Civil/Stormwater Report

Taree Police Station

Prepared for NSW Police Force / 17 / 05 / 2018

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1.0 Introduction

Taylor Thomson Whitting has been engaged by GroupGSA Pty Ltd to complete a civil and stormwater assessment for the proposed redevelopment of the NSW Police Station in Taree. The redevelopment consists of the demolition of the existing police station and replacement with a new building.

The report will present obtained flood information, service utilities and councils development control plans (DCP), identify constraints associated with the development site and a stormwater management proposal which includes stormwater quantity and quality measures.

1.1 The Site

Taree Police Station is located at 79 Albert Street, Taree and within the Midcoast Council Local Government Area.

There is a shopping precinct approximately 200 metres, east from the site and Taree Hospital 300 metres north from the site.

Figure 1: Locality Plan

Image source: Nearmap (dated 8 August 2017)

1.2 Proposed Development

The proposed works is the reconstruction of Taree Police Station with a total gross floor area of 2,940m^2. There is no proposed works to the adjoining courthouse.

The existing police station and courthouse is bounded by residential buildings and public service buildings to the west and east respectively. In addition, there is an existing public building adjoining the police station to the north.

The land use near the development site consists of a mix of residential buildings and public buildings.

Albert Street is a two way local road, with 60 degree front to kerb angle parking provided on both sides of the street.

Figure 2: Site Layout
Image source: Nearmap (dated 8 August 2017)

1.3 Relevant Documents

The following documents have been reviewed in preparing this document:

- DCP 2010 Part E Flooding Requirements
- Greater Taree City Council – On-Site Detention Guidelines
- Greater Taree City Council – Development Design Specification D7 – Erosion Control and Stormwater Management
- Greater Taree Local Environmental Plan 2010

2.0 Co-ordination with Existing Services

A Dial Before You Dig (DBYD) search was completed to identify existing services surrounding the Taree Police Station.

2.1 Electrical Services

2.1.1 Essential Energy

- An existing ground substation on the site adjacent to the access driveway; and
- HV and LV underground cables running through the site which connects to the substation

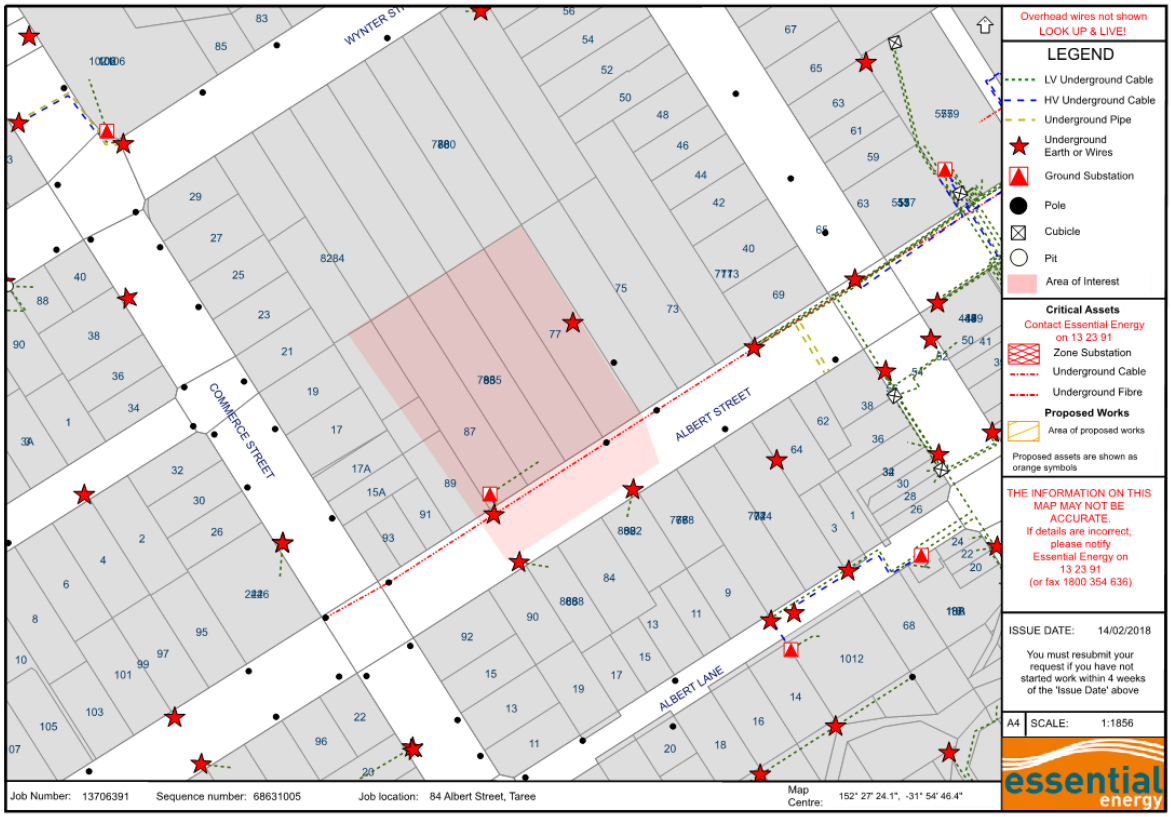

Figure 3: Electrical services (Essential Energy DBYD)

2.2 Communication Services

2.2.1 NBN

- Underground NBN service cables through the site and in the road reserve on Albert Street, running perpendicular to the site.

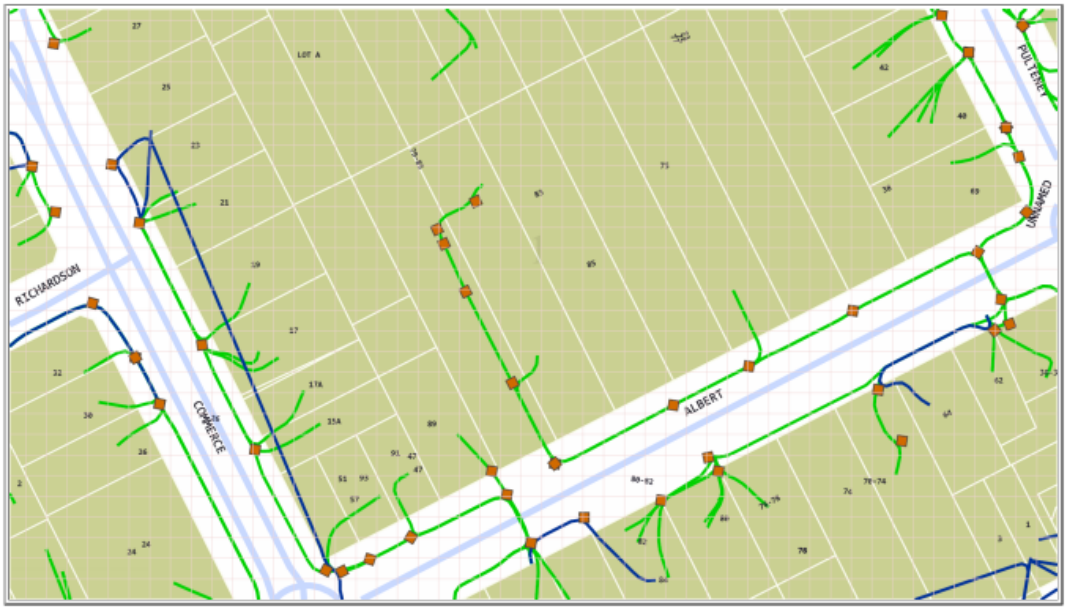

Figure 4: NBN Services (DBYD)

2.2.2 Telstra

Underground Telstra communication and fibre optic cables in the road reserve on Albert Street, and through the site.

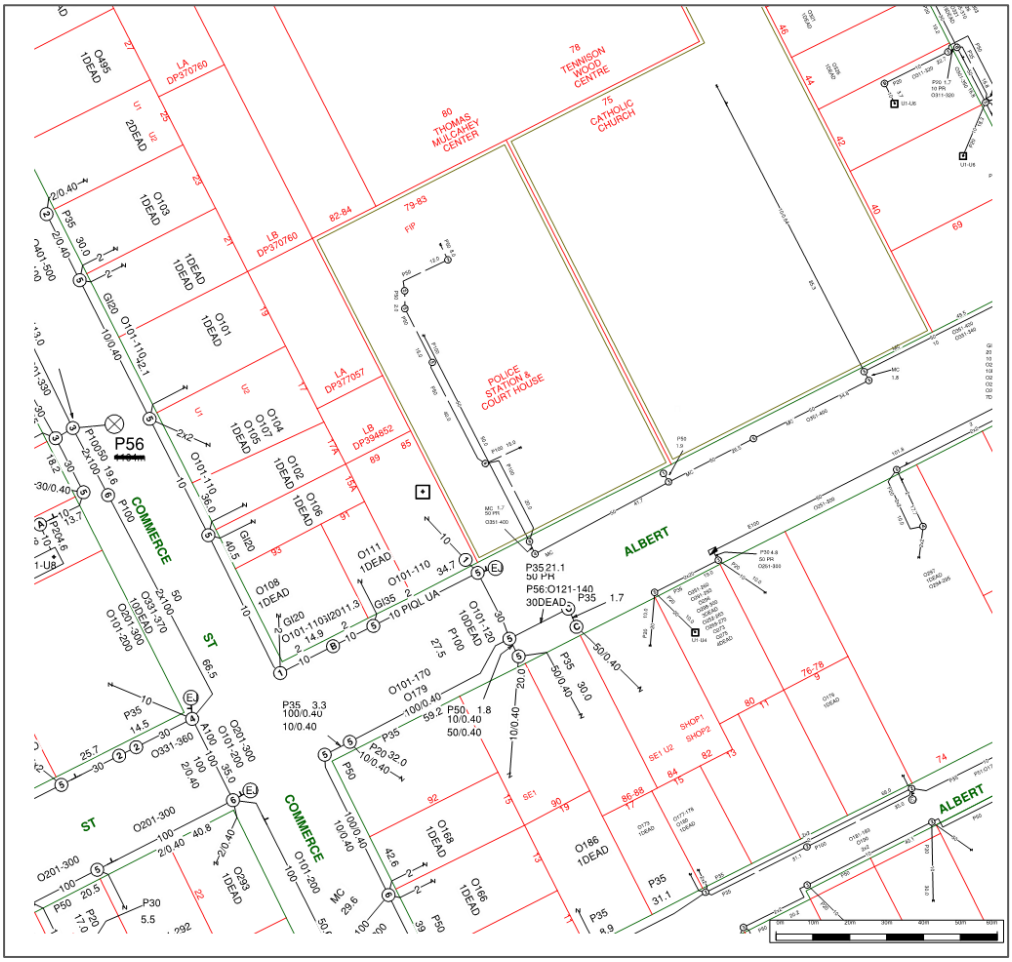

Figure 5: Telstra Services (DBYD)

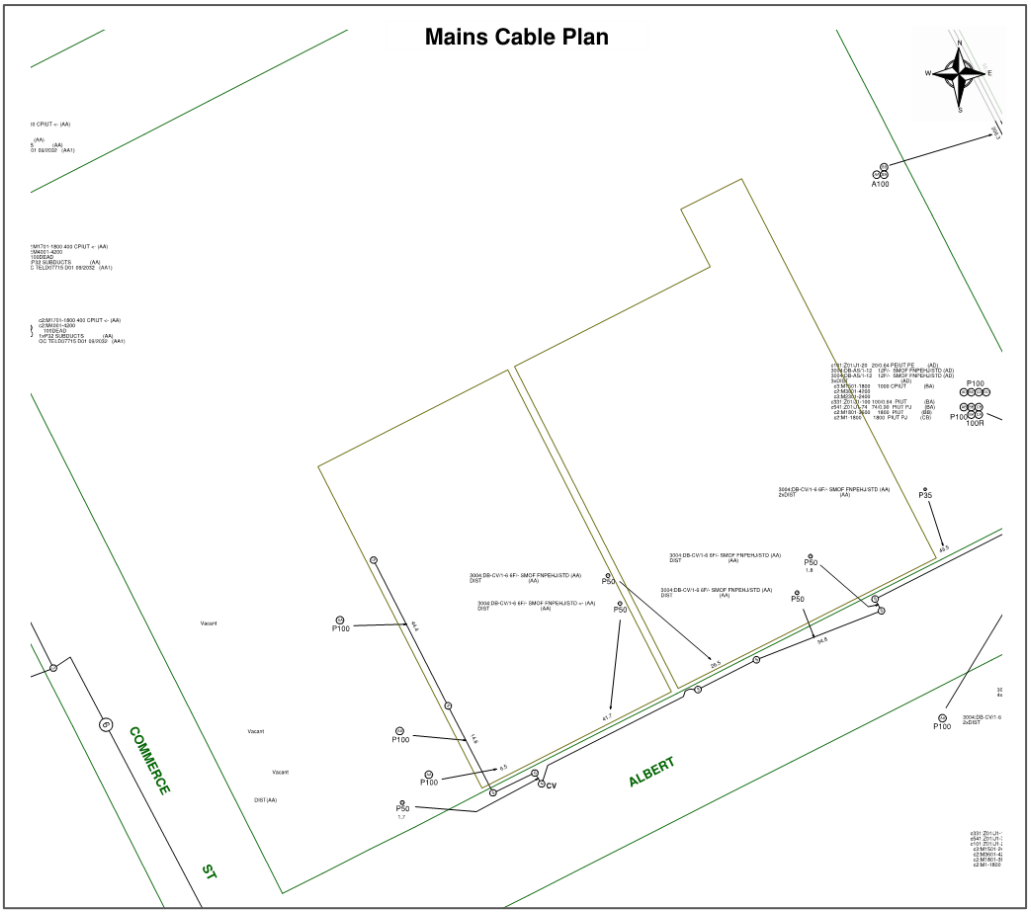

Figure 6: Telstra Services (DBYD)

2.2.3 Midcoast Water Services

- 100mm diameter water main running parallel to the site

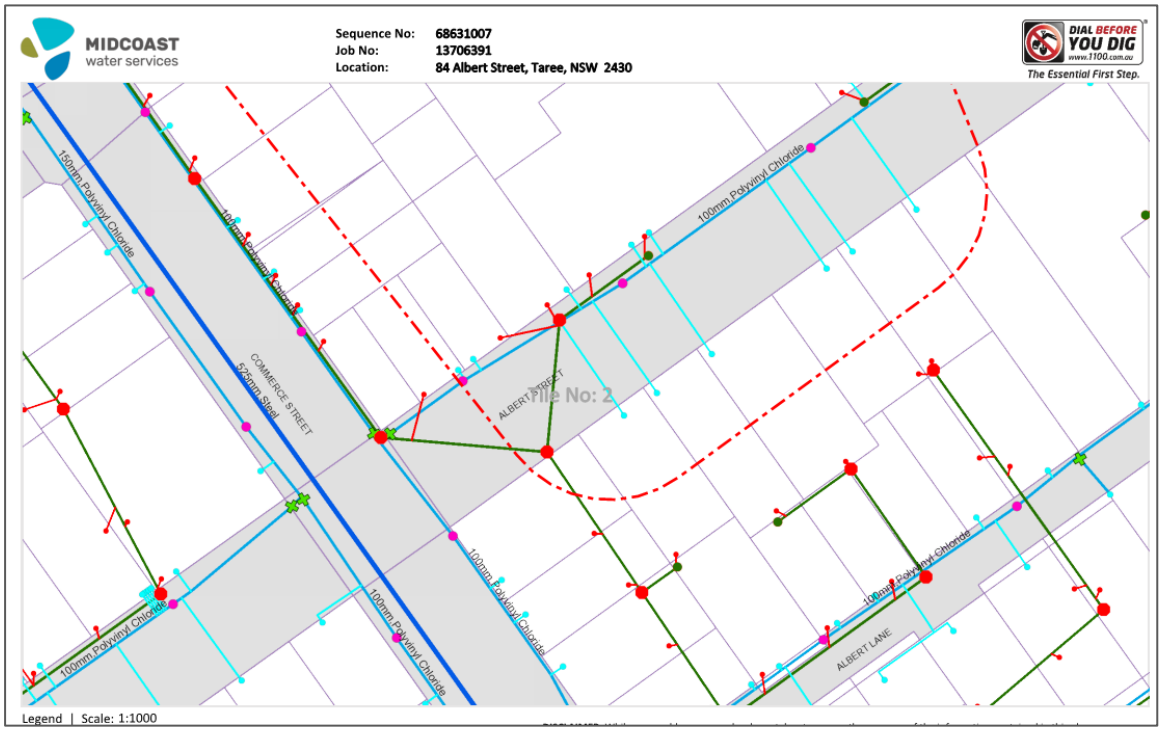

Figure 7: Midcoast Water Services (DBYD)

2.3 Stormwater

2.3.1 Midcoast Council Stormwater

There are existing stormwater pits within the vicinity of Taree Police Station. The station is near a crest with Albert street falling to both the West towards Commerce Street and the East towards Pulteney Street. The first pit the east was selected as the discharge point as this is the closest pit.

Figure 8: Existing Stormwater

Image Source: Nearmap 8 August 2017

3.0 Civil and Stormwater.

3.1 Stormwater

3.1.1 Stormwater Quantity

An OSD tank is required for developments which exceed 25% impervious area over the existing usage or when the impervious area exceeds 25% of the site. If the proposed development site increases the impervious area, a small OSD tank will be required.

The peak discharge from the site must not exceed that prior to development for storm events up to and including a 1:100 year ARI event (1% AEP)

The existing police station and courthouse has a total area of 5730m^2. The court house roof and front garden area are not part of the development and will not be connected to police stations stormwater system. The development has a catchment area of 4,390m^3 93% impervious and 7% pervious.

The proposed development will be 95% impervious area and 5% pervious. The provision of a small OSD tank will restrict the post development flow to the 1% AEP pre-development flow. An OSD tank with a volume of 30m^3 (8m x 3m x 1.25m) is required and orifice plate of 345mm.

3.1.2 Stormwater Design

The design for stormwater drainage of the development is shown in Figure 9 and drawing C03. The design includes roof drainage through gutter and downpipes to an inground gravity drainage system. The new inground pipes work will connect an OSD. The OSD's discharge will be controlled by an orifice plate to a new kerb inlet pit. The new kerb inlet pit will be connected by a 450mm reinforced concrete pipe to and existing council stormwater pit 35 east along Albert St.

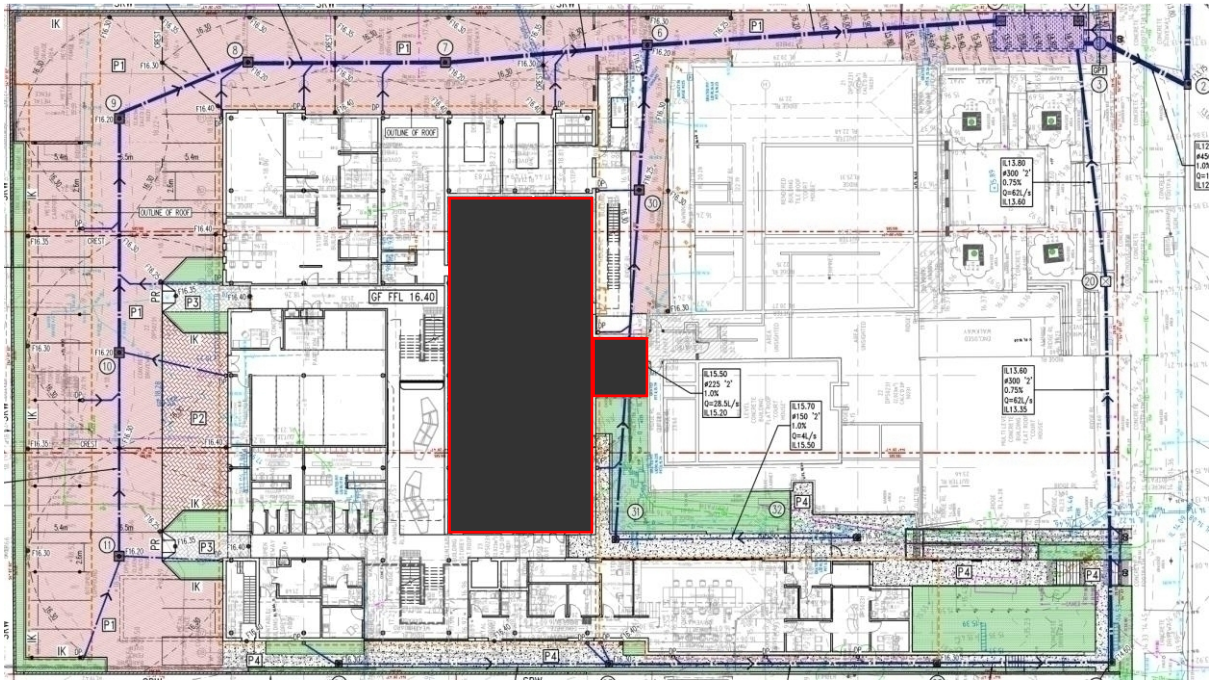

Figure 9: Stormwater Design

3.1.3 DRAINS Model

A DRAINS model was completed to determine the peak discharge during the 1% AEP storm event for the pre-development conditions and post development conditions.

The results are presented in the table below:

Table 1 - Discharge rates

Storm event	Pre-development	Post development	Reduction
20% AEP	180 l/s	142 l/s	21%
5% AEP	253 l/s	189 l/s	25%
1% AEP	336 l/s	242 /s	28%

3.1.4 Stormwater Quality

Stormwater quality for the post development site must not be worse than the predevelopment. The provision of stormwater quality treatment devices will be considered.

The development catchment area is 4,390m^2, with an impervious area of 95% and pervious area of 5%. This has been modelled in MUSIC and the quality of the existing stormwater exiting the site. These parameters must not be exceeded when the stormwater is discharged from the post development site. The proposed water quality treatment system is a SPELfilter. The system will be used as an inline system, which stormwater will pass through upon leaving the on-site detention tank.

Table 2 - Water Quality – Predevelopment

Pollutant	Inflow	Residual	% Reduction
Flow ML/yr	3.95	3.95	0
Total Suspended Solids (kg/yr)	801	20.1	97.5
Total Phosphorus (kg/yr)	1.61	0.181	88.7
Total Nitrogen (kg/yr)	11.6	5.54	52.1
Gross Pollutants (kg/yr)	102	0	100

3.2 Flooding

3.2.1 Flood Plain

Taree Police Station and Court House is located within the Manning River Catchment. The site is located outside the Flood Prone Land for the probable maximum flood (PMF) as shown in Figure 11 below.

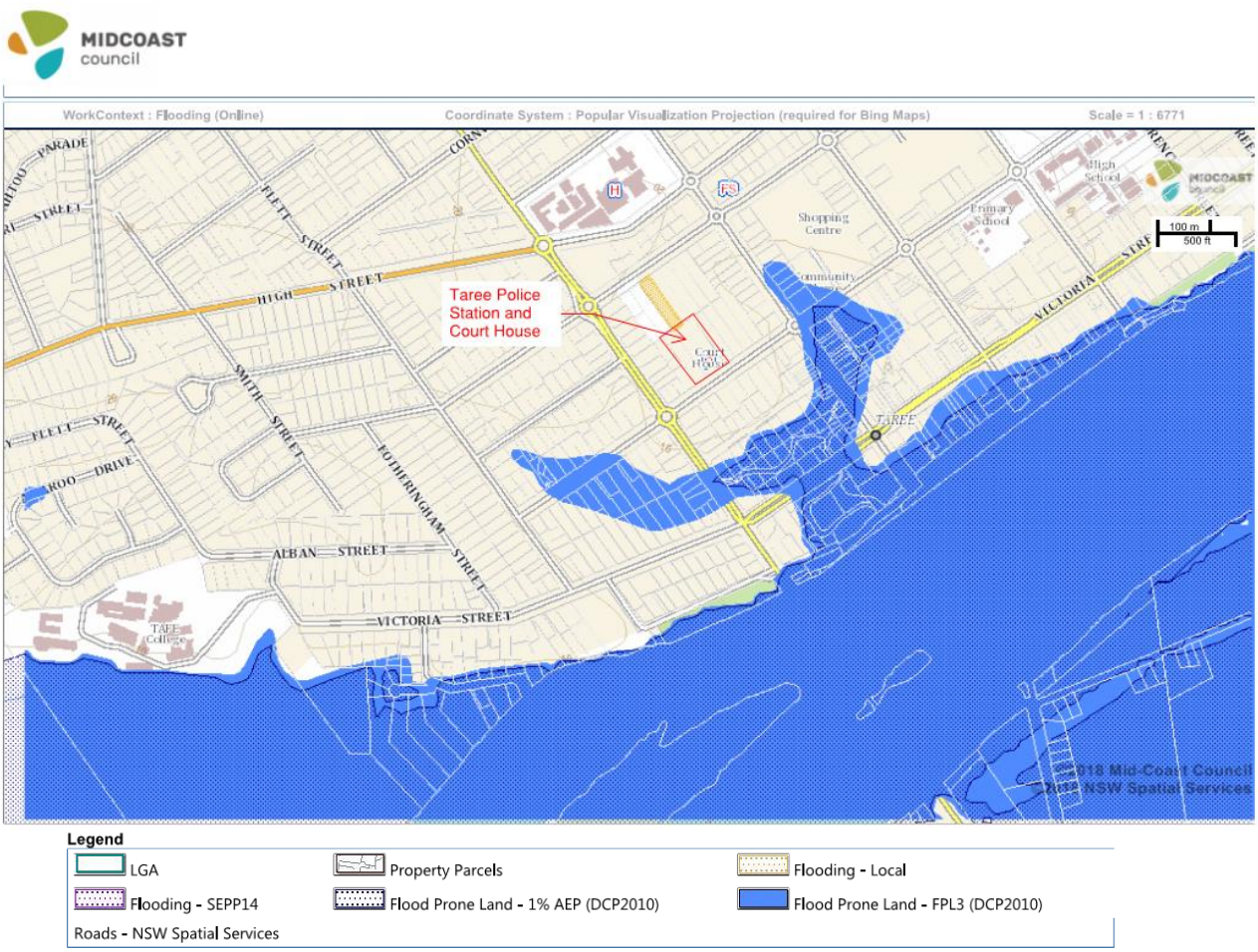

Figure 10: Midcoast Council Flood Map

Source Midcoast Council

3.2.2 Flood Planning Level

The site is not subject to overland flow or located within the flood prone land. The minimum surface level of open car parking spaces or carports of the proposed police station shall be at or greater than the 5% AEP (20 year ARI) flood level.

4.0 Conclusion and Recommendation

The following conclusions and recommendations are made:

- Taree Police Station is located outside of flood prone land for the PMF event.
- An 30m^3 on-site detention tank will be required to reduce peak discharge as there is a minor increase in impervious area for the proposed development site.
- Post development discharge rates will be reduced by 20%-25%.
- A Spel Filter treatment system or equivalent will be installed to meet the required water quality targets.
- A new stormwater pit and a 35m long 450mm diameter stormwater pipe will be installed to connect to the existing council stormwater pit on Albert Street.

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