



# Engineering Assessment

## Casuarina Way

### Casuarina Way

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## 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 comprise 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 can be achieved via a gravity connection into the existing sewer main in the road reserve approximately 260m to the south of the site. Alternatively, a number of other connection points could be investigated during the detailed design stage.

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<sup>2</sup>. 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 carpark areas. 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 comprise 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 record 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 assess 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 need for additional 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**

A plan showing the locations of the proposed services connections is provided in Appendix C.

#### **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.

#### **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), the closest location for a sewer connection in public land is on the south eastern corner of the roundabout to the south of the subject site.

It is estimated using back calculations that the proposed sewer connection sits at approximately RL 3.5m. The bottom southern corner of the subject site has an RL of approximately 9.5m. The proposed connection is 260m from the site and at a minimum grade of 1:60 connection can be achieved at approximately RL 4.2m.

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

Alternatively, there are a number of other potential connection locations in the local area (refer Figure 3) which may be utilised should they prove to be more viable during detailed design. Verification of levels and capacity will be required to determine the suitability of these locations.

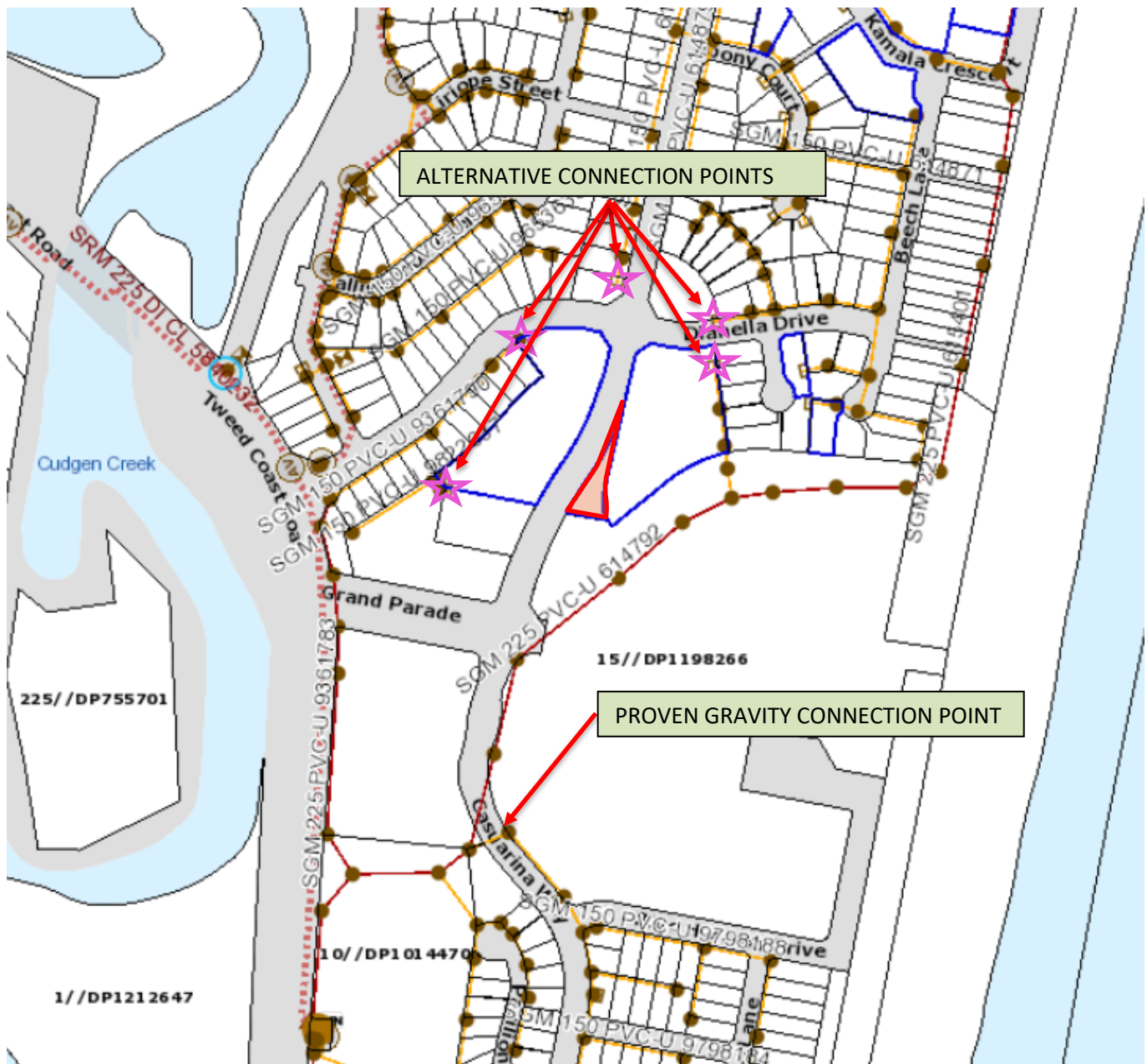


Figure 3 | Alternative Sewer Connection Locations

#### 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 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.

The allotment is capable of being serviced via a number of connection points in the immediate locality and the most suitable sewer connection point will be determined during the detailed design phase of the subdivision.

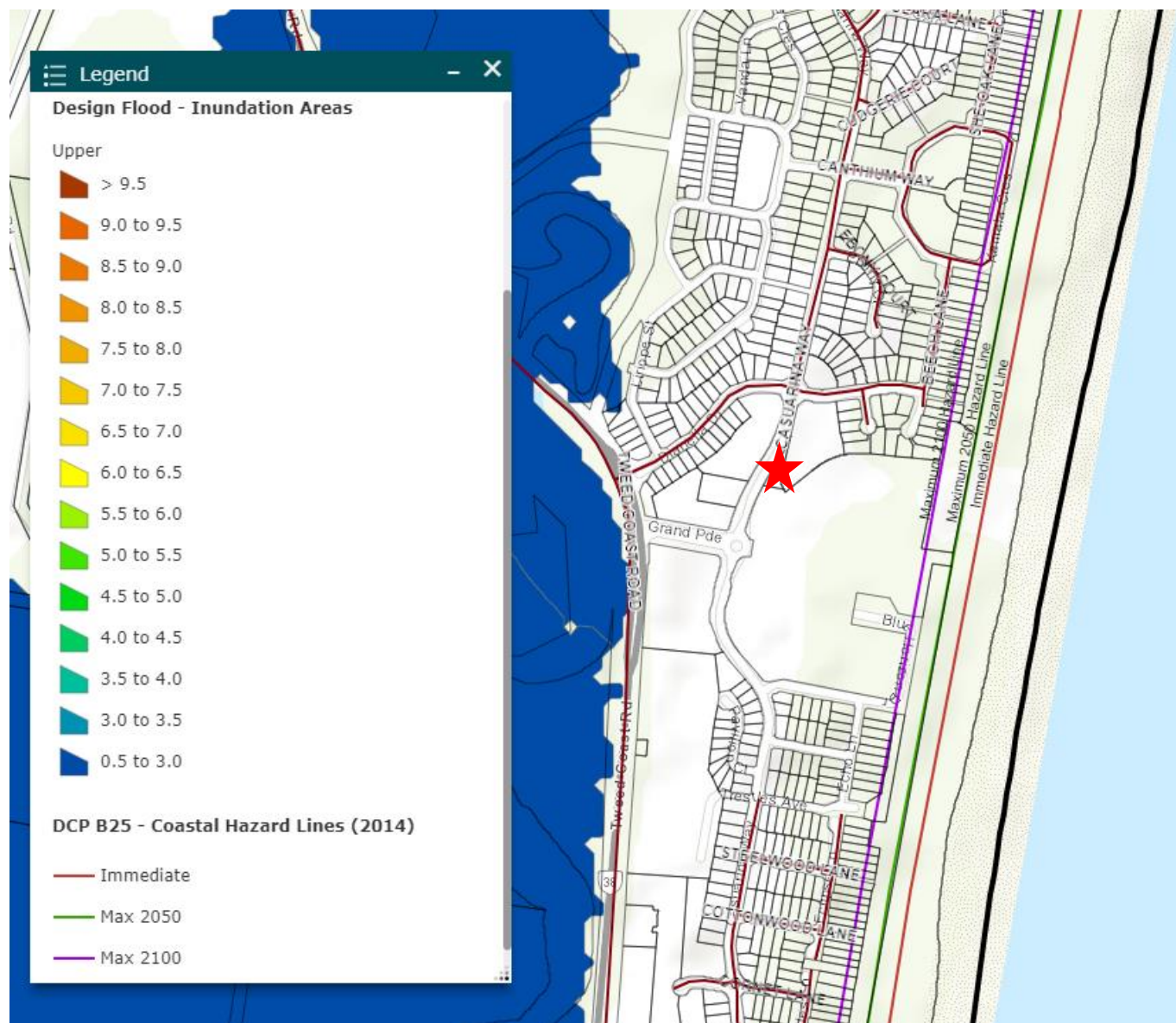
Power shall be serviced by a connection to the existing line running along the eastern side of Casuarina Way.

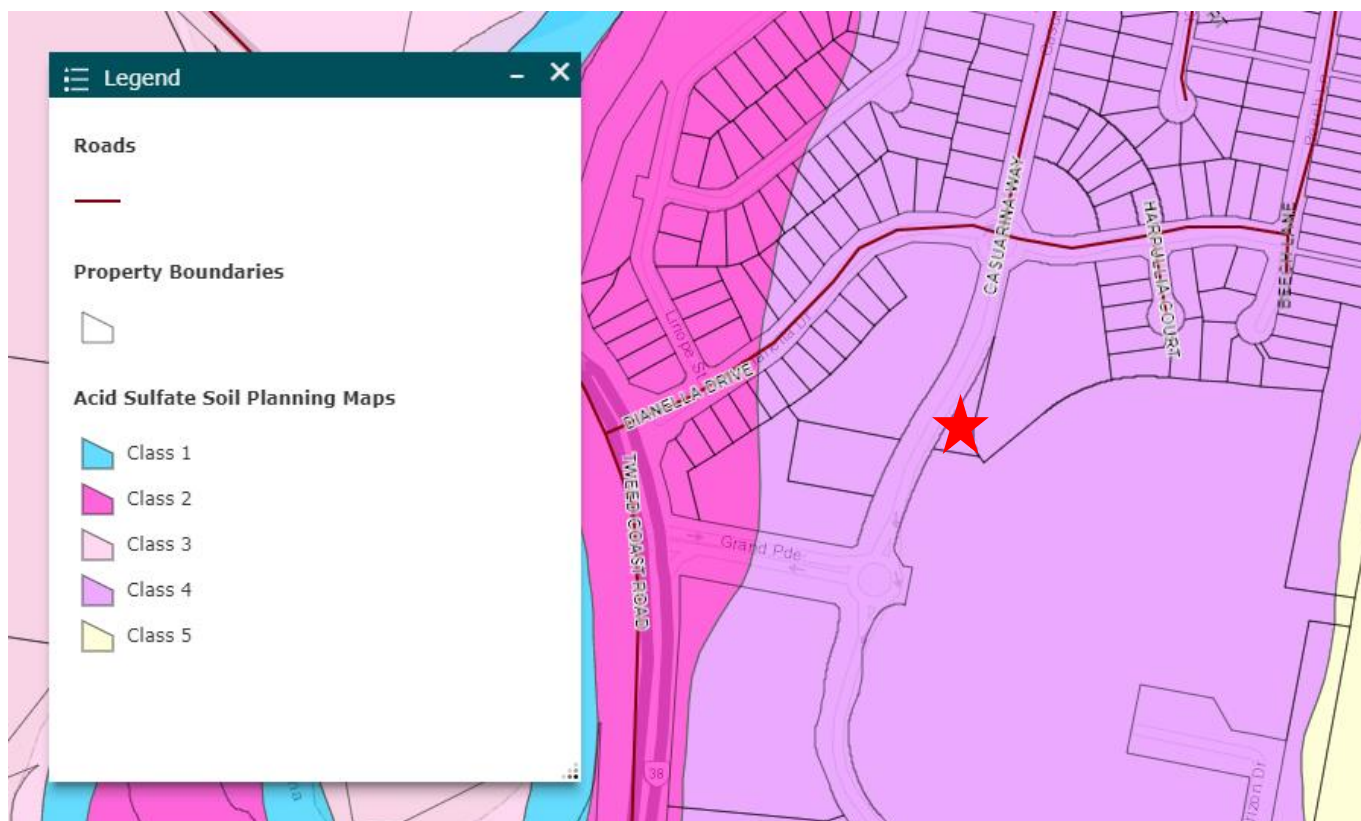
Telecommunications shall be serviced via a connection to the existing NBN network on the western side of Casuarina Way.

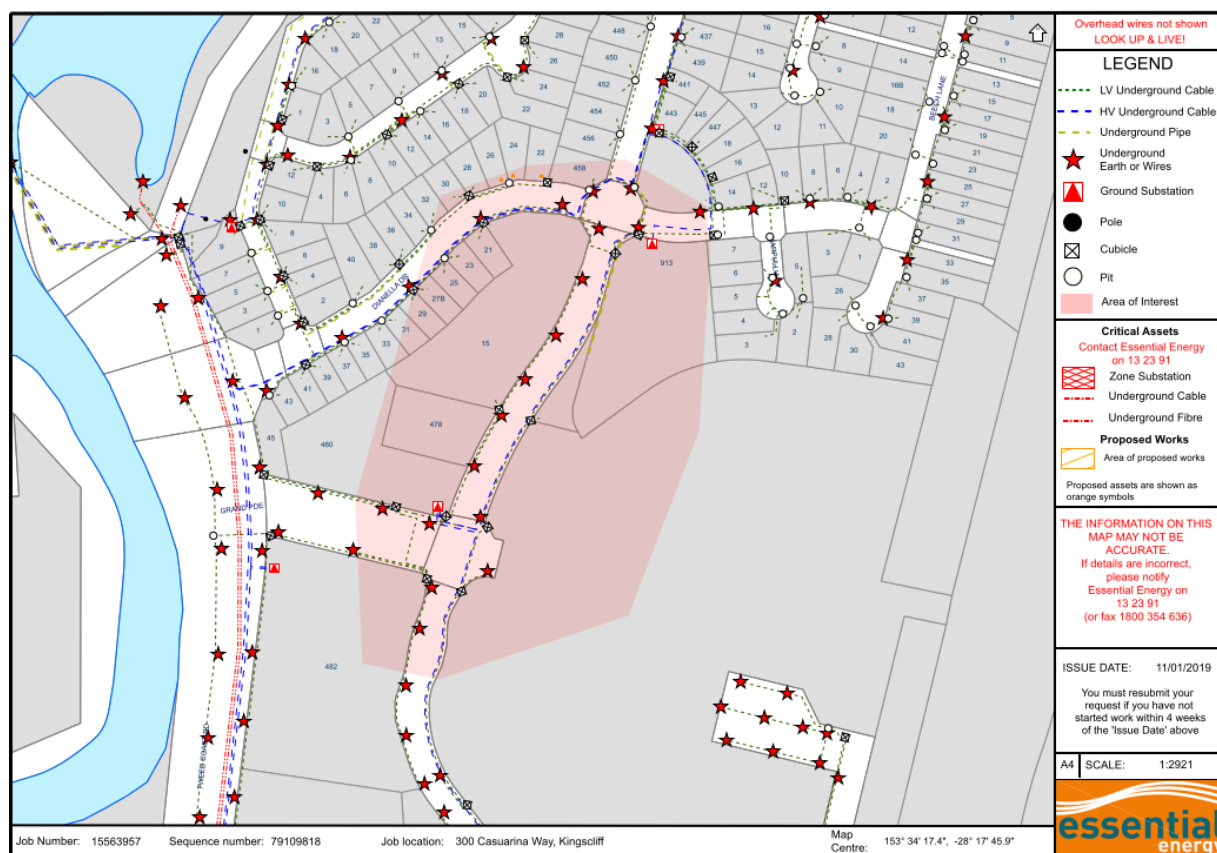
Based on the assessment undertaken, it is believed that the proposed development can readily be serviced in a sustainable way.

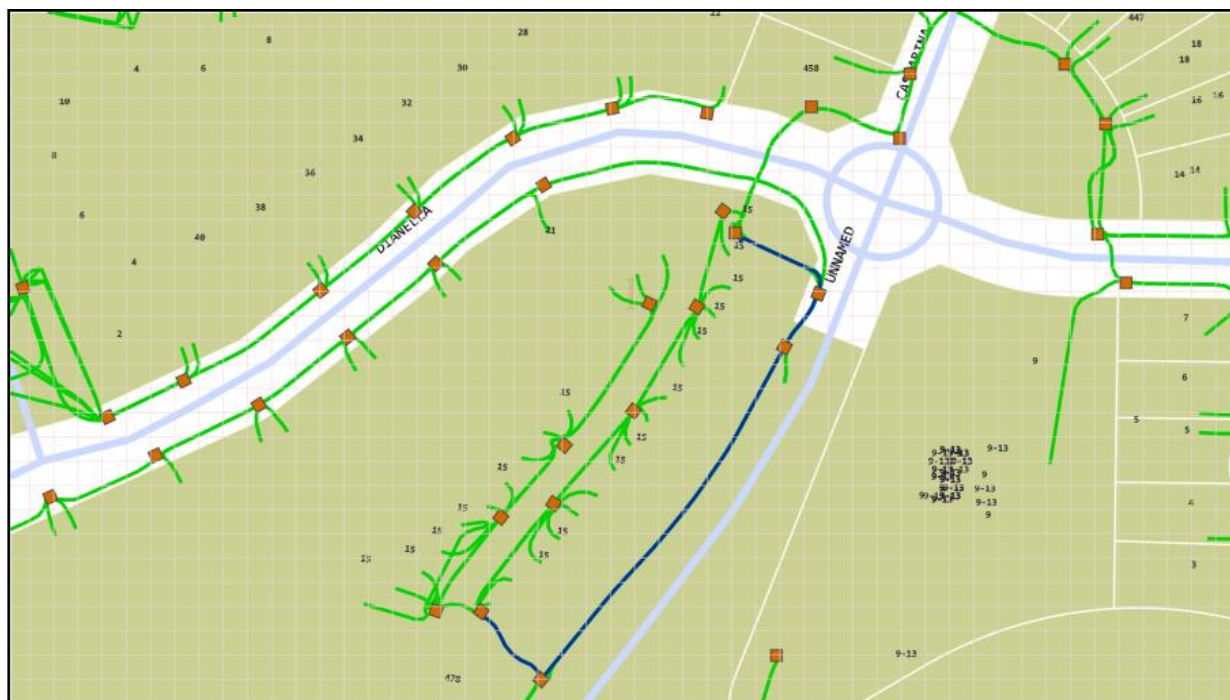
## APPENDIX A | CIVIL ENGINEERING RECORD PLANS

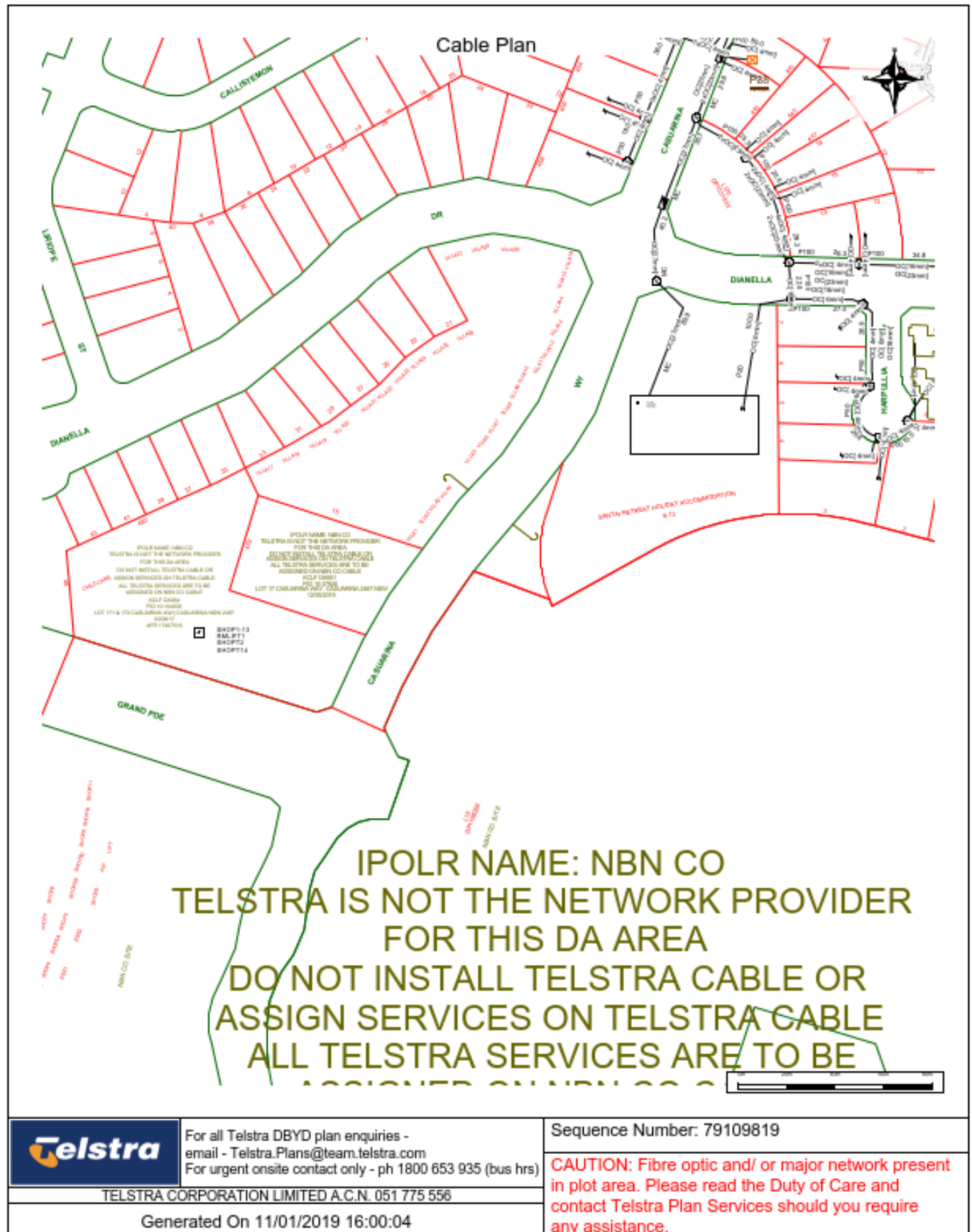
## **APPENDIX B | TSC MAPS AND DIAL BEFORE YOU DIG RESULTS**









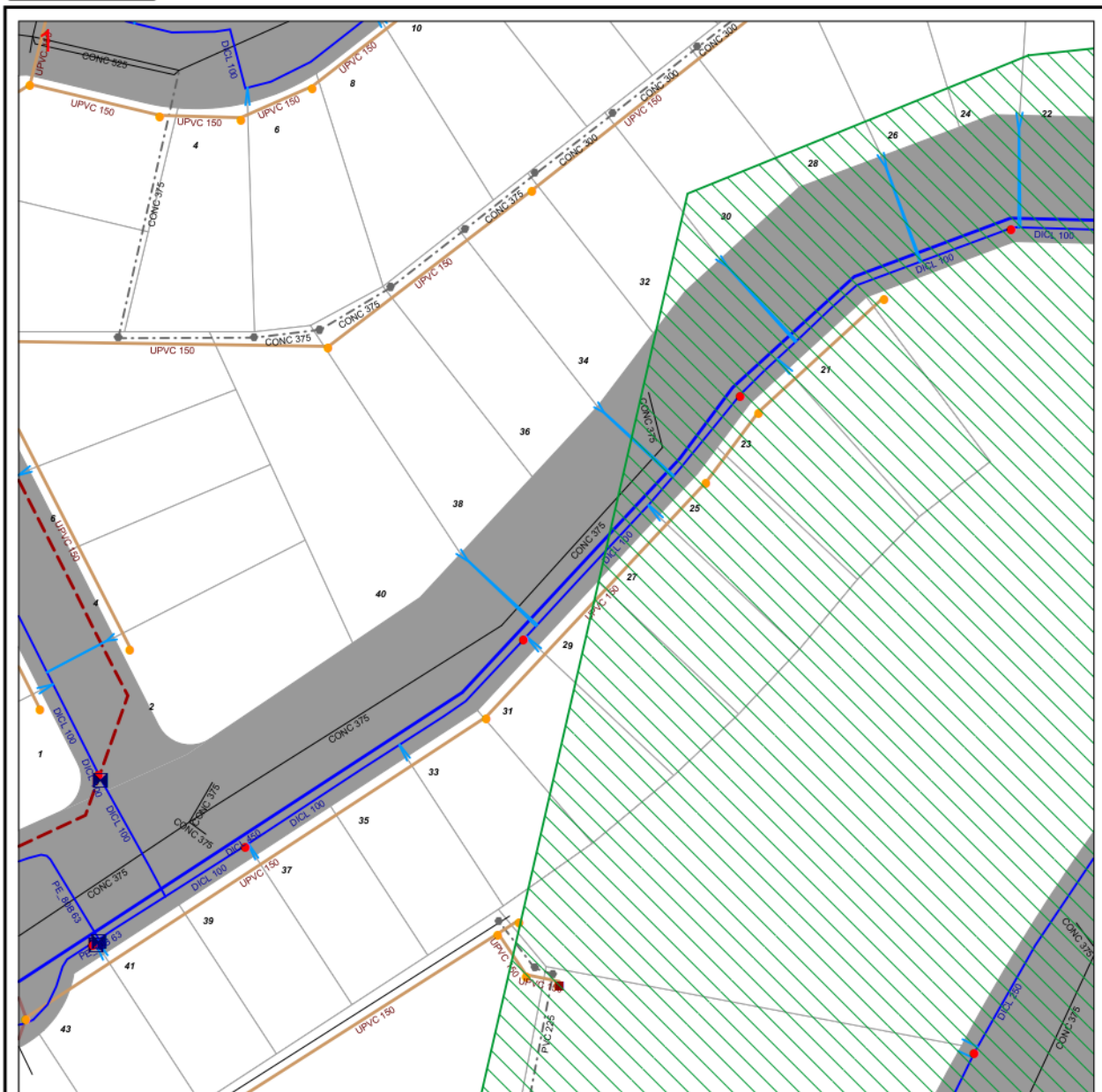






# Map 1

Sequence No: 79109817  
300 Casuarina Way Kingscliff



| Sewer Pipeline                 | Stormwater Pipeline            | Communication Cable     | Sewer Node          | Stormwater Node          | Water Node          |
|--------------------------------|--------------------------------|-------------------------|---------------------|--------------------------|---------------------|
| Sewer Rising Main              | Stormwater Culvert             | Communications Cable    | Vent Stack          | Stormwater Manhole       | Water Pump Station  |
| Sewer Rising Main (Abandoned)  | Stormwater Culvert (Abandoned) | Water Pipeline          | Vacuum Chamber      | Drop Inlet               | Reservoir           |
| Sewer Rising Main (Private)    | Stormwater Channel             | Water Service           | Sewer Pump Station  | Kerb Inlet               | Water Valve         |
| Sewer Vacuum Main              | Stormwater Channel (Abandoned) | Water Main (0-250mm)    | Sewer Pump          | Wingwall                 | Water Endcap        |
| Sewer Gravity Overflow         | Stormwater Pipe (0-975mm)      | Water Main (300-1000mm) | Sewer Valve         | Private Stormwater Point | Hydrant             |
| Sewer Gravity Main (0-200mm)   | Stormwater Pipe (1000-2100mm)  | Water Main (Abandoned)  | Sewer Endcap        | Communication Node       | Private Water Point |
| Sewer Gravity Main (225-600mm) | Stormwater Pipe (Abandoned)    | Water Pipe (Private)    | Sewer Manhole       |                          |                     |
| Sewer Gravity Main (700-900mm) | Stormwater Pipe (Private)      |                         | Private Sewer Point |                          |                     |
| Sewer Gravity Main (Abandoned) |                                |                         |                     |                          |                     |
| Sewer Gravity Main (Private)   |                                |                         |                     |                          |                     |

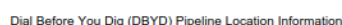
1:500 @ A3 Portrait

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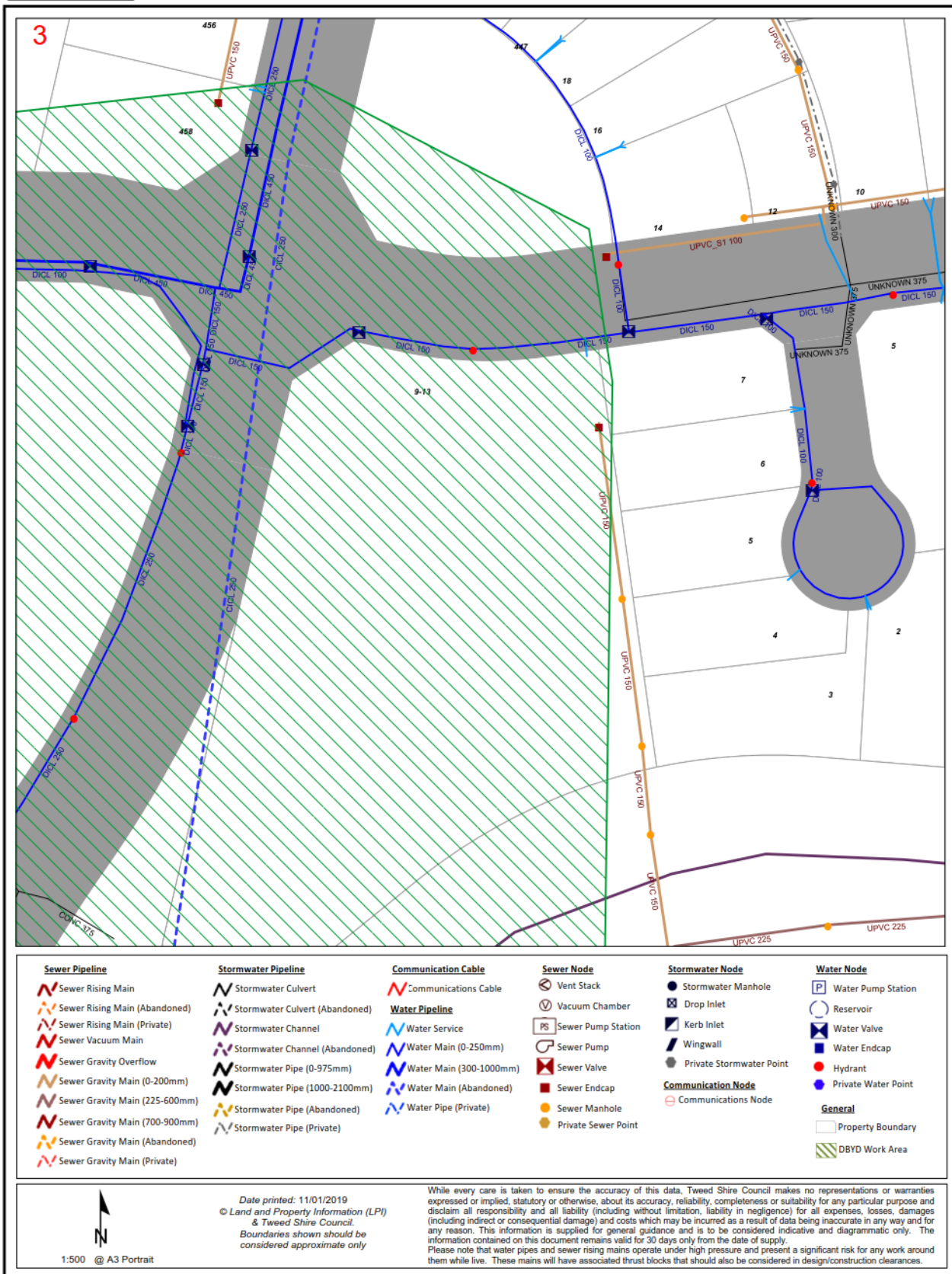
**Sequence No: 79109817**  
300 Casuarina Way Kingscliff





### Map 3

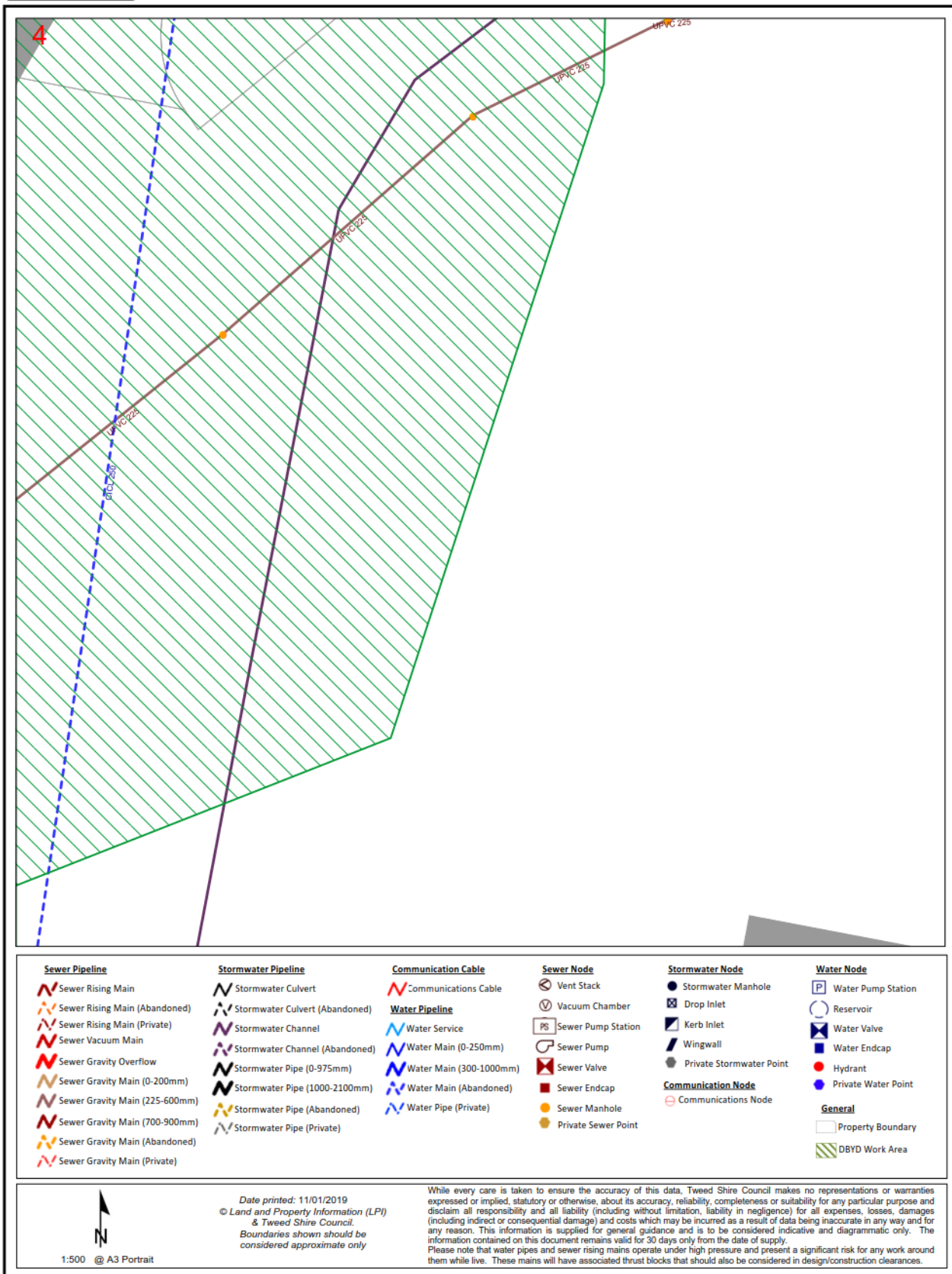
Sequence No: 79109817  
300 Casuarina Way Kingscliff





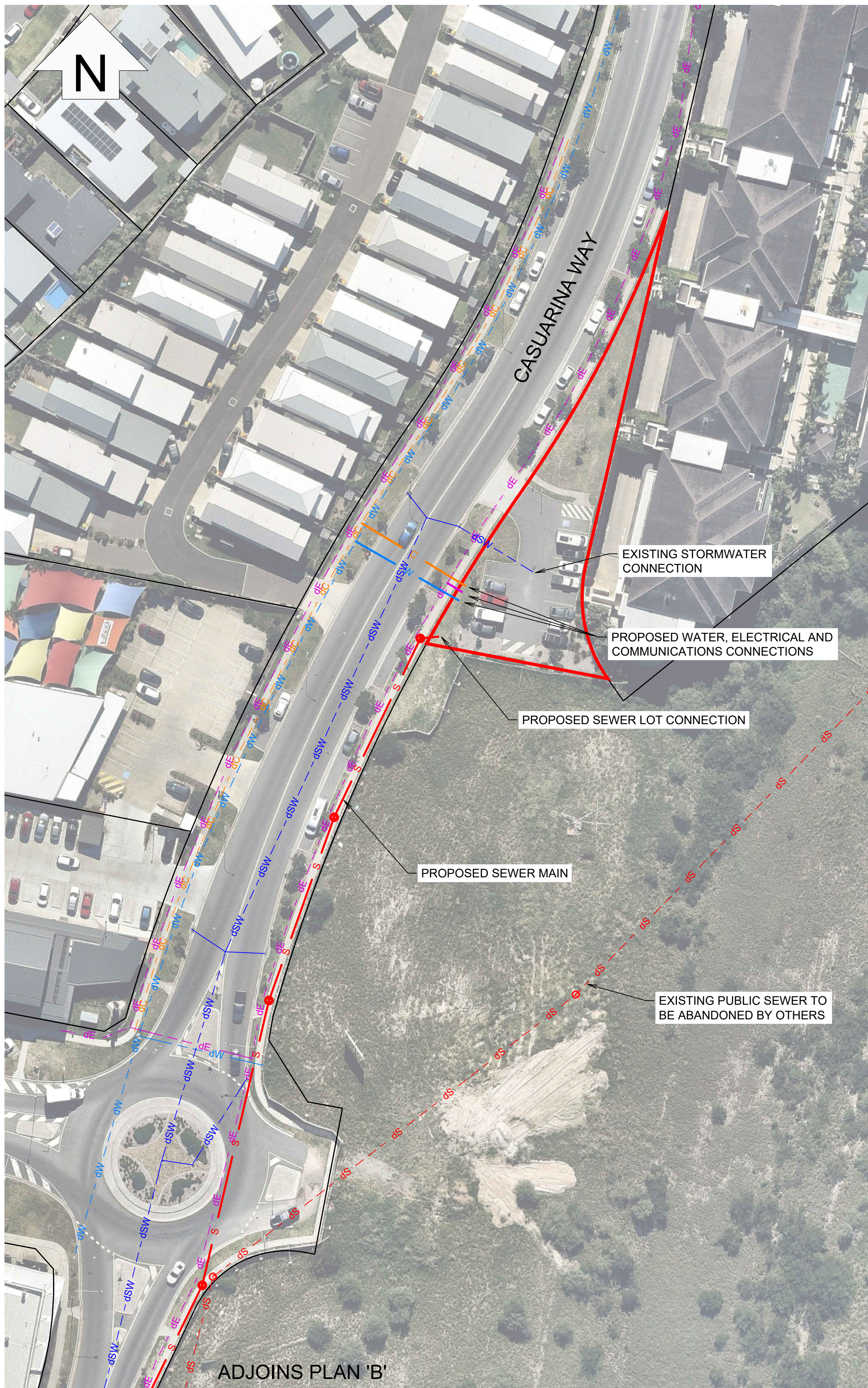
## Map 4

Sequence No: 79109817  
300 Casuarina Way Kingscliff

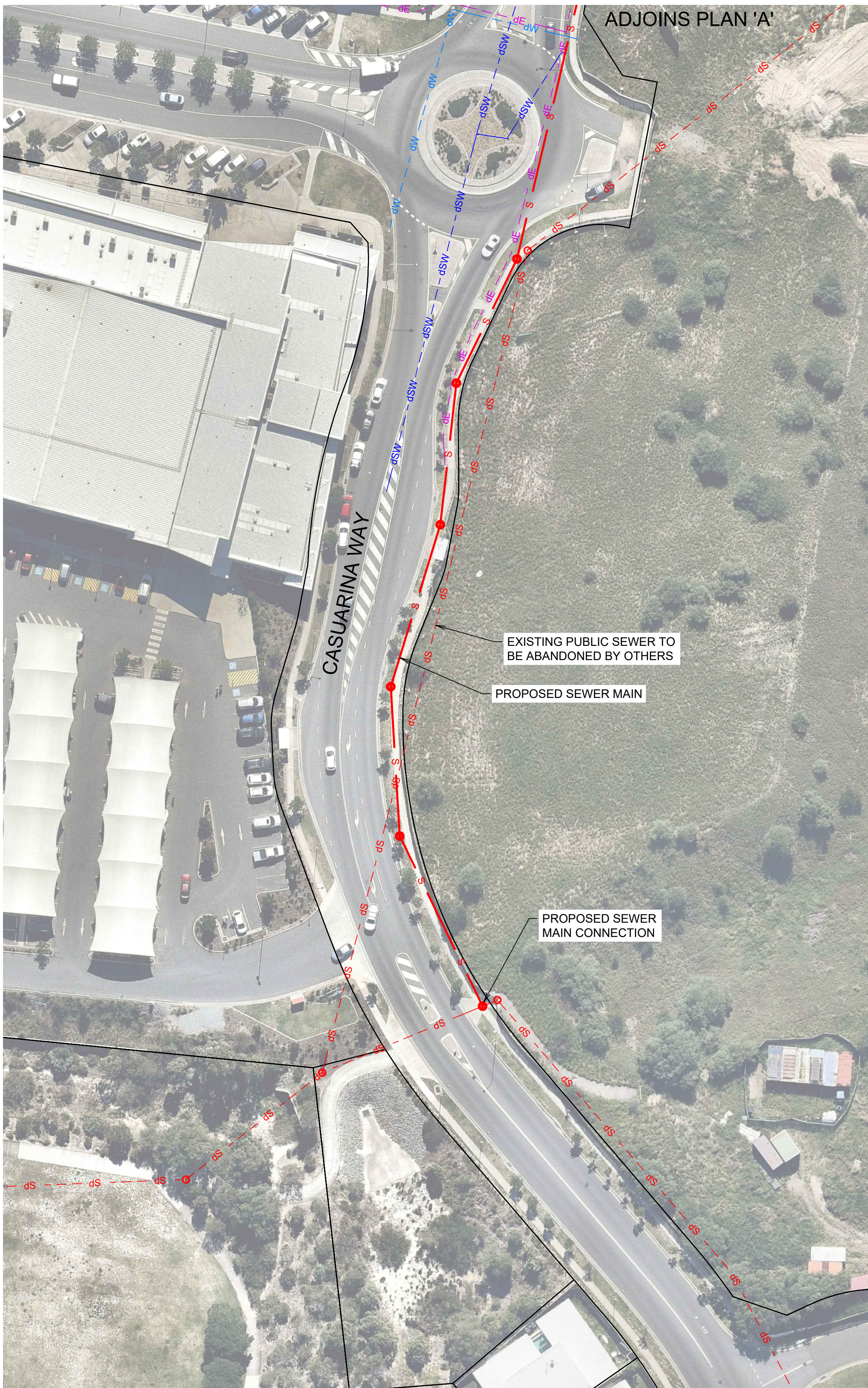


## **APPENDIX C | PROPOSED SERVICES CONNECTIONS PLAN**

100mm AT ORIGINAL SIZE



PLAN 'A'  
SCALE 1:500



PLAN 'B'  
SCALE 1:500

### LEGEND

- SITE BOUNDARY
- EXISTING STORMWATER PIPE (DBYD)
- EXISTING SEWER PIPE (DBYD)
- PROPOSED SEWER PIPE
- EXISTING WATER PIPE (DBYD)
- PROPOSED WATER PIPE
- EXISTING ELECTRICAL (DBYD)
- PROPOSED ELECTRICAL
- EXISTING COMMUNICATIONS (DBYD)
- PROPOSED COMMUNICATIONS

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