MAVEN

INFRASTRUCTURE REPORT (for Plan Change)

41-43 Brigham Creek Road Whenuapai

CIVIL ENGINEERING ▼ SURVEYING ▼ LAND DEVELOPMENT

PROJECT INFORMATION

CLIENT	Ai Ling
PROJECT	210001

DOCUMENT CONTROL

DATE OF ISSUE	03/11/2021
REVISION	B
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CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 PROJECT

The purpose of this report is to provide an assessment of infrastructure associated with the future proposed residential development and subdivision at 41-43 Brigham Creek Road, Whenuapai identified within Figure 1 Locality Plan (Below).

The site is contained within the **Future Urban Zone** of the Auckland Unitary Plan – Operative in Part ('AUP – OP'). A plan change application is underway to change the current site zoning to a **Residential - Mixed Housing Urban Zone**. This Infrastructure Report is a supporting document for the proposed Plan Change ("PC").

Figure 1: Locality Plan (retrieved from Auckland Council GIS)

The information provided herein relates to the stormwater, wastewater, water supply and other service infrastructure to serve the proposed subdivision, which is expected to yield an approximate 200 Lots.

The calculations and assessments included in this report are preliminary in nature, based on information available at time of issue. A detailed and comprehensive design of the civil infrastructure will be conducted after the PC during the subdivision stage.

1.2 LEGAL DESCRIPTION

Address	41-43 Brigham Creek Road, Whenuapai
Site Area	5.1921 Ha
Legal Description	LOT 2 DP 538562
AUP Zoning	Future Urban Zone

1.3 SITE DESCRIPTION

The site is bounded by Brigham Creek Road to the north and Mamari Road to the East.

The site is situated within an evolving semi-rural environment. Surrounding properties are a mix of residential lots and un-developed/vacant land. Surrounding landholdings support a mixture of future urban, residential, and business activities.

Access to the site is via a private accessway off Brigham Creek Road.

The balance of the site supports pasture paddocks which have been grazed. Existing shelterbelts and scattered landscape planting also exist. None of the trees within the development are classified as 'notable' or have an additional level of protection under the AUP(OP).

The site is best described as gently rolling. Highest elevations (RL 28.0m) are located centrally. Ground levels then drop unevenly with notable falls towards the western, southern, and south-eastern sections of the site. Lowest elevations (RL 21.0m) are recorded in the south-eastern corner.

1.4 PROPOSED DEVELOPMENT

As shown in Figure 2 below, the current proposal is to build a 230 Lot (free hold) residential development at the site. The proposed development will also include new public roads (vested to Auckland Transport) and Joint Owned Access Lots (JOALs).

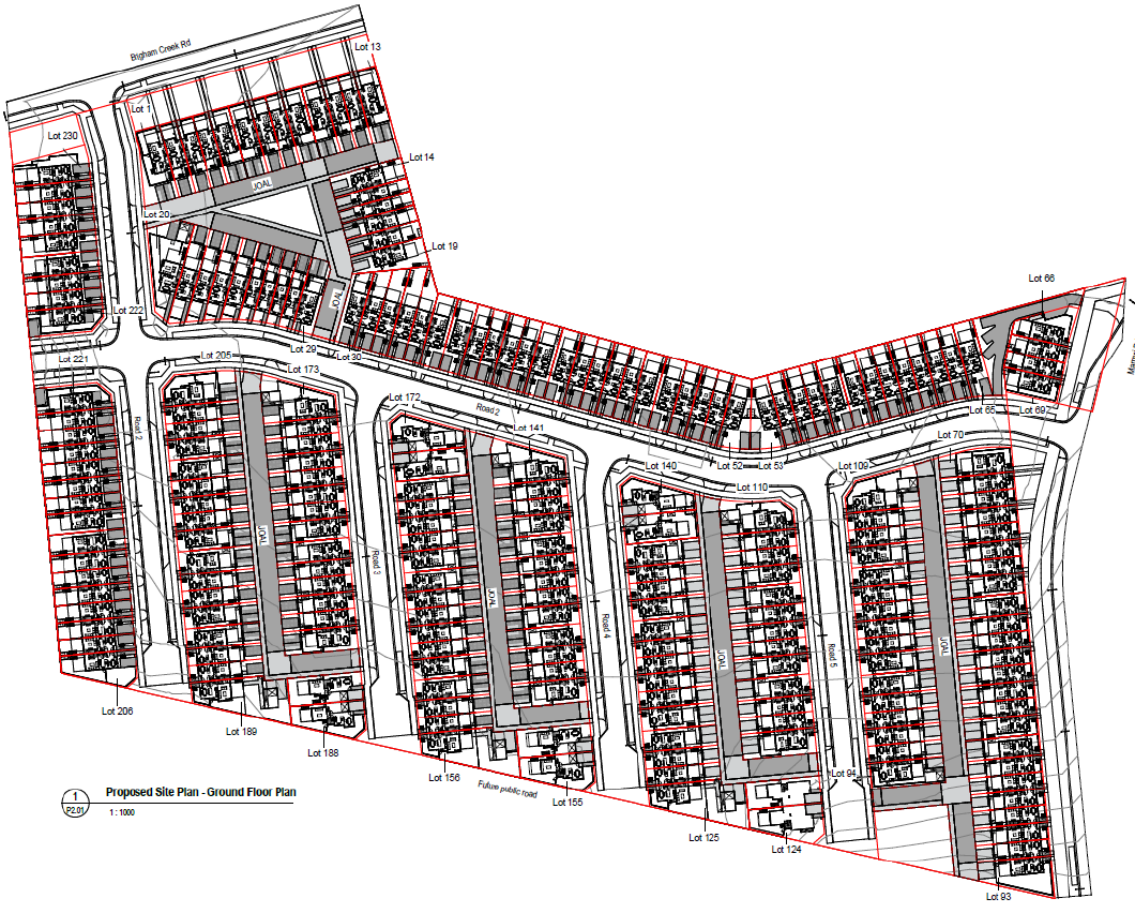


Figure 2: Development Concept Plan (via. TeamArchitects)

2.0 EARTHWORKS

A detailed earthworks design and strategy will be developed during the sub-division stage.

Earthworks will be carried out for the preparation of building platforms, pavement areas (including JOALs and public roads), underground services, construction of stormwater management devices, drainage and retaining walls as required.

Erosion and sediment control plans will be designed accordingly, and in accordance with Auckland Council design manual GD05 Erosion and Sediment Control Guide for Land Disturbing Activities in the Auckland Region.

Future earthworks operations will be supervised by a geotechnical engineer to ensure safety and a completion certificate will be provided at the completion of the earthworks as required.

2.1 EROSION AND SEDIMENT CONTROL

An erosion and sediment control plan will be implemented during site works in accordance with the guidelines of Auckland Council's GD05 document. The Resource Consent will require that erosion and sediment control measures are implemented and maintained in accordance with the Engineering Drawings.

As part of the plan, installation of sediment retention ponds ('SRP') and decanting earth bunds will be required.

Appropriate erosion and sediment controls will need to be installed onsite prior to the earthworks commencing. All control measures will be checked and confirmed acceptable by the Engineer before works commence.

3.0 OVERLAND FLOW AND FLOODING

A Stormwater Management Plan ('SMP') has been developed by Maven Associates for the development as part of the PC application. The plan has been developed in accordance with the Whenuapai Structure Plan that governs developments in the greater Whenuapai Catchment.

The plan summarizes the proposed stormwater strategy to mitigate the effects of and enable the proposed development in relation to the overland flow and flood plain environment in and around the site.

4.0 STORMWATER

The Auckland Council Stormwater Code of Practice sets out design and construction standards for stormwater and requires all land development projects to be provided with a means of stormwater disposal.

4.1 STORMWATER RETICULATION

New public stormwater infrastructure is proposed to service the development for the 10% AEP event.

The proposal includes a new public network be built within the site and the Mamari Road reserve. The network under Mamari Road will run south with an outfall structure discharging into Sinton Stream. The outfall will be specifically designed for erosion control.

Stormwater for the entire development will gravity discharge towards this south-eastern corner before being conveyed via this public network under Mamari road to ultimately discharge into the Sinton Stream.

As part of the proposed plan change discussions Auckland Council have requested further information for an indicative analysis of post-development sub-catchments and pipe capacity to confirm whether the amount of potential run-off given the level of development proposed can be accommodated by a stormwater reticulation network. Please refer to C450 for the 10-yr Stormwater Catchment Plan and capacity calculations in **Appendix B**, and plan series C400 **(Appendix C)** for the proposed reticulation design.

The analysis confirms that the proposed development can be adequately serviced by a future public stormwater network in accordance with the AC SWCoP.

Please note the proposed stormwater design is preliminary only and the proposed ground levels are subject to change. Final engineering design is to be confirmed at the Resource Consent stage.

4.2 STORMWATER ATTENUATION

The PAUP has classified the Whenuapai catchment area as a Stormwater Management Area for Flow 1 (SMAF 1). Hydrology mitigation (retention and detention) is required.
SMAF 1 mitigation requirements specified in E10 are as follows:

Stormwater management area control	Hydrology mitigation requirements
(1) Except as provided for in (2) below the following applies:	
Stormwater management area – Flow 1	(a) provide retention (volume reduction) of at least 5mm runoff depth for the impervious area for which hydrology mitigation is required; and (b) provide detention (temporary storage) and a drain down period of 24 hours for the difference between the pre-development and post-development runoff volumes from the 95th percentile, 24 hour rainfall event minus the 5 mm retention volume or any greater retention volume that is achieved, over the impervious area for which hydrology mitigation is required.

Stormwater management for areas of SMAF1 will be applied as follows:

- Retention of the first 5mm rainfall runoff depth volume generated from impervious areas; and
- Detention of the runoff volume generated from impervious areas for the 95% percentile rainfall event released over a 24-hour period.

Please refer to SMP that details the SMAF strategy for the proposed development.

4.3 STORMWATER QUALITY

The proposed stormwater quality strategy will incorporate a Water Sensitive Design approach focusing on reducing or eliminating stormwater contaminates potentially discharging into the ultimate downstream receiving environment (Sinton Stream).

The high-level strategy for the stormwater quality treatment has been detailed in SMP.

5.0 WASTEWATER

The Watercare Code of Practice for Land Development and Subdivision sets out the design principles for wastewater and requires any development project to be provided with a means of wastewater disposal.

5.1 WASTEWATER RETICULATION

There is currently no available connection to the public wastewater reticulation for the subject site.

An internal public wastewater reticulation network will be designed for the development. Individual lot connections will be installed on the proposed public mains.

The public network will gravity discharge into a new wastewater pumpstation, which will be located in the south-eastern corner of the development. As per Watercare's feedback, this pump station will be public. The future development at 45 Brigham Creek Road – which is anticipated to support a commercial tenancy (supermarket) will also discharge to this pump station via public rising mains.

The development pumpstation will discharge into a future Brigham Creek Road pumpstation. Watercare have confirmed the future installation of this pumpstation, which will be commissioned in 2024. The is pumpstation will ultimately discharge into the Watercare Northern Interceptor in the future.

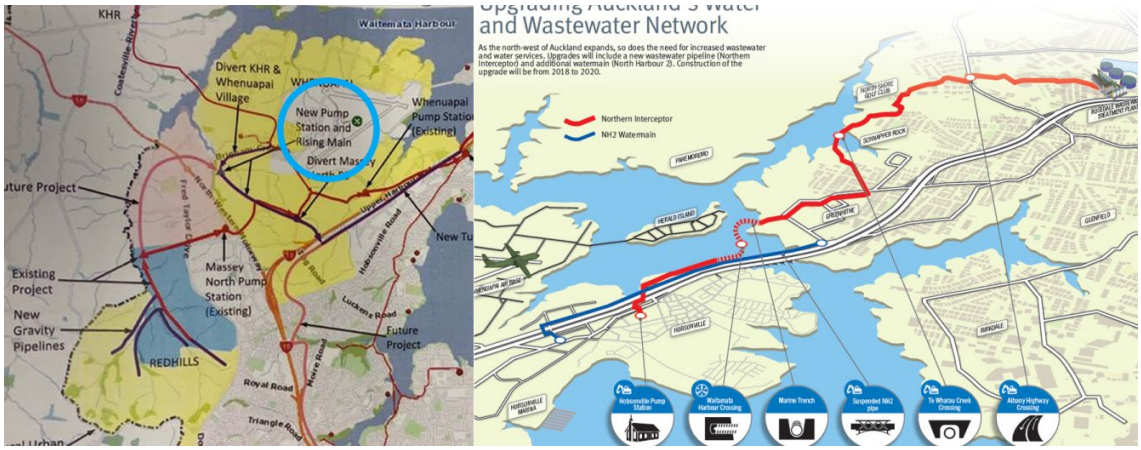


Figure 3: Future Brigham Creek Pumpstation & Northern Interceptor

Watercare have confirm that an interim wastewater solution will not be required, and the development pump station can discharge directly into to the future Brigham Creek Road pumpstation (2024) via. public rising mains under the public road reserve.

Please refer to plans C520 and C550 in the appendices for more information.

Final public wastewater network design will be subject to the approval of the Resource Consent and a future Engineering Plan Approval.

5.2 WASTEWATER CAPACITY

An application to Watercare has been made for a capacity assessment of the wastewater supply.

The proposed development network will be designed to have capacity for peak wet weather discharge, as per the WWCOP.

As per the calculations in **Appendix A,** the proposed development will result in a peak wet weather flow (PWWF) of 9.63 L/s.

The commercial development at 45 Brigham Creek Road will result in a peak wet weather flow of 20.10 L/s.

Overall, the proposed pump station for the development will designed at a minimum PWWF of 29.37 L/s.

6.0 WATER SUPPLY

The Watercare Code of Practice for Land Development and Subdivision sets out the design principles for water supply and requires assessment against SNZPAS 4509:2008 NZ Fire Service Fire Fighting Water Supply Code of Practise

6.1 POTABLE WATER SUPPLY

An application to Watercare has been made for a capacity assessment of the water supply.

A new public water supply network will be installed under the future public roads to service the development. The proposed network will connect to the existing Ø315mm watermain running under the Brigham Creek Road reserve (confirmed by GIS), north of the subject development. All lots will be serviced by individual lateral connections off the new water supply mains.

Calculations **(Appendix A)** for the proposed development indicate a peak water demand of 8.78 L/s.

Final public water supply design will be subject to the approval of the Resource Consent and a future Engineering Plan Approval

6.2 FIRE FIGHTING SUPPLY

The minimum firefighting water supply classification for residential development is FW2. Therefore, any future residential development must meet the following water supply requirements:

- A primary water flow of 12.5 litres/sec within a radial distance of 135m
- An additional secondary flow of 12.5 litres/sec within a radial distance of 270m
- The required flow must be achieved from a maximum of one or two hydrants operating simultaneously.
- A minimum running pressure of 100kPa

The new water supply network for the development will meet these requirements for adequate firefighting.

Flow rates and pressures will be tested to confirm minimum requirements for the water supply classification stipulated in SNZPAS 4509:2008 can be achieved.

7.0 OTHER SERVICES

BeforeUdig confirms presence of service networks (gas, power, and telecom) in the surrounding area. These services are managed by Chorus, Vector and Vocus.

It is anticipated that network upgrades/extensions will be required to support the proposed development. Services will be connected to the proposed development as per respective Service agreements.

Liaison with associated service providers to confirm the utility design for the development will be conducted after the Resource Consent approval.

8.0 CONCLUSIONS

A preliminary stormwater catchment and pipe capacity analysis has been conducted (as requested by Council) which confirms the suitability of a future public stormwater reticulation network to service the development. Final public stormwater design will require an Engineering Plan Approval.

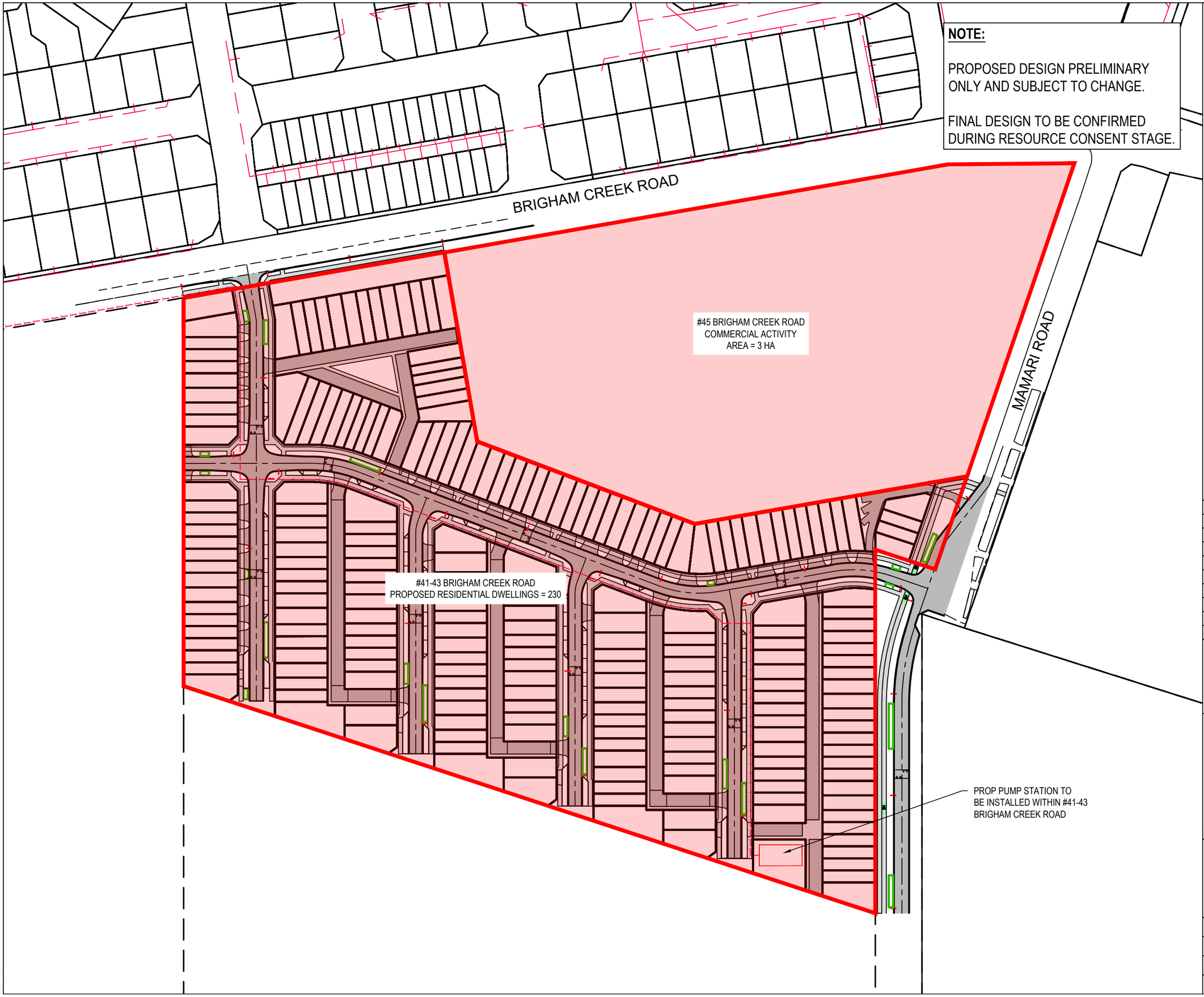
An internal public wastewater network will be designed to Watercare standards. A public pump station for the development will also be designed. Watercare have confirmed a future pump station at Brigham Creek Road (commissioned in 2024). It is proposed that the development pump station will discharge directly into to the future Brigham Creek Road pumpstation.
Final public wastewater design will require an Engineering Plan Approval.

Water supply infrastructure surrounding the site is considered sufficient for potable water supply and firefighting demand shall be incorporated for the proposed residential development design.

Telecommunications and power networks are present in the surrounding area and services are available for the proposed development.

This infrastructure assessment and the stormwater management plan conclude that proposed development can be adequately serviced by the public systems and in accordance with the latest Auckland Council development standards.

APPENDIX A – ENGINEERING CALCULATIONS



NOTE:

PROPOSED DESIGN PRELIMINARY ONLY AND SUBJECT TO CHANGE.

FINAL DESIGN TO BE CONFIRMED DURING RESOURCE CONSENT STAGE.

Notes

1. All works to be in accordance with Auckland council standards.
2. Co-ordinates in terms of NZ Geodetic Datum Mt Eden 2000. Levels in terms of the Auckland Vertical Datum 1946.
3. It is the contractors responsibility to locate all services that may be affected by his operations.
4. Pipe bedding: 0 - 10% granular bedding,10 - 20% weak concrete bedding.greater than 20% weak concrete bedding (7mpa plus anti scour blocks at 6m crs).
5. Each connection shall be marked by a 50mmx50mm treated pine stake extending 600mm above ground level with the top painted. This marker post shall be placed alongside a timber marker installed at the time of pipelaying and extending from the connection to 150mm below finished ground level. Connections shall be accurately indicated on "as built" plans.
6. Approved hardfill is to be used in backfilling of all road crossings and vehicle crossings to council standards.
7. Heavy duty manhole lids and frames to be used in trafficked areas, all manholes shall have stainless grates installed.
8. All Manholes are to be 1050mmØ unless shown otherwise.
9. All lines are to be 150mmØ PVC Class SN16 unless shown otherwise.
10. 150mmØ pipes that do not terminate in a manhole must be terminated with a 100mmØ on a 150mmØ london junction and blank cap.
11. All lines to be abandoned shall be sealed at each end. timing of all sealing to be coordinated with council staff.

Legend

- EX BDY
- PROP BDY
- EX WASTEWATER
- PROP WASTEWATER
- EX/PROP WWMH

Rev	Description	By	Date
A	PLAN CHANGE	JP	10/21

	By	Date
Survey	MH	03/21
Design	JP	10/21
Drawn	JP	10/21
Checked	WM	10/21

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Project

41-43 BRIGHAM CREEK RD WHENUAPAI DEVELOPMENT FOR FOR AI LING

Title

PROPOSED WASTEWATER CATCHMENT PLAN

Project no.	210001		
Scale	1:1500 @ A3		
Cad file	C500 - WASTEWATER (PC).DWG		
Drawing no.	C550	Rev	A

DATE: 11/1/21

Maven Associates		Job Number 210001	Sheet 1	Rev A
Job Title	41-43 Brigham Creek Road, Whenuapai	Author	Date	Checked
Calc Title	Wastewater Demand	JP	23/08/2021	WM

As per Watercare standards: 3 people per dwelling
PWWF = 1206 l/person/day
ks for uPVC = 0.6

Residential Discharge Rates

Design Wastewater flow allowance = 180 litres/person/day
Peaking Factor: Self-Cleansing Design Flow (PDWF) = 540 litres/person/day
Peaking Factor: Peak Design Flow (PWWF) = 1206 litres/person/day

Commercial Discharge Rates

Unknown and site area >10ha,<100ha = 1 L/s/ha (complete land area)
Peaking Factor: Self-Cleansing Design Flow (PDWF) = 2 L/s/ha (complete land area)
Peaking Factor: Peak Design Flow (PWWF) = 6.7 L/s/ha (complete land area)

CATCHMENT - 41-43 Brigham Creek Road (RESIDENTIAL)

Population	Dwellings	People	Occupancy
Proposed Residential Dwellings	230	3	690

Discharges	Persons	Rate l/p/day	Flow l/s
ADWF	690	180	1.44
PDWF	690	540	4.31
PWWF	690	1206	**9.63**

CATCHMENT - 45 Brigham Creek Road (COMMERICIAL - Supermarket)

Discharges	Area (ha)	Rate L/s/ha	Flow l/s
ADWF	3.00	1	3.00
PDWF	3.00	2	6.00
PWWF	3.00	6.7	**20.10**

TOTAL DISCHARGE (PWWF) (L/S) **29.73**

Maven Associates	Job Number	Sheet	Rev	41-43 Brigham Creek Road, Whenuapai	Author	Date	Checked
	210001	1	A	Calc Title: Pipe Capacity Check	JP	25.08.21	WM

Pipe ks factor = 1.5 mm

Pipe Line *number*	Catchment *letter*	Peak Cum. Flow rate *l/s*	Pipe dia *m*	Gradient *%*	Capacity *l/s*	Velocity *m/s*	Check OK
All lines	#41-43	9.63	0.150	0.75	13.47	0.76	OK
All lines	#41-43 + #45	29.73	0.225	0.55	33.98	0.85	OK

Maven Associates	Job Number 210001	Sheet 1	Rev A
Job Title: 41-43 Brigham Creek Road, Whenuapai Calc Title: Site Water Demand	Author: AP	Date: 14/08/2021	Checked: JP

As per Watercare standards: 3 people per dwelling

Demand 220 l/person/day

Demand Rates

Average Demand = 220 litres/person/day

Peak Demand (5x) = 1100 litres/person/day

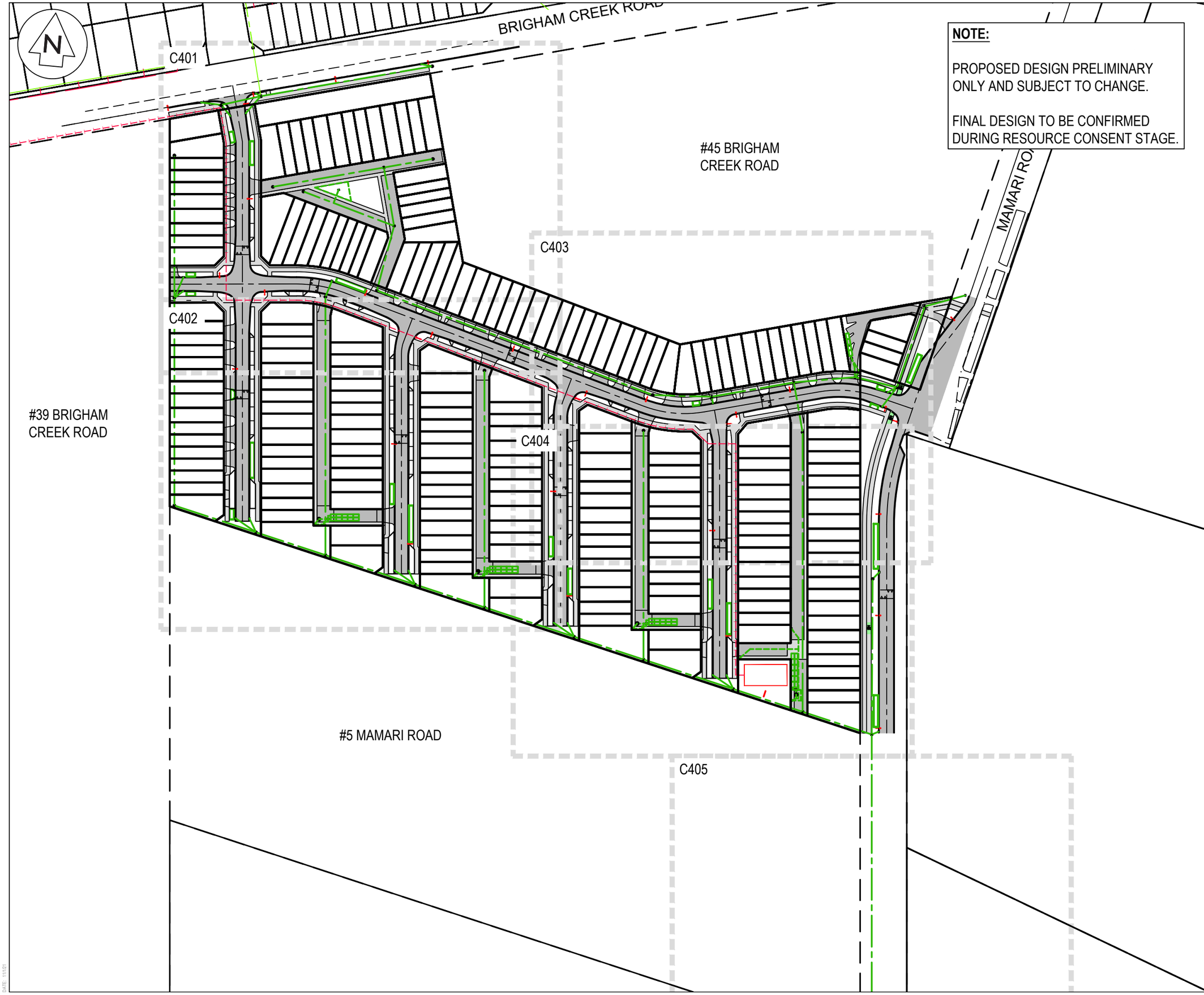
41-43 BRIGHAM CREEK ROAD

Population	Dwellings	People	Occupancy
Proposed Residential Dwellings	230	3	690

Demand	Persons	Rate l/p/day	Flow l/s
AD Water	690	220	1.76
PD Water	690	1100	8.78

Peak Demand	Persons	Rate l/p/day	Flow l/s
PD Water	690	1100	**8.78**

APPENDIX B – ENGINEERING PLANS



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10. All lines to be abandoned shall be sealed at each end. timing of all sealing to be coordinated with council staff.

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- EX BDY
- PROP BDY
- EX WW
- PROP WW
- PROP WW RISING MAIN
- EX SW
- PROP PUBLIC SW
- PROP PRIVATE SW
- EX/PROP MANHOLE
- PROP PRSWCP SINGLE
- PROP RAIN GARDEN

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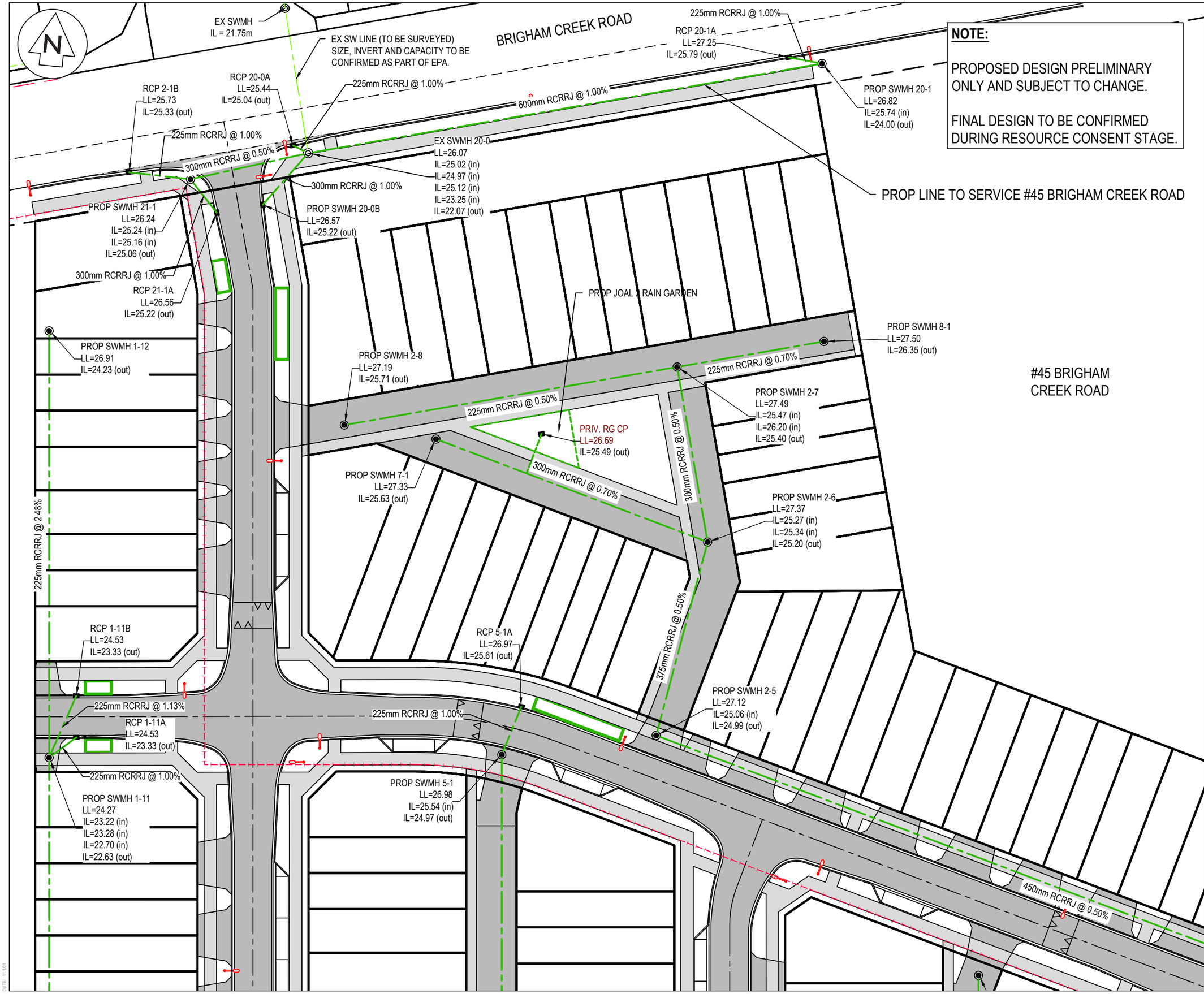
PROPOSED STORMWATER DRAINAGE OVIERVIEW PLAN

Project no.	210001		
Scale	1:1500 @ A3		
Cad file	C400 - STORMWATER (PC).DWG		
Drawing no.	C400	Rev	A

DATE: 11/1/21



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Project no.	210001		
Scale	1:500 @ A3		
Cad file	C400 - STORMWATER (PC).DWG		
Drawing no.	C401	Rev	A

DATE: 11/1/21

225mm RCRRJ @ 1.00%

PROP SWMH 1-11
LL=24.27
IL=23.22 (in)
IL=23.28 (in)
IL=22.70 (in)
IL=22.63 (out)

PROP SWMH 5-1
LL=26.98
IL=25.54 (in)
IL=24.97 (out)

NOTE:

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PROP SWMH 4-1
LL=27.38
IL=25.37 (out)

300mm RCRRJ @ 0.70%

300mm RCRRJ @ 2.75%

300mm RCRRJ @ 2.05%

PROP PRIVATE SW FILTER 1 &
CHAMBERMAXX STORAGE OR EQUIVALEVNT
RETENTION VOLUME = 4.25m^3
DETENTION VOUME = 15.25m^3

RCP 1-9B
LL=23.56
IL=22.44 (out)

RCP 1-9A
LL=23.56
IL=22.44 (out)

225mm RCRRJ @ 1.00%

375mm RCRRJ @ 0.50%

PROP SWMH 1-10
LL=23.54
IL=22.00 (in)
IL=21.93 (out)

225mm RCRRJ @ 1.00%

PRIV. CP 1-8A
LL=24.43
IL=23.33 (out)

PROP SWMH 1-9
LL=23.28
IL=22.33 (in)
IL=22.37 (in)
IL=21.74 (in)
IL=21.69 (out)

375mm RCRRJ @ 0.50%

PROP SWMH 1-8
LL=24.23
IL=21.53 (in)
IL=21.90 (in)
IL=21.39 (out)

PROP SWMH 1-7B
LL=24.88
IL=23.70 (out)

PROP SWMH 1-7A
LL=24.88
IL=23.70 (out)

525mm RCRRJ @ 0.50%

225mm RCRRJ @ 1.00%

225mm RCRRJ @ 1.00%

PRIV. CP 1-6A
LL=25.63
IL=24.53 (out)

PROP PRIVATE SW FILTER 2 &
CHAMBERMAXX STORAGE OR EQUIVALENT
RETENTION VOLUME = 4.15m^3
DETENTION VOUME = 14.89m^3

PROP SWMH 1-7
LL=24.99
IL=23.59 (in)
IL=23.63 (in)
IL=21.18 (in)
IL=21.13 (out)

525mm RCRRJ @ 0.50%

PROP SWMH 1-6
LL=25.36
IL=20.97 (in)
IL=23.27 (in)
IL=20.90 (out)

RCP 1-5B
LL=25.85
IL=24.67 (out)

600mm RCRRJ @ 0.50%

#5 MAMARI ROAD

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Project

41-43 BRIGHAM CREEK RD WHENUAPAI DEVELOPMENT FOR FOR AI LING

Title

PROPOSED STORMWATER DRAINAGE PLAN

Project no.	210001		
Scale	1:500 @ A3		
Cad file	C400 - STORMWATER (PC).DWG		
Drawing no.	C402	Rev	A

DATE: 11/1/21

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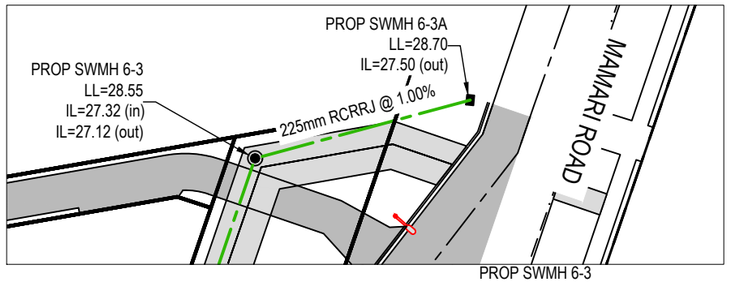
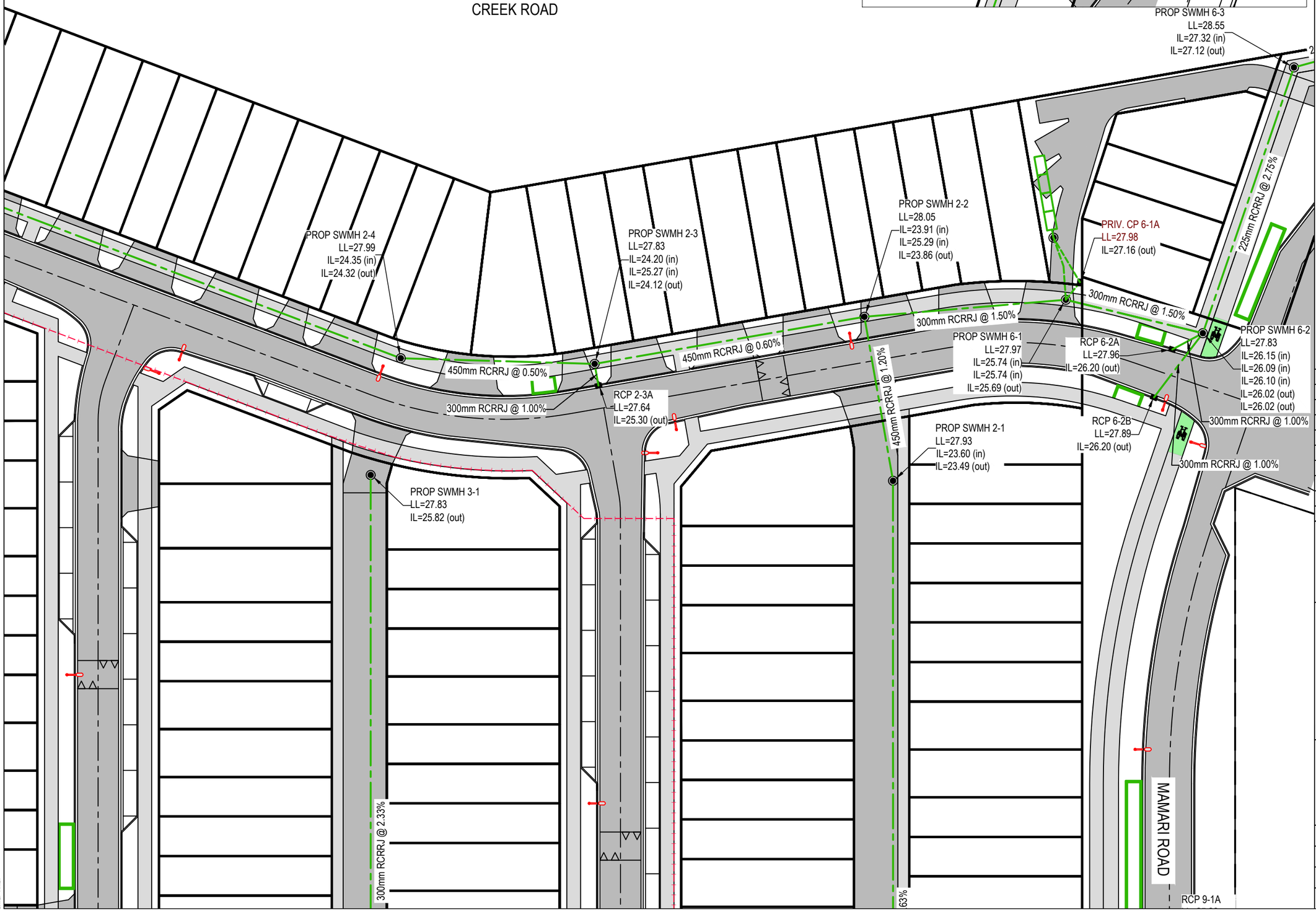
FINAL DESIGN TO BE CONFIRMED DURING RESOURCE CONSENT STAGE.

#45 BRIGHAM CREEK ROAD





Notes

1. All works to be in accordance with Auckland council standards.
2. Co-ordinates in terms of NZ Geodetic Datum Mt Eden 2000. Levels in terms of the Auckland Vertical Datum 1946.
3. It is the contractors responsibility to locate all services that may be affected by his operations.
4. Pipe bedding: 0 - 10% granular bedding,10 - 20% weak concrete bedding.greater than 20% weak concrete bedding (7mpa plus anti scour blocks at 6m crs).
5. Each connection shall be marked by a 50mmx50mm treated pine stake extending 600mm above ground level with the top painted. This marker post shall be placed alongside a timber marker installed at the time of pipelaying and extending from the connection to 150mm below finished ground level. Connections shall be accurately indicated on "as built" plans.
6. Approved hardfill is to be used in backfilling of all road crossings and vehicle crossings to council standards.
7. Heavy duty manhole lids and frames to be used in trafficked areas.
8. All Manholes are to be 1050mmØ unless shown otherwise.
9. All cesspit leads shall have min cover 0.9m.
10. All lines to be abandoned shall be sealed at each end. timing of all sealing to be coordinated with council staff.

Legend

- EX BDY
- PROP BDY
- EX WW
- PROP WW
- PROP WW RISING MAIN
- EX SW
- PROP PUBLIC SW
- PROP PRIVATE SW
- EX/PROP MANHOLE
- PROP PRSWCP SINGLE
- PROP RAIN GARDEN

Rev	Description	By	Date
A	PLAN CHANGE	JP	10/21

	By	Date
Survey	MH	03/21
Design	JP	10/21
Drawn	JP	10/21
Checked	WM	10/21

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Project

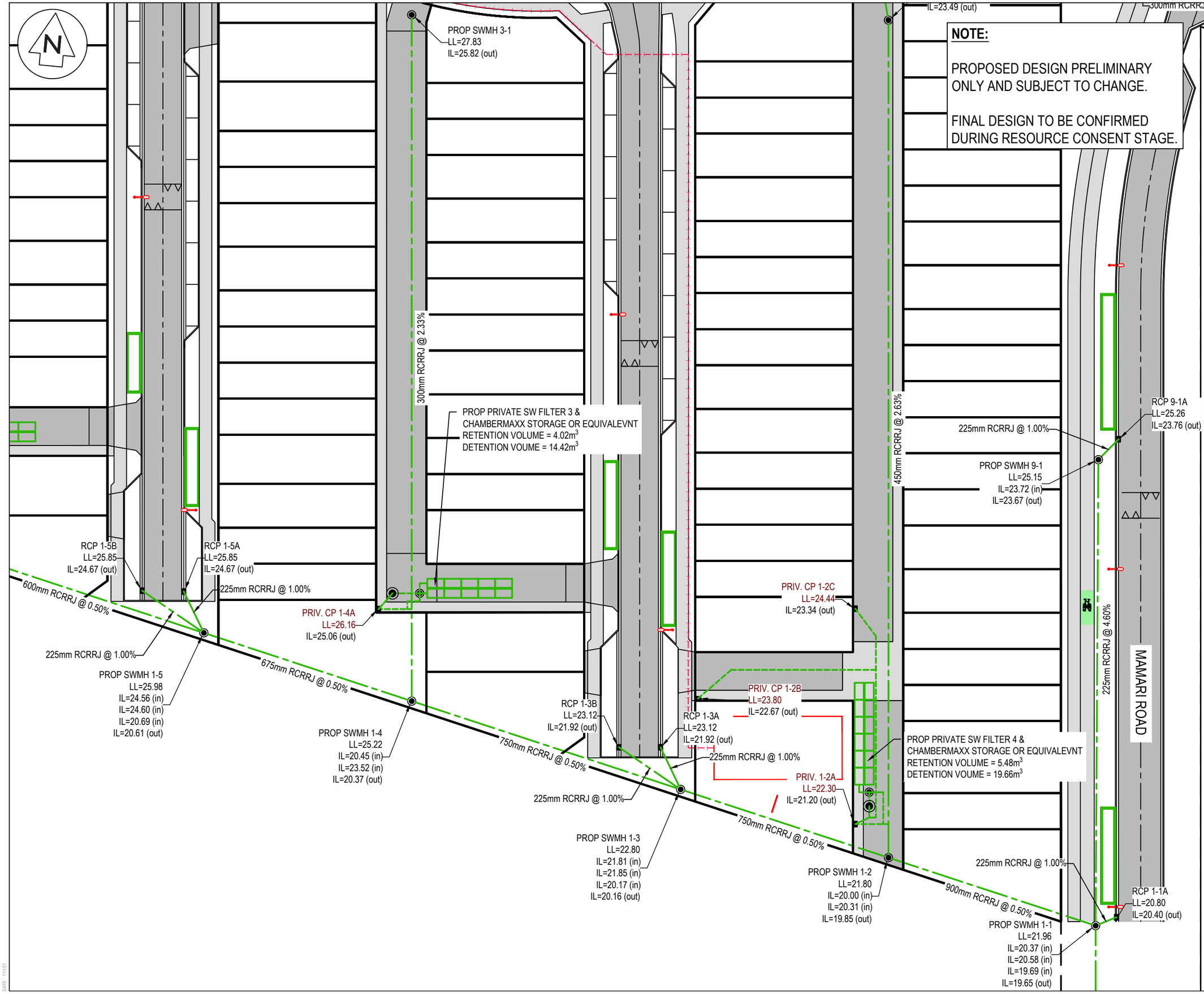
41-43 BRIGHAM CREEK RD WHENUAPAI DEVELOPMENT FOR FOR AI LING

Title

PROPOSED DRAINAGE OVIERVIEW PLAN

Project no.	210001
Scale	1:500 @ A3
Cad file	C400 - STORMWATER (PC).DWG
Drawing no.	C403 Rev A

DATE: 11/1/21



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Project

41-43 BRIGHAM CREEK RD WHENUAPAI DEVELOPMENT FOR FOR AI LING

Title

PROPOSED STORMWATER DRAINAGE PLAN

Project no.	210001		
Scale	1:500 @ A3		
Cad file	C400 - STORMWATER (PC).DWG		
Drawing no.	C404	Rev	A

DATE: 11/1/21

#5 MAMARI ROAD

900mm RCRRJ @ 2.61%

MAMARI ROAD

NOTE:

PROPOSED DESIGN PRELIMINARY ONLY AND SUBJECT TO CHANGE.

FINAL DESIGN TO BE CONFIRMED DURING RESOURCE CONSENT STAGE.

PROP OUTLET 1-0
LL=17.84
IL=16.29 (in)

PROP ROCK RIPRAP OUTLET
MINIMUM 10.05m LONG x 2.7m WIDE x 0.700m DEEP (MINIMUM ROCK SIZE 350mmØ)
LAID ON COCONUT FIBRE1200 MAT - BIOCOIR BC1200 OR EQUIVALENT

SINTON STREAM

Notes

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4. Pipe bedding: 0 - 10% granular bedding,10 - 20% weak concrete bedding.greater than 20% weak concrete bedding (7mpa plus anti scour blocks at 6m crs).
5. Each connection shall be marked by a 50mmx50mm treated pine stake extending 600mm above ground level with the top painted. This marker post shall be placed alongside a timber marker installed at the time of pipelaying and extending from the connection to 150mm below finished ground level. Connections shall be accurately indicated on "as built" plans.
6. Approved hardfill is to be used in backfilling of all road crossings and vehicle crossings to council standards.
7. Heavy duty manhole lids and frames to be used in trafficked areas.
8. All Manholes are to be 1050mmØ unless shown otherwise.
9. All cesspit leads shall have min cover 0.9m.
10. All lines to be abandoned shall be sealed at each end. timing of all sealing to be coordinated with council staff.

Legend

- EX BDY
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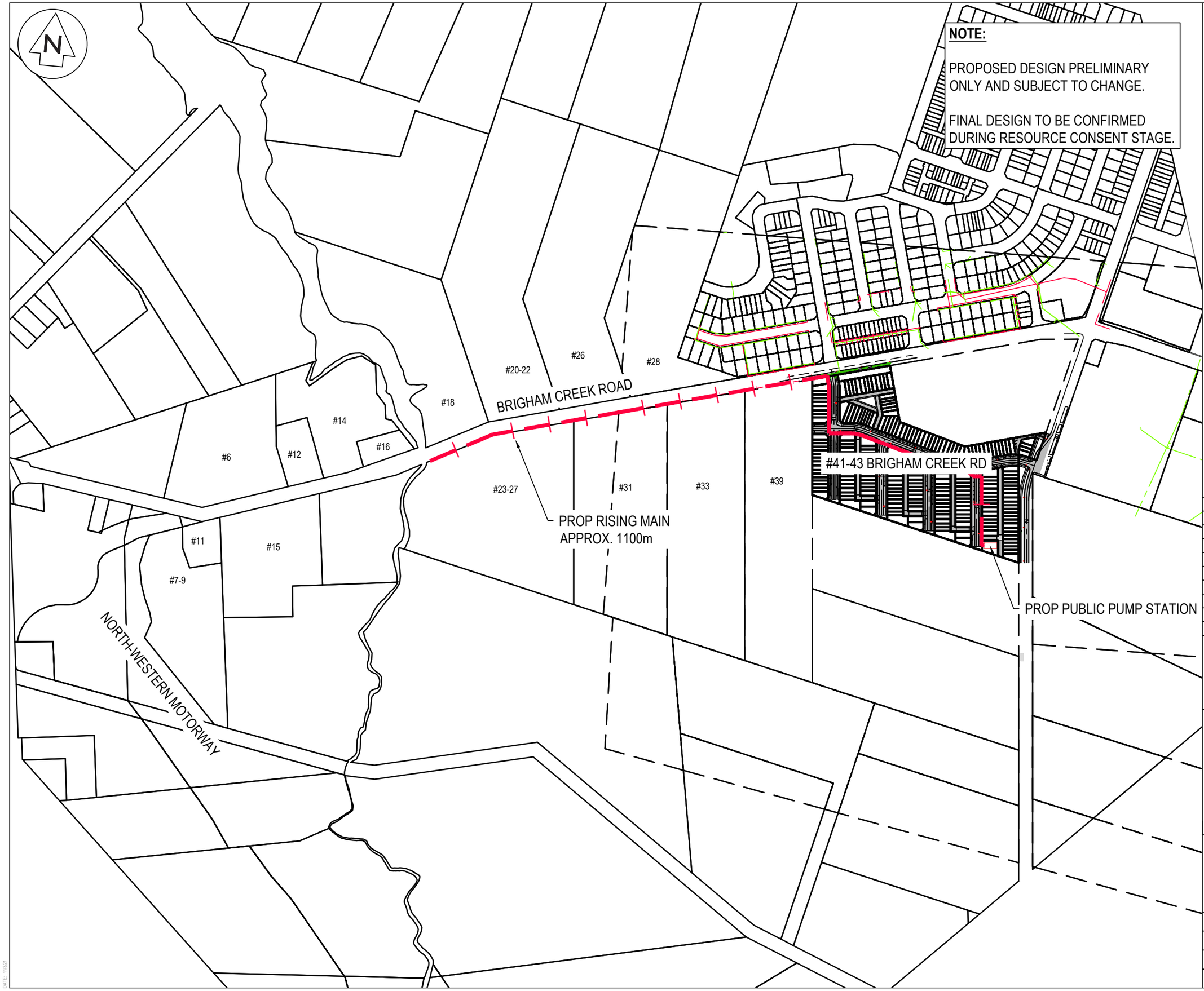
41-43 BRIGHAM CREEK RD
WHENUAPAI
DEVELOPMENT
FOR
FOR AI LING

Title

PROPOSED STORMWATER DRAINAGE PLAN

Project no.	210001		
Scale	1:500 @ A3		
Cad file	C400 - STORMWATER (PC).DWG		
Drawing no.	C405	Rev	A

DATE: 11/1/21



Notes

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6. Approved hardfill is to be used in backfilling of all road crossings and vehicle crossings to council standards.
7. Heavy duty manhole lids and frames to be used in trafficked areas, all manholes shall have stainless grates installed.
8. All Manholes are to be 1050mmØ unless shown otherwise.
9. All lines are to be 150mmØ PVC Class SN16 unless shown otherwise.
10. 150mmØ pipes that do not terminate in a manhole must be terminated with a 100mmØ on a 150mmØ london junction and blank cap.
11. All lines to be abandoned shall be sealed at each end. timing of all sealing to be coordinated with council staff.

Legend

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41-43 BRIGHAM CREEK RD
WHENUAPAI
DEVELOPMENT
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Title

PROPOSED WASTEWATER RISING MAIN OVERVIEW PLAN

Project no.	210001		
Scale	1:5000 @ A3		
Cad file	C500 - WASTEWATER (PC).DWG		
Drawing no.	C520	Rev	A

DATE: 11/2021

NOTE:

PROPOSED DESIGN PRELIMINARY ONLY AND SUBJECT TO CHANGE.

FINAL DESIGN TO BE CONFIRMED DURING RESOURCE CONSENT STAGE.

DRAFT FOR REVIEW

DATE: 11/1/21

Notes

1. All works to be in accordance with Auckland council standards.
2. It is the contractors responsibility to locate any underground services prior to the commencement of works.
3. Minimum cover shall be:
   - Roads, footpaths,crossings: 1000mm
   - Berms 600mm
   - Service connections: 550-650mm
4. Watermains laid across roads shall be backfilled with hardfill compacted in 200mm layers above the embedment material.
5. All uPVC pipe shall be PN12 minimum pressure rated with spignot and socket rubber ring joints.
6. All PE pipe shall be PN12.5 minimum pressure rated with butt-welded. Weld beads shall be removed to provide a smooth bore.
7. All non-metalic pipes are to have tracer wire fitted to council standards.
8. Pipes shall be bedded and surrounded to 150mm above the pipe soffit with sand or ap20.
9. Metal detector tape printed with 'water pipe below' shall be laid 150mm above all watermains.
10. A yellow isosceles triangle with cats eye pointing to FH shall be painted in the centre of all sealed roads.
11. All valves to be marked with sawcut kerb and blue paint.
12. All flange joints to be protected with denso tape or similar approved by the engineer.

Legend

- EX BDY
- PROP BDY
- EX WATERMAIN
- FH EX/PROP HYDRANT
- WM EX/PROP METER/ METER BANK
- EX SLUICE VALVE
- EX PEAT VALVE
- PROP WATERMAIN
- PROP SLUICE VALVE
- PROP PEAT VALVE

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41-43 BRIGHAM CREEK RD WHENUAPAI DEVELOPMENT FOR FOR AI LING

Title

PROPOSED WATERMAIN OVERVIEW PLAN

Project no.	210001		
Scale	1:1500 @ A3		
Cad file	C600 - WATER SUPPLY (PC).DWG		
Drawing no.	C600	Rev	A