Development Application

29 Pass Street, Wonthella

Prepared for City of Greater Geraldton

July 2016

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1 Introduction

Megara acts on behalf of Megara Sixteen Pty Ltd, who has a contract to purchase No. 29 Pass Street, Wonthella (subject land) from the City of Greater Geraldton. The proposed commercial development includes a service station, drive in liquor store and fast food outlets.

The proposed development has been designed having regard to the specific provisions of the Shire of Greater Geraldton Town Planning Scheme No. 1 and associated Strategies and Policies, as well as in accordance with meetings with the City and Main Roads of WA staff.

This report will address the major planning and design issues pertinent to the subject land. Specifically the report provides information on the following:

- Location and Site Description;
- Consultation with Council and MRWA;
- Town Planning Considerations;
- The key elements of the proposed development; and
- Justification for the development including detail regarding development requirements, Traffic Management and how it fits within the Commercial Activity Centres Strategy,

We consider the information contained therein adequately demonstrates the appropriateness of the proposed development and request it be considered on its merits and favourably determined a decision by the City of Greater Geraldton

2 Legal Description/Land Details

2.1 Legal Description

The subject land is legally described as Crown Land Title Lot 3123 on Deposited Plan 401118 Vol LR3025 Folio 709. The street address is 29 Pass Street, Wonthella. The land is reserved under management order for the purposes of Council depot with the primary interest holder being the City of Greater Geraldton.

The land is currently subject to a contract of sale between the Crown and City of Greater Geraldton, whereby a Certificate of Title (green title) will be created that will then be transferred to Megara Sixteen Pty Ltd, as per the contract of sale between the City and Megara.

Please refer to **Appendix A – Crown Land Title and Deposited Plan**

2.2 Site Description

The subject land is 2.2495ha in area, with three road frontages, Pass Street in the east (43.33m), Eastward Road in the south (98.04m) and North West Coastal Highway in the west (203.91m). An area of road widening has already been given up along Eastward Road and North West Coastal Highway frontages.

There are numerous trees along the frontage to North West Coastal Highway. It is understood that MRWA previous undertook to have these removed. The development envisaged in this proposal is in line with this objective to remove the trees. A detailed survey will be undertaken and any trees that can be safely saved will be.

The site is generally flat and vacant with it previously being used as a Council Depot; there are no existing structures or improvements on the land, with some water pump stations still being used on site. There is a general slope from the east to west (to North West Coastal Highway of 3m).

The site was previously used as the Council Depot with numerous buildings on site that have been removed, including wash down bays, staff car park, storage compound, fuel bowsers, amenities room, offices and workshops and nursery and the dog pound, that still exists. Megara Sixteen Pty Ltd have allowed for the free continued use of the dog pound, until 1 January 2017.

Please refer to **Appendix B - Site Feature Survey**.

2.3 Location

The subject property is situated on the eastern alignment of the North West Coastal Highway close to its intersection with Eastward Road. The proposed lot has frontage to the North West Coastal Highway, and is located approximately 1.5km's south of Geraldton's main industrial area of Webberton and approximately 3 km's east of Geraldton's CBD. Geraldton itself is located 424 kilometres north of Perth. See below for **Figure 1 - Aerial Photograph**, **Figure 2 - Location Plan**, and photographs (**Plates 1-3**) of the subject land.

The subject property is located in a commercial area where surrounding land uses include service commercial, light industrial, fast food, service stations, standard retail and bulky goods retail. See **Figure 3 Local Context Plan** below, with details on some of the stores and business located along North West Coastal Highway.

As demonstrated by the Local Context Plan, the proposed development is consistent with other retail, restaurant and service station commercial operations in the same zone along North West Coastal Highway, including, but not limited to, the following:

- The Salvation Army Thrift Shop;
- Shell Service Station;
- Smart Mart Convenience Shop;
- Dive Watersports;
- Video Ezy;
- BCF;
- Bunnings Warehouse;
- Subway;
- Dominoes Pizza;
- Chicken Treat;
- BP Service Station
- Supercheap Auto;
- Repco;
- McDonalds; and
- Ranger Camping.

Figure 1 - Aerial Photo

Figure 2 Location Plan

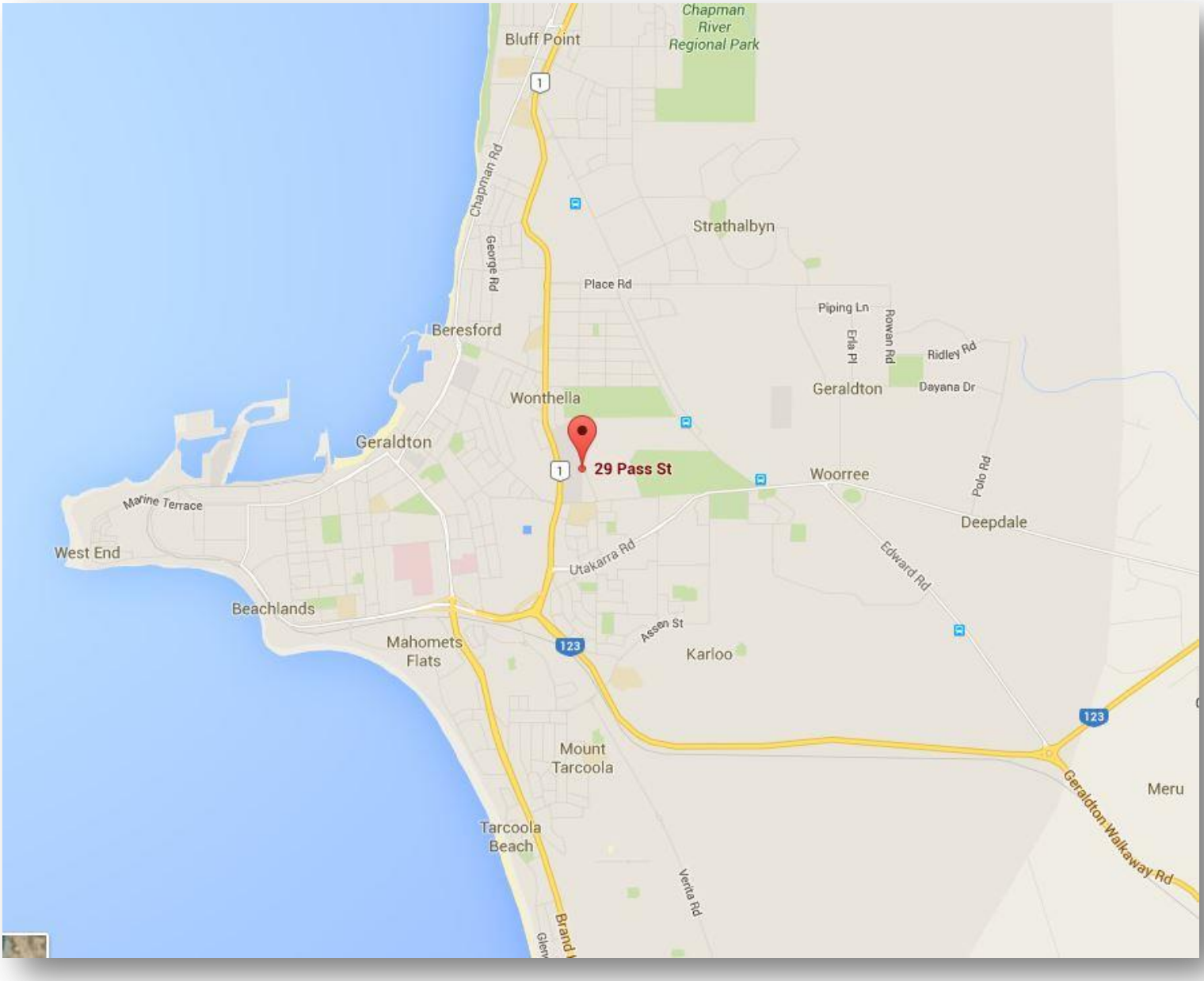


Plate 1 - View looking north east from controlled intersection

Plate 2 - View looking south east from North West Coastal Highway

Plate 3 - View looking north west from Eastward Road towards North West Coastal Highway

Figure 3 – Local Context

2.4 Servicing Information

2.4.1 Soil

The subject land is part of the Geraldton Geology Sheet; the site underlain by a quartz sand and coastal limestone. The sand is likely to be silty sand (i.e. with a relatively low permeability).

2.4.2 Site Contamination and Acid Sulphate Soils

No obvious contamination was apparent during the inspection for valuation purposes, As a result of demolition and analyses of the previous uses on site, the GDH report, commissioned by the City of Greater Geraldton states as follows:

"Generally, in specific analyses undertaken to screen for the most likely pollutants associated with historical activities, GHD has found no evidence of gross contamination and no specific impediment to the proposed land-use of light industry/commercial." (GHD July 2014)

DER mapping does not designate the area as comprising an acid sulphate soil risk.

2.4.3 Sewer

An existing DN225 sewer services the adjacent Lot 3124, at a depth of approximately 2.2m. This would be extended southwards to service the site.

2.4.4 Water

The site is surrounded by large diameter Water Corporation mains and is therefore able to be served.

2.4.5 Gas

Dial before you dig data indicates a medium pressure pipeline runs along the south and west of the site, which would be adequate to service the site. HP gas runs along Pass Street and Eastward Road.

2.4.6 Power

Existing overhead line is available within vicinity of the site, on the opposite side of the North West Coastal Highway.

2.4.7 Telecommunications

NBN is available.

2.4.8 Services Relocation

Some of the services noted above are currently located within the site and investigations are underway as to the implications of services relocation.

3 Background & Consultation

3.1 Background

Megara Sixteen Pty Ltd currently has a subdivision application with the WAPC awaiting determination (WAPC Application No.153462). This application proposes 3 lots (along with reciprocal rights of access easements to minimise crossovers to North West coastal highway). A copy of the plan is attached at **Appendix C.**

The subdivision approval waits for negotiations and analysis to progress with Main Roads WA so that their referral advice may be completed and the manner in which the development may access North West Coastal Highway is confirmed.

3.2 Consultation - Main Roads WA

A number of meetings and discussions have been undertaken between MRWA Mid-West and Megara regarding access to the Site. MRWA has it confirmed the ability to access North West Coastal Highway, subject to numerous conditions, discussed later in this report and traffic management report.

3.3 Consultation - City of Greater Geraldton

As per the above comments, numerous meetings and discussions have occurred with Council officers, with general support for the uses proposed on site received and requests for through access to Pass Street, more usable landscaping area as well as paths linking the public realm with the development. We have accommodated all Council request in the update plan submitted.

It was suggested that any submission is reliant on continued negotiations for access to the land from North West Coastal Highway with MRWA and requested that a brief review of the *Commercial Activities Centres Policy* be undertaken.

4 The Project

4.1 Project Summary

The overall project will contribute significantly to the economy of Greater Geraldton, with a total investment of approximately $10 million (including Aldi) during construction and the ongoing employment of approximately 73 people on completion. The overall impact and economic injection into the local economy will have a much greater final impact, as per the multiplier effect. The multiplier effect comes about because injections of new demand for goods and services into the circular flow of income stimulate further rounds of spending. This can lead to a bigger eventual final effect on output and employment.

This Development Application is not for the entire Lot 3123 area but for the two commercial lots north and south of the proposed Aldi along North West Coastal Highway and Pass Street. Megara proposes a full service station with associated convenience store at the corner with Eastward Road. All vehicle fuels will be available, including separate articulated vehicle diesel pumps. Adjacent will be a standard fast food outlet similar to others along the Highway (a tenant is yet to be confirmed) and a Thirsty Camel drive through bottle shop. All these uses are car based and as such suitable for the 'Service Commercial' zone along the highway.

Aldi is located in the middle to the site and subject to separate application. To the north of Aldi will be another drive through fast food restaurant (tenant not yet confirmed) and a Muzz Buzz drive through coffee take away, again car based uses best located along the Highway, between Muzz Buzz and the take away will be an access road to ensure access to/from Pass Street (as requested by Council). At the rear of the site, accessed via Pass Street will be nine Warehouse units, approximately 186m^2 each.

This Development Application is supported by a comprehensive traffic report that addresses all access, egress and traffic management measures, for both internal circulation and interface with all external roads, especially North West Coastal Highway. To this end there are five (5) proposed crossovers in total. This includes one to Pass Street to access the warehouse units and two to Eastward Road to separate heavy vehicle movement from the main fuel canopy access. There are two crossovers on North West Coastal highway, a left in left out in the north and full movement in the central portion (Aldi) site. There are cross access easements across the site (see Subdivision Plan at Appendix C) to facilitate access to all lots from the crossovers proposed, this is further detailed in this report and the attached Traffic Management Plan.

Landscaping is proposed across the entire frontage of the development, including Pass Street, with larger areas to be landscaped between Tenancies 1 (Caltex), and 2 (fast food) which also includes a picnic area and the proposed Aldi store and Tenancy 5 (Fast Food). These are large meaningful areas of landscaping and greenery well in excess of the required 10%.

A full copy of the development plans are contained at **Appendix D.**

4.2 About the Businesses

4.2.1 Caltex (Lot 1)

Caltex will be a 24 hour operation and offers 8 fuel bowers points for conventional fuel products across the range of unleaded, diesel and LPG. Additionally there will be a filling station for heavy vehicle and articulated trucks to the rear of the site (egress to Eastward Road).

The Caltex includes an incidental convenience store (Star Mart) that will sell a range of first order products including coffee, bakery goods, automotive supplies, newspapers, and on the go snacks. ATMs are also located on site. It is likely to employ up to 5 staff with 1-3 at any one time.

The site is designed to separate heavy vehicles from standard motor cars, with the diesel canopy at the rear of the site accessed via crossover onto Eastward Road. The main building has a gross floor area of 220m² and designed with glazing along the facade and frontage to North West Coastal Highway and the corner.

4.2.2 Fast Food (Lot 2)

The fast food outlet tenant has not yet been confirmed but it is a single storey standard drive through format store with 11 car drive through and a maximum gross floor area of 217m². The Fast Food Outlet is likely to operate 24 hours and employ up to 10 people and have between 3-5 staff on at any one time.

4.2.3 Thirsty Camel (Lot 3)

Thistly Camel bottle shop is a drive through liquor store that operates under a franchise arrangement. It will be open in accordance with its liquor licence, expected to be generally between 11am and 9am Monday to Saturday and 7pm on Sundays. It is a single storey drive through store with two lanes for drive through service. It has a gross floor area of 400m², which includes 300m² of shop floorspace and 100m² back of house. The Thirsty Camel is expected employ up to 10 people and have between 1-3 staff on at any one time.

4.2.1 Fast Food (Lot 5)

The fast food outlet tenant has not yet been confirmed but it is a single storey standard drive through format store with single car drive through and a maximum gross floor area of 225m². The Fast Food Outlet is likely to operate standard daytime and evening hours 7 days a week and employ up to 10 people and have between 3-5 staff on at any one time.

4.2.2 Muzz Buzz (Lot 5)

The Muzz Buzz is a drive through coffee franchise that does it primary trade in the mornings with operating house 5:30am to 6pm Monday to Friday and 7am to 5pm Saturday and Sunday. The operation has no dine in and is solely serviced by one building with 27m² of gross floor area and two drive through windows.

4.2.3 Warehouse Units (Lot 6)

Tenants for these warehouse units are yet to be determined. Unit 9 has a gross floor area of 234m² and Tenancies 2-8 186m² each and tenancy 1 = 187m², total of 1,705m² of warehouse floorspace, with an expected ancillary office or workshop to be included in each tenancy.

5 Town Planning Framework

5.1 WAPC Development Control Policy 5.1 Regional Roads (Vehicle Access)

The WAPC Development Control Policy 5.1 – Regional Roads (Vehicular Access) (DCP 5.1) provides the planning framework and controls to regulate access to regional roads.

Section 3.3 of DCP 5.1 stipulates the development requirements to control access to regional roads. Section 3.3 of DCP 5.1 states:

"3.3.1 In considering applications for access on regional roads, the effects of the proposals on traffic flow and road safety will be the primary consideration. The more important the regional road, the greater the importance attached to these factors. In general, the Commission will seek to minimise the creation of new driveways on regional roads and rationalise existing access arrangements."

To this end the development does not create any new driveways to North West Coastal Highway, with the 2 being moved to more appropriate locations to ensure it works with the current and future capacity of the Highway, this is further addressed below.

Furthermore section 3.3.5 states:

"3.3.5 In determining applications for development involving the formation, laying out or alteration of a means of access to regional roads, the following must be considered:

I. the effects of the development on traffic flow and safety, the character and function of the road, the volume and speed of traffic, the width of the carriageway and visibility; and

II. the volume and type of traffic generated by the development."

The proposed internal access arrangements on the subject site promote best practice traffic operation. It also maximises road safety on the adjacent roads due to the appropriate and even distribution of traffic flows between all road frontages, with no one road expected to deal with all the traffic (be it Eastward Road, Pass Street or North West Coastal Highway)

It is therefore considered the proposal satisfies the development requirements of DCP 5.1. This is further detailed in the attached traffic report.

5.2 Town Planning Scheme

The land is zoned "Service Commercial" and adjoining a "Primary Regional Road Reservation" under clause 3.5.1 the objectives of the "Service Commercial" zone are to:

a) accommodate commercial activities which, because of the nature of the business, require good vehicular access and/or large sites.

b) provide for a range of wholesale sales, showrooms, trades and services, which by reason of their scale, character, operational or land requirements, are not appropriate for industrial or commercial zones.

c) ensure development achieves relatively high amenity standards based on the level of exposure of the site and proximity to residential areas.

5.2.1 Land Use

The Caltex Service Station falls under the 'service station' land use under TPS1. A Service Station *means premises other than premises used for a transport depot, motor vehicle repair or motor vehicle wreckers, that are used for—*

a) "the retail sale of petroleum products, motor vehicle accessories and goods of an incidental or convenience nature; and / or

b) the carrying out of minor mechanical repairs to motor vehicles"

A 'Service Station' is a discretionary use under TPS1.

The two fast food restaurants and coffee drive-through (Muzz Buzz) fall under the fast food outlet land use under TPS1 and it *"'means premises, including premises with a facility for drive-through service, used for the preparation, sale and serving of food to customers in a form ready to be eaten—*

a) *without further preparation; and*

b) *primarily off the premises "*

A fast food outlet is a discretionary use under TPS1.

The Thirsty Camel is defined as a 'liquor store' under TPS1 which *"means premises the subject of a liquor store licence granted under the Liquor Control Act 1988 for the sale of packaged liquor for consumption off premises only"*

A 'liquor store' is an 'A' use under TPS1.

A 'Warehouse' is an 'A' use under TPS1.

5.2.2 Development Requirements

3.5.2 Site and development requirements

Table 6—Service Commercial zone site and development requirements

Minimum lot size	1,250m^2
Minimum setback Primary street	12 metres
Minimum setback Secondary street / side boundary	Variable or as per R-Codes where adjoining Residential zone
Minimum setback Rear boundary / other	Variable or as per R-Codes where adjoining Residential zone
Maximum plot ratio	0.6
Maximum building height	12 metres
Minimum landscaping	10%

5.3 Local Planning Policies/Structure Plans

There are no applicable Structure Plans or Local Development Plans, nor are any required under the Scheme provisions. The following local Planning Policies apply and will be addressed in later sections of this report:

- Consultation for Town Planning Proposals.
- Fast Food Outlets.
- Travel Plans.

5.4 Geraldton CBD Revitalisation Program

As per our meetings with senior Council staff we understand we should address the strategies within the Geraldton CBD Revitalisation Program, even when planning developments outside the CBD, based on our proposal being such a significant investment in the City. To this end the following strategies are relevant:

Strategy 1:

The City will strongly advocate to the State Government and State agencies a shift in infrastructure strategic planning and delivery:

- ***away** from single project-specific headworks delivery, at single developer cost, delivering only non-integrated single-site utility infrastructure capacity increments;*
- ***towards** coordinated planning and development of integrated multi-site headworks projects that deliver common user infrastructure capacity enhancements, with scale economies that reduce CBD headworks costs for developers;*

Strategy 3:

The City will continue to make town planning staff readily available for pre-application consultation. The City will track service delivery times and endeavour to determine completed applications within 20 working days.

Strategy 12:

The City will arrange visits by key stakeholders associated with financing development (such as bankers, financiers, superannuation fund managers and other financial industry representatives) to raise Geraldton's investment profile.

To this end, in order to assist future feasibility of the project, we respectfully request a 12 month moratorium on rates and fees, covering a portion of the construction phase.

5.5 Commercial Activity Centres Strategy

The Commercial Activity Centres Strategy (CACS) was adopted as a strategic planning document in 2013. It is based on expectations of the City of Greater Geraldton and the Mid-West Region entering a period of high economic growth with the city potentially reaching a population of 100,000 people in the next 20 years. To this end retail and other commercial floorspace requirements were also calculated on a lower growth assumption of 70,000 people by 2031.

The subject application complies with the objectives of the CACS especially objective 8 which states:

"Ensure that retail activities that occur away from the town centre involve an aggregation of uses at appropriate locations, and that such development contributes to the net community benefit and does not undermine commercial activity in the central area."

The proposed development includes two drive-through fast food and one drive through liquor store retail outlets, as well as a service station (and Aldi under separate application). These are car based uses that have been appropriately agglomerated and located, noting our floorspace uses are mostly for Service Station and Other Retail (being fast food not normally accommodated within a shopping centre, but although sometimes adjacent). This ensures that there is a separation of large format retail and car based drive through retail/food from pedestrian friendly retail centres. Some additional commentary on the CSAS and our proposal is summarised below:

- The 'current' (2013) retail floorspace in Geraldton measured by the CACS is 75,185m² and probably slightly higher in 2016. The total floorspace (across other retail, fast food, other retail and service station) of 1,146m² represents just 1.52% of the city's existing retail floorspace. Therefore the development represents a very small addition that will not disrupt the current or future centres hierarchy.
- The North West Coastal Highway precinct is a designated commercial area where a 'fast food', service station and 'liquor store' are discretionary uses. Car dominated drive through uses, and the relevant site requirements are difficult to find in existing centres and the central location relative to the Geraldton urban area will allow customers to easily access the site and not compete with pedestrian friendly CBD areas.
- The CACS allows for an increase in the retail floor area of the North West Coastal Highway precinct of up to 2,740m² by 2031 – although the area has a greater physical capacity than this. The proposal floor areas fall within this limit.
- The CACS analysis has assumed the staged development of two District Centres in the far north and far south of Geraldton in 2016 and 2021 respectively. Given the delays and uncertainty over the major port project at Oakajee 20km north of Geraldton and the lower medium-term population forecasts, most of the projected District Centre floorspace is unlikely to be needed or supported in those locations by 2021. Despite this, the ongoing growth in Geraldton's population will still have a need for additional retail floorspace which the subject site can partly provide in a central, rather than peripheral location.
- The subject site is 1-1.5km from four existing neighbourhood centres which allows those centres to still maintain a strong position within their localised residential catchments and to passing traffic.

- The car dominance of drive through uses require a central and convenient site on or close to main roads or close to the CBD (especially for service stations). Most of the neighbourhood centres are located in local subdivisions (ie Seacrest) and have small localised catchments which may be deleteriously affected by car based fast food and liquor outlets.

6 Development Assessment

6.1 Land Use

As detailed in section 6.2.1 all uses are either 'D' or 'A' uses meaning the Council must use its discretion to grant planning approval. Furthermore it is noted that the uses are supported by the Commercial Activity Centres strategy, as detailed above.

6.2 Built Form

The commercial tenancies will all present as single storey with appropriate signage to North West Coastal Highway, with predominately glazed shop fronts providing interaction with the street, landscaped areas and pathways.

The warehouse units will have an interface with the internal through road between Pass Street and North West Coastal Highway.

Plot ratio is well within the allowed 0.6.

6.3 Setbacks

All building have been setback in excess of the 12m required and comply with the Local Planning Scheme

6.4 Building Height

All buildings are less than 12m in height and comply with the Local Planning Scheme.

6.5 Car Parking

The following calculations are provided for car parking across the site

Lots 1, 2 & 3 – Service Station, Fast food and Liquor store

Land Use	Car Bays Required*	Provided
Service Station 1 per 50m² @ 220m²	4.4	
Fast Food, 10 drive through stack bays	10	
Fast Food, 1 per 4 patrons @ 100 patrons	25	
Liquor Store 10 per 20m²	20	
Total	59.4 = 60	83
Resultant surplus		**23**

Lot 5 –Muzz Buzz and Fast Food

Land Use	Car Bays Required*	Provided
Fast Food, 10 drive through stack bays	10	6
Fast Food, 1 per 4 patrons @ 100 patrons	25	23
Fast Food, 10 drive through stack bays	10	10
Total	45	39
Resultant Shortfall		**6**

The shortfall in Lot 5 is a result of amendments made to ensure through access to Pass Street to maintain through traffic from North West Coastal Highway.

Lot 6 - Warehouse (9 Tenancies)

Land Use	Car Bays Required*	Provided
Warehouse 1 per 50m² 9 Tenancies @ 187m² and 1 tenancies @ 234m² = 1,705m²	34.1 = 35	39
Resultant surplus		**4**

*Location of motorcycle /scooter bays to be negotiated within excess vehicle bays.

6.6 Landscaping

LPS1 requires 10% of a site to be landscaped. In addition to this the Council has requested consideration of minimising 1m landscape strips and also inclusion of a communal seating area. To this end we've increased the width of all perimeter landscaping to be at least 1.5m wide and also added some fixed tables and chairs to the large landscaped area between the Lots 1 and 2

The following calculations are provided to demonstrate compliance with Scheme requirements for minimum 10% of site to be landscaped.

Site Area	Landscaping Required	Landscaping Provided	Landscaping Percentage
Lot 1, 2 & 3 (to be one lot on new Title) – 7,978m²	10% = 797.85m²	Soft =1,126m² Hard = 465m² Total = 1,591m²	20% (14% soft)
Lots 5 & 6 (to be one lot on new Title) – 7,676m²	10% = 767.6m²	Soft = 1,221.3m² Hard = 590.8 m² Total = 1,812.1m²	23.6% (15.9% soft)

6.7 Traffic Management

The following detail provides extracts from the attached comprehensive Traffic Study (at **Appendix E**), prepared by Move Consultants to address specific issues and measures as required by both the CoGG and MRWA in approving the proposed crossover locations and full movement crossover into the site from North West Coastal Highway near the Aldi entrance.

Proposed access arrangements to the site include the following:

- *"A full movements crossover to the east side of North-West Coastal Highway (Southern Access) approximately 120m north of the signalised intersection of North-West Coastal Highway/Eastward Road/Johnston Street and 40m south of the unsignalised intersection of North-West Coastal Highway/Gray Street. – Designed to accommodate left-turn inbound by 36.5m vehicles, right-turn inbound by 19m vehicles and left-turn outbound by 19m vehicles and right-turn outbound by 12.5m vehicles;*
- *A partial movements crossover (left-in/left-out only) crossover to the east side of North-West Coastal Highway (Northern Access) approximately 35m north of the unsignalised intersection of North-West Coastal Highway/Gray Street. – Designed to accommodate left-turns inbound and outbound by 12.5m vehicles.*
- *A partial movements crossover (left-in/left-out only) crossover to the north side of Eastward Road (Western Access) approximately 60m east of the signalised intersection of North-West*

Coastal Highway/Eastward Road/Johnston Street providing direct access into the proposed petrol station. – Designed to accommodate inbound and outbound left-turns by 12.5m vehicles.

- *A full movements crossover to the north side of Eastward Road (Eastern Access) approximately 90m east of the signalised intersection of North-West Coastal Highway/Eastward Road/Johnston Street. - Designed to accommodate inbound left- and right-turns inbound by 19m vehicles and outbound left- and right-turns by 36.5m vehicles.*
- *A full movements crossover the south-west side of Pass Street at the north-western corner of the site. - Designed to accommodate inbound and outbound turns by vehicles up to 12.5m in length.*

The results of the SIDRA analysis for proposed access arrangements under the two major access scenarios (Scenarios 2 and 3) indicate that under both scenarios the proposed primary access points to North-West Coastal Highway (Southern Access) and Eastward Road (Eastward Road) will operate at acceptable Levels of Service; however, the preferred option is to allow for full movements at the Southern Access to North-West Coastal Highway in order to minimise right-turning movements at the Eastward Road full movements driveway in order to reduce site-generated traffic associated with tenancies other than the petrol station (Tenancy 1) at this location and to minimise conflict with entering and existing trucks utilising the diesel bowsers at the rear of the site and with entering and existing service/delivery vehicles associated with the discount supermarket and petrol tenancy, including fuel tankers. There is more than sufficient capacity at the southern access to allow for a full movements access inclusive of outbound right-turns at this location due to the gaps in traffic resulting from the 'platooning' effect introduced into northbound traffic discharging from the signalised intersection to the south. This is reflected in the results of the assessment at this location.

The results of the SIDRA assessment at the proposed Eastward Road Eastern Access are acceptable under both Scenarios 2 and 3 with the preferred option being Scenario 2 which minimises outbound right-turns at this location. Under both scenarios, the northbound left-turn movement does not impede through traffic travelling east and the southbound right-turn movement does not impede through traffic travelling west on Eastward Road. Under Scenarios 2 and 3, the expected maximum downstream queue on Eastward Road does not impede traffic operations at the proposed Eastward Road Eastern Access.

The results of the SIDRA assessment of the signalised intersection at North-West Coastal Highway/Eastward Road/Johnston Street indicate that with the addition of site-generated traffic under both Scenarios 2 and 3 and under the future ultimate dual carriageway 2031 traffic scenario will have a minimal impact on queuing and vehicular delays with the majority of increase in traffic through this location resulting from growth in background traffic or passing traffic on the boundary road network under the 10-year future scenario.

A review of the proposed on-site circulation and car parking layout was undertaken to assess the adequacy of the proposed site access and circulation in addition to service/delivery areas on the site. The design of the proposed car parking areas adjacent to the rear of the building on the site has been reviewed using AutoTrack and the relevant Australian Standards and Austroads guidelines, with the proposed design considered adequate to accommodate on-site manoeuvring and circulation.

In conclusion, it should be noted that based both on a review of the modelled total traffic assessment and observed traffic operations of the boundary road system, the anticipated site-generated traffic associated with the proposed development can be accommodated within the existing practical capacity, functional road classification and existing geometry of the local road system."

6.7.1 RAV Network Reclassification

A review of the existing Restricted Access Vehicle (RAV) network in the vicinity of the site indicates that North-West Coastal Highway is classified as a RAV Network 8 which includes 36.5m vehicles; however, Eastward Road along the frontage of the site is only classified as 'a RAV Network 1 or permitted travel by vehicles up to 19m in length.

Due to the proposal to allow for access into and out of the site by vehicles up to 36.5m in length, a reclassification of the section of Eastward Road between Pass Street and North-West Coastal Highway will be required to a minimum of a RAV Network 3. Discussions with the City of Greater Geraldton and Main Roads WA indicate that an application to reclassify the road to allow for 'as of right' travel by these vehicles will not be an issue with regard to safety and operations along this section of road as currently oversize vehicles are utilising this section of Eastward Road to access the industrial subdivision to the

east and north with the existing crash history indicating that there is no impact on the existing risk profile.

A safety assessment undertaken for the proposal indicates that adequate sight distances are in place to accommodate the expected site-generated traffic to both North-West Coastal Highway and Eastward Road. A review of the crash history indicates that the proposal will have a minimal impact on the existing risk profile on the adjacent road network.

6.7.2 Street Trees

As per previous comments from MRWA regarding the "*need to remove the tuart trees along the boundary of the Lot*" we request that any approval include allowance to "*remove what is seen to be a risk* (the trees) *and would affect future development of the corner site and potential risk to the Highway"* as stated by MRWA.

These can be removed as per the state-wide purpose permit to clear vegetation in the road reserves MRWA control.

6.8 Waste Management

Adequate bin storage locations and service yards and areas have been provided for the proposed development. Bin storage must meet the provisions of the City of Greater Geraldton Local Laws. To this end we advise that Rubbish collection will be undertaken via private waste collection arrangements

All bin stores will feature minimum wall height of 1.5 metres, selfclosing gates, smooth impervious floor and access to a liquid disposal system.

6.9 Stormwater & Waste Water Management

The proposed development will appropriately utilise industry best practice measures for stormwater treatment and hydrocarbon capture for the service station component. This consists of:

- An oil capture and containment tank located beneath the refuelling bays, which captures runoff from paved surfaces. The tank is a glass reinforced plastic vessel, which is made in accordance with Australian Standards 2634-1983 Tank Design.
- The tank is composed of a preliminary oil retention chamber which separates oil from stormwater. The stormwater then runs through a secondary separation chamber which separates and contains the remainder of hydrocarbons.
- The stormwater then runs into drains as per usual stormwater management.
- The contained waste (oils, fuels, hydrocarbons) are regularly removed by a vacuum loading truck and taken away off site for treatment.
- Having regard to the above, an industry best management practice w ill be implemented, having no impacts on the surrounding area

6.10 Odour and Gaseous Management

Management of potential pollutants is a statutory requirement for all Petrol Filling Stations and Service Stations under the Dangerous Goods Safety Regulations 2004.

Odour and gaseous management is undertaken through a Stage 1 Vapour Recovery System, which is implemented as a minimum across Australia. The Stage 1 Vapour Recovery System is considered a best management practice.

In simplistic terms, when fuel is transferred from the fuel tanker to the underground fuel tank, vapour is displaced into a hose connected from the underground tank to the tanker via underground pipework. The tanker draws the vapours into its tank as fuel is displaced.

There is no vapour leaked as the fittings to and from the underground tank are air tight. Odour and gaseous management is also addressed when a licence under the Dangerous Goods Safety Regulations 2004 is applied for. This will also be a requirement for this proposal.

Odour and Gaseous management has been contemplated and precautions are appropriately taken in line with statutory requirements. Further, a best management practice will be utilised and will have no impact on adjoining properties.

6.11 Noise Management

Noise emissions from the proposed land uses are capable of complying with the Environmental Protection (Noise) Regulations 1997. An acoustic report will be provided wit he Building Permit application.

6.12 Signage

Generic signage only is shown for all tenancies except the Caltex, where signage is detail in the drawings for approval.

6.13 Fast food Outlets LPP

All proposed fast foot outlets have been designed to ensure compliance with this policy. All traffic safety and movement issues, along with any potential conflicts have been addressed in the plan or through the Move Consultants report.

With regard to impacts on residential amenity, it should be noted that along with the above comments regarding noise and acoustic management, the property has no shared boundaries with residential properties, and is for the most part surrounded by light industrial and commercial land uses. Therefore impacts on the residential area is minimised or nil.

7 Conclusion

It is considered the proposal should be favourably determined, on individual merit, recognising the proposal provides for significant investment in the region on underutilised land.

In summary, the proposal is justified and considered appropriate for the following reasons:

- The proposed land uses comply with the Commercial Activity Centres Strategy in terms of location of car based commercial uses as well as floor space allowance and impact, or lack thereof, on other commercial centres.
- The proposal improves the layout and functionality of the subject site, providing for safer and more efficient movement through the site for vehicles than if only one or two access points were allowed.
- The proposal improves the appearance of the subject site where previously it was a Council Depot.
- The proposal reduces any potential amenity impacts on adjacent residential dwellings.
- The proposal is entirely consistent with Town Planning Scheme No. 1 and the Commercial Activity Centres Strategy.

We therefore respectfully request the Application for Development Approval be considered on its merits and favourably determined.

Appendix A - Certificate of Title

WESTERN AUSTRALIA

REGISTER NUMBER	
3123/DP401118	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
N/A	N/A

VOLUME LR3025 FOLIO 709

RECORD OF QUALIFIED CERTIFICATE OF CROWN LAND TITLE

UNDER THE TRANSFER OF LAND ACT 1893
AND THE LAND ADMINISTRATION ACT 1997

NO DUPLICATE CREATED

The undermentioned land is Crown land in the name of the STATE of WESTERN AUSTRALIA, subject to the interests and Status Orders shown in the first schedule which are in turn subject to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

REGISTRAR OF TITLES WESTERN AUSTRALIA

LAND DESCRIPTION:

LOT 3123 ON DEPOSITED PLAN 401118

STATUS ORDER AND PRIMARY INTEREST HOLDER:
(FIRST SCHEDULE)

STATUS ORDER/INTEREST: RESERVE UNDER MANAGEMENT ORDER

PRIMARY INTEREST HOLDER: CITY OF GREATER GERALDTON OF PO BOX 101, GERALDTON
(XE N080123) REGISTERED 3 AUGUST 2015

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. N080122 RESERVE 25345 FOR THE PURPOSE OF MUNICIPAL DEPOT REGISTERED 3.8.2015.
N080123 MANAGEMENT ORDER. CONTAINS CONDITIONS TO BE OBSERVED. REGISTERED 3.8.2015.

Warning: (1) A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required. Lot as described in the land description may be a lot or location.
(2) The land and interests etc. shown hereon may be affected by interests etc. that can be, but are not, shown on the register.
(3) The interests etc. shown hereon may have a different priority than shown.

----------END OF CERTIFICATE OF CROWN LAND TITLE----------

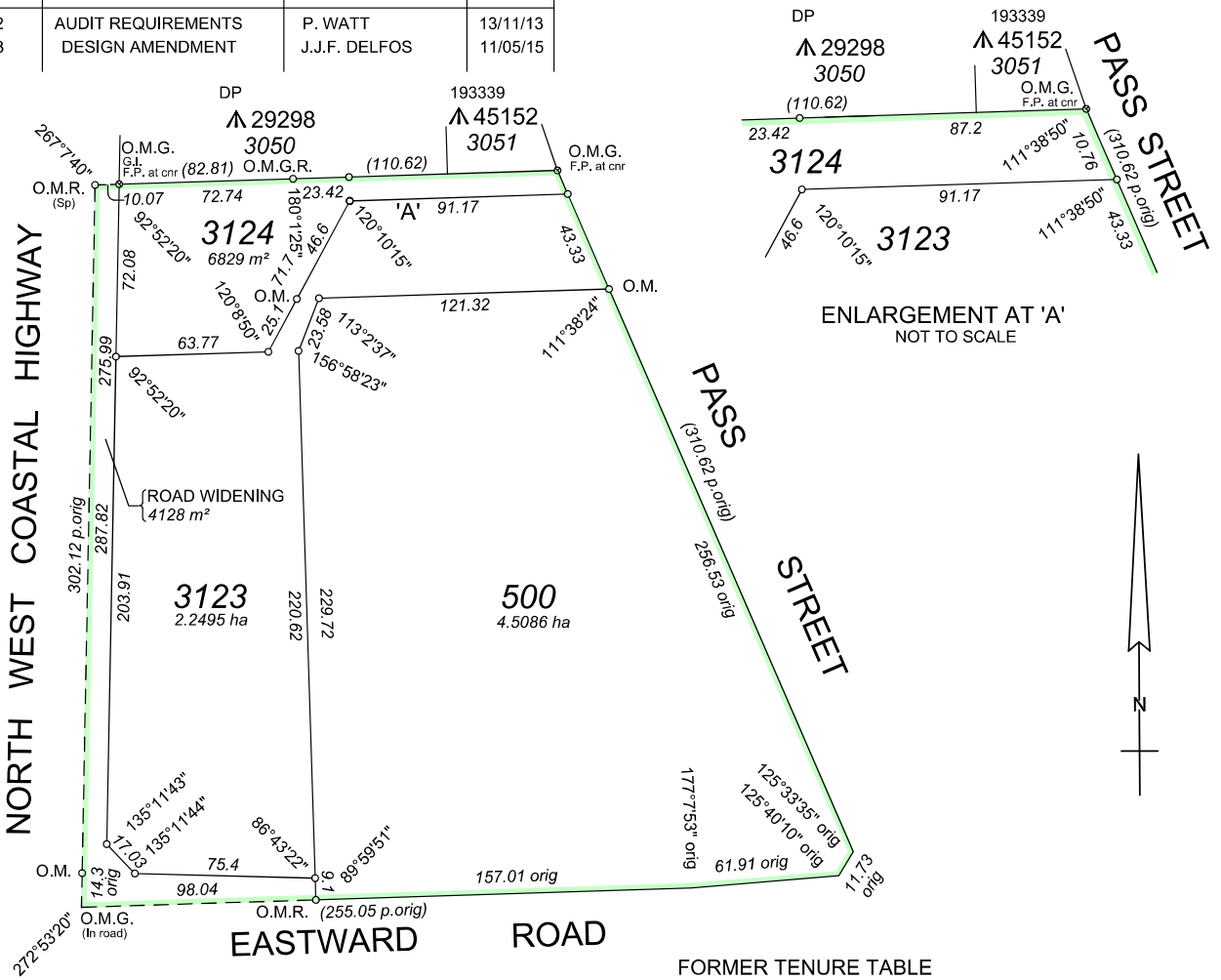
STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: DP401118.
PREVIOUS TITLE: LR3010-648, LR3010-649.
PROPERTY STREET ADDRESS: 29 PASS ST, WONTHELLA.
LOCAL GOVERNMENT AREA: CITY OF GREATER GERALDTON.
RESPONSIBLE AGENCY: DEPARTMENT OF LANDS (SLSD).

NOTE 1: N080118 CORRESPONDENCE FILE 00232-1959-04RO

VER.	AMENDMENT	AUTHORISED BY	DATE
2	AUDIT REQUIREMENTS	P. WATT	13/11/13
3	DESIGN AMENDMENT	J.J.F. DELFOS	11/05/15



ENLARGEMENT AT 'A'
NOT TO SCALE

FORMER TENURE TABLE

LOTS	FORMER PI/TENURE	ON PLAN/DIAGRAM	TITLE
500	PT LOT 2506	DP 174922	L/R 3010-648
3123	PT LOT 2506 PT LOT 2507	DP 174922 DP 174922	L/R 3010-648 L/R 3010-649
3124	PT LOT 2507	DP 174922	L/R 3010-649

INTERESTS & NOTIFICATIONS

SUBJECT	PURPOSE	STATUTORY REFERENCE	ORIGIN	LAND BURDENED	BENEFIT TO	COMMENTS

TYPE CROWN

PURPOSE SUBDIVISION

PLAN OF

LOTS 500, 3123, 3124 AND ROAD WIDENING

HELD BY LANDGATE IN DIGITAL FORM ONLY.

SSA ~~YES~~/NO

DISTRICT VICTORIA DRDL FILE 03744-1953-02

TOWNSITE

LOCAL AUTHORITY CITY OF GREATER GERALDTON

LOCALITY WONTHELLA

FORMER TENURE	ON	FIELD BOOK
SEE TABLE	INDEX BE43(2) 16.15	123903

SCALE: 1:2000 AT A3 SIZE
ALL DISTANCES ARE IN METRES
0 40 80 120

SURVEYOR'S CERTIFICATE - Reg 54

I, J.J.F. DELFOS

hereby certify that this plan is accurate and is a correct representation of the-

(a) *survey; and/or

(b) *calculations from measurements,

(* delete if inapplicable)

undertaken for the purposes of this plan and that it complies with the relevant written law(s) in relation to which it is lodged

Johannes Jacobus Frederick Delfos 2015.05.20 10:42:15 +08'00'

Licensed Surveyor Date

HTD
SURVEYORS & PLANNERS
HILLE, THOMPSON & DELFOS
PO Box 820, GERALDTON WA 6531
Ph: (08) 9921 3111 Fax: (08) 9921 8072

LODGED

DATE 23-Oct-13

FEE PAID $0.00

ASSESS No. 13767022

TYPE OF VALIDATION

FULL AUDIT

LEGAL COMPONENT RL

DOCKET PLAN / DIAGRAM TRIM

CERTIFIED CORRECT 22-5-2015

I.S.C.

F.S.C.

JOB REF : 327/12/1711

APPROVED BY
WESTERN AUSTRALIAN PLANNING COMMISSION

FILE

EXEMPT FROM WAPC APPROVAL
DELEGATED UNDER S.16 P&D Act 2005

DATE

IN ORDER FOR DEALINGS

SUBJECT TO

Reserve Action

Dedication Action

22-5-2015
FOR INSPECTOR OF PLANS & SURVEYS DATE
AUTHORIZED LAND OFFICER

APPROVED

3-8-2015
INSPECTOR OF PLANS & SURVEYS DATE
AUTHORIZED LAND OFFICER

Landgate
Western Australian Land Information Authority

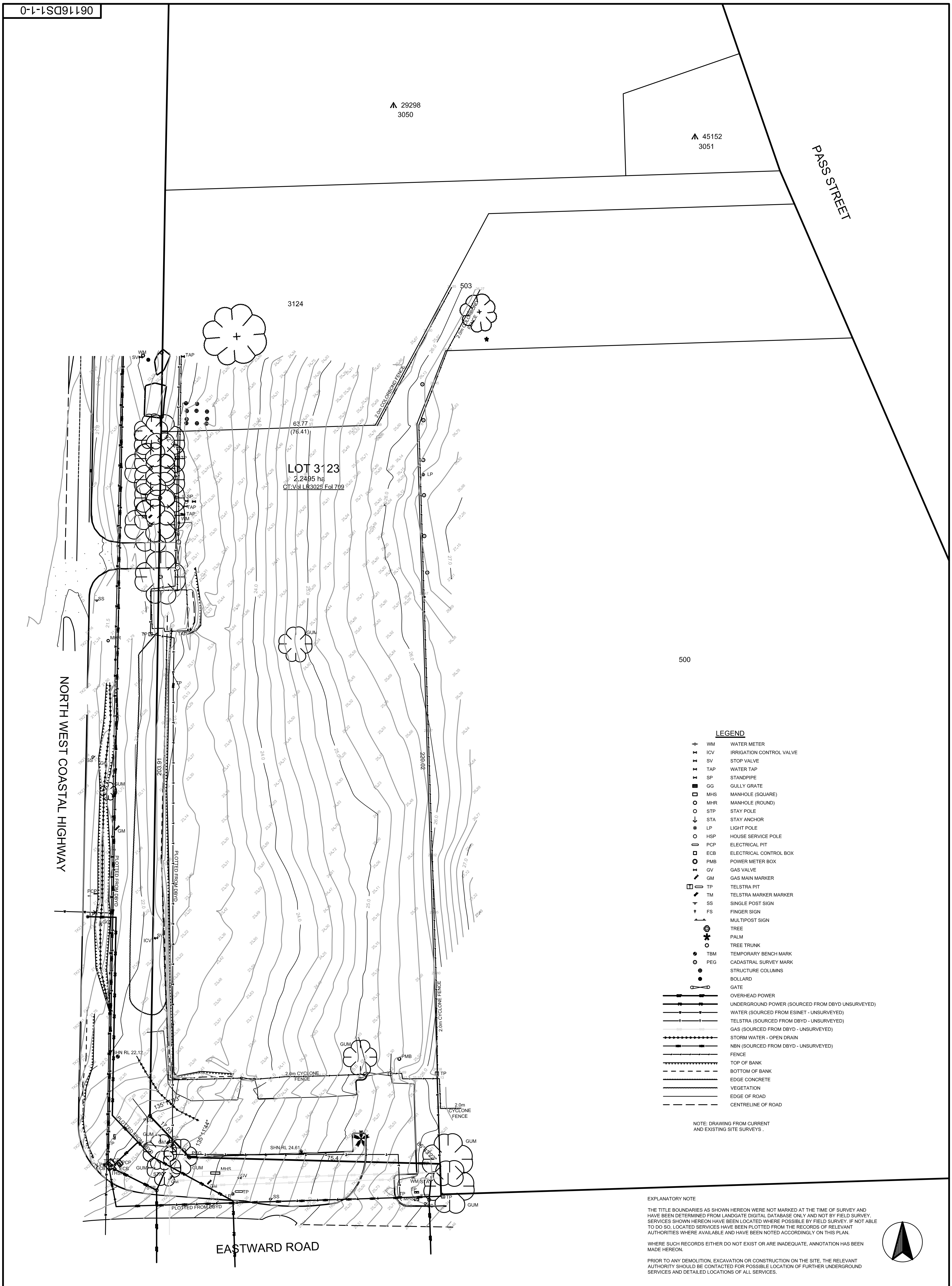
DEPOSITED PLAN

401118

SHEET 1 OF 1

VERSION 3

Appendix B - Site Feature Survey


06116DS1-1-0
29298
3050
45152
3051
PASS STREET
503
3124
2.0m COLORBOND FENCE
63.77
(76.41)
LOT 3123
2.2495 ha
CT:Vol LR3025 Fol 709
500
NORTH WEST COASTAL HIGHWAY
203.91
220.02
PLOTTED FROM DBYD
2.0m CYCLONE FENCE
SHN RL 22.12
SHN RL 24.61
135°11'43"
135°11'44"
17.03
75.4
86°43'22"
EASTWARD ROAD

LEGEND

WM	WATER METER	
ICV	IRRIGATION CONTROL VALVE	
SV	STOP VALVE	
TAP	WATER TAP	
SP	STANDPIPE	
GG	GULLY GRATE	
MHS	MANHOLE (SQUARE)	
MHR	MANHOLE (ROUND)	
STP	STAY POLE	
STA	STAY ANCHOR	
LP	LIGHT POLE	
HSP	HOUSE SERVICE POLE	
PCP	ELECTRICAL PIT	
ECB	ELECTRICAL CONTROL BOX	
PMB	POWER METER BOX	
GV	GAS VALVE	
GM	GAS MAIN MARKER	
TP	TELSTRA PIT	
TM	TELSTRA MARKER MARKER	
SS	SINGLE POST SIGN	
FS	FINGER SIGN	
	MULTIPOST SIGN	
	TREE	
	PALM	
	TREE TRUNK	
TBM	TEMPORARY BENCH MARK	
PEG	CADASTRAL SURVEY MARK	
	STRUCTURE COLUMNS	
	BOLLARD	
	GATE	
	OVERHEAD POWER	
	UNDERGROUND POWER (SOURCED FROM DBYD UNSURVEYED)	
	WATER (SOURCED FROM ESINET - UNSURVEYED)	
	TELSTRA (SOURCED FROM DBYD - UNSURVEYED)	
	GAS (SOURCED FROM DBYD - UNSURVEYED)	
	STORM WATER - OPEN DRAIN	
	NBN (SOURCED FROM DBYD - UNSURVEYED)	
	FENCE	
	TOP OF BANK	
	BOTTOM OF BANK	
	EDGE CONCRETE	
	VEGETATION	
	EDGE OF ROAD	
	CENTRELINE OF ROAD	

NOTE: DRAWING FROM CURRENT AND EXISTING SITE SURVEYS .

EXPLANATORY NOTE

THE TITLE BOUNDARIES AS SHOWN HEREON WERE NOT MARKED AT THE TIME OF SURVEY AND HAVE BEEN DETERMINED FROM LANDGATE DIGITAL DATABASE ONLY AND NOT BY FIELD SURVEY. SERVICES SHOWN HEREON HAVE BEEN LOCATED WHERE POSSIBLE BY FIELD SURVEY. IF NOT ABLE TO DO SO, LOCATED SERVICES HAVE BEEN PLOTTED FROM THE RECORDS OF RELEVANT AUTHORITIES WHERE AVAILABLE AND HAVE BEEN NOTED ACCORDINGLY ON THIS PLAN.

WHERE SUCH RECORDS EITHER DO NOT EXIST OR ARE INADEQUATE, ANNOTATION HAS BEEN MADE HEREON.

PRIOR TO ANY DEMOLITION, EXCAVATION OR CONSTRUCTION ON THE SITE, THE RELEVANT AUTHORITY SHOULD BE CONTACTED FOR POSSIBLE LOCATION OF FURTHER UNDERGROUND SERVICES AND DETAILED LOCATIONS OF ALL SERVICES.

00 10 20 30
ALL DISTANCES ARE IN METRES

REV.	DATE	DESCRIPTION	INT.
0	04/03/16	ORIGINAL ISSUE	JH

REVISIONS

SURVEYED BY:	SW	25/02/16
DRAWN BY:	JH	04/03/16
CHECKED BY:	ED	08/03/16
APPROVED BY:	ED	08/03/16

AREA FILE: 1711
CONT. INT'VAL 0.2m
V DATUM: AHD
H DATUM: GCG94
FIELD Bk: TSC3#2

HTD
SURVEYORS & PLANNERS
HILLE, THOMPSON & DELFOS
PO Box 820, GERALDTON WA 6531
PHONE: (08) 9921 3111 FAX: (08) 9921 8072

ISO 9001 FS 520743

CLIENT: MEGARA

LOT 3123 on DP 401118
DETAIL SURVEY

NORTH WEST COASTAL HWY., GERALDTON - CITY OF GREATER GERALDTON

SCALE 1 : 500 ALL DISTANCES IN METRES | SHEET SIZE A1 | DWG No. 06116DS1-1-0

19812DS1-1-1

NORTH WEST COASTAL HIGHWAY

PASS STREET

3050

500

3124
5937 m²

502
892 m²

503
638 m²

501
4066 m²

3123

72.74
92°52'20"
72.08
63.77
76.41
92°52'20"
203.91
23.42
149°49'45"
17.25
90°
10
91.17
73.92
87.2
TREE LINE
111°38'50"
10.76
111°38'50"
43.33
111°38'24"
13.87
150°57"
150°58"
46.6
38.6
59°49'19"
121.32
113°2'37"
25.1
23.58
120°8'50"
12.64
156°58'23"
90°0'51"
220.62

CONCRETE SLABS
GREENHOUSE
CLD GREENHOUSE
DOG POUND
TREE LINE
PASS STREET

LEGEND

WM	WATER METER	LP	LIGHT POLE
TAP	WATER TAP	PP	POWER POLE
SP	STANDPIPE	TP	TELSTRA PIT
SC	SEWER CONNECTION	TM	TELSTRA MARKER
SV	STOP VALVE		TREE TRUNK
	STRUCTURAL COLUMN	GM	GAS MARKER
SS	SINGLE POST SIGN		

FENCE
TOP OF BANK
BOTTOM OF BANK
BUILDING
VEGETATION
PROPOSED BOUNDARIES

NOTE:

DRAWING FROM CURRENT AND EXISTING SITE SURVEYS .

CADASTRAL DATA SOURCED FROM DP 401118

EXPLANATORY NOTE

THE TITLE BOUNDARIES AS SHOWN HEREON WERE NOT MARKED AT THE TIME OF SURVEY AND HAVE BEEN DETERMINED BY PLAN DIMENSIONS ONLY AND NOT BY FIELD SURVEY.
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1	14/11/13	ADD DP 401118	GT
0	10/06/12	ORIGINAL	TS

REVISIONS

00 10 20 30
ALL DISTANCES ARE IN METRES

SURVEYED BY:	TS	22/05/12
DRAWN BY:	TS	10/06/12
CHECKED BY:		
APPROVED BY:		

AREA FILE: 1711
CONT. INT'VAL: 0.2
V DATUM: AHD
H DATUM: GCG
FIELD Bk: TSC3-1

HTD
SURVEYORS & PLANNERS
HILLE, THOMPSON & DELFOS
PO Box 820, GERALDTON WA 6531
PHONE: (08) 9921 3111 FAX: (08) 9921 8072

ISO 9001
FS 520743

CLIENT: SALEEBA ADAMS ARCHITECTS

LOTS 501-503 & 3124 on DP401118

DETAIL SURVEY

NWCH , GERALDTON - CITY of GREATER GERALDTON

SCALE 1 : 500 (ALL DISTANCES IN METRES)
SHEET SIZE A2
DWG No. 19812DS1-1-1

Appendix C - Subdivision Plan

PASS ST

43.515 m

121.33 m

91.145 m

LOT 500

71.700 m

23.58 m

45.63 m

92.67 m

82.313 m

17.78 m

9.40 m

8.40 m

59.49 m

75.40 m

17.03 m

85.00 m

77.16 m

41.74 m

78.58 m

63.77 m

Lot 1
8000 m2

Lot 2
6500 m2

Lot 3
7907 m2

LOT 3050

LOT 3124

LOT 3123
2.2295 ha
CT VOL LR3025 FOL 799

EASTWARD ROAD

CYPRESS ST

LOT 1788

LOT 1798

LOT 1797

BANKSIA ST

NORTH WEST COASTAL HIGHWAY

LOT 1

LOT 2

GRAY ST

LOT 1921

LOT 3037

LOT 3036

Cross Access Easment

Benefit: Lot 2 & Lot 3
Burden: Lot 1

Benefit: Lot 1 & Lot 3
Burden: Lot 2

Proposed Crossovers

Cross Over Locations

Electrical Infrastructure

Level 1, 662 Newcastle Street
Leederville Western Australia 6902
T 08 9230 3600
F 08 9227 0611

Issue	Revision Description	Date

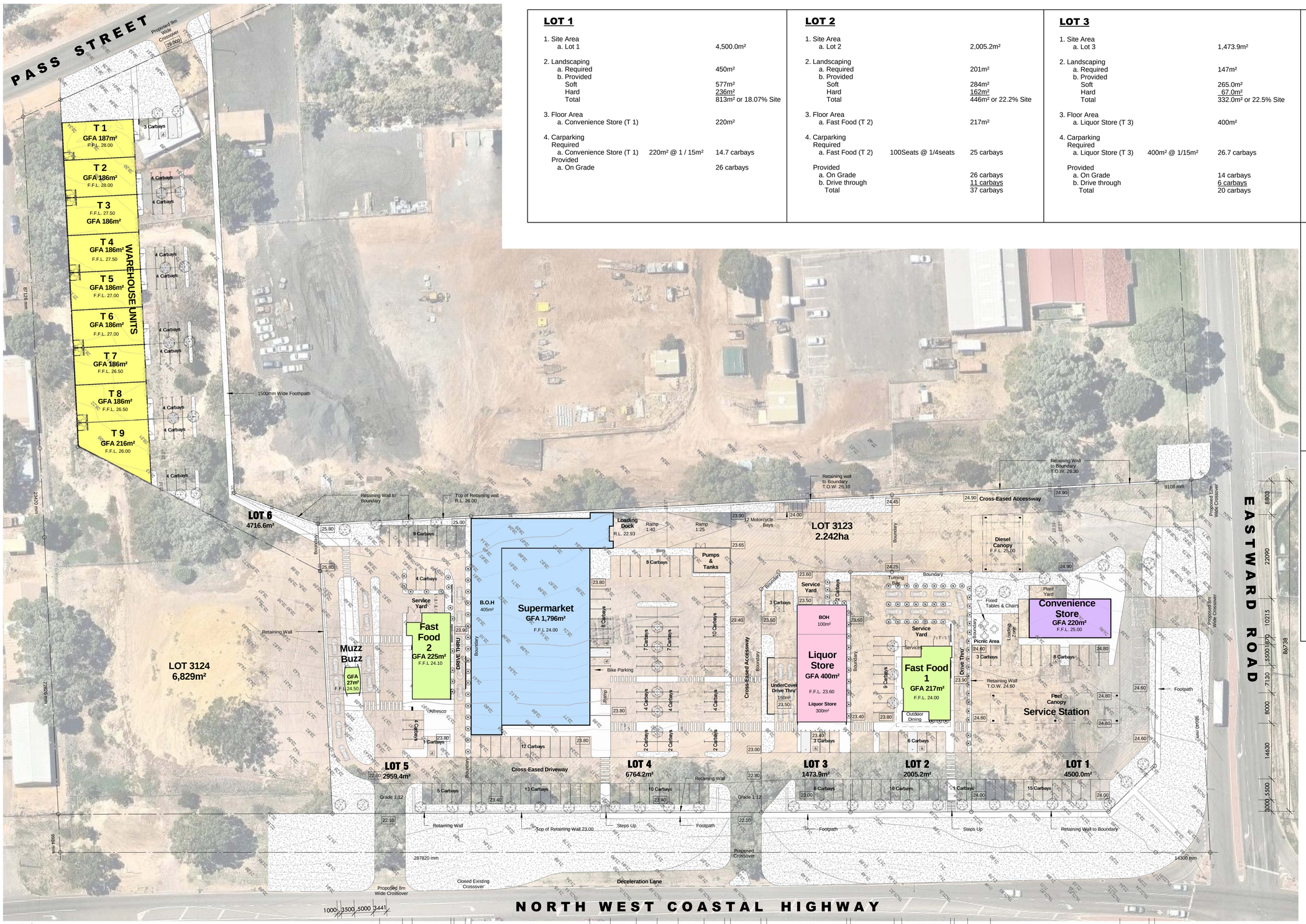
MEGARA BUILDING VALUE

DRAWING TITLE: Lot 3123 NWCH- Geraldton

PROJECT NAME: Project Name

PROJECT NUMBER:	SCALE:	DRAWING NUMBER:	DATE:	REVISION NUMBER
3149	1 : 1000 @ A3	A101	21.03.2016	

Appendix D - Proposed Development Plans



LOT 1

1. Site Area		
a. Lot 1		4,500.0m²
2. Landscaping		
a. Required		450m²
b. Provided		
Soft		577m²
Hard		236m²
Total		813m² or 18.07% Site
3. Floor Area		
a. Convenience Store (T 1)		220m²
4. Carparking		
Required		
a. Convenience Store (T 1)	220m² @ 1 / 15m²	14.7 carbays
Provided		
a. On Grade		26 carbays

LOT 2

1. Site Area		
a. Lot 2		2,005.2m²
2. Landscaping		
a. Required		201m²
b. Provided		
Soft		284m²
Hard		162m²
Total		446m² or 22.2% Site
3. Floor Area		
a. Fast Food (T 2)		217m²
4. Carparking		
Required		
a. Fast Food (T 2)	100Seats @ 1/4seats	25 carbays
Provided		
a. On Grade		26 carbays
b. Drive through		11 carbays
Total		37 carbays

LOT 3

1. Site Area		
a. Lot 3		1,473.9m²
2. Landscaping		
a. Required		147m²
b. Provided		
Soft		265.0m²
Hard		67.0m²
Total		332.0m² or 22.5% Site
3. Floor Area		
a. Liquor Store (T 3)		400m²
4. Carparking		
Required		
a. Liquor Store (T 3)	400m² @ 1/15m²	26.7 carbays
Provided		
a. On Grade		14 carbays
b. Drive through		6 carbays
Total		20 carbays

LOT 4

1. Site Area		
a. Lot 4		6,764.2m²
2. Landscaping		
a. Required		676m²
b. Provided		
Soft		556m²
Hard		242m²
Total		798m² or 11.8% Site
3. Floor Area		
a. Supermaket (T 4)		1,796m²
4. Carparking		
Required		
a. Retail	1184m² @ 1 / 15m²	78.9 carbays
b. B.O.H	461m² @ 1 / 15m²	30.7 carbays
Total		109.6 carbays
Provided		
a. On Grade		93 carbays

LOT 5

1. Site Area		
a. Lot 5		2,959.4m²
2. Landscaping		
a. Required		296m²
b. Provided		
Soft		718.8m²
Hard		268.7m²
Total		987.5m² or 33.3% Site
3. Floor Area		
a. Fast Food (T 5)		225m²
b. Fast Food (T 6)		27m²
Total		252m²
4. Carparking		
Required		
a. Fast Food (T 5)	150 seats @ 1/4m²	35.7 carbays
b. Fast Food (T 6)		2 carbays
Total		37.7 carbays
Provided		
a. On Grade		23 carbays
b. Drive Through		15 carbays
Total		38 carbays

LOT 6

1. Site Area		
a. Lot 6		4,716.6m²
2. Landscaping		
a. Required		472m²
b. Provided		
Soft		502.5m²
Hard		322.1m²
Total		824.6m² or 17.5% Site
3. Floor Area		
a. Warehouse (T 1-9)		1,706m²
4. Carparking		
Required		
a. Warehouse (T 1-9)	1,706m² @ 1 / 75m²	22.7 carbays
Provided		
a. On Grade		39 carbays

N

SITE PLAN
SCALE: 1 : 500

PROPOSED COMMERCIAL DEVELOPMENT

LOCATION:LOT 3123 CORNER NORTH WEST COASTAL HIGHWAY & EASTWARD ROAD

FOR:MEGARA BY: CB RICHARD ELLIS

SK007
JULY 2016
01
As indicated @ A1

8057

5 10 15 20 25 50

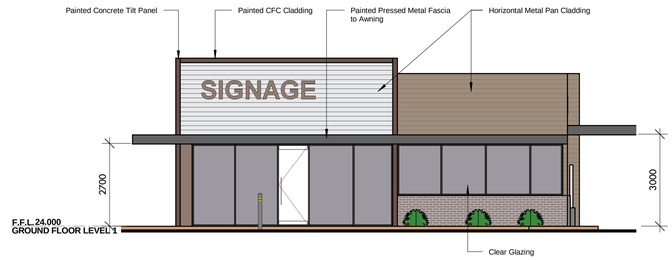
Member Australian Institute of Architects
meyer shircore and associates ARCHITECTS 50 YEARS 1963|2013

Suite 2, Ground Floor, 437 Roberts Road Subiaco WA 6008
PO Box 1294 Subiaco WA 6904
t: 08 9381 8511 f: 08 9388 1339

N

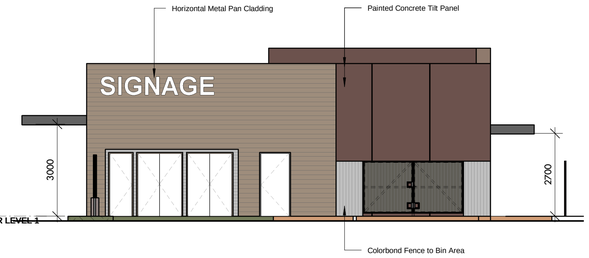
FAST FOOD GROUND FLOOR PLAN

SCALE: 1 : 100



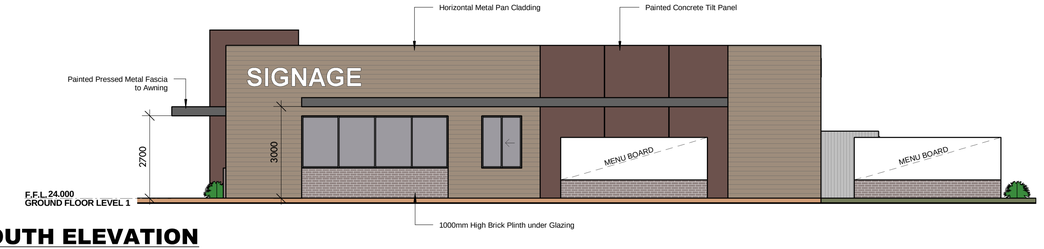
WEST ELEVATION (North West Coastal Highway Elevation)

SCALE: 1 : 100



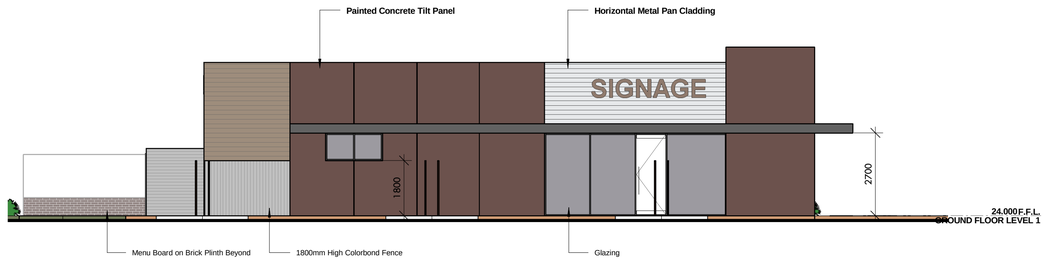
EAST ELEVATION

SCALE: 1 : 100



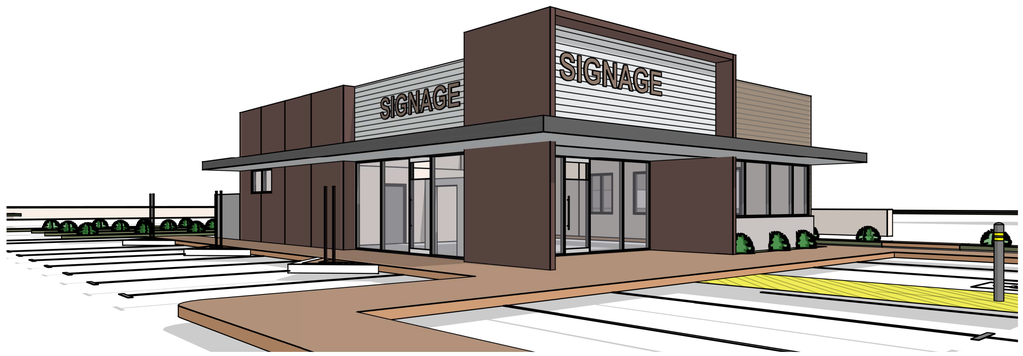
SOUTH ELEVATION

SCALE: 1 : 100



NORTH ELEVATION

SCALE: 1 : 100



NORTH WEST VIEW OF LOT 2 FAST FOOD TENANCY

LOT 2 FAST FOOD TENANCY

PROPOSED COMMERCIAL DEVELOPMENT
LOCATION:LOT 3123 CORNER NORTH WEST COASTAL HIGHWAY & EASTWARD ROAD
FOR:MEGARA BY: CB RICHARD ELLIS

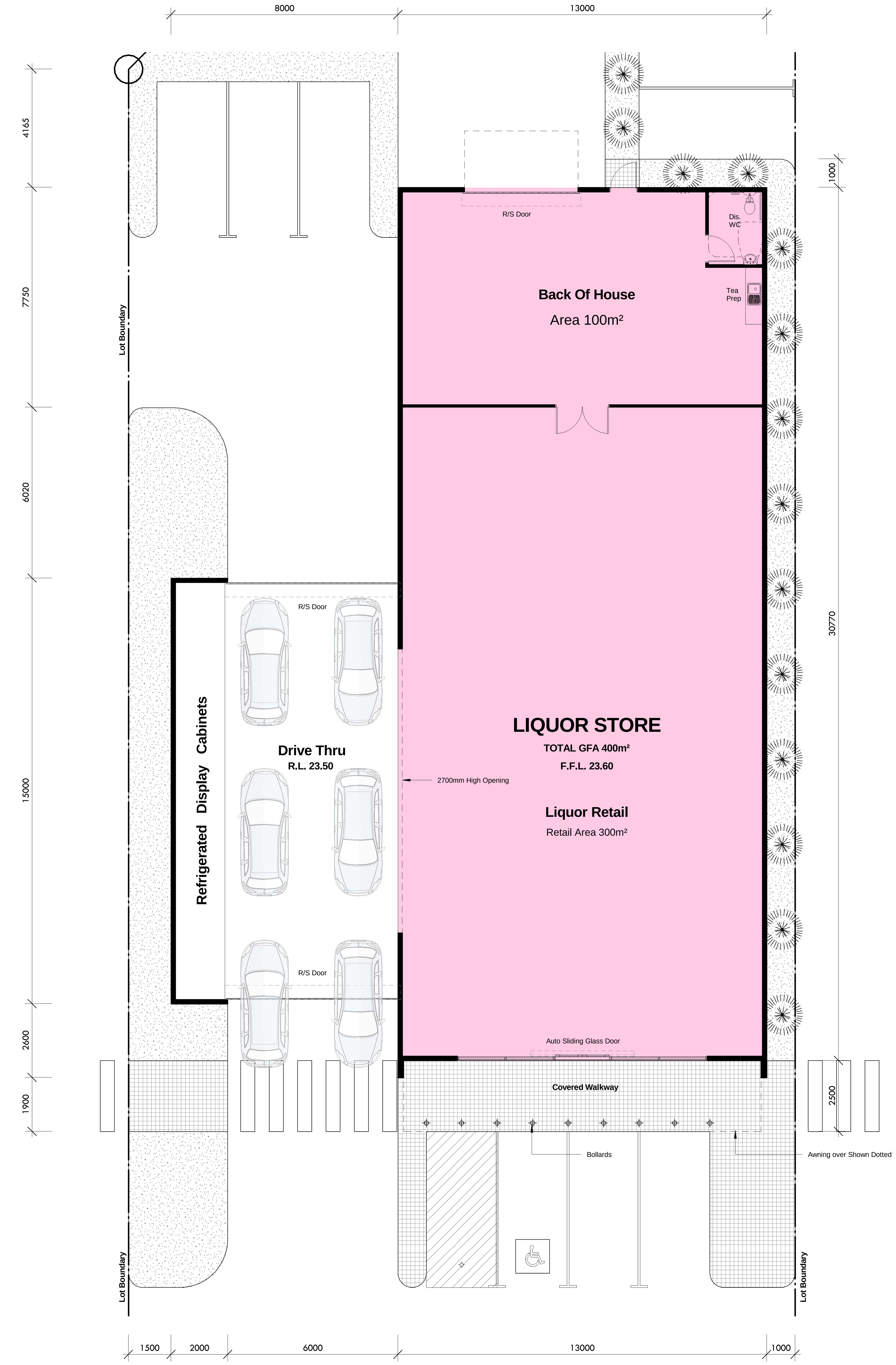
SK007
JULY 2016
02
1 : 100 @ A1

8057

0 1 2 3 4 5 10

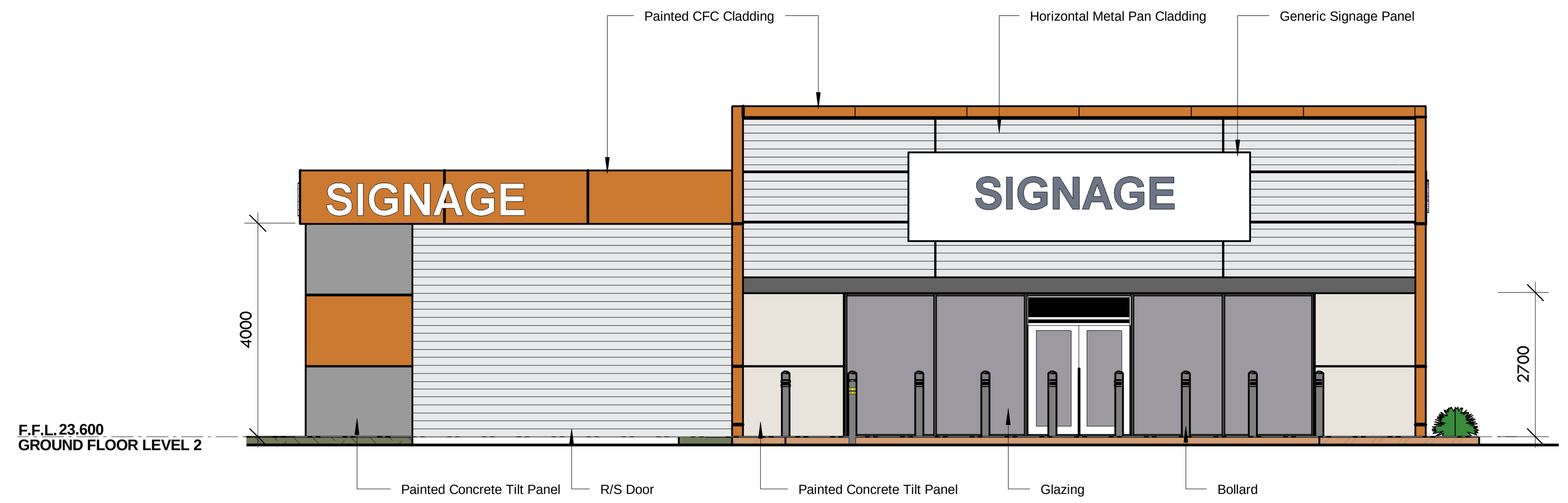
Member Australian Institute of Architects
meyer shircore and associates ARCHITECTS 50 YEARS 1963|2013

Suite 2, Ground Floor, 437 Roberts Road Subiaco WA 6008
PO Box 1294 Subiaco WA 6904
t: 08 9381 8511 f: 08 9388 1339



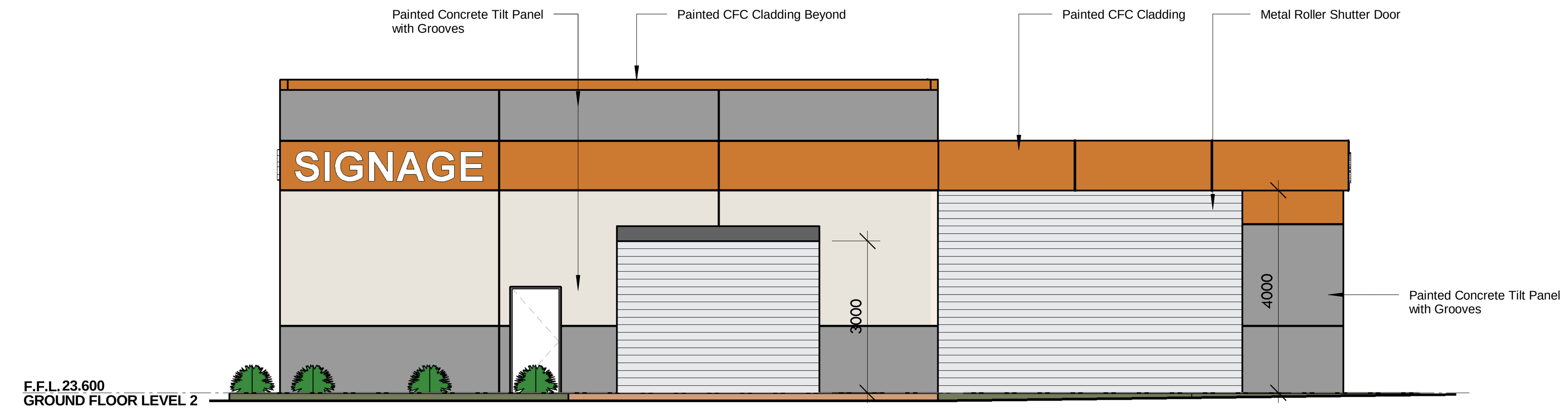
LIQUOR STORE GROUND FLOOR PLAN

SCALE: 1 : 100



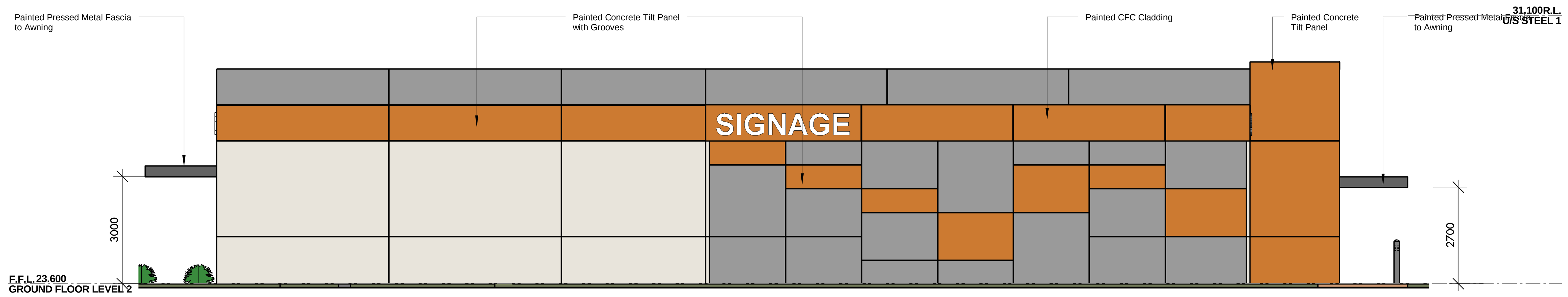
WEST ELEVATION (North West Coastal Highway Elevation)

SCALE: 1 : 100



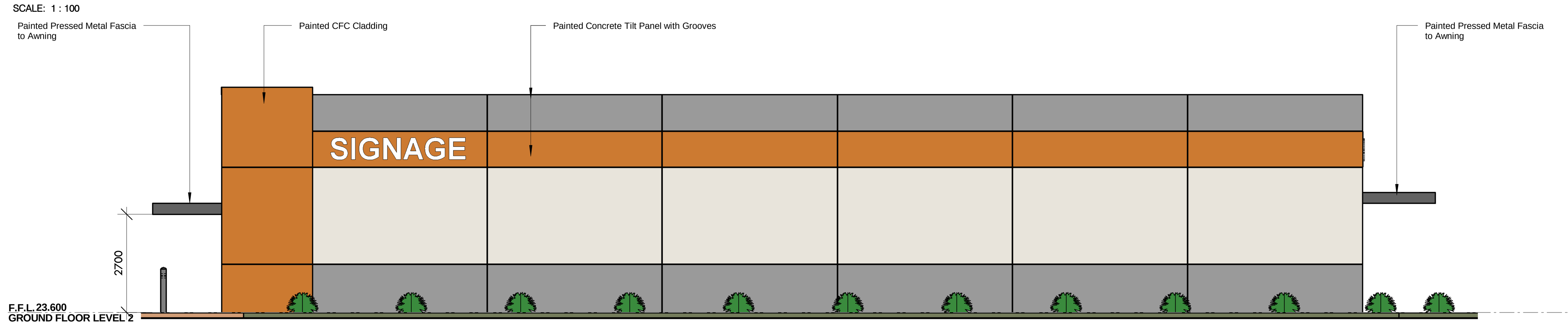
EAST ELEVATION

SCALE: 1 : 100



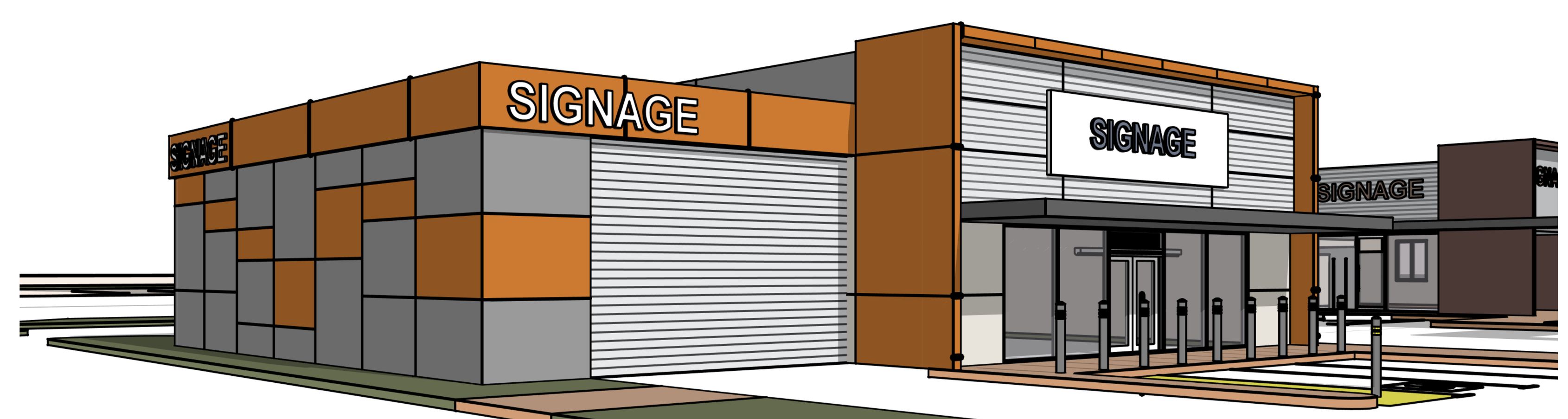
NORTH ELEVATION

SCALE: 1 : 100



SOUTH ELEVATION

SCALE: 1 : 100



NORTHWEST VIEW OF LIQUOR STORE

LOT 3 DRIVE THRU LIQUOR STORE

PROPOSED COMMERCIAL DEVELOPMENT
LOCATION:LOT 3123 CORNER NORTH WEST COASTAL HIGHWAY & EASTWARD ROAD
FOR:MEGARA BY: CB RICHARD ELLIS

SK007
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1 : 100 @ A1

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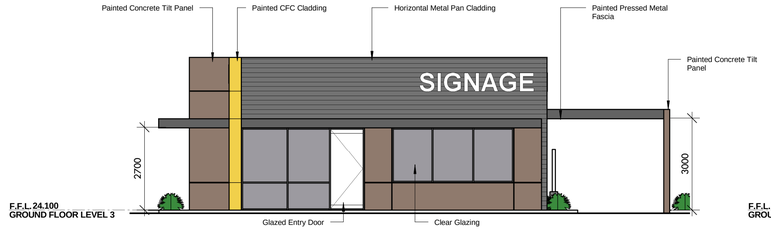
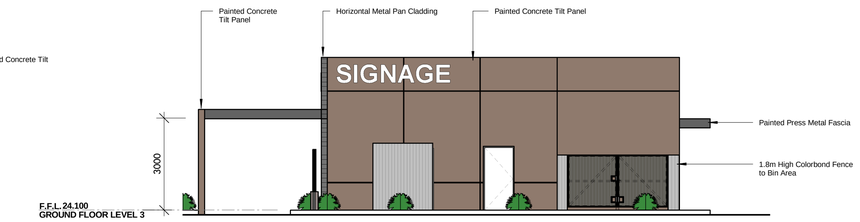
FAST FOOD GROUND FLOOR PLAN

SCALE: 1 : 100

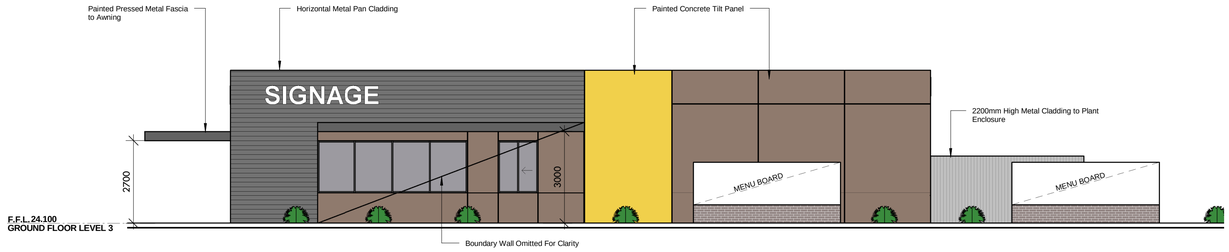


WEST ELEVATION (North West Coastal Highway Elevation)



EAST ELEVATION

SCALE: 1 : 100

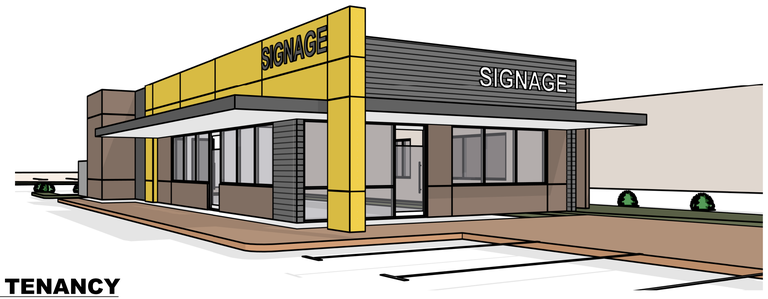


SOUTH ELEVATION

SCALE: 1 : 100

NORTH ELEVATION

SCALE: 1 : 100



NORTH WEST VIEW OF LOT 5 FAST FOOD TENANCY

LOT 5 FAST FOOD TENANCY

PROPOSED COMMERCIAL DEVELOPMENT

LOCATION:LOT 3123 CORNER NORTH WEST COASTAL HIGHWAY & EASTWARD ROAD

FOR:MEGARA BY: CB RICHARD ELLIS

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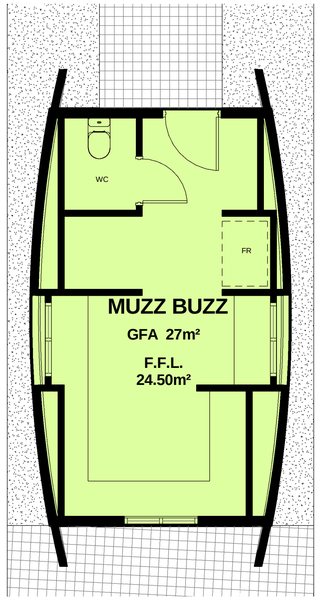
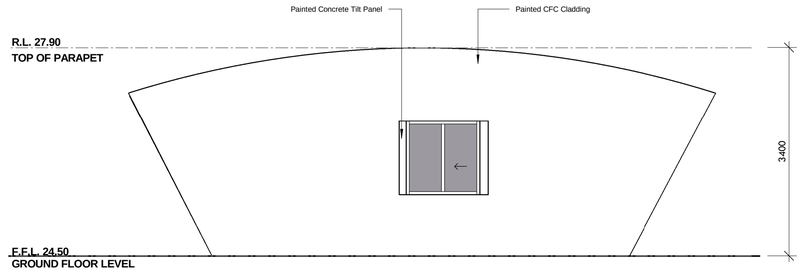


N

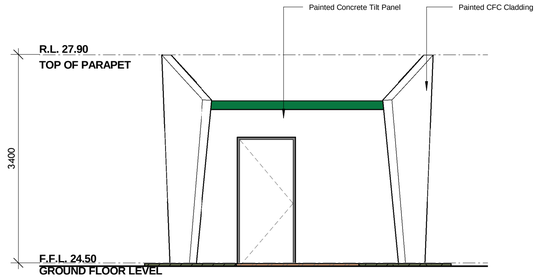
MUZZ BUZZ GROUND FLOOR PLAN

SCALE: 1 : 50



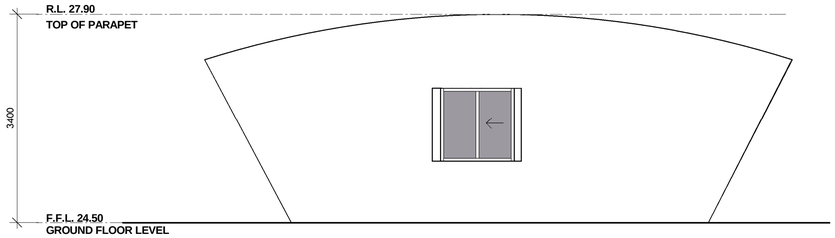
NORTH ELEVATION

SCALE: 1 : 50



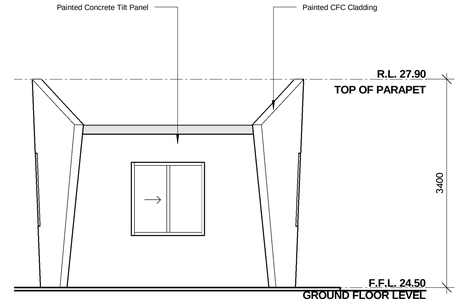
EAST ELEVATION

SCALE: 1 : 50



SOUTH ELEVATION

SCALE: 1 : 50



WEST ELEVATION (North West Coastal Highway Elevation)

SCALE: 1 : 50

LOT 5 MUZZ BUZZ

PROPOSED COMMERCIAL DEVELOPMENT
LOCATION:LOT 3123 CORNER NORTH WEST COASTAL HIGHWAY & EASTWARD ROAD
FOR:MEGARA BY: CB RICHARD ELLIS

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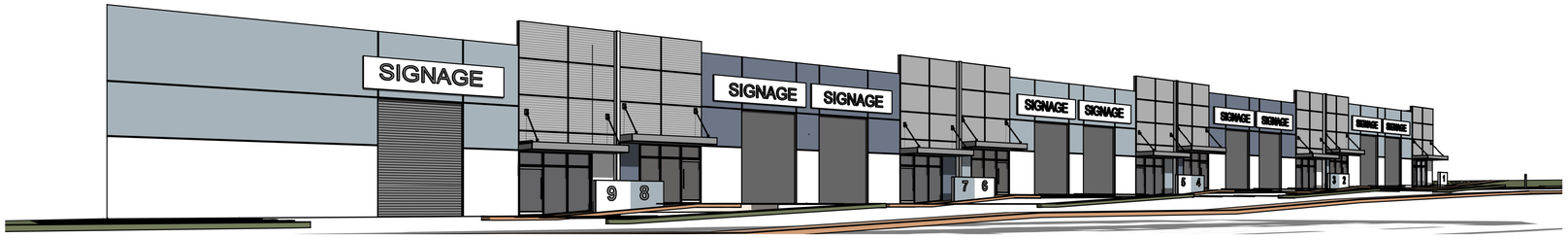
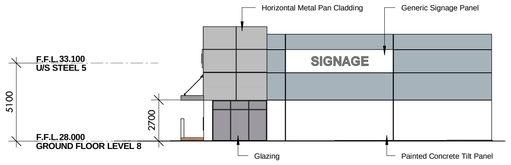
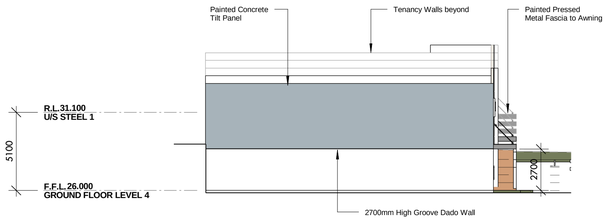


VIEW OF TENANCIES 1 - 9

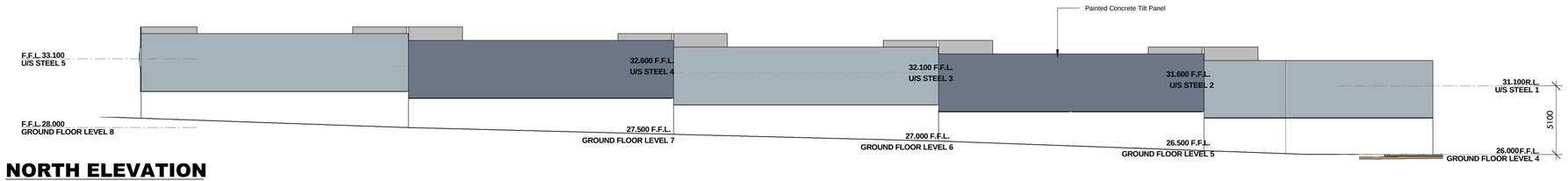


EAST ELEVATION (Pass Street Elevation)

SCALE: 1 : 200

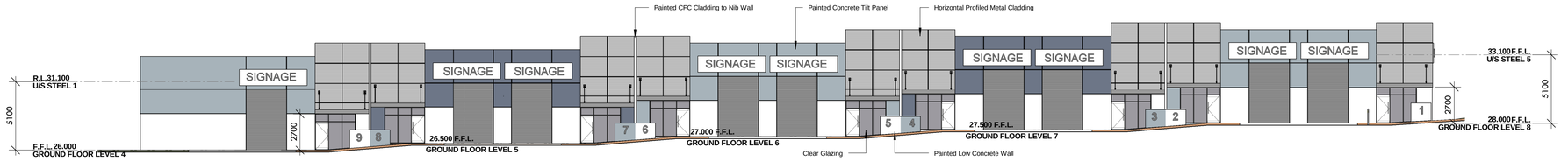


WEST ELEVATION



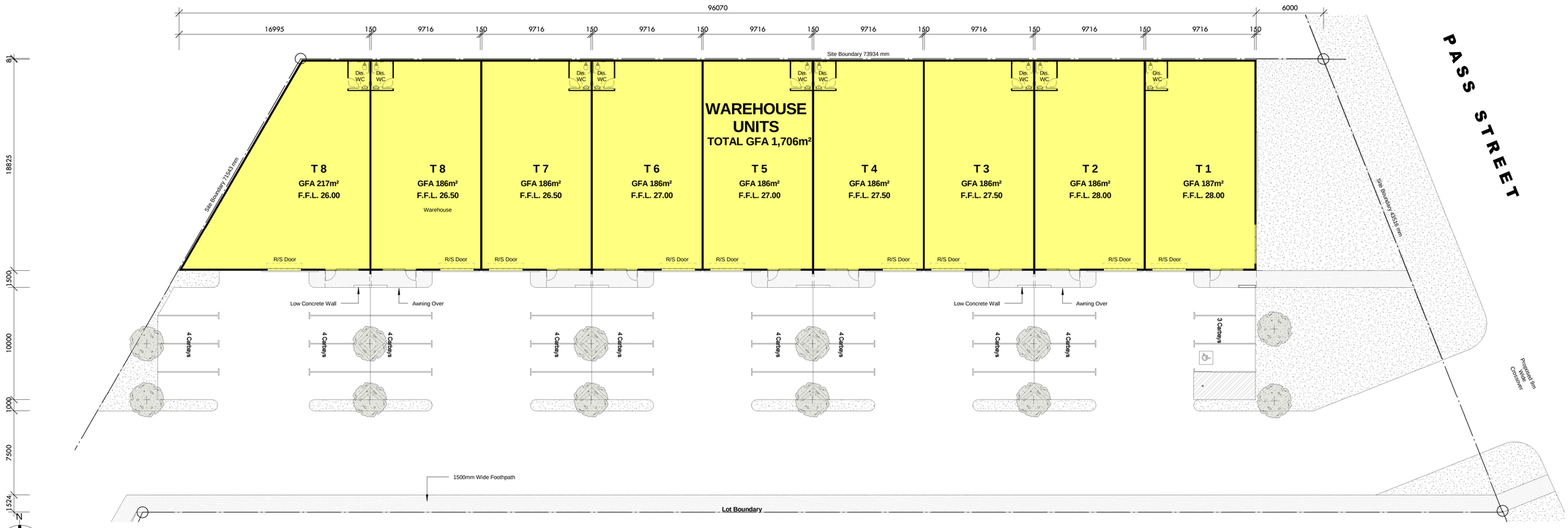
NORTH ELEVATION

SCALE: 1 : 200



SOUTH ELEVATION

SCALE: 1 : 200



TENANCIES 1 - 9 GROUND FLOOR PLAN

SCALE: 1 : 200

LOT 6 WAREHOUSE UNITS 1 - 9

PROPOSED COMMERCIAL DEVELOPMENT
LOCATION:LOT 3123 CORNER NORTH WEST COASTAL HIGHWAY & EASTWARD ROAD
FOR:MEGARA BY: CB RICHARD ELLIS

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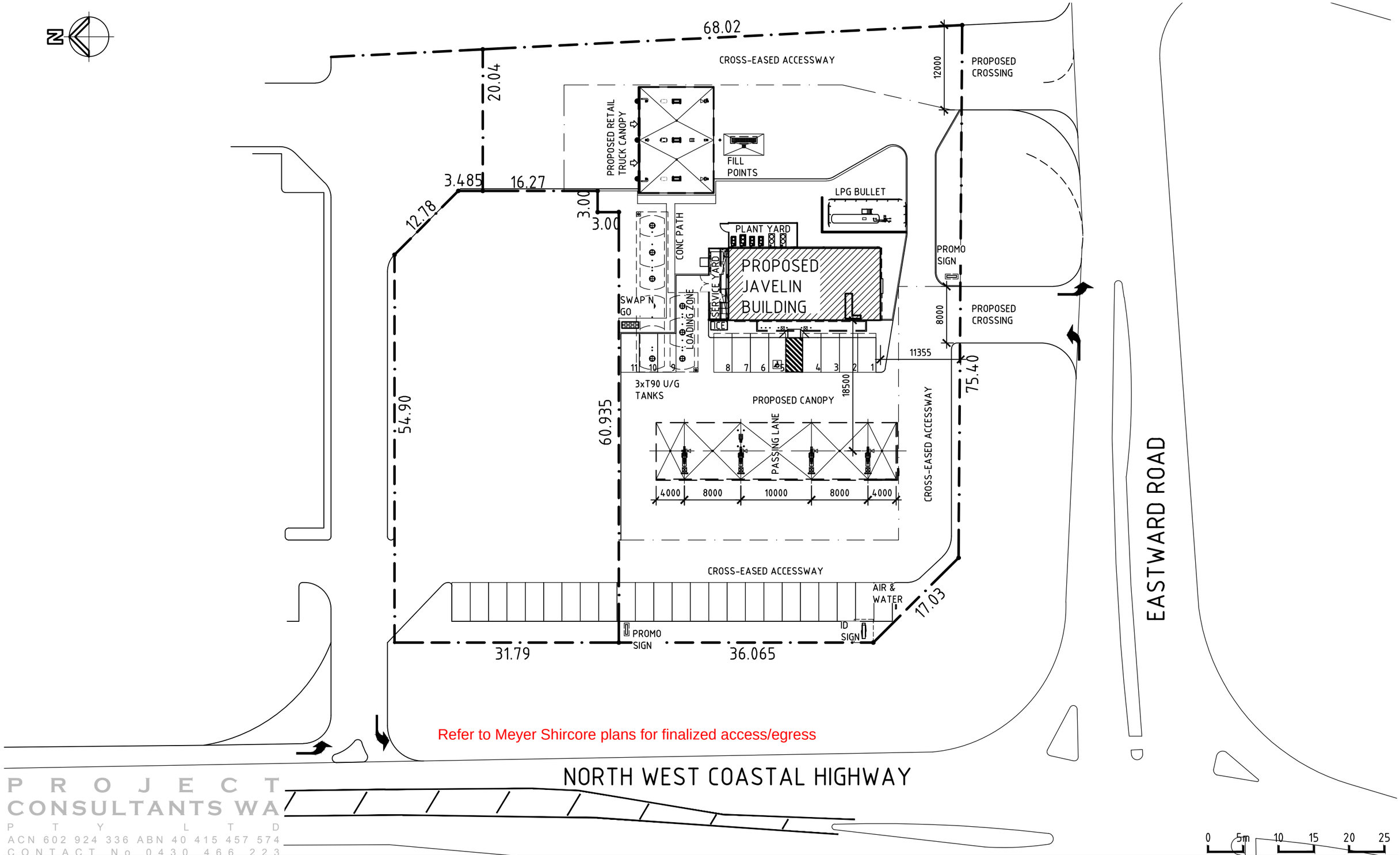

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Caltex Australia Petroleum Pty Ltd

REV.	BY	DATE	DESCRIPTION OF CHANGE
A	JS	21.06.16	DEVELOPMENT APPLICATION

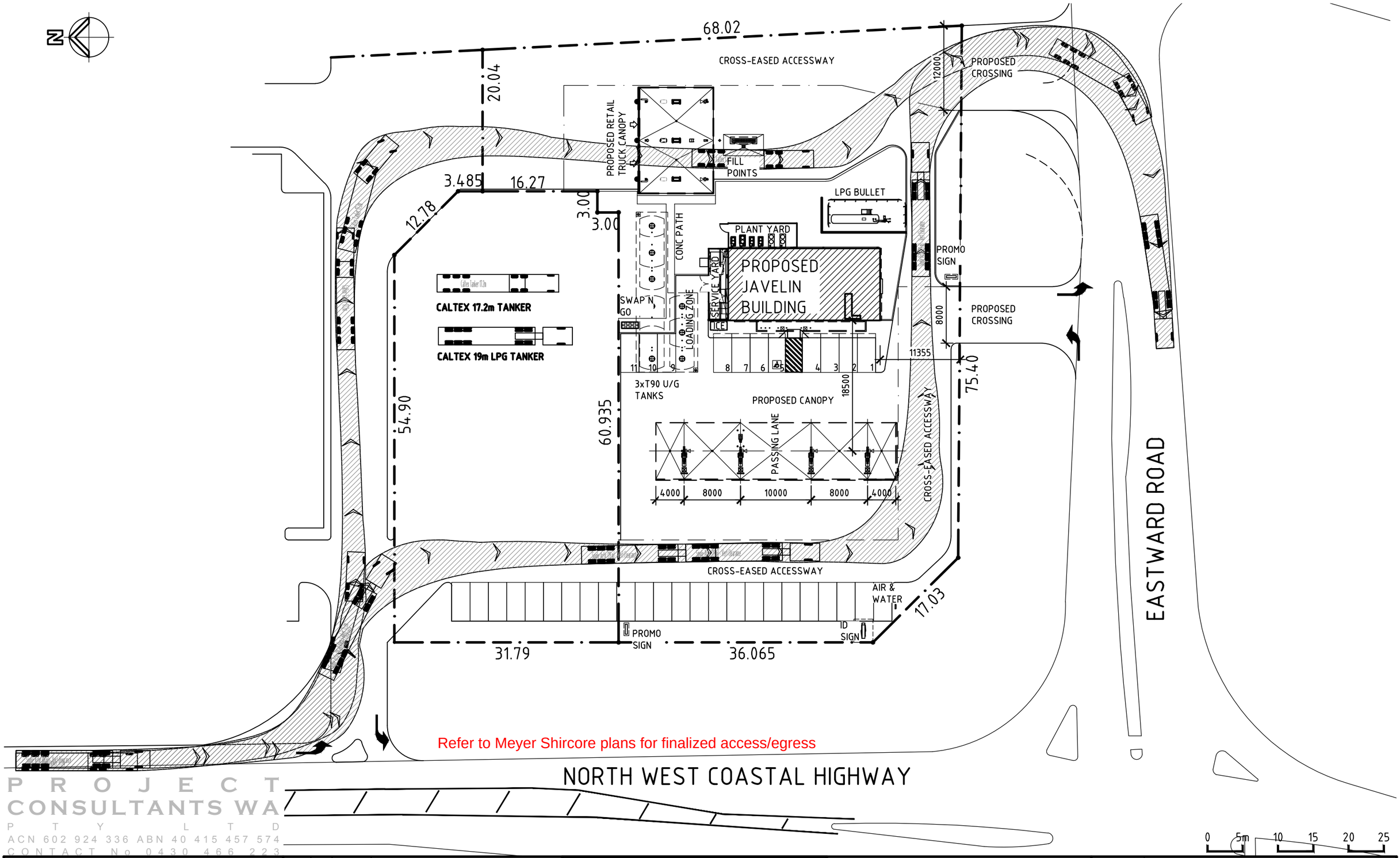
REVISION

PROJECT
GERALDTON - WA
NORTH WEST COASTAL HIGHWAY
CNR EASTWARD ROAD

TITLE
SITE PLAN: PROPOSED

SCALE 1:500
SIZE A3

DEVELOPMENT APPLICATION
APPROVED | DATE
DRAWING No. P1516-A100 | REV. A



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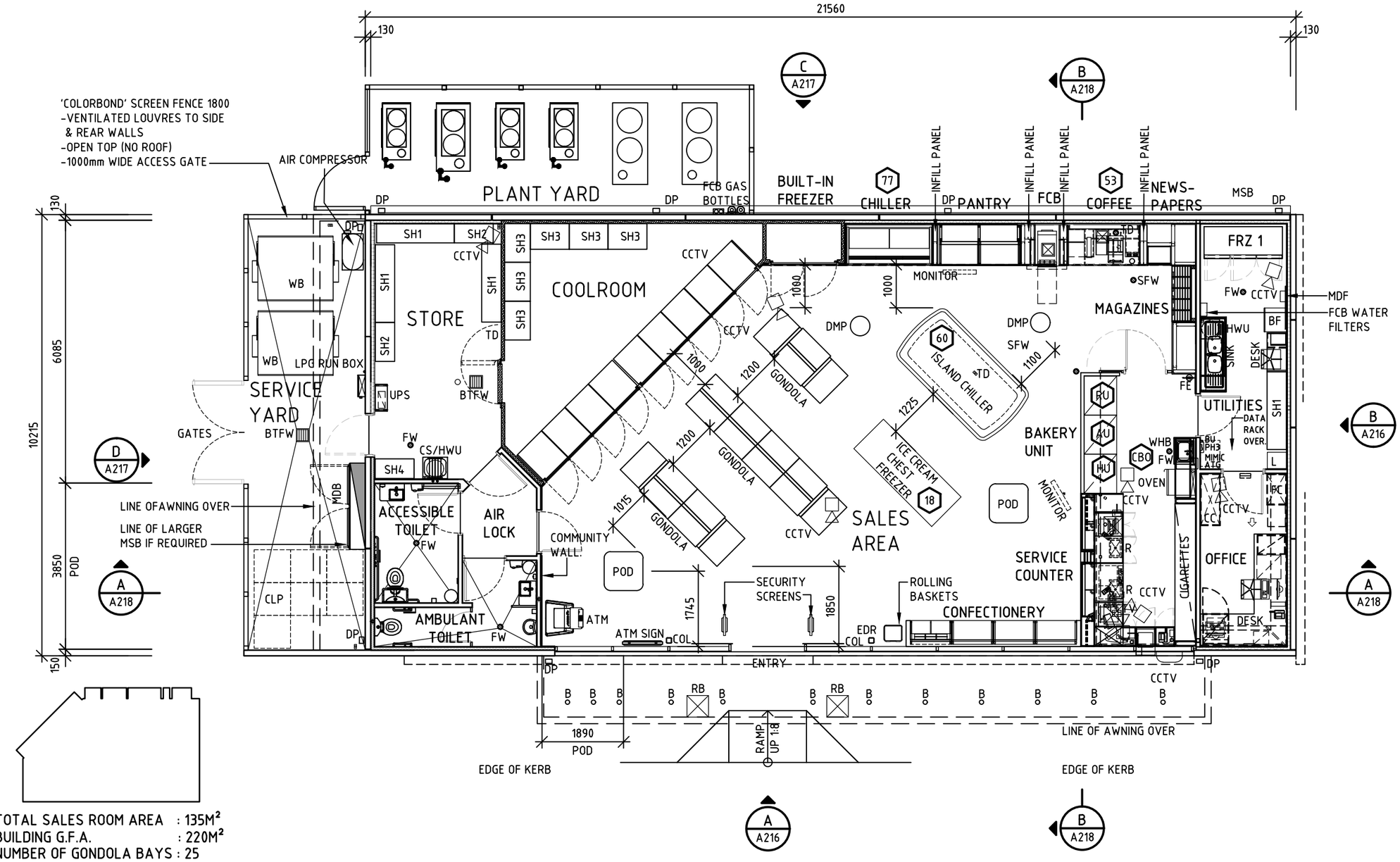
REV.	BY	DATE	DESCRIPTION OF CHANGE
A	JS	21.06.16	DEVELOPMENT APPLICATION

REVISION

PROJECT
GERALDTON - WA
NORTH WEST COASTAL HIGHWAY
CNR EASTWARD ROAD

TITLE
SITE PLAN
TANKER SWEPT PATHS

SCALE 1:500
SIZE A3
DEVELOPMENT APPLICATION
APPROVED
DATE
DRAWING No. P1516-A107
REV. A



TOTAL SALES ROOM AREA : 135M²
BUILDING G.F.A. : 220M²
NUMBER OF GONDOLA BAYS : 25

WALL LEGEND

- 130mm CONCRETE PANEL WALLS PLUS 76mm STRAPPING AND 9mm VILLABOARD LINING WITH R2.0 70mm BATT INSULATION TO MEET SECTION J REQUIREMENTS. (MODIFY TO SUIT SITE SPECIFIC SECTION J REPORT.)
- INTERNAL METAL STUD FRAMED WALL WITH 9mm VILLABOARD LINING ON ALL EXPOSED SURFACES
- COOLROOM & FREEZER PANELLING, REFER TO REFRIGERATION DRAWINGS.
- GLAZED SHOPFRONT

LEGEND

AC/1	AIR CONDITIONING CONDENSOR UNIT
ATG	AUTOMATIC TANK GAUGING
ATM	AUTOMATIC TELLER MACHINE
AU	AMBIENT DISPLAY
B	BOLLARD
BF	BAR FRIDGE
BTFW	BUCKET TRAP FLOOR WASTE
BU	BUNDY CLOCK
CCTV	CLOSED CIRCUIT TV SECURITY
CLP	STACKABLE DELIVERY TROLLEYS
COL	METAL COLUMN TO STRUCTURAL ENGINEERS DETAIL
CS	CLEANER'S SINK
DMP	INTERNAL BIN UNIT
DP	DOWNPIPE
EDR	EMERGENCY AUTO DOOR RELEASE BUTTON ON COLUMN
FC	FILING CABINET
FCB	FROZEN CARBONATED BEVERAGE
FE	FIRE EXTINGUISHER
FW	FLOOR WASTE
HU	HEATED DISPLAY
HWU	HOT WATER UNIT
L	LOCKERS
MDF	TELSTRA
MDB	MAIN DISTRIBUTION BOARD
MSB	MAIN SWITCHBOARD
POD	DISPLAY UNIT
R	POS REGISTER
RB	RUBBISH BIN
RU	REFRIGERATED DISPLAY
SB	SERVICE YARD BOLLARDS
SFW	SEALED FLOOR WASTE
SH1	1800x450 SHELVING UNIT
SH2	900x450 SHELVING UNIT
SH3	900x600 SHELVING UNIT
TD	TUNDISH
UPS	UNINTERUPTED POWER SUPPLY
VP	VENT PIPE
VGS	VERTICAL GREASE SEPERATOR
WB	DUMPSTER BIN
WHB	HAND BASIN
⬡	REFER TO EQUIPMENT SCHEDULE

NOTES : CONSTRUCTION

C.01 PROVIDE ADDITIONAL BLOCKING / FRAMING WITHIN WALLS AS NECESSARY TO SUPPORT FIXTURES.

C.02 REFER TO DRAWING A202 FOR FITTINGS, FIXTURE AND EQUIPMENT SCHEDULES.

0 1m 2 3 4 5

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REV.	BY	DATE	DESCRIPTION OF CHANGE
A	JS	27.06.16	DEVELOPMENT APPLICATION

REVISION

PROJECT
GERALDTON - WA
NORTH WEST COASTAL HIGHWAY
CNR EASTWARD ROAD

TITLE
SHOP : FLOOR PLAN

SCALE 1:100

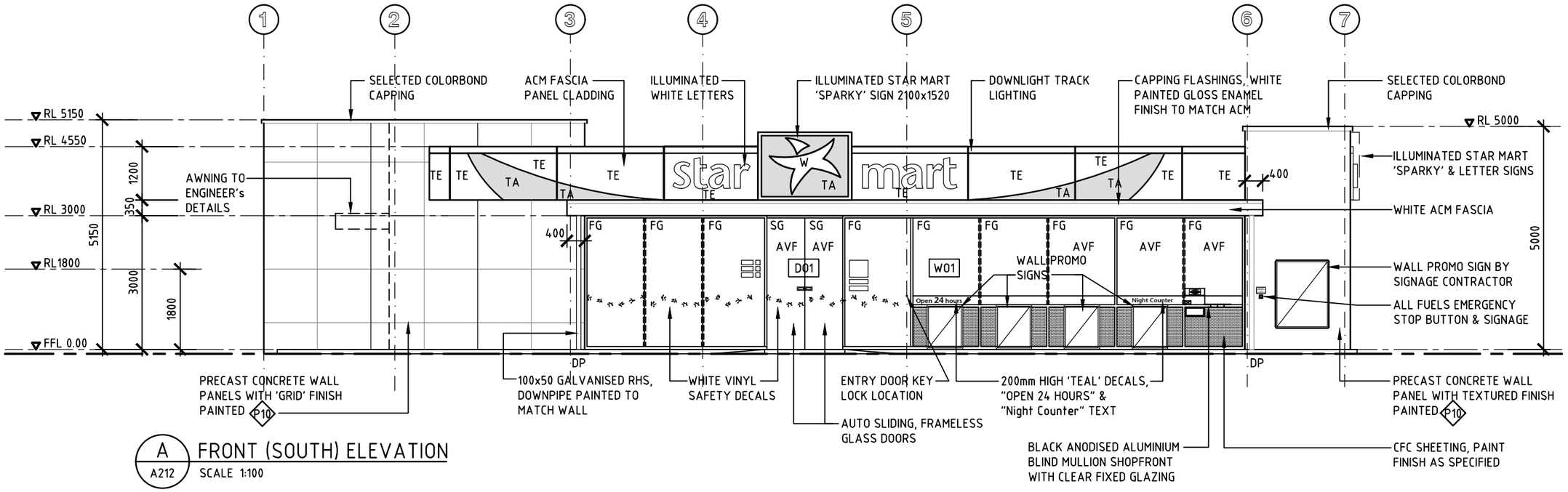
DEVELOPMENT APPLICATION

APPROVED | DATE

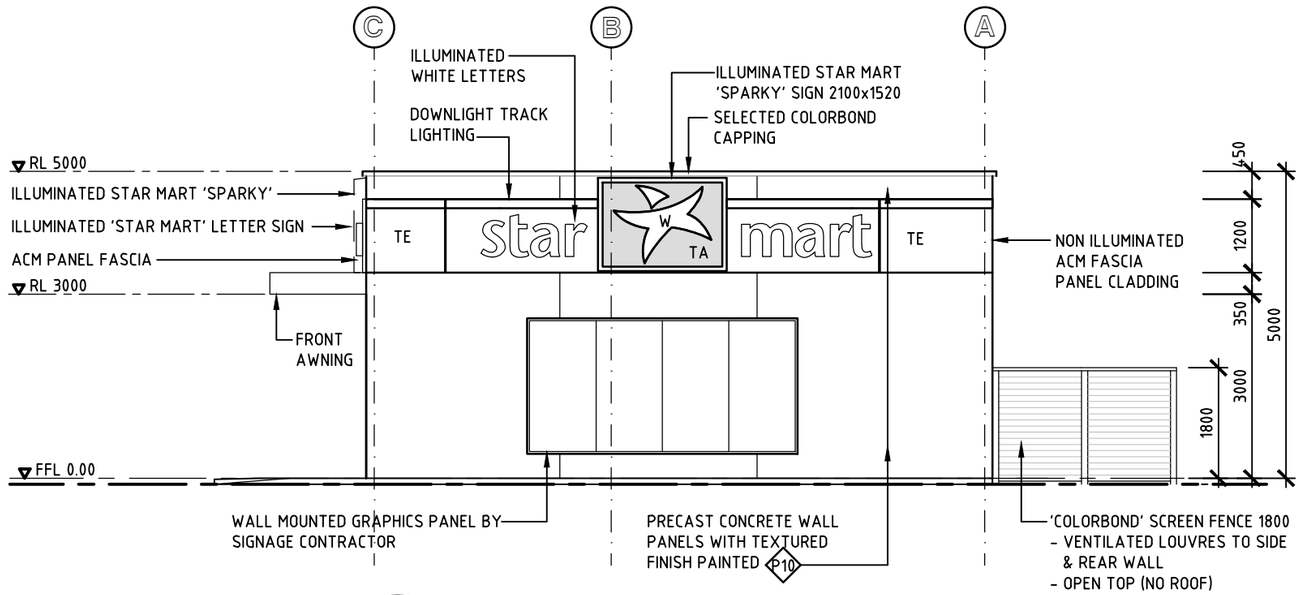
SIZE A3

DRAWING No. P1516-A210

REV. A



A / A212 FRONT (SOUTH) ELEVATION
SCALE 1:100



B / A212 RIGHT SIDE (EAST) ELEVATION
SCALE 1:100

PRINCIPAL CONSULTANT GUIDANCE NOTES:

KEEP 'STAR & MART' LETTERS SPARKY BOX, LIGHTING , TRACKS AND GRAPHIC PANEL TO WALL / FACING PROMINENT ROAD FRONTAGES.
REMOVE 'STAR & MART' LETTERS IF THE WALL IS NOT IN CLEAR VISIBILITY FROM PASSING TRAFFIC.
REMOVE LIGHTING TRACK GRAPHIC AND PANEL IF WALL IS NOT VISIBLE.
CONFIRM IF SHOPFRONT BLINDS ARE REQUIRED, DELETE CONSTRUCTION NOTE C.03 IF NOT REQUIRED.

NOTES: CONSTRUCTION

C.01 PROVIDE POWER & SUPPORT FRAMING BEHIND ALL ILLUMINATED SIGNS.
PROVIDE INDIVIDUAL POWER SUPPLY POINTS BEHIND 'STAR MART' LETTERS.
C.02 PROVIDE POWER AND SUPPORT FRAMING BEHIND ALL ILLUMINATED SIGNS.
C.03 PROVIDE AND INSTALL SHOPFRONT BLINDS TO ALL WINDOWS
- SUPPLIER : LITEMASTER BLINDS AND AWNINGS
- TYPE : GREY / GREEN REFLECTIVE FILM BLIND

KEY: GENERAL

0.00 HEIGHT IN MILLIMETERS IN RELATION TO DATUM LEVEL 0.00 - SLAB LEVEL OF SALES AREA
SG = SLIDING GLASS DOOR
DP = DOWNPIPE
FG = FIXED GLASS
AVF = ANTI-VANDAL FILM AS FOLLOWS :-
- 3M PTY LTD : SM4 CLARL, 4 MIL/100 MICRON ANTI VANDAL/ANTIGRAFFITI CLEAR FILM.
- SOLARGARD / GRAFFITIGARD : 4MIL/100 MICRON ANTI VANDAL ANTI GRAFFITI CLEAR FILM

FASCIA COLOUR KEY

TE = TEAL
TA = TANGERINE
W = WHITE

0 1m 2 3 4 5

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REV.	BY	DATE	DESCRIPTION OF CHANGE
A	JS	27.06.16	DEVELOPMENT APPLICATION

REVISION

PROJECT
GERALDTON - WA
NORTH WEST COASTAL HIGHWAY
CNR EASTWARD ROAD

TITLE
SHOP : ELEVATIONS

SCALE 1:100

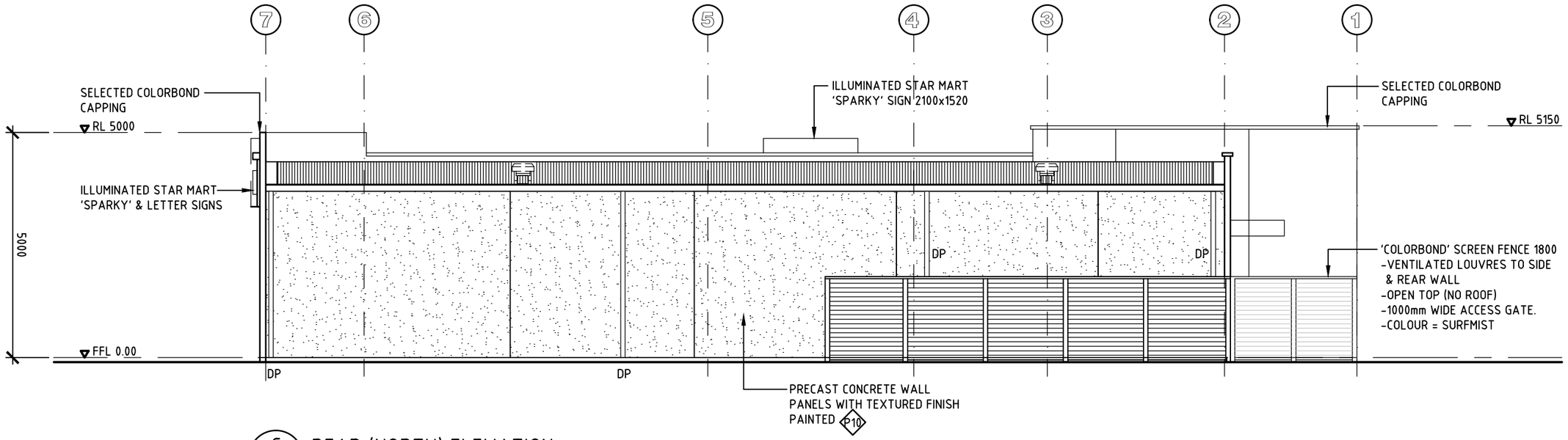
DEVELOPMENT APPLICATION

APPROVED | DATE

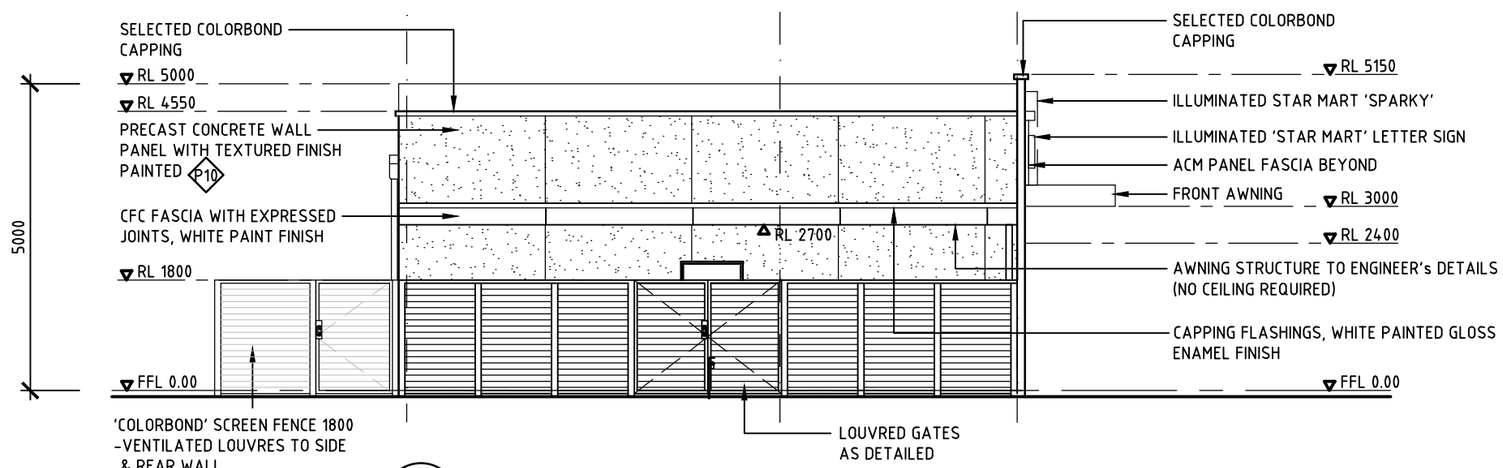
SIZE A3

DRAWING No. P1516-A216

REV. A



C A212 REAR (NORTH) ELEVATION
SCALE 1:100



D A212 LEFT SIDE (WEST) ELEVATION
SCALE 1:100

KEY: GENERAL

0.00 HEIGHT IN MILLIMETERS IN RELATION TO DATUM LEVEL 0.00 – SLAB LEVEL OF SALES AREA

DP DOWNPIPE

FASCIA COLOUR KEY

TE = TEAL
TA = TANGERINE
W = WHITE

0 1m 2 3 4 5

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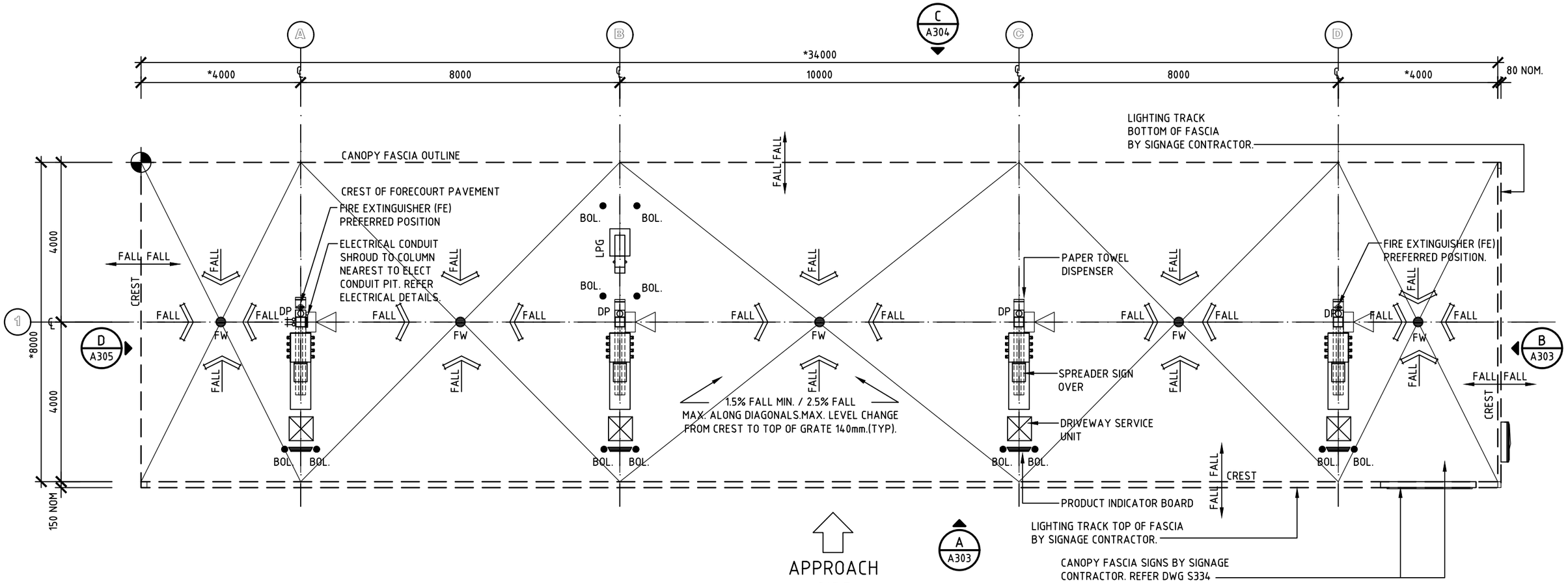
REV.	BY	DATE	DESCRIPTION OF CHANGE
A	JS	27.06.16	DEVELOPMENT APPLICATION

REVISION

PROJECT
GERALDTON – WA
NORTH WEST COASTAL HIGHWAY
CNR EASTWARD ROAD

TITLE
SHOP : ELEVATIONS

SCALE 1:100
DEVELOPMENT APPLICATION
APPROVED
DATE
SIZE A3
DRAWING No. P1516-A217
REV. A



KEY

DP	DOWNPIPE.
FW	FLOOR WASTE
BOL	METAL BOLLARD 165Ø x 1200mm HIGH (TYPICAL)
	SPEAKER
FALL	FALL IN FORECOURT PAVING
	DISPENSER WITH SPREADER SIGN OVER
	WATER POINT

NOTE : CONSTRUCTION

C.01 2 FIRE EXTINGUISHERS REQUIRED BY AS1940-PLACE ON COLUMNS EACH SIDE OF CANOPY FACING SALESROOM.

C.02 ADDITIONAL FIRE EXTINGUISHERS MAY BE REQUIRED TO SUIT SITE SPECIFIC CONDITIONS.

C.03 PUMP POSITION AND SPREADER SIZE TO BE CONFIRMED ON SITE TO SUIT CANOPY COLUMN SIZE.

C.04 FOR FLOOR WASTE / FORECOURT DRAINAGE, DOWNPIPE AND CANOPY BOX GUTTER DETAILS, REFER TO THE HYDRAULIC ENGINEERS DOCUMENTATION.

NOTE : GENERAL

G.01 DRAWINGS NOTING 'BCC' RELATE TO DOCUMENTATION SUITABLE FOR USE IN THE BRISBANE CITY COUNCIL (BCC) OR ASSOCIATED AREAS.

G.02 THIS CANOPY DOES NOT COMPLY FOR USE IN THE BRISBANE CITY COUNCIL AREA. MODIFY AS NECESSARY IF USED IN THIS AREA.

PRINCIPAL CONSULTANT : GUIDANCE NOTES

*THE EAVES OVERHANG DIMENSIONS SHOWN ARE INDICATIVE ONLY AND ARE BASED ON AN APPROXIMATE 10° LINE OFF VERTICAL FROM CANOPY EDGE TO CREST OF FORECOURT. SITE SPECIFIC REQUIREMENTS FOR DRAINAGE/OVERHANGS SHALL BE DETERMINED BY THE CIVIL ENGINEER AND DIMENSIONS ADJUSTED ACCORDINGLY

PROJECT CONSULTANTS WA
PTY LTD
ACN 602 924 336 ABN 40 415 457 574
CONTACT No 0430 466 223

REV.	BY	DATE	DESCRIPTION OF CHANGE
A	JS	27.06.16	DEVELOPMENT APPLICATION

REVISION

PROJECT
GERALDTON - WA
NORTH WEST COASTAL HIGHWAY
CNR EASTWARD ROAD

TITLE
CANOPY : PLAN

0 1m 2 3 4 5

SCALE 1:100

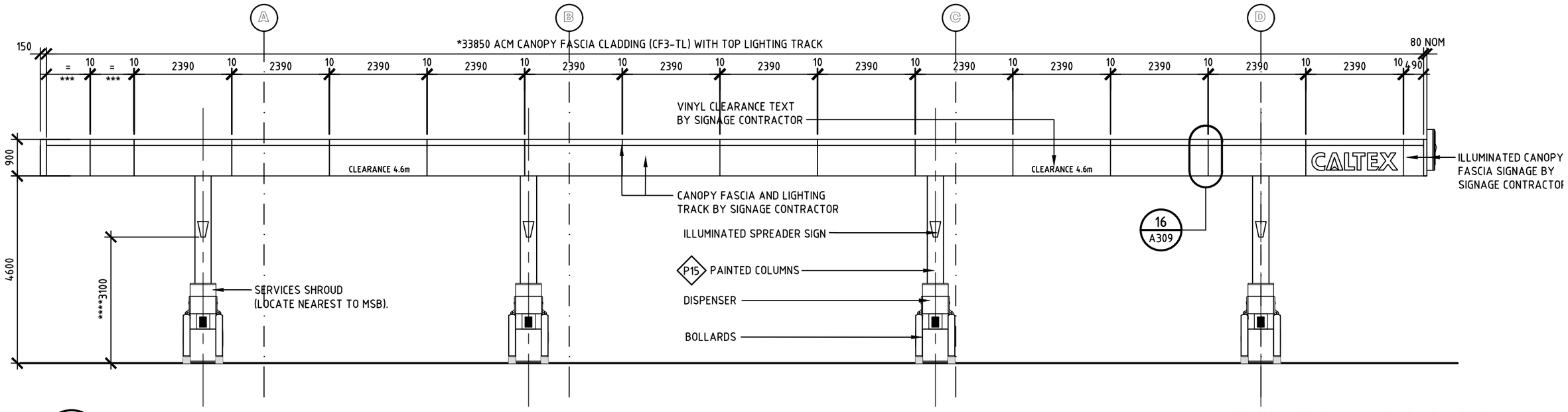
DEVELOPMENT APPLICATION

APPROVED | DATE

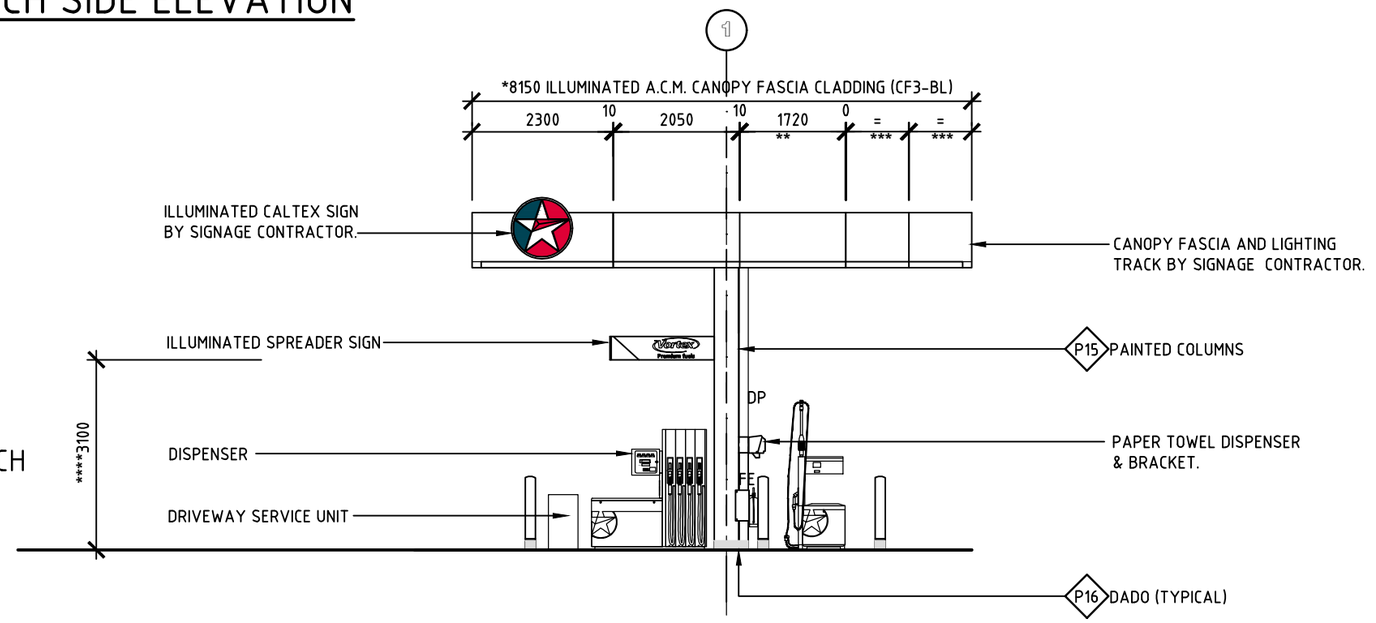
SIZE A3

DRAWING No. P1516-A300

REV. A



A A300 APPROACH SIDE ELEVATION



B A300 ROAD FRONT ELEVATION

PRINCIPAL CONSULTANT : GUIDANCE NOTES

* THE EAVES OVERHANG DIMENSIONS SHOWN ARE INDICATIVE ONLY AND ARE BASED ON AN APPROXIMATE 10° LINE OFF VERTICAL FROM CANOPY EDGE TO CREST OF FORECOURT. SITE SPECIFIC REQUIREMENTS FOR DRAINAGE/OVERHANGS SHALL BE DETERMINED BY THE CIVIL ENGINEER AND DIMENSIONS ADJUSTED ACCORDINGLY

** MAKE UP PANEL

*** IF END PANEL IS LESS THAN HALF OF 2390mm THEN DIVIDE EQUALLY THE TWO END PANELS.

****CRITICAL OH&S DIMENSION

NOTE : CONSTRUCTION

C.01 PRODUCT INDICATOR BOARDS NOT SHOWN FOR DRAWING CLARITY.

NOTE : GENERAL

G.01 DRAWINGS NOTING 'BCC' RELATE TO DOCUMENTATION SUITABLE FOR USE IN THE BRISBANE CITY COUNCIL (BCC) OR ASSOCIATED AREAS.

G.02 THIS CANOPY DOES NOT COMPLY FOR USE IN THE BRISBANE CITY COUNCIL AREA. MODIFY AS NECESSARY IF USED IN THIS AREA.

0 1m 2 3 4 5

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REV.	BY	DATE	DESCRIPTION OF CHANGE
A	JS	27.06.16	DEVELOPMENT APPLICATION

REVISION

PROJECT
GERALDTON - WA
NORTH WEST COASTAL HIGHWAY
CNR EASTWARD ROAD

TITLE
CANOPY : ELEVATIONS

SCALE 1:100

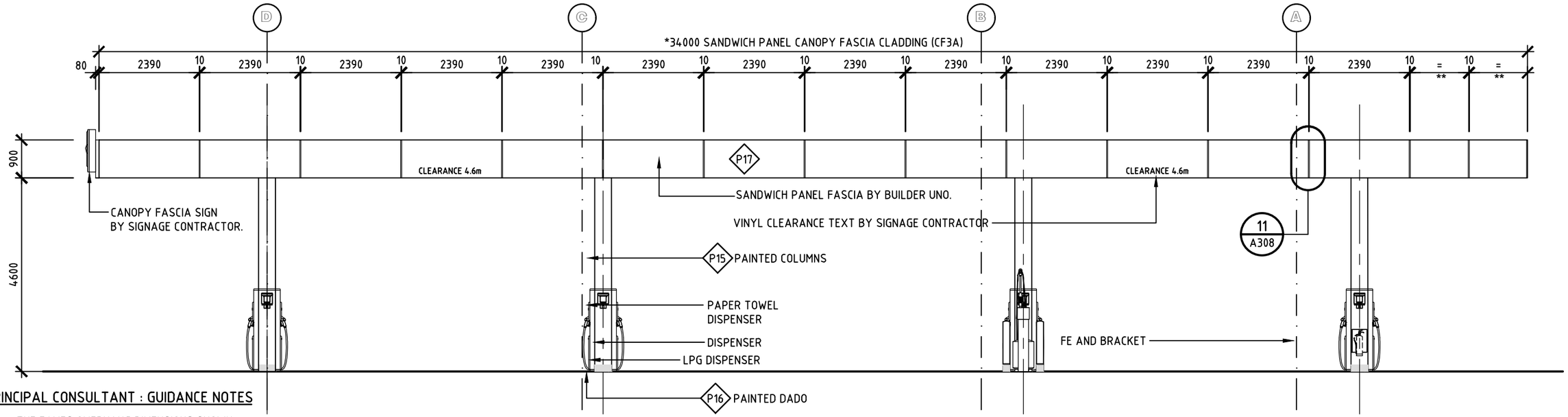
DEVELOPMENT APPLICATION

APPROVED | DATE

SIZE A3

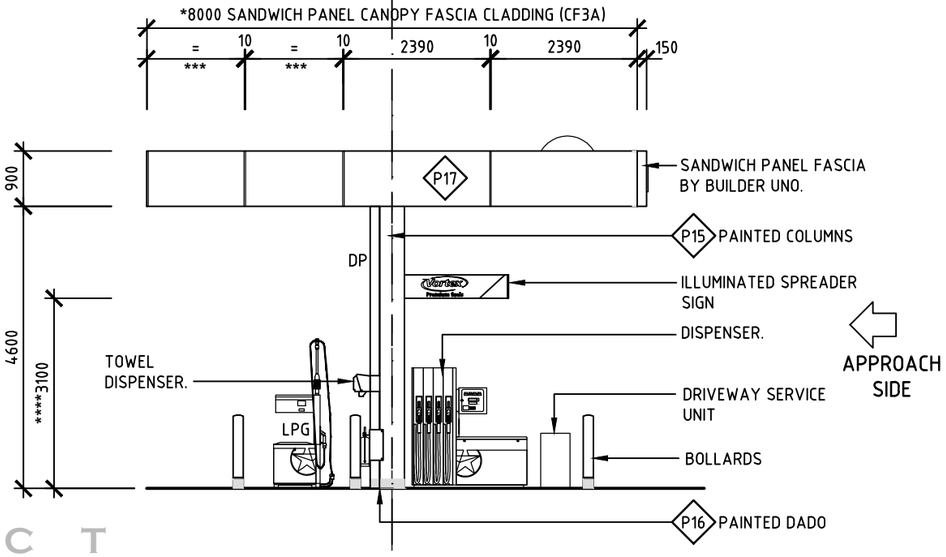
DRAWING No. P1516-A303

REV. A



C / A300 SHOP SIDE ELEVATION

1



D / A300 REAR ELEVATION

PRINCIPAL CONSULTANT : GUIDANCE NOTES

* THE EAVES OVERHANG DIMENSIONS SHOWN ARE INDICATIVE ONLY AND ARE BASED ON AN APPROXIMATE 10° LINE OFF VERTICAL FROM CANOPY EDGE TO CREST OF FORECOURT. SITE SPECIFIC REQUIREMENTS FOR DRAINAGE/OVERHANGS SHALL BE DETERMINED BY THE CIVIL ENGINEER AND DIMENSIONS ADJUSTED ACCORDINGLY

** MAKE UP PANEL

*** IF END PANEL IS LESS THAN HALF OF 2390mm THEN DIVIDE EQUALLY THE TWO END PANELS.

****CRITICAL OH&S DIMENSION

NOTE : CONSTRUCTION

C.01 PRODUCT INDICATOR BOARDS NOT SHOWN FOR DRAWING CLARITY.

NOTE : GENERAL

G.01 DRAWINGS NOTING 'BCC' RELATE TO DOCUMENTATION SUITABLE FOR USE IN THE BRISBANE CITY COUNCIL (BCC) OR ASSOCIATED AREAS.

G.02 THIS CANOPY DOES NOT COMPLY FOR USE IN THE BRISBANE CITY COUNCIL AREA. MODIFY AS NECESSARY IF USED IN THIS AREA.

CANOPY - FINISHES SCHEDULE

KEY	MATERIAL	MANUFACTURER	REF. NO.	FINISH	COLOUR
ACM FASCIA	ALUMINIUM COMPOSITE SHEET	SIGNAGE SUPPLIER	CF3 - TL	SATIN	RED
SANDWICH PANEL TOP FLASHING	STEEL	BLUESCOPE LYSAGHT	-	DULUX PAINT FINISH - SATIN	DULUX 'CALTEX' CANOPY RED
ROOF	STEEL	BLUESCOPE LYSAGHT	KLIPLOK 700 HI-STRENGTH 0.48 BMT	'COLORBOND' SATIN	SURFMIST
SOFFIT LINING AND TRIM	STEEL	BLUESCOPE LYSAGHT	EASYCLAD 2PF 300	'COLORBOND' SATIN	SURFMIST
BOLLARDS	METAL	LEDA	HIG150RCAL + FULL STOP RING	VARIOUS	VARIOUS

KEY	ITEM/SUBGRADE	COLOUR/CODE	SPECIFICATION
P15	CANOPY - METAL COLUMNS - METAL BOLLARDS	SPIDERS WEB DULUX 84645 (DELTA LIGHT GREY)	AU_SD08362 DULUX LUXATHANE R TWO PACK HIGH GLOSS ON NEW MILD STEEL (COMMERCIAL) (INTERIOR/EXTERIOR) 1ST COAT AUDI1109 DULUX DUREBILD STE - PC237 TWO PACK EPOXY 2ND COAT AUDD1137 DULUX LUXATHANE R TWO PACK HIGH GLOSS
P16	CANOPY - METAL COLUMNS (DADO)	DULUX84599 MEDIUM GREY	AU_SD08362 DULUX LUXATHANE R TWO PACK HIGH GLOSS ON NEW MILD STEEL (COMMERCIAL) (INTERIOR/EXTERIOR) 1ST COAT AUDI1109 DULUX DUREBILD STE - PC237 TWO PACK EPOXY 2ND COAT AUDD1137 DULUX LUXATHANE R TWO PACK HIGH GLOSS
P17	CANOPY - INSULATED ALUMINIUM SANDWICH PANEL	DULUX 'CALTEX' CANOPY RED - A4010	AUSI5528 DULUX METALSHIELD PREM UV RESISTANT ENAMEL TOPCOAT ON NEW ALUMINIUM (EXTERIOR) 1ST COAT AUDI0540 DULUX LUXEPOXY 4 WHITE PRIMER TWO PACK PRIMER 2ND COAT DULUX METALSHIELD PREM UV RESISTANT ENAMEL TOPCOAT GLOSS

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Caltex Australia Petroleum Pty Ltd

REV.	BY	DATE	DESCRIPTION OF CHANGE
A	JS	27.06.16	DEVELOPMENT APPLICATION

REVISION

PROJECT
GERALDTON - WA
NORTH WEST COASTAL HIGHWAY
CNR EASTWARD ROAD

TITLE
CANOPY : ELEVATIONS

0 1m 2 3 4 5

SCALE 1:100

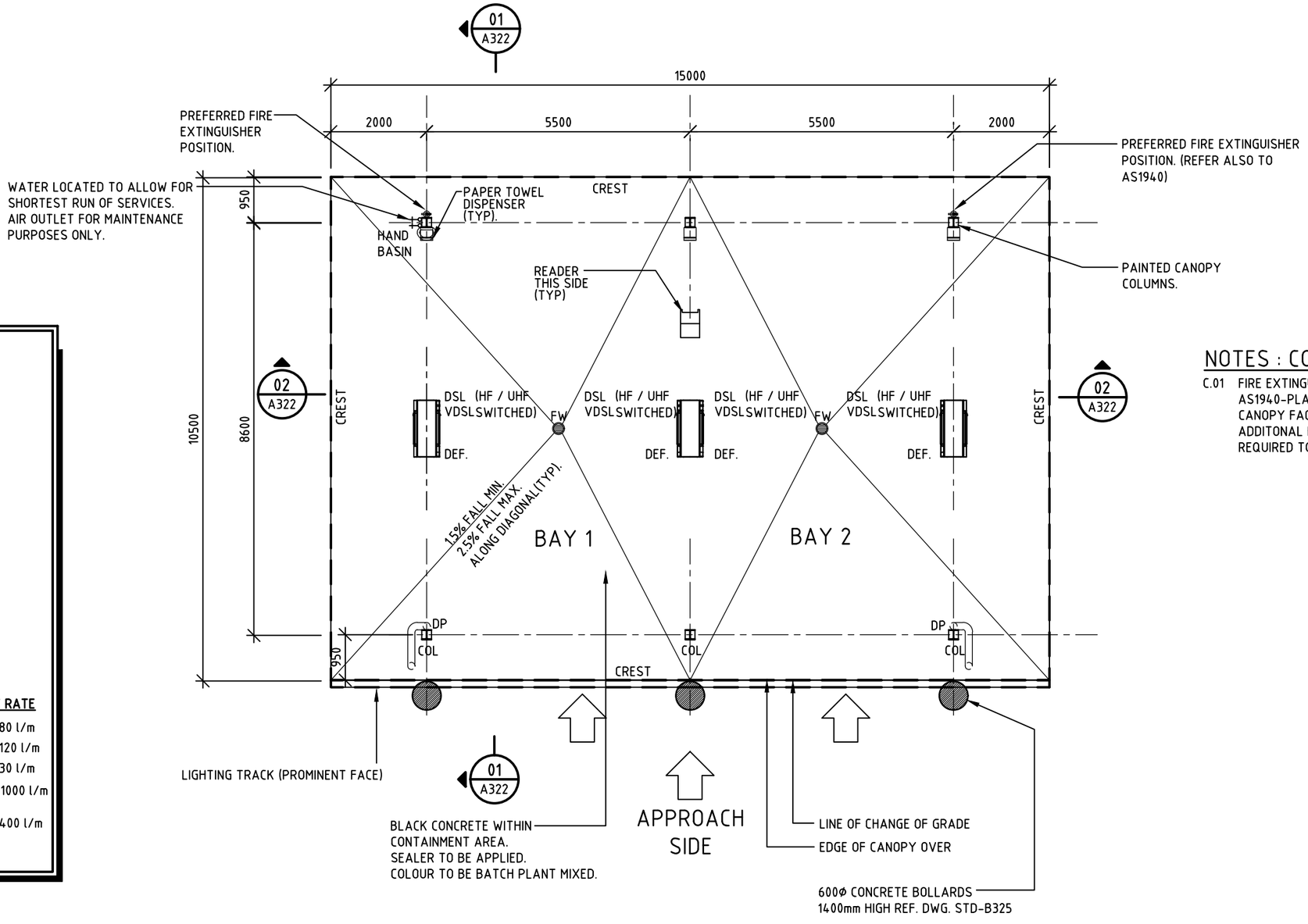
DEVELOPMENT APPLICATION

APPROVED | DATE

SIZE A3

DRAWING No. P1516-A304

REV. A



NOTE/LEGEND

3 HOSE DISPENSER
(GALLAGHER)

6 HOSE DISPENSER
(GALLAGHER)

ICR
ISLAND
CARD READER

TYPE	FLOW RATE
HF – HIGH FLOW	Nom. 80 l/m
UHF – ULTRA HIGH FLOW	Nom. 120 l/m
DEF – DIESEL EXHAUST FLUID	Nom. 30 l/m
BOTTOM LOADING- LARGE TANKER.	Nom. 1000 l/m
BOTTOM LOADING- MINI TANKER.	Nom. 400 l/m

NOTES : CONSTRUCTION

C.01 FIRE EXTINGUISHERS REQD.-AS PER AS1940-PLACED ON COLUMNS EACH SIDE OF CANOPY FACING THE SALESROOM. ADDITONAL FIRE EXTINGUISHERS MAY BE REQUIRED TO SUIT SITE SPECIFIC CONDITIONS.

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REV.	BY	DATE	DESCRIPTION OF CHANGE
A	JS	28.06.16	DEVELOPMENT APPLICATION

REVISION

PROJECT
GERALDTON - WA
NORTH WEST COASTAL HIGHWAY
CNR EASTWARD ROAD

TITLE
RETAIL TRUCK CANOPY
UNDER CANOPY PLAN

SCALE 1:100

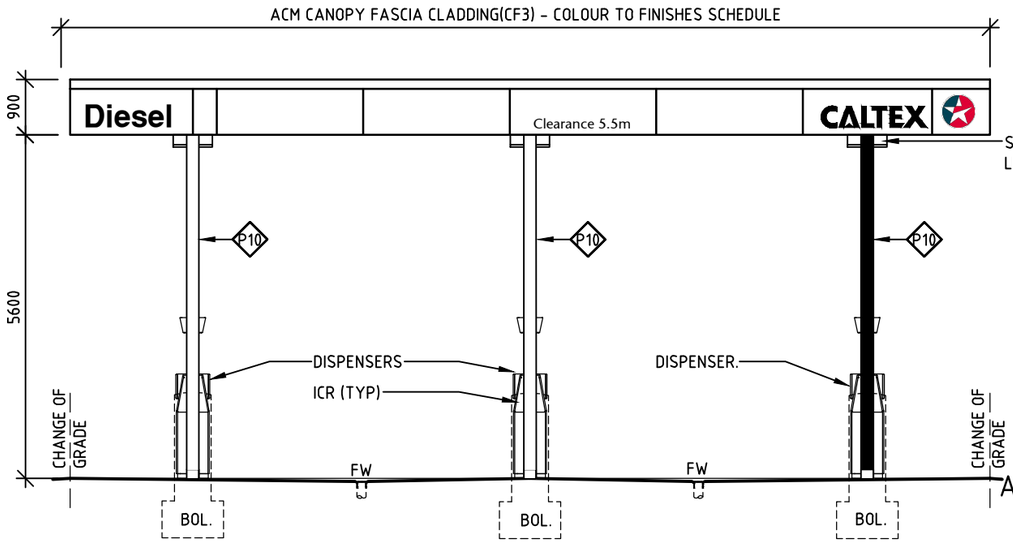
DEVELOPMENT APPLICATION

APPROVED | DATE

SIZE A3

DRAWING No. P1516-A320

REV. A



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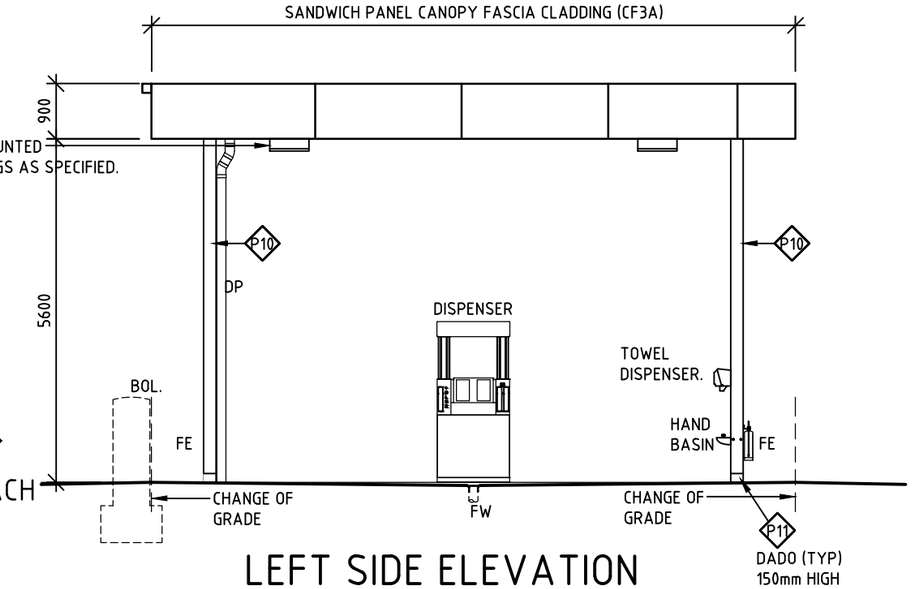
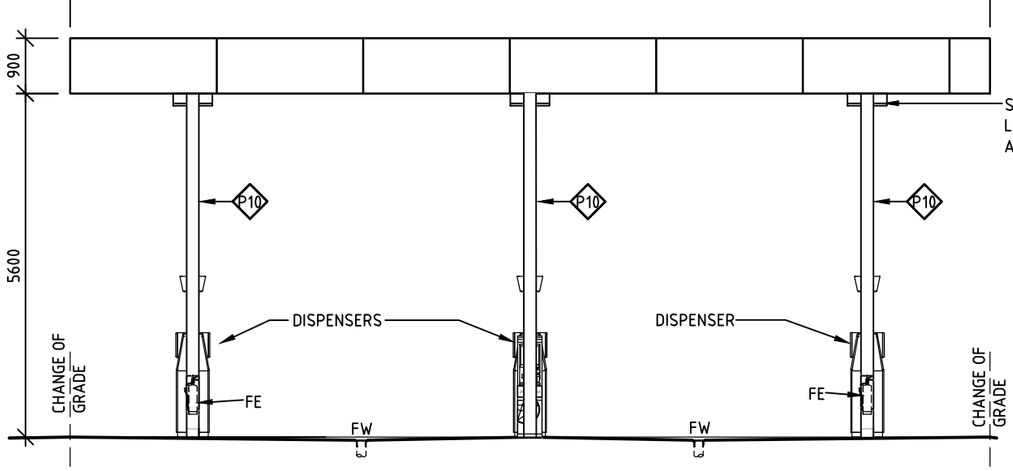


LEFT SIDE ELEVATION



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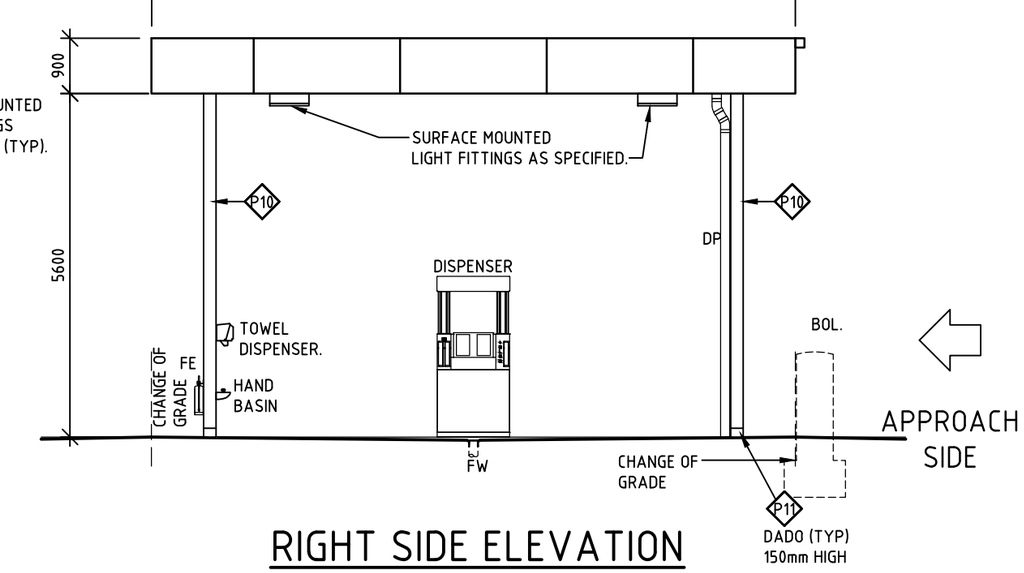

RIGHT SIDE ELEVATION

0 1m 2 3 4 5

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REVISION

PROJECT
GERALDTON - WA
NORTH WEST COASTAL HIGHWAY
CNR EASTWARD ROAD

TITLE
RETAIL TRUCK CANOPY
ELEVATIONS

SCALE 1:100

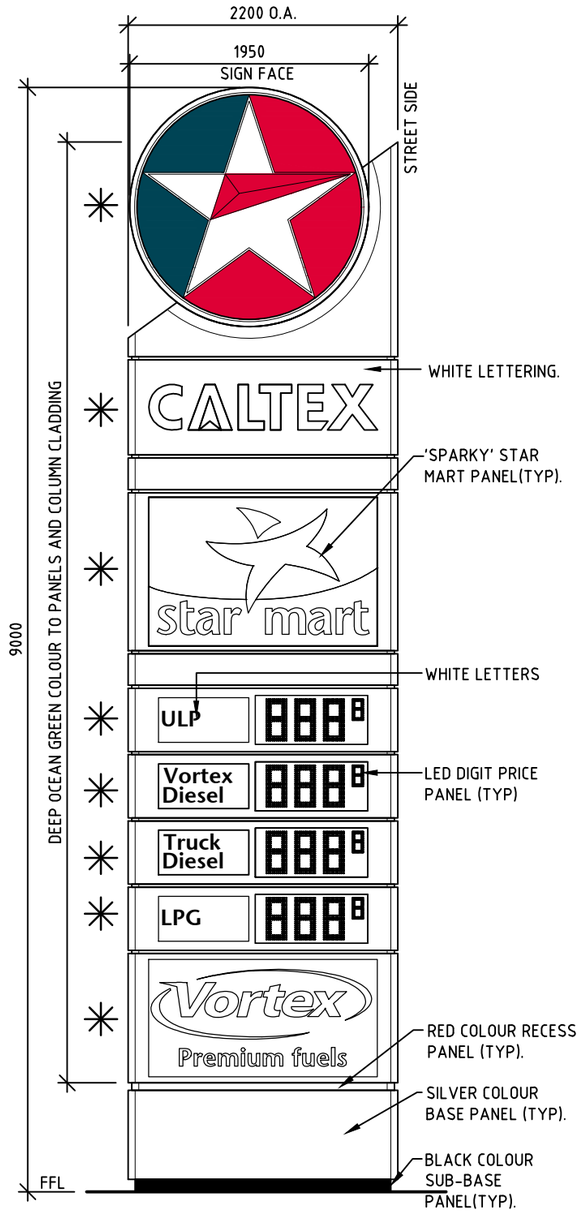
DEVELOPMENT APPLICATION

APPROVED | DATE

SIZE A3

DRAWING No. P1516-A321

REV. A



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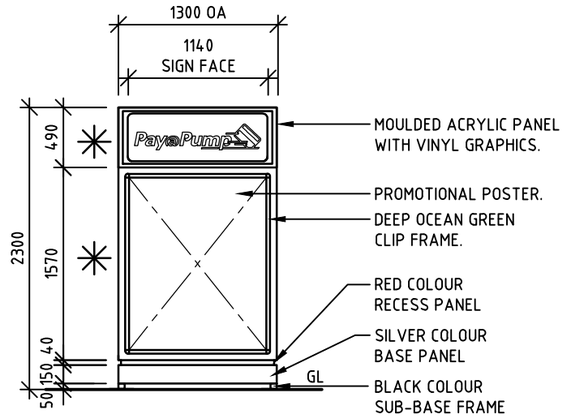

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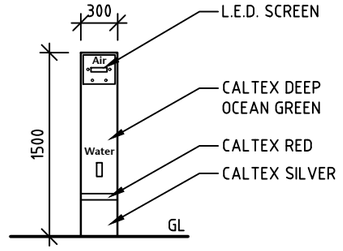
HAMPSTEAD ROAD
1 OFF TYPE PR3-SC



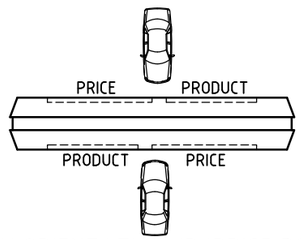
AIR & WATER SIGN

1 OFF

✳ INTERNALLY ILLUMINATED SIGN BOX

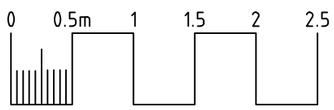
SIGN MANUFACTURER NOTE:

SIGNAGE PANEL SIZES & GRAPHICS ARE INDICATIVE ONLY. FOR FINAL DETAILS REFER TO APPROVED SIGNAGE ARTWORK SHOWING PANEL DETAILS & GRAPHICS ISSUED WITH SUPPLY CONTRACT.



SIGN ORIENTATION-ID/PRICE BOARD

(ID/PRICE SIGNS TO READ LEFT TO RIGHT-PRODUCT THEN PRICE)



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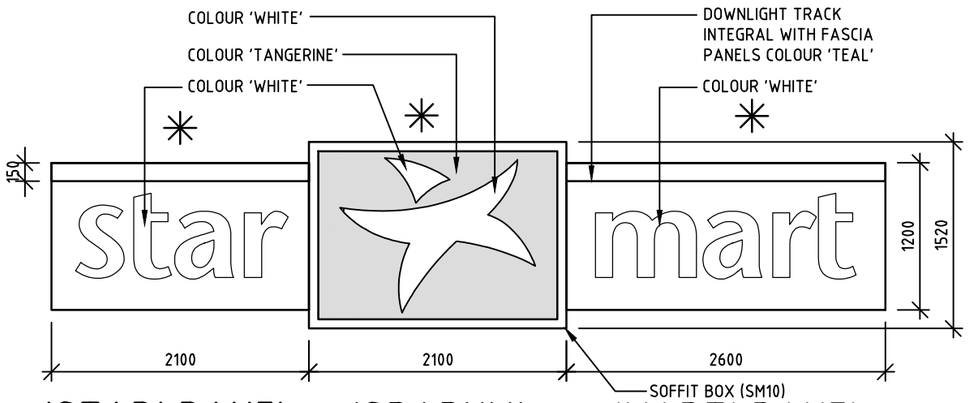
A	JS	28.06.16	DEVELOPMENT APPLICATION

REVISION

PROJECT
GERALDTON - WA
NORTH WEST COASTAL HIGHWAY
CNR EASTWARD ROAD

TITLE
SIGNAGE DETAILS
SHEET 1

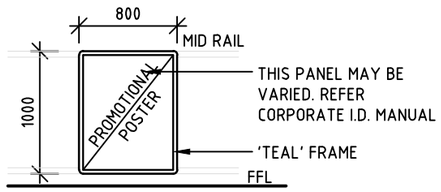
SCALE 1:50
SIZE A3
DEVELOPMENT APPLICATION
APPROVED | DATE
DRAWING No. P1516-S110
REV. A



'STAR' PANEL
2 OFF

'SPARKY' PANEL
2 OFF

'MART' PANEL
2 OFF



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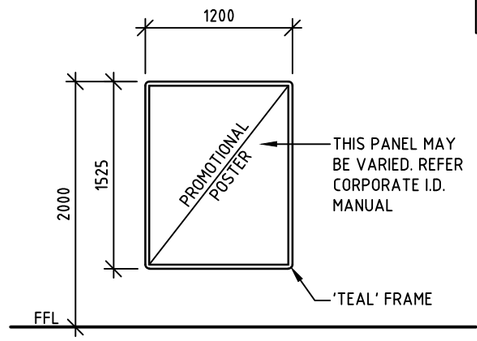
PR26/hw
4 OFF



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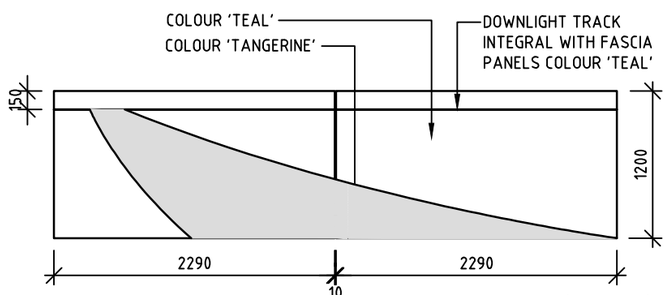
INTERNALLY ILLUMINATED SIGN BOX

SHOPFRONT SAFETY DECALS



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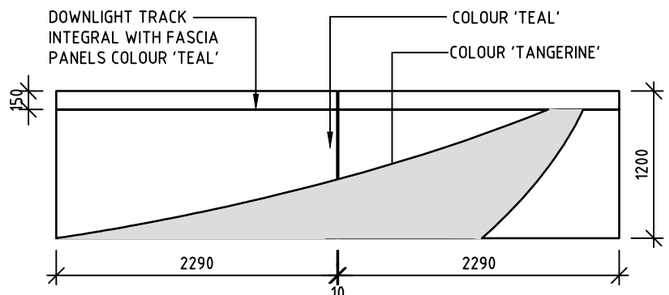

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0 0.5m 1 1.5 2 2.5

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REVISION

PROJECT
GERALDTON - WA
NORTH WEST COASTAL HIGHWAY
CNR EASTWARD ROAD

TITLE
SIGNAGE DETAILS
SHEET 2

SCALE 1:50

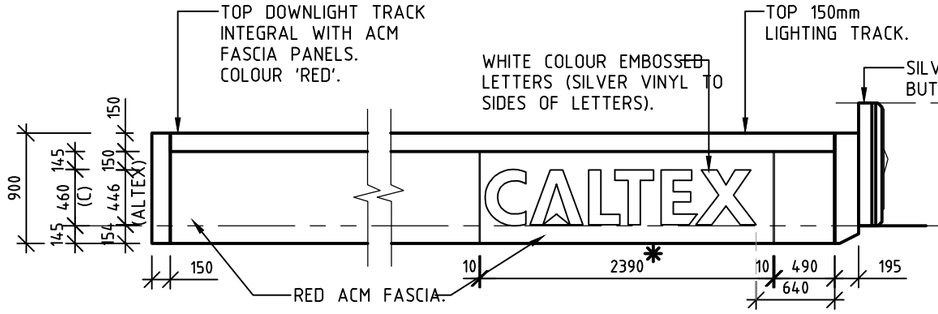
DEVELOPMENT APPLICATION

APPROVED | DATE

SIZE A3

DRAWING No. P1516-S111

REV. A



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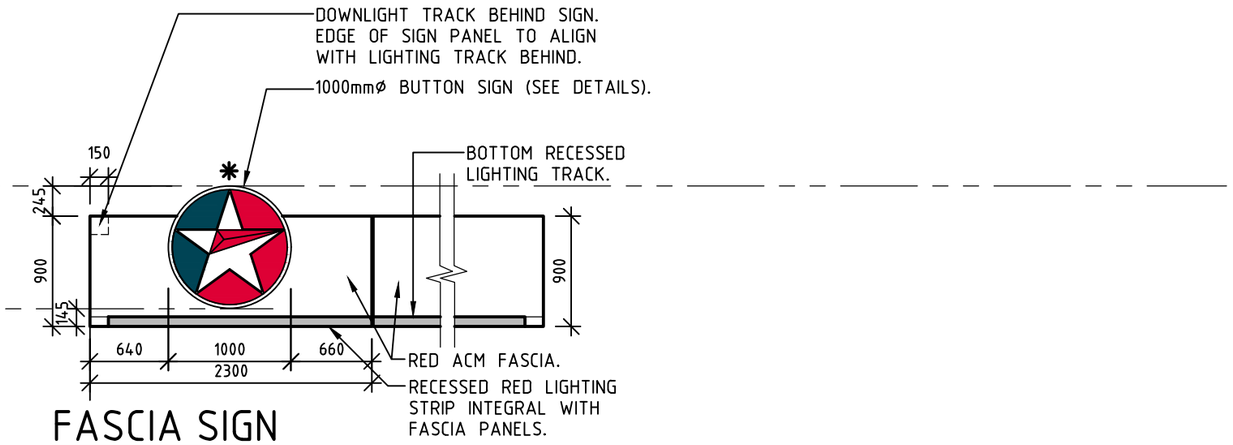

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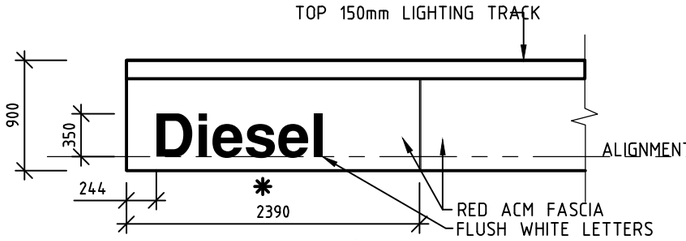
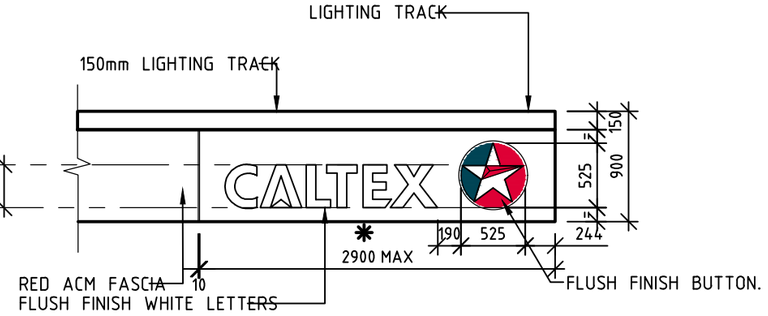


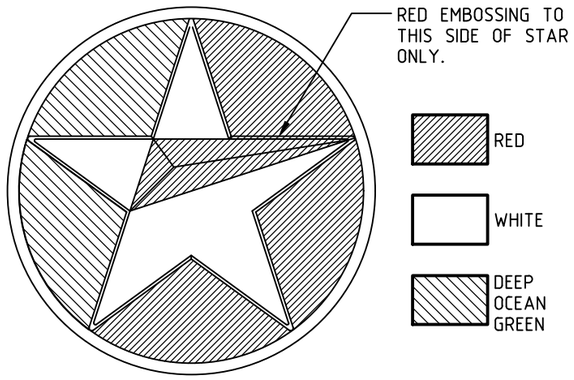
FASCIA SIGN (RETAIL TRUCK CANOPY)



FASCIA SIGN (RETAIL TRUCK CANOPY)

NOTE:

SIGN MANUFACTURER NOTE :
SIGNAGE PANEL SIZES & GRAPHICS INDICATIVE ONLY.
FOR FINAL DETAILS REFER TO APPROVED SIGNAGE SUPPLIER ARTWORK SHOWING PANEL DETAILS & GRAPHICS.



BUTTON COLOUR DETAILS

✳ INTERNALLY ILLUMINATED ACRYLIC SIGN BOX

0 0.5m 1 1.5 2 2.5

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A	JS	28.06.16	DEVELOPMENT APPLICATION

REVISION

PROJECT
GERALDTON - WA
NORTH WEST COASTAL HIGHWAY
CNR EASTWARD ROAD

TITLE
SIGNAGE DETAILS
SHEET 3

SCALE 1:50
SIZE A3

DEVELOPMENT APPLICATION
APPROVED | DATE
DRAWING No. P1516-S334 | REV. A

Appendix E - Traffic Study

Proposed Commercial Development
Lot 3123, Pass Street, Wonthella

TRANSPORT IMPACT AND CAR PARKING ASSESSMENT – V2

FINAL REPORT

Prepared for: Megara Developments
Prepared by: Move Consultants

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July 2016

DOCUMENT ISSUE AUTHORISATION

Issue	Rev	Date	Description	Checked	Approved
1	0	30/06/16	DRAFT	HH	HH
2	1	080716	REV	HH	HH

TABLE OF CONTENTS

PAGE

1. INTRODUCTION

1.1 OVERVIEW

This Transport Impact and Car Parking Assessment has been prepared for Lots 3123, Pass Street, Wonthella in the City of Greater Geraldton. The proposed development on the subject lands consists of a number of commercial elements including specialty retail tenancies, fast food restaurants with drive-through facilities, a fixed liquor store tenancy with drive-through, a discount supermarket, a drive-through coffee kiosk and a petrol station with convenience market and a separate diesel pay-by-car fuelling area. This assessment is inclusive of a detailed site plan and provides a detailed assessment in relation to future traffic operations and car parking issues.

1.2 SITE LOCATION

The broader site is located approximately 2.3km due east of the Geraldton City Centre in the suburb of Wonthella. The site flanks the eastern side of North-West Coastal Highway and is located within the north-eastern quadrant of the signalised intersection of North-West Coastal Highway/Eastward Road/Johnston Street. The site also housed the former City of Greater Geraldton Works Depot until it was decommissioned and relocated and is currently vacant. Pass Street, to the north-east rear of the site, provides limited frontage and access to the site.

Main Roads Western Australia's Mid West Regional Office is located to the east of the site on Eastward Road with Rangeway Primary School located on the south side of Eastward Road, between Cypress Street and Pass Street/Rifle Range Road, approximately 150m from the site with access from Cypress Street and Hovea Street to the south. Industrial uses are generally in place on the west side of North-West Coastal Highway opposite the primary frontage of the site as well as to the north and south along North-West Coastal Highway and to the immediate east and north-east within the broader industrial cell east of North-West Coastal Highway.

The site is currently vacant with four (4) existing crossovers inclusive of two (2) crossovers to the east side of North-West Coastal Highway, one (1) crossover to the north side of Eastward Road and one (1) crossover to the south-west side of Pass Street. The location of the site is shown in Figure 1. The City context of the site is shown in Figure 2.

Figure 1: Site Location

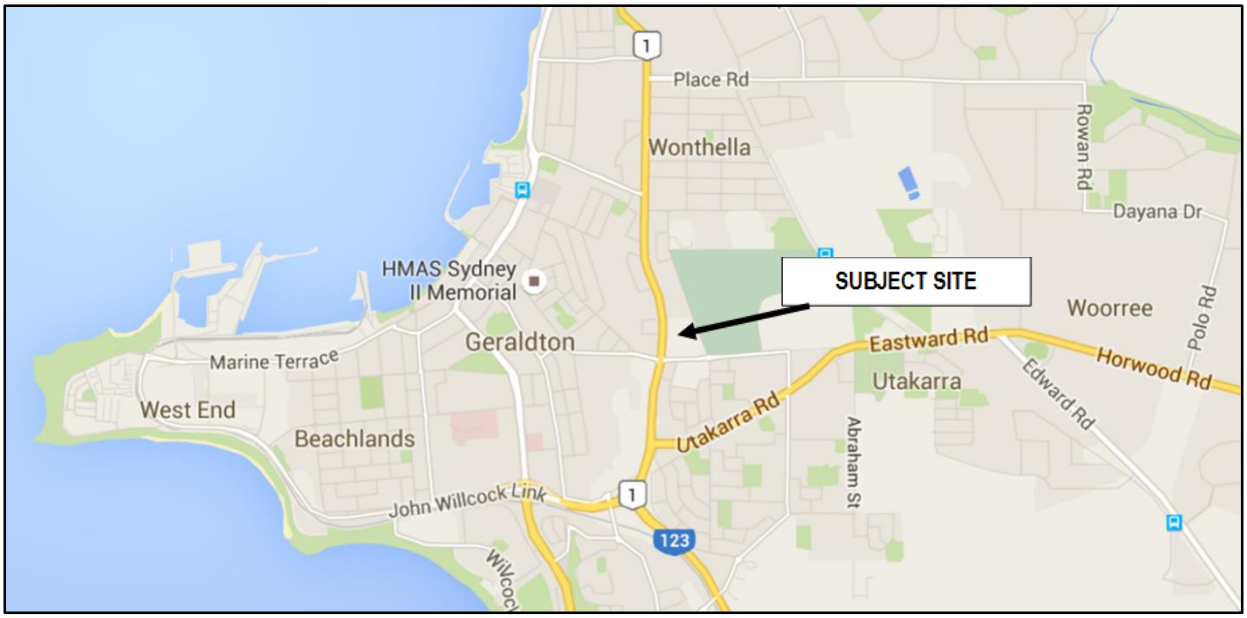


Figure 2: City Context

1.3 SCOPE OF ASSESSMENT

This assessment has been prepared in accordance with the Western Australian Planning Commission's *Transport Assessment Guidelines for Developments: Volume 4 – Individual Developments* (2006).

Specifically, this report aims to assess the impacts of the proposed development on the boundary road network within the City to identify any modifications, to site or road layout, which may be required to serve the proposed site, with a particular emphasis on access arrangements to both North-West Coastal Highway and Eastward Road. In addition, the assessment considers the proposed access, circulation, and egress arrangements to and from the site.

For this purpose, the traffic operations at the proposed primary crossover to North-West Coastal Highway (Southern Access) under two access scenarios and the full movements Eastward Road crossover (Eastern Access) as well as the anticipated future operations at the signalised intersection of North-West Coastal Highway/Eastward Road/Johnston Street have been assessed inclusive of development traffic generated under a full-build out scenario. These broader impacts to the boundary roads in the context of peak weekday daily and peak hour traffic conditions have included consideration of the future 10+year background road traffic conditions. This assessment is also reflective of discussions with Main Roads Western Australia and the City of Greater Geraldton in relation to the proposed access arrangements and is inclusive of technical matters which have been addressed in detail relating to boundary roadway traffic operations.

2. EXISTING SITUATION

2.1 ROAD INFRASTRUCTURE

The proposed development is to be constructed on a site which is currently vacant and is proposed to be served by 5 crossovers:

- A full movements crossover (Southern Access) to the east side of North-West Coastal Highway approximately 120m north of the signalised intersection of North-West Coastal Highway/Eastward Road/Johnston Street and 40m south of the unsignalised intersection of North-West Coastal Highway/Gray Street.
- A partial movements crossover (left-in/left-out only) crossover (Northern Access) to the east side of North-West Coastal Highway approximately 35m north of the unsignalised intersection of North-West Coastal Highway/Gray Street.
- A partial movements crossover (left-in/left-out only) crossover (Western Access) to the north side of Eastward Road approximately 60m east of the signalised intersection of North-West Coastal Highway/Eastward Road/Johnston Street providing direct access into the proposed petrol station.
- A full movements crossover to the north side of Eastward Road (Eastern Access) approximately 90m east of the signalised intersection of North-West Coastal Highway/Eastward Road/Johnston Street.
- A full movements crossover the south-west side of Pass Street at the north-western corner of the site.

North-West Coastal Highway forms the primary north-south connection into the Geraldton urban area connecting the eastern boundary of the City Centre with suburban areas to the north, east and south where it connects directly into the Brand Highway approximately 1.5km due south-west of the site. It serves a broad range of industrial, commercial, residential and other service users within the City of Greater Geraldton but also provides direct access to a range of mixed-use activities, including bulky goods, retail and other commercial uses to the north of the site. It also functions as a bypass route around the Geraldton City Centre for north-south through traffic. It is classified as a *Primary Distributor* road under the Main Roads Western Australia *Functional Road Hierarchy* and is defined as a road which *"…provides for major regional and inter-regional traffic movement and carries large volumes of generally fast moving traffic. These roads are strategic freight routes and all are National or State roads and are managed by Main Roads."* . It has been constructed as a two lane undivided single carriageway along the western frontage of the site flaring wide to a dual divided carriageway on approach and discharge from the signalised intersection with Eastward Road/Johnston Street to the south. Preliminary design plans have been prepared by a consultant engaged by Main Roads for the upgrade of the road to a dual divided carriageway; however, these works are currently not planned, programmed or funded as part of the 5-Year Capital Works Program with the Outer Bypass project ranking higher in priority for delivery in the short to medium term. As noted in the City's *Integrated Transport Strategy,* the road classification remains unchanged from its existing *Primary Distributor* classification. It is owned, operated and maintained by Main Roads WA. It is owned, operated and maintained by Main Roads Western Australia and operates under a posted speed limit of 60kph. It carries an existing weekday daily volume of 13,000 vpd (MRWA, 2016).

Eastward Road, along the southern frontage of the site, provides direct access into the established industrial areas to the east and north of the site as well as to residential areas to the south-east of the site. It is currently constructed as a two lane single carriageway and widens to a dual divided carriageway on approach to and discharge from the signalised intersection with North-West Coastal Highway/Johnston Street. It is currently classified as a *Local*

Distributor road under the MRWA *Functional Road Hierarchy* which is defined as a road which *"…carries traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area and typically should accommodate buses but discourage trucks. These roads are managed by Local Government."* In the City's *Integrated Transport Strategy,* Eastward Road is proposed to be reclassified as a *District Distributor* road as part of the plan to connect Eastward Road with Horwood Road, east of the Pass Street/Rifle Range Road intersection and downgrade Utakarra Road; however, this issue was addressed in a discussion with the City who indicated that this proposal is very long-term and should not be taken into consideration as part of this assessment. It is owned, operated and maintained by the City of Greater Geraldton and operates under a posted speed limit of 60kph. It currently carries approximately 6,700 vpd (MRWA, 2016).

Johnston Street, to the south-west of the site, provides direct access into the Geraldton City Centre as well as to industrial areas to the east and north of the site as well as to residential areas to the south-west of the site. It is currently constructed as a two lane single carriageway and widens to a dual divided carriageway on approach to and discharge from the signalised intersection with North-West Coastal Highway/Eastward Road. It is currently classified as a *Local Distributor* road under the MRWA *Functional Road Hierarchy* which is defined as a road which *"…carries traffic within a cell and link District Distributors at the boundary to access roads. The route of the Local Distributor discourages through traffic so that the cell formed by the grid of District Distributors only carries traffic belonging to or serving the area and typically should accommodate buses but discourage trucks. These roads are managed by Local Government."* In the City's *Integrated Transport Strategy,* no changes to the existing road classification are proposed. It is owned, operated and maintained by the City of Greater Geraldton and operates under a posted speed limit of 60kph. It currently carries approximately 7,100 vpd (MRWA, 2016).

Pass Street has been classified as an *Access Road* under the MRWA *Functional Road Hierarchy* and provides direct access to industrial lots to the east of the site. It has been constructed as a single undivided carriageway with a 7.0m seal and gravel shoulders. It is owned, operated and maintained by the City of Greater Geraldton and operates under a speed limit of 50kph. Other *Access Roads* in the vicinity of the site include Rifle Range Road and Cypress Street to the east of the site connecting to the south side of Eastward Road and Gray Street, opposite the site connecting to the west side of North-West Coastal Highway. Cypress Street and Rifle Range Road form a boundary to the existing Rangeway Primary School which no direct access to Eastward Road. Existing school speed zoning is in place on Cypress Street, Rifle Range Road, Hovea Street and Cassia Street from 7:30 a.m. to 9:00 a.m. and 2:30 p.m. .to 4:00 p.m. on school days. Existing traffic volumes on these roads are estimated to be in the order of 1,000 to 2,000 vpd maximum on Cypress Street and Rifle Range Road based upon a review of existing travel patterns and spatial distribution of land uses. Existing traffic volumes on Pass Street are estimated to be in the order of 2,500 vpd with volumes on Gray Street estimated to be in the order of less than 1,000 vpd.

The intersection of North-West Coastal Highway/Eastward Road/Johnston Street is signalised with dedicated left- and right-turn pockets and two through lanes on all approaches to the intersection. Minor changes to the existing signalised intersection have been recommended in the City's *Integrated Transport Strategy* in order to improve safety for right-turning vehicles and minimise delays and queuing for through traffic. Additional modifications to the intersection are proposed as part of a future dual carriageway upgrade which may include extension of existing medians, pedestrian and cycling crossing opportunities, right-turn pockets and modification of left-turning arrangements. The intersection of Eastward Road/Pass Street/Rifle Range Road, to the north-east of the site currently operates as a 4-way single circulating roundabout.

Figure 3 shows the road hierarchy in the vicinity of the site.

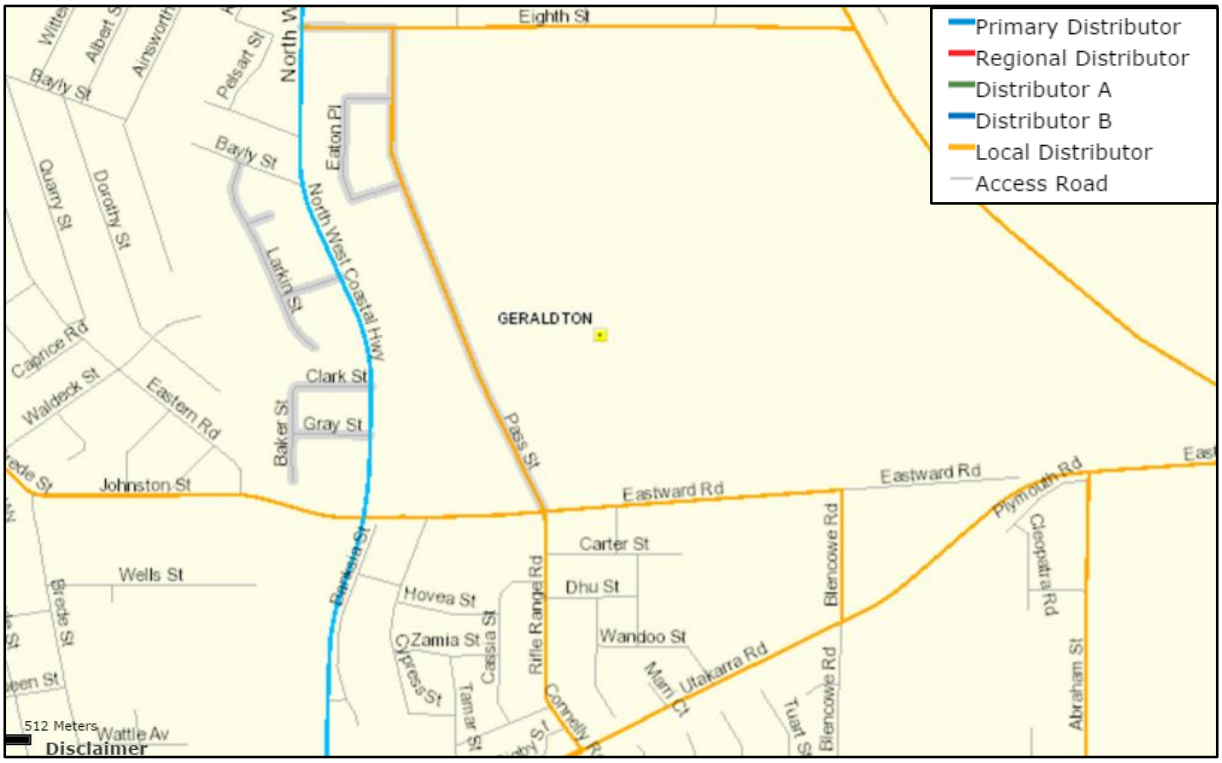


Figure 3: MRWA Road Hierarchy

2.2 PUBLIC TRANSPORT, PEDESTRIAN, AND CYCLIST FACILITIES

The site is served by TransWA Bus Route 853 (Geraldton-Circular Route: Via Utakarra and Rangeway) along Johnston Street to the south-west of the site. This bus route provides broadly hourly service between 8:30 a.m. and 5:30 p.m. on weekdays and hourly service on Saturdays between 8:30 and 2:30 p.m. Bus stops are in place along the southern frontage of the site to the east of North-West Coastal Highway on Eastward Road within a 5-minute walk of the site. Any future changes to bus services will be dependent upon future urban development in the area.

Figure 4 shows the existing public transport services in the vicinity of the site.

Figure 4: Existing Public Transport Services

Johnston Street and Eastward Road, to the west and east of North-West Coastal Highway, respectively, have on-road bicycle lanes in the form of sealed shoulders. They have also both been designated as *Bicycle Friendly Streets*. Future planned upgrades to the existing cycling network include a modification to the existing intersection at North-West Coastal Highway/Eastward Road/Johnston Street on the Johnston Street approach. There is a footpath on the south side of Eastward Road opposite the site.

North-West Coastal Highway currently has no designated footpaths in place adjacent to the site. A short section of the road to the south of Eastward Road/Johnston Street has designated on-road cycling facilities. It is assumed that as part of the future dual carriageway works that dedicated pedestrian and cycling facilities in the form of a shared path and/or on-road bicycle lanes will be incorporated.

Figure 5 shows the existing pedestrian and cycling facilities in the vicinity of the site.

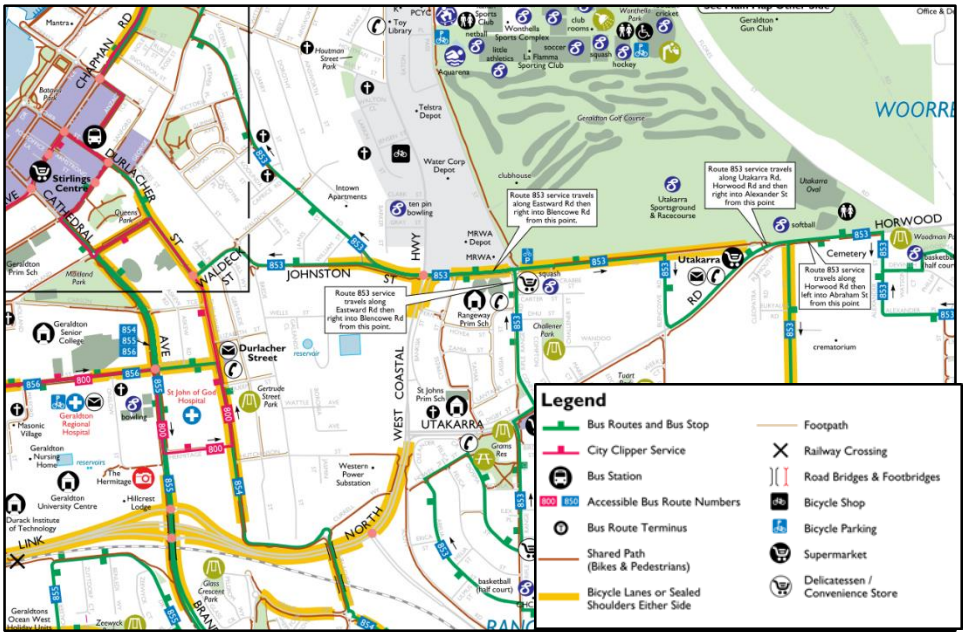


Figure 5: Existing Pedestrian and Cycling Facilities

3. PROPOSED DEVELOPMENT

A site plan of the proposed development is attached in **Appendix A**.

3.1 PROPOSED LAND USES

The proposal seeks approval for development of a series of commercial uses including the following elements:

- Tenancy 1: Petrol Station with 8 fuelling conventional fuelling stations, a convenience store/kiosk (220m^2) and a diesel card-only fuelling area with 6 fuelling stations located at the north-eastern corner of the site.
- Tenancy 2 - Fast Food Restaurant with Double-Drive Through – 217m^2
- Tenancy 3 – Fixed Tenancy Liquor Store with Double Drive Through – 400m^2
- Tenancy 4 – Discount Supermarket - 1,560m^2 GFA plus 405m^2 Back of House
- Tenancy 5 – Fast Food Restaurant with Single Drive Through – 225m^2
- Tenancy 6 – Coffee Kiosk/Drive-Through – 27m^2
- Tenancies 7-15 – Specialty Retail/Light Industrial/Bulky Goods – 1,705m^2

3.2 PROPOSED ACCESS AND PARKING ARRANGEMENTS

Proposed crossover arrangements to the site include the following:

- A full movements crossover to the east side of North-West Coastal Highway approximately 120m north of the signalised intersection of North-West Coastal Highway/Eastward Road/Johnston Street and 40m south of the unsignalised intersection of North-West Coastal Highway/Gray Street. (Southern Access)
- A partial movements crossover (left-in/left-out only) crossover to the east side of North-West Coastal Highway approximately 35m north of the unsignalised intersection of North-West Coastal Highway/Gray Street. (Northern Access)

- A partial movements crossover (left-in/left-out only) crossover to the north side of Eastward Road approximately 60m east of the signalised intersection of North-West Coastal Highway/Eastward Road/Johnston Street providing direct access into the proposed petrol station. (Western Access)
- A full movements crossover to the north side of Eastward Road approximately 90m east of the signalised intersection of North-West Coastal Highway/Eastward Road/Johnston Street. (Eastern Access)
- A full movements crossover the south-west side of Pass Street at the north-western corner of the site.

Proposed car parking on the site will consist of 281 customer parking bays across the site on the three (3) lots. Car parking on the petrol station site will be self-contained; however, the balance of the parking will be located on the remaining lots and can be accessed by all users as part of a shared arrangement. In addition to this car parking supply, additional bays within the drive-through areas of the two fast food restaurants, the coffee kiosk/tenancy and the liquor store drive-through will be in addition to the in addition to the above noted supply. Rubbish collection will be undertaken by a private contractor on the site and will be arranged in consultation with Council as part of the development of a separate Waste Management Plan.

Service and delivery vehicles as well as fuel tankers will access dedicated areas adjacent to each tenancy.

3.3 END OF TRIP FACILITIES

End-of-trip facilities (including bicycle racks are proposed to be provided on the broader site including secure bicycle parking and changing facilities consistent with Austroads guidelines.

4. TRANSPORT ANALYSIS

A traffic generation and distribution exercise has been undertaken to assess the potential traffic impacts associated with the proposed development. The aim of this exercise was to establish the traffic volumes which would be generated from the proposed development and to quantify the effect that the additional traffic has on the surrounding road network with a focus on the volume and functionality of traffic at the proposed full movements crossovers to both North-West Coastal Highway and Eastward Road as well as the signalised North-West Coastal Highway/Eastward Road/Johnston Street signalised intersection under future traffic conditions for the weekday a.m. and p.m. peak hours. An assessment of the Saturday peak hour was not undertaken as background traffic on the boundary road network is significantly lower than on a typical weekday and would therefore not represent the ‘worst case’ scenario.

4.1 TRIP GENERATION

Anticipated site-generated traffic has been derived from trip generation rates documented in the *Institute of Transportation Engineers Trip Generation Manual, 8th Edition* as well as documented site-specific survey data for the proposed liquor store and its drive-through facility and the coffee kiosk/drive-through. It has been assumed that passing trade for the proposed uses will be in the order of 50% during the respective peak hours based upon a blended rate following review of the respective individual passing trade rates for the uses on the site.

Trip distribution and assignment to the boundary road network has been assumed as follows:

- 40% to and from the north via North-West Coastal Highway;
- 35% to and from the south via North-West Coastal Highway;
- 10% to and from the west via Johnston Street;
- 10% to and from the east via Eastward Road; and
- 5% to and from the north-east via Pass Street.

The anticipated total traffic generation associated with the proposal is in the order of 6,702 vehicle trips per day with 219 vph (114 vph inbound/105 vph outbound) during the a.m. peak hour and 380 vph (199 vph inbound/181 vph outbound) during the p.m. peak hour. As noted above, the passing trade component is in the order of 50% across the site with the net additional traffic generation on the boundary road network as follows:

- Daily: +3,351 vpd NET
- A.M. Peak Hour: 109 vph NET
- P.M. Peak Hour: 190 vph NET

Site-generated traffic assignment to the boundary road network results in the following additional traffic on the road linkages:

- North-West Coastal Highway (North)
    - A.M. Peak Hour: +44 vph
    - P.M. Peak Hour: +76 vph
    - Daily: +1,340 vpd
- North-West Coastal Highway (South)
    - A.M. Peak Hour: +38 vph
    - P.M. Peak Hour: +67 vph
    - Daily: +1,173 vpd
- Eastward Road:
    - A.M. Peak Hour: +59vph
    - P.M. Peak Hour: +85vph
    - Daily: +1,488 vpd
- Johnston Street:
    - A.M. Peak Hour: +11vph
    - P.M. Peak Hour: +19 vph
    - Daily: +335 vpd
- Pass Street:
    - A.M. Peak Hour: +6vph
    - P.M. Peak Hour: +9vph
    - Daily: +167vpd

It should be noted that the site traffic generation has not been adjusted for multi-purpose trip making or 'trip chaining' across the site, which can typically range between 20% and 30% of overall trip generation, in order to assess the 'worst case' scenario with regard to traffic operations on the road network.

A review of the traffic impacts on the boundary road links under their existing geometry are shown in Table 1.

Table 1: Comparison of Base Future Traffic Volumes (10+ Years) to Future Total Traffic Volumes

Road Link	Future Background Volume - Adjusted for 3% Growth over 10-years (vpd)	Site-Generated Traffic (vpd)	Total Future Traffic (vpd)	Practical Capacity (vpd)	Within Practical Capacity (Y/N)
North-West Coastal Highway (North)	16,900 vpd	1,340 vpd	18,240 vpd	20,000 vpd	Y
North-West Coastal Highway (South)	11,700 vpd	1,173 vpd	12,873 vpd	20,000 vpd	Y
Eastward Road	8,700 vpd	1,488 vpd	10,188 vpd	15,000 vpd (between signalised intersection and eastern boundary)	Y
Johnston Street	9,230 vpd	335 vpd	9,565 vpd	10,000 vpd	Y
Pass Street	1,430 vpd	+167 vpd	1,597 vpd	3,000 vpd	Y

The existing traffic volumes for both the daily period and a.m. and p.m. peak hours have been factored up by 3% per annum for 10 years to arrive at a base background 'worst case' scenario traffic volume. The practical capacities as noted above have been based upon a review of the type of road link, adjacent existing access arrangements and land uses as well as functional capacity. As a result, both North-West Coastal Highway and Eastward Road have practical capacities at the higher end of the range for their respective road classifications and Eastward Road functions broadly as a dual divided carriageway along the frontage of the site. Eastward Road is also planned to be reclassified as a *District Distributor* road in the future which is expected to have a practical capacity in excess of 15,000 vpd.

As shown in Table 1, the growth in background traffic is responsible for the vast majority of increase in road traffic on the boundary road links in the vicinity of the development. The respective increases during the a.m. and p.m. peak hours are minimal in comparison to the background traffic on the road network (less than 10% on both North-West Coastal Highway and Pass Street and less than 5% on Johnston Street). The increases in traffic on Eastward Road are in the order of 15% but are concentrated on a very short section along the southern boundary of the site

with a minimal increase to the east of the intersection with Pass Street with peak hour traffic not expected to impact operations at the Eastward Road/Cypress Street or Eastward Road/Rifle Range Road/Pass Street. School peak periods typically occur between 8:00 a.m. and 9:00 a.m. and 2:30 and 3:30 p.m. with school traffic accounted for in this assessment during the a.m. peak hour with the school peak period occurring several hours earlier than the roadway peak hour.

The results of the road link assessment indicate that the boundary road network has sufficient practical capacity to accommodate site-generated traffic under the 'worst case' or full build-out scenario (without adjustment for multi-purpose trip making) without the need to implement road network improvements such as a dual carriageway on North-West Coastal Highway. The trigger for this upgrade will be the direct result of growth in background traffic passing the site and not site-generated traffic and will not be required within the 10 to 15-year time horizon.

4.2 INTERSECTION AND CROSSOVER ASSESSMENT

4.2.1 Assessment Scenarios

The operational performance of the proposed full movements crossovers to the site on North-West Coastal Highway and Eastward Road as well as the signalised North-West Coastal Highway/Eastward Road/Johnston Street intersection were assessed using the software program *SIDRA Intersection 5.1* for existing and future road conditions. This was undertaken for the following scenarios:

- Scenario 1
    - North-West Coastal Highway/Eastward Road/Johnston Street intersection – Existing
- Scenario 2
    - North-West Coastal Highway/Eastward Road/Johnston Street intersection – Full Movements at Southern Access to Site on North-West Coastal Highway
    - Southern Access to North-West Coastal Highway (Primary Access) – Full Movements
    - Eastward Road Full Movements Access (Eastern Access)
- Scenario 3
    - North-West Coastal Highway/Eastward Road/Johnston Street intersection – Right-In/Left-In/Left-Out Only Movements at Southern Access to Site on North-West Coastal Highway
    - Southern Access to North-West Coastal Highway (Primary Access) – Right-In/Left-In/Left-Out Only Movements
    - Eastward Road Full Movements Access (Eastern Access)

Figures 3 through 9 show the traffic at the primary access to North-West Coastal Highway (Southern Access), the full movements access to Eastward Road (Eastern Access) and the North-West Coastal Highway/Eastward Road/Johnston Street intersection under Scenarios 1 through 3.

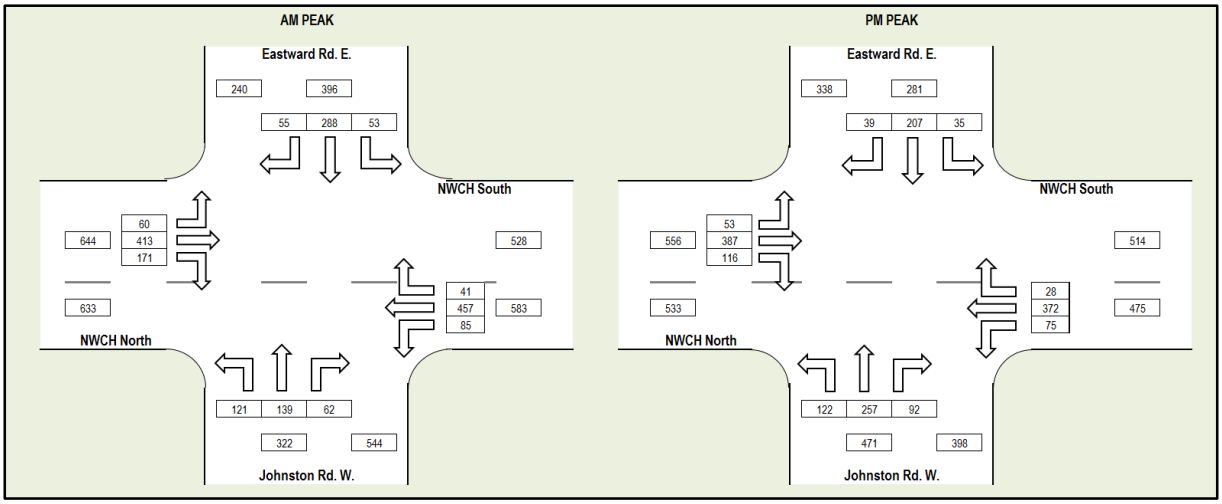


Figure 6: North-West Coastal Highway/Eastward Road/Johnston Street – Existing Traffic (Scenario 1)

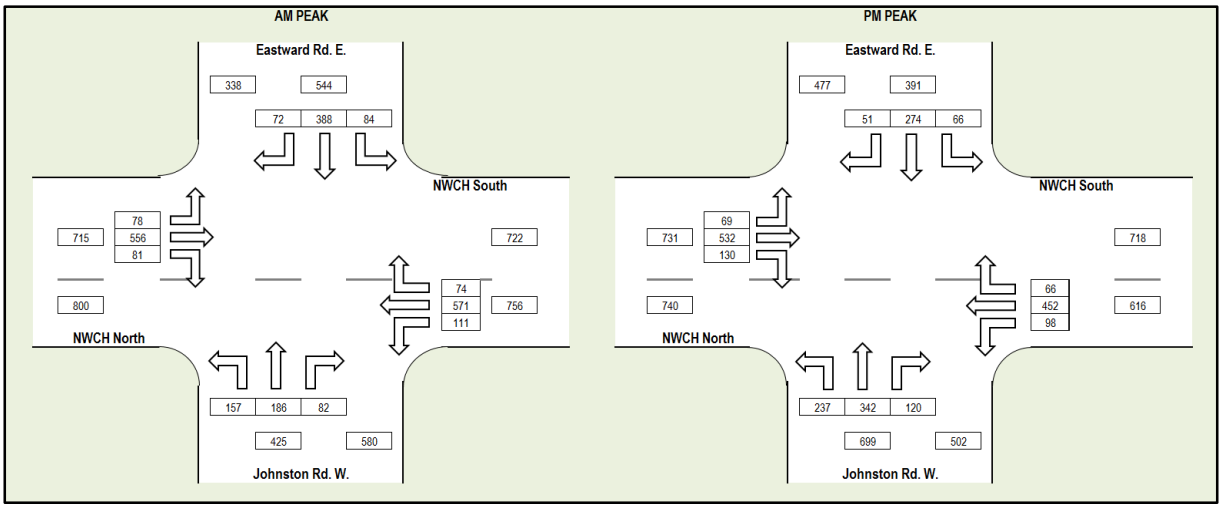


Figure 7: North-West Coastal Highway/Eastward Road/Johnston Street – Existing NWCH Geometry + Full Movements at Southern Access (Scenario 2)

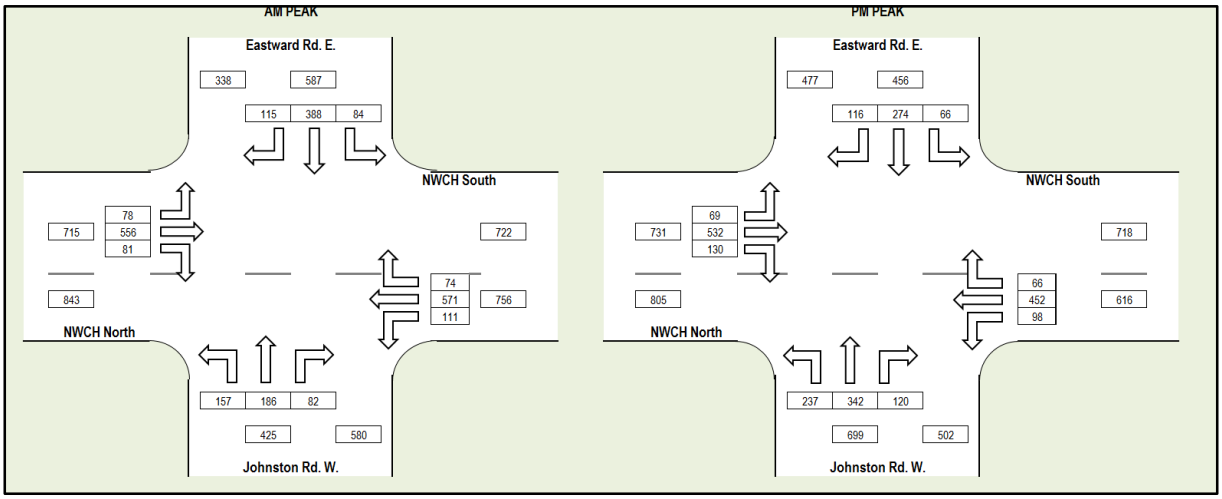


Figure 8: North-West Coastal Highway/Eastward Road/Johnston Street – Existing NWCH Geometry + Right-In/Left-In/Left-Out Only Movements at Southern Access (Scenario 3)

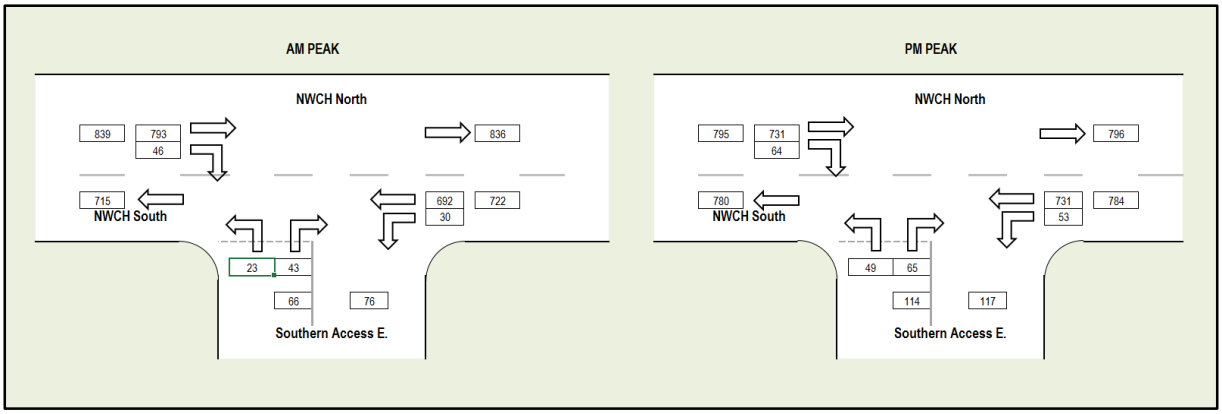


Figure 9: Southern Access Street – Full Movements + Existing NWCH Geometry (Scenario 2)

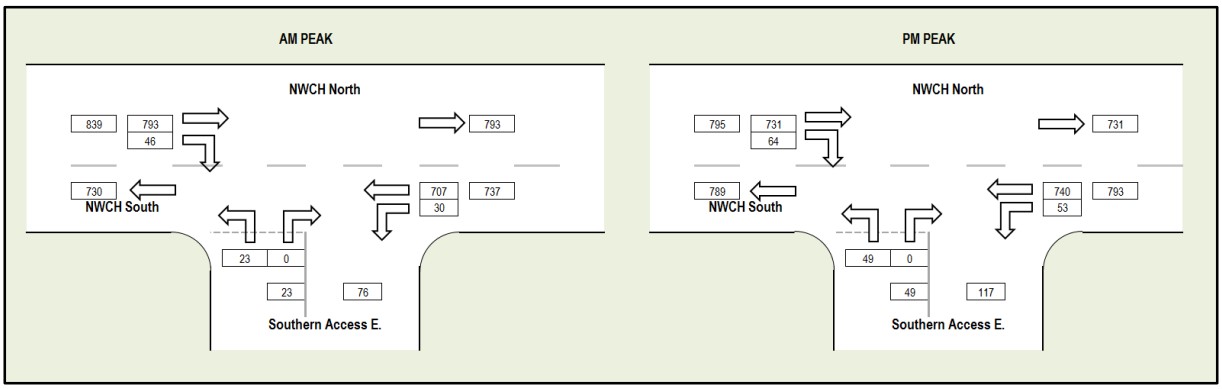


Figure 10: Southern Access– Right-In/Left-In/Left-Out Movements + Existing NWCH Geometry (Scenario 3)

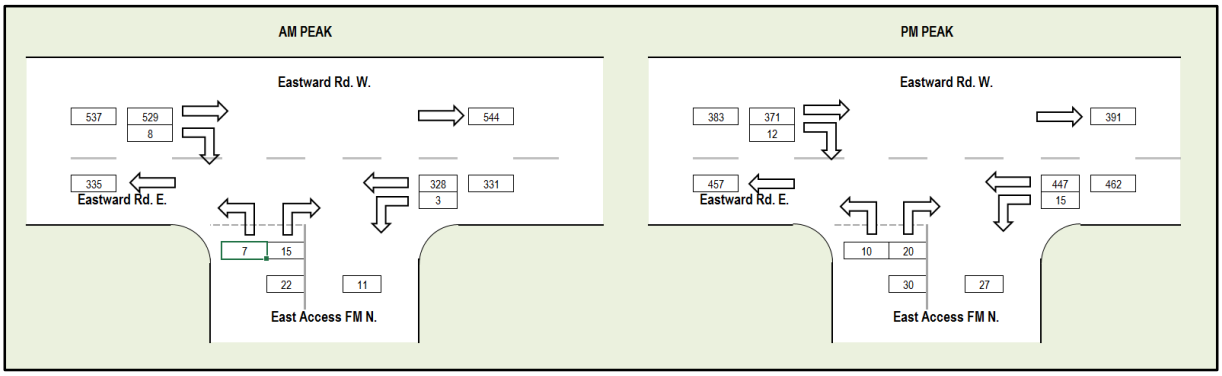


Figure 11: Eastward Road Full Movements Access (Eastern Access) - Full Movements at Southern Access + Existing NWCH Geometry (Scenario 2)

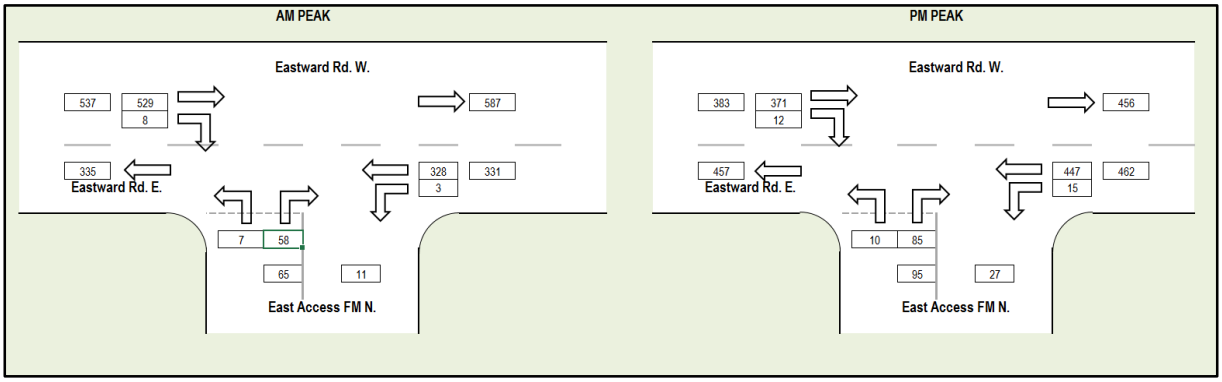


Figure 12: Eastward Road Full Movements Access (Eastern Access)- Right-In/Left-In/Left-Out Only Movements at Southern Access + Existing NWCH Geometry (Scenario 3)

4.2.2 SIDRA Analysis Program

SIDRA is a commonly used intersection modelling tool used by traffic engineers for all types of intersections. Outputs for four standard measures of operation performance can be obtained, being Degree of Saturation (DoS), Average Delay, Queue Length, and Level of Service (LoS).

- **Degree of Saturation** is a measure of how much physical capacity is being used with reference to the full capability of the particular movement, approach, or overall intersection. A DoS of 1.0 equates to full theoretical capacity although in some instances this level is exceeded in practice. SIDRA uses maximum acceptable DoS of 0.90 for signalised intersections for its Design Life analysis. Design engineers typically set a maximum DoS threshold of 0.95 for new intersection layouts or modifications.
- **Average Delay** reports the average delay per vehicle in seconds experienced by all vehicles in a particular lane, approach, or for the intersection as a whole. For severely congested intersections the average delay begins to climb exponentially.
- **Queue Length** measures the length of approach queues. In this document we have reported queue length in terms of the length of queue at the 95th percentile (the maximum queue length that will not be exceeded for 95 percent of the time). Queue lengths provide a useful indication of the impact of signals on network performance. It also enables the traffic engineer to consider the likely impact of queues blocking back and impacting on upstream intersections and accesses.
- **Level of Service** is a combined appreciation of queuing incidence and delay time incurred, producing an alphanumeric ranking of A through F. A LoS of A indicates an excellent level of service whereby drivers delay is at a minimum and they clear the intersection at each change of signals or soon after arrival with little if any queuing. Values of B through D are acceptable in normal traffic conditions. Whilst values of E and F are typically considered undesirable, within central business district areas with significant vehicular and pedestrian numbers, corresponding delays/queues are unavoidable and hence, are generally accepted by road users.

4.2.3 Results of SIDRA Analysis

The results of the SIDRA analysis for proposed access arrangements under the two major access scenarios (Scenarios 2 and 3) indicate that under both scenarios the proposed primary access points to North-West Coastal

Highway (Southern Access) and Eastward Road (Eastward Road) will operate at acceptable Levels of Service; however, the preferred option is to allow for full movements at the Southern Access to North-West Coastal Highway in order to minimise right-turning movements at the Eastward Road full movements driveway in order to reduce site-generated traffic associated with tenancies other than the petrol station (Tenancy 1) and within the diesel fuelling card-only area and primary service/delivery driveway to the site at this location and to minimise conflict with entering and existing trucks utilising the diesel bowsers at the rear of the site and with entering and existing service/delivery vehicles associated with the discount supermarket and petrol tenancy, including fuel tankers. There is more than sufficient capacity at the Southern Access to allow for a full movements access inclusive of outbound right-turns at this location due to the gaps in traffic resulting from the 'platooning' effect introduced into northbound traffic discharging from the signalised intersection to the south. This is reflected in the results of the assessment at this location. The implementation of a full movements crossover at the Southern Access to North-West Coastal Highway will also result in improved Levels of Service at the Eastward Road Eastern Access and also reduce site-generated traffic impacts on Eastward Road between North-West Coastal Highway and Pass Street/Rifle Range Road with net site-generated traffic under this scenario (Scenario 2) in the order of 1,488 vpd in comparison to >2,000 vpd under Scenario 3. Scenario 2 will also limit the impact of site-generated traffic on eastbound right-turning traffic at the signalised North-West Coastal Highway/Eastward Road/Johnston Street. The northbound 95th percentile right-turning queue at the Southern Access under both Scenarios 2 and 3 does not exceed the proposed nominal right-turn pocket length of 40m and does not impede the southbound right-turn into the signalised North-West Coastal Highway/Eastward Road/Johnston Street intersection.

The results of the SIDRA assessment at the proposed Eastward Road Eastern Access are acceptable under both Scenarios 2 and 3 with the preferred option being Scenario 2 which minimises outbound right-turns at this location. Under both scenarios, the northbound left-turn movement does not impede through traffic travelling east and the southbound right-turn movement does not impede through traffic travelling west on Eastward Road. Under Scenarios 2 and, the expected maximum downstream queue on Eastward Road does not impede traffic operations at the proposed Eastward Road full movements access (Eastern Access).

The results of the SIDRA assessment of the signalised intersection at North-West Coastal Highway/Eastward Road/Johnston Street indicate that with the addition of site-generated traffic under both Scenarios 2 and 3 scenario will have a minimal impact on queuing and vehicular delays with the majority of increase in traffic through this location resulting from growth in background traffic or passing traffic on the boundary road network under both the 10-year and 2031 scenarios with the existing road geometry on North-West Coastal Highway more than adequate to accommodate the traffic generated by the full build-out of the site.

The results of the SIDRA assessment are attached in **Appendix B**.

No SIDRA assessment was undertaken for the Northern Access to North-West Coastal Highway or the Western Access to Eastward Road as both are proposed to function as left-in/left-out only and volumes are expected to be relatively low at these locations with the removal of right-turn movements resulting in safe ingress and egress at these locations location and a very good Level of Service. Similarly, no SIDRA assessment was undertaken at the Pass Street access due to the relatively low site-generated and ambient background traffic volumes expected at this location.

5. SAFETY ASSESSMENT

A review of the existing crash history on the boundary road network was undertaken for the 5-year reporting period 20111-2015. The results of this review indicate that the vast majority of crashes occurred at the signalised North-West Coastal Highway/Eastward Road/Johnston Street intersection and involved rear end crashes and right-angle crashes. This location has been identified in the City's *Integrated Transport Strategy* with a recommendation to modify the existing signal timing to allow for more green time on the north-south approaches as well as to implement a protected right-turn phase to minimise right-angle crashes. No crashes were reported on Eastward Road or on North-West Coastal Highway along the respective frontages of the site involving a driveway with the number of midblock crashes (excluding the intersections with Cypress Street and Pass Street/Rifle Range Road) very low.

Only 1 crash was reported at the Eastward Road/Cypress Street intersection and 7 crashes at the Eastward Road/Pass Street/Rifle Range Road intersection, most of which were right-angle crashes, which have been mitigated recently through the implementation of a 4-way single circulating roundabout.

Based upon the proposed access arrangements and the relatively low site-generated traffic expected on Eastward Road concentrated on the section between North-West Coastal Highway and the eastern boundary, it can be concluded that the proposal will have a minimal impact on the risk profile of the road.

A review of sightlines at the Eastward Road Eastern Access indicates that there is in excess of 150m sight distance to the east over the crest of the existing hill on Eastward Road to satisfy minimum Approach Sight Distance, Safe Intersection Sight Distance and Minimum Gap Sight Distance requirements, including for heavy vehicles up to 36.5m in length. Sight distance to the west along Eastward Road towards the signalised intersection is also adequate as eastbound traffic is controlled by signals and will allow for adequate gaps in traffic to allow for safe ingress and egress by site-generated traffic.

Minimum sight distance requirements are more than adequately met at the proposed North-West Coastal Highway full movements access (Southern Access) to the north and south along North-West Coastal Highway.

6. REVIEW OF RAV NETWORKS

A review of the existing Restricted Access Vehicle (RAV) network in the vicinity of the site indicates that North-West Coastal Highway is classified as a RAV Network 8 which includes 36.5m vehicles; however, Eastward Road along the frontage of the site is only classified as 'a RAV Network 1 or permitted travel by vehicles up to 19m in length. Due to the proposal to allow for access into and out of the site by vehicles up to 36.5m in length, a reclassification of the section of Eastward Road between Pass Street and North-West Coastal Highway will be required to a minimum of a RAV Network 3. Discussions with the City of Greater Geraldton and Main Roads WA indicate that an application to reclassify the road to allow for 'as of right' travel by these vehicles will not be an issue with regard to safety and operations along this section of road as currently oversize vehicles are utilising this section of Eastward Road to access the industrial subdivision to the east and north with the existing crash history indicating that there is no impact on the existing risk profile.

7. VEHICULAR ACCESS AND PARKING

7.1 ON-SITE QUEUING, CIRCULATION, AND ACCESS

Proposed access arrangement to the site include the following:

- A full movements crossover to the east side of North-West Coastal Highway (Southern Access) approximately 120m north of the signalised intersection of North-West Coastal Highway/Eastward Road/Johnston Street and 40m south of the unsignalised intersection of North-West Coastal Highway/Gray Street. – Designed to accommodate left-turn inbound by 36.5m vehicles, right-turn inbound by 19m vehicles and left-turn outbound by 19m vehicles and right-turn outbound by 12.5m vehicles;
- A partial movements crossover (left-in/left-out only) crossover to the east side of North-West Coastal Highway (Northern Access) approximately 35m north of the unsignalised intersection of North-West Coastal Highway/Gray Street. – Designed to accommodate left-turns inbound and outbound by 12.5m vehicles.
- A partial movements crossover (left-in/left-out only) crossover to the north side of Eastward Road (Western Access) approximately 60m east of the signalised intersection of North-West Coastal Highway/Eastward Road/Johnston Street providing direct access into the proposed petrol station. – Designed to accommodate inbound and outbound left-turns by 12.5m vehicles.
- A full movements crossover to the north side of Eastward Road (Eastern Access) approximately 90m east of the signalised intersection of North-West Coastal Highway/Eastward Road/Johnston Street. - Designed to accommodate inbound left- and right-turns inbound by 19m vehicles and outbound left- and right-turns by 36.5m vehicles.
- A full movements crossover the south-west side of Pass Street at the north-western corner of the site. - Designed to accommodate inbound and outbound turns by vehicles up to 12.5m in length.

The crossover arrangements are proposed to be generally reciprocal across all the lots with the exception of the proposed partial movements (left-in/left-out only) crossover to the north side of Eastward Road (Western Access) which provides direct access and egress into the petrol station site. The proposed orientation of the uses along the western frontage to the site along North-West Coastal Highway will encourage the majority of traffic to access the site via the two crossovers located along the western boundary with the Eastward Road full movements access (Eastern Access) primarily accommodating service, delivery and fuel tanker vehicles, oversize heavy vehicles utilising the diesel card-only bowsers and a limited amount of conventional passenger traffic and the Eastward Road partial movements access (Western Access) providing access directly into the petrol station for customers.

A review of the proposed on-site circulation and car parking layout was undertaken to assess the adequacy of the proposed site access and circulation in addition to service/delivery areas on the site. The design of the proposed car parking areas adjacent to the rear of the building on the site has been reviewed using AutoTrack and the relevant Australian Standards and Austroads guidelines, with the proposed design considered adequate to accommodate on-site manoeuvring and circulation. Expected manoeuvring by vehicles between 19m and 36.5m, fuel tankers, will consist of entry via a left-turn movement into the Southern Access on North-West Coastal Highway travelling in a line haul manner in an easterly direction then turning right into the rear of the site to access the diesel bowsers and underground fuel tanks with exit in forward gear in a southerly direction to the Eastern Access on Eastward Road. Service and delivery vehicles accessing Tenancy 2 will enter and exit via North-West Coastal

Highway. Service and delivery vehicles accessing Tenancy 3 will enter and exit via the Eastward Road Eastern Access. Service and delivery vehicles accessing Tenancy 4 up to 19m in length will enter via the North-West Coastal Highway Southern Access travelling easterly in a line haul manner and then utilise the space to the north of the diesel bowsers to reverse into the designated loading area and then exit in forward gear to Eastward Road. Service and delivery vehicles for Tenancies 5 to 15 will enter via the Pass Street crossover utilise the existing service bays and car parking areas during off-peak periods.

The number of oversized (>19m) vehicles accessing and egressing the site will be generally less than 10 to 15 vehicles per day on average, including diesel customers, fuel tankers and deliveries with a maximum of 3 to 4 vehicles expected to access the card-only diesel bowsers during the a.m. and p.m. peak periods. Deliveries will be in the order of a maximum of 1 to 3 vehicles per day which would be undertaken outside peak trading hours (typically prior to 7 a.m. and after 9 p.m.).

Proposed access layout to North-West Coastal Highway is attached in **Appendix C** and will be negotiated with Main Roads Western Australia during the detailed design process. A minor modification to the southbound right-turn pocket at the North-West Coastal Highway/Eastward Road/Johnston Street intersection may be required to accommodate the proposed inbound right-turn pocket to the Southern Access but this will be confirmed during these discussions.

As noted previously, rubbish collection will be undertaken via a private contractor with a Waste Management Plan for the site developed in conjunction with the Council as part of the detailed design process. be undertaken via private waste collection arrangements on-site with all vehicles entering and exiting the site in forward gear. The proposed crossover widths to the boundary road network will be sufficient to accommodate circulation of service and delivery vehicles on the site.

A detailed review of the proposed fast food restaurant drive-throughs, the coffee kiosk drive-through and liquor store drive-through arrangements has also been considered and a detailed assessment of the queuing arrangement indicates that the proposed design is safe and appropriate with sufficient queuing/stacking space on approach to the drive-through as well as upon discharge into the car park. During the a.m. and p.m. peak hours, it is estimated that typically between 45% and 60% of the time less than 1 vehicle will be queuing within the fast food restaurant and coffee kiosk drive-throughs area with a maximum demand of between 27 and 32 vehicles per peak hour entering and exiting the drive through with no queuing within the broader car park of the development or onto the road network downstream from either Pass Street or North-West Coastal Highway due to the proposed layout of the respective facilities. The proposed double drive-through facility associated with the liquor store tenancy allows for the queuing of up to 6 vehicles at this location with the expectation that typically 45% of the time less than 1 vehicle will be queuing within the drive-through area. double-drive through arrangement. A brief of the circulation into and out of the drive-through facilities indicates that vehicles will enter these areas in forward gear in a line haul manner and exit in a line haul manner with no turns required. The proposed design of these facilities is appropriate and safe and has been designed in accordance with Australian Standards and other relevant traffic engineering design guidelines.

7.2 PARKING DEMAND AND SUPPLY

The required car parking supply for the service station proposal on the site, based upon the City's *Local Planning Scheme No. 1* indicates that the proposed on-site parking supply of 281 bays to serve the overall site with additional parking provided at the fuel bowser locations and within each of the respective drive-through facilities. The proposed on-site supply is appropriate for the proposed activities on the site and is consistent with the parking supply provided at similar developments within the Perth Metropolitan Area and regional areas and will result in efficient and effective movement on the site for customers and staff. The proposed layout of the car parking bays is consistent with Australian Standard *AS 2890.1.: Off-Street Parking* and *AS 2890.6: Off-Street Parking for People with Disabilities.* Formalised car parking bays, with the exception of that provided on the petrol station site, will be reciprocal across the site.

It can therefore be concluded that the proposed on-site car parking supply is consistent with good and orderly planning and with relevant Council and State Government planning guidelines.

8. CONCLUSIONS

The aim of this Transport Impact and Parking Assessment was to discuss the traffic likely to be generated by the proposed commercial development on Lot 3123, Pass Street, Wonthella in the City of Greater-Geraldton and to assess the impacts associated with anticipated site-generated upon the adjacent transport infrastructure.

The results of the SIDRA analysis for proposed access arrangements under the two major access scenarios (Scenarios 2 and 3) indicate that under both scenarios the proposed primary access points to North-West Coastal Highway (Southern Access) and Eastward Road (Eastward Road) will operate at acceptable Levels of Service; however, the preferred option is to allow for full movements at the Southern Access to North-West Coastal Highway in order to minimise right-turning movements at the Eastward Road full movements driveway in order to reduce site-generated traffic associated with tenancies other than the petrol station (Tenancy 1) at this location and to minimise conflict with entering and existing trucks utilising the diesel bowsers at the rear of the site and with entering and existing service/delivery vehicles associated with the discount supermarket and petrol tenancy, including fuel tankers. There is more than sufficient capacity at the southern access to allow for a full movements access inclusive of outbound right-turns at this location due to the gaps in traffic resulting from the 'platooning' effect introduced into northbound traffic discharging from the signalised intersection to the south. This is reflected in the results of the assessment at this location. The implementation of a full movements crossover at the Southern Access to North-West Coastal Highway will also result in improved Levels of Service at the Eastward Road Eastern Access and also reduce site-generated traffic impacts on Eastward Road between North-West Coastal Highway and Pass Street/Rifle Range Road with net site-generated traffic under this scenario (Scenario 2) in the order of 1,488 vpd in comparison to >2,000 vpd under Scenario 3. Scenario 2 will also limit the impact of site-generated traffic on eastbound right-turning traffic at the signalised North-West Coastal Highway/Eastward Road/Johnston Street. The northbound 95th percentile right-turning queue at the Southern Access under both Scenarios 2 and 3 does not exceed the proposed nominal right-turn pocket length of 40m and does not impede the southbound right-turn into the signalised North-West Coastal Highway/Eastward Road/Johnston Street intersection.

The results of the SIDRA assessment at the proposed Eastward Road Eastern Access are acceptable under both Scenarios 2 and 3 with the preferred option being Scenario 2 which minimises outbound right-turns at this location. Under both scenarios, the northbound left-turn movement does not impede through traffic travelling east and the southbound right-turn movement does not impede through traffic travelling west on Eastward Road. Under

Scenarios 2 and 3, the expected maximum downstream queue on Eastward Road does not impede traffic operations at the proposed Eastward Road Eastern Access.

The results of the SIDRA assessment of the signalised intersection at North-West Coastal Highway/Eastward Road/Johnston Street indicate that with the addition of site-generated traffic under both Scenarios 2 and 3 and under the future ultimate dual carriageway 2031 traffic scenario will have a minimal impact on queuing and vehicular delays with the majority of increase in traffic through this location resulting from growth in background traffic or passing traffic on the boundary road network under the 10-year future scenario.

The results of the road link assessment indicate that the boundary road network has sufficient practical capacity to accommodate site-generated traffic under the 'worst case' or full build-out scenario (without adjustment for multi-purpose trip making) without the need to implement road network improvements such as a dual carriageway on North-West Coastal Highway. The trigger for this upgrade will be the direct result of growth in background traffic passing the site and not site-generated traffic and will not be required within the 10 to 15-year time horizon.

A safety assessment undertaken for the proposal indicates that adequate sight distances are in place to accommodate the expected site-generated traffic to both North-West Coastal Highway and Eastward Road. A review of the crash history indicates that the proposal will have a minimal impact on the existing risk profile on the adjacent road network.

A review of the existing Restricted Access Vehicle (RAV) network in the vicinity of the site indicates that North-West Coastal Highway is classified as a RAV Network 8 which includes 36.5m vehicles; however, Eastward Road along the frontage of the site is only classified as 'a RAV Network 1 or permitted travel by vehicles up to 19m in length. Due to the proposal to allow for access into and out of the site by vehicles up to 36.5m in length, a reclassification of the section of Eastward Road between Pass Street and North-West Coastal Highway will be required to a minimum of a RAV Network 3. Discussions with the City of Greater Geraldton and Main Roads WA indicate that an application to reclassify the road to allow for 'as of right' travel by these vehicles will not be an issue with regard to safety and operations along this section of road as currently oversize vehicles are utilising this section of Eastward Road to access the industrial subdivision to the east and north with the existing crash history indicating that there is no impact on the existing risk profile.

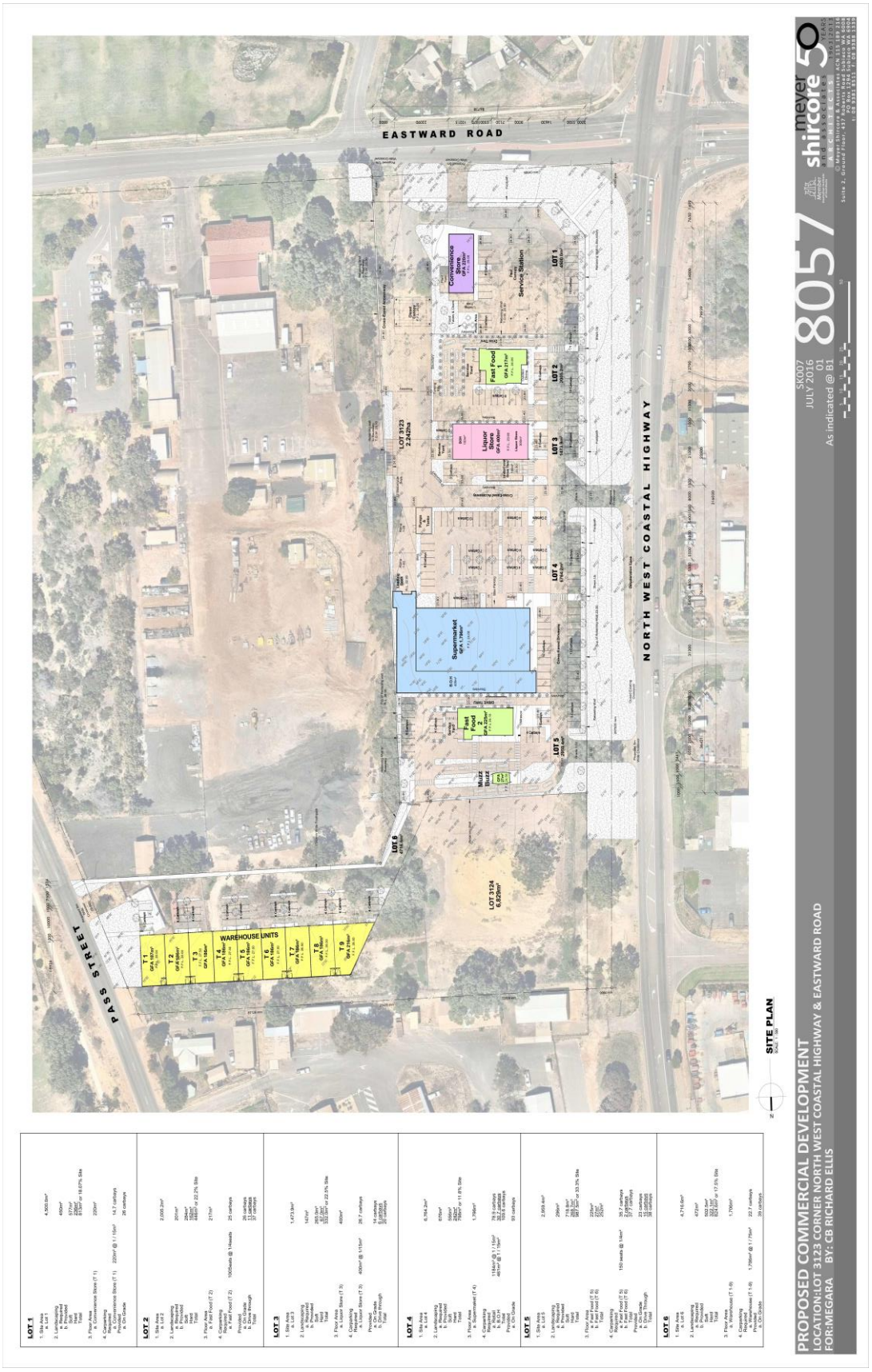
The proposed access arrangements to the site consist of three full movements crossovers, one each to the east side of North-West Coastal Highway (Southern Access), the south-west side of Pass Street and the north side of Eastward Road (Eastern Access), respectively; and two partial movements (left-in/left-out only) crossovers to the east side of North-West Coastal Highway (Northern Access) and the north side of Eastward Road (Western Access). The proposed access arrangements are safe, appropriate and will assist in effective and efficient distribution of site-generated traffic to and from the site with a minimal impact on the respective boundary road links and intersections. The proposed access arrangements will also allow for the minimal impact to traffic operations at the North-West Coastal Highway/Eastward Road/Johnston Street signalised intersection under the preferred Scenario 2 (Full Movements access at Southern Access to North-West Coastal Highway). The access arrangements will also allow for effective and efficient service and delivery to and from the site and access by vehicles greater than 19m in length. An indicative concept design for the proposed North-West Coastal Highway access points has been prepared for discussion with Main Roads Western Australia during the detailed design stages of the project.

A review of the proposed on-site circulation and car parking layout was undertaken to assess the adequacy of the proposed site access and circulation in addition to service/delivery areas on the site. The design of the proposed car parking areas adjacent to the rear of the building on the site has been reviewed using AutoTrack and the relevant Australian Standards and Austroads guidelines, with the proposed design considered adequate to accommodate on-site manoeuvring and circulation. Rubbish collection will be undertaken via private waste collection arrangements on-site with all vehicles entering and exiting the overall site in forward gear. The proposed crossover widths to the crossovers on North-West Coastal Highway, Eastward Road and Pass Street will be sufficient to accommodate circulation of service and delivery vehicles on the site. A queuing assessment of the proposed drive-through arrangements on the site for the respective tenancies indicates that the proposed layout is appropriate, safe and efficient and will not result in queuing downstream on to the boundary road network with all traffic demands associated with this element of the proposal contained on the site.

The required car parking supply for the service station proposal on the site indicates that the proposed on-site parking supply of 281 bays plus additional parking at the petrol bowsers and within the respective drive-through areas is consistent with the required statutory car parking supply outlined in these plans, guidelines and policies. The proposed on-site supply bays are appropriate for the proposed activities on the site and is consistent with the parking supply provided at similar developments within the Perth Metropolitan Area and will result in efficient and effective movement on the site for customers and staff. The proposed layout of the car parking bays is consistent with Australian Standard *AS 2890.1.: Off-Street Parking* and *AS 2890.6: Off-Street Parking for People with Disabilities.*

In conclusion, it should be noted that based both on a review of the modelled total traffic assessment and observed traffic operations of the boundary road system, the anticipated site-generated traffic associated with the proposed development can be accommodated within the existing practical capacity, functional road classification and existing geometry of the local road system.

APPENDIX A: SITE PLAN



LOT 1

1. Site Area a. Lot 1	4,500.0m²
2. Landscaping a. Required b. Provided Soft Hard Total	450m² 2,272m² 2282m² 51.62m² or 16.07% Site
3. Floor Area a. Commerce Store (T 1)	220m²
4. Carparking Required a. Commerce Store (T 1) Provided a. On Grass	22m² @ 1:10m² 14.7 carbays 220m² @ 1:10m² 22 carbays 28 carbays

LOT 2

1. Site Area a. Lot 2	2,005.2m²
2. Landscaping a. Required b. Provided Soft Total	201m² 256m² 1,800m² 4800.0 or 22.2% Site
3. Floor Area a. Fast Food (T 2)	217m²
4. Carparking Required a. Fast Food (T 2) Provided a. On Grass b. Drive Through Total	1005sqm @ 1/40sqm 25 carbays 26 carbays 6 carbays 32 carbays

LOT 3

1. Site Area a. Lot 3	1,473.9m²
2. Landscaping a. Required b. Provided Soft Hard Total	147m² 312m² 821.0m² 1133.0m² or 22.2% Site
3. Floor Area a. Liquor Store (T 3)	400m²
4. Carparking Required Provided Store (T 3) Provided a. On Grass b. Drive Through Total	400m² @ 1/15m² 26.7 carbays 54 carbays 6 carbays 30 carbays

LOT 4

1. Site Area a. Lot 4	6,764.3m²
2. Landscaping a. Required b. Provided Soft Hard Total	676m² 1,196m² 7824m² 7824m² or 11.8% Site
3. Floor Area a. Supermaxed (T 4)	1,196m²
4. Carparking Required a. B.O.H. b. F.O.H. Provided	114m² @ 1:15m² 401m² @ 1:10m² 7.6 carbays 40.1 carbays 93 carbays

LOT 5

1. Site Area a. Lot 5	2,959.4m²
2. Landscaping a. Required b. Provided Soft Total	296m² 718.9m² 1,800m² 887.9m² or 33.5% Site
3. Floor Area a. Fast Food (T 5) b. Fast Food (T 6)	224m² 224m²
4. Carparking a. Fast Food (T 5) b. Fast Food (T 6) Total Provided a. On Grass b. Drive Through Total	150 seats @ 1/4m² 37.5 carbays 37.5 carbays 75 carbays 18 carbays 93 carbays

LOT 6

1. Site Area a. Lot 6	4,716.6m²
2. Landscaping a. Required b. Provided Soft Hard Total	472m² 1612.2m² 1800.0m² 3412.2m² or 17.5% Site
3. Floor Area a. Warehouse (T 1-9)	1,746m²
4. Carparking Required a. Warehouse (T 1-9) Provided a. On Grass	1,746m² @ 1:75m² 22.7 carbays 39 carbays

APPENDIX B: SIDRA OUTPUTS

MOVEMENT SUMMARY

Site: North West Coastal Highway/ Eastward Road/Johnston Street - Future A.M. Peak Hour(Existing Geom + RO

Future A.M. Peak Hour
Signals - Fixed Time Cycle Time = 55 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: North West Coastal Hwy South											
1	L	93	5.0	0.141	4.2	LOS A	0.9	6.7	0.34	0.47	36.1
2	T	481	10.0	0.451	28.8	LOS C	7.1	53.8	0.86	0.82	33.8
3	R	78	10.0	0.247	30.0	LOS C	2.8	21.1	0.89	0.76	33.1
Approach		652	9.3	0.451	25.4	LOS C	7.1	53.8	0.79	0.76	34.0
East: Eastward Road E											
4	L	88	10.0	0.149	13.5	LOS B	1.5	11.6	0.44	0.72	44.0
5	T	408	5.0	0.541	22.4	LOS C	6.8	49.4	0.94	0.77	35.2
6	R	76	10.0	0.257	29.4	LOS C	2.7	20.4	0.88	0.76	33.4
Approach		573	6.4	0.541	21.9	LOS C	6.8	49.4	0.86	0.76	36.0
North: North West Coastal Hwy North											
7	L	82	5.0	0.070	8.9	LOS A	0.5	3.9	0.30	0.66	48.2
8	T	585	10.0	0.549	22.6	LOS C	8.6	65.2	0.89	0.80	27.0
9	R	85	5.0	0.262	26.0	LOS C	3.0	22.1	0.90	0.75	25.8
Approach		753	8.9	0.549	21.5	LOS C	8.6	65.2	0.83	0.78	28.4
West: Johnston Road W											
10	L	165	5.0	0.246	2.6	LOS A	1.0	7.4	0.28	0.43	28.2
11	T	196	5.0	0.086	5.0	LOS A	1.7	12.3	0.44	0.35	50.8
12	R	86	5.0	0.468	27.1	LOS C	3.4	25.1	0.98	0.75	15.5
Approach		447	5.0	0.468	8.4	LOS A	3.4	25.1	0.49	0.46	30.1
All Vehicles		2425	7.7	0.549	20.2	LOS C	8.6	65.2	0.76	0.71	31.8

MOVEMENT SUMMARY

Site: North West Coastal Highway/ Eastward Road/JohnstonStreet - Future P.M. Peak Hour (Existing Geom + RO)

Future P.M. Peak Hour
Signals - Fixed Time Cycle Time = 50 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: North West Coastal Hwy South											
1	L	83	5.0	0.118	4.1	LOS A	0.7	5.4	0.35	0.47	36.2
2	T	381	10.0	0.433	29.3	LOS C	5.6	42.5	0.89	0.81	33.5
3	R	69	10.0	0.200	27.0	LOS C	2.2	16.9	0.87	0.75	34.7
Approach		533	9.2	0.433	25.1	LOS C	5.6	42.5	0.81	0.75	34.1
East: Eastward Road E											
4	L	69	10.0	0.117	14.0	LOS B	1.2	9.2	0.48	0.72	43.6
5	T	288	5.0	0.382	19.7	LOS B	4.5	32.8	0.91	0.72	36.8
6	R	54	10.0	0.193	27.3	LOS C	1.8	13.4	0.87	0.74	34.5
Approach		412	6.5	0.382	19.7	LOS B	4.5	32.8	0.83	0.73	37.5
North: North West Coastal Hwy North											
7	L	73	5.0	0.067	9.0	LOS A	0.5	3.6	0.33	0.66	48.0
8	T	560	10.0	0.637	24.0	LOS C	8.3	62.8	0.95	0.85	26.5
9	R	137	5.0	0.382	23.9	LOS C	4.3	31.4	0.91	0.77	26.6
Approach		769	8.6	0.637	22.5	LOS C	8.3	62.8	0.88	0.82	27.9
West: Johnsotn Road W											
10	L	249	5.0	0.335	2.6	LOS A	1.4	10.2	0.30	0.45	28.2
11	T	360	5.0	0.170	5.8	LOS A	3.1	22.9	0.51	0.42	49.6
12	R	126	5.0	0.549	23.7	LOS C	4.4	32.2	0.98	0.81	16.0
Approach		736	5.0	0.549	7.8	LOS A	4.4	32.2	0.52	0.50	31.5
All Vehicles		2449	7.3	0.637	18.2	LOS B	8.3	62.8	0.75	0.69	31.7

MOVEMENT SUMMARY

Site: North West Coastal Highway/ Eastward Road/Johnston Street - Future A.M. Peak Hour(Existing Geo. NO RO

Future A.M. Peak Hour
Signals - Fixed Time Cycle Time = 55 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: North West Coastal Hwy South											
1	L	93	5.0	0.141	4.2	LOS A	0.9	6.7	0.34	0.47	36.1
2	T	481	10.0	0.451	28.8	LOS C	7.1	53.8	0.86	0.82	33.8
3	R	78	10.0	0.247	30.0	LOS C	2.8	21.1	0.89	0.76	33.1
Approach		652	9.3	0.451	25.4	LOS C	7.1	53.8	0.79	0.76	34.0
East: Eastward Road E											
4	L	88	10.0	0.149	13.5	LOS B	1.5	11.6	0.44	0.72	44.0
5	T	408	5.0	0.541	22.4	LOS C	6.8	49.4	0.94	0.77	35.2
6	R	121	10.0	0.410	30.2	LOS C	4.2	32.3	0.91	0.78	33.0
Approach		618	6.7	0.541	22.6	LOS C	6.8	49.4	0.87	0.77	35.7
North: North West Coastal Hwy North											
7	L	82	5.0	0.070	8.9	LOS A	0.5	3.9	0.30	0.66	48.2
8	T	585	10.0	0.549	22.6	LOS C	8.6	65.2	0.89	0.80	27.0
9	R	85	5.0	0.262	26.0	LOS C	3.0	22.1	0.90	0.75	25.8
Approach		753	8.9	0.549	21.5	LOS C	8.6	65.2	0.83	0.78	28.4
West: Johnston Road W											
10	L	165	5.0	0.250	2.6	LOS A	1.0	7.4	0.28	0.43	28.2
11	T	196	5.0	0.086	5.0	LOS A	1.7	12.3	0.44	0.35	50.8
12	R	86	5.0	0.468	27.1	LOS C	3.4	25.1	0.98	0.75	15.5
Approach		447	5.0	0.468	8.4	LOS A	3.4	25.1	0.49	0.46	30.1
All Vehicles		2470	7.7	0.549	20.4	LOS C	8.6	65.2	0.77	0.71	31.9

MOVEMENT SUMMARY

Site: North West Coastal Highway/ Eastward Road/Johnston Street- Future P.M. Peak Hour(Existing Geo. NO RO

Future P.M. Peak Hour
Signals - Fixed Time Cycle Time = 50 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: North West Coastal Hwy South											
1	L	83	5.0	0.118	4.1	LOS A	0.7	5.4	0.35	0.47	36.2
2	T	381	10.0	0.433	29.3	LOS C	5.6	42.5	0.89	0.81	33.5
3	R	69	10.0	0.200	27.0	LOS C	2.2	16.9	0.87	0.75	34.7
Approach		533	9.2	0.433	25.1	LOS C	5.6	42.5	0.81	0.75	34.1
East: Eastward Road E											
4	L	69	10.0	0.117	14.0	LOS B	1.2	9.2	0.48	0.72	43.6
5	T	288	5.0	0.382	19.7	LOS B	4.5	32.8	0.91	0.72	36.8
6	R	122	10.0	0.439	28.6	LOS C	4.0	30.4	0.92	0.79	33.8
Approach		480	7.0	0.439	21.1	LOS C	4.5	32.8	0.85	0.74	36.8
North: North West Coastal Hwy North											
7	L	73	5.0	0.067	9.0	LOS A	0.5	3.6	0.33	0.66	48.0
8	T	560	10.0	0.637	24.0	LOS C	8.3	62.8	0.95	0.85	26.5
9	R	137	5.0	0.382	23.9	LOS C	4.3	31.4	0.91	0.77	26.6
Approach		769	8.6	0.637	22.5	LOS C	8.3	62.8	0.88	0.82	27.9
West: Johnston Road W											
10	L	249	5.0	0.364	2.8	LOS A	1.6	11.7	0.33	0.46	28.1
11	T	360	5.0	0.170	5.8	LOS A	3.1	22.9	0.51	0.42	49.6
12	R	126	5.0	0.549	23.7	LOS C	4.4	32.2	0.98	0.81	16.0
Approach		736	5.0	0.549	7.8	LOS A	4.4	32.2	0.53	0.50	31.5
All Vehicles		2518	7.4	0.637	18.5	LOS B	8.3	62.8	0.76	0.70	31.7

MOVEMENT SUMMARY

Site: NWCH/Southern Access - Future A.M. Peak Hour (10-Yr) - Full Movements/Existing Geometry

Future A.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: North West Coastal Hwy South											
2	T	668	10.0	0.365	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	61	5.0	0.091	12.0	LOS B	0.3	2.3	0.55	0.84	45.3
Approach		729	9.6	0.365	1.0	LOS B	0.3	2.3	0.05	0.07	58.4
East: Southern Access East											
4	L	24	5.0	0.023	10.0	LOS B	0.1	0.6	0.45	0.72	47.0
6	R	45	5.0	0.139	19.3	LOS C	0.6	4.5	0.80	0.93	39.4
Approach		69	5.0	0.139	16.0	LOS C	0.6	4.5	0.68	0.86	41.7
North: North West Coastal Hwy North											
7	L	32	5.0	0.018	8.4	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	728	10.0	0.398	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		760	9.8	0.398	0.3	LOS A	0.0	0.0	0.00	0.03	59.4
All Vehicles		1559	9.5	0.398	1.4	NA	0.6	4.5	0.05	0.08	57.9

MOVEMENT SUMMARY

Site: NWCH/Southern Access - Future P.M. Peak Hour (10-Yr) - Full Movements/Existing Geometry

Future P.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: North West Coastal Hwy South											
2	T	616	10.0	0.336	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	85	5.0	0.137	12.6	LOS B	0.5	3.5	0.60	0.87	44.7
Approach		701	9.4	0.336	1.5	LOS B	0.5	3.5	0.07	0.11	57.6
East: Southern Access East											
4	L	42	5.0	0.042	10.3	LOS B	0.2	1.2	0.47	0.76	46.9
6	R	68	5.0	0.221	20.8	LOS C	1.0	7.4	0.82	0.96	38.3
Approach		111	5.0	0.221	16.8	LOS C	1.0	7.4	0.69	0.88	41.2
North: North West Coastal Hwy North											
7	L	56	5.0	0.031	8.4	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	769	10.0	0.420	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		825	9.7	0.420	0.6	LOS A	0.0	0.0	0.00	0.05	59.1
All Vehicles		1637	9.2	0.420	2.1	NA	1.0	7.4	0.08	0.13	56.8

MOVEMENT SUMMARY

Site: NWCH/Southern Access - Future A.M. Peak Hour (10-Yr) - RILILO Only/Existing Geometry

Future A.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: North West Coastal Hwy South											
2	T	668	10.0	0.365	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	61	5.0	0.091	12.1	LOS B	0.3	2.3	0.55	0.84	45.2
Approach		729	9.6	0.365	1.0	LOS B	0.3	2.3	0.05	0.07	58.4
East: Southern Access East											
4	L	24	5.0	0.023	10.0	LOS B	0.1	0.6	0.45	0.72	47.0
Approach		24	5.0	0.023	10.0	LOS B	0.1	0.6	0.45	0.72	47.0
North: North West Coastal Hwy North											
7	L	32	5.0	0.018	8.4	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	728	10.0	0.398	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		760	9.8	0.398	0.3	LOS A	0.0	0.0	0.00	0.03	59.4
All Vehicles		1513	9.6	0.398	0.8	NA	0.3	2.3	0.03	0.06	58.7

LOS (Aver. Int. Delay): NA. The average intersection delay is not a good LOS measure for two-way sign control due to zero delays associated with major road movements.
Level of Service (Worst Movement): LOS B. LOS Method for individual vehicle movements: Delay (HCM).

MOVEMENT SUMMARY

Site: NWCH/Southern Access - Future P.M. Peak Hour (10-Yr) - RILILO Only/Existing Geometry

Future P.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: North West Coastal Hwy South											
2	T	616	10.0	0.336	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	85	5.0	0.130	12.3	LOS B	0.5	3.4	0.58	0.86	44.9
Approach		701	9.4	0.336	1.5	LOS B	0.5	3.4	0.07	0.10	57.7
East: Southern Access East											
4	L	42	5.0	0.040	10.1	LOS B	0.2	1.1	0.45	0.75	47.0
Approach		42	5.0	0.040	10.1	LOS B	0.2	1.1	0.45	0.75	47.0
North: North West Coastal Hwy North											
7	L	56	5.0	0.031	8.4	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	728	10.0	0.398	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		784	9.6	0.398	0.6	LOS A	0.0	0.0	0.00	0.05	59.1
All Vehicles		1527	9.4	0.398	1.3	NA	0.5	3.4	0.04	0.09	58.0

MOVEMENT SUMMARY

Site: NWCH/Southern Access - Future A.M. Peak Hour (Dual Carriageway Full Movements)

Future A.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: North West Coastal Hwy South											
2	T	808	10.0	0.221	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	39	5.0	0.077	13.8	LOS B	0.3	1.9	0.67	0.88	43.6
Approach		847	9.8	0.221	0.6	LOS B	0.3	1.9	0.03	0.04	59.0
East: Southern Access East											
4	L	24	5.0	0.028	11.0	LOS B	0.1	0.8	0.53	0.78	46.2
6	R	45	5.0	0.340	44.7	LOS E	1.5	11.2	0.94	1.02	27.0
Approach		69	5.0	0.340	32.9	LOS E	1.5	11.2	0.80	0.94	31.6
North: North West Coastal Hwy North											
7	L	32	5.0	0.018	8.4	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	1027	10.0	0.281	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		1059	9.9	0.281	0.2	LOS A	0.0	0.0	0.00	0.02	59.6
All Vehicles		1976	9.6	0.340	1.6	NA	1.5	11.2	0.04	0.06	57.5

MOVEMENT SUMMARY

Site: NWCH/Southern Access - Future P.M. Peak Hour (Dual Carriageway Full Movements)

Future P.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: North West Coastal Hwy South											
2	T	794	10.0	0.217	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	73	5.0	0.139	13.7	LOS B	0.5	3.5	0.67	0.88	43.7
Approach		867	9.6	0.217	1.2	LOS B	0.5	3.5	0.06	0.07	58.2
East: Southern Access East											
4	L	42	5.0	0.047	10.8	LOS B	0.2	1.3	0.52	0.80	46.4
6	R	68	5.0	0.402	33.5	LOS D	1.7	12.2	0.91	1.02	31.4
Approach		111	5.0	0.403	24.9	LOS D	1.7	12.2	0.76	0.94	35.8
North: North West Coastal Hwy North											
7	L	56	5.0	0.031	8.4	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	968	10.0	0.264	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		1024	9.7	0.264	0.5	LOS A	0.0	0.0	0.00	0.04	59.3
All Vehicles		2002	9.4	0.403	2.1	NA	1.7	12.2	0.07	0.10	56.7

MOVEMENT SUMMARY

Site: NWCH/Southern Access - Future A.M.
Peak Hour - (Dual Carriageway RILILO)

Future A.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: North West Coastal Hwy South											
2	T	794	10.0	0.217	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	61	5.0	0.122	14.1	LOS B	0.4	3.1	0.68	0.89	43.4
Approach		855	9.6	0.217	1.0	LOS B	0.4	3.1	0.05	0.06	58.4
East: Southern Access East											
4	L	24	5.0	0.028	11.0	LOS B	0.1	0.8	0.53	0.78	46.2
Approach		24	5.0	0.028	11.0	LOS B	0.1	0.8	0.53	0.78	46.2
North: North West Coastal Hwy North											
7	L	32	5.0	0.018	8.4	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	1027	10.0	0.281	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		1059	9.9	0.281	0.2	LOS A	0.0	0.0	0.00	0.02	59.6
All Vehicles		1939	9.7	0.281	0.7	NA	0.4	3.1	0.03	0.05	58.9

MOVEMENT SUMMARY

Site: NWCH/Southern Access - Future P.M.
Peak Hour - (Dual Carriageway RILILO)

Future P.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: North West Coastal Hwy South											
2	T	794	10.0	0.217	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
3	R	85	5.0	0.163	13.9	LOS B	0.6	4.2	0.67	0.89	43.6
Approach		879	9.5	0.217	1.3	LOS B	0.6	4.2	0.07	0.09	57.9
East: Southern Access East											
4	L	42	5.0	0.047	10.8	LOS B	0.2	1.3	0.52	0.80	46.4
Approach		42	5.0	0.047	10.8	LOS B	0.2	1.3	0.52	0.80	46.4
North: North West Coastal Hwy North											
7	L	56	5.0	0.031	8.4	LOS A	0.0	0.0	0.00	0.67	49.0
8	T	968	10.0	0.264	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		1024	9.7	0.264	0.5	LOS A	0.0	0.0	0.00	0.04	59.3
All Vehicles		1946	9.5	0.264	1.1	NA	0.6	4.2	0.04	0.08	58.3

MOVEMENT SUMMARY

Site: Eastward Road Eastern Access - Future A.M. Full Movements at SA

Future A.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Eastward Road West											
1	L	2	100.0	0.067	11.1	LOS B	0.0	0.0	0.00	1.30	47.5
2	T	242	10.0	0.067	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		244	10.8	0.067	0.1	LOS B	0.0	0.0	0.00	0.01	59.8
North: Eastward Road East											
8	T	557	10.0	0.159	1.0	LOS A	2.3	17.6	0.24	0.00	55.4
9	R	8	50.0	0.159	11.8	LOS B	2.3	17.6	0.51	0.93	49.0
Approach		565	10.6	0.159	1.2	LOS B	2.3	17.6	0.25	0.01	55.3
West: Eastern Access Full Movements - North											
10	L	7	50.0	0.011	11.4	LOS B	0.1	0.6	0.34	0.61	47.1
12	R	16	50.0	0.159	45.9	LOS E	0.6	6.4	0.86	0.95	26.9
Approach		23	50.0	0.159	34.9	LOS E	0.6	6.4	0.70	0.85	31.2
All Vehicles		832	11.8	0.159	1.8	NA	2.3	17.6	0.19	0.04	55.4

MOVEMENT SUMMARY

Site: Eastward Road Eastern Access - Future P.M. Full Movements at SA

Future P.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Eastward Road West											
1	L	4	100.0	0.092	11.1	LOS B	0.0	0.0	0.00	1.29	47.5
2	T	329	10.0	0.092	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		333	11.0	0.092	0.1	LOS B	0.0	0.0	0.00	0.01	59.8
North: Eastward Road East											
8	T	601	10.0	0.175	1.5	LOS A	2.7	21.0	0.28	0.00	54.7
9	R	13	50.0	0.175	12.9	LOS B	2.7	21.0	0.61	0.94	48.2
Approach		614	10.8	0.175	1.7	LOS B	2.7	21.0	0.29	0.02	54.6
West: Eastern Access Full Movements - North											
10	L	11	50.0	0.017	11.3	LOS B	0.1	0.6	0.32	0.65	47.2
12	R	21	50.0	0.199	42.5	LOS E	0.8	7.5	0.86	0.97	28.1
Approach		32	50.0	0.199	32.1	LOS E	0.8	7.5	0.68	0.86	32.5
All Vehicles		978	12.1	0.199	2.2	NA	2.7	21.0	0.20	0.04	55.0

MOVEMENT SUMMARY

Site: Eastward Road Eastern Access - Future A.M. RILILO at SA

Future A.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Eastward Road West											
1	L	2	100.0	0.069	11.1	LOS B	0.0	0.0	0.00	1.30	47.5
2	T	248	10.0	0.069	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		250	10.8	0.069	0.1	LOS B	0.0	0.0	0.00	0.01	59.8
North: Eastward Road East											
8	T	557	10.0	0.159	1.1	LOS A	2.3	17.7	0.25	0.00	55.4
9	R	8	50.0	0.159	11.9	LOS B	2.3	17.7	0.52	0.93	48.9
Approach		565	10.6	0.159	1.2	LOS B	2.3	17.7	0.25	0.01	55.3
West: Eastern Access Full Movements - North											
10	L	7	50.0	0.012	11.4	LOS B	0.1	0.6	0.35	0.62	47.1
12	R	61	50.0	0.623	72.0	LOS F	3.5	34.5	0.93	1.14	20.4
Approach		68	50.0	0.623	65.5	LOS F	3.5	34.5	0.87	1.09	21.7
All Vehicles		883	13.7	0.623	5.9	NA	3.5	34.5	0.23	0.10	50.3

MOVEMENT SUMMARY

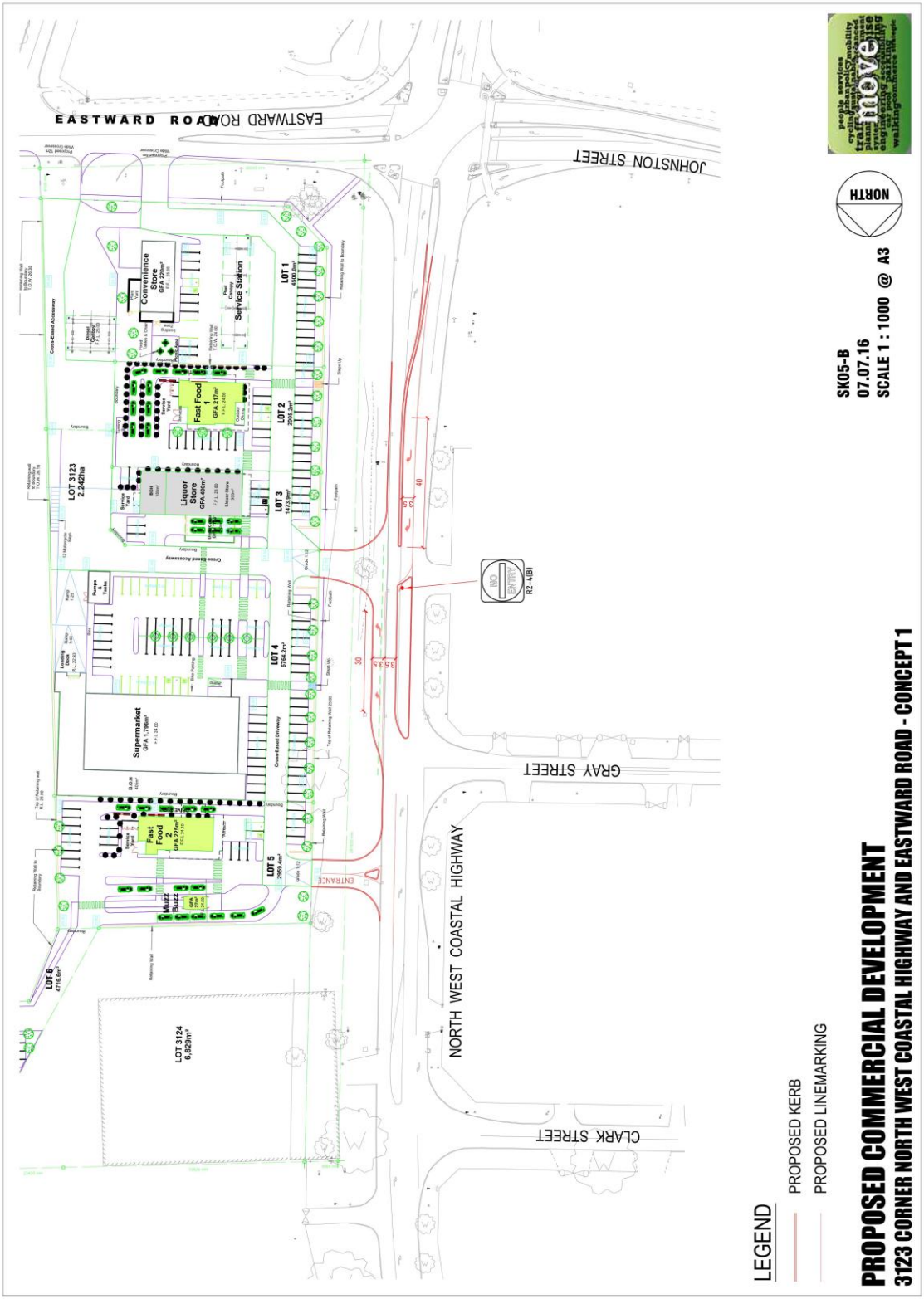
Site: Eastward Road Eastern Access - Future P.M. RILILO at SA

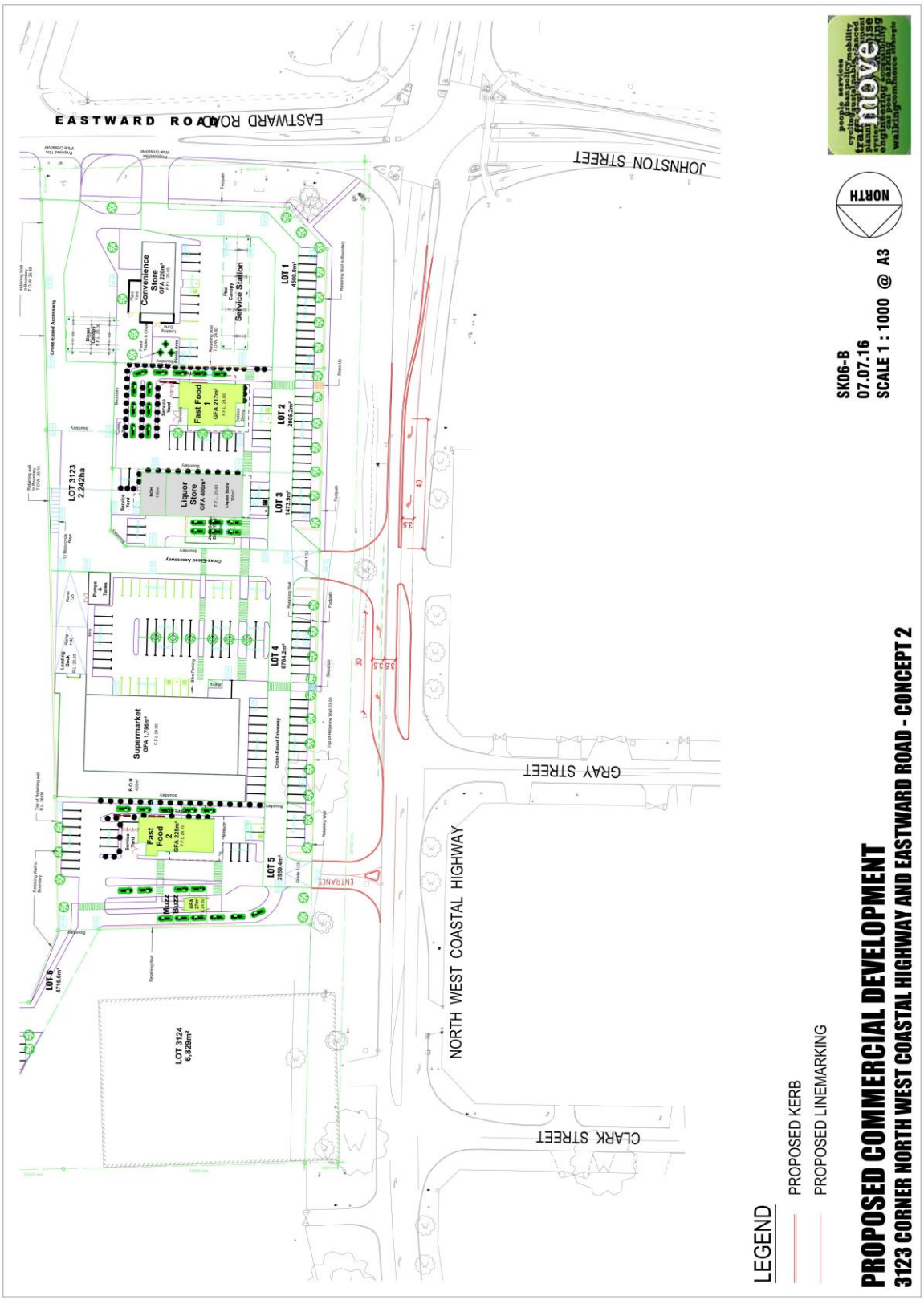
Future P.M. Peak Hour
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flow veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Eastward Road West											
1	L	11	100.0	0.100	11.1	LOS B	0.0	0.0	0.00	1.24	47.5
2	T	346	10.0	0.099	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
Approach		357	12.8	0.099	0.3	LOS B	0.0	0.0	0.00	0.04	59.4
North: Eastward Road East											
8	T	391	10.0	0.118	1.5	LOS A	1.7	13.2	0.26	0.00	55.1
9	R	13	50.0	0.118	12.9	LOS B	1.7	13.2	0.58	0.93	48.0
Approach		403	11.3	0.118	1.8	LOS B	1.7	13.2	0.27	0.03	54.8
West: Eastern Access Full Movements - North											
10	L	11	50.0	0.018	12.3	LOS B	0.1	0.9	0.41	0.65	46.1
12	R	89	50.0	0.688	61.8	LOS F	4.6	45.6	0.92	1.22	22.5
Approach		100	50.0	0.686	56.6	LOS F	4.6	45.6	0.87	1.16	23.8
All Vehicles		860	16.4	0.686	7.6	NA	4.6	45.6	0.23	0.16	49.0

APPENDIX C: NORTH-WEST COASTAL HIGHWAY ACCESS CONCEPT


EASTWARD ROAD
JOHNSTON STREET
GRAY STREET
CLARK STREET
NORTH WEST COASTAL HIGHWAY
ENTRANCE
Convenience Store
Service Station
Fast Food 1
Liquor Store
Supermarket
Fast Food 2
Mutz Buzz
LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 8
LOT 3123
2.242ha
LOT 3124
6,829m²
NO ENTRY
R2-4(B)
NORTH
SK05-B
07.07.16
SCALE 1 : 1000 @ A3
LEGEND
PROPOSED KERB
PROPOSED LINEMARKING
PROPOSED COMMERCIAL DEVELOPMENT
3123 CORNER NORTH WEST COASTAL HIGHWAY AND EASTWARD ROAD - CONCEPT 1


EASTWARD ROAD
JOHNSTON STREET
GRAY STREET
CLARK STREET
NORTH WEST COASTAL HIGHWAY
ENTRANCE
LOT 3123
2.242ha
LOT 3124
6,829m²
LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 8
Convenience Store
Service Station
Fast Food 1
Liquor Store
Supermarket
Fast Food 2
NORTH
SK06-B
07.07.16
SCALE 1 : 1000 @ A3
LEGEND
PROPOSED KERB
PROPOSED LINEMARKING
PROPOSED COMMERCIAL DEVELOPMENT
3123 CORNER NORTH WEST COASTAL HIGHWAY AND EASTWARD ROAD - CONCEPT 2