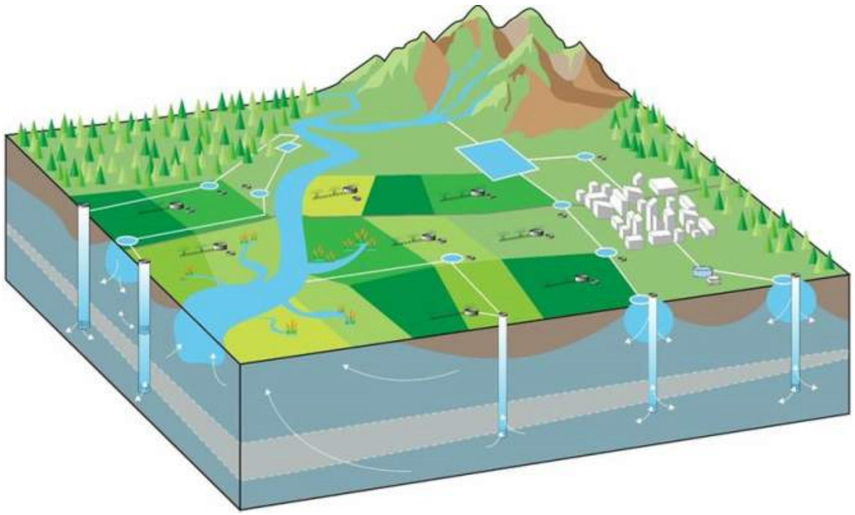
WGA

WALLBRIDGE GILBERT AZTEC

Maven Associates

Mangakotukutuku



13 May 2021

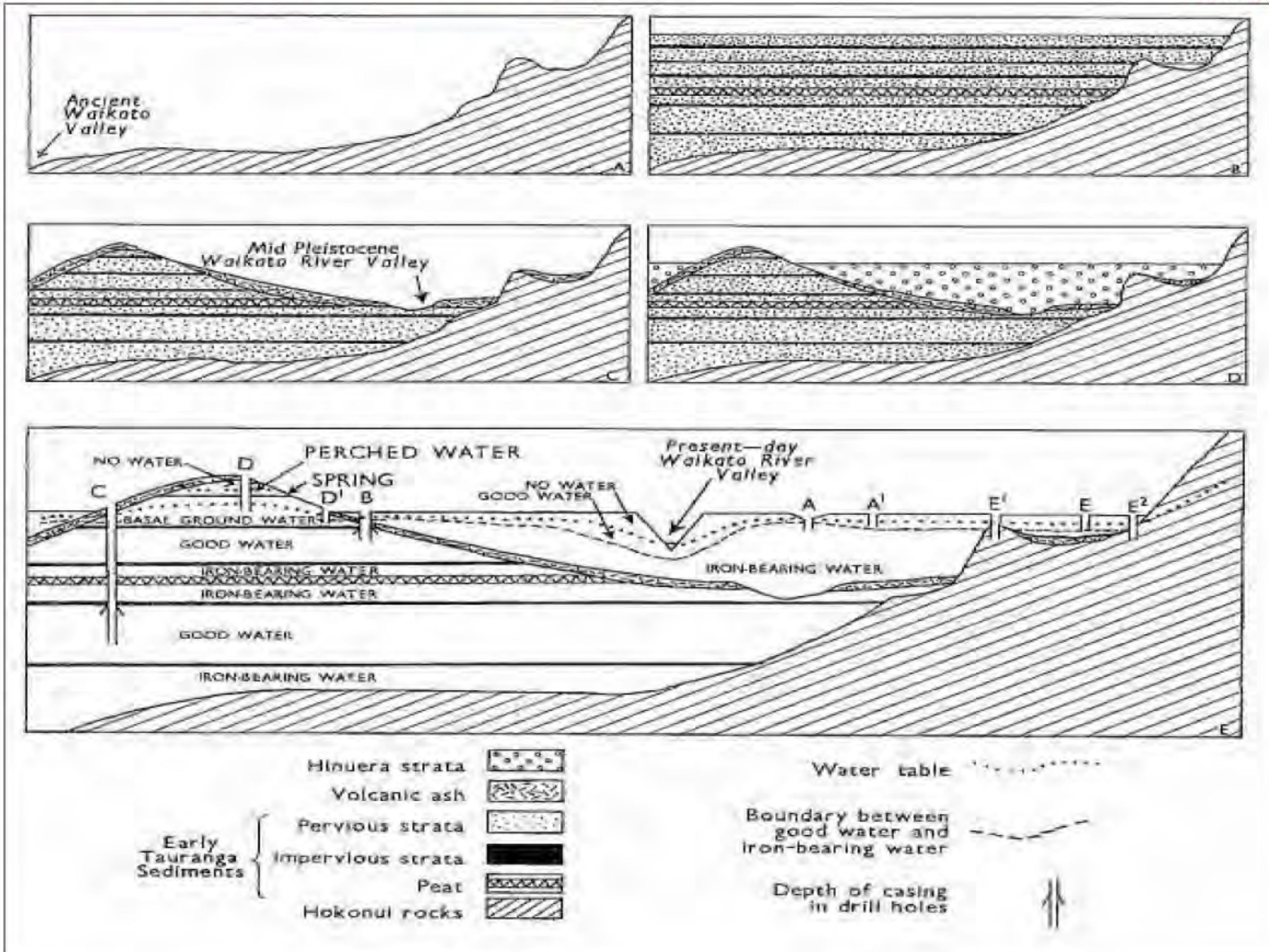
WGA210896

Geology

WGA
WALLBRIDGE GILBERT AZTEC

Groundwater Setting

WGA
WALLBRIDGE GILBERT AZTEC



Schofield 1972

Groundwater – Mangakotukutuku

WGA
WALLBRIDGE GILBERT AZTEC

- **Groundwater Quantity**
  - Local bores have been tested up to 1,700 m^3/day (150 mm bore for irrigation)
  - Two local irrigation consents approximately 1,200 m^3/day each
  - 600 litres per person per day average (MfE 2007)
  - Up to 1,700,000 litres per day is equivalent to a supply for 2,833 people

- **Water Quality**
  - Some areas of high Iron: staining and taste
  - Deeper bores low nutrient concentrations (nitrate removal is costly – easier to deal with iron in deeper bores)

Groundwater as a drinking supply

- **Opportunities**
  - Transition supply to start development
  - Aquifers provide natural water storage (less surface area storage)
  - Short vertical pipe compared to long distribution pipe lines (speed and cost)
  - Security from surface events (e.g. volcanic eruptions, spills)
- **Potential Issues**
  - Some layers have high Iron that will require treatment
  - Risk of bores only achieving low flow rates
- **Requirements**
  - Multiple bores needed
  - Local water treatment
  - Higher rates for peak use will require storage of treated water
  - Regular local water testing
- **Treatment for Iron**
  - Aeration followed by filtration is usually effective in removing iron. Sometimes increasing the pH, chemical oxidation followed by filtration, greensand filters or ion exchange is used

Treatment Options for Small Drinking-water Supplies

Resources for Drinking-water Assistance Programme

This document is available at: www.health.govt.nz

MINISTRY OF HEALTH

Appendix H – MBR/Aeration Wastewater case study

New German MBR Technology Now in New Zealand Makes Previously Uneconomic Subdivisions Viable.

Executive Summary

Proven Technology that has been mainstream in Europe for decades for the treatment of wastewater is now available in New Zealand with the first large scale development underway in Whitford, South of Auckland.

Stewart and Cavalier, a long standing Te Awamutu based engineering company have teamed up with MENA WATER, the German maker of MBR technology based package plants and are building the first New Zealand plant sold to a private developer.

MENA WATER package plants can be used on a small scale or for large subdivisions and for entire cities. The plants are very compact compared to the current 20^{th} century technology used in this country and have a number of other significant advantages. The two main advantages are:

1- Developers can now put very cost effective plants into an area where development was previously impossible because there was insufficient capacity available from the municipal scheme or costs of connection or building a new sewage treatment plant were too high.
2- MENA WATER MBR plants produce a very high quality effluent which is virtually free of any suspended solids, microbes and viruses, making it safe for discharge to environment or reuse in application that do not require potable water quality.

MBR treatment plants have been expensive systems in the past but with the development in the technology and improvements in the components quality and durability, the cost of building and operating this type of wastewater treatment plants has dramatically dropped.

The fact that MBR treatment plants produce the best effluent quality make them the number one choice in the developed countries and now even more and more MBR treatment plant are built in developing countries.

Lack of proper infrastructure is an obstacle in front of many developers in New Zealand. While existing infrastructure are struggling to keep up with the growth in the country many development projects have to be delayed or even cancelled as there is no sewage treatment plant to serve the development area.

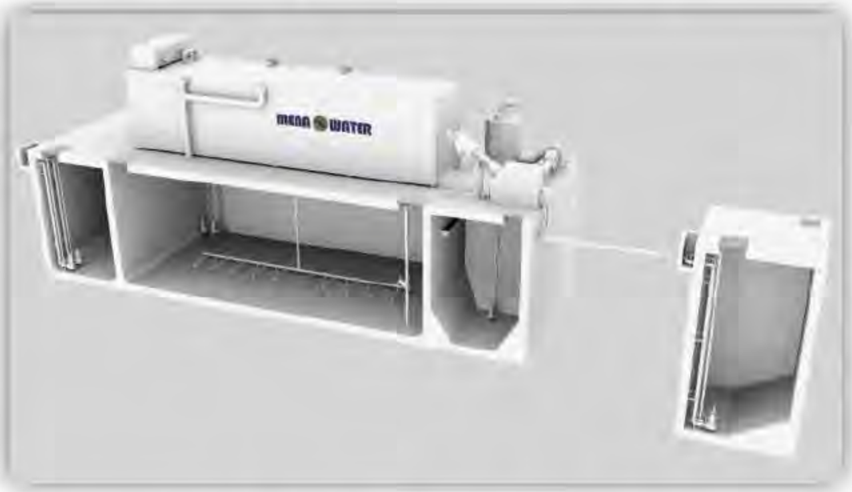
Conventional wastewater treatment plants are very expensive to build and have a lengthy construction time and often are not economical when they only serve a limited number of dwellings and with ever tightening environmental standards, they are sometimes unable to cope and require expensive upgrades.

They are usually built far from cities and towns so transferring sewage to the plants requires a complex collection network with multiple lifting and transfer stations that must be maintained fit for operation at all-time resulting in high operation and maintenance costs.

For a country the size of New Zealand with many small towns and cities that have a population of less than 20,000 or new residential development projects that cannot easily be connected to a sewage network, a decentralized wastewater treatment plant is an ideal solution.

MBR treatment technology is one of the most recent and advanced technologies for wastewater treatment which occupies an area less than 1/3rd of the area a conventional treatment plant occupies and produces a very high quality treated effluent which is suitable for recycling and reuse in applications that do not require potable water quality such as wash-down water, irrigation water, firefighting water etc.

MENA WATER state of the art containerized MBR plants are taking wastewater treatment package plants to the next level of cost reduction and simplicity in plant construction and operation.



Membrane modules, being the heart of the treatment plant are housed in a standard ISO shipping container next to the plant machine room where key mechanical equipment is located.

Plant control panel is fitted in the same container as well, inside an air conditioned compartment.

Raw sewage is pumped to the treatment plant inlet works where physical treatment stage happens as a screen removes large solid material from water and the primary settling tank removes oil and grease, sand and other non-organic solids from water.

Biological treatment stage happens in underground tanks where dissolved organic contamination and nutrients such as Nitrogen and Phosphorus are removed from water.

Finally, ultra-filtration membranes act as a physical barrier, separating any solid material from water and produce a very high quality effluent which is virtually free of any suspended solid materials, bacteria and microbes.

The membrane container sits on ground level and above the biological treatment tanks. This arrangement gives very quick and easy access to the equipment of the treatment plant that operators need to have access to during plant operation and maintenance.

The membrane container with all the items and equipment inside it is a pre-fabricated and shop-tested unit which is ready for operation as soon as it arrives at installation site.

Power is supplied to all equipment in the plant from the control panel in the container.

The treatment plant is controlled by a Siemens PLC and operators can access the control system via a touch screen HMI fixed on control panel door.

A GSM modem allows operators to monitor the plant from anywhere via a PC, tablet or a smart phone and in case of faults in the process an alarm SMS will be sent to plant operators and manager.

MENA WATER is a German engineering and manufacturing company and a member of Huber technology group. Our containerized MBR plants are designed and built based on German standards. German and European made equipment are used in fabrication of the units and all tanks and mechanical equipment in contact with wastewater are made of stainless steel.

The container is clad with Aluminium sheets, giving it a nice clean look that fits well in surrounding environment.

The wide range of plant capacities make it very easy for customers to choose the size of plant suitable for them based on current and future inflow.

MENA WATER Containerised MBR plants are available with the following capacities:

	MW-MR25	MW-MR75	MW-MR150	MW-MR300	MW-MR450	MW-MR600	MW-MR1000
Capacity (m^3/day)	25	75	150	300	450	600	1,000
Houses Served *	40	125	250	500	750	1,000	1,665
Footprint (m x m)	8 x 3	12 x 4	14 x 5	14 x 6	16 x 7	20 x 7	25 x 7

* 200 L per person per day, 3 residents in each house

During the last 10 years, MENA WATER has installed and commissioned more than 50 package MBR plants in Europe, Africa and the Middle East with plant capacities ranging from 10 to 5,400 m^3/day.

Our products and services are provided to our esteemed clients in New Zealand through our local business partner, Stewart & Cavalier Engineers.

With more than 60 years' experience in electro-mechanical engineering projects and a vast knowledge of local regulations and requirements, Stewart & Cavalier Engineers are able to do turn-key projects and manage the work at every stage, delivering the plant to the client ready for operation.

At the moment, we are fabricating a 150 m^3/day package MBR plant which will serve a new residential development in Whitford, Auckland.

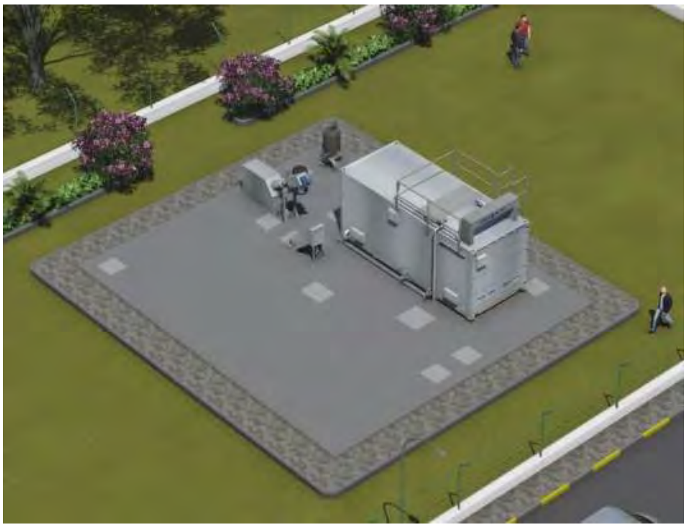
'Whitford Manor Estate' is an exclusive development project with about 150 stand-alone sections, terraced houses and 'Manor House' apartments.

Each dwelling has its own sewage pumping station and via a pressurized sewer network, raw sewage is delivered to the MBR plant which is located on a small section inside the development area.

The plant has enough capacity to receive wastewater from about 70 existing dwellings from Whitford Village as well, serving about 220 dwellings in total.

The treatment occupies a 12 x 10 m section. Plant buffer tank, primary settling tank, biological treatment tanks and effluent tank are all underground reinforced concrete tanks. An odour control system is provided to eliminate any chances of foul odour spreading in the area.

A standard 20' cladded shipping container located on top of the tanks houses the membrane filtration unit, sludge dewatering unit, machine room and control system.



The design of this wastewater treatment system has been fully consented by Auckland City Council and the treated effluent of this MBR plant has such a high quality, that it can be discharged safely to a stream at the boundary of the development area.

In addition to the wastewater treatment plant, MENA WATER is also supplying a Reverse Osmosis unit for the treatment of underground water to produce potable water. While the main source of drinking water for the development is rain water, the RO plant is a backup system that produces potable water during low rain season.

For further information and enquiries, please contact:

Ross Burrell (Stewart & Cavalier Engineers Ltd.)

027 533 4966

rossb@stewcav.co.nz

MENA WATER

OUR AIM - YOUR CONFIDENCE

MBR Package Plants
for Sewage Treatment





From Sewage to Pure Irrigation Water

Convenient Operation

Clean Effluent Water

Modular System

Wastewater Treatment with MBR Technology

Our system ensures reliable reduction or elimination of polluting load such as suspended solids, organic matter, nutrients and microorganisms within an efficient process combination of biological treatment and membrane filtration. The result is clean and high quality effluent water, which can be re-used as service water or discharged to (even sensitive) receiving waters.

Scope of Supply for Complete Package Plants

MENA-Water offers complete MBR package plants, pre-assembled as containerized system (ISO sizes). This facilitates easy transportation, fast availability and straight start-up of the MBR plant. Included inside the package housing are all main components such as:

- Stainless steel membrane tank with modules and aeration system
- Blowers for aeration tank and membrane scouring
- Permeate pump, backwash and disinfection system
- Process instrumentation, electrical control cabinet with PLC

For optimized performance of the entire plant, all necessary equipment for installation in the external structures is included in our scope of supply:

- Equipment for lifting station and mechanical pre-treatment
- Diffusers, pumps, mixers for biological treatment
- Equipment for sludge treatment, grit and clean water pumping

If desired, MENA-Water provides comprehensive support for installation, start-up and maintenance activities and can consult anytime via remote monitoring from back office.
Beyond our MBR scope of supply, we can also offer solutions for further plant equipment such as:

- Sludge treatment
- Odor control
- Mobile power generator
- Containerized operator room

MBR Package Plant
MW-MR150

Benefits of our MENA-Water MBR Package Plants

- ✓ Well-proven, complete and clean system solution
- ✓ Compact footprint combined with convenient accessibility
- ✓ Minimum works for site installation and civil structures
- ✓ Full automatic system operation with online monitoring facility
- ✓ Adaptable to future demand due to modular system

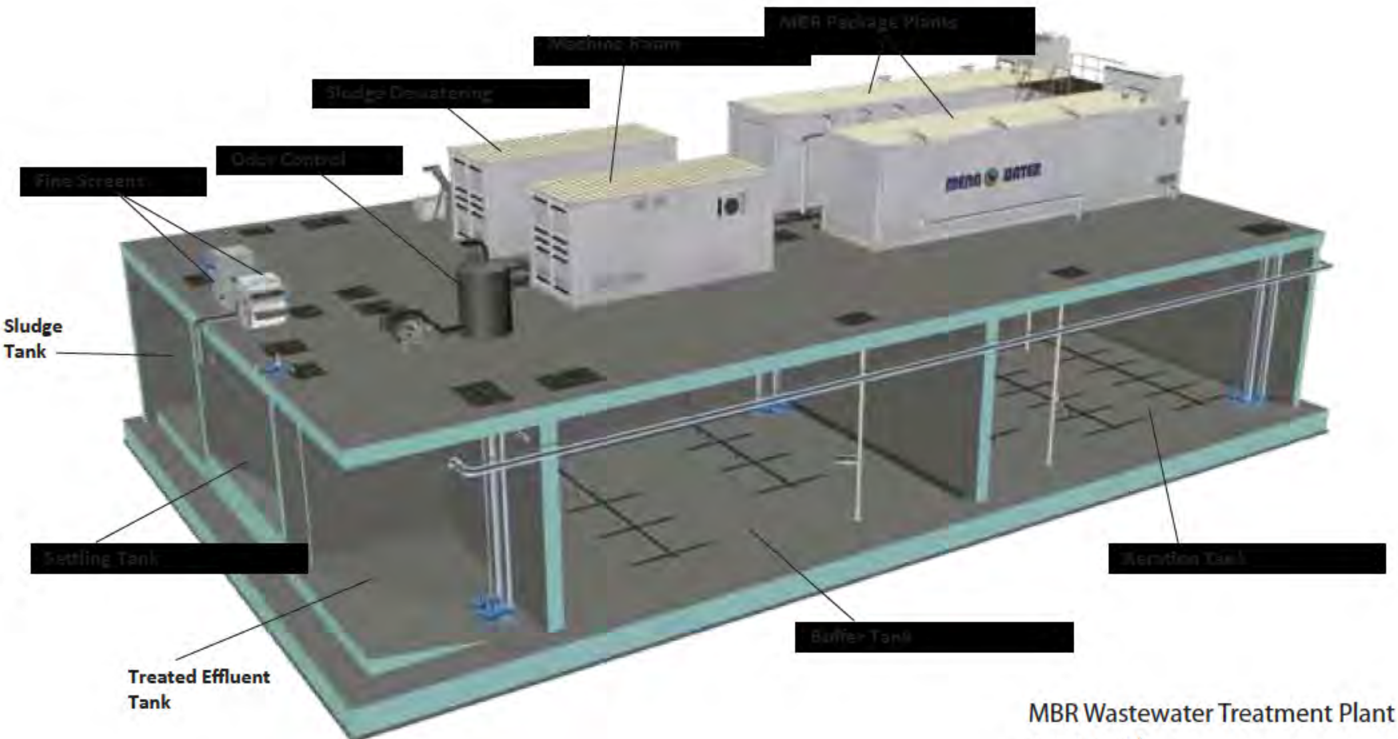
Fields of Application

MENA-Water MBR package plants are capable to handle a wide range of capacities, starting from a daily throughput of a few cubic meters, reaching to some thousands of cubic meters per day. Our plants can be arranged custom-fit to serve your desired wastewater application.

Typical applications are:

- Common municipal sewage treatment
- Independent sewage treatment system for stand-alone operation (hotels / business areas / housing complexes etc.)
- Sanitation solution for outlying locations
- Sanitation solution for close and densely populated residential areas due to minimized smell, dirt and footprint
- Process step for industrial wastewater treatment
- Pre-treatment step for reverse osmosis plants

Standard Sizes	Capacity m^3/d	Population Equivalent	Approx. Footprint
MW-MR10	10	up to 85	8 x 3 m
MW-MR25	25	up to 210	8 x 3 m
MW-MR75	75	up to 625	12 x 4 m
MW-MR150	150	up to 1250	14 x 5 m
MW-MR300	300	up to 2500	14 x 6 m
MW-MR450	450	up to 3750	16 x 7 m
MW-MR600	600	up to 5000	20 x 7 m
MW-MR1000	1000	up to 8300	25 x 7 m



MBR Wastewater Treatment Plant $2000\ m^3/d$

MENA WATER

OUR AIM - YOUR CONFIDENCE

MENA WATER FZC

P.O. Box: 120881, D3-11, SAIF Zone
Sharjah, United Arab Emirates
Tel.: +971 6 5575507
Fax: +971 6 5575508
E-Mail: info@mena-water.com

www.mena-water.com

MENA WATER GmbH

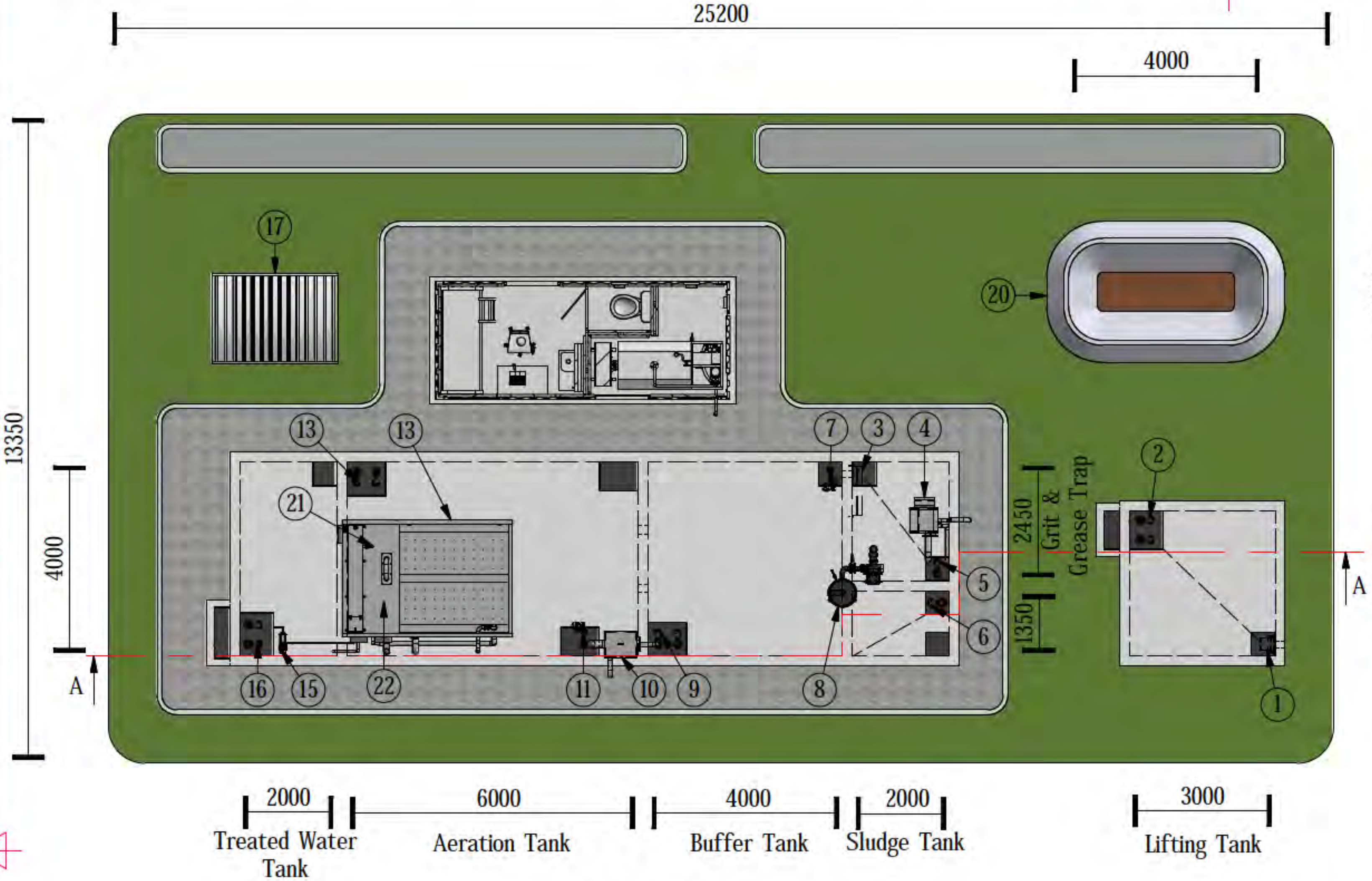
Member of German Water Partnership

Industriepark Erasbach A1
92334 Berching
Germany
Tel.: +49 8462 201 390
Fax: +49 8462 201 239
E-Mail: info@mena-water.de

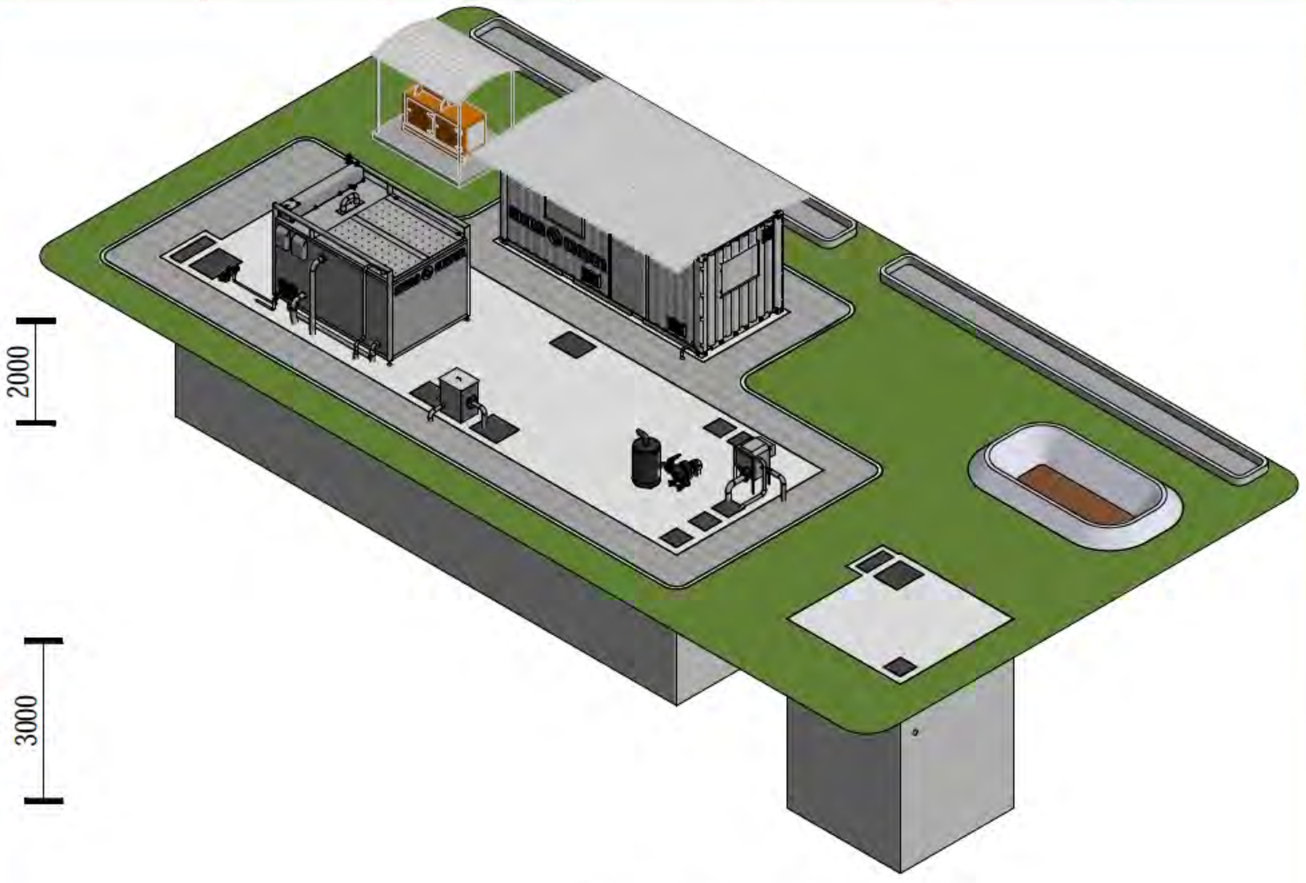
www.mena-water.de

Member of HUBER TECHNOLOGY Group
WASTE WATER Solutions

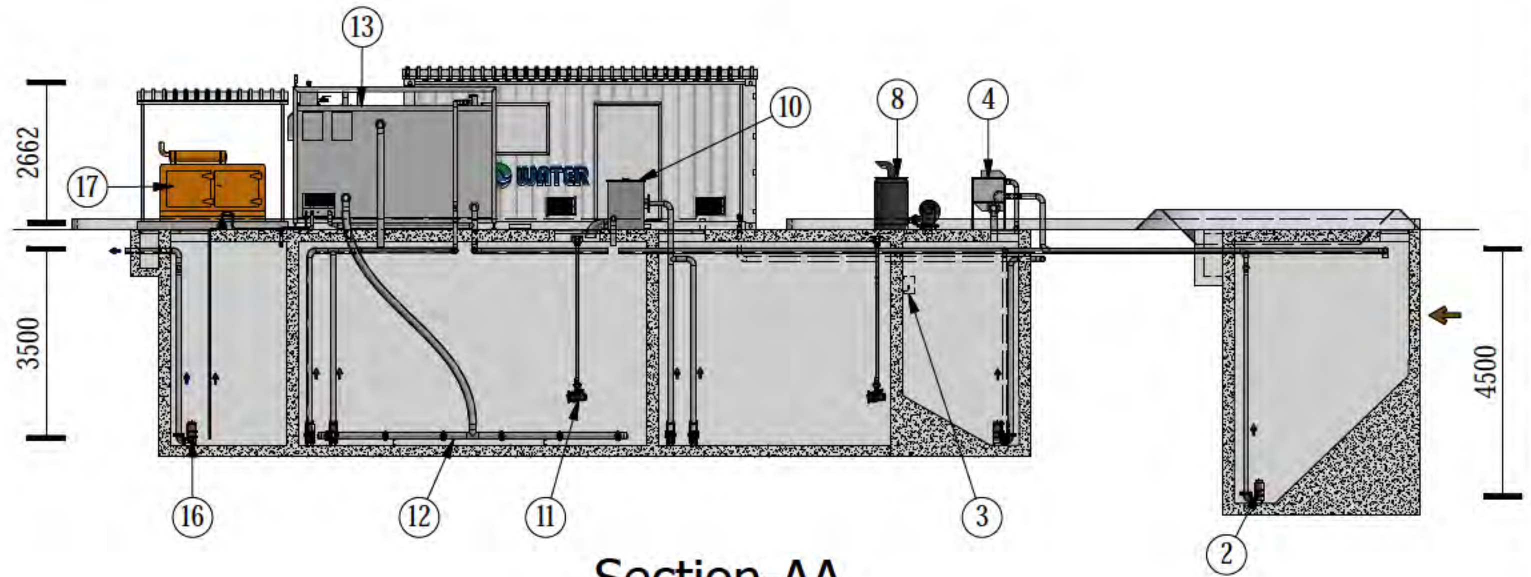
MBR_Esn-0618



Plant Layout



Isometric view



Section-AA

Itemref	Quantity	Title / Name, designation, material, dimension etc.	Article no./ Reference
22	1	Machine Room	
21	1	Control Panel	
20	1	Sludge Storage Area	Optional
17	1	Standby Power Generator (DG).	Optional
16	2	Treated Water Discharge Pumps (TWP).	Optional
15	1	Service Water Pump (SP).	Optional
13	1	Package Plant MW-MR150-U	
12	1	Aeration Diffusers (AD).	
11	1	Aeration Mixer (MX).	
10	1	Secondary Screen (Static) (ST-SC 500/1).	
9	2	Balancing Pumps (BP).	
8	1	Odor Control Filter (OD).	Optional
7	1	Buffer Tank Mixer (MX).	
6	1	Sludge Pump (SP).	
5	1	Grit Pump (GP).	
4	1	Automatic Fine Screen (SC).	
3	1	Grease Baffle (GOB).	
2	2	Lifting Station Pumps (LSP).	Optional
1	1	Basket Screen (BKL).	Optional

Equipment List

Designed by:	Drawn by:	Approved by:	Paper Size:	Date:	Scale:
A.G	J.T./C.p.dhyani	A.G.	A3	06-08-2016	N.T.S.

MENA WATER

E-mail: info@mena-water.com - Web: www.mena-water.com

Title: MW-MR150-U
Plant Layout

Drawing number:	Version:	Sheet:
PL-MR150-U-GD-(I)	V0	1 / 1

Appendix I – Draft Stormwater ICMP (On request)

Appendix J – Service Provisions

Tuatahi
First Fibre

PO Box 27050
Garnett Avenue 3257
0800 Fibre LTD
tuatahifibre.co.nz

19 March 2024

CONDITIONAL ACCEPTANCE BY TUATAHI FIRST FIBRE LIMITED AS TELECOMMUNICATIONS OPERATOR

Development: SL1, Hamilton South Development
Legal Name: All the land shown in the below Overall Structure Plan

1. Tuatahi First Fibre Limited (TFF) confirms that a TFF telecommunications connection will be made available for each site in the development, **providing the developer was to sign an TFF Installation Agreement.** Upon approval of this agreement, TFF will undertake to become the telecommunications operator of the telecommunications reticulation in the proposed public roads for SL1, Hamilton South (the "**Subdivision**"), to provide network connections to all lots (circa 12,000 lots), in the Subdivision (the "**Reticulation**").

2. The Reticulation will be installed in accordance with:

   (a) the requirements and standards set by the Hamilton City Council and advised to TFF via the Council's website; and

   (b) the requirements of the Telecommunications Act 2001 and all other applicable laws, regulations and codes (as amended).

3. The Reticulation will be installed by our preferred provider to TFF's satisfaction.

4. TFF will be the owner, operator and maintainer of the Reticulation.

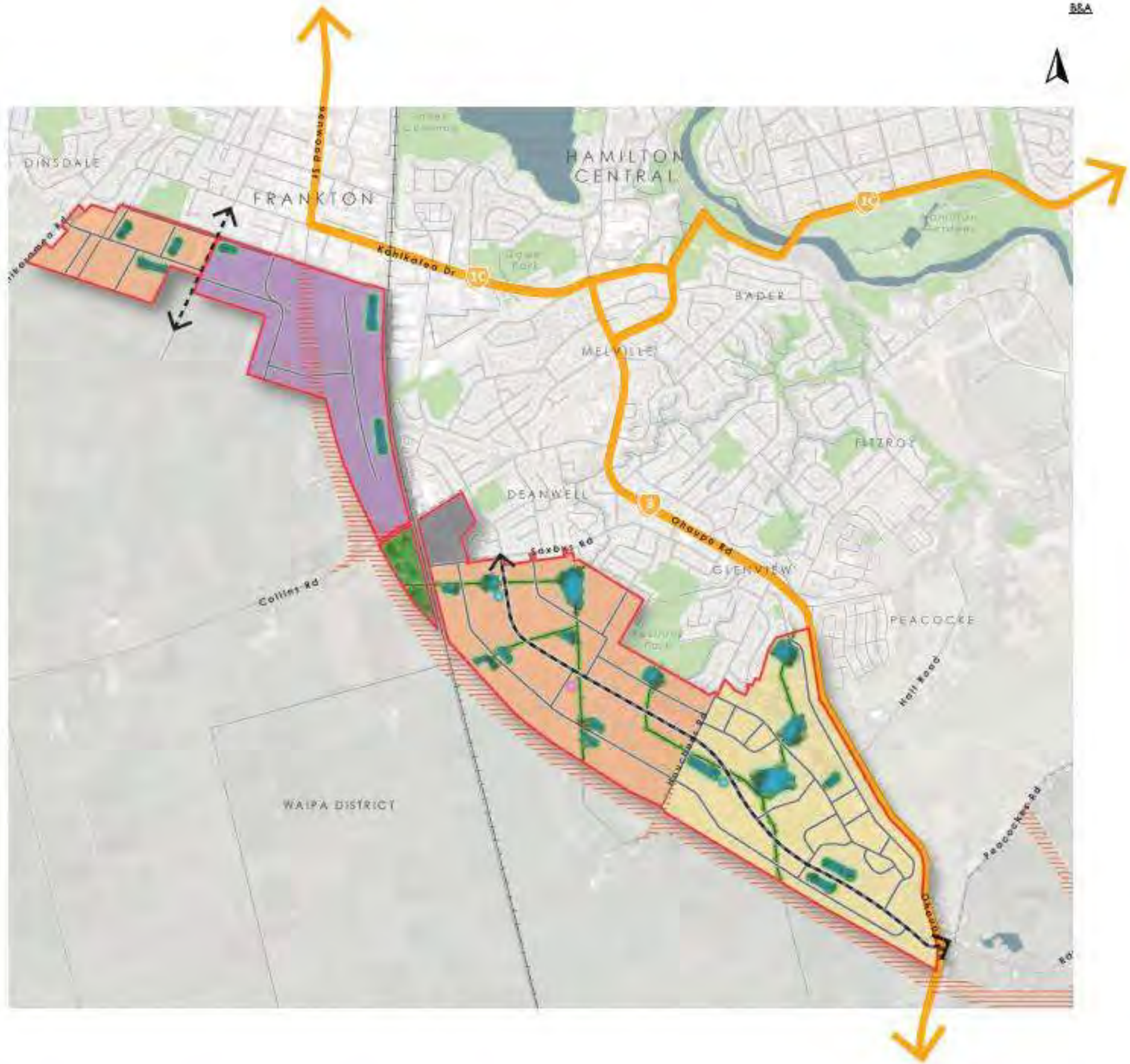
5. One or more retail service providers will be available to supply telecommunications services over the completed Reticulation when service is available, provided that TFF shall not be responsible if the retail service provider's offer to supply such telecommunications services or the number of such providers varies from time to time.

SIGNED for and on behalf of **TUATAHI FIRST FIBRE LIMITED** by:

Signature:

Name: Dan Fenwick

OVERALL STRUCTURE PLAN



Key

- Site Boundary
- Medium Density Residential
- Medium Density Residential (topographical)
- Industrial Development
- Indicative Green Space
- Existing Social Amenities (schools and sport grounds)
- Indicative Stormwater Treatment and Ecological Enhancement Opportunities
- Indicative Key Collector Connection and Movement Road
- Indicative Key Local Connections/Road Network
- Existing Roading Network
- State Highway
- Railway
- Southern Links Designation
- Indicative neighbourhood centre location
- Indicative recreation and open space location

High-level Indicative Structure Map
Scale 1:25,000

Natural Gas is Available

First Gas Limited
Private Bag 2020, New Plymouth, 4342
New Zealand
P 0800 NEW GAS (0800 639 427)

26 March 2024

MAVEN Waikato Limited
Level 1, 286 Victoria St
Hamilton Central

Attention: Tim Hawke

First Gas Reference
SL 1

Enquiries To
Paul Bird
DDI: (04) 979 5367

Dear Tim

Natural Gas Availability – SL 1

I refer to your email of March 18th, asking for natural gas availability for a new area of development in Hamilton South.

Firstgas Distribution (Dx) confirms that natural gas can be supplied to the overall development and we look forward to bringing supply to the initial stages in due course.

If you have any further questions regarding this letter, please contact me on (04) 979 5367 or via email.

I look forward to hearing from you.

Kind regards

Paul Bird
Distribution Development Manager
Firstgas

Your Ref: SL1

27 March 2024

Tim Hawke
Maven Waikato Ltd
286 Victoria St
HAMILTON

Dear Tim

RE: PROPOSED SUBDIVISION – SL1 HAMILTON SOUTH

Thank you for your enquiry regarding the power availability for the proposed subdivision of the area known as SL1.

We have investigated the electricity supply requirements for the above proposed subdivision and we are able to supply the electrical reticulation.

In order for us to give clearance to the Hamilton City Council it will be necessary for the power to be extended to the boundary of all lots.

An easement will be required in favour of WEL Networks Ltd over any existing reticulation which currently runs through this property.

An easement will be required in favour of WEL Networks Ltd over any electrical reticulation installed along private right of ways. The requirement for this will be confirmed at time of design.

WEL will prepare the easement but any costs associated with this, the survey, LINZ registration fees, and landowner legal fees will be the developer's responsibility.

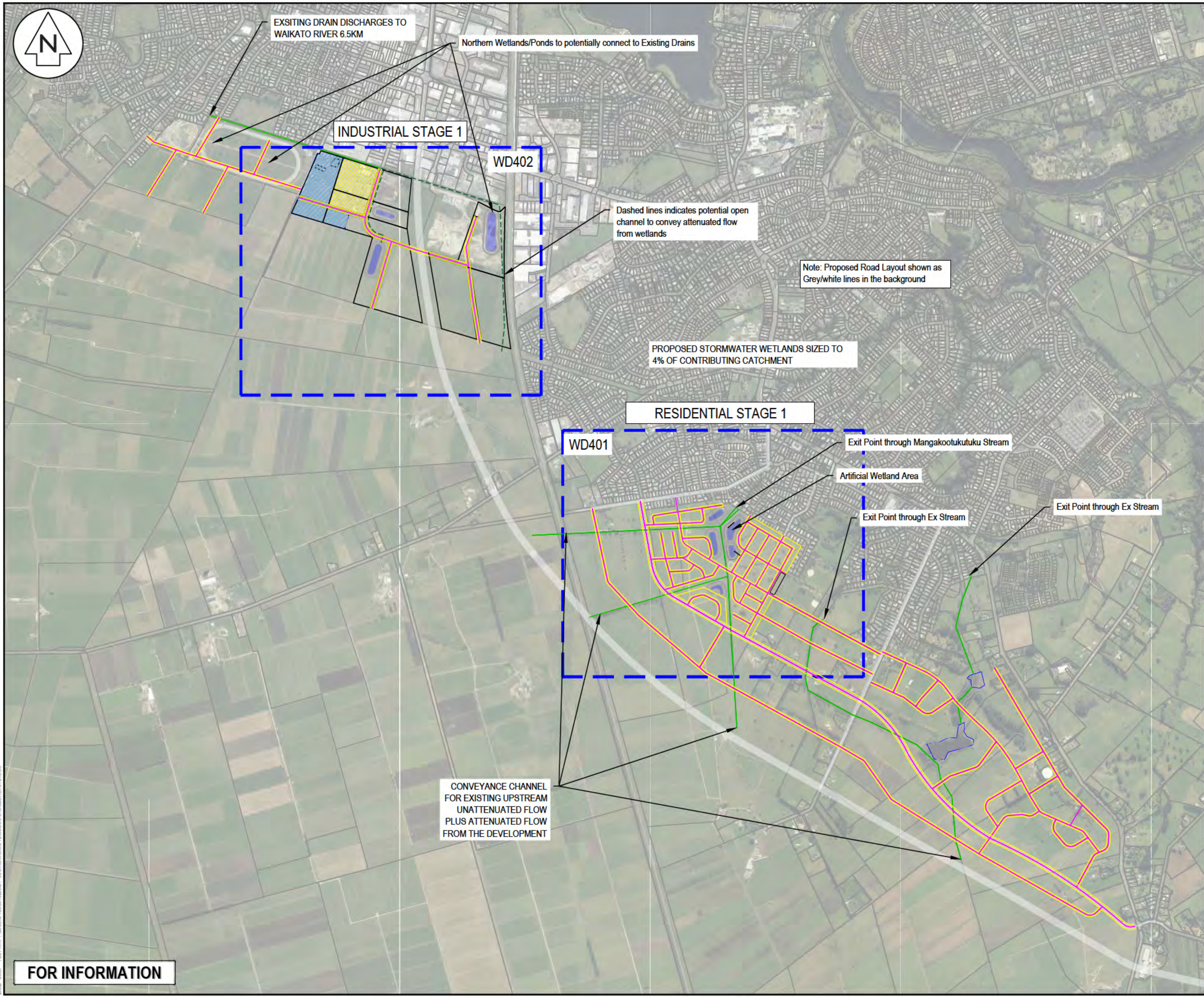
If you wish us to proceed with pricing for the installation of the electrical reticulation please contact us at www.wel.co.nz/get-connected/subdivision . Please attach this consent letter with your application.

We thank you for your enquiry. If you have any further queries or require additional information, please do not hesitate to contact me.

Yours faithfully

Miranda McLean
PROJECT MANAGER

Appendix K – Stage 1 Drawings



LEGEND

- EX BDY
- PROP CATCHMENT BDY
- PR WETLANDS
- PR FUTURE WETLANDS
- EX STREAM

Rev	Description	By	Date
B	FOR INFORMATION	RK	05/2024
A	FOR INFORMATION	RK	30/04/24

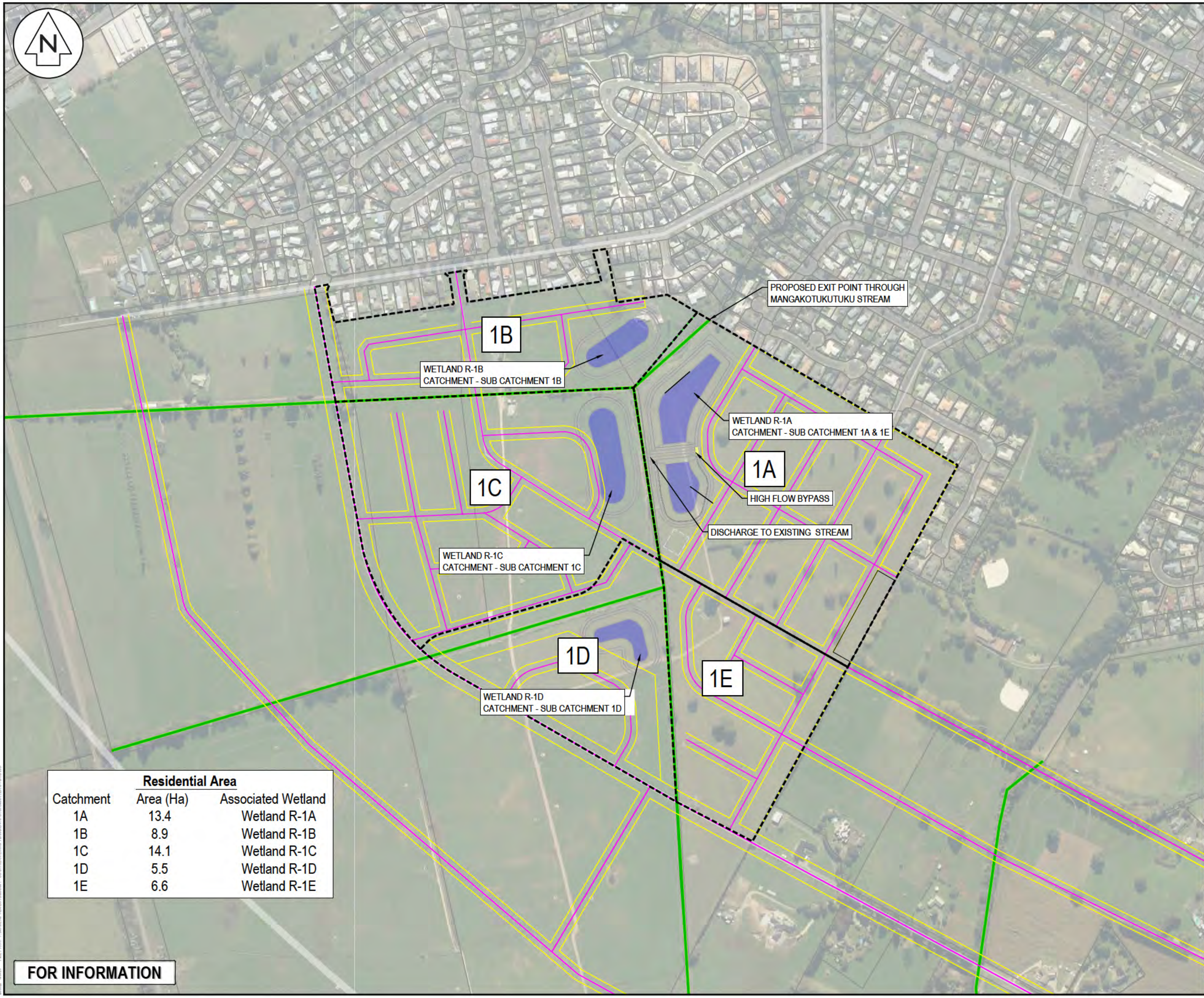
	By	Date
Survey	LINZ	02/2024
Design	RK	02/2024
Drawn	MKS	02/2024
Checked	DJM	02/2024

Maven Associates
09 571 0050
info@maven.co.nz
www.maven.co.nz
5 Owens Road, Epsom
Auckland 1023

Project
STAGE1 SOUTHERN LINKS 1 FOR SOUTHERN LINKS

Title
PROPOSED OVERALL STORMWATER CATCHMENT PLAN

Project no.	289001
Scale	1:20000 @ A1
Cad file	C410-STORMWATER STG1.DWG
Drawing no.	WD410
Rev	B



Residential Area

Catchment	Area (Ha)	Associated Wetland
1A	13.4	Wetland R-1A
1B	8.9	Wetland R-1B
1C	14.1	Wetland R-1C
1D	5.5	Wetland R-1D
1E	6.6	Wetland R-1E

LEGEND

- EX BDY
- PROP CATCHMENT BDY
- PR WETLANDS
- PR FUTURE WETLANDS
- EX STREAM

Rev	Description	By	Date
B	FOR INFORMATION	RK	05/2024
A	FOR INFORMATION	RK	04/2024

	By	Date
Survey	LINZ	02/2024
Design	RK	02/2024
Drawn	AP	04/2024
Checked	DJM	04/2024

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09 571 0050
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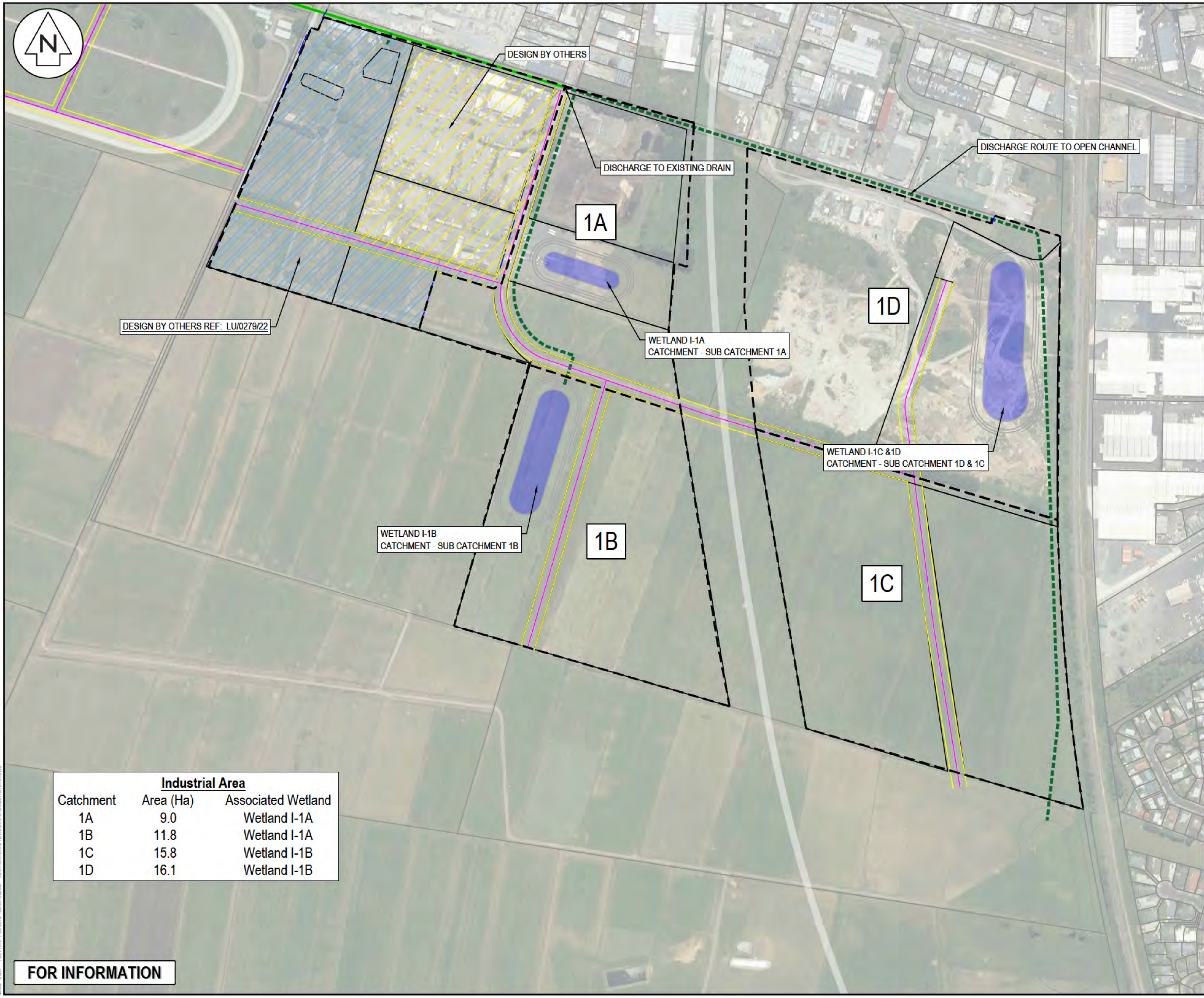
5 Owens Road, Epsom
Auckland 1023

Project
STAGE1 SOUTHERN LINKS 1 FOR SOUTHERN LINKS

Title
PROPOSED RESIDENTIAL STORMWATER CATCHMENT PLAN

Project no.	289001
Scale	1:5000 @ A3
Cad file	C410-STORMWATER STG1.DWG
Drawing no.	WD411
Rev	B



Industrial Area

Catchment	Area (Ha)	Associated Wetland
1A	9.0	Wetland I-1A
1B	11.8	Wetland I-1A
1C	15.8	Wetland I-1B
1D	16.1	Wetland I-1B

FOR INFORMATION

LEGEND

- EX BDY
- PROP CATCHMENT BDY
- PR WETLANDS
- PR FUTURE WETLANDS
- EX STREAM

Rev	Description	By	Date
B	FOR INFORMATION	RK	05/2024
A	FOR INFORMATION	RK	04/2024

	By	Date
Survey	LINZ	02/2024
Design	RK	02/2024
Drawn	AP	04/2024
Checked	DJM	04/2024

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09 571 0050
info@maven.co.nz
www.maven.co.nz
5 Owens Road, Epsom
Auckland 1023

Project
STAGE1 SOUTHERN LINKS 1 FOR SOUTHERN LINKS

Title
PROPOSED INDUSTRIAL STORMWATER CATCHMENT PLAN

Project no.	289001
Scale	1:5000 @ A3
Cad file	C410-STORMWATER STG1.DWG
Drawing no.	WD412
Rev	B

DATE: 5/3/24 FILE PATH: F:\MAVEN\PROJECTS\289001 - SOUTHERN LINKS 1\DWG\C410-STORMWATER STG1.DWG

LEGEND

- EX BDY
- SUB STAGE BOUNDARIES
- EX WASTEWATER
- PROP WASTEWATER RISING MAIN
- PROP WASTEWATER PUMPSTATION

Ref	Revisions	By	Date
A	FOR INFORMATION	TCH	04/2024

	By	Date
Survey	LINZ	02/2024
Design	TCH	04/2024
Drawn	TCH	04/2024
Checked		

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www.maven.co.nz
5 Owens Road, Epsom
Auckland 1023

Project
STAGE 1 SOUTHERN LINKS 1 FOR SOUTHERN LINKS

Title
PROPOSED CENTRAL WASTEWATER DRAINAGE OPTION 1

Project no.	298001
Scale	1:2500 @ A1
Cad file	WD510.DWG
Drawing no.	WD510 — Rev A

THE PROPOSED WASTEWATER NETWORK SHALL CONNECT INTO THE EXISTING NETWORK, IF THERE IS SUFFICIENT CAPACITY. THE MBR PLANTS SHOWN ON THE PLAN ARE ONLY TO BE INSTALLED, IF THERE IS INSUFFICIENT CAPACITY FOR THAT CATCHMENT. PROPOSED RISING MAINS TO BE HORIZONTAL DIRECTIONAL DRILLED WHEN THEY PASS THROUGH LIVE CARRIAGEWAYS.

FOR INFORMATION

LEGEND

- EX BDY
- SUB STAGE BOUNDARIES
- EX WASTEWATER
- PROP WASTEWATER RISING MAIN
- PROP WASTEWATER PUMPSTATION

Ref	Revisions	By	Date
A	FOR INFORMATION	TCH	04/2024

	By	Date
Survey	LINZ	04/2024
Design	TCH	04/2024
Drawn	TCH	04/2024
Checked		

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www.maven.co.nz
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Auckland 1023

Project
STAGE 1 SOUTHERN LINKS 1 FOR SOUTHERN LINKS

Title
PROPOSED CENTRAL WASTEWATER DRAINAGE OPTION 2

Project no.	298001		
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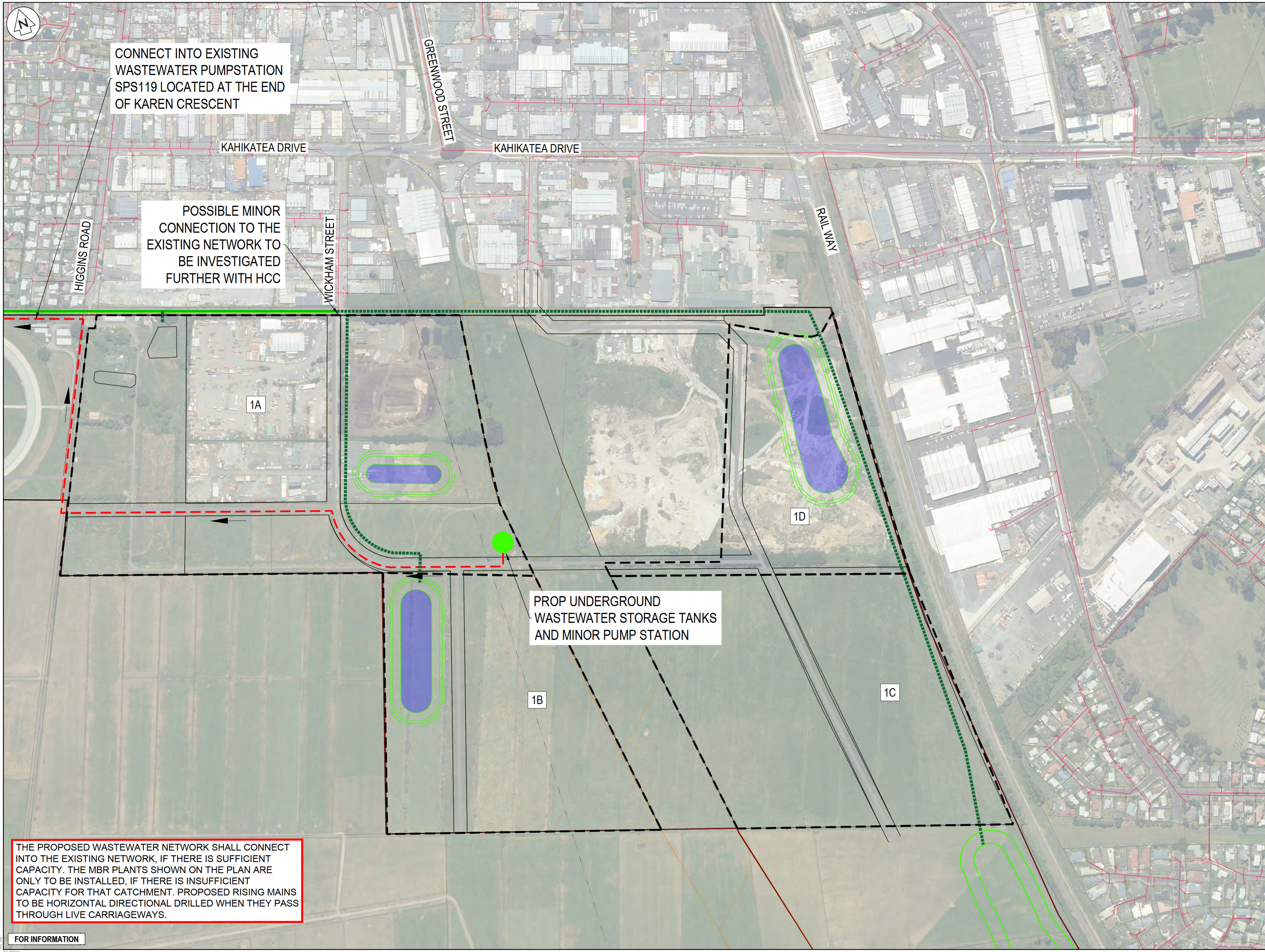
Drawing no.	WD511	Rev	A



LEGEND

- EX BDY
- SUB STAGE BOUNDARIES
- EX WASTEWATER
- PROP WASTEWATER RISING MAIN
- PROP WASTEWATER PUMPSTATION

Ref	Revisions	By	Date
A	FOR INFORMATION	TCH	04/2024

	By	Date
Survey	LINZ	02/2024
Design	TCH	04/2024
Drawn	TCH	04/2024
Checked		

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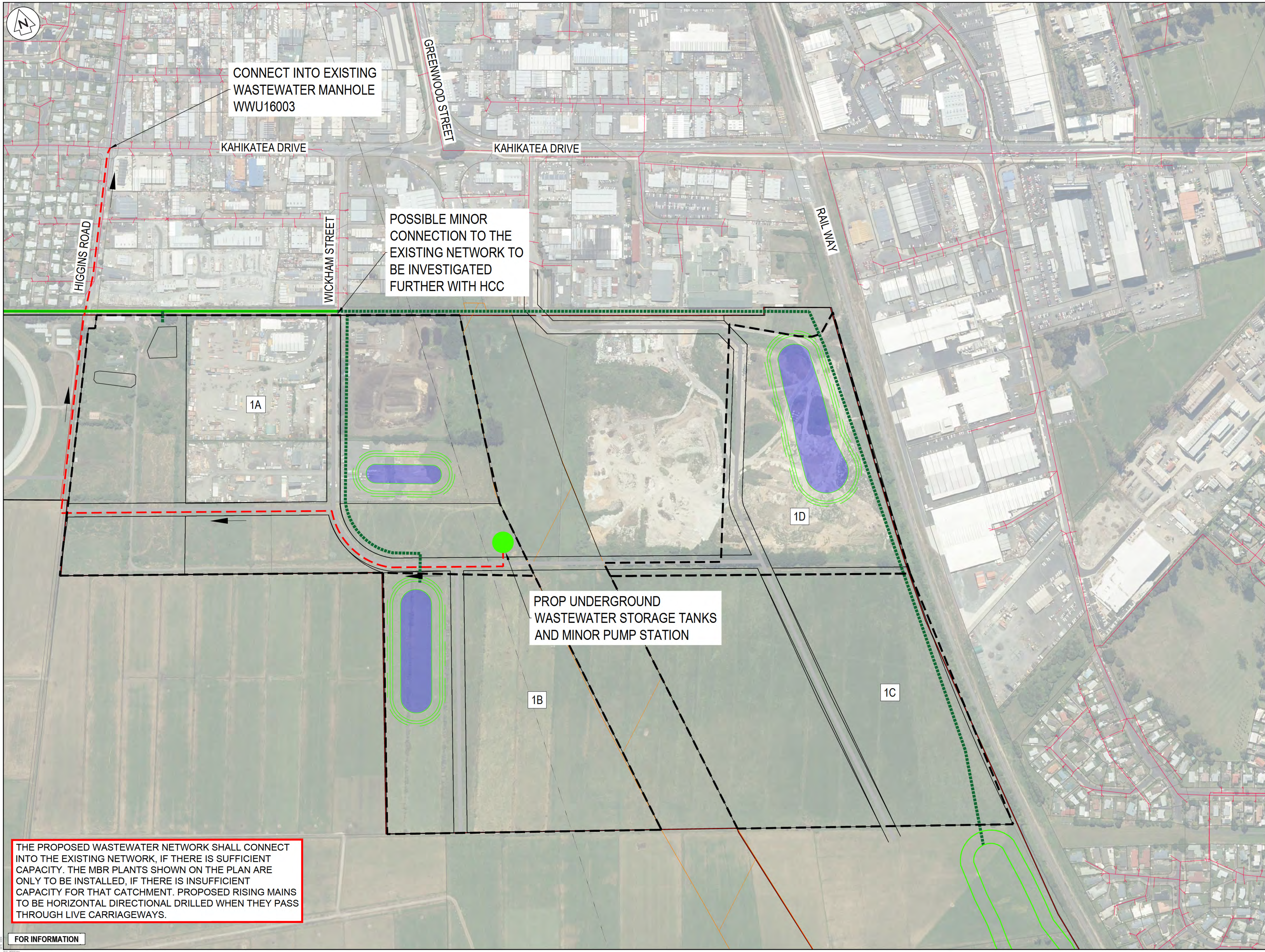
Project
STAGE 1 SOUTHERN LINKS 1 FOR SOUTHERN LINKS

Title
PROPOSED NORTH WASTEWATER DRAINAGE OPTION 1

Project no.	298001		
Scale	1:2500 @ A1		
Cad file	WD510.DWG		
Drawing no.	WD512	Rev	A



THE PROPOSED WASTEWATER NETWORK SHALL CONNECT INTO THE EXISTING NETWORK, IF THERE IS SUFFICIENT CAPACITY. THE MBR PLANTS SHOWN ON THE PLAN ARE ONLY TO BE INSTALLED, IF THERE IS INSUFFICIENT CAPACITY FOR THAT CATCHMENT. PROPOSED RISING MAINS TO BE HORIZONTAL DIRECTIONAL DRILLED WHEN THEY PASS THROUGH LIVE CARRIAGEWAYS.

FOR INFORMATION

LEGEND

- EX BDY
- SUB STAGE BOUNDARIES
- EX WASTEWATER
- PROP WASTEWATER RISING MAIN
- PROP WASTEWATER PUMPSTATION

Ref	Revisions	By	Date
A	FOR INFORMATION	TCH	04/2024

	By	Date
Survey	LINZ	02/2024
Design	TCH	04/2024
Drawn	TCH	04/2024
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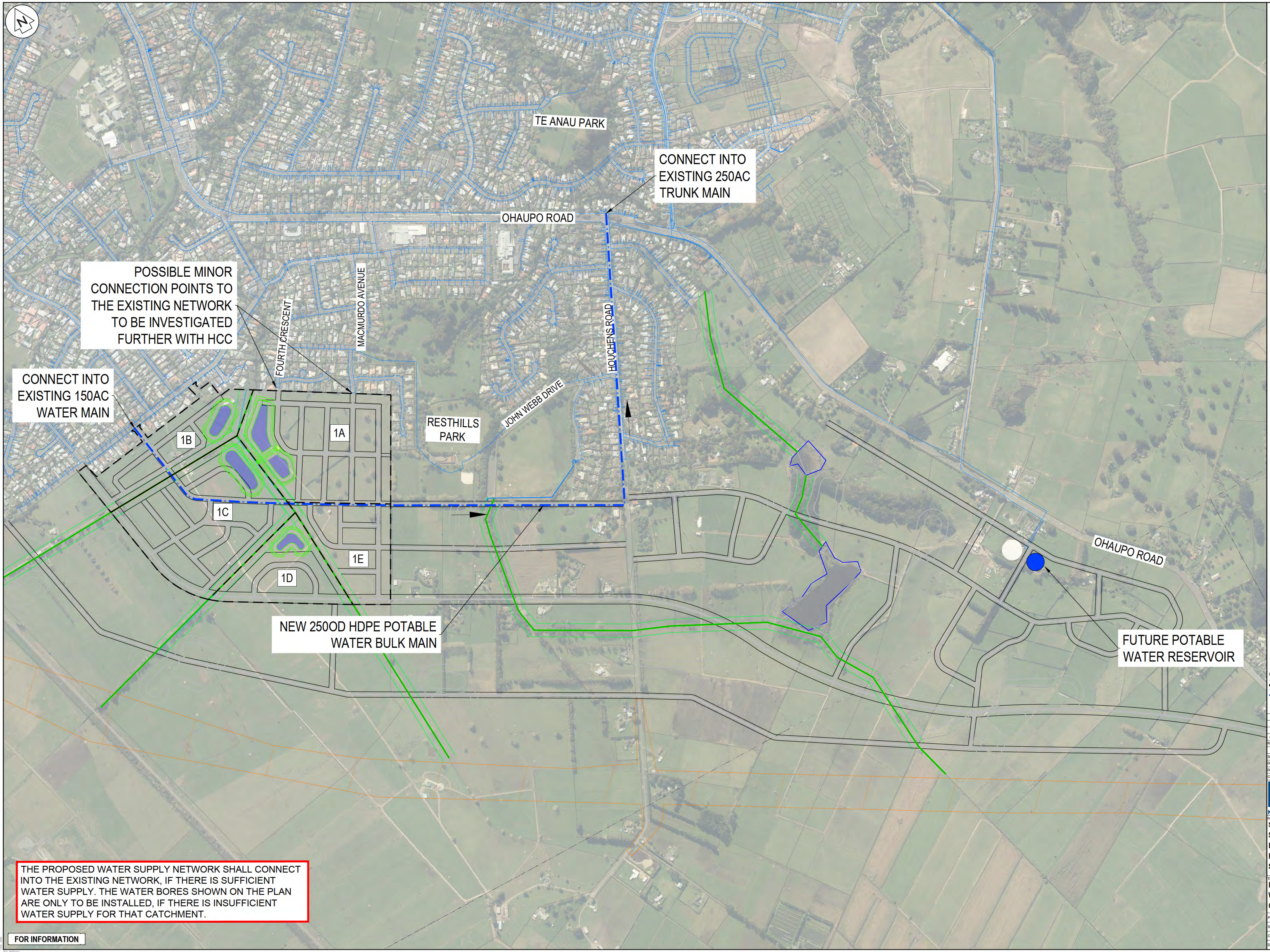
Project
STAGE 1 SOUTHERN LINKS 1 FOR SOUTHERN LINKS

Title
PROPOSED NORTH WASTEWATER DRAINAGE OPTION 2

Project no.	298001
Scale	1:2500 @ A1
Cad file	WD510.DWG
Drawing no.	WD513 Rev A



LEGEND

(thin line)	EX BDY
(heavy dashed line)	SUB STAGE BOUNDARIES
(blue line)	EX WATERMAIN
(blue dashed line, W)	PROP WATERMAIN
(blue circle)	INDICATIVE NEW WATER RESERVOIR

Ref	Revisions	By	Date
A	FOR INFORMATION	TCH	04/2024

	By	Date
Survey	LINZ	02/2024
Design	RJM	02/2024
Drawn	RJM	02/2024
Checked	MS	02/2024

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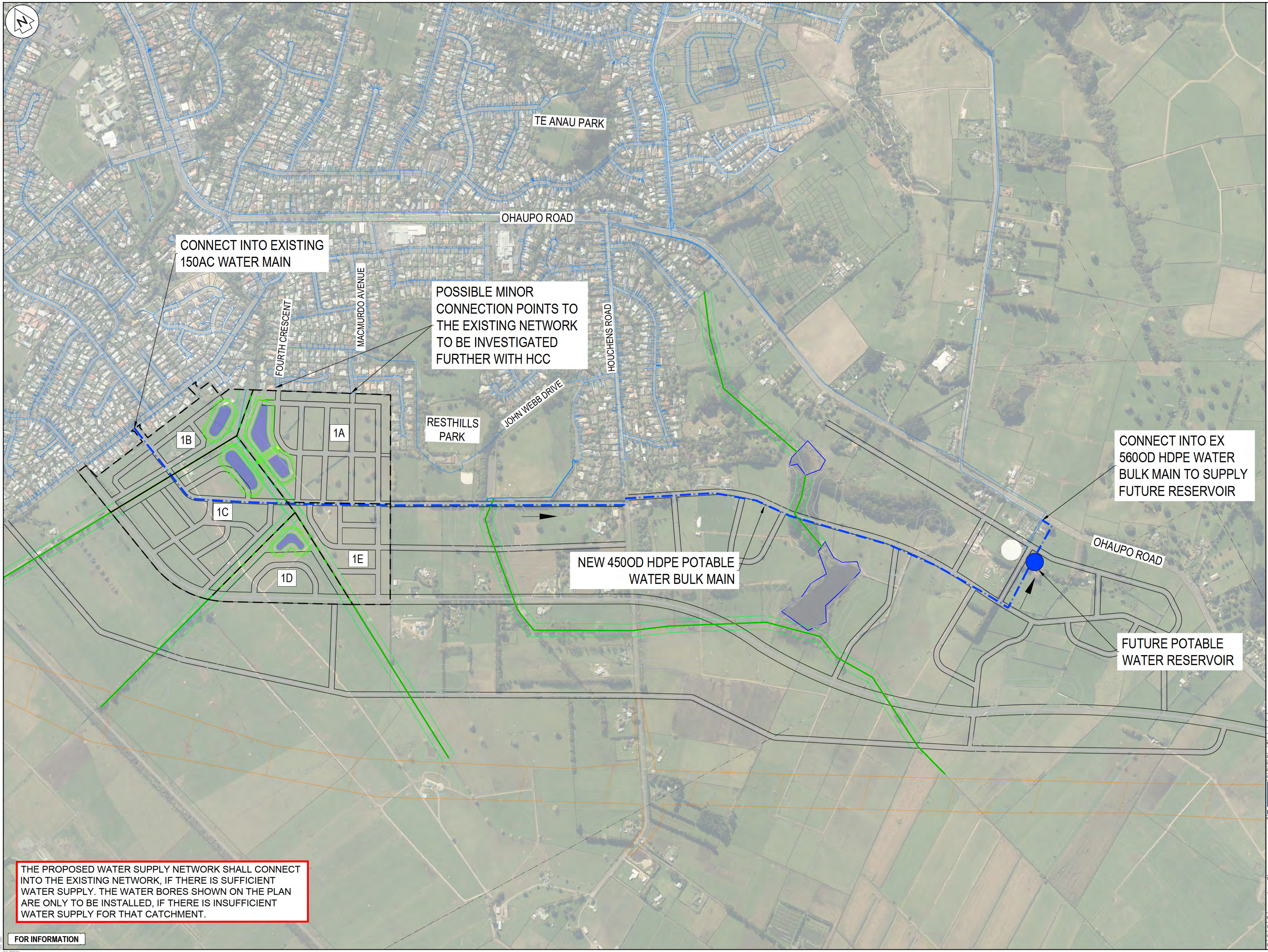
Project
STAGE 1 SOUTHERN LINKS 1 FOR SOUTHERN LINKS

Title
PROPOSED CENTRAL WATER SUPPLY OPTION 1

Project no.	298001
Scale	1:5000 @ A1
Cad file	WD610.DWG
Drawing no.	WD610
Rev	A



THE PROPOSED WATER SUPPLY NETWORK SHALL CONNECT INTO THE EXISTING NETWORK, IF THERE IS SUFFICIENT WATER SUPPLY. THE WATER BORES SHOWN ON THE PLAN ARE ONLY TO BE INSTALLED, IF THERE IS INSUFFICIENT WATER SUPPLY FOR THAT CATCHMENT.

FOR INFORMATION

LEGEND

- EX BDY
- SUB STAGE BOUNDARIES
- EX WATERMAIN
- PROP WATERMAIN
- INDICATIVE NEW WATER RESERVOIR

A	FOR INFORMATION	TCH	04/2024
Ref	Revisions	By	Date

	By	Date
Survey	LINZ	02/2024
Design	TCH	04/2024
Drawn	TCH	04/2024
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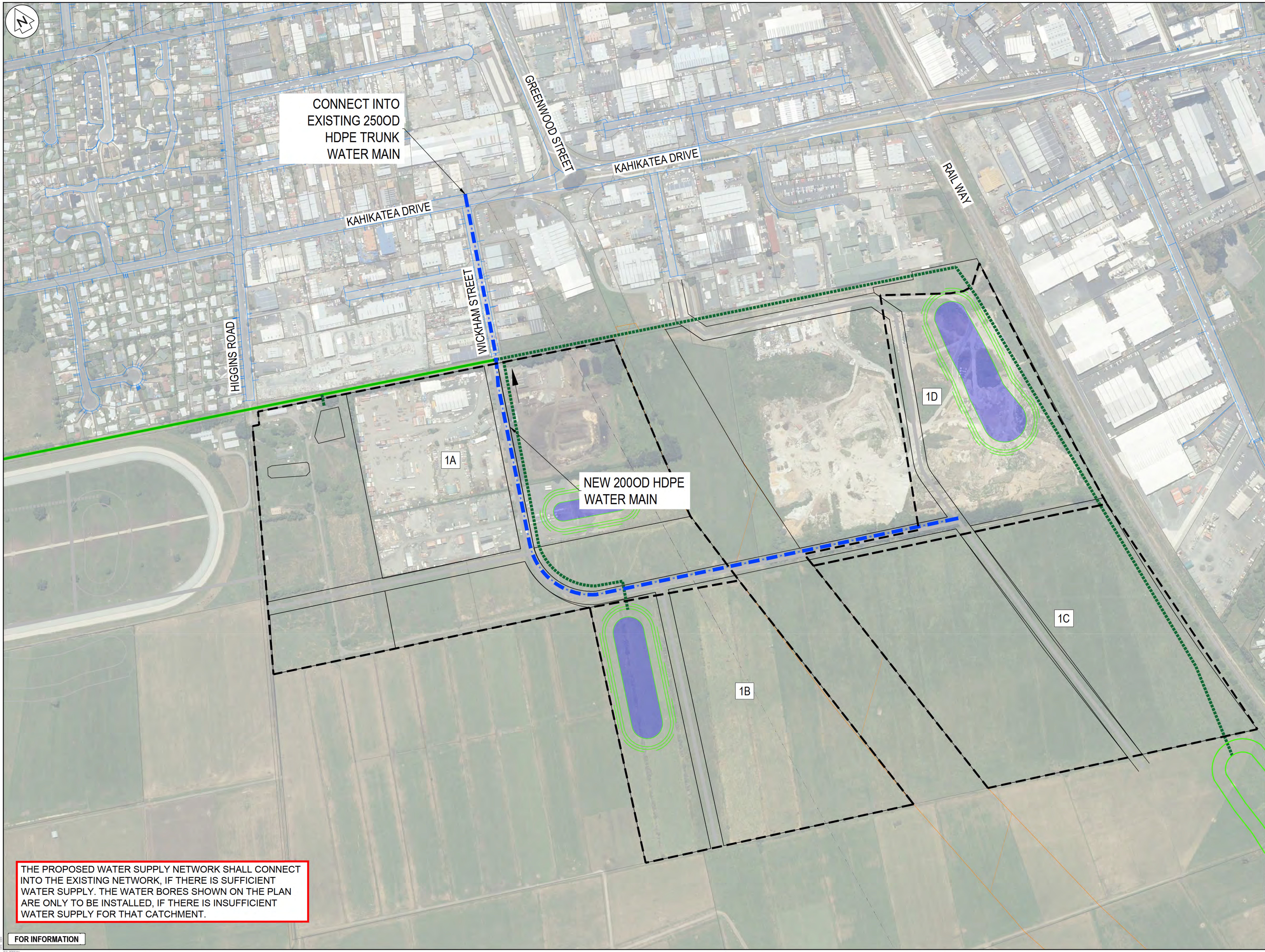
Project
STAGE 1 SOUTHERN LINKS 1 FOR SOUTHERN LINKS

Title
PROPOSED CENTRAL WATER SUPPLY OPTION 2

Project no.	298001		
Scale	1:5000 @ A1		
Cad file	WD610.DWG		
Drawing no.	WD611	Rev	A



THE PROPOSED WATER SUPPLY NETWORK SHALL CONNECT INTO THE EXISTING NETWORK, IF THERE IS SUFFICIENT WATER SUPPLY. THE WATER BORES SHOWN ON THE PLAN ARE ONLY TO BE INSTALLED, IF THERE IS INSUFFICIENT WATER SUPPLY FOR THAT CATCHMENT.

FOR INFORMATION

LEGEND

- EX BDY
- SUB STAGE BOUNDARIES
- EX WATERMAIN
- PROP WATERMAIN
- INDICATIVE NEW WATER RESERVOIR

Ref	Revisions	By	Date
A	FOR INFORMATION	TCH	04/2024

	By	Date
Survey	LINZ	02/2024
Design	TCH	04/2024
Drawn	TCH	04/2024
Checked		

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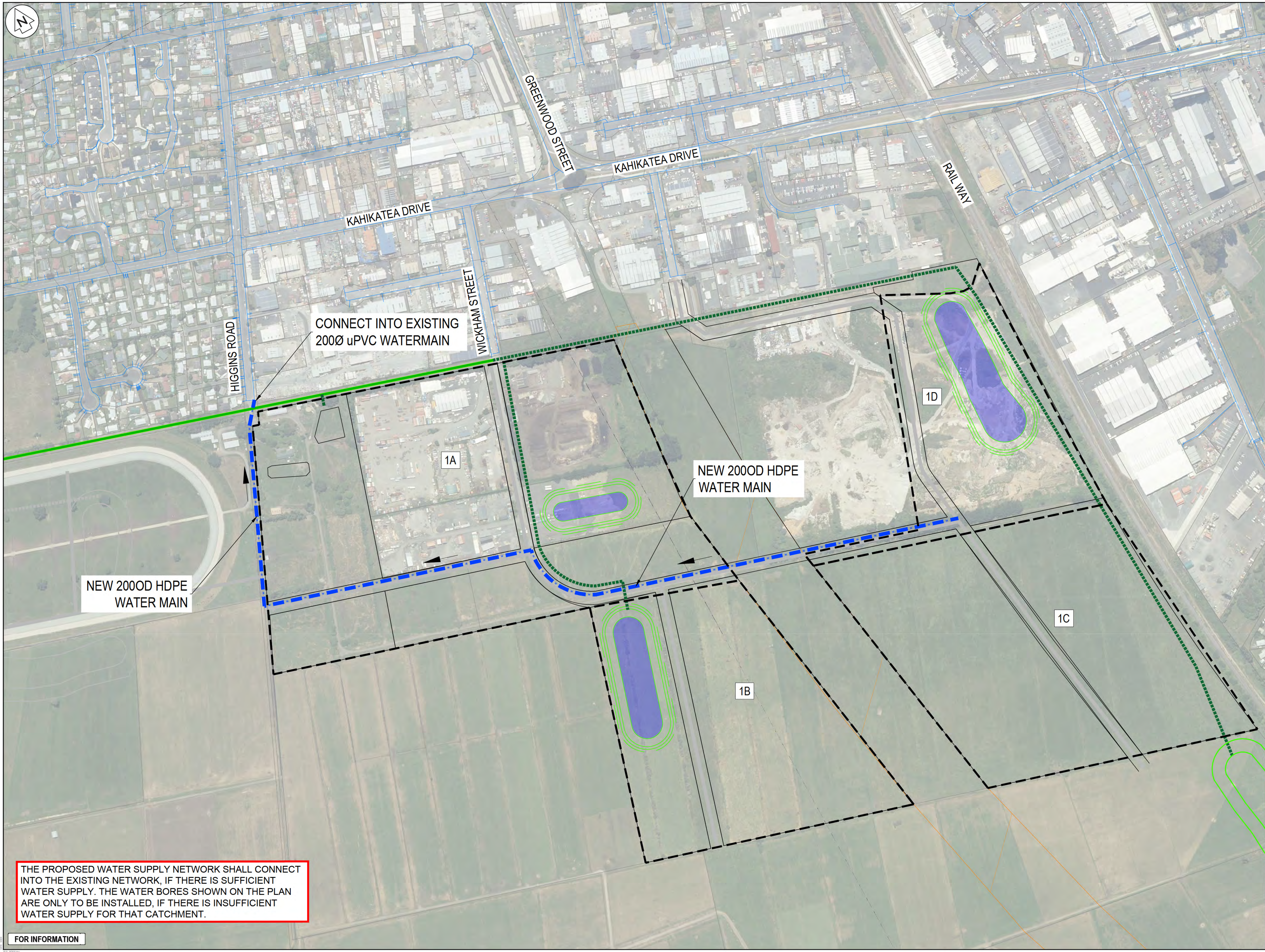
Project
STAGE 1
SOUTHERN
LINKS 1
FOR
SOUTHERN LINKS

Title
PROPOSED CENTRAL
WATER SUPPLY
OPTION 1

Project no.	298001		
Scale	1:2500 @ A1		
Cad file	WD610.DWG		
Drawing no.	WD612	Rev	A



LEGEND

- EX BDY
- SUB STAGE BOUNDARIES
- EX WATERMAIN
- PROP WATERMAIN
- INDICATIVE NEW WATER RESERVOIR

Ref	Revisions	By	Date
A	FOR INFORMATION	TCH	04/2024

	By	Date
Survey	LINZ	02/2024
Design	TCH	04/2024
Drawn	TCH	04/2024
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Project
STAGE 1 SOUTHERN LINKS 1 FOR SOUTHERN LINKS

Title
PROPOSED NORTH WATER SUPPLY OPTION 2

Project no.	298001
Scale	1:2500 @ A1
Cad file	WD610.DWG
Drawing no.	WD613 Rev A

Appendix L – Stage 1 Wastewater Calculations

Maven Associates		**Job Number** **298001**	**Sheet** **1**	**Rev** **C**
Job Title	**Hamilton South Links - Stage 1A Industrial**	**Author**	**Date**	**Checked**
Calc Title	**Southern Links 1 - WW Demand Calc**	**TCH**	**3/05/2024**	**DJM**

As per Waikato Local Authority RITS standards

Domestic Average Daily Flow (Water Consumption)=	200	*l/person/day*
Infiltration Allowance=	2,250	*l/Ha/day*
Surface Water Ingress=	16,500	*l/Ha/day*

Refer to C450-1 for catchment details

Catchment area =	**17.6**	*Ha*
Population Equivalent as per Table 5-3=	45	*person per Ha*
Total Population	792	
Wastewater Peaking factor as per Table 5-2=	2.6	

Using a pupolation value person (max development scenario)

Average Daily Flow (ADF)=	198.00	*m^3/day*
Peak Daily Flow (PDF)=	5.23	*L/sec*
Peak Wet Weather Flow (PWWF)=	**8.59**	*L/sec*

Pipe Ks (uPVC) = 0.60

PWW Flow	**Pipe dia**	**Gradient**	**Capacity**	**Velocity**	**Check**
l/s	*m*	*%*	*l/s*	*m/s*	*OK*
8.586	0.225	1.00	**52.44**	1.32	OK

Maven Associates	Job Number 298001	Sheet 2	Rev B
Job Title: Hamilton South Links - Stage 1B Industrial Calc Title: Southern Links 1 - WW Demand Calc	Author TCH	Date 1/05/2024	Checked DJM

As per Waikato Local Authority RITS standards

Domestic Average Daily Flow (Water Consumption)=	200	*l/person/day*
Infiltration Allowance=	2,250	*l/Ha/day*
Surface Water Ingress=	16,500	*l/Ha/day*

Refer to C450-1 for catchment details

Catchment area =	**11.8**	*Ha*
Population Equivalent as per Table 5-3=	45	*person per Ha*
Total Population	531	
Wastewater Peaking factor as per Table 5-2=	2.8	

Using a pupolation value person (max development scenario)

Average Daily Flow (ADF)=	132.75	*m^3/day*
Peak Daily Flow (PDF)=	3.75	*L/sec*
Peak Wet Weather Flow (PWWF)=	**6.00**	*L/sec*

Pipe Ks (uPVC) = 0.60

PWW Flow	**Pipe dia**	**Gradient**	**Capacity**	**Velocity**	**Check**
l/s	*m*	*%*	*l/s*	*m/s*	*OK*
6.002	0.225	1.00	**52.44**	1.32	OK

	Job Number	Sheet	Rev
Maven Associates	**298001**	**3**	**B**
Job Title Hamilton South Links - Stage 1C Industrial	**Author**	**Date**	**Checked**
Calc Title Southern Links 1 - WW Demand Calc	**TCH**	**1/05/2024**	**DJM**

As per Waikato Local Authority RITS standards

Domestic Average Daily Flow (Water Consumption)=	200	*l/person/day*
Infiltration Allowance=	2,250	*l/Ha/day*
Surface Water Ingress=	16,500	*l/Ha/day*

Refer to C450-1 for catchment details

Catchment area =	**15.6**	*Ha*
Population Equivalent as per Table 5-3=	45	*person per Ha*
Total Population	702	
Wastewater Peaking factor as per Table 5-2=	2.6	

Using a pupolation value person (max development scenario)

Average Daily Flow (ADF)=	175.50	*m^3/day*
Peak Daily Flow (PDF)=	4.63	*L/sec*
Peak Wet Weather Flow (PWWF)=	**7.61**	*L/sec*

Pipe Ks (uPVC) = 0.60

PWW Flow	**Pipe dia**	**Gradient**	**Capacity**	**Velocity**	**Check**
l/s	*m*	*%*	*l/s*	*m/s*	*OK*
7.610	0.225	1.00	**52.44**	1.32	OK

Maven Associates	Job Number	Sheet	Rev
	298001	4	B
Job Title: Hamilton South Links - Stage 1D Industrial	Author	Date	Checked
Calc Title: Southern Links 1 - WW Demand Calc	TCH	1/05/2024	DJM

As per Waikato Local Authority RITS standards

Domestic Average Daily Flow (Water Consumption)=	200	*l/person/day*
Infiltration Allowance=	2,250	*l/Ha/day*
Surface Water Ingress=	16,500	*l/Ha/day*

Refer to C450-1 for catchment details

Catchment area =	**4.7**	*Ha*
Population Equivalent as per Table 5-3=	45	*person per Ha*
Total Population	212	
Wastewater Peaking factor as per Table 5-2=	3.7	

Using a pupolation value person (max development scenario)

Average Daily Flow (ADF)=	52.88	*m^3/day*
Peak Daily Flow (PDF)=	1.93	*L/sec*
Peak Wet Weather Flow (PWWF)=	**2.83**	*L/sec*

Pipe Ks (uPVC) = 0.60

PWW Flow	Pipe dia	Gradient	Capacity	Velocity	Check
l/s	*m*	*%*	*l/s*	*m/s*	*OK*
2.831	0.225	1.00	**52.44**	1.32	OK

Maven Associates	Job Number 298001	Sheet 5	Rev C
Job Title: Hamilton South Links - Stage 1 Industrial Calc Title: Southern Links 1 - WW Demand Calc	Author TCH	Date 3/05/2024	Checked DJM

As per Waikato Local Authority RITS standards

Domestic Average Daily Flow (Water Consumption)=	200	*l/person/day*
Infiltration Allowance=	2,250	*l/Ha/day*
Surface Water Ingress=	16,500	*l/Ha/day*

Refer to C450-1 for catchment details

Catchment area =	**49.7**	*Ha*
Population Equivalent as per Table 5-3=	45	*person per Ha*
Total Population	2237	
Wastewater Peaking factor as per Table 5-2=	2.1	

Using a pupolation value person (max development scenario)

Average Daily Flow (ADF)=	559.13	*m^3/day*
Peak Daily Flow (PDF)=	12.17	*L/sec*
Peak Wet Weather Flow (PWWF)=	**21.66**	*L/sec*

Pipe Ks (uPVC) = 0.60

PWW Flow	**Pipe dia**	**Gradient**	**Capacity**	**Velocity**	**Check**
l/s	*m*	*%*	*l/s*	*m/s*	*OK*
21.657	0.300	1.00	**111.94**	1.58	OK

Maven Associates	Job Number 298001	Sheet 1	Rev A
Job Title: Hamilton South Links - Stage 1A Residential Calc Title: Southern Links 1 - WW Demand Calc	Author TCH	Date 24/04/2024	Checked DJM

As per Waikato Local Authority RITS standards

Domestic Average Daily Flow (Water Consumption)=	200	*l/person/day*
Infiltration Allowance=	2,250	*l/Ha/day*
Surface Water Ingress=	16,500	*l/Ha/day*

Refer to C450-1 for catchment details

No. of residential dwellings =	**311**	
Catchment area =	**8**	*Ha*
Total Population	933	
Wastewater Peaking factor as per Table 5-2=	3	

Using a pupolation value person (max development scenario)

Average Daily Flow (ADF)=	204.60	*m^3/day*
Peak Daily Flow (PDF)=	6.69	*L/sec*
Peak Wet Weather Flow (PWWF)=	**8.22**	*L/sec*

Pipe Ks (uPVC) = 0.60

PWW Flow	Pipe dia	Gradient	Capacity	Velocity	Check
l/s	*m*	*%*	*l/s*	*m/s*	*OK*
8.215	0.15	1.00	**17.96**	1.02	OK

Maven Associates	Job Number 298001	Sheet 2	Rev A
Job Title: Hamilton South Links - Stage 1B Residential Calc Title: Southern Links 1 - WW Demand Calc	Author TCH	Date 24/04/2024	Checked DJM

As per Waikato Local Authority RITS standards

Domestic Average Daily Flow (Water Consumption)=	200	*l/person/day*
Infiltration Allowance=	2,250	*l/Ha/day*
Surface Water Ingress=	16,500	*l/Ha/day*

Refer to C450-1 for catchment details

No. of residential dwellings =	**117**	
Catchment area =	**3.1**	*Ha*
Total Population	350	
Wastewater Peaking factor as per Table 5-2=	3.7	

Using a pupolation value person (max development scenario)

Average Daily Flow (ADF)=	76.98	*m^3/day*
Peak Daily Flow (PDF)=	3.08	*L/sec*
Peak Wet Weather Flow (PWWF)=	**3.67**	*L/sec*

Pipe Ks (uPVC) = 0.60

PWW Flow	Pipe dia	Gradient	Capacity	Velocity	Check
l/s	*m*	*%*	*l/s*	*m/s*	*OK*
3.670	0.15	1.00	**17.96**	1.02	OK

Maven Associates	Job Number 298001	Sheet 3	Rev A
Job Title: Hamilton South Links - Stage 1C Residential Calc Title: Southern Links 1 - WW Demand Calc	Author TCH	Date 24/04/2024	Checked DJM

As per Waikato Local Authority RITS standards

Domestic Average Daily Flow (Water Consumption)=	200	*l/person/day*
Infiltration Allowance=	2,250	*l/Ha/day*
Surface Water Ingress=	16,500	*l/Ha/day*

Refer to C450-1 for catchment details

No. of residential dwellings =	**330**	
Catchment area =	**6.9**	*Ha*
Total Population	991	
Wastewater Peaking factor as per Table 5-2=	3	

Using a pupolation value person (max development scenario)

Average Daily Flow (ADF)=	213.73	*m^3/day*
Peak Daily Flow (PDF)=	7.06	*L/sec*
Peak Wet Weather Flow (PWWF)=	**8.38**	*L/sec*

Pipe Ks (uPVC) = 0.60

PWW Flow	Pipe dia	Gradient	Capacity	Velocity	Check
l/s	*m*	*%*	*l/s*	*m/s*	*OK*
8.379	0.15	1.00	**17.96**	1.02	OK

	Maven Associates	Job Number	Sheet	Rev
		298001	4	A
Job Title	Hamilton South Links - Stage 1D Residential	Author	Date	Checked
Calc Title	Southern Links 1 - WW Demand Calc	TCH	24/04/2024	DJM

As per Waikato Local Authority RITS standards

Domestic Average Daily Flow (Water Consumption)=	200	*l/person/day*
Infiltration Allowance=	2,250	*l/Ha/day*
Surface Water Ingress=	16,500	*l/Ha/day*

Refer to C450-1 for catchment details

No. of residential dwellings =	**94**	
Catchment area =	**2.6**	*Ha*
Total Population	282	
Wastewater Peaking factor as per Table 5-2=	14	

Using a pupolation value person (max development scenario)

Average Daily Flow (ADF)=	62.25	*m^3/day*
Peak Daily Flow (PDF)=	9.21	*L/sec*
Peak Wet Weather Flow (PWWF)=	**9.70**	*L/sec*

Pipe Ks (uPVC) = 0.60

PWW Flow	Pipe dia	Gradient	Capacity	Velocity	Check
l/s	*m*	*%*	*l/s*	*m/s*	*OK*
9.703	0.15	1.00	**17.96**	1.02	OK

	Maven Associates	Job Number	Sheet	Rev
		298001	5	A
Job Title	Hamilton South Links - Stage 1E Residential	Author	Date	Checked
Calc Title	Southern Links 1 - WW Demand Calc	TCH	24/04/2024	DJM

As per Waikato Local Authority RITS standards

Domestic Average Daily Flow (Water Consumption)=	200	*l/person/day*
Infiltration Allowance=	2,250	*l/Ha/day*
Surface Water Ingress=	16,500	*l/Ha/day*

Refer to C450-1 for catchment details

No. of residential dwellings =	**179**	
Catchment area =	**3.6**	*Ha*
Total Population	538	
Wastewater Peaking factor as per Table 5-2=	3.3	

Using a pupolation value person (max development scenario)

Average Daily Flow (ADF)=	115.70	*m^3/day*
Peak Daily Flow (PDF)=	4.20	*L/sec*
Peak Wet Weather Flow (PWWF)=	**4.89**	*L/sec*

Pipe Ks (uPVC) = 0.60

PWW Flow	Pipe dia	Gradient	Capacity	Velocity	Check
l/s	*m*	*%*	*l/s*	*m/s*	*OK*
4.891	0.15	1.00	**17.96**	1.02	OK

Maven Associates	Job Number 298001	Sheet 6	Rev A
Job Title: Hamilton South Links - Stage 1 Residential Calc Title: Southern Links 1 - WW Demand Calc	Author TCH	Date 24/04/2024	Checked DJM

As per Waikato Local Authority RITS standards

Domestic Average Daily Flow (Water Consumption)=	200	*l/person/day*
Infiltration Allowance=	2,250	*l/Ha/day*
Surface Water Ingress=	16,500	*l/Ha/day*

Refer to C450-1 for catchment details

No. of residential dwellings =	**1031**	
Catchment area =	**24**	*Ha*
Total Population	3093	
Wastewater Peaking factor as per Table 5-2=	2.7	

Using a pupolation value person (max development scenario)

Average Daily Flow (ADF)=	673.05	*m^3/day*
Peak Daily Flow (PDF)=	19.96	*L/sec*
Peak Wet Weather Flow (PWWF)=	**24.58**	*L/sec*

Pipe Ks (uPVC) = 0.60

PWW Flow	**Pipe dia**	**Gradient**	**Capacity**	**Velocity**	**Check**
l/s	*m*	*%*	*l/s*	*m/s*	*OK*
24.583	0.225	1.00	**52.44**	1.32	OK

Appendix M – Stage 1 Water Supply Calculations

Maven Associates	Job Number 298001	Sheet 1	Rev C
Job Title: Hamilton South Links - Stage 1A Industrial Calc Title: Southern Links 1 - Water Demand	Author TCH	Date 3/05/2024	Checked DJM

Water Catchment

As per RITS Standard 6.2.3		47	People per hectare
	Demand	260	l/person/day

Demand Rates

Average Demand =	260	litres/person/day
Peak Demand (5x) =	1300	litres/person/day

Population	Area (Ha)	People	Occupancy
Industrial (1ha x 47 people per ha)	17.6	47	834
Total			834

Demand	Persons	Rate l/p/day	Flow l/s
AD Water	834	260	2.51
PD Water	834	1300	12.54

Peak Demand	Persons	Rate l/p/day	Flow l/s
PD Water	834	1300	**12.54**

Maven Associates	Job Number 298001	Sheet 1	Rev B
Job Title: Hamilton South Links - Stage 1B Industrial Calc Title: Southern Links 1 - Water Demand	Author TCH	Date 1/05/2024	Checked DJM

Water Catchment

As per RITS Standard 6.2.3		47	People per hectare
	Demand	260	l/person/day

Demand Rates

Average Demand =	260	litres/person/day
Peak Demand (5x) =	1300	litres/person/day

Population	Area (Ha)	People	Occupancy
Industrial (1ha x 47 people per ha)	11.8	47	559
Total			559

Demand	Persons	Rate l/p/day	Flow l/s
AD Water	559	260	1.68
PD Water	559	1300	8.41

Peak Demand	Persons	Rate l/p/day	Flow l/s
PD Water	559	1300	**8.41**

Maven Associates	Job Number 298001	Sheet 1	Rev B
Job Title: Hamilton South Links - Stage 1C Industrial Calc Title: Southern Links 1 - Water Demand	Author TCH	Date 1/05/2024	Checked DJM

Water Catchment

As per RITS Standard 6.2.3	47	People per hectare
Demand	260	l/person/day

Demand Rates

Average Demand =	260	litres/person/day
Peak Demand (5x) =	1300	litres/person/day

Population	Area (Ha)	People	Occupancy
Industrial (1ha x 47 people per ha)	15.6	47	739
Total			739

Demand	Persons	Rate l/p/day	Flow l/s
AD Water	739	260	2.22
PD Water	739	1300	11.12

Peak Demand	Persons	Rate l/p/day	Flow l/s
PD Water	739	1300	**11.12**

Maven Associates	Job Number 298001	Sheet 1	Rev B
Job Title: Hamilton South Links - Stage 1D Industrial Calc Title: Southern Links 1 - Water Demand	Author TCH	Date 1/05/2024	Checked DJM

<u>Water Catchment</u>

As per RITS Standard 6.2.3		47	People per hectare
	Demand	260	l/person/day

Demand Rates

Average Demand =	260	litres/person/day
Peak Demand (5x) =	1300	litres/person/day

Population	Area (Ha)	People	Occupancy
Industrial (1ha x 47 people per ha)	4.7	47	223
Total			223

Demand	Persons	Rate l/p/day	Flow l/s
AD Water	223	260	0.67
PD Water	223	1300	3.35

Peak Demand	Persons	Rate l/p/day	Flow l/s
PD Water	223	1300	**3.35**

Water Catchment

As per RITS Standard 6.2.3		47	People per hectare
	Demand	260	l/person/day

Demand Rates

Average Demand =	260	litres/person/day
Peak Demand (5x) =	1300	litres/person/day

Population	Area (Ha)	People	Occupancy
Industrial (1ha x 47 people per ha)	49.7	47	2354
Total			2354

Demand	Persons	Rate l/p/day	Flow l/s
AD Water	2354	260	7.08
PD Water	2354	1300	35.42

Peak Demand	Persons	Rate l/p/day	Flow l/s
PD Water	2354	1300	**35.42**

Maven Associates		Job Number 298001	Sheet 1	Rev A
Job Title Calc Title	Hamilton South Links - Stage 1A Residential Southern Links 1 - Water Demand	Author TCH	Date 24/04/2024	Checked DJM

Water Catchment

As per RITS Standard 6.2.3		3	people per dwelling
	Demand	260	l/person/day

Demand Rates

Average Demand =	260	litres/person/day
Peak Demand (5x) =	1300	litres/person/day

Population	Dwellings	People	Occupancy
Proposed Dwellings	311	3	933
Commercial Unit (0.95ha x 45 person per ha)			0
Total			933

Demand	Persons	Rate l/p/day	Flow l/s
AD Water	933	260	2.81
PD Water	933	1300	14.04

Peak Demand	Persons	Rate l/p/day	Flow l/s
PD Water	933	1300	**14.04**

Maven Associates	Job Number 298001	Sheet 2	Rev A
Job Title Hamilton South Links - Stage 1B Residential Calc Title Southern Links 1 - Water Demand	Author TCH	Date 24/04/2024	Checked DJM

Water Catchment

As per RITS Standard 6.2.3		3	people per dwelling	
	Demand	260	l/person/day	

Demand Rates

Average Demand =	260	litres/person/day
Peak Demand (5x) =	1300	litres/person/day

Population	Dwellings	People	Occupancy
Proposed Dwellings	117	3	351
Commercial Unit (0.95ha x 45 person per ha)			0
Total			351

Demand	Persons	Rate l/p/day	Flow l/s
AD Water	351	260	1.06
PD Water	351	1300	5.28

Peak Demand	Persons	Rate l/p/day	Flow l/s
PD Water	351	1300	**5.28**

Maven Associates	Job Number 298001	Sheet 3	Rev A
Job Title: Hamilton South Links - Stage 1C Residential Calc Title: Southern Links 1 - Water Demand	Author TCH	Date 24/04/2024	Checked DJM

<u>Water Catchment</u>

As per RITS Standard 6.2.3		3	people per dwelling
	Demand	260	l/person/day

Demand Rates

Average Demand =	260	litres/person/day
Peak Demand (5x) =	1300	litres/person/day

Population	Dwellings	People	Occupancy
Proposed Dwellings	330	3	990
Commercial Unit (0.95ha x 45 person per ha)			0
Total			990

Demand	Persons	Rate l/p/day	Flow l/s
AD Water	990	260	2.98
PD Water	990	1300	14.90

Peak Demand	Persons	Rate l/p/day	Flow l/s
PD Water	990	1300	**14.90**

Maven Associates	Job Number 298001	Sheet 4	Rev A
Job Title: Hamilton South Links - Stage 1D Residential Calc Title: Southern Links 1 - Water Demand	Author TCH	Date 24/04/2024	Checked DJM

Water Catchment

As per RITS Standard 6.2.3		3	people per dwelling
	Demand	260	l/person/day

Demand Rates

Average Demand =	260	litres/person/day
Peak Demand (5x) =	1300	litres/person/day

Population	Dwellings	People	Occupancy
Proposed Dwellings	94	3	282
Commercial Unit (0.95ha x 45 person per ha)			0
Total			282

Demand	Persons	Rate l/p/day	Flow l/s
AD Water	282	260	0.85
PD Water	282	1300	4.24

Peak Demand	Persons	Rate l/p/day	Flow l/s
PD Water	282	1300	**4.24**

Maven Associates	Job Number 298001	Sheet 5	Rev A
Job Title: Hamilton South Links - Stage 1E Residential Calc Title: Southern Links 1 - Water Demand	Author TCH	Date 24/04/2024	Checked DJM

Water Catchment

As per RITS Standard 6.2.3		3	people per dwelling
	Demand	260	l/person/day

Demand Rates

Average Demand =	260	litres/person/day
Peak Demand (5x) =	1300	litres/person/day

Population	Dwellings	People	Occupancy
Proposed Dwellings	179	3	537
Commercial Unit (0.95ha x 45 person per ha)			0
Total			537

Demand	Persons	Rate l/p/day	Flow l/s
AD Water	537	260	1.62
PD Water	537	1300	8.08

Peak Demand	Persons	Rate l/p/day	Flow l/s
PD Water	537	1300	**8.08**

Maven Associates	Job Number 298001	Sheet 6	Rev A
Job Title: Hamilton South Links - Stage 1 Residential Calc Title: Southern Links 1 - Water Demand	Author TCH	Date 24/04/2024	Checked DJM

<u>Water Catchment</u>

As per RITS Standard 6.2.3		3	people per dwelling
	Demand	260	l/person/day

Demand Rates

Average Demand =	260	litres/person/day
Peak Demand (5x) =	1300	litres/person/day

Population	Dwellings	People	Occupancy
Proposed Dwellings	1031	3	3093
Commercial Unit (0.95ha x 45 person per ha)			0
Total			3093

Demand	Persons	Rate l/p/day	Flow l/s
AD Water	3093	260	9.31
PD Water	3093	1300	46.54

Peak Demand	Persons	Rate l/p/day	Flow l/s
PD Water	3093	1300	**46.54**