# DEVELOPMENT INFRASTRUCTURE REPORT

# TAMAHERE COUNTRY CLUB

## STAGE 3 Extension

82 & 92 Tamahere Drive
TAMAHERE 3283

MAY 2023


**PREPARED BY**
Kotare Consultants

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**FILE: 1011.3 | REVISION: 2**

kotareconsultants.nz

17 June 2023 (Rev 2 – 27 March 2024)

Kotare Consultants

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Kotare Consultants Reference: 1011.3
Council Reference: TBC

**TAMAHERE COUNTRY CLUB LIMITED:**
46 Tamahere Drive
TAMAHERE 3283

Attn: Nathan Sanderson
Brendon Russo

# Tamahere Country Club Extension Infrastructure Report:
**56, 82 & 92 Tamahere Drive, Tamahere 3283**

## THREE WATERS, ROADING, EARTHWORKS, AND UTILITY SERVICING CONCEPTS

**TABLE OF CONTENTS**

## 1.0 Introduction:

Tamahere Country Club Limited is seeking resource consent for an expansion of their existing retirement village in Tamahere. That development is known as the Tamahere Country Club (TCC). The site to which this extension applies is the majority of 56, 82 & 92 Tamahere Drive, Tamahere.

This report provides an overview at a conceptual level of anticipated infrastructure within the development. The purpose is to outline key infrastructure concepts regarding supply and design, and to demonstrate feasibility.

Our report will cover the following matters:

- Wastewater Management;
- Stormwater Management;
- Water Supply;
- Roading;
- Earthworks;
- Utility Services.

The proposed infrastructure has been developed alongside collaboration with various consultants and the report gives reference to enclosed supporting documentation. Reference plans from previous staging are included in **Appendix C** for illustration related infrastructure described.

## 2.0 Wastewater Management:

The overall wastewater strategy for the extension is a gravity reticulation network that leads to a low point central to the overall development and adjacent to the existing wastewater treatment plant. The wastewater treatment plant has contingency and additional capacity and performance is being actively monitored to confirm capacity is appropriate. Appropriate gravity connection points have been provided as part of previous future-proofed civil works in earlier staging.

The wastewater treatment plant is modular in design and can be upgraded (additional capacity added) as part of the extension works if required. Following treatment, the wastewater is dispersed to primary wastewater disposal beds to the South-West of site. A reserve Wastewater Field has been located at the North-East end of the extension area as per previous reporting by Ormiston & Associates and as constructed. There is contingency in the wastewater treatment and discharge system as consented with Waikato Regional Council to accommodate additional wastewater and should additional capacity be required; revision can be sought from the Regional Council separate to the District Council consenting process.

We have undertaken a capacity check on wastewater treatment as shown in Table 1 and note that the treatment system is modular with the ability to ultimately increase capacity should this be required however these initial calculations indicate that the system should be able to cater for the overall development. This is partly due to a future-proofed design and further confidence in that treatment requirements are generally lower than initial calculation. With reference to Figure 3 below it is noted that the current wastewater primary treatment system in Green and the Reserve Area in Orange. We note the space in red as possible extension if required and that there are additional vacant areas shown blue should as suitable locations demonstrating surplus capacity to requirement.


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Table 1: Wastewater Treatment Capacity Check.

**Wastewater Calculations (anticipated occupancy upon completion)**

| | |
|---|---|
| 271 Units @ 1.7 Occupancy (165l / day) | 76016 l/day |
| 80 Care Units @ 1.0 occupancy (220l / day) | 17600 l/day |
| 40 Staff at 50 l / day | 2000 l/day |
| 60 Guests at 15 l / day | 900 l/day |
| I & I at factor of 1.6 | 57909 l/day |
| | 154425 l/day |

**Wastewater Calculations (based on occupancy March 2024)**

| | |
|---|---|
| 155 Units @ 1.7 Occupancy (165l / day) | 43478 l/day |
| 0 Care Units @ 1.0 occupancy (220l / day) | 0 l/day |
| 100 Staff (include construction) at 50 l / day | 5000 l/day |
| 30 Guests at 15 l / day | 450 l/day |
| I & I at factor of 1.6 | 29357 l/day |
| | 78284 l/day |
| | 51% |

The current occupancy is considered representative of 50% of total anticipated occupancy upon completion.
At 50% development (equiv.) the actual demand is 45,000l /day (refer Chart November 2023 to March 2024).
The existing treatment plant has been designed for 130,00 l/day
As such, the treatment plant is currently underutilised to its actual design capacity.

Note: The treatment plant and performance is monitored and recorded daily.
Note: the treatment plan is modular in nature and capable of expansion.
Note: There is approx. 100m3 of storage in manholes in lines as a matter of additional contingency / risk reduction.

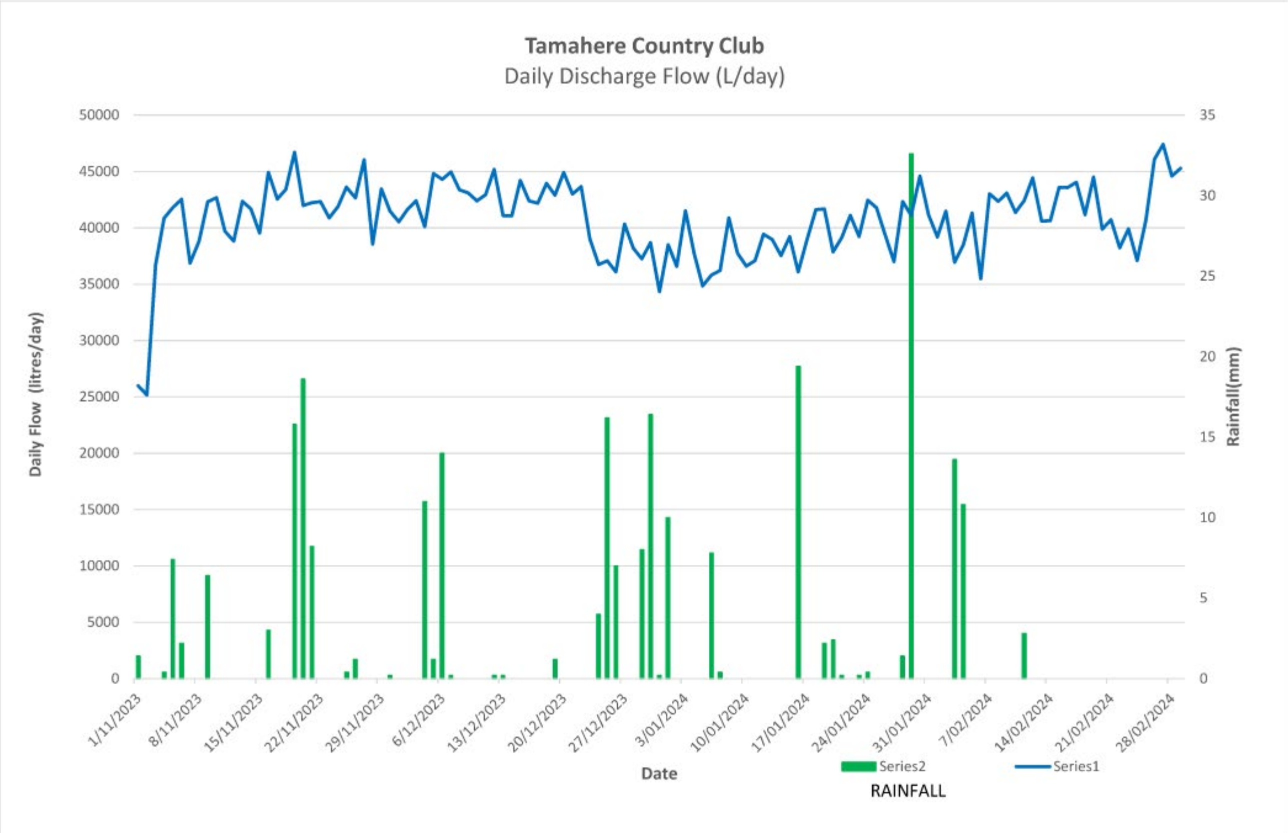


Figure 2: WW Flow Chart November 2023 to March 2024

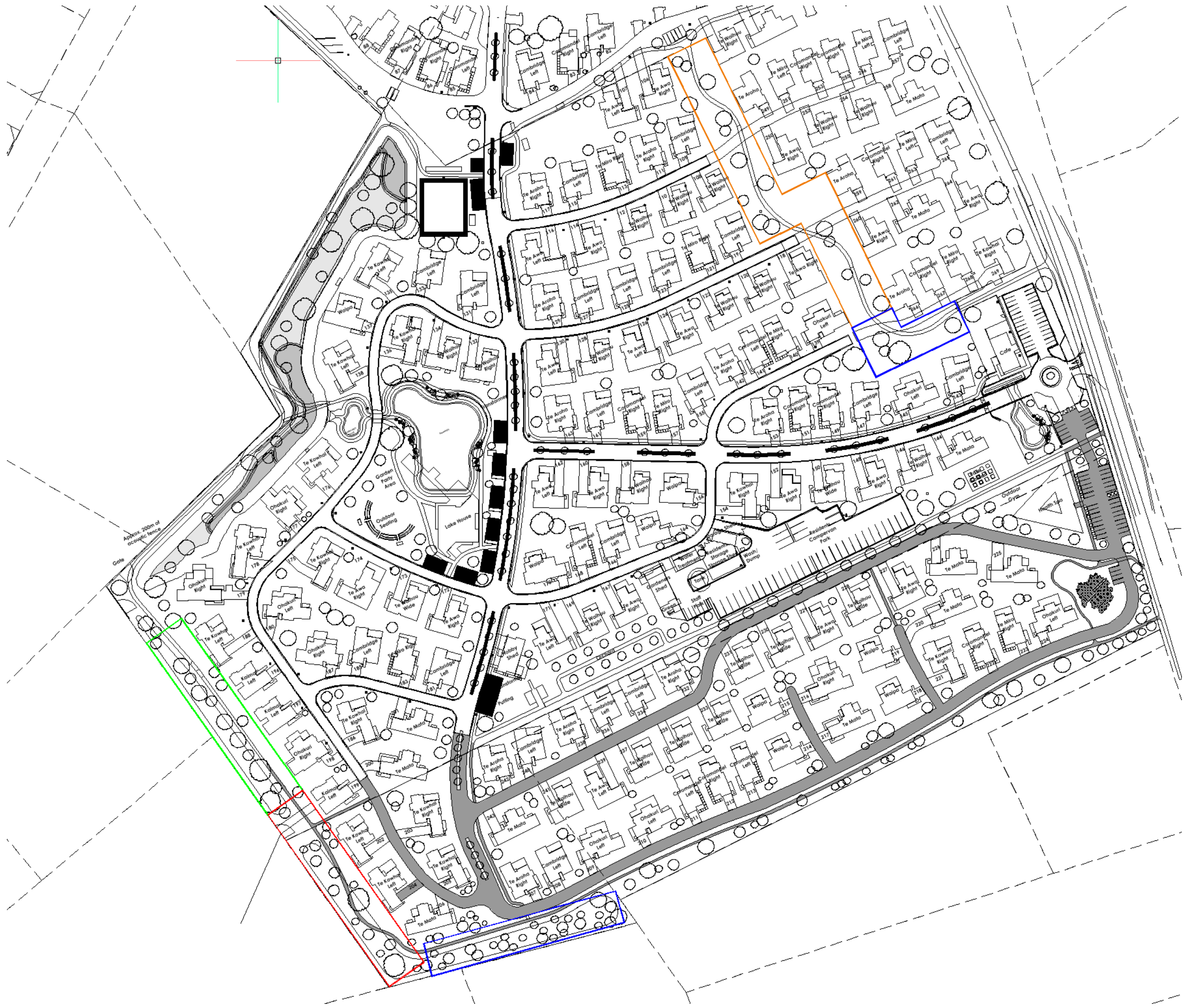

Figure 3: Indicative spacing for wastewater disposal and reserve space allocations.

## 3.0 Stormwater Management:

The overall stormwater strategy for the extension is for the development of a reticulated infrastructure network that will channel stormwater from the road, access network, buildings, and hardstand areas to the existing attenuation system for treatment and soakage. See Kotare Consultants stormwater plans in **Appendix A** for Stormwater Concept. Appropriate gravity connection points have been provided as part of previous future-proofed civil works in earlier staging. Roading and swales have been designed to convey secondary overland storm flows to reticulation networks as appropriate.

The attenuation system is designed to attenuate stormwater events to at least the 100-year event and, at a certain level greater than the 2-year event, on overflow will facilitate some stormwater discharge to the existing receiving swale downstream to the West of the wider site. Further localised attenuation and soakage will be implemented in localised locations within the extension as required either for individual units or larger catchment areas inclusive of roading where required to increase capacity. Specific soakage testing will be undertaken as part detailed design inclusive of respective soakage tanks where required.

The combination of the attenuation basin and the overflow are designed to keep any flows discharged to the immediate downstream environment to be in line with existing pre-development rates. Any existing inflows to site have been considered and allowed for within the proposed stormwater system model. See **Appendix B** for Te Miro Water Stormwater Reporting and further detail related to the site's stormwater philosophy and design.

## 4.0 Water Supply:

The overall development has a water reticulation network in place that incorporates a series of bores and a water treatment plant in close proximity to facilitate appropriate water supply to the extension. A separate irrigation & firefighting network draws from a lake feature within the development that captures stormwater and has a backup supply from the bore where required and forms an appropriately sized reservoir.

The design concept layout for the extension water reticulation network is shown on plans within **Appendix A** with sizing for the dual network to ensure appropriate capacity. The concept utilises interconnected networks of water, principal, and rider mains to ensure suitable supply, pressure, and resilience, and valves will be located to ensure convenience of isolation and maintenance. Fire hydrant location has been considered as appropriate and in line with standards and requirements. Engineering design, construction, and quality assurance will ensure that appropriate pressure and water quality are provided for, and all relevant standards met.

There is contingency in the water treatment plan and water take as consented with Waikato Regional Council to accommodate additional water supply and should additional capacity be required; revision can be sought from the Regional Council separate to the District Council consenting process.

It is noted that there is a 100$m^3$ and a 200$m^3$ reservoir tank on site for potable water resilience and the irrigation pond has approximately 4000$m^3$ of capacity and incorporates the ability for stormwater retention for irrigation purposes.

We provide a check confirming adequate capacity in water take consented for development as follows:

Table 4: Water Take Capacity Check

**Water Take Calculations**

| | | | |
|---|---|---|---|
| People | | | |
| 271 Units @ 1.7 Occupancy (230l / day) | 105961 | litres | |
| 80 Care Units @ 1.0 occupancy (280l / day) | 22400 | litres | |
| 40 Staff and 60 Guests at 50 l / day) | 5000 | | |
| Total | 133361 | litres | |
| | | | |
| Cubic Meters | 133 | m3 / day | |
| Consented - APP143736 | 355 | m3 / day | |
| *Balance* | *222* | *m3 / day* | *spare capacity* |
| | *38%* | *Usage for Potable* | |

*Capacity for Potable water is the critical measure and it is noted it only requires 1/third of daily allowable take.*

| | | | |
|---|---|---|---|
| Daily Use People | 48677 | m3 / year | |
| Irrigation Over Dry Season - 100 days @ 100m3 a day | 10000 | m3 /year | |
| Total Usage | 58677 | | |
| Consented | 63325 | m3 / year | |
| *Balance* | *4648* | *m3 / year* | *spare capacity* |
| | *7%* | *Spare Capacity* | |

Please note there are green stormwater retention mechanisms on site
allowing stormwater to be utilised for irrigation from integrated lake reservoir.
Irrigation will be monitored and can be adjusted as required to ensure compliance with consent.

## 5.0 Roading:

Roading infrastructure has been modelled from existing roading design established within TCC, and Stantec has provided input as per their transport report. See Kotare Consultants plan set within **Appendix A** for roading layout and section concepts as they relate to the extension. The concept ensures appropriate interfaces and connectivity with the wider Tamahere Country Club development to the north.

## 6.0 Earthworks:

Earthworks plans are included within the Kotare Consultants plan set enclosed as **Appendix A**. A topographical site plan is enclosed similarly, and the Geotechnical Investigation Report is incorporated within the master land use consent application report by BBO.

The earthworks concept has been developed on a relatively flat site to ensure sufficient road grades and consistent overland flow to common low points; the initial concept proposes approximately 50,000$m^3$ of Fill (Solid). The concept respects existing levels with respect existing farm drains, swales, the existing TCC development and Tamahere Drive, and ensures secondary stormwater flow is consistent and safe. Preliminary design has sought to minimise filling requirements and further rationalisation of the design will be undertaken to reduce fill volumes where possible in course.

The duration of earthworks is anticipated to be 6 – 8 months. It is proposed to have a singular entry and exit point from site off the existing 70 Tamahere Drive entranceway, inclusive of truck washing infrastructure. A singular point of entry reduces access points to site and mitigating traffic effects. Designated parking areas on site will mitigate parking on the existing abutting carriageways. For works in proximity the entranceway and roading, applicable temporary traffic management plans and CARS approvals will be implemented to suit works where required.

A bund along the western boundary will be continued as is consistent with the existing development at a height of approximately 3 meters. There is a protected tree on site and a perimeter constructure fence will be established outside the dripline to ensure this is protected during works.

The overall Sediment & Erosion Control Strategy is to contain the site with perimeter bunding and for the maintenance of sediment retention infrastructure at the low points of site in general accordance with Waikato Regional Council guidelines. Clean and Dirty water diversion bunds will be developed and maintained actively as appropriate.

Ponding Volume and Sediment Infrastructure will be monitored and maintained to ensure it operates effectively in line with requirements. Any works around the perimeter will require appropriate bunding / trenching and sediment fencing to contain sediment runoff and exposed surfaces may require mulch spreading where appropriate.

## 7.0 Utility Services:

Waipa Networks, Tuatahi First Fibre, and First Gas can service the development extension via existing networks in respect electricity, telecommunications, and gas. Waipa Networks Ltd, Tuatahi First Fibre Ltd, and First Gas Ltd will undertake their infrastructure design for the development in course. Relevant existing services in abutting roads or crossing site would be located at time of works and maintained or redirected where applicable as part any construction works.

## 8.0 <u>Summary</u>:

This report, in conjunction with the enclosed development concept plan set, stormwater reporting, and geotechnical and transportation reporting (in the master document), outlines key infrastructure concepts regarding supply and design and demonstrates availability of service, feasibility of infrastructure, and emphasis on environmental sustainability. The concepts will be developed further, and a full development engineering set would be made available for Council Development Engineering review in due course on matters applicable and as part construction.

Should you have any queries, please do not hesitate to contact the undersigned.

Yours faithfully,

<u>Ciaran P. Murphy</u>
*MNZIS, BSurv.*
Director
**Kotare Consultants Ltd**

# APPENDIX A

## KOTARE CONSULTANTS SUBDIVISION CONSENT PLAN SET Issue Two


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FILE: 1011.03

ISSUE TWO

# TAMAHERE COUNTRY CLUB

## SANDERSON GROUP

SANDERSON

## FOR CONSENT PLAN SET

# SOUTH PRECINCT
# TAMAHERE DRIVE, TAMAHERE

## OCTOBER 2023

INDEX



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NOTES:

1. HEIGHTS ARE IN TERMS OF MOTURIKI VERTICAL DATUM 1953.
   ORIGIN: AP 3 DP 565970 RL=47.27
2. COORDINATES ARE IN TERMS OF NZGD 2000, MOUNT EDEN CIRCUIT.
3. CONTOURS ARE SHOWN AT 0.25M INTERVALS.




Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE NOTES

DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

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| | |
|---|---|
| CLIENT | TAMAHERE COUNTRY CLUB SOUTH PRECINCT |
| PROJECT TITLE | EARTHWORKS EXISTING LAYOUT |
| BY: - CHK: - | APR: |
| STATUS: | FOR CONSENT |
| CHANGELOG: | REFER TO DRAWING REGISTER |
| SCALE: (A3) | 1:1500 |
| DATE | 01-06-2023 |
| PLAN | 1011.03-10-EA-101 |
| REV | - |

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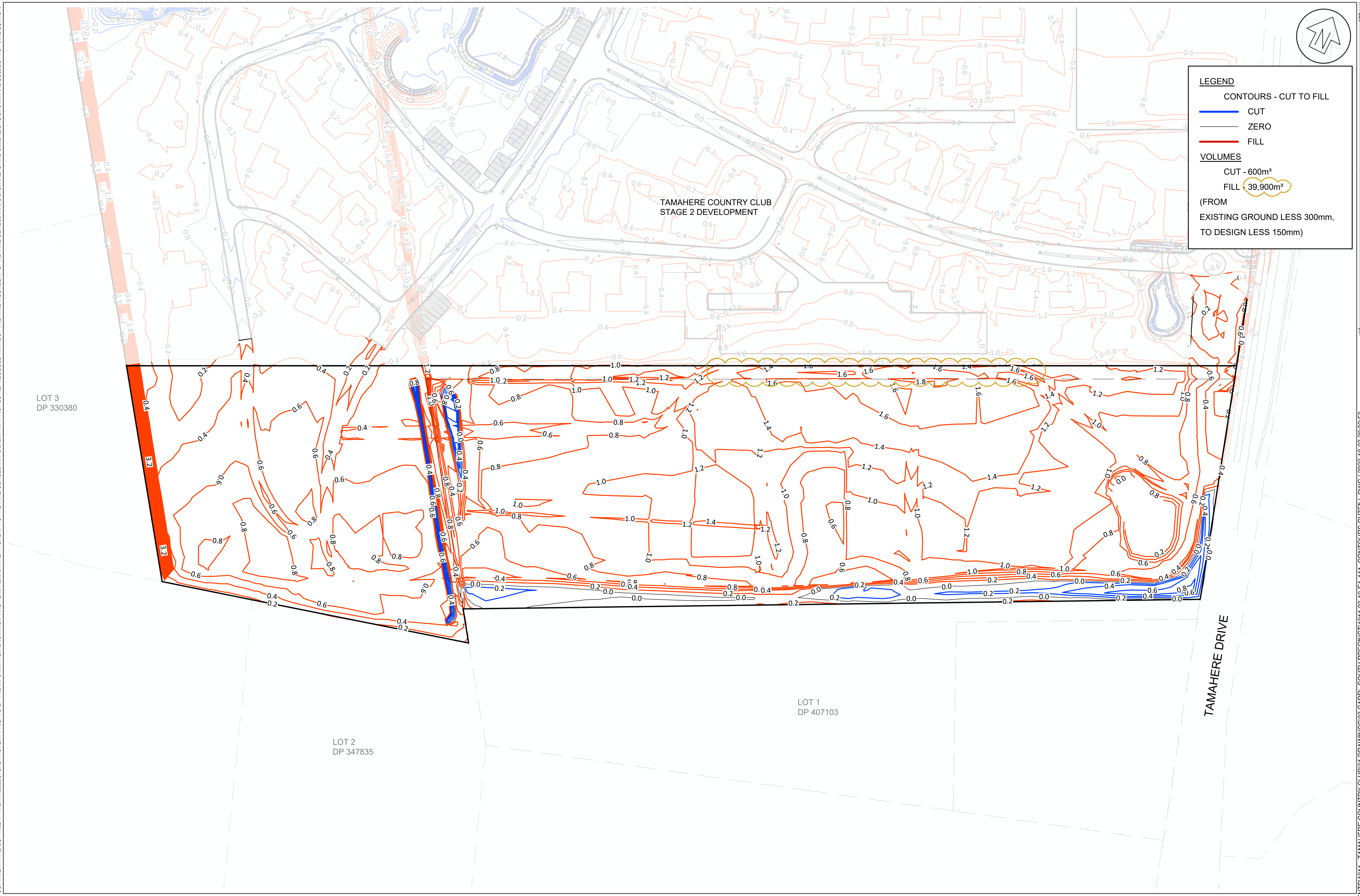


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Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE

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CLIENT
TAMAHERE COUNTRY CLUB
SOUTH PRECINCT

PROJECT TITLE
EARTHWORKS
CUT FILL CONTOURS

BY: -
CHK: -
APR:
STATUS: FOR CONSENT
CHANGELOG:
REFER TO DRAWING REGISTER

SCALE: (A3) 1:1500
DATE 03.10.2023
PLAN 1011.03.10.EA.111
REV A

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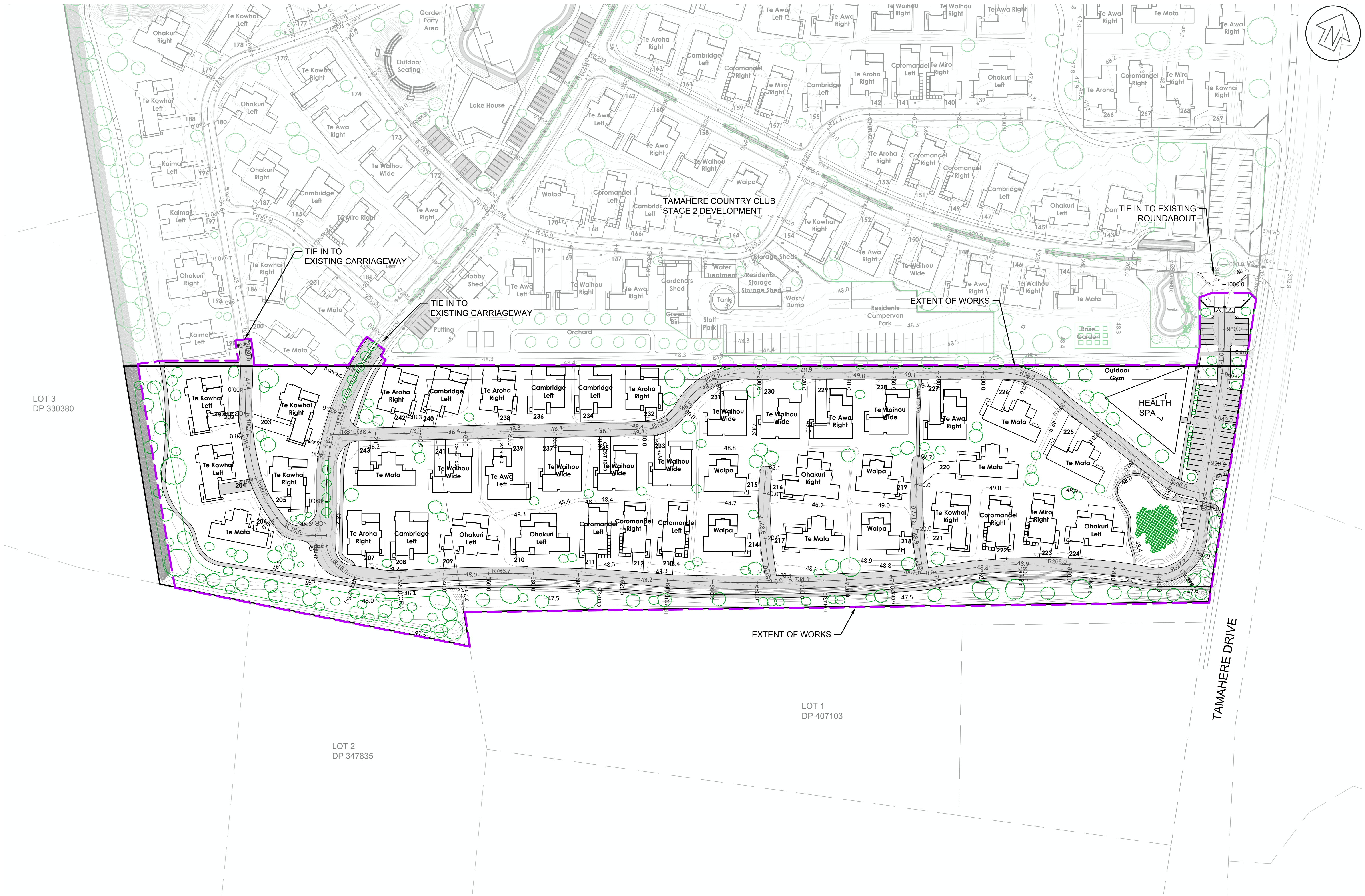




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Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE NOTES

DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

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CLIENT
TAMAHERE COUNTRY CLUB
SOUTH PRECINCT

PROJECT TITLE
EARTHWORKS
DESIGN CONTOURS

BY: -
CHK: -
APR:
STATUS: FOR CONSENT
CHANGELOG:
REFER TO DRAWING REGISTER

SCALE: (A3) 1:1500
DATE 03-10-2023
PLAN 1011.03-10-EA-121
REV A

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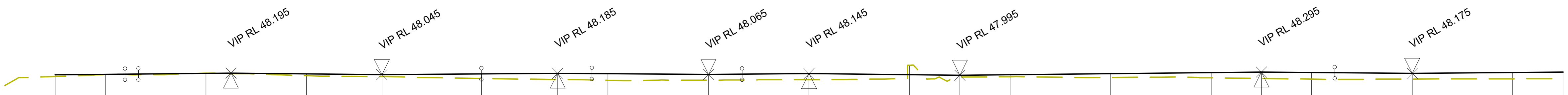


HZ CURVE DATA: R -207.28 | R -110 | R -17.97 | R 766.69 | R -734.11

VT CURVE LENGTH (m)

VT CURVE RADIUS (m)

VT GEOM. GRADE (%): 0.5% | -0.5% | 0.4% | -0.4% | 0.4% | -0.5% | 0.5% | -0.4% | 0.5%

VT GEOM. LENGTH (m): 35 | 30 | 35 | 30 | 20 | 30 | 60 | 30 | 170

DATUM RL = 24.4

| | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DESIGN SURFACE | 48.020 | 48.070 | 48.170 | 48.120 | 48.045 | 48.124 | 48.185 | 48.145 | 48.065 | 48.145 | 48.045 | 47.995 | 48.045 | 48.145 | 48.245 | 48.295 | 48.255 | 48.175 | 48.265 | 48.310 |
| EXISTING SURFACE | 47.874 | 48.049 | 48.200 | 47.949 | 47.854 | 47.667 | 47.568 | 47.487 | 47.503 | 47.540 | 48.980 | 47.821 | 47.844 | 47.778 | 47.728 | 47.671 | 47.605 | 47.609 | 47.630 | 47.659 |
| CUT / FILL DEPTH | 0.146 | 0.021 | -0.030 | 0.171 | 0.191 | 0.458 | 0.617 | 0.658 | 0.562 | 0.605 | -0.935 | 0.174 | 0.201 | 0.367 | 0.517 | 0.624 | 0.650 | 0.566 | 0.635 | 0.651 |
| CHAINAGE | 370 | 380 | 400 | 420 | 435 | 454.85 | 470 | 480 | 500 | 520 | 540 | 550 | 560 | 580 | 600 | 610 | 620 | 640 | 660 | 670 |

LONGITUDINAL SECTION RS100EXTN


HZ CURVE DATA: R -734.11 | R 268 | R -17.69 | R -110

VT CURVE LENGTH (m): VC 2.5

VT CURVE RADIUS (m): R 416.67

VT GEOM. GRADE (%): 0.5% | -0.4% | 0.2%

VT GEOM. LENGTH (m): 170 | 151.25 | 9.25

DATUM RL = 25

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DESIGN SURFACE | 48.310 | 48.355 | 48.445 | 48.535 | 48.625 | 48.715 | 48.772 | 48.895 | 48.940 | 48.900 | 48.820 | 48.756 | 48.660 | 48.580 | 48.500 | 48.420 | 48.347 | 48.353 |
| EXISTING SURFACE | 47.659 | 47.631 | 47.817 | 48.162 | 48.154 | 47.995 | 47.986 | 48.005 | 48.034 | 48.070 | 48.397 | 48.418 | 48.391 | 48.227 | 48.111 | 48.054 | 47.702 | 47.855 |
| CUT / FILL DEPTH | 0.651 | 0.724 | 0.628 | 0.373 | 0.471 | 0.720 | 0.786 | 0.890 | 0.906 | 0.830 | 0.423 | 0.337 | 0.269 | 0.353 | 0.389 | 0.366 | 0.645 | 0.498 |
| CHAINAGE | 670 | 680 | 700 | 720 | 740 | 760 | 772.58 | 800 | 810 | 820 | 840 | 856.08 | 880 | 900 | 920 | 940 | 958.21 | 970 |

LONGITUDINAL SECTION RS100EXTN

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE
- :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
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CLIENT: TAMAHERE COUNTRY CLUB SOUTH PRECINCT

PROJECT TITLE: ROADING LONGSECTION SHEET 1

BY: - CHK: - APR:

STATUS: FOR CONSENT

CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:1000

DATE 03·10·2023

PLAN 1011.03·20·RD·231

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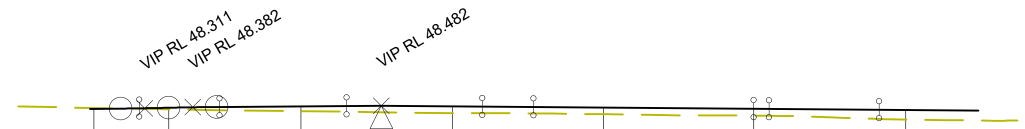


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VT CURVE RADIUS (m): R 1359.78 | R 385.62

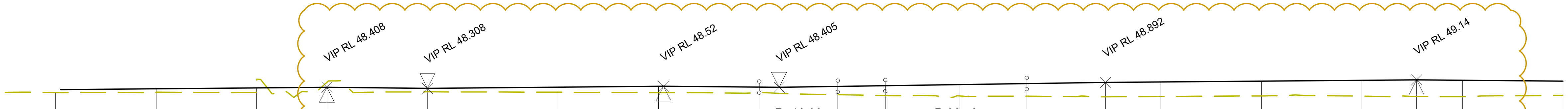
VT GEOM. GRADE (%): 0.7% | 1.1% | 0.4% | -0.4%

VT GEOM. LENGTH (m): 7.24 | 6.36 | 24.94 | 78.99

DATUM RL = 24.9

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| DESIGN SURFACE | 48.268 | 48.347 | 48.440 | 48.445 | 48.365 | 48.285 | 48.205 |
| EXISTING SURFACE | 48.331 | 48.247 | 48.125 | 48.000 | 47.920 | 47.826 | 47.575 |
| CUT / FILL DEPTH | -0.063 | 0.100 | 0.315 | 0.445 | 0.445 | 0.459 | 0.630 |
| CHAINAGE | 372.61 | 382.51 | 400 | 420 | 440 | 459.89 | 480 |

LONGITUDINAL SECTION RS102EXT




HZ CURVE DATA: R -18.38 | R 32.52

VT CURVE LENGTH (m)

VT CURVE RADIUS (m)

VT GEOM. GRADE (%): 0.4% | -0.5% | 0.5% | -0.5% | 0.8% | 0.4% | -0.4%

VT GEOM. LENGTH (m): 53 | 20 | 47 | 23 | 65 | 61.87 | 149.15

DATUM RL = 24.8

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DESIGN SURFACE | | 48.255 | 48.345 | 48.408 | 48.308 | 48.425 | 48.515 | 48.425 | 48.492 | 48.563 | 48.675 | 48.775 | 48.892 | 48.936 | 49.016 | 49.096 | 49.140 | 49.103 | 49.023 |
| EXISTING SURFACE | 47.872 | 47.908 | 47.897 | 48.899 | 47.955 | 47.910 | 47.883 | 47.854 | 47.660 | 47.585 | 47.530 | 47.507 | 47.453 | 47.485 | 47.545 | 47.517 | 47.488 | 47.481 | 47.594 |
| CUT / FILL DEPTH | | 0.347 | 0.448 | -0.491 | 0.353 | 0.516 | 0.632 | 0.570 | 0.832 | 0.978 | 1.145 | 1.268 | 1.440 | 1.451 | 1.471 | 1.579 | 1.652 | 1.622 | 1.429 |
| CHAINAGE | 0 | 20 | 40 | 54 | 74 | 100 | 120 | 140 | 155.72 | 165.13 | 180 | 193.34 | 209 | 220 | 240 | 260 | 270.88 | 280 | 300 |

LONGITUDINAL SECTION RS109

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
:GEODETIC CODE :ORIGIN MARK
:N :E :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT: TAMAHERE COUNTRY CLUB SOUTH PRECINCT

PROJECT TITLE: ROADING LONGSECTION SHEET 2

BY: - CHK: - APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER
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DATE 03·10·2023
PLAN 1011.03·20·RD·232
REV A

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VT CURVE LENGTH (m)

VT CURVE RADIUS (m)

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VT GEOM. LENGTH (m): 149.15

DATUM RL = 24.9

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| DESIGN SURFACE | 49.023 | 48.943 | 48.894 | 48.783 | 48.703 | 48.660 | 48.623 | 48.559 |
| EXISTING SURFACE | 47.594 | 47.435 | 47.534 | 47.936 | 47.933 | 47.944 | 47.974 | 48.205 |
| CUT / FILL DEPTH | 1.429 | 1.508 | 1.360 | 0.847 | 0.770 | 0.716 | 0.649 | 0.354 |
| CHAINAGE | 300 | 320 | 332.31 | 360 | 380 | 390.89 | 400 | 416.03 |

## LONGITUDINAL SECTION RS110

HZ CURVE DATA: R 157.67

VT CURVE LENGTH (m)

VT CURVE RADIUS (m)

VT GEOM. GRADE (%): 0.4%

VT GEOM. LENGTH (m): 55

DATUM RL = 24.8

| | | | | |
|---|---|---|---|---|
| DESIGN SURFACE | 48.505 | 48.585 | 48.665 | |
| EXISTING SURFACE | 47.614 | 47.596 | 47.703 | 47.727 |
| CUT / FILL DEPTH | 0.891 | 0.989 | 0.961 | |
| CHAINAGE | 0 | 20 | 40 | 52.07 |

## LONGITUDINAL SECTION RS111

HZ CURVE DATA: R 177.59

VT CURVE LENGTH (m)

VT CURVE RADIUS (m)

VT GEOM. GRADE (%): 0.4%

VT GEOM. LENGTH (m): 55

DATUM RL = 25.1

| | | | | |
|---|---|---|---|---|
| DESIGN SURFACE | 48.810 | 48.890 | 48.970 | |
| EXISTING SURFACE | 48.000 | 48.187 | 47.999 | 47.852 |
| CUT / FILL DEPTH | 0.809 | 0.703 | 0.970 | |
| CHAINAGE | 0 | 20 | 40 | 52.72 |

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE
- :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT: TAMAHERE COUNTRY CLUB SOUTH PRECINCT

PROJECT TITLE: ROADING LONGSECTION SHEET 3

BY: - CHK: - APR:

STATUS: FOR CONSENT

CHANGELOG: REFER TO DRAWING REGISTER

SCALE (A3): 1:1000

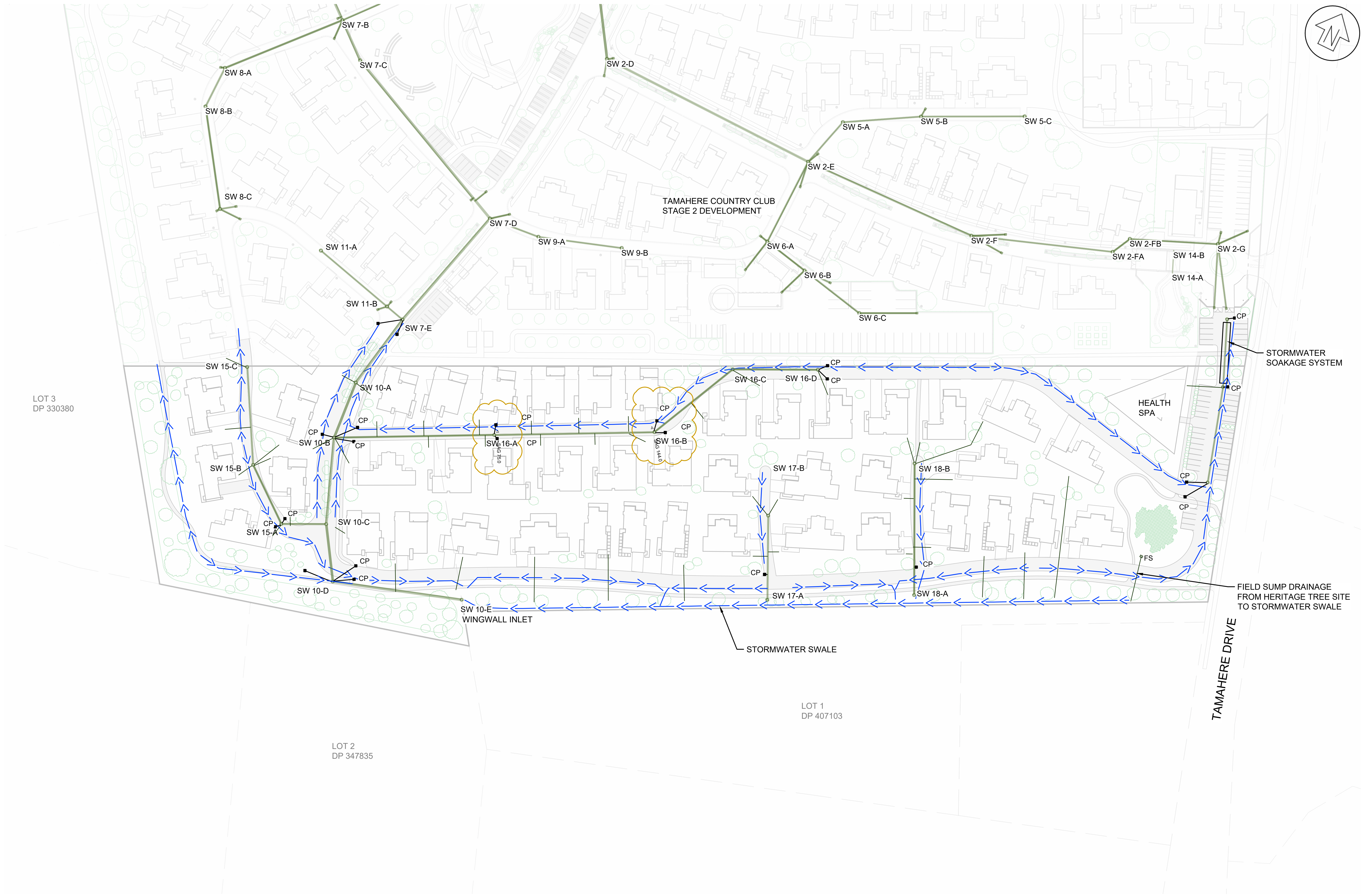
DATE: 03·10·2023

PLAN: 1011.03·20·RD·233

REV: A

Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024

K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_SOUTH PRECINCT\1011.03-20-RD-233_ROAD LONGSECTIONS.DWG | 2023-10-03 20:02:36






Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
SOUTH PRECINCT

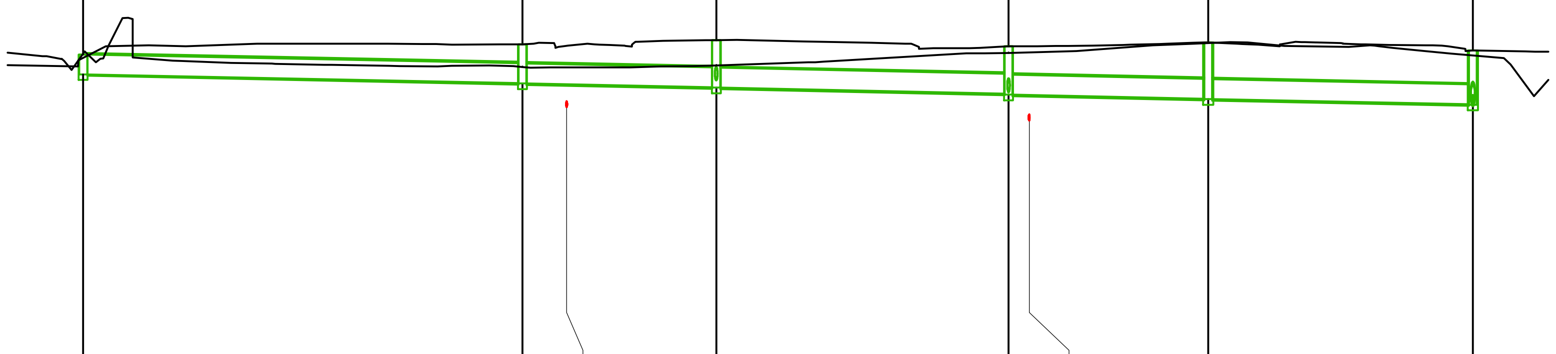
PROJECT TITLE
STORMWATER
PLAN LAYOUT

BY: - APR:
CHK: -
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:1500
DATE 03·10·2023
PLAN 1011.03·40·SW·401
REV A

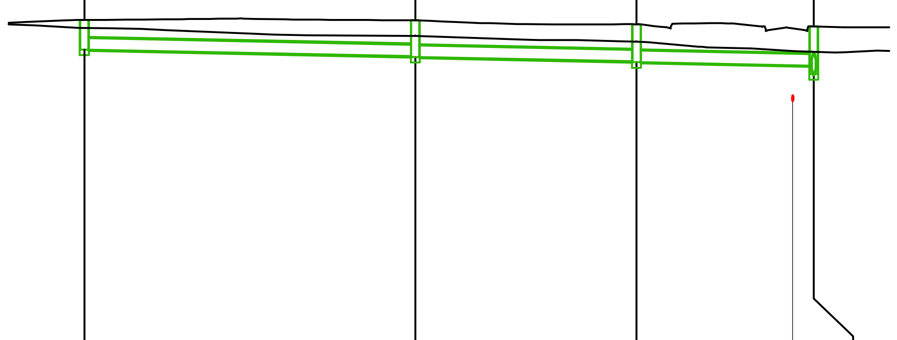
K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_SOUTH PRECINCT\1011.03-40-SW-401_SW LAYOUT.DWG | 2023-10-03 20:02:34

Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024




| | 10-E | | 10-D | | 10-C | | 10-B | | 10-A | | 7-E |
|---|---|---|---|---|---|---|---|---|---|---|---|
| LINE DEFLECTION & BRANCHES | | | 83° | | -1° 15 -90° | | 21° 16 112° | | 15° | | 7 |
| PROPERTY CONNECTION TYPE | | | | | | | | | | | |
| DATUM RL | 39.000 | | | | | | | | | | |
| PIPE SIZE (mm), CLASS | | 525, RCRRJ Class 4 | | 525, RCRRJ Class 4 | | 525, RCRRJ Class 4 | | 525, RCRRJ Class 4 | | 525, RCRRJ Class 4 | |
| GRADE (%) | | 0.4% | | 0.4% | | 0.4% | | 0.4% | | 0.4% | |
| LENGTH | | 58.11 | | 25.64 | | 38.67 | | 26.41 | | 35.01 | |
| FINISHED (& EXISTING) SURFACE LEVEL | 47.74 (47.85) | | 48.10 (47.49) | | 48.21 (47.54) | | 48.04 (47.87) | | 48.15 (48.13) | | 47.93 (47.80) |
| DEPTH OF INVERT BELOW FSL | 0.43 | | 1.03 1.04 | | 1.25 1.26 | | 1.25 1.28 | | 1.49 1.50 | | 1.43 1.44 |
| INVERT LEVEL | 47.30 | | 47.07 47.06 | 47.04 | 46.96 46.95 | | 46.79 46.76 | 46.75 | 46.66 46.65 | | 46.51 46.50 |
| CHAINAGE | 0.00 | | 58.11 | 63.95 A 150mm IL 46.43 | 83.74 | | 122.42 | 125.15 L 150mm IL 46.08 | 148.83 | | 183.84 |

Scale Hz 1:1000 / Vt 1:200




| | 15-C | | 15-B | | 15-A | | 10-C |
|---|---|---|---|---|---|---|---|
| LINE DEFLECTION & BRANCHES | | | -22° | | -64° | | 10 |
| PROPERTY CONNECTION TYPE | | | | | | | |
| DATUM RL | 39.000 | | | | | | |
| PIPE SIZE (mm), CLASS | | 300, RCRRJ Class 4 | | 300, RCRRJ Class 4 | | 300, RCRRJ Class 4 | |
| GRADE (%) | | 0.4% | | 0.4% | | 0.4% | |
| LENGTH | | 43.78 | | 29.29 | | 23.43 | |
| FINISHED (& EXISTING) SURFACE LEVEL | 48.38 (48.17) | | 48.38 (47.96) | | 48.26 (47.81) | | 48.21 (47.54) |
| DEPTH OF INVERT BELOW FSL | 0.78 | | 0.95 0.97 | | 0.98 1.00 | | 1.04 1.26 |
| INVERT LEVEL | 47.60 | | 47.42 47.40 | | 47.29 47.27 | 47.18 | 47.17 46.95 |
| CHAINAGE | 0.00 | | 43.78 | | 73.06 | 93.72 A 150mm IL 46.24 | 96.50 |

Scale Hz 1:1000 / Vt 1:200

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT: TAMAHERE COUNTRY CLUB SOUTH PRECINCT

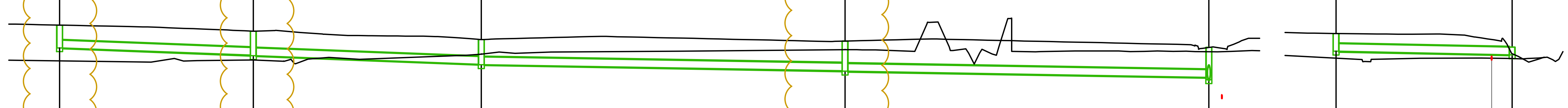
PROJECT TITLE: STORMWATER LONGSECTION SHEET 1

BY: - CHK: - APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:AS
DATE 18·05·2023
PLAN 1011.03·40·SW·421
REV -

K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_SOUTH PRECINCT\1011.03-40-SW-421_SW LONGSECTIONS.DWG | 2023-10-03 20:02:26

Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024



| | 16-D | | 16-C | | 16-B | | 16-A | | 10-B |
|---|---|---|---|---|---|---|---|---|---|
| LINE DEFLECTION & BRANCHES | | | -39° | | 38° | | | | 10 |
| PROPERTY CONNECTION TYPE | | | | | | | | | |
| DATUM RL | 40.000 | | | | | | | | |
| PIPE SIZE (mm), CLASS | | 300, RCRRJ Class 4 | | 300, RCRRJ Class 4 | | 300, RCRRJ Class 4 | | 300, RCRRJ Class 4 | |
| GRADE (%) | | 0.75% | | 0.75% | | 0.33% | | 0.33% | |
| LENGTH | | 38.07 | | 44.86 | | 71.51 | | 71.57 | |
| FINISHED (& EXISTING) SURFACE LEVEL | 48.92 (47.51) | | 48.68 (47.55) | | 48.35 (47.78) | | 48.29 (47.95) | | 48.04 (47.87) |
| DEPTH OF INVERT BELOW FSL | 0.90 | | 0.94 / 0.96 | | 0.97 / 0.99 | | 1.17 / 1.19 | | 1.18 / 1.28 |
| INVERT LEVEL | 48.02 | | 47.74 / 47.72 | | 47.38 / 47.36 | | 47.12 / 47.10 | | 46.86 / 46.76 |
| CHAINAGE | 0.00 | | 38.07 | | 82.93 | | 154.44 | | 226.01 |

Scale Hz 1:1000 / Vt 1:200

| | 17-B | | A 150mm IL 47.54 | | 17-A |
|---|---|---|---|---|---|
| DATUM RL | 40.000 | | | | |
| PIPE SIZE (mm), CLASS | | 300, RCRRJ Class 4 | | | |
| GRADE (%) | | 0.4% | | | |
| LENGTH | | 34.64 | | | |
| FINISHED (& EXISTING) SURFACE LEVEL | 48.59 (47.62) | | | | 47.79 (47.60) |
| DEPTH OF INVERT BELOW FSL | 0.70 | | | | 0.04 / 0.04 |
| INVERT LEVEL | 47.89 | | 47.76 | | 47.75 / 47.75 |
| CHAINAGE | 0.00 | | 30.62 | | 34.64 |

Scale Hz 1:1000 / Vt 1:200

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

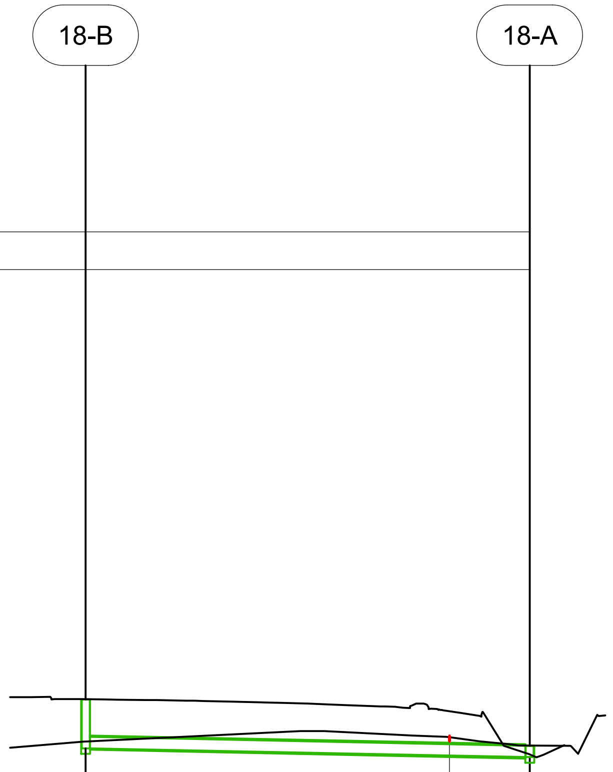
CLIENT
TAMAHERE COUNTRY CLUB
SOUTH PRECINCT

PROJECT TITLE
STORMWATER
LONGSECTION SHEET 2

BY: - APR:
CHK: -
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:AS
DATE 03·10·2023
PLAN 1011.03·40·SW·422
REV B

K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_SOUTH PRECINCT\1011.03-40-SW-422_SW LONGSECTIONS.DWG | 2023-10-03 20:02:25




LINE DEFLECTION & BRANCHES

PROPERTY CONNECTION TYPE

| | 18-B | | 18-A | |
|---|---|---|---|---|
| DATUM RL | 40.000 | | | |
| | | | | |
| PIPE SIZE (mm), CLASS | 300, RCRRJ Class 4 | | | |
| GRADE (%) | 0.4% | | | |
| LENGTH | 58.73 | | | |
| | | | | |
| FINISHED (& EXISTING) SURFACE LEVEL | 49.03 (47.91) | | 47.57 | (47.80) |
| DEPTH OF INVERT BELOW FSL | 1.30 | | 0.07 | 0.07 |
| INVERT LEVEL | 47.73 | 47.54 | 47.50 | 47.50 |
| CHAINAGE | 0.00 | 48.14 A 150mm IL 47.91 | 58.73 | |

Scale Hz 1:1000 / Vt 1:200



Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

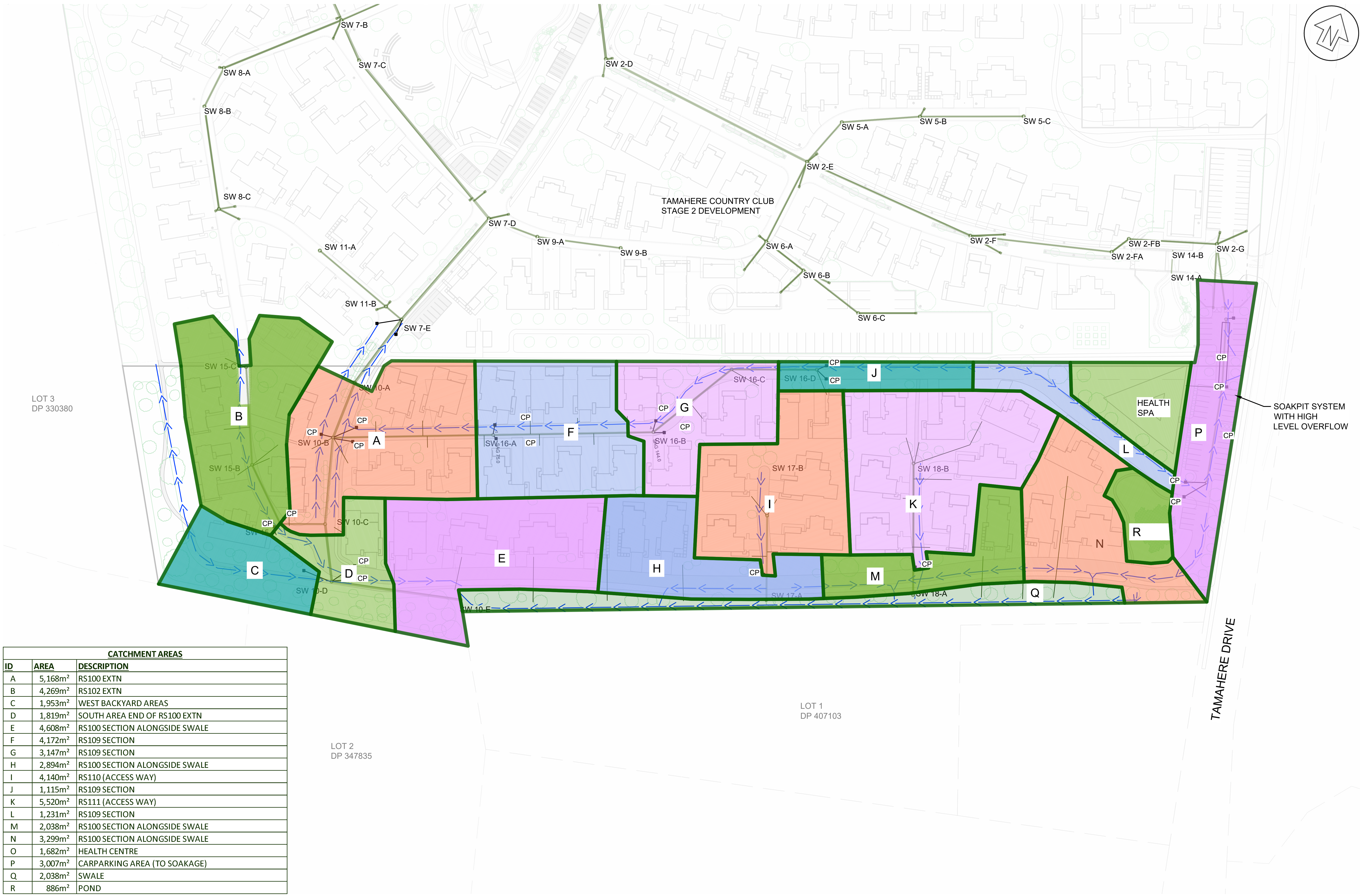
CLIENT
TAMAHERE COUNTRY CLUB
SOUTH PRECINCT

PROJECT TITLE
STORMWATER
LONGSECTION SHEET 3

BY: - APR:
CHK: -
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:AS
DATE 18·05·2023
PLAN 1011.03·40·SW·423
REV -

K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_SOUTH PRECINCT\1011.03-40-SW-423_SW LONGSECTIONS.DWG | 2023-10-03 20:02:23




| CATCHMENT AREAS | | |
|---|---|---|
| **ID** | **AREA** | **DESCRIPTION** |
| A | 5,168m² | RS100 EXTN |
| B | 4,269m² | RS102 EXTN |
| C | 1,953m² | WEST BACKYARD AREAS |
| D | 1,819m² | SOUTH AREA END OF RS100 EXTN |
| E | 4,608m² | RS100 SECTION ALONGSIDE SWALE |
| F | 4,172m² | RS109 SECTION |
| G | 3,147m² | RS109 SECTION |
| H | 2,894m² | RS100 SECTION ALONGSIDE SWALE |
| I | 4,140m² | RS110 (ACCESS WAY) |
| J | 1,115m² | RS109 SECTION |
| K | 5,520m² | RS111 (ACCESS WAY) |
| L | 1,231m² | RS109 SECTION |
| M | 2,038m² | RS100 SECTION ALONGSIDE SWALE |
| N | 3,299m² | RS100 SECTION ALONGSIDE SWALE |
| O | 1,682m² | HEALTH CENTRE |
| P | 3,007m² | CARPARKING AREA (TO SOAKAGE) |
| Q | 2,038m² | SWALE |
| R | 886m² | POND |

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vl DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE NOTES

DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
SOUTH PRECINCT

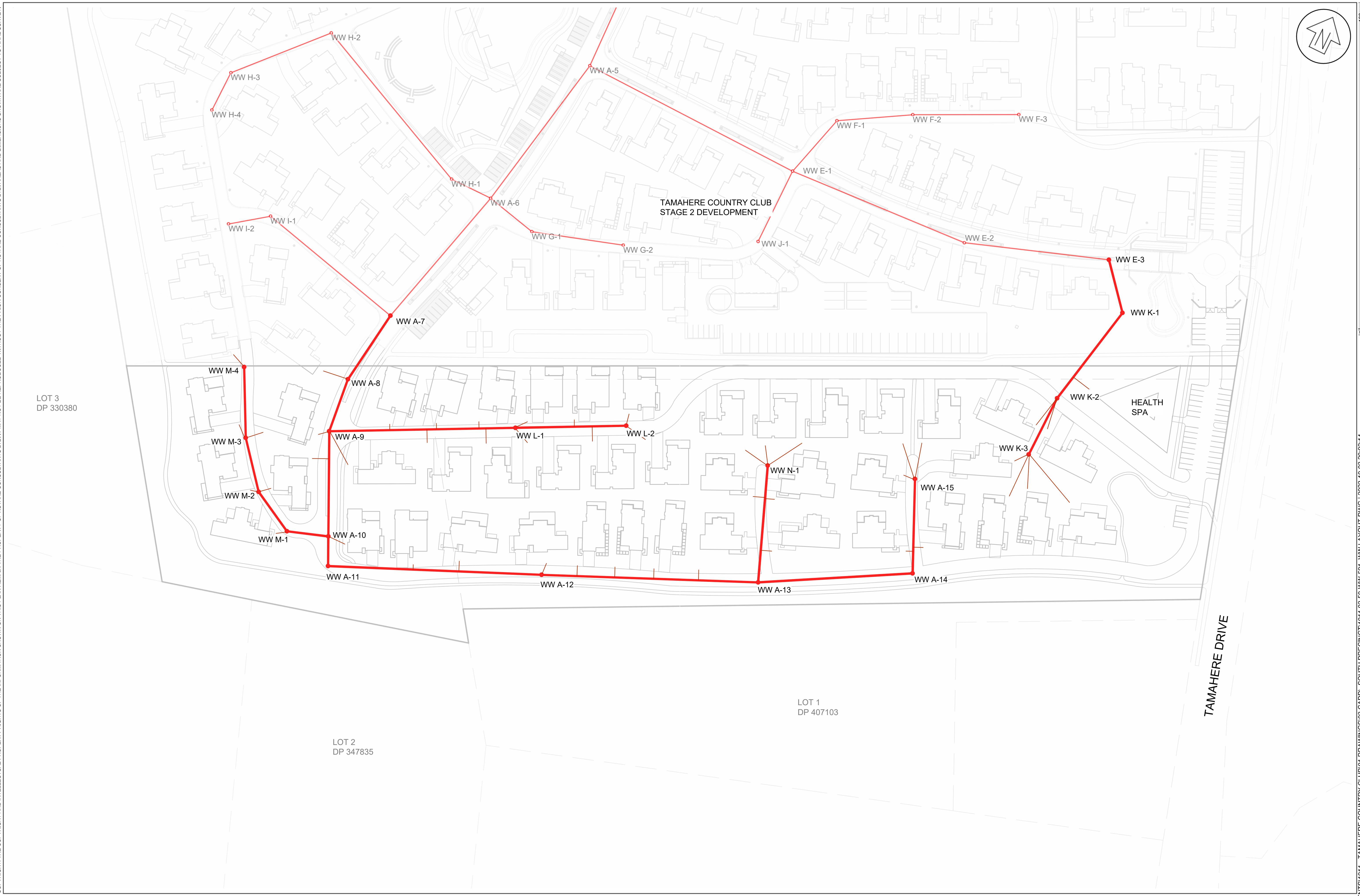
PROJECT TITLE
STORMWATER
CATCHMENT PLAN

BY: - APR:
CHK: -
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:1500
DATE 21·05·2023
PLAN 1011.03·40·SW·491
REV -

K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_SOUTH PRECINCT\1011.03-40-SW-491_SW CATCHMENTS.DWG | 2023-10-03 20:02:21

Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024




Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE

NOTES

DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
SOUTH PRECINCT

PROJECT TITLE
WASTEWATER
PLAN LAYOUT

BY: -
CHK: -
APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:1500
DATE 18-05-2023
PLAN 1011.03-50-WW-501
REV -

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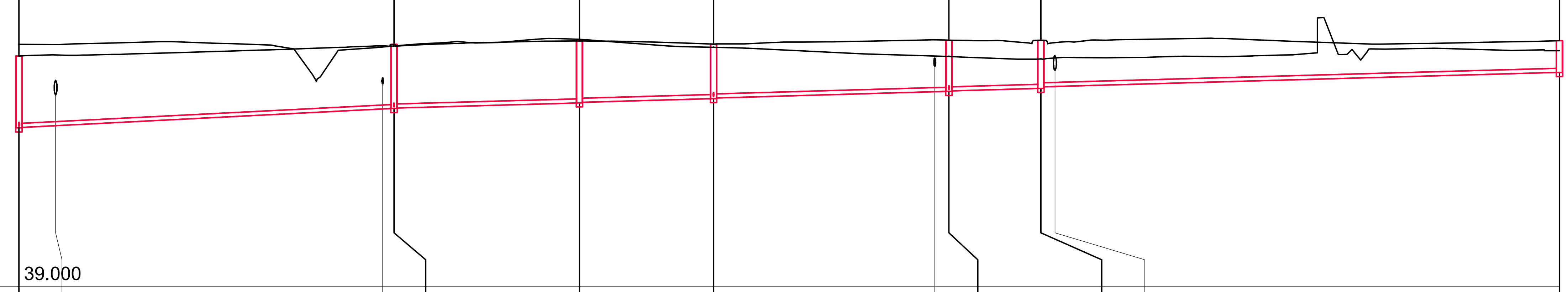
Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024

| MAINTENANCE HOLE / SHAFT NAME | A-6 | A-7 | A-8 | A-9 | A-10 | A-11 | A-12 |
|---|---|---|---|---|---|---|---|
| MH / MS COVER TYPE | | | | | | | |
| MH / MS TYPE | MH1050 | MH1050 | MH1050 | MH1050 | MH1050 | MH1050 | MH1050 |
| DS MH / MS DROP TYPE | | | | | | | |
| LINE DEFLECTION & BRANCHES | 4° G -88° H 79° | -7° I 89° | -14° | -19° L -111° | M 90° | -88° | |
| PROPERTY CONNECTION TYPE | | | | | | | |



DATUM RL 39.000

| | A-6 to A-7 | A-7 to A-8 | A-8 to A-9 | A-9 to A-10 | A-10 to A-11 | A-11 to A-12 |
|---|---|---|---|---|---|---|
| PROPERTY DESCRIPTION | | | | | | |
| PIPE SIZE (mm), CLASS | 150, uPVC SN16 | 150, uPVC SN16 | 150, uPVC SN16 | 150, uPVC SN16 | 150, uPVC SN16 | 150, uPVC SN16 |
| GRADE (1 IN X) | 1% | 0.55% | 0.55% | 0.55% | 0.56% | 0.55% |
| LENGTH | 69.69 | 34.48 | 24.92 | 43.76 | 17.08 | 96.40 |
| EMBEDMENT TYPE | | | | | | |

| | A-6 | Branch | Branch | A-7 | A-8 | A-9 | Branch | A-10 | A-11 | Branch | A-12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| FINISHED (& EXISTING) SURFACE LEVEL | 47.56 (48.00) | | | 47.99 (47.93) | 48.12 (48.18) | 48.01 (47.89) | | 48.15 (47.54) | 48.14 (47.45) | | 48.13 (47.76) |
| DEPTH OF INVERT BELOW FSL | 2.67 2.65 | | | 2.38 2.36 | 2.30 2.28 | 2.02 2.00 | | 1.90 1.88 | 1.78 1.72 | | 1.17 |
| INVERT LEVEL | 44.89 44.91 | 44.98 | 45.59 | 45.61 45.63 | 45.82 45.84 | 45.98 46.01 | 46.24 | 46.25 46.27 | 46.36 46.42 | 46.43 | 46.95 |
| CHAINAGE | 250.12 | 256.92 7 525mm IL 46.12 | 317.71 11 225mm IL 46.52 | 319.81 | 354.29 | 379.21 | 420.35 15 300mm IL 47.18 | 422.97 | 440.05 | 442.67 10 525mm IL 47.04 | 536.45 |

Scale Hz 1:1000 / Vt 1:200

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
SOUTH PRECINCT

PROJECT TITLE
WASTEWATER
LONGSECTION SHEET 1

BY: - CHK: - APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:AS
DATE 18·05·2023
PLAN 1011.03·50·WW·521
REV -

Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024

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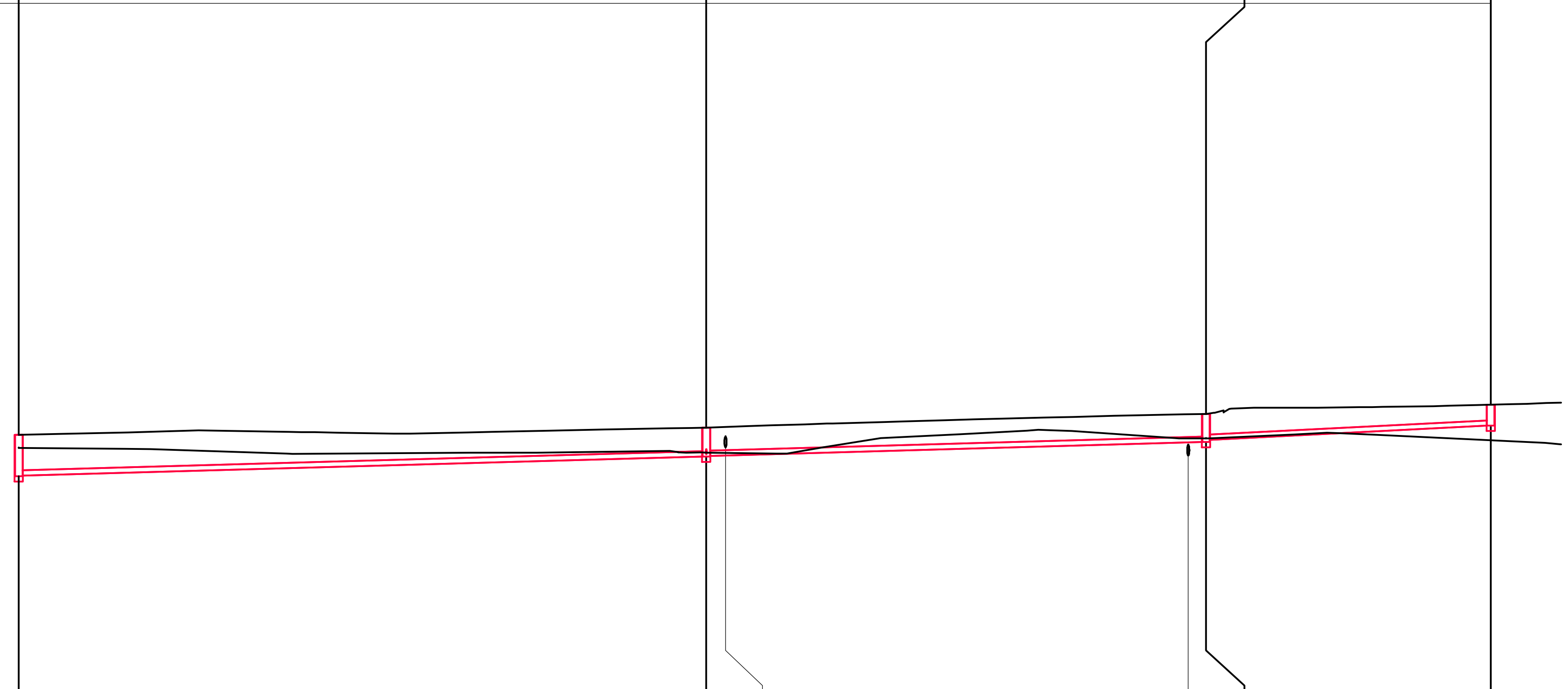
| MAINTENANCE HOLE / SHAFT NAME | A-12 | A-13 | A-14 | A-15 |
| --- | --- | --- | --- | --- |
| MH / MS COVER TYPE | | | | |
| MH / MS TYPE | MH1050 | MH1050 | MH1050 | MH1050 |
| DS MH / MS DROP TYPE | | | | |
| LINE DEFLECTION & BRANCHES | | -7° N -92° | -85° | |
| PROPERTY CONNECTION TYPE | | | | |



DATUM RL 40.000

| | A-12 to A-13 | A-13 to A-14 | A-14 to A-15 |
| --- | --- | --- | --- |
| PROPERTY DESCRIPTION | | | |
| PIPE SIZE (mm), CLASS | 150, uPVC SN16 | 150, uPVC SN16 | 150, uPVC SN16 |
| GRADE (1 IN X) | 0.55% | 0.56% | 1% |
| LENGTH | 97.70 | 71.03 | 40.46 |
| EMBEDMENT TYPE | | | |

| | A-12 | A-13 | | | A-14 | A-15 |
| --- | --- | --- | --- | --- | --- | --- |
| FINISHED (& EXISTING) SURFACE LEVEL | 48.13 (47.76) | 48.33 (47.63) | | | 48.73 (48.02) | 48.98 (47.97) |
| DEPTH OF INVERT BELOW FSL | 1.17 1.15 | 0.82 0.80 | | | 0.80 0.74 | 0.59 |
| INVERT LEVEL | 46.95 46.97 | 47.51 47.53 | 47.54 / 17 300mm IL 47.78 | 47.91 / 18 300mm IL 47.54 | 47.92 47.98 | 48.39 |
| CHAINAGE | 536.45 | 634.14 | 636.87 | 702.64 | 705.18 | 745.64 |

Scale Hz 1:1000 / Vt 1:200



Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
SOUTH PRECINCT

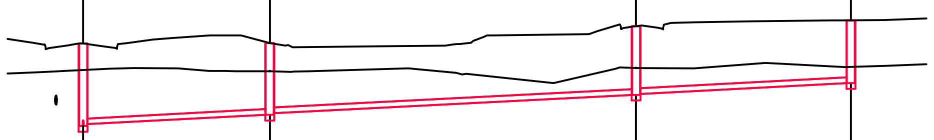
PROJECT TITLE
WASTEWATER
LONGSECTION SHEET 2

BY: - APR:
CHK: -
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:AS
DATE 18·05·2023
PLAN 1011.03·50·WW·522
REV -

K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_SOUTH PRECINCT\1011.03-50-WW-522_WW LONGSECTIONS.DWG | 2023-10-03 20:02:06

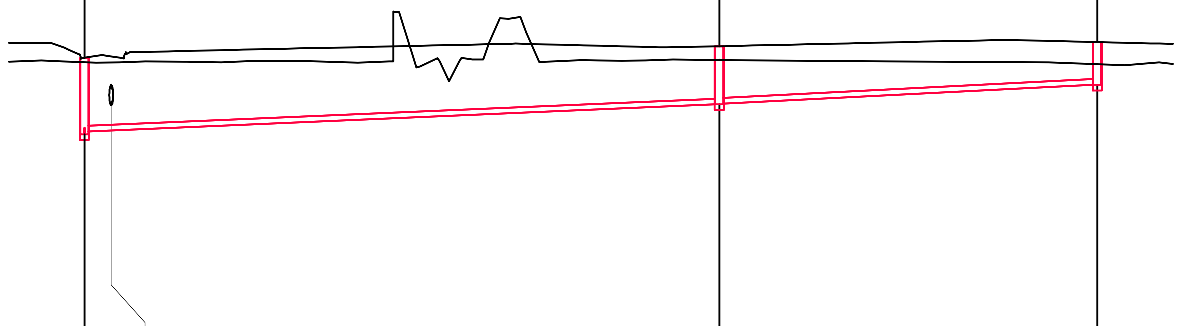
| MAINTENANCE HOLE / SHAFT NAME | E-3 | K-1 | K-2 | K-3 |
|---|---|---|---|---|
| MH / MS COVER TYPE | | | | |
| MH / MS TYPE | MH1050 | MH1050 | MH1050 | MH1050 |
| DS MH / MS DROP TYPE | | | | |
| LINE DEFLECTION & BRANCHES | E | 52° | -11° | |
| PROPERTY CONNECTION TYPE | | | | |



| DATUM RL 40.000 | E-3 | | K-1 | | K-2 | | K-3 |
|---|---|---|---|---|---|---|---|
| PROPERTY DESCRIPTION | | | | | | | |
| PIPE SIZE (mm), CLASS | | 150, uPVC SN16 | | 150, uPVC SN16 | | 150, uPVC SN16 | |
| GRADE (1 IN X) | | 1% | | 1% | | 1% | |
| LENGTH | | 24.69 | | 48.50 | | 28.43 | |
| EMBEDMENT TYPE | | | | | | | |
| FINISHED (& EXISTING) SURFACE LEVEL | 48.39 (47.69) | | 48.40 (47.65) | | 48.85 (47.74) | | 49.00 (47.77) |
| DEPTH OF INVERT BELOW FSL | 2.18 2.13 | | 1.90 1.85 | | 1.81 1.79 | | 1.66 |
| INVERT LEVEL | 46.21 46.26 | | 46.50 46.55 | | 47.03 47.06 | | 47.34 |
| CHAINAGE | 0.00 | | 24.69 | | 73.19 | | 101.62 |

Scale Hz 1:1000 / Vt 1:200

| MAINTENANCE HOLE / SHAFT NAME | A-9 | L-1 | L-2 |
|---|---|---|---|
| MH / MS COVER TYPE | | | |
| MH / MS TYPE | MH1050 | MH1050 | MH1050 |
| DS MH / MS DROP TYPE | | | |
| LINE DEFLECTION & BRANCHES | A | | |
| PROPERTY CONNECTION TYPE | | | |



| DATUM RL 40.000 | A-9 | | L-1 | | L-2 |
|---|---|---|---|---|---|
| PROPERTY DESCRIPTION | | | | | |
| PIPE SIZE (mm), CLASS | | 150, uPVC SN16 | | 150, uPVC SN16 | |
| GRADE (1 IN X) | | 0.85% | | 1% | |
| LENGTH | | 83.98 | | 50.00 | |
| EMBEDMENT TYPE | | | | | |
| FINISHED (& EXISTING) SURFACE LEVEL | 48.01 (47.89) | | 48.31 (47.95) | | 48.42 (47.83) |
| DEPTH OF INVERT BELOW FSL | 2.02 1.95 | | 1.54 1.52 | | 1.13 |
| INVERT LEVEL | 45.98 46.06 | 46.08 | 46.77 46.79 | | 47.29 |
| CHAINAGE | 0.00 | 3.53 10 525mm IL 46.75 | 83.98 | | 133.98 |

Scale Hz 1:1000 / Vt 1:200



Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

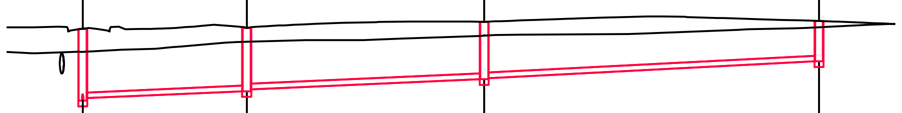
CLIENT: TAMAHERE COUNTRY CLUB SOUTH PRECINCT

PROJECT TITLE: WASTEWATER LONGSECTION SHEET 3

BY: - CHK: - APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER
SCALE: (A3) 1:AS
DATE 18.05.2023
PLAN 1011.03-50-WW-523
REV -

K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_SOUTH PRECINCT\1011.03-50-WW-523_WW LONGSECTIONS.DWG | 2023-10-03 20:02:05

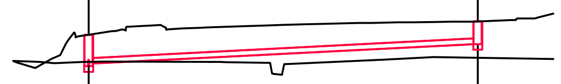
| MAINTENANCE HOLE / SHAFT NAME | A-10 | | M-1 | | M-2 | | M-3 |
|---|---|---|---|---|---|---|---|
| MH / MS COVER TYPE | | | | | | | |
| MH / MS TYPE | MH1050 | | MH1050 | | MH1050 | | MH1050 |
| DS MH / MS DROP TYPE | | | | | | | |
| LINE DEFLECTION & BRANCHES | < | | 64° | | 22° | | |
| PROPERTY CONNECTION TYPE | | | | | | | |



| DATUM RL | 39.000 | | | | | | |
|---|---|---|---|---|---|---|---|
| PROPERTY DESCRIPTION | | | | | | | |
| PIPE SIZE (mm), CLASS | | 150, uPVC SN16 | | 150, uPVC SN16 | | 150, uPVC SN16 | |
| GRADE (1 IN X) | | 0.85% | | 0.85% | | 1% | |
| LENGTH | | 21.71 | | 31.45 | | 44.31 | |
| EMBEDMENT TYPE | | | | | | | |
| FINISHED (& EXISTING) SURFACE LEVEL | 48.15 (47.54) | | 48.17 (47.81) | | 48.33 (47.97) | | 48.35 (48.19) |
| DEPTH OF INVERT BELOW FSL | 1.90 / 1.84 | | 1.67 / 1.62 | | 1.52 / 1.49 | | 1.07 |
| INVERT LEVEL | 46.25 / 46.31 | | 46.50 / 46.55 | | 46.81 / 46.84 | | 47.29 |
| CHAINAGE | 0.00 | | 21.71 | | 53.16 | | 97.47 |

Scale Hz 1:1000 / Vt 1:200

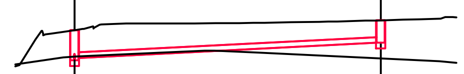
| MAINTENANCE HOLE / SHAFT NAME | A-13 | | N-1 |
|---|---|---|---|
| MH / MS TYPE | MH1050 | | MH1050 |
| LINE DEFLECTION & BRANCHES | < | | |



| DATUM RL | 40.000 | | |
|---|---|---|---|
| PIPE SIZE (mm), CLASS | | 150, uPVC SN16 | |
| GRADE (1 IN X) | | 1% | |
| LENGTH | | 51.48 | |
| FINISHED (& EXISTING) SURFACE LEVEL | 48.33 (47.63) | | 48.68 (47.73) |
| DEPTH OF INVERT BELOW FSL | 0.82 / 0.76 | | 0.59 |
| INVERT LEVEL | 47.51 / 47.57 | | 48.09 |
| CHAINAGE | 0.00 | | 51.48 |

Scale Hz 1:1000 / Vt 1:200

| MAINTENANCE HOLE / SHAFT NAME | A-14 | | O-1 |
|---|---|---|---|
| MH / MS TYPE | H1050 | | MH1050 |
| LINE DEFLECTION & BRANCHES | < | | |



| DATUM RL | 41.000 | | |
|---|---|---|---|
| PIPE SIZE (mm), CLASS | | 150, uPVC SN16 | |
| GRADE (1 IN X) | | 1% | |
| LENGTH | | 40.46 | |
| FINISHED (& EXISTING) SURFACE LEVEL | 48.73 (48.02) | | 48.98 (47.97) |
| DEPTH OF INVERT BELOW FSL | 0.80 / 0.74 | | 0.59 |
| INVERT LEVEL | 47.92 / 47.98 | | 48.39 |
| CHAINAGE | 0.00 | | 40.46 |

Scale Hz 1:1000 / Vt 1:200



Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT: TAMAHERE COUNTRY CLUB SOUTH PRECINCT

PROJECT TITLE: WASTEWATER LONGSECTION SHEET 4

BY: - CHK: - APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER
SCALE: (A3) 1:AS
DATE 18·05·2023
PLAN 1011.03·50·WW·524
REV -

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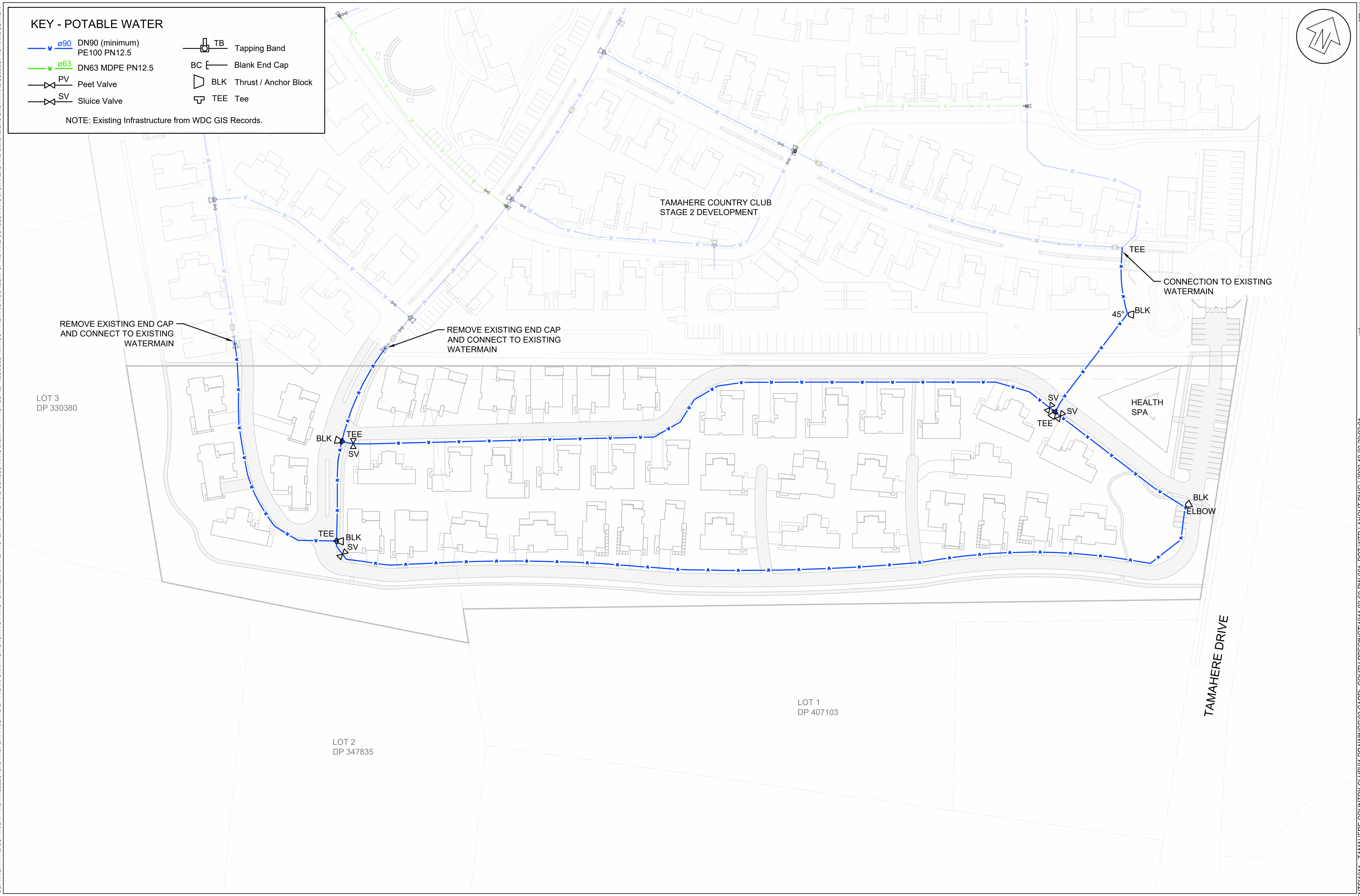
Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024






Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE
- :ORIGIN MARK
- :N - :E - :Z :COORDINATE

NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
SOUTH PRECINCT

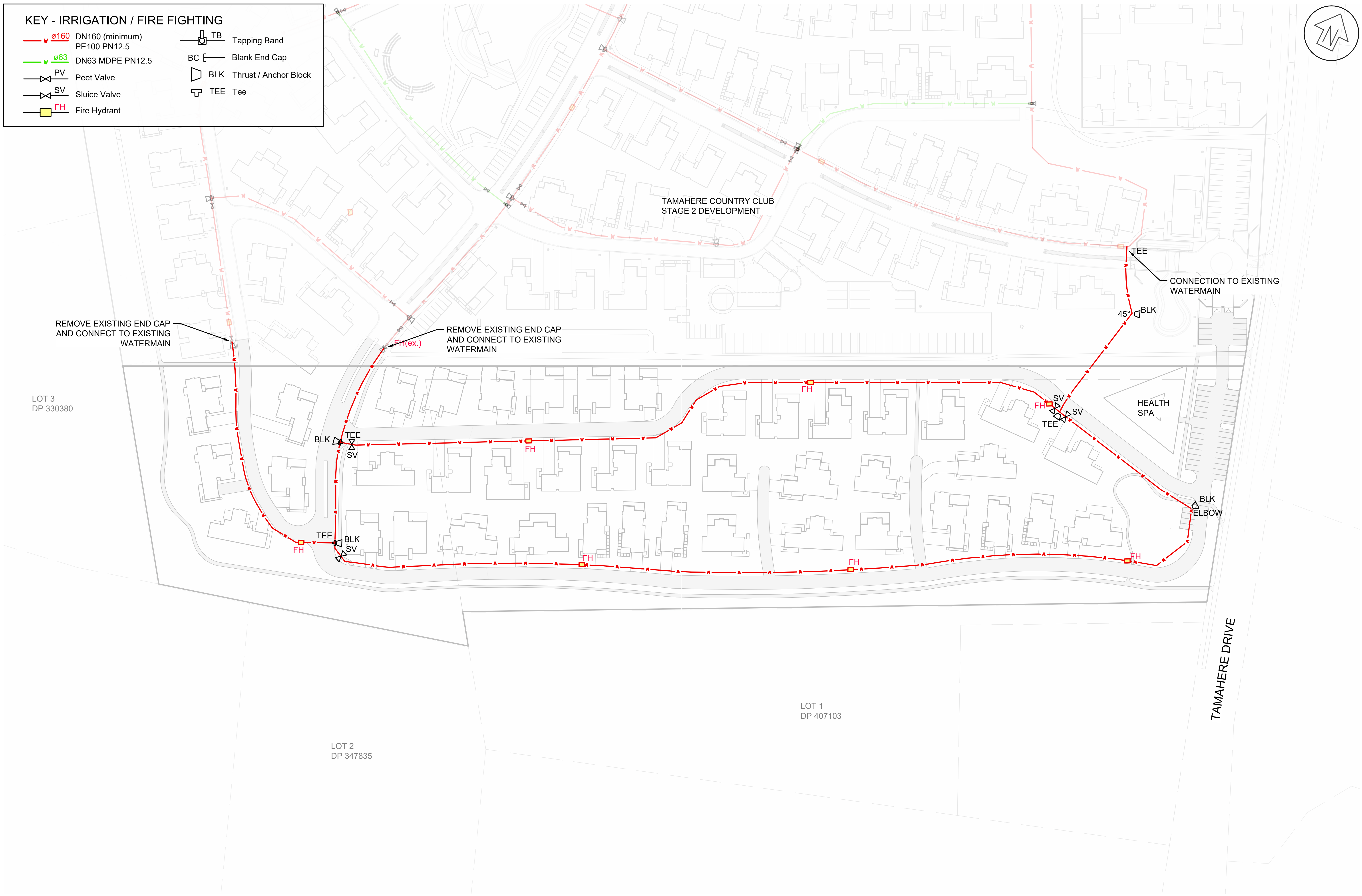
PROJECT TITLE
WATER
POTABLE LAYOUT

BY: -
CHK: -
APR:
STATUS: FOR CONSENT
CHANGELOG:
REFER TO DRAWING REGISTER

SCALE: (A3) 1:1500
DATE 18·05·2023
PLAN 1011.03·60·PW·601
REV -

K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_SOUTH PRECINCT\1011.03-60-PW-601_POT WTR LAYOUT.DWG | 2023-10-03 20:02:01

Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024






Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
:GEODETIC CODE :ORIGIN MARK
:N :E :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare
CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
SOUTH PRECINCT

PROJECT TITLE
WATER
FIREFIGHTING AND IRRIGATION LAYOUT

BY: - APR:
CHK: -
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:1500
DATE 18.05.2023
PLAN 1011.03-60-PW-602
REV -

FILE: 1011.04

ISSUE ONE

# TAMAHERE COUNTRY CLUB

## SANDERSON GROUP

## FOR CONSENT PLAN SET

# EAST PRECINCT
# TAMAHERE DRIVE, TAMAHERE

## JUNE 2023

INDEX

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Cambridge 3434 NZ

Tel: 07 827 5340
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ciaran@kotareconsultants.nz





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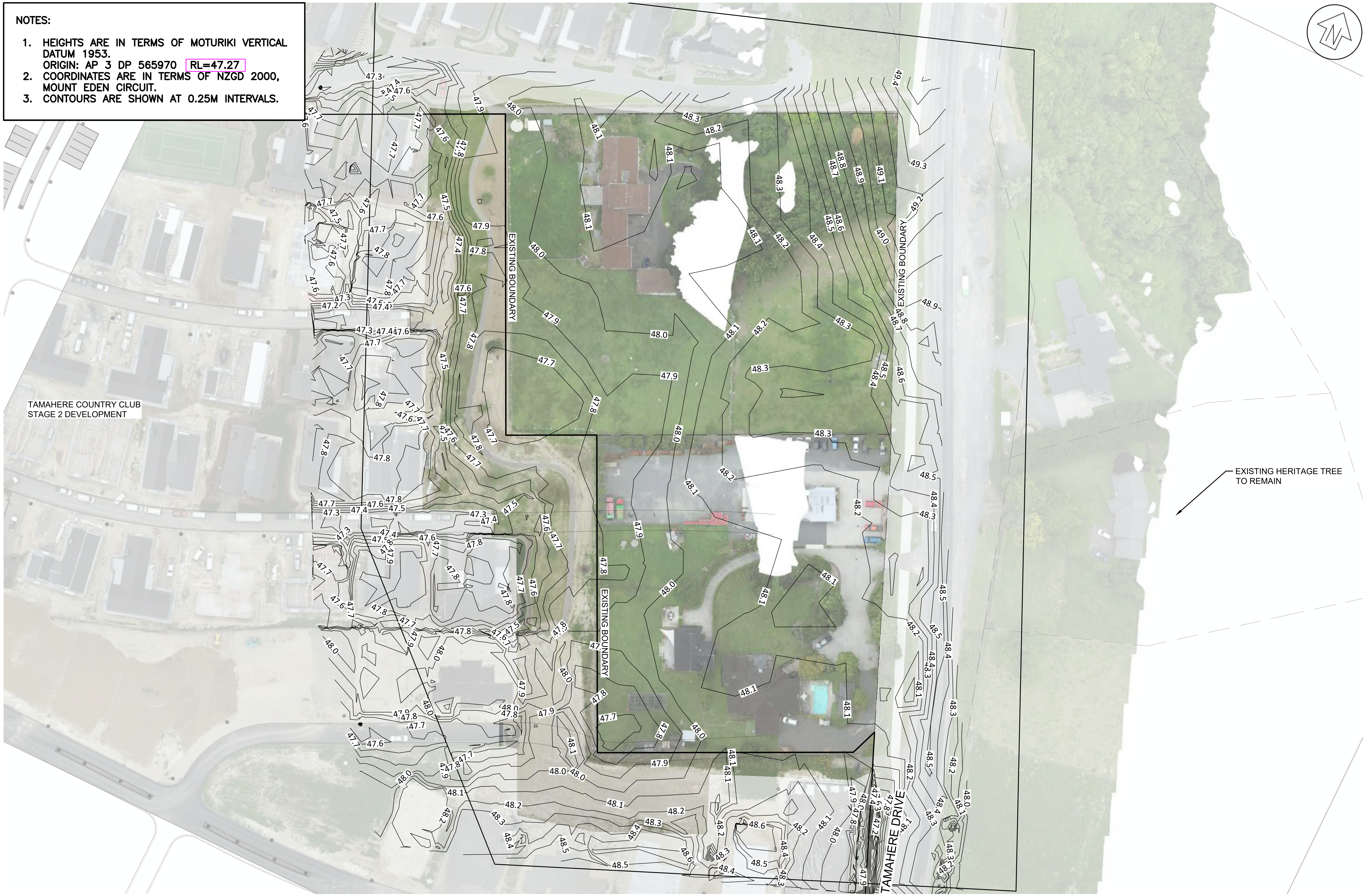
NOTES:

1. HEIGHTS ARE IN TERMS OF MOTURIKI VERTICAL DATUM 1953.
   ORIGIN: AP 3 DP 565970 RL=47.27
2. COORDINATES ARE IN TERMS OF NZGD 2000, MOUNT EDEN CIRCUIT.
3. CONTOURS ARE SHOWN AT 0.25M INTERVALS.





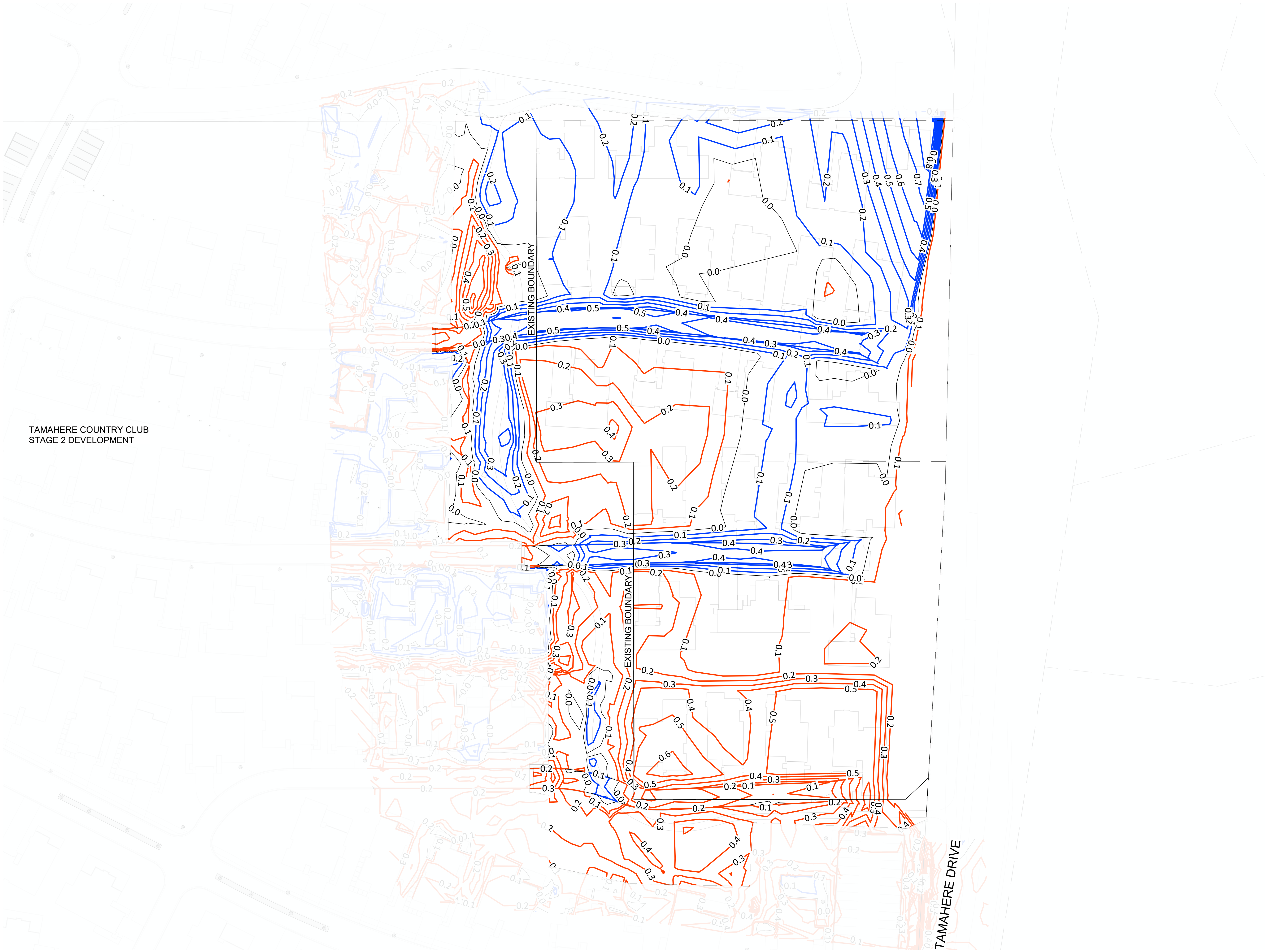

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

| CLIENT | PROJECT TITLE |
|---|---|
| TAMAHERE COUNTRY CLUB EAST PRECINCT | EARTHWORKS EXISTING LAYOUT |

BY: -
CHK: -
APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER
SCALE: (A3) 1:1000
DATE 02·06·2023
PLAN 1011.04·10·EA·101
REV -

K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_EAST PRECINCT\1011.04-10-EA-101_CONTOURS EX.DWG | 2023-06-13 16:11:35




LEGEND

CONTOURS - CUT TO FILL

0.1m CUT

ZERO

0.1m FILL

VOLUMES

CUT - 3,000m³

FILL - 10,000m³

(FROM

EXISTING GROUND LESS 300mm,

TO DESIGN LESS 150mm)

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

| | |
|---|---|
| CLIENT | TAMAHERE COUNTRY CLUB EAST PRECINCT |
| PROJECT TITLE | EARTHWORKS CUT FILL CONTOURS |
| BY: - | APR: |
| CHK: - | |
| STATUS: | FOR CONSENT |
| CHANGELOG: | REFER TO DRAWING REGISTER |
| SCALE: (A3) | 1:1000 |
| DATE | 02·06·2023 |
| PLAN | 1011.04·10·EA·111 |
| REV | - |

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Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024




Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
EAST PRECINCT

PROJECT TITLE
EARTHWORKS
DESIGN CONTOURS

BY: -
CHK: -
APR:
STATUS: FOR CONSENT
CHANGELOG:
REFER TO DRAWING REGISTER

SCALE: (A3) 1:1000
DATE 02·06·2023
PLAN 1011.04·10·EA·121
REV -

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Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024

## LONGITUDINAL SECTION RS101 NIKAU CRES.

START OF WORKS

VIP RL 47.055 · VIP RL 47.288 · VIP RL 47.162

HZ CURVE DATA: R -212.64 · R -47.3 · R 146.5

VT CURVE LENGTH (m): VC 10 · VC 10 · VC 10

VT CURVE RADIUS (m): R 666.67 · R 1000 · R 1000

VT GEOM. GRADE (%): -1% · 0.5% · -0.5% · 0.5%

VT GEOM. LENGTH (m): 16.08 · 46.42 · 25 · 195.5

DATUM RL = 24.5

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DESIGN SURFACE | 47.206 | 47.105 | 47.080 | 47.180 | 47.263 | 47.263 | 47.195 | 47.188 | 47.330 | 47.408 | 47.530 | 47.630 | 47.730 | 47.830 | 47.930 |
| EXISTING SURFACE | 47.471 | 47.406 | 47.377 | 47.268 | 47.236 | 47.227 | 47.218 | 47.272 | 47.271 | 47.332 | | | | | |
| CUT / FILL DEPTH | -0.265 | -0.301 | -0.297 | -0.088 | 0.026 | 0.036 | -0.023 | -0.084 | 0.059 | 0.076 | | | | | |
| CHAINAGE | 0 | 10.08 | 20 | 40 | 56.5 | 66.5 | 80 | 91.5 | 120 | 135.6 | 160 | 180 | 200 | 220 | 240 |

## LONGITUDINAL SECTION RS103 TITOKI CRES.

START OF WORKS

VIP RL 47.081 · VIP RL 47.288 · VIP RL 47.147 · VIP RL 47.381 · VIP RL 47.303 · VIP RL 47.425

HZ CURVE DATA: R -194.66 · R -250 · R 500

VT CURVE LENGTH (m): VC 8 · VC 10 · VC 10 · VC 10 · VC 10

VT CURVE RADIUS (m): R 400 · R 1000 · R 1000 · R 1000 · R 1111.11

VT GEOM. GRADE (%): -1.5% · 0.5% · -0.5% · 0.5% · -0.5% · 0.4% · 0.5%

VT GEOM. LENGTH (m): 6.92 · 41.47 · 28.11 · 46.72 · 15.66 · 30.56 · 160

DATUM RL = 24.5

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DESIGN SURFACE | 47.169 | 47.101 | 47.151 | 47.251 | 47.263 | 47.172 | 47.170 | 47.224 | 47.270 | 47.356 | 47.356 | 47.314 | 47.391 | 47.483 | 47.583 | 47.683 | 47.783 | 47.836 |
| EXISTING SURFACE | 47.688 | 47.734 | 47.666 | 47.431 | 47.301 | 47.348 | 47.437 | 47.422 | 47.358 | 47.340 | 47.337 | 47.353 | 47.429 | 47.427 | | | | |
| CUT / FILL DEPTH | -0.519 | -0.633 | -0.515 | -0.180 | -0.038 | -0.175 | -0.267 | -0.198 | -0.088 | 0.016 | 0.019 | -0.039 | -0.037 | 0.056 | | | | |
| CHAINAGE | 0 | 9.92 | 20 | 40 | 52.39 | 70.5 | 80 | 90.77 | 100 | 117.22 | 127.22 | 137.88 | 160 | 180 | 200 | 220 | 240 | 250.58 |

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE
- :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES

DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT: TAMAHERE COUNTRY CLUB EAST PRECINCT

PROJECT TITLE: ROADING LONGSECTION SHEET 1

BY: - CHK: - APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:1000
DATE 02.06.2023
PLAN 1011.04-20-RD-231
REV -

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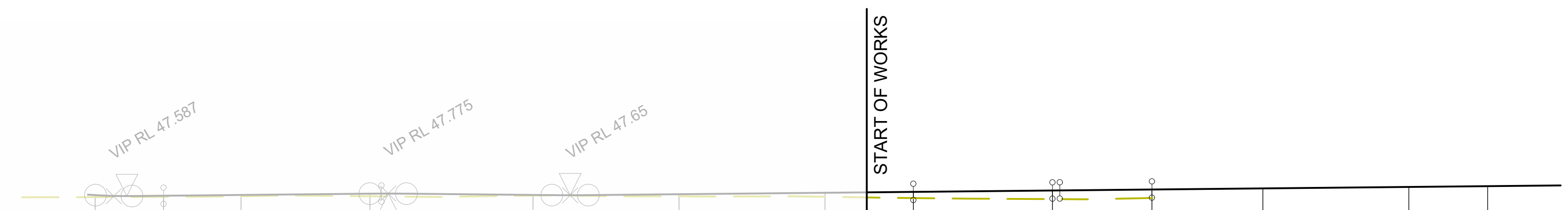


| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HZ CURVE DATA | R 27.25 | | | | | | | | R 50 | R -29.51 | | | |
| VT CURVE LENGTH (m) | VC 5 | | | VC 5 | | VC 5 | | | | | | | |
| VT CURVE RADIUS (m) | R 142.86 | | | R 500 | | R 500 | | | | | | | |
| VT GEOM. GRADE (%) | -3% | | 0.5% | | -0.5% | | | | 0.5% | | | | |
| VT GEOM. LENGTH (m) | 3.55 | | 37.61 | | 24.93 | | | | 150 | | | | |
| DATUM RL = 24.8 | | | | | | | | | | | | | |
| DESIGN SURFACE | 47.663 | 47.621 | 47.674 | 47.762 | 47.675 | 47.725 | 47.825 | 47.885 | 47.980 | 48.049 | 48.125 | 48.225 | 48.279 |
| EXISTING SURFACE | 47.524 | 47.544 | 47.583 | 47.586 | 47.629 | 47.581 | 47.550 | 47.460 | 47.389 | 47.464 | | | |
| CUT / FILL DEPTH | 0.139 | 0.077 | 0.091 | 0.176 | 0.046 | 0.144 | 0.275 | 0.426 | 0.592 | 0.584 | | | |
| CHAINAGE | 0 | 9.38 | 20 | 37.66 | 60 | 80 | 100 | 112.11 | 131.17 | 144.8 | 160 | 180 | 190.8 |

LONGITUDINAL SECTION RS201 MATIPO STREET

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE NOTES

DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
EAST PRECINCT

PROJECT TITLE
ROADING
LONGSECTION SHEET 2

BY: - APR:
CHK: -
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:1000
DATE 02·06·2023
PLAN 1011.04·20·RD·232
REV -

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Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
EAST PRECINCT

PROJECT TITLE
STORMWATER
PLAN LAYOUT

BY: -
CHK: -
APR:
STATUS: FOR CONSENT
CHANGELOG:
REFER TO DRAWING REGISTER

SCALE: (A3) 1:1000
DATE 02·06·2023
PLAN 1011.04·40·SW·401
REV -

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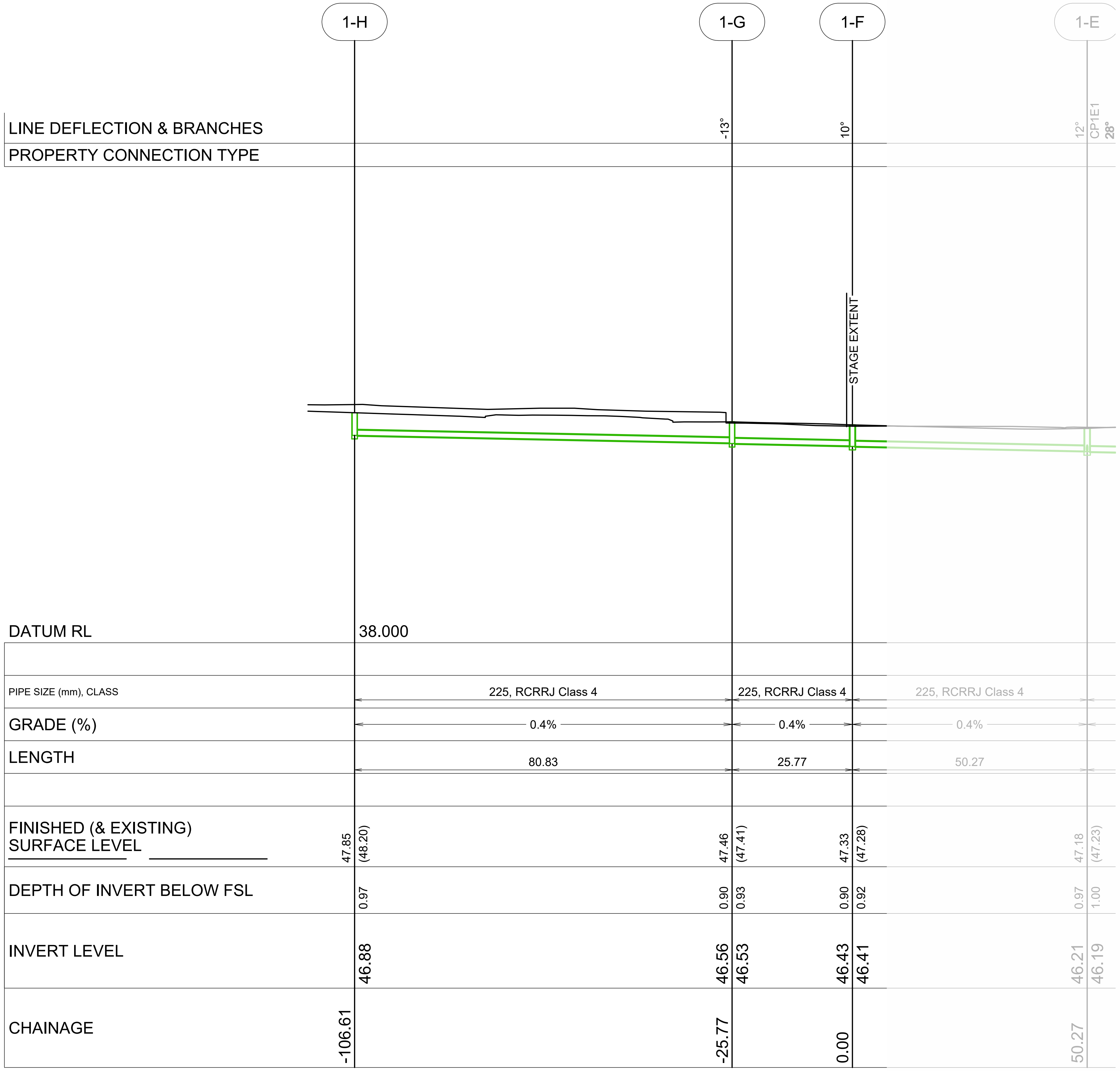
Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024




Scale Hz 1:1000 / Vt 1:200

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE
- :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
EAST PRECINCT

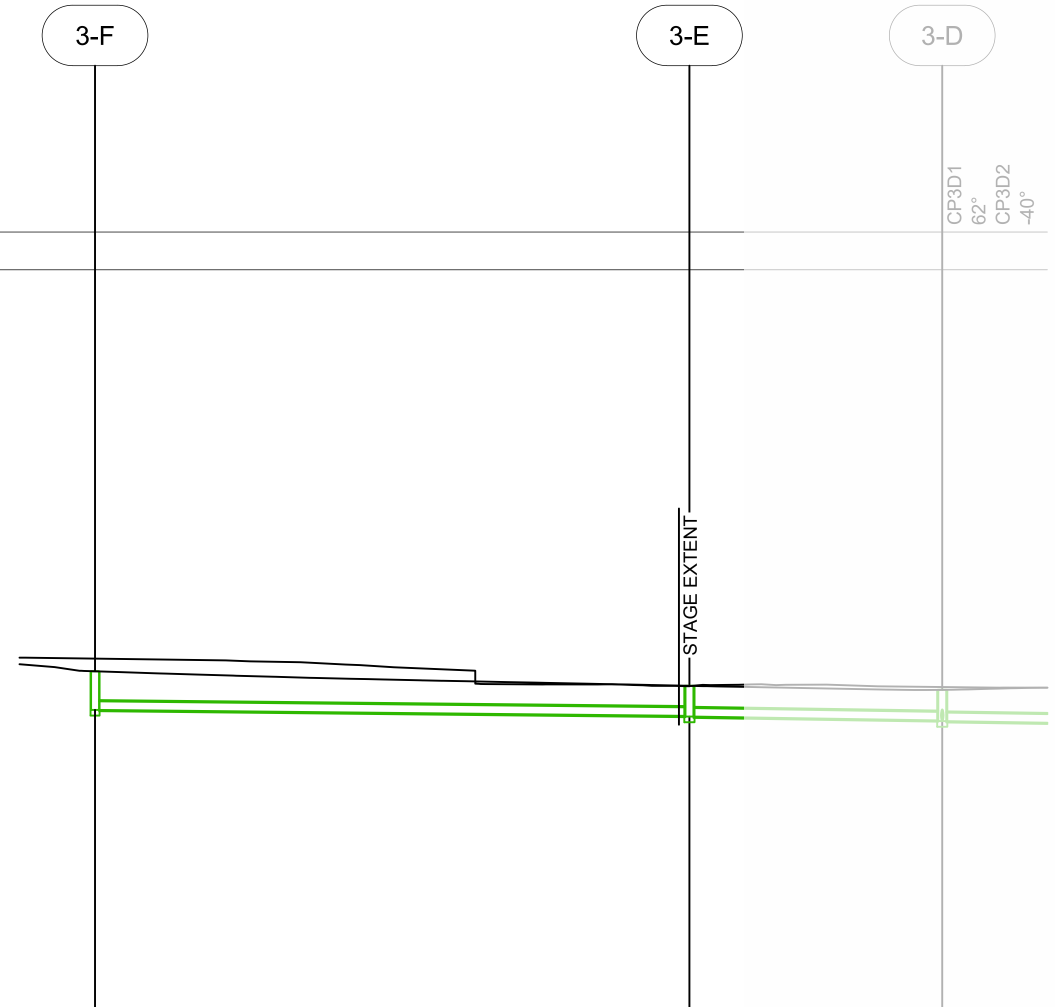
PROJECT TITLE
STORMWATER
LONGSECTION SHEET 1

BY: - APR:
CHK: -
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:AS
DATE 02·06·2023
PLAN 1011.04·40·SW·421
REV -

K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_EAST PRECINCT\1011.04-40-SW-421_SW LONGSECTIONS.DWG | 2023-06-13 16:11:50

Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024




| | 3-F | | 3-E | | 3-D | |
|---|---|---|---|---|---|---|
| LINE DEFLECTION & BRANCHES | | | | | CP3D1 62° CP3D2 -40° | |
| PROPERTY CONNECTION TYPE | | | | | | |
| DATUM RL | 38.000 | | | | | |
| PIPE SIZE (mm), CLASS | | 225, RCRRJ Class 4 | | 225, RCRRJ Class 4 | | |
| GRADE (%) | | 0.2% | | 0.3% | | |
| LENGTH | | 78.63 | | 33.45 | | |
| FINISHED (& EXISTING) SURFACE LEVEL | 47.78 (48.11) | | 47.39 (47.38) | | 47.29 (47.36) | |
| DEPTH OF INVERT BELOW FSL | 1.02 | | 0.79 0.81 | | 0.81 0.83 | |
| INVERT LEVEL | 46.76 | | 46.60 46.58 | | 46.48 46.46 | |
| CHAINAGE | -112.08 | | -33.45 | | 0.00 | |

Scale Hz 1:1000 / Vt 1:200



Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE
- :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
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Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
EAST PRECINCT

PROJECT TITLE
STORMWATER
LONGSECTION SHEET 2

BY: - APR:
CHK: -
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:AS
DATE 02·06·2023
PLAN 1011.04·40·SW·422
REV -



Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024


| | 5-E | 5-D | 5-C | 5-B |
|---|---|---|---|---|
| LINE DEFLECTION & BRANCHES | | 15° | -13° | -4° CP5BA 57° |
| PROPERTY CONNECTION TYPE | | | | |
| DATUM RL | 39.000 | | | |
| PIPE SIZE (mm), CLASS | 225, RCRRJ Class 4 | 225, RCRRJ Class 4 | 225, RCRRJ Class 4 | |
| GRADE (%) | 0.4% | 0.4% | 0.35% | |
| LENGTH | 55.53 | 24.65 | 46.29 | |
| FINISHED (& EXISTING) SURFACE LEVEL | 48.25 (48.08) | 47.94 (47.39) | 47.84 (47.49) | 47.63 (47.65) |
| DEPTH OF INVERT BELOW FSL | 1.16 | 1.07 1.10 | 1.10 1.13 | 1.08 1.10 |
| INVERT LEVEL | 47.09 | 46.87 46.84 | 46.74 46.72 | 46.55 46.53 |
| CHAINAGE | -114.47 | -58.94 | -34.29 | 12.01 |

Scale Hz 1:1000 / Vt 1:200



Hz DATUM: Mount Eden 2000
Vt DATUM: Moturiki '53
GEODETIC CODE: -
ORIGIN MARK: -
COORDINATE: N: - E: - Z: -

NOTES
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Kotare CONSULTANTS

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TAMAHERE COUNTRY CLUB
EAST PRECINCT

PROJECT TITLE
STORMWATER
LONGSECTION SHEET 3

BY: -
CHK: -
APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER
SCALE: (A3) 1:AS
DATE 02-06-2023
PLAN 1011.04-40-SW-423
REV -

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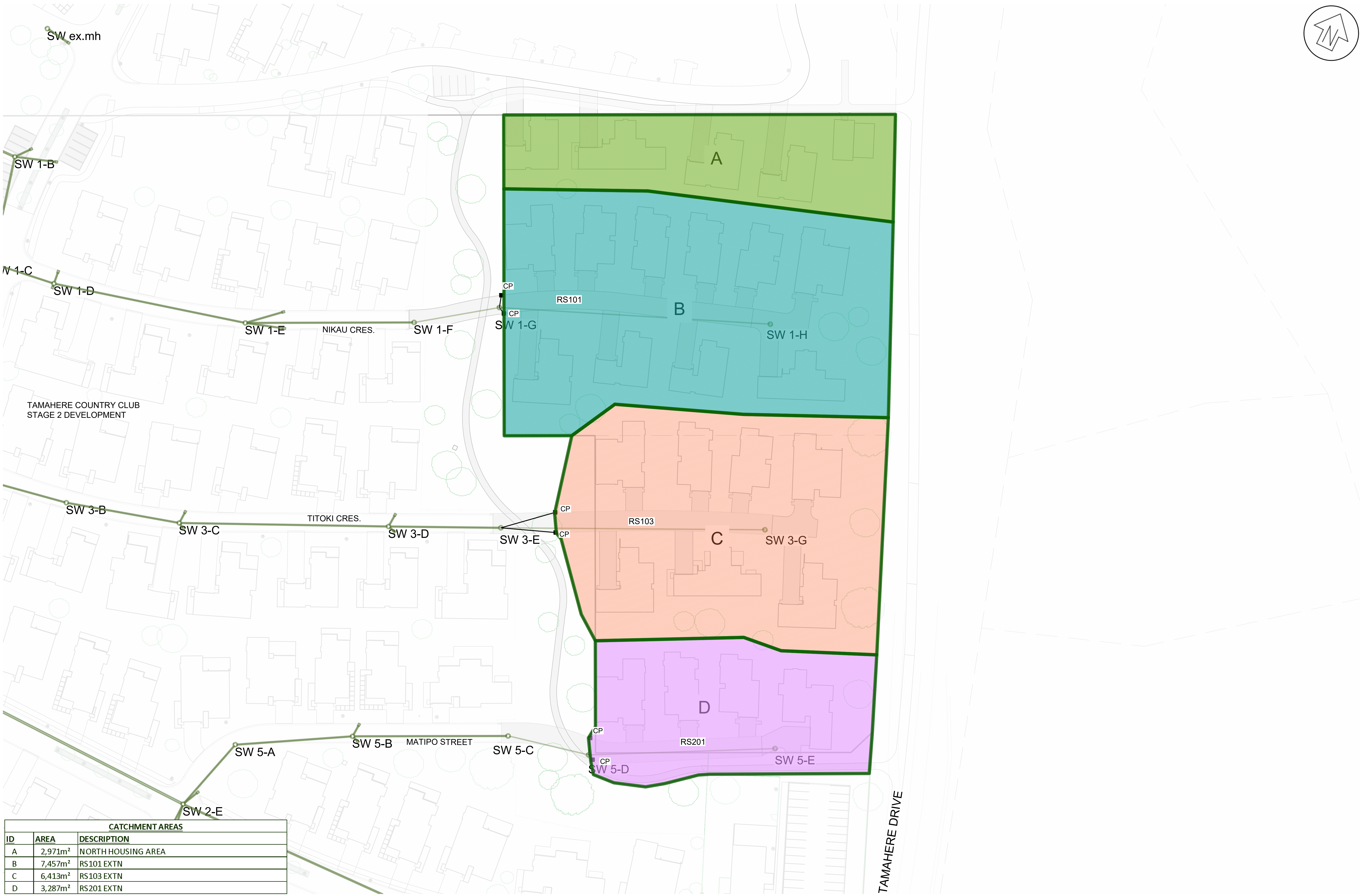


**CATCHMENT AREAS**

| ID | AREA | DESCRIPTION |
|---|---|---|
| A | 2,971m² | NORTH HOUSING AREA |
| B | 7,457m² | RS101 EXTN |
| C | 6,413m² | RS103 EXTN |
| D | 3,287m² | RS201 EXTN |



Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
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Kotare CONSULTANTS

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TAMAHERE COUNTRY CLUB
EAST PRECINCT

PROJECT TITLE
STORMWATER
CATCHMENT PLAN

BY: -
CHK: -
APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:1000
DATE 02·06·2023
PLAN 1011.04·40·SW·491
REV -

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Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024




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Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE

NOTES
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Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
EAST PRECINCT

PROJECT TITLE
WASTEWATER
PLAN LAYOUT

BY: -
CHK: -
APR:
STATUS: FOR CONSENT
CHANGELOG:
REFER TO DRAWING REGISTER

SCALE: (A3) 1:1000
DATE 02.06.2023
PLAN 1011.04-50-WW-501
REV -

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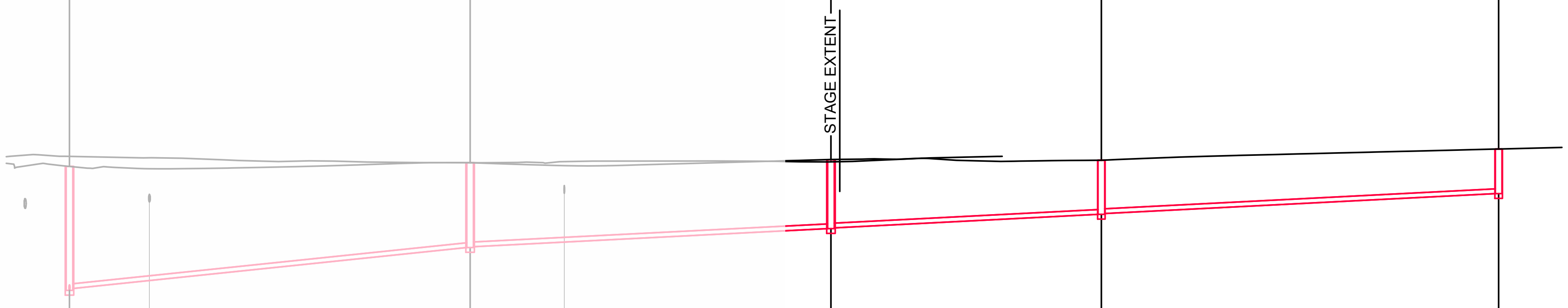
100mm

Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024

| MAINTENANCE HOLE / SHAFT NAME | A-3 | CP1D1 | B-1 | CP1E1 | B-2 | B-3 | B-4 |
|---|---|---|---|---|---|---|---|
| MH / MS COVER TYPE | | | | | | | |
| MH / MS TYPE | MH | | MH | | MH | MH1050 | MH1050 |
| DS MH / MS DROP TYPE | | | | | | | |
| LINE DEFLECTION & BRANCHES | < | | -12° | | -10° | 16° | |
| PROPERTY CONNECTION TYPE | | | | | | | |
| FINISHED (& EXISTING) SURFACE LEVEL | 47.11 (47.43) | | 47.23 (47.23) | | 47.33 (47.26) | 47.31 (47.31) | 47.66 (47.66) |
| DEPTH OF INVERT BELOW FSL | 3.91 3.85 | | 2.68 2.65 | | 2.18 2.16 | 1.71 1.68 | 1.41 |
| INVERT LEVEL | 43.20 43.26 | 43.51 CP1D1 225mm IL 46.00 | 44.55 44.58 | 44.73 CP1E1 225mm IL 46.27 | 45.15 45.17 | 45.60 45.63 | 46.26 |
| CHAINAGE | 0.00 | 12.63 | 63.34 | 78.23 | 120.40 | 163.15 | 225.96 |




DATUM RL 37.000

| | A-3 to B-1 | B-1 to B-2 | B-2 to B-3 | B-3 to B-4 |
|---|---|---|---|---|
| PROPERTY DESCRIPTION | | | | |
| PIPE SIZE (mm), CLASS | 150, PVC | 150, PVC | 150, PVC | 150, PVC |
| GRADE (1 IN X) | 2.04% | 1% | 1% | 1% |
| LENGTH | 63.34 | 57.05 | 42.75 | 62.82 |
| EMBEDMENT TYPE | | | | |

Scale Hz 1:1000 / Vt 1:200

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE
- :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
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Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
EAST PRECINCT

PROJECT TITLE
WASTEWATER
LONGSECTION SHEET 1

BY: - APR:
CHK: -
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:AS
DATE 02-06-2023
PLAN 1011.04-50-WW-521
REV -

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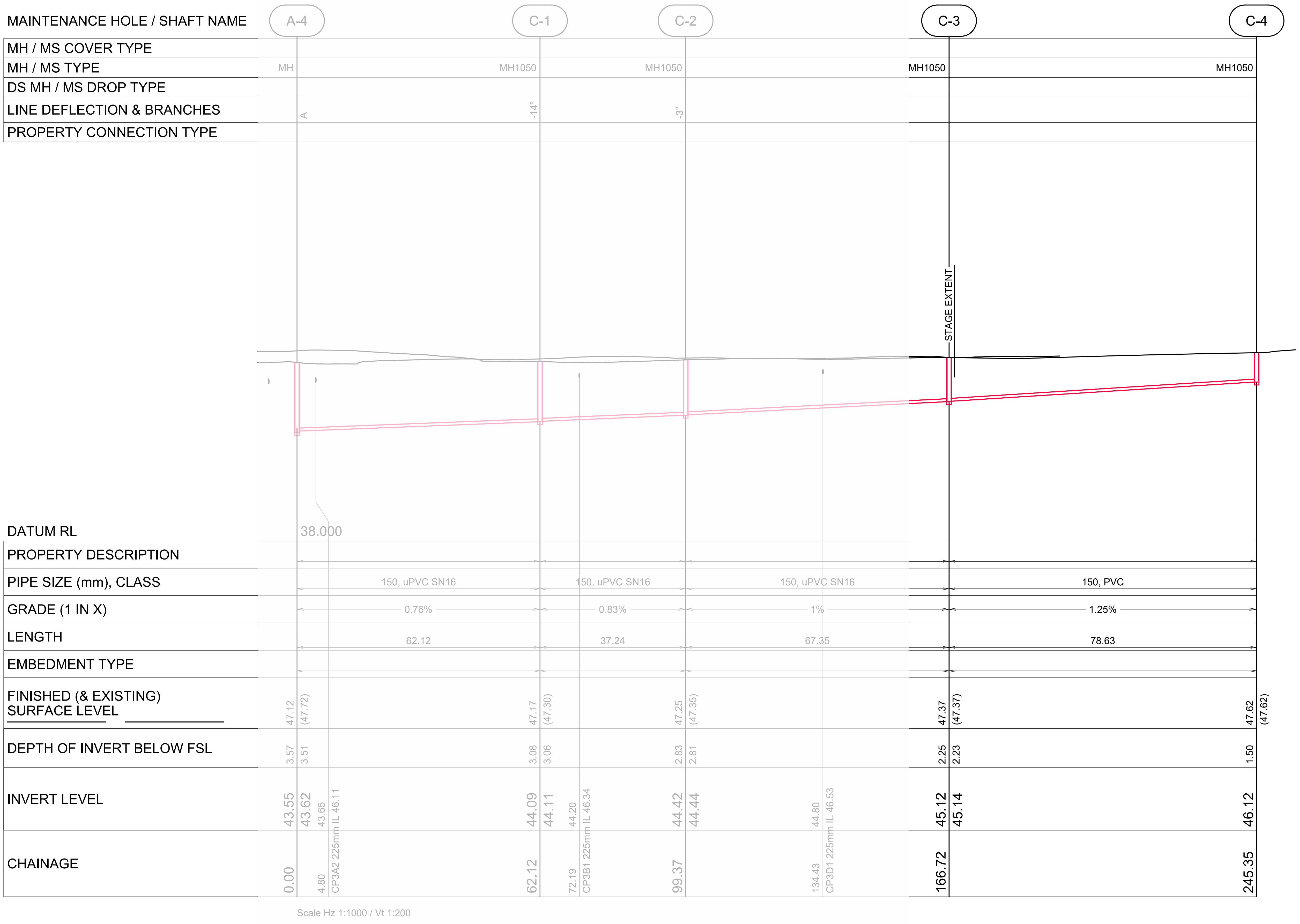


Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE
- :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

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TAMAHERE COUNTRY CLUB
EAST PRECINCT

PROJECT TITLE
WASTEWATER
LONGSECTION SHEET 2

BY: -
CHK: -
APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:AS
DATE 02·06·2023
PLAN 1011.04·50·WW·522
REV -

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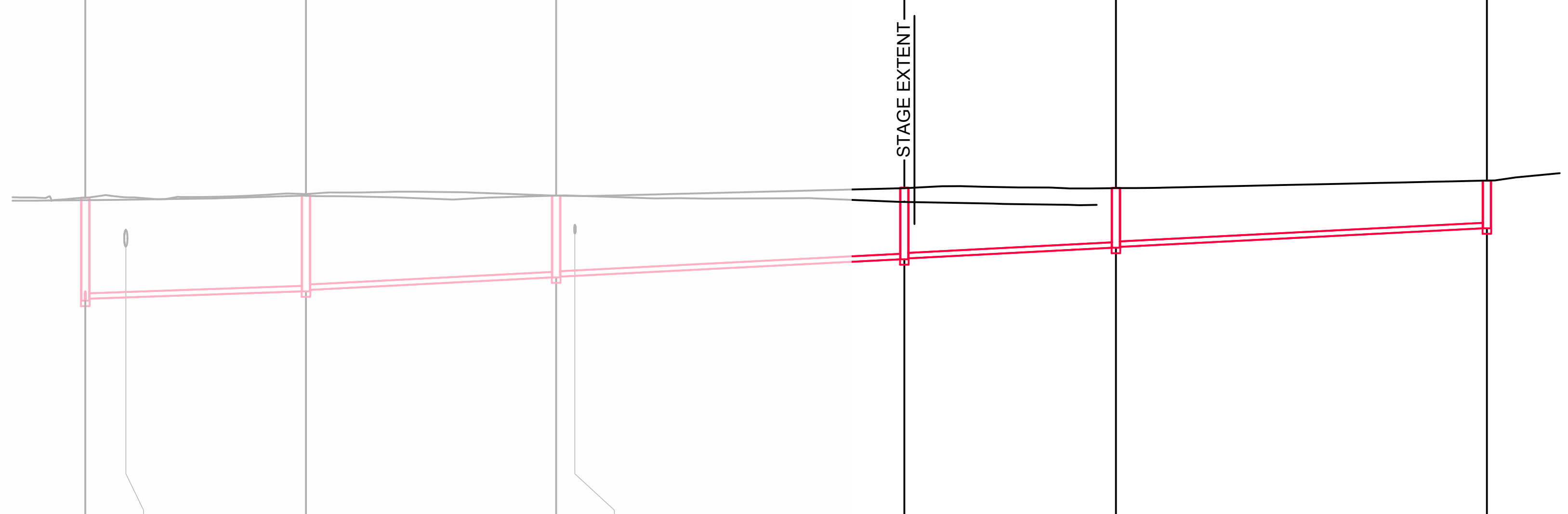
Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024

| MAINTENANCE HOLE / SHAFT NAME | E-1 | F-1 | F-2 | F-3 | F-4 | F-5 |
|---|---|---|---|---|---|---|
| MH / MS COVER TYPE | | | | | | |
| MH / MS TYPE | MH1050 | MH1050 | MH1050 | MH1050 | MH1050 | MH1050 |
| DS MH / MS DROP TYPE | | | | | | |
| LINE DEFLECTION & BRANCHES | E | 44° | 4° | 11° | -13° | |
| PROPERTY CONNECTION TYPE | | | | | | |




DATUM RL 38.000

| | E-1 → F-1 | F-1 → F-2 | F-2 → F-3 | F-3 → F-4 | F-4 → F-5 |
|---|---|---|---|---|---|
| PROPERTY DESCRIPTION | | | | | |
| PIPE SIZE (mm), CLASS | 150, uPVC SN16 | 150, uPVC SN16 | 150, uPVC SN16 | 150, PVC | 150, PVC |
| GRADE (1 IN X) | 0.67% | 1% | 1% | 1% | 1% |
| LENGTH | 30.30 | 34.35 | 47.81 | 29.05 | 50.94 |
| EMBEDMENT TYPE | | | | | |

| | E-1 | Branch | F-1 | F-2 | Branch | F-3 | F-4 | F-5 |
|---|---|---|---|---|---|---|---|---|
| FINISHED (& EXISTING) SURFACE LEVEL | 47.58 (47.51) | | 47.68 (47.63) | 47.64 (47.64) | | 47.84 (47.46) | 47.85 (47.85) | 48.05 (48.05) |
| DEPTH OF INVERT BELOW FSL | 2.83 / 2.77 | | 2.67 / 2.63 | 2.25 / 2.23 | | 1.95 / 1.93 | 1.64 / 1.62 | 1.31 |
| INVERT LEVEL | 44.75 / 44.81 | 44.84 | 45.01 / 45.05 | 45.39 / 45.41 | 45.43 | 45.89 / 45.92 | 46.21 / 46.23 | 46.74 |
| CHAINAGE | 0.00 | 5.57 2 450mm IL 46.24 | 30.30 | 64.65 | 67.22 CP5BA 225mm IL 46.60 | 112.46 | 141.51 | 192.46 |

Scale Hz 1:1000 / Vt 1:200

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
EAST PRECINCT

PROJECT TITLE
WASTEWATER
LONGSECTION SHEET 3

BY: - APR:
CHK: -
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER
SCALE: (A3) 1:AS
DATE 02·06·2023
PLAN 1011.04·50·WW·523
REV -

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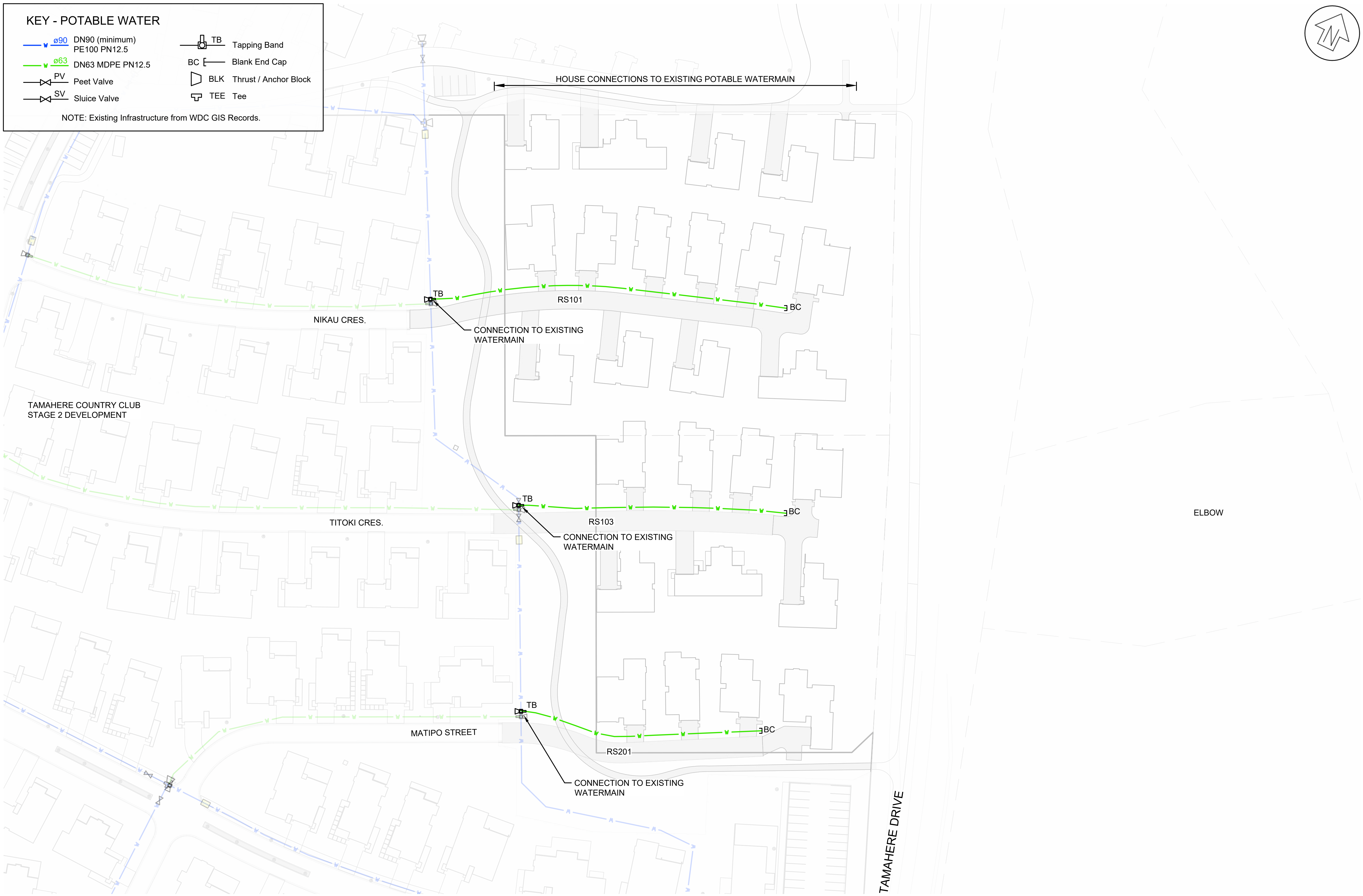
Version: 2, Version Date: 28/03/2024






Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT: TAMAHERE COUNTRY CLUB EAST PRECINCT

PROJECT TITLE: WATER POTABLE LAYOUT

BY: - CHK: - APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER
SCALE: (A3) 1:1000
DATE 02·06·2023
PLAN 1011.04·60·PW·601
REV -

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Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024




Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE
- :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

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CLIENT
TAMAHERE COUNTRY CLUB
EAST PRECINCT

PROJECT TITLE
WATER
FIREFIGHTING AND IRRIGATION LAYOUT

BY: -
CHK: -
APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:1000
DATE 02·06·2023
PLAN 1011.04·60·PW·602
REV -

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# APPENDIX B

## TE MIRO WATER Stormwater Report and Revision Memorandum

*TAMAHERE COUNTRY CLUB – SOUTH AND EAST EXTENSION DRAFT* *DATE* 09-06-2023

| | |
|---|---|
| TO: | Emily Patterson – BBO and Ciaran Murphy – Kotare Consultants |
| FROM: | Mike Chapman and Arun Gopi – Te Miro Water |
| SUBJECT: | Stormwater Management South and East Extensions – Tamahere Drive, Tamahere. |

## INTRODUCTION

In May 2023, Te Miro Water were engaged by Kotare Properties to undertake a re-design to accommodate additional stormwater runoff from the proposed TCC Stage 3 extension. Note Stage 3 is now referred to as the south extension (Figure 1). The drawing set relating to stormwater is provided in the Appendix.

In June 2023 Te Miro were subsequently engaged by Kotare Consultants to provide further assessment for the eastern extension (in addition to the earlier southern extension) also shown in Figure 1. The key stormwater objectives when looking at both extension areas are:

1. Provide a stormwater solution for south and east TCC extension areas. The runoff from both areas ultimately reaches the communal soakage basin (as part of Stage 2). This basin discharges to existing drain (at existing 100yr peak flow) which runs north under Airport Road into the Tamahere rural residential area.
2. Each extension will need to provide additional attenuation within the site because the communal soakage basin and existing pipe network does not have capacity to accommodate peak flows and runoff.
3. TRITON chamber systems are proposed to provide additional attenuation with controlled outlet to the existing 10- year primary pipe system to the soakage basin (already constructed within Stage 2).
4. The TRITON system in the south and east areas are designed to accommodate runoff from both lot and accessway impervious areas. TRITON systems are currently provided within the TCC Stage 1 development.
5. HEC HMS model is revised to check spill > 10 year up to the 100 year continues to be safely contained within the soakage basin with peak flow to existing drain at no more than existing peak flow.
6. This memo retains the earlier assessment for the south (previous referred to as Stage 3) but now includes the east area.

## RESULTS- SOUTH PRECINCT

The HEC HMS results show runoff from the southern extension can be accommodated within the current basin (design as part of Stage 2). However, TRITON systems are now recommended due to the additional runoff from the east extension and need to restrict flows to the existing pipe capacity now installed within Stage 2.

The consented stormwater design solution for Stage 2 includes a communal stormwater soakage basin along the northern boundary which is designed to soak up to the 10yr event. A weir control is provided to the existing drain to manage flows above the 10yr up to the 100yr. Flows are attenuated to the existing 100-year peak flow entering the drain.

A re-use system is also provided with initial flows from the 10yr primary network entering the soakage basin being initially directed to HYNDS defender units prior to being pumped to a sperate feature pond for irrigation and firefighting. The re-use volumes are not considered in the soakage design or water quality treatment forebay so in this sense they provide additional benefits to the overall stormwater solution. Stage 3 will also drain to this basin with first flush also directed initially to the HYNDS units and then to the feature pond.

For the south precinct two previous stormwater management options were assessed with Option 1 being the preferred option.

1. Accommodate south extension (all pervious and impervious areas) within the existing Soakage basin (located in Stage 2) while maintaining existing peak flows offsite to the existing drain in accordance with the WRC discharge consent. It is noted the basin has been enlarged compared to the basin submitted in the SMP for Stage 2 Resource Consent.
2. Undertake on lot soakage up to the 10yr (roof areas) with only road and pervious areas going to the basin. Spill to the basin from lots will however above 10yr. This option would reduce pressure on the basin if existing storage capacity was insufficient.


*Figure 1: South and East Extension in relation to Existing Stage 1 and 2 (SW plans for south and east areas are provided in the appendix)*

## ORIGINAL HEC HMS MODEL TO SUPPORT SOUTH EXTENSION ONLY

A HEC HMS model was built (for Stage 2) to assess the current soakage basin capacity and control peak flows to the receiving environment (farm drain) to existing peak flows (determined separately by from TUFLOW 2D modelling). This model was then updated to include runoff from the south area – importantly a revised depth-elevation table was included in the model (provided by Kotare consultants).

To re-cap, the existing soakage basin results (based on runoff from Stage 2 only) are:

The pond base elevation: 46mRL
Maximum 100yr level: 46.9mRL
Freeboard: 47.4mRL
Peak flow to drain: 0.6m$^3$/s

The new design inputs for the south extension are as follows:

South area catchment was divided into 3 land use sub catchments (Table 1). 1. pervious (greenspace including road berms, gardens reserve etc), 2. Roof and 3. road/driveways/pond.

TABLE 1

| Type | Lots (roofs) | Roads | Small Pond (lake) | Pervious | Impervious (Road+ small pond) | Total area |
|---|---|---|---|---|---|---|
| Area (ha) | 0.94 | 1.3051 | 0.051 | 3.47 | 1.36 | 5.77 |

Scenario 1: Test the current basin with base elevation = 46mRL (see depth elevation table below) and spillway to rural drain at 46.9mRL. As above this scenario includes Stage 3 as well as the original Stage 2 runoff.

Paired Data Table Graph

| Elevation (M) | Area (1000 M2) |
|---|---|
| 46.0 | 5.7020 |
| 46.9 | 7.4120 |
| 47.4 | 8.3639 |

The peak discharge was within consent limit = 0.75m3/s (limit is 0.8m3/s), however peak 100yr level is 47.27mRL which is ~400mm above currently proposed 100yr peak level in the basin (from just Stage 2) resulting in freeboard to FFL now needing to be set higher at minimum 47.8mRL. Weir length (alongside drain) = 2.25m

Scenario 2: Use depth elevation table starting at 45mRL to provide greater storage (Figure 3 shows current basin under construction). The revised – larger- basin is under construction. Resulting in keeping peak discharge rates to the drain to consent limits. The spillway level (broad crested wooden weir to drain) remains at 46.9mRL (as per current design) providing 300mm height difference to prevent backflow from the drain into the basin (drain invert ~46.6mRL).

Peak discharge is within consent limit = 0.5m3/s (limit is 0.8m3/s). Peak 100yr level is now lower at 47.00mRL which complies with required freeboard to FFL set at minimum 47.5mRL. Weir spillway is set at 46.9mRL and weir length is now increased to 5m (parallel to drain bank) to keep peak 100yr level to 47mRL. Essentially a shallow 100mm spill depth along this 5 m length. Peak storage Depth = 11,000m$^3$.

Paired Data Table Graph

| Elevation (M) | Area (1000 M2) |
|---|---|
| 45.00 | 0.0000 |
| 45.10 | 3.4710 |
| 45.20 | 3.9970 |
| 45.30 | 4.2540 |
| 45.40 | 4.5120 |
| 45.50 | 4.7750 |
| 45.60 | 4.9590 |
| 45.70 | 5.1440 |
| 45.80 | 5.3290 |
| 45.90 | 5.5150 |
| 46.00 | 5.7020 |
| 46.10 | 5.8900 |
| 46.20 | 6.0780 |
| 46.30 | 6.2660 |
| 46.40 | 6.4560 |
| 46.50 | 6.6460 |
| 46.60 | 6.8360 |
| 46.70 | 7.0280 |
| 46.80 | 7.2200 |
| 46.90 | 7.4120 |
| 47.00 | 7.6050 |
| 47.40 | 8.3639 |

*Figure 2: Revised Soakage Basin Depth-Elevation Table provided by Kotare Consultants.*

*Figure 3: Soakage basin under construction (6 April 2023) – showing scruffy inlets to HYNDS unit prior to pumping first flush to feature ponds.*

## TRITON SIZING – SOUTH AND EAST EXTENSIONS

The assessment above (from previous memo) highlights runoff from the south extension could be contained within the communal soakage basin especially given the revised as built depth-elevation table (enlarged basin during construction resulting in no need for on-site attenuation). However, a TRITON system is also required as outlined in the introduction, given we now have the south and east extension areas and a stormwater network installed in stage 2 which was not designed to take primary flows from upper areas.

The TRITON system calculations are provided in the appendix for both the south and east areas and summurised in Table 2. It should be noted that the systems are designed conceptually at this stage assuming a conservative 50mm/hr soakage rate (as was used for the soakage basin) and a 70% impervious area for the lots and roads. Also, the final configuration (length and width) is to be determined to best fit within the built form for each area.

At detailed design we recommend further soakage testing at each location to confirm final rates for design. The preliminary TRITON dimensions are shown in Table 2

## TABLE 2

| 10-year rain | Storage volume | Length | Width |
|---|---|---|---|
| South Extension | 2,000$m^3$ | 200m | 13m |
| East Extension | 800$m^3$ | 80m | 13m |

## HEC HMS MODEL UPDATES

The HEC HMS model (originally developed for Stage 2 basin sizing) was updated for the south area and then again with the south and east areas (Figure 4). The results show the soakage basin has capacity to accommodate the 100 Year minus 10 Year flows (10 year is now contained within the TRITON system) from the southern and eastern precincts. The peak flow from the basin to the existing drain is well within the consented existing peak flow of 0.8$m^3$/s. For reference the earlier peak outflow was 0.5m3/s when we assumed the whole of southern precinct was discharging to the basin ie. No TRITONS and no east precinct included.

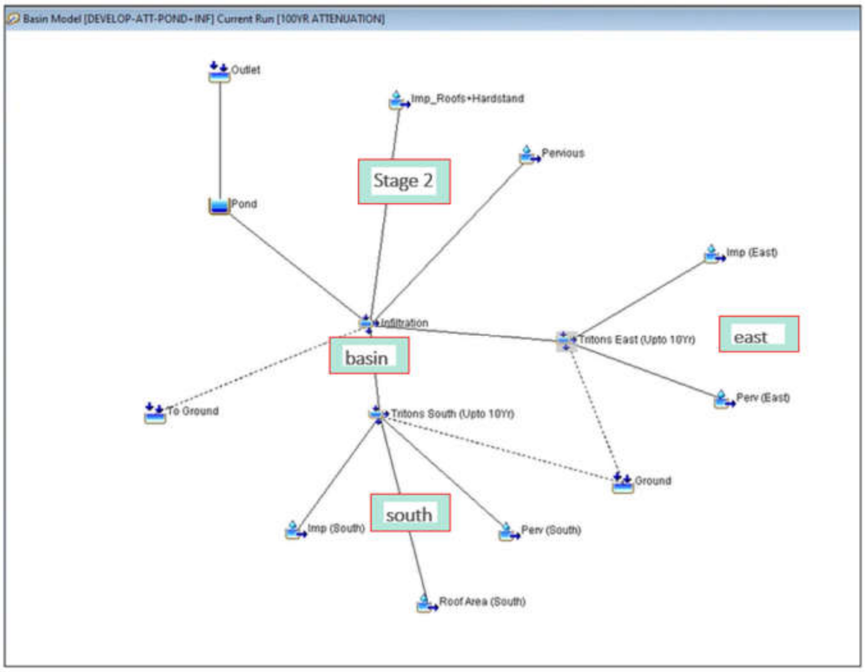



*Figure 4: HEC HMS schematic with inclusion of both south and east precinct as well as original Stage 2*

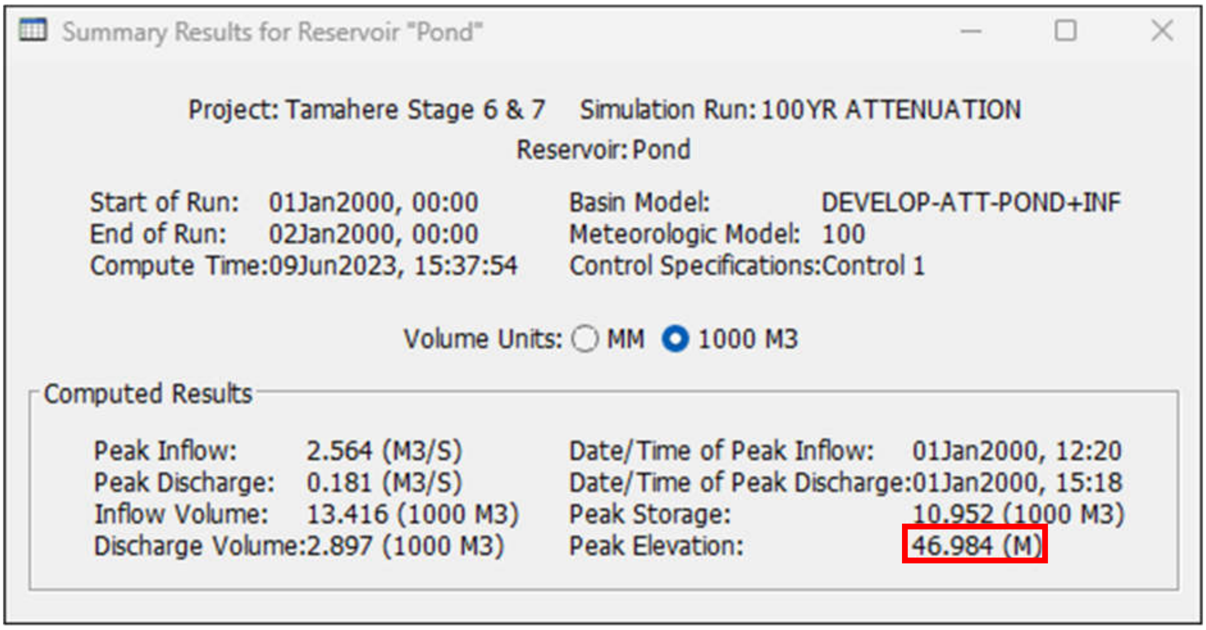



*Figure 5 output from HEC HMS showing peak elevation and discharge from the basin.*

## CONCLUSIONS

1. The original memo (for the south area only) has been further updated to reflect inclusion of the east extension. Updates include revised HEC HMS model and requirement for TRITON systems to augment attenuation previously provided by only the basin.
2. The HEC HMS model previously reflected runoff from just Stage 2 for the earlier consent.
3. The current soakage basin and installed pipe network for Stage 2 cannot accommodate runoff and peak flows from the south and east extension areas, which when combined amount to a similar area to Stage 2.
4. Therefore, TRITON systems are proposed in the south and east precincts to store, soak and attenuate runoff. Spill from each TRITON system for flows above the 10 year will be conveyed to the communal basin within the pipe network (given flows from Stage 2 will have passed already through) as well as within the road network.
5. The final configuration of the TRITON systems (length and width) will be confirmed at detailed following on site soakage testing.
6. Input hydrology parameters for south and east pervious and impervious areas remain as per the Stage 2 scenario – 70% impervious.
7. A revised depth-elevation table was provided by Kotare Consultants. The soakage basin has been deepened by 1m compared to the original design for Stage 2 consent. Providing approximately 5,500m3 more storage volume. The top area is also increased compared to the original consent. Original depth of 46mRL lowered to 45mRL.
8. The HEC HMS model results show the basin can accommodate additional runoff from south area while limiting 100yr peak flows offsite to less than existing peak flows. Peak 100-year elevation in the basin = 47.00mRL. Freeboard to FFL should be set minimum 47.5mRL.
9. Peak elevation is maintained at 47mRL using TRITON system to manage 10-year runoff from south and east areas.
10. The weir spillway to the existing drain should be lengthened from 2.25m to 5m to keep elevation to 47.00mRL (~100mm spill depth over weir) to provide sufficient freeboard.
11. Peak discharge is within consent limit = $0.5m^3/s$ (limit is $0.8m^3/s$).



Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024

## LIMITATIONS

This report is for the use by Kotare Consultants Ltd and Sanderson Ltd. The report should not be used or relied upon by any other person or entity or for any other project. No responsibility is accepted by Te Miro Water Limited or its directors for the accuracy of information provided by third parties and/or the use of any part of this report in any other context or for any other purposes.

# APPENDIX

**Tamahere Country Club**

**TRITON sizing for south and east precincts**

**Objectives:**

1. Size TRITON system to manage runoff from imperious areas up to the 10-year storm event.
2. To alleviate pressure on the soakage basin and existing downstream primary stormwater network.
3. Use HEC HMS to check spill from TRITON system is accommodated within the communal soakage for events > 10 year up to the 100 year.

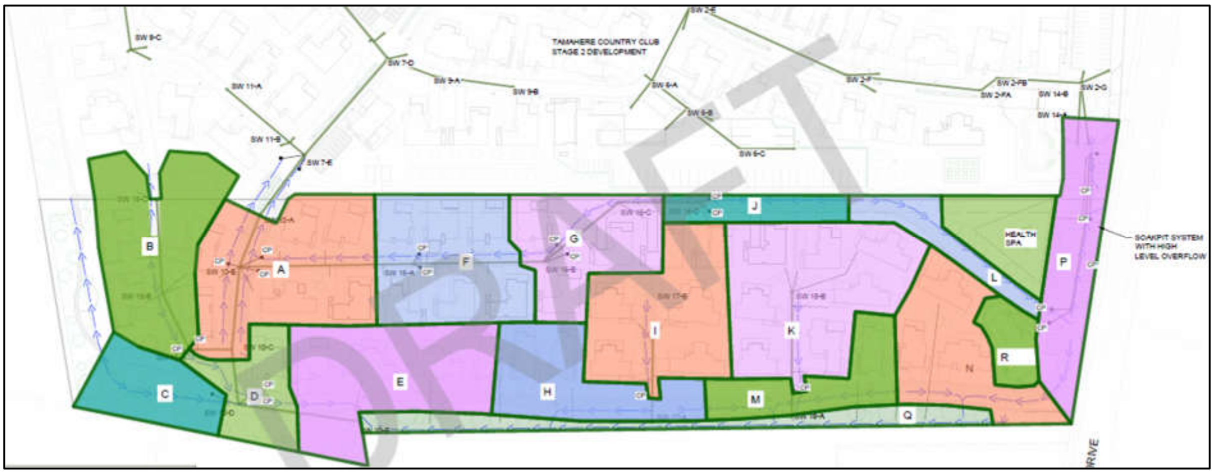
**Southern Precinct**

Contributing Catchments: A to R

A = 5,168m$^2$ B = 4,269m$^2$ C = 1,953m$^2$ D = 1,819m$^2$ E = 4,608m$^2$ F = 4,172m$^2$ G = 3,147m$^2$ H = 2,894m$^2$ I = 4,140m$^2$ J = 1,115m$^2$ K = 5,520m$^2$ L = 1,231m$^2$ M = 2,038m$^2$ N = 3,299m$^2$ O = 1,682m$^2$ P = 3,007m$^2$ Q = 2,038m$^2$ R = 886m$^2$

Runoff Coefficients used: Impervious - 0.9 and Pervious - 0.3

Triton accommodates the 10-Yr runoffs from Catchments A to R




| Rev ID | Ch ID | Change Name | Date |
|---|---|---|---|
| 21 | 36 | Caravan Park Changes | 16/11/22 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Tamahere Country Club

FINE RETIREMENT LIVING

46 Tamahere Drive
Tamahere

**Tamahere Master Site Plan**

DRAWN BY: Studio H Design

1:2000 @ A3

DATE: 3/04/23

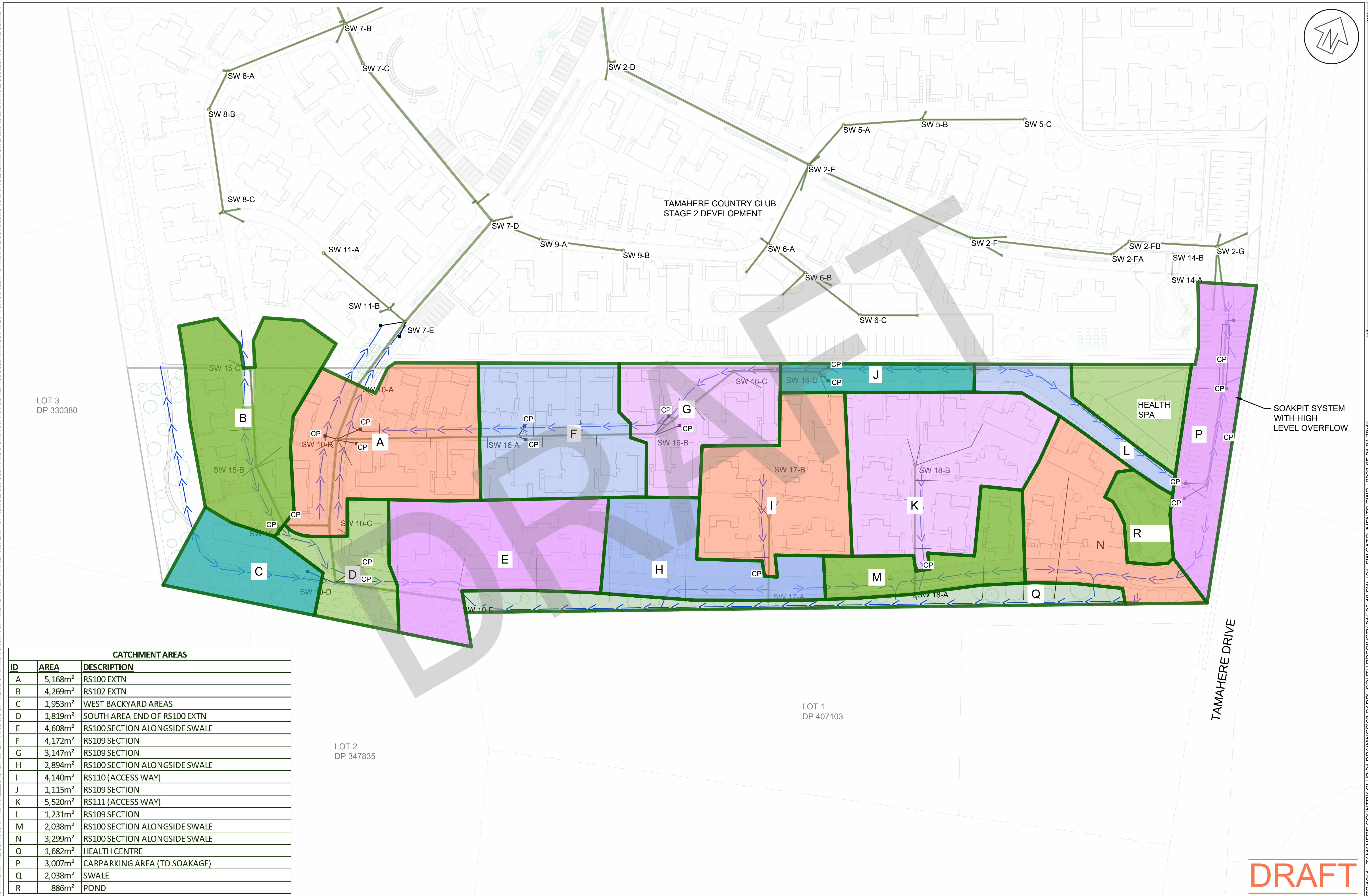
PHONE: #Contact Phone Number

REVISION NUMBER:

21



Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024




| CATCHMENT AREAS | | |
|---|---|---|
| ID | AREA | DESCRIPTION |
| A | 5,168m² | RS100 EXTN |
| B | 4,269m² | RS102 EXTN |
| C | 1,953m² | WEST BACKYARD AREAS |
| D | 1,819m² | SOUTH AREA END OF RS100 EXTN |
| E | 4,608m² | RS100 SECTION ALONGSIDE SWALE |
| F | 4,172m² | RS109 SECTION |
| G | 3,147m² | RS109 SECTION |
| H | 2,894m² | RS100 SECTION ALONGSIDE SWALE |
| I | 4,140m² | RS110 (ACCESS WAY) |
| J | 1,115m² | RS109 SECTION |
| K | 5,520m² | RS111 (ACCESS WAY) |
| L | 1,231m² | RS109 SECTION |
| M | 2,038m² | RS100 SECTION ALONGSIDE SWALE |
| N | 3,299m² | RS100 SECTION ALONGSIDE SWALE |
| O | 1,682m² | HEALTH CENTRE |
| P | 3,007m² | CARPARKING AREA (TO SOAKAGE) |
| Q | 2,038m² | SWALE |
| R | 886m² | POND |



DRAFT

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE

NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT: TAMAHERE COUNTRY CLUB

PROJECT TITLE: STORMWATER CATCHMENT PLAN

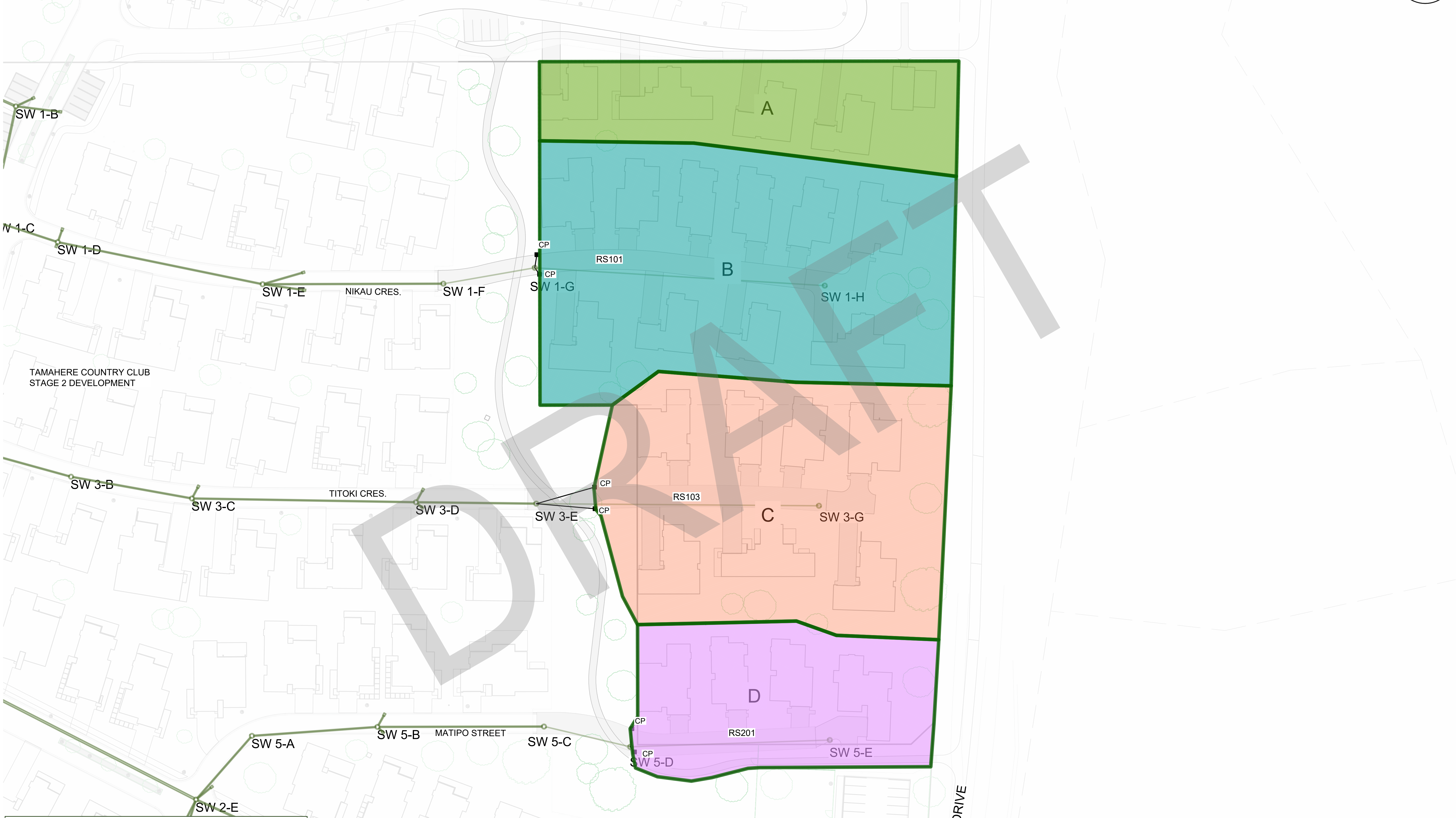
BY: -
CHK: -
APR:
STATUS: PRELIMINARY
CHANGELOG: REFER TO DRAWING REGISTER

SCALE: (A3) 1:1500
DATE 21·05·2023
PLAN 1011.03·40·SW·491
REV -

K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_SOUTH PRECINCT\1011.03-40-SW-491_SW CATCHMENTS.DWG | 2023-05-21 04:30:11

Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024

# EAST PRECINCT




| CATCHMENT AREAS | | |
|---|---|---|
| ID | AREA | DESCRIPTION |
| A | 2,971m² | NORTH HOUSING AREA |
| B | 7,457m² | RS101 EXTN |
| C | 6,413m² | RS103 EXTN |
| D | 3,287m² | RS201 EXTN |

DRAFT

Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
- :GEODETIC CODE - :ORIGIN MARK
- :N - :E - :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER.
DESIGN IN REFERENCE TO R.I.T.S. / N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT
TAMAHERE COUNTRY CLUB
STAGE 7

PROJECT TITLE
STORMWATER
CATCHMENT PLAN

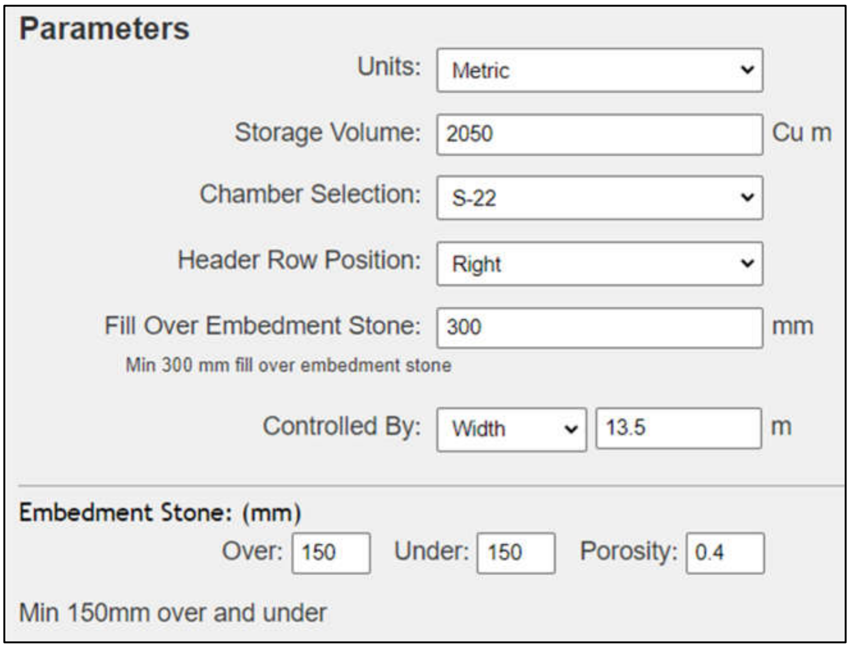
BY: -
CHK: -
APR:
STATUS: PRELIMINARY
CHANGELOG:
REFER TO DRAWING REGISTER

SCALE: (A3) 1:1000
DATE 02·06·2023
PLAN 1011.04·40·SW·491
REV -

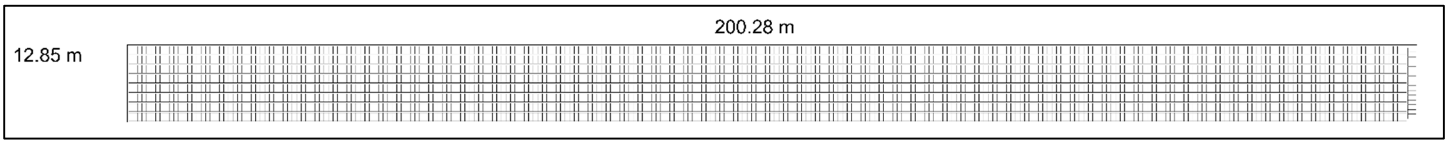


K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_EAST PRECINCT\1011.04-40-SW-491_SW CATCHMENTS.DWG | 2023-06-02 14:58:15

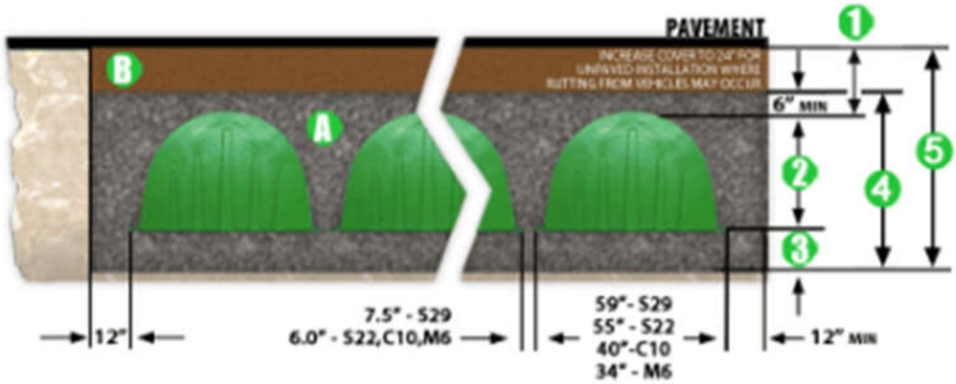
Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024




Indicative dimensions – can be split into shorter and wider lengths. To be confirmed at detailed combined with on-site soakage testing to confirm final dimensions.



# Project Results




| | |
|---|---|
| 1 Cover Over System: | 300 mm |
| 2 Height Of Chamber: | 888 mm |
| 3 Embedment Stone Under Chambers: | 150 mm |
| 4 Section Height: | 1189 mm |
| 5 System Depth: | 1489 mm |
| A Volume of Embedment Stone Required: | 1676 Cu. m |
| B Volume of Fill Material Required: | 772 Cu. m |

| | |
|---|---|
| Total Storage Provided: | 2054 Cu. m |
| Type Of Chambers: | S-22 |
| # Of Spacers Required: | 7 |
| # Of Chambers Required: | 2263 |
| # Of End Caps Required: | 18 |
| Required Bed Size: | 2575 Sq. m |
| Volume of Excavation: | 3061 Cu. m |
| * Area of Filter Fabric: | 3081 Sq. m |
| # of Chambers long: | 281 |
| # of rows: | 8 |
| Actual Trench Length: | 200.28 m |
| Actual Trench Width: | 12.85 m |

* Filter Fabric quantity for Fabric on Top and Sides of System Only, does not include overlap

**Triton System Dimensions**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| L | 200.28 | m | Area | 2573.6 | $m^2$ | ΣCA | 36,862 | $m^2$ |
| W | 12.85 | m | Vol (net) | 2050.00 | $m^3$ | Infiltration Rate | 1.39E-05 | m/sec |
| D | 0.89 | m | | | | Constant Outflow | | l/s |

| Duration | i | Q | $V_{runoff}$ | $V_{infiltration}$ | $V_{outflow}$ | $V_{storage}$ | Balance |
|---|---|---|---|---|---|---|---|
| | mm/hr | l/sec | $m^3$ | $m^3$ | $m^3$ | $m^3$ | $m^3$ |
| 10 min | 111.0 | 1137 | 681.9 | 21.4 | 0.0 | 660.5 | 1389.5 |
| 20 min | 76.7 | 785 | 942.4 | 42.9 | 0.0 | 899.5 | 1150.5 |
| 30 min | 61.2 | 627 | 1128.0 | 64.3 | 0.0 | 1063.6 | 986.4 |
| 1 hr | 41.0 | 420 | 1511.3 | 128.7 | 0.0 | 1382.7 | 667.3 |
| 2 hrs | 26.7 | 273 | 1968.4 | 257.4 | 0.0 | 1711.1 | 338.9 |
| 6 hrs | 12.7 | 130 | 2808.9 | 772.1 | 0.0 | 2036.8 | 13.2 |
| 12 hrs | 7.7 | 79 | 3414.9 | 1544.2 | 0.0 | 1870.7 | 179.3 |
| 24 hrs | 4.6 | 47 | 4051.9 | 3088.3 | 0.0 | 963.5 | 1086.5 |
| 48 hrs | 2.7 | 27 | 4724.2 | 6176.6 | 0.0 | 0.0 | 2050.0 |

Red Cells: user entry

Green Cells: indicate excess system capacity (values are positive)

Yellow Cells: indicate storage shortfall (values are negative)

Length, Width and Volume of the Triton System are an output of the Triton Calculator at www.tritonsws.com/calculator

Refer to Cirtex® Stormwater Calculator Terms & Condition of use

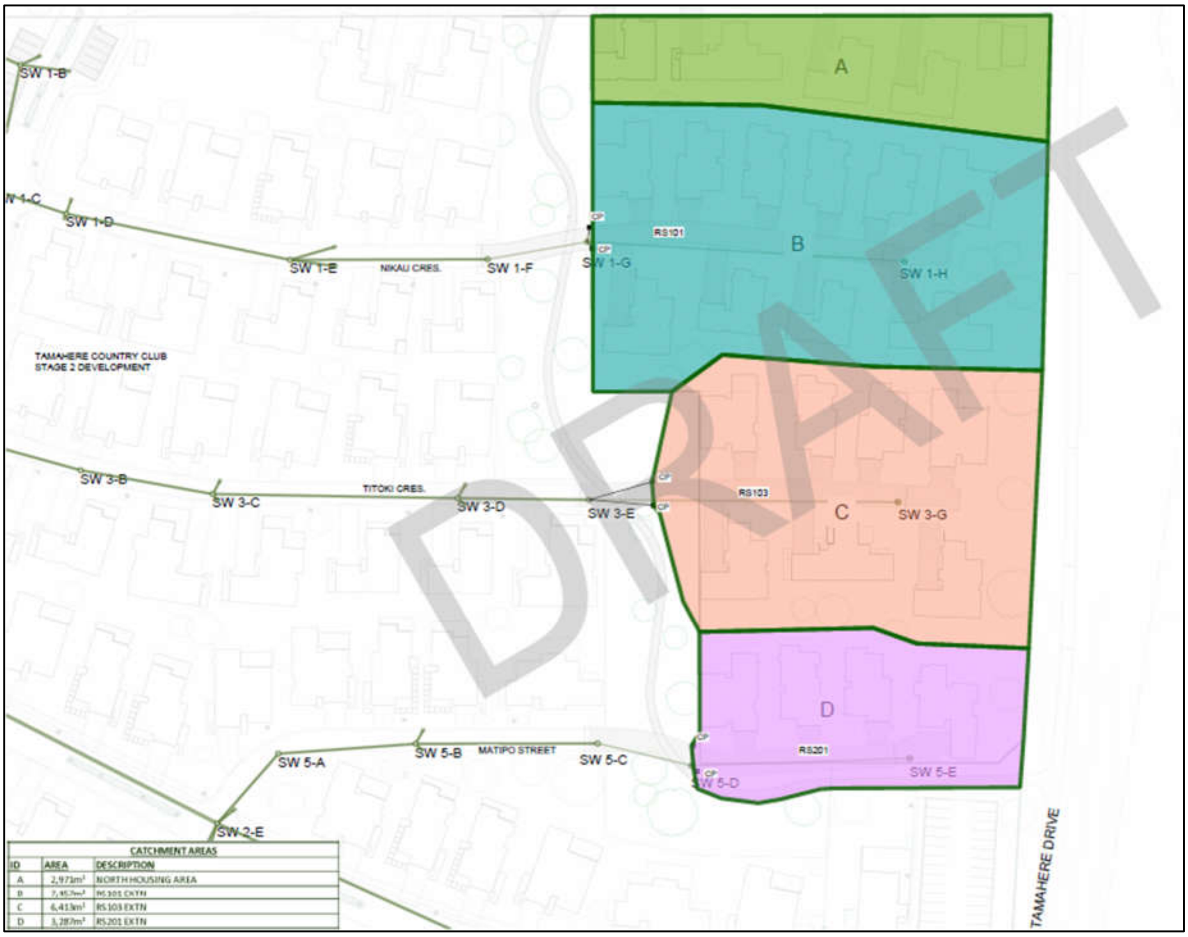
**Eastern Precinct**

Contributing Catchments: A, B, C and D

A = 2,971$m^2$   B = 7,457$m^2$   C = 6,413m2   D = 3,287$m^2$

Runoff Coefficients used: Impervious - 0.9 and Pervious - 0.3

Triton accommodates the 10-Yr runoffs from Catchments A, B, C and D



## Parameters

Units: Metric

Storage Volume: 800 Cu m

Chamber Selection: S-22

Header Row Position: Right

Fill Over Embedment Stone: 300 mm

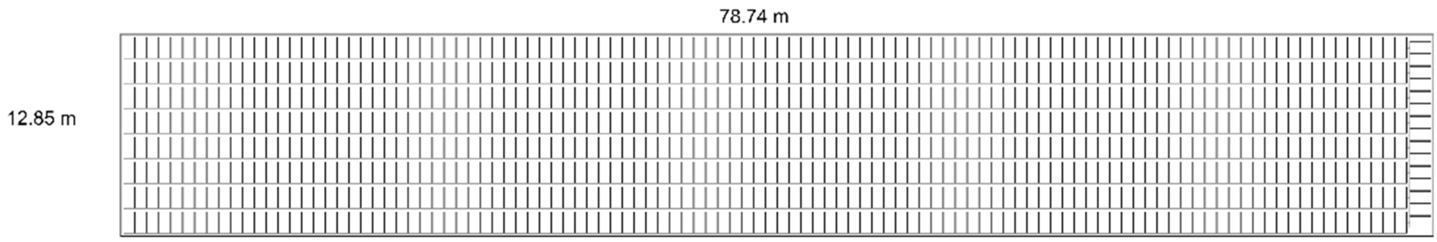
Min 300 mm fill over embedment stone

Controlled By: Width 13.5 m

**Embedment Stone: (mm)**

Over: 150 Under: 150 Porosity: 0.4

Min 150mm over and under




**Triton System Dimensions**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| L | 78.74 | m | Area | 1011.81 | $m^2$ | ΣCA | 14,090 | $m^2$ |
| W | 12.85 | m | Vol (net) | 800.00 | $m^3$ | Infiltration Rate | 1.39E-05 | m/sec |
| D | 0.89 | m | | | | Constant Outflow | | l/s |

| Duration | i | Q | $V_{runoff}$ | $V_{infiltration}$ | $V_{outflow}$ | $V_{storage}$ | Balance |
|---|---|---|---|---|---|---|---|
| | mm/hr | l/sec | $m^3$ | $m^3$ | $m^3$ | $m^3$ | $m^3$ |
| 10 min | 111.0 | 434 | 260.7 | 8.4 | 0.0 | 252.2 | 547.8 |
| 20 min | 76.7 | 300 | 360.2 | 16.9 | 0.0 | 343.4 | 456.6 |
| 30 min | 61.2 | 240 | 431.2 | 25.3 | 0.0 | 405.9 | 394.1 |
| 1 hr | 41.0 | 160 | 577.7 | 50.6 | 0.0 | 527.1 | 272.9 |
| 2 hrs | 26.7 | 105 | 752.4 | 101.2 | 0.0 | 651.2 | 148.8 |
| 6 hrs | 12.7 | 50 | 1073.7 | 303.5 | 0.0 | 770.1 | 29.9 |
| 12 hrs | 7.7 | 30 | 1305.3 | 607.1 | 0.0 | 698.2 | 101.8 |
| 24 hrs | 4.6 | 18 | 1548.8 | 1214.2 | 0.0 | 334.6 | 465.4 |
| 48 hrs | 2.7 | 10 | 1805.8 | 2428.3 | 0.0 | 0.0 | 800.0 |

Red Cells: user entry

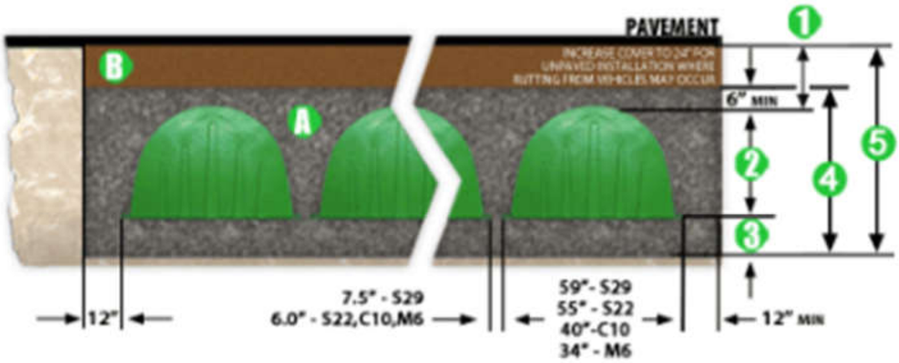
Green Cells: indicate excess system capacity (values are positive)

Yellow Cells: indicate storage shortfall (values are negative)

Length, Width and Volume of the Triton System are an output of the Triton Calculator at www.tritonsws.com/calculator

Refer to Cirtex® Stormwater Calculator Terms & Condition of use

# Project Results




| | |
|---|---|
| ❶ Cover Over System: | 300 mm |
| ❷ Height Of Chamber: | 888 mm |
| ❸ Embedment Stone Under Chambers: | 150 mm |
| ❹ Section Height: | 1189 mm |
| ❺ System Depth: | 1489 mm |
| Ⓐ Volume of Embedment Stone Required: | 664 Cu. m |
| Ⓑ Volume of Fill Material Required: | 303 Cu. m |

| | |
|---|---|
| Total Storage Provided: | 804 Cu. m |
| Type Of Chambers: | S-22 |
| # Of Spacers Required: | 7 |
| # Of Chambers Required: | 879 |
| # Of End Caps Required: | 18 |
| Required Bed Size: | 1012 Sq. m |
| Volume of Excavation: | 1204 Cu. m |
| * Area of Filter Fabric: | 1230 Sq. m |
| # of Chambers long: | 108 |
| # of rows: | 8 |
| Actual Trench Length: | 78.74 m |
| Actual Trench Width: | 12.85 m |

* Filter Fabric quantity for Fabric on Top and Sides of System Only, does not include overlap

TAMAHERE COUNTRY CLUB STAGE 6+7 DATE 12/10/2023

| | |
|---|---|
| TO: | James Templeton, WDC<br>Cc to Kathryn Drew BBO and Ciaran Murphy, Kotare Consultants |
| FROM: | TE MIRO WATER CONSULANTS LIMITED (MIKE CHAPMAN & ARUN GOPI) |
| SUBJECT: | S92: LUC0060/24-LDE response- 3 Waters mattersTamahere Country Club (TCC)-Stormwater South and East Stage (Stage 6 + 7). |

Dear James,

Thank you for review comments. This memo addresses your s92 query dated 13 September 2023 as per italics below and snip from the relevant section in the Waikato RITS.

*It is not clear within the Kotare report if the pipe grades (0.33% and 0.4% instances) proposed within the drawing detail have been assessed by Te Miro to meet suitable self-cleaning velocities as per RITS minimum grade.*
*RITS spec:*

**4.2.4.8 Minimum Gradients and Flow Velocities in Pipes**

Pipe gradients should be at a grade that prevents silt deposition. The minimum velocity should be at least 0.6m/s at a flow of half the 2 year ARI design flow. For velocities greater than 3.0m/s specific design to mitigate erosion is required.

As requested, we have now completed an assessment of the stormwater reticulation for the self-cleansing criteria in accordance with the RITS guidelines. The minimum gradients and flow velocities in pipe network required to prevent silt deposition has been assessed and the results/solutions are provided below for both the south and east extensions.

To summurise we have:

1. Provided the pipe sizing spreadsheet for both the south and east precincts with the design velocities listed for each pipeline.
2. The lines with the minimum design velocities have been assessed for a flow of half the 2 Year design storm in Hydraulic Toolbox.
3. The results from Hydraulic Toolbox show that all the lines except for the line from Catchment J in the south precinct can achieve the minimum velocity of 0.6m/s specified in RITS. The low velocity for Catchment J is due to the small size of the catchment and hence the low flow and corresponding velocity.
4. The minimum velocity required to achieve the self-cleaning criteria has also been calculated for the line from Catchment J and recommended.
5. The pipe assessment for the eastern precinct is shown in Figure 1-4 and for the southern in Figures 4-8.

Tamahere Stage 6 & 7 Pipe Sizing

Eastern Precinct

Stormwater Catchment

**Tamahere Stage 6 & 7**

**FACTORS**

| | | | | |
|---|---|---|---|---|
| Tc mins | 10 | | Runoff Coefficients | |
| f years | 10 | | Rd Cats - 85% Impervious & 15% Pe | 0.8 |
| i mm/hr | 13.05 | RCP 6.0 - 2 year *0.5 | Super Lots, Lots | 0.7 |
| Pipe Coeff.(mm) | 1.5 | Concrete pipe | Houses | 0.9 |

| PIPE LINE | INCREMENT | AREA (ha) | COEFF. | INTENSITY (mm/hr) | EQUIVALENT Increment | AREA Sum | FLOW (l/s) | DIA (mm) | GRADE (%) | CAPACITY (l/s) | VELOCITY (m/s) | CAPACITY Check |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Main Lines to SWMH 5-D** | | | | | | | | | | | | |
| SWMH5-E to SWMH5-D | Catchment D | 0.3287 | 0.70 | 13 | 0.2301 | 0.2301 | 8.3 | 300 | 0.40 | 65 | 0.9 | yes |
| **Main Line to SWMH 3-E** | | | | | | | | | | | | |
| SWMH3-F to SWMH3-E | Catchment C | 0.6413 | 0.70 | 13 | 0.4489 | 0.4489 | 16.3 | 375 | 0.20 | 83 | 0.7 | yes |
| **Main Lines to SWMH 1-G** | | | | | | | | | | | | |
| SWMH1-H to SWMH1-G | Catchment A | 0.2971 | 0.70 | 13 | 0.2080 | 0.2080 | | | | | | |
| | Catchment B | 0.7457 | 0.70 | 13 | 0.5220 | 0.7300 | 26.5 | 375 | 0.40 | 117 | 1.0 | yes |
| | | | | | | 1.4090 | | | | | | |

*Figure 1: Pipe Sizing spreadsheet for Eastern Precinct (half 2-year rain event)*

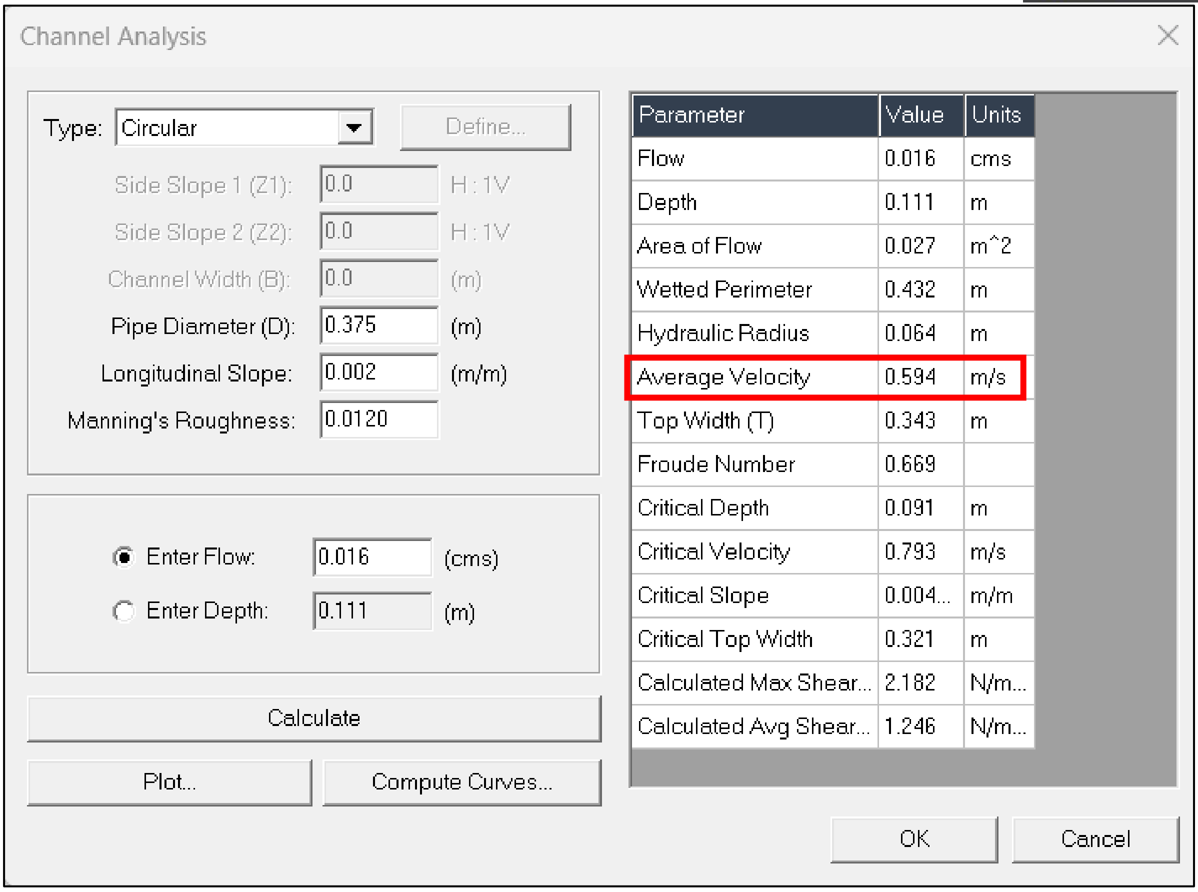
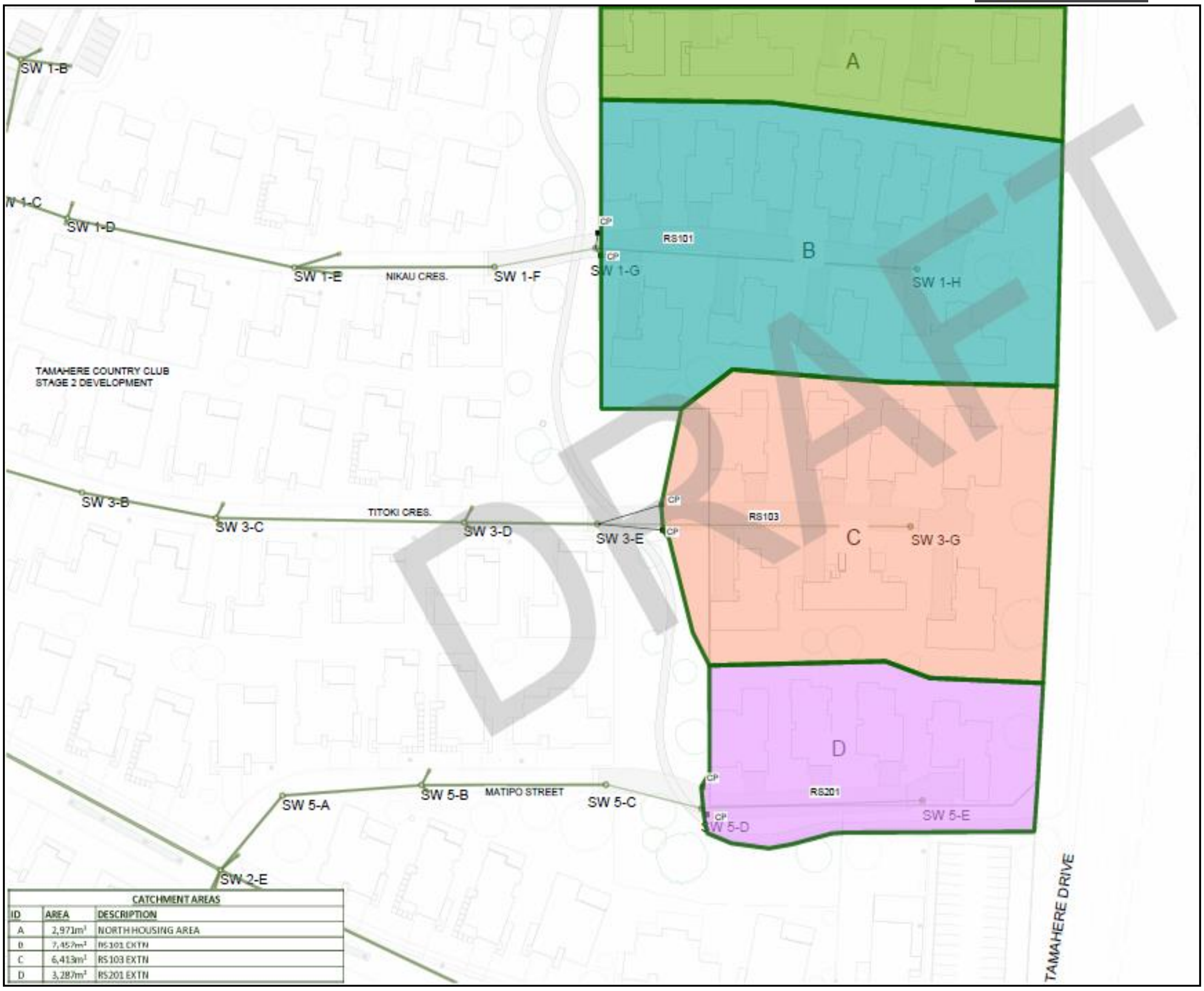



*Figure 2: Hydraulic Toolbox result for the line to MH3-E*

The pipeline to MH3-E is having the lowest velocity in the east precinct. Figure 2 shows the average velocity for a flow of half the 2 Year design storm is 0.6m/s (1dp), this meets the RITS minimum values as per RITS.




| CATCHMENT AREAS | | |
|---|---|---|
| ID | AREA | DESCRIPTION |
| A | 2,971m² | NORTH HOUSING AREA |
| B | 7,457m² | RS101 EXTN |
| C | 6,413m² | RS103 EXTN |
| D | 3,287m² | RS201 EXTN |

*Figure 3: Catchment Plan for Eastern Precinct*

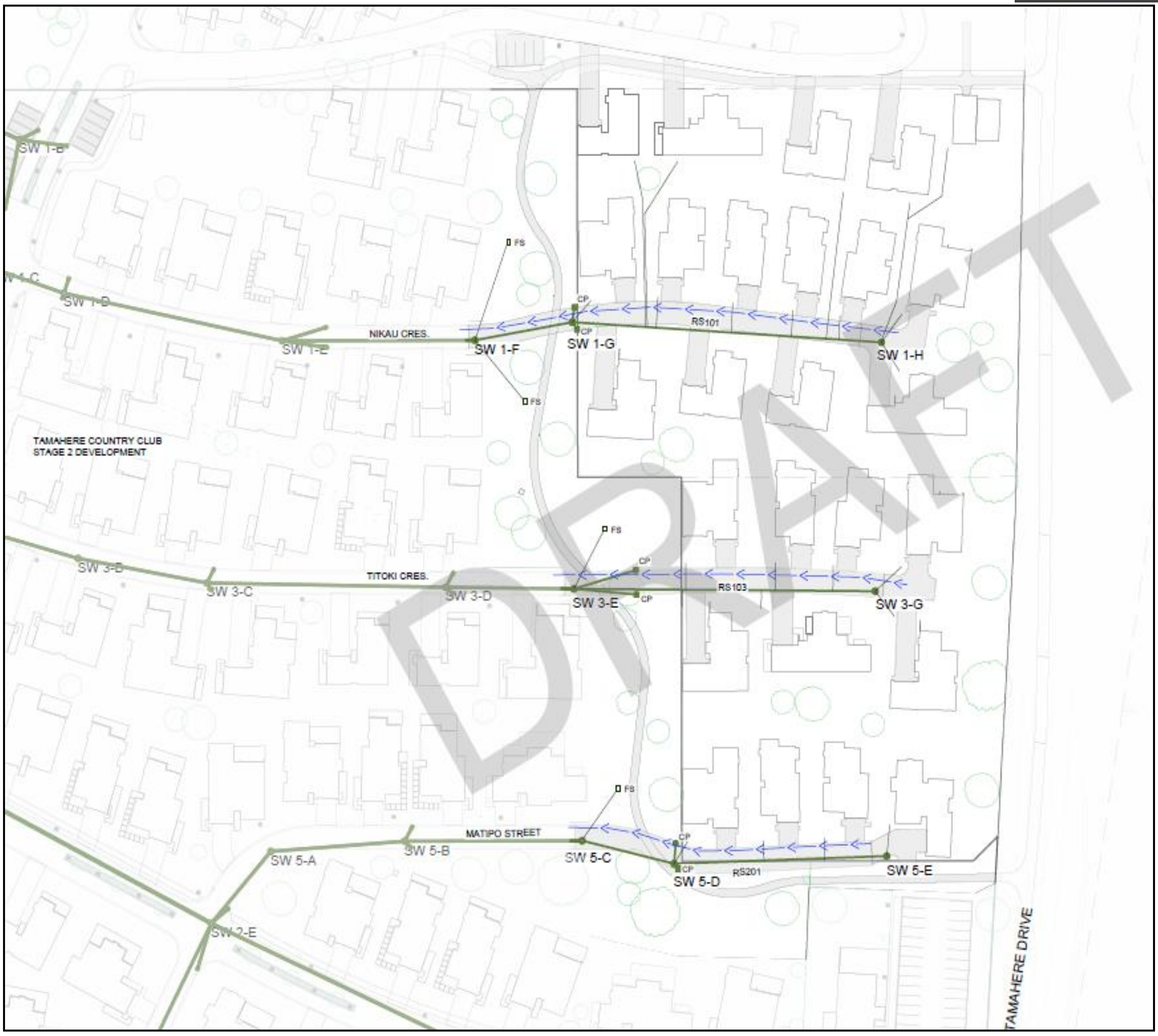


*Figure 4: SW Reticulation for Eastern Precinct*

Southern Precinct

Stormwater Catchment

# Tamahere Stage 6 & 7

FACTORS

| | | | |
|---|---|---|---|
| Tc mins | 10 | | |
| f years | 10 | | |
| i mm/hr | 13.05 | RCP 6.0 - 2 year *0.5 | |
| Pipe Coeff.(mm) | 1.5 | Concrete pipe | |

| Runoff Coefficients | |
|---|---|
| Rd Cats - 85% Impervious & 15% Pe | 0.8 |
| Super Lots, Lots | 0.7 |
| Houses | 0.9 |

| PIPE LINE | INCREMENT | AREA (ha) | COEFF. | INTENSITY (mm/hr) | EQUIVALENT Increment | AREA Sum | FLOW (l/s) | | DIA (mm) | GRADE (%) | CAPACITY (l/s) | VELOCITY (m/s) | CAPACITY Check |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Main Lines to SWMH 17-A** | | | | | | | | | | | | | |
| SWMH17-B to SWMH17-A | Catchment I | 0.4140 | 0.70 | 13 | 0.2898 | 0.2898 | 10.5 | | 300 | 0.40 | 65 | 0.9 | yes |
| **Main Line to SWMH 18-A** | | | | | | | | | | | | | |
| SWMH18-B to SWMH18-A | Catchment K | 0.5520 | 0.70 | 13 | 0.3864 | 0.3864 | 14.0 | | 300 | 0.40 | 65 | 0.9 | yes |
| **Main Lines to SWMH 10-A** | | | | | | | | | | | | | |
| SWMH10-E to SWMH10-D | Catchment P | 0.3007 | 0.85 | 13 | 0.2556 | 0.9318 | | | | | | | |
| | Catchment O | 0.1682 | 0.70 | 13 | 0.1177 | 1.0495 | | | | | | | |
| | Catchment L | 0.1231 | 0.80 | 13 | 0.0985 | 1.1480 | | | | | | | |
| | Catchment R | 0.0886 | 0.80 | 13 | 0.0709 | 1.2189 | | | | | | | |
| | Catchment N | 0.3299 | 0.70 | 13 | 0.2309 | 1.4498 | | | | | | | |
| | Catchment M | 0.2038 | 0.70 | 13 | 0.1427 | 1.5925 | | | | | | | |
| | Catchment H | 0.2894 | 0.70 | 13 | 0.2026 | 1.7951 | | | | | | | |
| | Catchment E | 0.4608 | 0.70 | 13 | 0.3226 | 2.1176 | | | | | | | |
| | Catchment Q | 0.2038 | 0.40 | 13 | 0.0815 | 2.1991 | 79.7 | | 525 | 0.40 | 285 | 1.3 | yes |
| SWMH10-D to SWMH10-C | Catchment D | 0.1819 | 0.70 | 13 | 0.1273 | 2.3265 | | | | | | | |
| | Catchment C | 0.1953 | 0.50 | 13 | 0.0977 | 2.4241 | 87.9 | | 600 | 0.40 | 405 | 1.4 | yes |
| SWMH15-C to SWMH15-B | Catchment B | 0.4269 | 0.70 | 13 | 0.2988 | 0.2988 | 10.8 | | 300 | 0.40 | 65 | 0.9 | yes |
| SWMH15-B to SWMH15-A | | - | 0.70 | 13 | 0.0000 | 0.2988 | 10.8 | | 300 | 0.40 | 65 | 0.9 | yes |
| SWMH15-A to SWMH10-C | | - | 0.70 | 13 | 0.0000 | 0.2988 | 10.8 | | 300 | 0.40 | 65 | 0.9 | yes |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SWMH10-C to SWMH10-B | | - | 0.70 | 13 | 0.0000 | 2.7230 | **98.7** | | 600 | 0.40 | **405** | 1.4 | **yes** |
| SWMH16-D to SWMH16-C | Catchment J | 0.1115 | 0.80 | 13 | 0.0892 | 0.0892 | **3.2** | | 300 | 0.33 | **59** | 0.8 | **yes** |
| SWMH16-C to SWMH16-B | | - | 0.70 | 13 | 0.0000 | 0.0892 | **3.2** | | 300 | 0.33 | **59** | 0.8 | **yes** |
| SWMH16-B to SWMH16-A | Catchment G | 0.3147 | 0.70 | 13 | 0.2203 | 0.3095 | **11.2** | | 300 | 0.33 | **59** | 0.8 | **yes** |
| SWMH16-A to SWMH10-B | Catchment F | 0.4172 | 0.70 | 13 | 0.2920 | 0.6015 | **21.8** | | 375 | 0.33 | **106** | 0.9 | **yes** |
| SWMH10-B to SWMH10-A | Catchment A | 0.5168 | 0.70 | 13 | 0.3618 | 3.6862 | **133.6** | | 675 | 0.40 | **552** | 1.5 | **yes** |
| SWMH10-A to SWMH7-E | | - | 0.70 | 13 | 0.0000 | 3.6862 | **133.6** | | 675 | 0.40 | **552** | 1.5 | **yes** |

*Figure 5: Pipe Sizing spreadsheet for Southern Precinct*

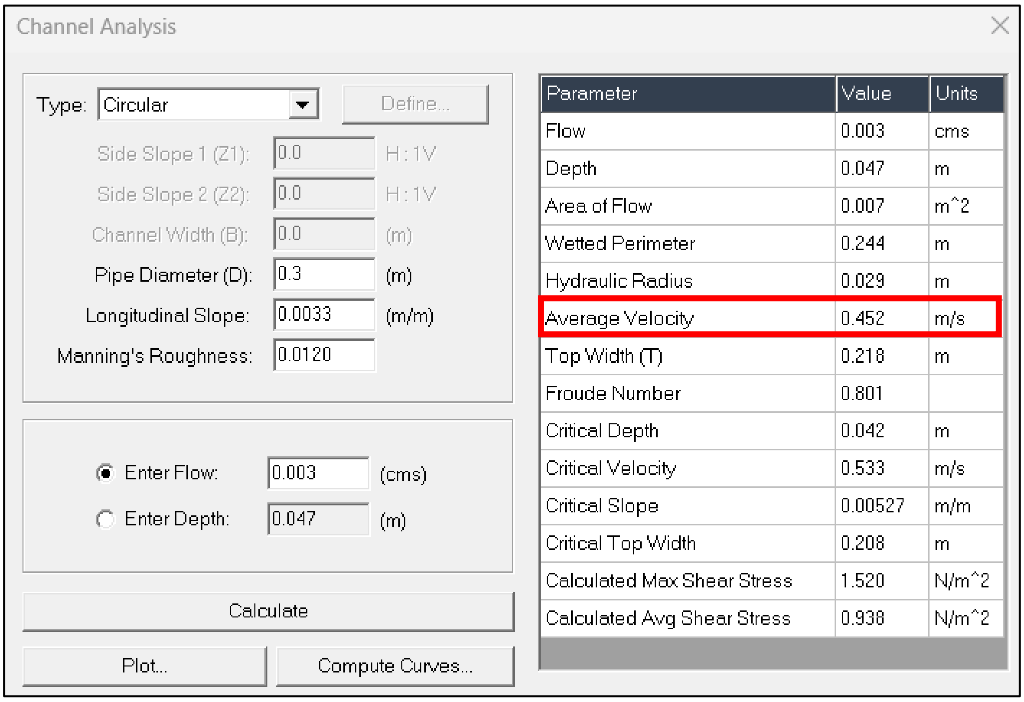



*Figure 6: Hydraulic Toolbox result for the line from MH16-D to MH16-C and MH16-C to MH16-B at 0.33% grade*

The pipeline from MH16-D to MH16-C is having the Lowest velocity and the average velocity (sub catchment J in Figure 9) for a flow of half the 2 Year design storm is 0.45m/s (Figure 6), however this is a small catchment with low flow. To achieve the minimum velocity of 0.6m/s, we would have to increase the grade to at least 0.75% for this line as shown in Figure 7.

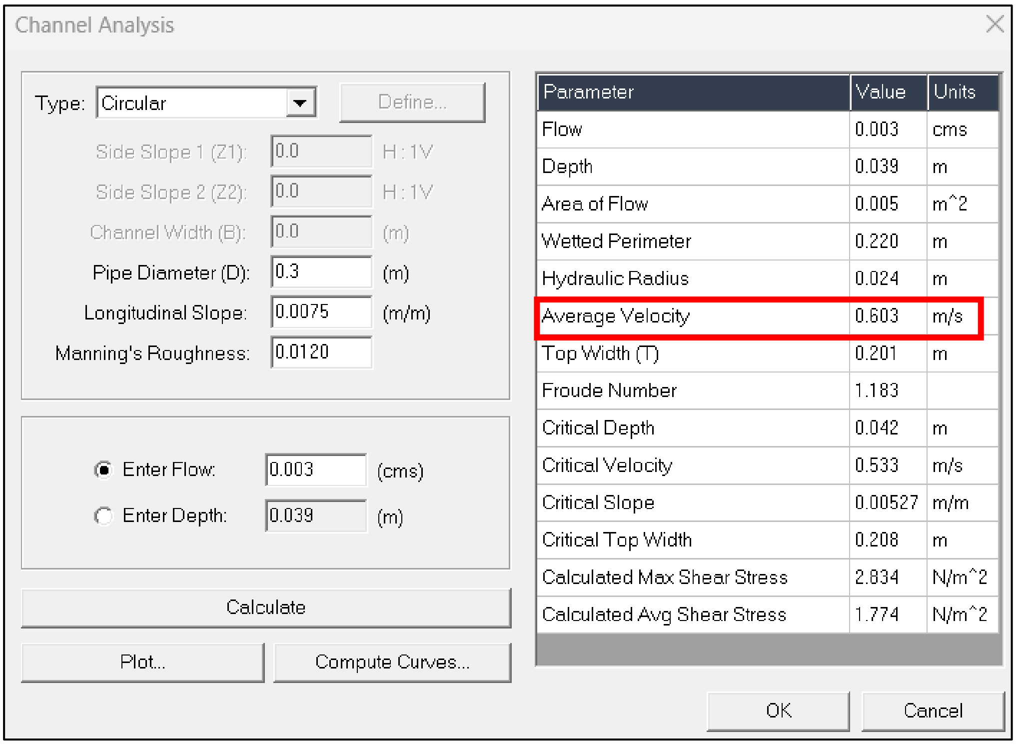



*Figure 7: Hydraulic Toolbox result for the line from MH16-D to MH16-C and MH16-C to MH16-B at 0.75% grade*

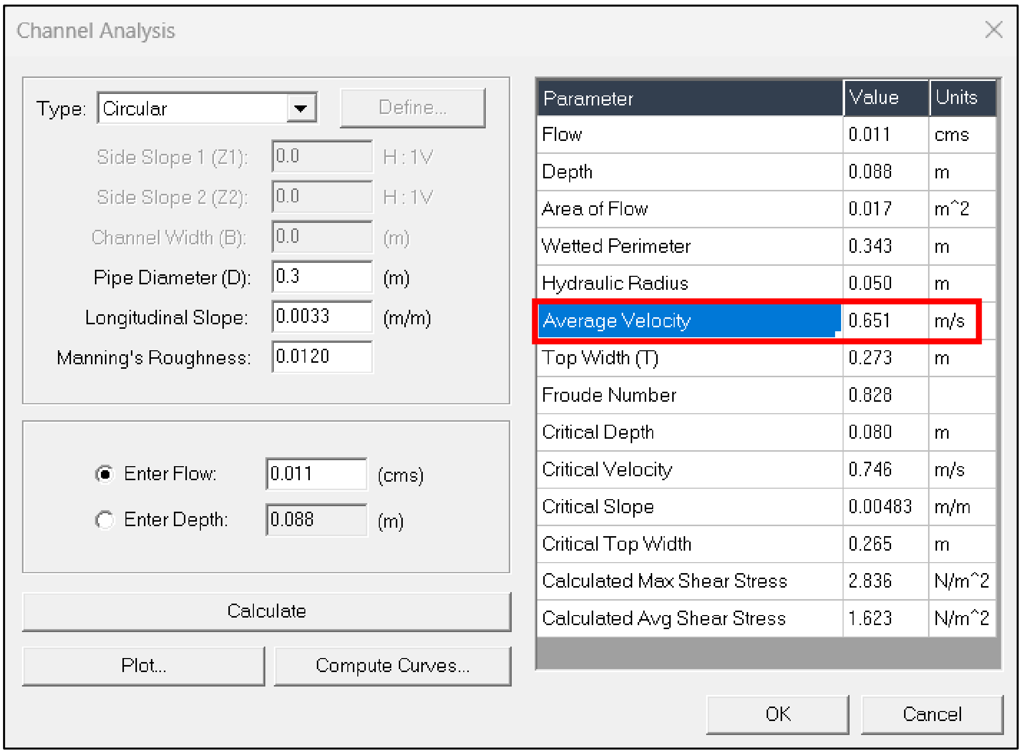
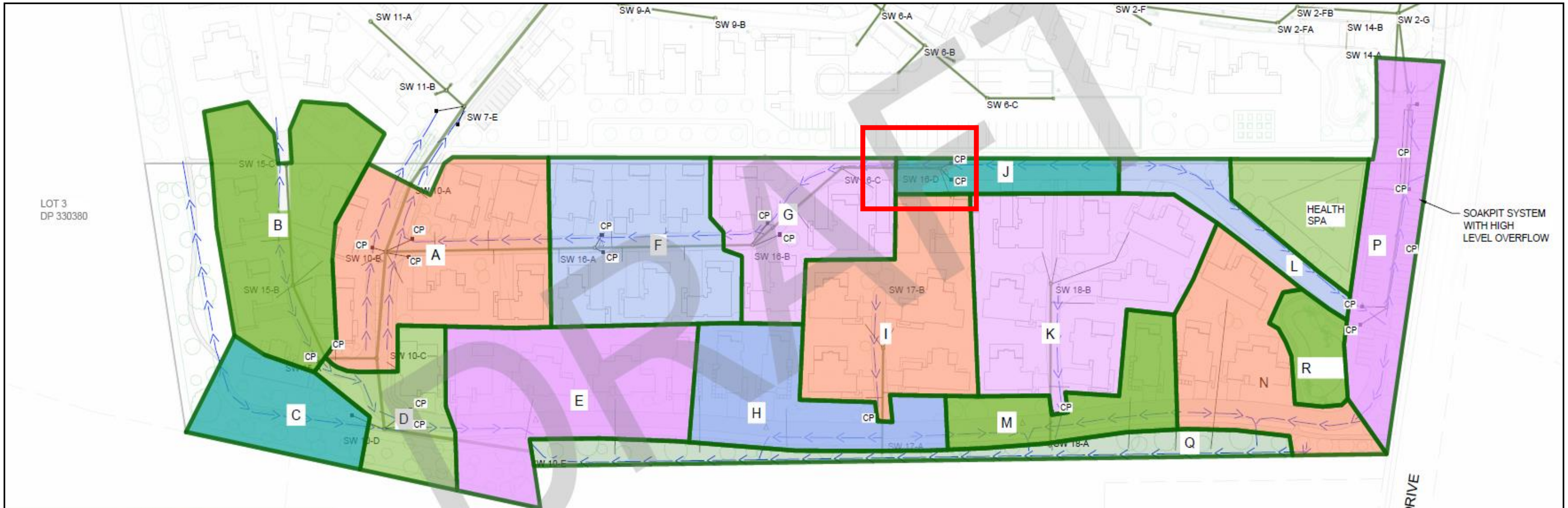



*Figure 8: Hydraulic Toolbox result for the line from MH16-B to MH16-A showing velocity at 0.33% grade*

The pipeline from MH16-B to MH16-A (sub catchment G and F) is having the next lowest velocity and the average velocity for a flow of half the 2 Year design storm is 0.65m/s as shown above in Figure 8, which meets the RITS minimum values as per specs.




**CATCHMENT AREAS**

| ID | AREA | DESCRIPTION |
|---|---|---|
| A | 5,168m² | RS100 EXTN |
| B | 4,269m² | RS102 EXTN |
| C | 1,953m² | WEST BACKYARD AREAS |
| D | 1,819m² | SOUTH AREA END OF RS100 EXTN |
| E | 4,608m² | RS100 SECTION ALONGSIDE SWALE |
| F | 4,172m² | RS109 SECTION |
| G | 3,147m² | RS109 SECTION |
| H | 2,894m² | RS100 SECTION ALONGSIDE SWALE |
| I | 4,140m² | RS110 (ACCESS WAY) |
| J | 1,115m² | RS109 SECTION |
| K | 5,520m² | RS111 (ACCESS WAY) |
| L | 1,231m² | RS109 SECTION |
| M | 2,038m² | RS100 SECTION ALONGSIDE SWALE |
| N | 3,299m² | RS100 SECTION ALONGSIDE SWALE |
| O | 1,682m² | HEALTH CENTRE |
| P | 3,007m² | CARPARKING AREA (TO SOAKAGE) |
| Q | 2,038m² | SWALE |
| R | 886m² | POND |

*Figure 9: Catchment Plan for Southern Precinct – red box highlights the low velocity section of network from small sub catchment J below RITS 0.6m/s.*

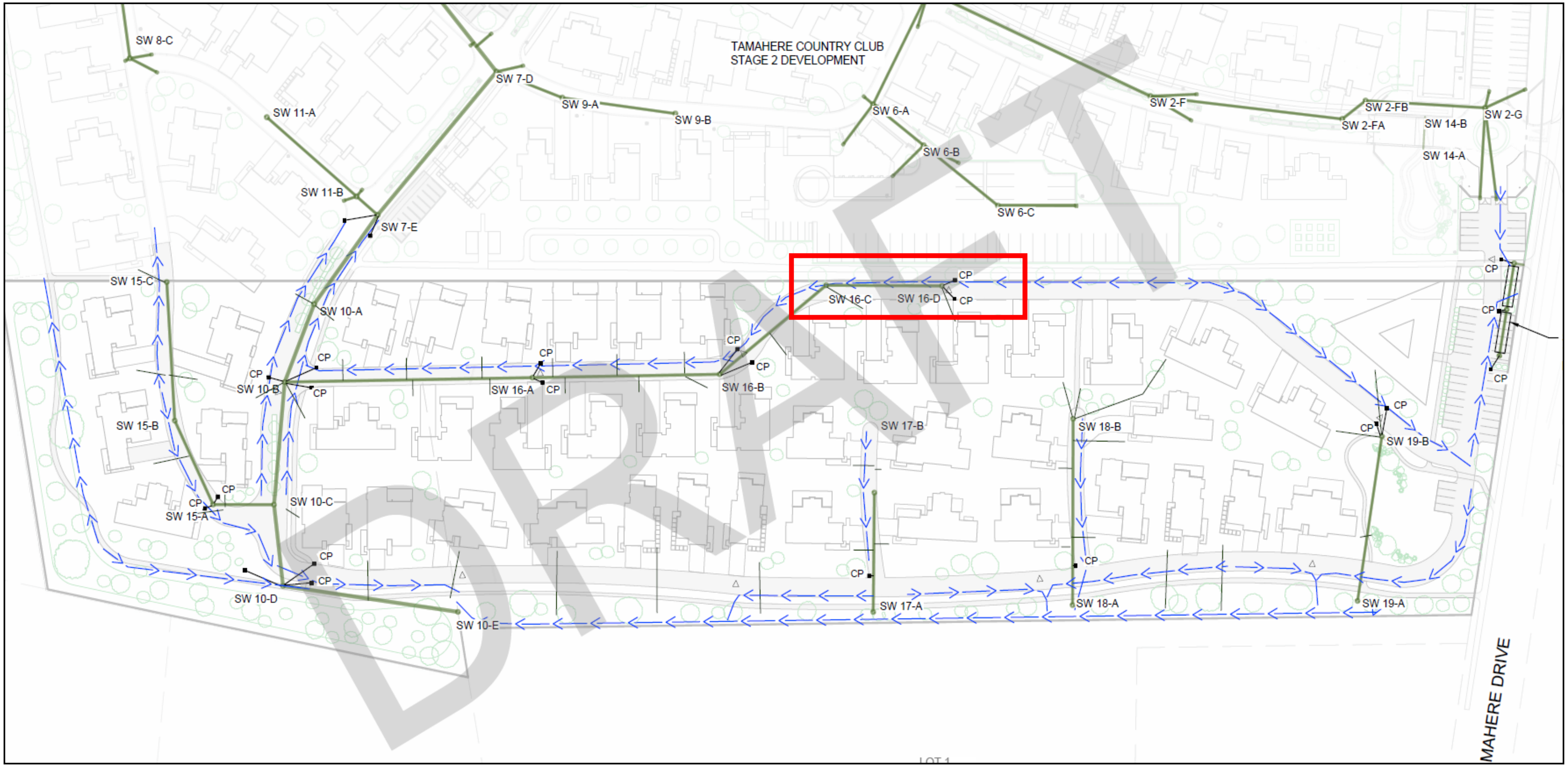



*Figure 10: SW Reticulation for Southern Precinct*

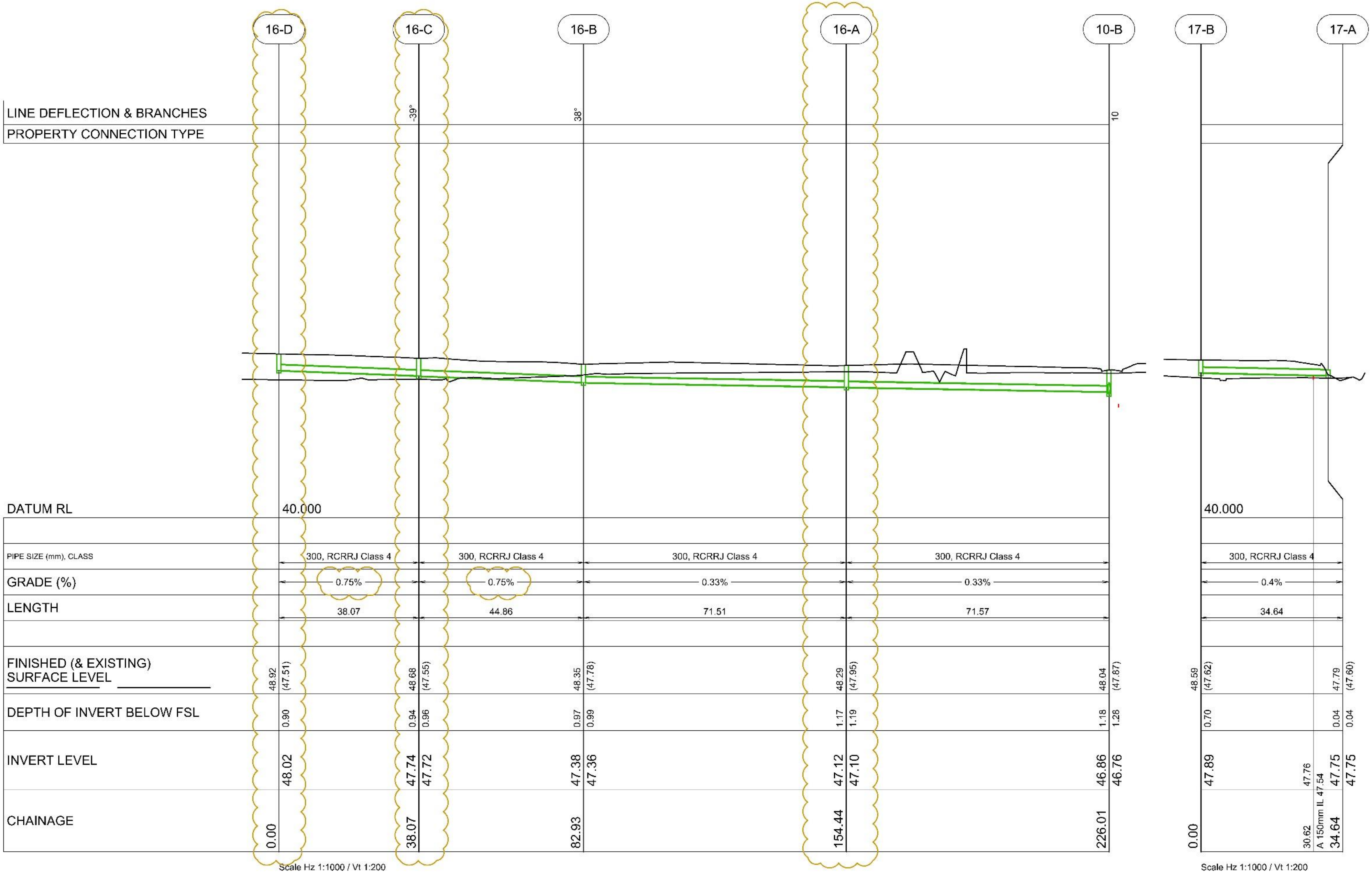



*Figure 11: Updated SW Long section drawing for Line 16 from Kotare*



Mount Eden 2000 :Hz DATUM
Moturiki '53 :Vt DATUM
:GEODETIC CODE - :ORIGIN MARK
:N :E :Z :COORDINATE
NOTES
DOCUMENT CONTROL TO BE RESPONSIBILITY OF PLAN HOLDER. DESIGN IN REFERENCE TO R.I.T.S/N.Z.S. UNLESS DETAILED.

Kotare CONSULTANTS

CLIENT: TAMAHERE COUNTRY CLUB SOUTH PRECINCT

PROJECT TITLE: STORMWATER LONGSECTION SHEET 2

BY: CHK: APR:
STATUS: FOR CONSENT
CHANGELOG: REFER TO DRAWING REGISTER
SCALE: (A3) 1:AS
DATE 03.10.2023
PLAN 1011.03-40-SW-422
REV B

K:\KC - DOCUMENTS\1011 - TAMAHERE COUNTRY CLUB\01 DRAWINGS\03 CADD_SOUTH PRECINCT\1011.03-40-SW-422_SW LONGSECTIONS.DWG | 2023-10-03 20:02:25

## CONCLUSIONS AND RECOMMENDATIONS

1. The pipe sizing spreadsheets provided in this memo demonstrates that all the lines except for the lines from MH16-D to MH16-C and MH16-C to MH16-B achieve a minimum flow velocity of 0.6m/s to meet the self-cleaning criteria in the RITS.
2. This is due to the small size of the contributing catchment J, which has a low flow of 3.2l/s going through the pipes.
3. Based on the Hydraulic Toolbox result, a revised gradient of 0.75% (0.33% up to 0.75%) is needed for this short section of line to achieve the minimum flow velocity of 0.6m/s. Kotare Consultants Ltd has updated their drawing set with the recommended gradient of 0.75% for the lines from MH16-D to MH16-C and MH16-C to MH16-B as highlighted in Figure 11.
4. The pipe gradients for all the other lines are at a grade that prevents silt deposition. The minimum velocity of 0.6m/s at a flow of half the 2 Year ARI design flow is achieved.
5. No pipelines had a velocity greater than 3m/s.

# APPENDIX C

## Previous Stage Reference Plans


KOTARE CONSULTANTS – Unit D Victoria Arcade, 75D Victoria Street, Cambridge 3434 – 07 827 5340 – ciaran@kotareconsultants.nz


NOTES:

1. HEIGHTS ARE IN TERMS OF MOTURIKI VERTICAL DATUM 1953
2. CONTOUR INTERVAL 0.25m (where applicable)
3. AREAS AND DIMENSIONS SHOWN ARE SUBJECT TO FINAL SURVEY. Design TBC onsite by Engineer

Kotare CONSULTANTS

PLAN TITLE

COMBINED SERVICES STAGE 1 SETOUT
TAMAHERE COUNTRY CLUB
SOUTH EXTENSION
AT 70 TAMAHERE DRIVE, TAMAHERE
SANDERSON GROUP

| REVISION | | |
|---|---|---|
| Rev0 | Original | 25 MAR 2021 |

DATE: 8 Dec 2021
CAD: CPM
JOB: 1011
ORIGINAL SCALE AT A3: 1:1500
SHEET: 16A0
REV 01

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Kotare Consultants Limited: Unit D Victoria Arcade, 75 Victoria Street, Cambridge 3434 NZ Tel: 07 827 5340 office@kotareconsultants.nz


## Wastewater Treatment Plant
(Refer to Report)

Design flow = 82,000 L/day wastewater and 130,000L/day total to account for Inflow and Infiltration
Conventional Sewer Reticulation via 2 Pump Stations
Innoflow Technologies AX1600 recirculating textile packed bed reactor (rtPBR) system.
The amended wastewater treatment system comprises the following components.

- 1 x 6,000 litre triple chamber grease trap to be located at the cafe kitchen.
- 11 x 25,000 litre septic tanks (Total 275,000 litres) with effluent outlet filters on the final tank.
- 3 x 25,000 litre pre-anoxic tanks.
- 8 x 25,000 litre recirculation tanks.
- 2 x 25,000 litre post-anoxic tanks.
- 16 x AX100 recirculating textile filter pods (AX1600).
- 2 x 25,000 litre treated effluent tanks.
- High water level alarms in all pump chambers
- Discharge water meter (+/-5% accuracy), data logger and remote monitoring connection.

## Wastewater Disposal Beds
(Refer to Report)

- Discharge volume = 60,000 litres/day. Remainder of wastewater discharged in existing system.
- Total basal area = 2,000$m^2$ comprising 4 beds each 125m long by 4 m wide, by 600mm deep with min 1m spacing between beds.
- Basal loading rate 30.0 litres/$m^2$/day
- Distribution over bed base by LPED, each bed in 3 zones.

NOTE: Plan based on drawing prepared and provided by Sanderson Group Ltd.

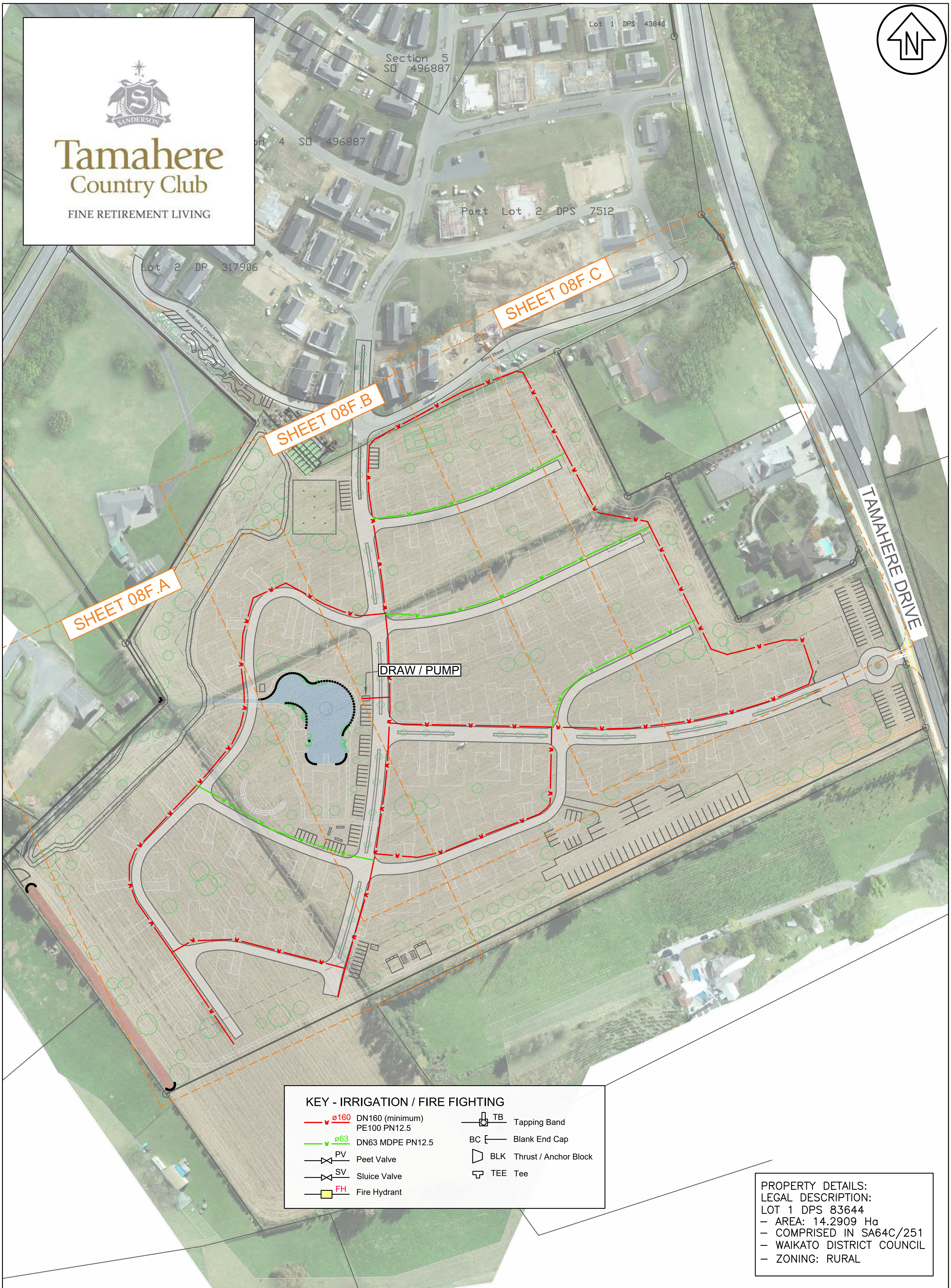
ORMISTON ASSOCIATES LTD
CONSULTANTS IN GEOTECHNICAL ENGINEERING, GEOLOGY & ENGINEERING GEOLOGY
Level 2, 90 Symonds Street, Grafton, Auckland City
P O Box 47-822, Ponsonby, Auckland 1144, New Zealand
Ph (09) 302 2193 Fax (09) 302 2197 Email: mail@ormiston.co.nz

CLIENT: Sanderson Group Ltd.
LOCATION: Tamahere Country Club - 46 Tamahere Drive
TITLE: Wastewater Site Plan - Expansion Area

SCALE: 1:2000 @ A3
DRAWN: TLS
DATE: June 2021
CHECKED: AWO

DRAWING NO
4816-1
SHEET 1 OF 1


Document Set ID: 4350583
Version: 2, Version Date: 28/03/2024




Kotare CONSULTANTS

PLAN TITLE

# WATER – FIREFIGHTING LAYOUT OVERVIEW
TAMAHERE COUNTRY CLUB
STAGE 4 (SOUTH)
AT 70 TAMAHERE DRIVE, TAMAHERE
SANDERSON GROUP

| REVISION | | |
|---|---|---|
| Rev0 | Original | APRIL 2021 |

DATE: MAY 2022
CAD: CPM
JOB: 1011
SCALE AT A3: 1:2000
SHEET: 08-01
REV 01

Kotare Consultants Limited: Unit D Victoria Arcade, 75 Victoria Street. Cambridge 3434 NZ Tel: 07 827 5340 office@kotareconsultants.nz

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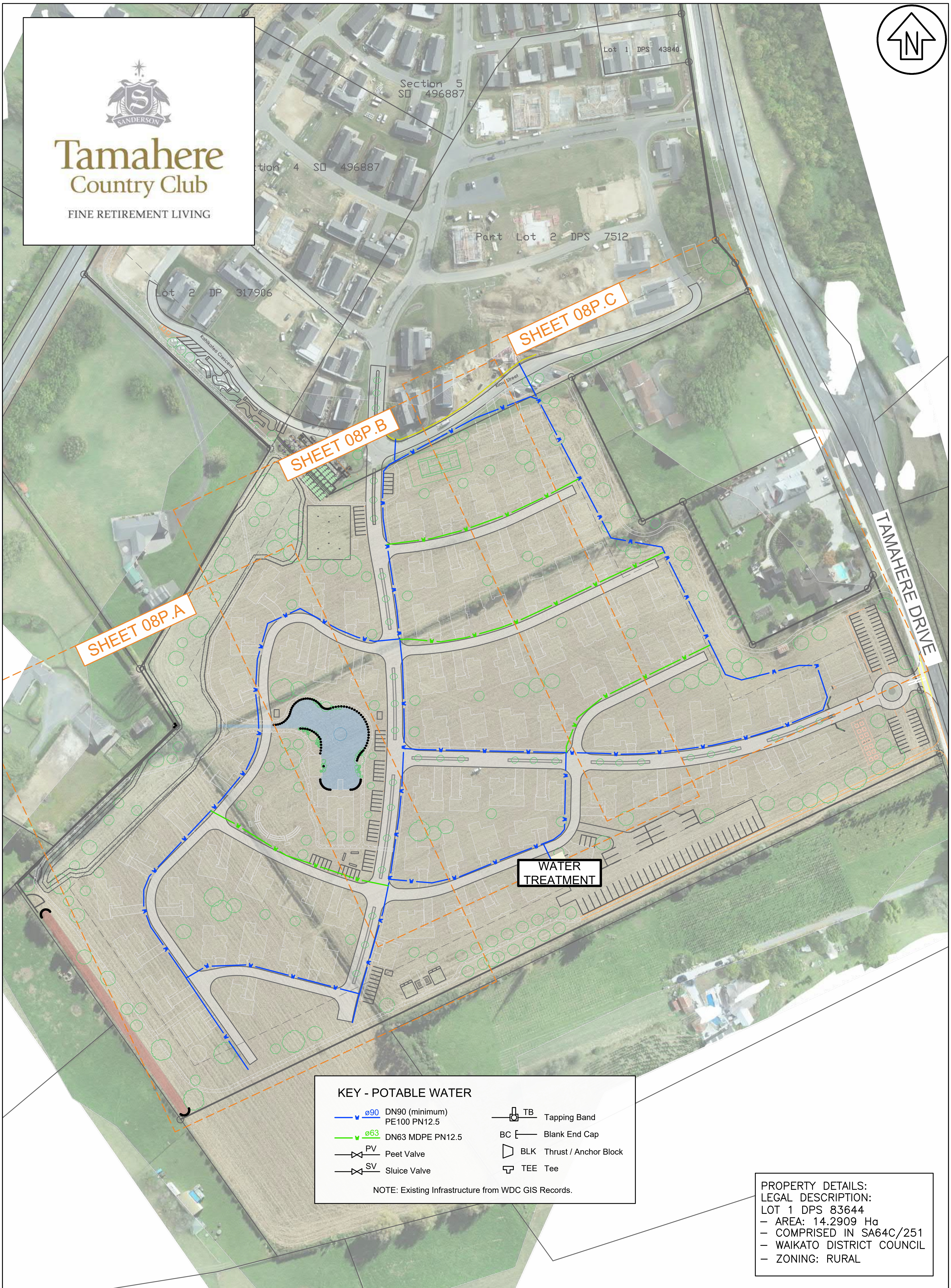
Tamahere Country Club
FINE RETIREMENT LIVING




KEY - POTABLE WATER

| | | | |
|---|---|---|---|
| ø90 | DN90 (minimum) PE100 PN12.5 | TB | Tapping Band |
| ø63 | DN63 MDPE PN12.5 | BC | Blank End Cap |
| PV | Peet Valve | BLK | Thrust / Anchor Block |
| SV | Sluice Valve | TEE | Tee |

NOTE: Existing Infrastructure from WDC GIS Records.

PROPERTY DETAILS:
LEGAL DESCRIPTION:
LOT 1 DPS 83644
- AREA: 14.2909 Ha
- COMPRISED IN SA64C/251
- WAIKATO DISTRICT COUNCIL
- ZONING: RURAL

Kotare CONSULTANTS

PLAN TITLE

WATER RETICULATION CONCEPT PLAN
TAMAHERE COUNTRY CLUB
STAGE 4 (SOUTH)
AT 70 TAMAHERE DRIVE, TAMAHERE
SANDERSON GROUP

| REVISION | | |
|---|---|---|
| Rev0 | Original | APRIL 2021 |

DATE: MAY 2022
CAD: CPM
JOB: 1011
SCALE AT A3: 1:2000
SHEET: 08-05
REV 01

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Kotare Consultants Limited: Unit D Victoria Arcade, 75 Victoria Street, Cambridge 3434 NZ Tel: 07 827 5340 office@kotareconsultants.nz

# APPENDIX C

## Previous Stage Reference Plans


KOTARE CONSULTANTS – Unit D Victoria Arcade, 75D Victoria Street, Cambridge 3434 – 07 827 5340 – ciaran@kotareconsultants.nz