



08/02/2021

UTILITIES INVESTIGATION REPORT

AVJennings

2514 ILLAWARRA HIGHWAY, TULLIMBAR

Project No: ISC00168

VERSION R.2

WOLLONGONG

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TABLE OF CONTENTS

1	INTRODUCTION	3
1.1	Site Description	3
2	WATER AND SEWER SERVICES	4
2.1	Water	2
2.2	Sewer	4
3	ELECTRICAL SERVICES	
4	GAS SERVICES	
5	TELECOMMUNICATIONS	
	CONCLUSION	۶
APPE	NDIX A: SYDNEY WATER DBYD PLANS	
APPE	NDIX B: ENDEAVOUR ENERGY DBYD PLANS	
	NDIX C: OPTICOM DBYD PLANS	
	NDIX D. CONCEPT MASTER PLAN	





1 INTRODUCTION

AVJennings Pty Ltd has engaged Maker ENG Pty Ltd (Maker) to provide professional services to support the Planning Proposal (PP) with Shellharbour City Council for the rezoning of rural land to residential for the purpose of future residential development at 2514 Illawarra Highway, Tullimbar (Lot 7 DP259137).

An important consideration during the preliminary stage of the project involves determining the ability of the site to be serviced by utility services. This report will assist in informing the suitability of the site for development and assess both current and proposed services in the vicinity of the development.

1.1 SITE DESCRIPTION

The subject site is located on the northern side of the Illawarra Highway, approximately 3km from Albion Park and has an area of 46.3 hectares. The site is bisected by Macquarie Rivulet and contains a singular dwelling with additional farming structures. The site is bound by North Macquarie Road to the north, the Illawarra Highway to the south, a future proposed development to the west (Lot 100 DP1251724), and the Calderwood Urban Development Project (CUDP) effectively surrounds the site. Figure 1-1 highlights the location of the site relative to its surroundings.

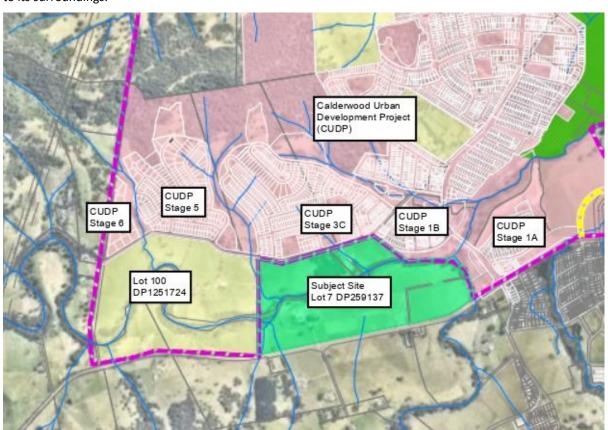


Figure 1-1 Site locality.

The layout of the subject site is likely to consist of approximately 400 lots with sizes starting at 300m². The concept plan attached in Appendix D displays the lot layout for the development. Maker has been involved in the development of the neighbouring CUDP and has conducted several previous utilities investigations. Many of the utilities required to service the subject site are expected to lead-in from the adjacent development.

Maker has prior experience with the neighbouring CUDP and is informed of the planned utility upgrade works for the development. However, as of July 2018, an increase in lot yield from 4,800 lots to 6,500 lots within the CUDP has potentially varied lead-in works and capacity of utilities. This report aims to investigate the effects of the increase lot yield and the resulting effects on available capacity of surrounding utilities.





WATER AND SEWER SERVICES

Sydney Water is the utility service authority responsible for the management and delivery of water and sewer reticulation services in the Calderwood precinct. Maker has confirmed that potable water and sewer infrastructure exists in the immediate vicinity of the subject site and have been recently, or are planned to be, constructed to service the neighbouring CUDP development. Connection to potable water and wastewater services planned to service the CUDP are anticipated to provide viable connection and capacity for the subject

WATER 2.1

Existing potable water services in the vicinity of the subject site consist of a 200mm watermain along Borjeson Circuit and Escarpment Drive, within the CUDP. It is anticipated that connection to the existing network will provide adequate capacity to service the site.

Prior to the proposed increase in lot yield withing the CUDP, master plans produced by Sydney Water were prepared to service 4,800 lots withing the CUDP and an additional 2,900 lots within the greater Calderwood investigation area, which lies outside the rezoned CUDP. Whilst engagement with Sydney Water has indicated no consideration has been given to the servicing requirements of any potential developments outside of the CUDP, consideration of surrounding lots in previous master plans produced by Sydney Water is promising for the servicing and capacity requirements of the subject site.

Sydney Water has programmed to construct a lead-in watermain by 2021-2022 as part of the Calderwood Package 3 trunk works. This may be utilized by the subject site and could be further investigated by submitting a feasibility application with Sydney Water at this early stage of the development.



Figure 2-1 Proposed potable water services.

2.2 **SEWER**

Existing wastewater services in the vicinity of the subject site consist of a 300mm PVC wastewater main on the southern side of Borjeson Drive within Stage 1B of the CUDP. Connection to the proposed wastewater infrastructure is also available on the northern side of the Macquarie Rivulet, which may be required during the development of the southern stages of the site. Capacity of the existing network is adequate based on Sydney Water advice, which proposes the general layout seen in Figure 2-2.

Future capacity accounts for wastewater capacity requirements of the proposed development at 128 North Macquarie Road (Lot 100 DP1251724). Engagement with the 128 North Macquarie Road site has allowed for sewer works to be completed independently of the rezoning of the subject site. A preferred optimised solution for both parties is currently underway to best meet the servicing requirements of the subject site and the 128





North Macquarie Road site. The neighbouring developer is willing to forward fund the cost of the design and construction to extend the sewerage main through the subject site to service the proposed development at 128 North Macquarie Road.

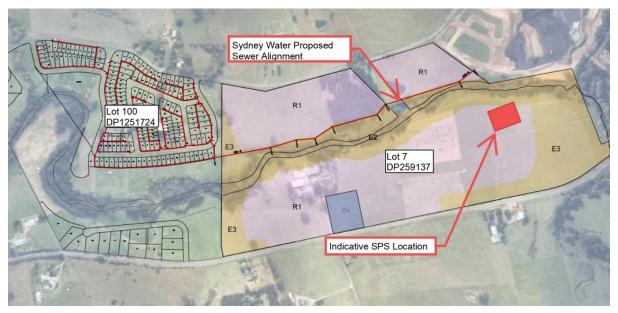


Figure 2-2 Indicative sewerage pump station and connection point.

The sewer on the southern side of the Macquarie Rivulet will require a pressure system to connect to the existing network as grades are not achievable. A Sewerage Pump Station (SPS) will likely be required and will likely be located on the north eastern corner of the southern precinct.

3 **ELECTRICAL SERVICES**

Endeavour Energy is the utility service authority responsible for the management and delivery of electrical services in the core Calderwood precinct. Developments in the vicinity of the subject site are currently serviced by an existing power distribution station on Russell Street in Albion Park located approximately 2.5km from the CUDP. However, this network currently provides electricity to the Albion Park area and has insufficient capacity to service the CUDP, therefore a new zone substation has been proposed.

The entire CUDP and surrounds are proposed to be serviced by a 132/11kV substation within a designated land area North West of the subject site as seen in Figure 3-1. Maker has been advised by Endeavour Energy that it is likely that additional capacity may be available to service developments neighbouring the CUDP, including the subject site once the Calderwood Zone Substation is commissioned around mid-2022. Endeavour Energy is expected to fund the proposed zone substation and the accompanying three 132kV feeders which will be supplying the substation.

The proposed development will ultimately be serviced by feeders extending from the Calderwood Zone Substation. There is an overhead feeder that runs along North Macquarie Road that may present an opportunity to service the site during initial stages of development. Reconfiguration of this feeder is anticipated and will likely be underground as part of the North Macquarie Road upgrade works proposed under Lendlease's Stage 3C project. We anticipate, without a formal connection enquiry to Endeavour Energy, that electrical connection will be made via the nearest connection point to an Endeavour Energy substation located within Lendlease's development to the north.

Previous experience with neighbouring developments indicates additional developer funded feeders may be required to meet the servicing demands of the subject site. However, this information is subject to change as a formal application is required for capacity reservation.





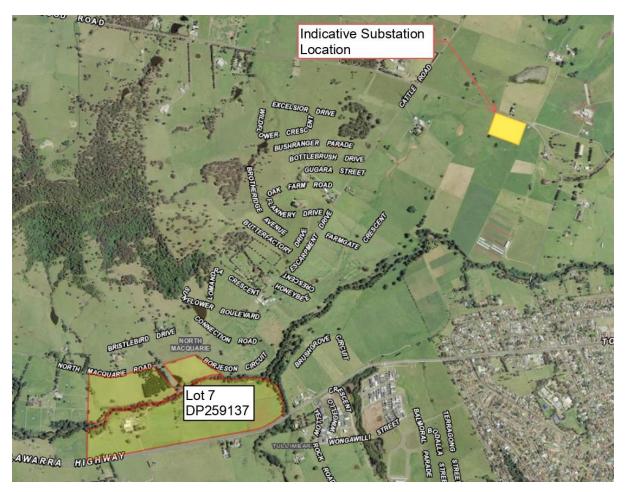


Figure 3-1 Indicative zone substation and electrical connection point.



Figure 3-2 Proposed UG Electrical Services.





GAS SERVICES

Zinfra is the utility service authority responsible for the management and delivery of gas services in the vicinity of the subject site. The initial stages of the neighbouring CUDP are currently serviced by a gas main running along Escarpment Drive within the CUDP. Zinfra has previously identified the need for a secondary steel gas main to ensure sufficient capacity is available to service later stages of the CUDP and surrounding developments, including the subject site.

Maker engaged Zinfra to receive high level advice in March 2020. Its response indicated that Zinfra is aware of the development of sites neighbouring the CUDP. It can be assumed that the subject site has likely been considered in the expansion of the natural gas network as Zinfra take a whole of network approach when extending their gas assets into new developments such as the CUDP and subject site. It can therefore be reasonably envisaged the installation of the secondary gas main will provide adequate capacity to service the subject site.

The proposed natural gas network to service the later stages of the CUDP can be seen in Figure 4-1 to extend east along Calderwood from the intersection of Escarpment Drive and Calderwood Road. Should sufficient capacity be provided by the proposed secondary steel gas main, connection to the gas main along Calderwood Road would present a viable connection point with minimal lead-in works required.



Figure 4-1 Proposed natural gas connection point.

Zinfra indicated the extent of connection and lead-in works is heavily subjected to the timing of the development works and the upgrade of North Macquarie Road.

TELECOMMUNICATIONS

Telecommunications services are within the vicinity of the subject site and are available via the adjacent CUDP development. Opticom private network currently services the initial stages of the CUDP via a telecommunications satellite compound located within Stage 1 of the CUDP. Fibre cables currently extend along escarpment drive in telecommunication conduits and are located within a shared trench arrangement with gas and electricity services. It can be expected the shared trench arrangement will continue throughout the CUDP and allow for telecommunication network connection at the proposed connection point to natural gas services, as highlighted in Figure 4-1.





Opticom has noted that there is no issue in meeting the increased capacity demands of the CUDP and has advised they can easily cope with the increased lot yield within the CUDP. It is expected capacity is available to service the subject site.

CONCLUSION

Advice has been provided regarding the utility service infrastructure requirements for the site, informed through consultation with relevant service authorities. Water, sewer, electricity, telecommunications, and gas can all be provided to service the proposed development.

All required utilities for the servicing of the subject site are within the vicinity of the subject site, with additional infrastructure proposed to meet the increasing capacities of the Calderwood and Tullimbar area. It is assumed the future extension of all utility services will provide adequate capacity to service the subject site with minimal lead-in costs.

All utility capacities mentioned in this report are indicative of the utility capacities at the time of enquiry. Confirmation of the capacity to service the site with all utilities mentioned in this report requires a formal supply offer for the request of services from respective service authorities.





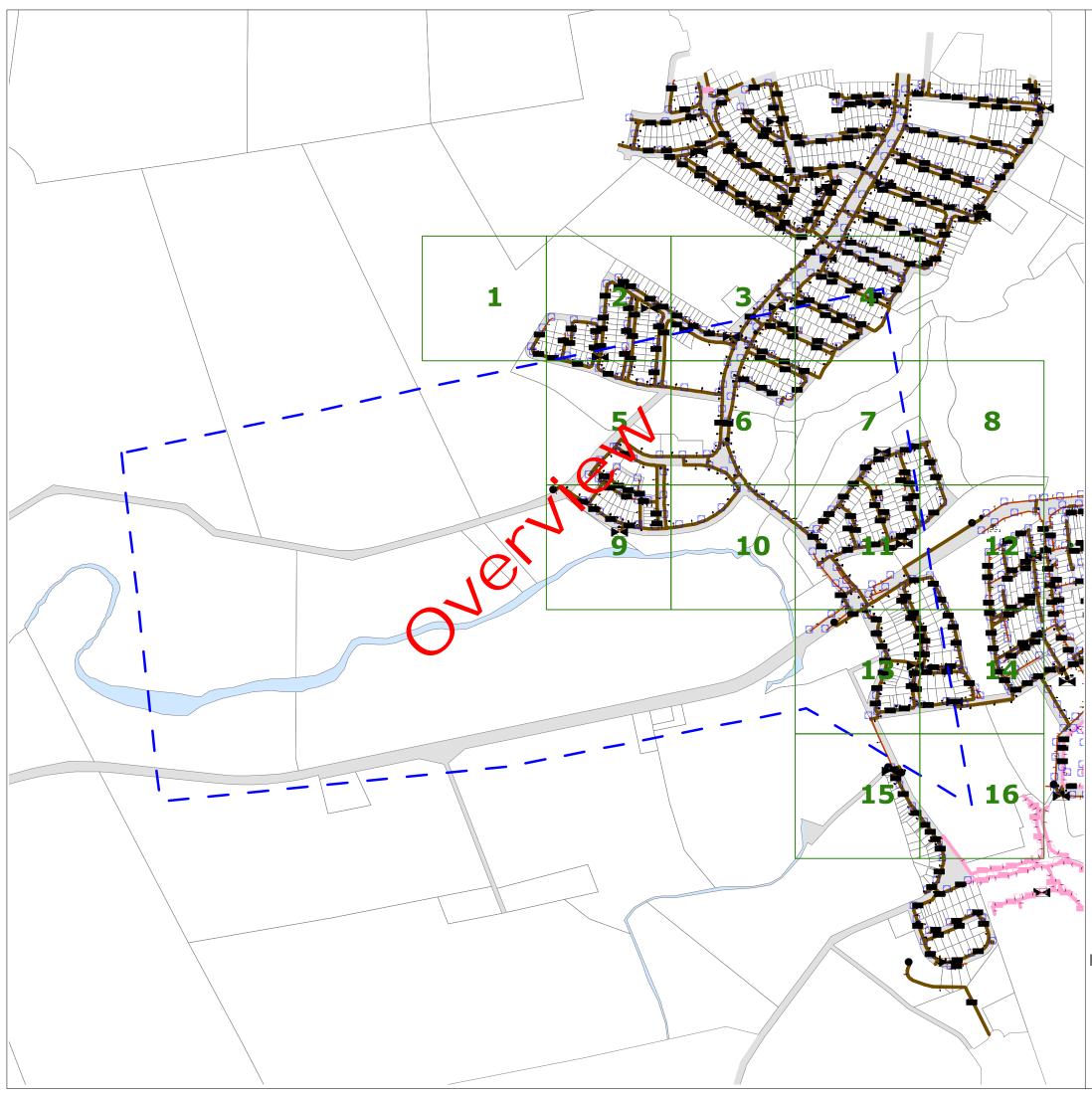
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APPENDIX B: ENDEAVOUR ENERGY DBYD PLANS





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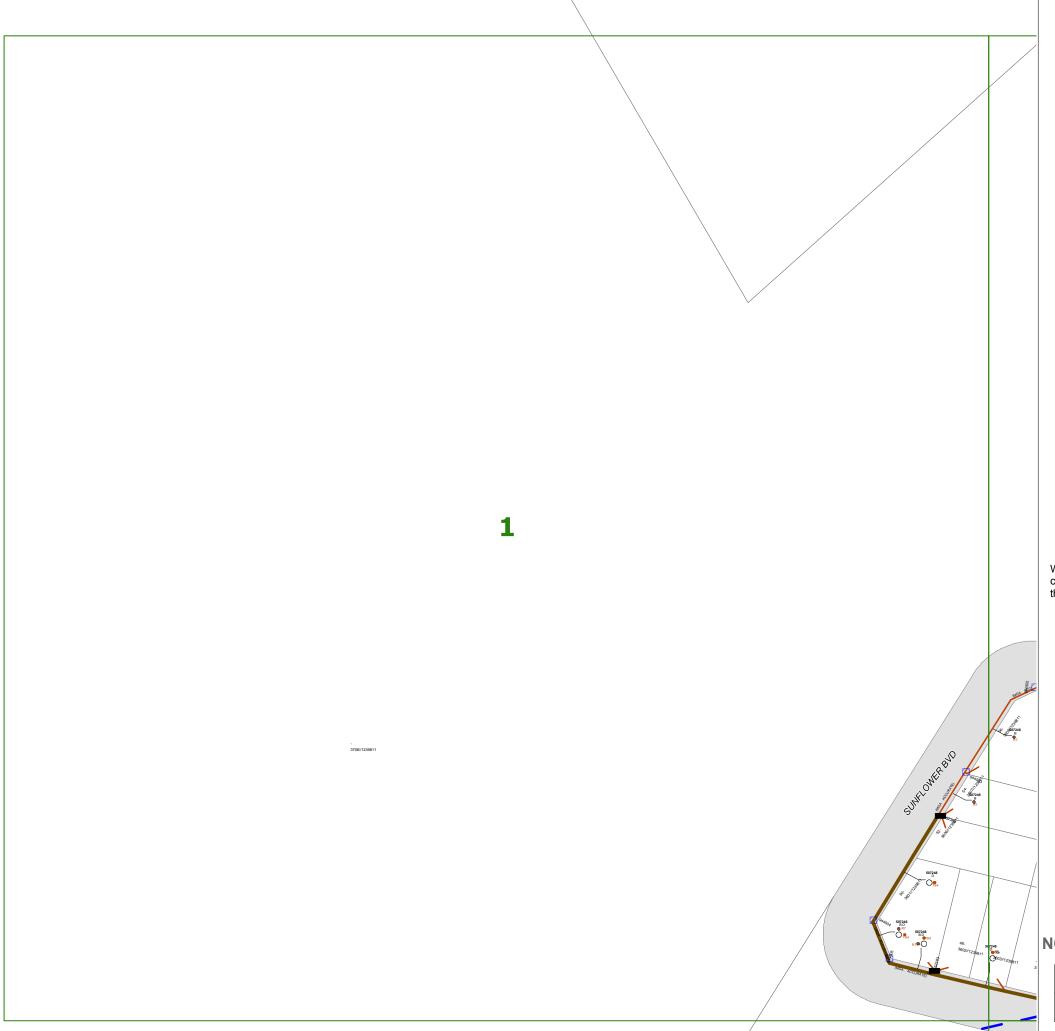
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NOT TO SCALE

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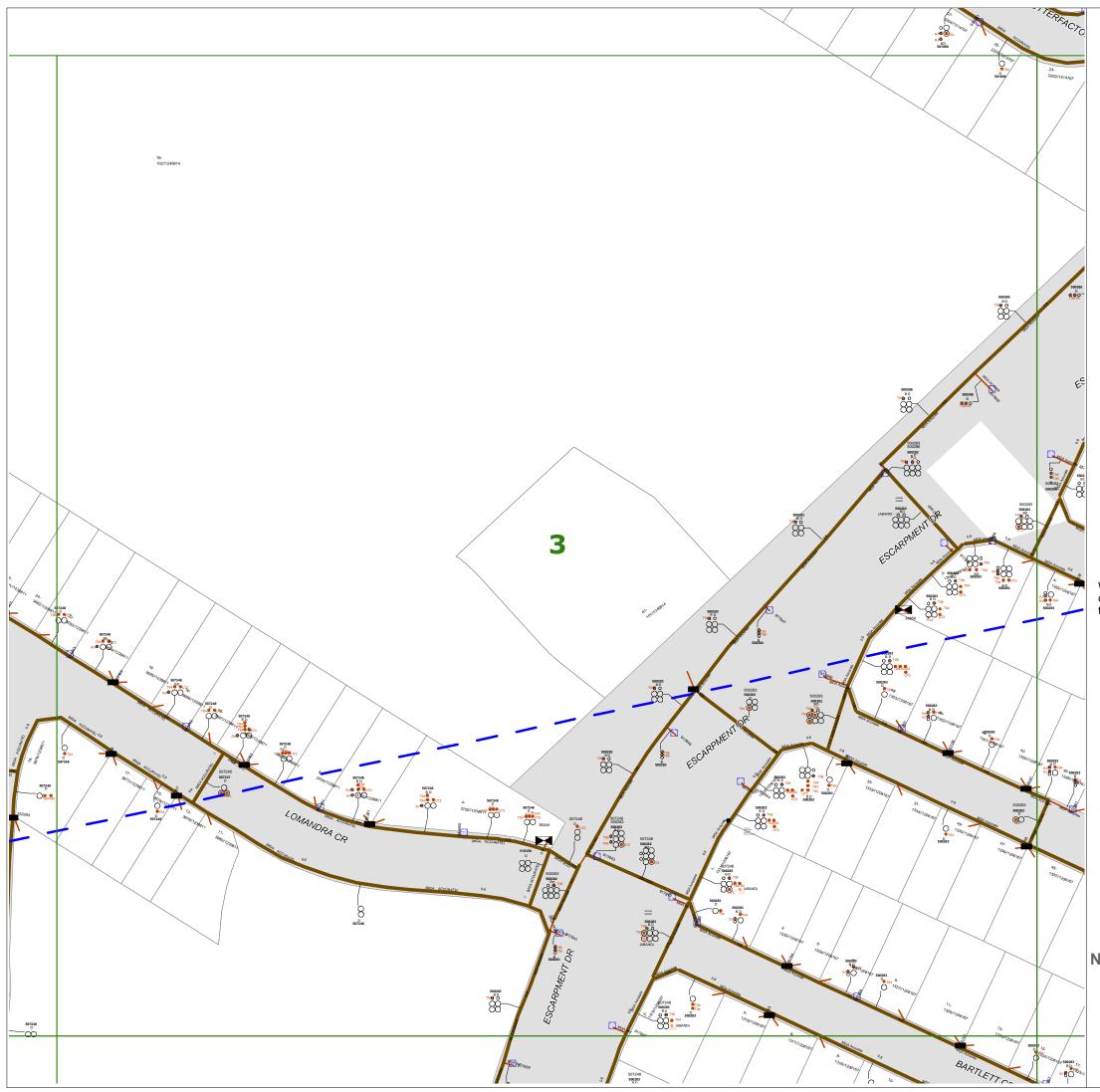
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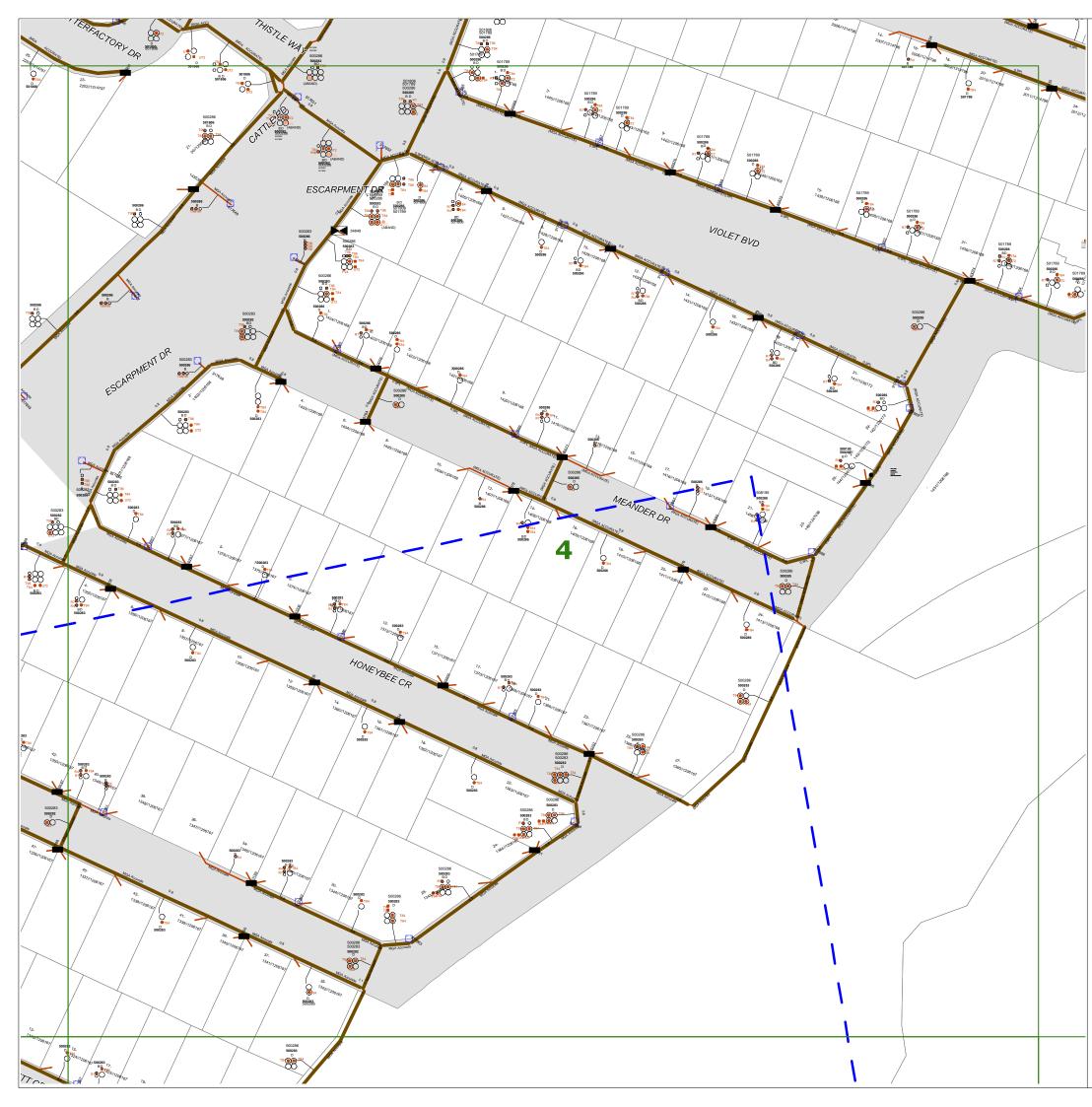
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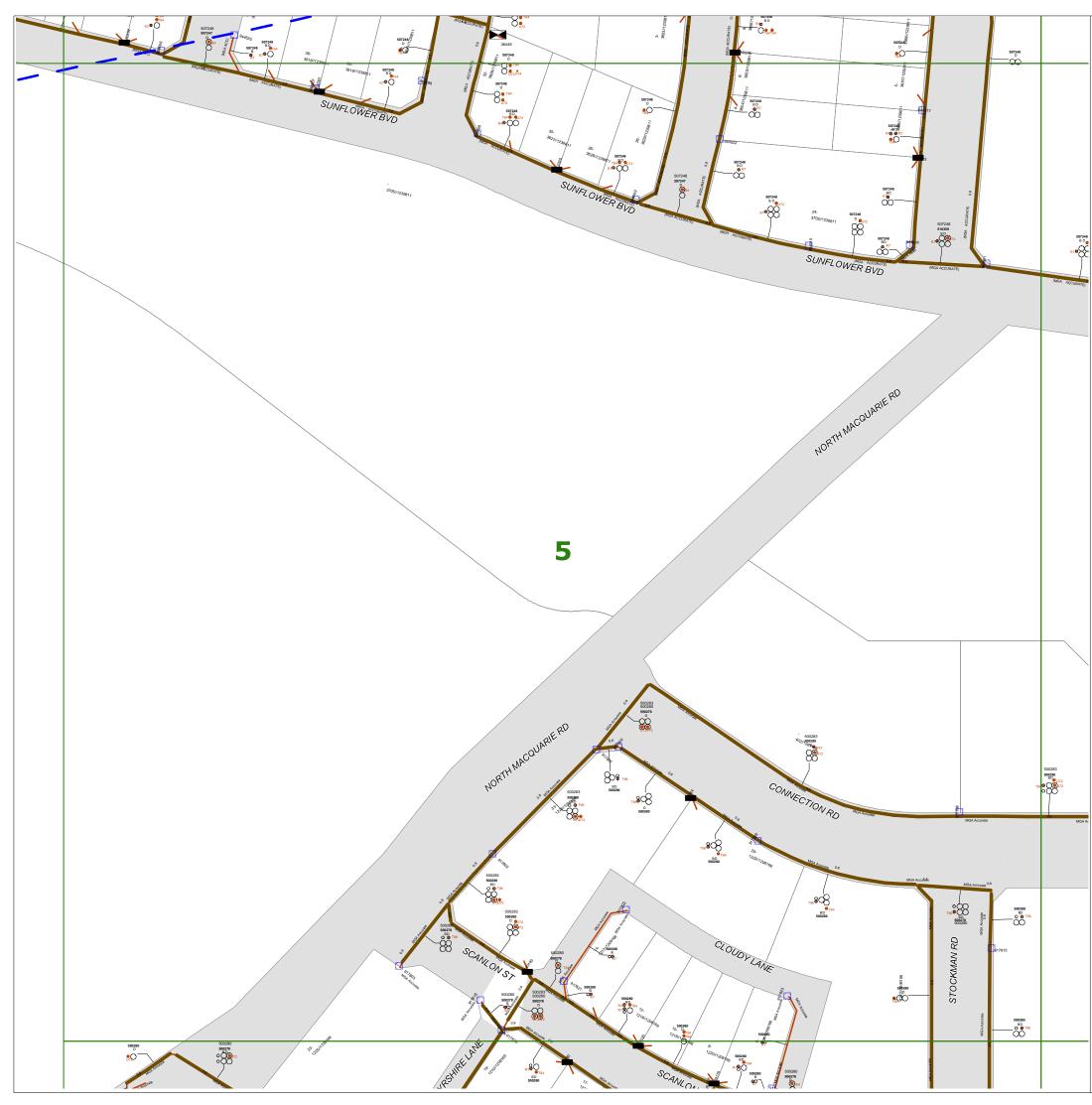
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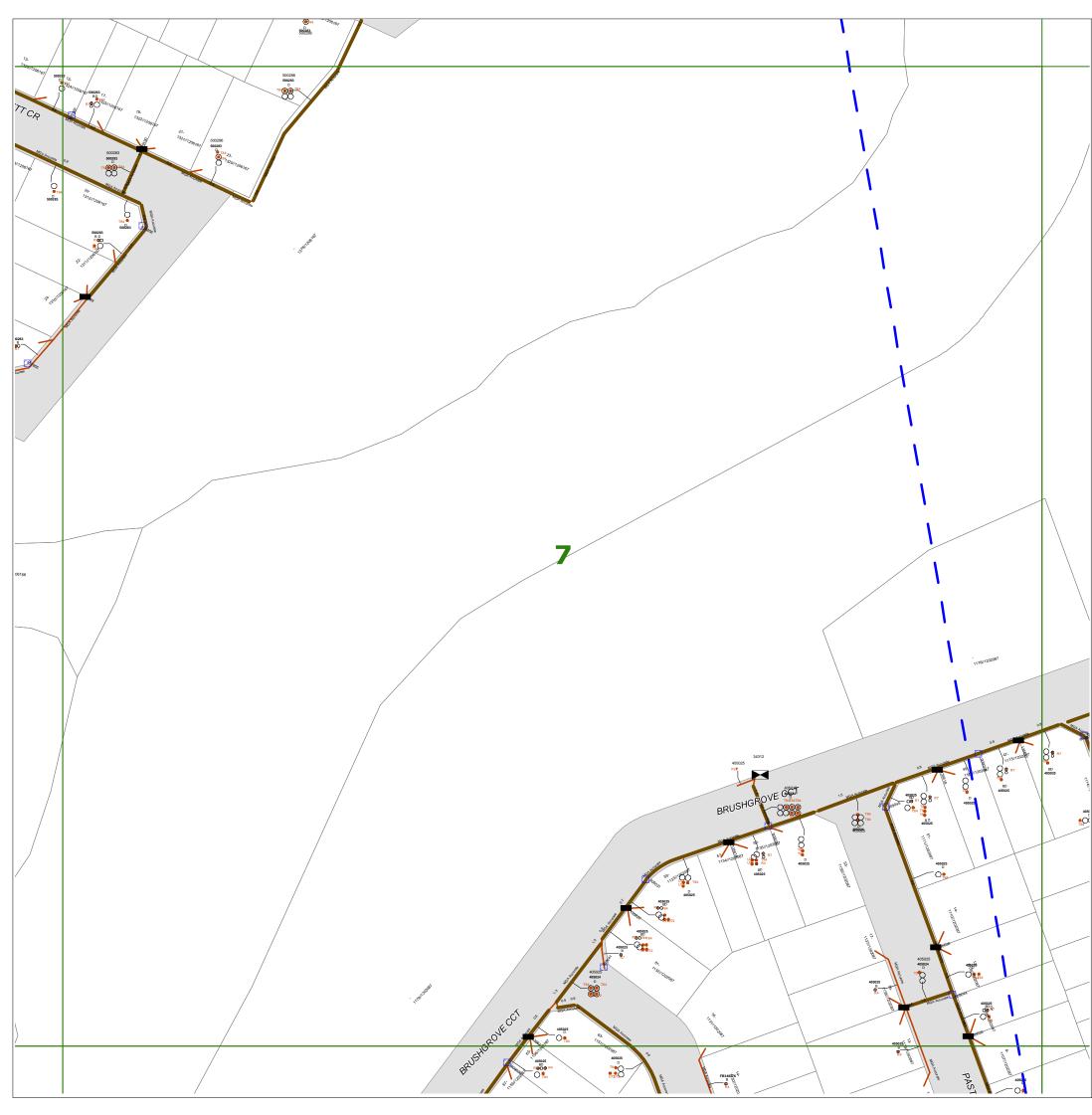
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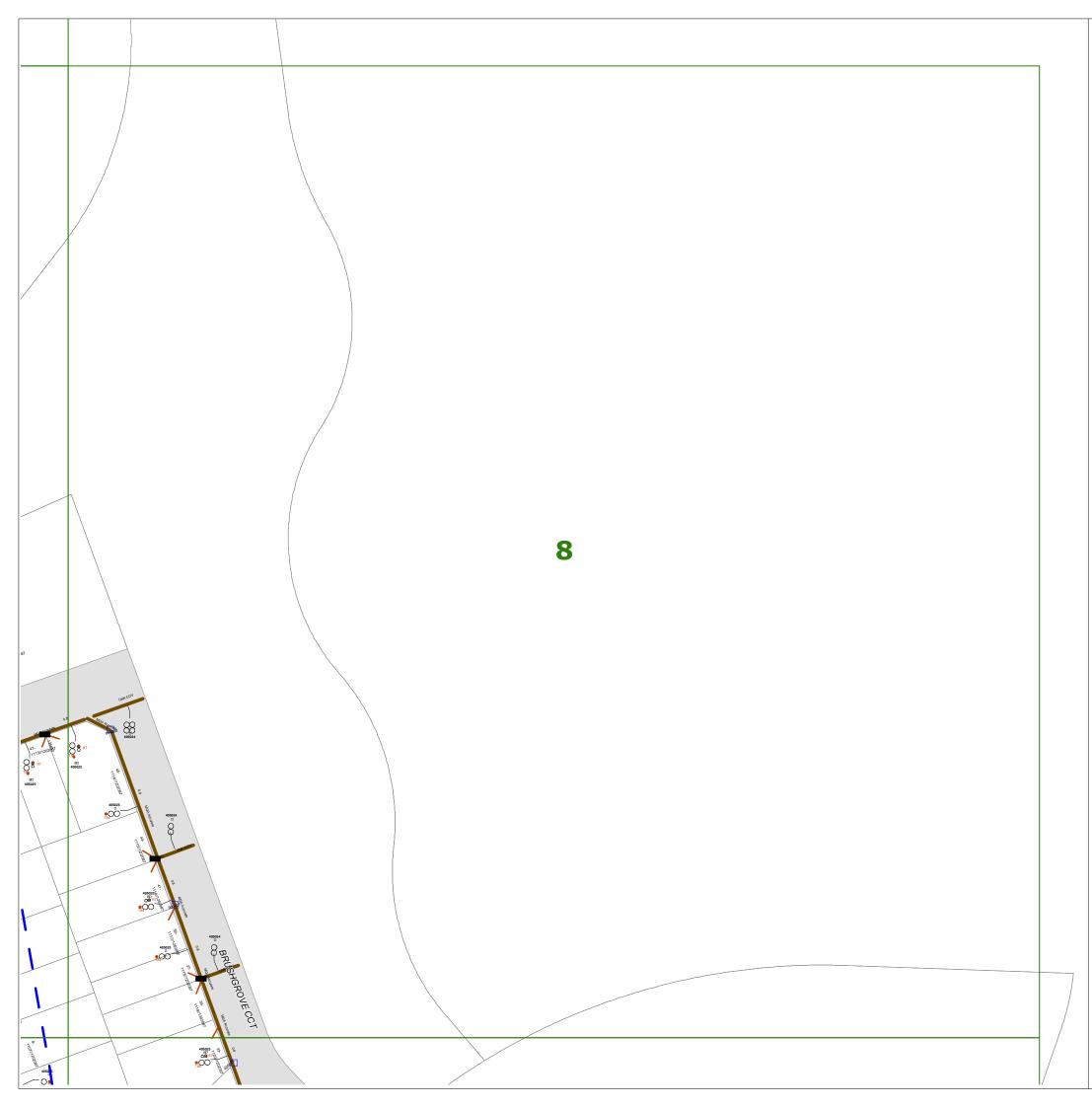
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<u> </u>	<u>LEGEND</u>
or 🔳	Street light column
	Padmount substation
<u>or</u>	Overground pillar (O.G.Box
\bowtie	Underground pit
	Duct run
	Cable run
88	Typical duct section
	Asbestos warning



NOT TO SCALE

DBYD Sequence No.:	106338776
Issued Date:	09/02/2021





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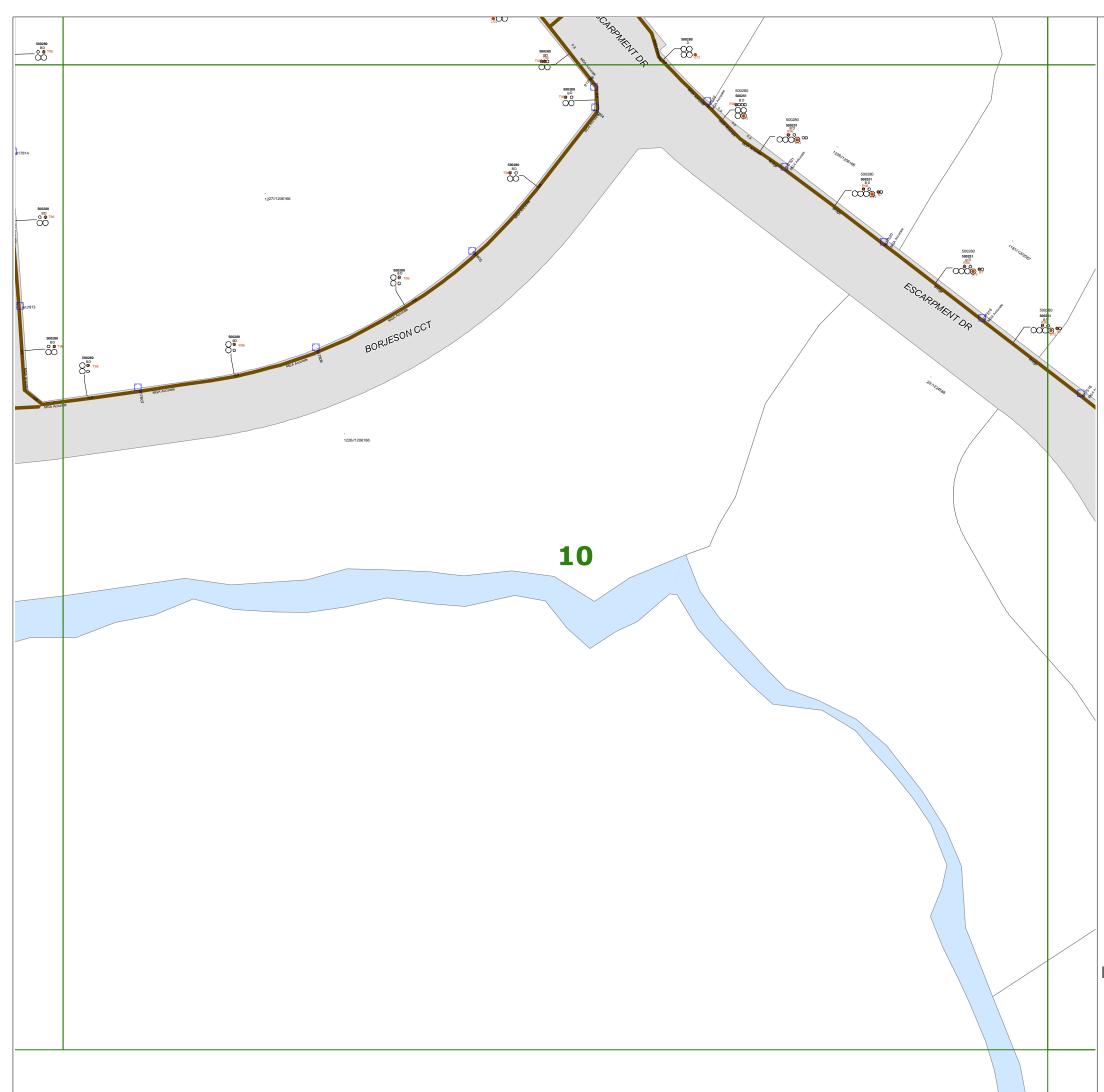
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Street light column Padmount substation Overground pillar (O.G.Box) Underground pit Duct run Cable run Typical duct section Asbestos warning



NOT TO SCALE

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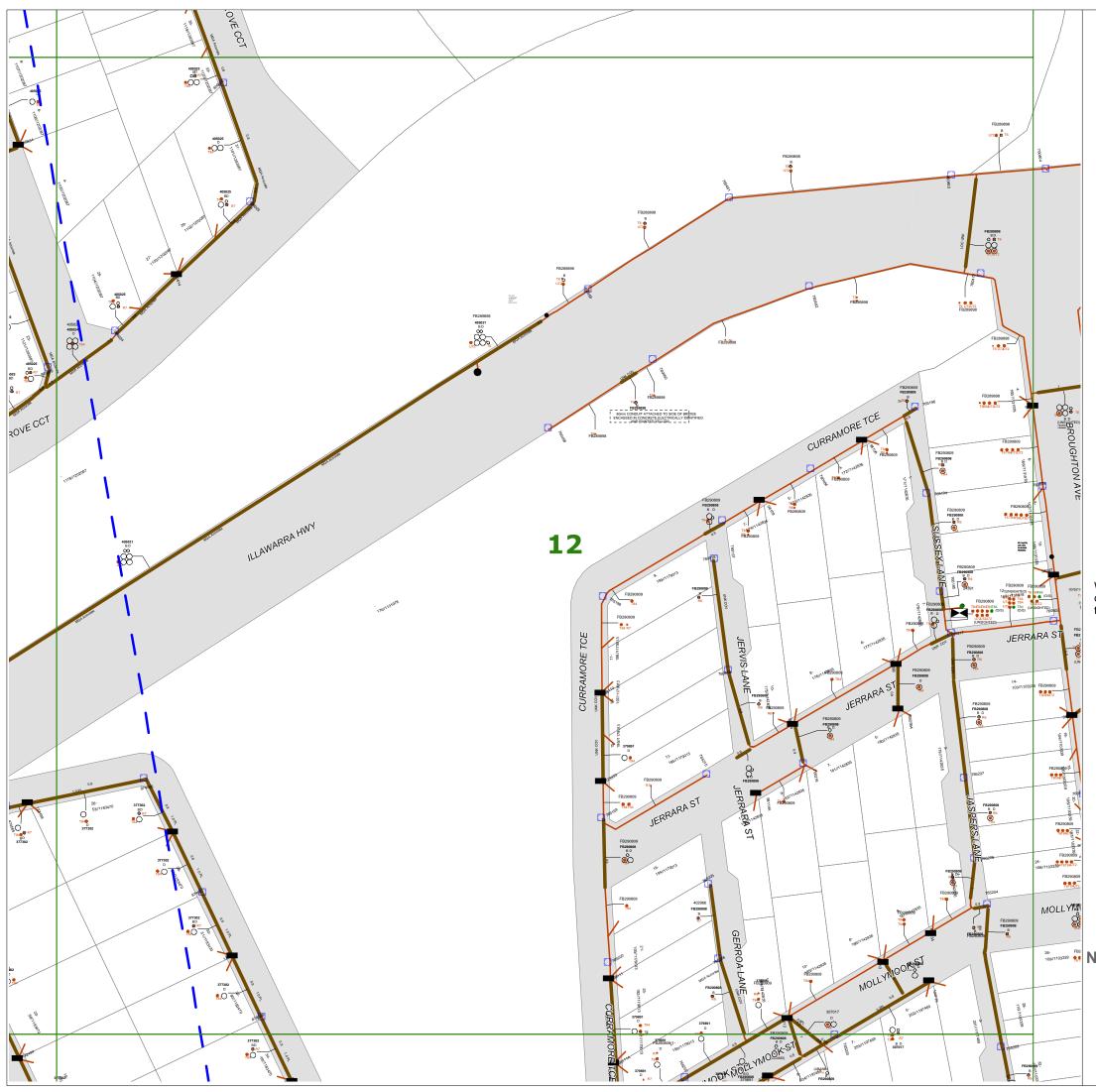
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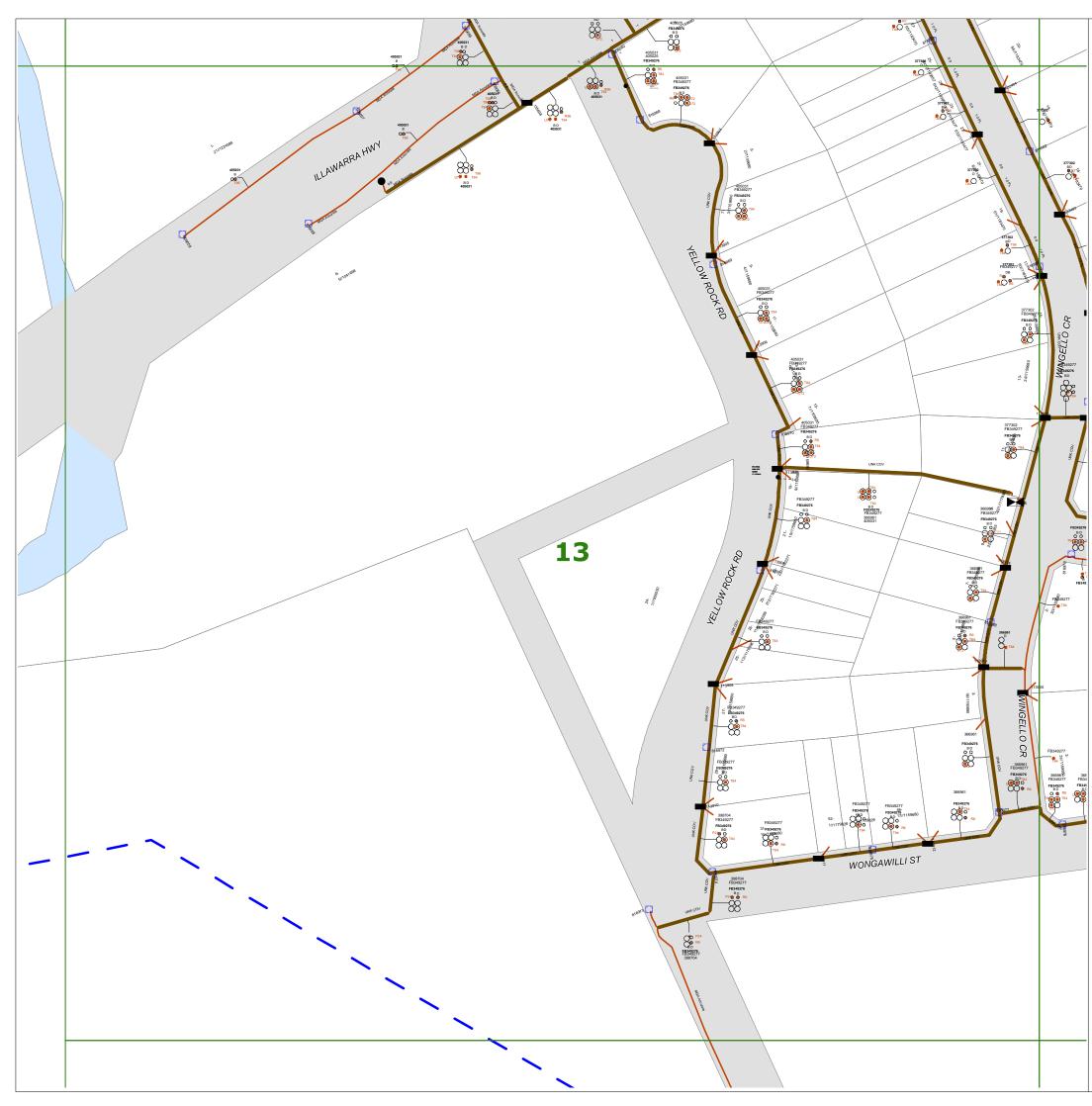
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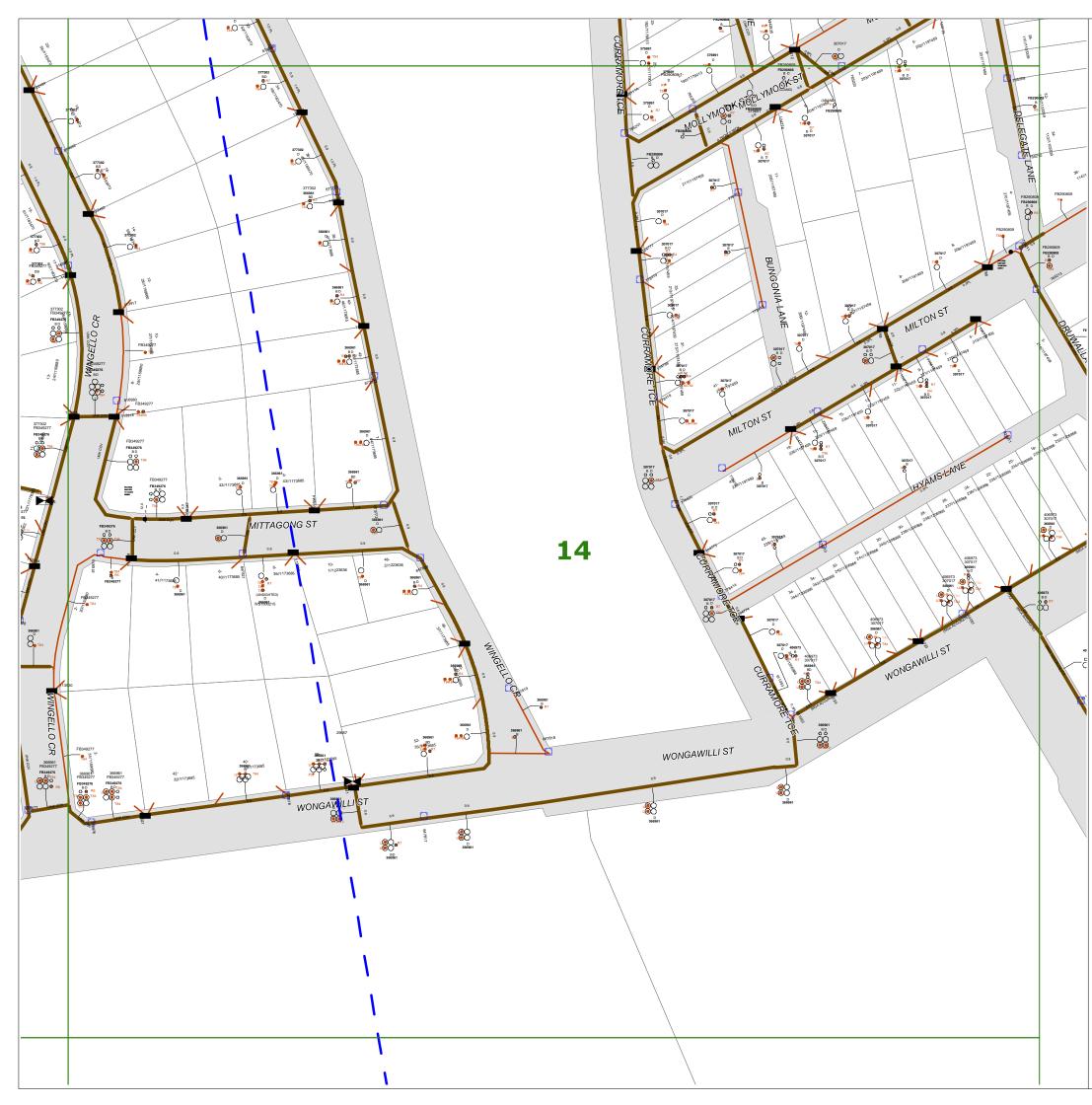
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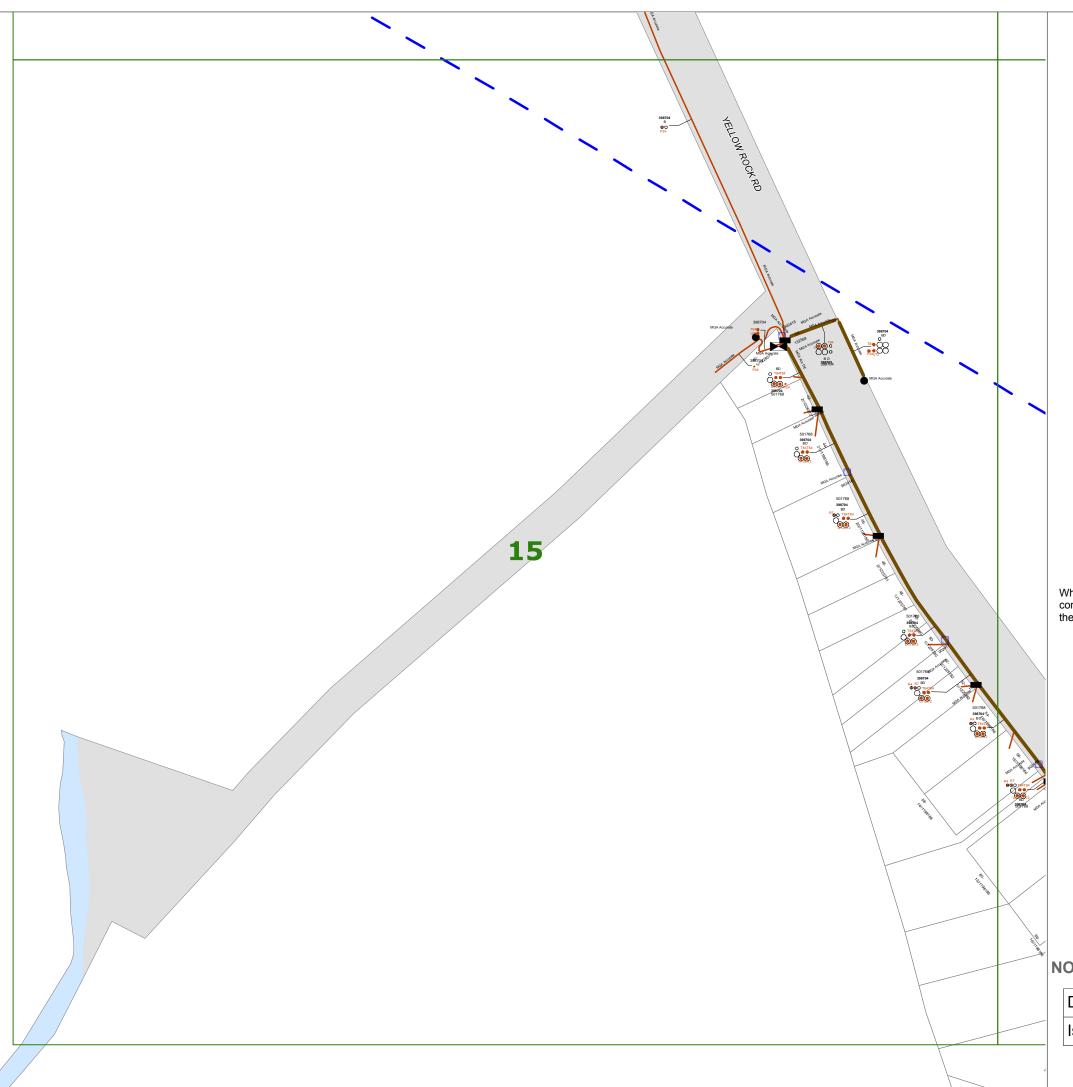
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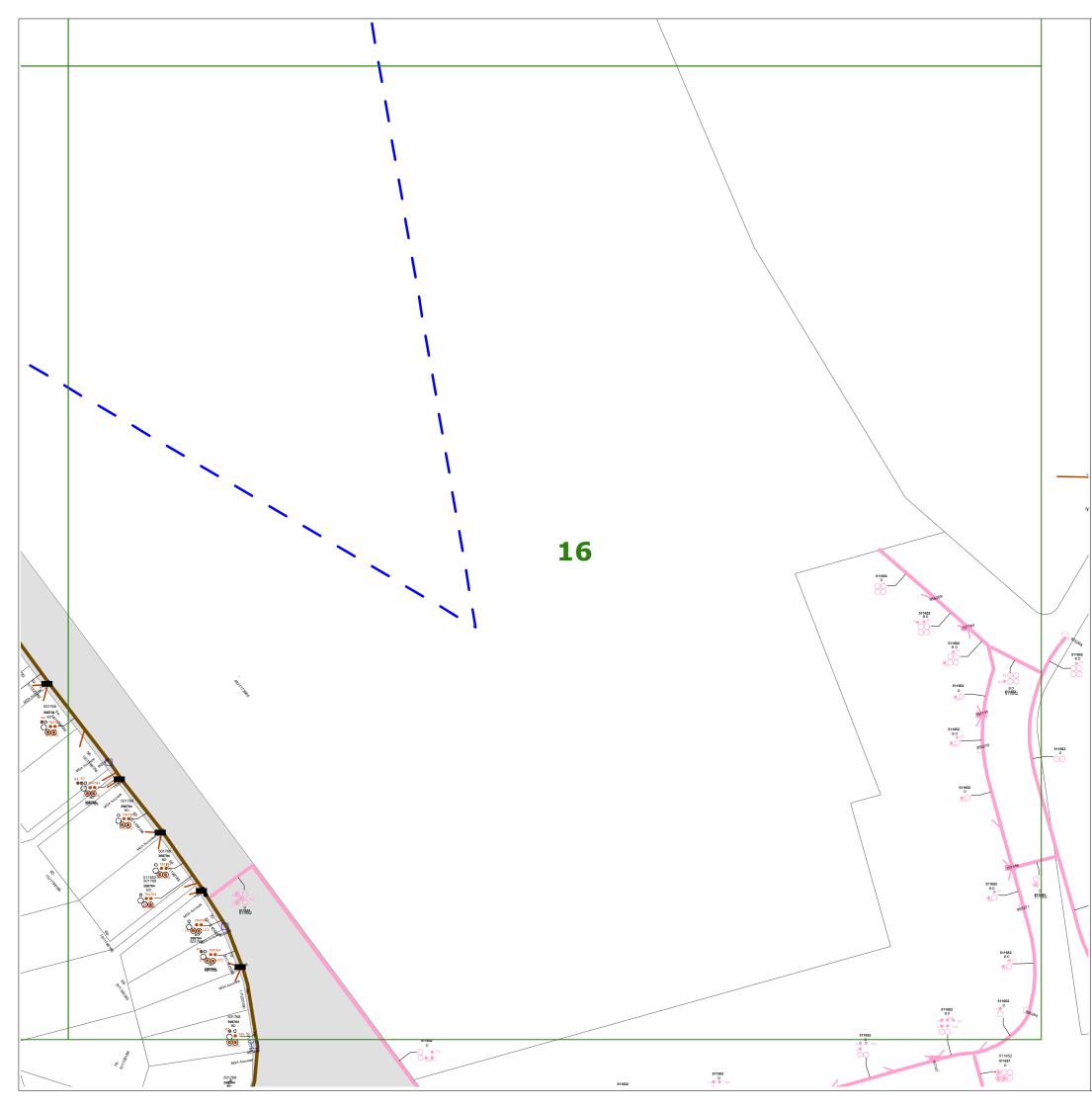
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APPENDIX C: OPTICOM DBYD PLANS

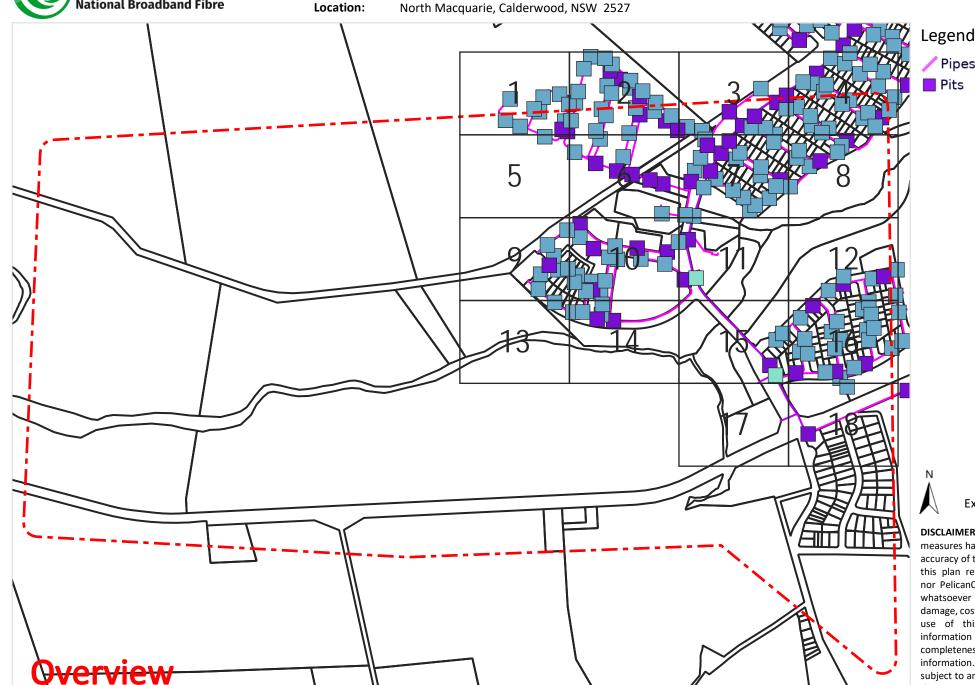


North Macquarie, Calderwood, NSW 2527



The Essential First Step.

Pipes



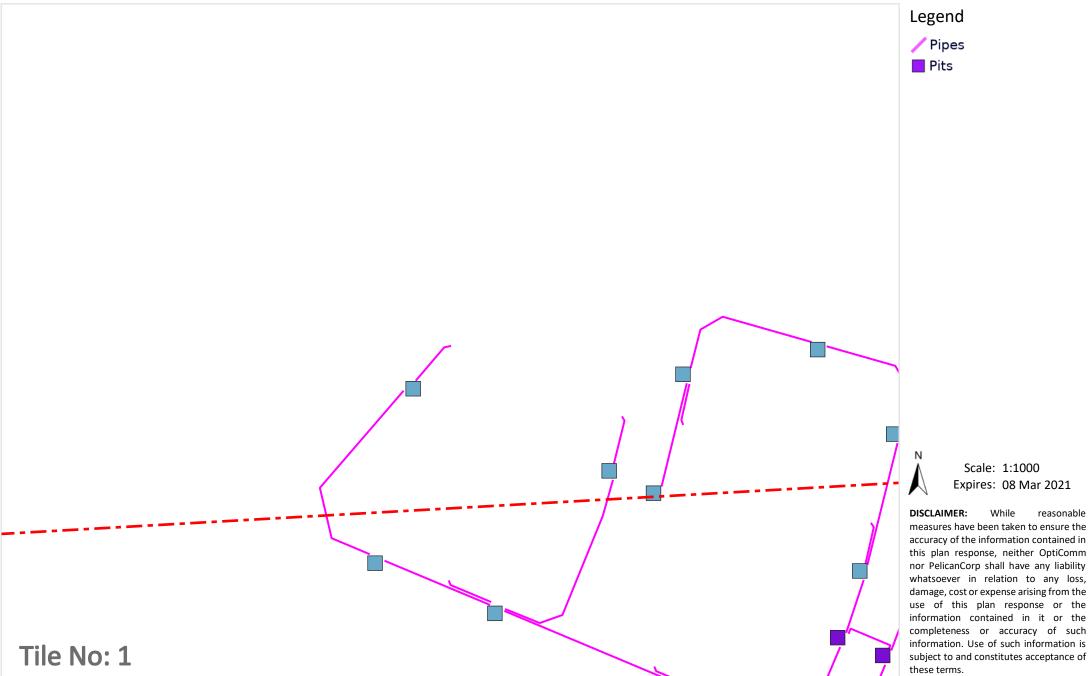
Scale: 1:8182 Expires: 08 Mar 2021

DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither OptiComm nor 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.



North Macquarie, Calderwood, NSW 2527 Location:

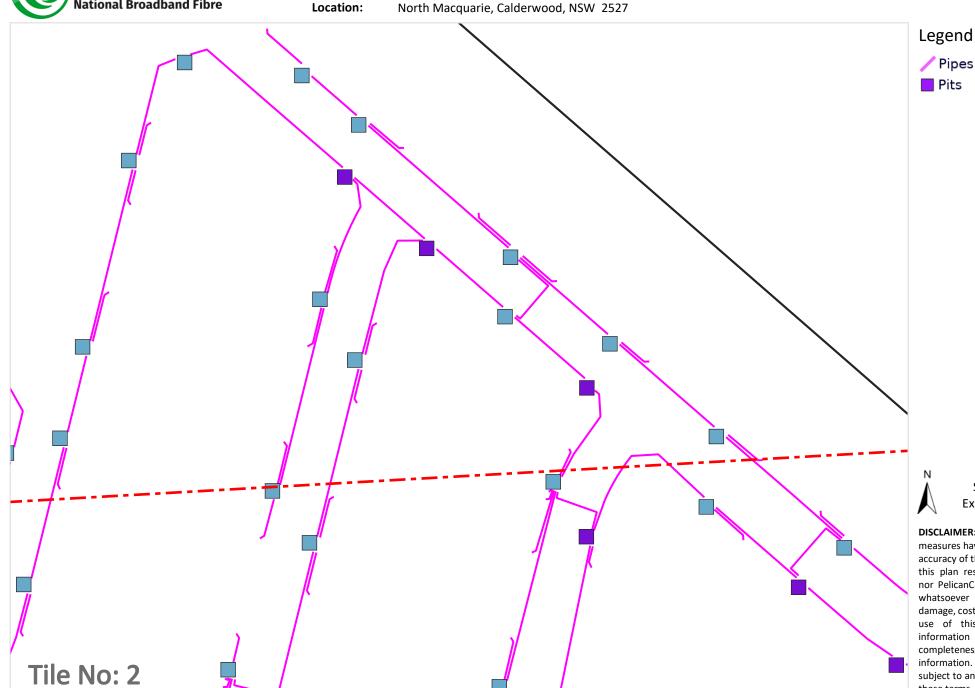






North Macquarie, Calderwood, NSW 2527





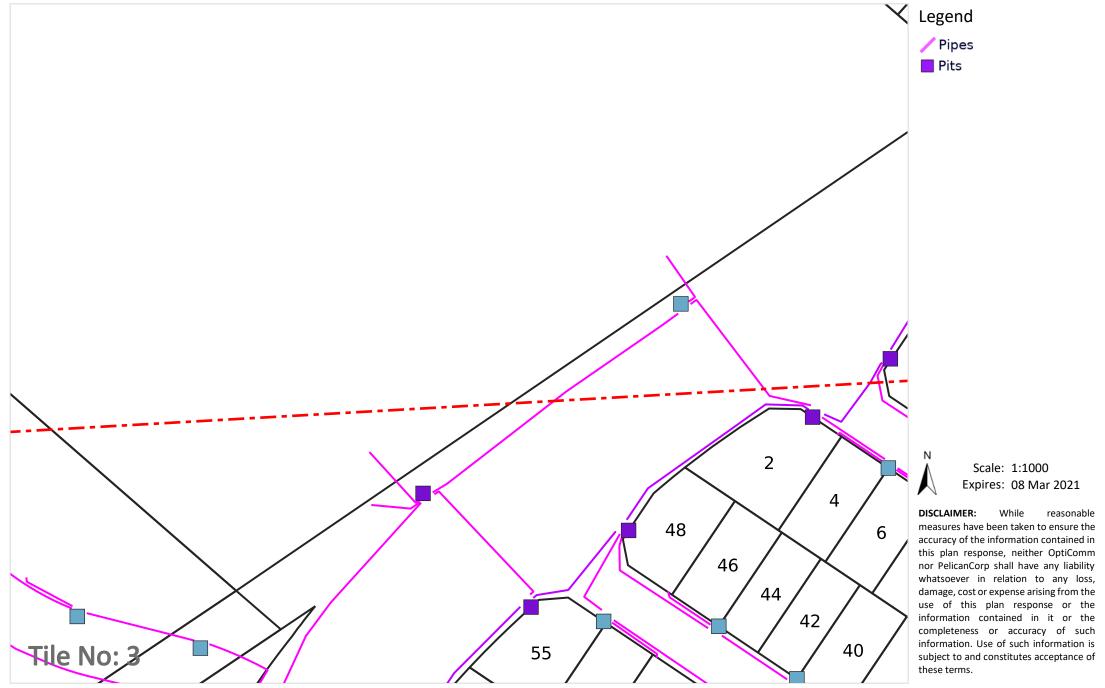
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Location: North Macquarie, Calderwood, NSW 2527







Location:

North Macquarie, Calderwood, NSW 2527







Location: North Macquarie, Calderwood, NSW 2527



Legend
/ Pipes
Pits

221



Scale: 1:1000 Expires: 08 Mar 2021

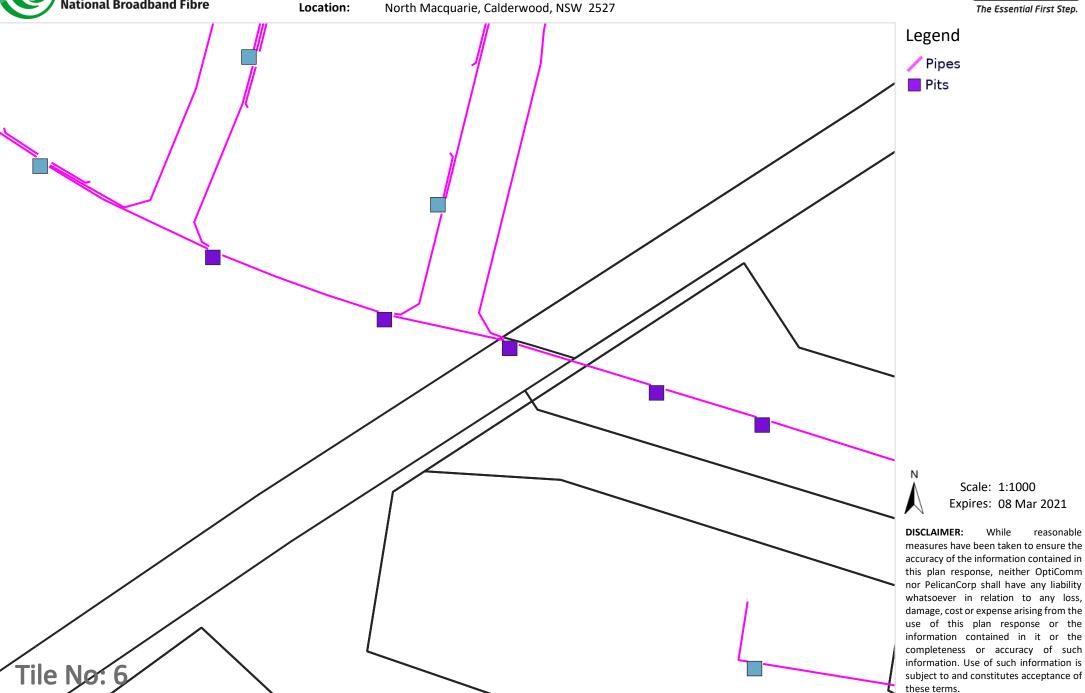
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Tile No: 5



North Macquarie, Calderwood, NSW 2527

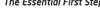






Location: North Macquarie, Calderwood, NSW 2527

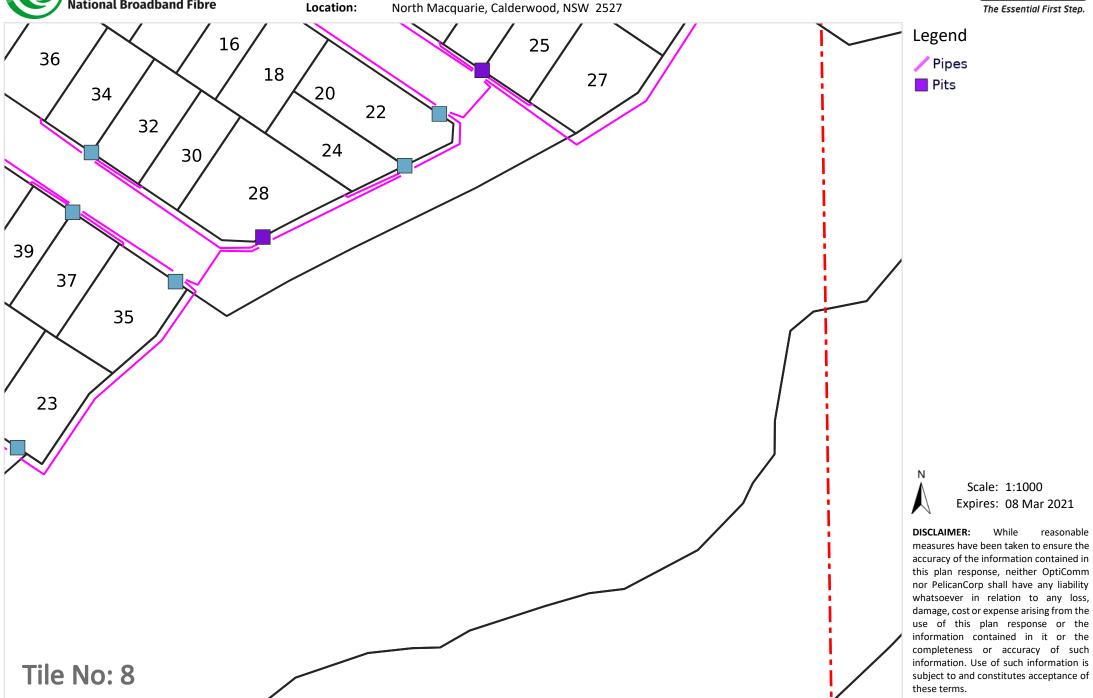








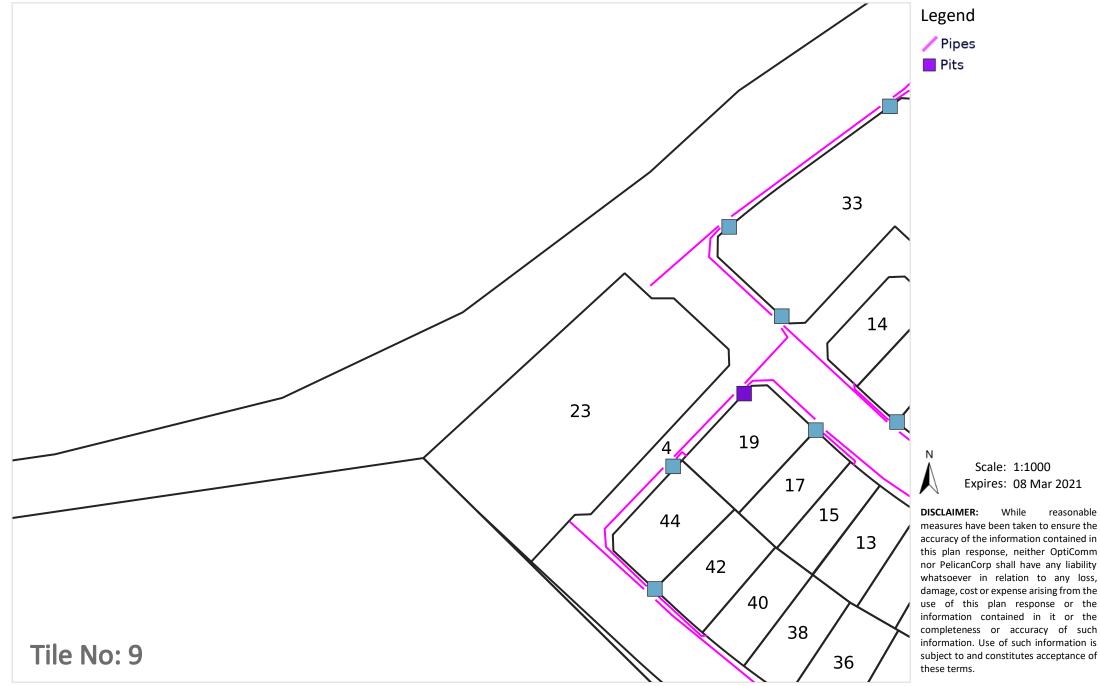






Location: North Macquarie, Calderwood, NSW 2527

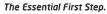






Location:





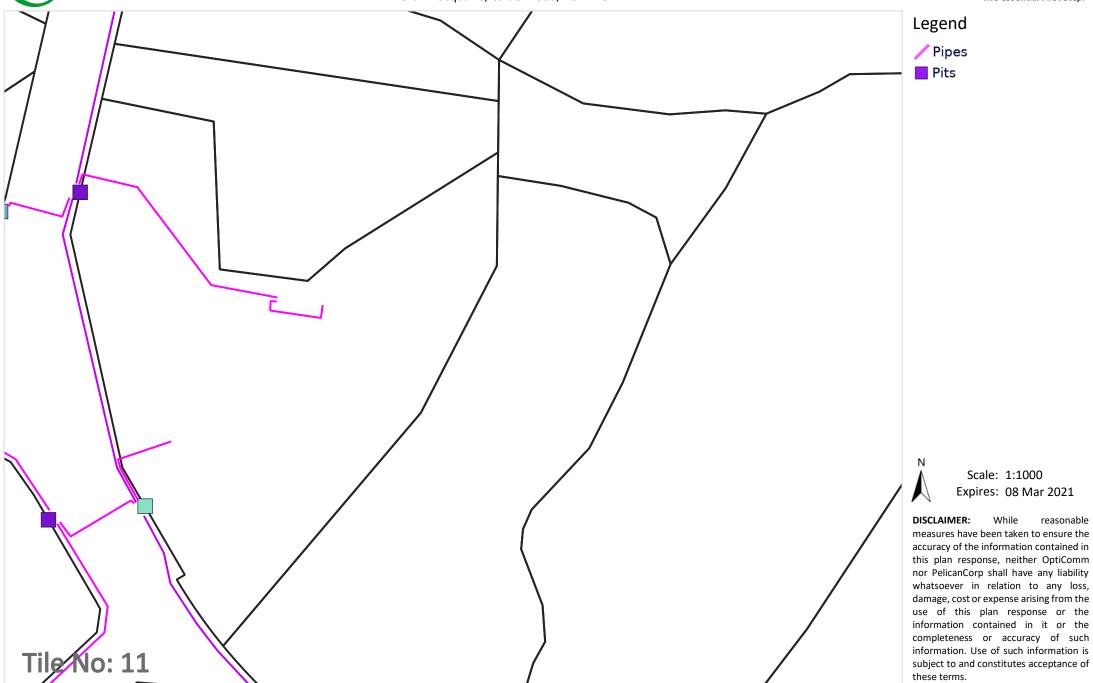




Job No: 106338781 Job No: 21037995 Location: North Maco

North Macquarie, Calderwood, NSW 2527







Location: North Macquarie, Calderwood, NSW 2527







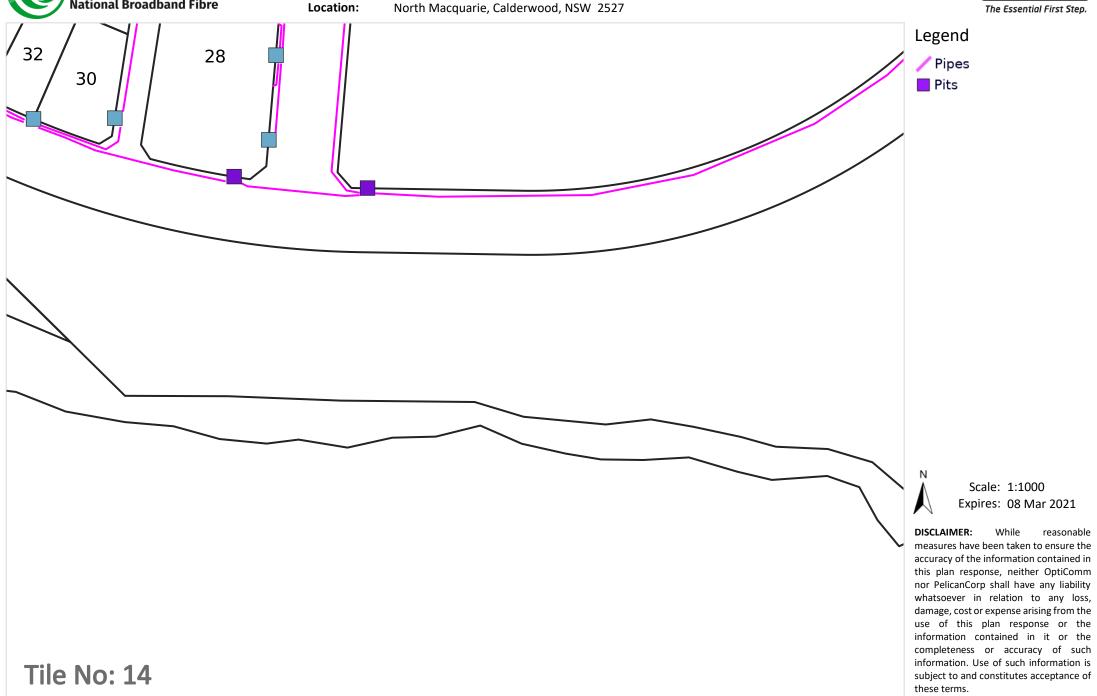
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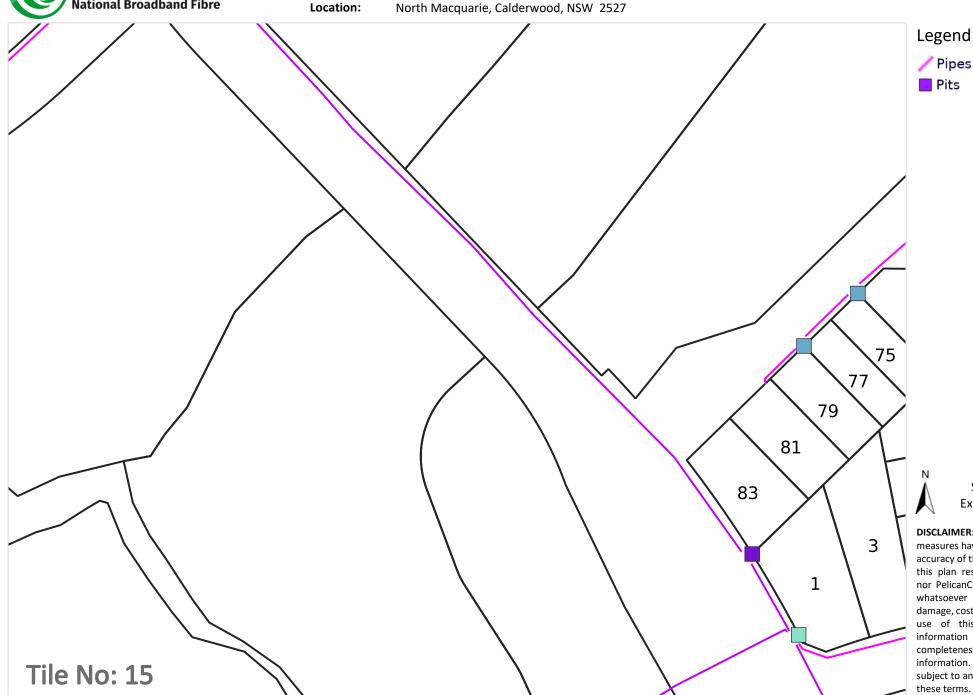






North Macquarie, Calderwood, NSW 2527





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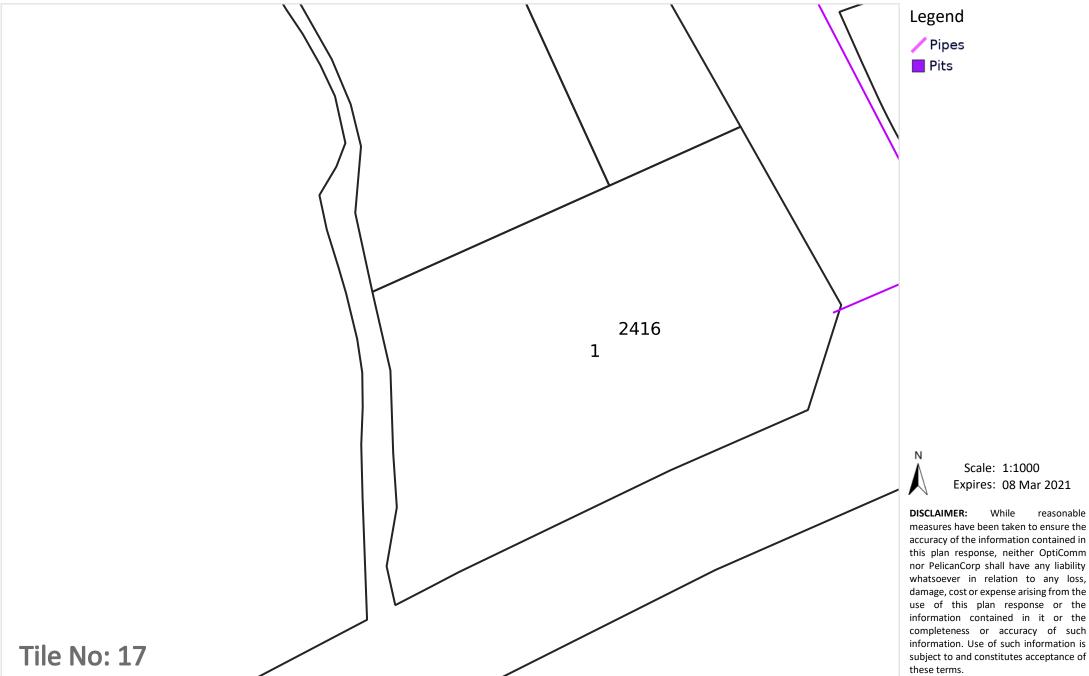
Location: North Macquarie, Calderwood, NSW 2527 The Essential First Step. Legend 🖊 Pipes Pits **B**7 Scale: 1:1000 Expires: 08 Mar 2021 DISCLAIMER: While reasonable measures have been taken to ensure the accuracy of the information contained in this plan response, neither OptiComm nor PelicanCorp shall 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: 106338781 Job No: 21037995 Location:

North Macquarie, Calderwood, NSW 2527







Location: North Macquarie, Calderwood, NSW 2527



The Essential First Step.



Scale: 1:1000 Expires: 08 Mar 2021

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APPENDIX D: CONCEPT MASTER PLAN (URBANCO)

