

Agenda for an extraordinary meeting of the Waikato District Council to be held in the Council Chambers, District Office, 15 Galileo Street, Ngaruawahia on **WEDNESDAY 28 NOVEMBER 2018** commencing at **1.00pm**.

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.

- 1. APOLOGIES AND LEAVE OF ABSENCE**
- 2. CONFIRMATION OF STATUS OF AGENDA**
- 3. DISCLOSURES OF INTEREST**
- 4. RECEIPT OF MINUTES**
 - 4.1 Policy & Regulatory Committee Meeting of 20 November 2018 2
- 5. REPORTS**
 - 5.1 Single Stage Business Case Hamilton to Auckland Start-Up Passenger Rail Service 9

GJ Ion
CHIEF EXECUTIVE

Open Meeting

To	Waikato District Council - Extraordinary
From	Gavin Ion Chief Executive
Date	21 November 2018
Prepared by	Wanda Wright Committee Secretary
Chief Executive Approved	Y
Reference #	GOV1301
Report Title	Receipt of Policy & Regulatory Committee Minutes

I. EXECUTIVE SUMMARY

To receive the minutes of a meeting by the Policy & Regulatory Committee held on Tuesday 20 November 2018.

2. RECOMMENDATION

THAT the minutes of a Hearing by the Policy & Regulatory Committee held on Tuesday 20 November 2018 be received;

AND THAT the following become a resolution of Council:

2017/18 Annual Dog Control Annual Report – P&R1811/05

THAT Council approve the 2017/18 Animal Control Report with amendments as noted for release to Local Government NZ and the community.

Fraud Prevention Policy – P&R1811/07

THAT Council approve the proposed amendments to the Fraud Prevention Policy.

Memorandum of Understanding for Remunerating Elected Representatives Serving on the Proposed District Plan Independent Hearings Pane – P&R1811/09

THAT Council approves the remuneration of Cr Dynes Fulton, Cr Janet Gibb and Cr Jan Sedgwick as per the hearing rate set by the Remuneration Authority for elected representatives of the Waikato District Council for the duration of

the Proposed Waikato District Plan hearings (this includes pre-hearing preparation and post-hearing work related to decisions).

Sensitive Expenditure Policy Review – P&R1811/10

THAT Council approves the revised Sensitive Expenditure Policy.

Standing Orders Policy – P&R1811/11

THAT Council adopt the Standing Orders Policy originally dated 1 November 2016.

Draft 2019 Meeting Calendar – P&R1811/12

THAT Council approves the draft 2019 Annual Meeting Calendar.

3. ATTACHMENTS

P&R Minutes

MINUTES of a meeting of the Policy & Regulatory Committee of the Waikato District Council held in the Council Chambers, District Office, 15 Galileo Street, Ngaruawahia on **TUESDAY 20 NOVEMBER 2018** commencing at **9.00am**.

Present:

Cr JD Sedgwick (Chairperson)
His Worship the Mayor, Mr AM Sanson
Cr AD Bech
Cr JA Church
Cr DW Fulton
Cr JM Gibb [from 9.23am]
Cr SL Henderson
Cr SD Lynch
Cr RC McGuire
Cr FM McInally
Cr EM Patterson
Cr NMD Smith
Cr LR Thomson

Attending:

Mr GJ Ion (Chief Executive)
Ms S O’Gorman (General Manager Customer Support)
Mrs W Wright (Committee Secretary)
Ms A Diaz (Chief Finance Officer)
Ms AM D’Aubert (Consents Manager)
Mr J Wright (Senior Planner)
Mr M Te Anga (Animal Control Team Leader)
Ms E Makin (Consents Team Leader – East)
Ms M May (Parks & Facilities Manager)
Mr V Ramduny (Planning & Strategy Manager)
Ms M Russo (Acting Corporate Planning Team Leader)
Ms S Solomon (Junior Corporate Planner)
Ms L Wilson (Waikato Times)
6 Members of Staff

APOLOGIES AND LEAVE OF ABSENCE

Resolved: (Crs Church/Thomson)

THAT an apology be received from Cr Main;

THAT an apology for lateness be received from Cr Gibb.

CARRIED on the voices

P&R1811/01

CONFIRMATION OF STATUS OF AGENDA ITEMS

Resolved: (Crs Thomson/Henderson)

THAT the agenda for a meeting of the Policy & Regulatory Committee held on Tuesday 20 November 2018 be confirmed and all items therein be considered in open meeting;

AND THAT all reports be received.

CARRIED on the voices

P&R1811/02

DISCLOSURES OF INTEREST

Cr Fulton, Cr Gibb and Cr Sedgwick advised members of the Board that they would declare a financial conflict of interest in item 5.6 [*Memorandum of Understanding for Remunerating Elected Representatives Serving on the Proposed District Plan Independent Hearings Panel*].

CONFIRMATION OF MINUTES

Resolved: (Crs McInally/Henderson)

THAT the minutes of a meeting of the Policy & Regulatory Committee held on Tuesday 18 September 2018 be confirmed as a true and correct record of that meeting.

CARRIED on the voices

P&R1811/03

CONFIRMATION OF HEARING MINUTES

Resolved: (Crs Patterson/Bech)

THAT the minutes of a hearing of the Policy & Regulatory Committee to hear and consider submissions and make recommendations on the Proposed Waikato District Council Gambling Venues Policy 2018 held on Monday 27 August and continued on Tuesday 18 September and Wednesday 26 September 2018 be confirmed as a true and correct record of that hearing.

CARRIED on the voices

P&R1811/04

REPORTS

Delegated Resource Consents Approved for the months of September and October 2018
Agenda Item 5.1

The report was received [*P&R1811/02 refers*] and discussion was held. The Consents Manager, Consents Team Leader – East and Senior Planner answered questions from the Committee.

Summary of Applications determined by the District Licensing Committee July – September 2018

Agenda Item 5.2

The report was received [P&R1811/02 refers] and discussion was held.

2017/18 Annual Dog Control Annual Report

Agenda Item 5.3

The report was received [P&R1811/02 refers]. The Animal Control Team Leader answered questions from the Committee.

Resolved: (Crs Lynch/Church)

THAT the Committee recommend to Council that the 2017/18 Animal Control Report with amendments as noted be approved for release to Local Government NZ and the community.

CARRIED on the voices

P&R1811/05

Cr Gibb entered the meeting at 9.23am during discussion on the above item and was present when voting took place.

Community Consultation for Amendment to Cemeteries Bylaw

Agenda Item 5.4

The report was received [P&R1811/02 refers]. The Parks & Facilities Manager answered questions from the Committee.

Resolved: (Crs Patterson/Smith)

THAT this Bylaw be discussed further by means of workshop prior to going out to consultation.

CARRIED on the voices

P&R1811/06

Fraud Prevention Policy

Agenda Item 5.5

The report was received [P&R1811/02 refers]. The Chief Finance Officer answered questions from the Committee.

Resolved: (Crs Bech/Lynch)

THAT the Policy & Regulatory Committee recommends to Council to approve the proposed amendments to the Fraud Prevention Policy.

CARRIED on the voices

P&R1811/07

Due to a conflict of interest, Cr Sedgwick called for nominations of a Chairperson to chair the following item. His Worship the Mayor was nominated by Cr Smith and seconded by Cr Lynch.

Resolved: (Crs Smith/Lynch)

THAT His Worship the Mayor assumes the chair for this item.

CARRIED on the voices

P&R1811/08

The meeting adjourned at 10.17am and resumed at 10.34am.

Memorandum of Understanding for Remunerating Elected Representatives Serving on the Proposed District Plan Independent Hearings Panel
Agenda Item 5.6

The report was received [P&R1811/02 refers].

Cr Fulton, Cr Gibb and Cr Sedgwick withdrew from the meeting and took no part in discussions or voting on this item.

Cr Sedgwick vacated the chair and His Worship the Mayor assumed the chair for this item.

The Planning & Strategy Manager answered questions from the Committee.

Resolved: (Crs Lynch/Patterson)

THAT the Policy & Regulatory Committee recommends to Council that the memorandum of understanding which confirms the remuneration of Cr Dynes Fulton, Cr Janet Gibb and Cr Jan Sedgwick (who have all been appointed as independent hearing commissioners to the hearings panel for the Proposed Waikato District Plan (Stages 1 and 2)), be received;

AND THAT the Policy & Regulatory Committee recommends to Council that Cr Dynes Fulton, Cr Janet Gibb and Cr Jan Sedgwick be remunerated as per the hearing rate set by the Remuneration Authority for elected representatives of the Waikato District Council for the duration of the Proposed Waikato District Plan hearings (this includes pre-hearing preparation and post-hearing work related to decisions).

CARRIED on the voices

P&R1811/09

Cr Sedgwick assumed the chair for the remainder of the meeting.

Sensitive Expenditure Policy Review
Agenda Item 5.7

The report was received [P&R1811/02 refers] and discussion was held. The Chief Finance Officer answered questions from the Committee.

Open Meeting

To	Waikato District Council
From	Ian Cathcart General Manager Service Delivery
Date	14 November 2018
Prepared by	Vishal Ramduny Strategic Projects Manager
Chief Executive Approved	Y
Reference #	GOV1301
Report Title	Single Stage Business Case Hamilton to Auckland Start-up Passenger Rail Service

1. EXECUTIVE SUMMARY

The purpose of this report as follows:

1. For Council to consider and endorse the *Single Stage Business Case: Hamilton to Auckland Start-up Passenger Rail Service* ("SSBC") for the consideration of the New Zealand Transport Agency (NZTA) Board of Directors at its 14 December 2018 meeting.
2. For Council to confirm funding as allocated in the 2018-2028 Long Term Plan (LTP) in support of the start-up passenger rail service that is expected to commence early 2020.
3. For Council to consider maintenance cost for the public amenities associated with the Huntly rail platform with effect from early 2020 when the service is expected to commence.

2. RECOMMENDATION

THAT the report from the **General Manager Service Delivery** be received;

AND THAT Council receive and endorse the *Single Stage Business Case: Hamilton to Auckland Start-Up Passenger Rail Service* (included as Attachment 1) for submission to NZTA;

AND FURTHER THAT Council confirm funding allocated in the 2018-2028 Long Term Plan (LTP) for the Hamilton to Auckland start-up passenger rail service operations that will likely commence early 2020 subject to:

- a. **Waikato Regional Council and Hamilton City Council endorsing the SSBC and confirming capital and operational funding for the service.**
- b. **NZTA's Board approving the SSBC and confirming the release of funding for the start-up rail service at its meeting on 14 December 2018.**
- c. **An open book price audit of KiwiRail costs being carried out by a suitably qualified and experienced person to the Waikato Regional Council's (the client) satisfaction.**
- d. **NZTA providing an enhanced Financial Assistance Rate (FAR) of 75.5% for public transport operations, 76% for above track work (this is for the Huntly station and the FAR required) and 100% for transitional rail activities for the period of the current (2018-2021) National Land Transport Programme.**

AND FURTHER THAT Council approve the Huntly station as the preferred station for the start-up passenger rail service on the understanding that the funding allocation in the 2018-2028 LTP will be used for the development of public facilities (shelter, lighting, CCTV, pedestrian access, park and ride) in support of having this station ready for the start-up service;

AND FURTHER THAT that a passenger rail facility at Tuakau be considered through the Hamilton to Auckland Corridor Plan as part of a northern Waikato/southern Auckland metropolitan train service linking the main towns from Pokeno to Papakura;

AND FURTHER THAT a train station at Te Kauwhata to be considered in year 3 of the start up service through a separate business case to be led by the Waikato District Council.

3. BACKGROUND

The Hamilton to Auckland Transport Connections Strategic Business Case (SBC) was developed collaboratively by Waikato Regional Council (WRC), Hamilton City Council (HCC), Auckland Council (AC), Waikato District Council (WDC), Auckland Transport (AT), the NZ Transport Agency (NZTA) and KiwiRail through the Hamilton to Auckland Transport Connections Working Party (led by WRC).

The purpose of the SBC was to outline the issues and problems related to growth and transport connectivity between Hamilton and Auckland and to confirm if there is a case for investment to improve transport connections between the two cities.

The SBC was submitted to NZTA in June 2018 for review and subsequently approved by NZTA staff subject to several conditions. The approval of the SBC provided access to NZTA funding of 51% for the completion of the Hamilton to Auckland Start-Up Passenger Rail Single Stage Business Case.

The Hamilton to Auckland start-up rail service will address the following two problem statements related with the corridor:

- Problem 1: A significant increase in demand for travel within the Hamilton-Auckland corridor, driven by rapid growth, is reducing transport system levels of service and placing economic performance at risk.
- Problem 2: Limited travel options in areas facing high growth is reducing liveability and impacting on quality of life, safety and environmental outcomes.

The SBC identified that the start-up passenger rail service was an important investment opportunity and as such, it was the point of entry for the SSBC project to be completed to enable access to funding from the National Land Transport Fund (NLTF).

The initial Programme Business Case (PBC) for the Hamilton to Auckland start-up rail service commenced in March 2018 in parallel to the SBC and at a time where there was no mechanism under which inter-regional rail was to be assessed by NZTA. With the confirmation of funding for rail in the 2018 Government Policy Statement on Land Transport (GPS) and 2018-21 National Land Transport Programme; the SSBC now falls within the NZTA jurisdiction for funding approval. The SSBC as such is required to comply with the NZTA Investment Assessment Framework (IAF).

All advice to central government has been that it will require significant government investment to establish this service. To progress its policy, government created a new activity class in the National Land Transport Plan called 'transitional rail'.

In July 2018, following a competitive procurement process, WRC commissioned Stantec NZ, a consultancy firm with extensive experience in completing business cases on rail services in New Zealand. Stantec were tasked to develop a SSBC that complies in all respects with NZTA's business case requirements and also to address the key gaps identified by NZTA in their review of the working draft Detailed Business case (DBC) that had been prepared by consultancy firm Business and Economic Research Limited (BERL) in May 2018 (commissioned by WRC and HCC).

The SSBC report is a summary and collation of a wide range of investigations and decisions in relation to this project over the last couple of years. It presents the work that has been undertaken and identifies any gaps that need to be filled during the pre-implementation phases to enable a successful service to begin as soon as possible.

The TCWG met on September 14 to discuss the first draft of business case and the total estimated project costs. It had been advised by NZTA that the total capital and operational expenditure were substantial and officials needed to revisit them in order to ensure the start-up service was fit for purpose and provided value for money. The TCWG directed that staff review the financials and explore opportunities for cost savings.

The Rail Officials Steering Group (ROSG) met on 21 September to refine the preferred investment option - in particular the need to invest in a Tuakau station at this time, the passenger capacity of the train, weekend services and the number of carriages to be refurbished. As a result the ROSG recommended the following:

- Defer the Tuakau station to a later stage of investment pending completion of the Hamilton to Auckland Corridor Plan (note: this was a matter discussed and agreed to at a WDC Councillor workshop in October 2018).
- Reduce the consist size from 5 to 4 carriages (200 passengers to 150).

- Exclude Sunday and public holiday services until 2022/2023 due to the planned track works between Pukekohe and Papakura and to reduce the operational expenditure for the start-up service.
- Reduce the operating cost of the reserve locomotive by not having it follow the daily service.
- Refurbishment of 11 carriages instead of 13 due to the reduction in operational carriages per service.

At its 5 October meeting the TCWG approved the changes as outlined above.

4. DISCUSSION

The business case that has now been finalised relies heavily on NZTA approval to use this new funding category to 100% fund the capital investment required in rolling stock, rail line and platform works (the latter is important for Huntly's 102m platform); and to subsidise the partner councils associated works and services with elevated subsidy rates.

The business case proposes 75% subsidy on all of the substantive partner councils above track works and services which has resulted in all of the required local share funding being within the funding allocations set by each council through their respective 2018-28 10 year plans.

Should NZTA's Board approve the SSBC, it is likely to do so subject to conditions relating to specific components of the project. This would enable access to funding for some aspects of the proposal, such as carriage acquisition and refurbishment while details of other aspects of the proposal are finalised.

The SSBC is also being considered for endorsement by the Waikato Regional Council on 21 November and by Hamilton City Council on 6 December 2018. A verbal update on the outcome of the WRC meeting will be provided at the Council meeting.

4.1. Residual Risks

Due to the nature of this project it is important to acknowledge the key residual risks associated with it at the outset.

A full summary of project risks along with mitigations are provided in the business case. While there are mitigations in place, given the nature of the project some residual risks remain which Council needs to be aware of.

All partner councils are exposed to financial risk through its commitment to fund the local share of operating costs for the service. Specifically:

- a. The 75.5% Financial Assistance Rate (FAR) that WRC is expecting to receive from NZTA if the SSBC is approved is only confirmed for the first two years of the start-up service. The following three years of operations will come under the 2021-2024 NLTP funding criteria and the enhanced FAR policies and rules may be subject to change. If the

FAR reduces to the normal public transport FAR rate of 51% then Council will have to fund the remainder of the cost, increasing the cost to ratepayers.

- b. At a workshop on 30 October WDC acknowledged that if the service draws significant patronage from the district during the first few years of the service, discussions regarding contribution to OPEX will take place through the next LTP cycle 2021-2024. This is a financial risk as it may result in WDC having to increase its general rate to find the net subsidy of the service proportional to the patronage.
- c. While potential patronage has been assessed and some contingencies built into the assessment, if there is a short-fall in fare revenue this will be shared by WRC and NZTA.

Should the service frequency, reliability or quality not meet customer needs, the start-up service may fail to create the momentum needed to continue to develop the regional rail between Hamilton and Auckland.

4.2. Financial overview

Based on the level of service proposed in the SSBC, the total project cost is estimated at \$57.77 million over 3 years and \$76.27 million over six years, having deducted fare revenues. Costs are comprised of:

- capital costs of:
 - \$26.65 million for track/station works
 - \$21.27 million for rolling stock (carriage and locomotives) acquisition and refurbishment
- service operating costs of:
 - \$1.94 million during the first part year of operations (4 months) and
 - \$5.82 million during the following two years until 2022/2023, and;
 - \$6.36 million from 2023/2024 of (Sunday and public holiday services will be introduced) during a full operational year as per the table below.

Funding Assistance Rates from the National Land Transport Fund subsidise these costs up to:

- 100% for rolling stock;
- 100% for track/platform work that will become an assets of KiwiRail and
- 75.5-76% for other assets such as rail shelters.
- Up to 75.5% for operating costs.
- 51-52% for railway station lease and maintenance costs.

The Business case assumes that the NZTA Board will approve the maximum funding assistance rates for the project.

Fare revenue estimates for the first three years are based on conservative estimates of demand. This assumes that the full modelled demand will only be achieved in year three (2022/2023) of the service with demand increasing from 60% in year one and 80% in year two. Based on this the fare revenue for the service is as follows:

- Year 1 - 2019/2020: \$204,193
- Year 2 - 2021/2022: \$816,768
- Year 3 - 2022/2023: \$1,020,957

The average fare paid by each patron will be \$9.10 and it will vary depending on the number of zones travelled. The one-way fare from Hamilton to Papakura will be \$12.20 and from Huntly \$7.80. A separate ticket will need to be purchased for use of the connecting Auckland Transport metro service.

As well as any changes in patronage from what has been conservatively estimated, fare revenue may be affected by:

- Delays in the completion of The Base train station resulting in a lower than expected patronage from day 1 of the service.
- Unforeseen service disruptions leading to a reduction in patronage and therefore lower revenue.
- Car journeys becoming faster with the completion of the Waikato Expressway and Papakura to Manukau improvements, reducing demand for rail services.

4.3. Potential benefits

The potential benefits that could be generated from introducing a passenger rail service between two of the biggest cities in New Zealand are:

- Improved accessibility to goods, services, employment and amenities to enhance interregional productivity
- Improved resilience, safety, quality of life and environmental outcomes for communities with a greater range of travel choices
- Creating a credible alternate mode of travel for people
- Start momentum towards developing long term growth goals
- Show strong desire for a mass transit mode
- Transit oriented development along the corridor
- Reduce environmental impact
- Ability for townships to grow and support local communities
- Auckland decongestion effects
- Optimised performance of transport service levels across the existing road and rail network
- Potential to reduce journey times for travel between Auckland and Hamilton.

A review of the project implementation phasing will be undertaken and reported back to Council in the first half of 2019.

5. CONSIDERATION

5.1 FINANCIAL

WRC is rating HCC ratepayers to fund the net cost of the service. WRC is the public transport and rating authority for bus and rail and as such, it is expected that throughout the first two years, WRC will fund the balance of net cost if NZTA is able to fund the service with a financial assistance rate equivalent to 75.5%. The following three years of operations will align with the 2021-2024 NLTP. Thus the enhanced financial assistance rate policies and rules will be revised by NZTA. WDC will review its funding contribution to the service through its Long Term Plan as it will be subject to a significant financial contribution being received from NZTA in its NLTP 2021-2024.

With regards to WDC cost share obligations to get the start up service operational by early 2020, Council had allocated \$240,000 in the Long Term Plan (2018-2028) to support a Tuakau rail facility. With a rail station at Tuakau now not being considered as part of the start up service, it is recommended that this funding allocation be committed to a Huntly rail station.

There will be a requirement for Council to provide for maintenance costs for the public facilities (park and ride, shelter, lighting, CCTV, pedestrian access) associated with the Huntly station. This is estimated at \$150,000 per annum (to be considered through the Annual Plan 2019/2020).

5.2 LEGAL

Nil.

5.3 STRATEGY, PLANS, POLICY AND PARTNERSHIP ALIGNMENT

The Hamilton to Auckland Start-up Passenger rail service is supported by policy under the recently completed 2018 update to the 2015-45 Regional Land Transport Plan (RLTP) and the Draft 2018 Regional Public Transport Plan (RPTP).

The start-up passenger rail service is also a key consideration in the Hamilton to Auckland Corridor Plan currently in preparation. The Corridor Plan is in response to the Government's Urban Growth Agenda and is being undertaken with the overall purpose of developing an integrated spatial plan and establishing an ongoing growth management partnership for the transport corridor between Hamilton and Auckland which:

- a. Accelerates identified transformational opportunities
- b. Outlines key housing, employment, social, environmental and network infrastructure priorities for the corridor over the next 30 years to successfully accommodate growth and also address levels of service, remedial or renewal needs
- c. Identifies planning, development, infrastructure, mitigation and restoration works required, and funding and legislative projects partners may take over the next 1-3, 3-10 and 10-30 years.

A key focus area for the Corridor Plan is 'Stronger Corridor Connections' focussing on supporting the realisation of the strategic directions with improved transport, green open space and recreational networks along the entire corridor. Investigation and introduction of an intercity passenger rail service has been identified as one of the key initiatives to be investigated through the corridor plan.

The context that sits behind the rail service is the rapid growth in demand for both housing and therefore commuting from north Waikato and Hamilton City to Auckland. It is largely acknowledged that this is largely related to the housing market in Auckland which is also driven by the rapid growth of the population in the city, a situation that is expected to continue.

5.4 ASSESSMENT OF SIGNIFICANCE AND ENGAGEMENT POLICY AND OF EXTERNAL STAKEHOLDERS

Highest levels of engagement	Inform	Consult	Involve	Collaborate	Empower
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Submissions on the passenger rail service/location of stations were received through Council's Long Term Plan (2018-2028). Input on a rail service between Hamilton to Auckland was also received during engagement with the community on the North Waikato Public Transport Review (2017) and Local Area Blueprint community workshops for Tuakau and Huntly (2018).					

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
		✓	Households
		✓	Business

6. CONCLUSION

Council is being asked to consider and endorse the *Single Stage Business Case: Hamilton to Auckland Start-up Passenger Rail Service* ("SSBC") for the consideration by the NZTA Board of Directors. Endorsement of the business will also confirm the Huntly station as one of the stations and commit funding (as allocated in Council's 2018-2028 LTP) in support of the start-up passenger rail service that is expected to commence early 2020.

7. ATTACHMENTS

- Single Stage Business Case Hamilton to Auckland Start-up Passenger Rail Service

SINGLE STAGE BUSINESS CASE
HAMILTON TO AUCKLAND START-UP
PASSENGER RAIL SERVICE

PREPARED FOR WAIKATO REGIONAL COUNCIL

November 2018

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

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QUALITY STATEMENT

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Andrew Maughan

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9/11/2018

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REVISION SCHEDULE

Rev No.	Date	Description	Signature or Typed Name (documentation on file)			
			Prepared by	Checked by	Reviewed by	Approved by
1	31/8/18	Draft one				
2	4/9/18	Draft for client review	AM, PP, SL, DW	AM	PP	AM
3	7/9/18	Draft for client review	AM, DW	AM	PP	AM
4	11/9/18	Draft for TCWG Review	AM, DW	AM	PP	AM
5	12/9/18	TIO Submission	AM, DW	AM	AM	AM
6	19/10/18	Review document	SB		SB	
7	31/10/18	Working draft for client review	SB, DW	DW	AM	AM
8	5/11/18	Working draft for client review	SB, AM, DW	AM	DW	AM
9	8/11/18	Final draft	SB, AM, DW	DW	DW	AM
10	9/11/18	FINAL	SB, AM, DW	SB	SB	AM

Abbreviations

AC	Auckland Council
AT	Auckland Transport
ATAP	Auckland Transport Alignment Project
CBD	Central Business District
DBC	Detailed Business Case
GPS	Government Policy Statement (on Land Transport)
H2ACSP	Hamilton to Auckland Corridor Plan
HCC	Hamilton City Council
HLITA	High Level Integrated Transport Assessment
IAF	Investment Assessment Framework
LTP	Long Term Plan
MoT	Ministry of Transport
MBIE	Ministry of Business Innovation and Employment,
NIMT	North Island Main Trunk (rail)
NLTP	National Land Transport Programme
NZTA	New Zealand Transport Agency
ODP	Operative District Plan
PBC	Programme Business Case
RMA	Resource Management Act
RLTP	Regional Land Transport Plan
RTC	Regional Transport Committee
SBC	Strategic Business Case
SH1	State Highway One
SSBC	Single Stage Business Case
TAIP	Transport Agency Investment Proposal
TIO	Transport Investment Online
TMP	Traffic Management Plan
Treasury BBC	Treasury Better Business Case
WRC	Waikato Regional Council
WDC	Waikato District Council
WaDC	Waipa District Council

Executive Summary

Both the Auckland and the Waikato sub-region (comprising Hamilton City, Waikato and Waipa Districts) are currently experiencing very high population growth, particularly in Auckland and Hamilton but also in the urban settlements along the interceding corridor between the two cities. The population growth and the transformation being planned for the corridor is putting increased pressure on the existing transport connections, and also highlighting an opportunity to establish areas of transit-oriented development with the re-establishment of an inter-regional rail service.

As a result, the Minister for Transport requested in February 2018 that the business case for the proposed Hamilton to Auckland Passenger Rail Service be completed as a priority, and work be commenced on a plan for the adjacent corridor (the Hamilton to Auckland Corridor Spatial Plan {H2ACSP}). Work completed to date on the H2ACSP identified the Start-Up inter-regional rail service as a key enabler for the corridor's envisaged transformation. In addition, following start-up and as part of the corridor work, a longer-term plan for transport connections envisages progression of an express service in the medium term and eventually a rapid rail connection to Auckland in the longer-term, plus the eventual expansion of the service through to Tauranga.

Given the Ministers stated priority, this Hamilton to Auckland Passenger Rail Single Stage Business Case (SSBC) is being completed ahead of the H2ACSP and ahead of completion of the long-term transport vision. However, work has progressed sufficiently on the H2ACSP to confirm key stakeholder expectations, which are that this Start-Up service is a key part and enabler of the longer-term vision for the Corridor and the interconnecting transport services.

The Hamilton to Auckland Transport Connections Strategic Business Case identified three problem statements, two of which were particularly relevant to this SSBC:

- Problem 1:** A significant increase in demand for travel within the Hamilton-Auckland corridor, driven by rapid growth, is reducing transport system levels of service and placing economic performance at risk.
- Problem 2:** Limited travel options in areas facing high growth is reducing liveability and impacting on quality of life, safety and environmental outcomes.

The primary benefits of addressing these problems are considered to be:

- Improved Journey Times
- Improved Reliability
- Improved Access to Social and Economic Areas
- Improved Attractiveness of Potential Growth Areas

The following investment objectives were subsequently identified and agreed with stakeholders (note: a baseline for investment objectives 4 and 5 would be established prior to implementation):

1. A shorter journey time by public transport between Hamilton and Central Auckland compared to by road during peak periods.
2. A more reliable journey time by public transport between Hamilton and Central Auckland, compared to by road during peak periods.
3. Daily patronage of 250 passengers, three years after start-up of a new public transport service.
4. X% increase in people living within 5 km of towns with direct access to a new public transport service by 20XX.
5. \$X value of building consents granted per annum within 5 km of towns with direct access to a new public transport service by 20XX.

A wide range of options and alternatives were considered to address the problems and achieve the investment objectives.

The preferred option is a Start-Up rail service for a minimum five-year period between Frankton (Hamilton) and Auckland (Papakura) to start, with intermediate stations at The Base (Hamilton) and Huntly (Waikato District). The trip duration between Frankton and Auckland CBD (allowing for a transition at Papakura) is expected to be approx. 2.5 hours long. If operating as planned, the Start-Up service presents as a reliable journey time alternative when compared to travelling by road.

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

The proposed Start-Up service would commence as a weekday peak hour service (two services for each peak direction) and a singular return Saturday service. The Start-Up service would begin with two train consists of four-carriages, with an overall capacity of 300 passengers each way daily, which transitions to two five-carriage train consists with an overall capacity of 400 passengers each way daily as demand dictates. A Sunday and public holiday service would be brought online as demand grows and track access permits (construction of key Auckland Rail projects restrict this), but is unlikely to start until Year 4 or Year 5 due.

This incremental approach has the service building year by year, providing a clear implementation pathway that responds to customer requirements over time, within cost and infrastructure constraints.

Projected passenger demand:

	Weekday one-way patronage	Total annual patronage
Year 1*	120	20,600**
Year 2	160	82,400**
Year 3	200	103,000**

* A part year from March to June (four months)

** Excludes Sunday and public holiday service

Beyond the initial Start-Up period, and depending upon demand, the service would look to integrate further with a 'through service' to Puhinui (Auckland International Airport connection once the interchange there is completed) and Auckland Central (subject to available capacity on the Auckland Transport Metro network). Any service enhancement would be subject to further assessment before confirmation and implementation if deemed feasible. All service options that involve further penetration into the Auckland Metro Network would be subject to the completion of the key Auckland rail projects, before the services could be established.

The capital cost of the Start-Up service is estimated at \$49.46m (including contingencies), around 52% of which is locomotive and rolling stock-related, and 48% station-related infrastructure. Annual operating cost is estimated at \$7.739m once the service is fully implemented (post 2023). This would be offset by fare revenue of \$1.56m once the service is fully implemented, which would grow with patronage and any future service enhancements. The benefit cost ratio is 0.5 at the standard 6% discount rate, based on Present Value net benefits of \$62.4m and Present Value net costs of \$118.8m over the 30-year evaluation period.

The preferred option has been assessed against the June 2018 Investment Assessment Framework, given its expected alignment with National Land Transport Programme (NLTP) investment criteria based on the signals provided in the Transport Agency Investment Proposal (TAIP) and the June 2018 Government Policy Statement (GPS) on Land Transport. The results alignment rating of High and cost benefit appraisal rating of Low give the investment proposal a priority order rating of 5 (five) in the improvement activity scale of 1 to 8, which suggests that it would be eligible for NLTP funding.

The preferred option has also been reviewed against the investment objectives. It is expected to achieve investment objectives 1, 2 and 3. Once baseline data to enable quantifying the scale of benefit is collated, it is also expected to achieve investment objectives 4 and 5 with more people settling within a short distance of the townships with stations, and increased investment (commercial and residential) in these towns as a result.

WRC has commenced a detailed project planning process with a view to establishing a dedicated project team that would oversee the delivery of the overall programme in support of the Start-Up passenger rail service.

It is recommended that funding for the next steps to establish the start-up service is provided for:

Project management and control

WRC as the lead agency to establish a dedicated project management team to deliver the programme of work as a single consistently managed project. This would include:

- Context and scope management.
- Risk (including demand model updates and associated data gathering for risk mitigation planning), Governance and Stakeholder Management (including agreements such as timetables with the Timetable Committee).

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

- Timeline, procurement (including operational contracts, ticketing) and resources.
- Quality and costs (including finalising fares and revenue forecasting for service operations).

Locomotives, Rolling Stock, and Maintenance Facilities

WRC to:

- Procure locomotives and rolling stock

KiwiRail to:

- complete detailed design for rolling stock following procurement of the rolling stock.
- complete refurbishment of locomotives before December 2018.
- commence preliminary design of the maintenance facilities in Te Rapa to optimise the preferred solution.

Tracks and signals

KiwiRail to:

- Confirm station concepts with station designers.
- Commence preliminary design of track slewing and signal works associated with stations.

Stations

Hamilton City Council and Waikato District Council to procure designers for each of the stations with:

- The Base to proceed with completion of preliminary design to DBC detail (subject to completion of KiwiRail level crossing safety assessment).
- Huntly to confirm concept operational feasibility with KiwiRail then to proceed with completion of preliminary design to DBC detail if side platform is feasible for five-year start-up period.

Waikato Regional Council

Hamilton to Auckland Start-Up Passenger Rail Service

CONTENTS

Abbreviations	i
Executive Summary	i
PART A – THE CASE FOR THE PROJECT	1
1. Introduction	1
2. Background	1
2.1 Strategic Case	1
2.2 North Waikato Integrated Growth Management Programme Business Case	2
2.3 Draft Hamilton to Auckland Corridor Spatial Plan	3
2.4 Draft Detailed Business Case	5
3. Collaboration	6
4. Strategic Alignment	7
5. Context	10
5.1 Location and Social Context	10
5.2 Regional Transport Context	15
5.3 Other Rail Projects	18
6. Constraints, Issues, Assumptions and Key Risks	20
6.1 Constraints	20
6.2 Issues	20
6.3 Assumptions	20
6.4 Key risks	21
7. Problems, Opportunities and Benefits	22
7.1 Problem 1: Transport System	22
7.2 Problem 2: Land Use Integration	28
7.3 Problem 3	30
7.4 Opportunities	30
7.5 Benefits	31
8. Investment Objectives	32
8.1 Comparison to Government Policy Statement Objectives	35
PART B – OPTION DEVELOPMENT	36
9. Option Development and Assessment	36
9.1 Process Overview	36
9.2 Long List Development	37
9.3 Long List of Options	45
9.4 Shortlist Identification	48
9.5 High-Level Economic Assessment of the Shortlisted Options	50
10. Preferred Option	51

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

10.1	Description	51
10.2	Economic Assessment	62
11.	PART C – READINESS AND ASSURANCE	71
11.1	Funding Case	71
11.2	Commercial Case – industry delivery	73
11.3	Management Case – how it will get implemented	74
11.4	Next Steps	83

LIST OF TABLES

Table 2-1: Key findings from work to date (October 2018)	4
Table 4-1: Alignment with National, Regional and Local Strategies, Policies and Plans	7
Table 5-1: Other rail projects in Greater Auckland area	19
Table 7-1: Census Data (Workplace Address)	24
Table 7-2: Forecast Daily Person Movements between the Waikato and Key Auckland Destinations	25
Table 7-3: Forecast 2021 AADT volumes between greater Waikato and Auckland	25
Table 7-4: Peak travel time mean duration and percentile range between Frankton and Britomart	27
Table 7-5: AM Peak mean travel time duration from Frankton to Britomart	27
Table 7-6: PM Peak mean travel time duration from Britomart to Frankton	27
Table 8-1: Indicators and Outcomes	34
Table 8-2: Investment Objectives Relating to the GPS Objectives	35
Table 9-1: Attributes, Interventions and Levels of Service	37
Table 9-2: Risks, Constraints and Uncertainties identified against the Attributes and Interventions	41
Table 9-3: Shortlisted Options	48
Table 9-4: Shortlisted Options Economic Assessment	50
Table 10-1: Preferred Option Attributes and Interventions	51
Table 10-2: Preferred Option forecast requirements	52
Table 10-3: Rail Infrastructure Proposal	53
Table 10-4: Frankton Station Proposal	54
Table 10-5: The Base Station Proposal	55
Table 10-6: Huntly Station Proposal	57
Table 10-7: Service Levels Summary	58
Table 10-8: Indicative start-up service timetable	58
Table 10-9: WRC adult smartcard fares under the zonal fare structure adopted in September 2017	59
Table 10-10: Fares overview	59
Table 10-11: Train vs private car journey cost comparison	60
Table 10-12: Capital Cost Components	62
Table 10-13: Operating Cost Components	63
Table 10-14: Indicative Fare Revenue	64
Table 10-15: Public Transport User Benefit Components	65
Table 10-16: Non-User Benefit Components	65

Table 10-17: Cost Benefit Appraisal Parameters	67
Table 10-18: 30-Year Present Value Benefits, Costs and BCR Outputs	68
Table 10-19: GPS Results Alignment	69
Table 10-20: IAF Priority Order for Improvement Programmes	70
Table 11-1: Funding Case	72
Table 11-2: Procurement and Resulting Asset or Service Owner	73
Table 11-3: Detailed Project Planning Process - Meeting 11 September 2018.....	74
Table 11-4: Business case status	76
Table 11-5: High-Level Transition Plan	82

LIST OF FIGURES

Figure 2-1: Extract from North Waikato Integrated Growth Management PBC – services in each settlement2	
Figure 2-2: The emerging five-point growth strategy	4
Figure 2-3: Potential future public transport context	5
Figure 5-1: Geographical area of Business Case	10
Figure 5-2: Median House Price Data: Hamilton City, Waikato District and Auckland (source: MBIE)	11
Figure 5-3: Household consents, Hamilton City, Waikato District and Auckland	12
Figure 5-4: Population Growth % 2001-2006.....	13
Figure 5-5: Population Growth % 2006-2013.....	13
Figure 5-6: Population Growth % 2001-2013.....	13
Figure 5-7: Employment Growth 2001-2006 percentages.....	14
Figure 5-8: Employment Growth 2006-2013 percentages.....	14
Figure 5-9: Employment Growth 2001-2013 percentages.....	14
Figure 5-10: Primary Transport Route Upgrades.....	15
Figure 5-11: NZTA Telemetry Count Sites.....	16
Figure 5-12: Future Proof Strategy study map showing areas of growth	17
Figure 7-1: Population Growth Index – 1996 to 2041 (source: NZ Business Demography Statistics: Feb 2017)23	
Figure 7-2: Employee Growth Index – 2010 to 2017 (source: NZ Business Demography Statistics: Feb 2017)23	
Figure 7-3: Workplace Address 2013 Census data	24
Figure 7-4: Map showing Level of Service (LoS A = Dark Green, LoS F = Red) (source: NZTA)	26
Figure 7-5: Median House Prices (source: MBIE)	28
Figure 7-6: Problem and Benefit Statements	31
Figure 8-1: Investment objectives developed from the benefit statements	32
Figure 9-1: Attributes and Interventions against Long List Options.....	45
Figure 9-2: Long list screen against investment objectives.....	46
Figure 9-3: Multi-criteria assessment of options	47
Figure 10-1: Concept layout for Frankton Station	55
Figure 10-2: Concept layout for The Base Station.....	56
Figure 10-3: Concept layout for Huntly Station	57
Figure 10-4: Projected annual patronage volumes (five-year start-up period)	61

Figure 11-1: Overarching Programme	77
Figure 11-2: Key activities for rolling stock programme	78
Figure 11-3: Expanded programme for The Base Station	80
Figure 11-4: Timetable Option.....	81

APPENDICES

Appendix A	Strategic Alignment
A.1	Government Policy Statement
A.2	Investment Assessment Framework
A.3	Draft Transport Agency Investment Proposal
A.4	Future Proof Study
A.5	North Waikato Integrated Growth Management PBC
A.6	Waikato Regional Land Transport Plan
A.7	Draft Auckland to Hamilton Corridor Plan
A.8	HCC and Waikato: 10 Year Plans
A.9	The Auckland Plan 2050
A.10	Auckland Transport Alignment Project (ATAP)
A.11	Hamilton City Council Operative District Plan (HCC ODP)
A.12	Waikato District Council Operative District Plan (WDC ODP)
Appendix B	Workshop Notes 13 August
Appendix C	RMA Assessment of Stations
Appendix D	Transport Connections Meeting Presentation
Appendix E	Proposed Funding Approach Uploaded to TIO
Appendix F	Station Costs
Appendix G	Communications and Engagement Plan
Appendix H	Rolling Stock Options Presented by KiwiRail
Appendix I	Workshop Full Council
Appendix J	Stations Review against Principles
Appendix K	Rail Station HLITA
Appendix L	Risk Table
Appendix M	Station Concept Development Discussion
Appendix N	Report to TCWG Passenger Rail Specification – 4 July 2018

PART A – THE CASE FOR THE PROJECT

1. Introduction

Both the Auckland and the Waikato sub-region (comprising Hamilton, Waikato and Waipa Districts) are currently experiencing very high population growth, particularly in Auckland and Hamilton but also in the urban settlements between the two cities. This population growth is putting increased pressure on the transport connections between these locations. The main focus of the pressure is State Highway One (SH1), a nationally significant transport corridor (classified as a National High Volume road under the One Network Road Classification {ONRC}), as limited other options exist.

This report presents the Single Stage Business Case (SSBC) for investing in a start-up passenger rail service between Hamilton and Auckland to improve transport connections and travel choice for local residents. There was an initial desire to implement this in October 2019, and Waikato Regional Council (WRC) and its partners did their best to meet this date. The revised date of March 2020 was determined following further assessment of the options and allows more time for rolling stock and station construction. Detailed programming had showed there was a high risk of some infrastructure works not being completed in time for an October 2019 start up.

This SSBC is a summary and collation of a wide range of investigations and decisions in relation to this project over the last couple of years. It presents the work that has been undertaken and identifies any gaps that need to be filled during the pre-implementation phases to enable a successful service to begin as soon as possible.

2. Background

2.1 Strategic Case

The Hamilton to Auckland Transport Connections Strategic Business Case (SBC) was developed collaboratively by WRC, Hamilton City Council (HCC), Auckland Council (AC), Waikato District Council (WDC), Auckland Transport (AT), the NZ Transport Agency (NZTA) and KiwiRail. It has also been supported by the Ministry of Transport (MoT) and Treasury. This report references the latest version dated 27 June 2018 as endorsed by the Hamilton to Auckland Transport Connections Working Group (TCWG). Refer to Section 3 for list of members of the TCWG.

The partners and stakeholders agreed the following problems exist in relation to the Hamilton to Auckland Transport Corridor:

- Problem 1:** A significant increase in demand for travel within the Hamilton-Auckland corridor, driven by rapid growth, is reducing transport system levels of service and placing economic performance at risk.
- Problem 2:** Limited travel options in areas facing high growth is reducing liveability and impacting on quality of life, safety and environmental outcomes.
- Problem 3:** Limited land use and transport integration across administrative boundaries is reducing our ability to effectively manage growth impacts and achieve key growth-related objectives.

The SBC identified that the Hamilton to Auckland Start-Up Passenger Rail Detailed Business Case was a key workstream under the SBC, along with a range of other activities. The SBC was endorsed by the Hamilton to Auckland TCWG and WRC. Subsequently it was submitted to NZTA who then endorsed it subject to conditions to be met through the development of the SSBC.

The SBC provided the foundation for this SSBC.

2.2 North Waikato Integrated Growth Management Programme Business Case

The North Waikato Integrated Growth Management Programme Business Case (PBC) was developed over the 2016-18 period and follows the Future Proof Strategy Study¹. Partners in this PBC included WDC (lead agency), WRC, HCC, AC, AT and NZTA. The PBC was endorsed by the WDC on 11 December 2017 and the WRC and their Strategy and Policy Committee in March 2018. The PBC was subsequently endorsed by NZTA. The PBC has informed the Problem Statements and Investment Objectives associated with this SSBC. Essentially this PBC looked at the growing concerns of largely unplanned growth in the north of the Waikato District and the role that this area plays in the growth of the Upper North Island, largely as a result of its proximity to Auckland and the housing pressure within Auckland City.

Two problem statements were developed and agreed with stakeholders that reflect the key areas to address through future investment. These problem statements are:

- Problem 1:** Ad-hoc responses to growth pressure is creating communities disconnected from services, amenities and employment (60%).
- Problem 2:** Current and future demand on the transport network is impacting on safety, commercial activity and service reliability (40%).

The PBC looked at a range of development options and subsequent infrastructure requirements. One of the key determinants of locations for further development growth was the availability of existing services and amenities to serve the community. The PBC essentially highlighted service levels in each of the locations as shown in Figure 2-1.

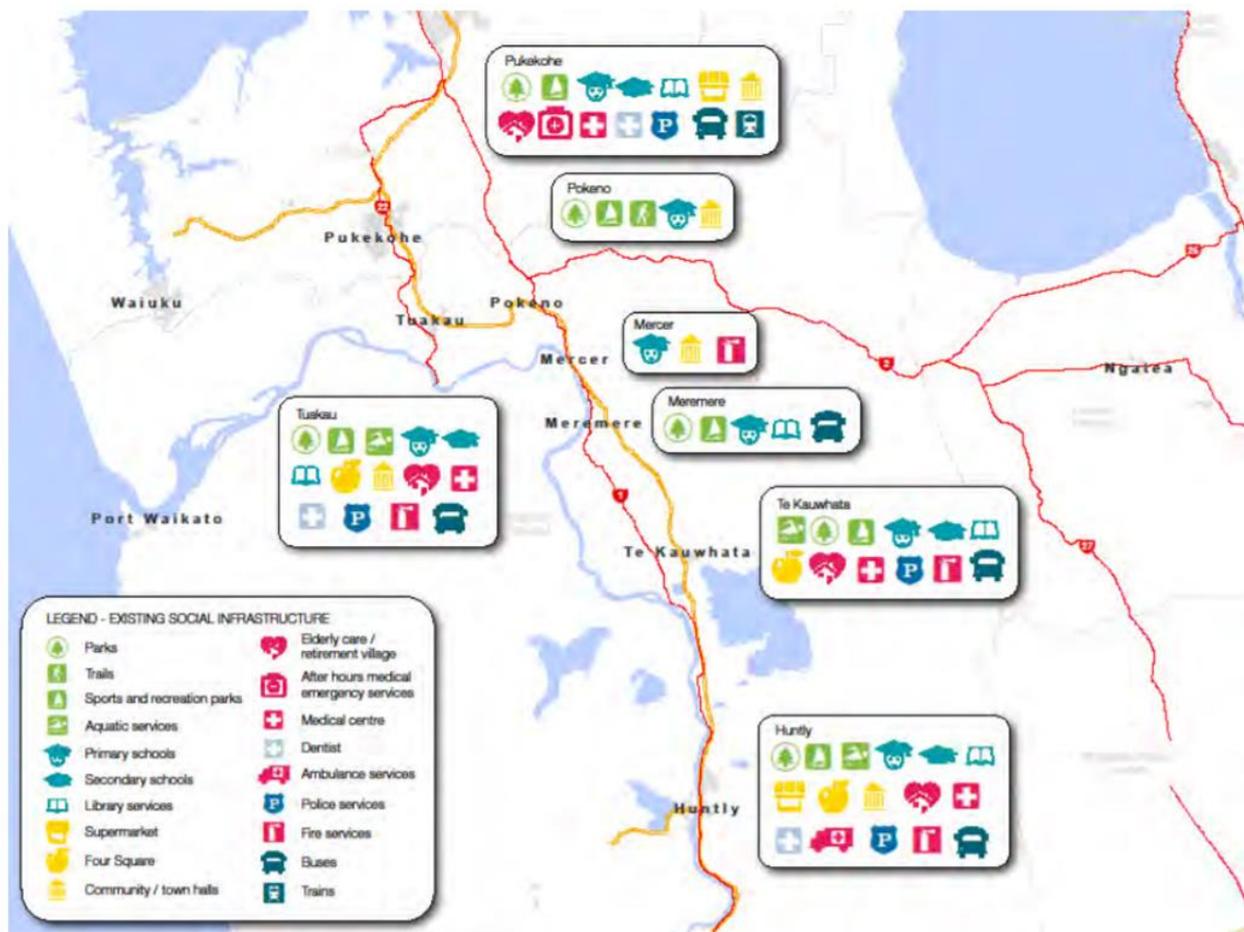


Figure 2-1: Extract from North Waikato Integrated Growth Management PBC – services in each settlement

¹ A 30-year growth management and implementation plan specific to the Hamilton, Waipa and Waikato sub-region (Future Proof sub-region). The Strategy provides a framework to manage growth in a collaborative way for the benefit of the Future Proof subregion both from a community and a physical perspective.

The ability to absorb both additional housing and cater for additional employment was considered to be driven somewhat by existing access to services, this has now been formalised in the Proposed Waikato District Plan. However, it remains to be seen whether the private sector market will undertake development in line with the growth in employment and population as outlined in the PBC. The PBC is also being used as a resource for the Hamilton to Auckland Corridor Spatial Plan (work currently underway and driven by central government).

From the perspective of this SSBC the North Waikato Integrated Growth Management PBC did include the rail option with the text 'Future transport connections between Tuakau, Pokeno and Auckland Central Business District (CBD)' in the programme summary.

2.3 Draft Hamilton to Auckland Corridor Spatial Plan

The purpose of the Hamilton to Auckland Corridor Spatial Plan (H2ACSP) is to better support growth and increase connectivity within the Auckland to Hamilton corridor, in a way that realises its social, economic, cultural and environmental potential.

The plan's scope is as an integrated plan for development and infrastructure in the corridor between Hamilton and Auckland, developed and owned by iwi, central government and local government, which accelerates transformational opportunities. A high-level spatial plan is expected to be completed by the end of 2018.

The plan has four inter-related objectives:

- improving housing affordability and choices.
- enhancing the quality of the natural and built environments and the vitality of Auckland and Hamilton and the communities within the corridor.
- improving access to employment, public services and amenities
- creating employment opportunities in the corridor.

These objectives are highly dependent on the provision of high-quality public transport services to provide a step-change in accessibility, enabling new housing, while reducing reliance on private passenger vehicles.

The plan will include a number of 'transformational projects' at a number of towns along the route including Drury, Paerata, Tuakau, Pokeno, Meremere, Te Kauwhata, Huntly, Ngaruawahia, The Base and Ruakura. These projects include actions that are expected to enable accelerated business growth, residential growth, a more transit oriented urban form, and supporting iwi to grow employment and development.

The Government has committed to enabling the plan to be delivered through new and existing tools such as Kiwibuild, funding/financing mechanisms, the Provincial Growth Fund, transport pricing and legislative reform.

2.3.1 Key findings from the work to date

At the time of this SSBC being completed the plan is still in development, however some initial findings and draft outputs are emerging which are set out below. Five key findings from work to date are outlined in Table 2-1.

Table 2-1: Key findings from work to date (October 2018)

Key Findings	
The corridor is a key asset for its people and the region	The corridor is a key natural, social, economic, cultural and physical infrastructure asset for the Upper North Island and indeed New Zealand, where rural and urban communities are braided together by significant natural, transport, marae and recreational networks.
...with significant long term development potential	There is significant housing and employment growth potential in the <i>Drury-Paerata-Pukekohe-Tuakau-Pokeno</i> cluster in the north, and in the larger Hamilton that stretches from Ngaruawahia in the north to Cambridge and Hamilton airport in the south.
... but also enduring limits to growth and with immediate needs.	Some of the 'river towns' have more limited population growth potential due to enduring natural constraints; however, all of them have potential and imperatives for revitalisation and more limited targeted development.
Successful development will require investment...	The full realisation of development potential will require supporting investments in social and network infrastructure and services of which water, wastewater, flood, drainage and a range of new regional, metro and intercity public transport services improvements will be key.
... as well as new tools, partnerships and approaches.	There is opportunity for increased scale and/or pace of housing and employment development in several key locations but new planning approaches, partnerships and delivery tools will be required to realise such potential and need.

2.3.2 Emerging Five-Part Growth Strategy

A diagram extracted from the October 2018 presentation (Figure 2-2) shows 'an analysis of the corridor's assets, constraints, opportunities, needs and requirements generate five possible focus areas'.

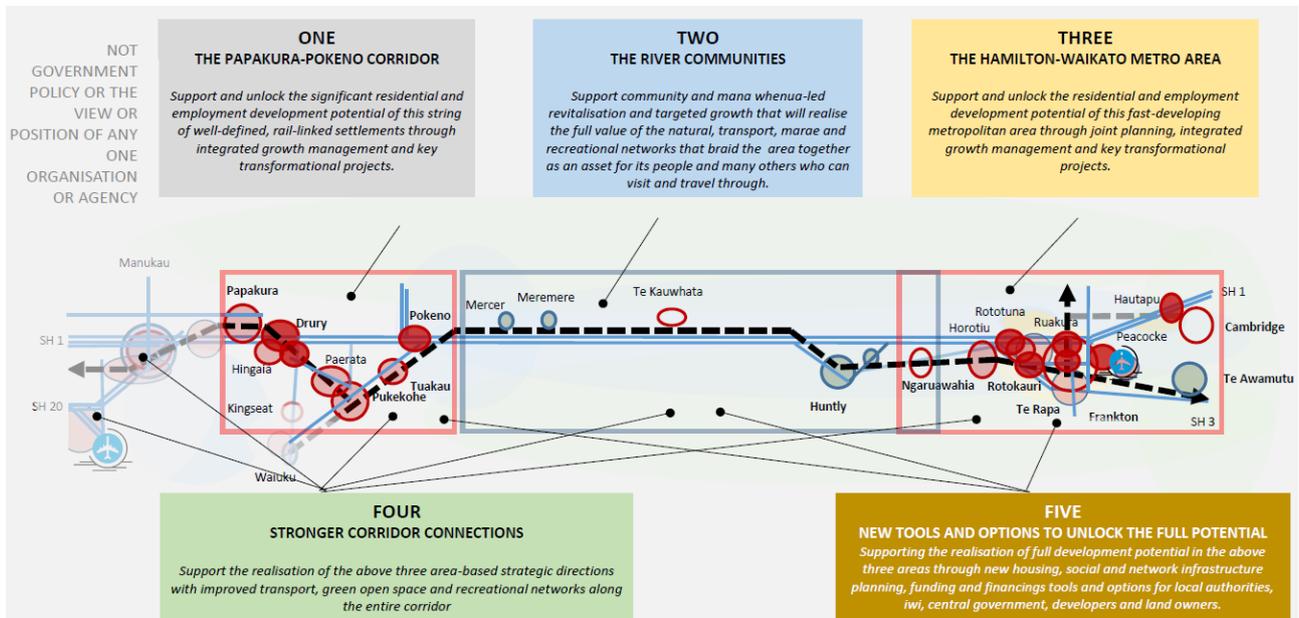


Figure 2-2: The emerging five-point growth strategy

2.3.3 Potential Future Public Transport Context

Figure 2-3 outlines the aspirational concepts for a wider Auckland Council and Waikato District public transport future emerging from the corridor plan. This includes short, medium and long-term staging of each concept. The start-up service sits in the top left-hand corner of this wider plan which will be informed by NZTAs decision on this business case. This concept is draft and has yet to be endorsed.

CONCEPTS	Stage 1: A possible shorter term (years 1-3) package	Stage 2: A possible medium term package (years 4-10)	Stage 3: A possible longer term (year 10+) package
New intercity services	Introduce non-stop diesel rail service from Rotokauri (or Frankton) to Papakura (or if at all possible, to Puhinui-Manukau) + a level of service that ideally matches customer needs and expectations	Add tracks and improved alignment (where needed) to achieve higher speeds. Extend service to new Hamilton CBD stations and a stop closer to Britomart	Electrify whole corridor; add tracks and new alignment (where need) to achieve higher speeds
Metro services (as noted above under other focus area)	AUCKLAND: Extend current Papakura-Pukekohe diesel shuttle service to Tuakau and Pokeno (would need 2 new stations and related tracks etc.)	Electrify Papakura to Pukekohe and Tuakau and Pokeno, if at all possible – and then run EMU rail service all the way to Pokeno	Electrify to Pukekohe Pokeno, if not done in medium term
	HAMILTON: Introduce a new diesel metro rail service from Huntly-Ngaruawahia-Rotokauri-Frankton-Hamilton CBD-Ruakura-Cambridge as part of a larger mass transit network. (needs new 4 new stations and related tracks, signals etc.)		Extend rail to Hamilton airport and electrify the new metro network
Regional/rural services (as noted above)	Introduce peak and more frequent off peak bus services between Huntly, Te Kauwhata, Meremere, Mercer and Pokeno	Upgrade all bus stations and service frequency, and possible extend bus services north from Pokeno to new Drury station (bus runs along SH1)	Add bus lanes on SH1 Pokeno-Drury and/or Replace bus service + all-stop rail service on new electrified track

Figure 2-3: Potential future public transport context

2.4 Draft Detailed Business Case

A draft Detailed Business Case (DBC) was previously prepared for this investment but was not finalised. The draft document identified several strategic reasons for the service:

- to alleviate congestion pressures across existing transport network.
- to respond to projected growth in commuters and freight volumes in the Upper North Island.
- to provide alternative transport choices for the projected growth in commuters.
- to support a mode shift to lower emission forms of transport.
- to assist regional development.
- to provide efficient and effective access to employment and housing areas.

A key point to note was that the DBC started at a time when there was no mechanism under which regional passenger rail was to be assessed. On this basis WRC and the other partners undertook the detailed business case work broadly in line with the Treasury Better Business Case (BBC) processes but not under the NZTA Investment Assurance Framework (IAF) process.

NZTA was involved in these early stages and did undertake some basic reviews of the work. However, given that it was expected to be funded via other government departments (with slightly differing investment case approaches) they did not assess against their own IAF.

Clearly with the confirmation of rail funding in the 2018 Government Policy Statement on Land Transport (GPS), the DBC now falls fully into the portfolio of NZTA for funding in the National Land Transport Programme (NLTP) and as such, is required to comply with the IAF.

Whilst the draft DBC document was not in line with NZTA requirements of a business case, it did provide valuable information around the infrastructure and operation of the service along with a high level financial, management and commercial case. For this current SSBC phase, the underlying work and

assumptions were queried and tested and as things have crystallised for both the wider stakeholder group and WRC, the SSBC work has incorporated these aspects.

3. Collaboration

The project, which is to provide a start-up passenger rail service that has long been identified in the Regional Land Transport Plan (RLTP) as a vision for the Region, has involved eight main partners who jointly formed the TCWG. These partners have been working together on this and predecessor projects over the last two years. The partners are:

- Waikato Regional Council (WRC) – the lead organisation for delivery of a passenger rail service linking to Auckland and being the manager of public transport in the Region. WRC have promoted the service through their 2018-2028 Long Term Plan (LTP), the 2018 update to the RLTP 2015-2045, and the Draft 2018-28 Regional Public Transport Plan.
- Hamilton City Council (HCC) – representing the Hamilton-Waikato metropolitan urban focus for the proposal and being the promoters of rail station sites at Frankton and a new modern public transport interchange facility at The Base (Rotokauri) which would help support the growth to the north east of city. The development of the Base transport hub was included in their 2018-2028 Long Term Plan (LTP). HCC is a key member of the Future Proof growth collaboration alongside WRC, WDC, Waipa District Council, tangata whenua representatives and NZTA.
- Waikato District Council (WDC) – the territorial authority responsible for the Waikato District which lies geographically between Hamilton and Auckland. The north of the District is currently accommodating larger scale growth than would have been anticipated less than 10 years ago. WDC is a key partner in the 'Future-proof' growth collaboration (see Section 4).
- Auckland Transport (AT) – AT is the transport authority for Auckland Council and supports the proposal on the premise that it can be operated without detriment to existing and planned Metro services, which form a critical component of Auckland's transport system and are essential to support planned growth areas. AT may potentially be the contracted manager of the start-up passenger rail service.
- Auckland Council (AC) – Auckland councillors are members of the Hamilton to Auckland TCWG overseeing the development of the SSBC.
- KiwiRail – Owner and operator of the rail network, KiwiRail are a key partner in the delivery of the project and are therefore working to provide costs and delivery information for rolling stock and station upgrades.
- NZ Transport Agency (NZTA) – Representatives from NZTA are members of the Hamilton to Auckland TCWG and have been actively involved in the project since its inception. NZTA will receive the SSBC and undertake an Independent Quality Assessment (IQA) prior to it going to the NZTA Board for endorsement in December 2018.
- Ministry of Transport (MoT) – Provides key support to the project in line with the requests from the Minister of Transport and the direction set by the GPS.

The partners have met on a regular basis to discuss potential solutions, constraints risks and trade-offs. Where relevant these are documented within the body of this SSBC.

4. Strategic Alignment

The Hamilton to Auckland start-up passenger rail service aligns closely with national, regional and local strategies, policies and plans, as demonstrated in Table 4-1. Further information is provided in Appendix A.

Table 4-1: Alignment with National, Regional and Local Strategies, Policies and Plans.

Document	Alignment
National	
Government Policy Statement on Land Transport (GPS) 2018-28	<p>The MoT prepares the GPS which sets out the Government's strategy to guide land transport investment over the next ten years. NZTA is responsible for giving effect to the GPS, through the NLTP and the region must be consistent with the GPS, through the RLTP. When the start-up passenger rail service is assessed against the GPS it shows:</p> <ul style="list-style-type: none"> • Strong alignment with all three GPS objectives under access: by providing increased access to economic and social opportunities along the corridor; a more resilient network through providing a new mode; and improved transport choice and access by providing a new mode. • Strong alignment with safety: by moving people onto a safer mode, notwithstanding interactions at level crossings with rail. • Moderate alignment with value for money: by using the business case approach for decision making and collaborating with investment across the organisations to realise efficiencies. • Strong alignment with environment: investing in public transport to increase use, lower greenhouse gas emissions and improve health has strong alignment with the GPS objectives. <p>The GPS also created a 'transitional rail' funding category for the first time, which is specifically intended to "support investment in.... new interregional commuter rail services, including the capital costs associated with the rolling stock to support housing and employment opportunities" (par. 183 of GPS)</p>
Regional	
Waikato Regional Policy Statement (RPS)	<p>The Waikato RPS was made operative in May 2016 (after being notified in late 2010). It identifies the North Island Main Trunk (NIMT) railway as regionally significant infrastructure which it describes as supporting the wellbeing of the regional community and being important to NZ as a whole. It sets out that in areas of actual/anticipated significant growth, territorial authorities should develop and maintain growth strategies which identify a spatial pattern of land use and infrastructure development and staging for at least a 30-year period. The RPS seeks to protect the effectiveness and efficiency of (and investment in) regionally significant infrastructure through district plans avoiding adverse effects on its function; avoiding adverse effects of ribbon development along the corridor and avoiding the need for additional access points onto those corridors. It also seeks to avoid the exacerbation of community severance caused by transport corridors. Onus is put on infrastructure providers to develop ways to maintain and improve the resilience of regionally significant infrastructure, such as through back-up systems and protection from the risk of natural hazards.</p>
2018 Update to the 2015-45 Waikato Regional Land Transport Plan (RLTP)	<p>The Waikato RLTP advocates for a start-up passenger rail service between Hamilton and Auckland, in line with the Government's commitment to increasing the use of rail to enable efficient interregional passenger transport. The start-up passenger rail service is listed as a prioritised significant transport activity in the RLTP.</p>
WRC 2018-28 Long Term Plan	<p>The start-up passenger service between Hamilton and Auckland is included in the WRC LTP with levels of service and stops broadly set up. WRC has set aside funds for this project in their respective LTP (which was adopted in June 2018).</p>
Draft Waikato Regional Public	<p>The Draft Waikato Regional Public Transport Plan 2018-28 was released for public consultation on 23 August 2018. The Plan supports the start-up</p>

Document	Alignment
Transport Plan 2018-2028	passenger rail service by inclusion of policies and a description of the phased development of the service. Submission received on the Draft RTP broadly support the start-up passenger rail service.
Auckland Regional Land Transport Plan (RLTP)	The Auckland RLTP identified inter-regional rail services and notes that changes in policy in response to growth pressures in Auckland and the Upper North Island mean that provision of inter-regional rail is now being considered. The plan notes that the Government has signalled its intention to introduce inter-regional rail services between Auckland, Hamilton and Tauranga as a means of supporting growth, housing and reducing congestion on the Southern Motorway (SH1).
The Auckland Plan 2050	In relation to this SSBC, the Auckland Plan includes discussion on Hamilton to Auckland Rail: <i>While major upgrades to SH1 to the north and south of Auckland are planned or underway, these improvements may have to be complemented by future upgrades to the rail network to better connect the upper North Island.</i>
Auckland Transport Alignment Project (ATAP)	In relation to this project ATAP already have some commitments in the vicinity, with upgrades and electrification of the NIMT now approved to Pukekohe. In the medium to longer term the expectation is that there would be further rail network upgrades to enable express and inter-regional passenger rail service. The reports indicate that as further funding becomes available, investigating the acceleration of these investments into the first decade should be a priority. These improvements are intended to "support the progressive implementation of inter-regional rail passenger services between Auckland and the Waikato, which will also help to unlock growth opportunities around the rail network in the Waikato ² ".
Sub-Regional	
Future Proof Strategy Study	The Future Proof Strategy is a growth strategy that sets out a 30-year vision specific to the Hamilton, Waipa, and Waikato sub-region. The main focus of the Future Proof Strategy study is to ensure identified growth issues are managed including by creating nucleated settlements with densities that are suited to the requirements of long-term growth. The start-up passenger rail service shows strong alignment with the Future Proof Strategy.
North Waikato Integrated Growth Management Programme Business Case (PBC)	The North Waikato Integrated Growth Management PBC follows the Future Proof Strategy. Essentially the PBC looked at the growing concerns related to largely unplanned growth in the north of Waikato District and the role that this area plays in the growth of the Upper North Island, largely as a result of its proximity to Auckland and the housing pressure within Auckland City. The PBC looked at a range of development options and subsequent infrastructure requirements. One of the key determinants of locations for further development growth was the availability of existing services and amenities to serve the community in the short term. From the perspective of this SSBC the North Waikato Integrated Growth Management PBC did include an option of 'Future transport connections between Tuakau, Pokeno and Auckland CBD' in the programme summary.
Waikato Plan 2017	Through 2016/17 Waikato councils, central government and other private and public agencies have worked together to create the Waikato Plan. The Plan provides the region with one voice about important issues that affect the region over the next 30 years. A key action in the Plan is to advocate for sub-regional or inter-regional public transport services not currently being provided, specifically to and from key services (including education and health providers) and between live and work locations. This includes passenger rail, which is linked to Key Action 4

² Auckland Transport Alignment Project Report, April 2018, pages 24 and 25

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

Document	Alignment
	(Advocate on behalf of regional transport priorities) and Key Action 5 (Integrate Waikato and Auckland transport networks).
Hamilton to Auckland Corridor Spatial Plan in preparation	<p>The Auckland to Hamilton Corridor Spatial Plan is a Central Government initiative supported locally and is expected to be completed by the end of 2018. The plan's scope is as an integrated spatial plan for development and infrastructure provision in the corridor between Auckland and Hamilton.</p> <p>The outcomes sought by the Corridor Plan, particularly in the North Waikato, are highly dependent on the provision of high-quality public transport services towards which the start-up passenger rail offering is being seen as a first step. In particular, high quality public transport connections are being relied on to provide a step-change in accessibility (and reliability of journey times), enabling new housing, while reducing reliance on private passenger vehicles and associated costs.</p>
District	
HCC and WDC 2018-28 Long Term Plans (LTPs)	The rail service between Hamilton and Auckland is included in the HCC and WDC LTPs with levels of service and stops broadly set up. HCC and WDC have set aside funds for train platform infrastructure in their respective LTPs (which have now been adopted).
Hamilton and Waikato District Plans	The Hamilton District Plan identifies the location of the Base Station as a key public transport interchange. While the Waikato plan does not specifically discuss passenger rail services, it re-iterates growth is planned to occur at the settlements between Hamilton and Auckland.

5. Context

5.1 Location and Social Context

The geographical scope of this SSBC is the area from Hamilton in the south to Auckland in the north (as shown in Figure 5-1). At start-up stage the SSBC is focussed upon the potential for passenger demand between Hamilton and Papakura, with transfers to AT Metro services at Papakura for Britomart and there is an anticipated improvement to run the service further into Auckland to the Strand within five years.

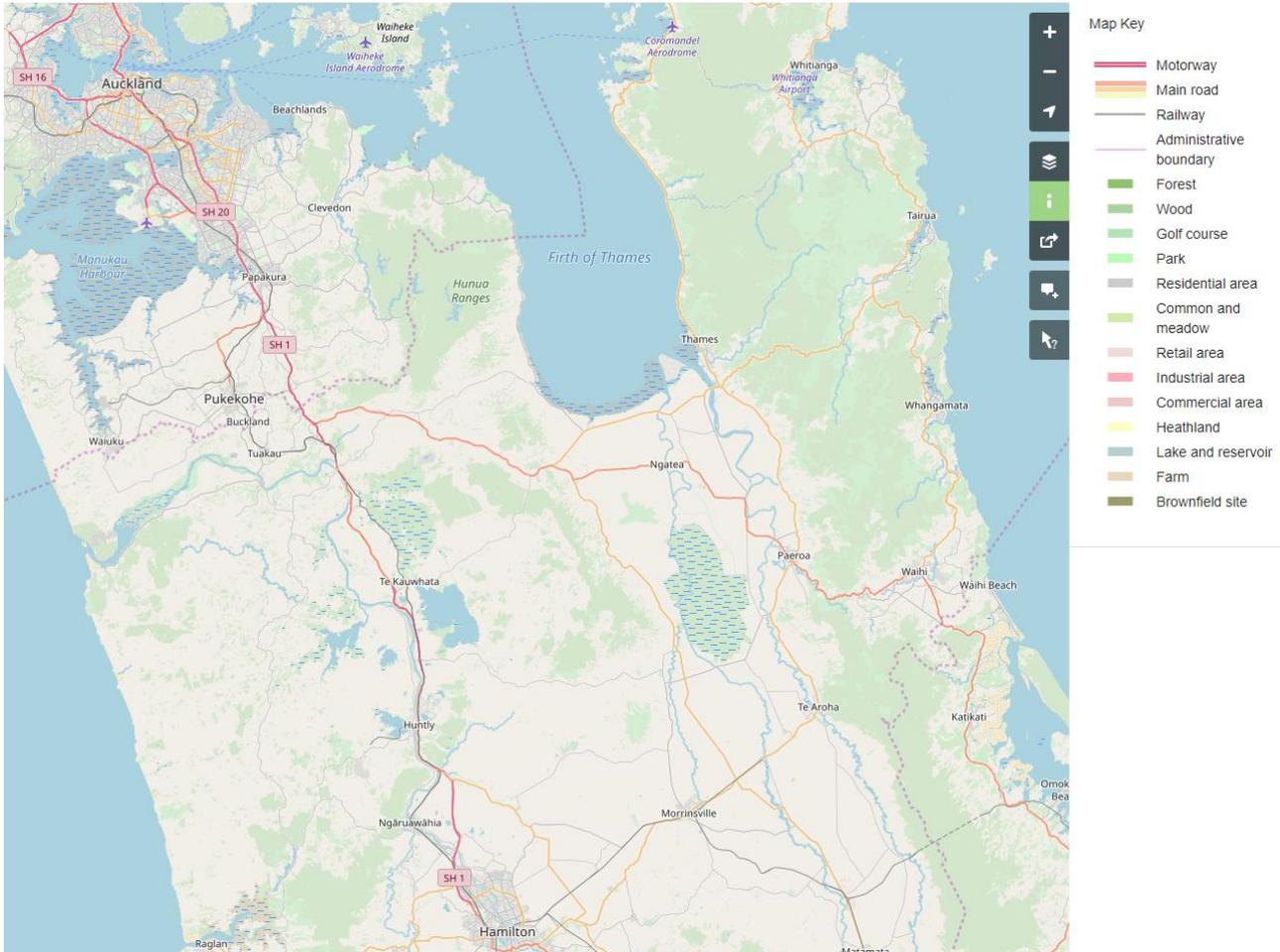


Figure 5-1: Geographical area of Business Case

The context that sits behind the start-up service is the existing and potential rapid growth in demand for both housing and therefore commuting from North Waikato and Hamilton City. It is widely acknowledged that this is largely related to the housing market (relatively high median price of land and housing compared to Waikato) in Auckland, which is also driven by the rapid growth of the population in Auckland City (a situation that is expected to continue):

More than 1.66 million people live in Auckland already. Over the next 30 years this could increase by another 720,000 people to reach 2.4 million. This could mean another 313,000 dwellings and 263,000 jobs are required over this period. Auckland's population growth is driven by both natural growth, meaning more births than deaths, and migration from overseas and from other parts of New Zealand. Natural growth is more easily planned for over the long-term, while changes in immigration patterns often require a more immediate response.³

³ Auckland Plan 2050 (June 2018) – 'a long-term spatial plan to ensure Auckland grows in a way that will meet the opportunities and challenges of the future'.

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

Another key factor is the growth of settlements in the northern Waikato area, driven by the availability of affordable housing and the relative proximity to Auckland.

Whilst the Auckland Plan 2050 intends to ensure the future population can be accommodated with the Auckland Plan area, the current housing market is known to be a restriction and the plan itself acknowledges that of the half a million potential building consents created, a large proportion may be unviable for several reasons. This is mitigated in some respects by over provision.

Whilst the Auckland Plan 2050 therefore sets out a way forward, the impact of this plan and the resource consents created and subsequent lags between this and construction probably mean that the efforts of the Plan are unlikely to be felt on the Auckland and north Waikato housing market for some time, possibly 10 years. Interestingly, median house prices in Auckland in the last reported quarter have fallen slightly whilst the median prices in Waikato district and Hamilton city have continued to rise. The graph in Figure 5-2 (using data provided by the Ministry of Business, Innovation and Employment {MBIE}) shows the trends in median house prices over the three districts of Hamilton, Waikato and Auckland since 1993.

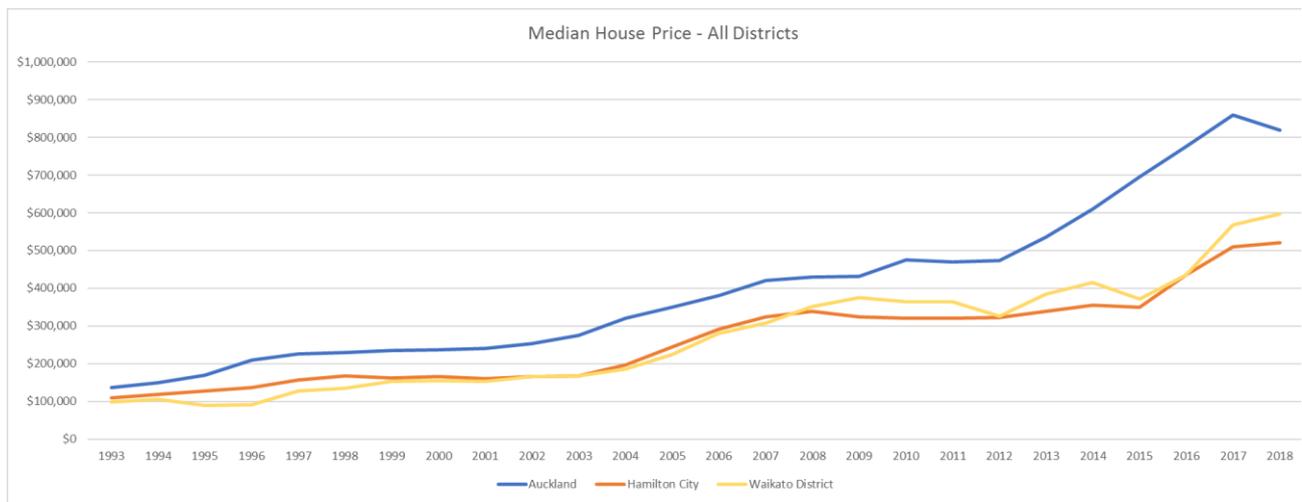


Figure 5-2: Median House Price Data: Hamilton City, Waikato District and Auckland (source: MBIE)

The graph indicates very little to no lag between the house price increases of Auckland and those of the neighbouring economies, this either indicates that the market is rapidly responding to the price increases in Auckland or that there is wider and more entrenched trend in house price increases since approximately 2003.

Household consent data has also been provided, the graph in Figure 5-3 shows the consents per annum for the three main affected Councils since 1993. The market in housing development is complex, but looking at both graphs (median house price and consents) it seems likely the trend in the low number of consents in Auckland between 2003 and 2013 has contributed to the more rapid rise in median house prices since 2013. Clearly this is difficult to remedy as development; particularly in areas with high land values, is affected by economic confidence (and by association, access to favourable bank loans). Other factors that may have contributed to this drop in consents but not investigated, are related to policy (for example, intensification restrictions and car parking standards can limit development in high value/high density areas). Hamilton City and Waikato District also had a similar dip in consent demand in post 2003 (though with a much smaller level of consenting). There is also a dip across the three authorities in consents in 2013, once again whilst the cause of this dip may be a result of many factors, the construction industry was thought to be stretched over this period by the focus of reconstruction in Christchurch.

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

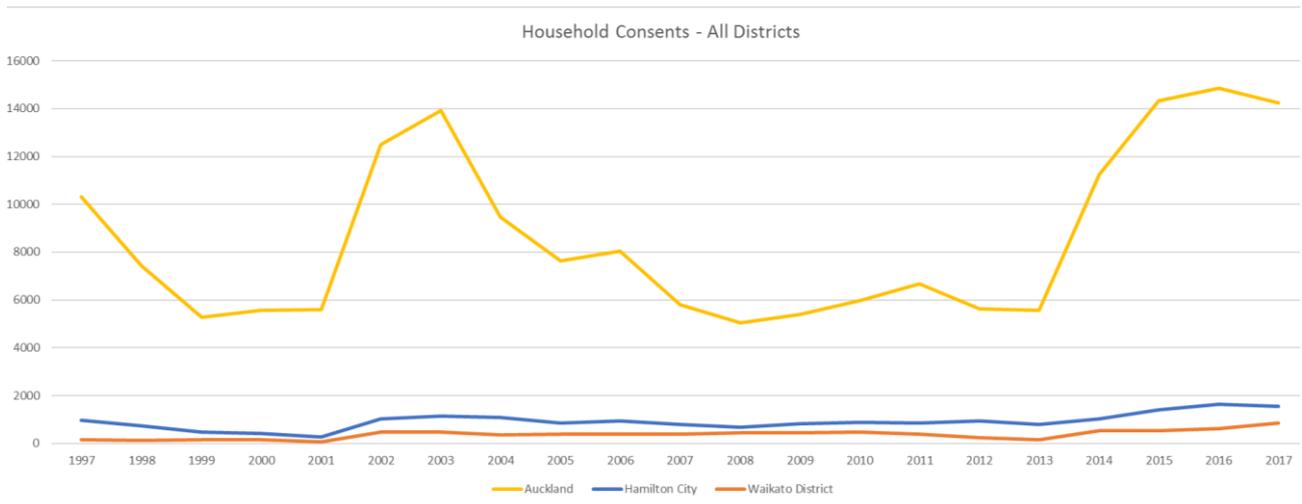


Figure 5-3: Household consents, Hamilton City, Waikato District and Auckland

The overall picture related to housing is that pressures are continuing to build and that whilst more recently there have been concerted efforts to consent and fund new housing across the three regions (as discussed in the sections above with Future Proof Strategy study), there is likely to be a large lag in effect.

There is a growth trend emerging which is illustrated in the following series of maps, and there are subtle population changes taking place along both the North Waikato / Auckland border, but also along the SH1 corridor and in Hamilton. The map in Figure 5-4 shows the population growth percentages by mesh block between 2001 and 2006. This indicates a fairly even growth on and around the SH1 corridor. The map in Figure 5-5 shows the growth percentages between 2006 and 2013, which shows a slightly less even pattern with subtle increases in population along the SH1 corridor and South Auckland.

The final map in Figure 5-6 shows the overall percentage increases between 2001 and 2013, which illustrates slightly more boldly the largest growth in South Auckland locations and fairly consistent growth in North Waikato, with a subtle shift in populations towards these areas and SH1. It should be noted that where percentages are used, particularly in relation to larger, more rural districts, the actual change in the total numbers may be relatively low.

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

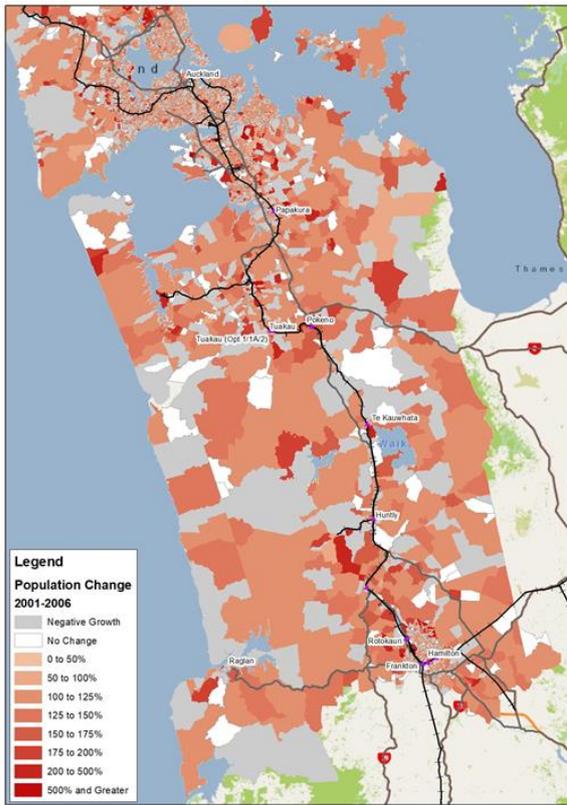


Figure 5-4: Population Growth % 2001-2006

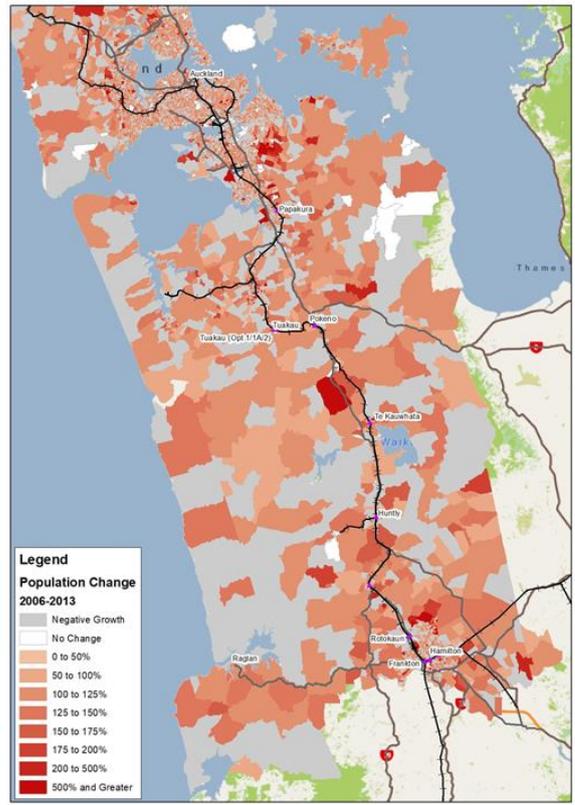


Figure 5-5: Population Growth % 2006-2013

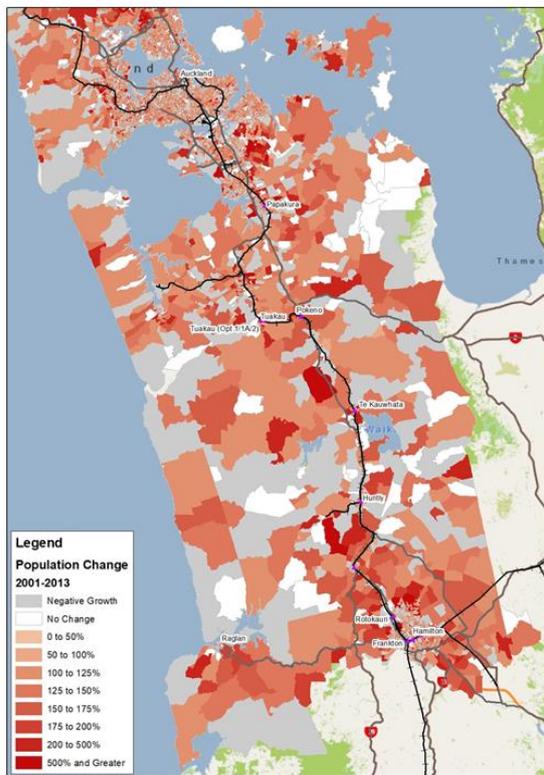


Figure 5-6: Population Growth % 2001-2013

The following three maps (Figure 5-7, Figure 5-8 and Figure 5-9) show there was little employment growth in the central areas of Auckland over the period 2001-2013, with patches of larger employment growth largely on the periphery and in locations along SH1.

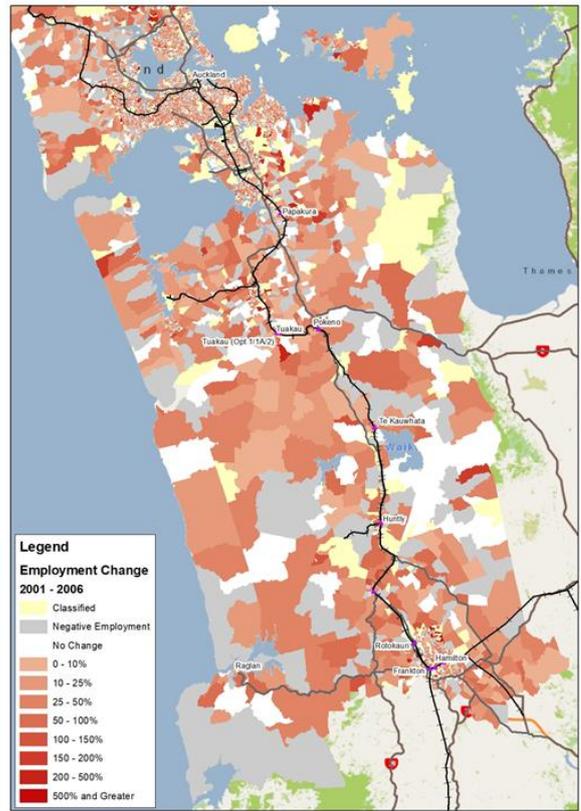


Figure 5-7: Employment Growth 2001-2006 percentages

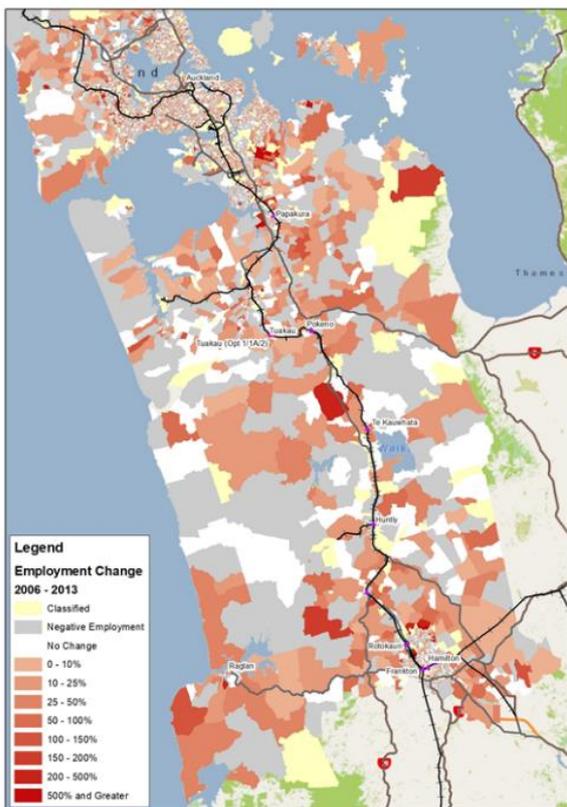


Figure 5-8: Employment Growth 2006-2013 percentages

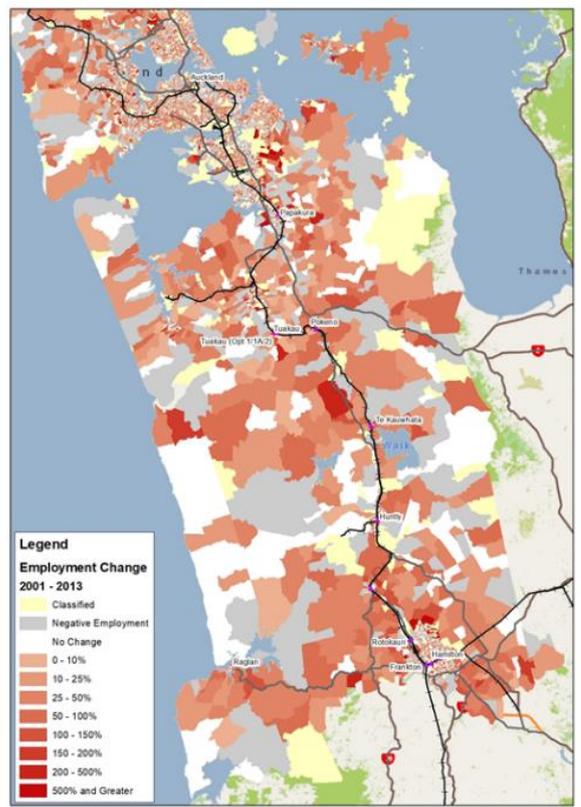


Figure 5-9: Employment Growth 2001-2013 percentages

5.2 Regional Transport Context

The current options to commute between Hamilton and Auckland favour private vehicle by road. Existing public transport options either cost too much or the timetables are not commuter friendly. WRC and WDC, coupled with NZTA have proposed plans to improve bus services in the North Waikato corridor, which are outlined in Section 5.2.3.

5.2.1 Road

The primary transport route between Hamilton and Auckland is SH1. This nationally strategic corridor is currently being upgraded to expressway standard of at least two lanes in each direction and a central median barrier as shown in Figure 5-10.

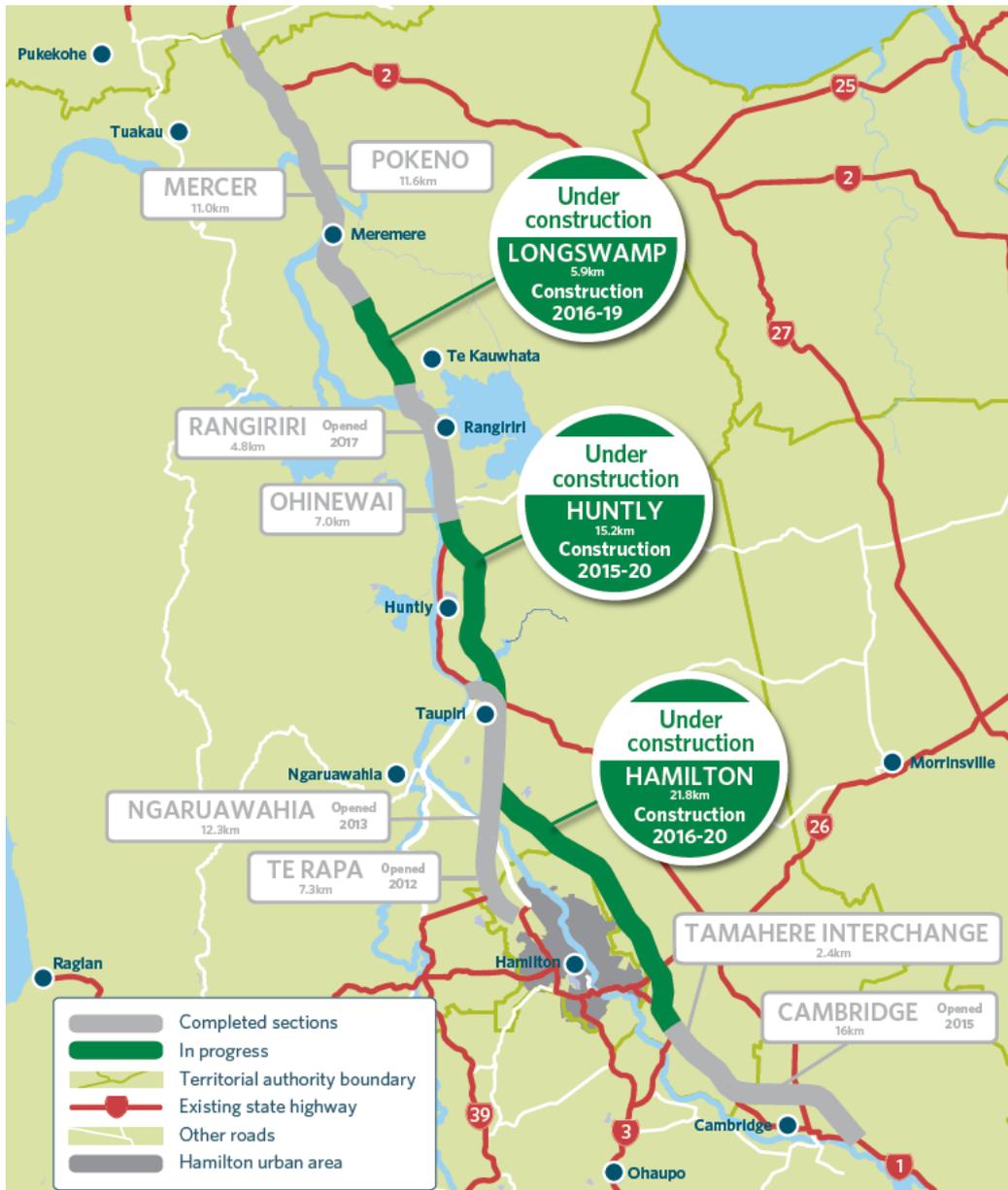


Figure 5-10: Primary Transport Route Upgrades

The state highway upgrades to the Waikato Expressway and sections of the Southern Motorway on the periphery of Auckland, are all likely to impact on Annual Average Daily Traffic (AADT) demands, with traffic demand on SH1 growing at an increased rate in recent years since improvements on the route started.

As the graph in Figure 5-11 shows, volumes monitored at the SH1 Bombay Telemetry site have increased from 37,282 in 2014 to 44,312 in 2017 (7,030 or a 19% increase). There is slower AADT growth at locations further north (Rosehill) which is likely due to existing traffic congestion on this section of SH1. The AADT at Taupiri also shows a similar slower growth, but this may be somewhat constrained by incomplete works at

the Hamilton end of SH1. If in the future, similar percentage growth increases are witnessed on other SH1 route sections as for Bombay, then the capacity improvement works planned to the Southern Motorway at the southern edge of Auckland are likely to have a brief lifespan before becoming congested again.

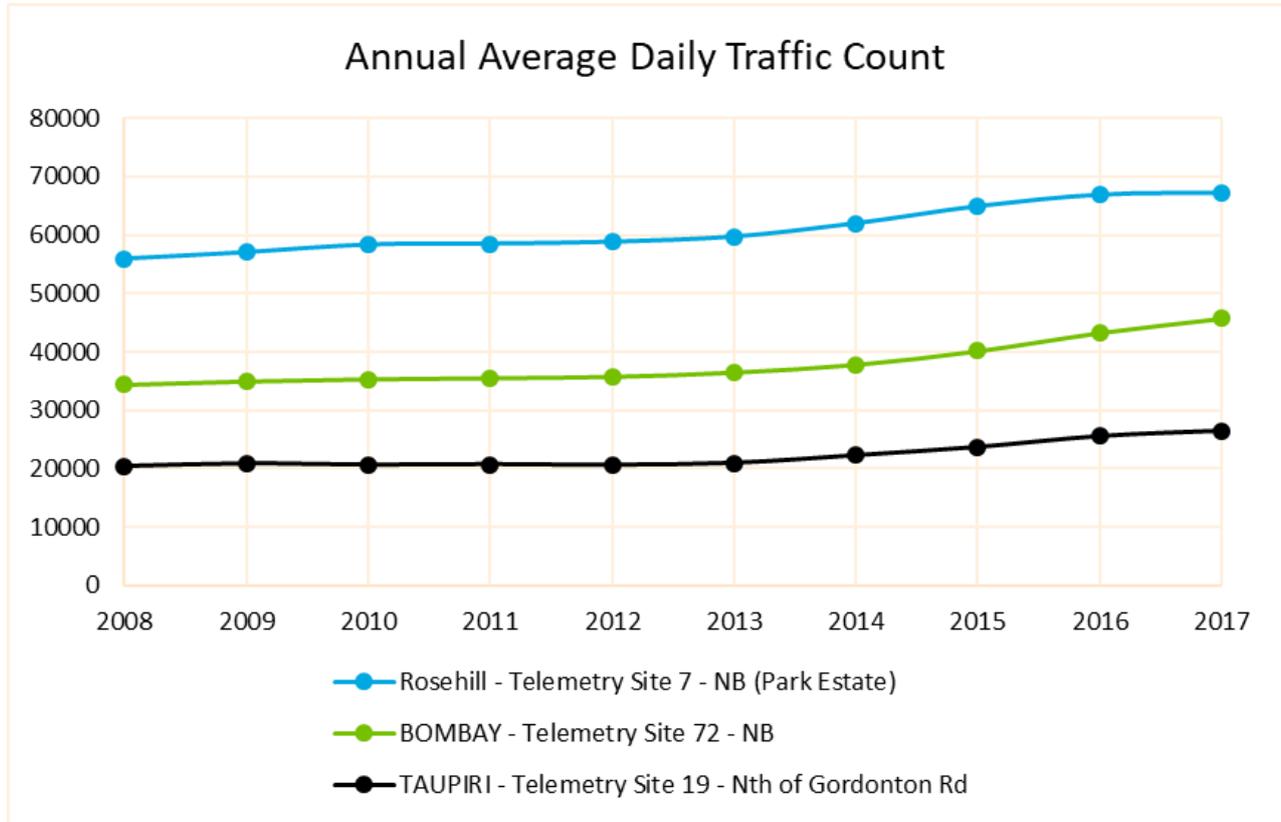


Figure 5-11: NZTA Telemetry Count Sites

The state highway improvements on the Waikato Expressway (Longswamp to Hamilton sections) have a total project cost of \$1,605M. The effect of this is anticipated to achieve a 35-minute time saving for journeys between Pokeno and Tirau. As alluded in the previous paragraph, whilst this may be achieved in the short term, journey time savings are rapidly eroded as demand grows to use the available road space. It is also clear from the Future Proof Strategy that the route would experience additional traffic demand because of new development (residential and commercial). It is also considered likely that further growth would occur because of changes to the make-up of the towns on the route as houses are sold to people specifically targeting these areas to live as a result of the proximity to the improved SH1 corridor. On this basis, having a passenger rail link would perform an essential role in protecting the Waikato Expressway investment, both through offering mode choice but by also creating a robust reason for directing growth in the townships rather than at locations near to SH1 junctions. It is anticipated that these overarching issues would be addressed as part of other works to consider regional rail and the 'second stage' GPS.

Figure 5-12 shows the proposed forecast growth planned across the Waikato, Hamilton and Waipa District Plans, it is worth reiterating that the total growth anticipated in this area over the next 30 years is a total of just over 95,000 households and nearly 1,000 hectares of employment land. With a modest projection of travel demand towards Auckland of 10% commute/education and 5% per day visiting Auckland, those 95,000 households would create approximately 14,000 additional trips per day heading to the Auckland Urban Area. Similarly, if one hectare of industrial land is assumed to generate around 50 trips per day and 10% of these are going into Auckland then it could be expected to have another 5,000 one-way vehicular trips. It is simply not possible to continue to expand the state highways going into Auckland to cater for both this and internal (to Auckland) demand. Looking at the Auckland Plan 2050, the projected consents sit at around half a million over a similar time period, whilst not all of this would be delivered – the consent demand is predicted to be at around 450,000. This level of growth is supported by some very timely investment in mass transit solutions, but even with this level of investment there is a good chance that household and retail/office/industrial growth would result in a steady state situation within the city for traffic.

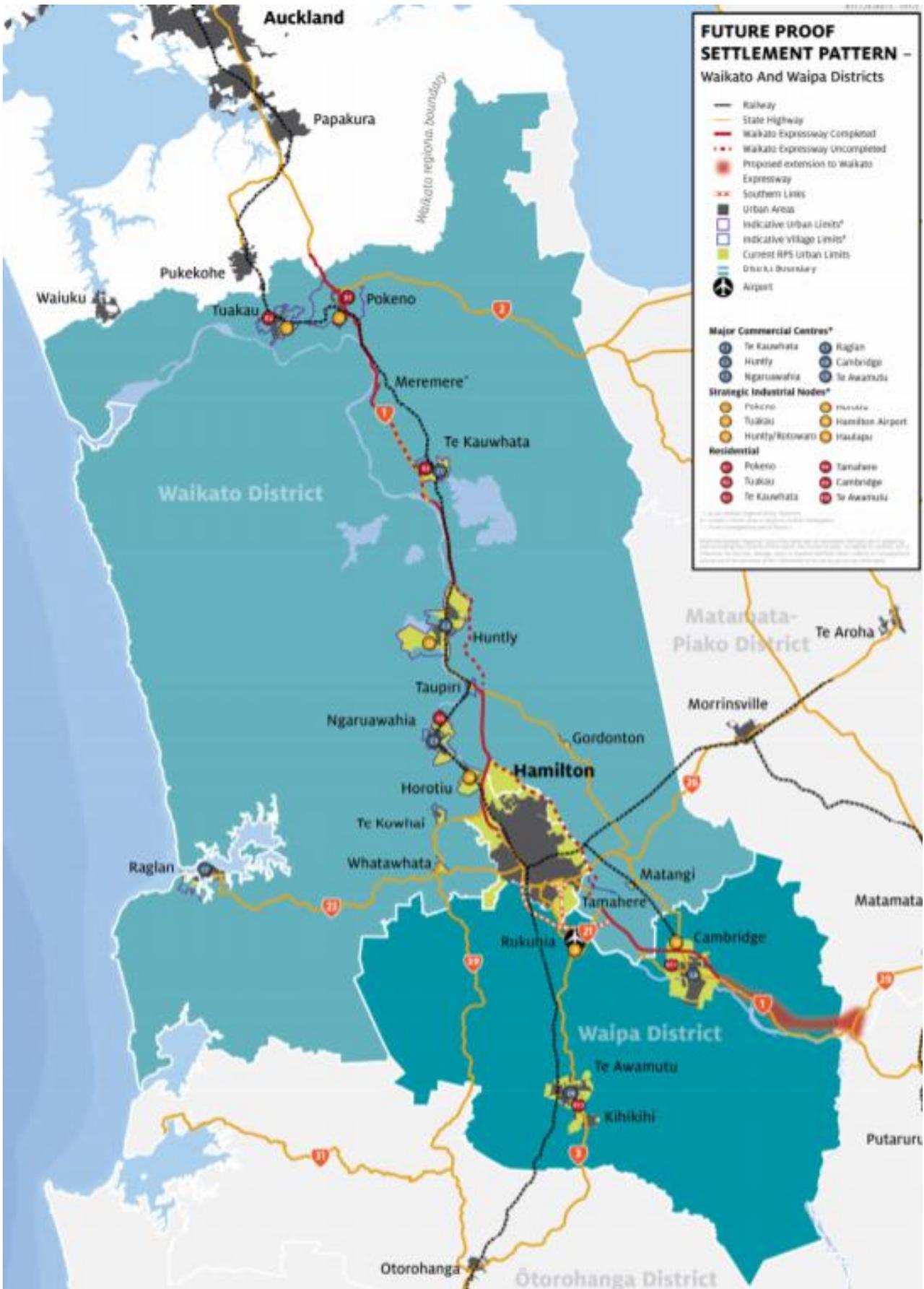


Figure 5-12: Future Proof Strategy study map showing areas of growth

For the figures for each district, refer to extracted tables shown in Appendix A.4 and Appendix E.

5.2.2 Rail Services

There is an existing rail passenger service operating between Hamilton and Auckland, which is the KiwiRail Northern Explorer service. The Northern Explorer travels between Wellington and Auckland over the course of a day and then makes the return journey the following day (there is one lay day per week). This service is primarily set up as a long-distance tourist train and is not a viable option for commuters to consider for work purposes at all. Ticket prices between Hamilton and Auckland start at \$59 each way, so are set much higher than would be expected of a potential passenger rail start-up service.

Historically this service was daily, with a train travelling each direction but this ceased in 2009 to the current service model today. Prior to 2004 it was a twice daily service.

A previous trial passenger rail service between Hamilton and Auckland, the Waikato Connection, operated in 2000 and 2001. This was not commercially viable and ceased operation after 14 months.

AT also has contracted Diesel Multiple Unit (DMU) passenger rail services between Pukekohe and Papakura and Electric Multiple Unit (EMU) passenger rail services north of there. The latter have reasonably high frequency.

5.2.3 Bus Services

There are several bus services in the Waikato Region, with few inter-regional services available to get to Auckland. Most of the existing options that connect to Auckland are not suitable for commuters based on the cost and timetable constraints in place. Available services are:

- InterCity: the nationwide bus service that could theoretically be used daily by commuters to reach Auckland. If they departed Hamilton at 5:30am they could be in Auckland Central by 8:00am, with a 4:45pm service returning at 7:00pm. The cost of such a return trip is approximately \$50 return, however ticket prices can fluctuate depending on availability. Intercity travel along the state highway corridors and generally only stop at smaller centres on request, apart from certain scheduled stops en route.
- Minibus Express: a bespoke Hamilton to Auckland International Airport service, generally for those passengers travelling overseas (\$80 one way or \$150 return).
- Council contracted bus services – As part of its 2018-28 Long Term Plan, WRC is committed to improve the bus network in the North Waikato area, with the following new projects approved for implementation over the next two years:
 - Pokeno to Pukekohe - a regular bus service between Pokeno and Pukekohe via Tuakau on weekdays and weekends. Designed to integrate with train services from Pukekohe to Auckland. Proposed service levels - 30min peak and 60-120min off-peak, Monday to Friday
 - Huntly to Pukekohe - a daily off-peak return service between Huntly and Pukekohe via north Waikato towns Monday to Friday, providing community connectivity and broader access to essential services.
 - Te Kauwhata to Hamilton– Extension of the existing Huntly bus service to Te Kauwhata for one return trip during peak periods on weekdays, providing access to employment, education and social opportunities
 - Community Transport Initiatives – WRC/WDC will investigate the opportunity of community initiated transport solutions to provide improved transport access, particularly in areas where public transport may not be a suitable/cost effective option.

In July 2018, the national commercial bus service provided by Naked Bus ceased operation. This removed a low-cost travel option for the regional. Naked Bus operated similarly to Intercity, but on a smaller scale.

5.3 Other Rail Projects

There are several other rail projects in construction or planning in the greater Auckland area, that provide certain limitations or influence what can be initially achieved by the start-up passenger service. These limitations, or influences, are referred to within the SSBC where relevant. These other rail projects are listed in Table 5-1 and provide indicative background information on the project and possible timings.

Table 5-1: Other rail projects in Greater Auckland area

Project	Information
Papakura to Pukekohe Electrification	<p>Electrification of the line between Papakura and Pukekohe is planned for completion over the next five years (2023), subject to final funding approval. A DBC is currently being updated to allow full funding application towards the end of this financial year. The current DBC assumes electrification of the existing two track railway. Changes to assumptions may mean that provision of additional tracks may need to be brought forward. The cost and timing implications of this have yet to be established.</p> <p>Access to the rail network for the electrification works is a key driver of delivery timeframes. It is likely that regular closures of the rail line will be required to complete the electrification works. Following completion, unless further work has been undertaken to facilitate operation of regional trains further north, the termination point of the Hamilton to Auckland passenger rail service would shift to Pukekohe. The design of Pukekohe will allow for this. Extension of electrification further south to Pokeno/Mercer may be under consideration as part of the Hamilton – Auckland corridor project. No detailed work has been undertaken in respect to this concept.</p>
Puhinui Station	<p>An initial upgrade of Puhinui Station to facilitate interchange with a dedicated bus service to Auckland International Airport, is currently in the design phase and is planned to be operation by 2021. This upgrade has been future proofed for four tracks and additional rail turn back facilities, but these are not included within the first stage of the project. Later stages include provision of a dedicated bridge crossing the railway, and an expanded passenger concourse. Provision of additional tracks would need to be brought forward to accommodate terminating regional trains, or provided as part of the 3rd main project. If there is capacity on the network for through running trains, then it is likely that they would call at this station. This is subject to further operational analysis and would require provision of appropriate customer facilities/information. Construction requires blocks of line, which would be co-ordinated with other works where possible.</p>
City Rail Link (CRL)	<p>The CRL will provide a connection between Mt Eden and Britomart via 3.5km twin tunnels and significantly improve access to the Auckland CBD. The project includes provision of additional platforms at Otahuhu and Henderson, and reconfiguration of Newmarket Junction. A new grade separated junction is also required at Mt Eden. Construction of these works on the existing rail network require blocks of line between now and project completion in 2024. The capacity provided at Otahuhu will largely be absorbed by planned metro services. There is no specific provision at this stage for regional trains to call, although if a path can be found to run trains north of Papakura, then calls at this station are likely to be possible.</p>
Wiri To Quay Park (3rd Main)	<p>NZTA have recently approved funding to update the business case for the third main and commence pre-implementation works. The programme for completion will be updated as part of this process, but it is planned to be completed prior to the opening of CRL (potentially by end of 2021/22). The project is primarily conceived for freight use, with added benefits for metro resilience, but it may provide additional capacity to enable regional trains to run in service north of Papakura (subject to growth in freight traffic, the timing of the service and operational modelling). The project also includes upgrade to Westfield Junction to enable a 15-minute interpeak metro service, and reconfiguration of freight access to the Auckland Port. Provision of the third main does not provide the step change in capacity required to run full express services through the Auckland network (which requires a fourth main) but it may facilitate limited stop services and/or regional trains.</p>
4th Main	<p>A fourth main line has been identified as necessary to provide capacity to meet planned metro passenger services and freight service growth. This is not provided for within the current Auckland RLTP funding envelope and not currently envisaged within the next 10 years. The timing for delivery of the fourth main is subject to review.</p>

Project	Information
Other Works	<p>Other works planned for completion on the AT Network prior to CRL completion that remain subject to funding include; completion of deferred renewals, additional power supplies, additional EMU stabling facilities, signalling headway improvements, Auckland Control Centre, Level Crossing Removal, station upgrades etc.</p> <p>Temporary access to the network will be required to complete these projects, which will be managed through normal industry process. The volume of work planned for completion will result in a higher level of disruption than might normally be expected. There is a desire to complete as much of this work as possible prior to introduction of more frequent trains enabled by the CRL.</p>

6. Constraints, Issues, Assumptions and Key Risks

6.1 Constraints

The following constraints advised by key project stakeholders have influenced the development of the SSBC:

- A requirement for a service to commence operation by March 2020 (was previously targeted for October 2019), and associated lead times that require an investment request to be lodged to the NZTA Board in December 2018.
- Because of constrained timeframes, it was determined that rolling stock would be limited to available used rolling stock within New Zealand that could be cost effectively re-purposed. The short 5-year focus of the business case would not provide sufficient justification for investment in new train sets for a service that might not operate beyond the start-up period.
- A focus on a start-up service only and the immediate five-year post-implementation period, therefore a longer-term investment pathway cannot be determined. The H2ACSP has the mandate to identify the longer-term transport vision for the rail corridor.
- Rail services cannot operate to an express pattern north of Papakura until several key rail projects are completed: Wiri To Quay Park (3rd Main), 4th main line, City Rail Link and Puhinui Station.
- The Hutt Workshop needs at least two months advanced notice to book a refurbishment on their production line. This is due to limited space and resources.

6.2 Issues

The following issues have influenced the development of the SSBC:

- Insufficient time to competitively tender the provision of rolling stock within the implementation timeframe (see constraints), limiting rail options and increasing cost risk.
- Insufficient time to competitively tender rail operations within the implementation timeframe, limiting rail options and increasing cost risk.
- Net funding cap of \$250,000 (local share) for rail stations within the Waikato District.
- Insufficient information on rail maintenance facility costs.
- Further investigation is required to confirm whether inter-regional passenger rail services can operate north of Papakura and directly into the Auckland CBD.

6.3 Assumptions

The following assumptions have influenced the development of the SSBC:

- Improved transport connections, including Passenger Rail services will emerge as key enablers of longer-term corridor development by the H2ACSP (which is currently under development)
- The Passenger Rail Service will enable agglomeration and land value uplift benefits making the passenger rail service a long-term value for money investment (this has not been quantified nor

included in the benefits when undertaking the project economic analysis in this business case because of the early stage of corridor planning)

- The start-up service will be incrementally improved over time to match customer service needs and expectations, and the adjacent authorities will invest in marketing to promote its use, which in turn will drive future growth and demand. This will include an assessment (preferably prior to start up services commencing) and identification of the earliest date whereby services can be run through to Central Auckland rather than terminating at Papakura.
- The approach taken to engaging with stakeholders throughout the business case process has led to the recommendation of an option that is on balance, and given the information that is currently available, the most widely supported option by the stakeholders
- The Capital Connection passenger rail service operating between Palmerston North and Wellington provides a suitable benchmark service.
- WRC collects targeted rates from HCC ratepayers to support investment in a service for the full five-year start-up period.
- There is sufficient track capacity for a rail service to operate south of Papakura.
- Stakeholders have a level of service expectation of two weekday services in each peak period direction and one weekend day service in each direction.
- Late running trains can be accommodated under the rail options, but this could change with Metro services and electrification to Pukekohe.
- AT Metro services have the capacity to take passengers north of Papakura and the net cost (operating cost less fare revenue) of carrying those passengers is neutral, for connecting service options.
- The Start-Up service can operate empty from Papakura to Westfield (for stabling purposes) and is not prioritised north of Papakura Station.

6.4 Key risks

A long list of risks were identified (Appendix L). The key risks include:

- Levels of service:
 - There is a risk The Base and Huntly stations will not be completed and ready for the initial start-up service date of March 2020. This is a low risk if funding is approved in December 2018.
 - There is a risk that the two consists⁴ of four carriages plus the maintenance spares are not ready for the scheduled March 2020 start date. This is a low risk if rolling stock procurement funding is approved in December 2018.
 - There is a risk that four carriages will not have enough capacity in the first few months if a high number of people want to 'trial' the service. This could put off potential or existing users from using the service.
 - There is a risk that the journey time of two and a half hours is longer on certain journeys due to operational issues occurring. If operational issues occurred often enough, then potential or existing users could be put off by the level of reliability.
- Costs:
 - Costs are being refined for all elements of the project as the design progresses, so there is a likelihood that these costs will change. Contingencies have been included in all estimates. Locomotives and rolling stock have been priced to a higher degree of certainty than other elements.

⁴ Train consist is rail terminology for a train and carriage set.

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

- KiwiRail costs are subject to the approval of KiwiRail's Board, but WRC has indicated that it cannot receive funding if the costs have not been approved by KiwiRail.
- The long-term feasibility of any service would also depend on the 75.5% (or greater) FAR rate being available. WDC contribution is dependant that a FAR of 76% is provided where a local share is required for the start-up service.
- Demand:
 - Demand is uncertain until the service starts, so there is a risk that the available capacity is not fit for purpose (too high or too low).
 - Revenue and benefits may not be as great as assumed if demand does not meet expected projections which would lead to service viability concerns.
- Project delivery:
 - There are multiple parties and interdependent activities requiring coordination throughout the life of the project making it a complex delivery. This leads to a higher risk of critical path delays with potential cost and reputational issues for all parties.

7. Problems, Opportunities and Benefits

Due to the constrained time period to produce this SSBC, it was not possible to redo the Investment Logic Map (ILM) from the Strategic Case, instead it was refined it to be more appropriate for this particular investment.

7.1 Problem 1: Transport System

A significant increase in demand for travel within the Hamilton-Auckland corridor, driven by rapid growth, is reducing transport system levels of service and placing economic performance at risk.

This problem was adopted straight from the Strategic Case:

Cause	Increased demand for travel driven by rapid growth.
Effect	Increasing travel on the Hamilton to Auckland corridor.
Consequence	Delays and impacts on economic performance.

7.1.1 Cause

There has been a significant increase in population in the Upper North Island over the last 20 years and this rate of growth is predicted to continue over the next 20 years.

Figure 7-1 shows that population growth in Auckland, Hamilton and Waikato District was much greater than the New Zealand average, with approximately 40-45% growth over the last 20 years. The same growth again is forecast over the next 20 years in Auckland and the other districts are not far behind. However, the population projection is based on the Statistics New Zealand Medium Growth prediction, which has often underestimated growth.

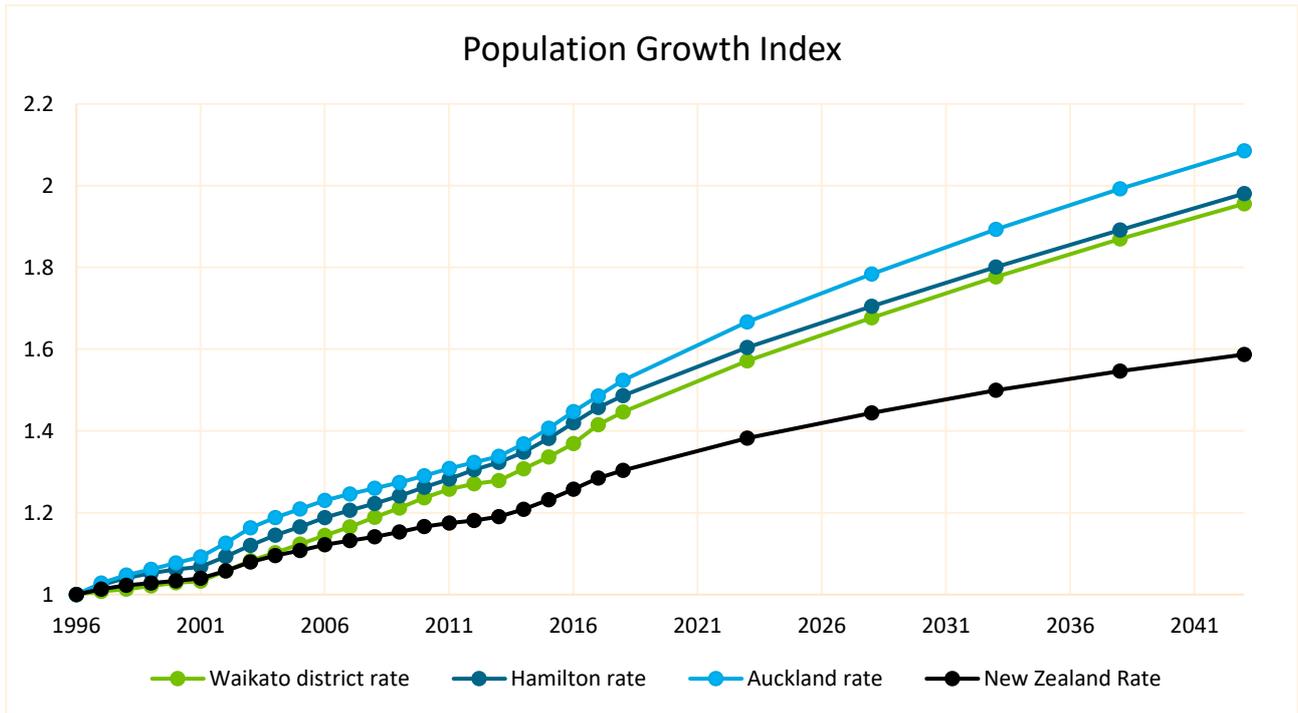


Figure 7-1: Population Growth Index – 1996 to 2041 (source: NZ Business Demography Statistics: Feb 2017)

Whilst population growth has been relatively similar across the Auckland and Waikato regions since 2010, employment growth has been significantly greater in Auckland as shown in Figure 7-2.

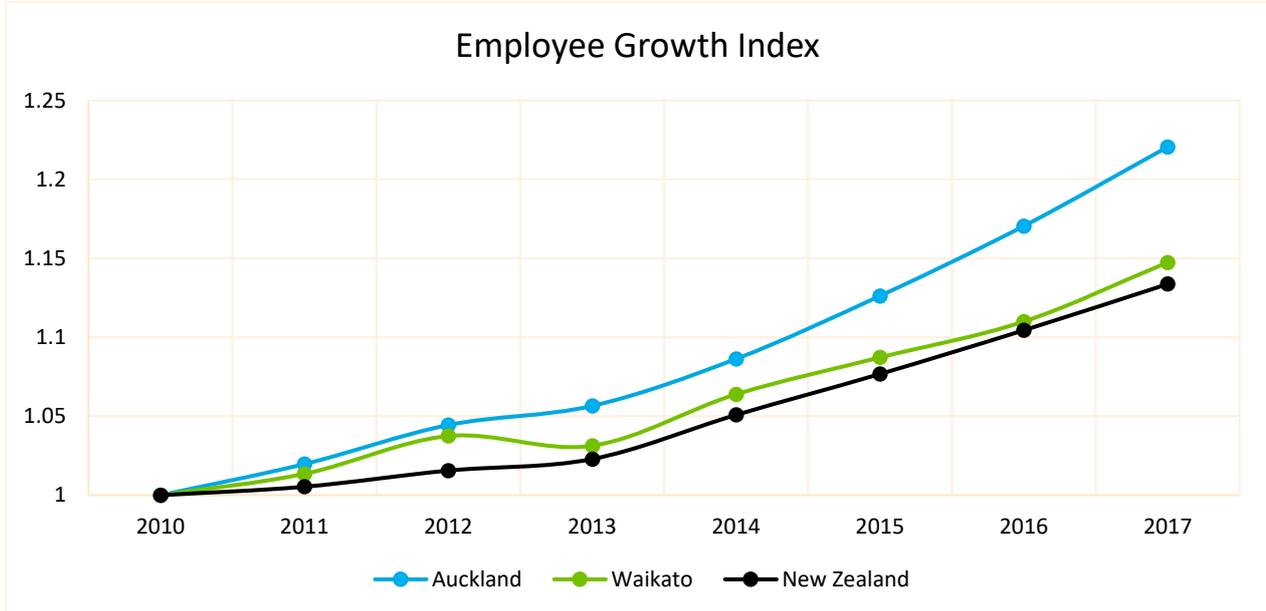


Figure 7-2: Employee Growth Index – 2010 to 2017 (source: NZ Business Demography Statistics: Feb 2017)

7.1.2 Effect

The large population increases in the Upper North Island, coupled with the increase in the number of jobs in Auckland is causing considerable growth in the demand for travel between the Waikato and Auckland Districts.

Overall the growth in travel is evidenced by the traffic volumes on the state highway corridor, as previously shown in Figure 5-11. Traffic growth was reasonable static over the period from 2008 to 2013, but since that time, traffic growth has greatly increased with 25% growth at the Bombay and Taupiri sites.

Future year traffic volumes were obtained from outputs of the 2006 Waikato Regional Transport Model (WRTM). By the year 2041, traffic volumes north of Hamilton are expected to be 40,000 vehicles per day, and at Bombay this increases to over 60,000 vehicles per day – a huge increase over the current volumes of 44,312 at Bombay.

However, less robust data was collected from Census data regarding commuting trips, as outlined in Section 7.1.2.1.

7.1.2.1 2013 Census Data

A review of the ‘Workplace Address’⁵ dataset from the 2013⁶ census concluded that it provided limited information of likely existing or potential future demand for a Hamilton-Auckland passenger rail service. However, Table 7-1 and Figure 7-3 suggest that the number of people travelling from Hamilton City and the Waikato and Waipa districts to work in Auckland on census day have increased significantly between 2006 and 2013. This trend is thought to have continued at an increased rate over the last five years.

Table 7-1: Census Data (Workplace Address)

District	2001				2006				2013			
	Waikato District	Hamilton City	Waipa District	Total	Waikato District	Hamilton City	Waipa District	Total	Waikato District	Hamilton City	Waipa District	Total
Total	360	510	120	990	549	573	153	1275	4803	1523	411	6737

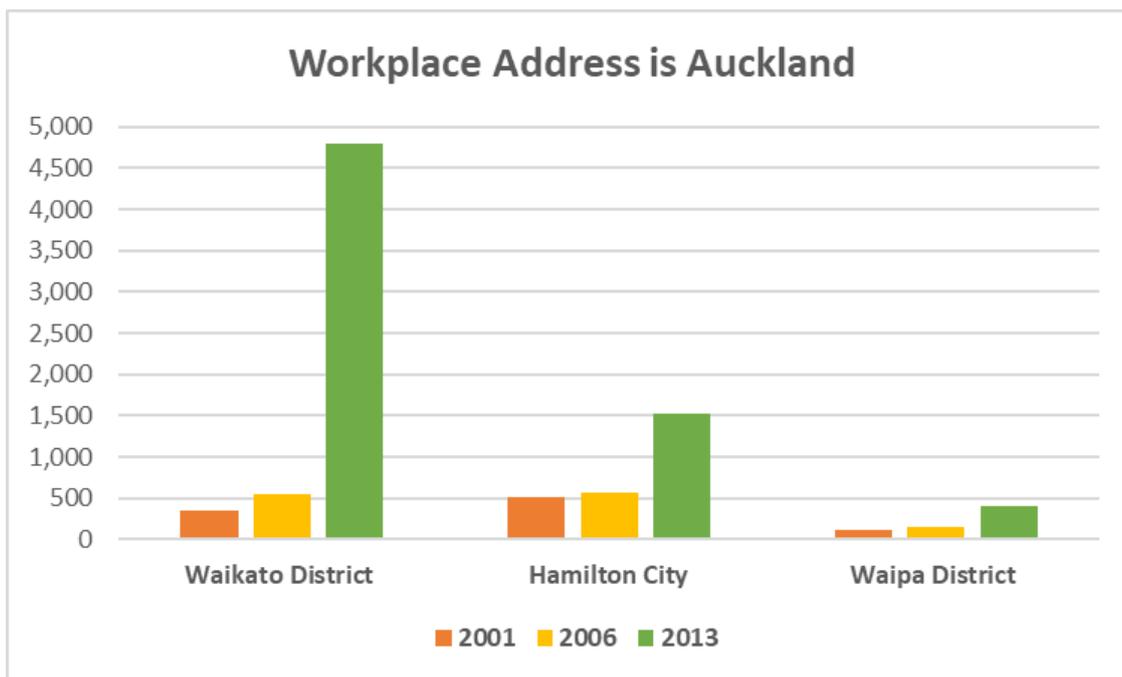


Figure 7-3: Workplace Address 2013 Census data

Note that all counts list Auckland as the place of destination (counted through workplace address) and at these times, Franklin was still technically part of Auckland.

It is considered that ‘Workplace Address’ dataset is overstating the number of Hamilton to Auckland commuting trips. Reasons why may relate to:

- People who share their work time between two places;

⁵ StatsNZ: Commuting patterns in Auckland: Trends from the Census of Population and Dwellings 2006–13.

⁶ At the time of writing the 2018 Census data was not published and was therefore unavailable for analysis.

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

- Inflated numbers by incorrect workplace coding to a head office in Auckland. This can occur when a respondent does not supply sufficient information for their workplace to be coded correctly; or
- On Census day, people must report where they were on that particular day even if it is not their normal place of work. As Auckland is New Zealand's largest city, there is likely to be a high number of out of town workers there on any given day.

7.1.2.1.1 Auckland Transport Macro Strategic Model Outputs

The Auckland Transport Macro Strategic Model (MSM) provides traffic forecasts covering the entire Auckland region for the years 2016, 2026, 2036 and 2046. The Model is a sophisticated four stage transport model built using the EMME software platform. It is owned and operated by the Auckland Forecasting Centre (part of AT) and covers the entire Auckland Isthmus between Warkworth in the North and Pukekohe in the South. It covers the road, rail and ferry networks for the AM, PM and Inter Peaks. Whilst the model does not specifically cover the Waikato region, it is included as an external zone, and therefore provides forecasts for the number of trips travelling to/from SH1 south of the Pokeno and various parts of Auckland.

Table 7-2 provides a summary of the person trips between destinations south of Pokeno and new employment destinations in Auckland. The values are in terms of the daily combined (southbound + northbound) person trips.

Table 7-2: Forecast Daily Person Movements between the Waikato and Key Auckland Destinations

Year	Auckland Airport	Auckland CBD	Newmarket	Papakura	TOTAL
2016	800	1,200	200	100	2,300
2026	900	1,500	200	200	2,800
2036	1,100	1,800	300	200	3,400
2046	1,400	2,300	400	300	4,400

Note: These forecasts assume there is no passenger rail between Hamilton and Auckland.

7.1.2.1.2 Waikato Regional Transportation Model Outputs

Table 7-3 shows the forecast average daily traffic movements between Hamilton city and Waikato and Waipa districts, and points in Auckland north of Drury, from the Waikato Regional Transportation Model in 2021.

Table 7-3: Forecast 2021 AADT volumes between greater Waikato and Auckland

	Auckland	HCC	WDC	Waipa DC	AADT from Auckland
Auckland		1,828	13,481	191	15,500
HCC	1,603				
WDC	11,373				
Waipa DC	198				
AADT to Auckland	13,174				

The table suggests there are more vehicles leaving Auckland and heading to greater Waikato per day, than travel in the opposite direction. However, the car users represented by this traffic movement⁷, represent a potential market for a Start-Up rail service. Naturally, not all of these motorists would be interested in using the Start-Up service, nor would the times of travel correlate to the train schedule, but the table suggests that there may be sufficient travel needs to support a rail service with a small (5-10%) market share.

⁷ Car users are approximately the same number once light and heavy good vehicles are discounted, and when vehicle occupancy is considered.

7.1.2.2 Summary

Several data sources show a considerable number of people travelling between the Hamilton City and the Waikato and Waipa districts, and locations in Auckland. While the different sources quantify this travel in different ways, they all show demand is increasing with time. They also suggest that there is a potential market for a rail service between Hamilton and Auckland.

7.1.3 Consequence

The overall consequence of the increasing population and transport movements is traffic delays and reduced economic performance.

NZTA's EfficiencyNet system plots where the problematic areas of the state highway network are located. Figure 7-4 shows the most problematic areas are north of Pukekohe, where the Hamilton to Auckland commuter traffic joins with the internal Auckland traffic.



Figure 7-4: Map showing Level of Service (LoS A = Dark Green, LoS F = Red) (source: NZTA)

7.1.3.1 Indicative journey duration by private vehicle

The distance from Frankton to Britomart by vehicle is currently 124 km long, which is unlikely to differ much once the final stages of the Waikato Expressway are completed. The following provides analysis of NZTA supplied traffic data from 2016 and 2018 for both the AM and PM peaks in the March weekdays⁸ of each year.

The travel durations provided in the following tables are not the result of complete journeys, rather the addition of the median durations (in hourly lots) to drive through three defined segments at a certain time

⁸ Note that the 2016 data did not exclude the two Easter public holidays, nor did 2018 exclude the one Easter public holiday that fell in March of those years.

during the peak periods. Therefore no 'one true' journey time between Frankton and Britomart can be presented. The data is provided to indicatively compare the possible travel time durations between road and rail. Caution is urged not to make decisions based on the information provided here, as these results have not been peer reviewed. It is instead the best available data at the time of writing the SSBC.

To provide a wider context, along with the mean travel time, a range of travel time durations (50th to 85th percentiles) for the complete journey are provided in Table 7-4. This shows that the journey time can be quite variable by upwards of an hour. This variability relates to the available capacity of the road, because if a vehicle crash occurs it can negatively impact on the journey duration and reduce capacity if lanes are closed as a result.

Table 7-4: Peak travel time mean duration and percentile range between Frankton and Britomart

Percentile	Frankton to Britomart AM Peak 06:00 – 09:00		Britomart to Frankton PM Peak 16:00 – 18:00	
	2016	2018	2016	2018
MEAN	2:42:05	2:30:40	2:03:31	2:08:37
50th	2:30:33	2:16:33	1:47:28	1:50:46
65th	2:34:54	2:23:58	1:59:34	2:06:05
75th	3:07:30	2:49:09	2:12:42	2:21:42
85th	3:22:57	3:04:55	2:36:46	2:47:15

The NZTA data was presented in three segments, of which the mean travel time values have been reproduced in Table 7-5 and Table 7-6 to allow some additional commentary and analysis.

Table 7-5: AM Peak mean travel time duration from Frankton to Britomart

YEAR	Segment 1: Frankton to Pokeno	Segment 2: Pokeno to Papakura	Segment 3: Papakura to Britomart	Total Average Duration
	6:00-7:00am	7:00-8:00am	8:00-9:00am	
2016	59:24	35:06	1:07:35	2:42:05
2018	55:25	41:19	53:56	2:30:40

Table 7-5 shows an AM peak mean journey time of approximately two hours and thirty-five minutes for each year, with the journey time reducing in 2018 from 2016. There are two possible explanations for this reduction in travel time. Since 2016, the Rangiriri section of the Waikato Expressway (in Segment 1) has opened which would help to reduce travel time and it is possible that there is less roadworks to impede traffic. The second reason for the larger reduction in Segment 3 is possibly due to the Waterview Tunnel opening in July 2017. This had a positive impact at reducing traffic congestion for central Auckland. The increase in travel time for Segment 2 is unknown but could be due to the increase in commuter traffic from North Waikato as more subdivisions come online and Auckland residents move there to find affordable housing.

Table 7-6: PM Peak mean travel time duration from Britomart to Frankton

YEAR	Segment 3: Britomart to Papakura	Segment 2: Papakura to Pokeno	Segment 1: Pokeno to Frankton	Total Average Duration
	4:00-5:00pm	4:00-5:00pm	5:00-6:00pm	
2016	53:11	15:00	55:20	2:03:31
2018	56:37	14:38	57:22	2:08:37

Table 7-6 shows a PM peak mean journey time of approximately two hours and five minutes, with the segment time comparison providing no noticeable difference between each year.

7.2 Problem 2: Land Use Integration

Limited travel options in areas facing high growth is reducing liveability and impacting on quality of life, safety and environmental outcomes.

Cause	Limited travel options in high growth areas.
Effect	Reducing Liveability.
Consequence	Affects current residents and limits future growth within affordable areas of the golden triangle.

This problem was adopted straight from the Strategic Case. It is a problem likely to occur rather than one which is currently evidenced.

7.2.1 Cause

The evidence in Problem 1 showed a significant increase in population across both Waikato and Auckland but a greater increase in jobs in Auckland. Accordingly, people appear to be moving out of Auckland but commuting back to Auckland for employment.

One reason for this may be the relatively high median house prices in Auckland. The stakeholder group and the work completed as part of the Future Proof Strategy study identified that there was a growing issue of people moving out of Auckland into areas in North Waikato and near to state highway connections for people to then commute for work in Auckland.

The graph in Figure 7-5 (also discussed in Section 5.1) shows the continuing rise in house prices across Auckland, Hamilton and Waikato. Over the period between 1993 and 2017 median house prices rose in each district:

- Auckland – from \$137k to \$820k i.e. \$623K increase or an approximate five-fold increase in value between 1993 and 2017;
- Hamilton – from \$110k to \$520k i.e. \$410k increase or an approximate four-fold increase in value between 1993 and 2017;
- Waikato District – from \$99k to \$598k i.e. \$409k increase or an approximate five-fold increase in value between 1993 and 2017.

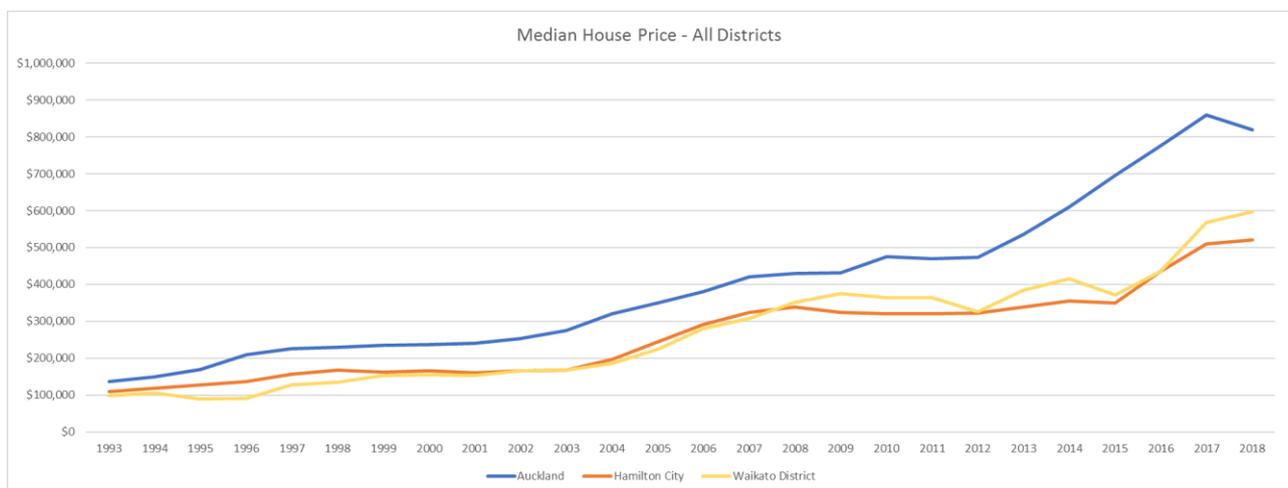


Figure 7-5: Median House Prices (source: MBIE)

Although the rate of increase may be similar across the three districts over the last 25 years, the rise in the last 10 years is much more marked in Auckland and the absolute cost of buying a house in Auckland is unaffordable for many people, even those in gainful employment.

People moving out of Auckland into North Waikato (to still be reasonably close to employment) may find themselves without any alternative transport choices apart from the private motor vehicle. There are currently limited travel options between Hamilton and Auckland, particularly to/from the townships between the two locations.

Evidence:

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

- *In terms of other transport modes, Intercity run a regional coach service that offers regular services between Auckland and Hamilton, the two other regional coach operators have recently left the market.*
- *WRC operates bus services between Hamilton and Huntly. These services operate approximately half hourly during the commuter peaks and hourly during the day. WRC also operate a bus service within Huntly twice a day on weekdays. From Hamilton, a bus service is provided once every two weeks that goes to Pukekohe via Huntly, Te Kauwhata and Meremere. AT operates a daily return bus service between Pukekohe and Tuakau in North Waikato. They also operate a return bus service on a Thursday between Pukekohe and Port Waikato, via Tuakau.*
- *From Pukekohe, AT diesel passenger rail shuttle services connect to onward EMU AT Metro services departing to Papakura. The diesel rail shuttles currently operate three times per hour during the commuter peaks, and hourly through the day, the service is soon to be improved to half hourly. There are no existing passenger rail services south of Pukekohe, apart from the Northern Explorer (Scenic Journeys) between Auckland and Wellington, which runs one train every second day (i.e. a northbound train one day, and a southbound train the next).*

The above illustrates the very clear lack of mode choice on the corridor, particularly for regular commuters and business trips.

7.2.2 Effect

The effects of this problem are:

- Reduced liveability (quality of life) due to constraints on access to social and economic area and opportunities
- Limited access to social and economic areas because of no modal choice and long timeframes for travel.
- More time spent by commuters in their vehicle rather than time where they could be working productively, for example on a train service, which would then free up more of the day for other activity.

Note that this aspect would need to be investigated further and more evidence gathered during the course of the start-up service, to support development of longer-term service options.

7.2.3 Consequence

A potential consequence of limited accessibility and this impacting on liveability is that the identified growth areas do not reach their full potential, thereby not achieving the aspirations of the H2ACSP (refer to Section 2.3 and the Future Proof Strategy Study).

As a result, this particular problem is considered to be best addressed when considering the longer-term service options, and the start-up service has been proposed as a first step in enabling development of a solution to this problem. This aspect would be investigated in more detail in the H2ACSP study being led by MBIE.

7.2.4 Side Effect

Other side effects of growth happening in these areas without providing additional modes are:

- **Road Safety:** In considering rail, the alignment to safety objectives are positive, at a strategic level rail is a safer mode than private car across most developed transport networks worldwide, notwithstanding the interactions at level crossings.
- **Environmental:** transfer of trips from private car to public transport reduces emissions and therefore has a positive effect on the environment.

7.2.5 Opportunities

There is a wider opportunity of rail in terms of increasing accessibility, as it can help not just those moving to North Waikato, but those who are already there. However – purely providing another mode would not create this opportunity:

- The new service needs to be paired with development in locations that are accessible to rail and not have development directed at SH1 intersections.

- Government needs to ensure that the transport system is equitable and that those on lower incomes can access the same main labour markets as those on higher incomes.
- Specifically, to ensure that families with limited access to a car can access similar opportunities to those with access.

7.3 Problem 3

The strategic case also included another problem statement:

Limited land use and transport integration across administrative boundaries is reducing our ability to effectively manage growth impacts and achieve key growth-related objectives.

This problem statement was not brought forward for this project as it is not seen as being attributable to this investment. Our reading of the strategic case was that the above problem statement was more about better co-ordination between government agencies rather than integration of land use planning and transport. Currently integration of agencies is happening separately and is not something that the SSBC should cover.

However, the key outcome of this problem statement (that being harmonious transport and land use integration), is a key aspect which is inherent in the two problem statements taken forward and would be brought to the fore with the investment objectives.

7.4 Opportunities

In addition to the above problem statements, there are also several opportunities that could be realised if the problem statements are solved. These are summarised as:

- Improved accessibility to goods, services, employment and amenities to enhance inter-regional productivity.
- Improved resilience, safety, quality of life and environmental outcomes for communities with a greater range of travel choices.
- Creating a credible alternate mode of travel for people to choose.
- Initiate momentum towards developing long term growth goals.
- Show strong desire for a mass transit mode.
- Reduce environmental impact.
- Ability for townships to grow and support local communities.
- Reduce Auckland congestion impacts.
- Optimised performance of transport service levels across the existing road and rail network.
- Passengers could work on the train, hence are more productive with their time while travelling.
- Reduced journey times for travel between Hamilton and central Auckland.
- Lower cost of travel by train when compared to travel by private car (and parking).

7.5 Benefits

The benefit statements were identified by looking purely at the problem statements; i.e. if we were to solve the problems, what benefits would be realised?

The benefits, and how they relate to the problem statements, are shown in Figure 7-6.

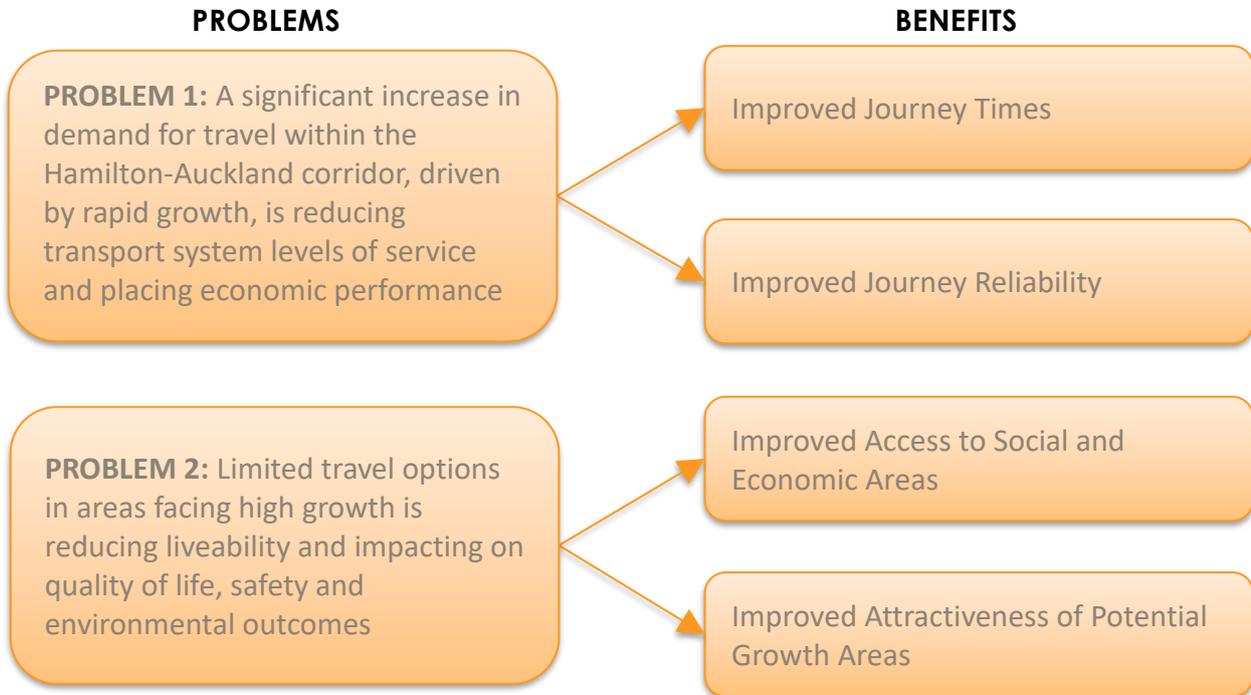


Figure 7-6: Problem and Benefit Statements

The benefits of addressing Problem 1 are improved journey times and improved journey reliability. It is acknowledged that the ultimate benefit of improving the transport system is improved economic performance; however, this is not directly attributable to transport investment and therefore has not been included as a benefit in this instance.

The benefits of addressing Problem 2 are improved access to social and economic areas (for people living, working and playing at either end, or along the route) and improved attractiveness of the growth areas located along the transport corridor for people to live and play in.

8. Investment Objectives

The investment objectives were developed from the benefit statements and are presented in Figure 8-1.

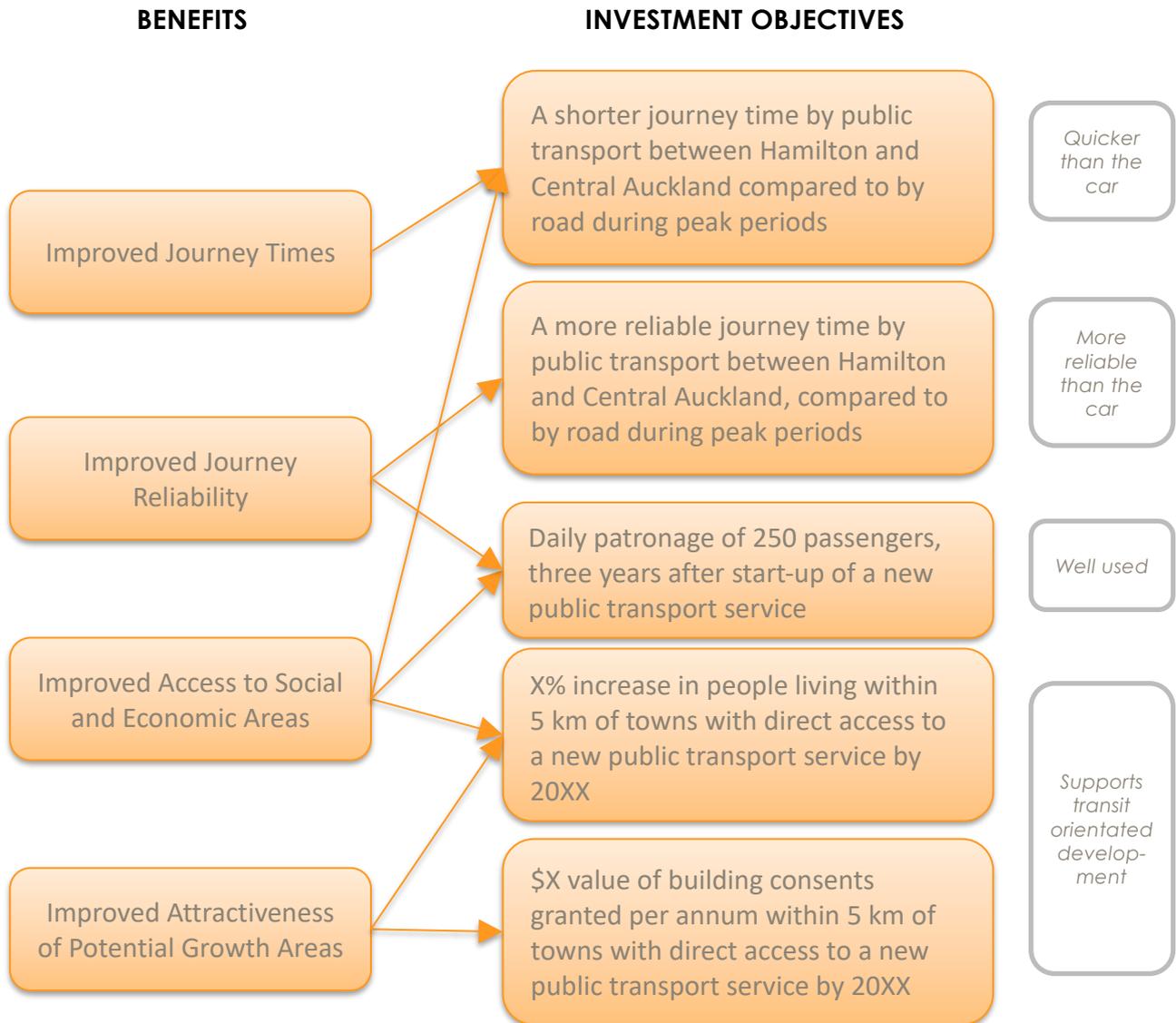


Figure 8-1: Investment objectives developed from the benefit statements

Five investment objectives were developed. Some relate to attracting people to use the service rather than taking their private vehicle and others relate to improving the social and economic fabric of the communities that the passenger service would serve.

The first two objectives relate to a public transport service that is faster and more reliable than travelling by private vehicle. The third objective relates to patronage, which accounts for the fact it would take more than just a quick reliable service to attract as many people as possible to the new service.

The last two objectives measure the number of people serviced by a new passenger service and the building consents granted as a proxy to understand the growth in the towns serviced, once the service is up and running.

The investment objectives were presented to and tested with the Hamilton to Auckland Transport Connections Working Group on 13 August 2018 (minutes of workshop in Appendix D). The above investment objectives have incorporated feedback received from the key stakeholders.

The long-term vision for this corridor is a high-speed mode of transport that reduces the journey to make the service more attractive to potential users. The H2ACSP considers the start-up service outlined in this SSBC as an enabler for longer term transport vision.

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

Exact targets and timeframes for the Investment Objectives would be determined when an implementation programme has been confirmed. This would be done by completing the measures of success in Table 8-1.

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

Table 8-1: Indicators and Outcomes

Investment Benefit	Why	Key Performance Indicator	Measure	Baseline	Target	Timeframe	Source
Improved Journey Time	To make rail attractive	Journey time on public transport between Hamilton and central Auckland.	Shorter journey time than private vehicle in AM peak period.	To be calculated annually	PT to be quicker than road	Every year	TomTom Journey Times (road) Actual Journey Times for rail (WRC)
Improved Reliability	To make rail attractive	Journey time reliability on public transport between Hamilton and central Auckland	Difference between average and 85%ile travel time smaller than private vehicle in AM peak period.	To be calculated annually	PT to be more reliable than road	Every year	TomTom Journey Times (road) Actual Journey Times for rail (WRC)
Improved access to social and economic areas	To promote growth areas	People living close to a public transport service	Increase in people living within 5 km of towns with direct access to a new public transport service by 20XX	Is measurable but no baseline data available at time of BC	XX% increase in people	Is measurable but no baseline data available at time of BC	Dwelling counts from Councils
Improved Attractiveness of Potential Growth Areas	To promote growth areas	Value of building consents	Dollar value of building consents granted per annum within 5 km of towns with direct access to a new public transport service by 20XX	Is measurable but no baseline data available at time of BC	\$XX of building consents	Is measurable but no baseline data available at time of BC	Building Consent data from Councils
All		Patronage	Daily patronage of XX passengers, three years after start-up of a new public transport service	Zero	250 passengers each weekday in each direction	2022	From WRC

8.1 Comparison to Government Policy Statement Objectives

Table 8-2 outlines how the SSBC investment objectives relate to the GPS objectives.

Table 8-2: Investment Objectives Relating to the GPS Objectives

Hamilton to Auckland Investment Objectives	GPS Objectives			
	Safety	Access	Environment	Value for Money
Improved Journey Time		Increased access to social and economic areas.		
Improved Journey Reliability		Increased access to social and economic areas.		
Increased Patronage	Fewer vehicles on the road where risk of serious injury is greater	Enables Transport Choice and Access.	Reduced greenhouse gas emissions.	Greater patronage increases fare box revenue.
Increase in people living close to service		Enables Transport Choice and Access. Increased access to social and economic areas.		
Increased value of building consents				

The table shows that the four government objectives are met by the investment objectives. Access is particularly well represented with many of the investment objectives contributing towards improved access to social and economic areas and enabling transport choice.

PART B – OPTION DEVELOPMENT

9. Option Development and Assessment

9.1 Process Overview

The Hamilton to Auckland TCWG was established in September 2017. This working group has met regularly to identify transport options that support the overarching transport connections outcomes within the North Waikato Integrated Growth Management PBC study. Key stakeholders included in this working group are:

- NZ Transport Agency
- Waikato Regional Council
- Auckland Transport
- Auckland Council
- Waikato District Council
- Hamilton City Council
- Ministry of Transport
- KiwiRail

The overall process of option identification has included:

- Feedback from working group meetings
- Customer demand survey
- Input from industry experts
- Collation of a long list of potential interventions
- Identification of key principles to use in evaluating options
- Screening of long list against investment objectives
- Evaluation of remaining options against key principles to arrive at a short list.

At the TCWG meeting on 13 August 2018, levels of service were explored and stakeholder preferences tested (see Appendix D presentation and Appendix B workshop minutes) to arrive at a list of key principles.

In addition to the Investment Objectives, the following key principles were agreed to and were used for the evaluation of options with a multi-criteria assessment:

1. Outcomes:
 - a. Flexibility of option to allow longer term options
 - b. Alignment with corridor partnership objectives
 - c. Attractiveness to customers
 - d. Enables choice and access (GPS alignment).

2. Implementability:

- a. Technical feasibility (for October 2019 Start-up⁹)
- b. Consent-ability (for October 2019 Start-up)
- c. Land constraints (for safe access, parking etc)
- d. Safety.

Scoring of options was completed qualitatively using a seven-point scale:

- +3: Significant benefit or alignment
- +2: Moderate benefit
- +1: Slight benefit
- 0: Neutral / No impact
- -1: Slight disbenefit
- -2: Moderate disbenefit
- -3: Significant disbenefit or misalignment (Fatal flaw).

9.2 Long List Development

A wide range of potential attributes and interventions were identified. Key risks, constraints and uncertainties were identified where relevant against specific interventions, particularly against the fit for purpose context. These are outlined in Table 9-1.

9.2.1 Attributes and Interventions

Table 9-1: Attributes, Interventions and Levels of Service

Characteristic	Attribute/Intervention	Description of Intervention and Relevant Level of Service Trade-off Considerations
Primary mode	Bus	Bus offers greater coverage, while rail offers faster travel times and a dedicated right of way, which provides better reliability. Active modes were considered for connecting to these primary modes rather than interventions on their own. An integrated transport assessment was undertaken for each connecting point for the shortlisted options.
	Train	
	Other (car)	
Service type	Connecting service (to AT Metro services at Papakura)	Other options that were excluded from the long list included: <ul style="list-style-type: none"> • An express service through to Auckland central. • A connecting service starting in Hamilton but stopping prior to the connection with the AT Metro network (this would rely on a bus service as a PT connection to AT Metro rail service).
	Through service (to Auckland central)	
Start-up stops	Kahikatea Drive	Existing corridor townships and stations were identified as potential stopping points. Stops south of Frankton were excluded by stakeholders from consideration for this start-up service. Frankton is currently used by KiwiRail for the Northern Explorer, so was considered likely to be a low-cost option to establish in this new service by October 2019. It is relatively
	Ruakura	
	Claudlands	
	Hamilton Central/Hamilton Transport Centre	
	Frankton	

⁹ The Start-Up date was moved to March 2020 after the option selection process had been completed. While the scores may change for a March 2020 start up date, the relativity will not. Therefore, the scoring was not revisited as it would not change the outcome of the shortlist process.

Characteristic	Attribute/Intervention	Description of Intervention and Relevant Level of Service Trade-off Considerations
	The Base/Rotokauri	centrally located within Hamilton, and it offers a large active mode catchment as well as car parking facilities.
	Ngaruawahia	Hamilton Central Transport Centre was only considered for the bus options, as it is the main bus station in Hamilton, although an out-of-use underground rail station still exists in that central location and could be reactivated in the future (however a new station at the intersection of Bryce Street and Seddon Road is considered more likely).
	Taupiri	
	Huntly	
	Te Kauwhata	
	Meremere	
	Pokeno	The Base was considered for bus-based options and neighbouring The Base for the rail-based options. A stop in this location aligns with a key area of forecast growth for Hamilton City and provides space for the development of park and ride and bus interchange facilities. HCC has already commenced concept work for a station in this location, in discussion with KiwiRail and the TCWG.
	Tuakau	
	Pukekohe	
	Papakura	
	Puhinui	
	Otahuhu	
	Newmarket	
	Auckland Central / The Strand	Ngaruawahia, Te Kauwhata, Meremere and Tuakau have former station facilities that could be reactivated, but most are in poor condition, so these locations were primarily considered in relation to the bus options. Te Kauwhata was considered to be the easiest of these stations to reactivate for rail purposes. Huntly station is in the town centre. It has been used more recently than most other stations (by the Overlander, which the Northern Explorer replaced, and previously the Silver Fern service), and it has good walk-up access and space for park and ride facilities. It is likely to be relatively easy to reactivate. Tuakau station is located near the town centre. Reactivation of the station is a focus for WDC and a budget allocation was made for this in their current LTP (and the two previous ones). The station has not been used for a significant period and substantial work is required to reactivate the station. Papakura is a key station on the Auckland rail network and currently caters to a large number of rail services, including connecting services from Pukekohe. Pukekohe, Puhinui, Otahuhu and Newmarket were excluded to limit disruption by the start-up inter-regional service on existing metro timetables. However, market research has indicated that the connection with Auckland Airport is important and work is currently underway to significantly improve the Puhinui-airport link, so this was considered as a stopping option. The Strand is currently used by KiwiRail for the Northern Explorer, so was considered likely to be a low-cost option to establish in this new service.
Frequency	One peak-direction trip per peak	A variety of service level options were considered, including weekday peak services (primarily to Auckland), weekday off-peak services, and weekend services.
	Two peak-direction trips per peak	Higher and lower peak frequencies were considered, with lower frequencies at off and inter-peak times. A higher frequency provides better travel options for customers, and generally drives higher patronage levels, but increases operating costs, so is usually linked to patronage requirements.
	One counter peak-direction trip per peak	
	One inter-peak trip in each direction	
	One weekend trip in each direction (each day)	Train consist sizes are also linked to patronage requirements. A single longer train (i.e. 6 cars) could be sufficient to meet short-term patronage demand and would have lower

Characteristic	Attribute/Intervention	Description of Intervention and Relevant Level of Service Trade-off Considerations
		<p>operating costs than two shorter (i.e. 3-5 car) trains, which also require an additional locomotive.</p> <p>Connecting service options allow enough time for passengers to change platforms. It is assumed that sufficient capacity will be available on the connecting Auckland Transport services, although detailed analysis of this has not been done.</p>
Vehicle features	Table and/or tray table seating	<p>Most of these features are considered standard for similar service elsewhere in New Zealand. There is a strong desire from some key stakeholders' elected representatives for Wi-Fi to be included in the start-up service. Wi-Fi is not offered on rail services elsewhere in New Zealand, but it is in some other countries. It would likely be a higher cost than customers could purchase for themselves (from mobile network operators) for the length of the service, and cell phone coverage maps show good coverage for almost the entire journey. The customer demand work identified WI-FI as one of four key on-board amenities desired by potential passengers.</p> <p>A servery is appropriate for longer-distance services, such as between Hamilton and central Auckland. However, it is not usual to deploy a servery on shorter-distance services, such as between Hamilton and Papakura.</p>
	Disabled hoist and capacity	
	Wi-Fi	
	Toilets including disabled toilet	
	Air conditioning	
	At-seat power	
	Luggage capacity	
	Bike capacity	
	Servery	
Stop features	Shelter	<p>Along with vehicle features, this is a key part of customer experience. Stakeholders have expressed a desire for the inter-regional service to appear seamless between the inter-regional service and the metro service in Auckland. AT standards were considered for the stations, however, this is considered a longer-term investment than start-up services, and stakeholders have felt a lower standard of service to suit a five-year start-up is more appropriate where these features are provided.</p>
	Seating	
	Passenger information (paper or electronic)	
	Walking & cycling links	
	Local bus stops (where available)	
	Bike racks	
	Drop-off/taxi	
	Park & ride	
Fares	WRC fare integration	<p>Services could utilise a stand-alone fare structure, the WRC fare structure or the AT fare structure. The first of these was discounted as being inconsistent with policy direction before the long list was developed. AT subsequently indicated that the last would be challenging to implement. The WRC fare structure was assumed for all options.</p>
	AT fare integration	
Ticketing	Paper-based	<p>It is expected that many passengers would be irregular users of the service, so some form of paper-based ticketing is desirable. This can be part of an electronic ticketing system and WITS offers this functionality.</p> <p>Two electronic ticketing systems are available for the options. The AT Hop system would ease the transfer requirement at Papakura for regular passengers, and better facilitate other public transport connections in Auckland.</p> <p>The new WITS system offers better control for WRC (the funder of the Start-Up service) and would better facilitate bus connections to the trains in the Waikato region.</p>
	AT Hop	
	New Waikato Integrated Ticketing System (WITS)	
Commercial	Operator-owned vehicles	<p>There are two key commercial considerations: vehicle ownership and the operating contract. Bus options would include competitive tendering of services and vehicle provision.</p>
	Regional Council-owned vehicles	

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

Characteristic	Attribute/Intervention	Description of Intervention and Relevant Level of Service Trade-off Considerations
	Negotiated operating contract	Rail services should also be competitively tendered in the long run, but the proposed implementation timeframe is insufficient for this, so rail contracts may have to be negotiated by necessity. This introduces a cost risk, so such negotiations should be informed by benchmarking. Rail rolling stock is usually owned by the regional council to allow for contracting flexibility, but WRC has indicated that it does not wish to own rolling stock, so rail vehicles are likely to be owned by the operator, which could make future contracting more difficult. This would be managed through an agreement between KiwiRail, WRC and the NZTA. Locomotives are usually owned by KiwiRail.
	Tendered operating contract	

9.2.1.1 Rolling Stock, Locomotives and Maintenance Facilities

Time constraints for implementation meant options were limited (refer to Constraints, Issues, Assumptions and Key Risks in Section 6). Nevertheless, the following options were considered.

- Rolling stock considered included:
 - Silver Fern railcars
 - Ex-AT carriages
 - Tourist operator owned carriages
- Locomotives:
 - Limited to KiwiRail owned locomotives (non-electric)
 - Only DFBs were submitted for consideration
- Maintenance facilities:
 - Servicing and regular maintenance were considered for:
 - Several options at Westfield
 - Several options at Te Rapa
 - Heavy maintenance is undertaken at Hutt Workshops in Wellington
- Stabling (rolling stock storage during the day and overnight):
 - Options considered included:
 - The Strand
 - Papakura
 - Westfield
 - Te Rapa

Required levels of service agreed with WRC have guided the specific requirements for each of the above, which is discussed in Section 9.4 Shortlist Identification.

9.2.2 Risks, constraints and uncertainties identified against the attributes and interventions

Table 9-2 outlines the identified risks, constraints and uncertainties of the attributes and interventions.

Table 9-2: Risks, Constraints and Uncertainties identified against the Attributes and Interventions

Characteristic	Attribute/intervention	Risk/Constraint/Uncertainty
Primary mode	Bus	Constraint: Delayed by road traffic congestion if not prioritised.
	Train	Constraint: the need to connect to another train service. Constraint: must stop at each station from Papakura into The Strand which reduces competitive versus private vehicle travel. Constraint: cannot travel at high speeds (>100 km/h) south of Papakura due to rail infrastructure max speed limits / track design. Risk: longer travel time due to train connection.
	Other (car)	
Service type	Connecting service (to AT Metro)	
	Through service (to Central Auckland)	
Start-up stops	Kahikatea Drive	Assumption: not part of start-up service consideration.
	Ruakura	Assumption: not part of start-up service consideration.
	Claudelands	Assumption: not part of start-up service consideration.
	Hamilton Central/Hamilton Transport Centre	
	Frankton	
	The Base/Rotokauri	Risk: Railway station may not be available until after the proposed 1 October 2019 commencement date.
	Ngaruawahia	Not applicable for the start-up service
	Taupiri	Not applicable for the start-up service
	Huntly	Risk: Railway station may not be available until after the proposed 1 October 2019 commencement date.
	Te Kauwhata	Uncertainty: Could be an alternative start-up railway station to Huntly - appears to primarily require platform height improvements.
	Meremere	Not applicable for the start-up service
	Pokeno	Not applicable for the start-up service
Tuakau	Risk: Railway station may not be available until after the initially proposed 1 October 2019 commencement date. ¹⁰	

¹⁰ Tuakau was considered as part of the option selection process, but it was subsequently decided to align improvements there with the future metro service direction of the H2ACSP and it is not included in the preferred option. The commencement date also changed to March 2020 from October 2019 originally.

Characteristic	Attribute/intervention	Risk/Constraint/Uncertainty
	Pukekohe	Assumption: not part of start-up service consideration.
	Papakura	Constraint: Rolling stock cannot be stabled at Papakura and must travel to Westfield for turning and stabling.
	Puhinui	Constraint: Insufficient time for a through service to stop at this station at present. Uncertainty: Subject to the availability of train paths through the Auckland rail network.
	Otahuhu	Constraint: Insufficient time for a through service to stop at this station at present. Uncertainty: Subject to the availability of train paths through the Auckland rail network.
	Newmarket	Constraint: Insufficient time for a through service to stop at this station at present. Uncertainty: Subject to the availability of train paths through the Auckland rail network.
	The Strand	Uncertainty: CRL works contingency required.
	Britomart	Constraint: Diesel operations not permitted
Frequency	One peak-direction trip per peak	Risk: Undersupply of seats. Risk: Passengers miss the evening peak train home.
	Two peak-direction trips per peak	
	One counter peak-direction trip per peak	Uncertainty: Not proposed for start-up rail service but could be added in first five years.
	One inter-peak trip in each direction	Constraint: Through train options subject to ability to turn train/locomotive or lead return service with SD carriage ¹¹ . Uncertainty: Not proposed for start-up but could be added in first five years.
	One weekend trip in each direction	Uncertainty: Whether the demand would exist. Risk: a private vehicle journey is free flowing to Auckland, thus rail would take much longer and could drive passenger demand down.
Vehicle features	Table and/or tray table seating	
	Disabled hoist and capacity	
	Toilets including disabled toilet	
	Air conditioning	
	At-seat power	
	Luggage capacity	

¹¹ SD is simply a naming convention for different carriage types used by KiwiRail. Others include: SA, SR, SRC and SRV.

Characteristic	Attribute/intervention	Risk/Constraint/Uncertainty
	Bike capacity	Constraint: Only a certain number of bikes can be carried, when demand might be higher. Constraint: While AT Metro does permit bikes on their services (at the discretion of on-board staff), they do recommend that doing so at peak times should be avoided. Folding bicycles may be taken on board at any time if folded and stored under a seat.
	Servery	Uncertainty: A servery could be added to all rail options, but the investment may not be warranted for connecting trips with shorter journeys. The long-term intention is for services through to Auckland CBD, so providing servery future proofs the service.
	Wi-Fi	Uncertainty: Wi-Fi can be added to all options, but the investment may be more than is required to make the Wi-Fi service fit for purpose, given that no other long-distance rail services offer this feature in New Zealand.
Stop features	Shelter	Risk: That low cost shelter options do not protect waiting passengers well in poor weather, which deters passengers from the service on wet days particularly during winter.
	Seating	
	Passenger information (paper or electronic)	
	Walking & cycling links	
	Local bus stops (where available)	
	Bike Storage	Risk: Unsecured bike storage facilities are unattractive to potential passengers, as they believe their bike could be stolen.
	Drop-off/taxi	
	Park and ride	Risk: That supply of parks does not meet demand.
Fares	WRC fare integration	
	AT fare integration	Constraint: AT has indicated that AT fare system integration would be challenging and it is not consistent with WRC objectives.
Ticketing	Paper-based	Risk: A solely paper-based system is more susceptible to fraud and doesn't provide the same degree of information as an electronic ticketing system.
	AT Hop	Constraint: Lack of integration with WRC bus services.
	WITS	Constraint: Lack of integration with AT Metro and bus services.
Commercial	Operator-owned vehicles	Risk: Operator ownership of rail rolling stock and supporting facilities is a potential cost risk. However, while the rolling stock will be owned by KiwiRail, NZTA will be able to have the rolling stock redeployed elsewhere if this service is discontinued.
	Regional council-owned vehicles	Constraint: WRC does not wish to own rolling stock.

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

Characteristic	Attribute/intervention	Risk/Constraint/Uncertainty
	Negotiated operating contract	Risk: Negotiated operating contracts are a potential cost risk.
	Tendered operating contract	Constraint: There is insufficient time to competitively tender the operating contract due to March 2020 start-up date. Constraint: There are limited tenderers in the market, but KiwiRail has agreed to an open book audit of their capital expenditure and operational expenditure.

9.3 Long List of Options

The interventions included were collated into a long list of options in Figure 9-1.

Characteristic	Attribute/intervention	Do minimum (do nothing)	Increased park & ride	Connecting bus - limited stops peak	Connecting bus - all stops peak	Connecting train - low frequency peak	Connecting train - higher frequency peak	Connecting train - low frequency all day	Connecting train - higher frequency all day	Connecting train - low frequency peak with facilities	Connecting train - higher frequency peak with facilities	Connecting train - low frequency all day with facilities	Connecting train - higher frequency all day with facilities	Through train - low frequency peak with facilities	Through train - higher frequency peak with facilities	Through train - low frequency all day with facilities	Through train - higher frequency all day with facilities	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
Primary mode	Bus																	
	Train																	
	Other (car)																	
Service type	Connecting service (to Auckland Transport)																	
	Through service (to Central Auckland)																	
Start-up stops	Kahikatea Drive																	
	Ruakura																	
	Claudefords																	
	Hamilton Central/Hamilton Transport Centre																	
	Frankton																	
	Rotokauri/The Base																	
	Ngaruawahia																	
	Taupiri																	
	Hunty																	
	Te Kauwhata																	
	Meremere																	
	Pokeno																	
	Tuakau																	
	Pukekohe																	
	Papakura																	
Frequency	Puhinui																	
	Otahuhu																	
	Newmarket																	
	Auckland Central/The Strand																	
	One peak-direction trip per peak																	
	Two peak-direction trips per peak																	
Vehicle features	One counter peak-direction trip per peak																	
	One interpeak trip in each direction																	
	One weekend trip in each direction																	
	Table and/or tray table seating																	
	Disabled hoist and capacity																	
	Toilets including disabled toilet																	
	Air conditioning																	
	At-seat power																	
	Luggage capacity																	
	Bike capacity																	
Stop features	Server																	
	Wifi																	
	Shelter																	
	Seating																	
	Passenger information (paper or electronic)																	
	Walking and cycling links																	
Fares	Local bus stops (where available)																	
	Drop-off/taxi																	
	Park & ride																	
Ticketing	WRC fare integration																	
	AT fare integration																	
	New WRC ETS system																	
Commercial	Paper-based																	
	AT Hop																	
	Operator-owned vehicles																	
	Regional council-owned vehicles																	
	Negotiated operating contract																	
	Tendered operating contract																	

Legend: Excluded from start up services

Figure 9-1: Attributes and Interventions against Long List Options

9.3.1 Assessment of Long List

Qualitative assessments were moderated internally by the SSBC technical advisers (Stantec), and then moderated in discussion with key stakeholders including WRC and NZTA. The results are provided in Figure 9-2.

9.3.1.1 Long list screen against investment objectives

Option	Investment objectives					Score
	A shorter journey time by public transport between Hamilton and Central Auckland compared to by private vehicle during peak periods	A more reliable journey time by public transport between Hamilton and Central Auckland, compared to by private vehicle during peak periods	Daily patronage of XX 2 years after start up of a new public transport service	X% increase in people living within X km of towns with direct access to a new public transport service by 20XX	\$X value of building consents granted per annum within X km of towns with direct access to a new public transport service by 20XX	
1 Do minimum (do nothing)	-3	-3	-3	-3	-3	-15
2 Increased park & ride	0	0	1	0	0	1
3 Connecting bus - limited stops peak	-1	-1	1	1	0	0
4 Connecting bus - all stops peak	-2	-2	1	1	0	-2
5 Connecting train - low frequency peak	1	1	1	1	1	5
6 Connecting train - higher frequency peak	1	1	2	2	1	7
7 Connecting train - low frequency all day	1	1	1	1	1	5
8 Connecting train - higher frequency all day	1	1	2	2	1	7
9 Connecting train - low frequency peak with facilities	1	1	1	1	1	5
10 Connecting train - higher frequency peak with facilities	1	1	2	2	1	7
11 Connecting train - low frequency all day with facilities	1	1	1	1	1	5
12 Connecting train - higher frequency all day with facilities	1	1	2	2	1	7
13 Through train - low frequency peak with facilities	2	2	2	2	2	10
14 Through train - higher frequency peak with facilities	2	2	3	3	2	12
15 Through train - low frequency all day with facilities	2	2	2	2	2	10
16 Through train - higher frequency all day with facilities	2	2	3	3	2	12

Figure 9-2: Long list screen against investment objectives

Key

- +3: Significant benefit or alignment
- +2: Moderate benefit
- +1: Slight benefit
- 0: Neutral / No impact
- -1: Slight disbenefit
- -2: Moderate disbenefit
- -3: Significant disbenefit or misalignment (Fatal flaw).

The initial screen showed that Options 1 to 4 were unlikely to contribute materially (overall) to the stated investment objectives and were therefore discounted from further assessment.

9.3.1.2 Multi-criteria assessment of options against key principles

The remaining options were then assessed using the key principles (Outcomes and Implementability) for guidance, as per Figure 9-3.

Option	Assessment criteria											
	Outcomes				Implementability				Outcome Score	Implementability Score		
	Flexibility	Corridor	Customer appeal	Enables choice and access	Feasibility	Consents	Property	Safety				
1	Do minimum (do nothing)								Carried forward for baseline only		-	-
2	Increased park & ride								Does not achieve investment objectives		-	-
3	Connecting bus - limited stops peak								Does not achieve investment objectives		-	-
4	Connecting bus - all stops peak								Does not achieve investment objectives		-	-
5	2	0	1	1	-1	-1	0	0	4	-2		
6	2	1	2	1	-2	-1	0	0	6	-3		
7	2	1	1	1	-1	-1	0	0	5	-2		
8	2	2	2	2	-2	-1	0	0	8	-3		
9	2	0	1	1	-1	-1	0	0	4	-2		
10	2	1	2	1	-2	-1	0	0	6	-3		
11	2	1	1	1	-1	-1	0	0	5	-2		
12	2	2	2	2	-2	-1	0	0	8	-3		
13	3	1	2	2	-1	-1	0	0	8	-2		
14	3	2	3	2	-2	-1	0	0	10	-3		
15	3	2	2	2	-1	-1	0	0	9	-2		
16	3	3	3	3	-2	-1	0	0	12	-3		

Figure 9-3: Multi-criteria assessment of options

Key

- +3: Significant benefit or alignment
- +2: Moderate benefit
- +1: Slight benefit
- 0: Neutral / No impact
- -1: Slight disbenefit
- -2: Moderate disbenefit
- -3: Significant disbenefit or misalignment (Fatal flaw).

The result of the MCA showed that a 'Through Service' would better achieve key stakeholder desired outcomes, and better achieve the Investment Objectives. All options have technical challenges.

9.4 Shortlist Identification

From the evaluation of the long list, stakeholders confirmed the shortlist in Table 9-3 to examine in more detail. The three shortlisted options were:

Table 9-3: Shortlisted Options

Shortlisted Option	Discussion
<p>Option 10 – Connecting train – higher frequency peak with facilities</p>	<p>This option was the initial preference identified by stakeholders prior to the MCA.</p> <p>Stakeholder preferences were to:</p> <ul style="list-style-type: none"> • provide more than one peak trip to provide peak travel options, • provide seven day travel, • operate services into the Auckland CBD when a suitable train path is available in the future (reflecting the customer preference identified through market research), and • servery seen as being essential for that given trip length. <p>There was concern that off-peak demand may be insufficient to cover costs of services at those times.</p>
<p>Option 12 - Connecting train – higher frequency all day with facilities</p>	<p>This is the highest scoring 'Connecting Train' option that includes a servery as a future proof service.</p> <p>This is the same as Option 10 with off-peak services added to provide:</p> <ul style="list-style-type: none"> • travel options for peak commuters (e.g. options in personal emergencies) • better options for travel for work purposes (e.g. to business meetings) • better options for airport-bound journeys given its importance as a destination for Waikato residents, and • better options for leisure / non-work journeys (i.e. more customer-friendly departure times than peak requirements allow).
<p>Option 16 - Through train higher frequency all day with facilities</p>	<p>This was the highest scoring of all options.</p> <p>This is the same as Option 12 except that its final stop is The Strand in Auckland's CBD. This option assumes that train path limitations can be addressed prior to or soon after implementation</p> <p>This option is most closely aligned to customer preferences identified through market research, offering good service levels and direct access to the Auckland CBD and potentially key intermediate stops such as Puhinui for the airport.</p>

The principle reason for the stakeholders selecting the three options were:

- A connecting and a through service were selected to enable an understanding of the range of value for money choice between options.
- Highest scoring against investment objectives (Option 14 and Option 16) and highest scoring against the key principles for each of a connecting service (Option 12) and a through service (Option 16).
- Closest alignment with the option defined by key stakeholders prior to undertaking the short list evaluation as a baseline for an informed trade-off discussion to decide the final recommended option.

9.4.1 Rolling Stock, Locomotives and Maintenance Facilities – option refinement

Rolling stock and locomotives:

- Options for the ex-AT carriages:
 - Refurbish to standard specification.
 - Refurbish to higher specification.
- Options for the DFB Locomotives included:

At this point, capacity was assumed following some preliminary demand modelling. Requirements were specified to KiwiRail by WRC based on the preliminary projected demand and feedback from customer surveys (requirements presented in Appendix N Report to TCWG Passenger Rail specification – 4 July 2018). This led to the development of the most viable number of locomotives, carriages and their configurations. More detail is presented in Appendix H Rolling Stock options.

Other KiwiRail facilities:

- Servicing and regular maintenance: two options were considered at Te Rapa:
 - Use existing facilities: this proved operationally difficult to achieve.
 - Addition to existing facilities: this was considered the only feasible solution.
 - Options were operationally constrained and a KiwiRail Committee resolved that a new facility at Te Rapa is the preferred option.
- Heavy maintenance: No alternatives were explored for heavy maintenance of rolling stock. All KiwiRail heavy maintenance is undertaken at the Hutt Workshops.
- Stabling: Westfield was considered the most viable stabling site during the daytime, therefore is the preferred option. Trains would travel (without passengers) to Westfield, where they would lay-over in the KiwiRail yards until the southbound journeys in the evening peak period. Night time stabling would occur at Te Rapa.

9.4.2 Stations – option refinement

Potential stations were considered against the investment principles. The full analysis is contained in Appendix J.

The analysis in Appendix J highlighted that the proposed stations of Frankton, The Base, and Huntly and the terminating station at Papakura are suitable for the start-up service. Given that rail tends to be a long-term investment, the proposed stations reflect the locations primarily of growth (The Base) or of deliverability (Frankton/Huntly).

Once the stations were reviewed and shortlisted options determined then each site was considered in greater detail (Appendix K Rail Station HLITA) with respect to:

- Pedestrian and cycle access.
- Public transport integration.
- Vehicular and car parking access and locations.

In all cases, given the early morning timing of the train services and the likely patronage, local traffic impacts are considered negligible. In all the proposed locations there is the capability to accommodate car parking, either on Council owned land (land purchased at The Base by HCC) or on street. In most cases additional works are required to enhance car parking areas. Frankton and Huntly have adequate walking and cycling access with a need for only minor works (for example, additional spurs off the existing Rail Trail walking and cycle route to the station in Frankton, and bike storage facilities). Cycle access to The Base is limited to the road, which does not currently have a footpath, limiting pedestrian access to park and ride and bus access only. Integration with other existing public transport, for example with local bus services, largely depends on the build-up of additional train services. Existing local bus services can easily be re-routed and timetables altered to integrate with the Start-Up service.

However, in the case of both Huntly and Frankton Stations, the main town centres are located only a short walk from the existing stops, so whilst an allowance was made in the design, this could change to provide additional parking or pick-up/drop off facilities.

9.5 High-Level Economic Assessment of the Shortlisted Options

Table 9-4 shows how the three shortlisted options compare from an economic perspective at a high level, along with their comparison to the qualitative assessment findings.

The economic assessment has similar parameters to the economic assessment of the preferred option (see Section 10.2), including a 30-year evaluation period and 6% discount rate, although NZTA Economic Evaluation Manual simplified procedures were used for simplicity. It was undertaken at an earlier point in the business case development process and assumed four Start-Up stations (the three that are included in the preferred option, and Tuakau, which was later aligned it with the future metro service direction of the H2ACSP), and costs and demand were consequently expected to be higher than the preferred option (250 weekday peak one-way passengers after a two-year ramp up period). Outputs are presented as ranges that reflect 40% variability (plus or minus 20%) in expected patronage and 40% variability in expected costs.

Option 10 has the lowest net cost (the funding gap between revenue and cost) and transport benefits, with a benefit cost ratio (BCR) range of 1.2 to 3.0. Option 12 and Option 16 have higher net costs and benefits, but broadly similar BCR ranges to Option 10, at 1.1 to 2.8 and 1.1 to 3.0 respectively. Both latter options have progressively higher incremental BCRs than the target incremental BCR of 1.0 at this patronage level, which indicates that the additional investment in these options is warranted if sufficient funding is available and operational constraints are addressed.

Option 16 is a limited-stops service, but not express service since trains cannot pass others on the corridor. It therefore does not offer travel time savings over the other options and its main benefit comes from the elimination of the connection to AT Metro services, which market research has indicated is a barrier to passengers wanting to use the service. Its return on investment would significantly improve if services could run to an express timetable with shorter running time north of Papakura, as may be possible in the future when the until capacity enhancements are completed between Wiri and Westfield by end of 2021/22.

Table 9-4: Shortlisted Options Economic Assessment

	Option 10	Option 12	Option 16
Capital cost (2018 \$m)	\$42.0 - \$62.9	\$42.0 - \$62.9	\$42.0 - \$62.9
Operating cost (2018 \$m)	\$75.0 - \$112.4	\$103.7 - \$155.6	\$115.9 - \$173.9
Revenue (2018 \$m)	\$14.8 - \$21.3	\$17.4 - \$26.0	\$26.1 - \$39.2
Net Cost Summary	\$102.2 - \$154.0	\$128.0 - \$192.5	\$131.8 - \$197.6
Transport benefits	\$190.5 - \$285.7	\$224.7 - \$337.0	\$238.0 - \$356.9
BCR	1.2 - 3.0	1.1 - 2.8	1.1 - 3.0
Incremental BCR	-	1.3	3.9
Qualitative assessment			
Investment objectives score	7	7	12
Outcomes	6	8	12
Implement-ability (by October 2019)	-3	-3	-3

Stakeholders recommended that Option 10 be implemented at start-up despite its lower incremental BCR and lower qualitative scoring, due to its relative ease of implementation at commencement, lower cost, and consistent BCR with other the options. The service enhancements associated with the other options will be reconsidered once the preferred option has been fully implemented and infrastructure is in place to support service improvements at the Auckland end of the corridor.

10. Preferred Option

Option 10 was selected by the TCWG workshop on 5 October as the preferred option for the start-up service. However, as this section outlines, it has been modified as further decisions were confirmed by stakeholders that had a bearing on the final option. The preferred option changes respond to the draft H2ACSP and issues on the corridor.

10.1 Description

This section outlines the final version of the Start-Up service chosen for operation on Day 1 in March 2020. This Start-Up service is adapted from Option 10 in the short list, with the main changes being:

- No station stop at Tuakau. The decision to remove this station from the Start-Up was made at the 5 October workshop by the TCWG, to instead align investment there with the future metro service extension on that part of the corridor. Bus service improvements would provide the short-medium term response necessary.
- No Sunday and public holiday service for the first three or four years, due to planned track works, including addition of third and fourth tracks to network and electrification between Pukekohe and Papakura.

10.1.1 Overview

The preferred option has the following attributes and interventions as noted in Table 10-1.

Table 10-1: Preferred Option Attributes and Interventions

Characteristic	Attribute/Intervention
Primary mode	Conventional locomotive-hauled carriage train utilising three locomotives and 11 refurbished carriages (sufficient to provide two four-carriage train consists and locomotive and carriage spares), plus two unrefurbished carriage spares for growth. Refer options report.
Service type	Connecting service to AT Metro services at Papakura. Operation north of Papakura to be investigated once the Wiri to quay Park 3 rd main project has been completed (mid 2022).
Start-Up stops (stations)	<ul style="list-style-type: none"> • Frankton (existing platform, no changes). • The Base (new island platform, track slewing¹²). • Huntly (upgraded side platform). • Te Kauwhata (to be further investigated within the five-year period). • Papakura (existing platform, no changes).
Frequency	Two weekday services in each direction, operating northbound in the morning peak and southbound in the evening peak (March 2020). One Saturday service in each direction, operating northbound in the morning and southbound in the evening (March 2020). One Sunday and public holiday service commencing after the Papakura to Pukekohe electrification project has been completed, operating northbound in the morning and southbound in the evening (late 2023). Interpeak services to be investigated (either aligned with an extension of operation north of Papakura or the later introduction of Sunday and public holiday services).
Vehicle features	<ul style="list-style-type: none"> • Table and/or tray table seating. • Disabled hoist and capacity. • Toilets including disabled toilet. • Air conditioning. • Luggage capacity. • Bike capacity. • Servery. • Wi-Fi capable.

¹² Track slewing is rail terminology for moving or realigning rail tracks.

Characteristic	Attribute/Intervention
	<ul style="list-style-type: none"> At-seat power points and USB ports.
Stop features	<ul style="list-style-type: none"> Minimum length 102m platform (Huntly), other platforms at least 140m. Lighting and CCTV for personal safety and security. Shelter. Seating. Passenger information (expected to be paper-based at start-up). Future local bus connections at Frankton, The Base and Huntly. Bike storage (Frankton and Huntly to be confirmed) Drop-off/taxi space at all stations. Park and ride at all stations. Walking and cycling links.
Fares	WRC fare integration.
Ticketing	WITS ticketing with on platform ticket infrastructure and the ability to issue paper-based tickets by train attendants.
Commercial	Operator-owned locomotives and rolling stock, maintained and serviced at Te Rapa (addition to existing facility).
	Negotiated operating contract.

10.1.2 Rolling Stock and locomotives

A description of the start-up service for the preferred option is provided in Table 10-2.

Table 10-2: Preferred Option forecast requirements

In service Date	March 2020	Future
Train Consist	2 x 4 carriage consist operational (may be operated as 1 x 3 carriage consist and 1 x 5 carriage consist if weekday demand is uneven) 300 seat capacity (150 per consist, or 100 and 200 per consist)	2 x 5 carriage consist if required to provide sufficient capacity to respond to higher than projected demand 400 seat capacity (200 per consist)
Forecast Demand	Approximately 120 in each direction on weekdays Approximately 30 in each direction on Saturdays.	Approximately 205 in each direction on weekdays (end 2023) Approximately 50 in each direction on weekend days (end 2023).
Locomotive¹³	2 x in operation rebuilt DFB 1 x maintenance spare rebuilt DFB	
Rolling Stock¹⁴	Refurbished ex-AT SA & SD carriages	Refurbished ex-AT SA & SD carriages
<i>SR – 50 patrons</i>	Operational: SR x 4 Spares: SR x 1	Operational: SR x 6 (if req.) Spares: SR x 1
<i>SRC – 20 patrons</i>	SRC x 2	SRC x 2
<i>SRV – 30 patrons</i>	SRV x 2	SRV x 2
	SA x 2 (unrefurb) ¹⁵	
Features Included	Vestibule Luggage Racks	

¹³ If KiwiRail finds a use for the locomotives outside of their commitment to the Start-Up service, they could be made available for use by KiwiRail for freight services when not in use for passenger rail. The operating contract will make provision for KiwiRail contribution to all associated costs.

¹⁴ SR = a standard passenger carriage; SRC = a severy and disabled access carriage; SRV = carriage with a generator.

¹⁵ The two unrefurbished growth spare SA carriages will only be refurbished to SR standard in the future if required to enter service to provide sufficient capacity to respond to higher than projected demand.

In service Date	March 2020	Future
	USB and power points Universal toilets Disabled access (2 per train consist) Wi-Fi capable Servery (<i>future proof through service</i>) Work friendly environment Security	
Operating Features	Stabled during the day in Westfield Maintained and serviced overnight and in the weekends in Te Rapa	
Capital Costs	Locomotives \$7,040,000 Rolling stock \$14,232,000 Maintenance and stabling facilities \$4,238,000 Ticketing equipment: \$300,000	
Annual operations and maintenance costs (including track access charges):	\$7,081,000	\$7,739,000 (includes Sunday and public holiday services after 2023, - excludes inflation)

The spare locomotive one spare of each carriage type will be sufficient to cover scheduled maintenance requirements, and unscheduled maintenance requirements in many cases, while maintaining services. Breakdowns will be managed on a case by case basis according to procedures laid out in the operating contract.

10.1.3 Track infrastructure

KiwiRail track and associated infrastructure requirements are described in Table 10-3.

Table 10-3: Rail Infrastructure Proposal

KiwiRail Infrastructure:	2019/2020
Tracks	The Base: Track slewing for central island platform Huntly: Rebuilt station siding track and switches
Signals	The Base Huntly
Level crossings	The Base: Pedestrian level crossing
Cost	Capital: \$7,380,000 (\$6,380,000 at The Base and \$1,000,000 at Huntly) Operational costs included in the track access charge

10.1.4 Stations

The specific features of each train station concept are detailed in this section, along with key attributes and concept diagrams. If more information on each station is required, refer to Appendix F for Features and Appendix C on the RMA Assessment. All three stations are expected to be operational by March 2020.

10.1.4.1 Frankton Station

Features of the Frankton Station concept are outlined in Table 10-4 and Figure 10-1. The infrastructure investment noted in 'Features' is provisional and will be determined if required once the station has commenced operation.

Table 10-4: Frankton Station Proposal

Forecast Demand (average weekday 2021-22)	Features (recommended improvements)	Platform and Pedestrian Access	RMA	Cost Estimate
80 - 125 passengers	<p>Shelter – use existing</p> <p>Seating – use existing</p> <p>Passenger information (paper or electronic) – upgrade signage</p> <p>Walking and cycling links – use existing cycling, additional footpath, build cycle cage for security</p> <p>Local bus stops – not currently used, but re-mark existing</p> <p>Drop-off/taxi – use existing but re-mark</p> <p>Park & ride - use existing but re-mark with additional markings</p> <p>Safety and Security – (CCTV, lighting) – upgrade (however KiwiRail already installing new CCTV)</p>	<p>150+m long Side platform – use existing</p> <p>KiwiRail operational feedback: Concept reviewed, no objections</p>	<p>Passenger transport activities a permitted activity</p> <p>Changes to car parking may require consent</p>	<p>Capital: \$200,000 (all above track) - provisional allowance only.</p> <p>Annual Maintenance and Operations: Allowance of \$150,000 maintenance and \$50,000 KiwiRail land lease costs</p>

Approximately one third of passengers are expected to come from Hamilton, with a mix of walk, cycle or car access. Approximately 25% are expected to come from Raglan or Tamahere by car, another 25% from the Waipa district via car, with the remainder from rural parts of the Waikato district that are easily accessible to Frankton via car. Dinsdale bus services will be reviewed to provide a bus connection to the Frankton station from Hamilton CBD. WRC will ensure that the existing bus services integrate well with the rail timetable when it is finalised.



Figure 10-1: Concept layout for Frankton Station

Concept diagram notes:

- the existing 25 car park spaces are shown as a block in blue
- around the periphery is space for a further 70-75 spaces, shown in teal
- three disabled spaces, shown in green
- taxi is shown yellow
- two buses (14m + 14m + 6m swing in at rear) space of 34m is in orange.

10.1.4.2 The Base Station

Features of The Base Station concept are outlined in Table 10-5 and Figure 10-2.

Table 10-5: The Base Station Proposal

Forecast Demand (average weekday 2021-22)	Features	Platform and Pedestrian Access	RMA	Cost Estimate
45 – 70 passengers	Shelter – build new Seating – build new Passenger information (paper or electronic) – signage (possible kiosk in future)	140m long New island platform One new pedestrian level crossing	Passenger transport activities a permitted activity The proposed	Capital: \$21,410,000 (includes platform, facilities ¹⁶ , the track infrastructure)

¹⁶ \$4,355,00 of the facilities cost relates to road construction to enable a park and ride.

Forecast Demand (average weekday 2021-22)	Features	Platform and Pedestrian Access	RMA	Cost Estimate
	<p>Walking and cycling links – provision for new footpath to park and ride, build cycle cage for security</p> <p>Local bus stops – (where available) – build new bus bay on Tasman Road</p> <p>Drop-off/taxi – build new on Tasman Road</p> <p>Park and ride – – Build new 100 parking space, chip sealed for start-up on HCC land – Facility for 450 in future</p> <p>Safety and Security – (CCTV, lighting) – build new</p>	<p>Road crossing on raised platform in new 30 km/h zone.</p> <p>KiwiRail operational feedback:</p> <p>Concept reviewed, no objections. However, review of level crossing concept and electric gates is still in progress</p>	<p>car parking should be considered a permitted activity</p>	<p>changes noted in Table 10-3, and \$6,400,000 for land purchase)</p> <p>Annual Maintenance and Operations:</p> <p>Allowance of \$150,000 maintenance and \$50,000 KiwiRail land lease costs</p>



Figure 10-2: Concept layout for The Base Station

Approximately 60% of passengers are expected to come from Hamilton, with a mix of walk, cycle or car access. Approximately 15% are expected to come from Horotiu by car, and the remainder from rural parts of the Waikato district that are easily accessible to The Base via car. The Orbiter and Northern Connector bus services will be reviewed to provide a bus connection to The Base station. WRC will ensure that the existing bus services integrate well with the rail timetable when it is finalised.

10.1.4.3 Huntly Station

Features of the Huntly Station concept are outlined in Table 10-6 and Figure 10-3.

Table 10-6: Huntly Station Proposal

Forecast Demand (average weekday 2021-22)	Features	Platform and pedestrian access	RMA	Cost Estimate
30 – 45 passengers	<p>Shelter – build new</p> <p>Seating – build new</p> <p>Passenger information (paper or electronic) – new signage.</p> <p>Walking and cycling links – use existing, including pedestrian overbridge, build cycle cage for stations for security.</p> <p>Local bus stops – On existing bus access road.</p> <p>Drop-off/taxi – to use parking area.</p> <p>Park and ride – refurbish existing area, new chip seal and marking.</p> <p>Safety and Security – (CCTV, lighting) – build new.</p>	<p>102m</p> <p>Use existing side platform</p> <p>Platform lifted and extended.</p> <p>KiwiRail operational feedback:</p> <p>Concept reviewed, no objections at this stage, however concept review is still in progress.</p>	<p>Parking activity could be permitted if no more than 300 vehicle movements per day.</p> <p>Car parking could be permitted within the KiwiRail designation providing they have financial responsibility for it.</p>	<p>Capital: \$2,240,000 (includes platform, facilities and the track infrastructure changes noted in Table 10-3)</p> <p>Annual Maintenance and Operations: Allowance of \$150,000 maintenance and \$50,000 KiwiRail land lease costs</p>



Figure 10-3: Concept layout for Huntly Station

Approximately 20% of passengers are expected to come from Huntly, with a mix of walk, cycle or car access. Approximately one third are expected to come from Taupiri or Ngaruawahia by car, with the remainder from rural parts of the Waikato district that are easily accessible to Huntly via car. The Northern Connector and Huntly-Pukekohe bus services will be reviewed to provide a bus connection to Huntly station. WRC will ensure that the existing bus services integrate well with the rail timetable when is finalised.

Residents from Te Kauwhata north, are generally not expected to use the service they are not expected to travel against their journey direction to board the service.

10.1.5 Service levels

10.1.5.1 Timetable

An outline of the service levels proposed for the initial service at commencement is provided in Table 10-7. All passengers travelling to, or from, points north of Papakura will change trains and platforms at that location, with standard AT Metro rail services providing the northward connection from there.

Table 10-7: Service Levels Summary

	March 2020	Future
Service Frequency	2 x weekday peak (am, pm) 1 x weekend (Sat – am, pm)	2 x weekday peak (am, pm) 2 x weekend (Sat & Sun – am, pm) 1 x public holiday (am, pm)
Approximate journey and connection times	Frankton – Papakura: 90 mins Papakura transfer time: 5-10 mins Papakura – Britomart: 50 mins (AT Metro) TOTAL TIME: 2 hrs 25 mins to 2 hrs 30 mins	

Table 10-8 provides a suggested weekday commencement timetable, based on an initial assessment and current AT Metro timetables. The departure and running times are indicative only and subject to further development and later confirmation by the Auckland Network Timetable Committee in 2019. They may therefore vary, and overall travel time could potentially reduce. They should not be regarded as exact timings.

Table 10-8: Indicative start-up service timetable

Station	AM Peak		Station	PM Peak	
	Train 1	Train 2		Train 1	Train 2
Hamilton (Frankton)	5:54	6:33	Britomart	16:30	17:30
The Base	6:02	6:41	Newmarket**	16:38	17:38
Huntly	6:25	7:04	Puhinui*	17:02	18:02
Papakura Arrival	7:22	8:01	Papakura Arrival	17:18	18:18
Transfer	0:12	0:11	Transfer	0:09	0:09
Papakura Depart	7:34	8:12	Papakura Depart	17:27	18:27
Puhinui*	7:51	8:30	Huntly	18:23	19:28
Newmarket**	8:15	8:55	The Base	18:45	19:50
Britomart	8:24	9:04	Hamilton (Frankton)	18:52	19:57

* Connections can be made to the Manakau Line and buses for Auckland International Airport.

** Connections can be made to the Western Line.

The indicative timetable suggests a 11 to 12-minute Papakura transfer time, which is sufficient for passengers to change platforms, which they will need to do via the overbridge in the northbound direction. This results in an overall Hamilton to central Auckland travel time of around 2 hours 30 minutes, which is comparable with private vehicle between the two points at peak times as shown in Table 7-4. It is likely to be competitive in the longer term if congestion increases as expected, particularly at the Auckland end of the corridor¹⁷.

Weekend timetables will be developed and confirmed prior to commencement in a similar fashion to weekday timetables. Departure times reflect the preferred market research timings.

¹⁷ The Congestion Question: Phase 1 Report prepared by six agencies involved in the Auckland Transport Alignment Project notes that Auckland Forecasting Centre modelling indicates that the proportion of Auckland vehicle travel in severe congestion will increase by 29 percent by 2046 (from 2016) in the morning and afternoon peaks.

10.1.5.2 Fares and Ticketing

The new WRC zonal fare structure will apply south of Papakura and AT's fare structure to the north¹⁸. Smartcard and cash fare options are available in both regions but will not be supported by fare integration or free transfer at Papakura, due to the complexities of integrating the two fare structures. Standard concession fares will apply on the respective services as per the policy of each region, but free travel for SuperGold card holders would not be available on the start-up service, as current scheme policy exempts inter-regional services. An outline of the current adult smartcard fares under the WRC fare schedule is provided in Table 10-9.

Table 10-9: WRC adult smartcard fares under the zonal fare structure adopted in September 2017

	Hamilton (Frankton and The Base)	Huntly	Papakura
Hamilton (Frankton and The Base)		\$4.00 (3 zones)	\$12.20 (7 zones)
Huntly	\$4.00 (3 zones)		\$7.80 (5 zones)
Papakura	\$12.20 (7 zones)	\$12.20 (7 zones)	

Table 10-10 shows the fares that will apply for a typical Hamilton-Auckland journey. Passengers will need separate smartcards for the Hamilton-Papakura and Papakura-Auckland (AT Metro) sections of their journey¹⁹.

Table 10-10: Fares overview

	Current (subject to change)	Future
Example Adult one-way Fare	<p><i>Hamilton-Papakura:</i> \$12.20 (smartcard), \$17.10 (cash)</p> <p><i>Papakura-Auckland:</i> \$6.20 (smartcard), \$9.00 (cash)</p>	Subject to future fare changes

WRC selected its new WITS ticketing system for the Start-Up service²⁰. This will be implemented on the WRC bus network in 2019 and permit integrated ticketing with connecting bus services. The system will allow:

- Smartcard passengers to tag on and off using validators at train doors, similarly to the way that they will do on buses.
- Smartcard top-ups and pre-purchase of paper tickets via cashless ticket vending machines at Frankton and The Base (ticket vending machines are not currently planned for Huntly or Papakura).
- Smartcard top ups via an app and auto-payment.
- Onboard staff to monitor passengers with smartcards and pre-purchased tickets and issue cash paper tickets using mobile retail devices.

Extension of WITS to the Start-Up service is expected to cost \$300,000. Operational costs have yet to be confirmed, but they are expected to be lower than those for AT Hop, the AT smartcard that passengers will use north of Papakura, which was previously considered as a ticketing option.

10.1.5.3 Fare Comparison Versus Cost of Private Vehicle Travel

Table 10-11 provides a high-level comparison between the cost of a return train journey versus a return private car journey between Frankton and Britomart (on a weekday). It assumes there is only one person in the private vehicle and that the train passenger is not using a cash fare. The values for the vehicle

¹⁸ Due to the need to switch services at Papakura.

¹⁹ The future national ticketing scheme may address this issue, but it is not likely to be fully implemented in both regions within the five-year Start-Up period that is the focus of this SSBC.

²⁰ Subject to formal confirmation at a 21 November 2018 WRC council meeting

operating costs per hour and travel time costs per hour are based on those in the NZTA Economic Evaluation Manual. All values have taxes excluded, to provide a more appropriate comparison. The return journey time for a train was set at five hours and a vehicle journey was based on the 2018 mean AM and PM peak journey time of four hours and thirty-eight minutes (refer to Section 7.1.3.1).

Table 10-11: Train vs private car journey cost comparison

	Private car	Train	Difference
Hamilton to Papakura return	-	\$21.22 (smartcard)	-
Papakura to Britomart return	-	\$10.78 (AT Hop)	-
Vehicle operating costs	\$53.20	-	-
CBD Parking all day	\$20.87	-	-
Subtotal (per weekday)	\$74.07	\$32.00	\$42.07
Travel Time costs (\$19.58/h)	\$90.72	\$97.90	\$(7.18)
TOTAL (per weekday)	\$164.79	\$129.90	\$34.89

Table 10-11 shows a commuter travelling by train between Frankton and Britomart versus a commuter who currently drives between the two stations, could make an approximate saving of \$42.07 per day versus travelling by their private car. If the commuter values their time spent travelling to work and therefore the travel time cost of each trip is considered, a train journey is still cheaper by \$34.89 per day. This is perhaps an unfair comparison, because a train passenger could work productively on the train, whereas a private vehicle driver cannot. Therefore, time spent on the train working remotely could in theory count towards the commuter's normal working day, something not possible by private vehicle currently (this excludes the future possibility of autonomous vehicles).

Over the course of a five-day working week, the saving (excluding travel time costs) would be \$210.35. If extrapolated out to a 220-day working year, this would equate to \$9,255.40 per year saving on train journeys versus private car journeys. The amount of savings calculated here are approximate and subject to changes in the cost of fuel, parking and train fares.

10.1.6 Demand

Demand is highly uncertain as new start-up rail services are rare in New Zealand. The last was the trial Waikato Connection service on the same corridor, which was unsuccessful and ceased running after 14 months in 2001 as noted in Section 5.2.2, although it should be noted that the character and scale of travel on the corridor has changed significantly since that time. A further complication is the end-to-end connecting nature of the service, which is unlike anything in New Zealand and is rare internationally.

Patronage demand projections have therefore been derived from market research, which was conducted by Mobius Research in early 2018. This provided information on the current travel behaviour of participants, and their interest in using three potential public transport options: a limited-stops through express rail service to central Auckland, a rail service connecting to AT Metro services at Papakura, and bus service connecting to AT Metro services at Papakura. The second option was very similar to the Start-Up service proposal and provided the following specific information, which has been used to help identify demand for the new service, both overall and at key stations:

- Location of the respondent
- Interest in the proposed service
- Likely frequency of use
- Willingness to pay at various fare levels.

The market research findings were combined with an estimation of overall demand for travel between Hamilton, Waipa district and Waikato district, and Auckland, based on the outputs of the Waikato Regional Transportation Model.

The demand assessment determined at the proposed service and fare levels, the level of weekday demand is likely to be approximately 200 passengers per day each way, following a 16-month ramp-up period. This is consistent with, but slightly lower than the level of demand for the Capital Connection, which runs as a single weekday peak service between Palmerston North and central Wellington (southwards in the morning peak and northwards in the afternoon peak).

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

Weekend and public holiday demand was estimated as being in the vicinity of 50 passengers per day each way following the ramp-up period²¹, based on the off-peak/peak demand split of Greater Wellington Regional Council's long-distance Masterton-Wellington Wairarapa services²².

Figure 10-4 shows the resulting projected annual patronage total for the five-year start-up period. This climbs from an estimated 21,000 in 2019-20 (four months of operation), to 82,000 in 2020-21, to 103,000 in 2021-22. Demand beyond the 2021-22 financial year is conservatively based on the combined (2011-2017) Hamilton/Waipia/Waikato annual population growth rate of 2.0% (arithmetic growth), with a jump in the 2023-24 financial year when Sunday and public holiday services are expected to be introduced. This climbs to a projected 167,000 passengers at the end of the 30-year assessment period (see Section 10.2.3 for an explanation of the economic assessment parameters). Actual growth could potentially be much higher, as traffic growth on the parallel state highway has increased by an average of 3.7% and urban development may increase the population by a much faster rate in the future, so the 2.0% growth rate should be regarded as conservative.

Most users of the Start-Up service are expected to be adults, given the focus of investment on weekday peak periods. The market research indicates that only one quarter of them are expected to use it for work/study/meeting travel purposes at start-up, although this proportion is likely to change significantly as the service becomes embedded as transport 'infrastructure' and people make locational decisions around it. Another quarter are expected to use it to reach Auckland International Airport, and the remainder for other purposes. The latter groups would be relatively infrequent users, as is characteristic of this type of long-distance service, but provide an important source of demand.

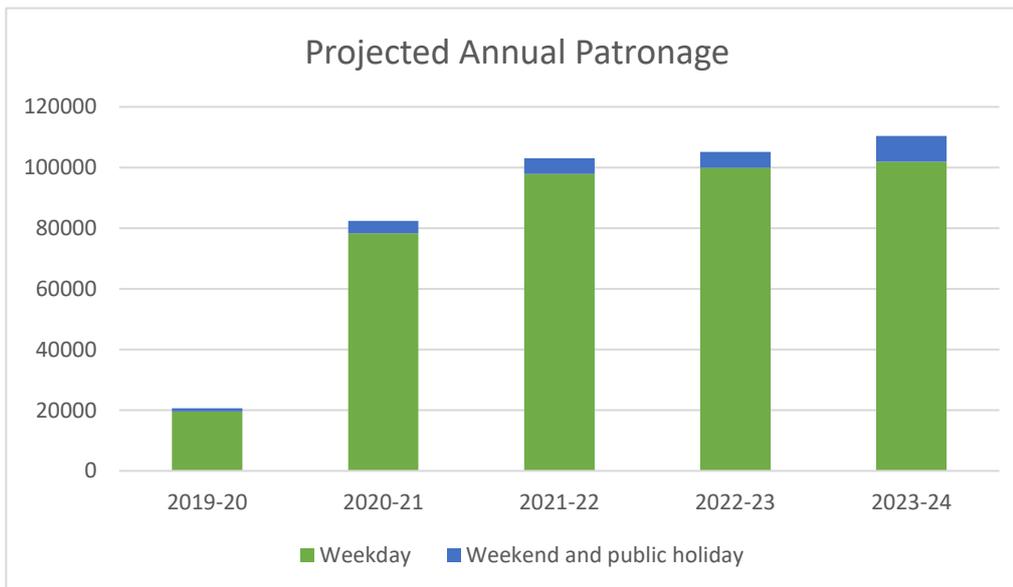


Figure 10-4: Projected annual patronage volumes (five-year start-up period)

It is important to note that both weekday and weekend/public holiday estimates are indicative. Patronage is uncertain until demonstrated, as with all new public transport services, and will need to be the subject of ongoing and close monitoring throughout the five-year commencement period.

²¹ New service public transport patronage typically builds up over the 12 to 18-month period following introduction. This business case has conservatively assumed 60% of projected demand after four months, 80% of projected demand after sixteen months, and 100% of projected demand after 28 months, following a typical demand ramp up profile.

²² Weekend demand could be greater as Auckland is a greater attractor and Hamilton has a larger catchment.

10.2 Economic Assessment

10.2.1 Cost Components

10.2.1.1 Capital Costs

The anticipated total cost of the capital cost components described in previous sections is shown in Table 10-12. These account for 32% of gross costs over the 30-year assessment period, with locomotive and rolling stock costs accounting for approximately two-thirds of this total, and station, track and support infrastructure accounting for the remainder. The following should be noted:

- Two of the three locomotive overhauls have been completed and the third is close to completion. The locomotives will operate in freight service until they are required, but they will be allocated specifically to the Start-Up service when it commences. They have been overhauled specifically for this service and the cost has been allocated to it accordingly.
- Locomotives and rolling stock will have a 15-year life once overhauled, which is well beyond the immediate start-up horizon of this business case.
- Rolling stock conversion costs include design costs and margin, but not warranty-related costs.
- Rolling stock and station related costs are subject to confirmation through the design and procurement process.
- Costs that include a defined contingency are noted.
- KiwiRail costs are indicative and subject to KiwiRail Board approval.
- Frankton Station improvements are provisional and will be determined if required once the station has commenced operation. This cost has not been included in the table but could be up to \$0.20m.

Table 10-12: Capital Cost Components

Type	Description	Financial Period	Cost (\$m)
Locomotives	Overhaul DFB x 2	2018-19	\$4.54
	Overhaul DFB x 1	2018-19	\$2.50*
	SUBTOTAL		\$7.04
Rolling stock	Purchase SA and SD carriages x 13	2018-19	\$0.97
	Convert carriage to SR specification x 5	2018-20	\$5.81**
	Convert carriage to SRC specification x 3	2018-20	\$4.24**
	Convert carriage to SRV specification x 3	2018-20	\$3.21**
	Maintenance facility	2018-20	\$3.80
	Stabling (Te Rapa) and access (Westfield)	2018-20	\$0.44**
	Ticketing equipment	2019-20	\$0.30
	SUBTOTAL		\$18.77
Stations	Frankton facilities	2018-20	Provisional
	The Base land acquisition	2018-19	\$6.40
	The Base track infrastructure	2018-20	\$6.38***
	The Base platform	2018-20	\$2.20
	The Base facilities	2018-20	\$6.43***
	Huntly track infrastructure	2018-20	\$1.00
	Huntly platform	2018-20	\$0.77
	Huntly facilities	2018-20	\$0.47
SUBTOTAL		\$23.65	
TOTAL			\$49.46

* Includes 10% contingency

** Includes 20% contingency

*** Includes 30% contingencies on some costs

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

The stations are very long-term infrastructure assets, which are required to enable the service to operate. Their level of service has been matched to short-term demand requirements. However, they do add considerable cost to the start-up service, even though the benefit of them will be realised over a very long term if the service is successful, particularly if it is improved in due course.

10.2.1.2 Operating costs

The anticipated annual cost of each of the operating cost components described in previous sections is shown Table 10-13. These account for 68% of gross costs over the 30-year assessment period, and increase following the introduction of Sunday and public holiday services in 2024. The following should be noted:

- The pre-end 2023 calendar costs are based on full year operation of two weekday peak services daily and a Saturday service in each direction.
- The post-end 2023 calendar year costs include the addition of Sunday and public holiday services in each direction.
- All stations are assumed to be operational from start-up.
- Communications, marketing and customer complaints are assumed to be managed through WRC's existing public transport operation, in partnership with KiwiRail and AT.
- The KiwiRail operations and maintenance costs shown in the table include a 7% margin and assume a cost-plus contract arrangement, with operational and performance risks being borne by the regional council. Such risks include fuel price, bus replacement, on-board sales profitability, incident costs, unplanned locomotive and carriage maintenance, vehicle availability and third-party damages. A higher margin may be applicable if some risk is borne by KiwiRail.
- A contingency of 5% is included to allow for the costs that have yet to be confirmed, which include (but are not limited to) cover for locomotive failure or train derailment, incident investigation, security monitoring, bus replacements for planned or unplanned network disruption, any additional ticketing-related costs, and security-related operational costs.
- KiwiRail costs are indicative and subject to KiwiRail Board approval.
- All costs are subject to confirmation through the procurement process.
- Costs for the first four months of operation in 2019-20 have been prorated in the economic assessment.

Table 10-13: Operating Cost Components

Type	Description	Annual Cost Prior to End 2023 (\$000)	Annual Cost Post 2023 (\$000)
Rail operations	Hook and tow (locomotive and engineer costs)	\$2,743	\$3,016
	Other labour and related costs	\$694	\$773
	Track access	\$605	\$674
	External services*	\$281	\$313
	Materials and supplies*	\$275	\$307
	Generator fuel	\$242	\$269
	Other costs	\$222	\$224
	SUBTOTAL (includes 7% margin)	\$5,063	\$5,577
Rolling stock maintenance	SUBTOTAL Includes 7% margin	\$981	\$1,093
Station maintenance	SUBTOTAL (three stations)	\$450	\$450
Other	Land lease allowance	\$150	\$150
	Management contract allowance	\$100	\$100
	SUBTOTAL	\$350	\$350
Contingency	5% allowance for unconfirmed items	\$337	\$369
TOTAL		\$7,081	\$7,739

*Includes ticketing-related costs

10.2.1.3 Revenue

Indicative annual fare revenue for the first five years of the start-up period is shown in Table 10-14. This provides 15% farebox cost recovery of operating costs after the ramp-up period in the 2021-22 financial year and increases to 24% at the end of the 30-year assessment period, assuming the conservative patronage growth rate described in Section 10.1.6. The following should be noted:

- The fare revenue projection is based on the mid-range patronage projection noted in Section 10.1.6. The actual revenue would be highly dependent on the actual demand, both in total and by station, given the zone-based fare structure proposed.
- For simplicity, revenue calculations assume that all passengers pay an adult smartcard fare – the actual average fare would be dependent on the mix of passenger types (e.g. adult versus concession) level of use of different payment methods (e.g. smartcard versus cash fares).
- Servery revenue is excluded and assumed to be cost-neutral.
- Both Start-Up service fare revenue and the increase in AT fare revenue are included in the economic assessment.

Table 10-14: Indicative Fare Revenue

	2019-20 (4 months)	2020-21	2021-22	2022-23	2023-24
Start-up service fare revenue (\$000)	\$204	\$817	\$1,021	\$1,042	\$1,094
Increased AT fare revenue (\$000)	\$86	\$345	\$431	\$440	\$462
Total fare revenue (\$000)	\$290	\$1,161	\$1,452	\$1,481	\$1,556

10.2.2 Benefit Components

10.2.2.1 Transport Benefits

Two types of transport benefit are available, those that would accrue to users of the new rail service and those that would accrue to non-users, particularly road users. The benefit assessment assumes that most passengers would otherwise use private vehicles for their trip, either as driver or passenger based on the market research findings, but a small number identified themselves as existing bus users. This split has been considered in the assessment of these benefits.

10.2.2.1.1 Public Transport User Benefits

The following public transport user benefits apply:

- **Travel Time Cost Savings:** The saving of travel time gained by passengers using the Start-Up service over existing travel options. This saving is based on the indicative train timetables noted in Section 10.1.5.1 and the mean road travel times noted in Section 7.1.3.1. It is expected to increase as road travel times increase as congestion worsens in the Auckland Region at weekday peak periods.
- **Vehicle Operating Cost Savings:** A saving in the cost of operating a motor vehicle, which is linked to travel time and accrued by former vehicle drivers.
- **Parking Cost Savings:** A saving in the cost of parking a motor vehicle, which accrued by some former vehicle drivers.
- **PT Vehicle Benefit:** A recognition of the value placed by passengers on key rail rolling stock features that the Start-Up service will have.
- **Consumer Surplus:** A recognition of the perception of value of the availability of the service to passengers, which reflects their willingness to pay for it.

These have been conservatively assessed in accordance the NZTA's Economic Evaluation Manual (EEM), and account for approximately 80% of the overall benefit. This is relatively high as a proportion but reflects the start-up nature of the service. A summary of each benefit's provisional value over the 30-year assessment period is provided in Table 10-15.

Table 10-15: Public Transport User Benefit Components

Benefit Type	30-Year Discounted Value (\$m)
Travel time cost savings	\$1.74
Vehicle operating cost savings	\$32.54
Parking user cost savings	\$6.36
Public transport user and infrastructure benefits	\$2.19
Consumer surplus (price user benefit)	\$7.40

10.2.2.1.2 Non-User Benefits

The following non-user benefits apply:

- **Decongestion:** The benefit to other road users of removing vehicles previously driven by public transport users at peak times.
- **Crash Cost Savings:** A saving associated with a reduction in crashes, due of the removal of the vehicles previously driven by public transport users.
- **Vehicle Emission Reduction:** A reduction in the emission of pollutants, due of the removal of the vehicles previously driven by public transport users.

These have been conservatively assessed in accordance with the EEM, and account for approximately 20% of the overall benefit. A summary of each benefit's provisional value over the 30-year assessment period is provided in Table 10-16.

Table 10-16: Non-User Benefit Components

Benefit Type	30-Year Discounted Value (\$m)
Decongestion	\$5.47
Crash cost Savings	\$4.72
Vehicle emission reduction	\$1.97

10.2.2.2 Other Benefits

The investment proposal is likely to provide a wider range of social, economic, environmental and other benefits, such as those relating to accessibility, productivity (through on-train work), resilience (through the availability of a modal alternative), and option and non-use (valuation of the service by people who do not use it), and be a key enabler of future public transport service improvements and longer-term development on the corridor. These benefits have not been quantified in this business case, as they are difficult to place a specific value on, but they are expected to provide significant wider economic benefits. These benefits are discussed further in an associated report by WRC²³, which provides more context around the potential benefits that are likely to supplement the direct benefits discussed above.

The WRC report identifies two main high-level benefits (the following italic text was extracted from the executive summary of the report):

- *An inter-regional rail service would bring Auckland and Hamilton/North Waikato business and potential employees closer together.*
- *Inter-regional rail is likely to have a stimulating effect on urban development and redevelopment in the places that the start-up rail service connects, particularly important at the Waikato / Hamilton end of the service.*

Further benefits are also expected from the start-up service and are listed in the report as:

²³ Hamilton to Auckland Inter-Regional Rail: Potential Wider Benefits (October 2018)

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

- *The movement of freight, by addressing constraints in the upper North Island strategic freight road and rail network that are currently limiting the ability to enhance economic performance and reduce the costs of doing business.*
- *Access to wider employment, further education and health care facilities. These benefits would initially arise for Huntly residents, and may arise for Te Kauwhata if established in the future.*

An area of potential benefit not explored is Tourism. By providing an alternative mode of transport tourists arriving in Auckland may be more likely to also visit Hamilton and the Waikato, potentially leveraging investment in initiatives such as the regional cycle trails network. This may be enhanced by the potential to, over time, offer airport connecting services.

While the above benefits may arise (some more than others) from the start-up rail service investment alone, these are expected to amplify over time as the service evolves and service levels improve. They may also be amplified by other products of the Corridor Plan including approaches to enabling land development and augmenting urban form towards being more transit-oriented and alternative approaches to infrastructure and financing.

Two other reports provide indirect support for a rail service between Hamilton and Auckland, those being: The Economic Linkages between New Zealand Cities (MBIE, May 2011) and The Economic Impacts of Connectivity (NZTA, February 2017). These reports provide some positive affirmation of the potential benefits, but they indicate that more detailed work is needed to quantify the level of benefits that would be realised from improvements to rail accessibility along the Hamilton to Auckland corridor.

The Economic Linkages between New Zealand Cities report states that *'the economic dominance and continued high rates of economic and population growth being experienced by Auckland, Hamilton and Tauranga provides a strong rationale for the investigation of the economic linkages between these three cities'*. At the time of writing (2011) it stated there was limited commuting between the three cities (citing 2006 Census data), whereas this pattern has most likely changed (for North Waikato in particular) with the surge in Auckland house prices since 2013.

The Economic Impacts of Connectivity report state that *'the effect on regional economies of large transport projects can be significant but it can also be challenging to measure and predict'*. Two economic models were built for the report and applied to the combined areas around the cities of Auckland, Hamilton and Tauranga (as a case study). One of the models indicated that a 0.4% regional overall GDP increase could be possible, but this figure does not include for any passenger rail benefits. The percentage also includes a wider study area than is the focus of this SSBC.

10.2.3 Cost Benefit Appraisal

The cost benefit appraisal input parameters are shown in Table 10-17. The following should be noted:

- Operating costs, fare revenue and benefits are based on the provision of two weekday peak services and one Saturday service in each direction between Hamilton and Papakura at Start-Up, with the addition of Sunday and public holiday services (at the Saturday service level) from 2024.
- No other service enhancements are assumed over the evaluation period, either within the five-year start-up period or beyond that. Any future upgrades would be subject to separate business cases.
- Additional rolling stock is refurbished as required to provide sufficient capacity as required by growth in the scenarios described on the following page. It is assumed that these are available for purchase where the requirement is above the 13 carriages covered in this business case.
- Rolling stock replacement is assumed to be like-for-like (i.e. upgraded used locomotives and rolling stock) with allowance for the additional capacity noted above. All 13 carriages are refurbished at replacement. Any future upgrades would be subject to a separate business case.
- AT services that provide the connection for the Start-Up service are assumed to have sufficient capacity to cope with demand (as advised by AT) on an ongoing basis without impact on their operating costs.

Table 10-17: Cost Benefit Appraisal Parameters

Input Type	Value
Evaluation period	30 years
Standard EEM discount rate (with sensitivity testing)	6%
Rolling stock life-cycle	15 years
The implementation points noted in Section 10.1	
The demand parameters noted in Section 10.1.6	
The costs noted in Sections 10.2.1.1 ²⁴ and 10.2.1.2	
The revenue noted in Section 10.2.1.3	
The benefits noted in Section 10.2.2.1	

Table 10-18 shows provides the provisional results of the start-up service benefit cost appraisal under three discount rate values, and the following four realistic scenarios that sensitivity test around key parameters:

- Low Scenario: This has starting patronage 20% below the projection, the same patronage growth rate as the Mid scenario below (2.0%), and operating and capital costs 10% above it. This is a low benefit, high cost scenario.
- Mid Scenario: The option defined in this business case, as summarised in Table 10-17.
- High Scenario: This has starting patronage 20% above the projection, a patronage growth rate set at the level of traffic growth on the parallel state highway (3.7%), the same operating cost as the Mid scenario, and capital costs 20% below it (which might be achievable if the contingency amounts embedded in most capital costs are not required). This is a high benefit, low cost scenario.
- Very High Scenario: This has starting patronage 40% above the projection, the same patronage growth rate as the High scenario, the same operating cost as the Mid and High scenarios, and capital costs 20% below it, similarly to the High Scenario. This is a very high benefit, low cost scenario.

Patronage drives the benefits under all scenarios and also contributes to the net cost or finding gap, since it also drives fare revenue. Demand thus has a significant effect on the outcome.

The table shows that:

- The BCR²⁵ ranges between 0.4 and 1.0 at the standard 6% discount rate, with a BCR of around 0.5 under the Mid scenario parameters that are described in the business case. The investment proposal has present value benefits of around \$62.4m and present value costs of \$118.8m at this level.
- It is higher (0.4 to 1.1), under a low discount rate, with a Mid scenario BCR of around 0.6.
- It is lower (0.3 to 0.9) under a high discount rate, with a Mid scenario BCR of 0.5, similarly to the standard discount rate.

The above indicate that the preferred option is only likely to provide greater direct transport benefits than its costs if patronage is higher than the current projection. This is possible, since patronage is subject to a high degree of uncertainty, which will only be quantifiable when the service is established as previously noted. Wider economic benefits, although unquantified in this assessment, would also be likely to support the proposal given the role of the start-up service in wider proposals for the corridor. It should also be

²⁴ The cost of land and roading changes that are required to support the provision of park and ride at The Base are not included in the cost benefit assessment.

²⁵ The BCRs presented are government BCRs that show the value for money that the investment provides from a central and local government investment perspective.

reiterated that the service must bear the cost of much of the infrastructure that will support the development of other rail services on the corridor.

Table 10-18: 30-Year Present Value Benefits, Costs and BCR Outputs

	Scenario			
	Low	Mid	High	Very High
Patronage at start	-20%	As defined	+20%	+40%
Patronage growth	As defined	As defined	3.7%	3.7%
Operating costs	+10%	As defined	As defined	As defined
Capital costs	+10%	As defined	-20%	-20%
4% Discount Rate				
Benefit	\$65.19m	\$81.48m	\$111.44m	\$130.01m
Net Cost	\$165.55m	\$142.61m	\$123.46m	\$118.19m
BCR	0.4	0.6	0.9	1.1
6% Discount Rate				
Benefit	\$49.92m	\$62.40m	\$84.36m	\$98.42m
Net Cost	\$137.33m	\$118.81m	\$102.92m	\$99.03m
BCR	0.4	0.5	0.8	1.0
8% Discount Rate				
Benefit	\$39.25m	\$49.06m	\$65.61m	\$76.54m
Net Cost	\$116.98m	\$101.59m	\$87.98m	\$85.02m
BCR	0.3	0.5	0.7	0.9
Rolling stock				
Refurbishment required	No	No	Year 11	Year 6 & 11
Extra carriage and refurbishment	No	No	Year 22 & 28	Year 16, 21 & 26

Note: All Benefits and Net Costs are Present Value totals

10.2.4 Assessment Profile

The preferred option was assessed against the June 2018 IAF, given its expected alignment with NLTP investment criteria based on the signals provided in the Transport Agency Investment Proposal (TAIP) and the 2018 GPS. The IAF rates a proposal on two factors: results alignment and cost benefit appraisal. The ratings are then brought together to form an overall assessment profile that determines a proposal's priority for NLTP investment.

10.2.4.1 Results Alignment – overall rating alignment is High

Results alignment is an assessment against the outcomes sought from the GPS. There are four rating bands – Low, Medium, High and Very High – each with criteria specific to the activity class. The improvements have been assessed against the public transport, rapid transit and transitional rail activity class criteria.

Table 10-18 shows the outcome of this assessment, based on an appraisal of the problems, benefits and investment objectives described in this SSBC and the strategic alignment outlined in Section 4. It indicates the preferred option responds strongly to the outcomes sought by the GPS. Two Medium ratings and eight High ratings are recommended against the ten criteria across three of the four results alignment categories. These include both the thriving regions and liveable cities "access" priorities, given the preferred option's key dual urban and regional impact.

The ratings collectively suggest that an overall results alignment rating of High is appropriate. The proposed Start-Up service would not enable a substantial increase in access for large numbers of people in its current form, due to its peak-only nature, low frequency and transfer requirement, so does not

recommended for the Very High rating that could be available under the liveable cities priority. That may be appropriate in the future as service levels are improved and are able to support full transit-oriented development.

Table 10-19: GPS Results Alignment

GPS Priority	Criteria	Alignment
Access to opportunities, enables transport choice and access, and is resilient - thriving regions	<ul style="list-style-type: none"> Addresses a significant gap in level of service in accessing social or economic opportunities and is identified in an approved regional economic development programme as making a significant contribution Makes best use of the public transport service operations in a multi-modal context with land use. 	High
	<ul style="list-style-type: none"> Addresses a significant gap for inter-regional public transport. 	Medium
Access to opportunities, enables transport choice and access, and is resilient - liveable cities	<ul style="list-style-type: none"> Addresses a significant gap in level of service in accessing social or economic opportunities and makes a significant contribution Addresses a significant gap in access to new housing in high growth urban areas Supports agreed integrated land use, multi-modal plans and land use in major metros Improves intermodal connectivity where this enhances the appropriate use of public transport Makes best use of the public transport service operations and connection to other services. 	High
Environment - reduce adverse effects on the climate, local environment and public health	<ul style="list-style-type: none"> Enables long term reductions in greenhouse gas emissions from land transport. 	High
	<ul style="list-style-type: none"> Enables reductions in harm to the environment and people, particularly arising from land transport-related air pollution and noise. 	Medium
Overall Results Alignment		HIGH

10.2.4.2 Cost Benefit Appraisal of Low

The IAF classifies BCR ratings into the following four bands:

- Low (1 to 2.9),
- Medium (3 to 4.9),
- High (5 to 9.9), and
- Very High (10 and above).

The investment proposal has an overall BCR of between 0.4 and 1.0. The high end of this range is classified as being in the Low band.

10.2.4.3 Improvement activity priority order rating of 5

A results alignment rating of High and cost benefit appraisal rating of Low, gives the investment proposal a priority order rating of five (5) in the improvement activity scale of 1 to 8 (as shown in Table 10-20), which suggests that it would be eligible for NLTP funding if the very high patronage, lower cost outcome is achieved. A lower BCR does not enable the investment to be directly prioritised. The final assessment profile and funding approval is subject to the NZTA's funding approval process, which takes a wide range of factors into account.

Table 10-20: IAF Priority Order for Improvement Programmes

Results Alignment	Cost Benefit Appraisal	Priority Order
Very High	L/M/H/VH	1
L/M/H	Very high (BCR 10+); PV_EoL	2
High	High (BCR 5-9.9)	3
High	Medium (BCR 3-4.9)	4
Medium	High (BCR 5-9.9)	4
High	Low (BCR 1-2.9)	5
Medium	Medium (BCR 3-4.9)	5
Medium	Low (BCR 1-2.9)	6
Low	High (BCR 5-9.9)	7
Low	Medium (BCR 3-4.9)	8
Low	Low (BCR 1-2.9)	Exclude

11. PART C – READINESS AND ASSURANCE

For the first time the (2018) GPS included a transitional rail activity class to provide scope for funding key rail projects that cannot wait for the rail review and second stage GPS. While the GPS makes provision for rail funding, the scope of this funding is tight. This activity class is known as Work Category 545 (WC545) Transitional Rail²⁶. The GPS supports investment in:

- improving urban rail services for passengers accessing housing, major employment areas and major metropolitan areas, where demand is outstripping capacity, to improve reliability or to reduce conflict between freight and passenger trains
- existing and new interregional commuter rail services, including the implementation of trial inter-regional rail commuter services to support housing and employment opportunities.

11.1 Funding Case

The following funding is proposed for the start-up service (see Appendix E for detail).

The WRC Council meeting on 28 May allocated \$300,000 in Year One and \$150,000 for Year Two at NZTA's 51% FAR. They also agreed the following:

- WRC, HCC and WDC are budgeting on an expected Funding Assistance Rate (FAR) of 100% for capital expenditure and 75.5% for operational expenditure (76% for WDC).
- Transitional Rail WC545 for platform and track (below platform) infrastructure.
- KiwiRail will own the rolling stock. KiwiRail is not an Approved Organisation under NZTA therefore WRC is applying for funding for the carriages and will have a contractual arrangement to transfer ownership of the assets to KiwiRail for them to refurbish for the inter-regional rail service.

Costs were assessed for all elements of the project. A review of station costs and associated risks is presented in Appendix E. KiwiRail estimates were examined and have been benchmarked against other services elsewhere in New Zealand.

Table 11-1 outlines the funding case under each Work Category for the first six years of the Start-Up service (two NLTP cycles). It should be noted that WRC is rating HCC ratepayers to fund the net cost of the service. WRC is the Public Transport and rating authority for bus and rail, and as such, it is expected that it will fund the balance of the net cost if NZTA is able to fund the service with a FAR equivalent to 75.5% throughout the first two years. The following three years of operations will align with the 2021-2024 NLTP and the enhanced FAR policies and rules are likely to be revised by the NZTA. WRC will review their funding contribution to the service through their Long Term Plan, and it will be subject to a significant financial contribution being received from the NZTA through the 2021-2024 NLTP.

²⁶ This work category provides for activities primarily related to 'below-track' improvements on the rail network that improve the passenger rail service reliability and capacity, enabling better access to housing and employment.

Table 11-1: Funding Case

Work Category	Activity	FAR	Approved Organization	18/19 Budget (total cost)	19/20 Budget (total cost)	NZTA 18/19 - Share	NZTA 19/20 - Share	NZTA 20/21 - Share	NZTA 21/21 - Share	NZTA 22/23 - Share	NZTA 23/24 - Share	NZTA Share over 6 year period (\$)	Councils Share over 6 year period (\$)	Total Budget (over 6 year period)
WC 324: Road improvements	Road changes to accommodate park and ride facility at The Base	75.5%	HCC	\$1,866,429	\$2,488,571	\$1,409,154	\$1,878,871					\$3,288,025	\$1,066,975	\$4,355,000
WC 514: Public Transport Operations and Maintenance	Ongoing maint. and leasing costs of Frankton station	51%	HCC				\$34,000	\$102,000	\$102,000	\$102,000	\$102,000	\$442,000	\$424,667	\$866,667
	Ongoing maint. and leasing costs of The Base station						\$34,000	\$102,000	\$102,000	\$102,000	\$102,000	\$102,000	\$442,000	\$424,667
	Ongoing maint. and leasing costs of Huntly station	52%	WDC				\$34,667	\$104,000	\$104,000	\$104,000	\$104,000	\$450,667	\$416,000	\$866,667
WC 515: Passenger Rail Services	Funding for the operation of the Start-Up service	75.5%	WRC				\$1,299,155	\$3,743,303	\$3,589,140	\$3,573,412	\$3,966,546	\$16,171,555	\$5,247,723	\$21,419,278
WC 531: Public Transport Infrastructure and major Renewals	The Base 'above track' infrastructure	75.5%	HCC	\$889,286	\$1,185,714	\$671,411	\$895,214					\$1,566,625	\$508,375	\$2,075,000
	Land for park and ride facility at the Base			\$6,400,000		\$4,832,000						\$4,832,000	\$1,568,000	\$6,400,000
	Extend WITS ticketing system to service		WRC	\$128,571	\$171,429	\$97,071	\$129,429					\$226,500	\$73,500	\$300,000
	Huntly 'above track' infrastructure	76.0%	WDC	\$201,429	\$268,571	\$153,086	\$204,114					\$357,200	\$112,800	\$470,000
WC 545: Transitional Rail Infrastructure	Procurement of rolling stock	100%	WRC	\$970,000		\$970,000						\$970,000	\$0	\$970,000
	Refurbishment of rolling stock			\$5,682,857	\$7,577,143	\$5,682,857	\$7,577,143				\$13,260,000	\$13,260,000		
	Locomotive overhaul			\$3,017,143	\$4,022,857	\$3,017,143	\$4,022,857				\$7,040,000	\$7,040,000		
	Rail maint. facility and stabling - Te Rapa / Westfield			\$1,816,286	\$2,421,714	\$1,816,286	\$2,421,714				\$4,238,000	\$4,238,000		
	Ongoing maint. costs of rolling stock					\$735,845	\$981,126	\$981,126	\$981,126	\$1,093,109	\$4,772,334	\$4,772,334		
	The Base platform			HCC	\$942,857	\$1,257,143	\$942,857	\$1,257,143				\$2,200,000		\$2,200,000
	The Base 'below track' infrastructure		\$2,734,286		\$3,645,714	\$2,734,286	\$3,645,714				\$6,380,000	\$6,380,000		
	Huntly platform upgrade			WDC	\$330,000	\$440,000	\$330,000	\$440,000				\$770,000		\$770,000
	Huntly 'below track' infrastructure		\$428,571		\$571,429	\$428,571	\$571,429				\$1,000,000	\$1,000,000		
				\$25,407,714	\$24,050,286	\$23,084,721	\$25,181,295	\$5,032,429	\$4,878,266	\$4,862,538	\$5,367,655	\$68,406,905	\$9,842,707	\$78,249,612

11.2 Commercial Case – industry delivery

Different elements of the project would be procured by different stakeholders, however, the plan presented in Table 11-2 will be reviewed as part of a detailed project planning session to be completed.

Table 11-2: Procurement and Resulting Asset or Service Owner

Work Category	Name	Phase	Procurement	Owner
WC 514: Passenger Rail Services²⁷	Operational phase of start-up passenger rail service	Implementation - Funding for the start-up service	WRC	WRC
	The Base Station (Start-Up Rail Service)	Implementation - Ongoing Maintenance of railway station	HCC	HCC
	Huntly Station (Start-Up Rail Service)	Implementation - Ongoing Maintenance of railway station	WDC	WDC
WC 531: Public Transport Infrastructure and Major Renewals	The Base Station (Start-Up Rail Service)	Implementation - The Base 'above track' infrastructure	HCC	HCC
	Huntly Station (Start-Up Rail Service)	Implementation - Huntly 'above track' infrastructure	WDC	WDC
WC 545: Transitional Rail Infrastructure²⁸	Rolling Stock Refurbishment and Maintenance Facility	Implementation - Procurement of Rolling Stock	WRC	KiwiRail
		Implementation - Refurbishment of Rolling Stock	WRC	KiwiRail
		Implementation - Locomotive Overhaul	WRC	KiwiRail
		Implementation - Rail Maintenance Facility - Te Rapa	WRC	KiwiRail
		Implementation - Ongoing Maintenance Costs of Rolling Stock	WRC	KiwiRail
	The Base Station (Start-Up Rail Service)	Implementation - The Base Platform	HCC	KiwiRail
		Implementation - The Base 'below track' infrastructure	HCC	KiwiRail
	Huntly Station (Start-Up Rail Service)	Implementation - Huntly Upgrade Platform	WDC	KiwiRail
		Implementation - Huntly 'below track' infrastructure	WDC	KiwiRail

²⁷ AT may be contracted to deliver operational management of the passenger rail services.

²⁸ Rolling stock and locomotive procurement, refurbishment, and ongoing maintenance and operations will be provided by KiwiRail (including investment in the rail maintenance facility at Te Rapa) on an open book basis with agreed margins (i.e. a cost plus contract).

KiwiRail confirm they have capacity to deliver the track infrastructure and signal improvements on time. Rolling stock is available for procurement immediately upon funding approval, and KiwiRail has planned and booked the necessary workspace in its workshops to enable refurbishment to be completed in a timely way (as per programme detailed later). Adequate resource is available (staff and subcontractors), and long lead time items have been incorporated in the development of the baseline delivery programme. Refurbishment of locomotives has already commenced and they are scheduled to be completed prior to the end of the 2018 calendar year.

For logistical purposes, stations can be divided into work more than 4 metres from the live rail and work required within 4 metres of the live rail. The rail corridor is a busy freight corridor, and even with 'block of line' for work within 4 metres of the live line, there would be trains coming through that cause delay to works. The Base will have the greatest impact on rail operations (with the creation of a new island platforms). The development of platforms has been staged in a way that is expected to be achievable within KiwiRail operating constraints by March 2020, particularly with opportunity for a more solid 'block of line' through Christmas 2019 for The Base.

AECOM had prepared a draft programme for delivery of The Base, which was considered feasible, albeit constrained by available block of line from KiwiRail, and no programme float, so with a high risk of delay. These concerns are alleviated by the March 2020 start date compared to the original October 2019 planned service start-up date.

All elements of the project will be managed by a dedicated project team that is expected to have nominated or seconded representatives from each of the Client organisations. Resourcing was reviewed in the September 2018 project planning workshop across each of the key delivery stakeholders – WRC, KiwiRail, HCC and WDC.

11.3 Management Case – how it will get implemented

11.3.1 Project Plan

WRC commenced a detailed project planning process with a view to establishing a dedicated project team that would oversee the delivery of the overall programme in support of the start-up passenger rail service.

Several issues would be discussed and resolved through this planning process. Planning commenced on 11 September 2018 with a workshop including key stakeholders and covered the following items detailed in Table 11-3. This preliminary plan is now being built into a more detailed project plan.

Table 11-3: Detailed Project Planning Process - Meeting 11 September 2018

Session	Topic	Description	Comment
1	Context and scoping	<ul style="list-style-type: none"> Confirming the project / programme delivery strategy (integration, including relationship with other projects / programmes). Confirm extent of programme (scope definition) 	<ul style="list-style-type: none"> Will discuss interdependencies with other projects and interface with AT network and Metro Operations. A detailed Gantt chart (critical path) will be agreed with key stakeholders. Scope is defined in the SSBC and includes: <ul style="list-style-type: none"> Rolling stock and locomotive procurement and refurbishment Track and signal works Stations including platforms, station facilities, level crossing works, car parking and associated local road access work
2	Risk, Governance and Stakeholder Management	<ul style="list-style-type: none"> Key risks and risk management approach. Key stakeholders, stakeholder engagement and communications management. 	<ul style="list-style-type: none"> Anticipated governance: <ul style="list-style-type: none"> Corridor Implementation Plan Passenger Rail Project Control Group Programme Manager (overall responsibility for the programme of work up to handover and commencement of services) Media relations and project team Project team includes:

Session	Topic	Description	Comment
		<ul style="list-style-type: none"> Project / programme governance. 	<ul style="list-style-type: none"> Programme Manager Project Managers from: WDC, WRC, HCC, AT and KiwiRail The Programme Manager would escalate decisions outside delegation to the control group and decisions would be referred to elected representatives of the various parties in a controlled and coordinated way as needed. A formal political governance is to be agreed between the funding partners. An example of a decision that may be escalated, is where a station location is changed because of feedback from the Corridor Planning study. A Communication and Engagement Plan commenced for this project (Appendix G). Many risks were identified in developing this SSBC. These were included in a risk log shown in Appendix L. The team would identify, evaluate and treat any additional risks led by the Programme Manager.
3	Timeline, procurement and resources	<ul style="list-style-type: none"> Review of draft timeline (Gantt) – Existing. Procurement strategy/plan (Clarify and confirm existing procurement business rules to operate within). Resources/ resource planning. 	<ul style="list-style-type: none"> Each of the Councils have NZTA approved procurement strategies and there is a Local Authority Shared Services Panel from which design services can be procured for stations and associated works KiwiRail would deliver track works and signalling, rolling stock and locomotive refurbishment, and maintenance depot development; procured through WRC. WRC would procure services from KiwiRail and potentially AT for ongoing operational contract management. The respective Councils would deliver the above ground station works and access utilising either tender processes or existing consultant panels. Procurement from KiwiRail would require open book pricing and appropriate margins to be negotiated (this is anticipated to be between KiwiRail and NZTA Chief Executives). Further, KiwiRail have advised they would build price tension into sub-elements of the work (such as through competitively priced subcontracts). KiwiRail costs would be subject to independent audit. A Programme Manager would be appointed to lead the project. This is not anticipated to be a full-time resource. KiwiRail, WDC, HCC and WRC would provide project management resource to deliver their elements of the project coordinated by the WRC appointed Programme Manager.
4	Quality and costs	<ul style="list-style-type: none"> Quality control approach and systems. Cost control and financial management (including funding.) 	<ul style="list-style-type: none"> The project team would administer the financial management of the programme for the elements of the programme their organisation is responsible for. The Programme Manager will have oversight of the overall financial performance and will report regularly to the Passenger Rail Project Control Group against project performance goals.

Session	Topic	Description	Comment
			<ul style="list-style-type: none"> Accountability for cost overruns resides with the respective responsible organisations, such as HCC and WDC for stations.

11.3.2 Delivery programme

11.3.2.1 Business case delivery

A NZTA SSBC typically combines an IBC and DBC into a single stage of delivery i.e. SSBC. It is therefore anticipated that all elements of long listing, to shortlisting, through to preliminary design are included. However, for this SSBC not all elements have been progressed through preliminary design. In overview, the status of the development of the SSBC are shown in Table 11-4. The limitations in completing all elements to completion of DBC are detailed in Table 11-4. Completion of activities such as preliminary design where needed have been included in the next stage delivery programmes.

Table 11-4: Business case status

	Element	SSBC status
1	Rolling stock and locomotives	DBC
2	Tracks and signalling	IBC***
3	Stations including high level impacts/deliverability review*	IBC**
4	Maintenance facility	IBC***
5	Level of service	DBC

* Excludes specific community engagement, however, stations and the rail service in general have been raised in the respective local government organisations LTP.

** All stations have an agreed concept with the respective Council. Subject to KiwiRail operational 'no objections' each of these stations would be able to proceed to preliminary design upon approval of the SSBC. With approval of the SSBC by the NZTA, it is anticipated that funding would then be approved for each station providing fit for purpose level of service is proposed in the preliminary design and costs do not escalate above allowances to a degree that undermines achievement of the BCR for the overall Passenger Rail project.

*** KiwiRail has made progress on maintenance facilities options and have examples of what they have developed elsewhere. They therefore have requirements in some detail but need to complete investigations and detailed design. They are confident maintenance and servicing facilities would be available when needed and would not delay service commencement. Tracks and signalling are planned in The Base programme and KiwiRail have the available resources to deliver; The Base is the key project to be managed around tracks and signalling.

11.3.2.2 Overarching delivery programme

A programme has been developed for delivery of:

- Rolling stock, locomotives (separate programme elements) and maintenance depot and facilities (part of rail operations roll out)
- Stations
- Ticketing
- Timetabling
- Fares
- Rail operations
- Rail infrastructure (programmed as part of the stations).

The overarching programme is outlined in Figure 11-1:

Task Name	Duration	Start	2019								2020		
			Otr 2	Otr 3	Otr 4	Otr 1	Otr 2	Otr 3	Otr 4	Otr 1	Otr 2		
Start up services	465 days	Thu 2/08/18											
Stations	336 days	Thu 2/08/18											0%
The Base	331 days	Fri 10/08/18											0%
Huntly	236 days	Thu 2/08/18											0%
Rolling stock programme	369 days	Fri 14/12/18											
Locomotives	356 days	Thu 2/08/18											0%
Ticketing	316 days	Thu 2/08/18											0%
Timetabling	356 days	Thu 2/08/18											0%
Fares	82 days	Fri 2/11/18											0%
Rail operations	356 days	Thu 2/08/18											0%
Business case approval date	0 days	Fri 14/12/18											

Figure 11-1: Overarching Programme

This programme aligns with the proposed transitional start-up service with all three stations (Frankton, The Base and Huntly) operational in March 2020.

Locomotives are expected to be ready by late 2018, as KiwiRail has already commenced refurbishing these.

Ticketing, timetabling, fares and operations, are all expected to be resolved prior to a scheduled start-up date of March 2020. The timetable has already been proposed to the Auckland Network Timetable Committee and is expected to be accepted at the Committee meeting early in 2019.

The rolling stock programme and stations are discussed in more detail in 11.3.2.3 and 11.3.2.4.

11.3.2.3 Rolling stock programme

The rolling stock programme provided by KiwiRail is shown in Figure 11-2. This programme has identified an earliest procurement date of 14 December 2018 for rolling stock.

The programme shows a delivery of two full train consists and spares by March 2020.

Key activities driving the programme include:

- Funding commitment from NZTA Board on 14 December 2018.
- Rolling stock refurbishment start in February 2019.
- Lead time for procurement of specialist materials/parts.
- Confirmation of required levels of service (this SSBC).

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

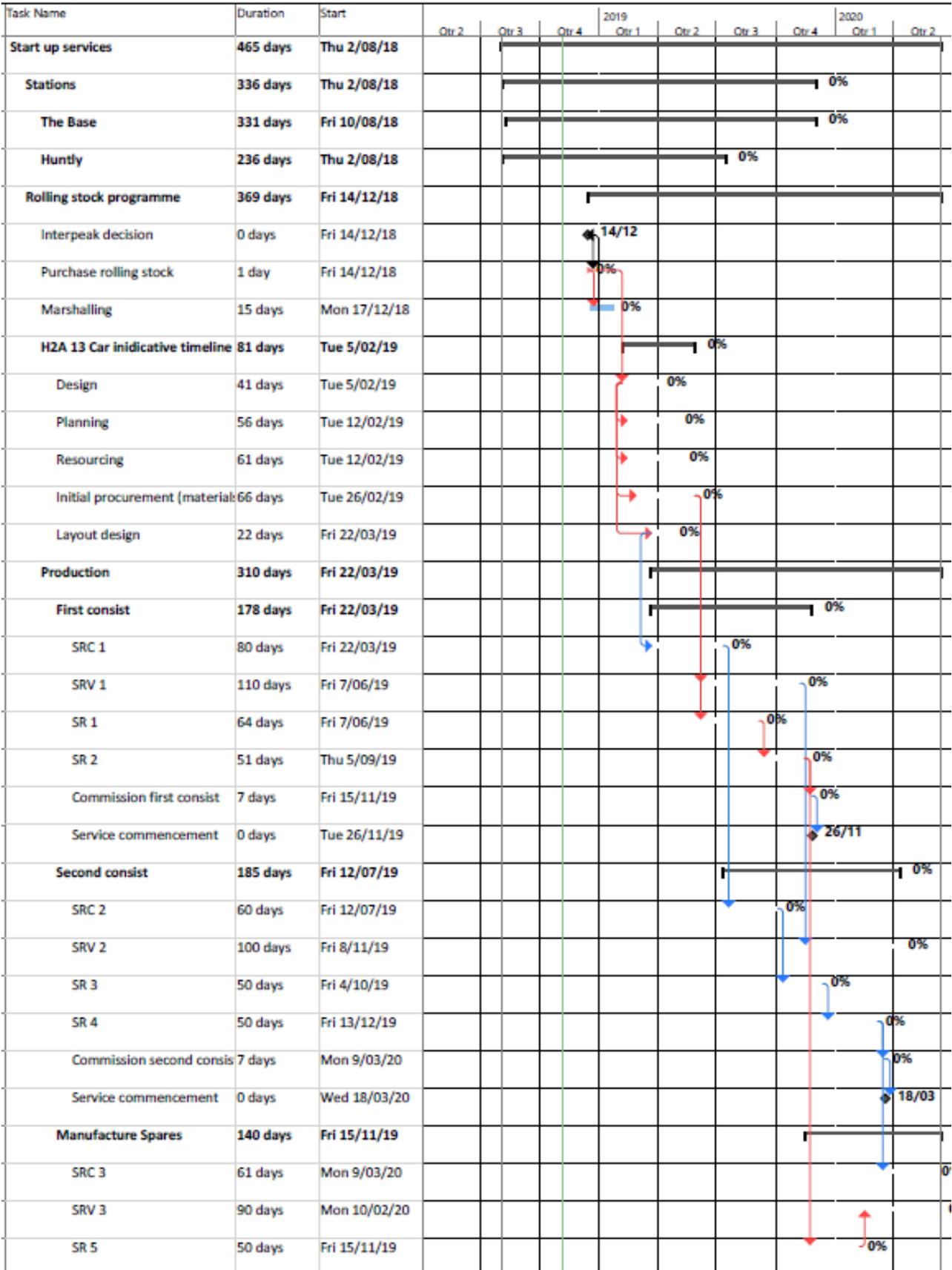


Figure 11-2: Key activities for rolling stock programme

11.3.2.4 Stations

The establishment of Huntly and Frankton stations for the Start-Up service is considered relatively straightforward to achieve. However, with the establishment of an island platform and associated track slewing at The Base, it means a lot more work is necessary prior to March 2020 for this station compared to Frankton and Huntly, but it is still achievable.

Key challenges include.

- 'Block of line' for KiwiRail tracks during busy freight periods for platform works, track slewing and pedestrian level crossings.
- Long lead time items such as luminaires (AT luminaires have a 14-week lead time).
- Remediation of the loop track to passenger operational standards required at Huntly
- The Base Station programme now has more contingency with the March 2020 start date as opposed to the original October 2019 date. There is now greater certainty associated with delivery of this station by March 2020, however some of the issues to overcome remain the same:
 - Accessibility to the tracks for the contractor to build the platform – the time period shown in the programme is very dependent on what time KiwiRail can allocate to work in the corridor (typically it is a few hours at a time, weekends or nights only), and acceptability of bi-directional running (reverse tracking) on the southbound track during construction. However, a larger 'block of line' window is available over the Christmas 2019 period, which can be taken advantage of.
 - Without the preliminary design it is not known what space would be available to keep Tasman Road open during the civil works for the track slewing.
 - Depending on the platform design, it may be possible to build some elements of the station concurrently with the track slewing, which would help the programme.
 - The usual arrangement is for KiwiRail to construct just the ballast, sleepers and track, not the civil works (i.e. formation, under-ballast and drainage). The project could explore KiwiRail to be responsible for the track slewing and civil works, level crossing and platform. That might ease some of the construction co-ordination but it depends on KiwiRail's resources and whether they want to manage that, including procurement.
 - The fast tracked programme has little time for approvals of design, by KiwiRail, the WRC and HCC; however while still a risk this has been mitigated to some extent by a later service start-up date scheduled for March 2020.
 - Geotechnical work is becoming critical given that Traffic Management Plan approval and rail corridor access could delay the site testing.
 - Work cannot commence until SSBC and funding are approved.
 - KiwiRail may yet decide a pedestrian level crossing at The Base is not acceptable meaning an overbridge is required at significant additional cost.

An expanded programme for The Base is shown in Figure 11-3. This baseline programme does not include additional business case steps such as:

- community engagement in relation to the station design as per a detailed business case process
- gateway funding approvals
- funder review points.

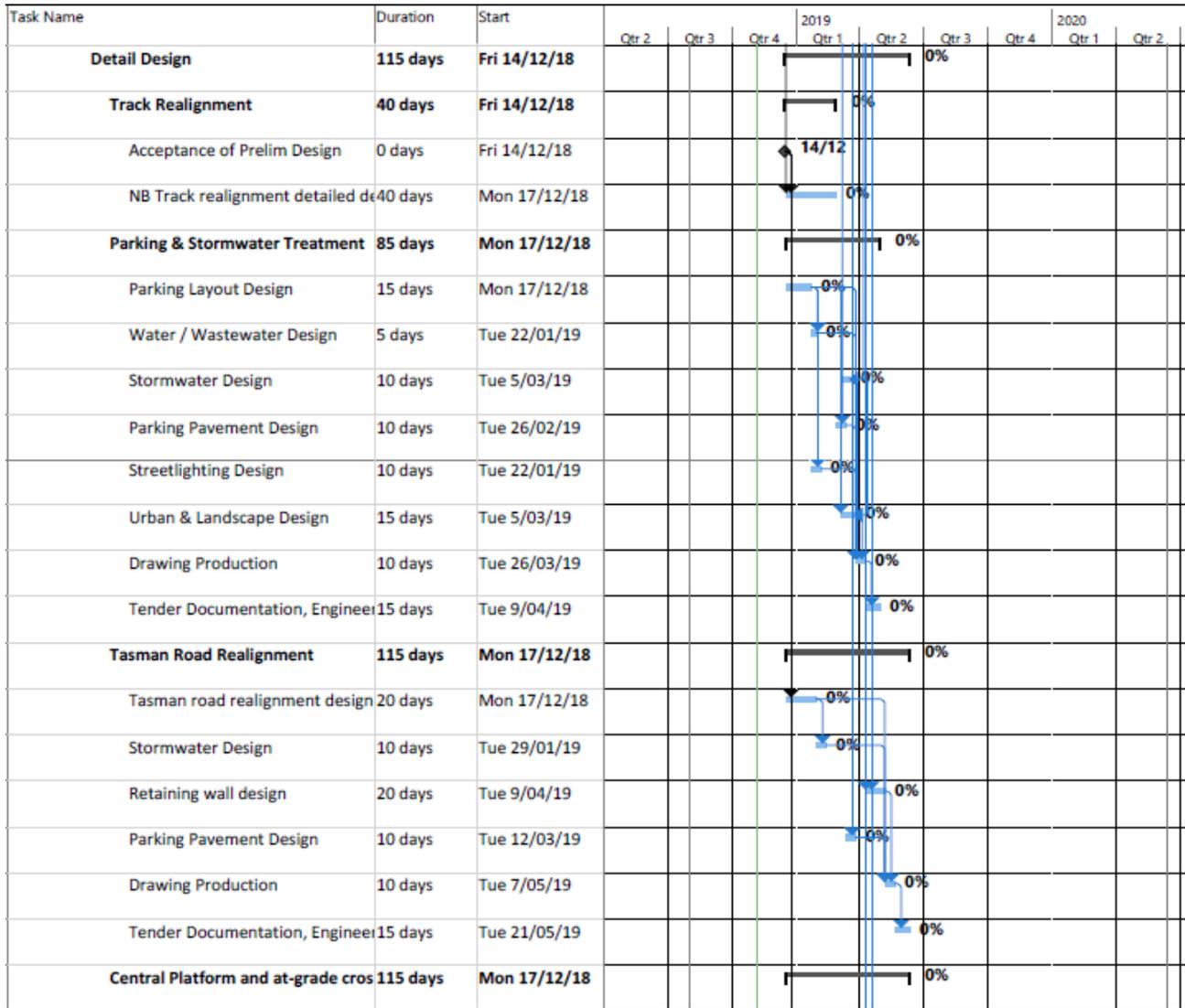


Figure 11-3: Expanded programme for The Base Station

11.3.2.5 Other activities

Other activities have been programmed and have some assumptions that were tested with key stakeholders, to the extent that they can assure delivery by start-up. These other activities include:

- Timetabling: the timetable option has already received preliminary approval (time has been set aside in the timetable for the service to Papakura) from the Timetable Committee for the Auckland Network and is locked into the Committee process enabling confirmation prior to scheduled service commencement.
- Ticketing, fares, rail operations and associated assumptions for start-up service are shown in the programme in Figure 11-4. This shows a reasonable amount of float for the establishment of these activities prior to start up on a critical path basis.
- Note that programmes assume activity start up immediately following the NZTA Board approval of the programme of work.

HAMILTON TO AUCKLAND PASSENGER SERVICE SSBC

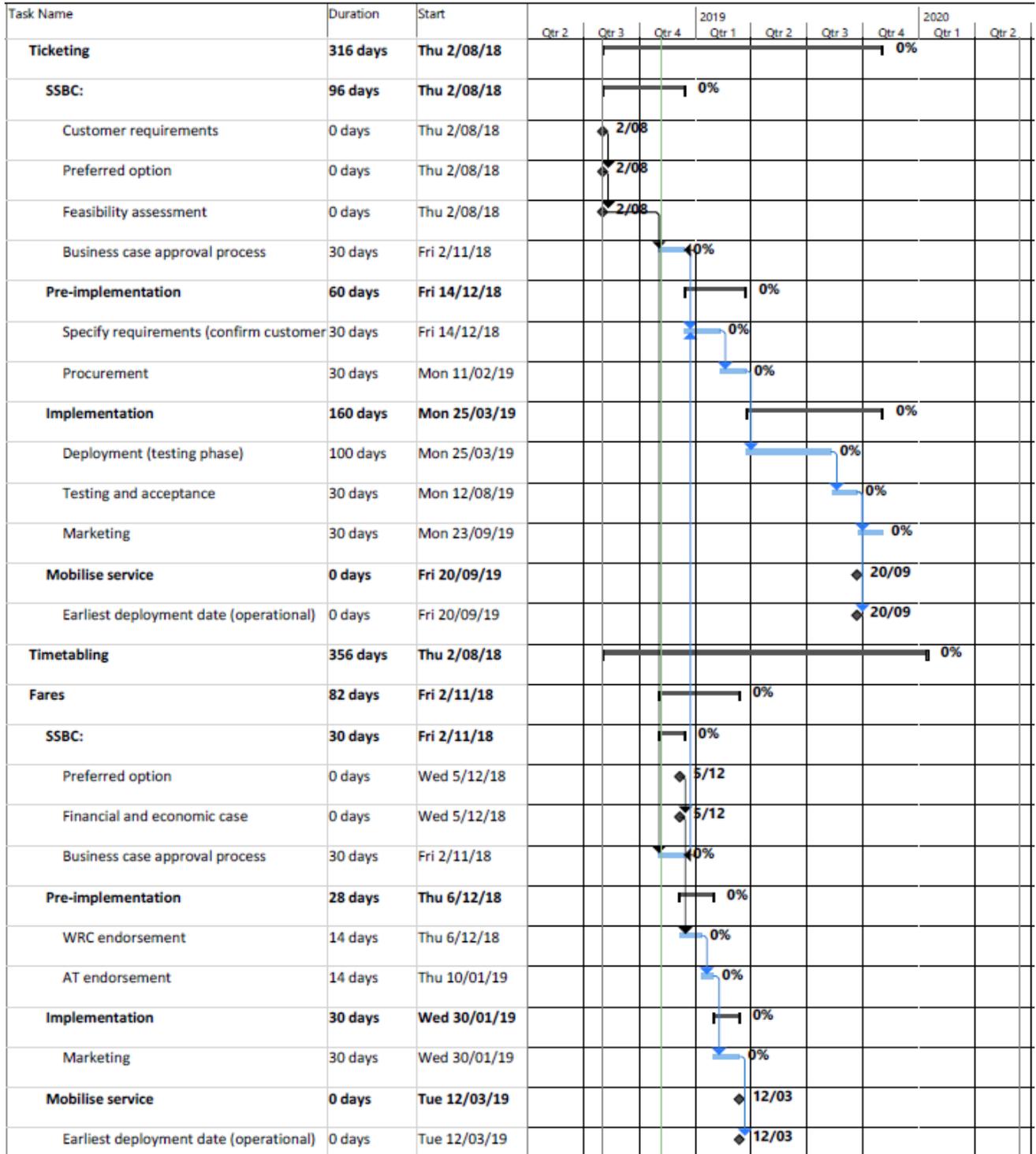


Figure 11-4: Timetable Option

11.3.3 Services establishment

A high-level transition plan was identified based upon a review of the delivery programme. The key challenge is the delivery of The Base Station by March 2020. The plan is presented in Table 11-5. It shows both the Start-Up service as defined in this document and potential enhancements to it. These are described further in the following sections.

Table 11-5: High-Level Transition Plan

	Day 1 (Mar 2020)	Year 1 (by June 2020)	Year 2 (by June 2021)	Year 3 (by June 2022)	Year 4 (by June 2023)	Year 5 (by June 2024)
Frankton, The Base & Huntly stations available						
Two train consists complete with 4 carriages						
Two weekday peak services to Papakura introduced (northbound am and southbound pm)						
Saturday service introduced (northbound am and southbound pm)						
Sunday and public holiday services (northbound am and southbound pm)						
<i>All services extended to Puhinui (subject to further assessment)</i>						
<i>Inter-peak services added (subject to further assessment)</i>						
<i>New station and stop at Te Kauwhata (subject to further assessment)</i>						
<i>All services extended to The Strand (subject to further assessment)</i>						

11.3.3.1 Start-up Service

Implementation of the proposed Start-Up service is proposed to be staged as per Table 11-5. Due to the infrastructure and construction constraints listed in Section 6.1, a Sunday and public holiday service is not likely until Year 5, although it might be possible from Year 4 onwards, dependent on other rail construction projects being successfully completed. This would be reassessed at the appropriate time. The demand for a Sunday and public holiday service is likely to be much better understood once the Start-Up service has bedded in weekday and Saturday services.

While a servery would not be required for the Day 1 service, a servery is considered to be an essential component of the offering, if and when, it extends beyond Papakura. The proposed configuration of the train consist with disabled facilities in the carriage with the servery (providing equal access for all passengers) means that investment in the servery is required at Start-Up to avoid disruption to the service in the future and it has been included in the preferred option.

11.3.3.2 Longer Term Service Options

Several incremental enhancements have been discussed earlier in this document and could be implemented within the five-year period that is the focus of this business case. These are shown in italics in the lower half of Table 11-5, with suggested implementation dates. All would be subject to further assessment before confirmation and implementation if deemed feasible. All that involve further penetration into the Auckland Metro Network would be subject to the completion of the major projects noted in Table 5-1.

A link to Auckland International Airport through Puhinui was highlighted as highly desirable through the H2ACSP workshops, customer surveys and key stakeholders (HCC, WRC). A Puhinui Station stop would provide access to Auckland International Airport and Auckland's eastern suburbs via a proposed Bus Rapid Transit service.

Interpeak services could be established within the five-year period if demand is demonstrated, and this aligns with our understanding of government expectations for the corridor. However, this has been pushed out to a later suggested implementation, given the associated operational cost and expected low revenue return. It could be implemented at an earlier point if desired.

WRC would like further consideration of a Te Kauwhata station stop within a similar timeframe. A new station there would support urban development in an area that has a strong Auckland orientation. Preliminary investigations have been conducted through this business case.

It is assumed The Strand (or another CBD station) would be accessible by the service within the first five years, however this has been suggested for the last year to align with the anticipated (date to be confirmed) completion of the CRL. It and through services do not form part of the start-up service.

AT requires that the extension of the Start-Up service to Puhinui, followed by The Strand, and the inclusion of an inter-peak service, are all subject to further assessment closer to commencement of the Start-Up service. AT will incorporate this thinking into planning and implementation for Pukekohe electrification, the third main between Wiri and Westfield, fourth main line, Puhinui interchange, and post-CRL timetables.

11.4 Next Steps

Following the anticipated funding approval by NZTA in December 2018, the next steps are set out below.

11.4.1 Project management and control

A dedicated project management team would be established to deliver the programme of work as a single consistently managed project. This would include:

- Context and scope management.
- Risk (including demand model updates and associated data gathering for risk mitigation planning), Governance and Stakeholder Management (including agreements such as timetables with the Timetable Committee).
- Timeline, procurement (including operational contracts, ticketing) and resources.
- Quality and costs (including finalising fares and revenue forecasting for service operations).

11.4.2 Locomotives, Rolling Stock, and Maintenance Facilities

WRC to:

- Procure locomotives and rolling stock

KiwiRail to:

- complete detailed design for rolling stock following procurement of the rolling stock.
- complete refurbishment of locomotives before December 2018.
- commence preliminary design of the maintenance facilities in Te Rapa to optimise the preferred solution.

11.4.3 Tracks and signals

KiwiRail to:

- Confirm station concepts with station designers.
- Commence preliminary design of track slewing and signal works associated with stations.

11.4.4 Stations

Designers would be procured for each of the stations with:

- The Base to proceed with completion of preliminary design to DBC detail (subject to completion of KiwiRail level crossing safety assessment).
- Huntly to confirm concept operational feasibility with KiwiRail then to proceed with completion of preliminary design to DBC detail if side platform is feasible for five-year start-up period.