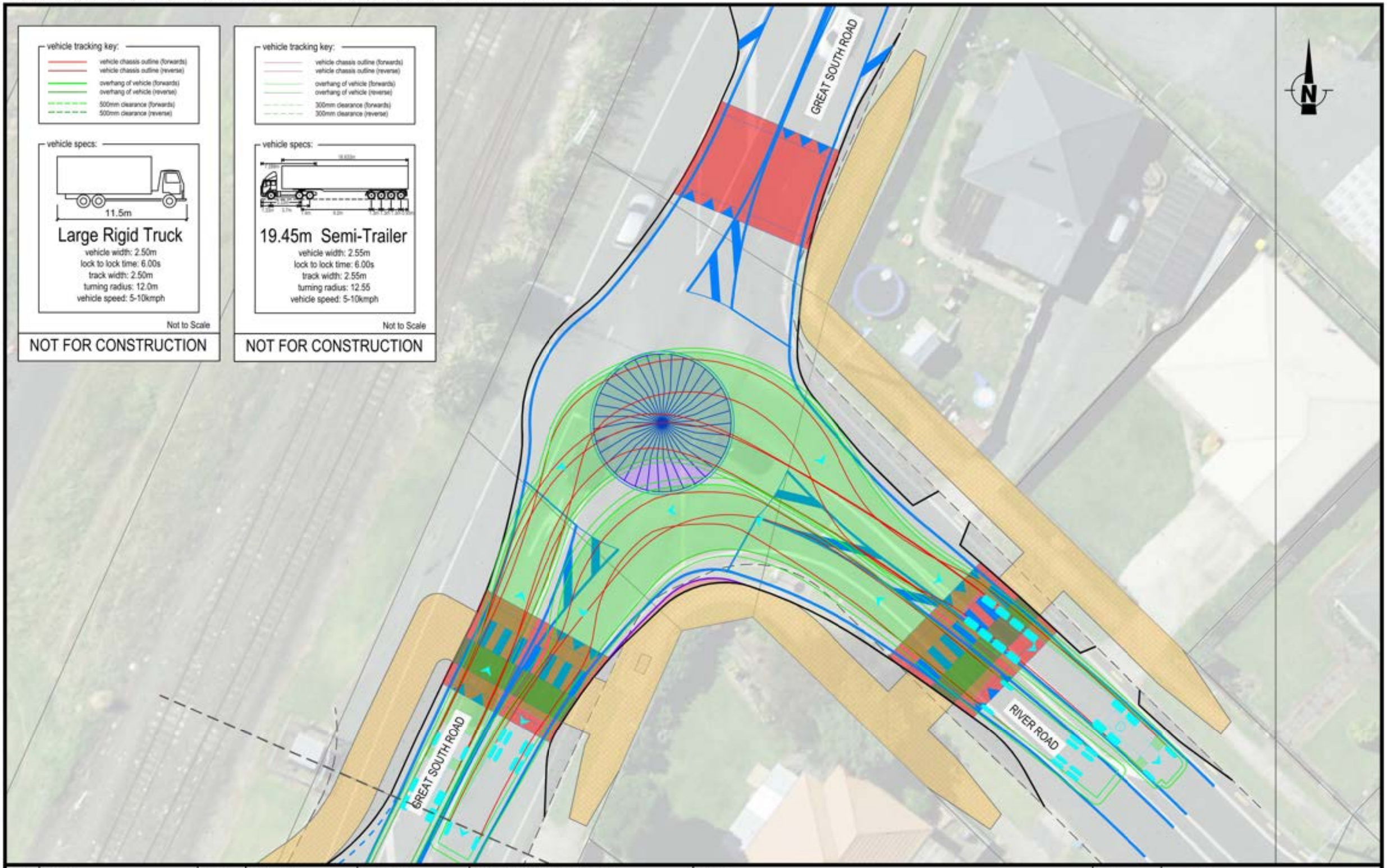


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# Ngaaruawaahia, Taupiri, Hopuhopu and Horotiu

## Walking, Cycling and Micromobility Assessment

April 2024

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TRANSPORTATION SPECIALISTS

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# EXECUTIVE SUMMARY

Flow has been commissioned by Waikato District Council (WDC) to conduct a transportation study for Ngaaruawaahia, Hopuhopu, Taupiri and Horotiu to understand how future growth until 2050 will affect the existing transport networks in these areas, as well as to undertake a high-level walking, cycling and micromobility assessment for Ngaaruawaahia, Hopuhopu, and Taupiri. Our assessment is divided into two parts: Part A focuses on traffic modelling and road network evaluation, while Part B (this report) assesses Micromobility/Walking/Cycling connectivity within and to/from the townships.

Our assessment has identified a long-term walking, cycling and micromobility network, that connects origins and destinations within each township and provides a regional network connecting the 4 urban areas. The network is illustrated in Figure ES1 overleaf. More detailed maps are appended to this report.

It is important to recognise that the network includes ***walking, cycling and micromobility networks***, combined. While these three modes are often grouped together as "active modes", they differ significantly in terms of their infrastructure requirements. Walking networks tend to be very fine grained, and include all streets within an urban area. By contrast, cycling networks tend to be more skeletal, with fewer urban streets represented. As a result, where we have identified a street as a priority within the overall active mode network, in some cases this may consist of walking infrastructure alone.

Our recommended network includes the following 5 route types, and stages these according to existing routes, short-medium term interventions, and longer-term interventions:

- The **Te Awa River Ride** along the Waikato River, that provides a north-south spine for the region as well as a primary recreational route
- **Regional connections** that provide connectivity between Ngaaruawaahia, Hopuhopu and Taupiri, which form the spine of the network
- **Core routes** that provide the main links between key trip generators/attractors
- **Local routes** to connect and provide access to individual homes and destinations. We have not mapped local routes, as all local streets need to fulfil this role in the network
- **Recreational trails** that provide walking and cycling routes through public reserves and natural spaces.

More detail on the characteristics expected of each of the 5 route types are listed in Table ES1 on subsequent pages.

We have provided recommended staging for the various elements of the network, classifying routes by:

- Existing, completed routes
- Short-medium term interventions – either existing streets that do not meet current best practice for walking, cycling and micromobility and that may require improvements, or new routes such as extensions to the successful Te Awa River Ride
- Longer-term interventions – generally future streets or improvements to existing rural roads that are necessary to support future land use development, but not needed until that development takes place.

**Figure ES1: Proposed active mode network (refer Appendix A for high resolution maps)**

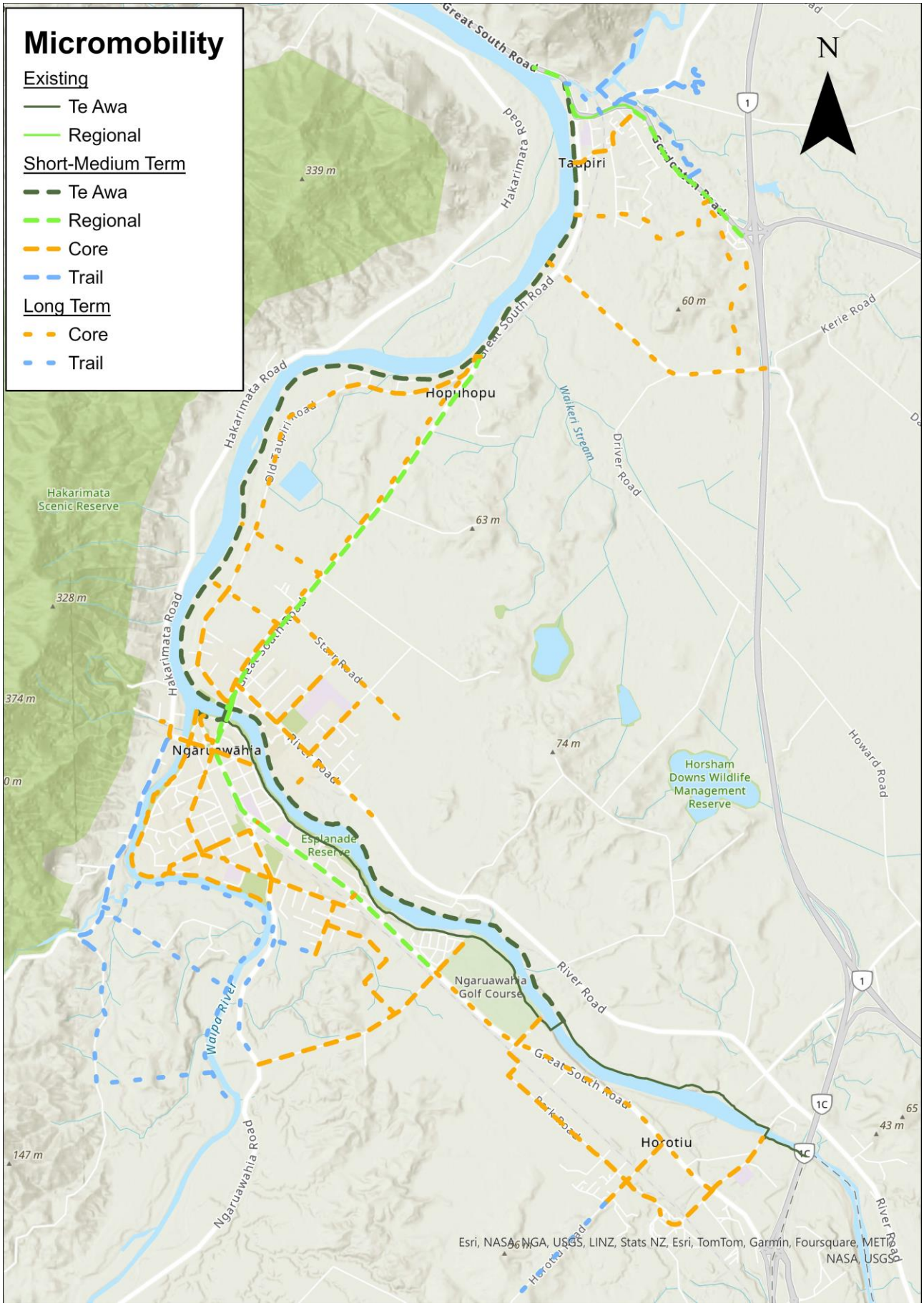

**Table ES1: Route hierarchy and type of facility**

| Route type | Function | Environment | Users | Type of Facility |
|---|---|---|---|---|
| **Te Awa and Regional routes** | Major routes connecting town centres and used for longer journeys | Busier, higher speed arterial roads, or in the case of off-road routes, parallel to them.<br>Routes traverse both urban and rural areas. | Combination of utility trips (trips to education, employment, and other destinations), recreational riders and cycle tourers.<br>Likely to serve high volumes of cyclists. | Off-road routes with little or no conflict with general traffic. May be shared paths or separated walking and cycling paths.<br>On-road routes using the street network where conflict with general traffic is managed. Likely to include both footpaths and cycle infrastructure that are separated from general traffic, with appropriate safe crossing locations.<br>Safe (raised or signalised) crossings at intersections and priority to active modes across driveways. |
| **Core routes** | Second tier "feeder" routes connecting Local routes to Te Awa and Regional routes, and supporting connections to key destinations such as schools | Busy roads with speed limits around 50 km/h.<br>Routes generally within urban areas. | Likely to serve modest volumes of pedestrians and cyclists | Walkable streets with footpaths on both sides of the street, connected by safe crossings at pedestrian desire lines.<br>Cycling infrastructure will be route specific, and may consist of separated cycleways, shared paths, or low-speed low-volume cyclable local streets. Existing streets will generally need to be retrofitted with these facilities to fulfil this role. |
| **Local routes (not mapped)** | Walkable and cyclable local streets, enabling everyday trips to schools, to local destinations, and onward trips about the wider network | Local streets or off-road shortcuts.<br>Generally within urban areas. | Likely to serve lower numbers of pedestrians and cyclists than other routes | Walkable streets with footpaths on both sides of the street, connected by safe crossings at pedestrian desire lines.<br>Dedicated cycle infrastructure not generally provided, but cycling likely to be enabled instead by low traffic volumes in the order of 3,000 vehicles per day or less, and slow traffic speeds of 30 km/h or less.<br>Existing local streets may need to be retrofitted with traffic calming, safer pedestrian crossings, and in some instances wider footpaths to fulfil this role. |
| **Trails** | Recreational | Generally through local reserves and natural spaces | Likely to serve lower numbers of pedestrians and cyclists than other routes | Walking paths, off road paths, multi-use tracks, cycle and mountain biking trails, and bridle/horse riding trails, as per the Connectivity Strategy |

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# 1 INTRODUCTION

Flow has been commissioned by Waikato District Council (WDC) to conduct a transportation study for Ngaaruawaahia, Hopuhopu, Taupiri and Horotiu to understand how future growth until 2050 will affect the existing transport networks in these areas, as well as to undertake a high-level walking, cycling and micromobility assessment for Ngaaruawaahia, Hopuhopu, and Taupiri. Our assessment is divided into two parts: Part A focuses on traffic modelling and road network evaluation, while Part B (this report) assesses Micromobility/Walking/Cycling connectivity within and to/from the townships.

The intention of the assessment is to develop a network of routes for these modes within and connecting each of the 4 townships. The network aligns with each town's existing land use distribution and key destinations, and support future growth enabled by land use zoning. Our assessment has taken into consideration:

- Existing travel patterns and behaviours
- Existing land use development and key destinations such as schools, local centres, areas of employment, community facilities and recreational destinations
- Anticipated future land use development
- The existing transport network
- Anticipated future changes to the transport network.

# 2 THE EXISTING TRANSPORT NETWORKS

## 2.1 Land use and key destinations – Ngaaruawaahia

Figure 1 and Figure 2 show the existing transport network, land use and key destinations in Ngaaruawaahia, and are referenced in the sections that follow.

**Figure 1: Ngaaruawaahia – Aerial view and existing transport network**

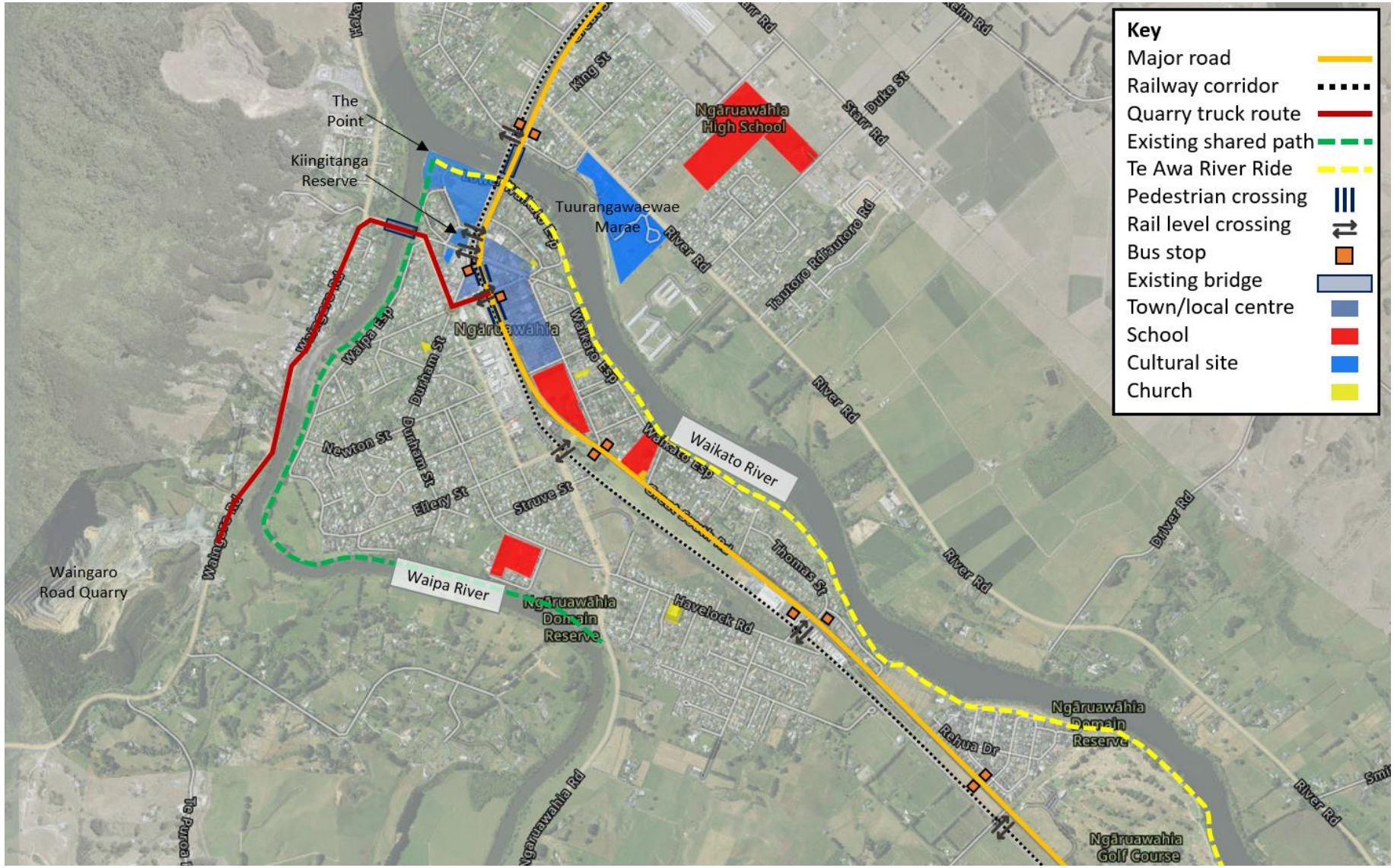
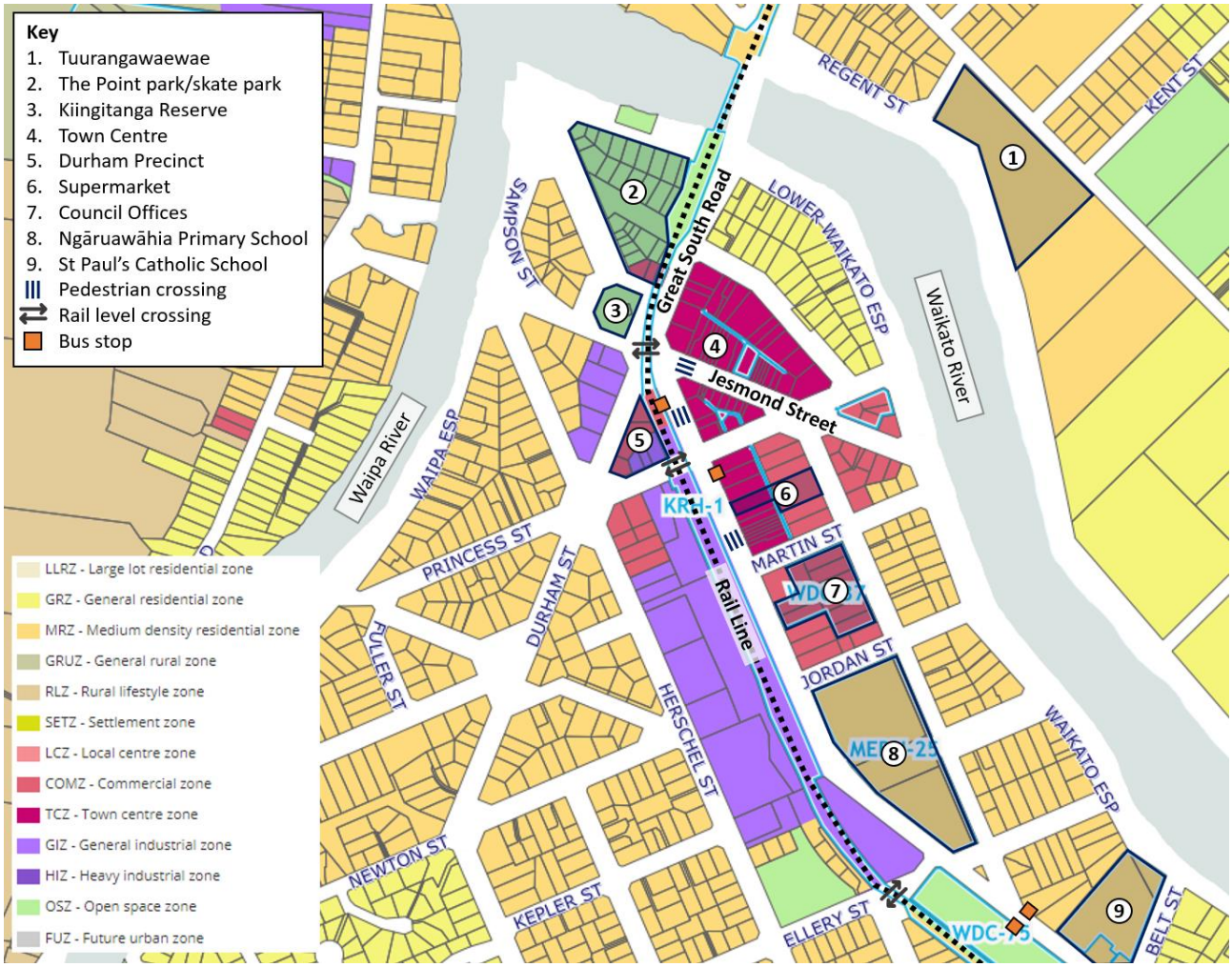


**Figure 2: Ngaaruawaahia Town Centre - Land use and key destinations**[1]




### 2.1.1 Zoning

The majority of Ngaaruawaahia is made up of medium density residential and general residential zones, with a large area of commercial and industrial land use located on Great South Road and the rail line.

### 2.1.2 Town Centre and employment areas

The Ngaaruawaahia Town Centre is the retail, food and beverage and employment centre of Ngaaruawaahia. The town centre generally sits on the eastern side of Great South Road, as shown in Figure 2. Jesmond Street is Ngaaruawaahia's main street, which currently connects to Great South Road via a left-in left-out intersection. A New World supermarket is located further south on Galileo Street, as are the Waikato District Council Offices – a key employer in Ngaaruawaahia.

To the west of Great South Road and the rail line the recently established Durham Precinct houses a variety of businesses, cafes and eateries, as well as a bike and e-bike hire business. There is also a large industrial area providing a variety of jobs.

[1] https://enterprise.mapimage.net/IntraMaps21B/?configId=4773e32d-66d0-4755-a825-a9313c15040d&project=Waikato&module=PDP%20-%20Decisions%20Version

Outside of the town centre there are small commercially zoned blocks to the north on Great South Road and to the west on Waingaro Road which serve as local centres with convenience stores and takeaways.

### 2.1.3 Schools and churches

There are 5 schools in Ngaaruawaahia – four primary schools and one secondary school[2]:

- Ngaaruawaahia High School is located to the north-east of the town centre (see Figure 1) and has a roll of approximately 300 students
- Te Kura Kaupapa Māori o Bernard Fergusson is located adjacent to Ngaaruawaahia with approximately 170 students
- Ngaaruawaahia Primary School and St Paul's Catholic School are located on Great South Road, south of the town centre, and have approximately 80 and 120 students respectively
- Waipa School is located further south on Havelock Road (see Figure 1) with approximately 370 students.

There are 6 churches in Ngaaruawaahia. These can be seen in Figure 1 and include two on Jesmond Street in the town centre and one connected to St Paul's Catholic School.

### 2.1.4 Marae and significant cultural destinations

Tuurangawaewae Marae is located across the Waikato River from the Ngaaruawaahia Town Centre to the north-east. Tuurangawaewae is a place of great significance as the home of Te Kiingitanga movement.

Other significant locations, Tuurangawaewae House and Kiingitanga Reserve are located on Eyre Street to the west of the rail line, south of The Point reserve.

Other Maaori Sites of Significance (MSOS) and Maaori Areas of Significance (MAOS) within Ngaaruawaahia include:

- Historic borrow pits at 5851 Great South Road
- Kaitotehe and Tukupoto Paa Hakarimata Road
- Te Pepepe Paa Hakarimata Road
- Puke-i-aahua Paa and Gardens Havelock Road.

## 2.2 Land use and key destinations – Taupiri

Figure 3 and Figure 4 show the existing transport network, land use and key destinations in Taupiri, and are referenced in the sections that follow.

[2] Information regarding school rolls obtained from Education Counts: https://www.educationcounts.govt.nz/find-school?&region=3&district=13#fas-search-section-specific

**Figure 3: Taupiri – Aerial view and existing transport network**

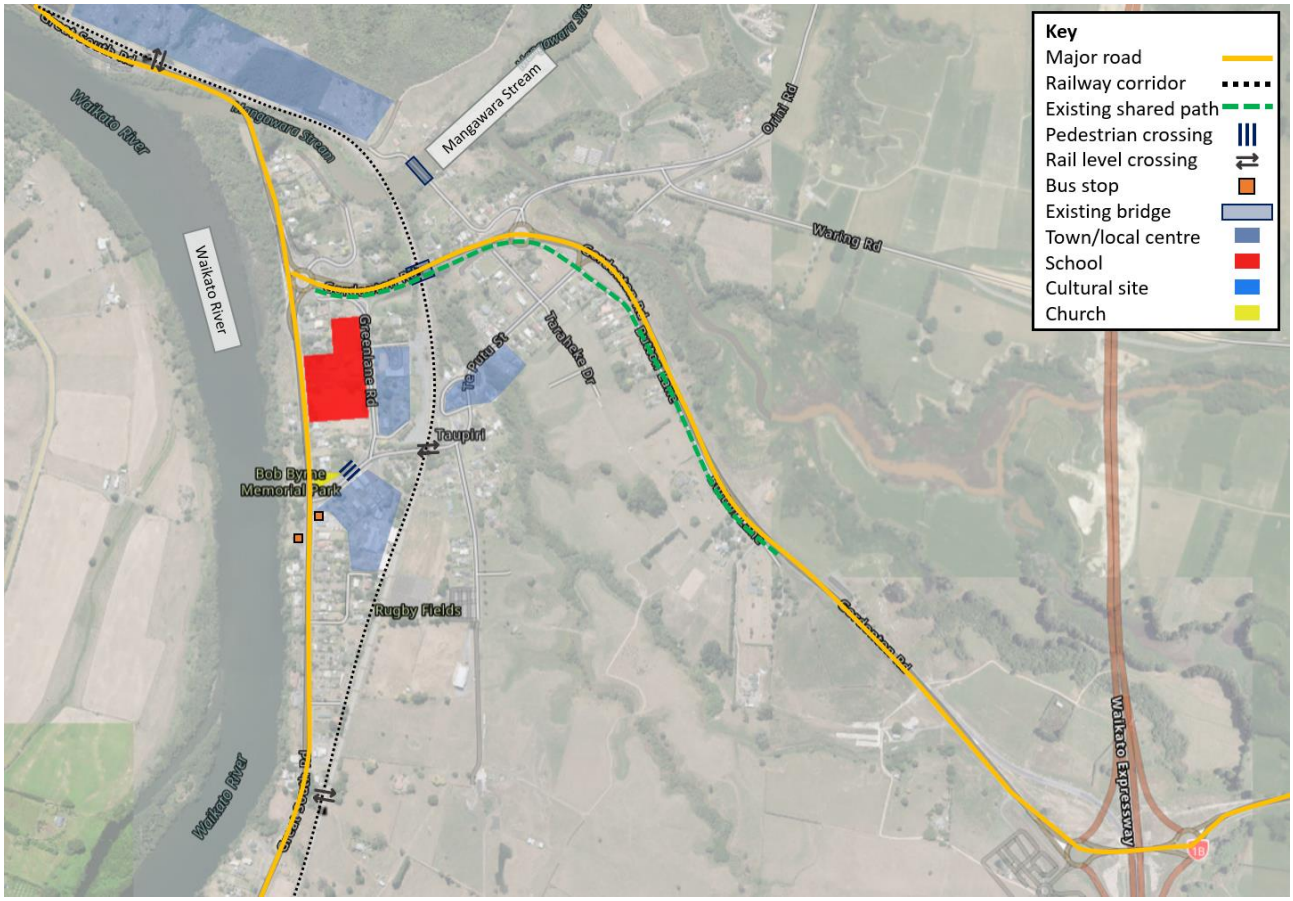
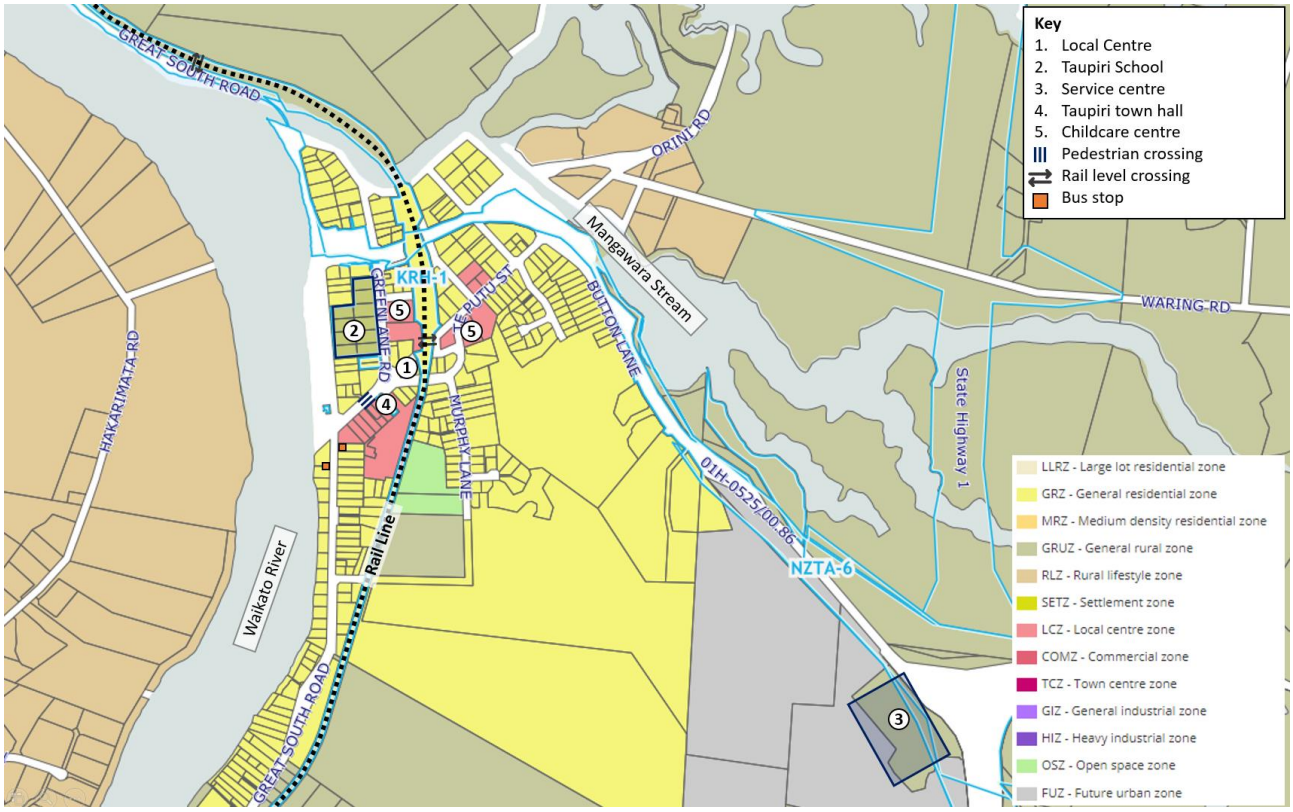


**Figure 4: Taupiri – Land use and key destinations**




### 2.2.1 Zoning

Taupiri is largely zoned for general residential use, with some land zoned as a local centre on Te Putu Street. The area around Taupiri is generally zoned for rural use, with a large section of land to the southwest zoned for Future Urban use (near the motorway interchange). We note that this zoning is currently under appeal, and may become live zoned in the short term.

### 2.2.2 Local Centre and employment areas

The Taupiri Local Centre is spread along Te Putu Street, and features a dairy, an early childhood education centre and a tavern.

Taupiri motorway interchange and service centre, located around 2.5 km southwest of the local centre, has a range of services targeted at users of State Highway 1, including a petrol station, a café and several fast-food restaurants.

### 2.2.3 Schools and churches

Taupiri School is located between Great South Road and Green Lane Road and is the only school in Taupiri with around 80 students. There is likewise one church in Taupiri at the intersection of Great South Road and Te Putu Street. There are currently 2 childcare centres within Taupiri, both within the centre of the township.

### 2.2.4 Marae and significant cultural destinations

Taupiri Marae is around 1.5 km south of Taupiri local centre near the intersection of Great South Road and Kainui Road, as indicated on Figure 3. Taupiri Maunga and Urupa are both located immediately north of the township, on the north bank of the Waikato River and Mangawara Stream. The Maunga and Urupa are both of very high significance to iwi.

## 2.3 Land use and key destinations – Hopuhopu

Figure 5 and Figure 6 show the existing transport network, land use and key destinations in Hopuhopu.

**Figure 5: Hopuhopu – Aerial view and existing transport network**

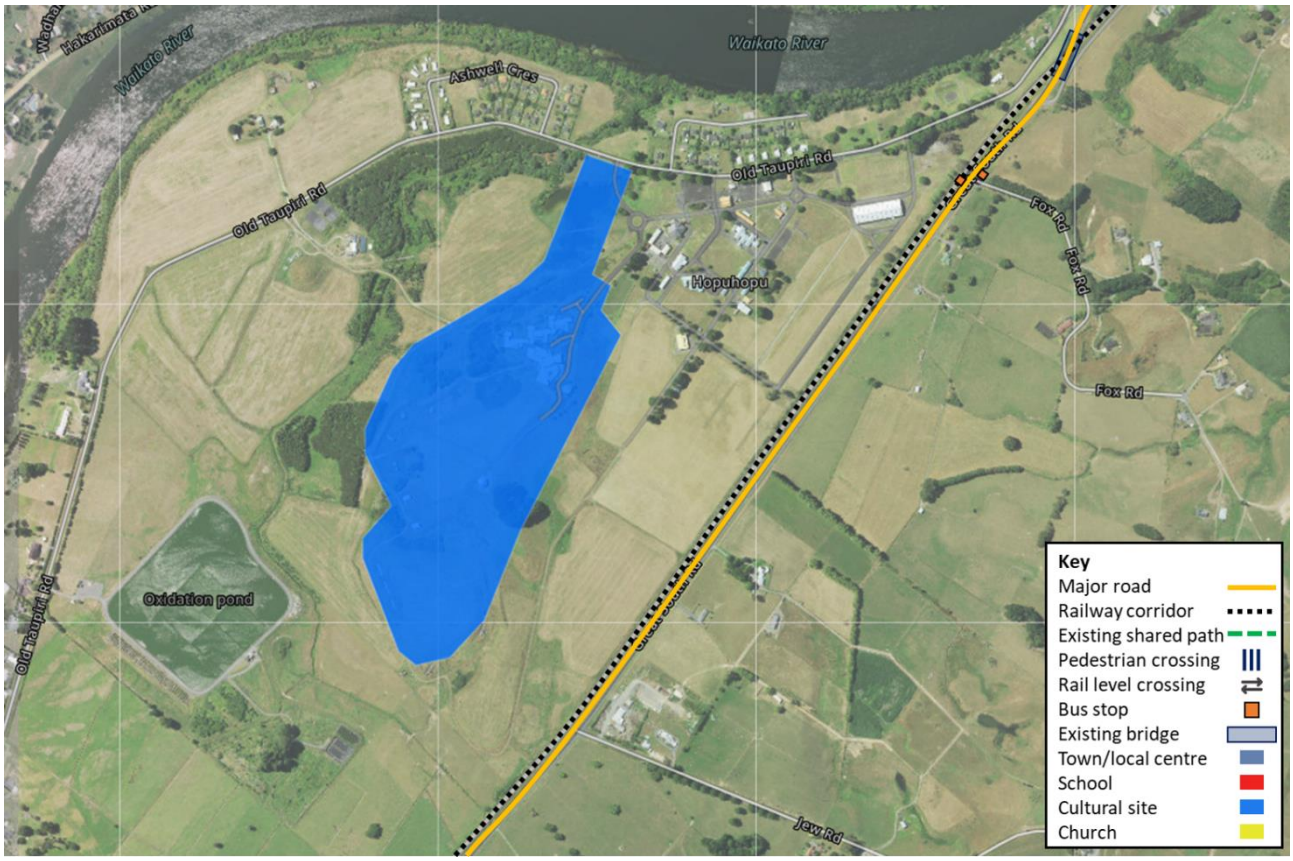
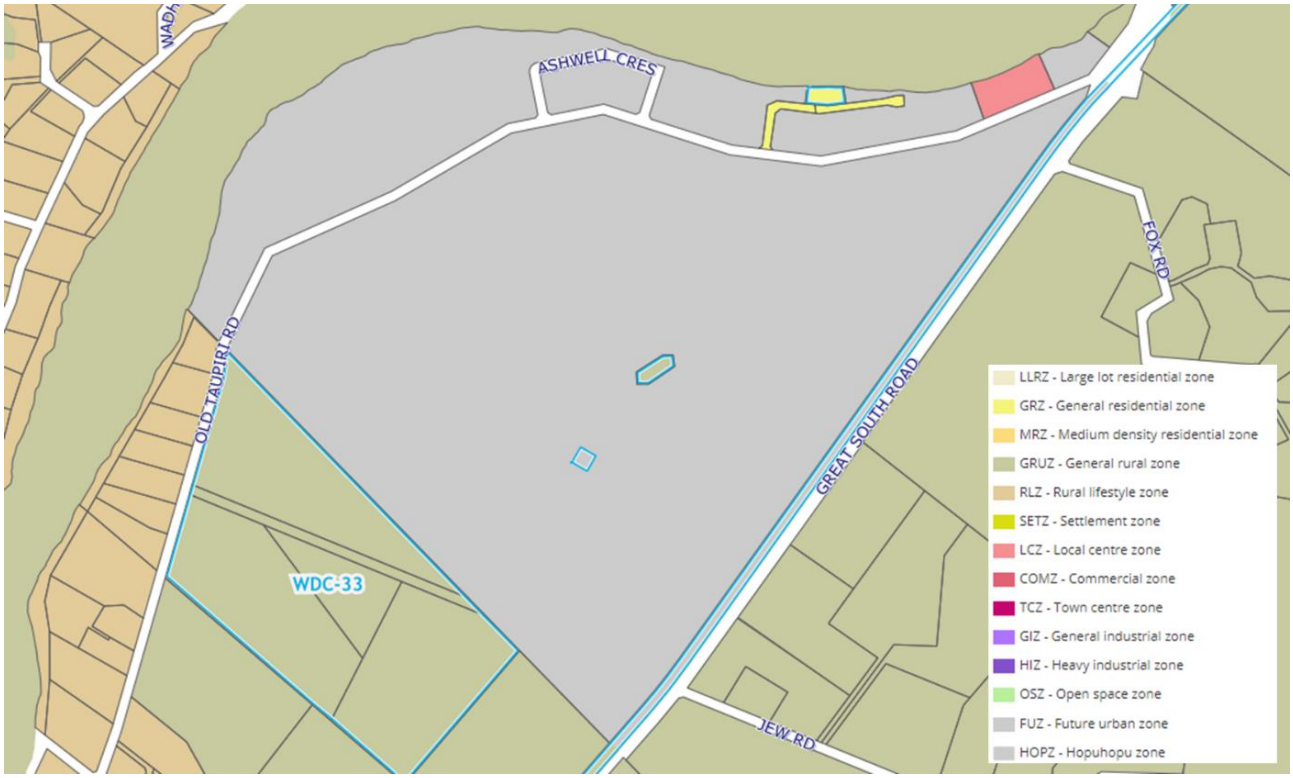


**Figure 6: Hopuhopu – Land use and key destinations**




### 2.3.1 Zoning

Hopuhopu is a former army base which was returned to Waikato-Tainui in 1993. A special purpose zone (HOPZ Hopuhopu Zone) has been established to enable Waikato-Tainui to promote their spiritual, educational, cultural, social, economic and environmental interests.[3] There is a small area of Local Centre zone on Old Taupiri Road, near the intersection with Great South Road.

### 2.3.2 Marae and significant cultural destinations

A large section of Hopuhopu is occupied by the Waikato-Tainui Hopuhopu Innovation Hub, a large precinct with a range of existing and planned functions including providing papakāinga, a native plant nursery, a sports and recreation precinct and a college for research and development.[4]

## 2.4 Land use and key destinations – Horotiu

Figure 7 and Figure 8 show the existing transport network, land use and key destinations in Horotiu.

[3] https://www.waikatodistrict.govt.nz/docs/default-source/your-council/plans-policies-and-bylaws/plans/district-plan-review/decisions/proposed-waikato-district-plan-(decisions-version)/part-3-area-specific-matters/special-purpose-zones/part-3_18-hopz-hopuhopu-zone.pdf?sfvrsn=57e59ac9_2
[4] https://waikatotainui.com/what-we-do/hopuhopu-innovation-hub/

**Figure 7: Horotiu – Aerial view and existing transport network**

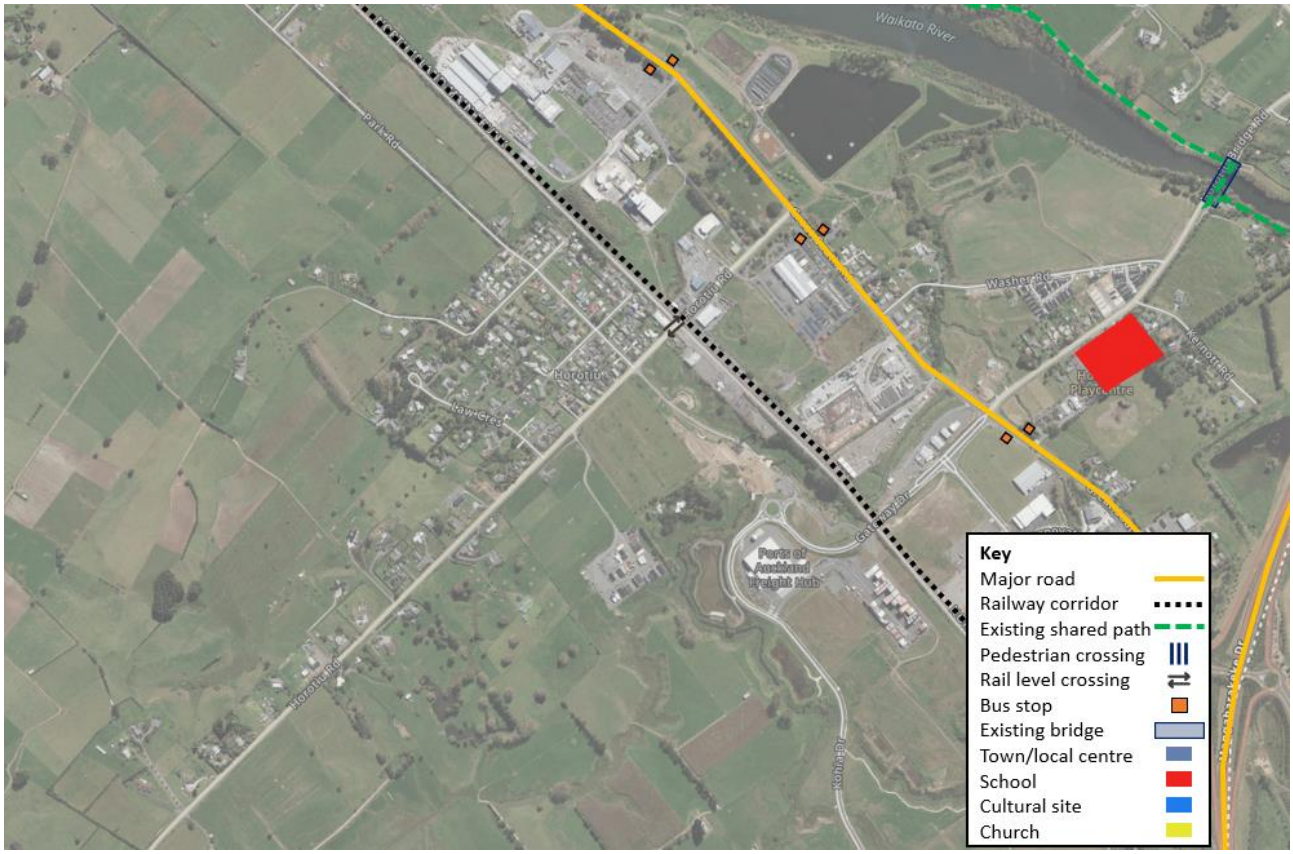
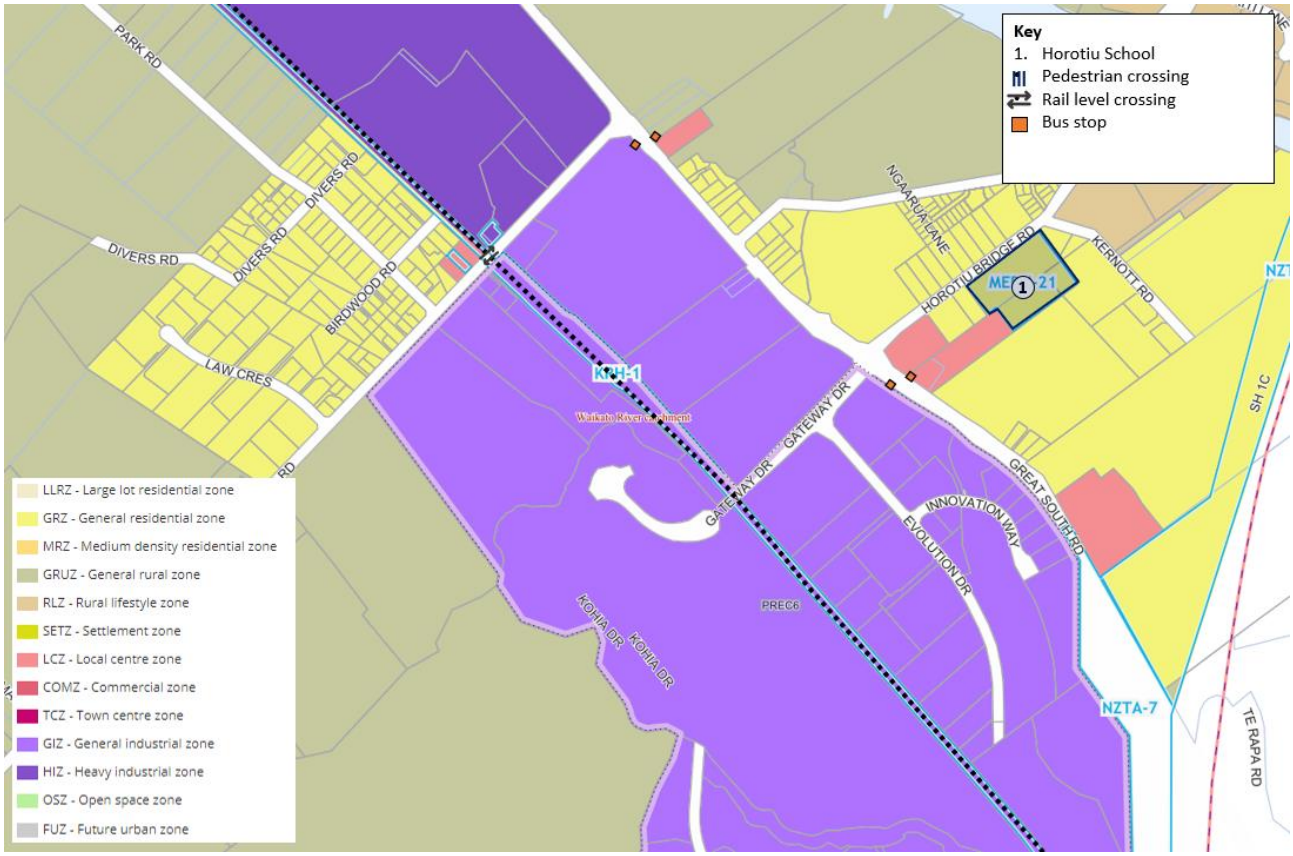


**Figure 8: Horotiu – Land use and key destinations**




### 2.4.1 Zoning

Horotiu consists of a mixture of existing residential and industrial zones, with a large undeveloped but live zoned land to the east and south. There are 4 small scale Local Centre zones strung out along Great South Road, and on Horotiu Road. Notably, there is an existing primary school on Horotiu Bridge Road, but this school is severed from the existing residential development by both Great South Road and the rail corridor.

## 2.5 Public transport

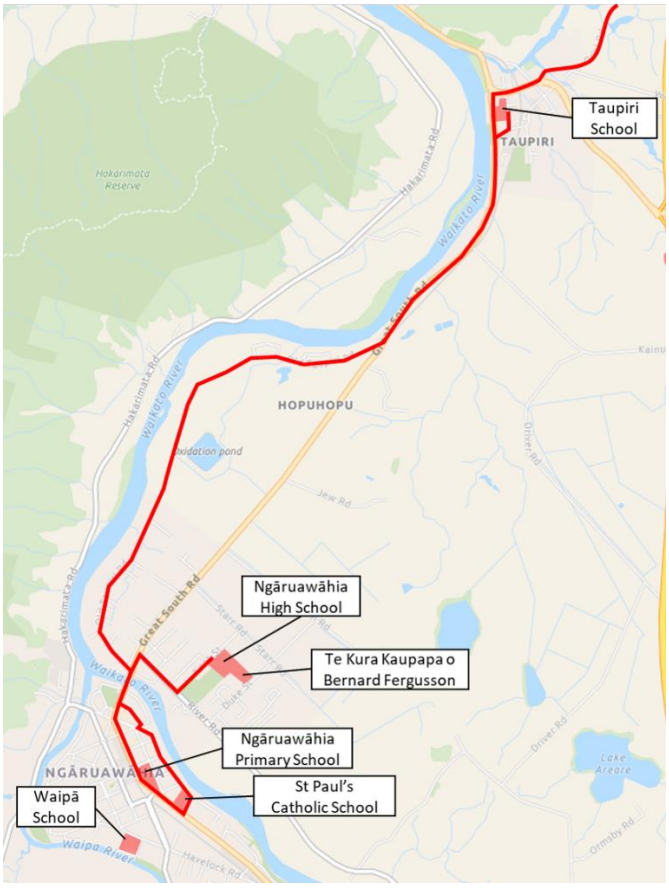
Ngaaruawaahia, Hopuhopu, Taupiri and Horotiu are served by one public bus route and one school bus route, shown in Figure 9 and Figure 10 respectively.

The Northern Connector route (route 21) operates between Huntly and Hamilton seven days a week, with one daily service running to Pukekohe on weekdays. The Northern Connector runs approximately once every hour through the day, and approximately every 20-30 minutes at peaks. The route follows Great South Road through Taupiri, Hopuhopu, Ngaaruawaahia and Horotiu, stopping in Taupiri Town Centre (see Figure 3), near Hopuhopu at Fox Road, at 5 locations in Ngaaruawaahia (see Figure 1) and at Horotiu Road.

A single school bus route serves Ngaaruawaahia and Taupiri, travelling south from Taupiri School on Great South Road, before turning onto Old Taupiri Road and travelling through Hopuhopu to Ngaaruawaahia, where it circulates past Ngaaruawaahia Primary School and St Paul's Catholic School before travelling north on Great South Road to Ngaaruawaahia High School.

**Figure 9: Northern Connector public bus route**

**Figure 10: Ngaaruawaahia and Taupiri school bus route**




## 2.6 Walking and cycling networks

### 2.6.1 Existing walking and cycling facilities

Existing walking and cycling facilities in Ngaaruawaahia and Taupiri are shown on Figure 1 and Figure 3.

The Te Awa River Ride, shown in Figure 11 below, is a 65km concrete path connecting Ngaaruawaahia to Lake Karapiro via Hamilton. The trail begins at The Point in Ngaaruawaahia and follows the Waikato River south along the edge of Ngaaruawaahia, crossing the river at the recently completed Perry Cycle Bridge.

The Te Awa River Ride is predominantly a recreational cycle route but can potentially also serve commuter trips into Ngaaruawaahia from the south, and from Ngaaruawaahia (and Taupiri and Hopuhopu) to Hamilton (approximately 20km, or 1 hour by bike).

There is also a walking/cycling path running along the Waipā River to the west of Ngaaruawaahia, again starting at The Point and running south along the edge of the town past Waipā School where it meets Ngaaruawaahia Road.

**Figure 11: Te Awa River Ride - Ngaaruawaahia to Karapiro**

### 2.6.2 Barriers to walking and cycling

There are a number of physical barriers which limit walking and cycling accessibility within Ngaaruawaahia, Taupiri, Hopuhopu and Horotiu:

- Great South Road is a major arterial road with over 17,000 vehicles/day. Great South Road runs through the centre of Taupiri, Ngaaruawaahia and Horotiu, causing severance through all three towns.
    - Within Ngaaruawaahia, two pedestrian crossings over Great South Road are provided within the town centre, approximately 180m from one another, but these are not at intersections and do not align with crossing points over the rail corridor.
    - Within Taupiri, Great South Road severs the bulk of the township from the Waikato River, the northbound bus stop, and businesses on the west side of the road. There are currently no safe, accessible crossing points of Great South Road within Taupiri
    - In Horotiu, Great South Road severs Horotiu School and the Waikato River from the majority of the existing residential area. Safe and accessible crossings are available at the

Gateway Drive/Horotiu Bridge Road intersection, but not at the Horotiu Road intersection.

- The rail corridor runs adjacent to Great South Road through Ngaaruawaahia, Taupiri, Hopuhopu and Horotiu, causing further severance.
  - In Ngaaruawaahia, the rail corridor severs the town centre from the residential area to the west. There are two level crossings provided for pedestrians within the town centre, approximately 150m apart, but as mentioned above these do not line up with pedestrian crossings over Great South Road. Level crossings also present a trip or slip hazard, particularly for cyclists.
  - Within Taupiri, the rail corridor is crossed by two grade separated road crossings, each with pedestrian facilities. However, the southern of these, Te putu Street, has a very narrow footpath that is not fully accessible for some users and does not provide a safe route for cyclists.
  - In Horotiu, the existing Horotiu Road level crossing does not have pedestrian or cyclist facilities.
- Ngaaruawaahia town centre is situated between the Waikato and Waipa Rivers. While the two rivers provide opportunities for recreational pathways (such as the Te Awa River Ride) they also cause severance between the town centre and some of the surrounding trip generators, including Tuurangawaewae Marae, schools and residential areas. Opportunities to cross the rivers are very limited, particularly for pedestrians and cyclists, with only narrow pathways provided on the Great South Road bridge over the Waikato River and the Waingaro Road bridge over the Waipa River. There are no other bridges in the area apart from the Perry Cycle Bridge over the Waikato River 4km further south.
- The Waingaro Quarry is located southwest of Ngaaruawaahia on the opposite side of the Waipa River. Heavy vehicles travelling to and from the quarry pass through Ngaaruawaahia, travelling via the Waingaro Road bridge, Herschel Street and Princess Street to access Great South Road. Care must be taken to ensure proper separation between pedestrians and cyclists and heavy vehicles, particularly at intersections along this route.

### 2.6.3 Safety issues

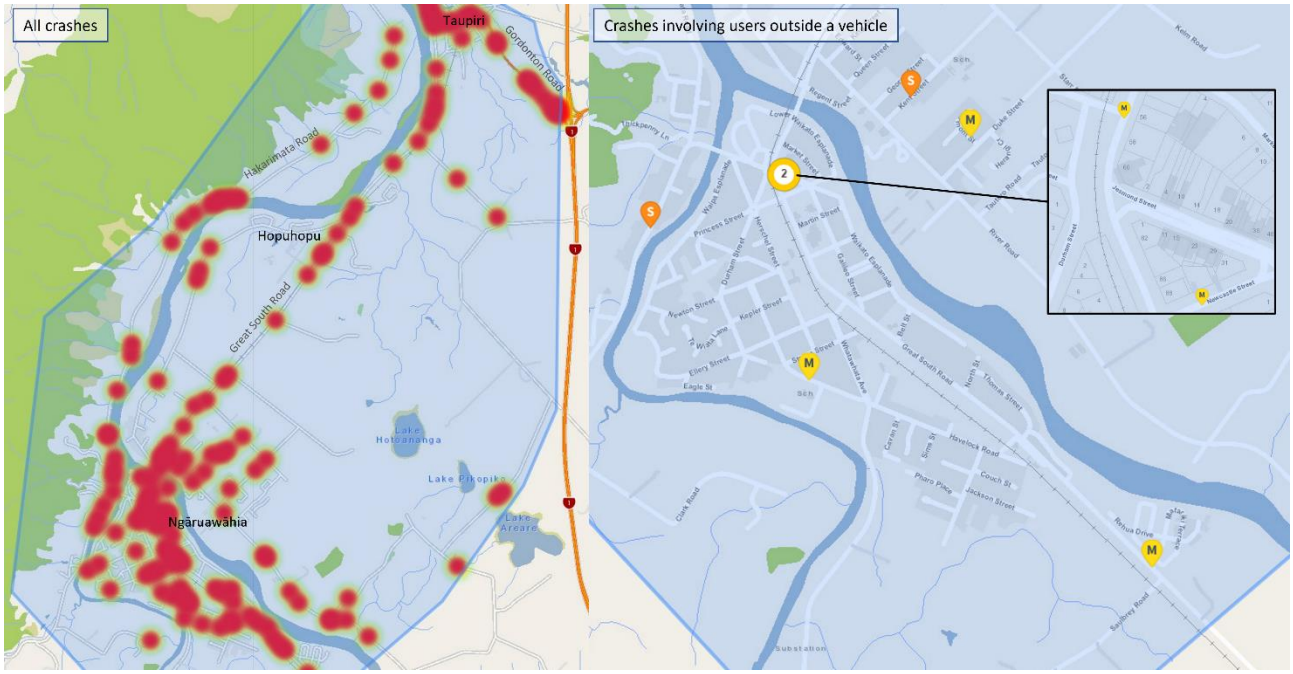
In order to identify safety issues in the project area we have assessed all reported crashes between 2017 and 2022 using Waka Kotahi NZ Transport Agency's Crash Analysis System (CAS). A total of 295 crashes were reported in the area, of which 22 were fatal or serious and the remainder were minor or non-injury crashes. Our key observations include:

- a large portion of reported crashes were located on Great South Road, Hakarimata Road and Gordonton Road. Great South Road in particular had a lot of crashes in both urban and rural areas
- serious crashes tended to occur in rural areas where speed limits are higher. Almost all of the serious crashes reported in urban areas happened on Great South Road

- the single site with the most reported crashes was the intersection of Great South Road and Newcastle/Princess Street, where around 15 crashes occurred over the period, although none of these were serious
- only 7 reported crashes involved road users outside a vehicle (pedestrians or cyclists), of which 2 were serious. All of these crashes occurred in Ngaaruawaahia, and 3 involved users on push scooters
- only 1 crash with a train was reported over the period, which occurred at the Princess Street level crossing

Figure 12 shows the locations of all reported crashes (left) and all reported crashes involving road users outside of a vehicle (right).

**Figure 12: Ngaaruawaahia, Taupiri and Hopuhopu crash locations 2017-2022 (CAS)**




## 2.7 Historical travel patterns – 2018 Census

Figure 13 and Figure 14 show where people who live and work in Ngaaruawaahia (shown in green in Figure 13) and the Taupiri-Lake Kainui area (shown green in Figure 14) commute to and from, and their main journey to work mode, as reported in the 2018 Census. We note that the Statistical Area 2 unit for Taupiri-Lake Kainui encompasses a large rural area to the southeast of Taupiri, so the data for Taupiri reflects travel patterns for this area as well as the town itself.

Our key observations from this data are as follows:

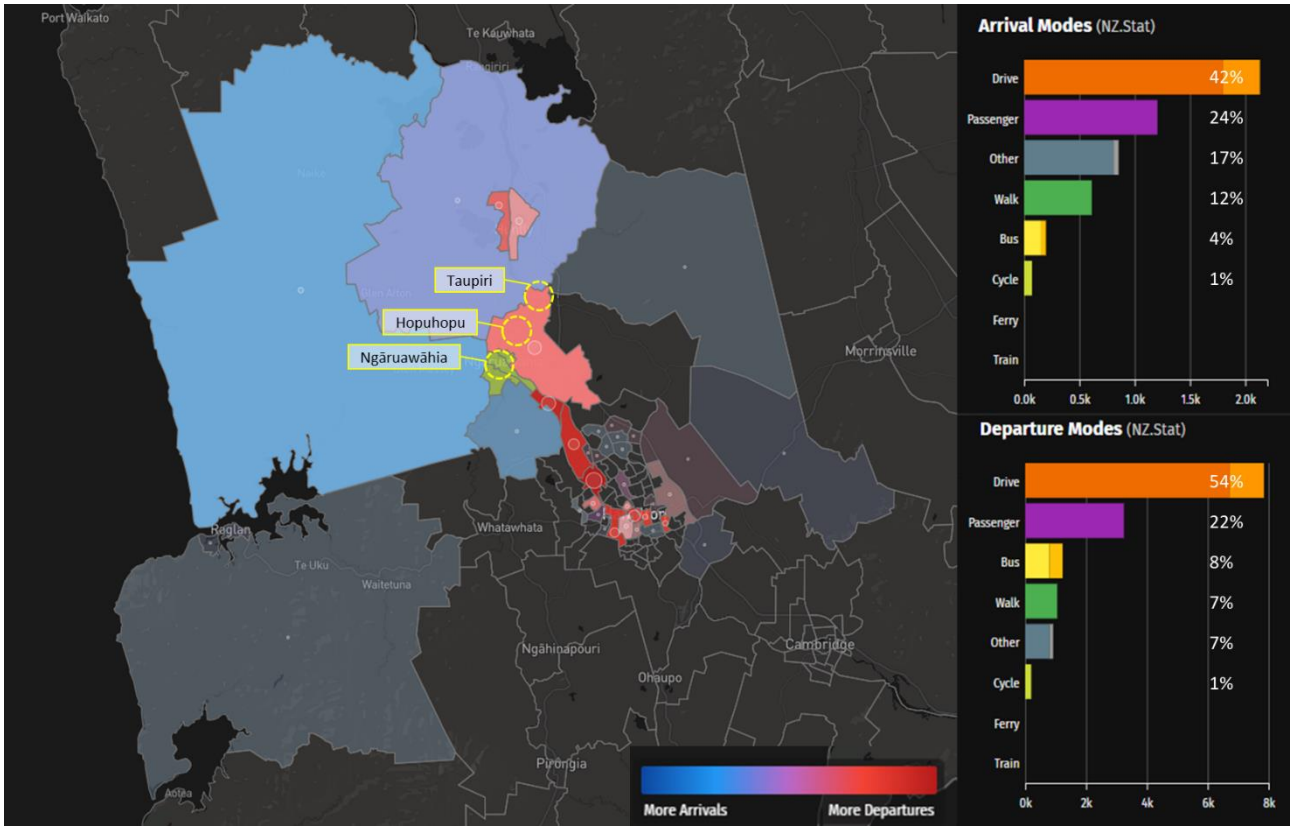
- roughly 1,000 Ngaaruawaahia residents (41%) commute within Ngaaruawaahia. Around half of these (504 people) are students. Roughly 260 people (37%) commute within the Taupiri-Lake Kainui area, of whom 57 are students

- 59% of people from Ngaaruawaahia and 73% of people from Taupiri-Lake Kainui commute to other areas. The majority of these commutes are towards Hamilton to the southeast
- A substantial number of people commute between Ngaaruawaahia and Taupiri, or travel from one area through the other to get to their destination (eg Ngaaruawaahia to Huntly via Taupiri)
- The majority of commuter trips to and from both areas are made by private vehicle (either as a driver or a passenger). 7% of commuter trips by Ngaaruawaahia residents are made by walking, compared to only 2% in Taupiri-Lake Kainui. Only 1% of people in either area make their commute trips by bike.

Our conclusions from this data include the following:

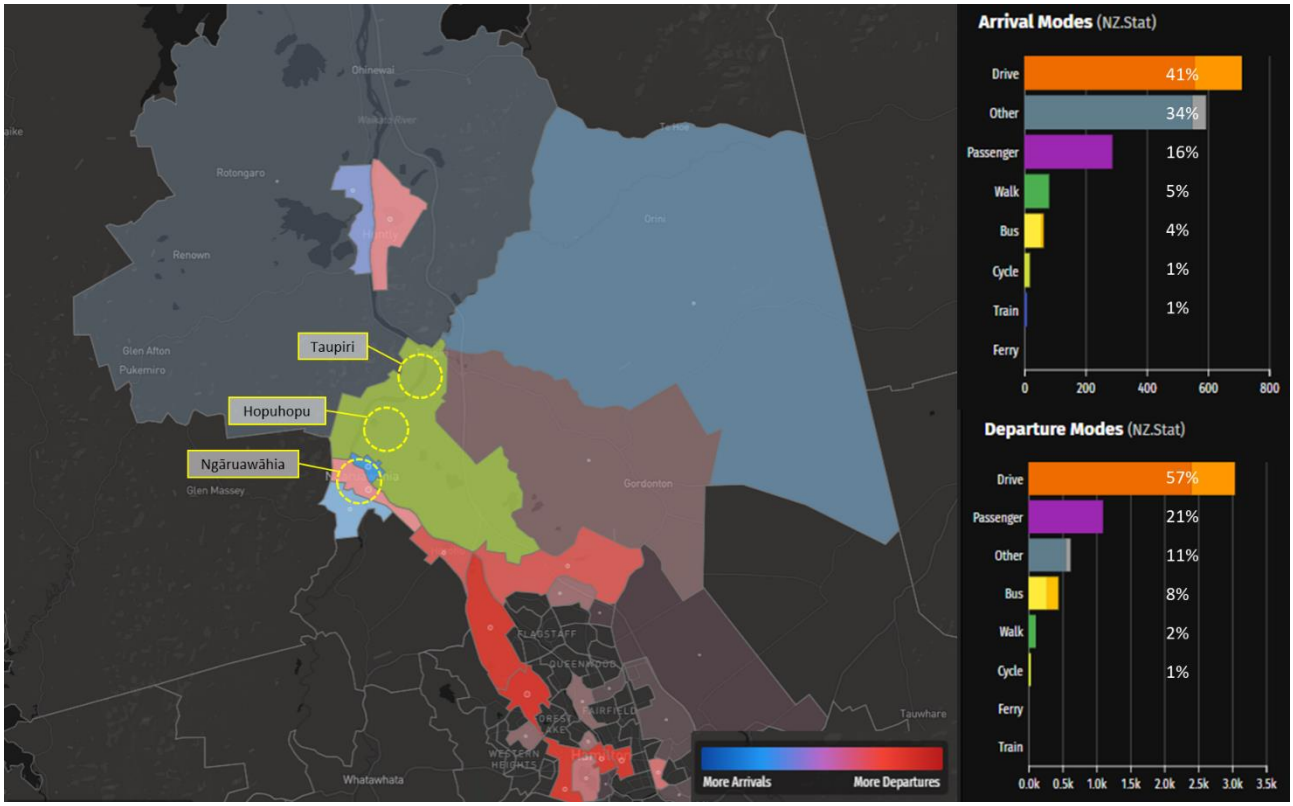
- a large portion of people live and work/study in the same area and are likely to make short journeys that are easily walkable or cyclable provided safe, convenient facilities are provided. This is particularly the case for Ngaaruawaahia, which is a smaller area with more urban land use
- a number of people commute between Ngaaruawaahia and Taupiri (around 7.5km) and Huntly further north (around 15km). These journeys could be made by bike if appropriate facilities were provided between Ngaaruawaahia, Hopuhopu and Taupiri
- many commuters also travel south from Ngaaruawaahia and Taupiri to Te Rapa and Hamilton, roughly following the Waikato River. Some of these journeys could potentially be made by bike using the Te Awa River Ride.

**Figure 13: Arrivals to and departures from Ngaaruawaahia for work and education (2018 Census)[5]**




[5] Statistics New Zealand. (2020). https://commuter.waka.app/

**Figure 14: Arrivals to and departures from the Taupiri-Lake Kainui area for work and education (2018 Census)[6]**




# 3 THE PROPOSED TRANSPORT NETWORK

## 3.1 Land use changes

Refer to the accompanying report "Ngaaruawaahia, Taupiri, Hopuhopu and Horotiu – Transport Assessment"[7], also prepared by Flow, for information on future land use changes.

## 3.2 Future public transport/rapid transit

Refer to the accompanying report "Ngaaruawaahia, Taupiri, Hopuhopu and Horotiu Transport Assessment", also prepared by Flow, for information on future public transport changes.

## 3.3 Proposed walking and cycling improvements

The Waikato District Council Connectivity Strategy 2023 (the Connectivity Strategy) outlines existing and proposed walking and cycling trails in the Waikato District. The Connectivity Strategy mapped out recreational trails that provide access to nature and link green spaces, but also mapped key urban connections linking destinations. Trails in the strategy play a role in providing wider connectivity

[6] Statistics New Zealand. (2020). https://commuter.waka.app/
[7] Flow Transportation Specialists. (November 2023). Ngaaruawaahia, Taupiri, Hopuhopu and Horotiu– Transport Assessment.

between the Ngaaruawaahia Town Centre and the surrounding area. Figure 15 (overleaf) provides an overview of the existing and proposed trails in the vicinity of Ngaaruawaahia and Taupiri.

Existing trails in the townships include the Te Awa River Ride running along the western bank of the Waikato River, footpaths along Great South Road, portions of trail along the Waipa River and several short sections of path in residential areas of Ngaaruawaahia.

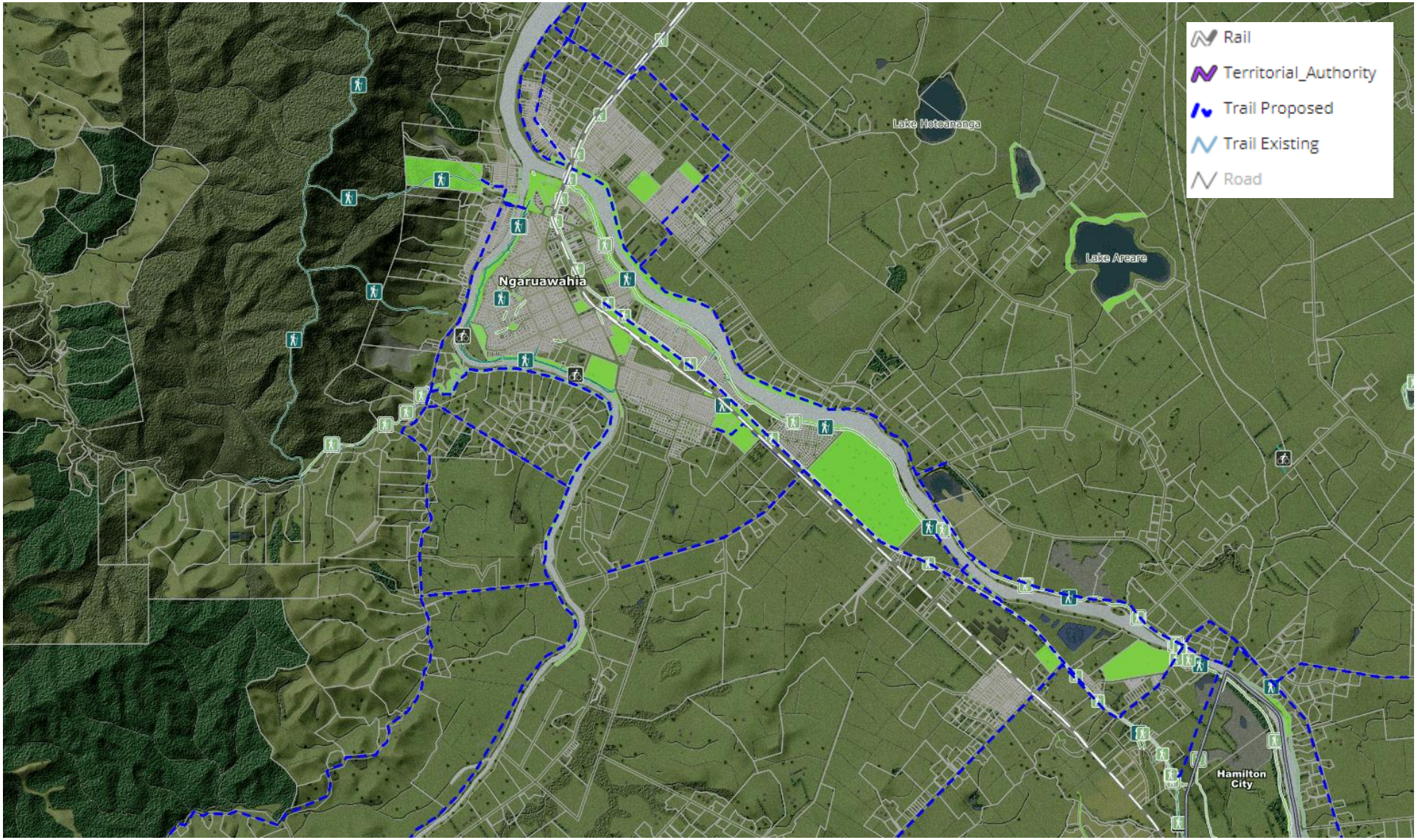
A range of new trails are proposed in the Connectivity Strategy, documented below in Table 1. Only three of the proposed routes in this area were considered high priority.

**Table 1: Waikato District Council Connectivity Strategy 2023 - New routes proposed near four townships**

| Number | Route | Type | Priority |
|---|---|---|---|
| 254 | Taupiri river walk | | High |
| 255 | Ngaaruawaahia River East | | High |
| 256 | Waipa River 1 | | Low |
| 257 | Waipa River 2 | | High |
| 276 | Waipa River | | High |
| 298 | Ngaaruawaahia High | | High |
| 300 | Ngaaruawaahia Te Puroa Road Clark Road | | Medium |
| 301 | Ngaaruawaahia Duke Jacobs Lane | | Medium |
| 314 & 326 | Huntly Taupiri link | | High |
| 315 | Waingaro Road footpath | | High |
| 392 | Te Kowhai – Horsham Downs connection | Multi-use | High |
| 395 | Taupiri – Cemetary to Mangawara Bridge | Multi-use | Medium |
| 396 | Great South Road to Te Awa | Multi-use | Medium |
| 408 | Button lane cycle extension | Multi-use | Low |
| 409 | Mangawara Stream | Multi-use | Medium |
| 424 | Connection to paa | Multi-use | High |
| 425 | Great South Road to service centre | Footpath | Low |
| 428 | Ngaaruawaahia to Taupiri connection | Multi-use | Medium |
| 429 | Jackson to Ngaaruawaahia Road | Footpath | High |
| 430 | Great South Road south | Multi-use | Medium |
| 432 | Ngaaruawaahia to Horotiu | Multi-use | Medium |
| 460 | Hakarimata to town | Multi-use | High |

**Figure 15: Waikato District Council Connectivity Strategy 2023 - Existing and proposed trails in Taupiri and Hopuhopu**

**Figure 16: Waikato District Council Connectivity Strategy 2023 - Existing and proposed trails in Ngaaruawaahia and Horotiu**



## 3.4 Other proposed transport improvements

A number of other transport improvements are proposed in the project area, and we summarise those improvements and their proposed staging in Table 2 below. Further details on these improvements and others, as well as the approximate proposed staging, are documented in the Ngaaruawaahia, Taupiri, Hopuhopu and Horotiu – Transport Assessment report.

**Table 2: Proposed investments in the wider transport network**

| Short-term (0 – 5 years) | Medium term (5 – 15 years) | Long-term (15+ years) |
|---|---|---|
| **INTERSECTIONS** | | |
| Upgrade the existing **Great South Road intersection with Jesmond Street** to a roundabout to deliver connection to the town centre. | Upgrade the **Jesmond Street/Newcastle Street** intersection to manage cyclist and pedestrian safety and reduce speeds as well as deliver connection to the town centre | |
| Upgrade the Great South Road intersection with Old Taupiri Road (south) to roundabout | Upgrade the Great South Road intersection with River Road to roundabout | |
| Upgrade Princess Street/GSR intersection | Upgrade the **Market Street and Great South Road intersection** to reduce speeds through this intersection to help support the low-speed zone south of the intersection | |
| **LEVEL CROSSINGS** | | |
| Upgrade the pedestrian level crossing at **Jesmond Street** during the upgrade of the Jesmond Street intersections. | Upgrade the level crossing at **Old Taupiri Road, unless** north Ngaaruawaahia Hopuhopu is developed earlier | Upgrade level crossing at **Kainui Road, unless** the Taupiri development takes place prior. Then upgrade along with Taupiri development. |
| Closure of the **Horotiu Road** and level rail crossing following the completion of Kohia Drive, encouraging use of the grade separated crossing of the NIMT at Gateway Drive | | Close the level crossing at **Wallbank Road**, once growth cell is developed, providing access to Old Taupiri Road |
| Closure of the **Waingaro Road** level rail crossing to formalise the required heavy vehicle movements from the Waingaro Road Quarry and encouraging use of Princess Street (requires Princess Street/GSR intersection upgrade) | Upgrade the **Havelock Road** level crossing | Monitoring and review safety at the **Havelock Road** level crossing |
| Upgrade the level crossing at **Princess Street** when the level crossing at Waingaro Road, is closed | Upgrade the level crossing at **Saulbrey Road** | Monitoring and review safety at the **Saulbrey Road** level crossing |

**Table 2: Proposed investments in the wider transport network**

| Short-term (0 – 5 years) | Medium term (5 – 15 years) | Long-term (15+ years) |
|---|---|---|
| **NGAARUAWAAHIA TOWN CENTRE – OTHER IMPROVEMENTS** | | |
| Create a defined **entryway/town centre gateway** at the northern and southern extents with kerb buildouts, raised platforms and visual cues | Provide an **improved walking and cycling connection** across Great South Road and the NIMT to connect east and west Ngaaruawaahia | |
| Introduce a **speed limit of 30 km/h** for key town centre streets supported with engineering features | Provide an **improved walking and cycling connection** along Great South Road and across the Waikato River | |
| Provide a **low-speed environment** (30 km/h) within the town centre, including on sections of Great South Road, Market Street and Martin Street. | Traffic calming measures to be implemented on **Herschel Street** to discourage rat running via Herschel Street | |
| Reroute the over-dimension vehicle route along Great South Road | | |
| Undertake safety improvements to **existing pedestrian crossing points** of Great South Road within the town centre, either signalised crossings or raised zebra crossings. | | |
| Interim traffic calming measures on sections of Great South Road through the town centre, using **tactical urbanism** to provide affordable yet effective traffic calming measures that support the low-speed limits, the low-speed environment | Provide more permanent traffic calming measures | |
| **TAUPIRI TOWN CENTRE** | | |
| Introduce a **lower speed limit** along Te Putu Street and Greenlane Road | | |
| Introduce some **raised platforms** to support lower speeds, especially at busier pedestrian crossing locations | | |
| **PUBLIC TRANSPORT** | | |
| Work with WRC on infrastructure improvements to support bus services along Great South Road. | Work with WRC to deliver Bus Rapid Transit (BRT) to support land use development | Reinstate the train station at Ngaaruawaahia to align with the Hamilton to Auckland (H2A) Corridor Plan. |

**Table 2: Proposed investments in the wider transport network**

| Short-term (0 – 5 years) | Medium term (5 – 15 years) | Long-term (15+ years) |
|---|---|---|
| | | Upgrade the existing bus stops and enable the rapid transit route, aligning with the Hamilton Waikato Metropolitan Spatial Plan (HWMSP). |

In addition to the above, Waikato District Council are investigating options to provide a new walking and cycling bridge across the Waikato River at Ngaaruawaahia, using the disused bridge piers of the former rail bridge.

# 4 RECOMMENDED ACTIVE MODE NETWORKS

## 4.1 Our approach to route hierarchies and intervention priorities

Our approach to developing the recommended active modes and micromobility network is as follows:

1. Identify and map key trip generators/attractors that need to be connected (see Sections 2.1 to 2.5)
2. Identify and map existing walking and cycling facilities and barriers to walking and cycling (see Section 2.6)
3. Develop an active mode hierarchy according to the following scale:
    - The **Te Awa River Ride** along the Waikato River, that provides a north-south spine for the region as well as a primary recreational route
    - **Regional connections** that provide connectivity between Ngaaruawaahia, Hopuhopu and Taupiri, which form the spine of the network
    - **Core routes** that provide the main links between key trip generators/attractors
    - **Local routes** to connect provide access to individual homes and destinations. We have not mapped local routes, as all local streets need to be walkable and cyclable, to fulfil this role in the network
    - **Trails** that provide walking and cycling routes through public reserves and natural spaces.
4. Prioritise interventions according to:
    - **Existing routes** that already align with best practice for walking, cycling and micromobility
    - **Short to medium term interventions** that address an immediate concern or are fundamental to the network, and
    - **Longer term interventions** that will be enabled or justified by future changes in land use or changes to the wider transport network.

Table 3 outlines the characteristics and types of walking and cycling facilities we would expect to see on each of the different routes from the hierarchy. In general, designs should target a Quality of Service (QoS) 1 or 2 in line with Auckland Transport's practitioner's guide for evaluation QoS for cycle facilities.[8]

[8] https://at.govt.nz/media/1973340/cycle-facilities-quality-of-service-evaluation-guide.pdf

**Table 3: Route hierarchy and type of facility**

| Route type | Function | Environment | Users | Type of Facility |
|---|---|---|---|---|
| **Te Awa and Regional routes** | Major routes connecting town centres and used for longer journeys | Busier, higher speed arterial roads, or in the case of off-road routes, parallel to them.<br>Routes traverse both urban and rural areas. | Combination of utility trips (trips to education, employment, and other destinations), recreational riders and cycle tourers.<br>Likely to serve high volumes of cyclists. | Off-road routes with little or no conflict with general traffic. May be shared paths or separated walking and cycling paths.<br>On-road routes using the street network where conflict with general traffic is managed. Likely to include both footpaths and cycle infrastructure that are separated from general traffic, with appropriate safe crossing locations.<br>Safe (raised or signalised) crossings at intersections and priority to active modes across driveways. |
| **Core routes** | Second tier "feeder" routes connecting Local routes to Te Awa and Regional routes, and supporting connections to key destinations such as schools | Busy roads with speed limits around 50 km/h.<br>Routes generally within urban areas. | Likely to serve modest volumes of pedestrians and cyclists | Walkable streets with footpaths on both sides of the street, connected by safe crossings at pedestrian desire lines.<br>Cycling infrastructure will be route specific, and may consist of separated cycleways, shared paths, or low-speed low-volume cyclable local streets. Existing streets will generally need to be retrofitted with these facilities to fulfil this role. |
| **Local routes (not mapped)** | Walkable and cyclable local streets, enabling everyday trips to schools, to local destinations, and onward trips about the wider network | Local streets or off-road shortcuts.<br>Generally within urban areas. | Likely to serve lower numbers of pedestrians and cyclists than other routes | Walkable streets with footpaths on both sides of the street, connected by safe crossings at pedestrian desire lines.<br>Dedicated cycle infrastructure not generally provided, but cycling likely to be enabled instead by low traffic volumes in the order of 3,000 vehicles per day or less, and slow traffic speeds of 30 km/h or less.<br>Existing local streets may need to be retrofitted with traffic calming, safer pedestrian crossings, and in some instances wider footpaths to fulfil this role. |
| **Trails** | Recreational | Generally through local reserves and natural spaces | Likely to serve lower numbers of pedestrians and cyclists than other routes | Unsealed off road walking and biking trails |

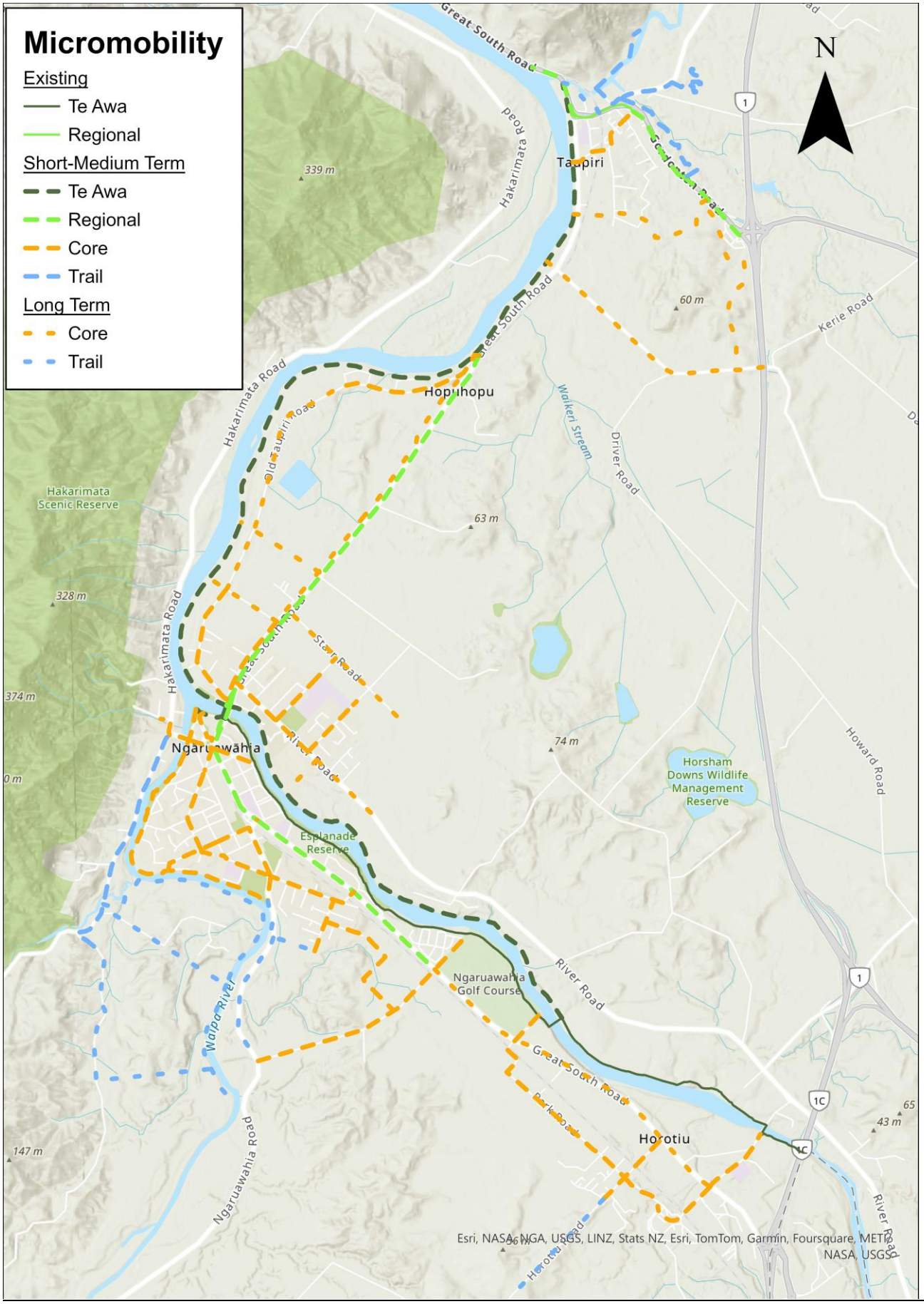
## 4.2 Our recommended active mode network

Our recommended active mode network is shown in Figure 17 overleaf. More detailed maps are appended to this report.

When viewing the proposed active mode network, it is important to recognise that it includes ***walking, cycling and micromobility networks***, combined. While these three modes are often grouped together as "active modes", they differ significantly in terms of their infrastructure requirements. Walking networks tend to be very fine grained, and include all streets within an urban area. By contrast, cycling networks tend to be more skeletal, with fewer urban streets represented. As a result, where we have identified a street as a priority within the overall active mode network, in some cases this may consist of walking infrastructure alone.

We do not know the future road network layout within the proposed growth cells but have provided some indicative future connections that would be beneficial through growth cells where there are no existing roads. We have assumed that where new roads are delivered or significant upgrades are made to existing roads to facilitate development, these will include safe and appropriate walking and cycling facilities.

**Figure 17: Proposed active mode network (refer Appendix A for high resolution maps)**



## 4.3 Regional Connections

Regional connections include Te Awa River Ride along the banks of the Waikato River, as well as primary strategic connections between urban areas. Both are shown as darker green colours in the proposed active mode map. The Regional network will generally consist of high quality footpaths and cycleways, or in some cases shared use paths, where conflict with general traffic is carefully managed and priority is given to active modes.

### 4.3.1 Ngaaruawaahia to Hopuhopu

The Ngaaruawaahia to Hopuhopu section extends from the east bank of the Waikato River in Ngaaruawaahia (where it will tie-in to the existing Great South Road bridge or a new walking and cycling bridge) to the intersection of Great South Road and Old Taupiri Road just north of Hopuhopu.

A significant amount of land use growth is planned for this area on both sides of the railway line. The railway line presents a significant challenge in this area as there are only three crossings over the railway line, two of which have no provision for pedestrians or cyclists.

We have considered four potential connections between Ngaaruawaahia and Hopuhopu:

- Option A: Great South Road – walking and cycling path(s) along Great South Road (route 428 in the Connectivity Strategy)
- Option B: Old Taupiri Road – walking and cycling path(s) along Old Taupiri Road (route 427 in the Connectivity Strategy)
- Option C: Waikato River – walking and cycling path(s) along the east bank of the Waikato River (routes 255 and 326 in the Connectivity Strategy). While other sections of Te Awa River Ride have a focus on recreational trips, there is the potential for this section to serve multiple trip types, avoiding the need for multiple routes each serving different purposes
- Option D: West of railway line – new connection following the western side of the railway corridor

It is difficult to provide a single connection that caters to all existing land use and growth cells due to the distance between the growth cells and the lack of walking and cycling connections across the rail line. Requiring people to backtrack to access a safe facility (ie go south to cross the rail line and travel north) is likely to deter many people from walking or cycling.

For the greatest uptake of walking and cycling for trips between Ngaaruawaahia, Hopuhopu and Taupiri, we recommend providing a direct connection on/adjacent to Great South Road <u>and</u> a shared path connection along the Waikato River. This provides:

- a direct connection between Ngaaruawaahia and Taupiri on Great South Road which facilitates longer distance, commuter cycling trips
- a recreational route along the river which extends Te Awa River Ride and is fully separated from traffic
- similar connectivity benefits to an Old Taupiri Road connection, providing a connection to Ngaaruawaahia and Taupiri for the growth cells west of the rail line

- a choice between the more direct Great South Road route and the higher amenity river route for people living in the growth cells along Great South Road and Old Taupiri Road, particularly if more safe crossings are established over the rail line.

### 4.3.2 Hopuhopu-Taupiri

The Hopuhopu-Taupiri connection extends from the northern intersection of Great South Road and Old Taupiri Road to the intersection of Taupiri Road and Gordonton Road at the north of Taupiri town.

The two obvious options for a Hopuhopu to Taupiri connection are a connection via Great South Road or a connection along the Waikato River. There is little difference between the two routes in terms of directness or connectivity as they run close together at this point. The Waikato River route would provide higher amenity and has stronger recreational potential, whereas a route on Great South Road may be better suited to utility cycling (ie trips to school, work, and other destinations). However, given the proximity of the two routes it does not seem necessary to deliver two connections.

It is recommended that the Te Awa River Ride be extended further north, capitalising on the recreational and cycle tourism benefits of the existing Te Awa route. However, irrespective of which route is selected the design will need to be cognisant of the different kinds of potential users, ranging from higher-speed commuters and sports cyclists to families and children using the path recreationally.

### 4.3.3 Taupiri Interchange

Our proposed network includes completion of the Taupiri Community Shared Pathway, between the town centre and the SH1 Taupiri service centre. The purpose of this regional route is to connect Taupiri's future eastward urban expansion to the town centre, and to connect to any future rapid transit hub in this location. We note that part of this route is already complete, and subsequent stages are funded.

### 4.3.4 Ngaaruawaahia

Within Ngaaruawaahia itself, the existing Te Awa River Ride fulfils an important recreational and cycle touring function along the western bank of the Waikato River. However, it bypasses Ngaaruawaahia's town centre and much of the township itself. As such, it is poorly suited to local trips to employment, education and other local walking, cycling and micromobility trips within Ngaaruawaahia.

We recommend a Regional route via Great South Road between Saulbrey Road and Old Taupiri Road form the main north-south strategic walking, cycling and micromobility connection through Ngaaruawaahia township. This recognises that Ngaaruawaahia's key destinations are concentrated along this route, and that Great South Road is a "spine" for the Ngaaruawaahia urban area, linking a range of origins and destinations, for multiple trip types and modes. It recognises that the same reasons that make Great South Road attractive for general traffic – directness, convenience and connectivity – make it attractive for cycling and micromobility trips too.

### 4.3.5 Ngaaruawaahia to Horotiu

The existing Te Awa River Ride provides a regional, recreational connection between Ngaaruawaahia and Horotiu. However, this link:

- Bypasses Horotiu, by crossing to the east bank of the Waikato River at the Perry Cycle Bridge, some 1.5 km north of Horotiu, and
- Does not cater very well to utility trips (trips to education, employment and other destinations), as, by following the river, it skirts around the outside of Ngaaruawaahia's urban area

However, given the scale of existing and future land use within Horotiu, and the dispersed trip patterns, we have not recommended a new Regional link within Horotiu. Instead, we recommend a network of Core connections within Horotiu and connecting to Te Awa. Refer Section 4.7.

Our active mode map also includes a new regional recreational route on the east bank of the Waikato River, from the Perry Cycle Bridge to Old Taupiri Road. This facility, as identified by the Connectivity Strategy, would mirror the existing Te Awa River Ride and provide bike access to the key destination of Tuurangawaewae.

## 4.4 Core active mode network – Ngaaruawaahia

### 4.4.1 Ngaaruawaahia North

For the purposes of our assessment, we have defined this area as the area north of the Waikato River but south of Kelm Road as shown previously in Figure 1. This area includes existing residential areas and growth cells on both sides of the railway line, and key destinations including Tuurangawaewae, Ngaaruawaahia High School and Te Kura Kaupapa o Bernard Fergusson.

East of the rail line we recommend providing core routes on River Road, Duke Street and Kent Street. Initially we suggest only extending these routes as far as Ngaaruawaahia High School, with further extensions to be delivered in conjunction with development. When development occurs along Starr Road, it will also be beneficial to provide a core route on Starr Road linking back to Great South Road.

West of the rail line we recommend providing an initial core route on Old Taupiri Road and Galbraith Street as far as Jacobs Lane (as proposed in the Connectivity Strategy).

### 4.4.2 Ngaaruawaahia Central

Within central Ngaaruawaahia, we have recommended a Core active mode network that includes part of the following streets:

- Durham Street
- Havelock Road
- Ellery Street
- Whatawhata Avenue
- Waikato Esplanade/Jesmond Street/Eyre Street/Waingaro Road

Collectively, these streets provide critical walking and cycling access to key destinations including Waipa Primary School, Ngaaruawaahia Primary School, the town centre and the employment area immediately south of it, bus stops on Great South Road, and to possible future rapid transit station (Refer to the accompanying report "Ngaaruawaahia, Taupiri, Hopuhopu and Horotiu Transport Assessment"). They

also provide an east-west connection between Te Awa River Ride, the town centre, Great South Road and Waingaro Road. The east-west Core route would bring walkers and riders from Te Awa into the heart of Ngaaruawaahia, "The Point", and onto recreational routes along the Waipa River and into Hakarimata.

### 4.4.3 Ngaaruawaahia South

Within Ngaaruawaahia south, we have recommended a Core route on Saulbrey Road, to enable the significant land use growth anticipated within this growth cell. We recommend that this link extend eastward onto Te Awa, and while we have shown this via a new route using an existing paper road, this could equally use the existing street network within the River Terraces development (eg Matariki Terrace).

## 4.5 Core active mode network – Taupiri

Core walking and cycling routes within Taupiri include parts of Kainui Road and Te Putu Street. We have also recommended new routes that bisect the large future urban area of Taupiri, and connect the future rapid transit hub at Taupiri interchange to Great South Road (west) and to Kainui Road (south). We note that these Core walking and cycling routes may not exactly follow the exact paths shown, if the future urban street networks provided during this area's urbanisation differ. The principle however, of connecting Taupiri interchange to urban areas west and south via Core walking and cycling routes, remains.

## 4.6 Core active mode network - Hopuhopu

The Core walking and cycling network within Hopuhopu consists of 2 routes: one via Old Taupiri Road and a second route running parallel to and immediately west of the rail corridor. We note that the latter of these routes would run parallel to, and in close proximity to, Great South Road, which we have already identified as part of the proposed Regional network. However, these 2 routes would be separated by the rail corridor. If multiple, regularly spaced, safe pedestrian and cyclist crossing points are provided across the rail corridor, only one of these 2 routes will be necessary to ensure land uses on each side are connected to the walking, cycling and micromobility network.

## 4.7 Core active mode network – Horotiu

Our proposed Core network within Horotiu focuses on providing connections from the township's existing and future residential areas to Horotiu School, to local employment area, and to regional connections via Te Awa. This includes parts of:

- Great South Road
- Horotiu Road
- Horotiu Bridge Road
- Gateway Drive
- Park Road.

## 4.8 Local route network

Local streets are a critical part of the walking, cycling and micromobility network, as they provide access to the individual places that people live, work, study, shop and engage in recreation. We have not mapped the local route network in our walking, cycling and micromobility maps, as every local street fulfils this function to at least some degree.

Not all of Ngaaruawaahia's, Taupiri's, Hopuhopu's and Horotiu's local streets will align with current best practice for local streets however, due to issues such as footpath widths, and safe and accessible crossings that meet the needs of all footpath users. Similarly, while traffic volumes are typically low on local streets, traffic speeds do not necessarily align with the 30 km/h operating speed that would allow the street to be considered cyclable by a wide range of people.

We recommend that existing local streets be reviewed to consider whether they meet the needs of people travelling by active modes.

# APPENDIX A The proposed active mode network

**Figure 18: Proposed active mode network - Ngaaruawaahia**

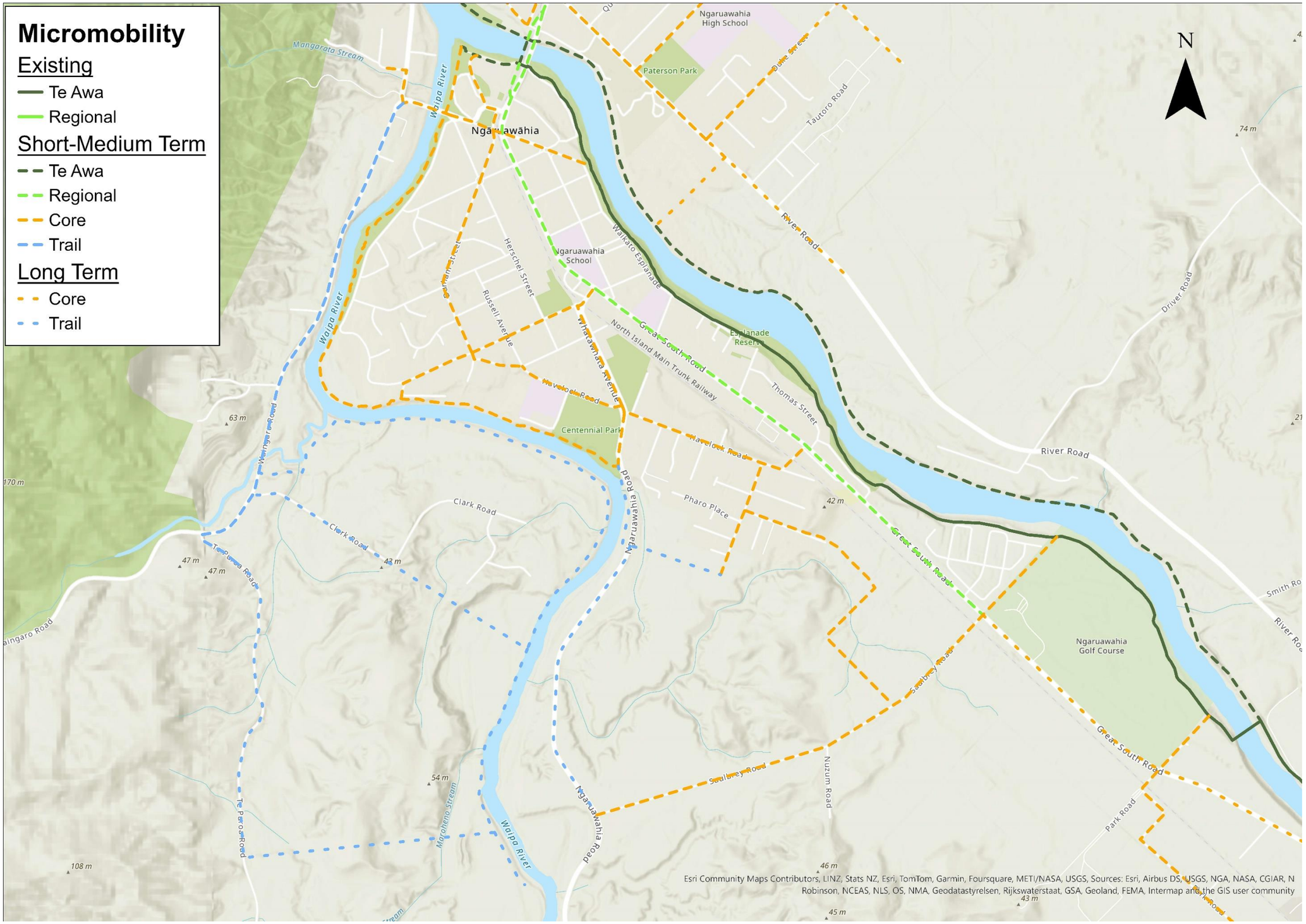


**Figure 19: Proposed active mode network - Hopuhopu**

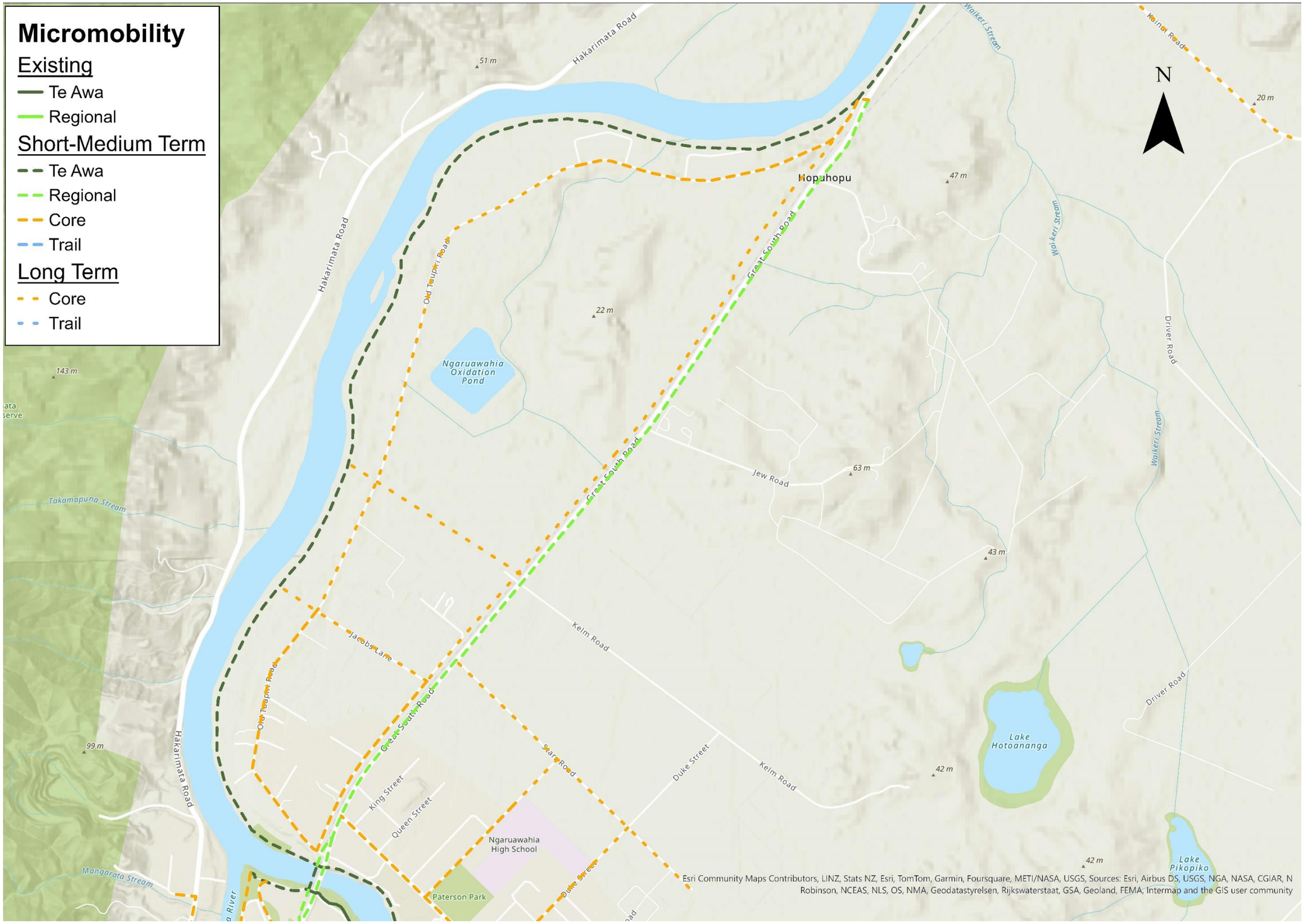


**Figure 20: Proposed active mode network - Taupiri**

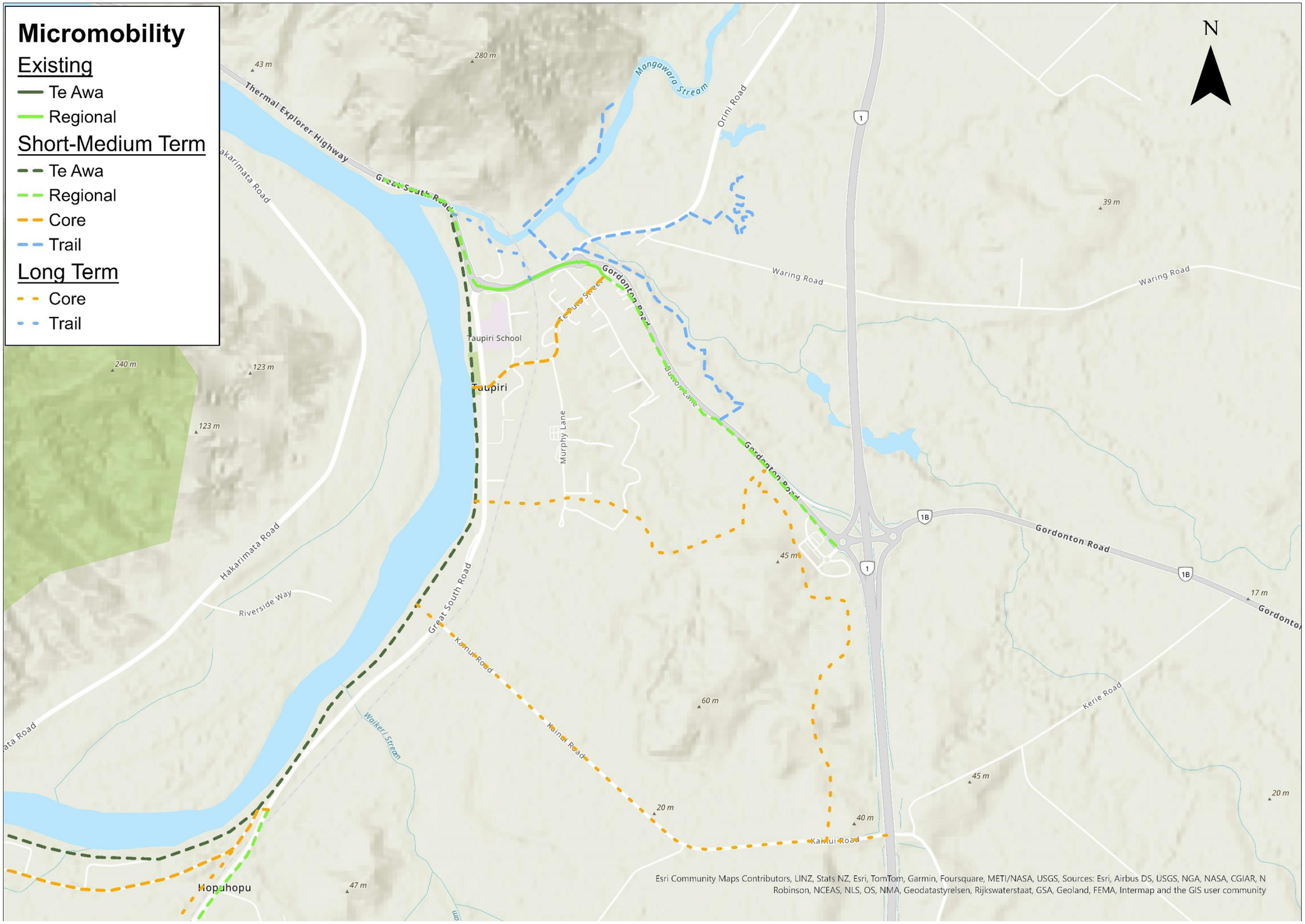


**Figure 21: Proposed active mode network - Horotiu**

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

**Open - Information Only**

| | |
|---|---|
| **To** | **Waikato District Council** |
| **Report title** | **2023/24 Q3 Non-financial Performance Measure Results** |
| Date: | 13 May 2024 |
| Report Author: | Nicole Hubbard, Corporate Planning Manager |
| Authorised by: | Tony Whittaker, Chief Operating Officer and Deputy CE |

## 1. Purpose of the report
## Te Take moo te puurongo

To inform the Performance and Strategy Committee of the non-financial performance results for the third quarter (Q3) (July 2023 to March 2024) of 2023/24.

## 2. Executive summary
## Whakaraapopototanga matua

There are 62 performance measures in Council's 2021-2031 Long Term Plan. Four of these are measured six-monthly and 11 are measured annually, therefore these will be reported on at the end of quarter four.

Results for the remaining 47 monthly and quarterly measures are as follows:

a. 32 are on track (68%)
b. two are being monitored (4%)
c. 12 are off-track (26%)
d. one is not achieved (2%).

The full results are attached to this report. Results are reported on every quarter to the Performance and Strategy Committee and are used to inform the Annual Report.

## 3. Staff recommendations
## Tuutohu-aa-kaimahi

**THAT the Performance and Strategy Committee receives the 2023/24 Q3 Non-financial Performance Report.**

## 4. Background
## Koorero whaimaarama

This Report includes the non-financial performance results for Q3 2023/24 (1 July 2023 to 31 March 2024).

This Report compares actual performance with the intended level of performance as set out in the 2021-2031 Long Term Plan. The performance results are presented by activity using traffic light reporting.

Results are reported on every quarter to the Performance and Strategy Committee and are used to inform the Annual Report.

## 5. Discussion
## Matapaki

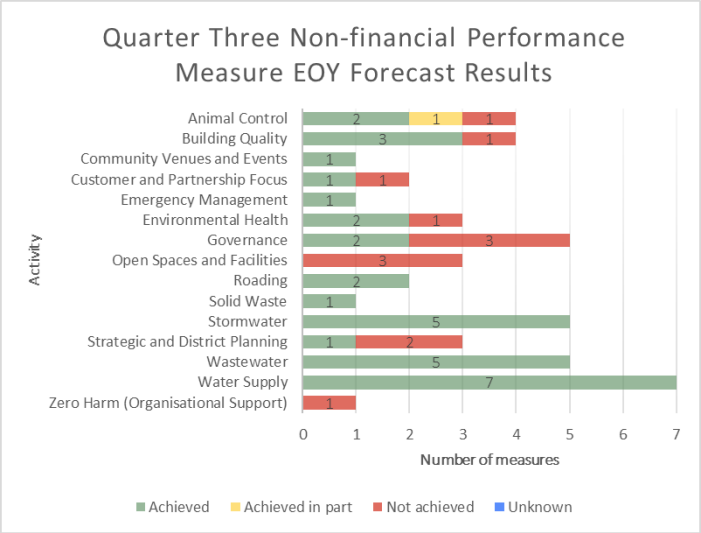
**Overall Results**

There are 62 performance measures in Council's 2021-2031 Long Term Plan. Four of these are measured six-monthly and 11 are measured annually, therefore these will be reported on at the end of quarter four.

Results for the remaining 47 measures are as follows:

a. 32 are on track (68%)
b. two are being monitored (4%)
c. 12 are off-track (26%)
d. one is not achieved (2%).

The graph below shows the end-of-year forecast results grouped by activity:




**Measures that are off-track / not achieved**

The following measures are off-track. Explanatory commentary for these measures can be found in the attachment.

a. The percentage of building consent applications that are processed within 20 working days.

b. The percentage of customers satisfied with the overall service received when contacting the Council.

c. Percentage of excessive noise complaints responded to within agreed timeframes.

d. Percentage of customers satisfied with the availability of their councillor.

e. Percentage of customers satisfied that Council engages with the community regarding the right issues.

f. Percentage of customers satisfied with the ease of access and clarity of information regarding key community issues.

g. Percentage of customers who are satisfied in the annual satisfaction survey (Public Toilets).

h. Percentage of customers who are satisfied with parks and reserves, including sports fields and playgrounds.

i. Percentage of customers who are satisfied with the presentation of Waikato District Council cemeteries.

j. Compliance with the Council's resource consents for discharge from its stormwater system, measured by the number of abatement notices, infringement notices, enforcement orders, and successful prosecutions received by the Council in relation to those resource consents*.

k. The percentage of resource consent applications which are processed within statutory timeframes.

l. The percentage of current land use consents that are older than 2 years which have been monitored in the last 2 years.

m. The number of total recordable injuries (TRI) at Waikato District Council.

**Measures that are to be monitored**

The measures that have been reported as monitor are listed below. Explanatory commentary for these measures can be found in the attachment.

a. The percentage of known dogs currently registered.

b. The percentage of buildings that provide sleeping care or paid accommodation that are audited for compliance annually.

## 6. Next Steps
## Ahu whakamua

The quarter four non-financial performance results will be reported in the 2023/24 Annual Report.

## 7. Attachments
## Ngaa taapirihanga

1. 2023-24 Q3 Non-Financial Performance Measure Results. Attachment P&S_13 May 24.

# WAIKATO DISTRICT COUNCIL
## NON-FINANCIAL PERFORMANCE MEASURE RESULTS

**2021-2031 Long Term Plan**
**Reporting Period: 1 July 2023 to 31 March 2024**

### ACTIVITY: ANIMAL CONTROL

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 1 - The percentage of aggressive dog behaviour complaints, where immediate risk to public safety is present, that has Council personnel on site within 1 hour. | 95% | 100% | 100% | 100% | On track | | |
| 2 - The percentage of complaints regarding straying stock that have Council personnel on site within 1 hour. | 95% | 100% | 100% | 100% | On track | | |
| 3 - Complete engagement and education visits throughout the district. | 120 per annum / 10 per month | 39 | 66 | 91 | On track | On track to meet the annual target, the monthly target will not always be met. | Achieved in part |
| 4 - The percentage of known dogs currently registered. | 95% | 78.4% | 84.2% | 85.4% | Monitor | With the increasing number of dogs in our district, Council now has a staff member specifically focusing on dog registrations. This includes calling and visiting owners yet to register their dog/s. We are unlikely to meet this measure by year end, but having a dedicated staff member will help to improve numbers. | |

### ACTIVITY: BUILDING QUALITY

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 5 - The percentage of existing buildings with building WoFs that are monitored and audited for compliance annually. | 33% | 2.8% | 9% | 30.4% | On track | | |
| 6 - The percentage of buildings that provide sleeping care or paid accommodation that are audited for compliance annually. | 100% | 8.5% | 21.1% | 50.7% | Monitor | All remaining facilities required to be audited annually are now booked in. We expect that all required audits will be completed by the end of June. | |
| 7 - The percentage of swimming pools that are inspected for compliance annually. | 33% | 2.7% | 14% | 25.6% | On track | | |
| 8 - The percentage of building consent applications that are processed within 20 working days. | 98% | 79% | 85% | 88% | Off track | The performance of the building review team is improving against the target, however, this measure will not be met for this year. Competency levels in the team have improved through training over the last few months enabling more capability to process higher competency consents in-house which will further improve performance in future. | |

## ACTIVITY: COMMUNITY VENUES AND EVENTS

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 9 – The number of events workshops held each year to support event organisers. | 2 | 1 | 2 | 2 | On track | | |

## ACTIVITY: CUSTOMER AND PARTNERSHIP FOCUS

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 10 - The percentage of customers satisfied with the overall service received when contacting the Council. | 72% | 50% | 53% | 54% | Off track | Our customer satisfaction has improved by 4% across the year. The percentage of dissatisfied customers has been decreasing, which is expected as we continue to focus on improving the customer experience via the Service Request Transformation project and development of online forms. | |
| 11 – Average level of effort to conduct business with Council. (On a scale of 1 – 5 (5 being high effort) how much effort did it take to conduct your business with Council?). | < 2.5 | 2.5 | 2.6 | 2.5 | On track | | |

## ACTIVITY: EMERGENCY MANAGEMENT

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 16 – Council maintains a minimum number of trained staff to intermediate level, to fulfil core Emergency Operations Centre roles. | 50 | 72 | 88 | 89 | On track | | |

## ACTIVITY: ENVIRONMENTAL HEALTH

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 17 – The percentage of food operations that are required to be verified annually that are verified. | 95% | 66% | 87% | 83% | On track | | |
| 19 – Percentage of excessive noise complaints responded to within agreed timeframes. | 85% | 55% | 59% | 57% | Off track | The digital communications issue between Council and the contractor has been resolved as of 26 March 2024. This measure will not be met by year end, however, numbers expected to improve over the next quarter. | |
| 20 – The percentage of hazardous land use information (HAIL) reports that will be completed within 10 working days. | 90% | 100% | 100% | 100% | On track | | |

## ACTIVITY: GOVERNANCE

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 21 – Percentage of customers satisfied with the availability of their councillor. | 80% | 44% | 40% | 42% | Off track | All councillors remain committed to being available to their local communities. This measure has been proposed to be removed through the 2024/25 Annual Plan process as it doesn't fairly reflect the work undertaken by councillors. | |
| 22 – Percentage of customers satisfied that Council engages with the community regarding the right issues. | 50% | 32% | 25% | 26% | Off track | Feedback indicates that residents are dissatisfied with Council's communications around rates, why they are so high and how the money is being spent. | |
| 23 – Percentage of customers satisfied with the ease of access and clarity of information regarding key community issues. | 50% | 37% | 35% | 36% | Off track | A communications and engagement strategy has been approved by ELT. One aspect of the strategy focuses on improving the ease of access and clarity of information around key community issues. All of Council will be involved in changing our approach to comms and engagement in this space to better serve our community. | |
| 24 - Percentage of agendas and minutes of all open meetings that are made publicly available via the Council's website within legislative timeframes. | 98% | 98% | 98% | 98% | On track | | |
| 25 – Number of formal hui held with iwi, mana whenua and hapu groups. | 9 | 8 | 13 | 18 | On track | | |

## ACTIVITY: OPEN SPACES AND FACILITIES

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 26 – Percentage of customers who are satisfied in the annual satisfaction survey (Public Toilets). | 75% | 46% | 40% | 46% | Off track | The Facilities team are working with contractors to ensure that graffiti is cleared in a timely manner and toilet paper is well stocked when scheduled cleaning is carried out. Contractors carry out more frequent cleaning in high use areas over the summer months. Audits to be carried out at public toilets to determine lighting levels for security and safety. | |
| 27 – Percentage of customers who are satisfied with parks and reserves, including sports fields and playgrounds. | 85% | 73% | 68% | 71% | Off track | Community feedback mentioned a lack of consultation with communities on projects such as playgrounds, and criteria to consider for future playground projects. | |
| 28 – Percentage of customers who are satisfied with the presentation of Waikato District Council cemeteries. | 85% | 77% | 75% | 74% | Off track | Community feedback raised a concern around the consistency of levels of service. The Open Spaces team will continue to deliver a high level of service around cemetery maintenance and burial procedures. | |

## ACTIVITY: ROADING

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 32 - The percentage of customer service requests relating to footpaths responded to within the time frame specified in the LTP*. | 95% | 100% | 96.2% | 98.1% | On track | | |
| 33 - The percentage of customer service requests relating to roads responded to within the time frame specified in the LTP*. | 95% | 98.6% | 97.1% | 95.5% | On track | | |

## ACTIVITY: SOLID WASTE

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 36 – Customer satisfaction with Waste Collection services. | 75% | 79% | 80% | 81% | On track | | |

## ACTIVITY: STORMWATER

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 38 – The number of flood events that occur in the territorial authority district*. | < 5 events per annum | 0 | 0 | 0 | On track | | |
| 39 – For each flooding event, the number of habitable floors affected (expressed per 1,000 properties connected to the Council's stormwater system)*. | 0.3 affected per 1,000 properties per event | 0 | 0 | 0 | On track | | |
| 40 – The median response time to attend a flooding event, measured from the time that the Council receives notification to the time that service personnel reach the site*. | < 2 hours | 0 | 0 | 0 | On track | | |
| 41 – The total number of complaints received by the territorial authority about the performance of its stormwater system (expressed per 1,000 properties connected to the Council's stormwater system)*. | < 4 per 1,000 properties per year | 0.5 | 0.9 | 1.7 | On track | | |
| 42 – Compliance with the Council's resource consents for discharge from its stormwater system, measured by the number of abatement notices, infringement notices, enforcement orders, and successful prosecutions received by the Council in relation to those resource consents*. | < 2 | 0 | 0 | 3 | Off track | Abatement notices have been received for Te Kauwhata, Huntly, and Ngaaruawaahia. Application made to WRC to have the Te Kauwhata abatement notice lifted as plant has been replaced. We're awaiting their response.<br><br>Huntly and Ngaaruawaahia plants are being upgraded and testing will be reviewed. | |

## ACTIVITY: STRATEGIC AND DISTRICT PLANNING

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 43 - The percentage of resource consent applications which are processed within statutory timeframes. | 98% | 94.3% | 94.8% | 93% | Off track | For period ending 31 March 2024, 495 out of 533 consents were issued within statutory timeframes. The reasons for the 38 consents being out of time differs in each case. The manner in which these consents were processed is being reviewed to avoid such problems in future. | |
| 44 - The percentage of current land use consents that are older than 2 years which have been monitored in the last 2 years. | 80% | 40% | 47% | 56% | Off track | Additional resourcing has been acquired to increase performance in this area. This figure is now starting to improve. | |
| 45 - The number of parking patrols which are carried out in individual communities under the Public Places Bylaw. | 168 | 45 | 89 | 136 | On track | | |

## ACTIVITY: WASTEWATER

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 48 – Number of dry weather sewerage overflows from the Council's sewerage system (expressed per 1,000 sewerage connections to the sewerage system)*. | <3 per 1,000 connections | 0.6 | 0.7 | 1.2 | On track | | |
| 49 – Where the Council attends to sewerage overflows resulting from a blockage or other fault in the Council's sewerage system, median response. Attendance time: from the time that the Council receives notification to the time that service personnel reach the site*. | < 1 hour (60 minutes) | 61 | 61 | 44 | On track | | |
| 50 – Where the Council attends to sewerage overflows resulting from a blockage or other fault in the Council's sewerage system, median response. Resolution time: from the time that the Council receives a notification to the time that service personnel confirm resolution of the blockage or other fault*. | < 4 hours (240 minutes) | 205 | 137 | 137 | On track | | |
| 51 – The total number of complaints received by Council about sewerage odour, sewerage system faults, sewerage blockages, and the Council's response to issues with its sewerage system (expressed per 1,000 connections to the Council's sewerage system)*. | < 10 per 1,000 connections | 1.3 | 1.9 | 3.5 | On track | | |
| 52 – Compliance with the Council's resource consents for discharge from its sewerage system measured by the number of convictions received by the Council in relation to those resource consents*. | 0 | 0 | 0 | 0 | On track | | |

## ACTIVITY: WATER SUPPLY

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 53 – The extent to which Councils drinking water supply (zones) complies with Part 4 of the drinking water standards (bacteria compliance criteria)*. | 18 (number of zones that comply out of 18) | 18 | 18 | 18 | On track | | |
| 54 – The extent to which Councils drinking water supply complies with part 5 of the drinking-water standards (protozoal compliance criteria)*. | 15 (number of zones that comply out of 15) | 15 | 15 | 15 | On track | | |
| 55 – The median on site attendance time for a non-urgent call-out, where Council attends a call-out in response to a fault or unplanned interruption to its networked reticulation system*. | < 5 days | 1 | 1 | 1 | On track | | |
| 56 – The median on site attendance time for an urgent call-out where Council attends a call-out in response to a fault or unplanned interruption to its networked reticulation system*. | < 60 minutes | 20 | 27 | 22 | On track | | |
| 57 – The median resolution time for non-urgent call-out where Council attends a call-out in response to a fault or unplanned interruption to its networked reticulation system*. | < 5 days | 2 | 2 | 1 | On track | | |
| 58 – The median resolution time for an urgent call-out where Council attends a call-out in response to a fault or unplanned interruption to its network reticulation system*. | < 240 minutes | 82 | 84 | 74 | On track | | |
| 59 – The total number of complaints received by Council about drinking water clarity, taste, odour, water pressure or flow, continuity of supply, and response to any of these issues (expressed per 1,000 connections to the water system)*. | < 25 per 1,000 connections | 2.5 | 5.6 | 8.8 | On track | | |

## ACTIVITY: ZERO HARM

| KPI | 2023/24 Target | Q1 | Q2 | Q3 | Status | Commentary | EOY Forecast |
|---|---|---|---|---|---|---|---|
| 62 - The number of total recordable injuries (TRI) at Waikato District Council. | 2 | 1 | 3 | 3 | Not achieved | One TRI occurred in September and two TRIs in October. | |

*Indicates mandatory measures.

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

**Open - Information Only**

| | |
|---|---|
| **To** | **Waikato District Council** |
| **Report title** | **Financial Performance Summary for the nine months to 31 March 2024** |
| Date: | 13 May 2024 |
| Report Author: | Colin Bailey, Finance Manager |
| | Jean de Abreu, Finance Planning & Reporting Team Leader |
| Authorised by: | Alison Diaz, Chief Financial Officer |

## 1. Purpose of the report
## Te Take moo te puurongo

To inform the Performance and Strategy Committee on on the financial performance against the Annual Plan 2023/2024 and those budgets carried forward from the 2022/23 financial year.

## 2. Executive summary
## Whakaraapopototanga matua

The national economy has been slowing down since early 2023 and slipped into a technical recession in the third quarter of that year. The Council's financial performance for the nine months to 31 March 2024 reflects the current national economic climate with a year to date deficit of $5.7 million compared to a planned surplus of $4.1 million. This is a reduction of $0.8 million in the deficit reported for the six months to 31 December 2024.

While Council's overall year to date revenue position of $142.5 million is in line with budget there are positive and adverse variances that affect the financial position. Rates income exceeds budget due to higher than planned growth in property capital values late in 2022/2023 and finance revenue from interest on funds on call and short term deposit also exceeds budget due to higher than planned interest rates.

These positive trends are expected to continue in the final quarter of the financial year and therefore contribute to the year end general rate position. Development and financial contributions income continued to be below budget at 54% of planned income due to a slow down in activity and ongoing uncertainty in the economy. This trend is expected to continue for the rest of the year and will result in development reserve balances not being as healthy as expected. These deficit reserves will attract higher interest charges which improve the general rate position.

Fees and Charges are adversely affected by the economic conditions with resource and building consents below planned levels, 924 building consents have been issued year to date. This is 24% less than last year and 55% of the full year budget. Resource consent applications received year to date are 638 (19% below last year) and year to date revenue is $0.7 million below budget. These will adversely impact the year end general rate position, partially offsetting the positive impacts mentioned above.

Activity levels increased in the quarter to 31 March 2024 as the construction season got underway with actual costs $2.0 million above budget for the quarter and $5.7 million year to date. This trend is expected to continue to year end as work plans are rolled out, with funding from general rate surpluses as detailed above as well as reserves.

Depreciation expenses exceed plan, resulting from the higher than expected infrastructure asset valuations at 30 June 2023 as reported previously. These higher depreciation costs improve renewal reserve balances (used to fund renewal capital expenditure) however this also adversely affects the general rate position. Finance costs (interest of debt) continue to be higher than budget due to market interest rates exceeding the rates used for the annual plan with the impact seen in the general rate position.

The year end general rate position is forecast to reflect a surplus as rates and finance revenue income continues above budget, partially offset by decreases in consents income and increases in general rate funded costs.

## 3. Staff recommendations
## Tuutohu-aa-kaimahi

**THAT the Performance and Strategy Committee receives the Financial Performance Summary for the nine months to 31 March 2024 report.**

## 4. Background
## Koorero whaimaarama

The quarterly financial performance report provides a summary of the financial results against the Annual Plan 2023/2024 and those budgets carried forward from the 2022/23 financial year. The purpose is to ensure the Performance and Strategy committee are able to monitor Council's strategy, and performance against the Long Term Plan and Annual Plan.

## 5. Discussion
## Matapaki

A summary of revenue and expenses, capital expenditure and key reserves balances for the nine months to 31 March 2024 is as follows.

- **Financial Performance Summary**
  - Council's deficit for the nine months is $5.7 million compared to the planned surplus of $5.5 million, largely due to the following:
    - Lower than planned Development and Financial Contributions income due to a slowdown in growth and the delay in the development of the Te Kauwhata Lakeside project ($3.5 million).
    - Subsidies and grants are lower than budget by $9 million due to lower NZTA Subsidy Income received, however the Roading team are forecasting this income will be fully realised by year end for the operational maintenance work categories.
    - Lower than planned Fees and Charges received due to lower numbers of building and resource consents processed.
    - Miscellaneous recoveries from external parties are tracking behind budget. These relate to the Festival Way project where Kainga Ora will be invoiced as the project milestones are reached and the SH1 revocation renewal programme which will be fully on-charged to the NZTA on completion of the project.
    - Other Expenses is $7.2 million higher than budget due to increased expenditure in consultancy costs to cover shortfall in staff particularly in the Building Consents and Building Quality areas as well as higher than budgeted costs in software maintenance (investments in systems upgrades are now expensed and not capitalised), insurance premiums, environmental maintenance and payment repairs.

- The above is offset by:
  - Higher than planned Finance Revenue (interest received) being $2.5 million higher than budget due to benefiting from higher than planned interest rates on funds on deposit.
  - Personnel costs are $2.2 million below plan due to delays in recruiting staff to fill vacant roles.
  - General and targeted rates are $2.7 million higher than budget due to higher than estimated capital values.

- **Capital Expenditure**
  - Capital expenditure for the nine months is $79 million, compared to the planned expenditure of $112.5 million (excluding carry forwards from 2022/2023). Actual expenditure is $43.5 million more than the same period of the previous year. The plans underway to further increase capex spend are detailed in the Service Delivery reports to the Infrastructure Committee.

The financial statements, as appended to this report, show the current year actuals and budgets as at 31 March 2024, including full year budgets to June 2024 and the prior year's actuals.

Key variances are outlined below:

- **Statement of Comprehensive Revenue and Expense:**
  - Revenue is $8.1 million higher than the prior year due to higher rates ($9.9 million higher than prior year), higher subsidies and grants ($4.4 million higher than prior year) due to increased work programme, and higher interest earned ($2.1 million higher than prior year).
  - This is offset by lower development and financial contributions ($6.7 million lower than prior year) and fees and charges revenue ($1.7 million lower than prior year).
  - Depreciation and amortisation expense is $4.8 million higher than the prior year due to higher asset values following the 2022/2023 year end revaluations.
  - Personnel costs are $4.1 million higher than prior year due to the higher headcount and market movement increases, partially offset by savings from vacancies.
  - Other expenses are $13.8 million higher than last year due to higher activity costs in the Roading and Three Waters areas, and consultancy costs to cover staff and skills shortages.

- **Statement of Financial Position:**
  - Current assets are $1.9 million higher than prior year due to rates increases and growth in the district as well as higher outstanding rates and water-by-meter overdue balances.
  - Non-current assets are $172 million higher than prior year due to increases in fixed assets, investments, intangible assets, and an increase due to gain on derivative financial instruments.
  - Liabilities are $86 million higher than prior year due to higher payables for capital expenditure.

- **Debt**
  - Actual year-end debt is $195 million, compared to $117 million in the prior year. The increase was required to fund capital expenditure and is broken down between loans from the Local Government Financing Authority (LGFA) ($185 million) and Housing Infrastructure Fund (HIF) $10.3 million). The HIF debt is the loan facility in place to support Water and Wastewater infrastructure expenditure in Te Kauwhata and is interest free. This benefit is passed onto developers through development and financial contributions.
  - As capital expenditure ramps up so does debt. Council has sufficient headroom to the debt cap (61.6% of limit) for the expected capital expenditure carry forward budgeted and planned expenditure for 2023/2024

## 6. Next Steps
## Ahu whakamua

The next Financial Performance Summary will be for the full year and reported in August 2024.

## 7. Attachments
## Ngaa taapirihanga

1. Attachment 1 - Financial Performance Summary for the nine months to 31 March 2024
2. Attachment 2 – Statement of Comprehensive Revenue and Expense and Notes as at 31 March 2024
3. Attachment 3a – Statement of Financial Position (Balance Sheet) and Notes as at 31 March 2024

4. Attachment 3b – Statement of Financial Position (Balance Sheet) and Notes as at 31 March 2024
5. Attachment 3c – Statement of Financial Position (Balance Sheet) and Notes as at 31 March 2024

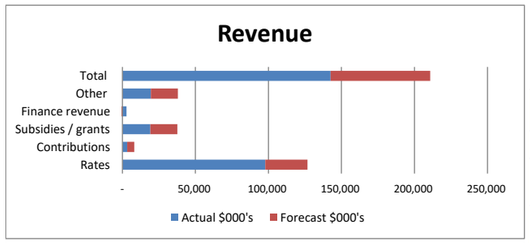
## AT A GLANCE

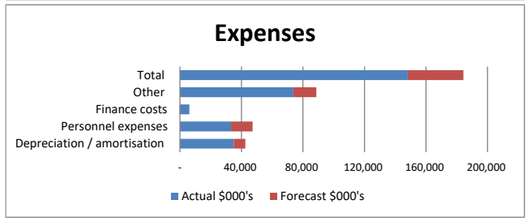
Operating expenses exceed year to date revenue due mainly to delayed receipt of the Development and Financial Contributions due to a slowdown in growth and the delay in the development of the Te Kauwhata Lakeside project ($3.5m), lower than budget subsidies and grants due to delayed work programmes, and lower than budget revenue received from Fees and Charges. Higher expenditure is largely due to higher consultancy expenditure to cover vacancies and staff shortages, slightly offset by below budget expenditure on personnel.
Capital expenditure YTD is $79 million, ahead of last year but less than budget and carried forward projects.

| | Mar-24 | Open Bal |
|---|---|---|
| **Reserve Balances Summary** | **$000's** | **$000's** |
| Restricted reserves | 1,046 | 810 |
| Council reserves | 16,015 | 23,016 |
| Development contributions | (49,305) | (31,934) |
| Replacement funds | 36,748 | 32,810 |
| Targeted rate reserves | (29,507) | (20,621) |
| **Total** | **(25,003)** | **4,081** |

**Key reserves (included in balances above)**

| | Mar-24 | Open Bal |
|---|---|---|
| | **$000's** | **$000's** |
| Disaster recovery | 1,609 | 1,980 |
| Hamilton East Property proceeds | 2,308 | 2,308 |
| Structure plan non-growth reserve | 2,038 | 2,106 |
| Northgate development area | (5,835) | (5,536) |
| Pokeno Structure plan | (17,120) | (13,990) |
| Tamahere Structure plan | (1,998) | (1,975) |
| DW water targeted rate | (21,607) | (17,281) |
| DW wastewater targeted rate | (6,862) | (4,464) |
| **Total** | **(47,467)** | **(36,852)** |




## FINANCIAL PERFORMANCE SUMMARY

### For the period ending 31 March 2024

Period 9

| | Actual $000's | FY Forecast $000's | % usage | YTD Variance $000's | Ref. |
|---|---|---|---|---|---|
| **Revenue** | | | | | |
| Rates | 97,784 | 126,743 | 77% | (2,726) | 1 |
| Development and financial contributions | 3,285 | 8,134 | 40% | 2,816 | 2 |
| Subsidies and grants | 19,124 | 37,663 | 51% | 9,123 | 3 |
| Finance revenue | 2,809 | 340 | 826% | (2,554) | 4 |
| Other revenue | 19,523 | 37,943 | 51% | 8,934 | 5 |
| **Total revenue** | **142,526** | **210,824** | **68%** | **15,592** | |
| **Expense** | | | | | |
| Depreciation and amortisation expense | 35,012 | 42,500 | 82% | (3,137) | 6 |
| Personnel expenses | 33,239 | 47,202 | 70% | 2,162 | 7 |
| Finance costs | 6,169 | 5,950 | 104% | (1,707) | 8 |
| Other expenses | 73,799 | 88,740 | 83% | (7,244) | 9 |
| **Total operating expenses** | **148,219** | **184,391** | **80%** | **(9,926)** | |
| **Surplus (deficit) before tax** | **(5,693)** | **26,433** | **-22%** | **25,518** | |

**The net operating deficit of $5.7 million is $25.5 million behind year to date expectations in overall terms.**
**Items to note are as follows:**

**Income**

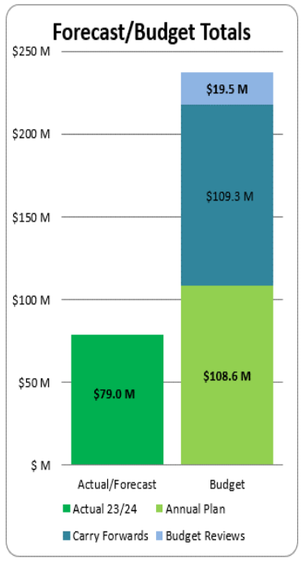
1 Above budget - Rates income affected by higher than estimated capital values. The surplus has been committed to fund unexpected leaky building claims.
2 Below budget - Development and financial contribution income is impacted by the relative timing of the development cycle.
3 Below budget - Subsidies are linked to progress of physical work programmes.
4 Above budget - Interest rates on deposits are higher than budget, plus funds on deposit are higher than budget.
5 Below budget - Vested assets are mostly recorded at the end of the financial year as part of the asset revaluation process.

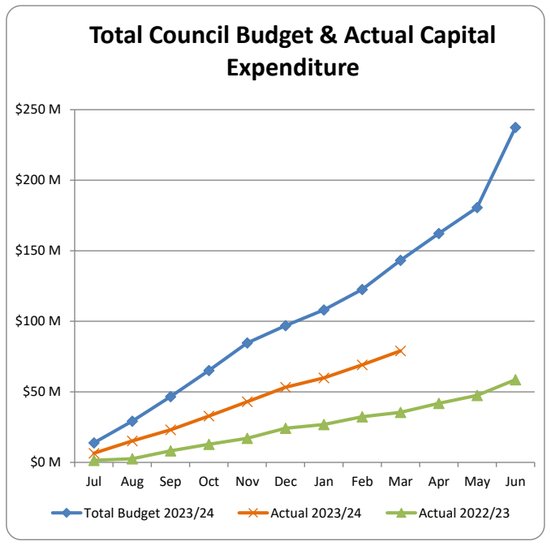
**Expense**

6 Above budget - Higher than anticipated year end asset valuations resulted in depreciation being higher than budget.
7 Below budget - Staff vacancies in many areas of the organisation.
8 Above budget - Higher than budget due to interest payments made out of phase with the budget as a result of interest rate reset dates.
9 Above budget - Largely due to increased expenditure in consultancy due to staff shortages and a one off insurance payment to Riskpool that was not budgeted for.

| Capital expenditure | Actual $000's | FY Budget $000's | Variance |
|---|---|---|---|
| Organisational Support | 2.8 | 11.2 | -8.4 |
| Roading | 23.1 | 72.7 | -49.7 |
| Stormwater | 1.4 | 13.9 | -12.4 |
| Sustainable Communities | 17.9 | 46.9 | -29.0 |
| Sustainable Environment | 0.4 | 3.5 | -3.1 |
| Wastewater | 22.4 | 67.2 | -44.8 |
| Water Supply | 11.0 | 22.1 | -11.1 |
| **Total Group of Activities** | **79.0** | **237.5** | **-158.4** |

The "FY Budget" shown above relates to the third year of the LTP, includes projects undertaken by developers on behalf of council plus any carry forward works from 2022/23.




| Net Operating Surplus (Deficit) Breakdown | Actual $000's | FY Forecast $000's | Variance $000's | Favourable (F) / Unfavourable (U) |
|---|---|---|---|---|
| Roading | 1,798 | 21,301 | 14,178 | U - Timing of vested asset revenue |
| Water | (3,930) | (917) | 3,243 | U - Activity levels above expectations |
| Wastewater | (1,077) | 6,261 | 5,773 | U - Activity levels above expectations |
| Stormwater | (276) | (564) | (147) | F - Activity levels below expectations |
| Sustainable Communities | (697) | (5,329) | (3,300) | F - Fees and charges and cost recoveries higher than budget |
| Sustainable Environment | (4,412) | (6,217) | (251) | F - Activity expenditure lower than budget |
| Governance | 17 | (279) | (226) | F - Tracking ahead of forecast deficit due to unfilled vacancies and low activity expenditure. |
| Organisational Support | (671) | (3,908) | (2,259) | F - Activity levels below expectations |
| **Total Group of Activities** | **(9,249)** | **10,348** | **17,010** | |
| General rate usage | **3,556** | - | **(3,556)** | F - The general rate income recognised currently exceeds the amount of general rate used. This number adjusts throughout the year relative to activity expenditure. |
| **Surplus (deficit)** | **(5,693)** | **10,348** | **13,454** | |

### Current Working Capital

| | |
|---|---|
| **Current Assets** | **$91,426,688** |
| Cash & cash equivalents | $22,450,650 |
| Debtors & other receivables | $62,555,337 |
| Prepayments | $2,086,916 |
| Other current assets | $4,333,784 |
| **Current Liabilities** | **$63,288,925** |
| Accounts Payable | $40,422,422 |
| Deposits & Bonds | $251,624 |
| Accrued expenses | $18,147,061 |
| Rates in advance | $4,467,818 |
| **Working capital** | **$28,137,763** |
| **Current ratio** | **1.44** |

| | | |
|---|---|---|
| **Limit on Total Debt** | **$317,051,000** | |
| Current Borrowing | $195,275,357 | 61.6% of limit; 84% of budget |
| Plan Debt 23/24 | $231,839,865 | $36.6M headroom ; 73% of limit |

**STATEMENT OF COMPREHENSIVE REVENUE AND EXPENSE**

**for the month ended 31 March 2024**

| Note | | 31-Mar-24 YTD Actual | 31-Mar-24 YTD Budget | 31-Mar-24 Total Budget | 31-Mar-23 YTD Actual (Last year) |
|---|---|---|---|---|---|
| | ***Revenue*** | | | | |
| 1 | Rates | 97,783,904 | 95,057,527 | 126,743,369 | 87,808,235 |
| | Development & financial contributions | 3,284,790 | 6,100,847 | 8,134,462 | 10,044,880 |
| | Subsidies and grants | 19,124,202 | 18,898,254 | 25,197,672 | 14,666,074 |
| | Finance revenue | 2,809,336 | 255,000 | 340,000 | 689,027 |
| | Other revenue | 19,523,488 | 22,129,940 | 29,506,587 | 21,207,669 |
| | ***Total revenue*** | **142,525,720** | **142,441,568** | **189,922,090** | **134,415,884** |
| | ***Expenses*** | | | | |
| 2 | Employee costs | 33,239,126 | 35,401,332 | 47,201,776 | 29,096,231 |
| | Depreciation and amortisation expense | 35,011,711 | 31,874,818 | 42,499,757 | 30,164,853 |
| 3 | Finance costs | 6,169,177 | 4,462,191 | 5,949,588 | 3,486,600 |
| 4 | Other expenses and losses | 73,798,945 | 66,555,037 | 88,740,049 | 62,704,634 |
| | ***Total expenses*** | **148,218,959** | **138,293,378** | **184,391,170** | **125,452,318** |
| | **Operating surplus (deficit) before tax** | **(5,693,239)** | **4,148,190** | **5,530,920** | **8,963,566** |

**Notes - Statement of comprehensive revenue and expense as at 31 March 2024**

| **Note 1: Rates revenue** | 31-Mar-24 YTD Actual | 31-Mar-24 YTD Budget | 31-Mar-24 Total Budget | 31-Mar-23 YTD Actual (Last year) |
|---|---|---|---|---|
| General rates | 54,449,010 | 54,403,412 | 72,537,882 | 49,772,918 |
| Uniform annual general charge | 10,164,143 | 9,887,609 | 13,183,479 | 9,211,727 |
| **Total general rates revenue** | **64,613,153** | **64,291,021** | **85,721,361** | **58,984,645** |
| *Targeted rates* | | | | |
| Community boards | 210,997 | 209,573 | 279,431 | 205,995 |
| Community centres and facilities | 747,106 | 655,682 | 874,242 | 649,011 |
| Refuse & waste management | 4,785,967 | 4,188,929 | 5,585,238 | 4,023,752 |
| Stormwater | 2,267,973 | 2,219,811 | 2,959,748 | 1,915,616 |
| Wastewater | 12,936,639 | 12,452,903 | 16,603,871 | 11,420,785 |
| Metered water supply | 5,358,622 | 5,537,596 | 7,383,461 | 5,009,620 |
| Other water rates | 5,141,038 | 5,005,520 | 6,674,026 | 4,196,222 |
| **Total targeted rates** | **31,448,342** | **30,270,013** | **40,360,017** | **27,421,001** |
| plus: Penalties revenue | 2,293,009 | 1,125,000 | 1,500,000 | 1,989,249 |
| **Total rates revenue** | **98,354,504** | **95,686,034** | **127,581,378** | **88,394,895** |
| less: Rate remissions | (570,600) | (628,507) | (838,009) | (586,661) |
| **Total net rates revenue** | **97,783,904** | **95,057,527** | **126,743,369** | **87,808,234** |

| Note 2: Employee costs | 31-Mar-24 YTD Actual | 31-Mar-24 YTD Budget | 31-Mar-24 Total Budget | 31-Mar-23 YTD Actual (Last year) |
|---|---|---|---|---|
| Salaries and wages | 32,036,077 | 34,038,876 | 45,385,168 | 28,095,166 |
| Kiwisaver contributions | 843,135 | 1,031,915 | 1,375,887 | 717,480 |
| ACC Levies | 71,104 | 91,378 | 121,837 | 75,883 |
| Fringe benefit tax | 94,172 | 108,010 | 144,013 | 89,246 |
| Mileage reimbursements | 82,207 | 53,621 | 71,495 | 64,489 |
| Other personnel expenses | 112,430 | 77,532 | 103,376 | 53,967 |
| **Total employee costs** | **33,239,126** | **35,401,332** | **47,201,776** | **29,096,231** |

| Note 3: Finance costs | 31-Mar-24 YTD Actual | 31-Mar-24 YTD Budget | 31-Mar-24 Total Budget | 31-Mar-23 YTD Actual (Last year) |
|---|---|---|---|---|
| External Interest Expense | 6,168,511 | 4,462,191 | 5,949,588 | 3,486,004 |
| Interest on reserves | 666 | - | - | 596 |
| **Total finance costs** | **6,169,177** | **4,462,191** | **5,949,588** | **3,486,600** |

| Note 4: Other expenses and losses | 31-Mar-24 YTD Actual | 31-Mar-24 YTD Budget | 31-Mar-24 Total Budget | 31-Mar-23 YTD Actual (Last year) |
|---|---|---|---|---|
| Audit fees | 371,478 | 348,030 | 464,040 | 166,200 |
| Asset adjustments | 239 | - | - | (66,317) |
| Bad debt written off | (42,703) | - | - | 5,284 |
| Rates penalty write-offs | 462,481 | 572,598 | 763,464 | 367,491 |
| Activity expenditure | 72,942,612 | 65,559,409 | 87,412,545 | 62,218,118 |
| Treasury administration | 64,838 | 75,000 | 100,000 | 13,858 |
| Property, plant and equipment - losses on disposal | - | - | - | - |
| **Total other expenditure** | **73,798,945** | **66,555,037** | **88,740,049** | **62,704,634** |

**Waikato District Council**
**Statement of financial position as at**
**31 March 2024**

| Note | | 31-Mar-24 YTD Actual | 31-Mar-24 YTD Budget | 31-Mar-24 Total Budget | 31-Mar-23 YTD Actual (Last year) |
|---|---|---|---|---|---|
| | **ASSETS** | | | | |
| | **Current assets** | | | | |
| | Cash & cash equivalents | 22,450,650 | 7,414,466 | 9,885,954 | 19,235,959 |
| 1 | Debtors & other receivables | 62,555,337 | 14,569,558 | 19,426,078 | 61,227,511 |
| | Prepayments | 2,086,916 | 1,935,579 | 2,580,772 | 3,598,397 |
| 2 | Other current assets | 5,433,049 | 4,946,256 | 6,595,008 | 6,549,752 |
| | **Total current assets** | **92,525,953** | **28,865,859** | **38,487,812** | **90,611,619** |
| | **Non-current assets** | | | | |
| 3 | Investments in other entities | 54,474,721 | 29,466,975 | 39,289,300 | 37,782,108 |
| | Investment property | 635,000 | 468,750 | 625,000 | 625,000 |
| | Intangible assets | 4,106,441 | 3,337,899 | 4,450,533 | 1,872,802 |
| 4 | Property plant & equipment | 2,346,067,737 | 1,850,293,945 | 2,467,058,593 | 2,195,553,666 |
| | Derivative financial instruments - assets | 4,322,898 | 1,163,346 | 1,551,128 | 1,551,128 |
| | **Total non-current assets** | **2,409,606,796** | **1,884,730,915** | **2,512,974,554** | **2,237,384,704** |
| | **TOTAL ASSETS** | **2,502,132,749** | **1,913,596,775** | **2,551,462,366** | **2,327,996,323** |
| | **LIABILITIES** | | | | |
| 5 | Creditors & other payables | 63,288,925 | 31,141,876 | 41,522,502 | 56,302,468 |
| 6 | Other liabilities | 7,640,906 | 1,656,086 | 2,208,114 | 6,458,678 |
| 7 | Borrowing | 195,275,357 | 139,832,387 | 186,443,183 | 117,259,000 |
| | **TOTAL LIABILITIES** | **266,205,188** | **172,630,349** | **230,173,799** | **180,020,146** |
| | **NET ASSETS** | **2,235,927,562** | **1,740,966,425** | **2,321,288,567** | **2,147,976,178** |
| | **EQUITY** | | | | |
| | Accumulated funds | 1,270,452,688 | 1,035,061,418 | 1,380,081,891 | 1,214,467,121 |
| | Year to date surplus (deficit) | (5,973,520) | - | - | 8,963,566 |
| 8 | Year to date reserve transfers | 56,461,072 | - | - | 11,558,521 |
| | Council reserves | (11,409,402) | 12,380,780 | 16,507,707 | 13,022,999 |
| | Restricted reserves | 1,046,174 | 104,697 | 139,596 | 204,175 |
| | Replacement funds | 36,747,964 | 7,476,065 | 9,968,087 | 34,037,748 |
| | Targeted rate reserves | (29,506,543) | (7,995,648) | (10,660,864) | (17,107,482) |
| | Development contributions | (49,304,598) | (76,624,831) | (102,166,441) | (28,301,945) |
| | Revaluation reserves | 933,489,721 | 747,814,811 | 997,086,415 | 880,799,295 |
| | Fair value through other comprehensive revenue & expense | 33,924,006 | 22,749,132 | 30,332,176 | 30,332,176 |
| | **TOTAL EQUITY** | **2,235,927,562** | **1,740,966,426** | **2,321,288,567** | **2,147,976,178** |

**Waikato District Council**
**Notes to the financial statements as at**
**31 March 2024**

| | | 31 Mar 2024 | 31 Mar 2023 |
|---|---|---|---|
| **1** | **Debtors & other receivables** | | |
| | Accruals | 6,382,688 | 7,115,830 |
| | Rates receivable | 48,027,066 | 40,798,671 |
| | Sundry debtors | 6,236,339 | 14,824,415 |
| | GST refund due (payable) | 2,599,674 | (877,720) |
| | | **63,245,767** | **61,861,196** |
| | Provision for doubtful debts | (690,430) | (633,685) |
| | **Net debtors & other receivables** | **62,555,337** | **61,227,512** |
| **2** | **Other current assets** | | |
| | Cattle | 10,887 | 2,855 |
| | Non-current assets held for sale | 5,422,163 | 6,546,897 |
| | **Total other current assets** | **5,433,049** | **6,549,752** |
| **3** | **Investments in other entities** | | |
| | Community loans | 1,075,017 | 859,871 |
| | Strada Corporation Ltd | 700,000 | 700,000 |
| | NZ Local Government Insurance Corp Ltd | 38,348 | 42,085 |
| | Waikato Regional Airport Ltd | 36,540,178 | 32,944,611 |
| | BNZ - Term deposit | 11,372,523 | 861,886 |
| | Local Authority Shared Services Ltd | | |
| | *LASS shares* | | |
| | *Waikato Regional Transport Model* | 112,500 | 112,500 |
| | *Shared Valuation Database Service* | 106,674 | 106,674 |
| | LGFA borrower notes | 4,529,481 | 2,154,481 |
| | **Total investments** | **54,474,721** | **37,782,108** |

**4 Property, plant & equipment (PP&E)**

| | 31 Mar 2024 | | | 31 Mar 2023 | | |
|---|---|---|---|---|---|---|
| | **Cost / Val'n** | **Accum dep'n** | **Book value** | **Cost / Val'n** | **Accum dep'n** | **Book value** |
| Bridges | 310,337,705 | - | 310,337,705 | 303,784,645 | (4,982,899) | 298,801,746 |
| Buildings | 77,075,163 | (5,470,633) | 71,604,530 | 74,839,349 | (2,271,300) | 72,568,049 |
| Computers | 3,250,044 | (2,575,675) | 674,369 | 3,250,044 | (2,188,887) | 1,061,158 |
| Drainage | 4,895,575 | (41,417) | 4,854,159 | 2,756,176 | (26,483) | 2,729,693 |
| Furniture | 1,906,659 | (1,570,300) | 336,359 | 1,906,659 | (1,475,795) | 430,864 |
| Land | 207,127,674 | - | 207,127,674 | 201,343,900 | - | 201,343,900 |
| Land under roads | 110,268,123 | - | 110,268,123 | 110,268,123 | - | 110,268,123 |
| Library books | 7,663,022 | (6,300,491) | 1,362,531 | 7,213,673 | (5,864,536) | 1,349,137 |
| Office equipment | 1,418,220 | (1,325,086) | 93,133 | 1,404,420 | (1,302,435) | 101,985 |
| Parks and reserves | 83,839,227 | (3,552,371) | 80,286,856 | 77,433,458 | (3,126,402) | 74,307,056 |
| Plant | 6,304,165 | (3,437,696) | 2,866,469 | 5,923,711 | (3,769,664) | 2,154,047 |
| Roading | 943,970,507 | (17,947,077) | 926,023,430 | 923,050,015 | (11,780,353) | 911,269,661 |
| Stormwater | 105,594,756 | (1,032,400) | 104,562,356 | 94,108,638 | (916,382) | 93,192,257 |
| Transfer stations | 3,406,141 | (86,625) | 3,319,516 | 2,978,484 | (77,556) | 2,900,929 |
| Wastewater | 179,582,785 | (4,758,593) | 174,824,191 | 169,810,883 | (2,751,300) | 167,059,583 |
| Water | 193,289,063 | (3,823,875) | 189,465,189 | 175,065,650 | (2,786,348) | 172,279,301 |
| Work in progress | 158,061,146 | - | 158,061,146 | 83,736,178 | - | 83,736,178 |
| **Total PP&E** | **2,397,989,976** | **(51,922,239)** | **2,346,067,737** | **2,238,874,006** | **(43,320,339)** | **2,195,553,666** |

| Note | | 31 Mar 2024 | 31 Mar 2023 |
|---|---|---|---|
| 5 | **Creditors & other payables** | | |
| | Trade payables | 40,422,422 | 34,669,177 |
| | Deposits & bonds | 251,624 | 241,330 |
| | Accrued expenses | 18,147,061 | 21,399,418 |
| | Rates in advance | 4,467,818 | (7,457) |
| | **Total creditors & other payables** | **63,288,925** | **56,302,468** |
| 6 | **Other liabilities** | | |
| | Employee entitlements | 5,584,811 | 4,250,564 |
| | Provisions | 2,056,094 | 2,208,114 |
| | Derivative financial instruments | - | 0 |
| | **Total other liabilities** | **7,640,906** | **6,458,678** |
| 7 | **Borrowings** | | |
| | Non current portion of borrowing | 184,275,357 | 97,259,000 |
| | Current portion of borrowing | 11,000,000 | 20,000,000 |
| | **Total borrowings** | **195,275,357** | **117,259,000** |

| 8 | **Reserve movements** | **Balance as at 31 Mar 2024** | **Movements** | **Opening balance** |
|---|---|---|---|---|
| | Council reserves | 11,409,402 | (34,380,119) | (22,970,717) |
| | Restricted reserves | (1,046,174) | 236,543 | (809,630) |
| | Replacement funds | (36,747,964) | 3,938,376 | (32,809,588) |
| | Targeted rate reserves | 29,506,543 | (8,885,648) | 20,620,895 |
| | Development contributions | 49,304,598 | (17,370,224) | 31,934,374 |
| | per Reserve balance report | **52,426,406** | **(56,461,072)** | **(4,034,666)** |
| | Revaluation reserves | (933,489,721) | - | (933,489,721) |
| | Fair value through other comprehensive revenue and expense | (33,924,006) | - | (33,924,006) |
| | **Total other reserves** | **(914,987,321)** | **(56,461,072)** | **(971,448,393)** |

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

**Open - Information Only**

| | |
|---|---|
| **To** | **Waikato District Council** |
| **Report title** | **Treasury Risk Management Policy – Compliance Report at 31 March 2024** |
| Date: | 13 May 2024 |
| Report Author: | Colin Bailey, Finance Manager |
| | Jean de Abreu, Finance Planning & Reporting Team Leader |
| Authorised by: | Alison Diaz, Chief Financial Officer |

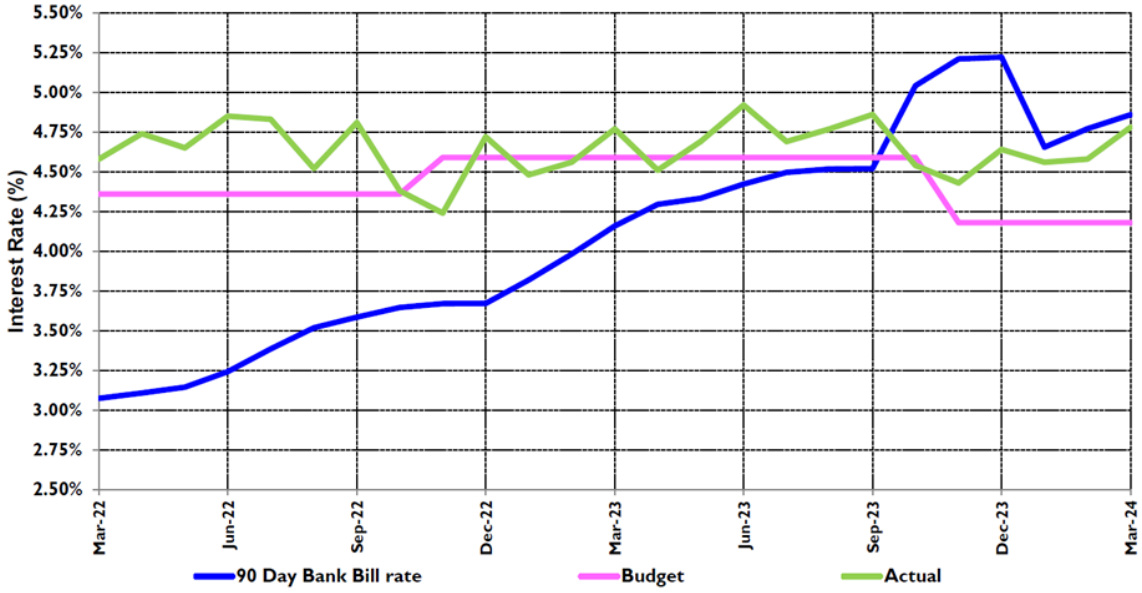
## 1. Purpose of the report
## Te Take moo te puurongo

The purpose of this report is to inform the Performance and Strategy Committee of compliance with the Treasury Risk Management Policy.

## 2. Executive summary
## Whakaraapopototanga matua

All areas of the treasury risk management are within policy limits except for:

- (# 6): Actual borrowing costs for year to date ending March 2024 are $1.7 million higher than the year to date budget. This interest expense is forecasted to be $2.3 million higher than budget for the full year. This will be offset by savings (lower than planned activity levels) in other general rate funded areas, for which the the year to date position is a surplus of $3.3 million. The interest rate benchmark chart below explains this variance. The 2023/24 budget was based on the Price Waterhouse Coopers (PWC) annual forecast of 4.2%, lower than the current LGFA rate of 6.1% which after taking interest rate swaps into account results in an actual interest rate cost of 4.4%.




- (# 12): Balanced budget benchmark (revenue / expenses): The benchmark requires Revenue (excluding development contributions) to be equal to or more than Expenses at the 31 March balance date. For the quarter ending 31 March 2024, Revenue is $8.7 million less than Expenses, or 94% of Expenses. This is largely due to Subsidies and grants being lower than budget by $9 million due to lower NZTA Subsidy Income received as a result of delayed work programmes. Other revenue is $8.9 million below budget due to lower-than-expected revenue in Fees and Charges. Depreciation is $3.1m above budget due to higher-than-expected infrastructure asset values and Other Expenses are $7.2 million higher than budget due to increased expenditure in consultancy costs as well as higher than budgeted costs in software maintenance, insurance premiums, environmental maintenance and payment repairs.

In April 2024, Council received an additional $30 million from LGFA. $10 million is required to finance forecasted capital expenditure and $20 million has been placed on fixed term deposit to fund upcoming debt repayments in April 2025 with a fixed interest rate of 6.26% p.a.. This will yield a gross interest income of $1.2 million. This strategy not only reduces our near term interest costs against BKBM, but also generates a positive carry on our term deposit and is favorably regarded by Fitch and other rating agencies.

## 3. Staff recommendations
## Tuutohu-aa-kaimahi

**THAT the Performance and Strategy Committee receive the 31 March 2024 Treasury Risk Management Policy – Compliance Report.**

## 4. Background
## Koorero whaimaarama

The Treasury Risk Management Policy (the Policy) provides the framework for all of the Council's borrowing and investment activities and defines key responsibilities and the operating parameters within which borrowing, investment and related risk management activities are to be carried out. The Treasury Management Compliance Report provides the quarterly results against policy benchmarks and performance measures.

## 5. Discussion
## Matapaki

The purpose of this report is to inform the Performance and Strategy Committee of compliance with the Treasury Risk Management Policy.

## 6. Next Steps
## Ahu whakamua

Not applicable.

## 7. Attachments
## Ngaa taapirihanga

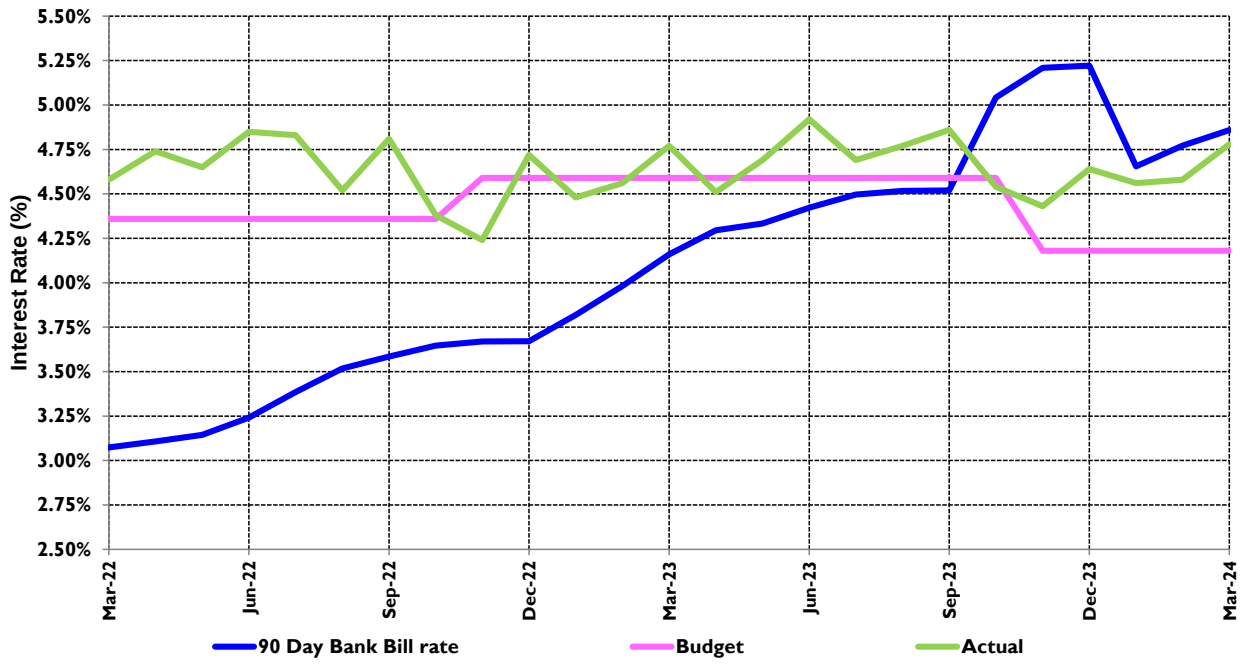
1. Attachment 1 - Treasury Risk Management Policy Compliance Report at 31 March 2024

**Waikato District Council**
**Treasury risk management policy - Compliance report**
**As at 31 March 2024**

| | Policy criteria | Policy limit | Actual | Within policy? |
|---|---|---|---|---|
| 1 | The percentage of net external debt to annual revenue | <175% | 91.8% | ✓ |
| | Net external debt = | Net external debt is defined as total external debt less liquid financial assets/investments | | |
| | Total annual revenue = | Total annual revenue is defined as earnings from rates, grants and subsidies, user charges, interest, dividends, financial and other revenue and excludes non-government capital contributions (e.g. developer contributions and vested assets). | | |
| 2 | Net interest expense on net external debt as a percentage of total annual revenue | <20% | 2.5% | ✓ |
| | Net interest expense = | total interest and financing costs less interest income | | |
| 3 | Net interest expense on net external debt as a percentage of planned annual rates | <25% | 3.5% | ✓ |
| 4 | Liquidity ratio | >110% | 117.0% | ✓ |
| | Liquidity = | Liquidity is defined as external debt plus available committed bank facilities plus liquid investments divided by current external debt | | |

5 Interest rate benchmark chart

Comparison of actual monthly and year-to-date interest payable, including the cost of swaps in place vs borrowing the total debt amount at the combined average of the 90-day bill rate and the five-year investor swap rate over the last two years.




| | | Budget | Actual | |
|---|---|---|---|---|
| 6 | Actual borrowing costs are <= budgeted borrowing costs | | | |
| | Current month | $495,833 | $852,234 | ✗ |
| | Year to date | $4,462,500 | $6,168,511 | ✗ |

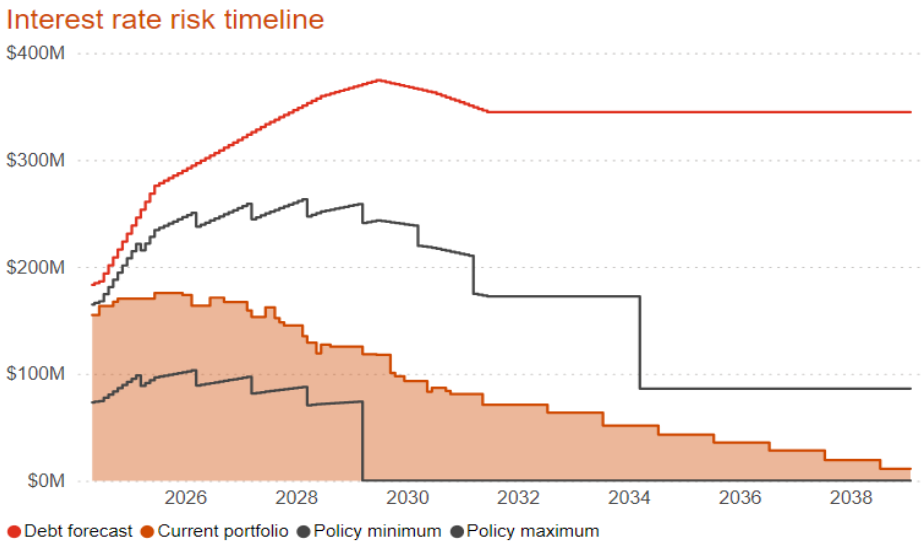
| 7 | Current interest rate swaps (including forward starts) | | | |
|---|---|---|---|---|
| | **Amount $** | **Effective date** | **Termination date** | **Fixed rate** |
| | **Live swaps** | | | |
| | 2,000,000 | 22-Jun-17 | 23-Jun-25 | 3.52% |
| | 2,000,000 | 25-Sep-17 | 25-Feb-27 | 3.67% |
| | 6,000,000 | 31-Oct-17 | 31-Jan-27 | 3.67% |
| | 10,000,000 | 28-Feb-18 | 28-Feb-28 | 3.33% |
| | 10,000,000 | 28-Aug-18 | 30-Aug-27 | 3.37% |
| | 10,000,000 | 28-Feb-19 | 27-Feb-26 | 3.33% |
| | 2,000,000 | 1-Mar-19 | 1-Dec-25 | 3.85% |
| | 2,000,000 | 19-Jun-19 | 19-Mar-28 | 3.10% |
| | 2,000,000 | 19-Jun-19 | 19-Mar-27 | 3.28% |
| | 10,000,000 | 30-Sep-19 | 28-Sep-29 | 3.55% |
| | 5,000,000 | 30-Jun-20 | 29-Jun-29 | 3.63% |
| | 3,000,000 | 20-Apr-22 | 21-Oct-30 | 4.06% |
| | 3,000,000 | 20-Apr-22 | 23-Oct-29 | 4.08% |
| | 2,000,000 | 21-Jun-22 | 21-Aug-28 | 4.09% |
| | 4,000,000 | 22-Jun-22 | 24-Sep-29 | 3.99% |
| | 3,000,000 | 22-Jun-22 | 24-Sep-29 | 4.05% |
| | 3,000,000 | 23-Jun-22 | 23-Sep-30 | 3.92% |
| | 4,500,000 | 23-Jun-22 | 21-Dec-29 | 3.97% |
| | 4,000,000 | 23-Jun-22 | 23-Mar-29 | 3.97% |
| | 3,000,000 | 23-Jun-22 | 23-Mar-29 | 3.97% |
| | 4,000,000 | 23-Jun-22 | 23-Mar-28 | 4.06% |
| | 3,000,000 | 22-Mar-23 | 22-Jun-29 | 4.20% |
| | **97,500,000** | **Total "live" swaps** | **Average interest rate of live swaps** | **3.71%** |
| | **Forward starting Swaps** | | | |
| | 4,000,000 | 25-Mar-24 | 25-Sep-26 | 4.21% |
| | 4,000,000 | 25-Mar-24 | 25-Mar-27 | 4.21% |
| | 4,000,000 | 23-Sep-24 | 23-Sep-27 | 4.26% |
| | 3,000,000 | 21-Oct-24 | 21-Oct-27 | 4.27% |
| | ***112,500,000*** | ***Total swaps*** | ***Average interest rate of total swaps*** | **4.13%** |

| 8 | Forward start period to be no more than 24 months unless there is a match with the expiry date of an existing swap of the same notional amount | 4 swaps with start periods > 24 months forward all are matched with existing swaps |
|---|---|---|

| 9 | Counterparty credit risk - swaps | | | |
|---|---|---|---|---|
| | NZ registered banks (each) | $30m | | |
| | - ANZ / National | | $0m | ✓ |
| | - ASB | | $0m | ✓ |
| | - BNZ | | $13.74m | ✓ |
| | - HSBC | | $0m | ✓ |
| | - Westpac | | $0m | ✓ |

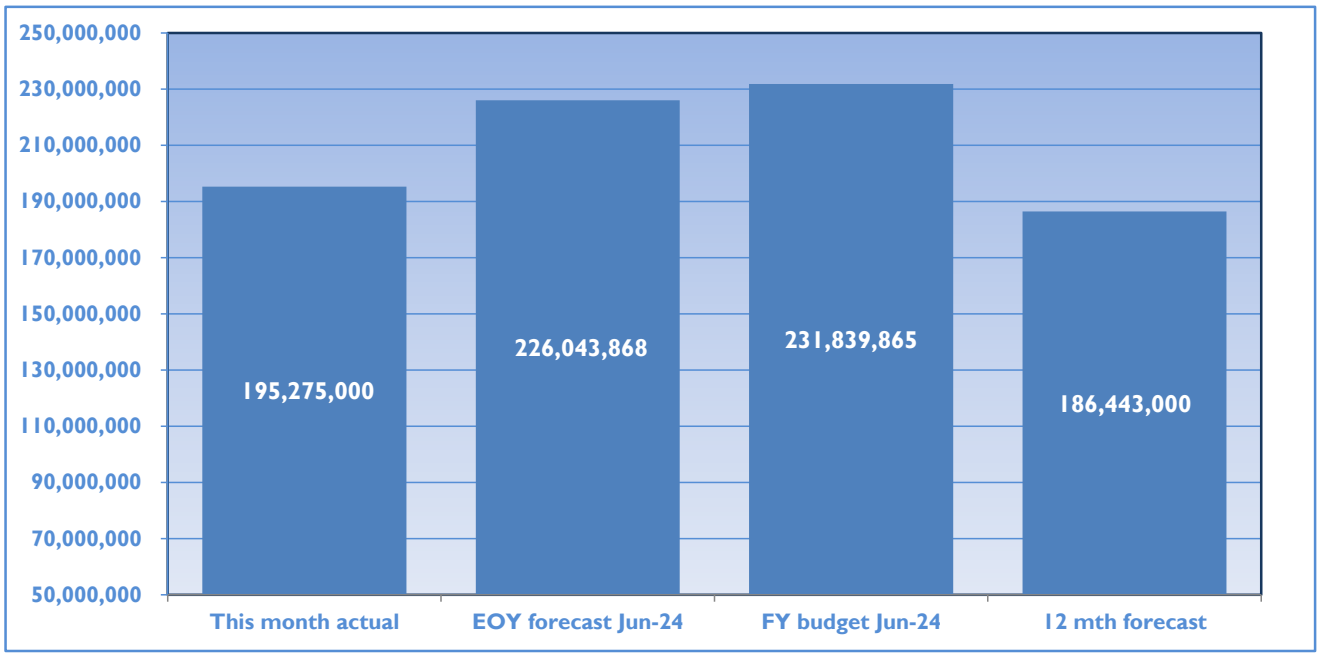
**10** Council's net external debt should be within the following fixed/floating interest rate risk control limits.:

| Debt period ending | Debt Forecast $m | Policy criteria | Actual | Within policy |
|---|---|---|---|---|
| Current | 209 | 40% - 90% | 79.2% | ✓ |
| Year 1 | 279 | 40% - 90% | 62.1% | ✓ |
| Year 2 | 310 | 35% - 85% | 53.8% | ✓ |
| Year 3 | 339 | 30% - 80% | 44.3% | ✓ |
| Year 4 | 362 | 25% - 75% | 34.7% | ✓ |
| Year 5 | 371 | 20% - 70% | 28.8% | ✓ |
| Year 6 | 359 | 0% - 65% | 23.7% | ✓ |
| Year 7 | 345 | 0% - 60% | 21.0% | ✓ |
| Year 8 | 345 | 0% - 50% | 19.2% | ✓ |
| Year 9 | 345 | 0% - 50% | 16.1% | ✓ |
| Year 10 | 345 | 0% - 50% | 13.3% | ✓ |

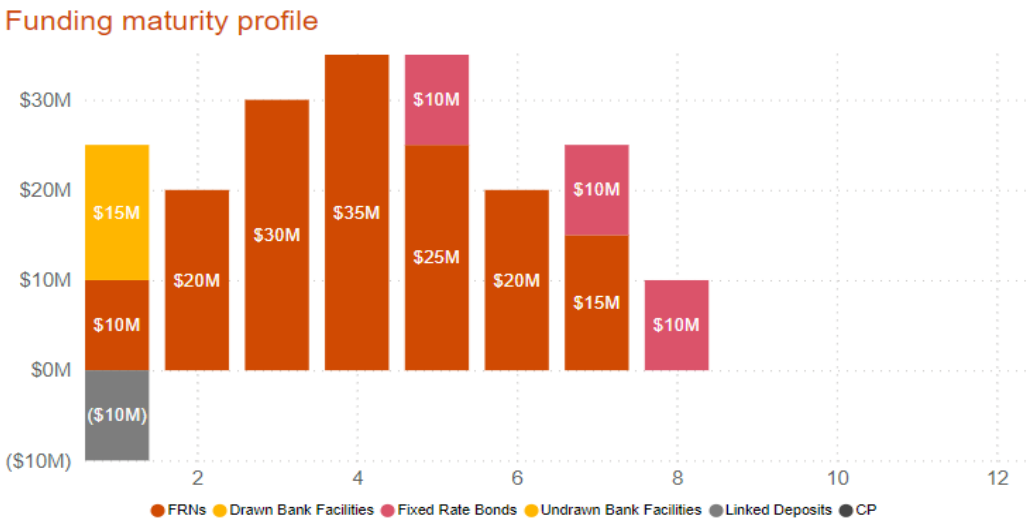



| | Policy criteria | Policy limit | Actual | Within policy? |
|---|---|---|---|---|
| **11** | Debt affordability benchmark - limit on debt (actual debt <= limit on debt) | <= $317m | $195m | ✓ |
| **12** | Balanced budget benchmark (revenue / expenses) | >=100% | 94% | ✗ |
| **13** | Essential services benchmark (CAPEX / dep'n - infrastructure) | >=100% | 113% | ✓ |
| **14** | Debt servicing benchmark (borrowing costs / revenue) | <15% | 4.4% | ✓ |
| | borrowing costs = | finance expenses per statement of comprehensive revenue and expense | | |

| | | | | |
|---|---|---|---|---|
| **15** | Borrowing at March 2024 | This graph depicts actual borrowing - LGFA plus bank (BNZ). | | |




| | | | | |
|---|---|---|---|---|
| **16** | Actual monthly (gross) borrowing is within end-of-year budget | $231,839,865 | $195,275,000 | ✓ |
| **17** | The maturity profile of the total committed funding in respect of all loans and committed facilities | | | |
| | 0 to 3 years | 15% - 60% | 34% | ✓ |
| | 3 to 7 years | 25% - 85% | 52% | ✓ |
| | 7 years plus | 0% - 60% | 13% | ✓ |



| | | |
|---|---|---|
| **18** | Financial assets | **$'000** |
| | *Share investments held for strategic purposes* | |
| | Local Authority Shared Services Limited | 220 |
| | Waikato Regional Airport Limited | 36,540 |
| | Strada Corporation Limited | 700 |
| | Civic Financial Services Limited | 38 |
| | *Investments held to reduce the current ratepayer burden* | |
| | Community loans as below | 1,074 |
| | *Short-term investments held for liquidity & working capital requirements* | |
| | Bank & cash balances | 1,953 |
| | Short-term bank deposits | 19,000 |
| | **Total investments** | **$59,525** |
| | For treasury purposes, LGFA borrower notes are netted off against related borrowing | |

**19** Community loans

| Borrower | Current balance $$ | Maturity date | Interest rate |
|---|---|---|---|
| Tamahere Community Loan | 356,441 | Jul-33 | 5.66% |
| Hukanui Golf Club Loan | 23,138 | Jan-32 | 5.66% |
| Port Waikato Community Loan | 451,299 | Jul-45 | 5.66% |
| Whatawhata Hall Community Loan | 242,829 | Jul-48 | 5.66% |
| | $1,073,706 | | |

| | Policy criteria | Policy limit | Actual | Within policy? |
|---|---|---|---|---|
| **20** | Counterparty credit risk - investments | | | |
| | NZ Government | unlimited | $0m | ✓ |
| | NZD resistered supranationals | $20m | $0m | ✓ |
| | LGFA | $20m | $4.529m | ✓ |
| | NZ registered banks (each) | $20m | | |
| | - ANZ / National | | $4.75m | ✓ |
| | - ASB | | $4.75m | ✓ |
| | - BNZ | | $4.75m | ✓ |
| | - HSBC | | $0m | ✓ |
| | - Westpac | | $4.75m | ✓ |
| **21** | Counterparty credit risk - total | | | |
| | NZ registered banks (each) | $50m | | |
| | - ANZ / National | | $4.75m | ✓ |
| | - ASB | | $4.75m | ✓ |
| | - BNZ | | $18.49m | ✓ |
| | - HSBC | | $0m | ✓ |
| | - Westpac | | $4.75m | ✓ |
| | | | | |
| **22** | Council currently acts as guarantor for: | | | |

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

**Open - Information Only**

| | |
|---|---|
| **To** | **Waikato District Council** |
| **Report title** | **2024-2034 Long Term Plan. Project close out** |
| Date: | 13 May 2024 |
| Report Author: | Nicole Hubbard, Corporate Planning Manager |
| Authorised by: | Tony Whittaker, Chief Operating Officer and Deputy CE |

## 1. Purpose of the report
## Te Take moo te puurongo

To inform the Performance and Strategy Committee of the close out of the 2024-2034 Long Term Plan (LTP) project and request input into the debrief process to create lesson learnt to support the 2025-2031 LTP project.

## 2. Executive summary
## Whakaraapopototanga matua

Staff have been working on the 2024-2034 LTP since January 2023, with regular reporting on the project to the Strategy and Policy Committee since March 2023.

With the introduction of the Water Service Act Repeal Bill, Council's were provided with a several options on how to proceed with their planning processes, including an option to defer the 2024-2034 LTP for one year and instead prepare a 2024/25 Annual Plan.

In a paper presented at the Council meeting on 28 February 2024, Council resolved to defer the LTP by 12 months and prepare an 'enhanced' annual plan for the 2024/25 financial year.

This report confirms the close out of the 2024-2034 LTP project and seeks feedback from Councillors on stages of the project to help inform the planning for the 2025-2034 LTP.

## 3. Staff recommendations
## Tuutohu-aa-kaimahi

**THAT the Performance and Strategy Committee:**

a. **receives the report.**

## 4. Background
## Koorero whaimaarama

Staff have been working on the 2024-2034 LTP since January 202, with regular reporting on the project to the Strategy and Policy Committee since March 2023.

In February 2024, councils were informed that the Water Service Act Repeal Bill would provide the option of deferring the LTP by 12 months and preparing an 'enhanced' annual plan for the 2024/25 financial year.

In a paper presented at the Council Meeting on 28 February, Council resolved to defer the LTP by 12 months and prepare an 'enhanced' annual plan for the 2024/25 financial year.

Following this decision staff have worked to close out the 2024-2034 LTP project and are current undertaking a debrief on the aspects of the process that were completed. The lesson learnt from the debrief will be used in the planning of the 2025-2034 LTP.

## 5. Discussion
## Matapaki

Following the Council decision to defer the LTP by 12 months and prepare an 'enhanced' annual plan for the 2024/25 financial year, there is an opportunity to identify aspects of the LTP project that went well that we want to continue doing, and parts of the project that could be improved or updated.

Feedback is currently being gathered from internal staff to help with planning the 2025-2034 LTP and we are keen to understand Councillors insights into the process to date.

All feedback gathered will be collated into a project close out report, which will identify the things that worked well which we should continue or repeat, and any areas for improvement, which will be used to create an improvement plan.

Staff would like to offer two options for providing your feedback. A survey will be developed whereby you can note how each part of the process went with an opportunity to add your comments. In addition to this staff will set up two sessions if you would prefer to provide in person feedback. Available times include:
- Monday 13 May 12.30-1.30pm.
- Tuesday 14 May 1.00-2.30pm.

## 6. Next Steps
## Ahu whakamua

Staff will circulate an online survey and communicate in person drop in session times. All feedback gathered will help with planning the 2025-2034 LTP.

## 7. Attachments
## Ngaa taapirihanga

None

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

**Open - Information Only**

| | |
|---|---|
| **To** | **Waikato District Council** |
| **Report title** | **Chief Executive's Business Plan** |
| Date: | 13 May 2024 |
| Report Author: | Tony Whittaker, Chief Operating Officer and Deputy CE |
| Authorised by: | Tony Whittaker, Chief Operating Officer and Deputy CE |

## 1. Purpose of the report
## Te Take moo te puurongo

To update/inform the Committee for on progress covering 2023/2024 business plan items.

## 2. Executive summary
## Whakaraapopototanga matua

The Chief Executive's Business Plan is a summary of progress on priority issues agreed by Councillors. Some of the items are still to be scoped and hence no progress made at this time.

## 3. Staff recommendations
## Tuutohu-aa-kaimahi

**THAT the Performance & Strategy Committee receives the update on the Chief Executive's Plan.**

## 4. Background
## Koorero whaimaarama

The Plan is a summary of progress on specific issues. It enables staff and Councillors to focus on the big issues and ensures that attention is given to those things of strategic importance. The Plan is in line with the Chief Executive's Performance Agreement which was updated and confirmed by Council in advance of this financial year.

# 5. Discussion
## Matapaki

The report contains the strategic issues that Council is focussed on. The Chief Executive's Business Plan is aligned to the Chief Executive's Performance Agreement. The underpinning criteria is the council vision of 'liveable, thriving and connected communities.'

### 5.1 Options
**Ngaa koowhiringa**

This report is for information only and as an update on progress. No decision is being sought from the Committee other than to receive the report.

### 5.2 Financial considerations
**Whaiwhakaaro puutea**

This report covers the strategic goals set for the Chief Executive for the year. There will be financial implications as the various projects and initiatives are worked through. There are no immediate concerns at the time of this report.

### 5.3 Legal considerations
**Whaiwhakaaro-aa-ture**

There are potential legal issues that arise through the implementation of this work plan and these will be discussed with council if and when these come to light.

### 5.4 Strategy and policy considerations
**Whaiwhakaaro whakamaaherehere kaupapa here**

The report and recommendations are consistent with and give effect to Council's vision of *'Liveable, thriving and connected communities – He noohanga aahuru, he iwi whai ora, he hapori tuuhono tahi.'*

### 5.5 Maaori and cultural considerations
**Whaiwhakaaro Maaori me oona tikanga**

Iwi and Tangata Whenua have been or will be consulted on at least some of the key projects or initiatives referred to in the report. Iwi are involved as a strategic partner of Council through our Joint Management Agreements and projects such as Raglan, Huntly and Te Kauwhata Wastewater Treatment plant upgrades and consent processes.

The Mana Whenua Forum will be a key engagement mechanism once formally established.

### 5.6 Climate response and resilience considerations
**Whaiwhakaaro-aa-taiao**

The matters in this report will impact on climate action but it is unclear what this will be until further progress on individual projects is made. A specific measure however is included in the Chief Executive performance measures regarding emission reduction.

### 5.7 Risks
**Tuuraru**

As this report seeks to provide a general update only, it is anticipated that the risk level is low.

## 6. Significance and engagement assessment
## Aromatawai paahekoheko

### 6.1 Significance
**Te Hiranga**

The matters covered in this report may be assessed as of high significance, in accordance with the Council's Significant and Engagement Policy.

### 6.2 Engagement
**Te Whakatuutakitaki**

Engagement on the contents of this report has been low and internal. However specific items encompass engagement with key external stakeholders.
The following areas are priorities in the communications and engagement approach:

1. Keeping councillors informed of progress;
2. Ensuring the development of strategic partnerships and relationships.

| Highest level of engagement | Inform | Consult | Involve | Collaborate ✓ | Empower |
|---|---|---|---|---|---|
| *Tick the appropriate box/boxes and specify what it involves by briefly explaining the tools used to engage (refer to the project engagement plan if applicable).* | Staff have worked collaboratively with our iwi/hapuu to maximise engagement on a range of activities and actions. Similarly, there has been consistent communication with a range of strategic partners and organisations. | | | | |

State below which external stakeholders have been or will be engaged with:

| Planned | In Progress | Complete | |
|---|---|---|---|
| ✓ | ✓ | | Internal |
| | | | Community Boards/ Community Committees |
| | ✓ | | Waikato-Tainui/Local iwi and hapū |
| | | | Affected Communities |
| | ✓ | | Affected Businesses |

## 7. Next Steps
## Ahu whakamua

Regular updates will be provided on progress with delivery of the business plan.

## 8. Confirmation of statutory compliance
## Te Whakatuuturutanga aa-ture

As required by the Local Government Act 2002, staff confirm the following:

| | |
|---|---|
| The report fits with Council's role and Committee's Terms of Reference and Delegations | Confirmed |
| The report contains sufficient information about all reasonably practicable options identified and assessed in terms of their advantages and disadvantages (section 5.1) | Confirmed |
| Staff assessment of the level of significance of the issues in the report after consideration of the Council's Significance and Engagement Policy (section 6.1) | Low |
| The report contains adequate consideration of the views and preferences of affected and interested persons taking account of any proposed or previous community engagement and assessed level of significance (Section 6.2) | Confirmed |
| The report considers impact on Maaori (Section 5.5) | Confirmed |

| | |
|---|---|
| The report and recommendations are consistent with Council's plans and policies (Section 5.4) | Confirmed |
| The report and recommendations comply with Council's legal duties and responsibilities (Section 5.3) | Confirmed |

## 9. Attachments
## Ngaa taapirihanga

1. Agreed Chief Executive KPIs 2023-24 - May 2024

# Chief Executive's KPIs – 2023/2024

***Overarching Council Vision: "Liveable, Thriving and Connected Communities"***

***Staff & Wellbeing Vision: "Work Safe, Home Safe"***

<table>
<tr><th>Key project/priority</th><th colspan="2">Key deliverables/KPIs</th><th>Update & Delivery Comments</th><th>RAG Status</th></tr>
<tr><td rowspan="3">1. Consistent delivery of Core Services. (Council will focus on reliable and essential services that keep our community safe and resilient)</td><td></td><td>The 2023/2024 Annual Plan is delivered within the agreed budget, financial strategy, legislative compliance, and in accordance with variations approved by Council. Provide regular updates to the Performance & Strategy Committee on progress, with recommended remedial actions for any actual/potential impacts on agreed delivery.</td><td>Performance information is provided quarterly.</td><td></td></tr>
<tr><td></td><td>Capital Works are delivered within the agreed budget and in accordance with variations approved by Council. Provide regular updates on progress, with recommendations for remedial actions to be undertaken where there are any barriers to the delivery of the projects, with a focus on the following key areas of work:</td><td>A recent briefing to council outlined a reduction in the forecast programme for the year. Although this lower than expected forecast is disappointing to announce at this time of the year, delivery is significantly up on last years $77m. A Council workshop on 13th May will outline the projects and why they won't be completed this financial year.
<table>
<tr><th></th><th>Total Budget 23/24</th><th>Actual Spend to 31 March 2024</th><th>Forecast further Spend 23/24</th><th>Actuals plus forecast</th></tr>
<tr><td>Community Connections</td><td>39,802,122</td><td>13,414,566</td><td>11,188,523</td><td>24,603,089</td></tr>
<tr><td>Roading</td><td>60,068,507</td><td>22,938,767</td><td>29,991,976</td><td>52,930,743</td></tr>
<tr><td>Strategic Property</td><td>8,486,440</td><td>5,590,543</td><td>450,000</td><td>6,040,543</td></tr>
<tr><td>Solid Waste</td><td>3,496,056</td><td>378,250</td><td>404,219</td><td>782,469</td></tr>
<tr><td>Waters</td><td>57,765,152</td><td>32,732,214</td><td>15,300,000</td><td>47,672,214</td></tr>
<tr><td>Total</td><td>$169,618,277</td><td>$75,054,340</td><td>$57,334,718</td><td>$132,029,058</td></tr>
</table></td><td></td></tr>
<tr><td></td><td>a)</td><td>Three Waters (projects managed and delivered via Watercare).</td><td>The Water Governance Board has confirmed the forecast of $47.6m is appropriate for the year. Current projects are being delivered within the project plan milestones and tracking well. This excludes carry forwards of $40.1m from 2022/23.<br><br>Operations and maintenance of the network and treatment plants</td><td></td></tr>
</table>

| Key project/priority | Key deliverables/KPIs | | Update & Delivery Comments | RAG Status |
|---|---|---|---|---|
| | | | are delivered to within standard.<br><br>Resource consent compliance is slipping but upgrades are being scoped and planned to enable this to be corrected. | |
| | | b) Roading (projects predominantly delivered through the Waikato District Alliance) | The capital Spend to March is $22m from a total annual budget of $60m. Highlights include:<br>• All Road to Zero Projects are on track and have delivered cost savings.<br>• All culvert projects have been completed.<br>• River Road/Lake Road roundabout consent granted physical works underway.<br>• Physical work at Horotiu is well underway.<br>• Stormwater work for Festival Way began in December, roadworks is underway.<br>• Pookeno - Pokeno Main Street and the Pokeno/Great South Road Roundabout are progressing well with completion due July or August, subject to weather.<br>• Pookeno – Munro Road, contract awarded – delays due to power cables requiring design changes (non-delivery risk<br>• Emergency Works (Cyclone Gabrielle) - three packages $3.3M tendered, two have commenced Wairamarama and Onewhero-Tuakau Roads (4 sites in total).<br><br>Two projects at risk of non-delivery include:<br>• Helenslee Road improvements; and<br>• Harrisville Bridge replacement.<br>These have been impacted due to unexpected complexity and insufficient budget. Additional budget has been requested next financial year to complete these projects. | |

| Key project/priority | Key deliverables/KPIs | Update & Delivery Comments | RAG Status |
|---|---|---|---|
| | c) Sustainable communities (including community aspirational projects, blueprints, economic development incorporating social & community related projects). | <u>Open Spaces</u><br>Several projects such as Raglan wharf, Pookeno Sports Park, and Buckland Road neighbourhood park, are progressing well.<br><br>The Avon court lighting and Pukekawa courts have been completed since the last report.<br><br><u>Community Facilities</u><br>Projects completed this year include Te Kowhai, Tamahere, Sunset Beach and Pookeno toilets. The Huntly boiler has progressed ahead of time and will be completed by the 30 April 2024. Pokeno Hub project at the scoping phase with Community engagement. Various smaller renewal projects are being progressed to be delivered by 30 June.<br><br><u>Community & Economic Growth</u><br>The "community aspirational projects, blueprints, economic development incorporating social & community related projects" are progressing in accordance with Community Plans and Blueprints. The total community aspirations and blueprints budget is $711,897, with actual spending to date of $92,525. The entire year allocation will not be spent prior to 30 June as the team continue to build capacity in the community for these community-led projects.<br><br>The Community Board and Committee plan programme commenced in January 2024, focussed on supporting them to develop their leadership around community wellbeings. The first milestone will be June 2024 where several plans will be presented to Council. | |
| | d) Solid waste – complete agreed Waste Management & Minimisation implementation plan by 30 June 2024. | <u>Waste Assessment</u><br>The draft Waste Assessment was sent to the Officer of Health before Christmas. This will come to Council before the Ministry for the Environment (MfE) deadline for review of the Waste Minimisation and Management Plan. Council needs to confirm whether to review the WMMP by 31st of May 2024.<br><br><u>Tuakau Resource Recovery Centre:</u><br>This project is underway. Consultants are currently working on the | |

| Key project/priority | Key deliverables/KPIs | | Update & Delivery Comments | RAG Status |
|---|---|---|---|---|
| | | | operational model; A review of the current concept to identify savings in the capital cost is being undertaken as is the development of a staging plan. Funding has been discussed with MfE. | |
| | | The 2024-2034 LTP document is complete by 30 June 2024. | The 2024/25 Enhanced Annual Plan engagement is complete. 224 submissions have been received with hearings planned for 14 to 16 May.<br>We need to use the delayed year of the LTP to engage with communities to reconsider assumptions and potentially levels of service. | |
| **2.** Council Responsiveness (Council will improve its responsiveness and communication to communities and customers). | **2.** | a) Complete the review of the Service Request system by 31 December 2023 (all service requests logged in property and rating). | The review of the Service Request System has been completed. Improvements to technology, ways of working, supplier management and performance monitoring are complete with appropriate change management plans in place with staff. | |
| | | b) Complete priority improvements (partner two way and automated email or text to customer) by 31 March 2024. | Antenno. Semi-automated email to customers on receipt and completion of request and alert notifications to staff have been implemented.<br>Integration is in place with Watercare.<br>Two-way integration with Amourguard and Citycare has been deferred to late 2024 at the request of the vendors. | |
| | | c) System fully operational (including training) by 30 June 2024. | On schedule to have system fully operational by 30 June, with exception of the Amourguard and Citycare integration. | |
| | **2.2** | a) Review and update the strategic communications plan. The revised plan to be approved by council by 31 March 2024. | The review of the organisation wide Communication Strategy (Trust and Confidence Strategy) is complete. This was presented in its final form to Council in March 2024.<br><br>A survey of key stakeholders (including Council) has been completed to provide a benchmark of current performance. | |
| | | b) Implement the agreed plan and report on progress quarterly. | A Change Proposal has been presented to the Communication Team and wider organisation re changes proposed to roles and ways of working. This was confirmed on 9 May. Recruitment for the Executive role is in progress. | |

| Key project/priority | Key deliverables/KPIs | | Update & Delivery Comments | RAG Status |
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| **3.** Building Community Resilience & Connectivity<br><br>We will prioritise the wellbeing of our district by building and supporting strong and resilient communities.<br><br>Our district is easy to explore, and communities are connected and well informed). | **3.1** | a) Amend and update priority existing community response plans by 30 June 2024. | Work to support Community Response Planning is continuing. Strong participation is being experienced with 20 plans now at various stages of completion.<br>Te Kauwhata and Onewhero are complete. Raglan Tuakau and Pukekawa are also complete awaiting formal sign off from Chairpersons.<br><br>Recovery funding from DIA is supporting the groups with plan development. | |
| | | b) Develop priority marae, community and business continuity plans following relevant community engagement by 30 June 2024. | A draft MOU is being piloted with Mangatangi Marae. The MOU will be workshopped with the council prior to 30 June.<br><br>The intention of the MOU is to progress the development of a relationship prior to an emergency. This relationship will enable community support in an emergency, with all parties understanding their roles.<br><br>Our team have worked to explain the opportunities available to Marae to support their development, what resilience is and those in existence to support resilience building. Some of the examples within our team business as usual include:<br>• Support of funding applications – The marae has had funding approved for a new Wharenui. The team provided a letter of support. In future an MOU could be provided as proof of working with CDEM to build resilience.<br>• Assisting with consenting administration.<br>• Working with Fire and Emergency New Zealand (FENZ) to potentially install additional water tanks for FENZ use and by the marae to increase their potable water storage.<br>• Assisting the marae to work with FENZ and TPK on the installation and funding of fire systems for their new buildings.<br>• Facilitating conversations between the marae and WRC on climate adaptation and improving river stabilization and restoration works along Mangatangi stream.<br>• Planning to implement capacity building workshop to 11 Marae (including Mangatangi) in collaboration with the | |

| Key project/priority | Key deliverables/KPIs | | Update & Delivery Comments | RAG Status |
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| | | | Agency Roopu (16 agencies including DIA, NGOs and Iwi) and our emergency management team.<br>• Waikato-Tainui, TPK, DIA, FENZ and St John have provided a high level of support and engagement to benefit the marae through the teams' engagements. The agencies have been very responsive and are working collaboratively to support resilience with Marae and working with our team.<br>• CDEM AKL have been engaging with Ngaati Tamaoho (including Mangatangi Marae) to provide spatial information for all their Marae from AKL CDEM. The team facilitated the collaboration. | |
| | **3.2** | Achieve an emission reduction target of 16% relative to 2023 emissions for the year ended 30 June 2024. | Council has several initiatives underway including the replacement of the Huntly aquatic centre gas boiler, further transition to fleet hybrids and electric vehicles, and LED office light replacements.<br><br>The replacement of the Huntly Aquatic Centre gas boiler is now complete. We expect a reduction of 14-16% in emissions from this as well as savings of $18,000 per year.<br><br>The result for 2023/24 will not be known until the operational Greenhouse Gas Inventory is completed and reported on which will be late 2024/early 2025, however the target of 16% was predicated on replacement of the Huntly aquatic centre gas boiler. The delay in this has compromised the annual target. | |
| | **3.3** | Develop a community connectivity plan by 31 March 2024, and commence implementing agreed actions. | This is part of the Communications Strategy (now called trust and Confidence Strategy) and was presented to Council as part of the workshop on that strategy in March. This included examples of the many connection points Council has with its communities. | |
| **4.** Building relationships (We are focused on building our cultural competence and responsiveness by improving our relationships. We | **4.1** | a) Provide evidence of outcomes achieved through initiatives, collaboration, and engagement with mana whenua (including mana whenua forums) on a half yearly basis to the Performance & Strategy Committee | The Executive Manager Maaori Partnerships is supporting a reset of the Mana Whenua Forum purpose and terms of reference at the request of Council. This commenced early May.<br><br>A comprehensive Cultural Capability and Engagement strategy and framework to give effect to our Te Tiriti obligations will be developed once the Maaori partnerships team are in place. This strategy will align with our commitment to give effect to the Te Tiriti principles of ensuring that Partnership, Protection of taonga | |

| Key project/priority | Key deliverables/KPIs | | Update & Delivery Comments | RAG Status |
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| will uphold Te Tiriti o Waitangi and weave Te Reo Maaori into our work). | | | and Participation in decision making of Maaori is embedded throughout the organisation.<br><br>The Executive Manager is currently supporting the Service Delivery and Community Growth teams to collaborate and engage with mana whenua in the delivery of a suite of projects, such as the;<br>• Community Growth Refocus project<br>• Mana whenua engagement in the Raahui Pookeka and Surrounding Environment Master Plan<br>• Rebrand of the Takitini website within the Economic Development team<br>• Hapuu related projects such as the Papahua reserve and Ngaa Uri aa Mahanga Memorandum of Understanding<br>• Flood resiliency fund in Port Waikato | |
| | | b) Demonstrate progress on delivering at least three of the strategic initiatives of the Waikato-Tainui JMA workplan. | The workplan was confirmed and adopted at the September JMA meeting. Components of the Work Programme have been superseded by the change of government. For example, 3 waters reform and RMA reform. Waikato District Council and Waikato-Tainui are active members of the Mayor & Iwi Chairs Forum which is focusing on the ability for local government and Iwi to work together for the best community outcome for 3 waters.<br>Specific areas that have progressed during the year are:<br>• Toituu resiliency<br>• Better off funding projects<br>• Social Procurement strategy implementation<br>• Internship opportunity for a tribal member<br>• Structure Planning<br>• Waikato Proposed District Plan appeals | |
| | **4.2** | a) Central Government – Provide quarterly evidence of the key outcomes achieved by the Chief Executive through building relationships with central government that are related to Council's future strategies and delivery aspirations., | The government has repealed 3 waters, The Natural and Built Environment Act and the Spatial Planning Act.<br><br>Early engagement has been held with Minister Potaka in line with government work programmes.<br><br>We continue to work with Department of Internal Affairs, MBIE, Kainga Ora, Ministry of Housing & Urban Development and Waka Kotahi. | |

| Key project/priority | Key deliverables/KPIs | | Update & Delivery Comments | RAG Status |
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| | | b) Focus should be on the crown agencies and associated Ministers identified by a Central Government Advocacy Action Plan to be adopted by Council by 31 December. | An advocacy approach with central government was provided in a council briefing in late 2023. This largely involves utilising staff and supplementing this when needed by external advisers.<br><br>Briefings for Incoming Ministers (BIMs) were sent to the following ministers and their respective Chief Executives on 19 January 2024:<br>• Hon Simeon Brown, Minister of Transportation and Local Government<br>• Hon Chris Bishop, Minister of Housing, RMA and Infrastructure<br>• Hon Mark Mitchell, Minister for Emergency Management<br>• Mayor Jacqui and staff met online with Minister Mitchell in relation to the cyclone debrief and review during March.<br>An opportunity to meet Minister Brown early June is in place. Our focus will be on Waters. | |
| | **4.3** | a) Design and implement a Developers Forum focused on building relationships and improvements in customer service by 30 June 2024. | A briefing memo on the approach to exploring a developers' forum, initially in Horotiu, has been prepared and provided to the Mayor. The developer's forum is proposed to be run by the Infrastructure Development Managers (IDMs), who currently engage with the active developers in the area. Following support, the IDM for Horotiu will reach out to the developers and arrange the first forum meeting. This KPI is on track. | |
| | **4.4** | a) Develop and implement a Rural Economic Advisory Panel (REAP) incorporating key representatives from the rural sector. | The Rural Economic Advisory Panel has been established. REAP has now been developed to operate more akin to a Council Committee and will be part of the formal Council reporting process. | |
| | | b) Establish the forum and commence meetings by 31 December 2023. | This KPI has been achieved. | |
| **5.** Sustainable Growth (We plan for | **5.1** | a) Develop a sustainable growth funding strategy by 31 March 2024. | Complete. The Sustainable Growth Approach was approved at the Performance and Strategy meeting. | |

| Key project/priority | | Key deliverables/KPIs | Update & Delivery Comments | RAG Status |
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| growth in a sustainable and responsible way, ensuring we embrace our local heritage and sense of community) | | b) Implement the approved plan and demonstrate agreed targeted benefits by 30 June 2024. | Specific work, based on the sustainable growth approach, to be scoped and dates assigned. | |
| | | a) Demonstrate progress in making the Proposed District Plan operable:<br><br>(i) Make the uncontested parts of the Proposed District Plan operative by 31 December 2023. | The intention is to make the first tranche of provisions operative in April 2024.There is some delay with this due to the complexity of the concurrent work undertaken to make parts of the District Plan Operative with Variation 3 provisions. | |
| | | (ii) Prepare an action plan to advance the appeals by 31 December 2023. | A suite of operational action plans has been in place since 2023 which includes priorities, issues, positions, resources, potential timing and status of all appeals. It is revised regularly to achieve consistency with guidance from the PDP Subcommittee. | |
| | | (iii) Report regularly on progress with outstanding appeals. | Reports on the progress of appeal resolution occurs at approximately six-weekly intervals through the PDP Subcommittee. Council was updated at the April Policy and Regulatory Committee. This KPI is **on track**. | |
| **6.** Staff and Culture (including leadership, engagement, and retention) | **6.1** | a) Outline what initiatives have been undertaken to strengthen the internal culture and leadership of the organisation and provide staff survey results to indicate whether these have been successful or not. | Our internal leadership program Takitaki is tracking to plan with the 30 participants having their next connection over three days in May at a Marae in the district.<br><br>Staff and Executive Leadership Team connection activity has increased across the organisation in response to a key metric in the last staff survey.<br><br>In the last month 'team up', an all-staff event held over three part days (to enable staggered attendance of staff to keep offices and services available) focused on connection and key organisational priorities and directives. This was well attended, and feedback was very positive. The event was held in the Council office, being cognisant of the current financial environment. Personal one on one staff coffee dates with ELT members and opportunity to attend ELT feedback forums are also in place. | |

| Key project/priority | Key deliverables/KPIs | | Update & Delivery Comments | RAG Status |
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| | | | The coming quarter will see implementation of further culture tactics including the review and communication of our flexible working policy and the launch of Our Plan for the coming year. The staff engagement survey will also be undertaken in June which will enable assessment of the effectiveness of workplace satisfaction initiatives implemented. | |
| | | b) Provide evidence on recruitment strategies being used to attract new talent, and retention strategies in place, including an assessment of effectiveness (retention rate, staff turnover, open jobs). | Our Talent Acquisition Business Partner has supported the launch of 'know the rules of the game, a rolling learning programme for all staff to understand business rules, policies, and processes.<br>We are still attracting strong applicants and filling vacancies.<br><br>Current open roles: 22 (various stages of the process)<br>13 new hires started last month, and 8 employee exits.<br>Labour turnover (LTO) **19.04% (remaining stable).** | |
| | **6.2** | Develop and implement a diversity strategy, starting with a Te Tiriti strategy which will uphold the principles of Te Tiriti o Waitangi. | Te Tiriti training and Te Reo learning will continue with the goal of all staff completing the training. Appointments are successfully being made into the vacancies in the Maaori Partnerships team who will support this learning.<br><br>Key support partner "Diversity Works" is in place and supporting learning through Takitaki and strategy development support.<br><br>The Staff engagement group (The Pulse) is working on several initiatives raised by staff including a quiet room and good techniques for working alongside neuro diverse colleagues. | |
| **7.** Zero Harm (Work Safe, Home Safe) | **7.1** | Complete the Strategic Plan work for 2023/2024 by 30 June 2024. | Work continues on the management of our critical risks, in particular mental wellbeing, driving for work and workplace violence. Meetings have been held with each Customer Delivery site to discuss the recent security review risk assessments and additional improvement opportunities. We continue to | |

| Key project/priority | Key deliverables/KPIs | | Update & Delivery Comments | RAG Status |
|---|---|---|---|---|
| | | | progress the implementation of our Zero harm Safety Management System and the improvement opportunities identified in the ISO45001 external audit. | |

**Footnote:**

1. The Chief Executive has agreed to deliver KPIs, subject to any changes due to Council's change of direction on any of the KPIs, in which case such changes would be considered. Delivery will also be subject to factors within the control of the Chief Executive.
2. Each deliverable including subcategories (e.g. (a), (b) etc.) will be assessed and scored.

Waikato District Council
Te Kaunihera aa Takiwaa o Waikato

**Open**

| | |
|---|---|
| **To** | **Waikato District Council** |
| **Report title** | **Exclusion of the Public** |
| Date: | 13 May 2024 |
| Report Author: | Thomas Rowland, Democracy Advisor |
| Authorised by: | Gaylene Kanawa, Democracy Manager |

## 1. Staff recommendations
## Tuutohu-aa-kaimahi

**THAT the public be excluded from the following parts of the proceedings of this meeting.**

**The general subject of each matter to be considered while the public is excluded, the reason for passing this resolution in relation to each matter, and the specific grounds under section 48(1) of the Local Government Official Information and Meetings Act 1987 for the passing of this resolution are as follows:**

| General subject of each matter to be considered | Reason for passing this resolution in relation to each matter | Ground(s) under section 48(1) for the passing of this resolution |
|---|---|---|
| **Item PEX 1**<br>**Minutes from meeting held on Tuesday, 2 April 2024.** | **Good reason to withhold exists under Section 6 or Section 7 Local Government Official Information and Meetings Act 1987** | **Section 48(1)(a)** |

**This resolution is made in reliance on section 48(1)(a) of the Local Government Official Information and Meetings Act 1987 and the particular interest or interests protected by Section 6 or Section 7 of that Act which would be prejudiced by the holding of the whole or relevant part of the proceedings of the meeting in public, as follows:**

| Item No. | Section | Interest |
|---|---|---|
| **Item PEX 1**<br>**Minutes from meeting held on Tuesday, 2 April 2024.** | **Refer to the previous Public Excluded reason in the agenda for the previous meeting.** | |

## 2. Attachments
## Ngaa taapirihanga

None