

APPENDIX 5. INVESTIGATIONS – INFRASTRUCTURE AND SERVICES



ENGINEERING

Preliminary Infrastructure Assessment

10-20 Halls Road, Highbury Code

JOB NUMBER:	S65805 - 287028
CLIENT:	Hallan Nominees Pty Ltd
SITE:	10-20 Halls Road, Highbury, SA 5089
DATE:	11/10/2023
REVISION:	A

**Engineering
your success.**

ADELAIDE
MELBOURNE
SYDNEY

© Koukourou Pty Ltd trading as FMG Engineering

The work carried out in the preparation of this report has been performed in accordance with the requirements of FMG Engineering's Quality Management System which is certified by a third party accredited auditor to comply with the requirements of ISO9001.

This document is and shall remain the property of FMG Engineering. The document is specific to the client and site detailed in the report. Use of the document must be in accordance with the Terms of Engagement for the commission and any unauthorised use of this document in any form whatsoever is prohibited. No part of this report including the whole of same shall be used for any other purpose nor by any third party without prior written consent of FMG Engineering.

FMG Engineering provides this document in either printed format, electronic format or both. FMG Engineering considers the printed version to be binding. The electronic format is provided for the client's convenience and FMG Engineering requests that the client ensures the integrity of this electronic information is maintained. Storage of this electronic information should at a minimum comply with the requirements of the Electronic Transactions Act 2000 (Cth).

Document Status

REV NO.	STATUS	AUTHOR	REVIEWER			APPROVED FOR ISSUE		
			NAME	SIGNATURE	DATE	NAME	SIGNATURE	DATE
A	Preliminary	Ryan Dou	Ghasem Ashtijou		11/10/23	Jordan Colbert		12/10/23

Table of contents

- Introduction.....4
- Site understanding4
 - Proposed Code Amendment.....5
- Services investigation6
 - Stormwater6
 - Water mains8
 - Electrical10
 - Communications.....12
 - Gas13
- Staging of Infrastructure Upgrades.....14
- Summary15
- Appendix A.....16
 - Correspondence from Service Authorities.....16

Introduction

FMG Engineering (FMG) has been engaged by Hallan Nominees Pty Ltd to undertake a service infrastructure investigation to obtain preliminary, high level assessment of the existing infrastructure in the area to support a proposed code amendment. The subject site is currently within the Resource Extraction Zone in the Planning and Design Code and it falls under the jurisdiction of the City of Tea Tree Gully.

FMG Engineering has prepared this high-level infrastructure assessment by utilising information obtained via Before-You-Dig-Australia (BYDA), and discussion with the service authorities, wherever viable. FMG Engineering has attempted to contact the following service authorities for further information:

- City of Tea Tree Gully (Council)
- SA Water (water and wastewater utilities)
- South Australian Power Networks - SAPN (electricity and power authority)

The purpose of our investigation is to provide a desktop assessment of the infrastructure currently available to the subject site and to assess the current capacity of the existing infrastructure. We note that some authorities have not provided detailed feedback, however we have utilised our engineering judgement and relevant previous experience to provide context where appropriate.

Site understanding

The subject site is as shown in Figure 1 below.



This subject site is located at 10-20 Halls Road, Highbury, SA 5089 and covers an area of approximately 18,450m², currently occupied by a residential dwelling informal pervious landscaping and two sheds. The site is bound by Halls Road, a vacant pervious lot to the south, and Residential dwellings on the west and north. A review of available GIS data (contours data from Nature Maps) shown in Figure 2 suggests the subject land has a gentle fall, with overall grade of approximately 10% towards the southeast (Halls Rd).



Figure 2: GIS data on Nature Maps

Proposed Code Amendment

FMG act on behalf of Hallan Nominees Pty Ltd and are undertaking a service assessment for Code Amendment investigations in relation to the 10-20 Halls Road, Highbury Code Amendment, which was recently initiated by the Minister. It is proposed to rezone the subject site from Resource Extraction Zone to the General Neighbourhood Zone to accommodate low density and low scale residential development, consistent with the established residential area to the north and west. If rezoned, future development could yield up to 40 residential allotments. In all likelihood, it will be less than this, however for the purposes of this investigation, FMG have based the high-level assessment on a yield of approximately 40 dwellings comprising detached/row dwellings to capture the critical scenario in terms of infrastructure requirements.

Services investigation

FMG has undertaken a Before You Dig Australia Investigation which has located the following utilities adjacent to the site:

- Stormwater
- APA
- NBN Co
- SA Power Networks
- SA Water
- Telstra

Stormwater

FMG Engineering has contacted City of Tea Tree Gully Council to determine the likely requirements for stormwater management should a future development application be made on this land. Council's response can be summarised as follows:

- Council detention requirements are to match pre-development flows to post developments flows (that being 5% back to 5% AEP and 1% back to 1% AEP in 30-minute storm event) with the difference detained on site.
- A minimum 60% of roof stormwater to be discharged to rainwater tanks or proposed detention storage.
- Should a sump/ pump be required, it must be designed to cater for 5% AEP pre-development discharge rate and provide storage sufficient for the 1% AEP storm event.
- Runoff can be discharged to either the road or existing underground drainage infrastructure, and Council may assess further limitations on allowable rates of discharge depending on the selected discharge method.
- To match the requirement of water quality for discharged stormwater runoff, a MUSIC model of proposed design should be prepared to show stormwater reduction targets are met as below:
 - 90% reduction in Gross Pollutants
 - 80% reduction in average annual Total Suspended Solids
 - 60% reduction in average annual Total Phosphorous
 - 45% reduction in average annual Total Nitrogen

A review of publicly available GIS data suggests there is no underground stormwater infrastructure in Halls Road, and currently there are no formal discharge points beyond surface discharge to the Halls Road asphalt surface. Generally speaking, stormwater discharge from Halls Road appears to be conveyed informally to the eastern side of the road reserve, into disused quarry land where a series of natural and manmade watercourses and dams collect runoff. Runoff from the subject site represents less than 1% of this overall catchment area, and on this basis, any increases to the total volume of runoff generated by future development applications on this site are considered immaterial to the overall downstream catchment.

Pre-development catchment is determined by aerial imagery (Jul 14, 2023, NEARMAP), which includes 7% impervious area and 93 % pervious area. The percentage of pervious and imperious for post-development catchments are assumed to yield up to 40 residential allotments. Table 1 shows details of the percentage.

A DRIANS model adopting ILSAX hydrological had been proposed to demonstrate feasibility of proposed development. The result of DRIANS model is summarised in Table 1 and indicates that minimum detention volume of approximately 350m³ is required to restrict the proposed peak flows to pre-development peaks. It is noted that Council's feedback on stormwater requirements for the site noted further restrictions may apply if stormwater is discharged to the kerb and gutter, and based on FMG's experience this is typically limited to 5 L/s, per outlet. The subject site could arguably provide multiple stormwater outlets to achieve the allowable pre-development rate, or limit post-development peak discharge rates further by providing additional detention storage,

Future development applications may need to consider further stormwater formalisation works downstream of the site to improve or formalise stormwater conveyance along Halls Road to limit development impacts on

downstream neighbouring properties or Council assets. Consideration towards providing a kerb along the western edge of Halls Road for the frontage of the subject site may be an appropriate measure to achieve formalisation of stormwater.

SUB-CATCHMENT	AREA (HA)	IMPERVIOUS PERCENTAGE	PERVIOUS PERCENTAGE	MINOR STORM ESTIMATED PEAK FLOW	MAJOR STORM ESTIMATED PEAK FLOW
PRE-DEVELOPMENT	1.845	7%	93%	113 L/S	258 L/S
POST-DEVELOPMENT ASSUMING MAXIMUM 40 ALLOTMENTS	1.845	80%	20%	111 L/s REQUIRING 230 M ³ OF DETENTION	253 L/s REQUIRING 350 M ³ OF DETENTION

Table 1 - Perviousness / imperviousness

Detention volume can be achieved onsite through many different combinations of rainwater tanks for residential allotments roof area, - surface ponding, swales, bio-retentions, and grassed basins. Consideration in future development applications should be given towards allocating land or road reserves to facilitate detention storage in the southeast corner of the allotment, as it is the lowest point of subject site naturally and close to the discharge point.

The quality of the stormwater runoff discharged from the site can be improved through the installation of proprietary water quality improvement devices or incorporation of Water Sensitive Urban Design practices such as biofiltration and raingardens, noting this is approach is preferred by Council’s engineers. Furthermore, based on flood mapping data excerpted from SAPPA, there is no flooding concern for the subject site as shown in Figure 2.

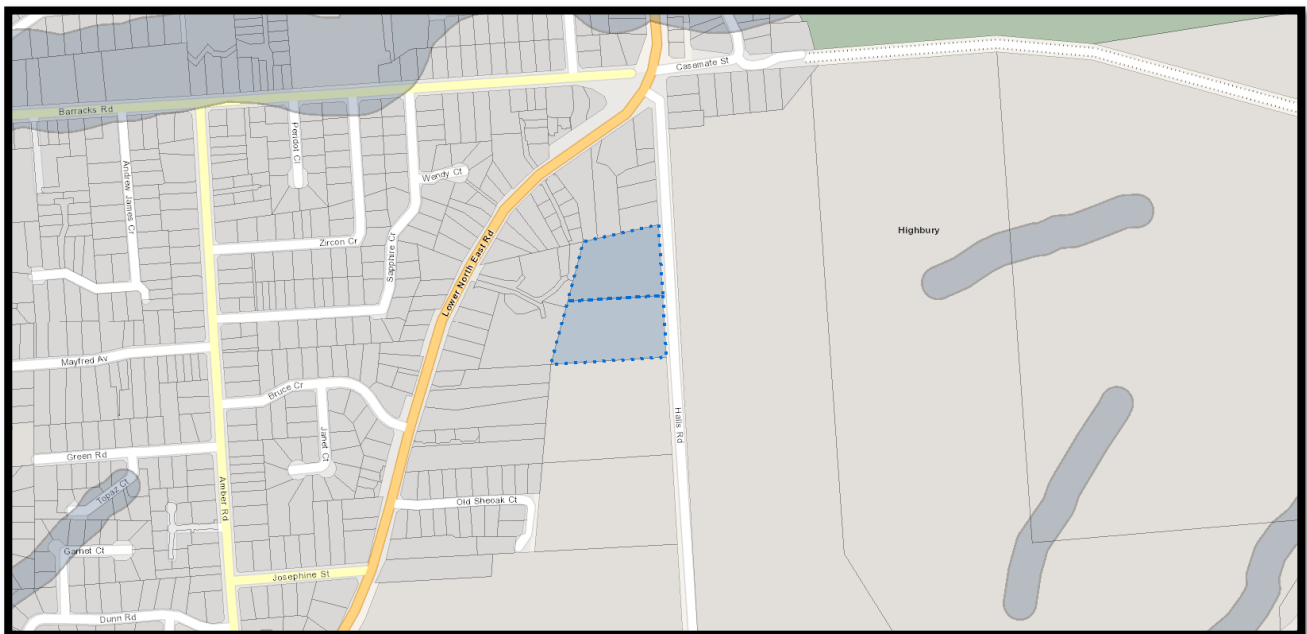


Figure 3- SAPPA Flooding Map

Water mains

A review of the BYDA investigation indicates that there is a major water main and a water meter adjacent the subject site on Halls Road servicing the residential houses to the north of the subject site. A 250mm diameter supply main (MSCL) is located on Halls Road. Hence, obtaining adequate capacity to service future development applications via the existing SA Water potable water main along Halls Road is unlikely to be a constraint or require significant augmentation.

Future development will require new water mains circulation along all new internal roads, with water connections per dwelling or building. It is also noted that there may be additional costs / infrastructure to meet applicable bushfire code requirements within this area.

Future investigations to verify the capacity of the SA Water network at this location would include a flow test at the metered location. FMG has contacted SA Water to obtain preliminary information on the augmentation works for the site based on anticipated future development. Based on current SA Water network analysis timeframes we anticipate a response will not be provided before January 2024. The report will be updated should we receive further advice from SA Water.

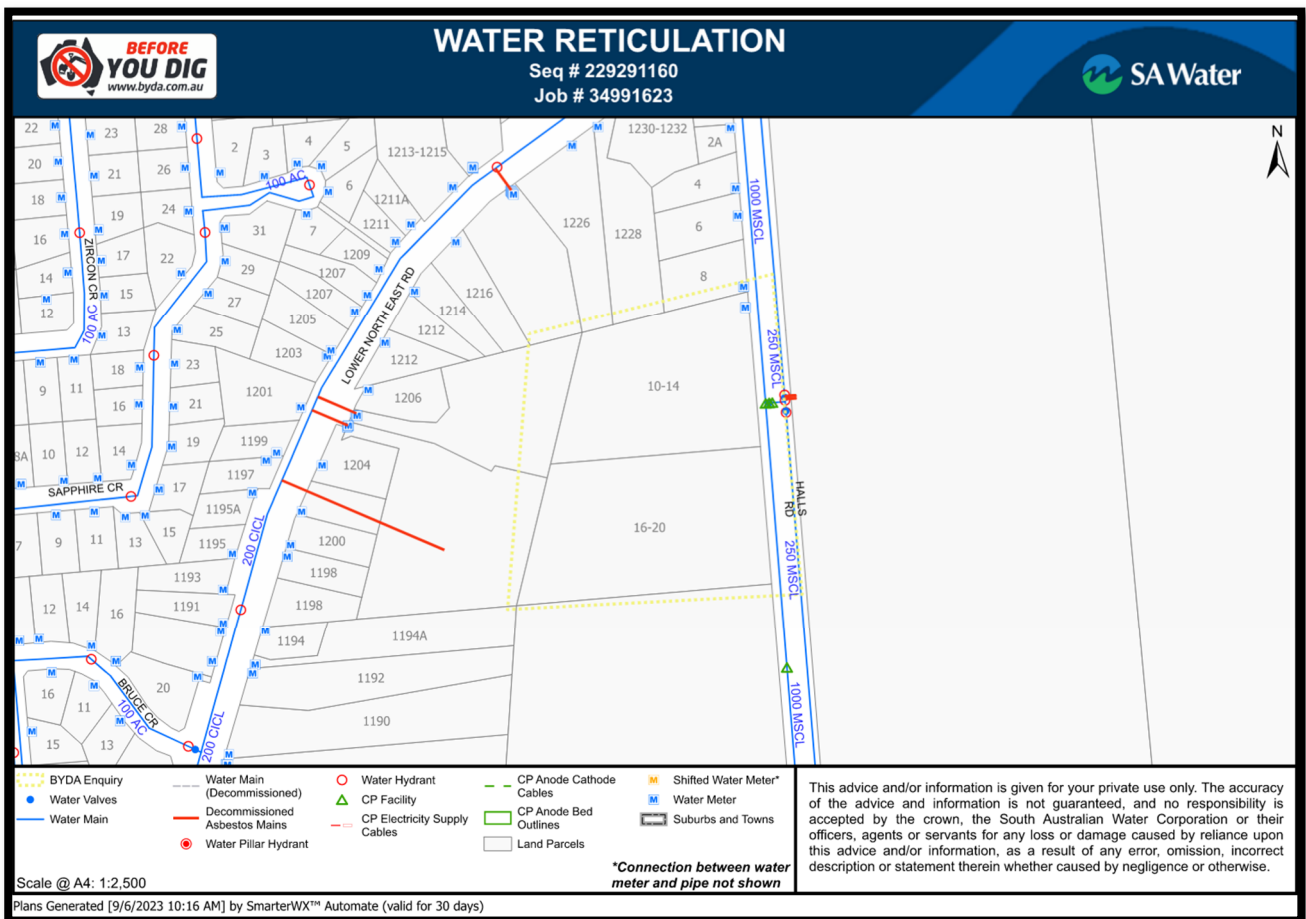


Figure 4 – SA water supply mains

Having reviewed publicly available GIS data, FMG is not aware of any existing or proposed recycled water schemes to service residential allotments. However, recycled water could be used for irrigation of public reserve areas by Council if desired.

Electrical

The property is currently serviced by above ground power lines along Halls Road (Electricity Pole), which connect into existing transformers at the site frontage to Halls Road adjacent the existing shed in the eastern corner as shown below.



Figure 6 - Transformer adjacent the Halls Road

FMG have contacted SAPN regional manager for further information on site loading requirements and whether it is likely that further augmentation will be required, however there is insufficient information at this stage for SAPN to provide an indication on the level of network augmentation required.

The SAPN network shown in figure 6 (BYDA) demonstrates that there are both low voltage and 11kv cable exits from the power network connected to the transformer unit.

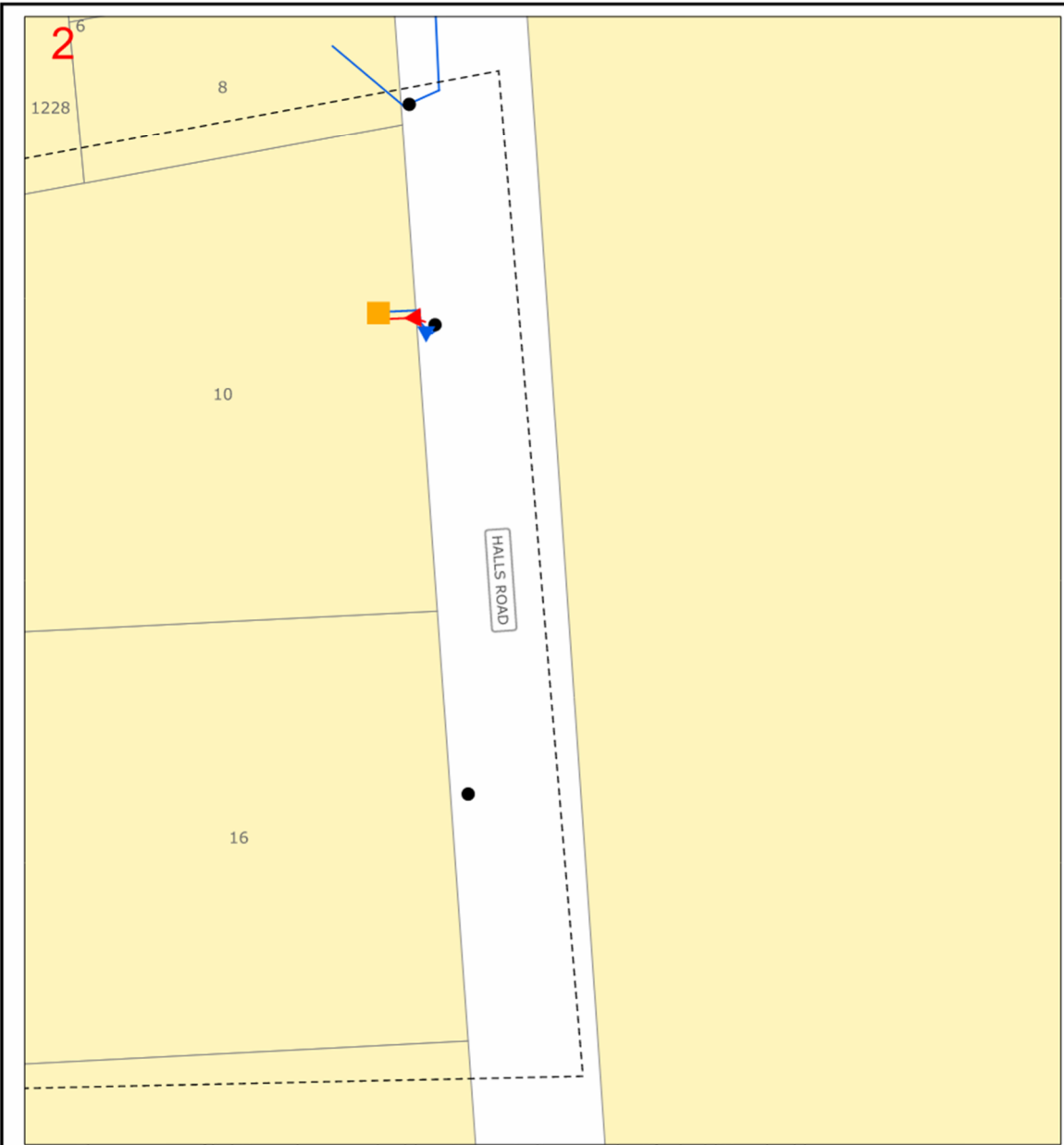
FMG Engineering does not provide electrical engineering services in house, however, has previously been supplied an approximation of 100VA/m² for commercial spaces, ~3-4kVA per apartment dwelling and ~10kVA per residential standalone dwelling. On this basis, and assuming maximum 40 standalone dwelling for future development applications, the total estimated demand may be within the order of (400 kVA). This is a similar order of magnitude of the capacity of a standard transformer, and suggests a new transformer may be required to provide sufficient capacity for this network. This is unlikely to be a barrier to future development, rather a cost consideration.

It is recommended that an electrical engineer be engaged prior to project inception to provide detailed informed advice on expected demands and liaise with SAPN to confirm site requirements.



Map 2

Sequence No: 229291159
10-20 Halls Road Highbury



Note: The presence of lighting columns and cable exits may indicate unidentified additional cables.

LEGEND:

	66kV/132kV		66kV/132kV		DBYD Requested Area		Fibre Cable/Duct
	33kV		33kV		HV Switch Unit		Fibre Pit
	19kV		19kV		Transformer Unit		Pilot Cable
	11kV		11kV		HV Joint Bay		LV Switching Cubicle/Pit
	Other HV		Other HV		Pit		Substation
	Not In Service		Not In Service		Electricity Pole		Light Column
	Low Voltage		Low Voltage		Electrical Earthing Area		

Communications

A review of the Before You Dig Australia investigation shows that there is NBN infrastructure within the vicinity of the subject site (north east corner) as shown in Figure 7. A review of NBNco's online portal shows fixed line services are available for this area, and it is assumed future development applications on this site will be able to extend this network accordingly.

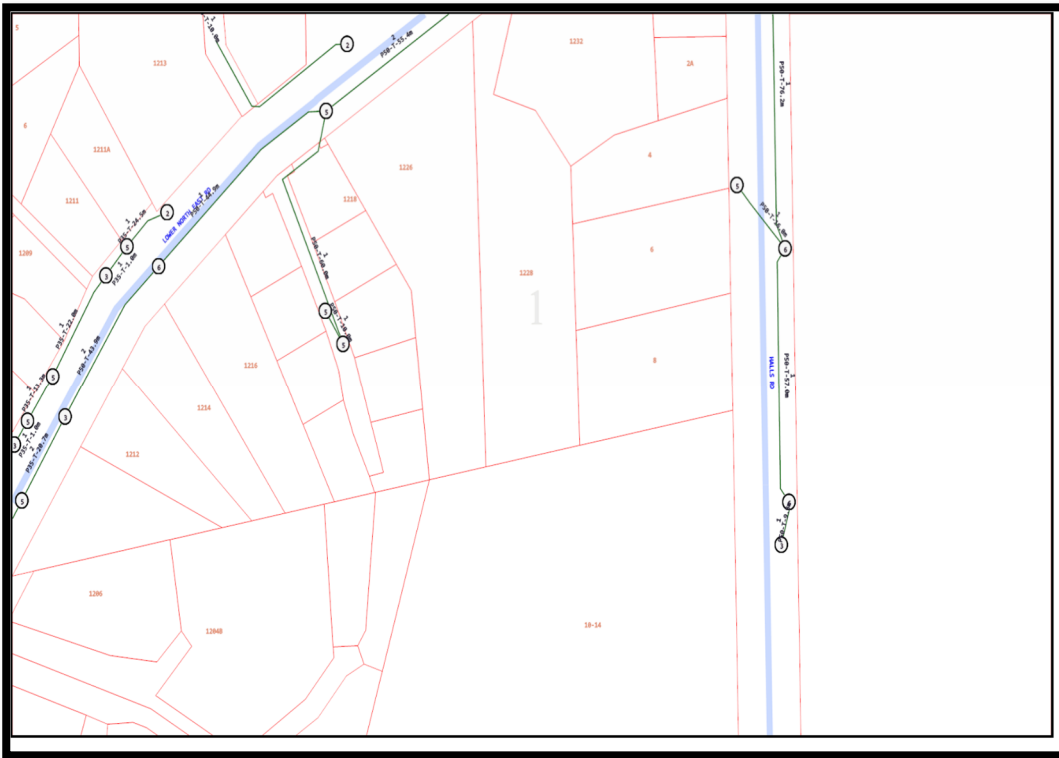


Figure 8 - NBN network on Halls Road

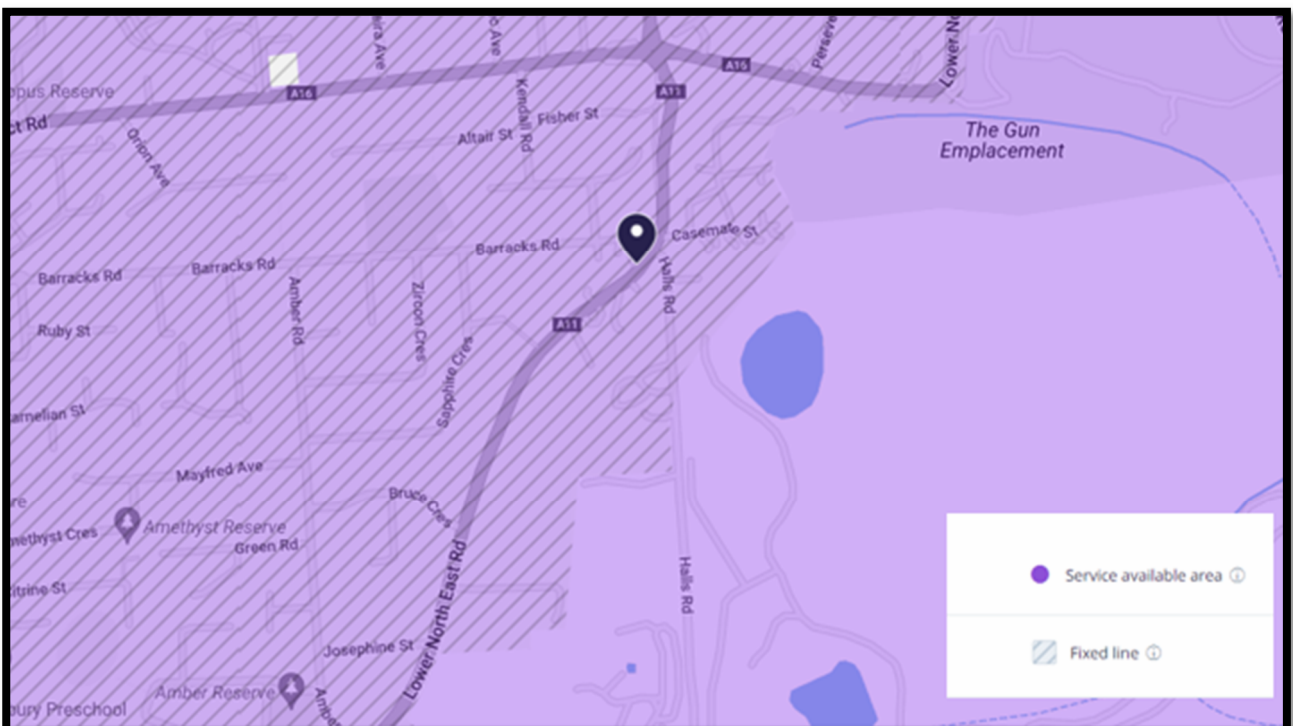


Figure 9- NBN infrastructure adjacent to the subject site

Gas

Information obtained via BYDA indicated that there is existing medium pressure gas main (35-100kPa) at the northeast corner of the site, adjacent the existing dwelling to the north of the site which could potentially be adequate to service the future development. The location of the gas main is shown in Figures 9. Depending on commercial viability and future development application plans, gas authority operators may elect to extend this service and provide gas connections for the subject site. As shown below existing neighbouring residential houses in the vicinity of the site have Gas Supplied.

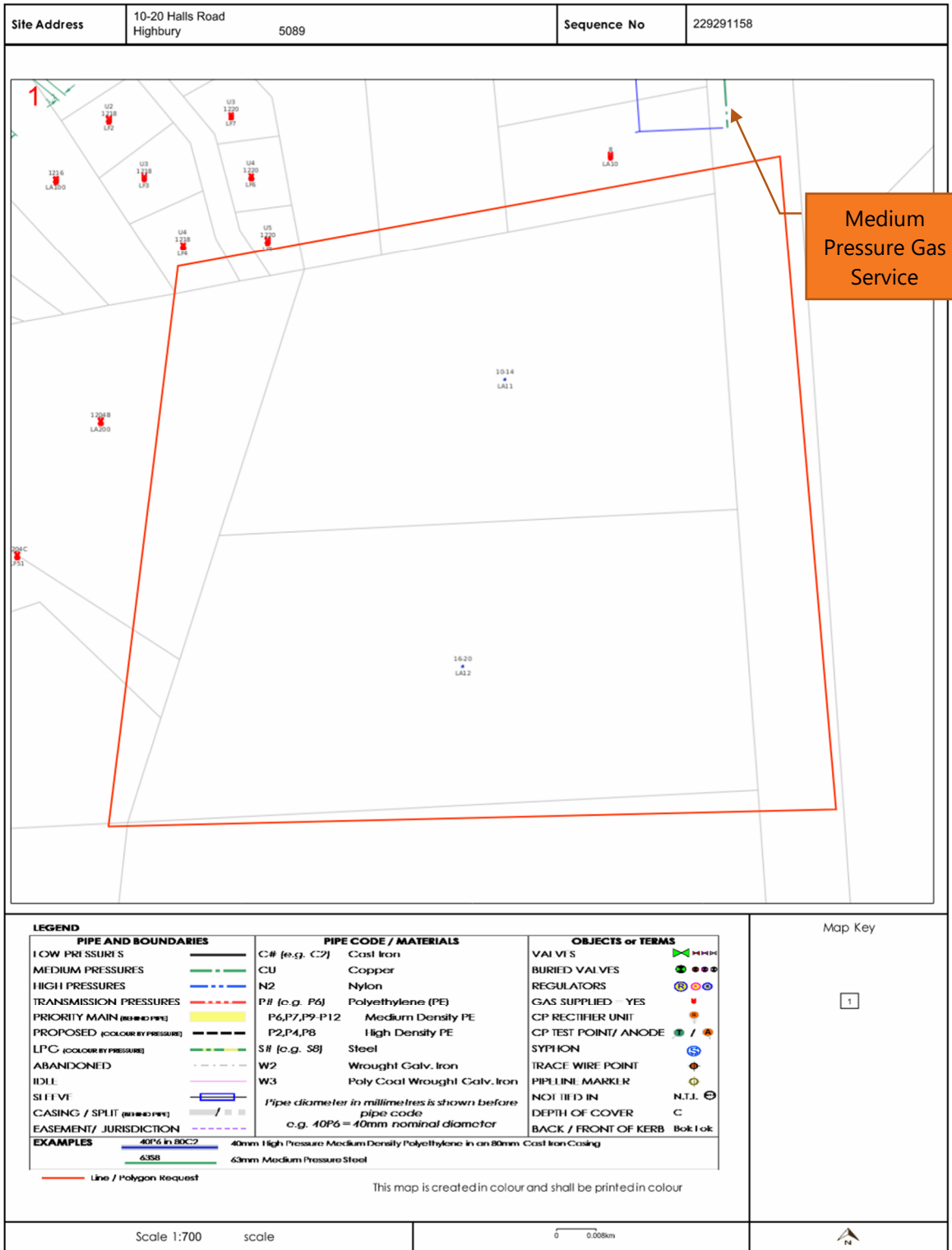


Figure 10- Location of medium pressure main on Halls Road

Staging of Infrastructure Upgrades

FMG Engineering is not a qualified cost estimator, however has been requested to provide some industry advice on how costs may be divided amongst stages. Whilst indicative in nature, we can provide the following opinions on how costs may be apportioned between the relevant stages, with some supplementary notes;

Stormwater

- Provision of a minimum of 350 cubic metres of stormwater detention across entire site, split proportionally across each parcel if staged. (Note: this may vary due to limited stormwater infrastructure in Halls Road, and may be subject to elevated detention volumes).
- detention storage should be considered in the south-eastern corner of the site, to facilitate drainage to the discharge point (Halls Road reserve). Total storage volume could be achieved over multiple basins if desired.
- Potential for underground storage tank options to be considered, however generally considered more costly and to be avoided if space permits.
- Construction of WSUD infrastructure to meet stormwater quality objectives, examples may include bio infiltration, proprietary stormwater filtration units, gross pollutant traps.

Water mains

- A 250mm diameter supply main (MSCL) is located on Halls Road, considering the size of pipe, it may have adequate capacity to support development on subject site.
- Water mains circulation needed for new development and possible additional considerations to meet bushfire code requirements.
- Future investigations to verify the capacity of the SA Water network at this location would include a flow test at the metered location.

Wastewater

- There is an existing pump station with 150mm PVCU pipe located on the northeast corner of subject site, but it does not provide any connection or valve adjacent the subject site on Halls Road.
- It is likely that future development applications will need to consider a new SA Water pump station and rising main, alongside the regular requirements for SA Water specification internal sewer reticulation and property connections.
- The discharge point for a pump station has not been confirmed by SA Water, and may be a large cost to future development applications, however is unlikely to be a barrier to future development.

Electrical

- FMG assume that the total estimated demand for future development on the subject site would be in the magnitude of (400kVA). This is of a similar scale to a standard transformer, and on this basis is likely to trigger the need for a new transformer within SAPN's network.
- Constraints in development will be determined based on SAPN response.

Communications

- It is not anticipated significant augmentation works will be required.
- New pit and pipe design will be required for future internal roads to service communications connections.

Gas

- Gas supply is observed in adjacent streets and servicing neighbouring allotments on Halls Road.
- Service of future development applications would need to be confirmed by the relevant gas authority, however is unlikely to be of concern and will not be a barrier to future development.

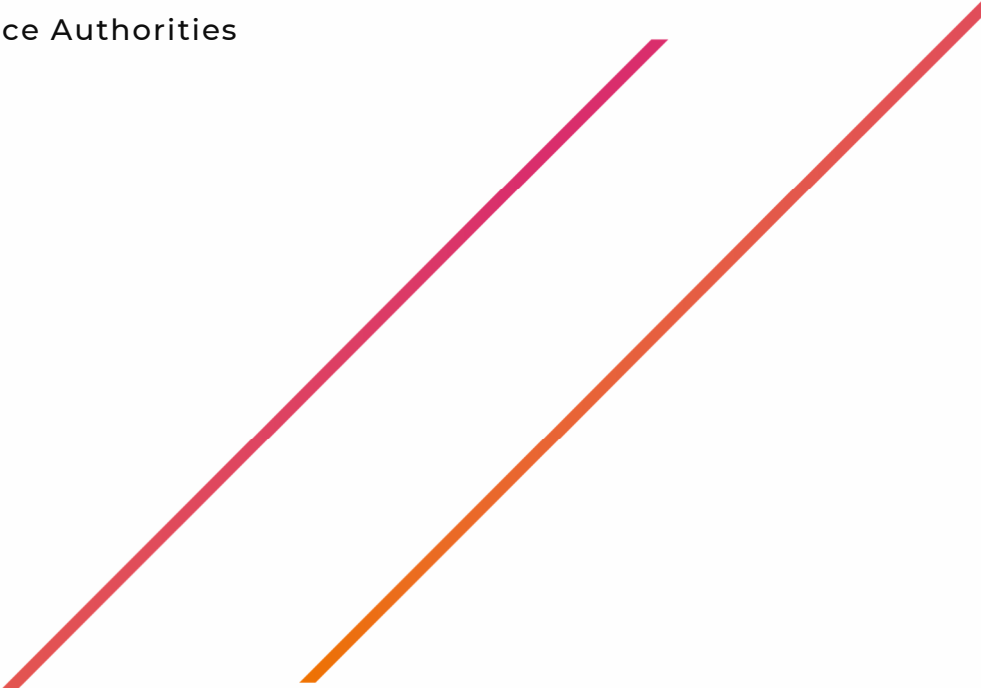
Summary

FMG Engineering had prepared this preliminary services assessment based on the information provided by Hallan Nominees Pty Ltd on the Code Amendment, anticipated future development and through desktop investigation (via DBYD, GIS and Aquamap) and discussion with Council and SA Water. At this stage, we believe there to be sufficient capacity in the current infrastructure, or sufficient capacity can be made available through a feasible level of augmentation to existing infrastructure. Result of this assessment is subject to change, pending final detailed feedback from SA Water and SAPN to verify these assumptions.

A thick diagonal line starting from the bottom left and extending towards the top right, with a color gradient from orange to red.

Appendix A

Correspondence from Service Authorities

Two thick diagonal lines starting from the bottom left and extending towards the top right, with a color gradient from orange to red. One line is positioned above the other.

From: Kariuki, Dennis <dennis.kariuki@cttg.sa.gov.au>
Sent: Wednesday, 20 September 2023 2:54 PM
To: Ryan Dou
Cc: Ghasem Ashtijou
Subject: RE: 10-20 Halls Road, HIGHBURY, SA 5089 - Code Amendment

Hi Ryan,

Council requirements with regard to your proposal and queries raised as below:

Site detention requirements

Council requirements are to match pre development flows to post developments flows (that being 5% back to 5% AEP and 1% back to 1% AEP in 30 minute storm event) with the difference detained on site. Council requires for a minimum 60% roof stormwater to be discharged to rain water tanks or detention proposed.

Water quality requirements (GPT)

Council requirement for water quality for large developments is to apply gross pollutant traps before connecting into existing drainage networks. A Music Model showing that Stormwater reduction targets are met as below must also be presented.

- o 90% reduction in Gross Pollutants
- o 80% reduction in average annual Total Suspended Solids
- o 60% reduction in average annual Total Phosphorous
- o 45% reduction in average annual Total Nitrogen

Sump/ Pump requirements

Should a sump/ pump be required, it must be designed to cater for 5% AEP discharge and 1% AEP storage – calculations would be required as part of the approval. Maximum discharge rates allowed are of 4L/s. Maximum velocity rate of discharge at the kerb at 0.5m/s

Discharge

You may elect to discharge to the road or underground drainage. Council will assess rates of discharge based on what method you elect.

Warm Regards

Dennis Kariuki | Engineer, Project & Assets

City of Tea Tree Gully
Service Centre, 1100 Golden Grove Road, Golden Grove

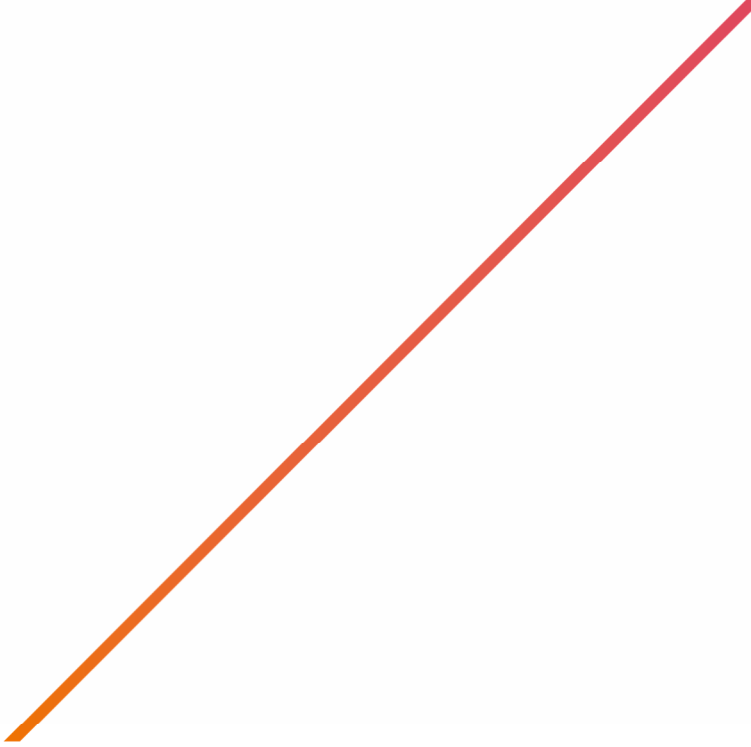
M 0481 059 935 | **T** 08 8397 7444

PO Box 571, Modbury, SA 5092
www.teatreegully.sa.gov.au

From: Ryan Dou <ryan.dou@fmgengineering.com.au>
Sent: Thursday, 14 September 2023 4:14 PM
To: Kariuki, Dennis <dennis.kariuki@cttg.sa.gov.au>
Cc: Ghasem Ashtijou <ghasem.ashtijou@fmgengineering.com.au>
Subject: 10-20 Halls Road, HIGHBURY, SA 5089 - Code Amendment

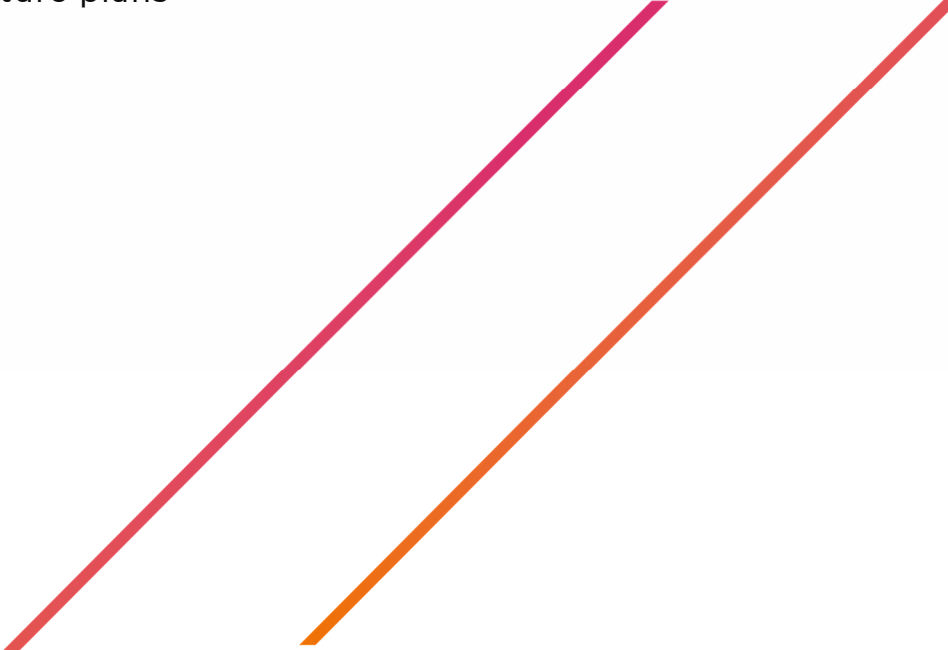
EXTERNAL SENDER: Exercise caution before clicking on any links or opening attachments.

Hi Dennis,



Appendix B

DBYD and existing infrastructure plans

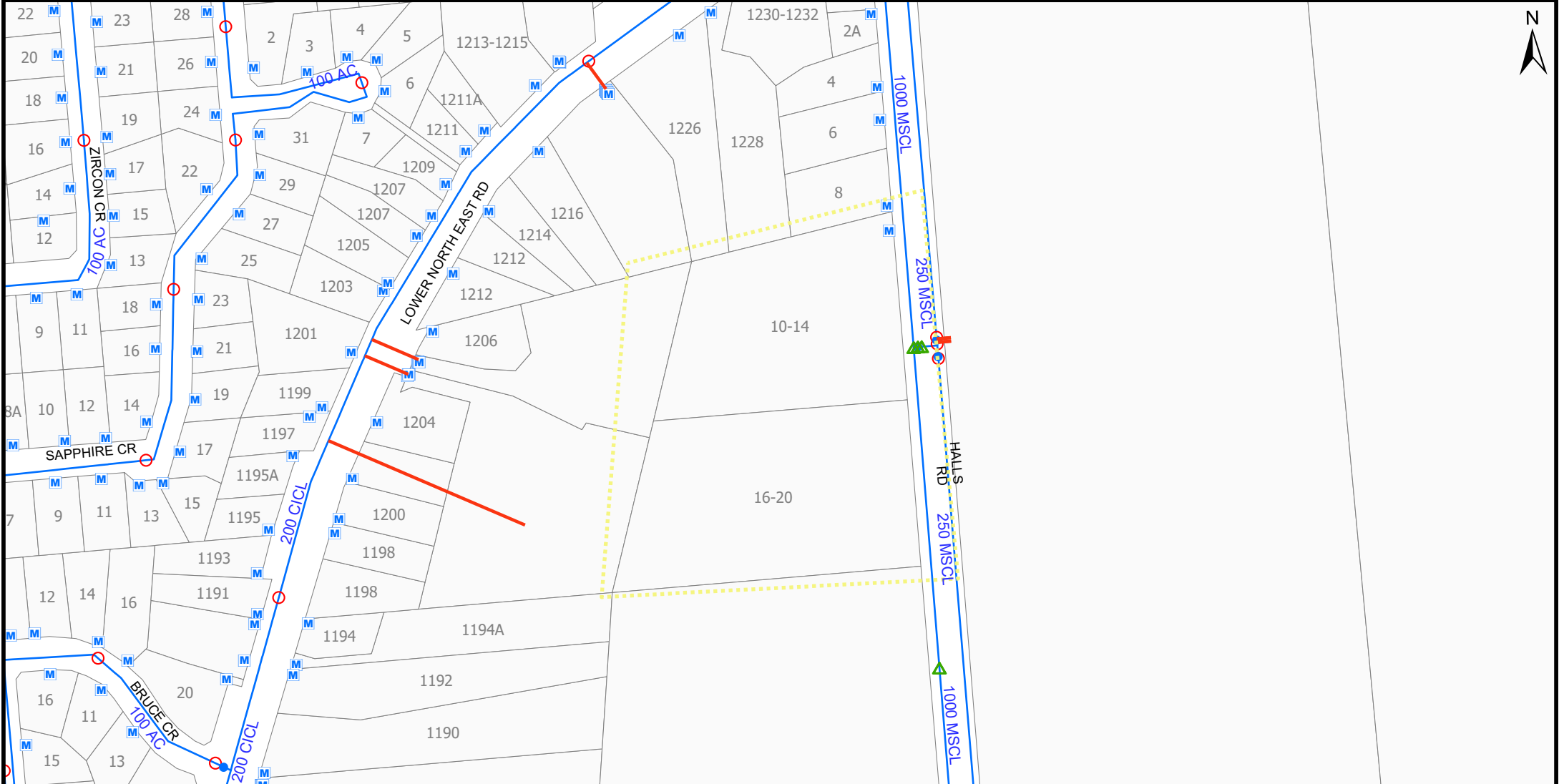




WATER RETICULATION

Seq # 229291160

Job # 34991623



- | | | | | |
|--------------|-------------------------------|------------------------------|-------------------------|----------------------|
| BYDA Enquiry | Water Main (Decommissioned) | Water Hydrant | CP Anode Cathode Cables | Shifted Water Meter* |
| Water Valves | Decommissioned Asbestos Mains | CP Facility | CP Anode Bed Outlines | Water Meter |
| Water Main | Water Pillar Hydrant | CP Electricity Supply Cables | Suburbs and Towns | Land Parcels |

This advice and/or information is given for your private use only. The accuracy of the advice and information is not guaranteed, and no responsibility is accepted by the crown, the South Australian Water Corporation or their officers, agents or servants for any loss or damage caused by reliance upon this advice and/or information, as a result of any error, omission, incorrect description or statement therein whether caused by negligence or otherwise.

***Connection between water meter and pipe not shown**

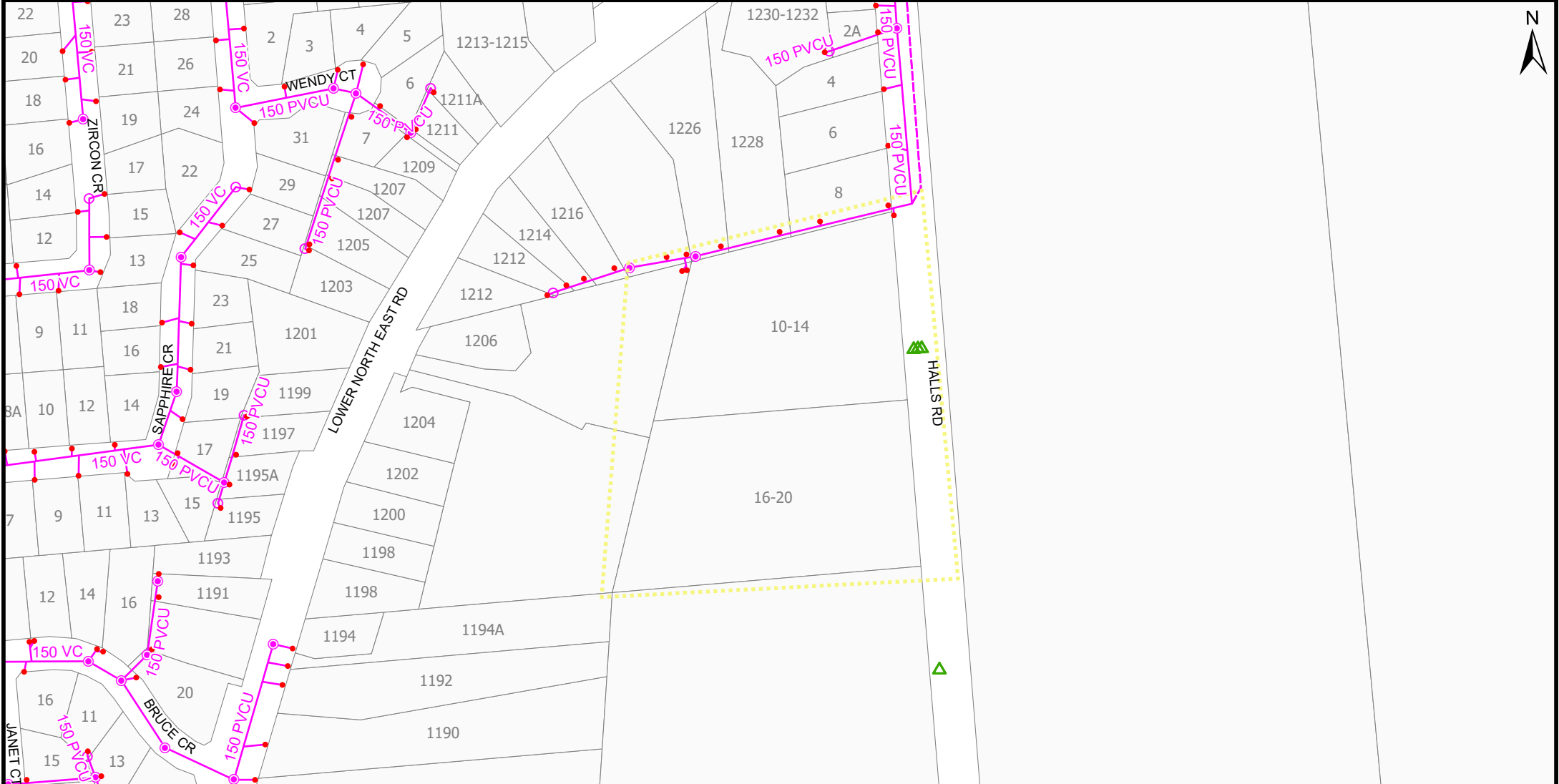
Scale @ A4: 1:2,500



WASTEWATER RETICULATION

Seq # 229291160

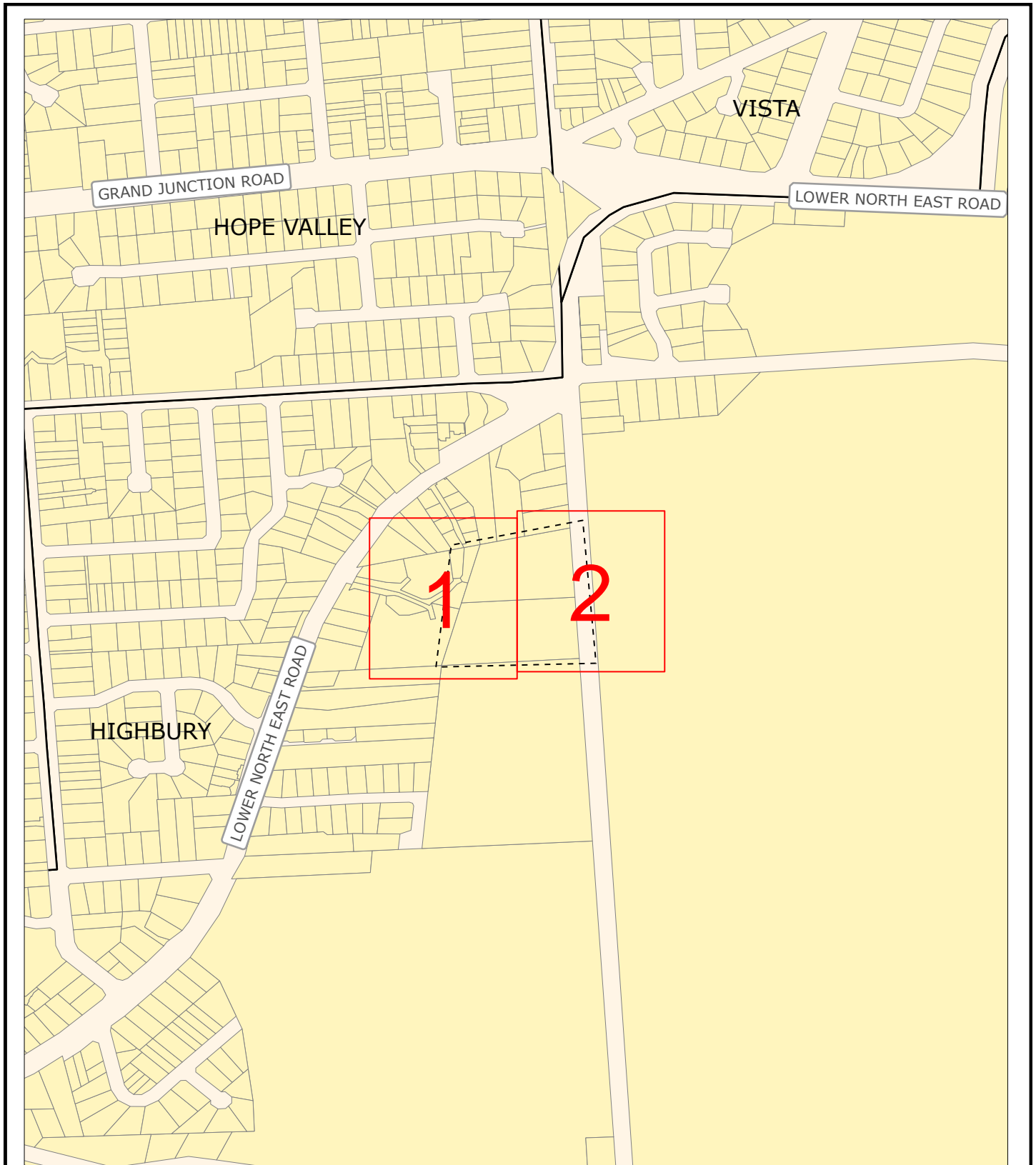
Job # 34991623



BYDA Enquiry	Maintenance Hole	Low Pressure	CP Anode Cathode Cables	Telemetry Cables
GIP	Maintenance Shaft	Pumping Mains	CP Facility	Land Parcels
Valve	Connections	Vacuum	CP Anode Bed Outlines	Suburbs and Towns
Inspection Opening	Gravity Mains	CP Anode Bed Outlines	CP Electricity Supply Cables	

This advice and/or information is given for your private use only. The accuracy of the advice and information is not guaranteed, and no responsibility is accepted by the crown, the South Australian Water Corporation or their officers, agents or servants for any loss or damage caused by reliance upon this advice and/or information, as a result of any error, omission, incorrect description or statement therein whether caused by negligence or otherwise.

Scale @ A4: 1:2,500



Disclaimer: The Plan/Sketch is supplied at your request and is subject to your agreement that SA Power Networks shall not be liable or responsible for the correctness or otherwise of any such information supplied pursuant to this request. Upon acceptance of this condition SA Power Networks grants you permission to use the Plan/Sketch as a guide to the location of SA Power Networks assets. The Plan/Sketch must be returned to SA Power Networks if you fail to accept the conditions of use.



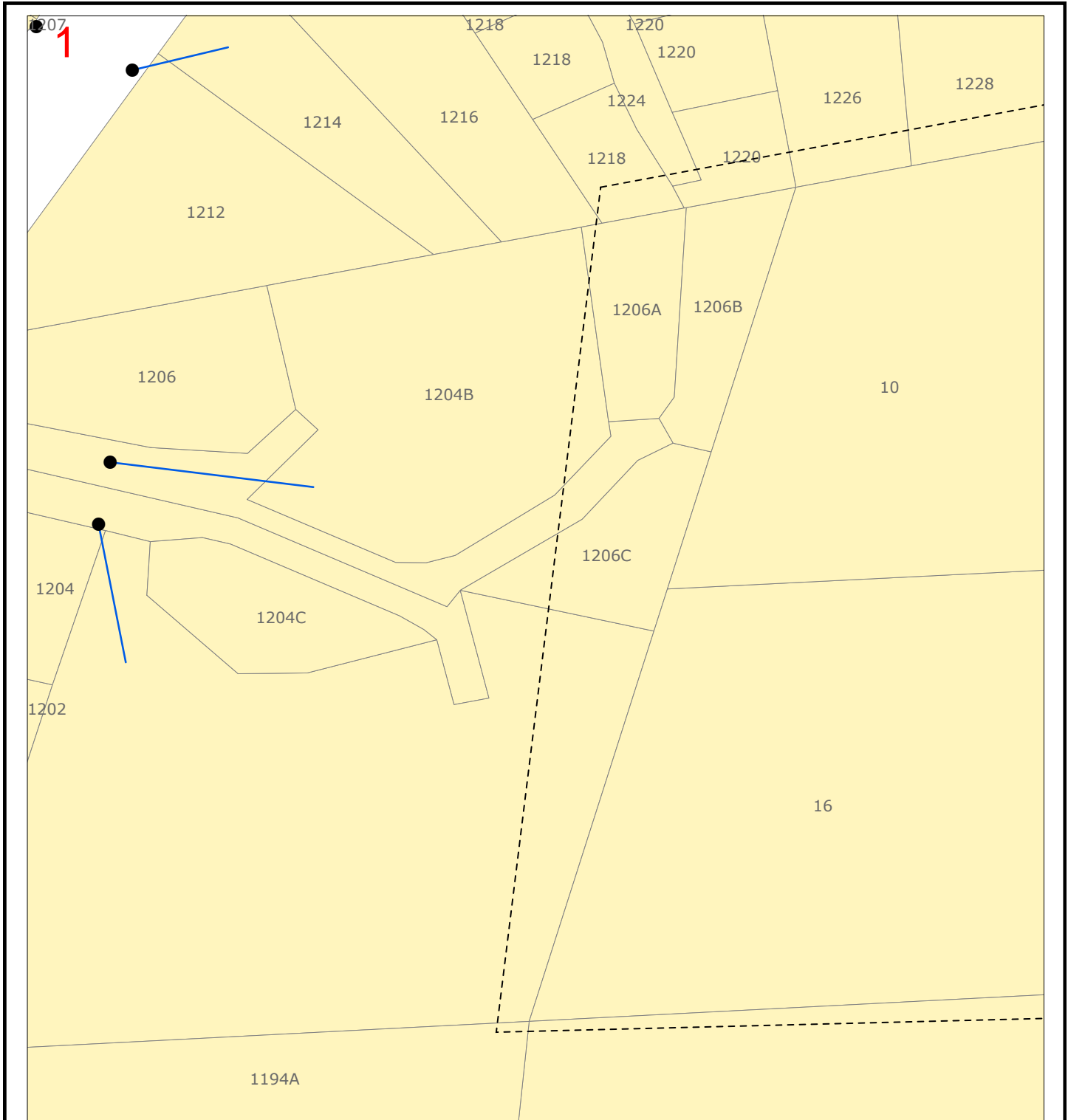
LEGEND:



Detail Map



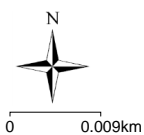
DBYD Requested Area

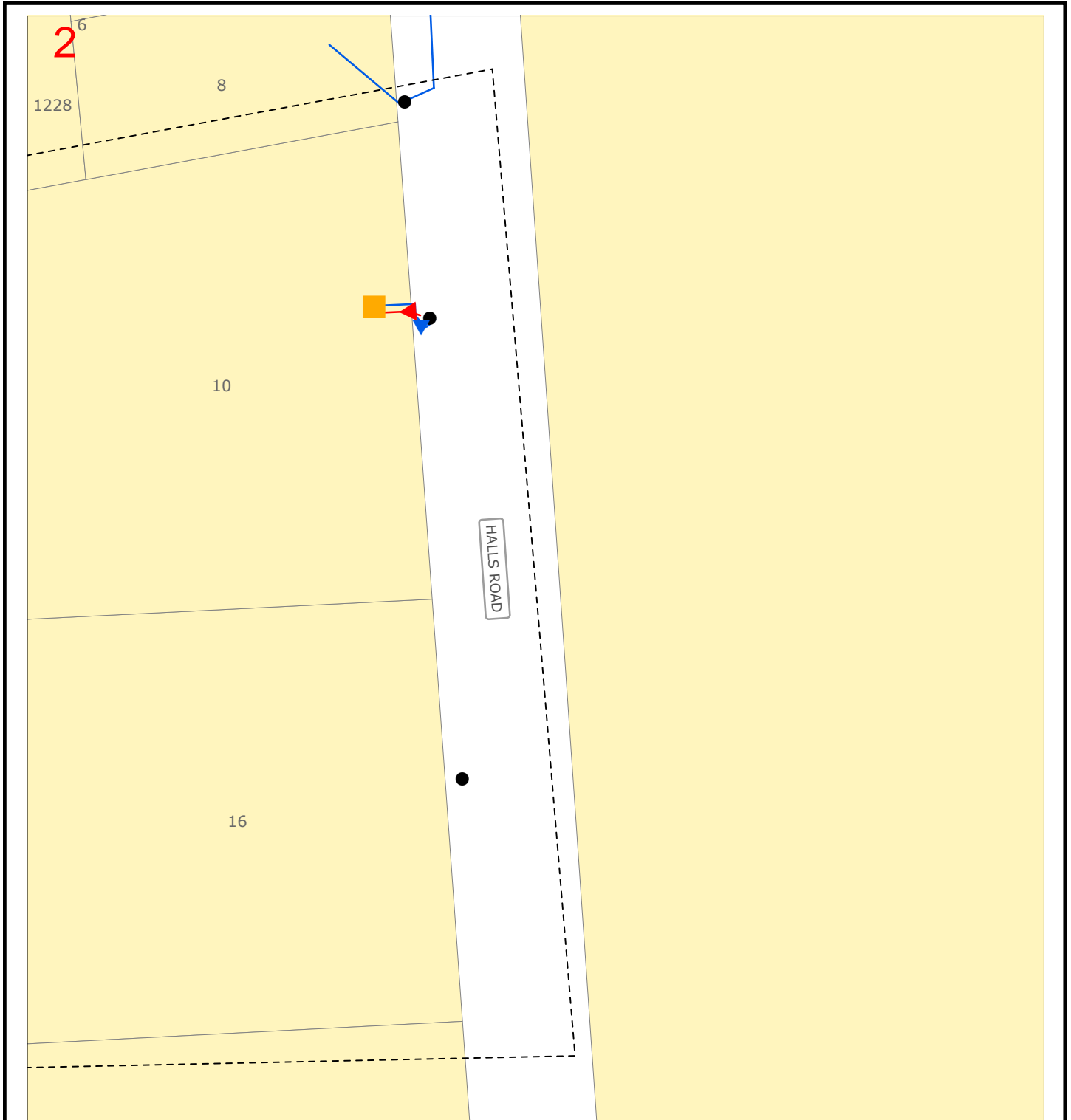


Note: The presence of lighting columns and cable exits may indicate unidentified additional cables.

LEGEND:

Cable Exits		Cables			
	66kV/132kV		66kV/132kV		DBYD Requested Area
	33kV		33kV		HV Switch Unit
	19kV		19kV		Transformer Unit
	11kV		11kV		HV Joint Bay
	Other HV		Other HV		LV Switching Cubicle/Pit
	Not In Service		Not In Service		Pit
	Low Voltage		Low Voltage		Electrical Earthing Area
					Fibre Cable/Duct
					Fibre Pit
					Pilot Cable
					Pilot Manhole/Pit
					Substation
					Electricity Pole
					Light Column

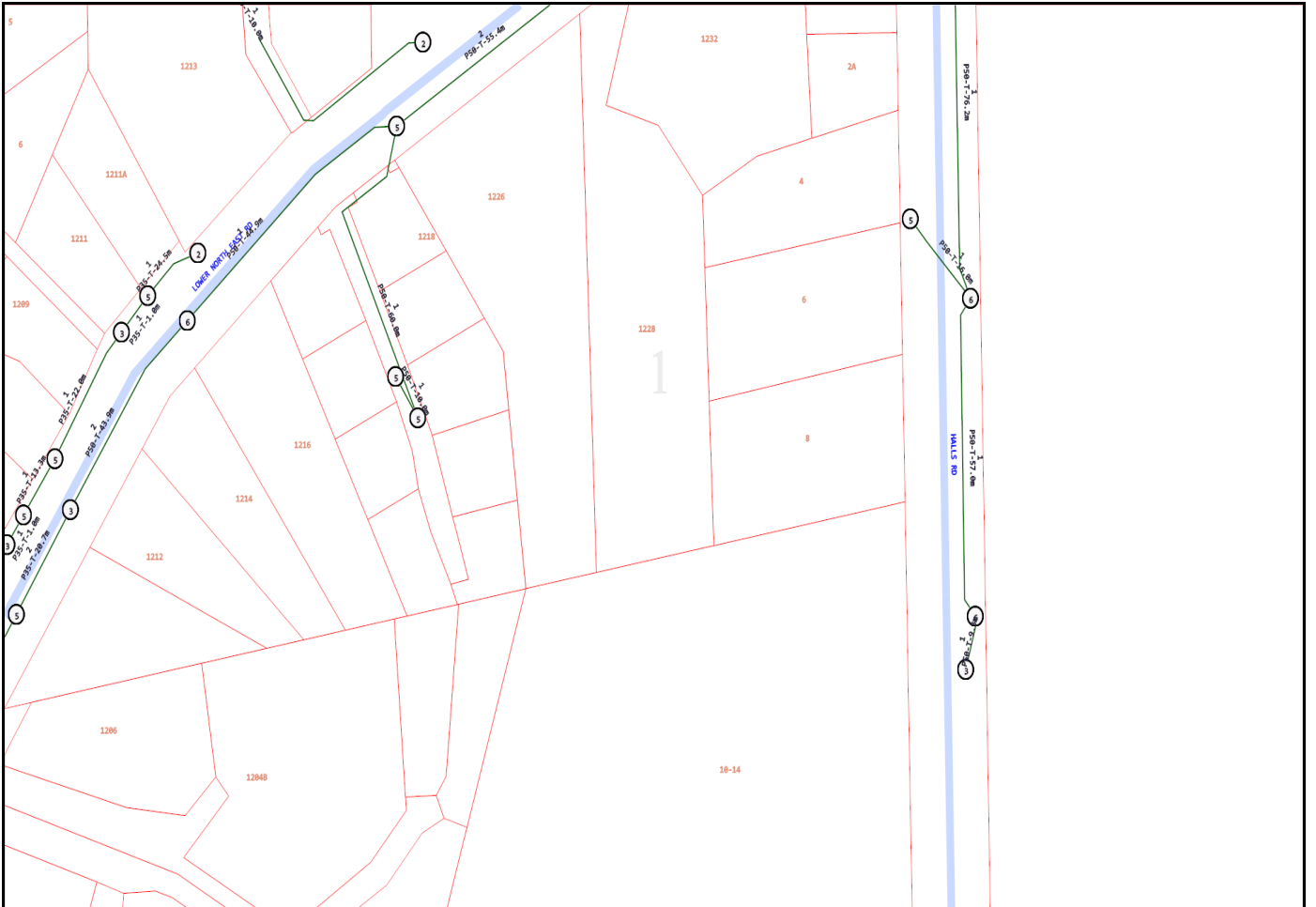


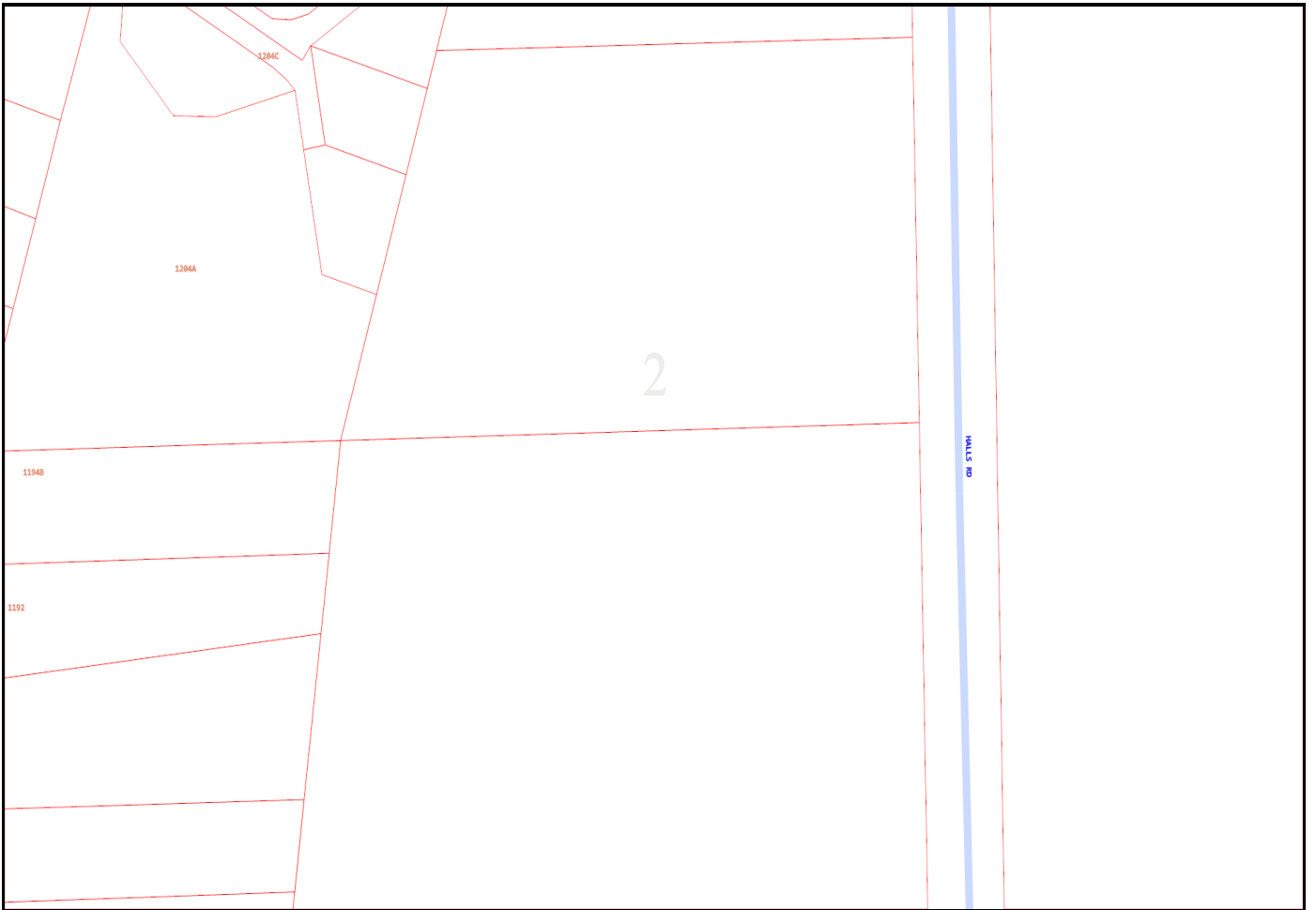


Note: The presence of lighting columns and cable exits may indicate unidentified additional cables.

LEGEND:

Cable Exits		Cables		DBYD Requested Area		Fibre Cable/Duct	
	66kV/132kV		66kV/132kV		DBYD Requested Area		Fibre Cable/Duct
	33kV		33kV		HV Switch Unit		Fibre Pit
	19kV		19kV		Transformer Unit		Pilot Cable
	11kV		11kV		HV Joint Bay		Pilot Manhole/Pit
	Other HV		Other HV		LV Switching Cubicle/Pit		Substation
	Not In Service		Not In Service		Pit		Electricity Pole
	Low Voltage		Low Voltage		Electrical Earthing Area		Light Column

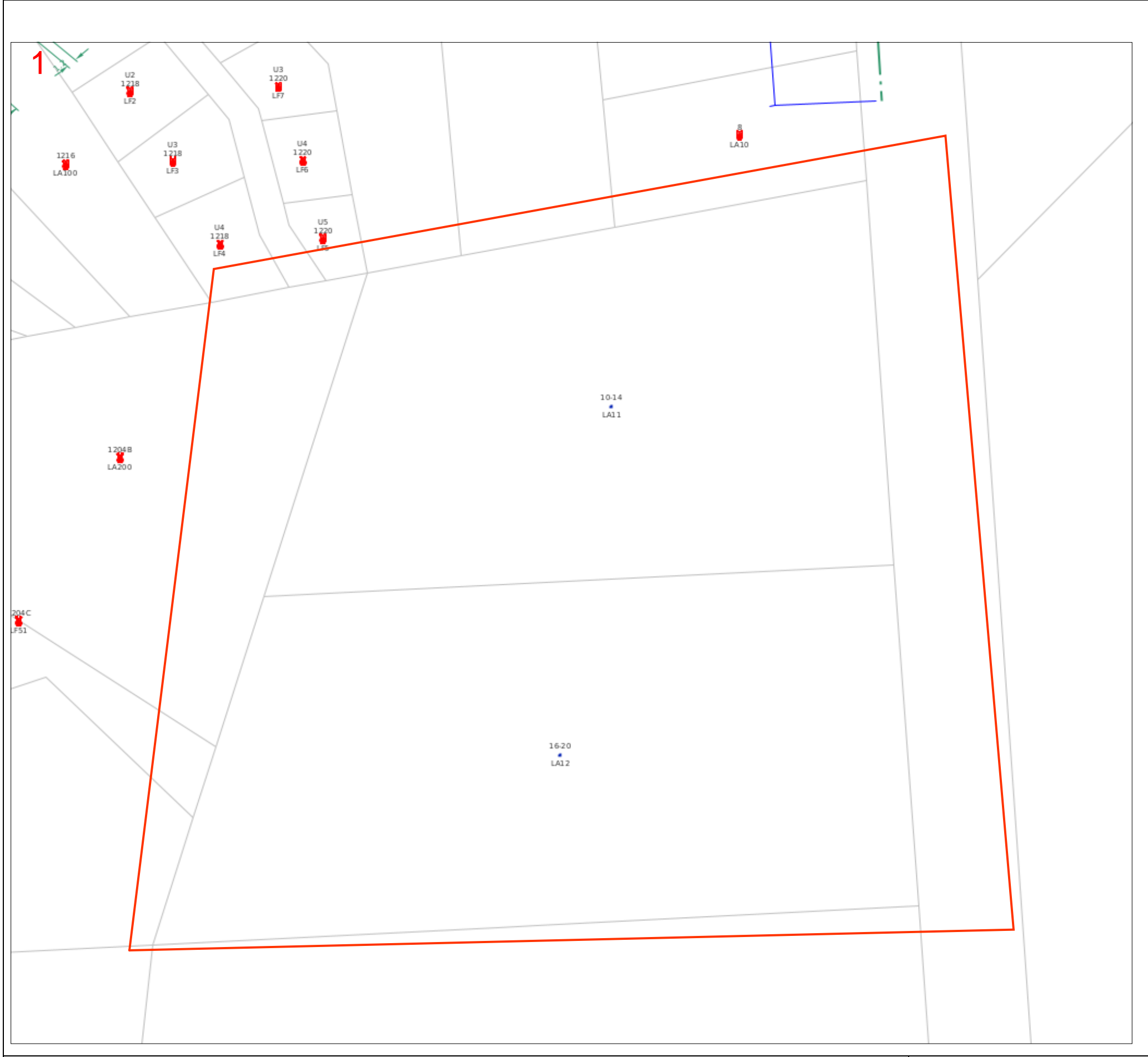




Emergency Contacts

You must immediately report any damage to the **nbn**TM network that you are/become aware of. Notification may be by telephone - 1800 626 329.

Site Address	10-20 Halls Road Highbury 5089	Sequence No	229291158
--------------	-----------------------------------	-------------	-----------



LEGEND		PIPE CODE / MATERIALS		OBJECTS or TERMS	
PIPE AND BOUNDARIES		C# (e.g. C2)	Cast Iron	VALVES	
LOW PRESSURES		CU	Copper	BURIED VALVES	
MEDIUM PRESSURES		N2	Nylon	REGULATORS	
HIGH PRESSURES		P# (e.g. P6)	Polyethylene (PE)	GAS SUPPLIED = YES	
TRANSMISSION PRESSURES		P6,P7,P9-P12	Medium Density PE	CP RECTIFIER UNIT	
PRIORITY MAIN (BEHIND PIPE)		P2,P4,P8	High Density PE	CP TEST POINT/ ANODE	
PROPOSED (COLOUR BY PRESSURE)		S# (e.g. S8)	Steel	SYPHON	
LPG (COLOUR BY PRESSURE)		W2	Wrought Galv. Iron	TRACE WIRE POINT	
ABANDONED		W3	Poly Coat Wrought Galv. Iron	PIPELINE MARKER	
IDLE		<i>Pipe diameter in millimetres is shown before pipe code e.g. 40P6 = 40mm nominal diameter</i>		NOT TIED IN	N.T.I.
SLEEVE				DEPTH OF COVER	C
CASING / SPLIT (BEHIND PIPE)				BACK / FRONT OF KERB	Bok Fok
EASEMENT/ JURISDICTION					
EXAMPLES		40mm High Pressure Medium Density Polyethylene in an 80mm Cast Iron Casing			
		63mm Medium Pressure Steel			
		Line / Polygon Request			

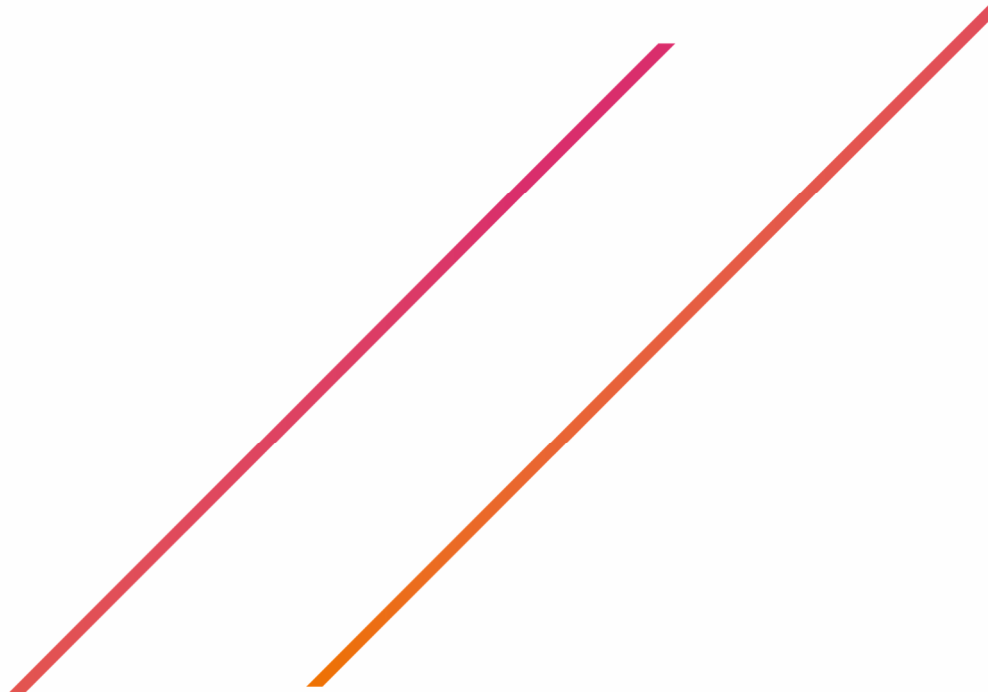
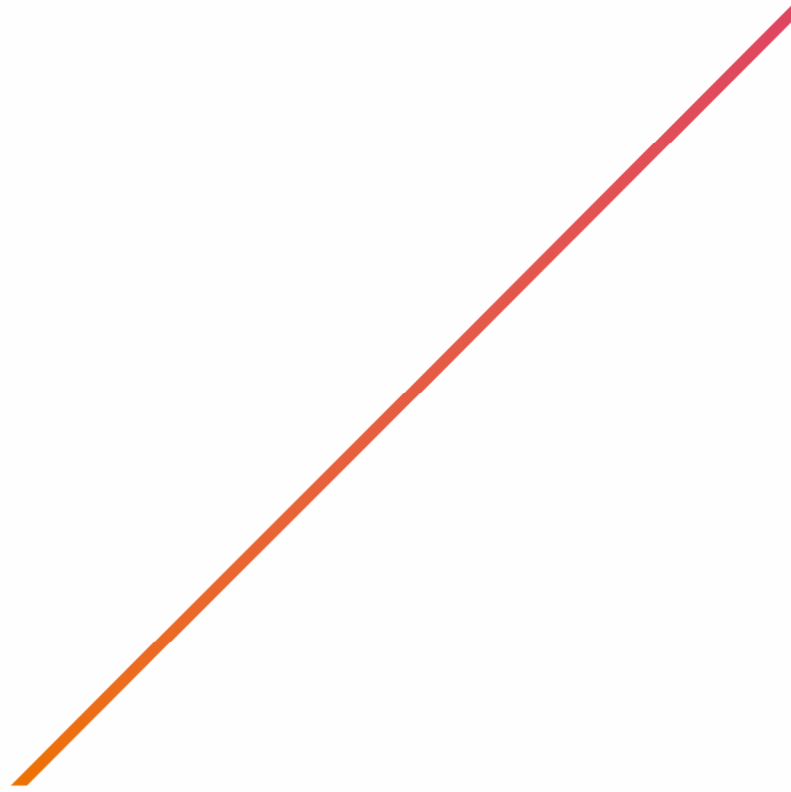
Map Key

1

Scale 1:700	scale	0 0.008km	
-------------	-------	-----------	--

Appendix C

Lidar Contour Plan





IMPORTANT NOTE:
No underground services have been located. All underground services must be identified prior to any excavation or construction work on site.

0	11/09/2023	INITIAL RELEASE	DJR	MM
REV	DATE	DESCRIPTION	CALC	FIELD
ADDITIONS, AMENDMENTS AND APPROVALS				

IMPORTANT NOTE:
Contours derived from LIDAR point cloud data accessed from the Department of Environment and Water.
Positional accuracies reported by DEW +/-4.2cm (95% confidence interval).
Vertical datum: AHD
(Ausgeoid2020) Capture in 2022.
Products derived from this data generate accuracies of between 30 and 50cm.

COORDINATE SYSTEM	
VERTICAL:	AHD
HORIZONTAL:	GROUND PLANE ORIENTED TO: MGA 20 ZONE 54
SCALE:	GROUND (CSF = 1.000 107 396)
ADOPTED STATION & AUTHORITY	
PSM 6628/28508	RL: 170.681 SDB
PSM 6628/28508	E: 291596.623 SDB
	N: 6141881.441 SDB
SDB denotes SA Government survey data base values	

© ALEXANDER & SYMONDS PTY. LTD. ORIGINAL SHEET SIZE B2

Scale: 1:500

Notes:
Property boundaries and easements shown hereon have been compiled from government records and show discrepancies to Certificate of Title dimensions.
Boundaries have not been verified by field survey.
Construction or design on or near boundaries or easements will require additional survey work.

CONTOUR INTERVAL:	MIN: 0.20m MAJ: 1.00m
SURVEY:	MM 07/09/2023
DRAWN:	DJR 11/09/2023
CHECKED:	MRE 11/09/2023

Alexander & Symonds Pty Ltd
11 King William Street Kent Town,
South Australia 5067
PO Box 1000 Kent Town, SA 5071
ABN 93007 753 988

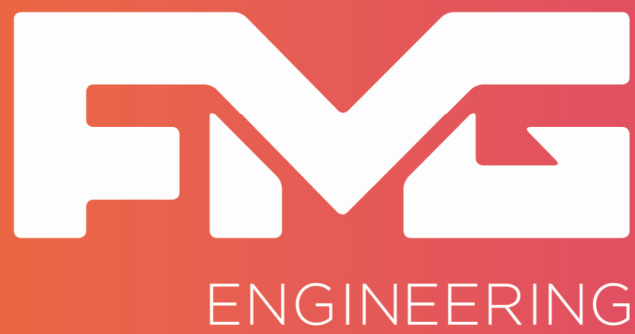
T (08) 8130 1666
F (08) 8362 0099
E www.alexander.com.au
adelaide@alexander.com.au

+ Property + Land Development +
+ Construction + Mining +
+ Spatial Information Management +

LIDAR CONTOUR SURVEY
10-20 HALLS ROAD
HIGHBURY

DRAWING No. SHEET 1 OF 1 REVISION 0

23A1922 Detail(0) MGA20P

The logo for FNG Engineering features the letters 'FNG' in a large, bold, white, stylized font. Below the letters, the word 'ENGINEERING' is written in a smaller, white, sans-serif font. The background is a gradient of orange and pink, with two diagonal stripes: a darker orange stripe in the upper right and a pink stripe in the lower left.

FNG

ENGINEERING

ADELAIDE

67 Greenhill Road
Wayville SA 5034
Ph: 08 8132 6600

MELBOURNE

2 Domville Ave
Hawthorn VIC 3122
Ph: 03 9815 7600

SYDNEY

Suite 28, 38 Ricketty St
Mascot NSW 2020
Ph: 1300 975 878

ABN: 58 083 071 185