

PROPOSED MIXED-USE DEVELOPMENT LOT 12 YARRABILBA DRIVE, YARRABILBA

TRAFFIC ENGINEERING ASSESSMENT

13 NOVEMBER 2020

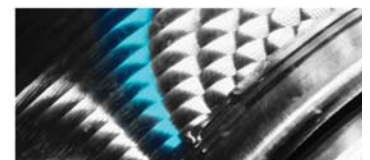
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DEVELOPMENT APPROVAL

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TABLE OF CONTENTS

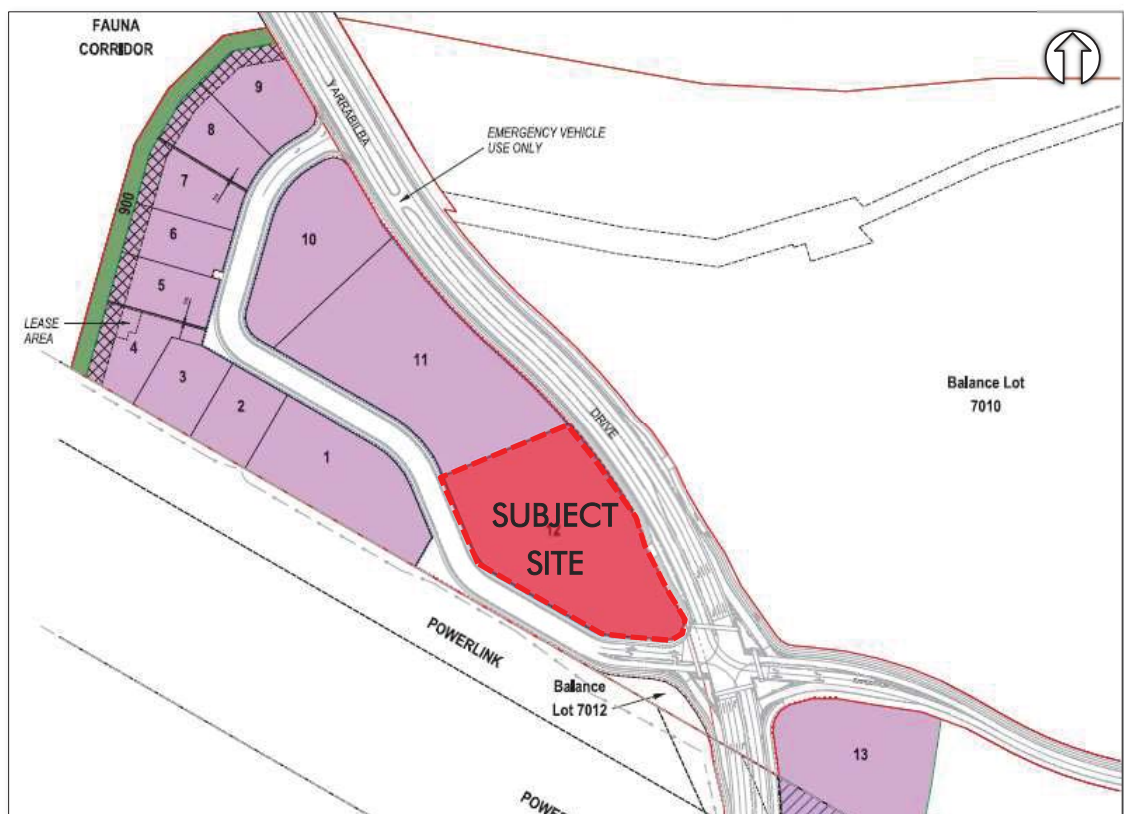
1.0 INTRODUCTION	1
1.1 Background	1
1.2 Aim	1
1.3 Scope of Report	1
2.0 YARRABILBA PRIORITY DEVELOPMENT AREA	2
2.1 Planning Overview	2
2.2 Subject Site	3
2.3 Surrounding Area	3
2.4 Access	3
2.5 Surrounding Road Network	4
2.6 Active and Public Transport	5
3.0 PROPOSED DEVELOPMENT	6
3.1 Site Layout	6
3.2 Vehicular Access Arrangements	6
3.3 Parking	7
3.4 Queuing	8
3.4 Servicing	9
3.6 Active and Public Transport	11
4.0 TRAFFIC OPERATIONS	12
4.1 Traffic Generation	12
4.2 Traffic Impact	12
5.0 CONCLUSIONS AND RECOMMENDATIONS	13
5.1 Conclusions	13
5.2 Recommendations	13
APPENDIX A: DEVELOPMENT SITE LAYOUT	
APPENDIX B: SWEEP PATH ANALYSIS	

1.0 INTRODUCTION

1.1 Background

In September 2020, PTT was commissioned by TFA Group Pty Ltd to undertake a traffic engineering assessment for a proposed mixed-use development at Lot 12 Yarrabilba Drive, Yarrabilba. The location of the subject site, which is shown on Figure 1.1, falls within Precinct 3D of the Yarrabilba Priority Development Area, and is administered by Economic Development Queensland (EDQ).

Figure 1.1: SITE LOCALITY



1.2 Aim

The aim of this assessment is to evaluate the proposed development in terms of its access, parking and servicing arrangements, pedestrian / cyclist facilities, likely peak hour traffic generation and impact on the surrounding road network.

1.3 Scope of Report

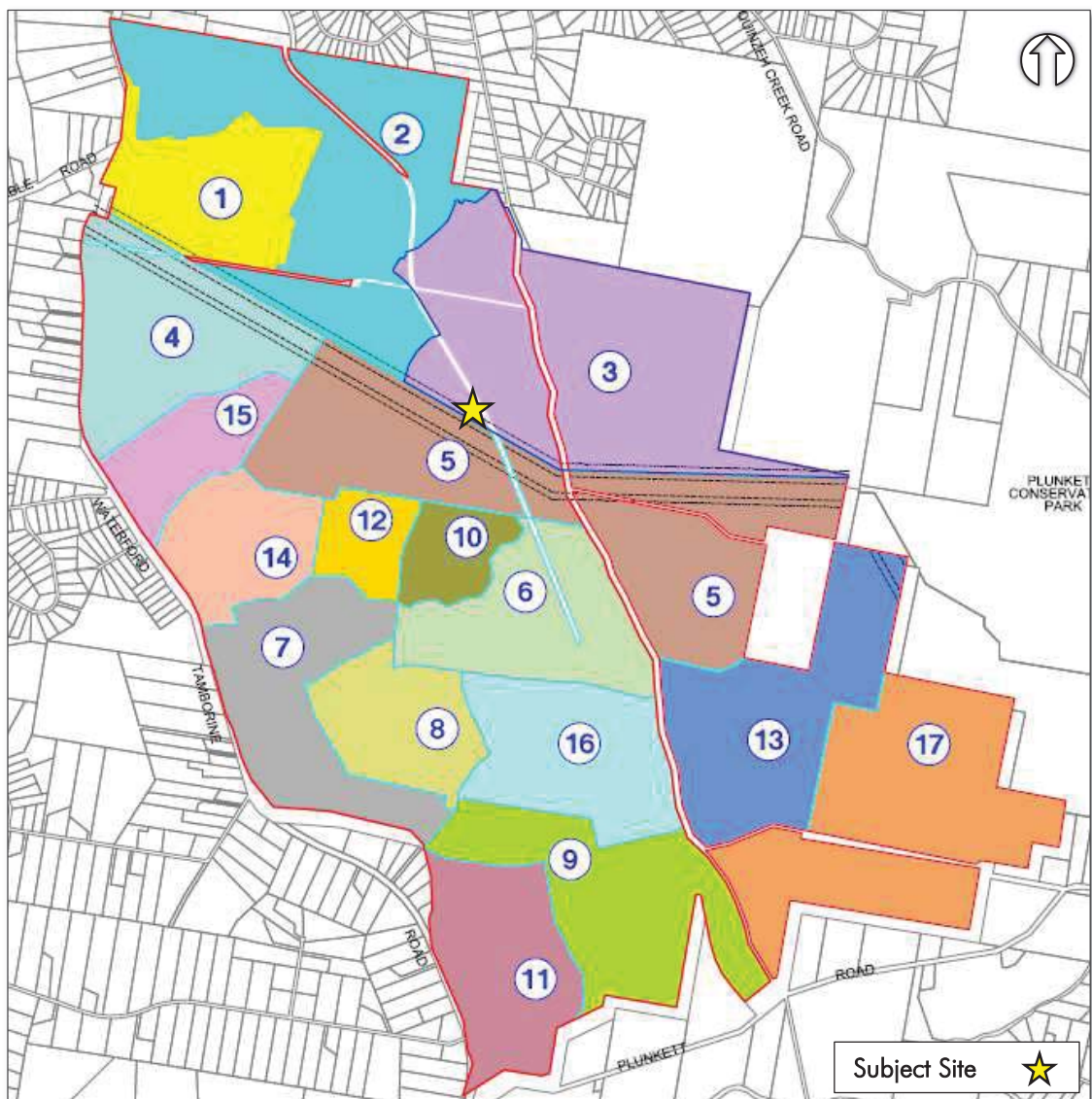
This report begins by summarising the characteristics of the existing road network (Chapter 2), followed by a description of the scope and scale of the proposed development, including access, parking and servicing arrangements (Chapter 3). The predicted peak hour traffic generation of the development is estimated along with a consideration of its likely traffic impact on the surrounding road network (Chapter 4). The report concludes with a summary of key findings and recommendations (Chapter 5).

2.0 YARRABILBA PRIORITY DEVELOPMENT AREA

2.1 Planning Overview

The Yarrabilba Priority Development Area (PDA) was adopted by EDQ in 2011, with a purpose of providing housing for up to 50,000 people in 20,000 dwellings. The PDA is approximately 2,200 hectares in size and is bounded by Plunkett Conservation Park to the east, Waterford Tamborine Road to the west and Plunkett Road to the south. The PDA is expected to be fully developed within 20 – 30 years and will comprise 17 precincts. A plan of the precincts is shown in Figure 2.1, including Precinct 3, which includes the subject site.

Figure 2.1: YARRABILBA PDA MASTERPLAN PRECINCTS



2.2 Subject Site

The subject site is located at Lot 12 Yarrabilba Drive, Yarrabilba and is formally identified as Lot 12 on SP304357. The site is located in Precinct 3D of the PDA and according to the approved plan of development (approval reference: DEV2018/922), the site is zoned as mixed business / infrastructure. The site is currently vacant and is shown in Figure 2.1.

Figure 2.2: SUBJECT SITE



2.3 Surrounding Area

As illustrated in Figure 2.2 the subject site is bounded by:

- vacant land to the north
- Yarrabilba Drive to the east
- Mill Street to the south and west

The surrounding area is currently undeveloped, although planning zones indicate the area will comprise predominantly commercial and residential uses.

2.4 Access

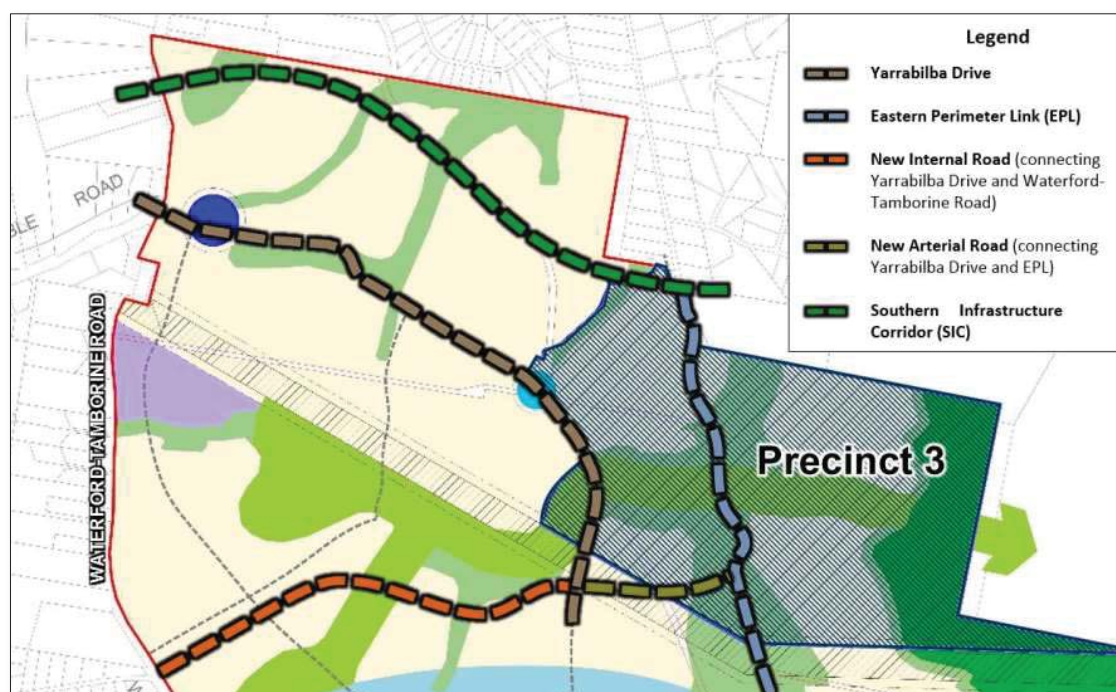
No formal vehicular access is currently provided to the site.

2.5 Surrounding Road Network

Traffic modelling for Precinct 3D and the Yarrabilba Masterplan area was undertaken in 2015, with the results documented in the Yarrabilba Master Plan Micro-Simulation Modelling – Revised Land Use and Road Network Report, published by Cardno. A Traffic Assessment Report for Precinct 3D was also published by SLR on 27 February 2018. The reports considered the expected traffic generated by the subject site and surrounding developments to inform the design of the surrounding road network.

Figure 2.3 shows the indicative road network for the Yarrabilba Masterplan.

Figure 2.3: YARRABILBA INDICATIVE ROAD NETWORK



Key attributes of the surrounding road network in the vicinity of the subject site are summarised in Table 2.1.

Table 2.1: ROAD NETWORK ATTRIBUTES

ATTRIBUTE	YARRABILBA DRIVE	MILL STREET
Road Hierarchy	Arterial Road	Industrial Access Road
Jurisdiction	Logan City Council (Council)	Council
Speed Limit (km/h)	60	50
Predominant Land Uses	Commercial / Residential	Commercial / Industrial
Cross-section	Divided, with two lanes of traffic in each direction	Undivided, with one lane of traffic in each direction
On-Street Parking	Yes	Yes
Footpaths	Both sides	Both sides
Bicycle Lanes	Yes	No
Bus Route	Yes	No

Yarrabilba Drive meets Mill Street and Fauna Way at a signalised intersection adjacent to the south-east corner of the subject site.

2.6 Active and Public Transport

2.6.1 Pedestrians and Cyclists

Pedestrian footpaths are provided on both sides of Yarrabilba Drive and Mill Street in the vicinity of the site. Pedestrian crossings are installed on all four approaches at the Yarrabilba Drive / Mill Street / Fauna Way signalised intersection adjacent to the south-east corner of the subject site.

According to the Active Transport Network Map for Precinct 3, Yarrabilba Drive is classified as a principal cycle route. Currently, on-street cycle lanes are provided on both sides of Yarrabilba Drive in the vicinity of the site. No cyclist facilities are provided on Mill Street.

2.6.2 Public Transport

There are two bus stops located on Yarrabilba Drive in the vicinity of the site, as indicated in Figure 2.2. The stops are serviced by TransLink Route 587, which provides access to Loganlea and operates approximately once an hour in both directions between 5:00am and 7:00pm on weekdays and once every two hours in both directions between 9:00am and 3:00pm on weekends.

at least 6.0m from the Yarrabilba Drive / Mill Street / Fauna Way signalised intersection and comply with AS2890.1 requirements for location.

The service station has separate entry and exit driveways from the internal access road.

3.2.2 Design

The Logan Planning Scheme requires driveway crossovers to be designed in accordance with the Institute of Public Works Engineering Australasia's (IPWEA) Standard Drawing RS-051. It is recommended that the driveways on Yarrabilba Drive and Mill Street be designed as General Wide Flaired in accordance with IPWEA Standard Drawing RS-051. However, a modified splay is required on the eastern kerb taper of the Mill Street crossover to allow an AV to exit the site, as shown in Figure 3.3.

3.2.3 Sight Distance

On a 60km/h road (ie Yarrabilba Drive), AS2890.1 requires an absolute minimum sight distance of 65m, with a desirable sight distance of 83m. Given the flat topography and straight alignment of Yarrabilba Drive in the vicinity of the site, the proposed crossover on Yarrabilba Drive achieves approximately 85m sight distance to the Yarrabilba Drive / Mill Street / Fauna Way intersection to the south. On a 50km/h road (ie Mill Street), AS2890.1 requires an absolute minimum sight distance of 45m, with a desirable sight distance of 69m. The proposed crossover on Mill Street achieves approximately 110m sight distance to the east and approximately 45m to the west which is consistent with AS2890.1 requirements. Therefore, the available sight distance at the Yarrabilba Drive and Mill Street crossovers are considered adequate.

3.3 Parking

3.3.1 Requirement

The parking requirement for the site has been determined based on the car parking provision rates outlined in EDQ's Plan of Development (POD). A parking provision of 31 spaces is required based on EDQ's rates, as shown in Table 3.1.

Table 3.1: PARKING REQUIREMENT

LAND USE	SCALE	PARKING RATE	REQUIRED
Service Station	107m ² GFA	1 space per 20m ² of shop GFA	5.4
Food and Drink Outlet	310m ² GFA	1 space per 10m ² ≤ 200m ² GFA + 1 space per 20m ² > 200m ² GFA	25.5
Total			31

3.3.2 Provision

The proposal provides a total of 31 on-site parking bays to support the development. This includes two air and water bays, two waiting bays and one person with disability (PWD) bay. Therefore, the proposed parking provision is consistent with EDQ's minimum parking requirement.

3.3.3 Persons with Disability Spaces

One PWD bay is proposed, adjacent to the front of the service station tenancy. This is consistent with the Building Code of Australia (BCA) which specifies that parking spaces for persons with a disability be provided at a rate of one space per 50, or part thereof, for a Class 6 Building with less than 1,000 car parking spaces.

3.3.4 Design

The proposed car park layout has been designed in accordance with AS2890.1 requirements for bay and aisle dimensions and is typified as follows:

- parking spaces dimensioned 2.6m wide by 5.4m long
- end parallel parking spaces dimensioned 2.34m wide by 7.0m long
- PWD parking spaces dimensioned 2.4m wide by 5.4m long, with an adjacent 2.4m wide shared area
- minimum 6.8m wide parking aisles

3.4 Queuing

Council's Planning Scheme requires sufficient queuing for three vehicles to be provided at each fuel bowser (ie one vehicle at the bowser and two vehicles queued behind).

We have undertaken a site-specific queuing assessment for the development using M-M-s queuing theory calculations. This assessment is based on:

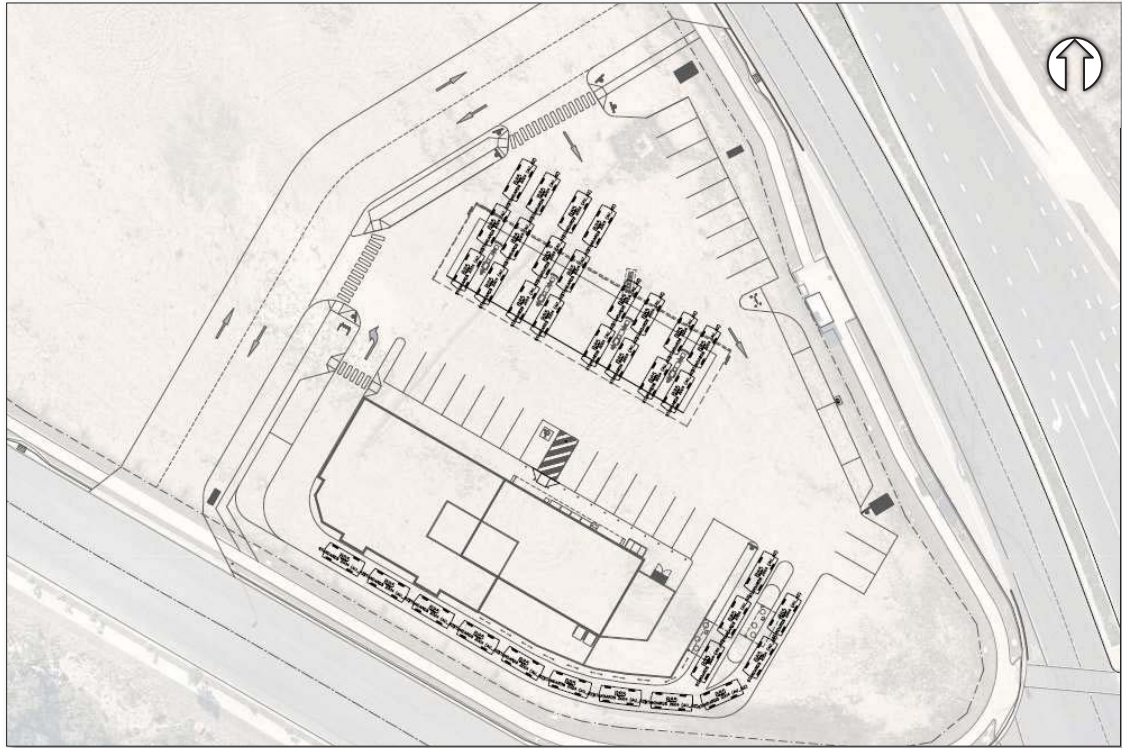
- an arrival rate of 44 vehicles per hour for the service station (ie lamda)
- a service rate of 12 vehicles per hour (ie a five minute dwell time per customer)
- eight refuelling positions (ie identical servers)

The queuing assessment predicts a 99th percentile queue of nine vehicles at the pumps. As shown in Figure 3.2 and attached in Appendix B, the development layout would be able to accommodate a total of 20 vehicles without blocking access to the fast food drive-through or on-site car parking. Accordingly, the on-site queuing provision is considered to be sufficient.

Council's Planning Scheme identifies a minimum queuing length of two vehicles (ie 12m) for a car park with 31 spaces. The proposed access arrangement provides approximately 23m of clear queuing space between the property boundary and the first internal conflict point from the Yarrabilba Drive access and approximately 80m of clear queuing space from the Mill Street access. Therefore, the proposed site layout provides sufficient on-site queuing.

Council's Planning Scheme requires that drive-through facilities provide queuing space for ten vehicles. The proposed drive-through facility provides queuing space for approximately 14 vehicles and is consistent with Council's requirements.

Figure 3.2: QUEUING PLAN



3.4 Servicing

3.4.1 Requirement

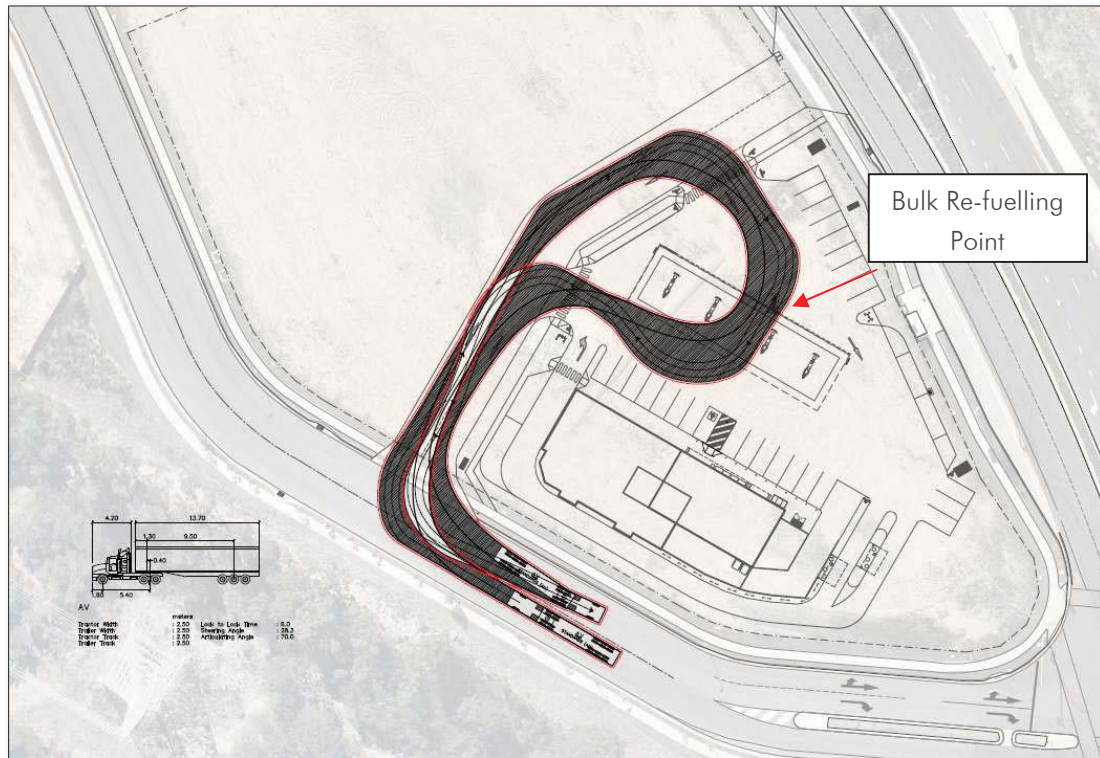
The Logan City Plan (2014) requires on-site servicing by a 19m long Articulated Vehicle (AV). In addition, the development will need to be able to accommodate a 10m long Refuse Collection Vehicle (RCV).

3.4.2 Bulk Tank Re-fuelling

A 19m long AV is expected to access the site for refuelling. A swept path of a 19m AV accessing and egressing the subject site is attached in Appendix B and shown in Figure 3.3.

Under the proposed re-fuelling arrangement, the bulk tank re-fuelling point is located on the northern side of the re-fuelling canopy. The location of the proposed re-fuelling point would allow an AV to stand and re-fuel without limiting access of vehicles entering from Yarrabilba Drive. Therefore, the proposed servicing arrangement can accommodate an AV.

Figure 3.3: AV SERVICING

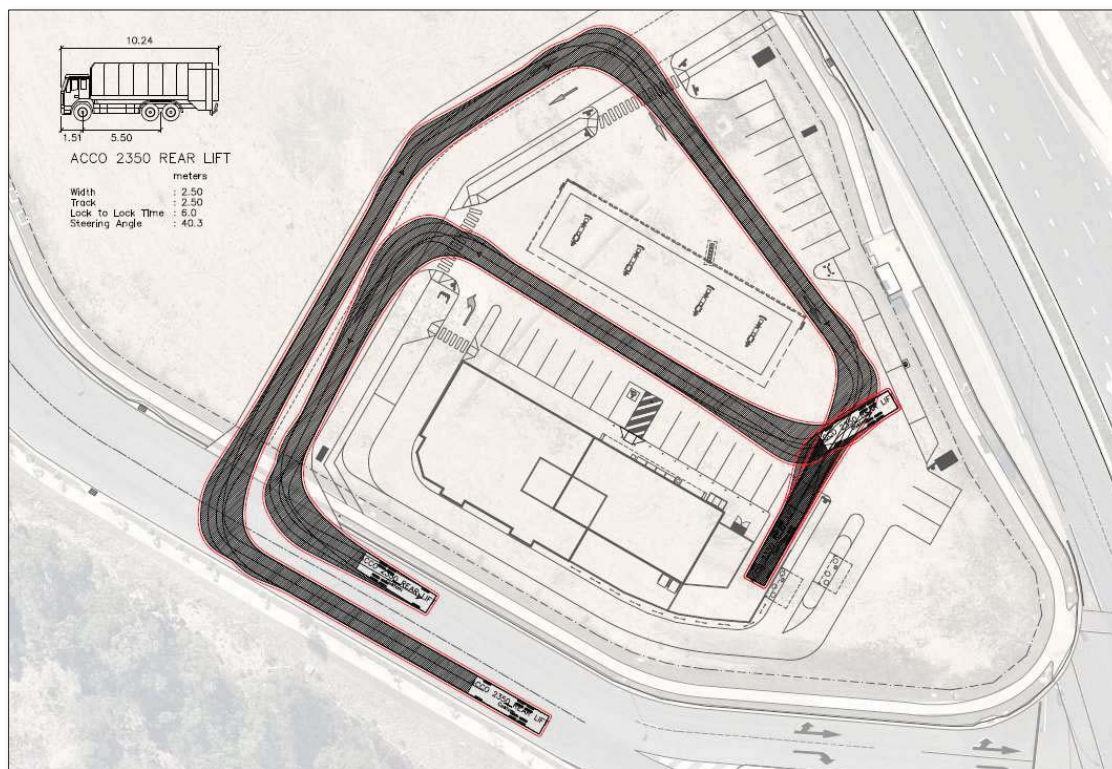


3.4.2 Refuse Collection

An on-site loading bay is proposed adjacent to the service station shop for refuse collection and small goods deliveries. The largest vehicle expected to access the loading bay would be a 10m Refuse Collection Vehicle (RCV).

A swept path drawing showing an RCV accessing the loading bay is shown in Figure 3.4 and attached in Appendix B.

Figure 3.4: RCV SERVICING



Accordingly, the proposed servicing arrangements are considered sufficient for the proposed use.

3.6 Active and Public Transport

3.6.1 Pedestrians

Pedestrian access to the site is proposed via dedicated pedestrian entrances from Yarrabilba Drive and Mill Street. Internal footpaths and crossings are proposed providing pedestrians convenient and safe accessibility to the service station shop and fast food outlet.

3.6.2 Cyclists

EDQ's POD requires bicycle parking be provided at a rate of one space per five car parking spaces. Therefore, a total of seven bicycle parking spaces are required to support the proposed development. The proposed layout provides one bike rack with a total capacity for eight bicycles and is consistent with EDQ's POD requirements.

3.6.3 Public Transport

The proposed development is not expected to have a negative impact on the surrounding public transport services and facilities and is expected to increase the viability of the future public transport services and facilities in Precinct 3D.

4.0 TRAFFIC OPERATIONS

4.1 Traffic Generation

The peak hour traffic generation for the proposed development has been estimated based on the Queensland Government traffic generation data available via the Open Data Portal, as summarised in Table 4.1. The traffic generation data is based on surveys of sites throughout Queensland undertaken between 2006 and 2018. The predicted traffic generation attributable to the proposed development is estimated to be 258 vehicles per hour (129 in and 129 out) for the morning and evening peaks.

Table 4.1: PEAK HOUR TRIP GENERATION

LAND USE	SCALE	RATE	TRIPS (VPH)	IN:OUT SPLIT	IN:OUT (VEH/HR)
Service Station	190m ² GFA	46 per 100m ² GFA	88	50 : 50	44 : 44
Food and Drink Outlet	310m ² GFA	55 per 100m ² GFA	170	50 : 50	85 : 85
Total			258		129 : 129

4.2 Traffic Impact

In terms of additional traffic movements on the surrounding road network, the proposed development traffic generation is consistent with the traffic generation rates included in the Precinct 3D modelling. The impact of the development site on the external road network has been considered in the planning of Precinct 3D and was addressed in the Yarrabilba Precinct 3D Traffic Assessment report prepared by SLR dated 27 February 2018. Accordingly, the impact of the development has been considered as part of the previous traffic modelling and a further traffic impact assessment is not considered necessary.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The proposed 500m² GFA mixed-use development at Lot 12 Yarrabilba Drive, Yarrabilba has been evaluated in terms of its access, parking and servicing arrangements, pedestrian / cyclist facilities, likely peak hour traffic generation and impact on the surrounding road network. The main points to note are:

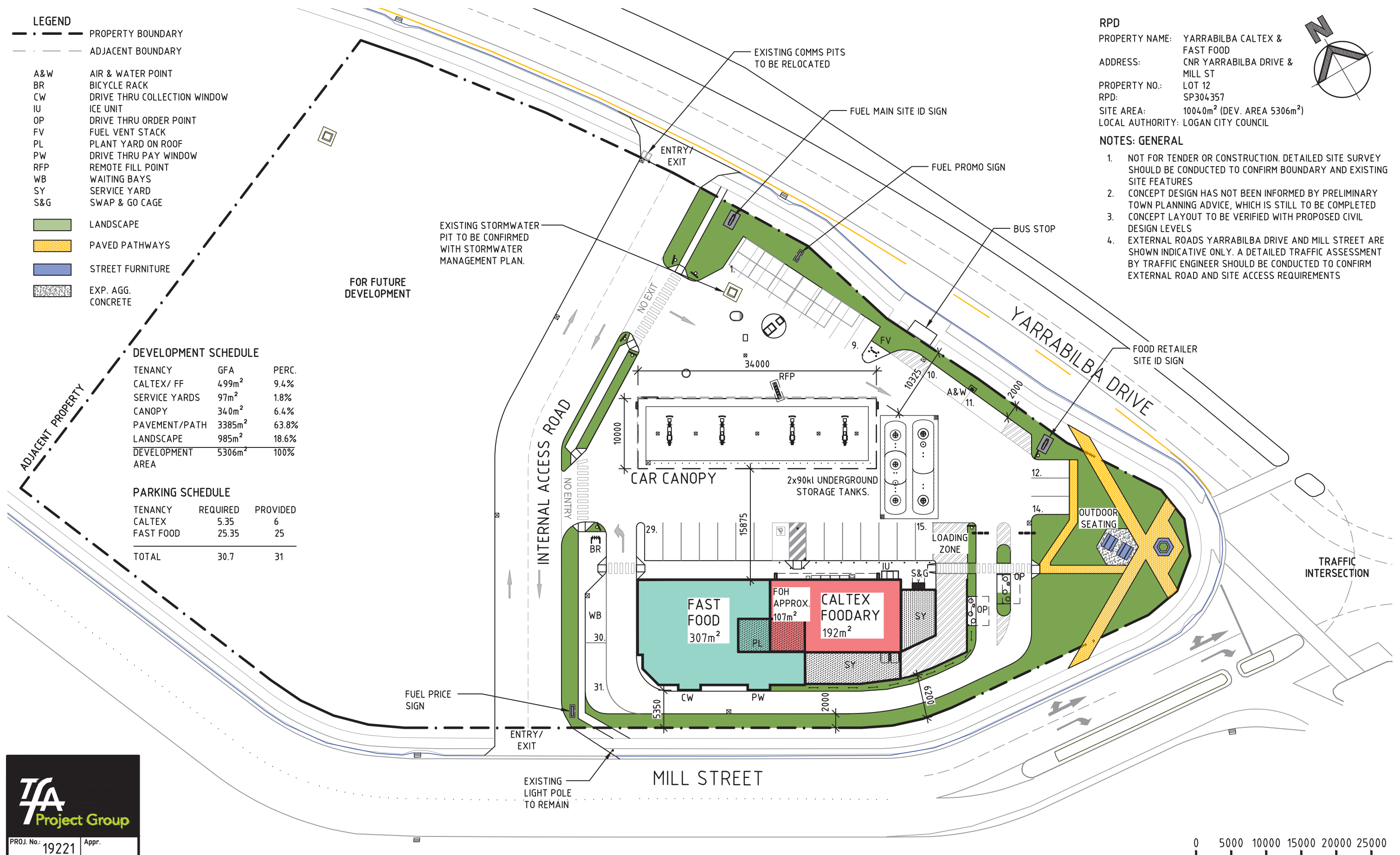
- the development application seeks approval for a service station and fast food outlet
- access is proposed via a left-in / left-out driveway on Yarrabilba Drive and an all-movements driveway on Mill Street
- the proposed access arrangements are generally consistent with Council and AS2890.1 requirements, in terms of location, design and sight distance
- sufficient on-site queuing is provided at each access and behind each fuel bowser to accommodate the predicted vehicle queues
- a total of 31 parking spaces are proposed on-site, including two air and water bays, two waiting bays and one PWD bay which is consistent with EDQ's requirements
- the proposed development accommodates a 19m AV to enter, undertake bulk refilling and exit to Mill Street in a forward gear
- the proposed development also accommodates RCV manoeuvring on-site
- the proposed development is expected to generate 258 vehicle trips during the weekday morning and evening peak hours
- the impact of the development site has been considered as part of the previous traffic modelling, and a further traffic impact assessment is not considered

5.2 Recommendations

Based on our review, it is recommended that:

- the western splay of the Mill Street driveway and Yarrabilba Drive driveway be designed as General Wide Flaired in accordance with IPWEA Standard Drawing RS-051
- the eastern splay of the Mill Street driveway be designed as shown in Figure 3.3

APPENDIX A DEVELOPMENT SITE LAYOUT



TFA

Project Group

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	A	DGC	18.09.20	CLIENT REVIEW			APPROVED		DATE
	B	DGC	28.09.20	DA ISSUE			DRAWING No. 19221-D03		REV. C
	C	EEK	13.11.20	DA ISSUE					
	REVISION								