Engineering Assessment
Casuarina Way

Casuarina Way

Planit
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CONTENTS

1. EXECUTIVE SUMMARY

The purpose of this assessment is to identify the civil engineering requirements to support the residential subdivision development of lot SP94481 in Casuarina Way, Casuarina, NSW. It covers drainage, water and sewer reticulation, power and telecommunications. It aims to ensure that the proposed development can be serviced adequately.

The total site currently consists of 27 townhouses, an internal road, and two carparks. The site is accessed from three locations, two access points on Casuarina Way and one access point on Dianella Drive. The proposed subdivision development will consist of the single carpark on the eastern side of Casuarina Way being separated from the existing lot. The carpark shall retain its current point of access in order to minimise earthworks. The proposed subdivision shall compromise of two individual lots, with the townhouses, internal road and minor carpark to the west of Casuarina remaining as the existing lot, and the carpark on the east of Casuarina Way will form a new lot.

The existing townhouses and carparks will remain as is and their access, services and utilities shall be maintained.

Earthworks will be required on the subject site and will include:

- Trenching for new services.

Water to the lot shall be serviced by connecting into the existing water main running along the western side of Casuarina Way.

Sewer service for the entire lot shall be services by connecting into the existing sewer main running along the south of the site in the drainage reserve.

No issues are foreseen in providing telecommunication and electrical services to the site. No provisions have been made to provide reticulated gas to the lot.

No geotechnical investigations have been carried out specifically for the subject site.

Acid Sulphate Soils and flooding are expected not to affect the development.

No detention basins are necessary on site as the proposed subdivision will not alter the impervious area.

2. CIVIL SITE ASSESSMENT

2.1. SITE DESCRIPTION

A Development Application is being prepared for lodgement with Tweed Shire Council for the subdivision of Lot SP94481 in Casuarina. The subject site (Figure 1) of the proposed development is a staged residential development with an area of approximately 3050m^2. It is proposed that the carpark (Figure 2) is to be subdivided from the lot onto a separate title. The site is situated 6.5km south of Kingscliff CBD under the Tweed Shire Council (TSC) local government area.

Figure 1 | Lot SP94481

The site currently consists of 27 townhouses, an internal road, and two carparks. The site is accessed from three locations, two access points on Casuarina Way and one access point on Dianella Drive. The proposed subdivision development will consist of the single carpark on the eastern side of Casuarina Way being separated from the existing lot. The carpark shall retain its current point of access in order to minimise earthworks. The proposed subdivision shall compromise of two individual lots, with the townhouses, internal road and minor carpark to the west of Casuarina remaining as the existing lot, and the carpark on the east of Casuarina Way will form a new lot.

The existing townhouses and carparks will remain as is and their access, services and utilities shall be guaranteed during the construction works.

Civil plans for the site are included in Appendix A. To confirm the locations of existing services, a 'Dial-Before-You-Dig' (DBYD) search has been requested within the vicinity of the development area and the results are included in Appendix B. It is assumed the site is built on fill similarly to the rest of Casuarina.

Figure 2 | Subject Site

2.2. ENGINEERING CONSTRAINTS

Service locations were obtained using records (DBYD) and discussion with Council. Based on preliminary investigations, no issues are expected with regards to connection points for services.

No geotechnical investigations have been carried out specifically for the subject site. It is assumed that the site is built on fill similarly to the rest of Casuarina. To accurately access the soil conditions, further geotechnical investigations would be required.

No adverse soil conditions including Acid Sulphate soils (ASS) have been encountered at the locations of the original investigation and confirmation is based on the information provided by TSC. The Acid Sulfate Soils Map (Appendix B) shows that the subject site appears to be within an area of Class 4 Acid Sulfate Soils. There should be no adverse effects on works that occur within the first 2m below surface level.

Data from TSC Design Flood Level maps (Appendix B) do not show any significant flooding risk.

3. STORMWATER MANAGEMENT

3.1. STORMWATER RUNOFF

The subject site is reasonably flat with a low point in the centre of the paved area. A stormwater drain already exists at this low point in the catchment. No bulk earthworks to alter overland flow paths are proposed on the site at this stage. The subject site is not undergoing any earthworks or construction so no additional treatment measures are necessary.

3.2. ON-SITE RAINWATER DETENTION

The impervious area of the site is not being altered, therefore there is no ned for aditional on-site rainwater detention.

3.3. STORMWATER QUALITY

No water quality measures will need to be implemented as the existing sites impervious area will not be altered.

4. SERVICES ASSESSMENT

4.1. WATER

TSC provides reticulated water supply to commercial customers within the local area and is responsible for all reticulated water supply to the development. Water reticulation should be connected through the available existing water main on the western side of Casuarina Way. It is proposed that the connection is under-bored from the eastern side of Casuarina Way to prevent major earthworks. Refer the 'Dial-Before-You-Dig' (Appendix B) for the proposed water reticulation layout.

The current site is not undergoing any size upgrades or changing its use. Currently, the subject site hosts a concrete sealed carpark, and there are no proposed changes. Therefore there will not be any additional demand being placed on the water infrastructure. A new connection may be required.

The location of the water main was not provided by the survey and was estimated from 'Dial-Before-You-Dig' plans (Appendix B) and is indicative only.

4.2. SEWER

TSC provides reticulated sewer to commercial customers within the local area and is responsible for all reticulated sewer supply to the development. Based on the limited information that has been provided by Council (Appendix A) and 'Dial-Before-You-Dig' plans (Appendix B), a sewer line exists in the drainage reserve that runs along the south of the site. It is estimated using back calculations that the sewer line sits at approximately RL 4.8m. The bottom southern corner of the site has an RL of approximately 9.5m, so achieving a minimum grade of 1 in 60 is not an issue.

After conversations with Council it is understood that the existing sewer line will be moved to the northern side of the drainage reserve in the near future by others as part of separate development works. Preliminary alignment plans for this sewer have been provided by NDC Consulting Engineers for the works in the adjacent property. This will have no negative impacts on the proposed sewer connection point and will shorten the distance between the site and the sewer line. It will be necessary that an easement is created on the private property between the lot and the drainage reserve to ensure that sewer servicing is possible.

The lot will only require a single sewer connection and no augmentation to the existing sewer network will be necessary.

4.3. STORMWATER

TSC provides reticulated stormwater to commercial customers within the local area and is responsible for all reticulated stormwater supply to the development. The subject site currently connects to the stormwater network on the eastern side of Casuarina Way. The current stormwater infrastructure is sufficient and no additional connections will be needed.

4.4. POWER

Essential Energy is the main service authority for power supply in the region and is responsible for building, operating and maintaining the electricity network within the proximity of the TSC area. HV and LV power is currently running along the eastern side of Casuarina Way and connection should be available via the west of the subject site.

4.5. TELECOMMUNICATIONS

NBN is the main telecommunications service supplier to the project area. Telstra service is available via the existing NBN network along the western side of Casuarina Way. The location of existing telecommunication services has been estimated through 'Dial-Before-You-Dig' plans (Appendix B) and is indicative only. Detailed service location is required prior to detailed design.

5. CONCLUSION

The engineering assessment undertaken for this site has identified that the proposed commercial subdivision of lot SP94481 in Casuarina Way can be readily serviced without significant augmentation to existing services for water, sewer, power and telecommunications.

Supply of water shall be through connection to the existing water main on the western side of Casuarina Way.

Lot shall be directly connected to the sewers existing in the drainage reserve along the south of the site.

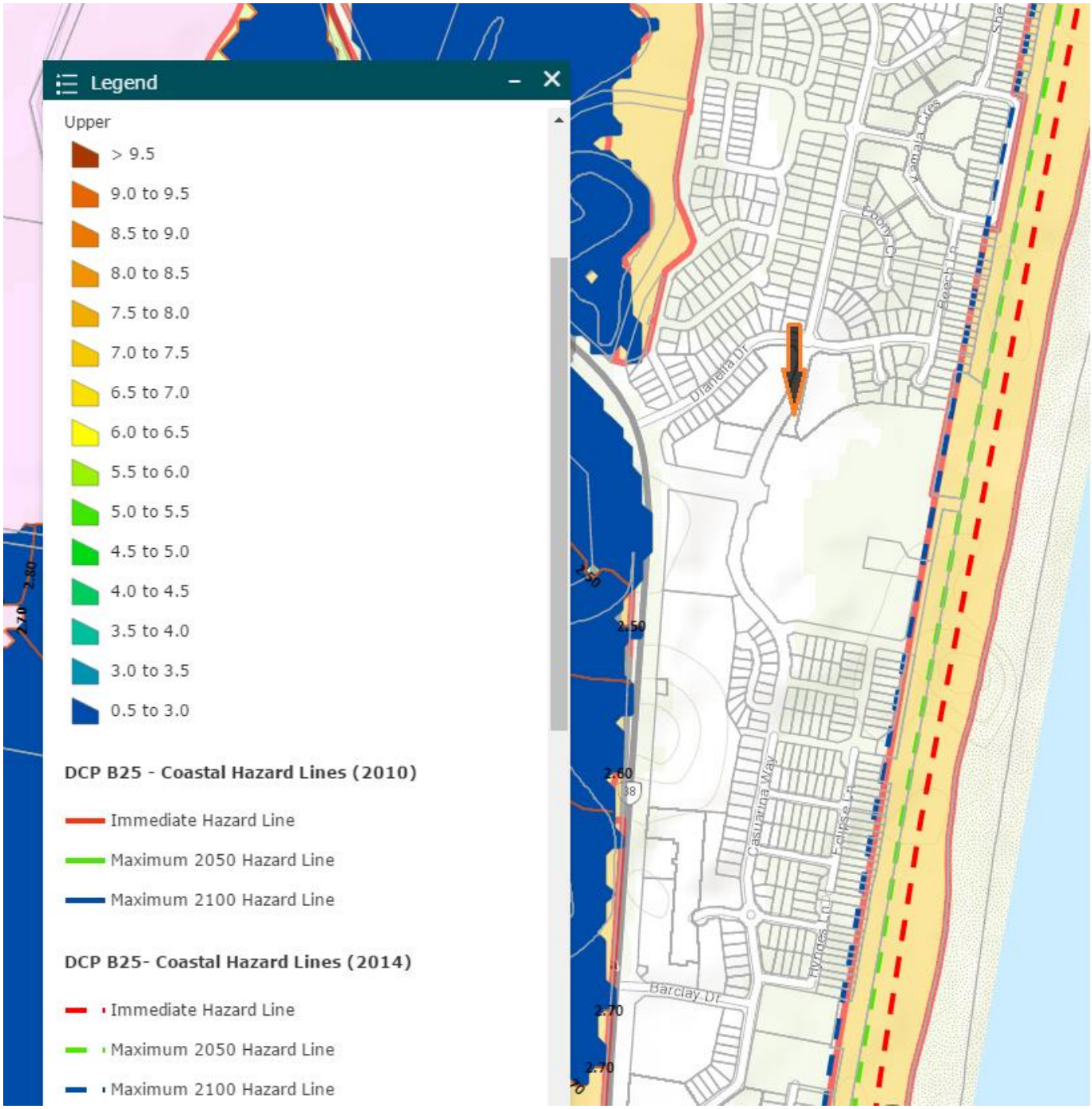
Power shall be serviced by a connection to the existing line running along the eastern side of Casuarina Way.

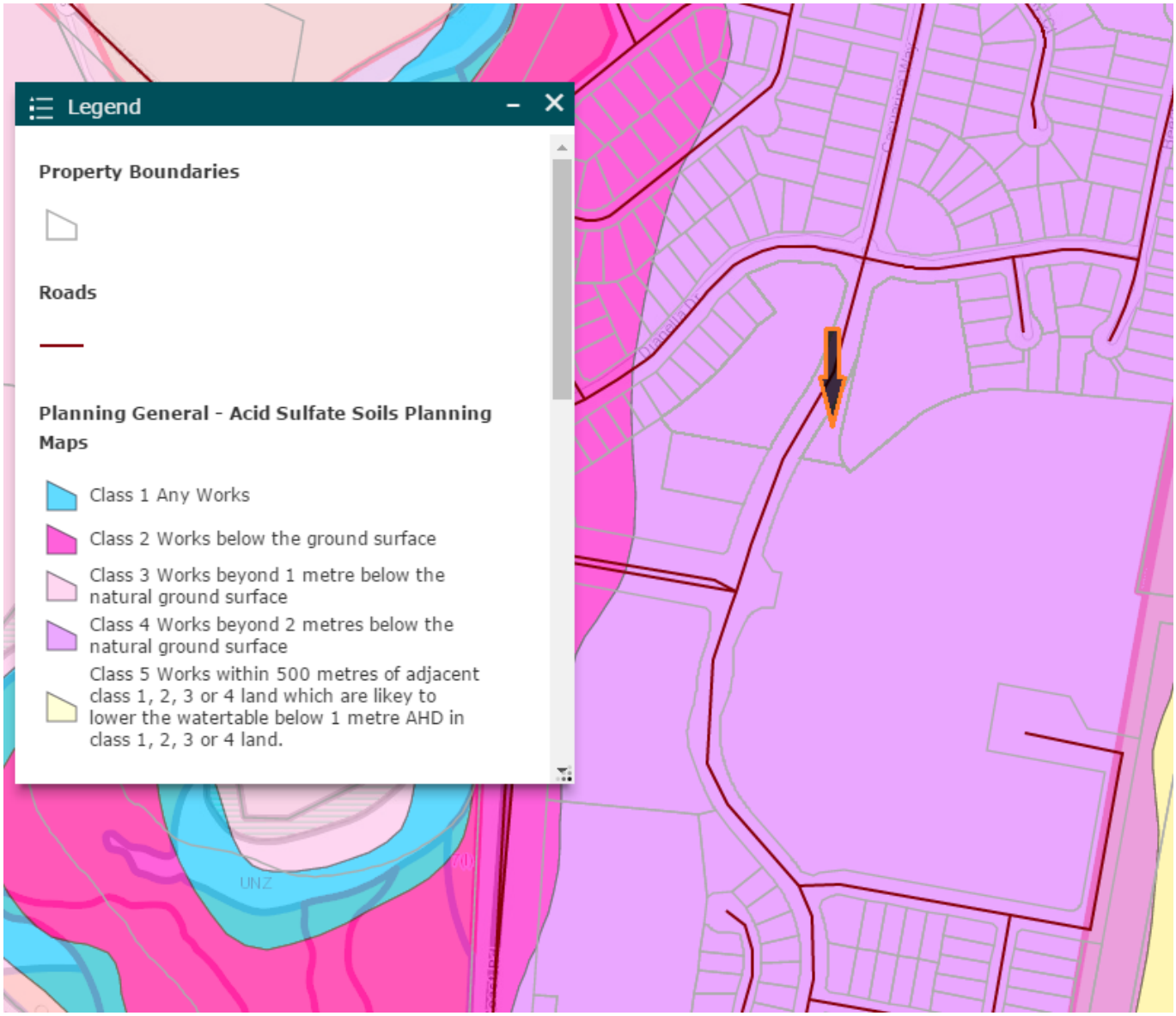
Telecommunications shall be serviced via a connection to the existing NBN network on the western side of Casuarina Way.

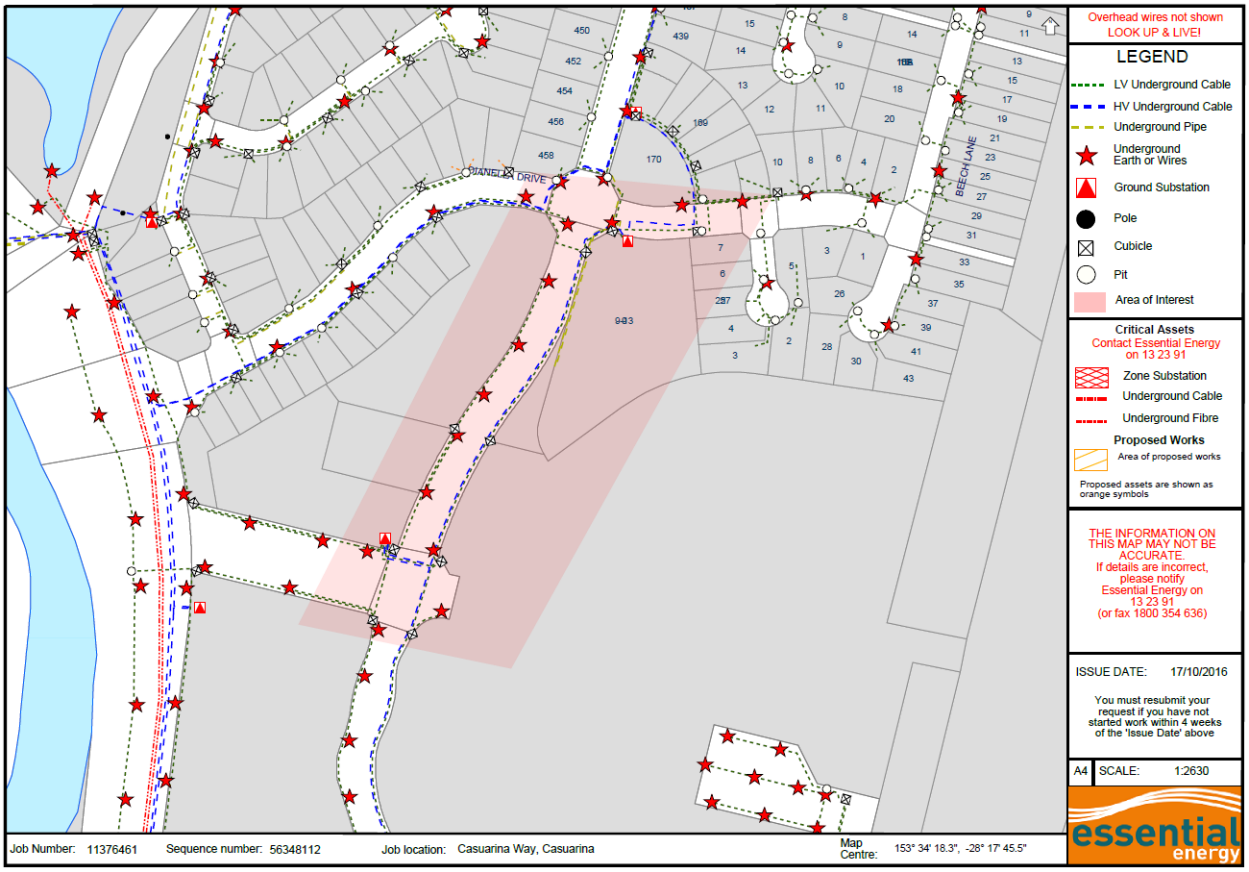
Based on the assessment undertaken, it is believed that the proposed development can readily be serviced in a sustainable way.

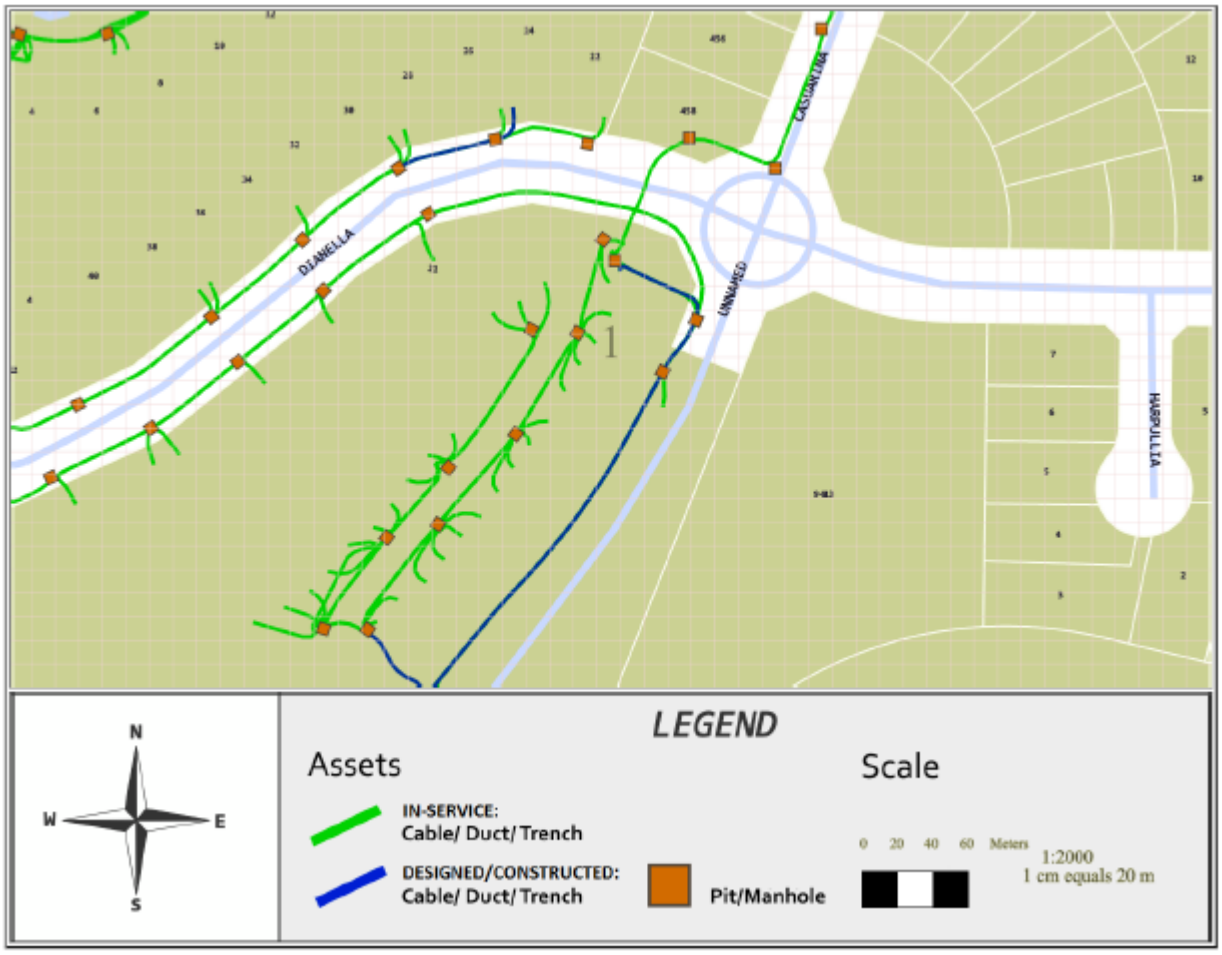
APPENDIX A | CIVIL ENGINEERING PLANS

APPENDIX B | TSC MAPS AND DIAL BEFORE YOU DIG RESULTS




Legend
Property Boundaries
Roads
Planning General - Acid Sulfate Soils Planning Maps
Class 1 Any Works
Class 2 Works below the ground surface
Class 3 Works beyond 1 metre below the natural ground surface
Class 4 Works beyond 2 metres below the natural ground surface
Class 5 Works within 500 metres of adjacent class 1, 2, 3 or 4 land which are likey to lower the watertable below 1 metre AHD in class 1, 2, 3 or 4 land.


Overhead wires not shown
LOOK UP & LIVE!
LEGEND
LV Underground Cable
HV Underground Cable
Underground Pipe
Underground Earth or Wires
Ground Substation
Pole
Cubicle
Pit
Area of Interest
Critical Assets
Contact Essential Energy on 13 23 91
Zone Substation
Underground Cable
Underground Fibre
Proposed Works
Area of proposed works
Proposed assets are shown as orange symbols
THE INFORMATION ON THIS MAP MAY NOT BE ACCURATE.
If details are incorrect, please notify Essential Energy on 13 23 91 (or fax 1800 354 636)
ISSUE DATE: 17/10/2016
You must resubmit your request if you have not started work within 4 weeks of the 'Issue Date' above
A4
SCALE: 1:2630
essential energy
DIANELLA DRIVE
BEECH LANE
Job Number: 11376461
Sequence number: 56348112
Job location: Casuarina Way, Casuarina
Map Centre: 153° 34' 18.3", -28° 17' 45.5"


DIANELLA
CASUARINA
UNNAMED
HARPULLIA
1
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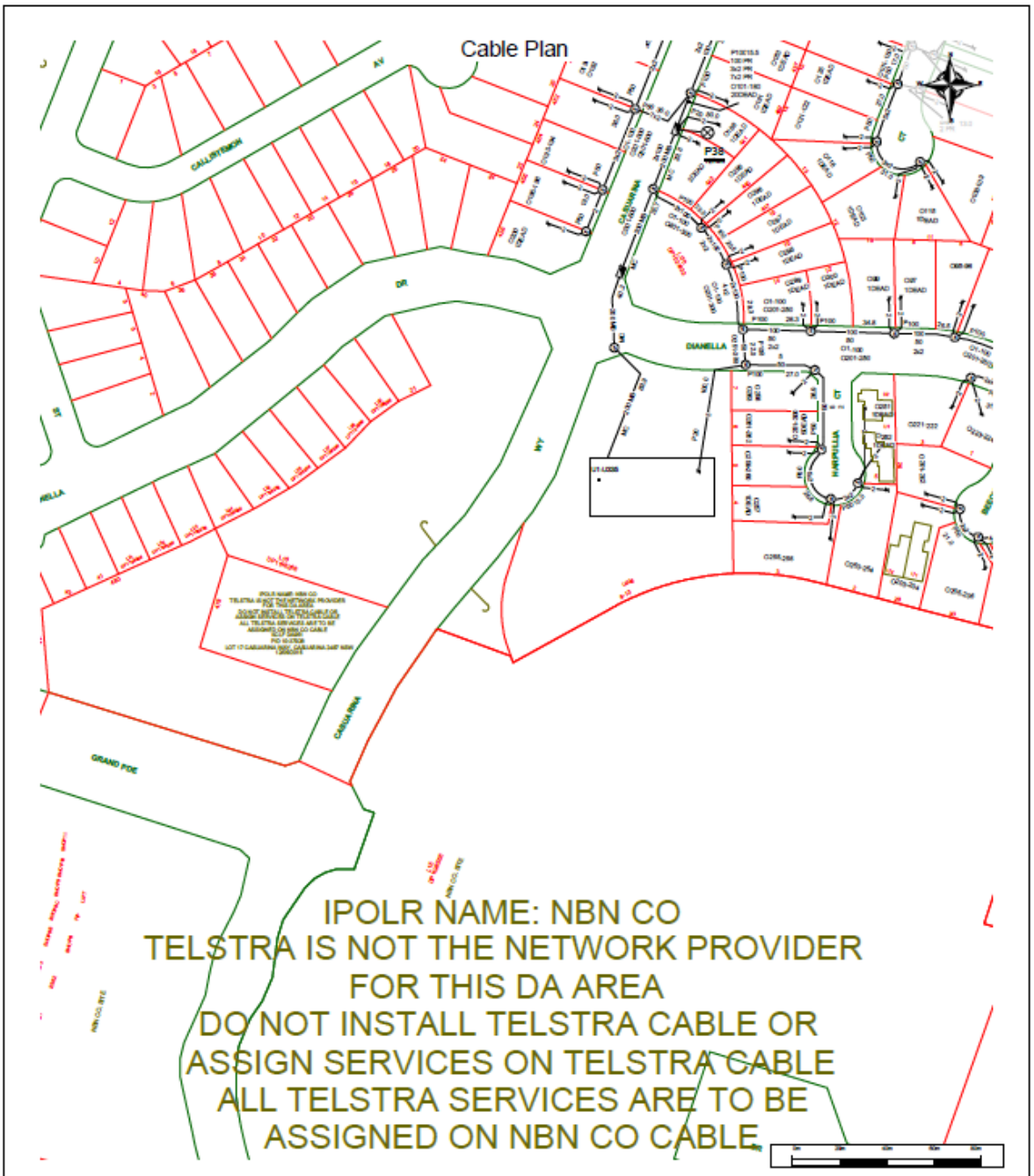
E
S
LEGEND
Assets
IN-SERVICE:
Cable/ Duct/ Trench
DESIGNED/CONSTRUCTED:
Cable/ Duct/ Trench
Pit/Manhole
Scale
0 20 40 60 Meters
1:2000
1 cm equals 20 m



Telstra For all Telstra DBYD plan enquiries - email - Telstra.Plans@team.telstra.com For urgent onsite contact only - ph 1800 653 935 (bus hrs)	Sequence Number: 56348113
TELSTRA CORPORATION LIMITED A.C.N. 051 775 556	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 17/10/2016 10:09:22	

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

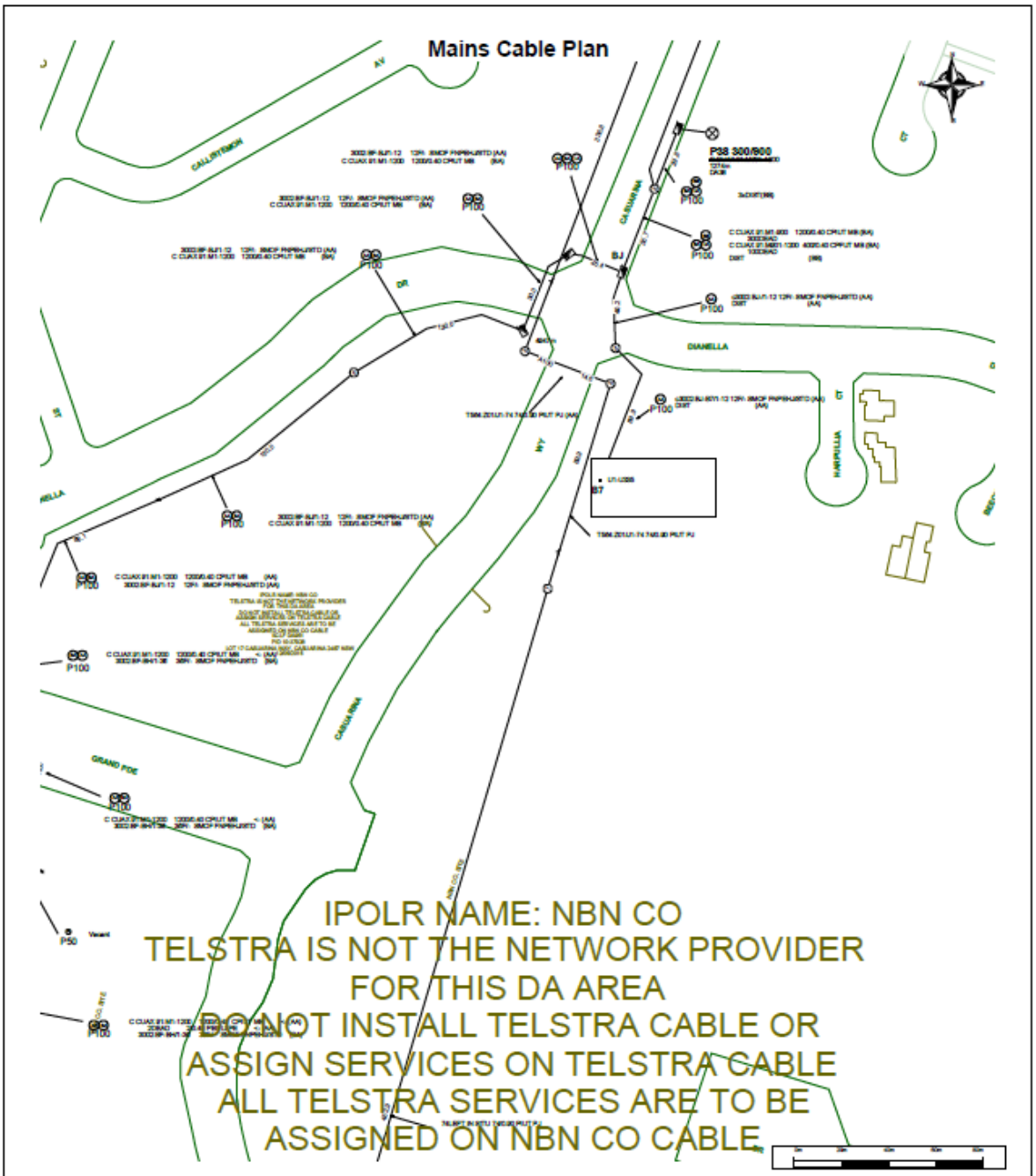
WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

It is your responsibility to locate Telstra's underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.

Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.

Page 1 of 2



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TELSTRA CORPORATION LIMITED A.C.N. 051 775 556	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.
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WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

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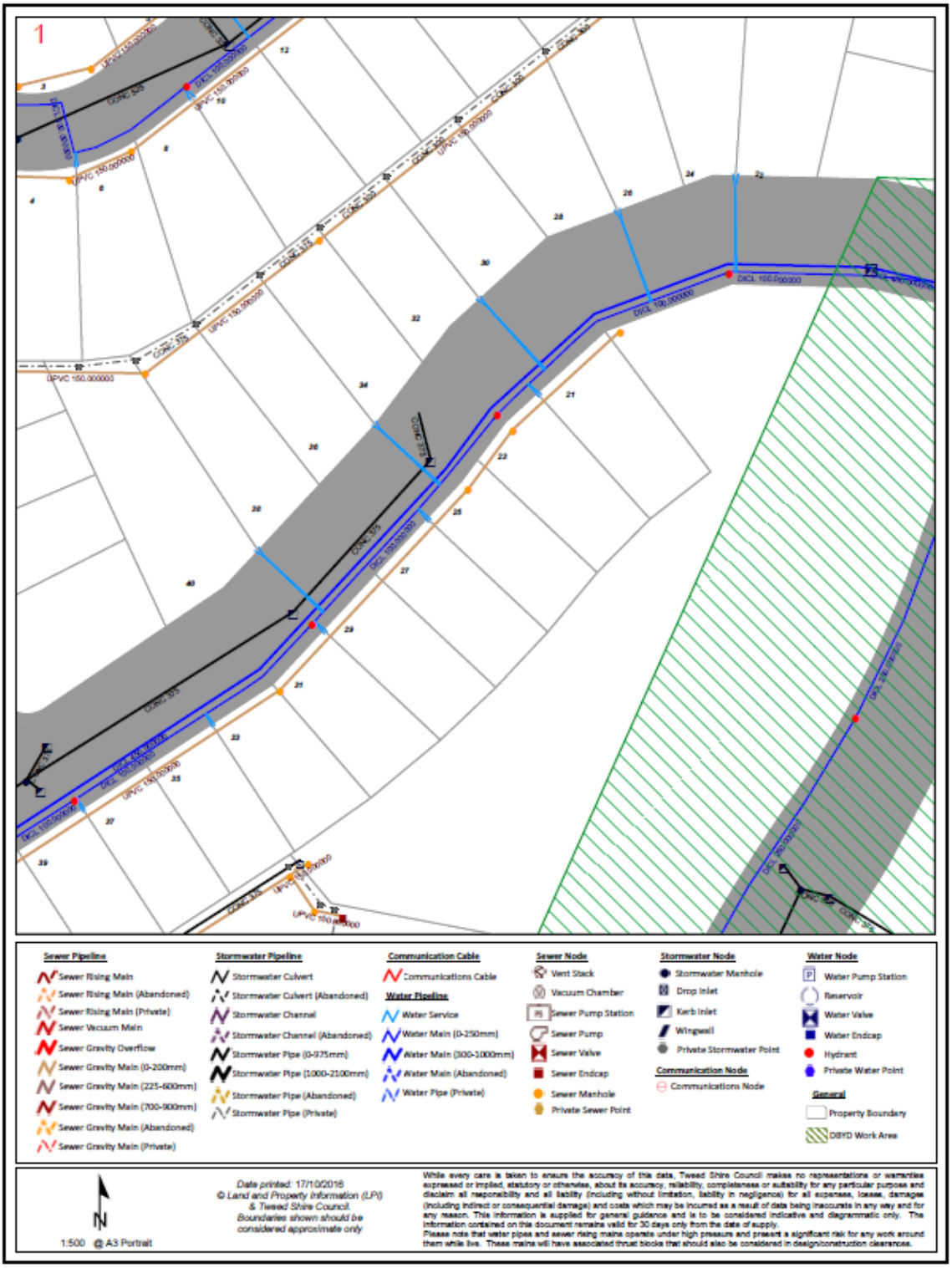
Map 1

Sequence No: 56348111
Casuarina Way Casuarina

TWEED SHIRE COUNCIL

Date: 17/10/2016



Dial Before You Dig (DBYD) Pipeline Location Information

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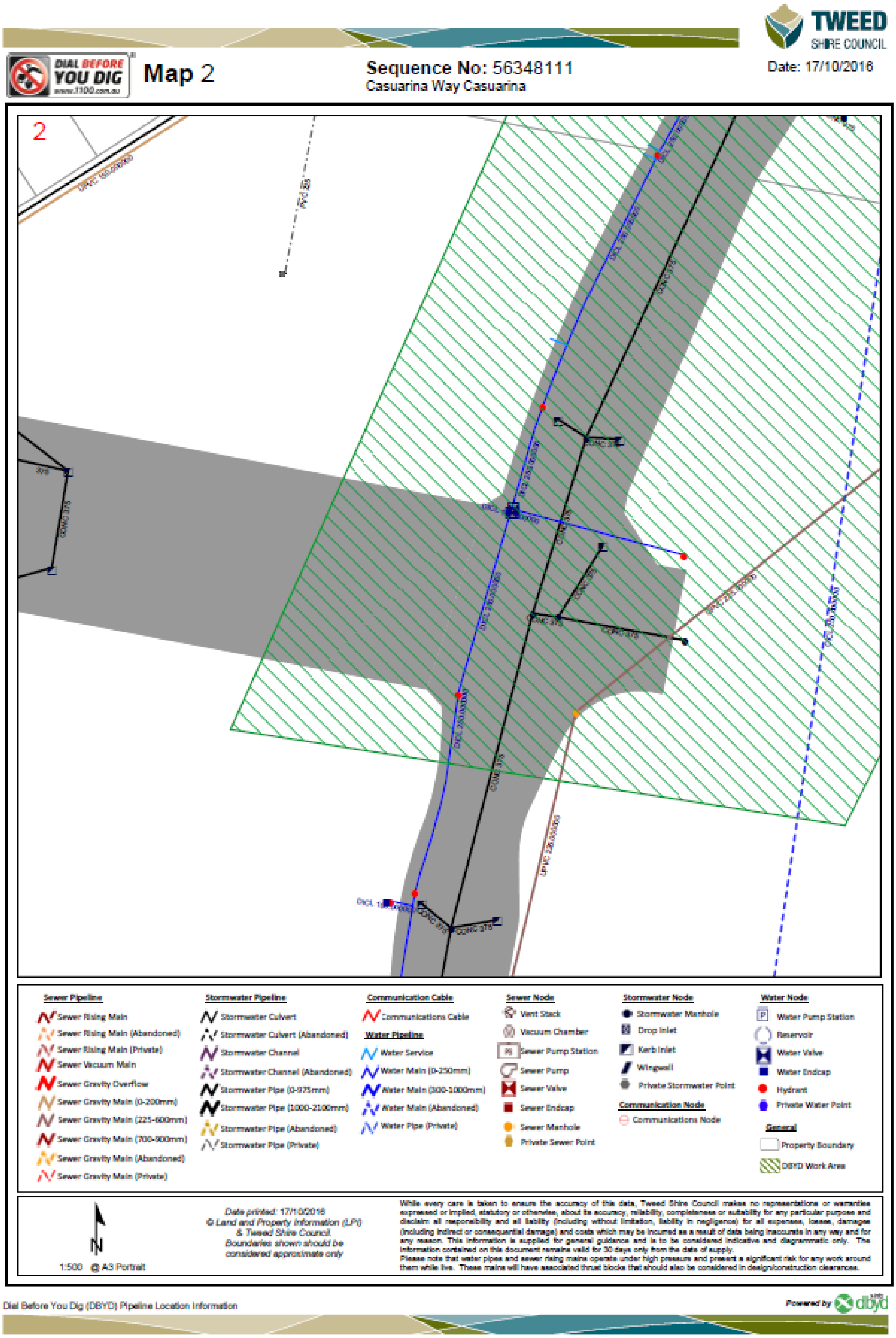
TWEED
SHIRE COUNCIL
DIAL BEFORE YOU DIG
Map 2
Sequence No: 56348111
Casuarina Way Casuarina
Date: 17/10/2016
2
Sewer Pipeline
Sewer Rising Main
Sewer Rising Main (Abandoned)
Sewer Rising Main (Private)
Sewer Vacuum Main
Sewer Gravity Overflow
Sewer Gravity Main (0-200mm)
Sewer Gravity Main (225-600mm)
Sewer Gravity Main (700-900mm)
Sewer Gravity Main (Abandoned)
Sewer Gravity Main (Private)
Stormwater Pipeline
Stormwater Culvert
Stormwater Culvert (Abandoned)
Stormwater Channel
Stormwater Channel (Abandoned)
Stormwater Pipe (0-975mm)
Stormwater Pipe (1000-2100mm)
Stormwater Pipe (Abandoned)
Stormwater Pipe (Private)
Communication Cable
Communications Cable
Water Pipeline
Water Service
Water Main (0-250mm)
Water Main (300-1000mm)
Water Main (Abandoned)
Water Pipe (Private)
Sewer Node
Vent Stack
Vacuum Chamber
Sewer Pump Station
Sewer Pump
Sewer Valve
Sewer Endcap
Sewer Manhole
Private Sewer Point
Stormwater Node
Stormwater Manhole
Drop Inlet
Kerb Inlet
Wingwall
Private Stormwater Point
Communication Node
Communications Node
Water Node
Water Pump Station
Reservoir
Water Valve
Water Endcap
Hydrant
Private Water Point
General
Property Boundary
DBYD Work Area
N
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Dial Before You Dig (DBYD) Pipeline Location Information
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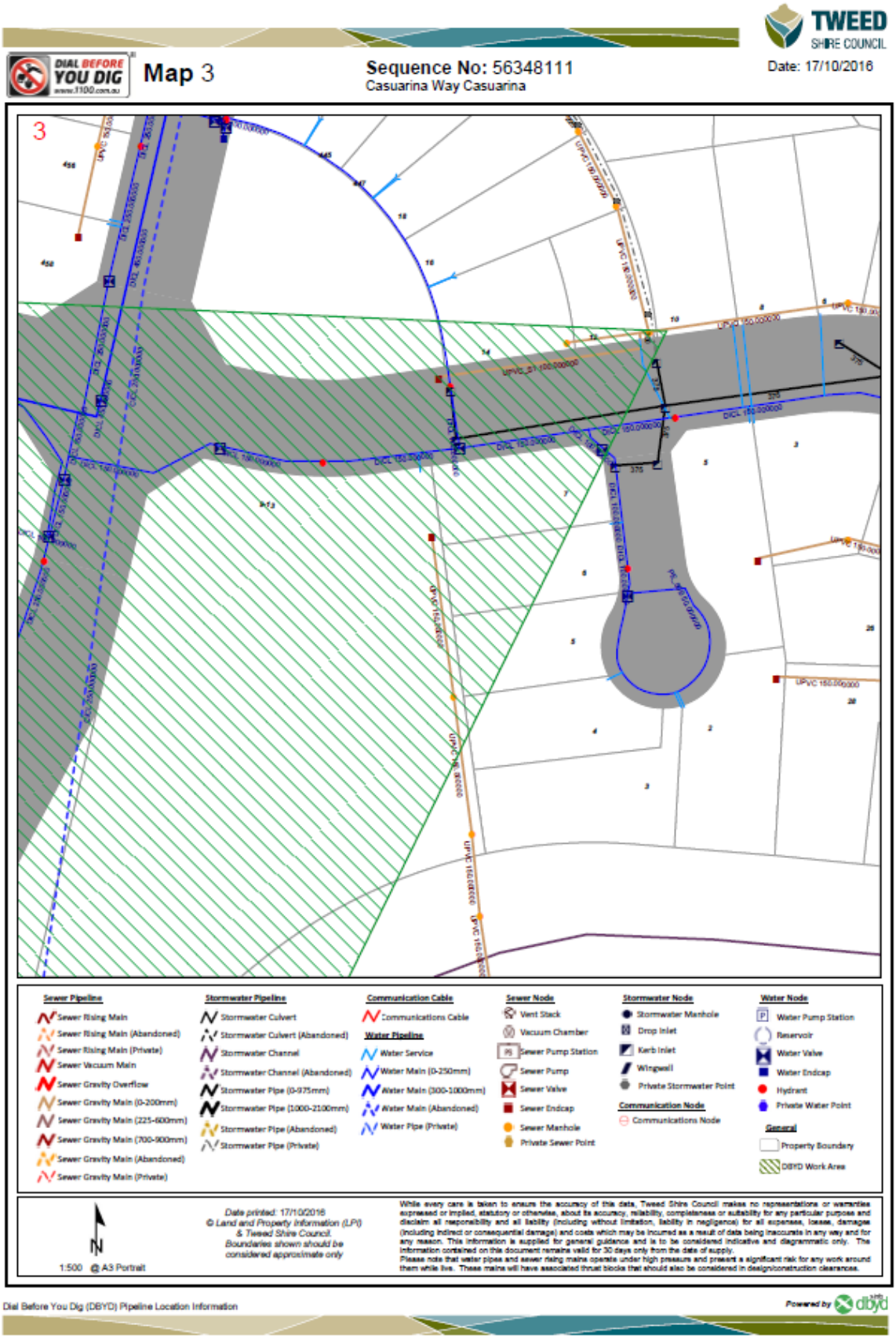
DIAL BEFORE YOU DIG
Map 3
Sequence No: 56348111
Casuarina Way Casuarina
TWEED SHIRE COUNCIL
Date: 17/10/2016
3
Sewer Pipeline
Sewer Rising Main
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Stormwater Manhole
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Kerb Inlet
Wingwall
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Water Node
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Map 4

Sequence No: 56348111
Casuarina Way Casuarina

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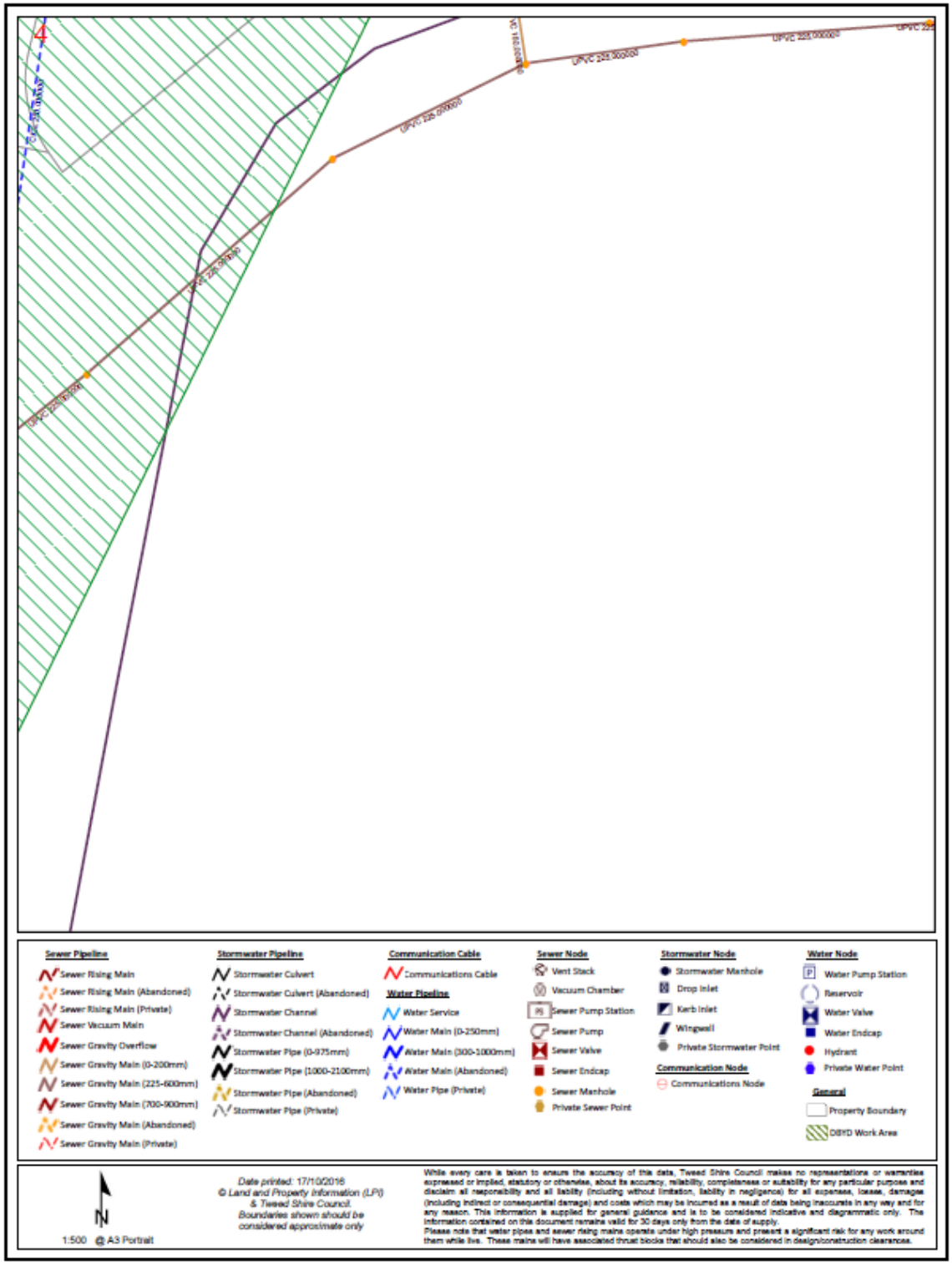
Date: 17/10/2016



Sewer Pipeline
- Sewer Rising Main
- Sewer Rising Main (Abandoned)
- Sewer Rising Main (Private)
- Sewer Vacuum Main
- Sewer Gravity Overflow
- Sewer Gravity Main (0-200mm)
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- Sewer Gravity Main (Abandoned)
- Sewer Gravity Main (Private)

Stormwater Pipeline
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Communication Cable
- Communications Cable

Water Pipeline
- Water Service
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- Water Main (300-1000mm)
- Water Main (Abandoned)
- Water Pipe (Private)

Sewer Node
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- Sewer Pump
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- Sewer Endcap
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Communication Node
- Communications Node

Water Node
- Water Pump Station
- Reservoir
- Water Valve
- Water Endcap
- Hydrant
- Private Water Point

General
- Property Boundary
- DBYD Work Area

N

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Dial Before You Dig (DBYD) Pipeline Location Information

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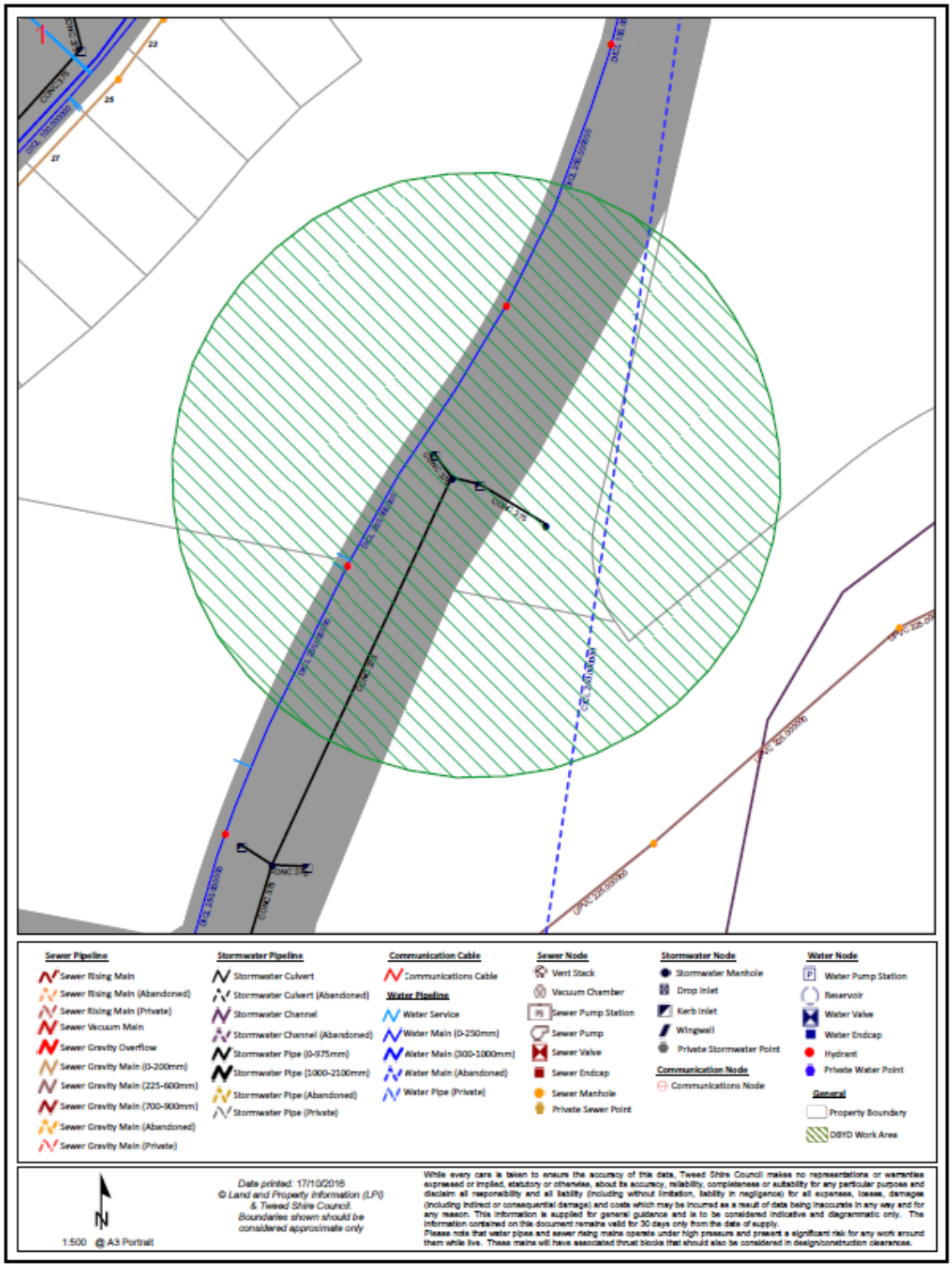
Map 1

Sequence No: 56349094
Dianella Drive Casuarina

Date: 17/10/2016



Sewer Pipeline
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Communication Cable
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Sewer Node
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- Sewer Endcap
- Sewer Manhole
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Stormwater Node
- Stormwater Manhole
- Drop Inlet
- Kerb Inlet
- Wingwall
- Private Stormwater Point

Communication Node
- Communications Node

Water Node
- Water Pump Station
- Reservoir
- Water Valve
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- Private Water Point

General
- Property Boundary
- DBYD Work Area

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Dial Before You Dig (DBYD) Pipeline Location Information

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