

Preliminary Engineering Services Report

Lot 2349 Guara Drive, Sunset Beach, Geraldton, WA 6530

Sunset Beach Estate Pty Ltd

Revision	Date	Comment	Completed by
A	29/11/2023	Prelim Draft	Larry Silvia
B	30/11/2023	Final	Joe Reilly

Disclaimer

This report is based on information provided by others, including service authorities and sub consultants. Bua Bua Consulting does not accept responsibility for the accuracy or completeness of this information.

Contents

	Page
Introduction	3
Earthworks	3
Stormwater Management	4
Potable Water	4
Wastewater Servicing	6
Road Network	7
Power	7
Telecommunications	7
Gas	8

Appendices

Appendix A	Lot 2349 Guara Drive Structure Plan
Appendix B	Lot 2349 Guara Drive Indicative Subdivision Layout Plan
Appendix C	Dial Before You Dig Information
Appendix D	Water Corporation Correspondence
Appendix E	UPD Power and Communications Servicing Report

Introduction

BUA BUA Consulting was engaged by Sunset Beach Estate Pty Ltd to undertake a Preliminary Engineering Services Report (PESR) for Lot 2349 Guara Drive, Sunset Beach in Geraldton.

The site is located within the Sunset Beach suburb and is bounded by the Chapman river to the south, Northwest Coastal Highway (NWCH) to the East, undeveloped Crown reserve landholdings to the North and existing residential neighbourhood to the West. Traffic access to the development will be via Chapman Road. The area of Lot 2349 is 4.577ha.

The subject land is currently zoned Urban Development under the City of Geraldton's Local Planning Scheme. The proposed development is for residential lots of R20 – R30 as well as POS areas. The current proposed lot yield for this proposal is 36 single residential and as shown on the Indicative Subdivision Layout 1 grouped housing site.

The Structure Plan for Lot 2349 is attached in Appendix A the Indicative Subdivision Layout plan for lot 2349 in Appendix B and the Dial Before You Dig Information in Appendix C.

Earthworks

Lot 2349 is relatively flat. It has gentle undulations which vary from RL 10 to RL 11.

The development is effectively a relatively flat sandplain with very low sand rises. While the subject land generally falls towards the North and West, there are some isolated trapped lows associated with the interdunal areas of the sand rises.

Substantial retaining walls are not envisioned however some minor retaining walls may be required to achieve servicing and flat lots.

It is expected that the subdivision design and earthworks will strive for a balanced cut to fill. There will likely be a requirement to import of clean fill to enable the fall and cover limits for stormwater drainage and sewer connections. This requirement will need to be determined at the Detailed Design Stage.

The lot is generally cleared and there is only limited non-remnant vegetation remaining on site.

Site specific Geotechnical Investigation has not yet been undertaken for this development. Broudscale Mapping has been utilised for geotechnical assumptions to date.

According to the Department of Agriculture and food the site's soil type is typically yellow sandplain. This is typically mainly yellow sands with neutral to slightly acid pH and water repellent soil.

The risk of Acid Sulfate soils is deemed to be low.

Stormwater Management

The stormwater controls for the site will need to include integrating land and water planning, implementing water sensitive urban design and planning to manage the total water cycle. This will ensure that downstream natural watercourses, predominantly the Chapman River, will have their natural conditions and flows maintained. Proposed water management strategies for the subject land will need to be based on best practice water sensitive urban designs that integrate sustainability and the provision of attractive communities.

These strategies are discussed by Oversby Consulting in the Local Water Management Strategy (LWMS) dated November 2023 and will be finalised during detailed design stage to ensure post development base flows and peak flows will be similar to predevelopment conditions. POS areas will be utilised for collection, treatment, and infiltration of all Stormwater runoff. Water off the road network will be directed to the bioretention swales/basins for treatment prior to infiltration.

Stormwater design and detailing will be undertaken in accordance with the requirement of the CGG land development specifications and drawings.

Conventional pit and pipe stormwater construction is expected to be utilised throughout the development.

The proposed Local Water Management Strategy overview is shown in Fig 2 of the LWMS report, and the drainage catchments are shown in Fig 7 of the report.

Although existing stormwater infrastructure is visible on the adjoining roads as constructed information was unavailable. The City of Greater Geraldton (CGG) advised that there is unlikely to be any substantial capacity in the existing system. Additionally, current site levels do not facilitate easy drainage to existing infrastructure.

Potable Water

Upgrades will be required to the Water Corporation's (WC's) infrastructure in Guara Drive and Nyrang Road to cater for the ultimate water demand for Lot 2349.

The existing 80AC / 58AC reticulation lines along Guara Drive and Nyrang Road will have to be upgraded to DN150 to achieve standard pressures and flow requirements. The Water Corporation has designated the proposed tie in points. Correspondence with the WC has been included in Appendix D

Waggrakine Tank No. 8 to the east of site has been decommissioned and Rangeway Tank No. 6 is currently feeding the proposed area. The WC advised that their budget includes for the demolition of the concrete tank within the next year.

Potable water servicing within the lot can be achieved using a conventional reticulated piped network and would be designed in accordance with the WC's design manuals.

Fire hydrants will need to be provided throughout the site on the WC's reticulation system.

An aerial map showing the location of existing water mains in the vicinity of the site is shown below in Fig 1.



Fig 1 Existing Water

Wastewater Servicing

The Water Corporation has an existing sewer network in place which partially surrounds the site. They have indicated the system has the capacity to cater for the approximate lot yield which is proposed. There are ample opportunities to join into the existing sewer network, those being along the Northern border, at the ends of Nyrang Road, Guara Drive and Park Avenue. The proposed internal sewer network and connection points will need to be determined at time of detailed design, once finished levels of roads and lots are finalised. Provision of sewer pumping station and associated pressure mains are not envisaged.

An aerial map showing the location of existing sewer mains in the vicinity of the site is shown below in Fig 2.



Road Network

Access to the site will be off Nyrang Road and Guara Drive.

Pavement design, carriageway widths and road design details will need to be in accordance with the CGG land development specification and drawings which are available from the CGG website: <https://www.cgg.wa.gov.au/build/town-planning/land-development.aspx>

A Traffic Impact Assessment has been prepared by Greenfield Technical Services. This contains detailed information on the road network and likely requirements. It highlights the need for external upgrades and explores various levels and or stages of possible upgrades to intersections based upon traffic and growth projections in addition to other data. Further discussions with the CGG will be required to ascertain the City's view on whether changes to this intersection will be required and if so, the magnitude of any upgrades.

Due to the proximity of the NWCH to the East noise abatement in the form of a barrier and/or QUIET House Packages may be required.

Power

A power and communications servicing report has been completed by subconsultant UPD for the proposed development. This report is attached in Appendix E.

The power requirements have been based upon 35 residential lots plus 18 grouped housing units. Initial investigations have indicated that there is sufficient capacity in the surrounding infrastructure to service this development. The proposed system will require a transformer and associated ring main unit. The final location of this equipment would be determined at detailed design stage.

All residential lots will require low voltage mains cable reticulation from transformer to standard power domes within each lot.

The UPD report includes suggested equipment requirements as well as possible associated costs and or Western Power credits.

Telecommunications

Based on the NBN rollout map, this subdivision area is currently serviced by fixed-line optic fibre cables. The development would be required to provide fibre-ready pit and pipe reticulation system to enable installation of the fibre-optic cabling.

This is further discussed in the UPD report. Existing adjacent communication infrastructure is also shown in the Report.

Gas

ATCO has indicated that there is existing gas infrastructure in the vicinity with sufficient capacity to service the proposed development.

Fig 3 below shows the location of the Gas mains on Nyrang Road and Guara Drive.

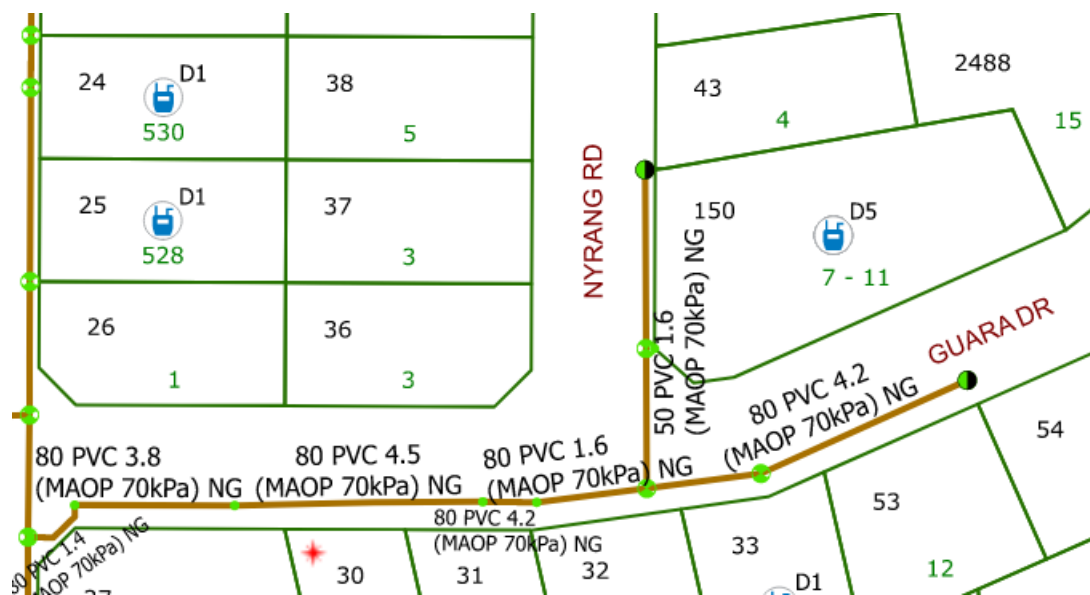


Fig 3 Existing Gas mains

Appendix A



TITLE: STRUCTURE PLAN LOT 2349 GUARA DRIVE, SUNSET BEACH		LOCAL AUTHORITY: CITY OF GREATER GERALDTON		 LANDWEST URBAN AND RURAL PLANNING CONSULTANTS	8 Anzac Terrace Geraldton WA 6530 PO BOX 1597 Geraldton WA 6531 Email : info@landwest.net.au Phone : (08) 9965 0550 Fax : (08) 9965 0559		REV: DATE: DETAILS: BY: APPROVED:		
CERTIFICATE OF TITLE(S) : -		DATE LAST MODIFIED: 12/09/2023			APPROVED:			PLAN:	
* This plan remains the property of Landwest and must not be used for any purpose other than which it was prepared for, in relation to the land duly described. Landwest accepts no responsibility for any losses or damages caused to any person/s who may use the information for a purpose for which it was not intended.		SCALE: 1:1500 @ A4			DESIGNED: GMB DRAWN: DW		23130-SP-01		

* This plan remains the property of Landwest and must not be used for any purpose other than which it was prepared for. in relation to the land duly described, Landwest accepts no responsibility for any losses or damages caused to any person/s who may use the information for a purpose for which it was not intended.

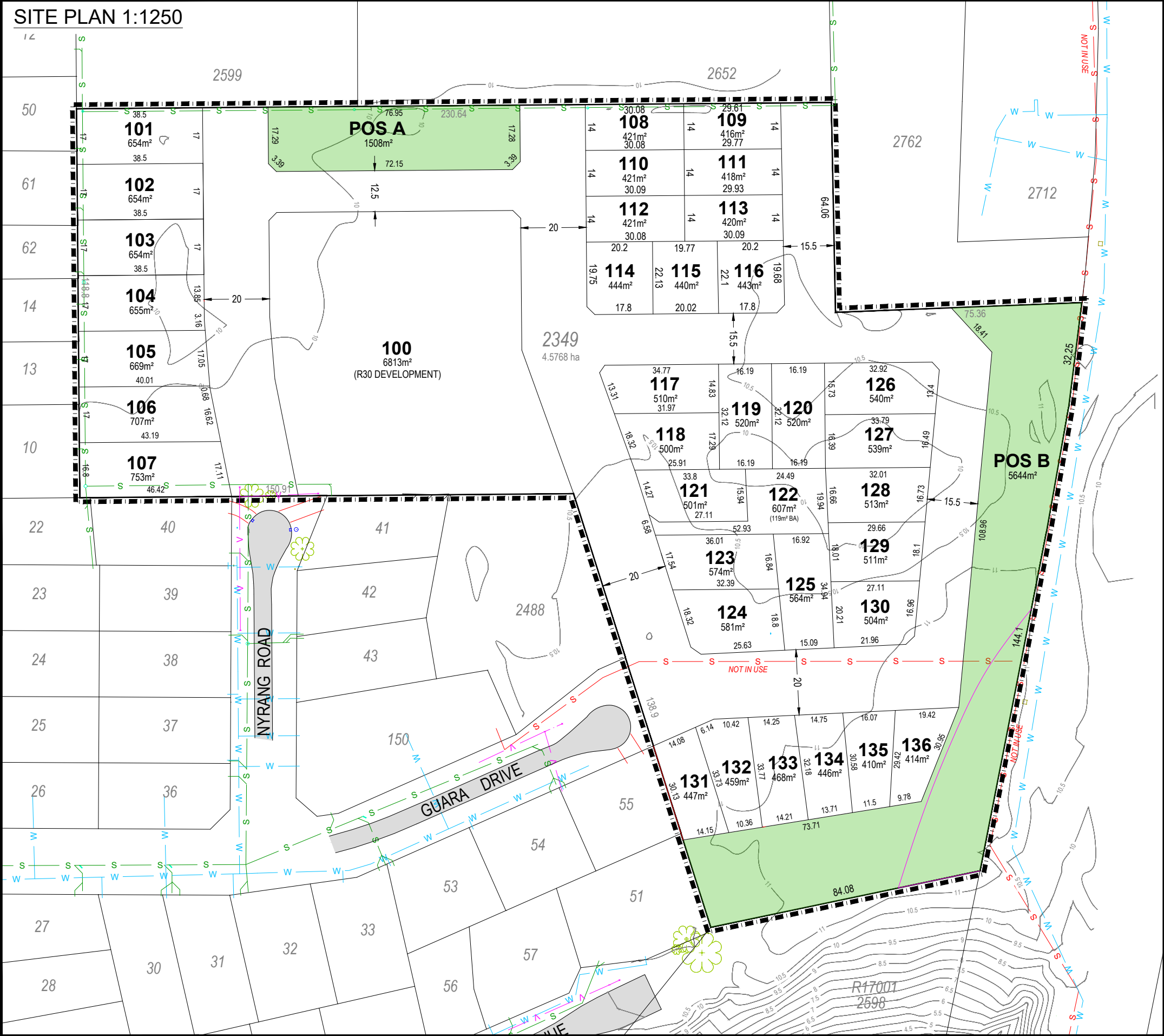
Appendix B

City of Greater Geraldton LPS No1 Zoning: Residential R30			Minimum Requirement	Actual Provision
Gross Subdivisional Area				4.5762ha
Indicative Lot Yield Comprising:				36 Single Residential 1 Grouped Housing
Residential	R20	Minimum Lot Size	350m²	410m²
		Average Lot Size	450m²	520m²
		Minimum Frontage	10m²	14m
	R30	Minimum Lot Size	260m²	Determined at Development Stage
		Average Lot Size	300m²	Determined at Development Stage
Drainage Function				836m2
Length of Proposed Road Reserve				780m
Area of Proposed Road Reserve				1.310ha
Public Open Space Reserve Refer POS Schedule				7,087m2

Public Open Space (POS) Schedule			
Lot 2349 Area			4.5762ha
Less Other Zoned Lots			NA
Less Other Deductions			NA
Gross Subdivisional Area			4.5762ha
Total POS Contribution	10%		4,576m2
To comprise Maximum	8% Unrestricted Use		915m2
	2% Restricted Use		3,661m2
POS Provision Actual	Unrestricted Use		6,251m2
	Restricted Use		836m2
	Total POS Provision		7,087m2

Notes:	
1.	Subdivision Plan Indicative Only .
2.	The plan is prepared for discussion purposes only and should not be used for any other purpose. No liability will be accepted where the plan is used for purposes other than that indicated in (1) above.
3.	Indicative Only Plan to be included in Structure Plan application/report for illustrative purposes only. Lot dimensions and areas subject to detailed design at subdivision stage.
4.	POS/Stormwater retention areas indicative only.
5.	All service information provided by relevant agencies.
6.	This plan is prepared using information provided by Landgate. The data extracted from Geospatial Databases is intended for informational purposes only.
7.	Survey Data: Quantum Surveys Ref: 22517

LEGEND			
	- SUBJECT LAND BOUNDARY		- NBN ALIGNMENT
	- PROPOSED CADASTRAL		- SEWER ALIGNMENT
	- WATER ALIGNMENT		- SEWER ALIGNMENT
	- SEWERAGE EASEMENT		- POWERLINE



TITLE: INDICATIVE SUBDIVISION LAYOUT PLAN LOT 2349 ON DEPOSITED PLAN 213800 GUARA DRIVE, SUNSET BEACH	CLIENT: SUNSET BEACH ESTATE PTY LTD		 LANDWEST URBAN AND RURAL PLANNING CONSULTANTS	8 Anzac Terrace Geraldton WA 6530 PO BOX 1597 Geraldton WA 6531 Email : info@landwest.net.au Phone : (08) 9965 0550 Fax : (08) 9965 0559	REV:	DATE:	DETAILS:	BY:	APPROVED:
	CERTIFICATE OF TITLE(S) : 4027/642	DATE LAST MODIFIED: 27/11/2023			APPROVED:	PLAN: 23130-01-F			
	SCALE: 1:1250 @A3				DESIGNED:	GMB	DRAWN:	DW	

* This plan remains the property of Landwest and must not be used for any purpose other than which it was prepared for, in relation to the land duly described. Landwest accepts no responsibility for any losses or damages caused to any person/s who may use the information for a purpose for which it was not intended.

Appendix C

To: Jenny Petersen
Phone: Not Supplied
Fax: Not Supplied
Email: jennyp@quantumsurveys.com.au

Dial before you dig Job #:	34295478	 DIAL BEFORE YOU DIG www.1100.com.au
Sequence #	225157381	
Issue Date:	28/05/2023	
Location:	6 Nyrang Road , Sunset Beach , WA , 6530	

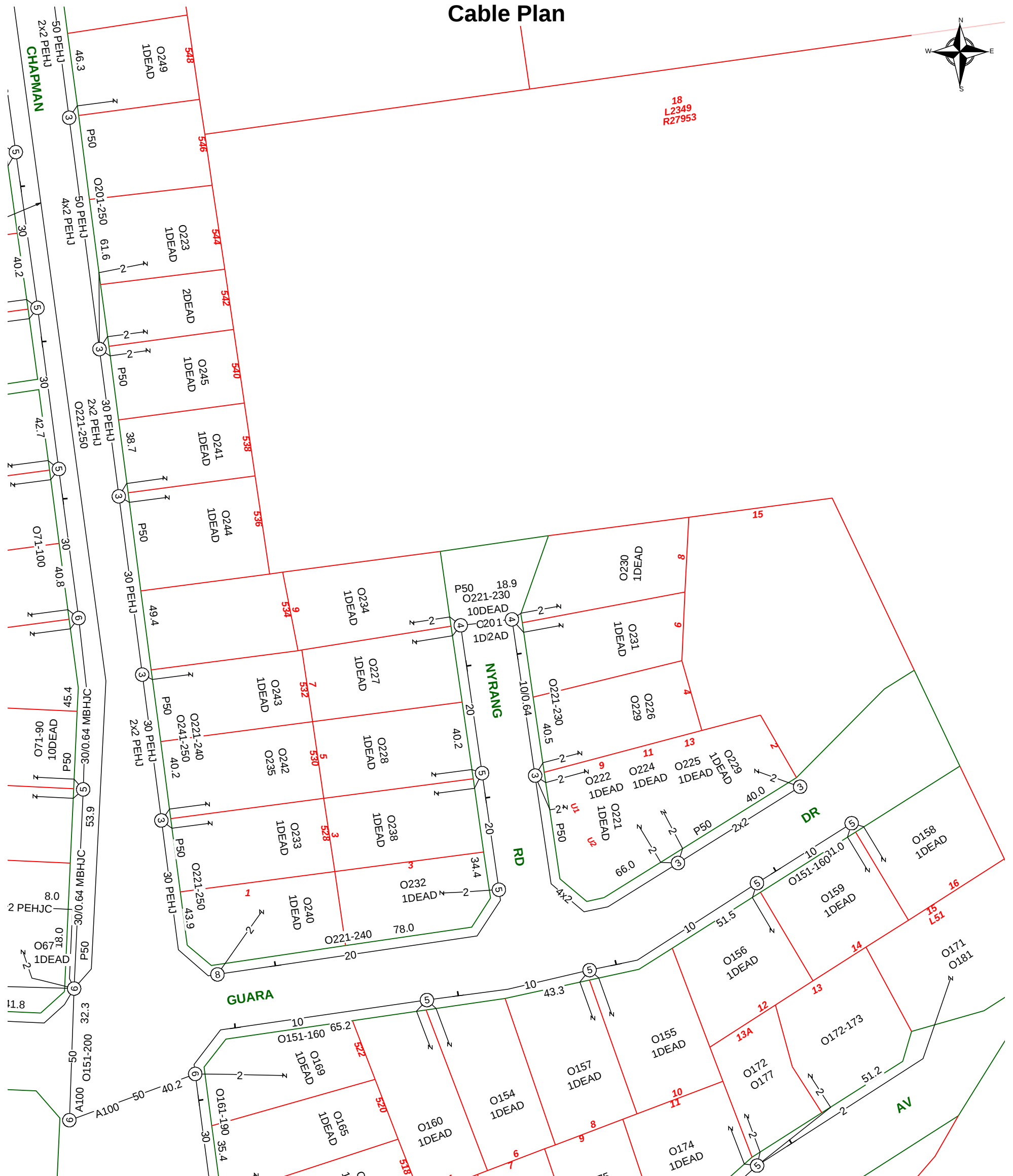
Indicative Plans



LEGEND



	Parcel and the location
	Pit with size "5"
	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.
	2 Direct buried cables between pits of sizes, "5" and "9" are 10.0m apart.
	Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables.
	Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables.
	Trench containing any INSERVICE/CONSTRUCTED (Power) cables.
	Road and the street name "Broadway ST"
Scale	0 20 40 60 Meters 1:2000 1 cm equals 20 m

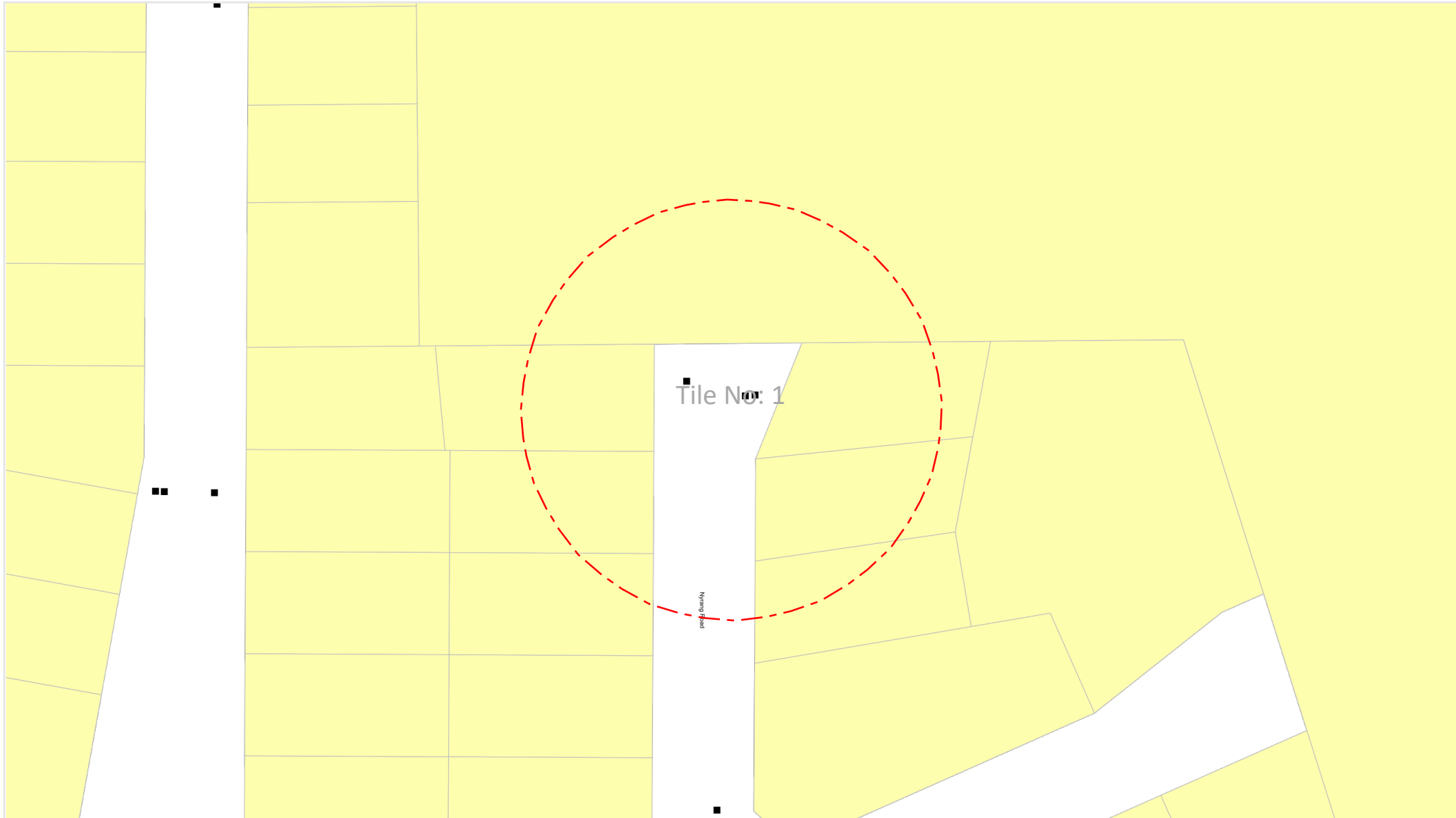


Sequence Number: 225157384

TELSTRA LIMITED A.C.N. 086 174 781

Generated On 29/05/2023 09:05:43

See the Steps- Telstra Duty of Care that was provided in the email response.



Legend | Scale: 1:1000



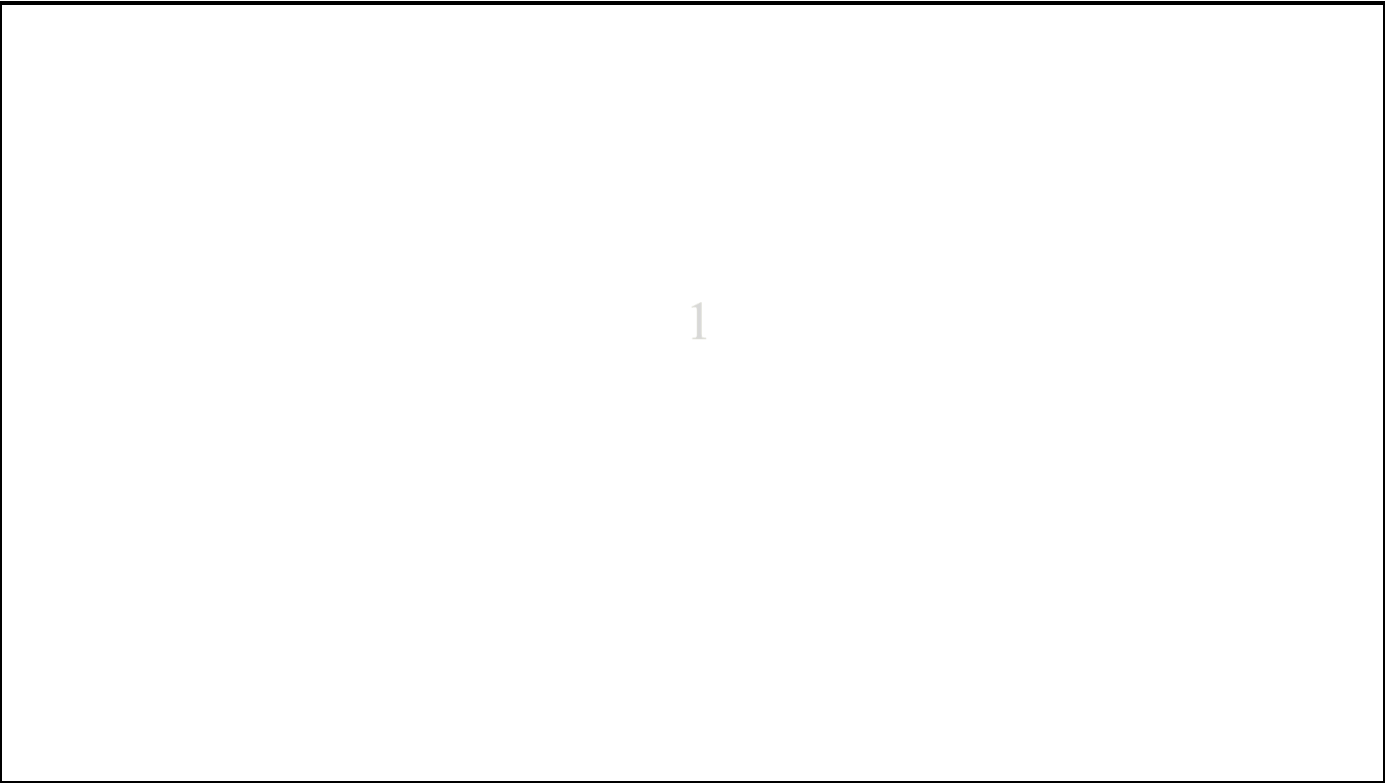
Refer to Legend in attached City of Greater Geraldton Requirements

DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither City of Greater Geraldton or PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

To: Jenny Petersen
Phone: Not Supplied
Fax: Not Supplied
Email: jennyp@quantumsurveys.com.au

Dial before you dig Job #:	34295487	 DIAL BEFORE YOU DIG www.1100.com.au
Sequence #	225157434	
Issue Date:	28/05/2023	
Location:	16 Guara Drive , Sunset Beach , WA , 6530	

Indicative Plans

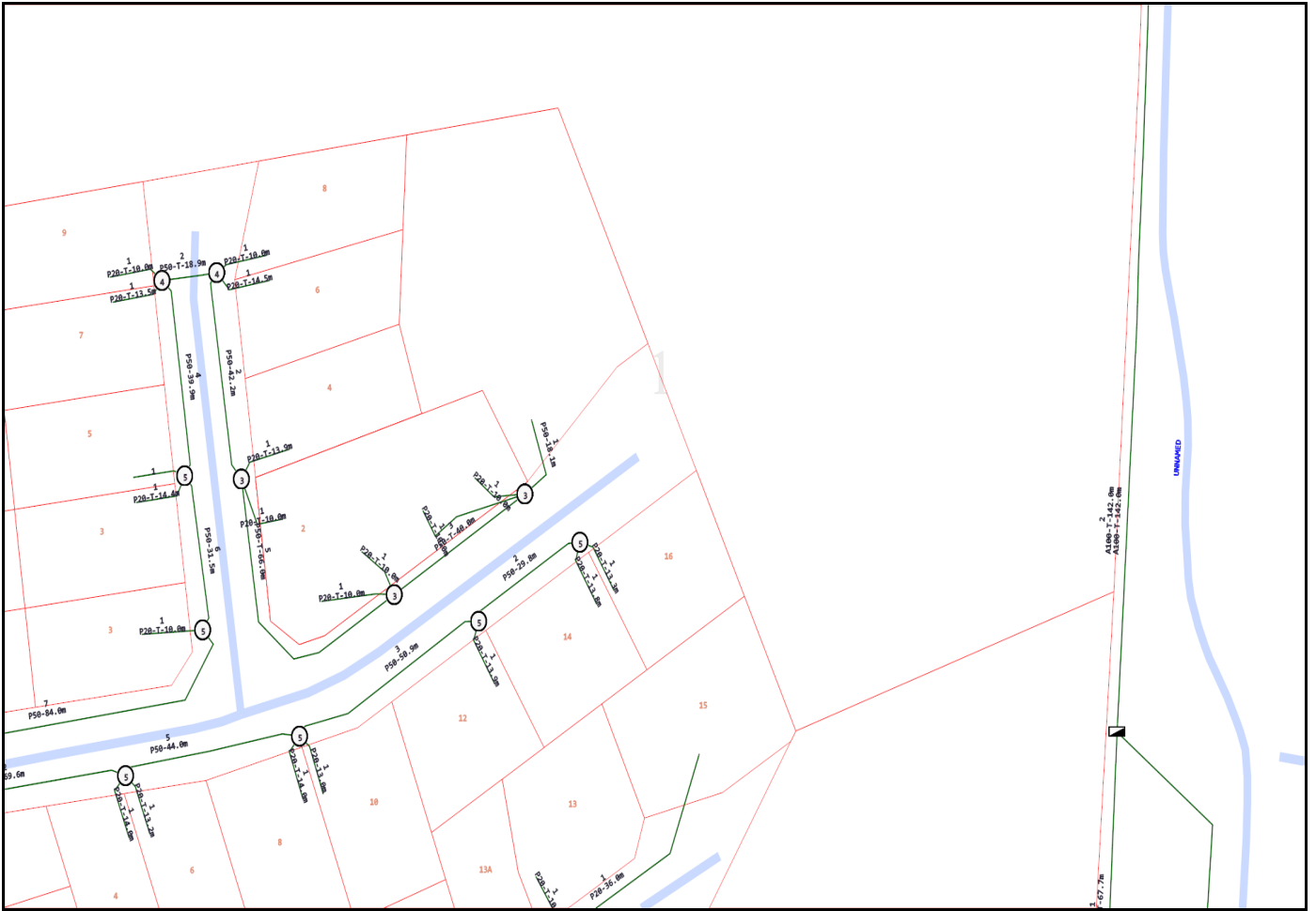




LEGEND



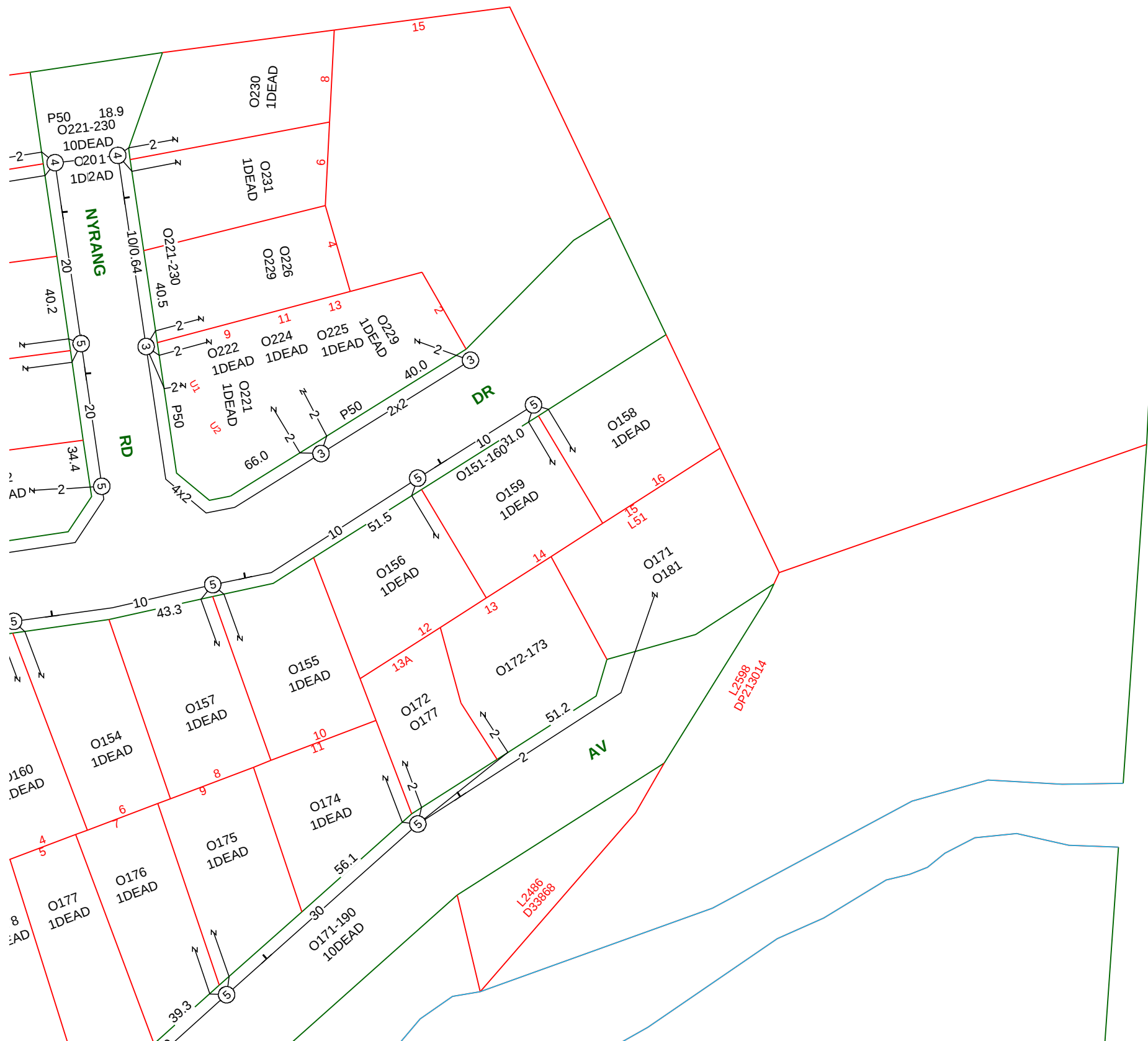
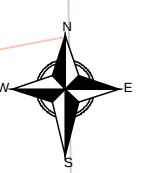
	Parcel and the location
	Pit with size "5"
	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.
	2 Direct buried cables between pits of sizes, "5" and "9" are 10.0m apart.
	Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables.
	Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables.
	Trench containing any INSERVICE/CONSTRUCTED (Power) cables.
	Road and the street name "Broadway ST"
Scale 	0 20 40 60 Meters 1:2000 1 cm equals 20 m



Emergency Contacts

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

Cable Plan



Report Damage: <https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment>
Ph - 13 22 03
Email - Telstra.Plans@team.telstra.com
Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries

TELSTRA LIMITED A.C.N. 086 174 781

Generated On 29/05/2023 09:06:03

Sequence Number: 225157437

CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.

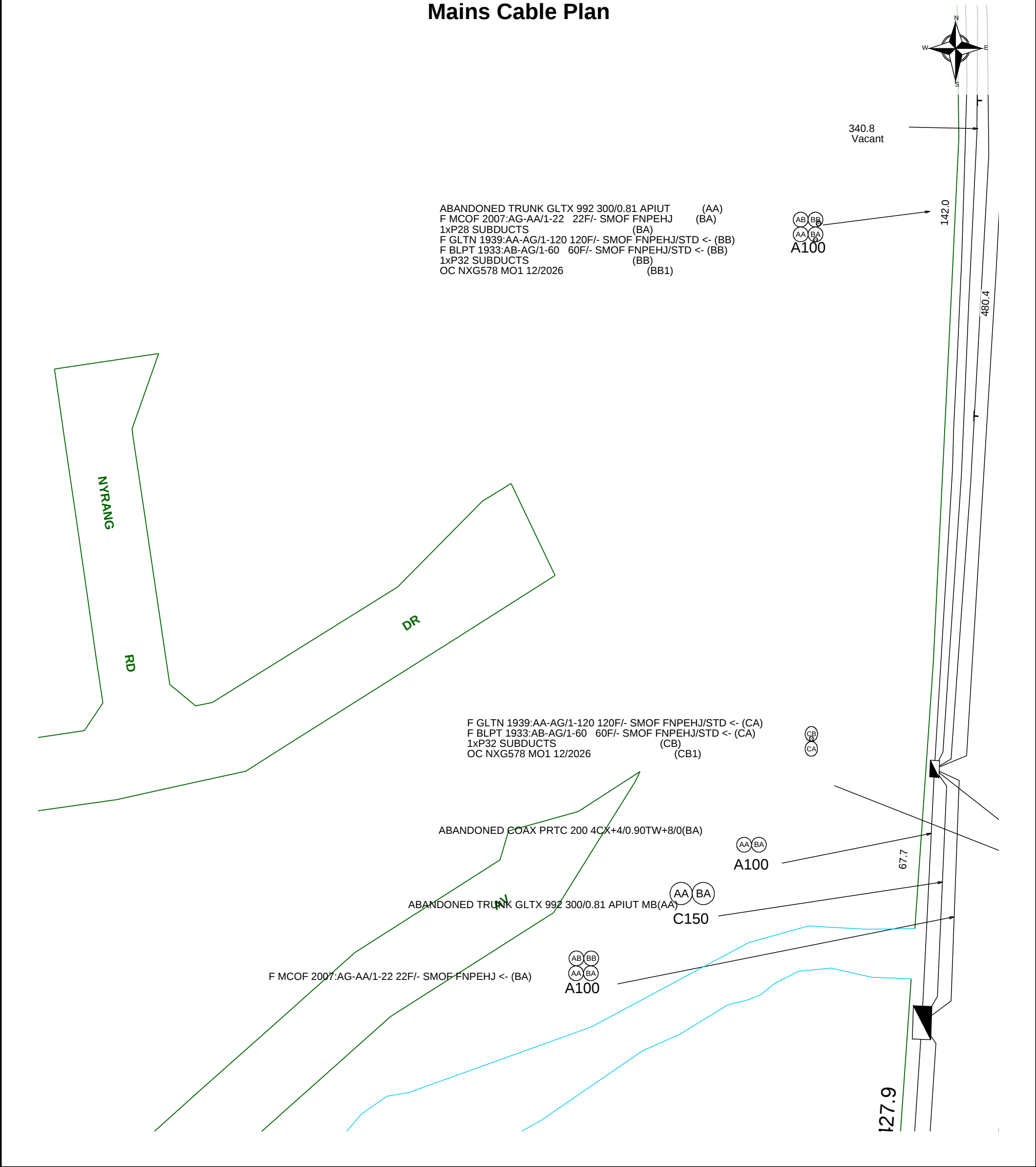
The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING

Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy. Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work. A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

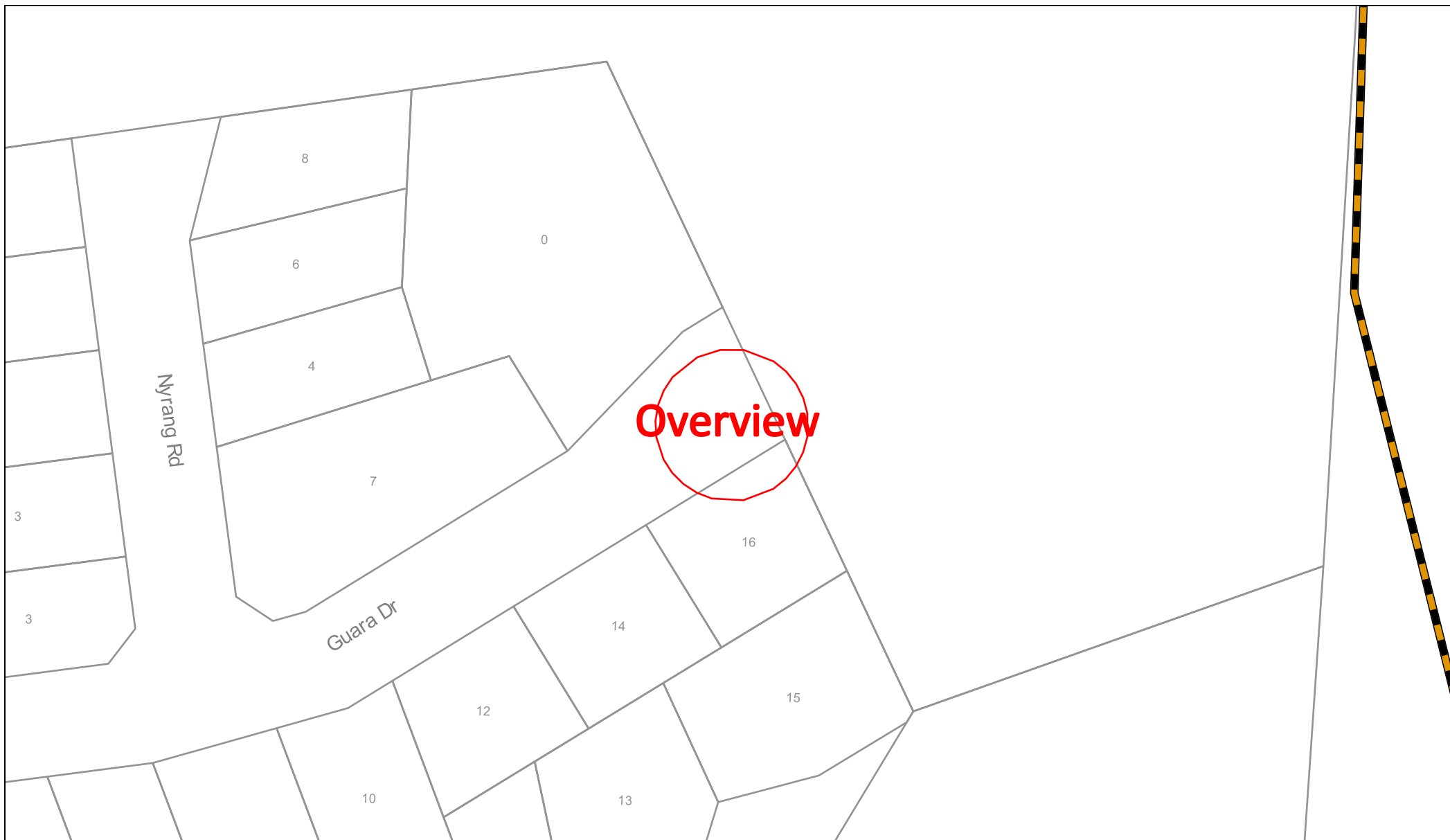
Mains Cable Plan



	Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment Ph - 13 22 03 Email - Telstra.Plans@team.telstra.com Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries	Sequence Number: 225157437
	TELSTRA LIMITED A.C.N. 086 174 781	CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.
	Generated On 29/05/2023 09:06:04	

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy. Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work. A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.



Sequence Number: 225157438

Date: 29/05/2023

DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL NEXTGEN. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIAL SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM NEXTGEN PTY LTD.



LEGEND

Digsite



Area

Assets



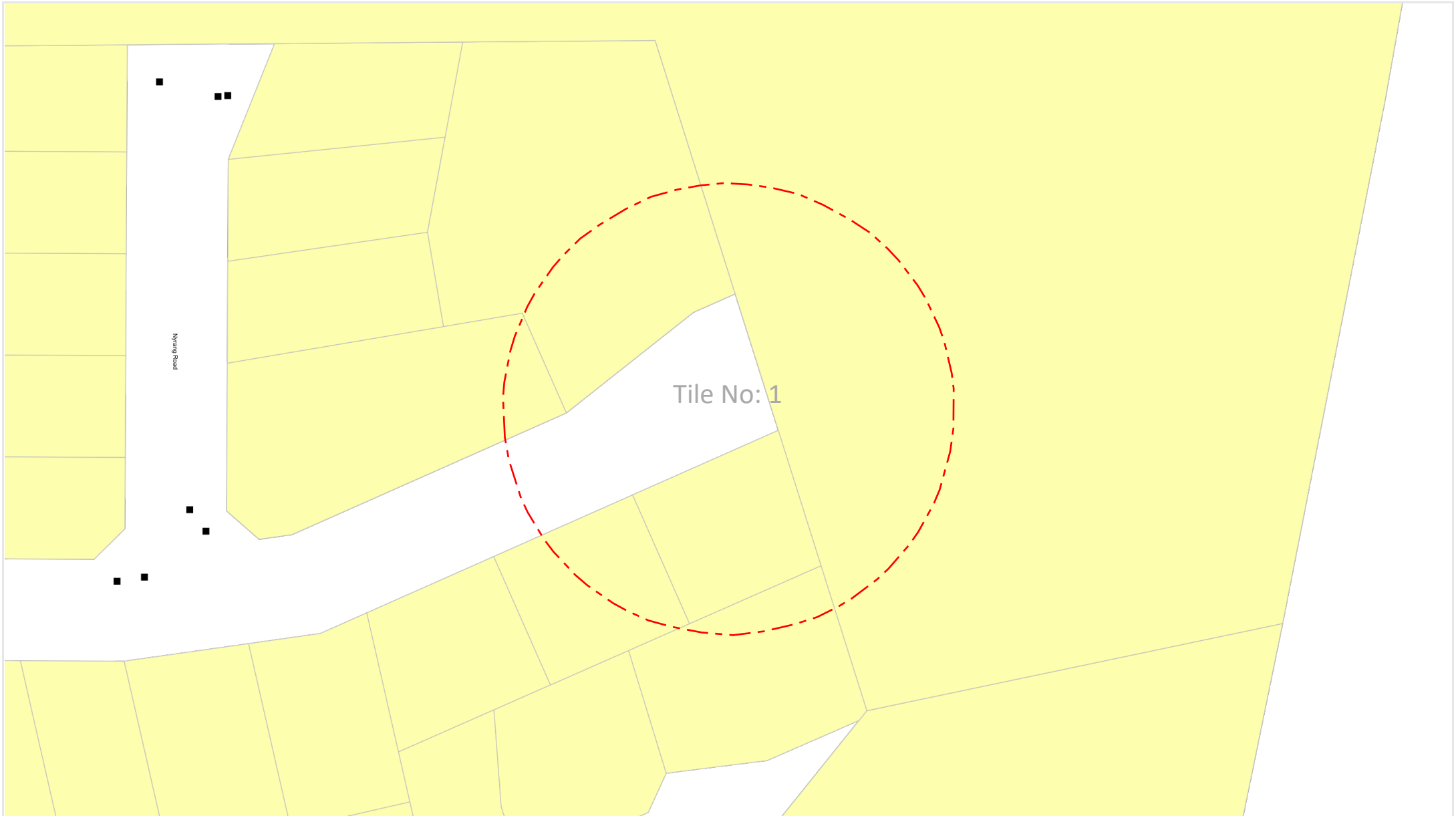
Cable



3rd Party Duct



Marker Post



Legend | Scale: 1:1000



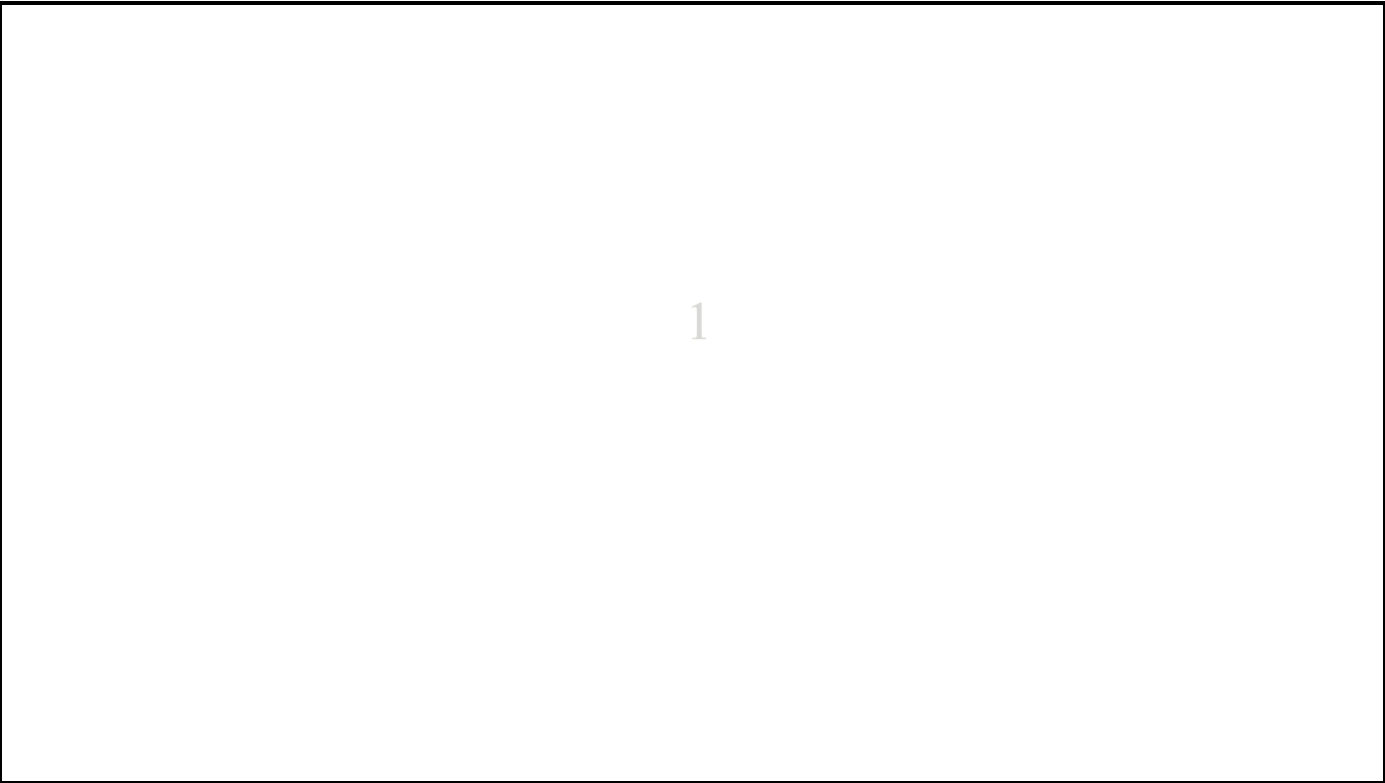
Refer to Legend in attached City of Greater Geraldton Requirements

DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither City of Greater Geraldton or PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.

To: Jenny Petersen
Phone: Not Supplied
Fax: Not Supplied
Email: jennyp@quantumsurveys.com.au

Dial before you dig Job #:	34295494	 DIAL BEFORE YOU DIG www.1100.com.au
Sequence #	225157480	
Issue Date:	28/05/2023	
Location:	13 Park Avenue , Sunset Beach , WA , 6530	

Indicative Plans

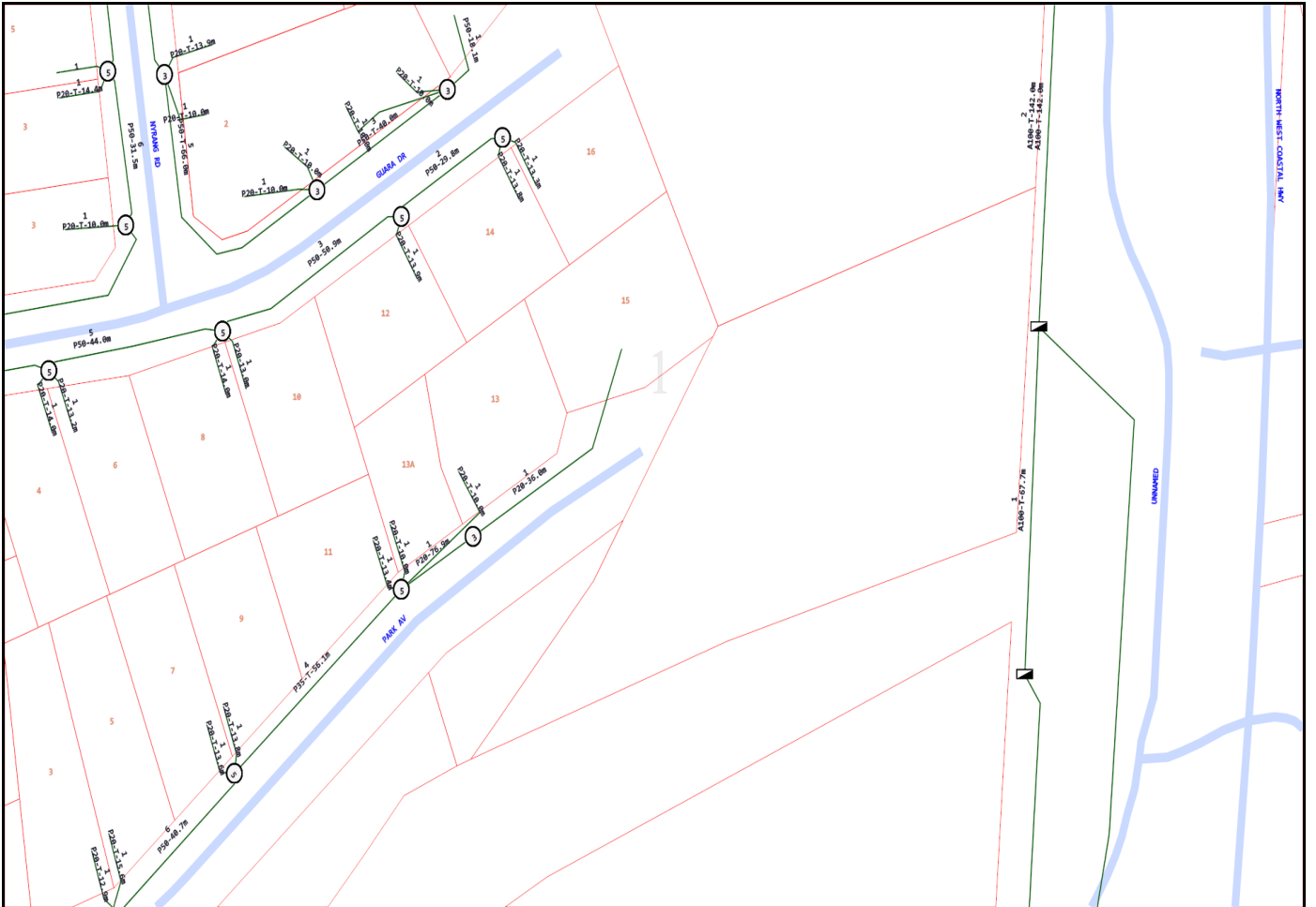




LEGEND



	Parcel and the location
	Pit with size "5"
	Power Pit with size "2E". Valid PIT Size: e.g. 2E, 5E, 6E, 8E, 9E, E, null.
	Manhole
	Pillar
	Cable count of trench is 2. One "Other size" PVC conduit (PO) owned by Telstra (-T-), between pits of sizes, "5" and "9" are 25.0m apart. One 40mm PVC conduit (P40) owned by NBN, between pits of sizes, "5" and "9" are 20.0m apart.
	2 Direct buried cables between pits of sizes, "5" and "9" are 10.0m apart.
	Trench containing any INSERVICE/CONSTRUCTED (Copper/RF/Fibre) cables.
	Trench containing only DESIGNED/PLANNED (Copper/RF/Fibre/Power) cables.
	Trench containing any INSERVICE/CONSTRUCTED (Power) cables.
	Road and the street name "Broadway ST"
Scale	0 20 40 60 Meters 1:2000 1 cm equals 20 m



Emergency Contacts

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

Cable Plan



Report Damage: <https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment>
Ph - 13 22 03
Email - Telstra.Plans@team.telstra.com
Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries

TELSTRA LIMITED A.C.N. 086 174 781

Generated On 29/05/2023 09:06:16

Sequence Number: 225157483

CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.

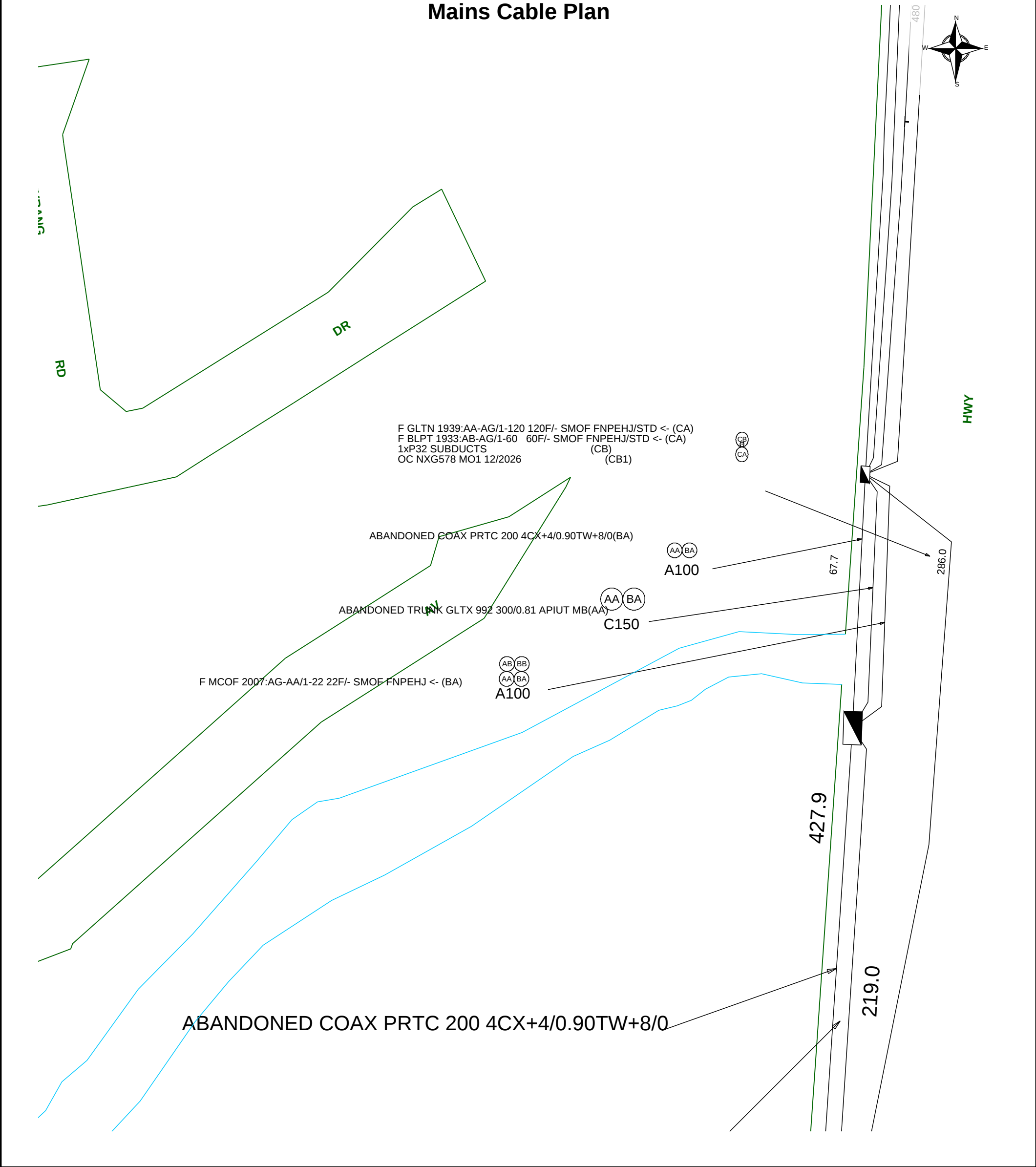
The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING

Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy. Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work. A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.

Mains Cable Plan



	Report Damage: https://service.telstra.com.au/customer/general/forms/report-damage-to-telstra-equipment Ph - 13 22 03 Email - Telstra.Plans@team.telstra.com Planned Services - ph 1800 653 935 (AEST bus hrs only) General Enquiries	Sequence Number: 225157483
	TELSTRA LIMITED A.C.N. 086 174 781	CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.
	Generated On 29/05/2023 09:06:18	

WARNING
Telstra plans and location information conform to Quality Level "D" of the Australian Standard AS 5488-Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. The exact position of Telstra assets can only be validated by physically exposing it. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy. Further on site investigation is required to validate the exact location of Telstra plant prior to commencing construction work. A Certified Locating Organisation is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works.

See the Steps- Telstra Duty of Care that was provided in the email response.



Sequence Number: 225157484

Date: 29/05/2023

DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL NEXTGEN. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIAL SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM NEXTGEN PTY LTD.



LEGEND

Digsite



Area

Assets



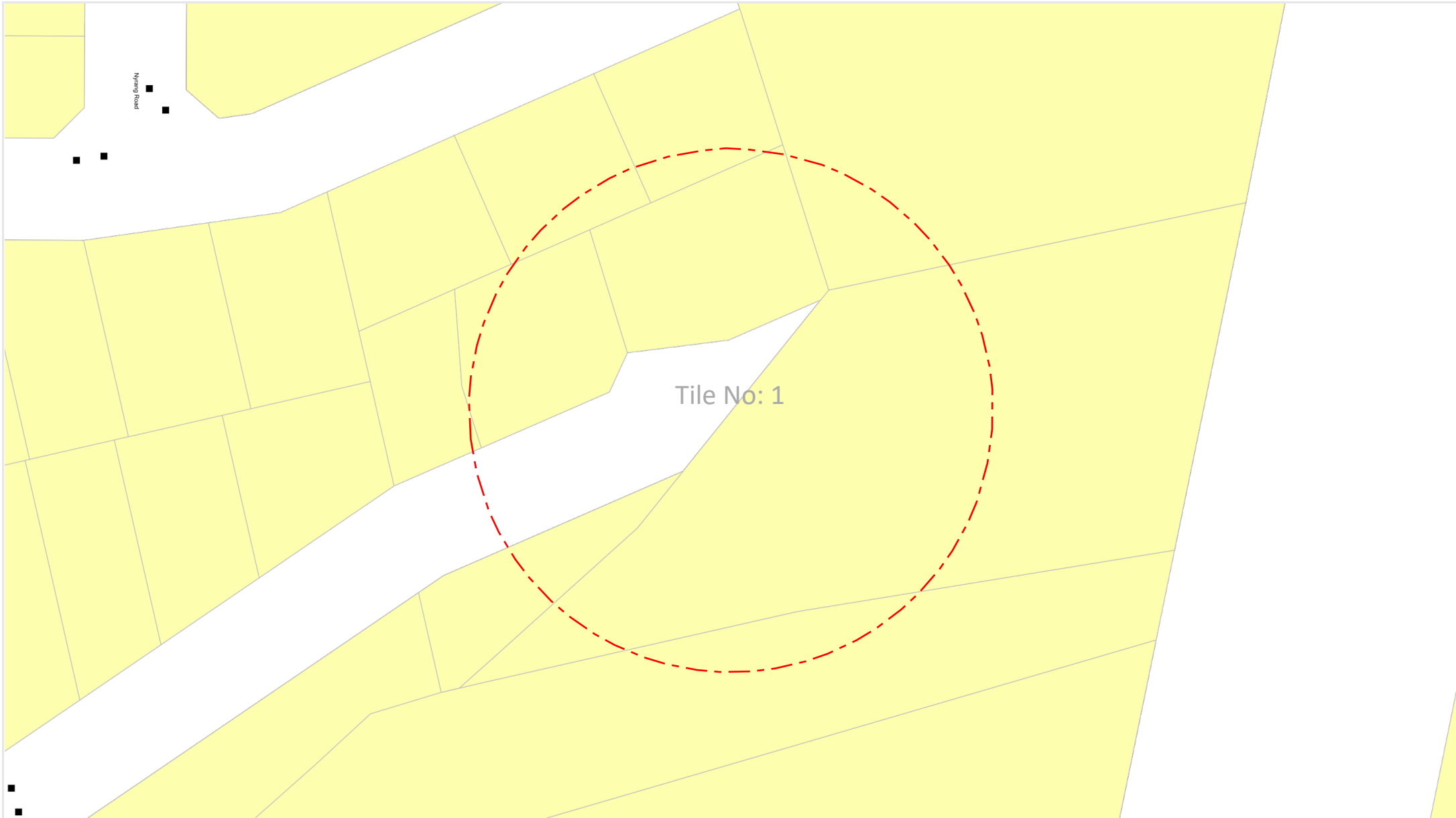
Cable



3rd Party Duct



Marker Post

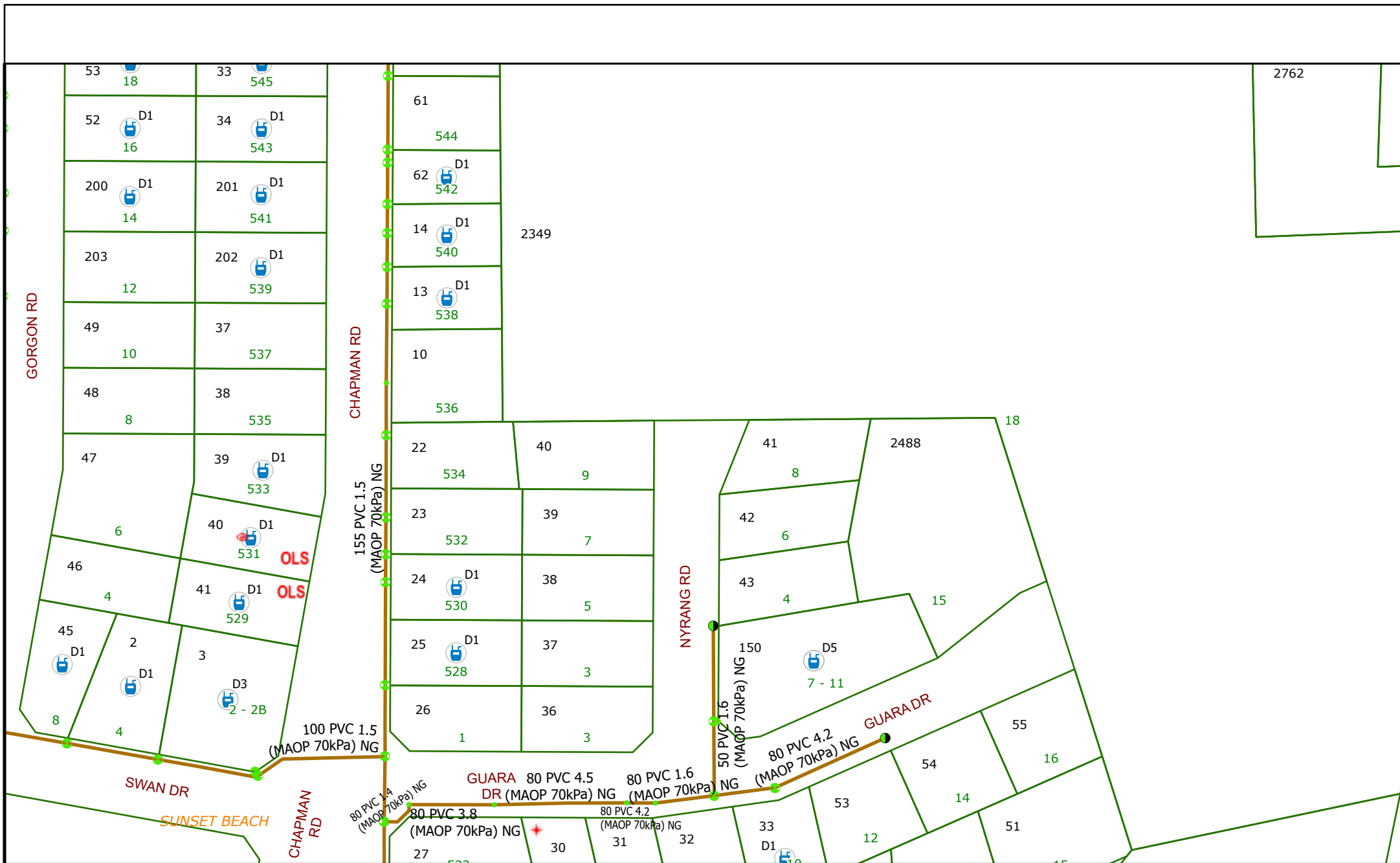


Legend | Scale: 1:1000



Refer to Legend in attached City of Greater Geraldton Requirements

DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither City of Greater Geraldton or PelicanCorp shall have any liability whatsoever in relation to any loss, damage, cost or expense arising from the use of this plan response or the information contained in it or the completeness or accuracy of such information. Use of such information is subject to and constitutes acceptance of these terms.



Sequence No: 225157383

Map Tile: 1

Scale: 1:1500

© ATCO Gas Australia Pty Ltd
ABN 90 089 531 975

Job No: 34295478

Date: 29/05/2023

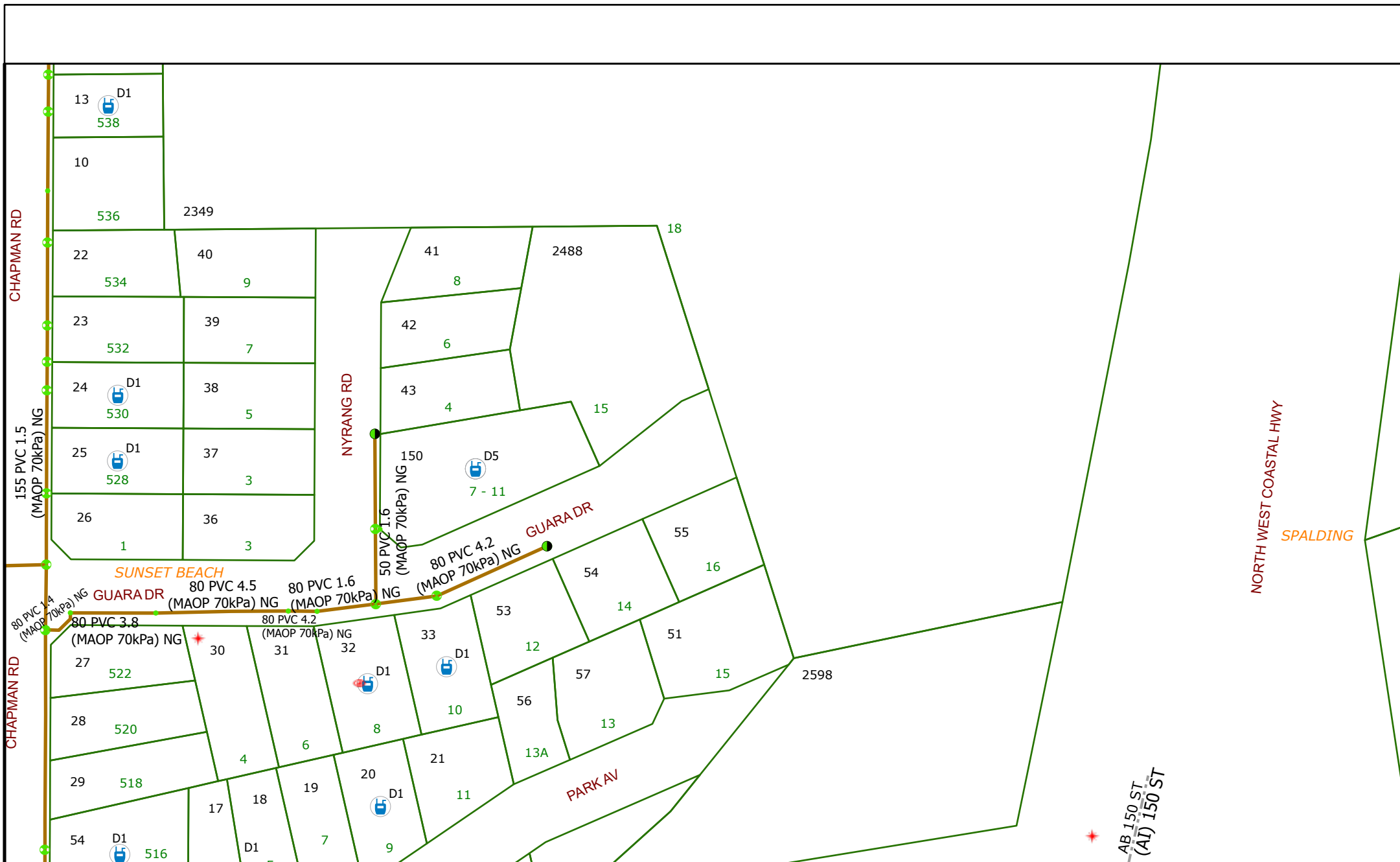
Location: 6 Nyrang Road, Sunset Beach 6530

Please read all **warnings**, conditions and information on the attached "Underground Asset Details" information sheet. This plan is issued subject to that information and those conditions and **warnings** (including, but not limited to, the "NO HOT WORKS" warning). Plans are current for only **30 days** from date of request, indicative only and not warranted to be accurate. It is your responsibility to carefully locate underground assets and follow safe work practises and procedures (eg pot-holing). ATCO Gas Australia will seek compensation for damage caused to assets.

© Western Australian Land Information Authority trading as Landgate
Based on information provided by and with the permission of the
Western Australian Land Information Authority trading as Landgate



ATCO



Sequence No: 225157436

Map Tile: 1

Scale: 1:1500

© ATCO Gas Australia Pty Ltd
ABN 90 089 531 975

Job No: 34295487

Date: 29/05/2023

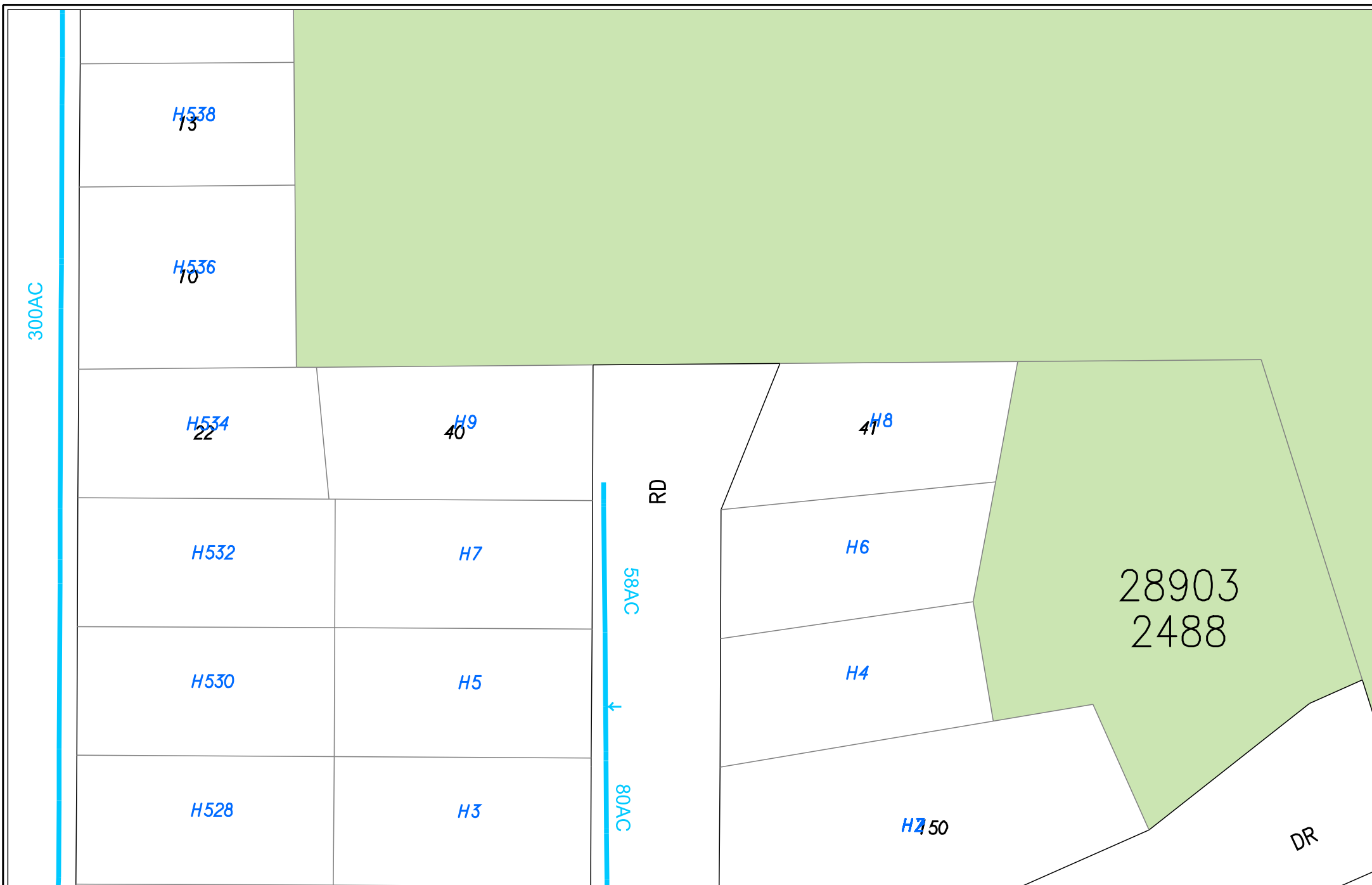
Location: 16 Guara Drive, Sunset Beach 6530

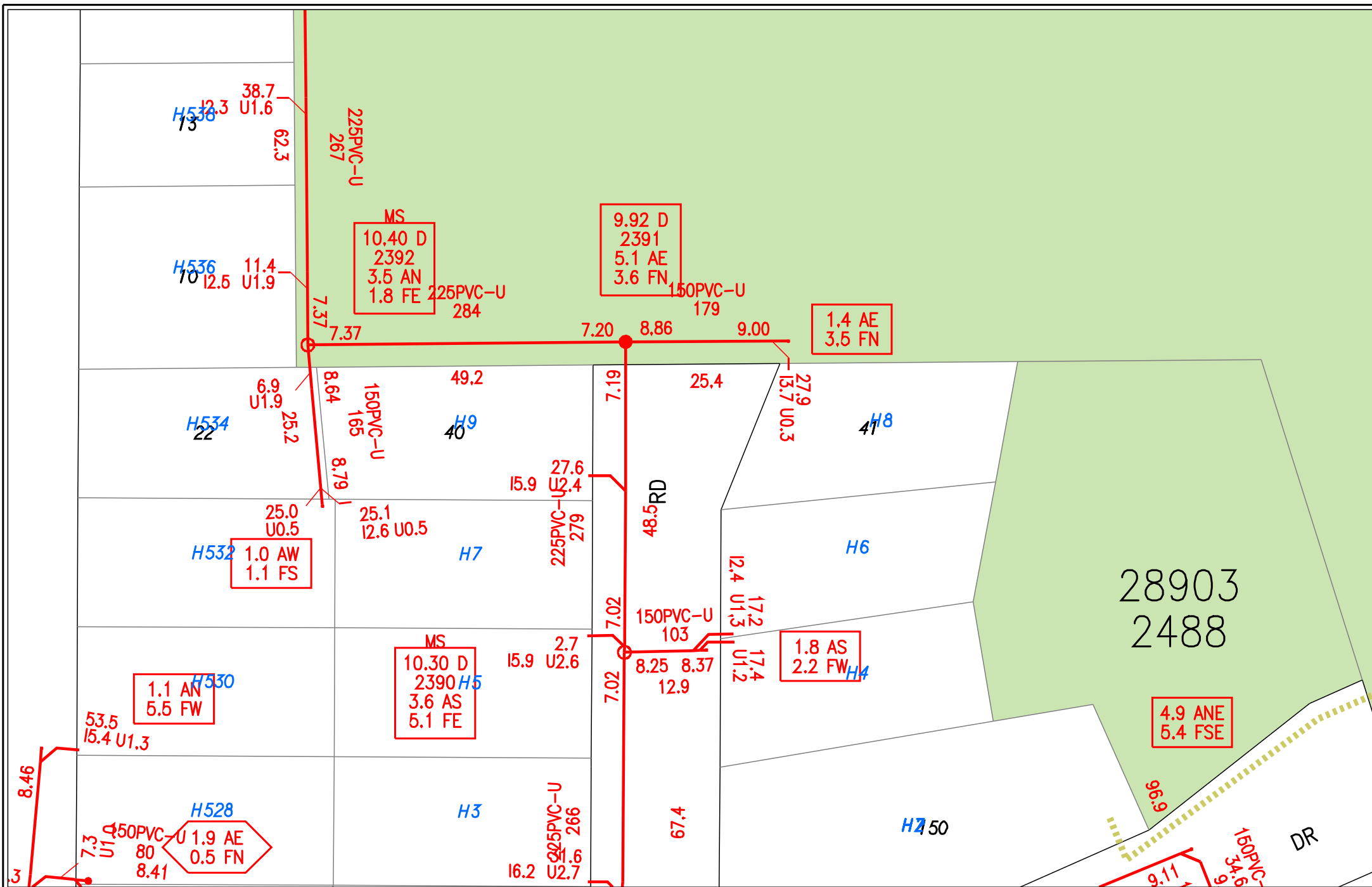
Please read all **warnings**, conditions and information on the attached "Underground Asset Details" information sheet. This plan is issued subject to that information and those conditions and **warnings** (including, but not limited to, the "NO HOT WORKS" warning). Plans are current for only **30 days** from date of request, indicative only and not warranted to be accurate. It is your responsibility to carefully locate underground assets and follow safe work practises and procedures (eg pot-holing). ATCO Gas Australia will seek compensation for damage caused to assets.

© Western Australian Land Information Authority trading as Landgate
Based on information provided by and with the permission of the
Western Australian Land Information Authority trading as Landgate



ATCO





Scale: 1:750

Centre Point: 114.628°, -28.727°

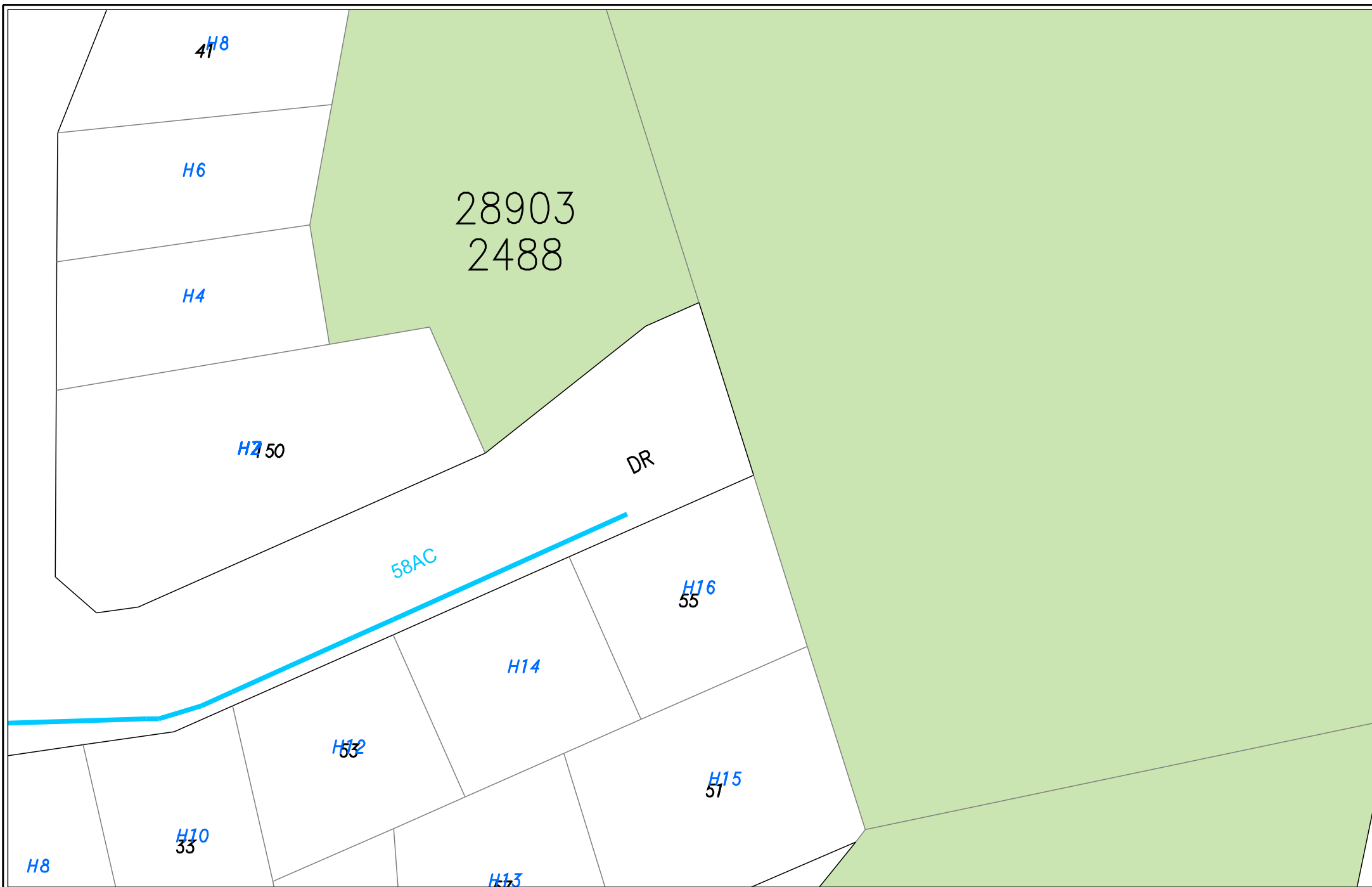
Sequence No: 225157382

Print Date: 29/05/2023 Page: 1 of 1

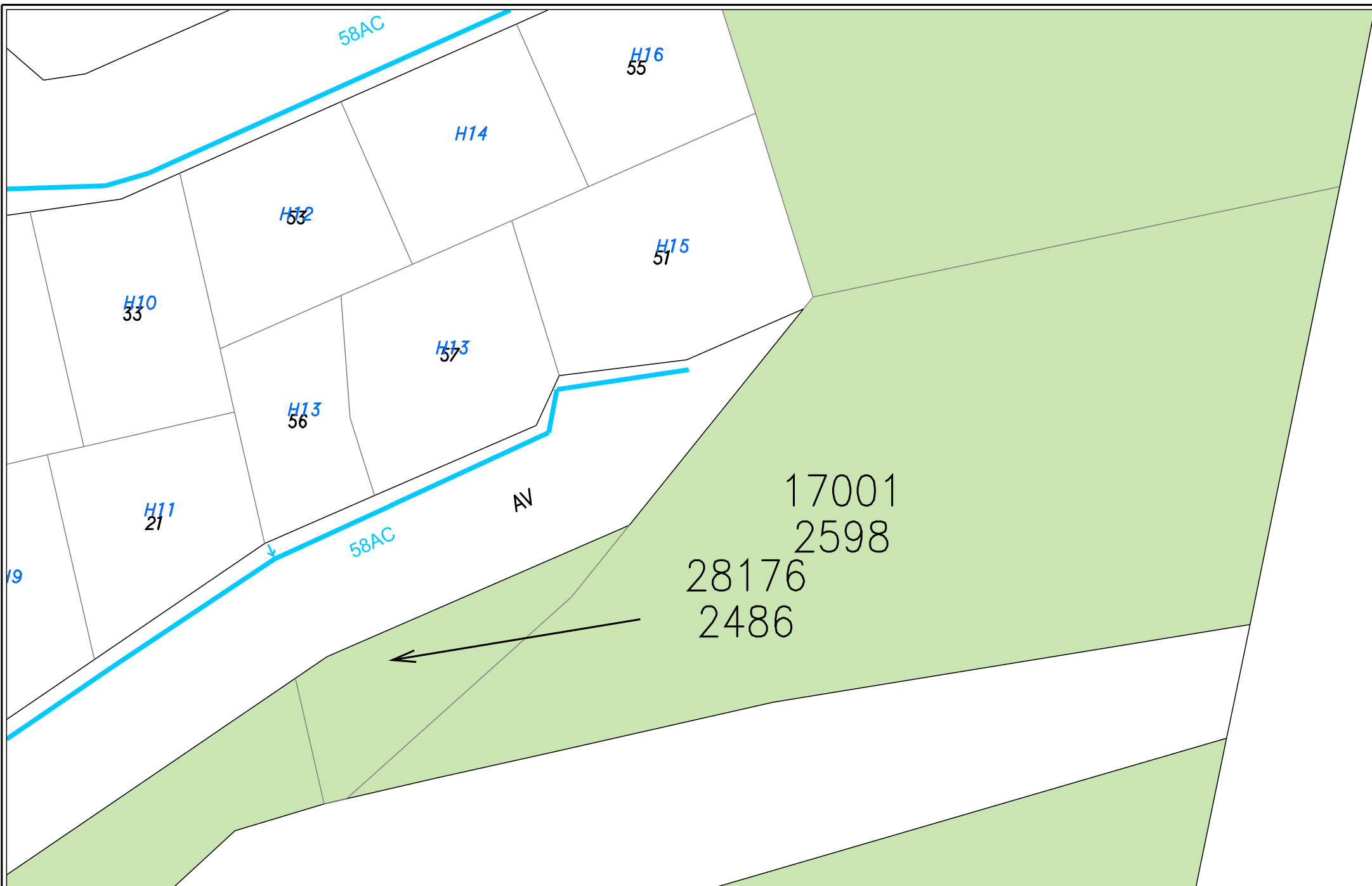


WARNING - CRITICAL PIPELINE
Refer to Information Brochure Damage Prevention and Legend for details

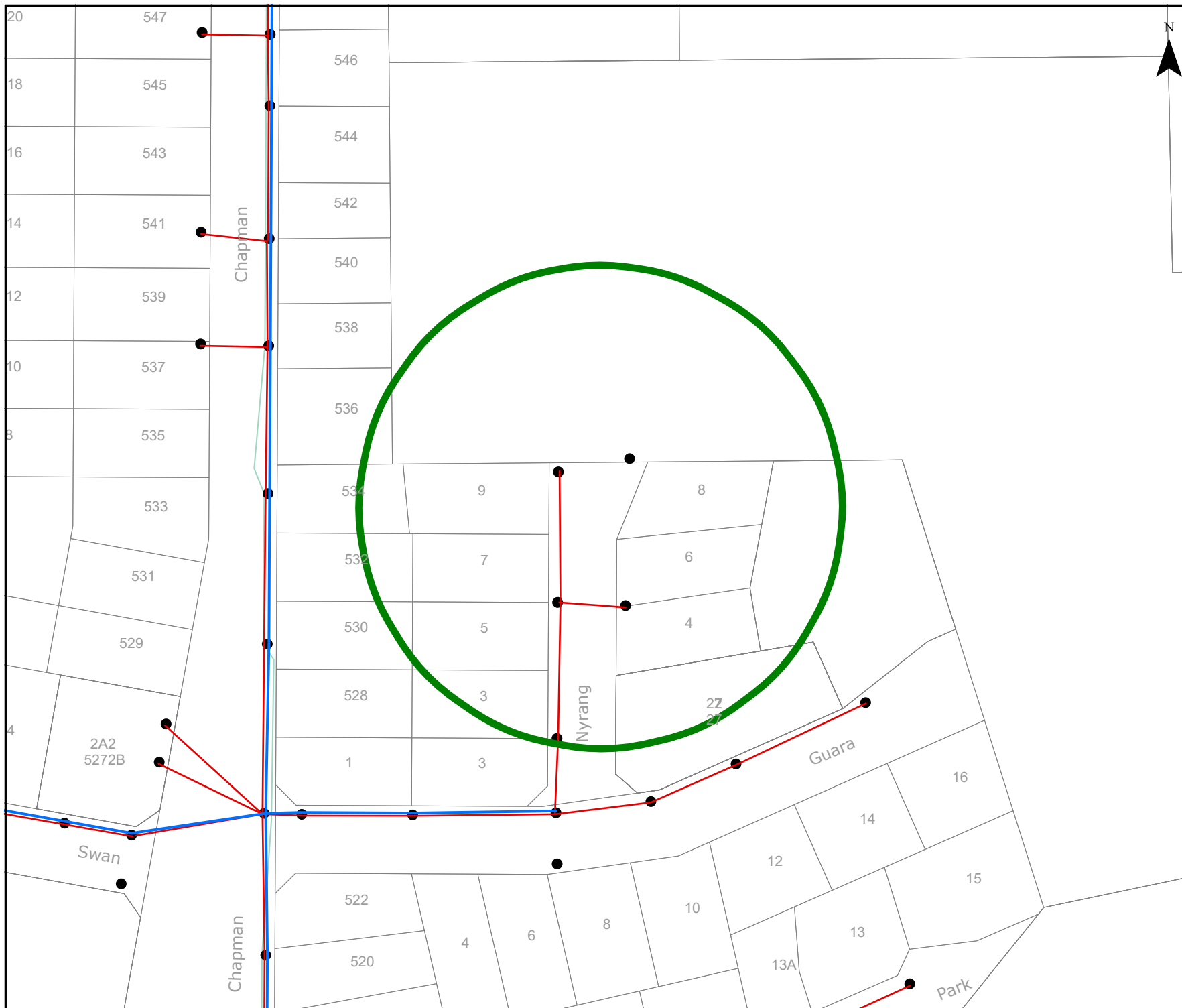
The Water Corporation has taken due care in the preparation of this map but accepts no responsibility for any inaccuracies or inappropriate use. This plan may be reproduced in its entirety for the purpose of site work planning but shall not otherwise be altered or published in any form without the permission of the Water Corporation. The Water Corporation may need to be advised of any planned ground disturbing activities near facilities on this map. Refer to Brochure - "Protecting Buried Pipelines". Please report any inaccuracies to Asset Registration Team by email to asset.registration@watercorporation.com.au.











OVERHEAD LEGEND

Structures	
● Power Pole	■ Transmission Poles

Transmission Overhead Powerline	
Transmission (33kV - 330kV)	

Distribution Overhead Powerline	
High Voltage (1kV - 33kV)	
Low Voltage (< 1kV)	

Proposed Construction Assets	
Design Area *	
High Voltage Overhead Powerline	
Low Voltage Overhead Powerline	
Power Pole	

Communications Assets	
Overhead Pilot Cable	

Feature	
Area of Interest	

*** Please refer to coversheet**

Privately owned cables NOT SHOWN (including house services)

This map is **INDICATIVE ONLY**.
Check that you have enough clearance from the **DANGER ZONES** near overhead powerlines.

Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30

Information valid for 30 days from date of issue

A4 | Scale : 1:1500

WARNING! Look out for overhead power lines



OVERHEAD LEGEND

Structures

- Power Pole
- Transmission Poles

Transmission Overhead Powerline

- Transmission (33kV - 330kV)

Distribution Overhead Powerline

- High Voltage (1kV - 33kV)
- Low Voltage (< 1kV)

Proposed Construction Assets

- Design Area *
- High Voltage Overhead Powerline
- Low Voltage Overhead Powerline
- Power Pole

Communications Assets

- Overhead Pilot Cable

Feature

- Area of Interest

*** Please refer to coversheet**

**Privately owned cables NOT SHOWN
(including house services)**

This map is **INDICATIVE ONLY**.
Check that you have enough
clearance from the **DANGER ZONES**
near overhead powerlines.

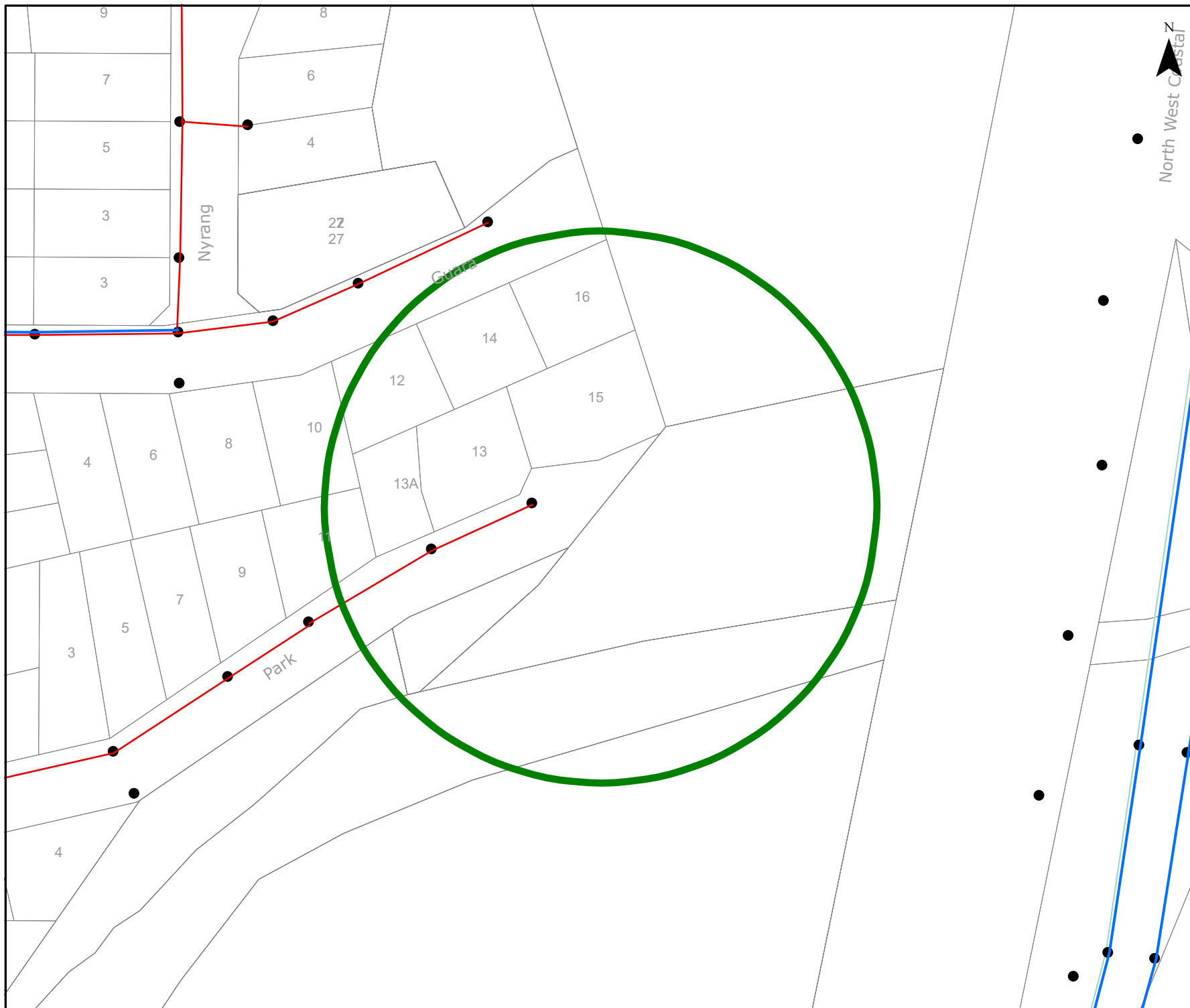
Telephone Support: 1300 769 345
Mon to Fri - 08:00 to 16:30

Information valid for 30 days
from date of issue

A4

Scale : 1:1500

**WARNING! Look out for
overhead power lines**





OVERHEAD LEGEND

Structures

● Power Pole

■ Transmission Poles

Transmission Overhead Powerline

Transmission (33kV - 330kV)

Distribution Overhead Powerline

High Voltage (1kV - 33kV)

Low Voltage (< 1kV)

Proposed Construction Assets

Design Area *

High Voltage Overhead Powerline

Low Voltage Overhead Powerline

Power Pole

Communications Assets

Overhead Pilot Cable

Feature

Area of Interest

* Please refer to coversheet

Privately owned cables NOT SHOWN (including house services)

This map is INDICATIVE ONLY. Check that you have enough clearance from the DANGER ZONES near overhead powerlines.

Telephone Support: 1300 769 345 Mon to Fri - 08:00 to 16:30

Information valid for 30 days from date of issue

A4

Scale : 1:1500

WARNING! Look out for overhead power lines

Appendix D

Joe Reilly

From: Jordan Hodge <Jordan.Hodge@watercorporation.com.au>
Sent: Wednesday, 20 September 2023 1:38 PM
To: Larry Silvia
Cc: Joe Reilly
Subject: RE: Land Development - lot 2349 Guara Drive Sunset Beach (SF0009662)

Hi Larry

Just note, we only provide services (water meter and sewer junction) to the boundary of the parent title (freehold lot). Internal plumbing would be private plumbing, the developer to ensure each strata lot has access to these services.

I don't think the overall dwelling yield increases that much over the small area.

Regards

Jordan Hodge
Team Leader – Greenfields Development
Development Services

Assets Planning & Delivery Group

E Jordan.Hodge@watercorporation.com.au
T (08) 9420 2332
P PO Box 100, Leederville, WA 6902



watercorporation.com.au

.....



From: Larry Silvia <silvia4747@icloud.com>
Sent: Wednesday, 20 September 2023 11:25 AM
To: Jordan Hodge <Jordan.Hodge@watercorporation.com.au>
Cc: Joe Reilly <joe@buabua.com.au>
Subject: Re: Land Development - lot 2349 Guara Drive Sunset Beach (SF0009662)

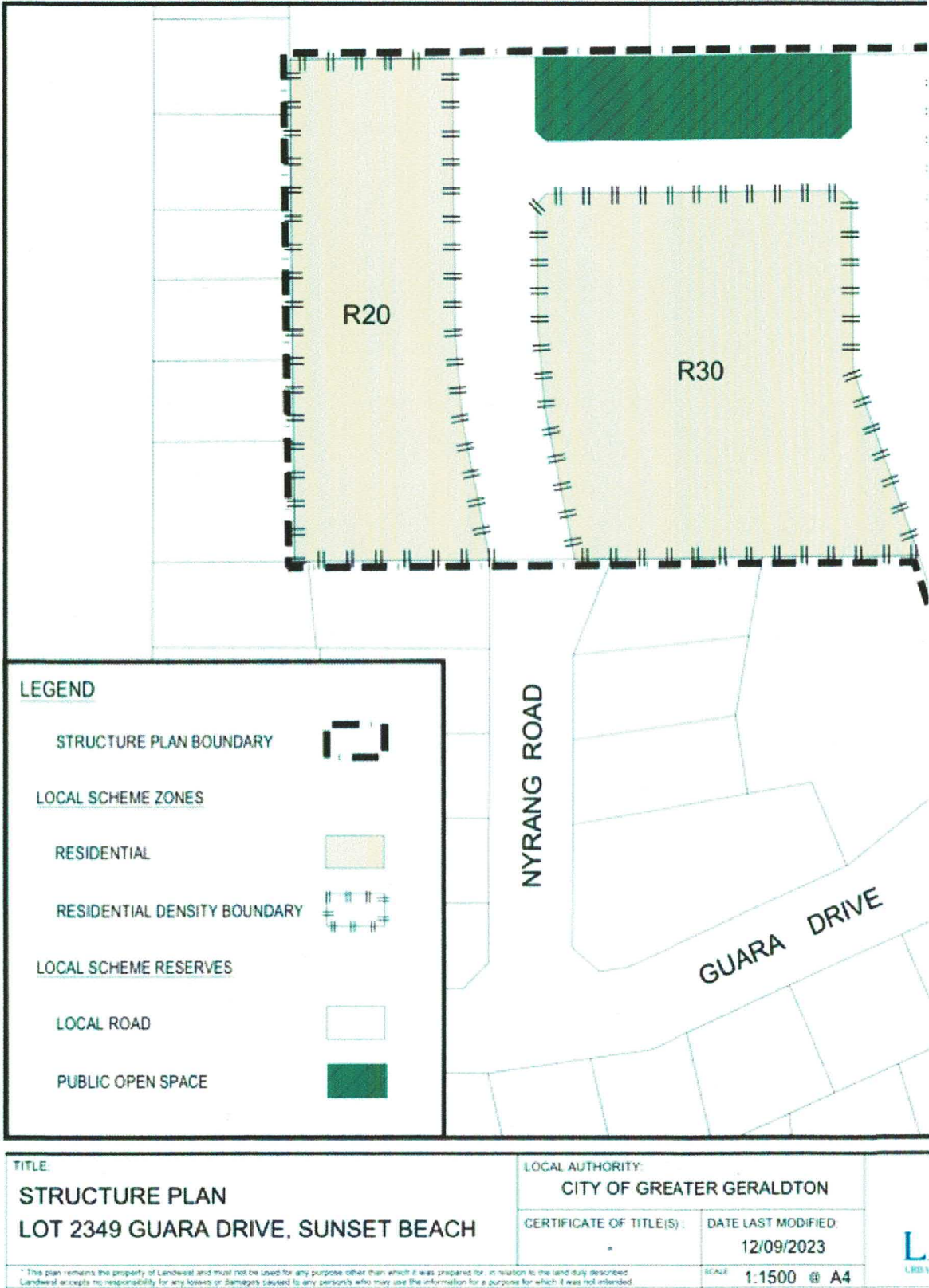
Hi Jordan

Thanks for that.

The client is considering a grouped housing site, which would be located in the R30 section as indicated on the attached plan. Size and number of units have not been discussed as yet.

Do you have any comment about that?

Regards



On Sep 20, 2023, at 11:11 AM, Jordan Hodge <Jordan.Hodge@watercorporation.com.au> wrote:

Hi Larry

The sewer design shall comply and follow the design principles outlined in [Design Standard DS50](#).

Without compromising the planning, the design meets the fundamental objectives of:

1. minimising sizing, depth and length of mains
2. considers finished surface levels in relation to cover on mains
3. connections to existing works have been appropriately designed (i.e. flow to flow where required)
4. applies standard alignments OR proposed non-standard alignments have been approved by the alignment owner
5. mains terminate at the extremity of the land (if future extension is applicable)
6. considers the proposed construction technique and/or constraints
7. Water Corporation approval has been sought for any design standard variations
8. isolation of the works have been considered
9. minimising number of access chambers
10. minimising sewers located in private property
11. most appropriate Access Chamber types and running traps have been shown where required
12. all lots served have sewer junctions at a location and depth suitable to correctly serve the lot/s and boundary traps where required.
13. all fill requirements are denoted (i.e. if design based on contours appropriate tolerances have been applied)
14. all sewer grades are within acceptable tolerances
15. clearly notated each pipe type to be used on the plan

Regards

Jordan Hodge
Team Leader – Greenfields Development
Development Services

Assets Planning & Delivery Group

E Jordan.Hodge@watercorporation.com.au
T (08) 9420 2332
P PO Box 100, Leederville, WA 6902

.....



watercorporation.com.au



.....

From: Larry Silvia <silvia4747@icloud.com>
Sent: Wednesday, 20 September 2023 10:53 AM

To: Jordan Hodge <Jordan.Hodge@watercorporation.com.au>
Cc: Joe Reilly <joe@buabua.com.au>
Subject: Re: Land Development - lot 2349 Guara Drive Sunset Beach (SF0009662)

Hi Jordan

Thank you for the information included herein.

Regarding the suggested sewer connection points, would there be a preference as to the flow or lot limits that would be suggested for them respectively.

Thank you for your assistance on this project.

Regards

Larry Silvia
Bua Bua Consulting Engineers

On Aug 4, 2023, at 2:12 PM, Jordan Hodge
<Jordan.Hodge@watercorporation.com.au> wrote:

Hi Larry

Advice has been received as per below:

Water

1. Waggrakine Tank No. 8 has been already decommissioned and Rangeway Tank No.6 is currently feeding the proposed area.
2. The existing 80AC /58AC retic mains along Guara Dr and Nyrang Rd shall be upgraded to DN150 to achieve standard pressures and fire flow requirements.
3. Just confirming the existing DN150AC at the corner of Guara & Chapman isn't connected to the DN300 in Chapman Rd. Proposed connection points should be at the end of the existing 58AC retics along Guara Dr and Nyrang Rd (shown as red crosses below).



Wastewater

There is capacity in the wastewater network to service the 43 lots.
Sewer retic of DIA 150PVC-U laid at 1:100 to 1:200 must be kept on public land as far as possible.

Jordan Hodge

Assets Planning & Delivery Group

T (08) 9420 2332

Appendix E



**Connecting people to their
investments.**

Power and Communication Servicing Report
UPD9839 – L2349 Guara Drive, Sunset Beach
Client: Bua Bua Pty Ltd

Issue Date: Thursday 18th August 2023

Page Count: 13



VERSION	DOCUMENT CHANGE	Author	DATE
V1.0	Original Issue	Damian Twyman	18/08/2023
V2.0	Revised to client requirements	Damian Twyman	20/10/2023

Copyright

© 2023, Underground Power Development, All rights reserved

This document is subject to copyright. Use, copying or transmission of this document in whole or part without prior written permission of Underground Power Development constitutes an infringement of copyright.



CONTENTS

1.	INTRODUCTION.....	4
2.	AREA OF INVESTIGATION	4
2.1	Proposed Lot Layout.....	6
3.	POWER REQUIREMENTS	6
3.1	Existing Power	6
3.2	OVERALL POWER REQUIREMENTS	7
3.3	Transmission Assets	7
3.4	Existing HV Capacity.....	8
3.5	Order of probable costs (Power)	8
3.6	HV System Pool	9
4.	EXISTING THIRD PARTY ASSETS IN THE AREA	10
5.	COMMUNICATIONS CONSIDERATION	11

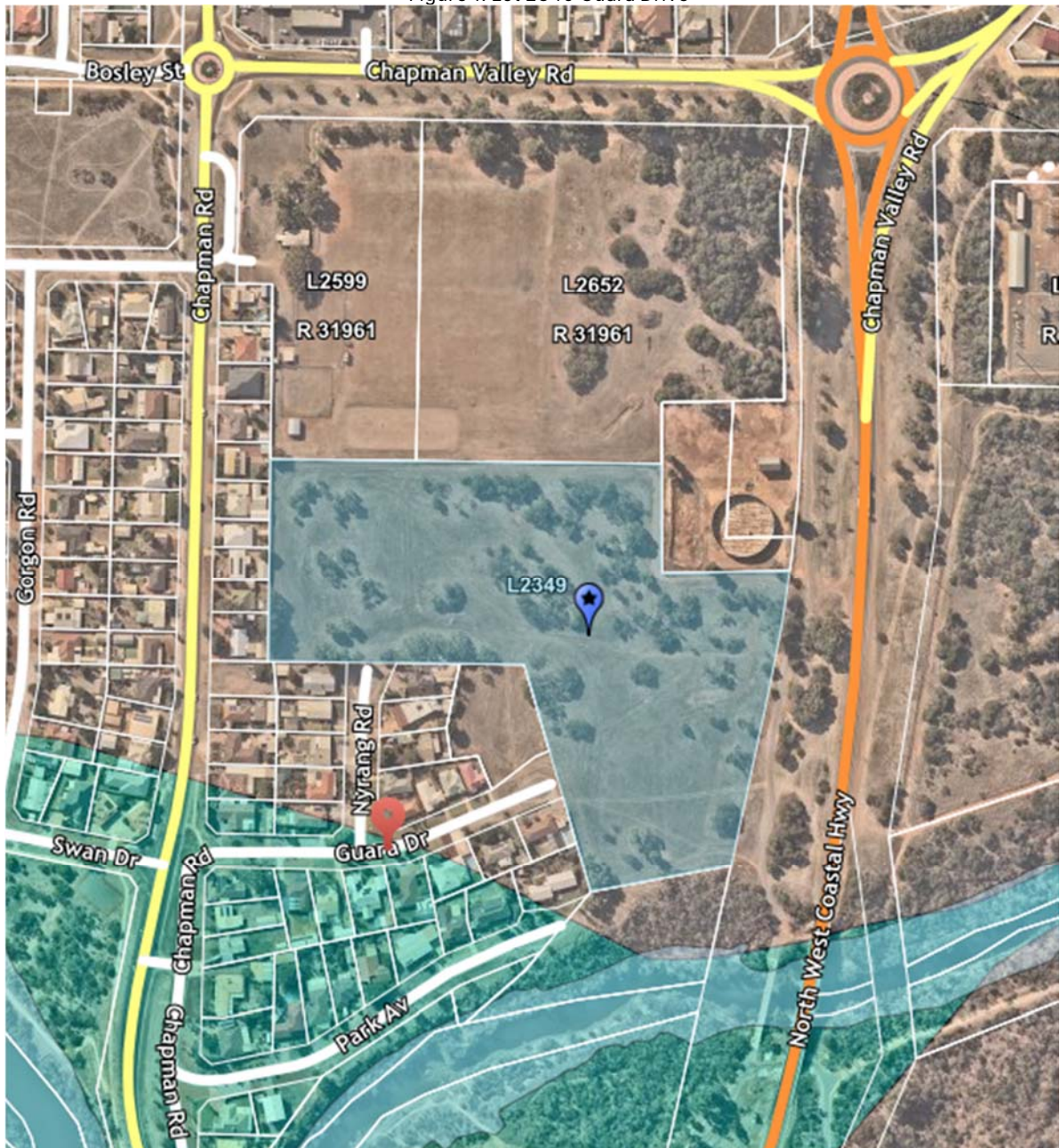
1. INTRODUCTION

Bua Bua Consulting requested Underground Power Development to prepare a power and communications servicing investigation report for the residential development located at Lot 2349 Guara Drive, Sunset Beach

2. AREA OF INVESTIGATION

The development lot is 4.577ha in area and located at the eastern end of Guara Drive, between Chapman Rd, Chapman Valley Rd and North West Coastal Hwy, Sunset Beach.

Figure 1: Lot 2349 Guara Drive



Source: (MNG Access)

Figure 2: Lot 2349 Guara Drive

Lots	from Landgate on August 16, 2023
Lot Number: 2349	
PIN: 12368446	
Plan Area: 45,768 m ² (4.577 ha)	
Polygon Area: 45,765 m ² (4.577 ha)	
Certificate of	
Title: 4027/642	
Survey Plan: P416451 2349	
Owners:	Sunset Beach Estate Pty Ltd
Sale History:	• \$620,000 May 25, 2020 - Sunset Beach Estate Pty L

Soil Systems	from DAFWA
Name: Tamala South System	
Description: Rises and Low Hills With Relict Dunes and Some Limestone Outcrop On Coastal Limestone North of Jurien Bay. Yellow Deep Sands Common, With Yellow/brown Shallow Sands and Calcareous Shallow and Deep Sands. Banksia Woodlands and Heathlands	
Floodplain Area	No results found.
Contaminated Sites	No results found.
Nearmap	from NearMap
Date Flown: May 2, 2023	

Source: (MNG Access)

2.1 PROPOSED LOT LAYOUT

Figure 3: Lot Layout



Source: (Landwest)

3. POWER REQUIREMENTS

3.1 EXISTING POWER

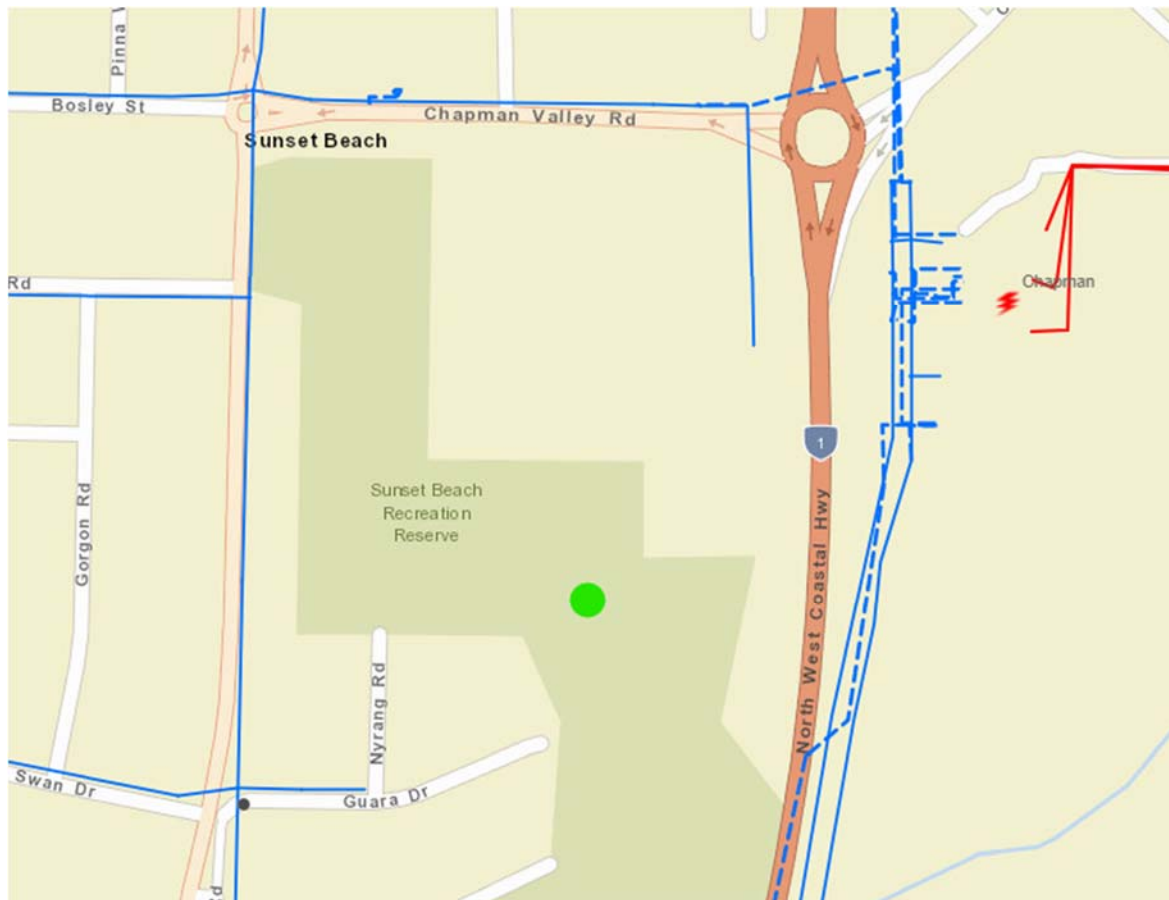
There are existing High Voltage (HV) and Low Voltage (LV) overhead power lines located on Guara Drive.

The capacity of the existing LV network is unknown and is unlikely to be able to supply the development.

The existing Western Power HV network is 22kV 3 phase

- CPN 315 Chapman Zone Substation

Figure 4: Lot Layout



Source: Western Power Network Mapping Tool

3.2 OVERALL POWER REQUIREMENTS

Based on the Western Power (WP) UDS manual requirements for residential/commercial lots, a per lot kVA load of 4.7kVA is applied to each residential lot and 200kVA/ha for commercial lots.

The proposed development comprises 35x residential lots (4.7kVA/lot) + 1x group housing site (18x units @ 3.5kVA/unit) with a total load of 227.5kVA. this capacity can be accommodated by installation of a 315kVA transformer.

The ideal location of the transformer is within a POS due to potential Earth Potential Rise (EPR) hazardous voltages to the public and noise pollution considerations for residential properties. POS A is the preferred location as it is more centrally located within the load distribution.

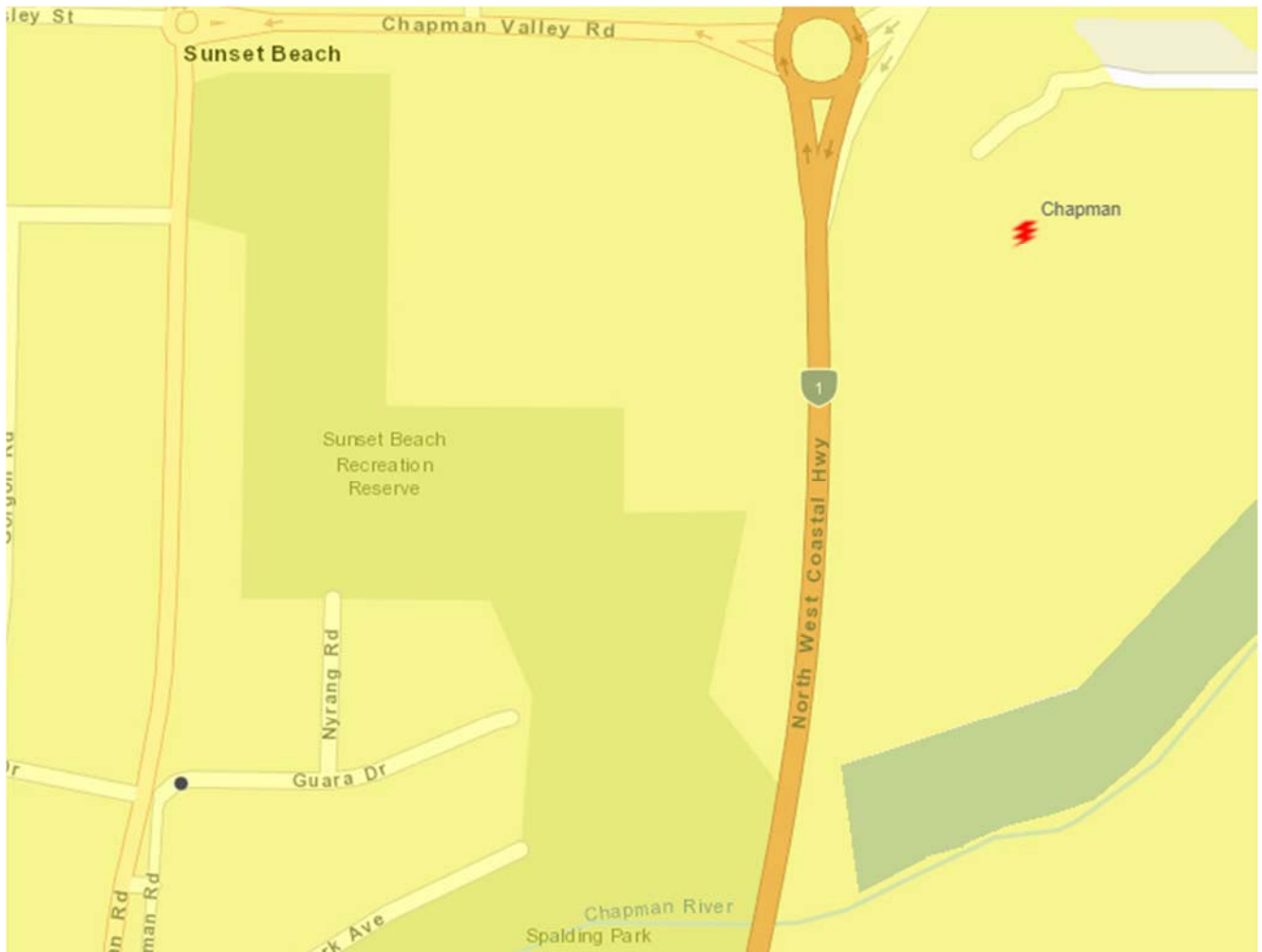
3.3 TRANSMISSION ASSETS

There are no Western Power transmission assets in the development area.

3.4 EXISTING HV CAPACITY

The Chapman Zone Substation has 15-20MVA remaining capacity for 2023/2024 which can accommodate this development. While we cannot advise the remaining spare capacity on individual HV feeders from the zone substation ie. CPN 315, it is likely that the HV feeder supplying this development has capacity for 1x additional 630kVA transformer.

Figure 5: Zone Substation HV capacity



Source: Western Power Network Mapping Tool

3.5 ORDER OF PROBABLE COSTS (POWER)

Power-indicative only

The Development requires a transformer as minimum and possibly a ringmain unit also dependent on Western power requirements. Allowance made for both.



The substation is to be located within the POS 1 area.

Approximate requirements:

- 400sqmm 3C Al cable (HV) - 300m
- 240sqmm 3C Al cable (LV) - 700m
- 1x 2+1 SWGR - \$25K
- 1x 315kVA Transformer - \$42K
- 400HV cable - \$45k
- 35HV cable - \$2k
- LV Lot pillars and associated items - \$40k
- Earthing of WP site - \$25k
- Other items - \$60k
- Contingency - \$40k

3.6 HV SYSTEM POOL

The high voltage (HV) subdivision pool allows the cost of installing HV infrastructure to be shared among developers of residential subdivisions. The pool reimburses developers who have paid for more than their share of the HV infrastructure, and collects funds from developers who make use of excess capacity on that infrastructure.

Western Power assesses whether or not a residential development can be included in the HV system pool by undertaking two tests, both of which must pass ie.

- System Charge Impact test (Economic % Test)
The system charge impact test is a measure of the impact on the baseline system charge when the proposed subdivision is included in the Pool.
If the test result indicates that the system charge would increase by more than 2% (i.e. Economic % > 2%) then the proposed subdivision fails the system charge impact test.
- Ratio Test (Economic kVA Test)
The Economic kVA Test is a measure of the cost effectiveness of providing HV Electricity Infrastructure for the proposed subdivision. It is determined by comparing the HV cost per kVA (i.e. total of SOR of CUs divided by the Design Load) of the proposed subdivision with the baseline system charge.
If the result is $\geq 4x$ then the proposed subdivision fails the ratio test.

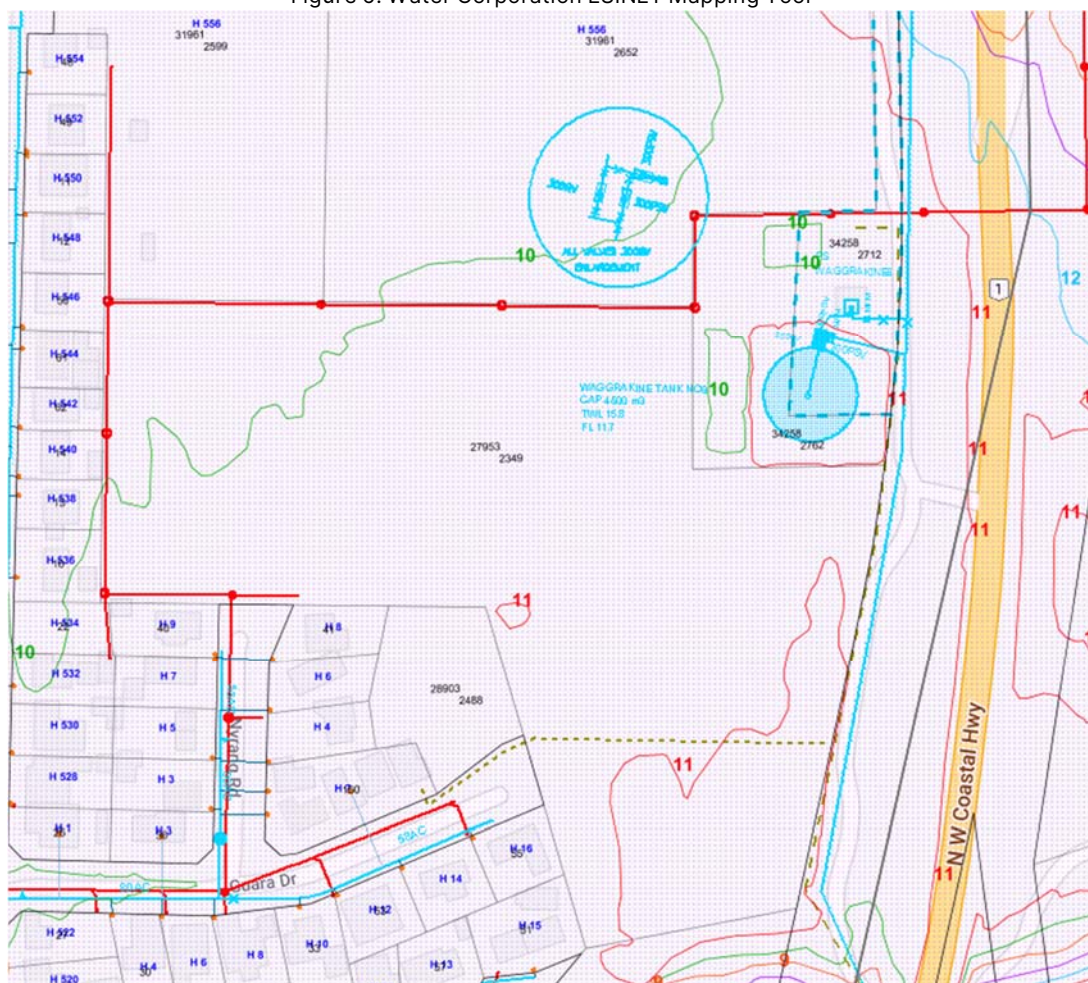
Stage 1 with 44x lots passes both tests and should be included in the HV system pool. Therefore a system charge payment will be included in the Western Power quote amounting to approximately \$31,020. Subsequently, there should be a refund to the developer for the HV asset component based on Western Power's schedule of rates.

Allowance should be made for a minimum of 20% less refund from Western Power than the actual HV component installation cost.

4. EXISTING THIRD-PARTY ASSETS IN THE AREA

There are existing Water Corporation (WC) assets of concern i.e. metallic pipes/valves, which would normally require assessment for hazardous voltages relating to the new power assets being installed. However, based on advice from Bua Bua, the WC assets are being removed so a hazard assessment is not required on the WC assets.

Figure 6: Water Corporation ESINET Mapping Tool



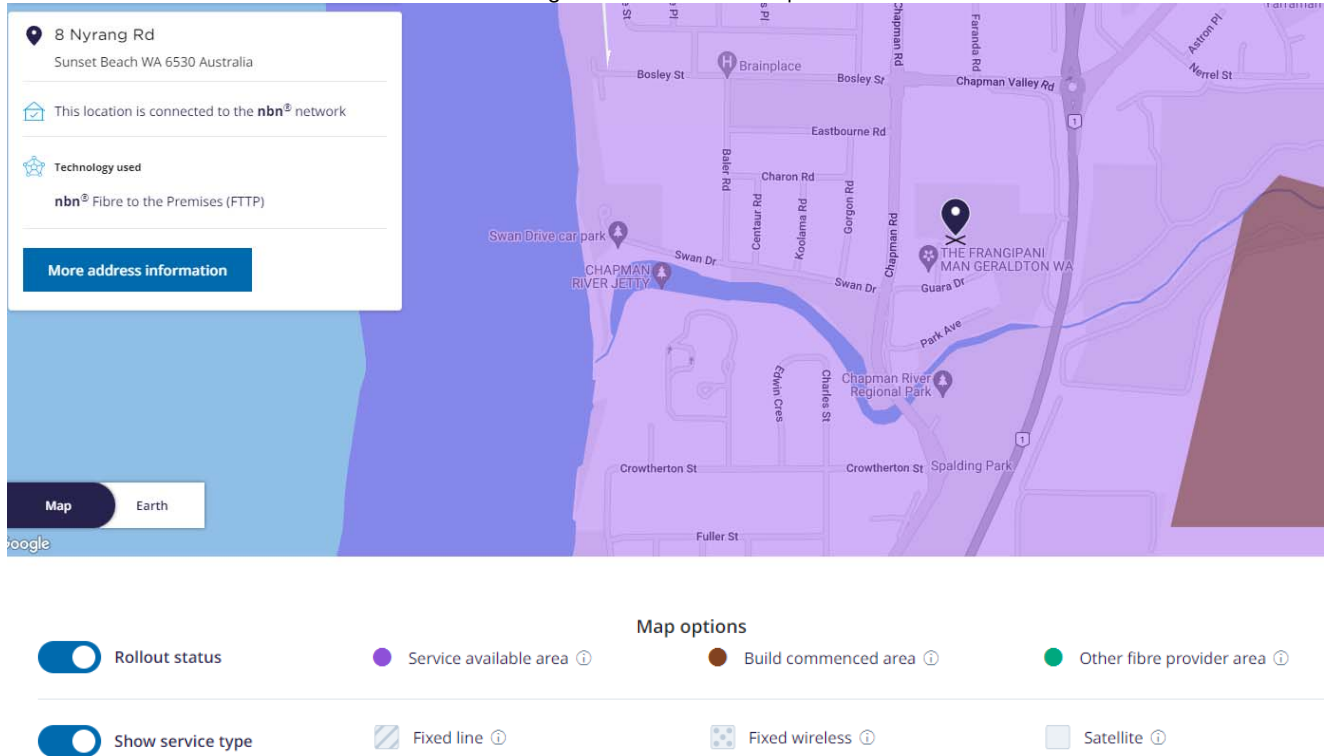
Source: Water Corporation, 2023

There are no critical ATCO gas steel pipelines or appurtenances located in the vicinity of this development. Full detailed EPR/LFI assessments are required for metallic pipes in relation to new electrical infrastructure installation. These assessments and associated works could cost in excess of \$60K if required.

5. COMMUNICATIONS CONSIDERATION

Based on the NBN rollout map, this subdivision is currently being serviced by fixed-line technology.

Figure 3: NBN Rollout Map



Source: NBN, 2023

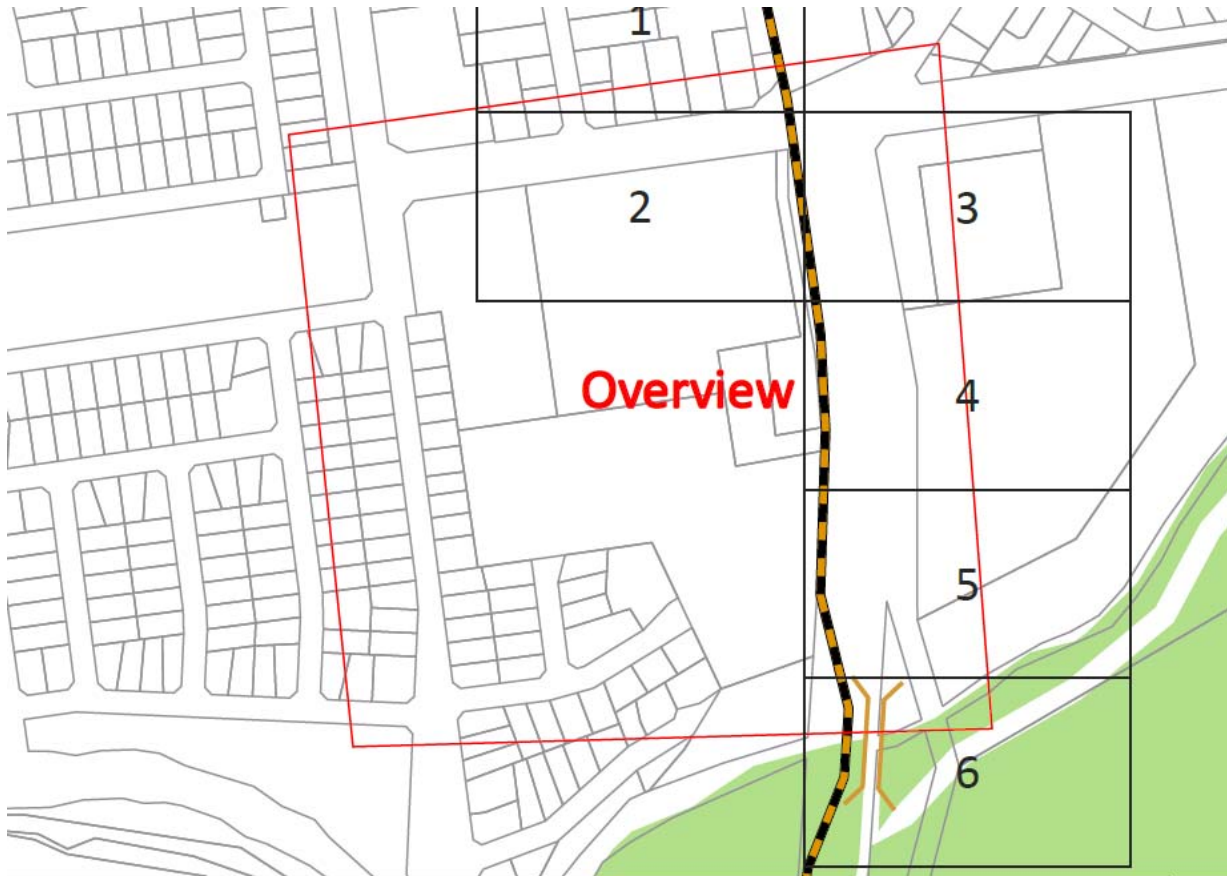
New fibre-ready pit and pipe infrastructure will need to be installed within the development to facilitate NBN installing fibre optic cables.

Currently, NBN charge \$600 per lot.

There are existing Telstra pit and pipe assets in the vicinity of the subdivision which shouldn't be impacting on the construction of comms infrastructure of this subdivision. Connection of the new network to the existing one will have to be completed by NBN construction crew.

There is also existing NextGen Communication network along Alexander Drive, which should not be affecting the subdivision layout.

Figure 4: Nextgen PLAN



Source: Nextgen Group DBYD, 2023

Please be advised that should any works are required where existing communication assets are, the relevant communication providers will have to be informed and possibly a quote is required to get their assets amended to suit the requirements of the subdivision.