



Infrastructure Report for Drury Metropolitan Centre Plan Change

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Blue Barn Consulting Limited

Prepared for:

Kiwi Property Group Limited



DOCUMENT CONTROL & QUALITY STATEMENT

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REVISION HISTORY

The following table outlines the revision history of this document:

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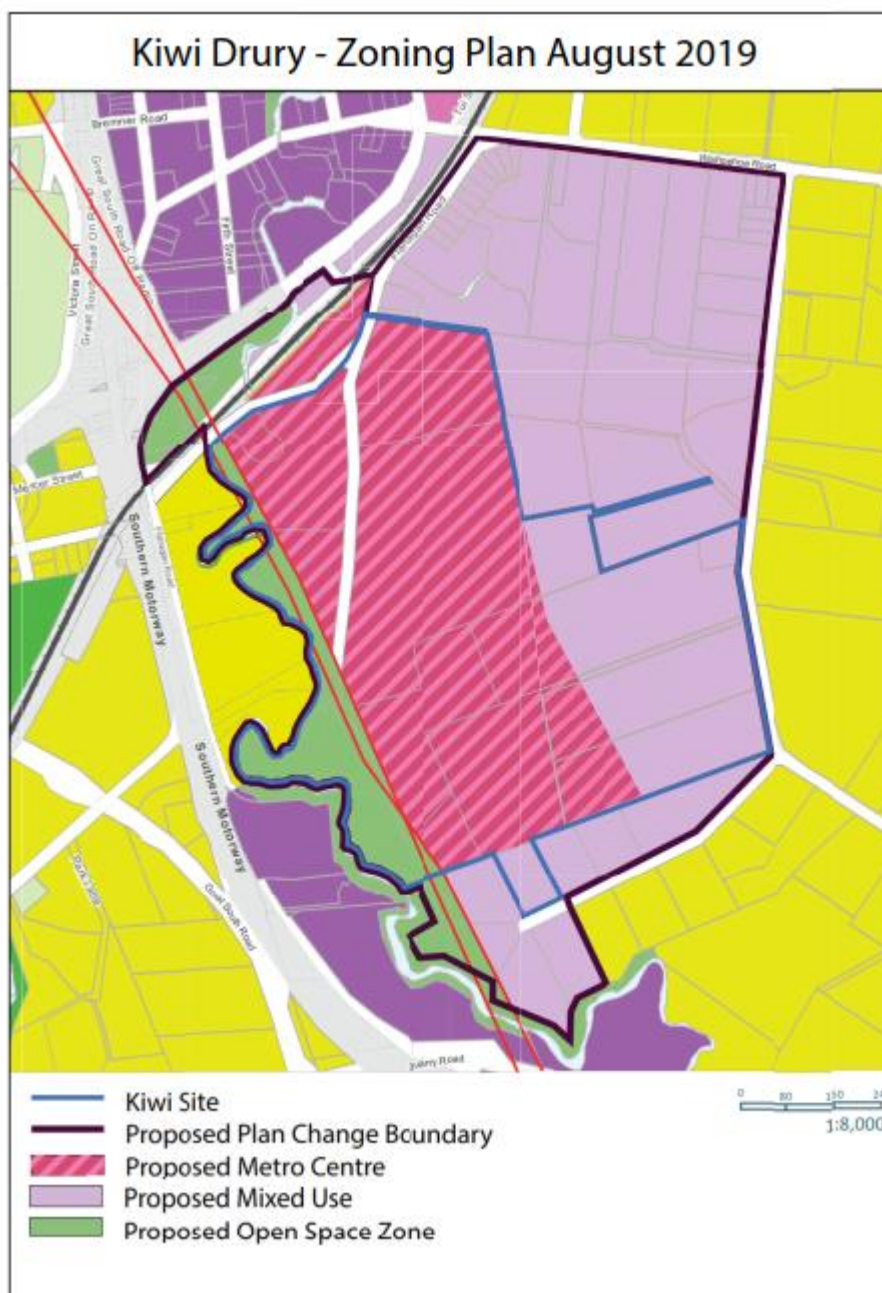
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1. INTRODUCTION

This Infrastructure Report has been commissioned by Barker and Associates on behalf of Kiwi Property Group and will be included as part of the supporting documentation for the private Drury Metropolitan Centre Plan Change submission to Auckland Council.

The report encompasses the various infrastructure components that will be necessary to enable the site to be re-zoned to Metropolitan Centre and Mixed Use zones. These components include bulk earthworks, wastewater, water supply and utilities, such as, electricity, gas and telecommunications. Comment will also be made on topographical site constraints.



2. THE PLAN CHANGE AREA

2.1 TOPOGRAPHY

The landform generally rises from Flanagan Road which has an elevation of approximately 10m above LINZ Datum, to a high point of 30m near the dwelling for 120 Flanagan Road. From this high point, a ridge extends in a north to south direction towards Brookfield Road. The properties fronting Fitzgerald Road and Waihoehoe Road within the proposed Plan Change area can be described as gently rolling towards the existing watercourses

that pass through the site and lead underneath Flanagan Road to ultimately discharge to the Hingaia Stream. These properties slope down in an east to west direction from Fitzgerald Road from a reduced level (RL) of approximately RL 30m, to a valley the middle of the site with levels between 20m and 10m. The landform then rises to a high point of RL 30m on the central north/south ridge before falling away to the eastern bank of the Hingaia Stream which forms the western boundary of the site, at an RL of around 10m at the top of the stream bank.

The central gully drains from the middle of the Fitzgerald Road site both northwards to Flanagan Road and southwards, towards Brookfield Road. There is another minor gully that also drains towards Brookfield Road. All three of these gullies are currently impacted to a minor extent by the 100-Year Flood Plain as depicted on the Council's Rapid Flood Hazard GIS.

The Plan Change area is impacted by a permanent watercourse that runs from east to west through the northern section of the plan change area. There are significant areas of land that are flood prone adjacent to this watercourse, in particular adjacent to Flanagan Road.

The extent of the 100-Year Flood Plain, flood prone areas and overland flow paths are shown on Figure 1, below.

2.2 BULK EARTHWORKS

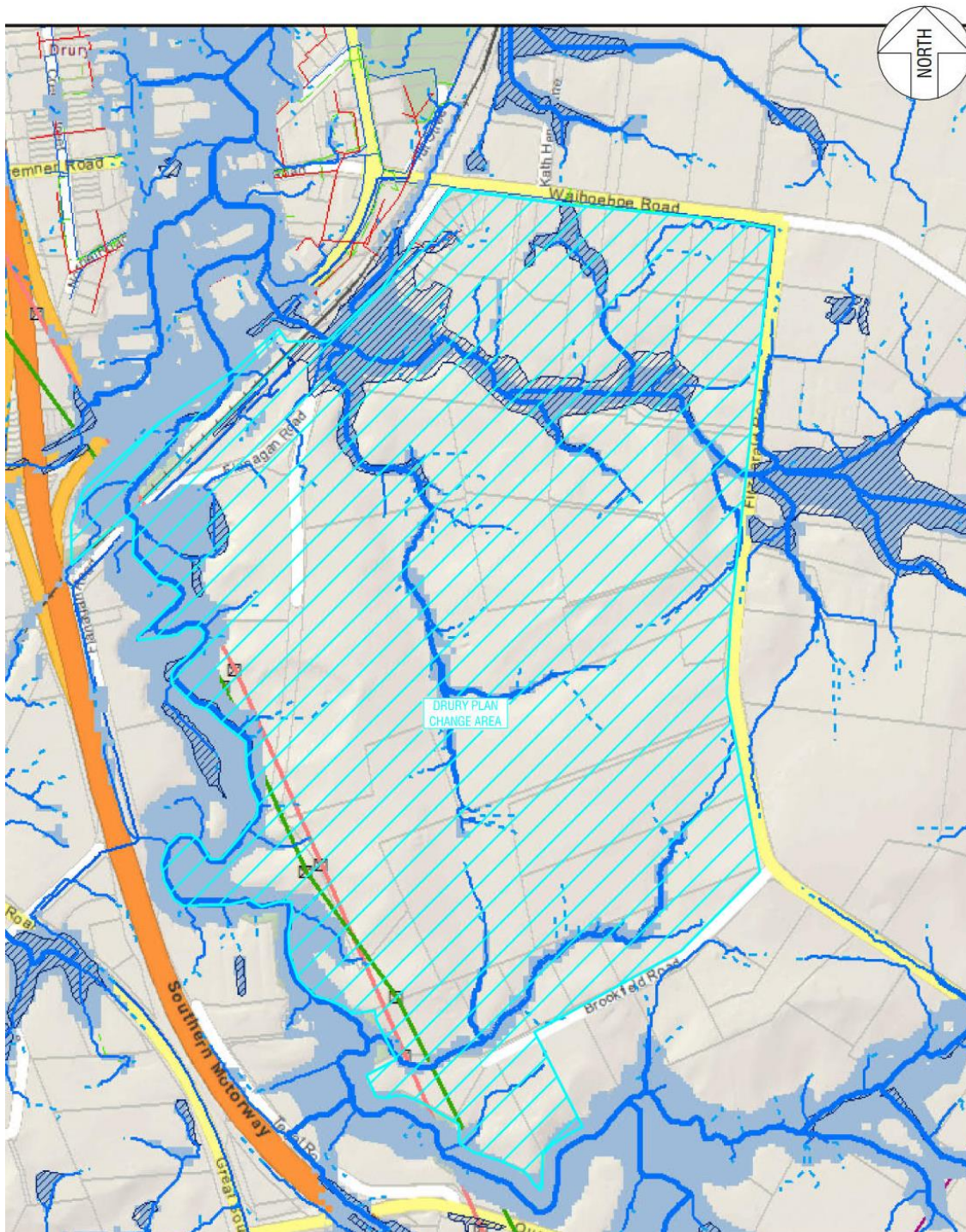
As the area proposed for the Metropolitan Centre and Mixed Use zones on the southern two thirds of the site are well elevated above the level of the 100-year floodplain as depicted on the Council flood hazard maps, any future development of the area will not be subject to inundation by flooding. Earthworks over the northern third of the plan change area will need to be designed so as to avoid any impact on the 100 year flood plain and the areas shown as being flood prone. On site overland flowpaths for runoff that cannot be conveyed through piped infrastructure will need to be provided to ensure that flow can be safely conveyed to the receiving environments. This overland flow will be redirected down future road carriageways and green swales to discharge into the existing permanent streams to avoid adverse effects of stream erosion or flooding. All buildings will be designed with appropriate freeboard in accordance with the AUP.

The future earthworks for the development will be designed to achieve a cut fill balance over the Drury Metropolitan Centre Plan Change Area. The preliminary geotechnical investigations to date have confirmed that the underlying soils are suitable for a bulk cut to fill operation.

There will also likely be soft saturated alluvium soils in the valleys that will require removal as unsuitable material as part of the bulk earthworks exercise. These additional excavations will require replacement with engineered fill and appropriate underfill drainage.

There may also be non-engineered or non-documented fill in the vicinity of the existing railway, roads and industrial buildings that will need to be investigated as part of an extended geotechnical site investigation in due course.

FIGURE 1 **100-YEAR FLOOD PLAIN**



3. WASTE WATER

There is currently no piped Waste Water reticulation to the area to be subject to the Drury Metropolitan Centre Plan Change.

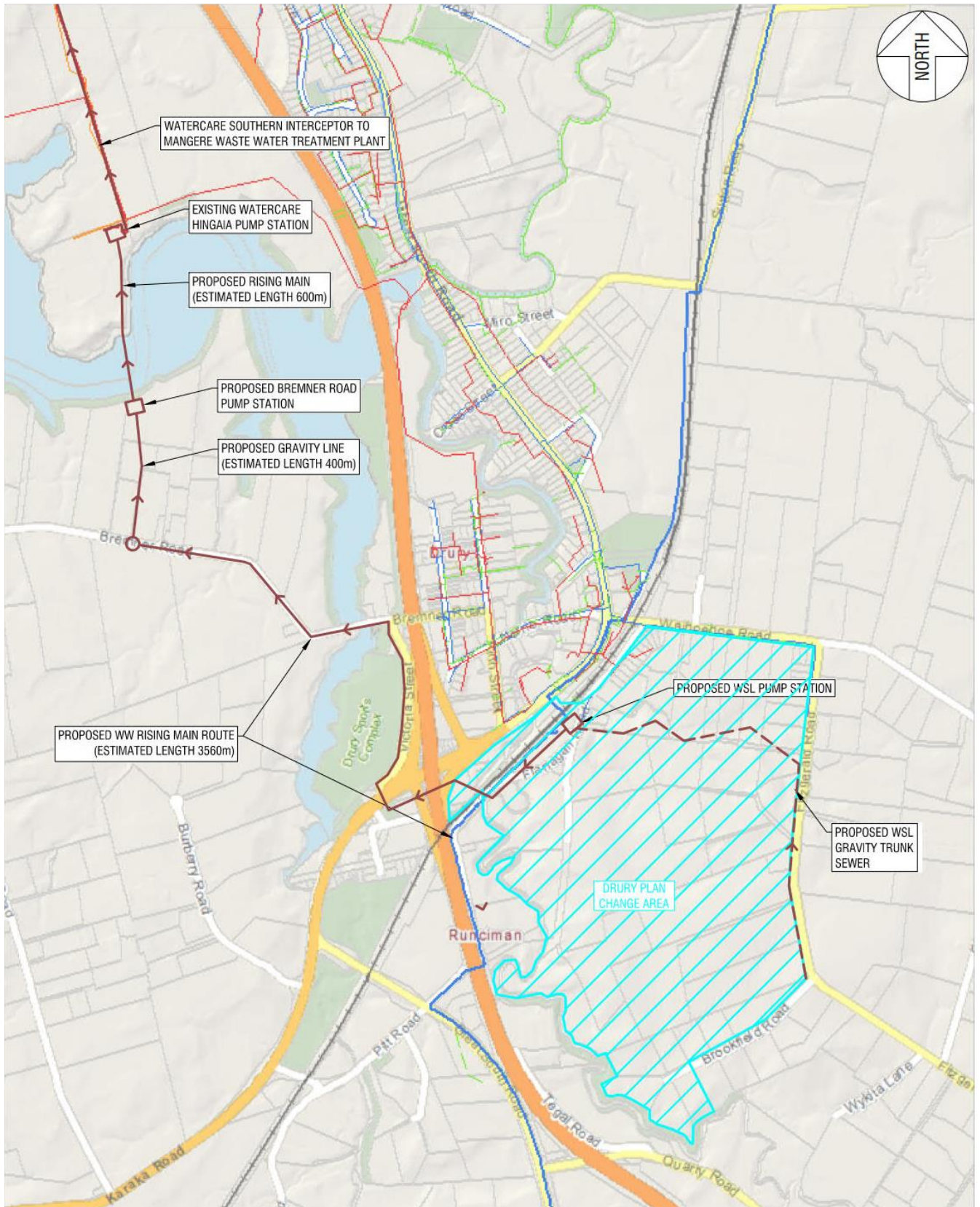
Watercare Services Limited (WSL) has proposed a solution to service the initial development within the proposed Plan Change area in conjunction with the Drury South development and the Fulton Hogan development to the east of Fitzgerald Road. The solution agreed to by the various developer parties and WSL involves WSL laying a rising main from the Drury South pump station up to a manhole at the intersection of Brookfield Road and Fitzgerald Road. Then a trunk gravity transmission main would run northwards from this manhole, along Fitzgerald Road and then westwards generally following the east west permanent watercourse that traverses the Plan Change area to the pump station proposed to be located on the WSL site in Flanagan Road adjacent to the existing WSL water pump station for the Waikato River supply main.

WSL have confirmed that development enabled by the Plan Change can be fully serviced in the future by local gravity reticulation connecting to this WSL trunk transmission gravity main. The WSL concept design plans for the proposed solution are included with this report as Appendix A.

WSL have further proposed running a rising main from the Flanagan Road Pump Station under SH 1 and northwards to Bremner Road to a terminal manhole at the end of a new trunk gravity main. The Flanagan Road Pump Station, the rising main and gravity main downstream from this pump station can be upgraded and will need to be sized to cater for future development within the Plan Change area and the wider Drury East area in the future.

This gravity main would run through the Bremner Road Special Housing Area (SHA) and connect to a new pump station that is to be constructed within the SHA. WSL have required this pump station to accommodate the wastewater flows from 6000HUE to cater for the Plan Change area, the Drury South Development and the Fulton Hogan lands. As with the Flanagan Road pump station, this pump station will also be able to be upgraded in the future to cater for further demand. A rising main will take wastewater from the Bremner Road pump station, under the Hingaia Estuary and discharge into the existing WSL Hingaia Pump Station. This major Pump Station discharges to the WSL Southern Interceptor which ultimately discharges to the Mangere Sewage Treatment plant.

FIGURE 2 WSL WASTE WATER SOLUTION



4. WATER SUPPLY

There is currently no piped Water Supply to the area to be subject to the Drury Metropolitan Centre Plan Change.

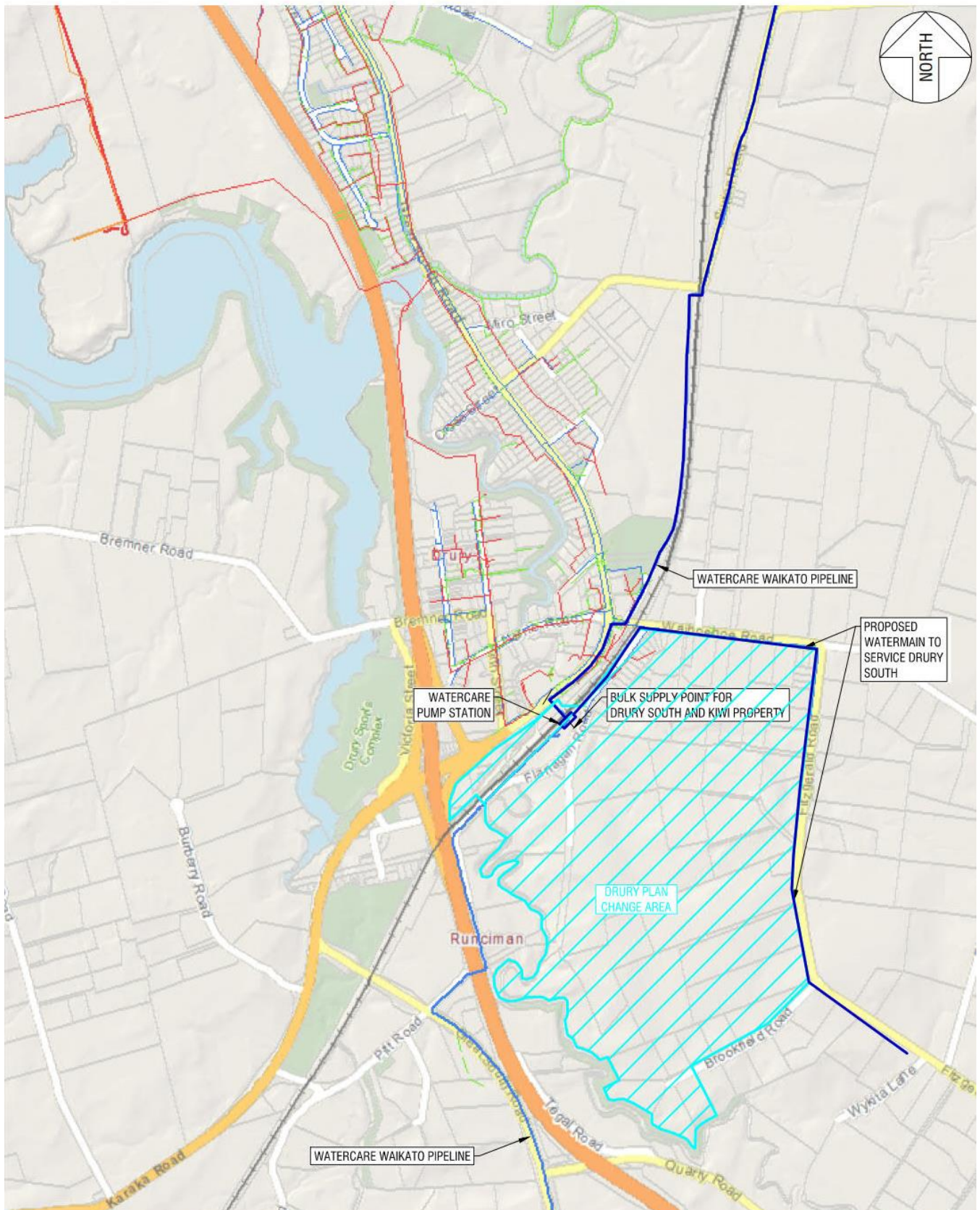
The existing 1200mm diameter CLS WSL pipeline from the Waikato River runs along the north-western side of Flanagan Road to the WSL major pump station located on the northern side of Flanagan Road opposite 68 Flanagan Road. A Bulk Supply Point (BSP) is available adjacent to this pump station.

Drury South Limited are currently laying a new watermain adjacent to the Plan Change Area that will connect to the available BSP to service their development. This new watermain will run along Fitzgerald, Waihoehoe and Flanagan Roads.

WSL has confirmed that a new Bulk Water Supply Point (BSP) can be provided adjacent to this pump station with sufficient flows and pressures to service the Drury Metropolitan Centre Plan Change area. This BSP can be suitably sized to provide adequate flows and pressures. Local reticulation to WSL and Veolia standards can be provided from this BSP to enable all sites within the subject area to be provided with an adequate supply of potable water for domestic and firefighting purposes. This local reticulation would be fully funded by the landowners within the subject area as part of the normal land development process.

This potential water supply solution is shown in Figure 3, below

FIGURE 3 WSL WATER SUPPLY SOLUTION



5. UTILITIES

5.1 POWER AND TELECOMMUNICATIONS

Power and telecommunications services are currently available to the Drury Metropolitan Centre Plan Change area by overhead reticulation in Flanagan Road, Waihoehoe Road, Fitzgerald Road and Brookfield Road. There will be a need for network upgrades for both power and telecommunications services by the respective Utility Authorities to provide an adequate level of service for a fully developed site. The extent of these can be determined once the final zoning has been determined and the nature of the future development has been finalised.

Initial discussions with the Utility Supply Authorities have indicated that there are no fundamental constraints to upgrading power and telecommunication services to fully service the Drury Metropolitan Centre Plan Change area

5.2 GAS

There is piped underground gas reticulation available in Flanagan, Waihoehoe, Fitzgerald and Brookfield Roads with all reticulation having a pressure level of MP4 (210-410kPa). There is a 160mm dia PE100 main in Flanagan Road, a 100mm dia ST main in Fitzgerald Road and a 50mm dia PE main in Brookfield Road.

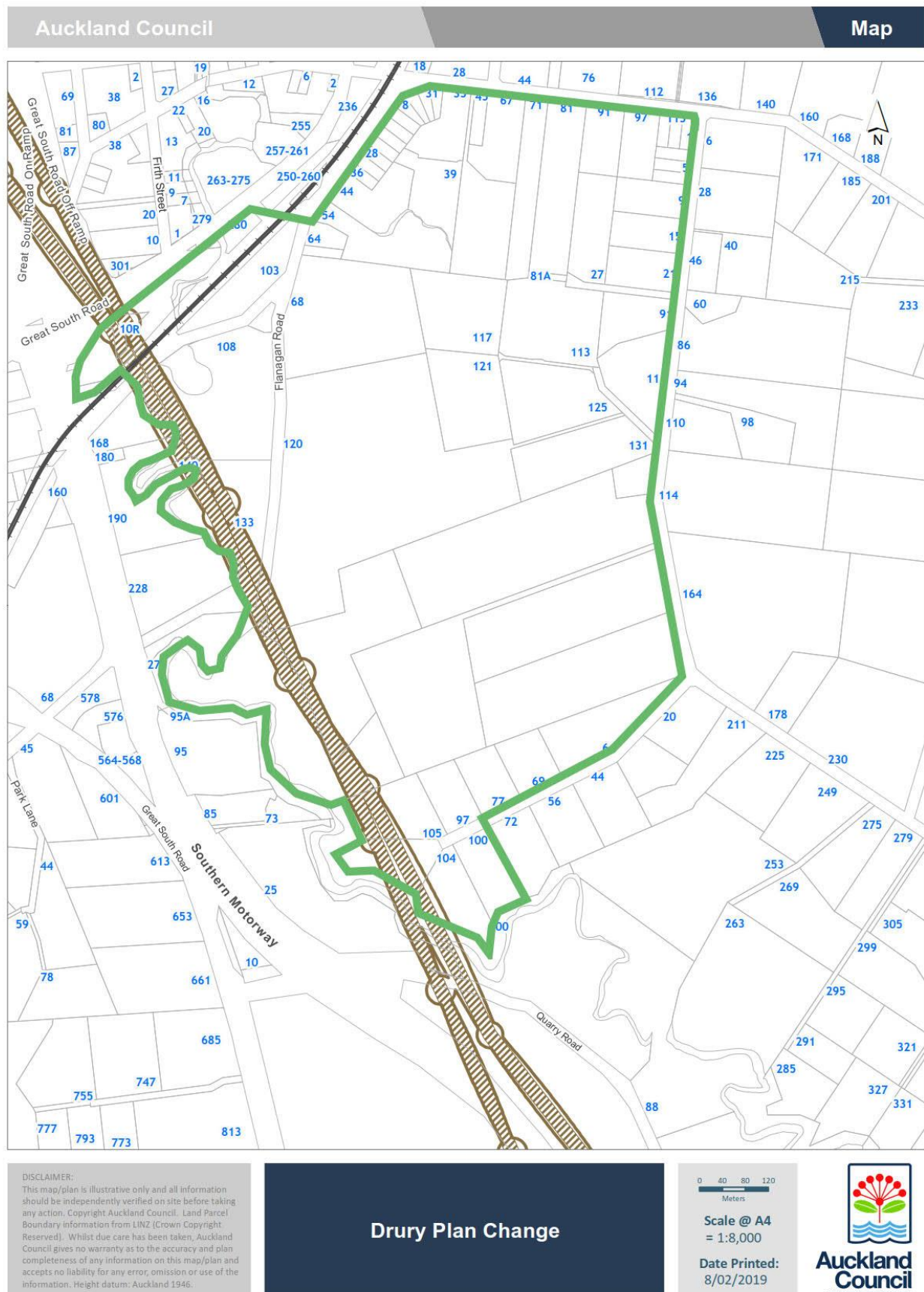
Initial discussions with the Utility Supply Authority have indicated that there are no fundamental constraints to upgrading the gas services to fully service the Drury Metropolitan Centre Change area

5.3 TRANSPOWER TRANSMISSION LINES

The western portion of the Drury Metropolitan Centre Plan Change area adjacent to the Hingaia Stream is compromised by the presence of two Transpower Transmission Lines, one 220kv the other 110kv that traverse the site in a north-south direction near the common boundary between Lots 2 and 5 DP 57466. The alignment of these Lines is covered by the National Grid Yard Overlay which is shown on the AUP Infrastructure Overlay Map below, Figure 5. The Overlay requires Subdivision adjacent to the National Grid Corridor, to be in accordance with the NZ Electrical Code of Practice 34:2001 which contains restrictions on the location of structures, extent of land disturbance, including earthworks and the operation of construction machinery in relation to those transmission lines. There is a minimum 12m no-build zone extending from the outer edge of the visible foundation of the pylon tower but limited earthworks are permitted up to 6m of the outer edge of the visible tower foundation, provided written consent from Transpower is obtained.

The Metropolitan Centre development that is proposed in the Drury Metropolitan Centre Plan Change area will be outside the 12m exclusion zone.

FIGURE 4 AUP INFRASTRUCTURE OVERLAY MAP, NATIONAL GRID YARD OVERLAY

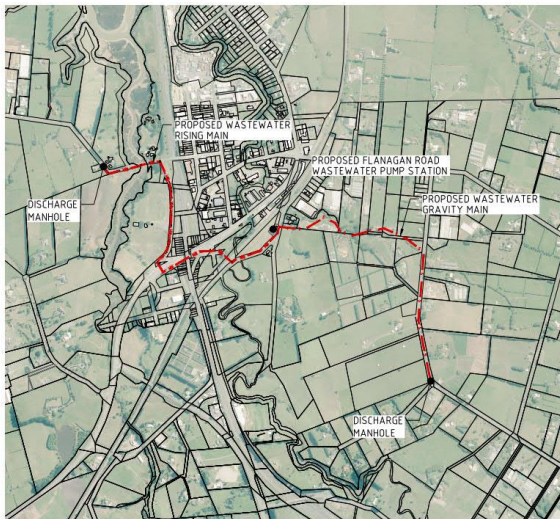


APPENDIX A

WSL CONCEPT WASTEWATER PLANS

WATERCARE SERVICES LIMITED

DRURY SOUTH WASTEWATER SERVICING



LOCALITY PLAN
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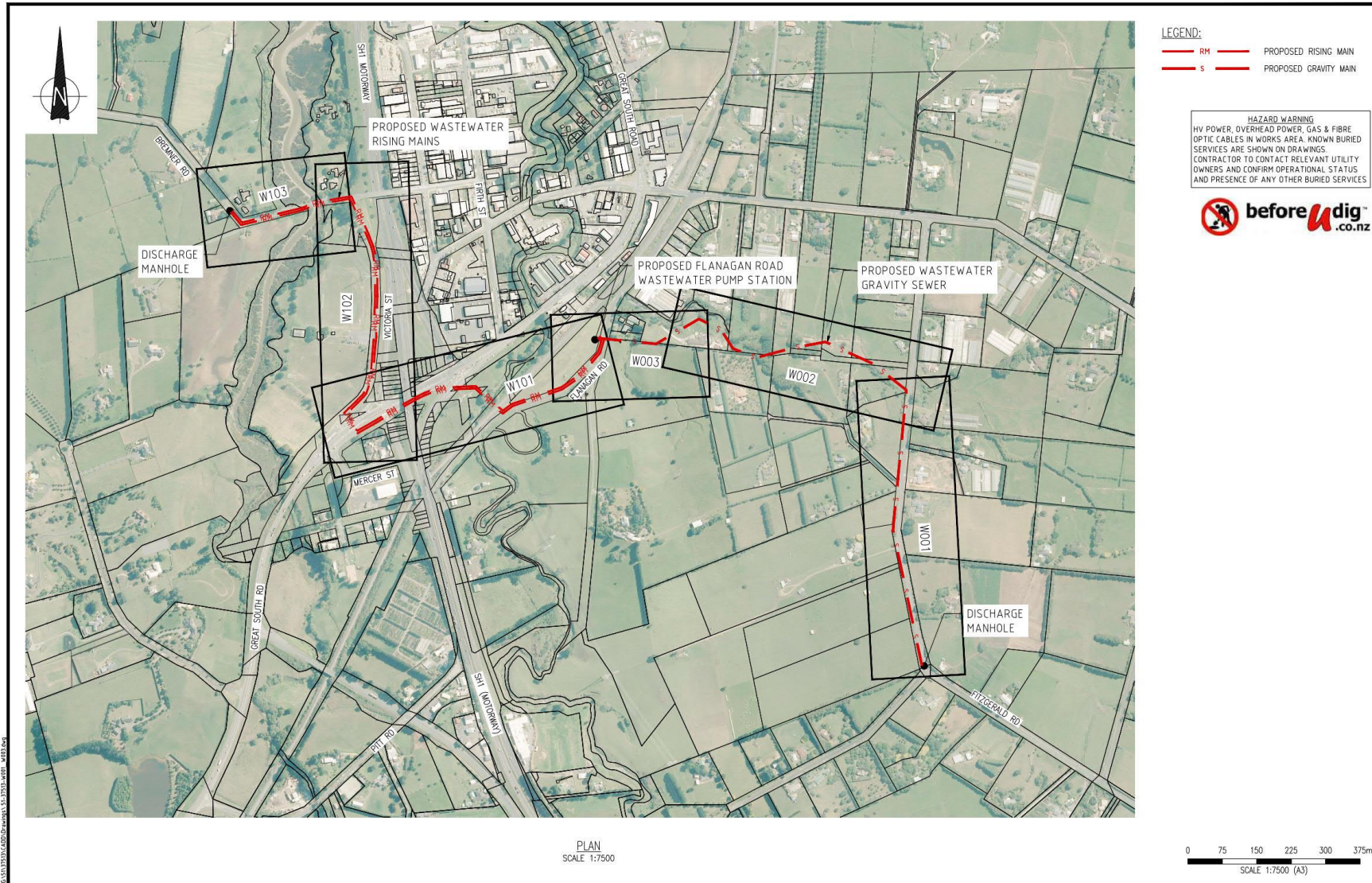
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51-37513-G002	WASTEWATER TRUNK SEWER - OVERALL LAYOUT PLAN
	WASTEWATER GRAVITY MAIN
51-37513-W001	WASTEWATER GRAVITY SEWER PLAN AND LONGITUDINAL SECTION SHEET 1 OF 3
51-37513-W002	WASTEWATER GRAVITY SEWER PLAN AND LONGITUDINAL SECTION SHEET 2 OF 3
51-37513-W003	WASTEWATER GRAVITY SEWER PLAN AND LONGITUDINAL SECTION SHEET 3 OF 3
	WASTEWATER RISING MAIN
51-37513-W101	WASTEWATER RISING MAIN PLAN AND LONGITUDINAL SECTION SHEET 1 OF 3
51-37513-W102	WASTEWATER RISING MAIN PLAN AND LONGITUDINAL SECTION SHEET 2 OF 3
51-37513-W103	WASTEWATER RISING MAIN PLAN AND LONGITUDINAL SECTION SHEET 3 OF 3
	FLANAGAN ROAD PUMP STATION
51-37513-W301	FLANAGAN ROAD PUMP STATION - LAYOUT PLAN

				DESIGNED	G. PONE	06-18
				DES. APPROVED	D. KING	-
				DRAWN	V. BUNAWA	06-18
				CWG. APPROVED	-	-
				WSL DESIGN MGMT.	-	-
				WSL PROJ. LEAD	-	-
A	06-18	CONCEPT DESIGN	VB			
ISSUE	DATE	AMENDMENT	BY	APPROD.	BY	DATE



WATERCARE SERVICES LIMITED
DRURY SOUTH WASTEWATER SERVICING
COVER SHEET, LOCALITY PLAN AND DRAWING LIST

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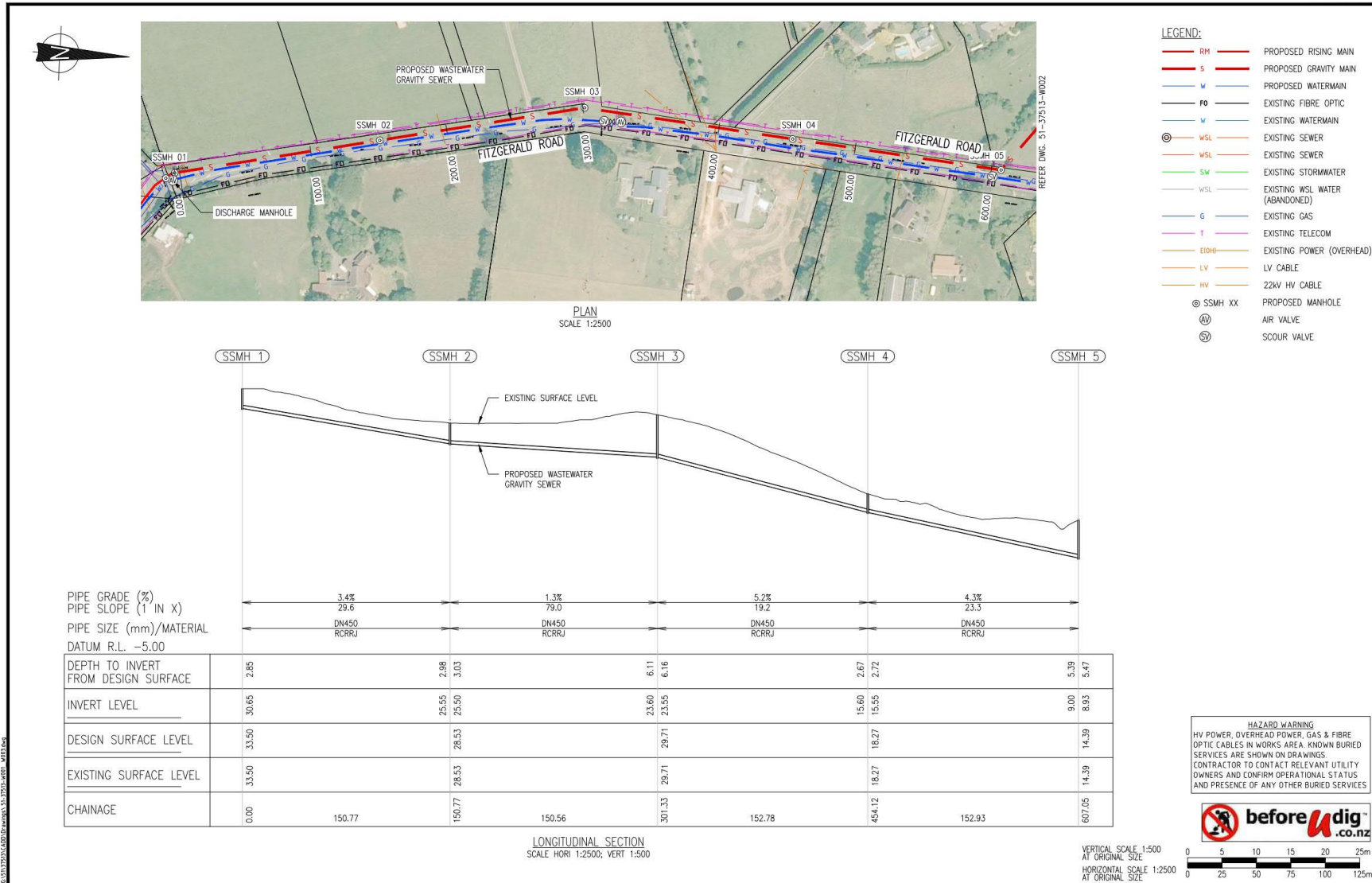
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DES. APPROVED	D. KING	-
DRAWN	V. BUENWA	06-18
DWG. APPROVED	-	-
WSL DESIGN MGMT.	-	-
WSL PROJ. LEAD	-	-
BY	DATE	

ISSUE	DATE	AMENDMENT	BY	APPROD.
A	06-18	CONCEPT DESIGN	VB	



WATERCARE SERVICES LIMITED
 DRURY SOUTH WASTEWATER SERVICING
 WASTEWATER TRUNK SEWER - OVERALL LAYOUT PLAN

CAD FILE	51-37513-G002	DATE	22-06-18
ORIGINAL SCALE	A3	CONTRACT No.	-
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REF No.	51-37513-G002		
DWG No.	51-37513-G002	ISSUE	A



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DRAWN	V. BUENWA	06-18
DWG. APPROVED	-	-
WSL DESIGN MGMT.	-	-
WSL PROJ. LEAD	-	-
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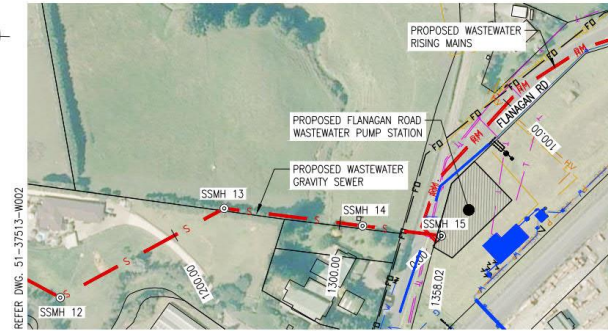
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DRURY SOUTH WASTEWATER SERVICING
WASTEWATER GRAVITY SEWER - PLAN AND LONGITUDINAL SECTION - SHEET 1 OF 3

CAD FILE	51-37513-W001	DATE	21-06-18
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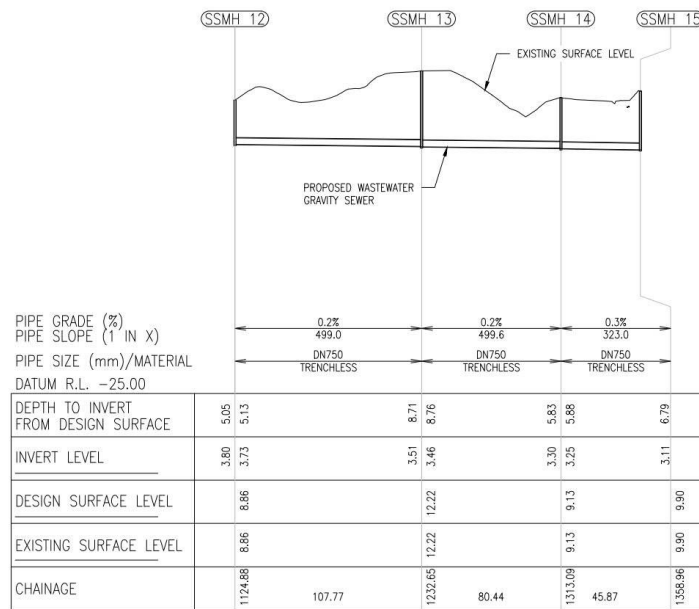
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WASTEWATER GRAVITY SEWER - PLAN AND LONGITUDINAL SECTION - SHEET 2 OF 3

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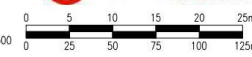
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- S PROPOSED GRAVITY MAIN
- W PROPOSED WATERMAIN
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- W EXISTING WATERMAIN
- WSL EXISTING SEWER
- SW EXISTING STORMWATER
- WSL EXISTING WSL WATER (ABANDONED)
- G EXISTING GAS
- T EXISTING TELECOM
- E10KV EXISTING POWER (OVERHEAD)
- LV LV CABLE
- HV 22KV HV CABLE
- SSMH XX PROPOSED MANHOLE
- AV AIR VALVE
- SV SCOUR VALVE



HAZARD WARNING
HV POWER, OVERHEAD POWER, GAS & FIBRE OPTIC CABLES IN WORKS AREA. KNOWN BURIED SERVICES ARE SHOWN ON DRAWINGS. CONTRACTOR TO CONTACT RELEVANT UTILITY OWNERS AND CONFIRM OPERATIONAL STATUS AND PRESENCE OF ANY OTHER BURIED SERVICES



VERTICAL SCALE 1:500
AT ORIGINAL SIZE
HORIZONTAL SCALE 1:2500
AT ORIGINAL SIZE



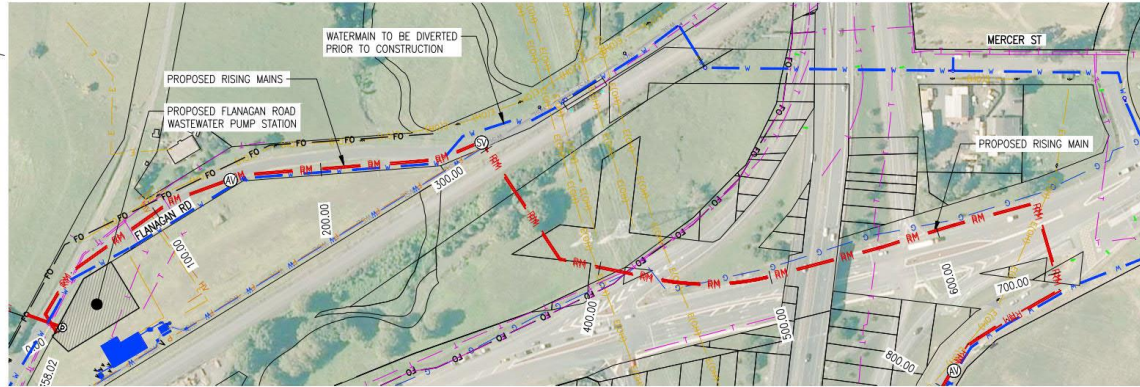
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DRAWN	V. BUENAWA	06-18
DWG. APPROVED	-	-
WSL DESIGN MGMT.	-	-
WSL PROJ. LEAD	-	-
BY	DATE	
ISSUE	DATE	
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DRURY SOUTH WASTEWATER SERVICING
WASTEWATER GRAVITY SEWER - PLAN AND LONGITUDINAL SECTION - SHEET 3 OF 3

CAD FILE	51-37513-W003	DATE	22-06-18
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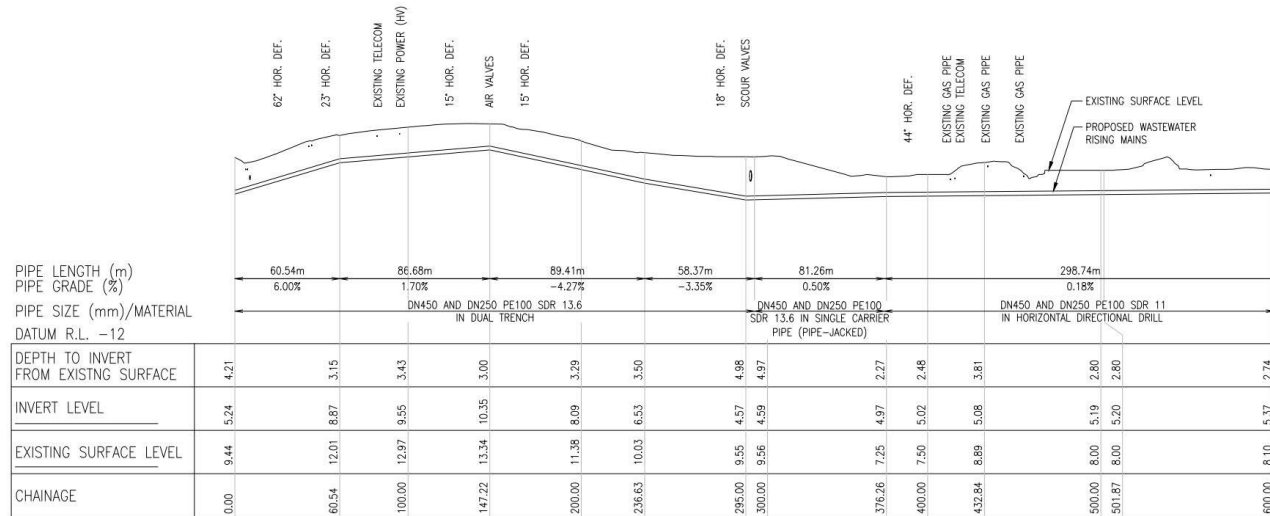


PLAN
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- W EXISTING WATERMAIN
- WSL EXISTING SEWER
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- T EXISTING TELECOM
- E10H EXISTING POWER (OVERHEAD)
- LV EXISTING LV CABLE
- HV EXISTING 22KV HV CABLE
- SMH XX PROPOSED MANHOLE
- AV AIR VALVE
- SV SCOUR VALVE



LONGITUDINAL SECTION
SCALE HORI 1:2500; VERT 1:500

VERTICAL SCALE 1:500
AT ORIGINAL SIZE
HORIZONTAL SCALE 1:2500
AT ORIGINAL SIZE

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CAD FILE: 51-37513-W101 W103	DATE: 22-06-18
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REF No: 51-37513-W101	
DWG No: 51-37513-W101	ISSUE: A

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DRURY SOUTH WASTEWATER SERVICING

WASTEWATER RISING MAIN - PLAN AND LONGITUDINAL SECTION - SHEET 1 OF 3

DESIGNED	G. PONCE	06-18
DES. APPROVED	D. KING	-
DRAWN	V. BUENIVA	06-18
DWG. APPROVED	-	-
WSL DESIGN MGMT.	-	-
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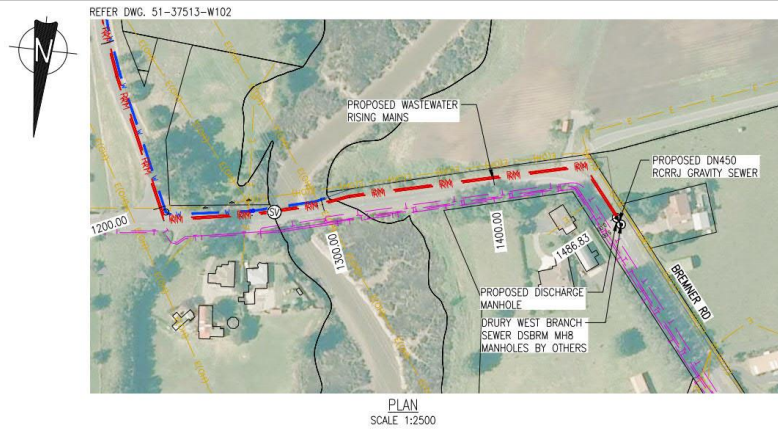
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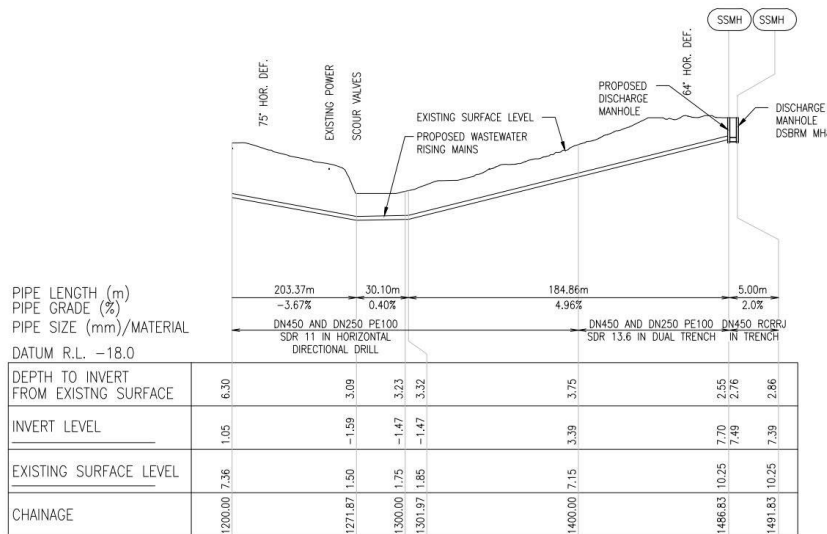
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DRURY SOUTH WASTEWATER SERVICING
WASTEWATER RISING MAIN - PLAN AND LONGITUDINAL SECTION - SHEET 2 OF 3

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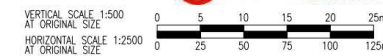
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⊙ SSMH XX	PROPOSED MANHOLE
⊙	AIR VALVE
⊙	SCOUR VALVE



LONGITUDINAL SECTION
SCALE HORI 1:2500; VERT 1:500

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DWG. APPROVED	-	-
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ISSUE	DATE	
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DRURY SOUTH WASTEWATER SERVICING
WASTEWATER RISING MAIN - PLAN AND LONGITUDINAL SECTION - SHEET 3 OF 3

CAD FILE	51-37513-W101 W103	DATE	22-06-18
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