

Transport Impact Assessment

Sorrento Activity Centre Structure Plan

CW1200106



Prepared for
Megara

3 June 2022



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Table of Contents

1	Introduction	6
	1.1 Background	6
2	Existing Situation	7
	2.1 Existing Site Context	7
	2.2 Existing Zoning	8
	2.3 Existing Land Uses	8
	2.4 Existing Road Network	9
	2.5 Existing Key Intersections	10
	2.6 Existing Traffic Volumes	12
	2.7 Existing Pedestrian/Cycle Networks	12
	2.8 Existing Public Transport Facilities	13
	2.9 Crash Assessment	14
3	Changes to Surrounding Transport Network	15
	3.1 Road Network	15
	3.2 Pedestrian/Cycle Networks	15
	3.3 Public Transport Services	15
4	Proposed Changes to the Surrounding Environment	16
	4.1 West Coast Drive	16
	4.2 Padbury Circle	18
	4.3 The Plaza	19
5	Integration with Surrounding Area	20
	5.1 Surrounding Attractors/Generators	20
	5.2 Proposed Changes to Surrounding Land Uses	20
	5.3 Level of Accessibility	21
6	Development Proposal	22
	6.1 Proposed Development	22
	6.2 Vehicle Parking Requirements and Provision	23
	6.3 Vehicular Access Arrangements	24
	6.4 Service and Waste Vehicle Provision	25
	6.5 Pedestrian and Cyclist Access	27
7	Analysis of Transport Network	29
	7.1 Assessment Years and Time Period	29
	7.2 Background Traffic	29
	7.3 Traffic Generation	29
	7.4 Future Year Traffic Growth	31
	7.5 Key Assumptions	31
	7.6 Traffic Distribution and Assignment	31
	7.7 Intersection Performance	38

Appendices

Appendix A WAPC Transport Impact Assessment Checklist

Appendix B Sorrento Activity Centre Plan

Tables

Table 2-1	Road Network Description	10
Table 2-2	Existing Mid-block Traffic Volumes (Two-way)	12
Table 2-3	Bus Services within the Vicinity of the Site	13
Table 2-4	Total Crashes	14
Table 2-5	Intersection Crashes	14
Table 2-6	Midblock Crashes	14
Table 6-1	Statutory Parking Requirements	23
Table 7-1	Trip Generation Rates	29
Table 7-2	Directional Distribution	29
Table 7-3	Total Trip Generation	30
Table 7-4	Trip Generation Rates	30
Table 7-5	Directional Distribution	30
Table 7-6	Total Trip Generation	30
Table 7-7	Comparison of Existing Traffic and Proposed Development Traffic	31
Table 7-8	Level of Service (LOS) Performance Criteria	38
Table 7-9	Scenario 1 - SIDRA Results – West Coast Drive/The Plaza Intersection	39
Table 7-10	Scenario 1 - SIDRA Results – West Coast Drive/Raleigh Road Intersection	40
Table 7-11	Scenario 2 - SIDRA Results – West Coast Drive/The Plaza Intersection	41
Table 7-12	Scenario 2 - SIDRA Results – West Coast Drive/Raleigh Road Intersection	41
Table 7-13	Scenario 2 - SIDRA Results – West Coast Drive/ Site Access Intersection	42
Table 7-14	Scenario 3 - SIDRA Results – West Coast Drive/The Plaza Intersection	43
Table 7-15	Scenario 3 - SIDRA Results – West Coast Drive/The Plaza Intersection (with modifications)	44
Table 7-16	Scenario 3 - SIDRA Results – West Coast Drive/Raleigh Road Intersection	44
Table 7-17	Scenario 4 - SIDRA Results – West Coast Drive/The Plaza Intersection	45
Table 7-18	Scenario 4 - SIDRA Results – West Coast Drive/The Plaza Intersection (with modifications)	45
Table 7-19	Scenario 4 - SIDRA Results – West Coast Drive/Raleigh Road Intersection	46
Table 7-20	Scenario 4 - SIDRA Results – West Coast Drive/Site Access Intersection	46

Figures

Figure 1-1	Site Location	6
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Figure 2-1	Site Location	7
Figure 2-2	LPS3 Zoning Map	8
Figure 2-3	Existing Site Context	8
Figure 2-4	Existing Road Network Surrounding the Site	9
Figure 2-5	West Coast Drive and The Plaza Intersection	10
Figure 2-6	West Coast Drive and Raleigh Road Intersection	11
Figure 2-7	The Plaza and Padbury Circle Intersection	11
Figure 2-8	Pedestrian / Cyclist facilities in the vicinity	12
Figure 2-9	Public Transport Routes Vicinity of the Site	13
Figure 3-1	Long Term Cycling Network	15
Figure 4-1	Existing Pedestrian Crossings on West Coast Drive	16
Figure 4-2	Bus Stop Locations and Proposed Re-Location	17
Figure 4-3	Proposed Pedestrian Crossing to Geneff Park	18
Figure 4-4	Proposed Changes to The Plaza	19
Figure 5-1	Surrounding attractors/generators	20
Figure 6-1	Ground Floor Plan Layout	22
Figure 6-2	Site Access Location	24
Figure 6-3	Service and Waste Collection Bay	25
Figure 6-4	Swept Path Diagram for an 8.8m Truck	26
Figure 6-5	Proposed Pedestrian Movements	27
Figure 6-6	Residential Bike Store	28
Figure 7-1	Residential Development Traffic Distribution	32
Figure 7-2	Commercial/Visitor Development Traffic Distribution	33
Figure 7-3	Scenario 1 Traffic Volumes	34
Figure 7-4	Scenario 2 Traffic Volumes	35
Figure 7-5	Scenario 3 Traffic Volumes	36
Figure 7-6	Scenario 4 Traffic Volumes	37
Figure 7-7	SIDRA Layout - West Coast Drive/The Plaza Intersection	39
Figure 7-8	SIDRA Layout - West Coast Drive/Raleigh Road Intersection	40
Figure 7-9	SIDRA Layout - West Coast Drive/Site Access Intersection	42
Figure 7-10	SIDRA Layout - West Coast Drive/The Plaza Intersection (with modifications)	43

1 Introduction

1.1 Background

Cardno has been commissioned by Megara to prepare a Transport Impact Assessment (TIA) for the proposed redevelopment of the Sorrento Plaza at the intersection of West Coast Drive, The Plaza and Padbury Circle, Joondalup.

Specifically, this report aims to assess the impacts of the proposed development upon the adjacent road network, as well as the need for and use of parking and the opportunities related to pedestrian, cycling and public transport access.

This report has been prepared in accordance with the *Western Australian Planning Commission (WAPC) Transport Impact Assessment Guidelines Volume 2 – Planning Schemes, Structure Plans & Activity Centre Plans (2016)*. The checklist form, included in these guidelines is enclosed in **Appendix A**.

An aerial image of the Site is shown in **Figure 1-1**.

Figure 1-1 Site Location



2 Existing Situation

2.1 Existing Site Context

The proposed development site (the Site) is located on the eastern side of West Coast Drive. Lots 2, 147, 148 and 149 West Coast Drive are currently occupied by restaurants and commercial developments, while Lot 146 Padbury Circle is currently vacant and Lot 145 is occupied by a single dwelling.

The Site is bounded by a service station to the south, short-stay accommodation to the north, residential lots to the east, and Marmion Beach to the west.

The location of the Site is illustrated in **Figure 2-1**.

Figure 2-1 Site Location

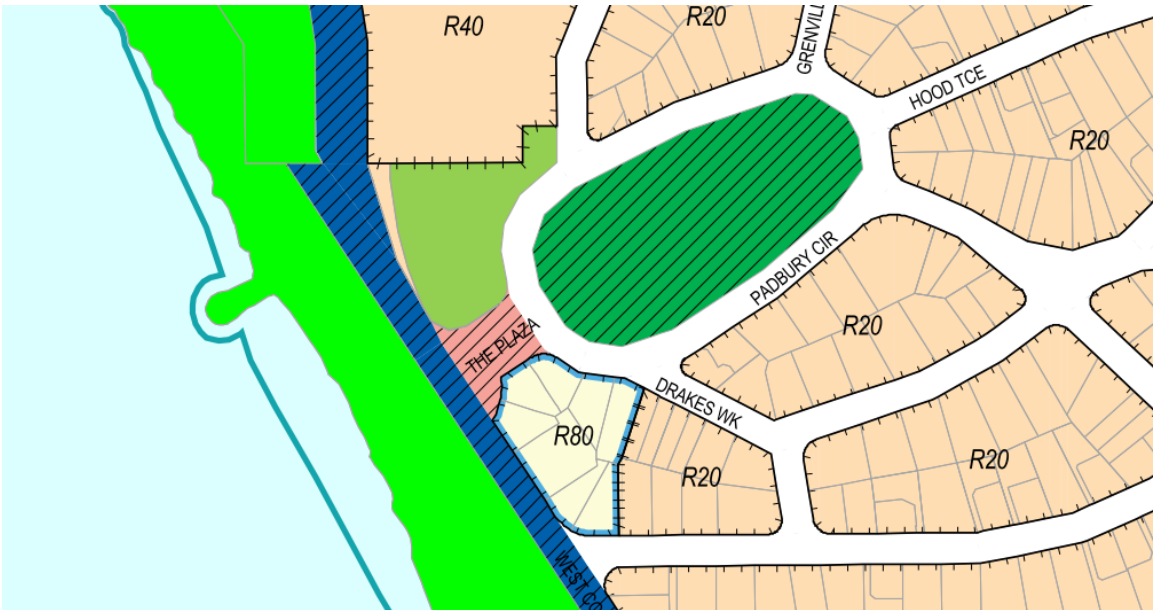


Source: Metromap (2021)

2.2 Existing Zoning

According to the City of Joondalup Local Planning Scheme (LPS) No. 3 illustrated in **Figure 2-2**, the Site is currently zoned as 'Centre' with R Codes R80 category. Adjacent lots are also zoned as 'Centre'. Geneff Park located in the northeast direction is currently reserved for 'Public Open Space'. The Sorrento beachfront is reserved as 'Public Open Space'. A lot zoned as 'Private Community Purposes' is located to the northwest. Other surrounding lots are zoned as 'Residential'.

Figure 2-2 LPS3 Zoning Map

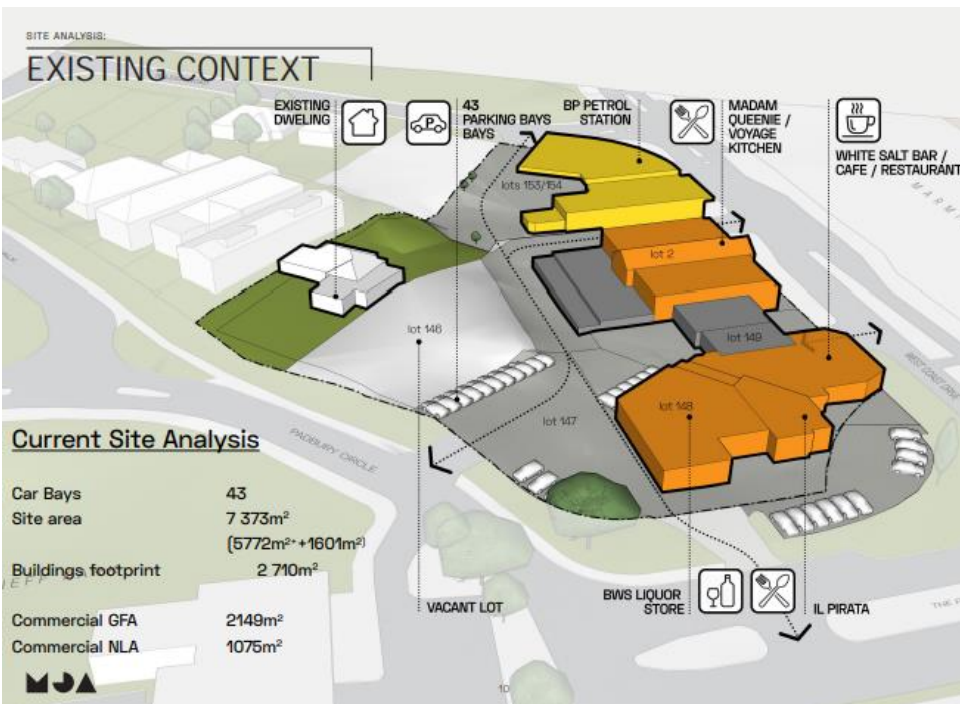


Source: City of Joondalup

2.3 Existing Land Uses

Within the proposed Site Planning Area, there are a number of existing food and beverage developments, as well as a liquor store (see below, **Figure 2-3**)

Figure 2-3 Existing Site Context



Source: MJA

2.4 Existing Road Network

Figure 2-4 shows the layout and classification of the roads surrounding the Site.

Road classifications are defined in the Main Roads Functional Hierarchy as follows:

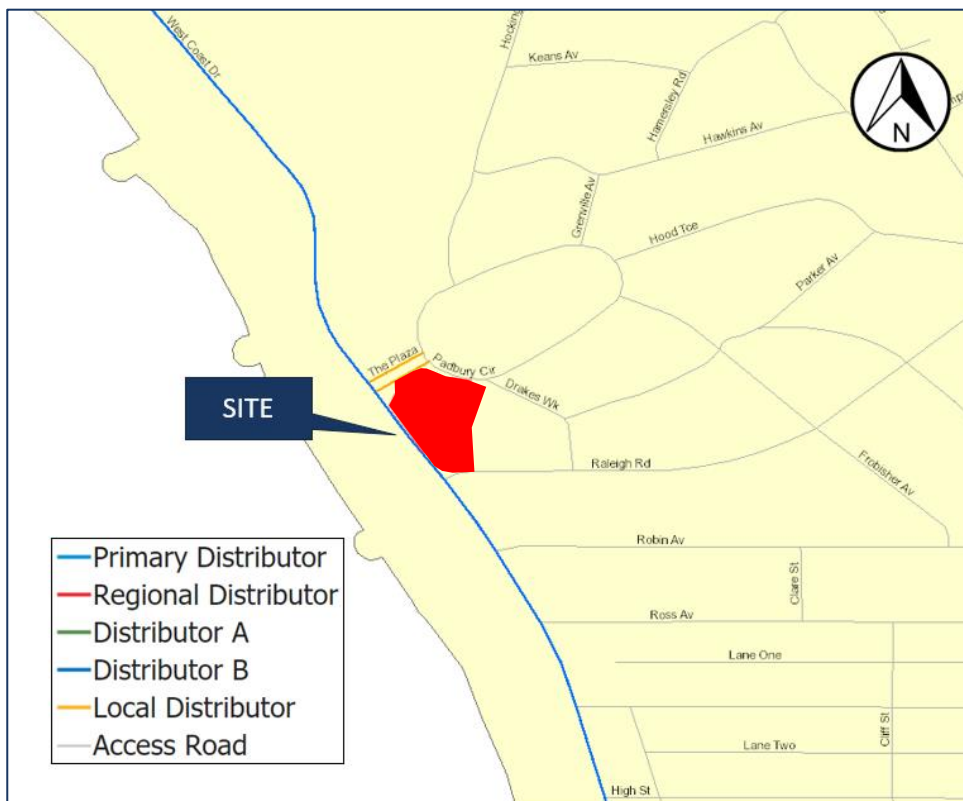
District Distributor B (dark blue): Perform a similar function to “District Distributor A” but with reduced capacity due to flow restrictions from access to and roadside parking alongside adjoining property. These are often older roads with traffic demand in excess of that originally intended. District Distributor A and B roads run between land-use cells and not through them, forming a grid that would ideally be around 1.5 kilometres apart. They are managed by Local Government.

In this instance West Coast Drive also an ‘other regional road’ (a Blue Road) under the Metropolitan Region Scheme (MRS), and therefore planning authority for adjacent developments is shared by both DPLH and the City of Joondalup.

Local Distributors (orange): Carry 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. These roads should accommodate buses but discourage trucks. They are managed by Local Government.

Access Roads (grey): Provide access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly. They are managed by Local Government.

Figure 2-4 Existing Road Network Surrounding the Site



Source: Main Roads Mapping Information Centre (2021)

The characteristics of the surrounding road network are further described in **Table 2-1**.

Table 2-1 Road Network Description

Road Name	Road Hierarchy	Jurisdiction	No. of Lanes	No. of Footpaths	Pavement Width (m)	Posted Speed Limit (km/h)
West Coast Drive	Distributor B	Local govt.	2	2	11.5 (incl. 2m median)	50
The Plaza	Local Distributor	Local govt.	2	2	15.0 (incl. 5m median)	50
Padbury Circle	Access Road	Local govt.	2	2 (between The Plaza and Drakes Walk) 1 (east of Drakes Walk)	6.0	50
Drakes Walk	Access Road	Local govt.	2	1	7.0	50
Raleigh Road	Access Road	Local govt.	2	2 (between West Coast Dr and Drakes Walk) 1 (east of Drakes Walk)	7.0	50

2.5 Existing Key Intersections

Key intersections surrounding the proposed Site which are likely to be affected by the trips generated by the development are discussed in the following sections.

2.5.1 West Coast Drive and The Plaza Intersection

Located northwest of the Site, this intersection is a 3-way give-way sign-controlled intersection. The northwest bound approach of the intersection has a 25.0m right turn pocket while the southeast bound approach has a high-angle left-turn slip lane (give-way controlled) with storage capacity for at least 3 cars. The existing intersection is shown in **Figure 2-5**.

Figure 2-5 West Coast Drive and The Plaza Intersection



Source: Metromap (2021)

It is noted that while observations show that vehicles turning right out of The Plaza tend to stage in the 4.0m-wide central median, this space is not consistent with Main Roads requirements for two-stage crossing, which specify a minimum of 6.0m (ideally 7.0m).

2.5.2 West Coast Drive and Raleigh Road Intersection

Located south of the Site, this intersection is a 3-way give-way sign-controlled intersection. The existing intersection is shown in **Figure 2-6**.

Figure 2-6 West Coast Drive and Raleigh Road Intersection



Source: Metromap (2021)

2.5.3 The Plaza and Padbury Circle Intersection

Located north of the Site, this intersection is a 3-way uncontrolled intersection. The existing intersection is shown **Figure 2-7**.

Figure 2-7 The Plaza and Padbury Circle Intersection



Source: Metromap (2021)

2.6 Existing Traffic Volumes

Existing traffic volume data was sourced from Main Roads WA Traffic Data and City of Joondalup and is presented in **Table 2-2** below.

Table 2-2 Existing Mid-block Traffic Volumes (Two-way)

Road Name	Year of Data	Monday-Friday Two-way Traffic Volumes		
		AM Peak	PM Peak	Average Daily
West Coast Dr North of Beach Rd (SLK 0.10)	2020/2021	1,514	1,465	16,459
West Coast Dr South of Hepburn Av (SLK 2.56)	2020/2021	1,355	1,330	15,572
West Coast Dr South of Helier Dr	2019	-	-	13,723
West Coast Dr South of Ross Ave	2019	-	-	14,124

Source: MRWA SCATS data/City of Joondalup

2.7 Existing Pedestrian/Cycle Networks

Existing pedestrian/cycle networks are illustrated in **Figure 2-8**.

A shared path is located along the entire west side of West Coast Drive, which is extremely popular for recreation purposes and beach access. This path is heavily used by pedestrians, cyclists and other micro-mobility users, as well as for dog-walking.

A shared path is also provided on the east side of West Coast Drive, connecting to and beyond Sacred Heart College, which is located approximately 500m north of the Site. On-road cycle lanes are available along West Coast Drive north of The Plaza. However, these do not connect into any other higher-order cycling facilities, and the cross-section of West Coast Drive further to the south is generally hostile for cyclists. Nevertheless, this route is popular among recreational cyclists, and particularly for group rides.

For pedestrians/cyclists travelling east-west direction, the predominant routes for local movements are along the “local bicycle friendly” roads of Helier Drive / Seacrest and Chandler Rd. Regional cycling is more likely to occur along Marmion Avenue and Hepburn Avenue.

Overall, the existing pedestrian and cycle infrastructure surrounding the Site is average for all user. Pedestrian crossings across West Coast Drive also needs improvement as it can be difficult for pedestrians to safely cross the road.

Figure 2-8 Pedestrian / Cyclist facilities in the vicinity



Source: Department of Transport (2021)

2.8 Existing Public Transport Facilities

Details of Bus Route 423 which passes the Site via West Coast Drive are shown in **Table 2-3**.

Table 2-3 Bus Services within the Vicinity of the Site

Route Number	Route name	Weekday Peak Frequency	Weekend Peak Frequency
423	Stirling Stn – Warwick Stn via Karrinyup Bus Stn & Hillarys Boat Harbour	10 mins	30 mins

The routes of nearby bus services and the nearest bus stops to the Site are shown in **Figure 2-9**.

Two bus stops on West Coast Drive (served by Bus Route 423) are located immediately adjacent to the Site. Two other bus stops on Padbury Circle served by the same bus route are also located within 300 metres of the Site.

Figure 2-9 Public Transport Routes Vicinity of the Site



Source: Transperth

The presence of the bus stops fronting the Site and frequent peak period service ensures the Site has adequate connectivity both to local destinations (Karrinyup, Hillary’s Boat Harbour), and to the wider public transport network (via Warwick Station, Stirling Station).

2.9 Crash Assessment

A search of the Main Roads WA Reporting Centre for crash data has been undertaken. This covered all recorded traffic accidents within 200 metres from the Site between 1 January 2016 and 31 December 2020.

The results are summarised below in **Table 2-4** to **Table 2-6**.

Table 2-4 Total Crashes

Type of Crash (RUM Code)	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
Rear End	-	-	2	3	-	5
Sideswipe Same Direction	-	-	-	1	-	1
Right Turn Thru	-	1	-	-	-	1
Right Angle	-	-	-	1	-	1
Non Collision	-	-	-	1	1	2
Total	-	1	2	6	1	10

Table 2-5 Intersection Crashes

Intersection Name	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
West Coast Dr - Raleigh Rd	-	1	-	1	-	2
West Coast Dr - The Plaza	-	-	-	1	1	2
Total	-	1	-	2	1	4

Table 2-6 Midblock Crashes

Road Name	Fatal	Hospital	Medical	Major Property Damage	Minor Property Damage	Total Crashes
West Coast Dr	-	-	2	4	-	6
Total	-	-	2	4	-	6

Crashes recorded are summarised below:

- > One crash required hospitalisation and two crashes required medical attention
- > All of the crashes within 200 metres from the Site occurred on West Coast Drive
- > Rear-end crashes are the most common type of crash
- > 4 crashes were recorded at intersections while 6 crashes were recorded on a midblock section

The number of crashes recorded is not considered excessive and there are no unusual patterns of crash types that would indicate existing geometric concerns.

The proposed redevelopment is not anticipated to have any material impact on the number of crashes. The consolidated, legible access points proposed for the Site are not considered to have any particular intrinsic risks.

3 Changes to Surrounding Transport Network

3.1 Road Network

The City of Joondalup has advised that modifications to the existing cross-section of West Coast Drive from St Helier Drive to Raleigh Road are being considered for implementation in the medium to long term.

This may include improvements to the intersection of West Coast Drive and The Plaza, with the opportunity to improve the quality of the interface with the public realm. This might include the creation of pedestrian priority zone with seating, shade and high quality surface treatments, as well as improving traffic function and safety. The proposed development provided an opportunity for this to be fast tracked and partially funded through the community benefits proposed.

However, no detailed information on the proposed modifications was provided.

3.2 Pedestrian/Cycle Networks

Cardno has contacted the City of Joondalup and received no information on proposed changes to the surrounding pedestrian and cycle networks surrounding the Site.

The Department of Transport *Long Term Cycling Network* shows The Plaza as a Local Route connecting to the Principle Shared Path along the coast.

Figure 3-1 Long Term Cycling Network



Source: DoT

3.3 Public Transport Services

Cardno contacted the Public Transport Authority and was advised that there are no proposed changes to bus Route 423 serving the Site in the short to medium term. They also advised of a long-term strategy to split Route 423 into two different services.

This is unlikely to impact public transport access for the Site.

4 Proposed Changes to the Surrounding Environment

4.1 West Coast Drive

The existing pedestrian crossing facilities on West Coast Drive are recommended to be upgraded for safety and accessibility, in line with Austroads Guidelines. Ideally crossings are located at desirelines, either for access to the beach or a bus stop.

It is good design practice to provide the shortest crossing of the road that is practicable in the circumstances. Therefore, the northern median / pedestrian refuge should remain at 4m wide, but the southern pedestrian crossing with a 1.8m wide refuge should be widened if possible. Where a refuge connects significant shared use paths the minimum width of 2.0m is likely to be inadequate and a minimum of 3.0m width should be provided.

Figure 4-1 Existing Pedestrian Crossings on West Coast Drive



Source: Metromap

It is recommended that the bus embayment along the frontage of West Coast Drive be modified to on-street stopping and relocated north of The Plaza, as shown in **Figure 4-2**, with the aim of creating a pedestrian friendly environment. Currently, the location of the bus shelter abuts the alfresco dining furniture of the nearby restaurants which significantly impedes pedestrian movement. The relocation of the bus embayment would maximise opportunities for alfresco dining and enhance the area's social and economic function.

This stop is not timed, and the proposed changes are not expected to significantly impact the operation of West Coast Drive. On-street stopping would improve the operation of the bus route by eliminating the need to re-join traffic flow.

The bus stop on the western side is recommended to be modified by removing the existing embayment and allowing in-lane stopping. This will reduce conflict with bus passengers disembarking the bus, or waiting for a bus, and users of the shared path.

Removing the bus embayments (and relocating the bus stop on the eastern side) will provide an opportunity for additional on-street parking on West Coast Drive. Best practice design would locate these bays near the carriageway with the on-road bicycle lane located next to the footpath.

4.1.2 Bus Stop Locations

It is recommended that the bus embayment along the frontage of West Coast Drive be modified to on-street stopping or relocated north of The Plaza, as shown in **Figure 4-2**, with the aim of creating a pedestrian friendly environment. Currently, the location of the bus shelter abuts the alfresco dining furniture of the nearby restaurants which significantly impedes pedestrian movements and sightlines. The relocation of the bus embayment would maximise opportunities for alfresco dining and enhance the area’s social and economic function.

This stop is not timed, and the proposed changes are not expected to significantly impact the operation of West Coast Drive. On-street stopping would improve the operation of the bus route by eliminating the need to re-join traffic flow.

The bus stop on the western side is recommended to be relocated into the current bus embayment, removing the bus embayment as proposed above. This will reduce conflict with bus passengers disembarking the bus or waiting for a bus and users of the shared path.

Figure 4-2 Bus Stop Locations and Proposed Re-Location



Source: Metromap

4.3 The Plaza

The current cross-section of The Plaza, consisting of a dual carriageway with wide central median, has been constructed specifically to support vehicle movements. By doing so, it reduces the safety and use of The Plaza as a pedestrian space.

Modifying the cross-section, differentiating the pavement, improving on-street parking and introducing trees and shade would all assist in reducing traffic speeds and creating an attractive space for pedestrian and cycling access.

More significant changes to The Plaza, which could include creating a 'Shared Zone' for The Plaza (See **Figure 4-4**), would greatly improve pedestrian function. These changes could only be made in the context of wider changes to the network, and the impacts of this change would need to be carefully considered.

Some of these opportunities are discussed below:

- > The road reservation of The Plaza is 40m, with a current carriageway width of 20m. Reducing this to a single carriageway would allow for shorter and safer crossing movements.
- > Reducing the carriageway footprint would allow footpaths and verges to be widened, with substantial landscaping and trees included for shelter and shade.
- > Differentiated pavement would create a threshold effect, marking this zone as a slow speed space different from West Coast Drive.
- > Removing the slip lane would reduce entry speeds on the approach.
- > On-street parking provides a buffer for activity while also giving additional utility for delivery drivers, and other short-stay customers.

While none of these are currently required under the planning framework it is recommended the application be a trigger for negotiations between the applicant and the City of Joondalup to fast track and provide these improvements as part of the community benefits proposed.

Figure 4-4 Proposed Changes to The Plaza



Source: Metromap

5 Integration with Surrounding Area

5.1 Surrounding Attractors/Generators

It is anticipated that trips generated/attracted by the activity centre will come primarily from the residential areas of Sorrento. Visitors to Hillarys Boat Harbour or Marmion Beach may also be attracted to the proposed Site along their route.

Key transport modes for consideration are therefore pedestrian and cycling connections from West Coast Drive and from the local residential catchment, in addition to vehicular access from West Coast Drive.

Figure 5-1 Surrounding attractors/generators



Source: Metromap

5.1.2 School Movements

Sacred Heart College’s bus access relies on The Plaza for right turn movements from West Coast Drive.

Parent driver behaviour is also affected by the left in/left out only for the school from West Coast Drive. Those seeking to travel north will exit onto West Coast Drive southbound and use Raleigh Road to turn around and head northbound.

A pedestrianised Shared Zone with self-explaining street design on The Plaza would assist in providing a safe environment for the street users.

5.2 Proposed Changes to Surrounding Land Uses

There are some changes anticipated for developments in the broader Sorrento area. In particular, the potential redevelopment of the Sorrento Surf Club, which is likely to create a more attractive destination for Sorrento Beach users.

5.3 Level of Accessibility

Access to the Site is anticipated to be mainly via West Coast Drive in the north-south direction. Trips coming from the residential areas in the east are anticipated to be via local roads including Padbury Circle, Raleigh Road, Frobisher Avenue, Hocking Parade, and Hood Terrace, among others.

6 Development Proposal

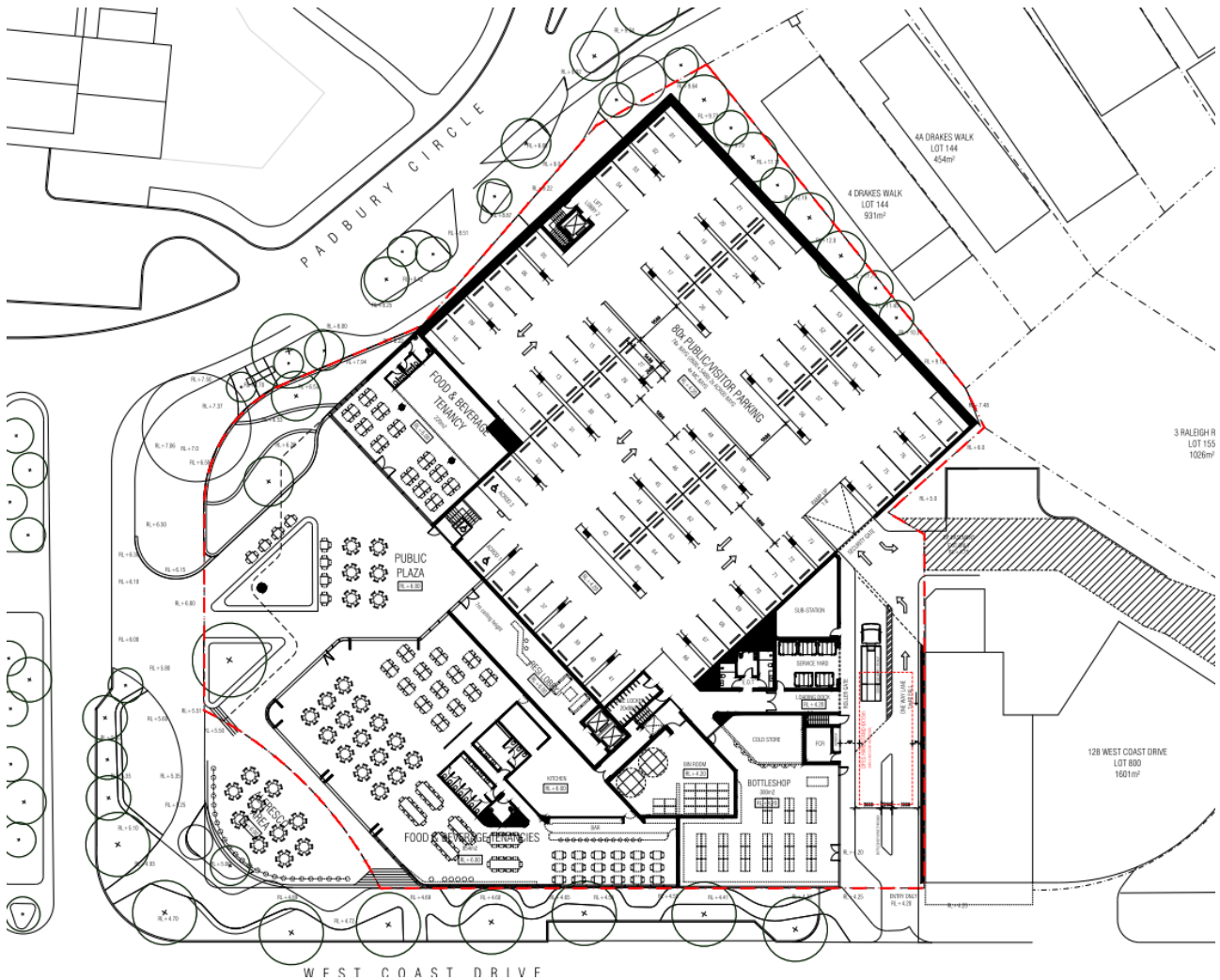
6.1 Proposed Development

The proposed development comprises following components:

- > 75 residential apartments
- > Food and beverage tenancies (1,074m²)
- > Bottle shop (300m²)

Figure 6-1 shows the ground floor layout of the proposed Site with the full set of Site plans are provided in **Appendix B**.

Figure 6-1 Ground Floor Plan Layout



Source: MJA Studio

6.2 Vehicle Parking Requirements and Provision

The Statutory parking requirements, in accordance with the *City of Joondalup's District Planning Scheme 2 and R-codes*, have been considered in the context of the proposed development and SACP and summarised below in **Table 6-1**.

Table 6-1 Statutory Parking Requirements

Development Classification	Requirements	Yield	Parking Required	Parking Provided
*Residential				
▪ 1 bedroom dwelling	1 bay per dwelling	6	6 Bays	155 Bays
▪ 2+ bedroom dwelling	1.25 bay per dwelling	69	87 Bays	
▪ Visitor	<ul style="list-style-type: none"> ▪ 1 bay per four dwellings up to 12 dwellings ▪ 1 bay per eight dwellings for the 13th dwelling and above 	75	11 Bays	80 Bays total
Bottle Shop Food and Beverage	1 per 20m ² NLA	1,374m ²	68 Bays	
Total			172 Bays	

For the purpose of this assessment, Location B requirements have been used for the residential component. While a frequent bus route is available in the vicinity of the development, as a result of the long travel times associated with connection to the nearest rail hub (23 minutes to Warwick and 32 minutes to Stirling Station), the service is likely to be less attractive, resulting in a requirement for a higher vehicle ownership by residents. The residential component of the development meets this statutory requirement.

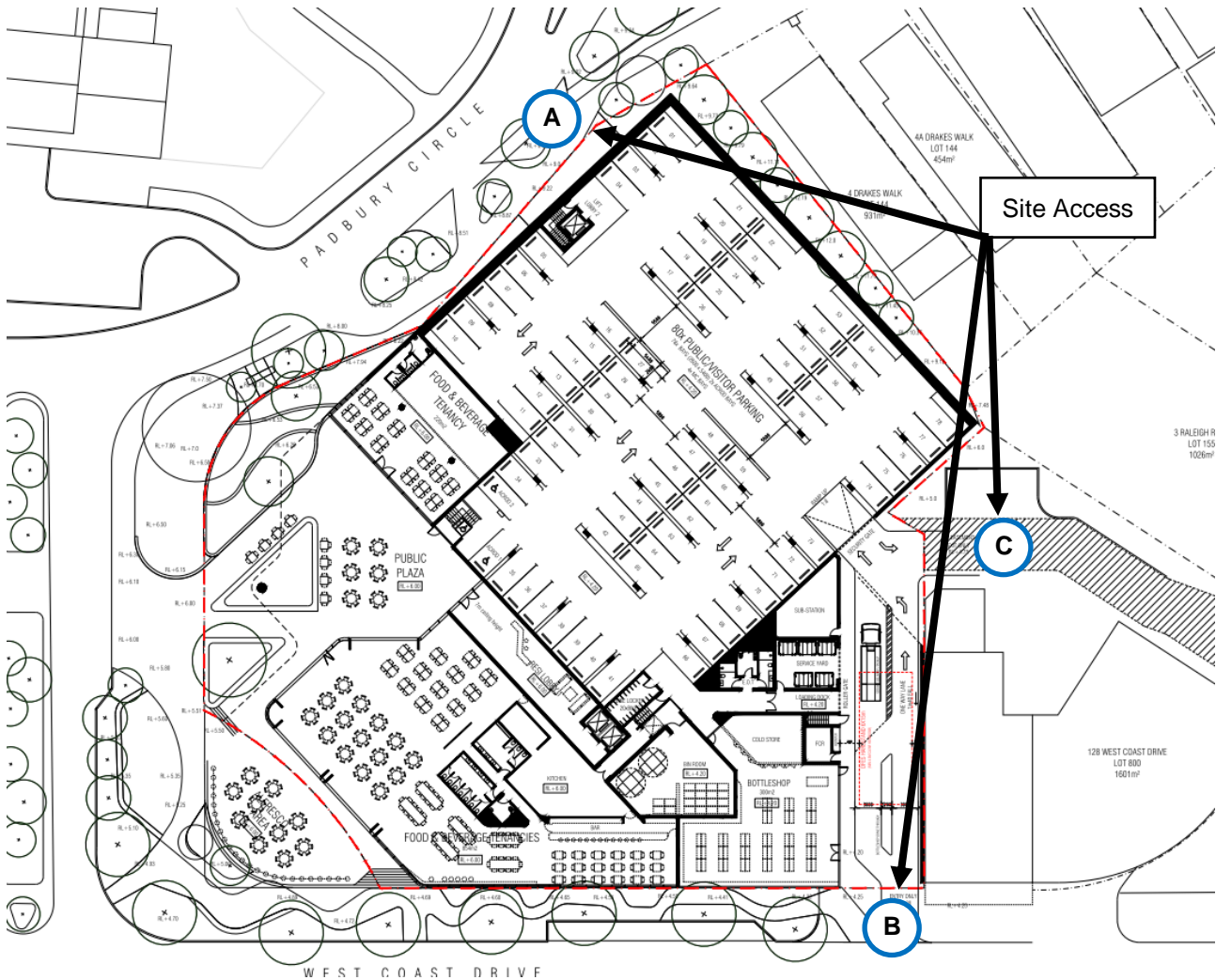
The public parking provision designated for residential visitors and commercial uses comprises 80 bays, which meets the statutory requirements.

6.3 Vehicular Access Arrangements

Two site access are proposed for the development as summarised below and shown in **Figure 6-2**.

- > Access A – located on Padbury Circle and provides access to the mezzanine and level 1 residential car parks.
- > Access B – located of West Coast Drive and serves an entry only access to the commercial and visitor car park.
- > Access C – located along the southern boundary of the Site which links to the adjacent BP Site and serves as an exit only access for the commercial and visitor car park allowing these users to travel through the BP site and exit onto Raleigh Road.

Figure 6-2 Site Access Location

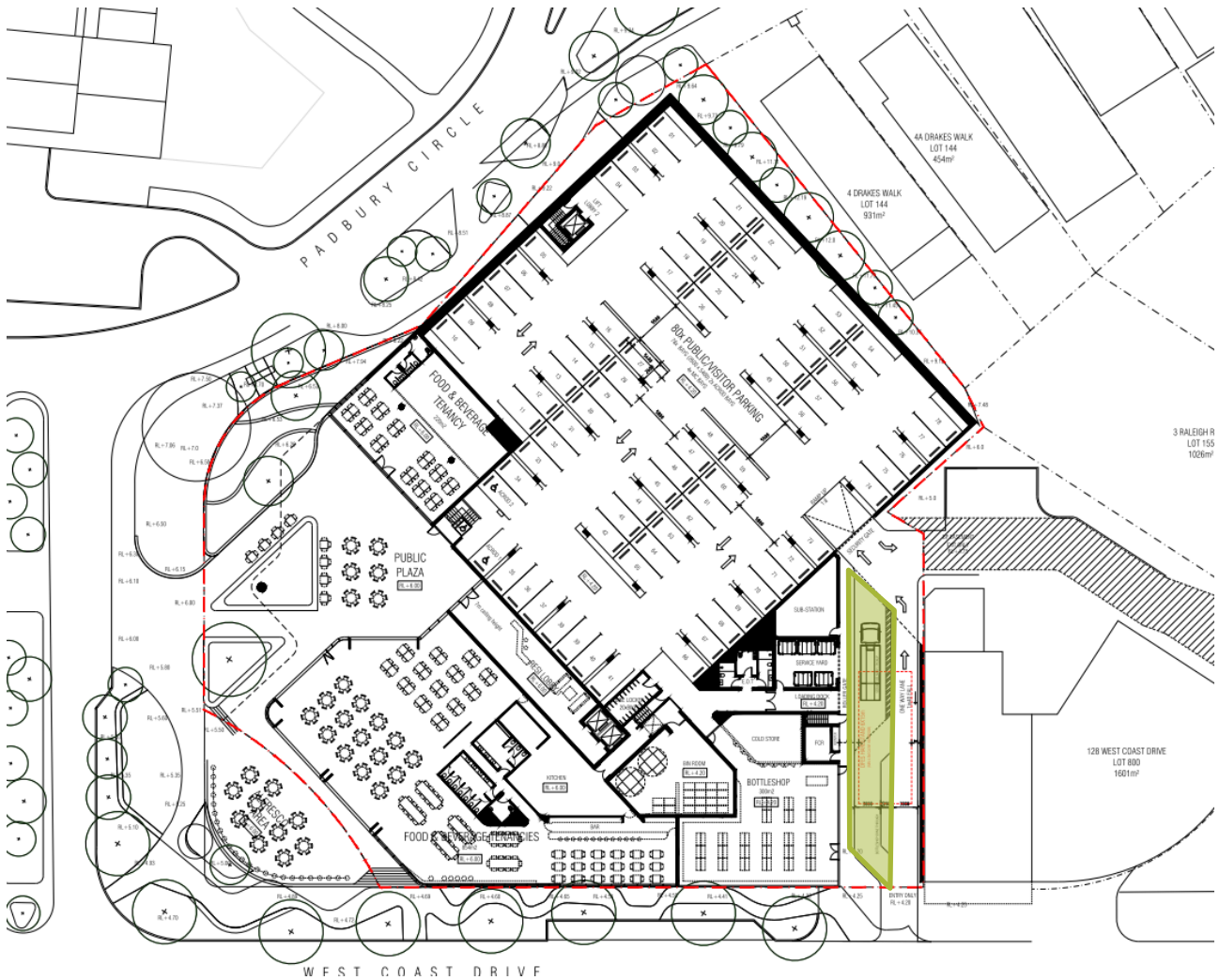


Source: MJA Studio (2022)

6.4 Service and Waste Vehicle Provision

Servicing and waste collection for the Site occurs at the service bays located on the ground floor near the West Coast Drive Site Access as shown in **Figure 6-3**.

Figure 6-3 Service and Waste Collection Bay



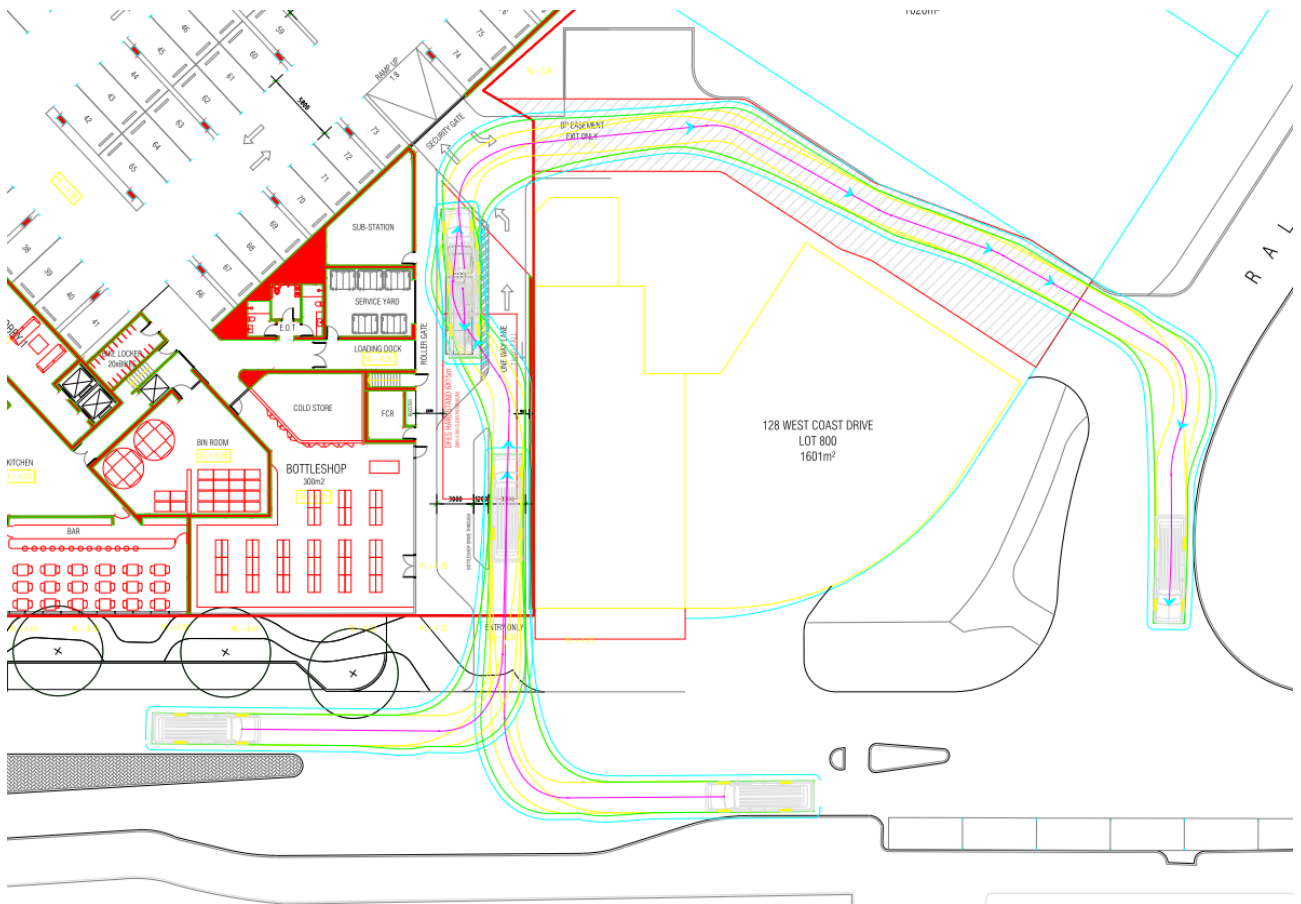
Source: MJA Studio (2022)

The service/waste collection arrangement is as follows:

- > Service/waste vehicle will enter the Site from West Coast Drive to access the service bay,
- > Once collection or servicing is complete, the truck will drive forward and turn right into the BP roadway link (Access 3),
- > The service/waste vehicle will then drive through the BP site and exit onto Raleigh Road.

A swept path assessment has been conducted for an 8.8m as shown in **Figure 6-4** below.

Figure 6-4 Swept Path Diagram for an 8.8m Truck

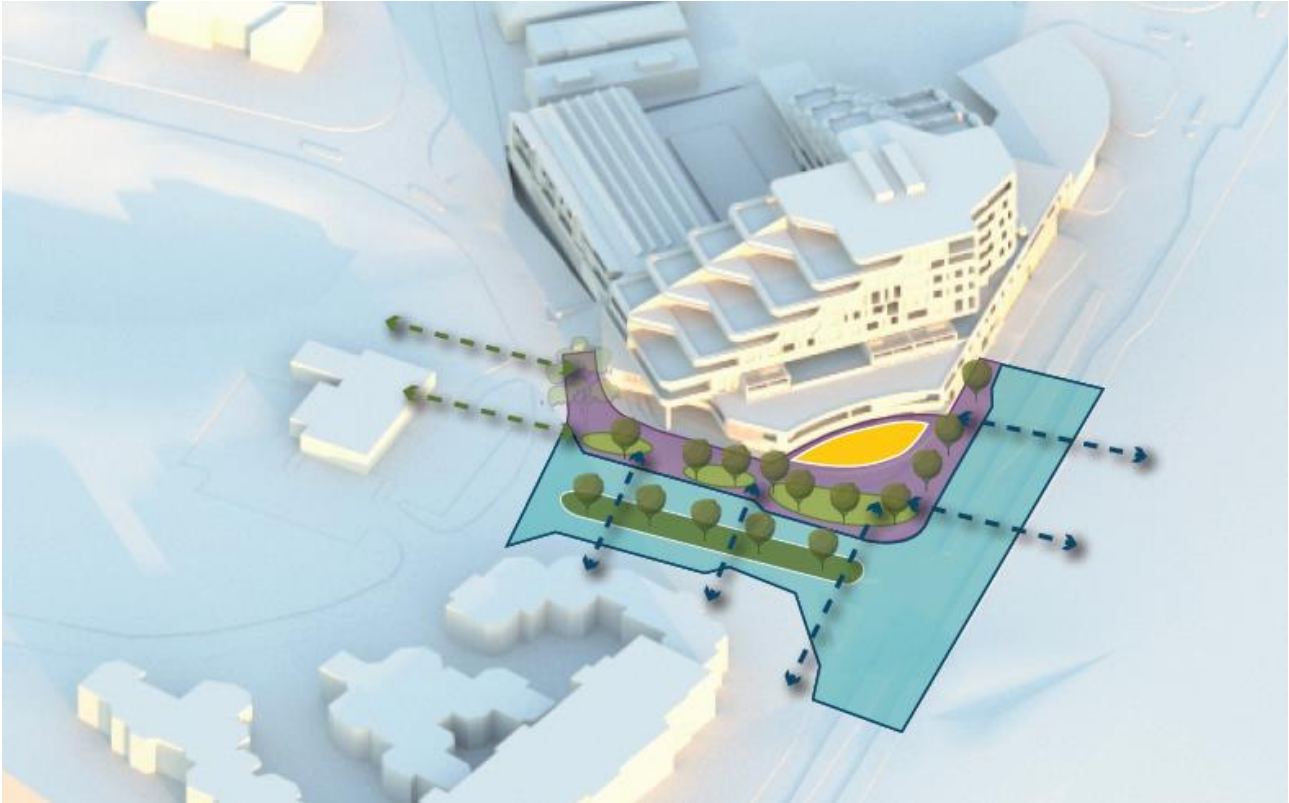


6.5 Pedestrian and Cyclist Access

Pedestrian and cyclist access has not yet been defined, however it should be provided generally in accordance with the requirements of *Liveable Neighbourhoods*.

Indicative drawings show the expected pedestrian movements (**Figure 6-5**).

Figure 6-5 Proposed Pedestrian Movements



Source: Aspect Studios

Additionally, a secure residential bike store is provided on level 1 as shown in **Figure 6-6**.

7 Analysis of Transport Network

7.1 Assessment Years and Time Period

Peak times selected are 3:00 PM to 4:00 PM and 11:00 AM to 12:00 PM respectively for the weekday afternoon peak and weekend peak periods, based on mid-block traffic volume data provided by the Main Roads WA.

In order to test the adequacy of the road network, particularly the intersections at West Coast Drive, the following four scenarios have been assessed:

- > **Scenario 1** – 2021 background traffic without proposed development traffic
- > **Scenario 2** – 2021 background traffic with proposed development traffic
- > **Scenario 3** – 10-year growth (2031) without proposed development traffic
- > **Scenario 4** – 10-year growth (2031) with proposed development traffic

7.2 Background Traffic

The background traffic for this assessment has been obtained from the traffic counts provided by the City of Joondalup for the weekday peak period. With regards to the background traffic volumes for the weekend peak, this was obtained from the previous Sorrento Activity Centre Transport Assessment.

7.3 Traffic Generation

Trip generation has been calculated for the proposed development utilising trip generation rates from the *Institute of Transportation Engineers (ITE) "Trip Generation" 10th Ed.*

7.3.1 Existing Traffic Generation

Table 7-1 provides the trip generation rate during the Weekday AM, Weekday PM, and Weekend peak hours, **Table 7-2** outlines the directional distribution acquired from ITE for the existing development and **Table 7-3** states the total trip generation for the existing development. Given the small size of the proposed kiosk, the trip generation for this component is considered to be negligible and has been excluded.

Table 7-1 Trip Generation Rates

Land Use	Source	Weekday AM Peak	Weekday PM Peak	Weekend Peak
Office	ITE 712	3.51	4.02	0.43
Bottle shop	ITE 899	0*	18.43	18.43**
Food and Beverage	ITE 932	15.11	18.41	12.05
Fitness Studio	ITE 492	1.51	4.22	3.19

* The operating hours of the bottle shop is assumed to be outside of the AM peak period.

** ITE does not provide a weekend rate for this land use, therefore the trip rate for the weekday PM peak has been used.

Table 7-2 Directional Distribution

Land Use	Weekday AM Peak		Weekday PM Peak		Weekend Peak	
	In	Out	In	Out	In	Out
Office	60%	40%	46%	54%	50%	50%
Bottle shop	51%	49%	50%	50%	50%	50%
Food and Beverage	57%	43%	52%	48%	51%	49%
Fitness Studio	46%	54%	52%	48%	49%	51%

Table 7-3 Total Trip Generation

Land Use	Weekday AM Peak		Weekday PM Peak		Weekend Peak	
	In	Out	In	Out	In	Out
Office	4	3	4	4	1	1
Bottle shop	0	0	28	28	28	28
Food and Beverage	62	47	69	64	45	43
Fitness Studio	2	2	4	3	3	3
Total	68	52	105	99	77	75
	120		204		152	

The existing development represents a two-way trip generation of approximately 120 vehicles during the weekday AM peak hour, 204 vehicles during the weekday PM peak hour and 152 vehicles during the weekend peak hour.

7.3.2 Proposed Development Traffic Generation

Table 7-4 provides the trip generation rate during the Weekday AM, Weekday PM, and Weekend peak hours, **Table 7-5** outlines the directional distribution acquired from ITE for the proposed development and **Table 7-6** states the total trip generation for the proposed development.

Table 7-4 Trip Generation Rates

Land Use	Source	Weekday AM Peak	Weekday PM Peak	Weekend Peak
Residential	ITE 221	0.32	0.41	0.44
Bottle shop	ITE 899	0*	18.43	18.43**
Food and Beverage	ITE 932	15.11	18.41	12.05

* The operating hours of the bottle shop is assumed to be outside of the AM peak period.

** ITE does not provide a weekend rate for this land use, therefore the trip rate for the weekday PM peak has been used.

Table 7-5 Directional Distribution

Land Use	Weekday AM Peak		Weekday PM Peak		Weekend Peak	
	In	Out	In	Out	In	Out
Residential	27%	73%	60%	40%	49%	51%
Bottle shop	51%	49%	50%	50%	50%	50%
Food and Beverage	57%	43%	52%	48%	51%	49%

Table 7-6 Total Trip Generation

Land Use	Weekday AM Peak		Weekday PM Peak		Weekend Peak	
	In	Out	In	Out	In	Out
Residential	7	18	19	13	17	17
Bottle shop	0	0	28	28	28	28
Food and Beverage	93	70	103	95	67	64
Total	100	88	150	136	112	109
	188		286		221	

The opening year development represents a two-way trip generation of approximately 188 vehicles during the weekday AM peak hour, 286 vehicles during the weekday PM peak hour and 221 vehicles during the weekend peak hour.

7.3.3 Net Increase in Traffic

Table 7-7 provides comparison of the estimated traffic generated by the existing site and the proposed development. Overall, the anticipated increase in traffic generated by the proposed development is approximately 60-80 additional vehicles during the respective peaks.

Table 7-7 Comparison of Existing Traffic and Proposed Development Traffic

Land Use	Weekday AM Peak		Weekday PM Peak		Weekend Peak	
	In	Out	In	Out	In	Out
Existing Development	68	52	105	99	77	75
Proposed Development	100	88	150	136	112	109
Net increase/decrease	32	36	45	37	35	34

7.4 Future Year Traffic Growth

The future traffic growth of the surrounding road network was determined based on the historic traffic growth rate from *MRWA Road Traffic Map* which was determined to be around 1% per annum. This growth rate has been applied for the background traffic along West Coast Drive. No traffic growth for the background traffic is expected along The Plaza and Raleigh Road as there are no significant developments anticipated nearby which will use these roads.

7.5 Key Assumptions

The following provides a list of assumptions use in the assessment.

- > Though Lot 800 is part of the Sorrento Activity Centre Area, it has not been included as part of this assessment as the development within this lot is already established (currently a BP Service Station) and the traffic impacts of this development is already captured in the background traffic volumes. Additionally, no significant changes to the existing service station site are anticipated in the next 10-20 years (or for the life of the development which is estimated to be approximately 30 years).
- > For the purpose of this assessment, the AM peak period has not been assessed as the background traffic volumes as well as the associated peak trip generation are anticipated to be lower than the PM and weekend peak periods.
- > For the scenarios that include the proposed development traffic (Scenario 2 and 4), the traffic volumes generated by the existing development has been removed from the network.
- > A growth rate of 1% per annum has been used to growth traffic volumes along West Coast Drive for the future assessment Scenarios (Scenario 3 and 4).
- > Heavy vehicle volumes were obtained from Main Roads Traffic Map.

7.6 Traffic Distribution and Assignment

As summarised in **Section 6.3**, the residential and commercial access are separated with the residential access off Padbury Circle and the commercial/visitor access off West Coast Drive.

- > Residential distribution – the majority of residential traffic is assumed to travel to/from West Coast Drive (80%) as it serves as a key arterial link when travelling to the north and south with the north/south distribution based on the current distribution for the respective peak periods. A small proportion assumed to travel to/from the east (20%) via the local roads.
- > Commercial/visitor distribution – as a result of the access arrangement, all commercial and visitor traffic will enter the Site from West Coast Drive and exit onto Raleigh Road and back onto West Coast Drive with the north/south distribution based on the current distribution for the respective peak periods.

The estimated distribution is presented in **Figure 7-1** for the residential component and on **Figure 7-2** for the commercial/visitor component.

Figure 7-1 Residential Development Traffic Distribution



Figure 7-2 Commercial/Visitor Development Traffic Distribution



7.6.2 Background and Development Traffic Volumes

Figure 7-3 through to Figure 7-6 provides a summary of the traffic volumes for Scenarios 1, 2, 3 and 4 respectively.

Figure 7-3 Scenario 1 Traffic Volumes

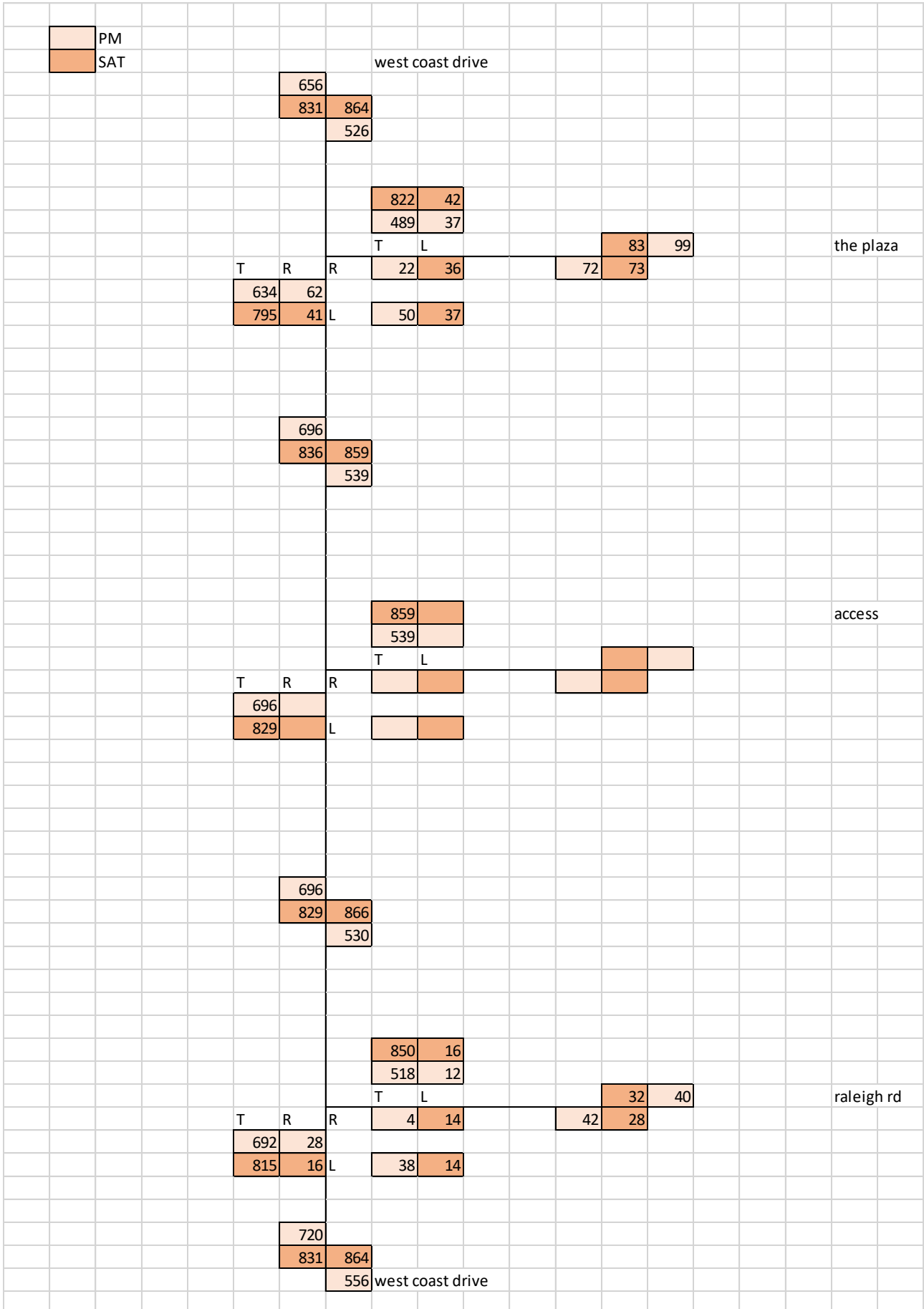


Figure 7-4 Scenario 2 Traffic Volumes

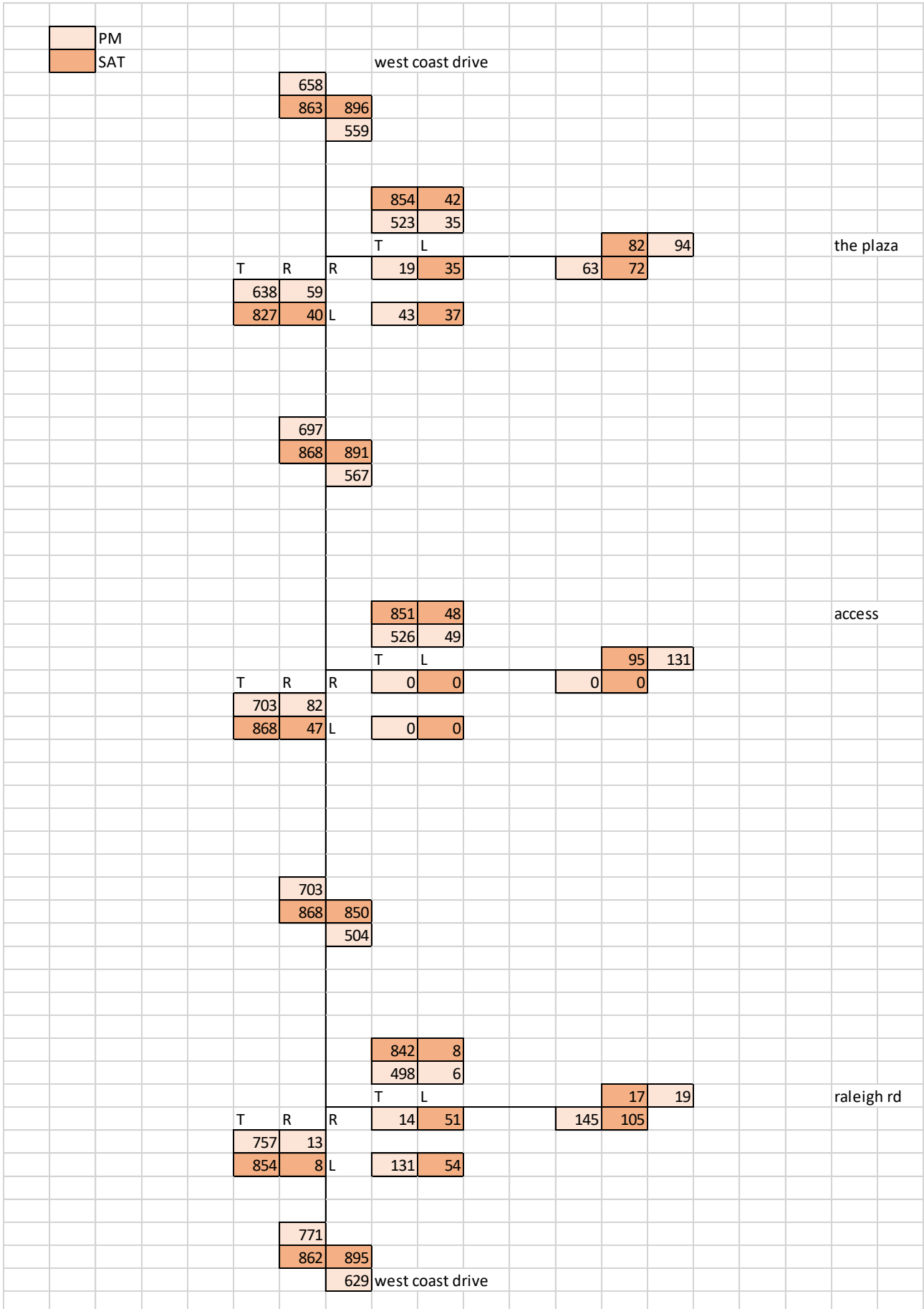


Figure 7-5 Scenario 3 Traffic Volumes

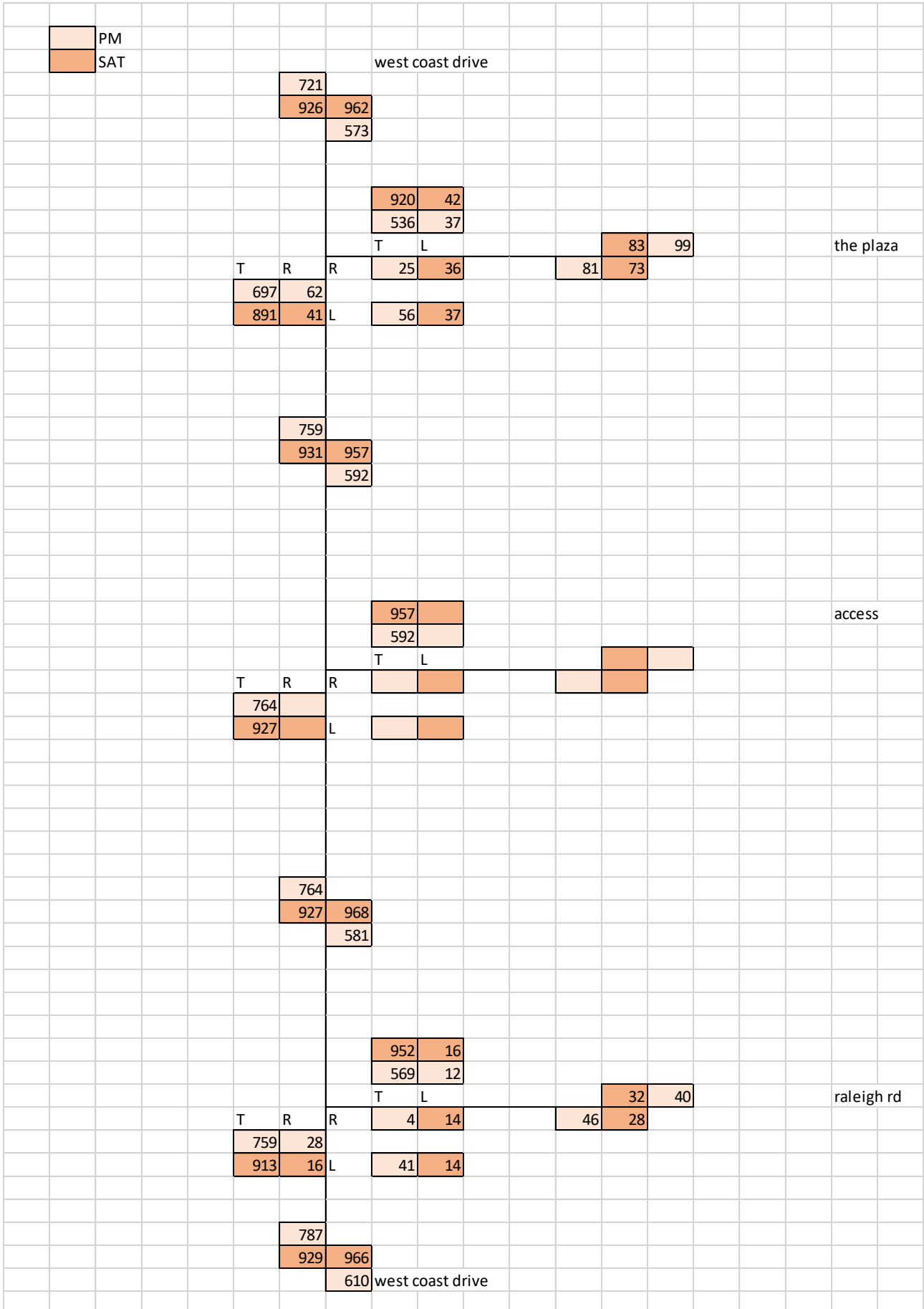
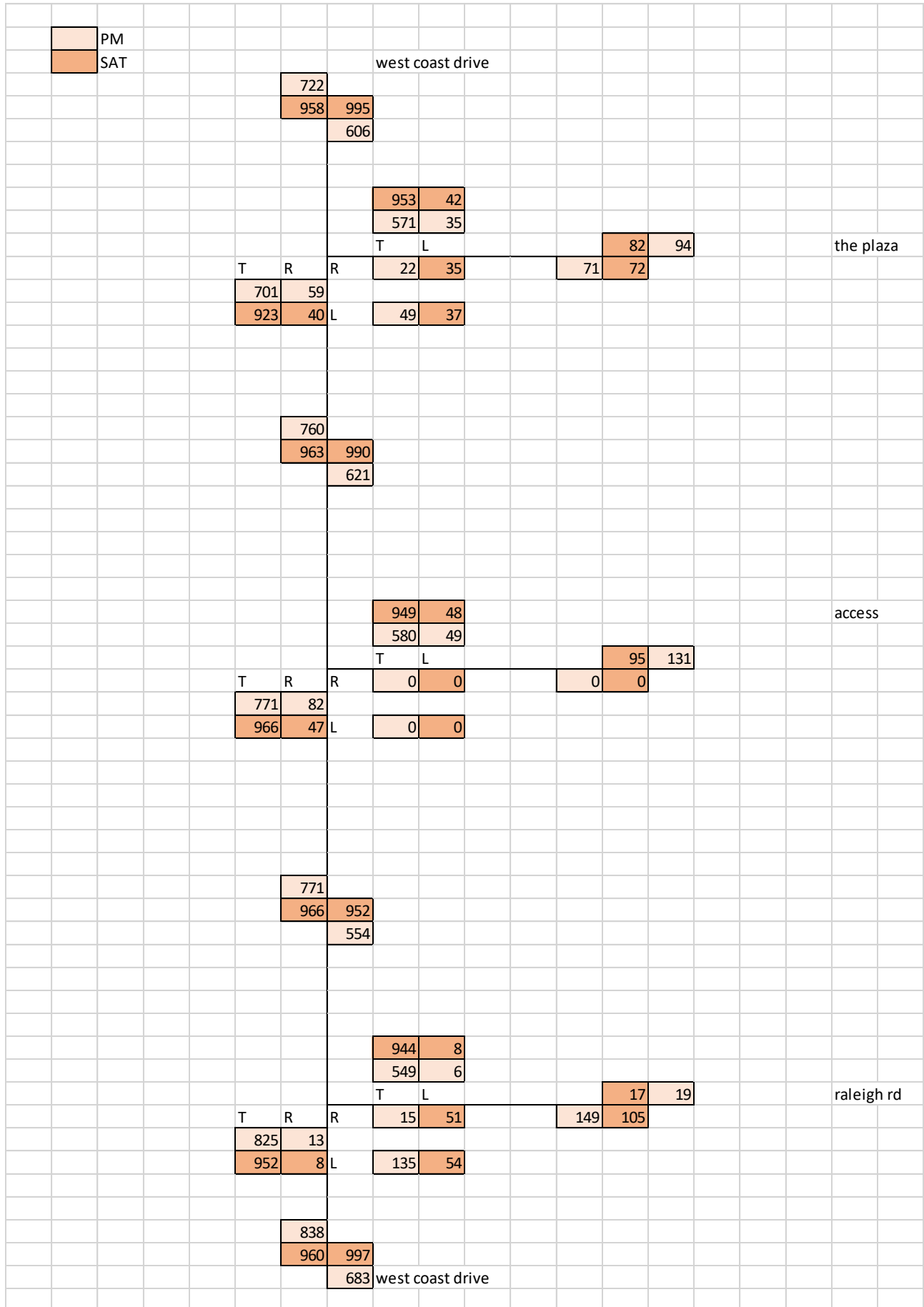


Figure 7-6 Scenario 4 Traffic Volumes



7.7 Intersection Performance

SIDRA analysis was undertaken at the following intersections to estimate the impact of the development generated traffic on the surrounding transport network:

- > West Coast Drive/The Plaza
- > West Coast Drive/Raleigh Road
- > West Coast Drive/Site Access (Scenario 2 and 4 only)

SIDRA results for each approach are presented below in the form of Degree of Saturation (DOS), Average Delay, Level of Service (LOS) and 95th Percentile Queue. These characteristics are defined as follows:

- > **Degree of Saturation (DOS):** is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The theoretical intersection capacity is exceeded for an un-signalized intersection where $DOS > 0.80$;
- > **95% Queue:** is the statistical estimate of the queue length up to or below which 95% of all observed queues would be expected;
- > **Average Delay:** is the average of all travel time delays for vehicles through the intersection. An un-signalised intersection can be considered to be operated at capacity where the average delay exceeds 40 seconds for any movement; and
- > **Level of Service (LOS):** is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. The different levels of service can generally be described as shown in **Table 7-8**.

Table 7-8 Level of Service (LOS) Performance Criteria

LOS	Description	Signalised Intersection	Unsignalised Intersection
A	Free-flow operations (best condition)	≤10 sec	≤10 sec
B	Reasonable free-flow operations	10-20 sec	10-15 sec
C	At or near free-flow operations	20-35 sec	15-25 sec
D	Decreasing free-flow levels	35-55 sec	5-35 sec
E	Operations at capacity	55-80 sec	35-50 sec
F	A breakdown in vehicular flow (worst condition)	≥80 sec	≥50 sec

7.7.2 Scenario 1

7.7.2.1 West Coast Drive/The Plaza

The following presents the analysis of the West Coast Drive/The Plaza intersection. **Figure 7-7** is a SIDRA layout representation of the proposed intersection and **Table 7-9** shows the SIDRA results of the analysis.

Figure 7-7 SIDRA Layout - West Coast Drive/The Plaza Intersection

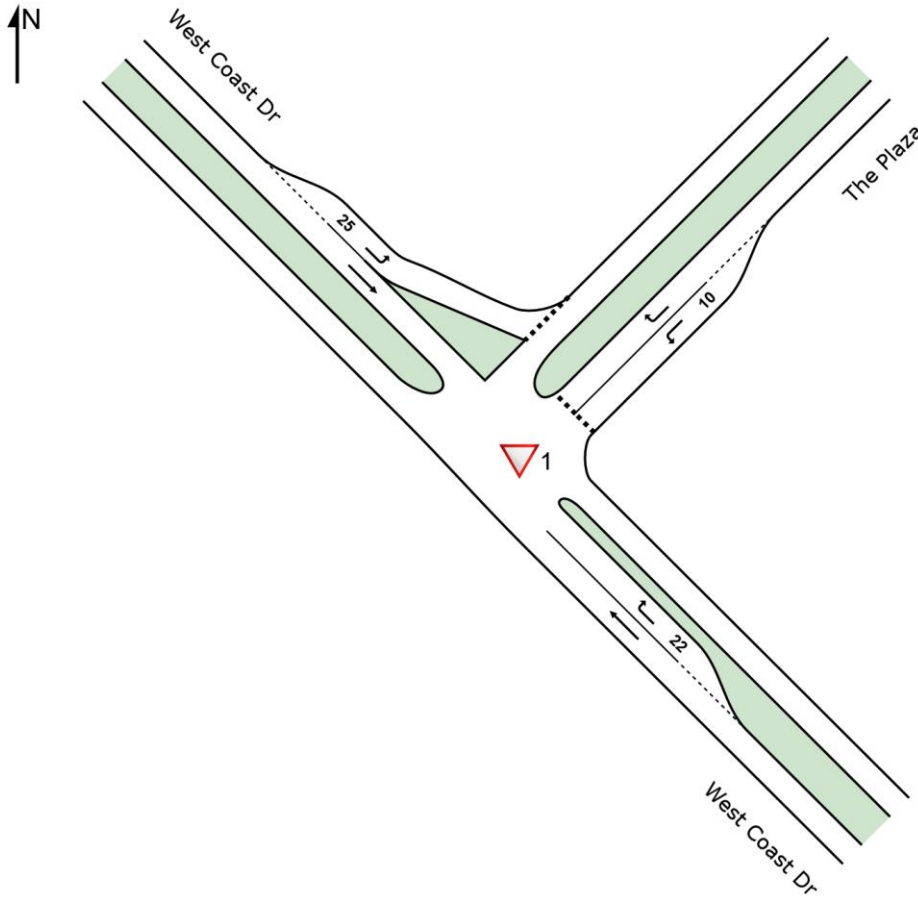


Table 7-9 Scenario 1 - SIDRA Results – West Coast Drive/The Plaza Intersection

Intersection Approach		Weekday PM peak				Weekend Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
West Coast Dr (SE)	T	0.336	0.1	A	0	0.422	0.2	A	0
	R	0.058	6.6	A	1.7	0.064	9.4	A	1.7
The Plaza (NE)	L	0.051	6.5	A	1.3	0.062	9.4	A	1.5
	R	0.112	22.5	C	2.5	0.519	80.2	F	11.9
West Coast Dr (NW)	L	0.024	4.7	A	0.7	0.027	4.6	A	0.8
	T	0.257	0.1	A	0	0.432	0.2	A	0
All Vehicles		0.336	1.2	A	2.5	0.519	2.3	A	11.9

7.7.2.2 West Coast Drive/Raleigh Road

The following presents the analysis of the West Coast Drive/Raleigh Road intersection. **Figure 7-8** is a SIDRA layout representation of the proposed intersection and **Table 7-10** shows the SIDRA results of the analysis.

Figure 7-8 SIDRA Layout - West Coast Drive/Raleigh Road Intersection

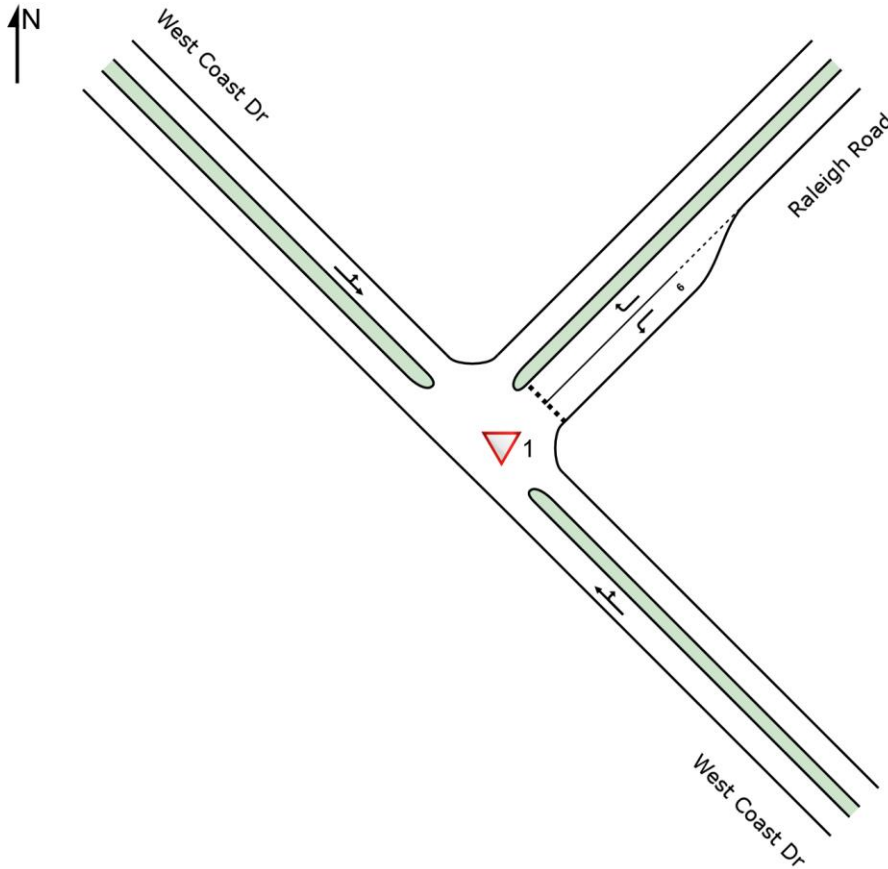


Table 7-10 Scenario 1 - SIDRA Results – West Coast Drive/Raleigh Road Intersection

Intersection Approach		Weekday PM peak				Weekend Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
West Coast Dr (SE)	T	0.392	0.3	A	3.9	0.456	0.6	A	4.9
	R	0.392	9.3	A	3.9	0.456	15.9	C	4.9
Raleigh Rd (NE)	L	0.04	7.7	A	1.1	0.025	10.5	B	0.6
	R	0.015	16.4	C	0.3	0.119	33.2	D	2.3
West Coast Dr (NW)	L	0.279	4.7	A	0	0.456	4.8	A	0
	T	0.279	0.1	A	0	0.456	0.2	A	0
All Vehicles		0.392	0.7	A	3.9	0.456	0.9	A	4.9

7.7.3 Scenario 2

7.7.3.1 West Coast Drive/The Plaza

Table 7-11 shows the SIDRA results of the analysis at West Coast Drive/The Plaza intersection for Scenario 2.

Table 7-11 Scenario 2 - SIDRA Results – West Coast Drive/The Plaza Intersection

Intersection Approach		Weekday PM peak				Weekend Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
West Coast Dr (SE)	T	0.338	0.1	A	0	0.439	0.2	A	0
	R	0.058	6.8	A	1.7	0.066	9.8	A	1.7
The Plaza (NE)	L	0.046	6.7	A	1.2	0.066	9.8	A	1.6
	R	0.103	23.6	C	2.3	0.594	102	F	13.6
West Coast Dr (NW)	L	0.023	4.7	A	0.6	0.027	4.6	A	0.8
	T	0.275	0.1	A	0	0.449	0.2	A	0
All Vehicles		0.338	1.1	A	2.3	0.594	2.6	A	13.6

7.7.3.2 West Coast Drive/Raleigh Road

Table 7-12 shows the SIDRA result of the analysis at West Coast Drive/Raleigh Road intersection for Scenario 2.

Table 7-12 Scenario 2 - SIDRA Results – West Coast Drive/Raleigh Road Intersection

Intersection Approach		Weekday PM peak				Weekend Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
West Coast Dr (SE)	T	0.411	0.1	A	1.9	0.463	0.3	A	2.4
	R	0.411	9.2	A	1.9	0.463	15.7	C	2.4
Raleigh Rd (NE)	L	0.135	7.8	A	3.7	0.094	10.7	B	2.3
	R	0.056	17.8	C	1.1	0.45	44.5	E	9.8
West Coast Dr (NW)	L	0.265	4.7	A	0	0.447	4.8	A	0
	T	0.265	0.1	A	0	0.447	0.2	A	0
All Vehicles		0.411	1.1	A	3.7	0.463	1.9	A	9.8

7.7.3.3 West Coast Drive/Site Access

The following presents the analysis of the West Coast Drive/Site Access intersection. **Figure 7-9** is a SIDRA layout representation of the proposed intersection and **Table 7-13** shows the SIDRA results of the analysis.

Figure 7-9 SIDRA Layout - West Coast Drive/Site Access Intersection

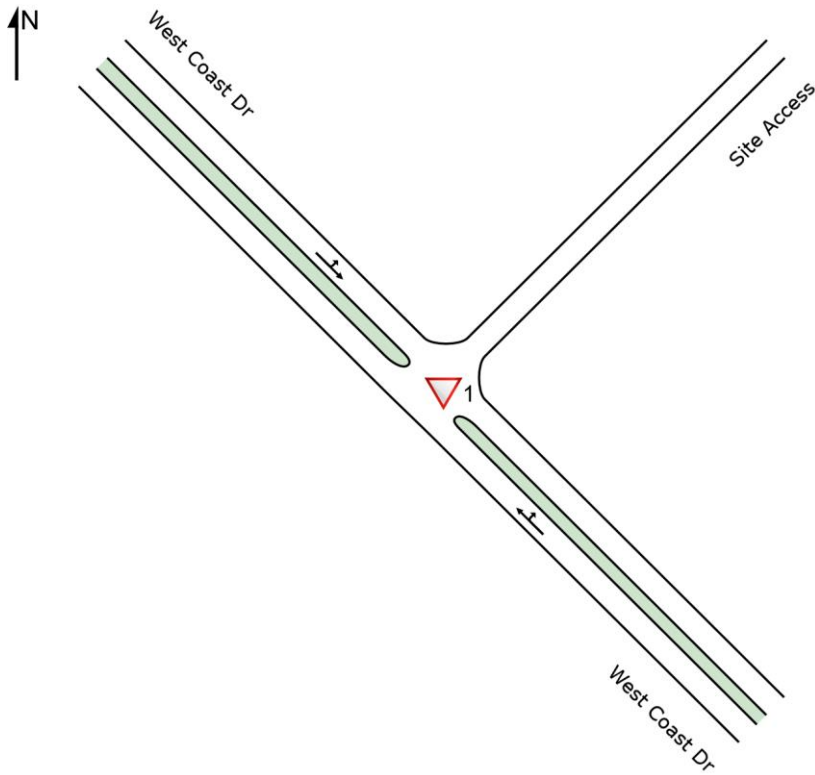


Table 7-13 Scenario 2 - SIDRA Results – West Coast Drive/ Site Access Intersection

Intersection Approach		Weekday PM peak				Weekend Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
West Coast Dr (SE)	T	0.456	1	A	12.9	0.54	1.8	A	16.3
	R	0.456	10.3	B	12.9	0.54	17.8	C	16.3
West Coast Dr (NW)	L	0.303	4.7	A	0	0.474	4.8	A	0
	T	0.303	0.2	A	0	0.474	0.2	A	0
All Vehicles		0.456	1.4	A	12.9	0.54	1.6	A	16.3

7.7.4 Scenario 3

7.7.4.1 West Coast Drive/The Plaza

Table 7-14 shows the SIDRA results of the analysis at West Coast Drive/The Plaza intersection for Scenario 3.

Table 7-14 Scenario 3 - SIDRA Results – West Coast Drive/The Plaza Intersection

Intersection Approach		Weekday PM peak				Weekend Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
West Coast Dr (SE)	T	0.37	0.1	A	0	0.473	0.2	A	0
	R	0.062	6.9	A	1.8	0.078	10.8	B	2
The Plaza (NE)	L	0.06	6.9	A	1.6	0.075	10.8	B	1.8
	R	0.16	27.8	D	3.6	0.874	217.4	F	23.5
West Coast Dr (NW)	L	0.024	4.7	A	0.7	0.027	4.6	A	0.8
	T	0.282	0.1	A	0	0.484	0.2	A	0
All Vehicles		0.37	1.3	A	3.6	0.874	4.7	A	23.5

The SIDRA results show significant delays for the right turn movement onto West Coast Drive. These results are under the assumption that no vehicles are using the central median along West Coast Drive to perform a staged right turn. The width of the central median is approximately 4m which does not provide sufficient width a vehicle to stage safely however, on-site observations suggests that this is still common practice. By widening the median to 6m (the minimum median width required for safe staging), the operation can be significantly improved. The layout of this modified intersection arrangement is shown in Figure 7-10 and the SIDRA results are summarised in Table 7-15.

Figure 7-10 SIDRA Layout - West Coast Drive/The Plaza Intersection (with modifications)

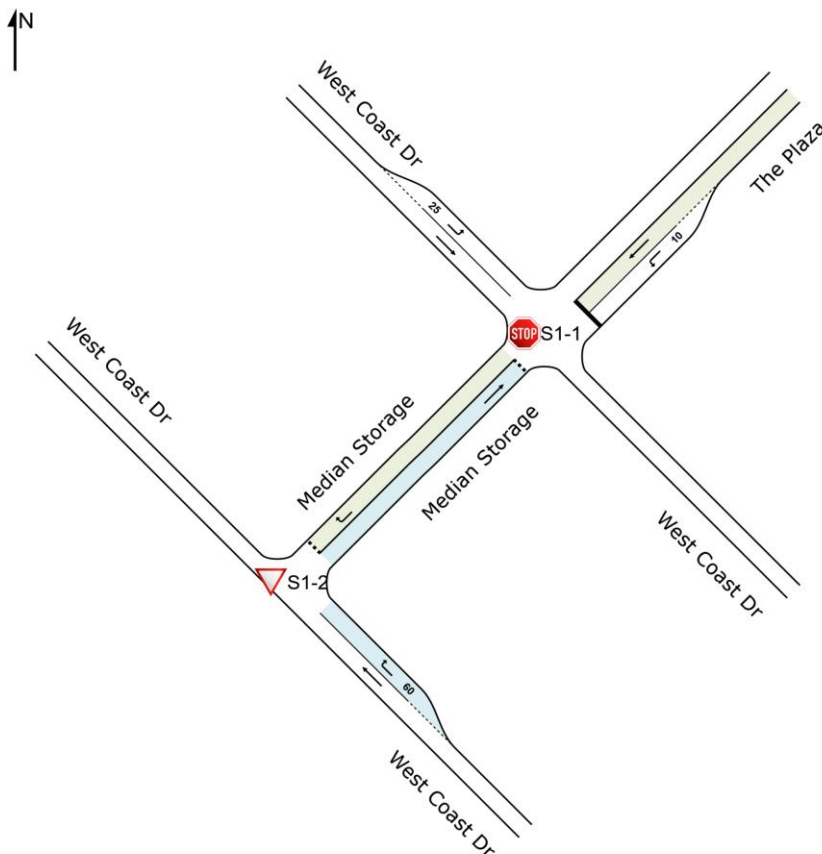


Table 7-15 Scenario 3 - SIDRA Results – West Coast Drive/The Plaza Intersection (with modifications)

Intersection Approach		Weekday PM peak				Weekend Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
West Coast Dr (SE)	T	0.367	0.1	A	0	0.469	0.2	A	0
	R	0.034	8.2	A	0	0.078	12.2	B	0
The Plaza (NE)	L	0.074	11.1	B	1.9	0.101	16.9	C	2.4
	R	0.055	16.2	C	1.5	0.199	32.1	D	4.9
West Coast Dr (NW)	L	0.02	5.6	A	0	0.023	5.6	A	0
	T	0.282	0.1	A	0	0.484	0.2	A	0
All Vehicles		0.367	1.3	A	1.9	0.484	1.5	A	4.9

7.7.4.2 West Coast Drive/Raleigh Road

Table 7-16 shows the SIDRA results of the analysis at West Coast Drive/Raleigh Road intersection for Scenario 3.

Table 7-16 Scenario 3 - SIDRA Results – West Coast Drive/Raleigh Road Intersection

Intersection Approach		Weekday PM peak				Weekend Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
West Coast Dr (SE)	T	0.43	0.4	A	4.6	0.514	0.8	A	7
	R	0.43	10.2	B	4.6	0.514	20.6	C	7
Raleigh Rd (NE)	L	0.046	8	A	1.2	0.03	12.1	B	0.7
	R	0.019	19.6	C	0.4	0.195	53.4	F	3.6
West Coast Dr (NW)	L	0.306	4.7	A	0	0.51	4.8	A	0
	T	0.306	0.1	A	0	0.51	0.3	A	0
All Vehicles		0.43	0.8	A	4.6	0.514	1.2	A	7

7.7.5 Scenario 4

7.7.5.1 West Coast Drive/The Plaza

Table 7-17 shows the SIDRA results of the analysis at West Coast Drive/The Plaza intersection for Scenario 4. Additionally, **Table 7-18** shows the SIDRA results with the inclusion of the median modifications mentioned in *Section 6.7.4.1*.

Table 7-17 Scenario 4 - SIDRA Results – West Coast Drive/The Plaza Intersection

Intersection Approach		Weekday PM peak				Weekend Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
West Coast Dr (SE)	T	0.372	0.1	A	0	0.488	0.2	A	0
	R	0.062	7.1	A	1.8	0.081	11.4	B	2.1
The Plaza (NE)	L	0.055	7.1	A	1.4	0.08	11.4	B	1.9
	R	0.151	29.2	D	3.3	1.024	323	F	34.9
West Coast Dr (NW)	L	0.023	4.7	A	0.6	0.027	4.6	A	0.8
	T	0.3	0.1	A	0	0.501	0.2	A	0
All Vehicles		0.372	1.2	A	3.3	1.024	6.3	A	34.9

Table 7-18 Scenario 4 - SIDRA Results – West Coast Drive/The Plaza Intersection (with modifications)

Intersection Approach		Weekday PM peak				Weekend Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
West Coast Dr (SE)	T	0.369	0.1	A	0	0.486	0.2	A	0
	R	0.073	8.5	A	0	0.092	12.7	B	0
The Plaza (NE)	L	0.068	11.4	B	1.8	0.109	17.8	C	2.5
	R	0.055	17.5	C	1.4	0.214	35.1	E	5.2
West Coast Dr (NW)	L	0.019	5.6	A	0	0.023	5.6	A	0
	T	0.3	0.1	A	0	0.501	0.2	A	0
All Vehicles		0.369	1.2	A	1.8	0.501	1.5	A	5.2

7.7.5.2 West Coast Drive/Raleigh Road

Table 7-19 shows the SIDRA results of the analysis at West Coast Drive/Raleigh Road intersection for Scenario 4.

Table 7-19 Scenario 4 - SIDRA Results – West Coast Drive/Raleigh Road Intersection

Intersection Approach		Weekday PM peak				Weekend Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
West Coast Dr (SE)	T	0.448	0.2	A	2.2	0.517	0.4	A	3.5
	R	0.448	10.1	B	2.2	0.517	20.3	C	3.5
Raleigh Rd (NE)	L	0.148	8.1	A	4.1	0.115	12.3	B	2.7
	R	0.075	21.5	C	1.5	0.736	97.6	F	17
West Coast Dr (NW)	L	0.292	4.7	A	0	0.501	4.8	A	0
	T	0.292	0.1	A	0	0.501	0.2	A	0
All Vehicles		0.448	1.1	A	4.1	0.736	3.2	A	17

7.7.5.3 West Coast Drive/Site Access

Table 7-20 shows the SIDRA results of the analysis at West Coast Drive/Site Access intersection for Scenario 4.

Table 7-20 Scenario 4 - SIDRA Results – West Coast Drive/Site Access Intersection

Intersection Approach		Weekday PM peak				Weekend Peak			
		DOS	Delay (s)	LOS	95% Queue (m)	DOS	Delay (s)	LOS	95% Queue (m)
West Coast Dr (SE)	T	0.498	1.3	A	15.4	0.611	2.7	A	23.6
	R	0.498	11.4	B	15.4	0.611	23.3	C	23.6
West Coast Dr (NW)	L	0.332	4.7	A	0	0.525	4.8	A	0
	T	0.332	0.2	A	0	0.525	0.3	A	0
All Vehicles		0.498	1.5	A	15.4	0.611	2.1	A	23.6

7.7.6 SIDRA Results Summary

A summary of the SIDRA results are provided below:

- > The results of the SIDRA assessment at West Coast Drive/The Plaza intersection shows that all the approaches apart from the right turn movement out of The Plaza to West Coast Drive in the Saturday Peak, have sufficient capacity to accommodate the traffic demand during the weekday PM and weekend peak hour periods for all scenarios.

Furthermore, as shown in the results with the modified intersection arrangement, the operation for the right turn movement can be improved significantly by widening the median to allow vehicles to safely stage at the central median.

- > The results of the SIDRA assessment at West Coast Drive/Raleigh Road intersection shows that all approaches have sufficient capacity to accommodate the traffic demand during the weekday PM and weekend peak hour periods for all scenarios.

Right-turn egress from Raleigh Road on the weekend peak operates at a relatively poor level of service. However, given the short queue length for this movement even during the peak periods, approximately 1-3 vehicles for Scenarios 3 and 4, the overall impact is considered to be negligible. Therefore, no modifications to this intersection are considered necessary to support the proposed development.

The results of the SIDRA assessment at West Coast Drive/Site Access intersection shows that all approaches have sufficient capacity to accommodate the traffic demand during the weekday PM and weekend peak hour periods for all scenarios. Therefore, no modifications to this crossover geometry are considered necessary to support the proposed development.

8 Summary and Conclusions

This report has been prepared in accordance with the *Western Australian Planning Commission (WAPC) Transport Impact Assessment Guidelines Volume 2 – Planning Schemes, Structure Plans & Activity Centre Plans (2016)*.

The following conclusions have been made in regards to the proposed development:

- > The main access for visitors to the Site is proposed south of the existing West Coast Drive/The Plaza intersection, retaining full movements under priority control.
- > The residential access to the Site is proposed from Padbury Circle.
- > The Site has access to shared paths along West Coast Drive, though pedestrian crossings across West Coast Drive will need improvement as it can be difficult for pedestrians to safely cross the road.
- > The Site benefits from public transport facilities with Route 423 bus services operating along West Coast Highway stopping at Stirling Station, Warwick Station and Karrinyup Bus Station.
- > The Site is expected to generate a total of 188 vehicles in the weekday AM peak hour, 286 vehicles in the weekday PM peak hour and 221 vehicles in the weekend peak hour. With the exclusion of the existing development traffic, the total increase in vehicle trips onto the road network is between 60-80 vehicles.
- > The results of the SIDRA assessment at West Coast Drive/The Plaza intersection shows that all the approaches apart from the right turn movement out of The Plaza to West Coast Drive in the Saturday Peak, have sufficient capacity to accommodate the traffic demand during the weekday PM and weekend peak hour periods for all scenarios.

Furthermore, as shown in the results with the modified intersection arrangement, the operation for the right turn movement can be improved significantly by widening the median to allow vehicles to safely stage at the central median. As part of the previous assessment for the SAC, this proposed arrangement was discussed with the City of Joondalup, who were receptive of the idea. It is likely that further consultation with the City and MRWA will be required as the application progresses.

- > The results of the SIDRA assessment at West Coast Drive/Raleigh Road intersection shows that all approaches have sufficient capacity to accommodate the traffic demand during the weekday PM and weekend peak hour periods for all scenarios.

Right-turn egress from Raleigh Road on the weekend peak operates at a relatively poor level of service. However, given the short queue length for this movement even during the peak periods, approximately 1-3 vehicles for Scenarios 3 and 4, the overall impact is considered to be negligible. Therefore, no modifications to this intersection are considered necessary to support the proposed development.

- > The results of the SIDRA assessment at West Coast Drive/Site Access intersection shows that all approaches have sufficient capacity to accommodate the traffic demand during the weekday PM and weekend peak hour periods for all scenarios. Therefore, no modifications to this crossover geometry are considered necessary to support the proposed development.

APPENDIX

A

WAPC TRANSPORT IMPACT
ASSESSMENT CHECKLIST

Item	Provided	Comments/Proposals
Summary		
Introduction/Background	Included in Section 1	
Structure plan proposal	Included in Section 6	
▪ regional context	Included in Section 2	
▪ proposed land uses	Included in Section 2	
▪ table of land uses and quantities	Included in Section 6	
▪ major attractors/generators	Included in Section 5	
▪ specific issues	N/A	
Existing situation		
▪ existing land uses within structure plan	Included in Section 2	
▪ existing land uses within 800 metres of structure plan area	Included in Section 2	
▪ existing road network within structure plan area	Included in Section 2	
▪ existing pedestrian/cycle networks within structure plan area	Included in Section 2	
▪ existing public transport services within structure plan area	Included in Section 2	
▪ existing road network within 2 (or 5) km of structure plan area	Included in Section 2	
▪ traffic flows on roads within structure plan area (PM and/or AM peak hours)	N/A	
▪ traffic flows on roads within 2 (or 5) km of structure plan area (AM and/or PM peak hours)	Included in Section 2	
▪ existing pedestrian/cycle networks within 800m of structure plan area	Included in Section 2	
▪ existing public transport services within 800m of structure plan area	Included in Section 2	
Proposed internal transport networks		
▪ changes/additions to existing road network or proposed new road network	N/A	
▪ road reservation widths	N/A	
▪ road cross-sections & speed limits	N/A	
▪ intersection controls	N/A	
▪ pedestrian/cycle networks and crossing facilities	N/A	
▪ public transport routes	N/A	
Changes to external transport networks		
▪ road network	Included in Section 3	
▪ intersection controls	Included in Section 3	
▪ pedestrian/cycle networks and crossing facilities	Included in Section 3	
▪ public transport services	Included in Section 3	
Integration with surrounding area		
▪ trip attractors/generators within 800 metres	Included in Section 5	
▪ proposed changes to land uses within 800 metres	Included in Section 5	
▪ travel desire lines from structure plan to these attractors/generators	N/A	
▪ adequacy of external transport networks	N/A	
▪ deficiencies in external transport networks	N/A	

▪ remedial measures to address deficiencies	N/A	
Analysis of internal transport networks		
▪ assessment year(s) and time period(s)	Included in Section 7	
▪ structure plan generated traffic	Included in Section 7	
▪ extraneous (through) traffic	Included in Section 7	
▪ design traffic flows (ie. total traffic)	Included in Section 7	
▪ road cross-sections	N/A	
▪ intersection controls	Included in Section 7	
▪ access strategy	N/A	
▪ pedestrian / cycle networks	Included in Section 2	
▪ safe routes to schools	N/A	
▪ pedestrian permeability & efficiency	Included in Section 2	
▪ access to public transport	Included in Section 2	
Analysis of external transport networks		
▪ extent of analysis	Included in Section 7	
▪ base flows for assessment year(s)	Included in Section 7	
▪ total traffic flows	Included in Section 7	
▪ road cross-sections	N/A	
▪ intersection layouts & controls	Included in Section 7	
▪ pedestrian/cycle networks	Included in Section 2	
Conclusions	Included in Section 8	

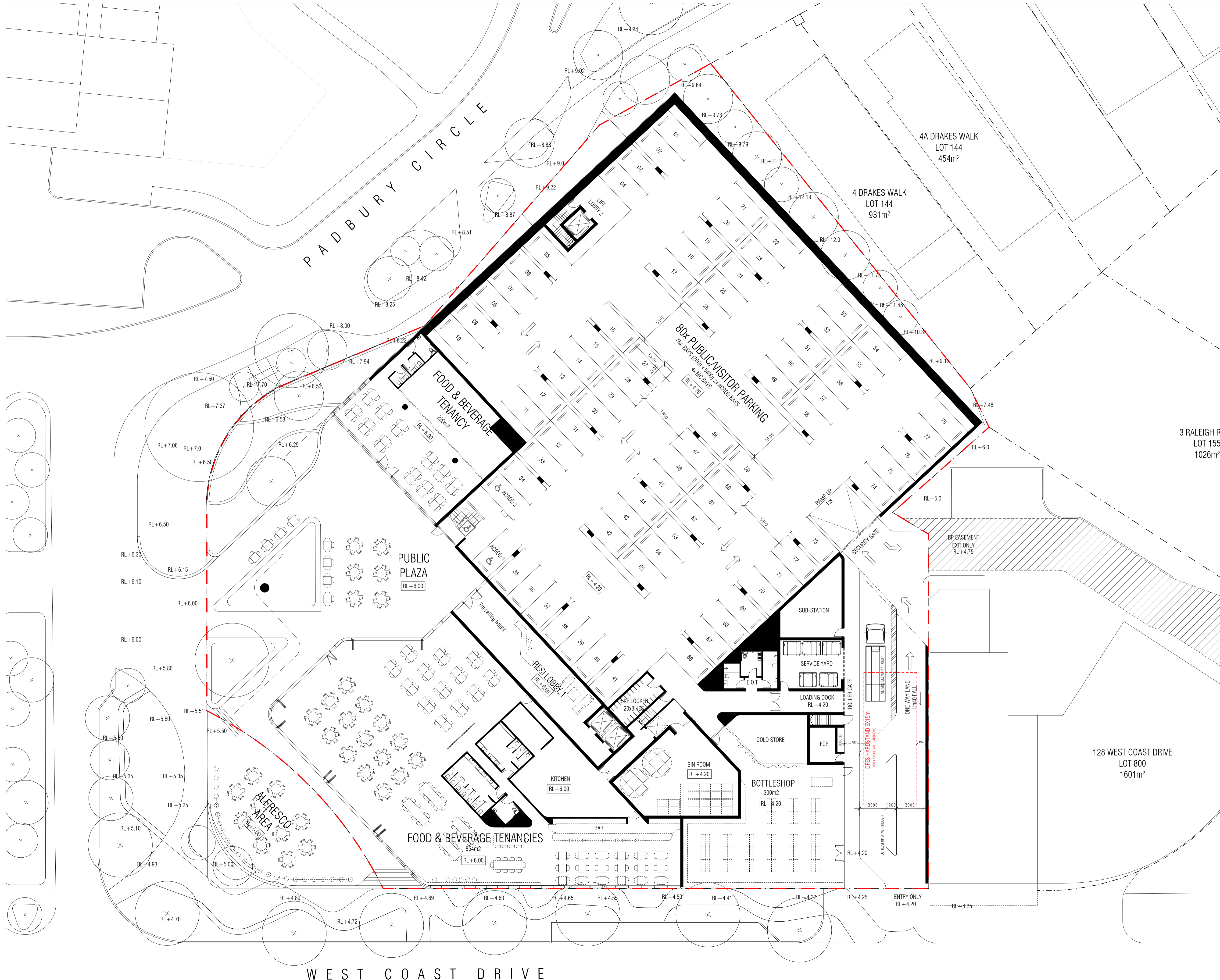
APPENDIX

B

SORRENTO ACTIVITY CENTRE PLAN

REV.	DATE	AMENDMENT	INIT.
-	17.12.21	DEVELOPMENT APPLICATION	TD
-	15.03.22	FOR INFORMATION / SDRP 2	TD
-	03.05.22	FOR INFORMATION / SDRP 3	TD

PLANNING: PLANNING SOLUTION
LANDSCAPE: ASPECT STUDIO
WASTE: TALIS
TRAFFIC: CARDNO
ENERGY: CUNDALL



CLIENT
MEGARA

PROJECT
SORRENTO ACTIVITY CENTRE

PROJECT ADDRESS
**WEST COAST DRIVE
SORRENTO, WA**

MJA PROJECT NUMBER
20057

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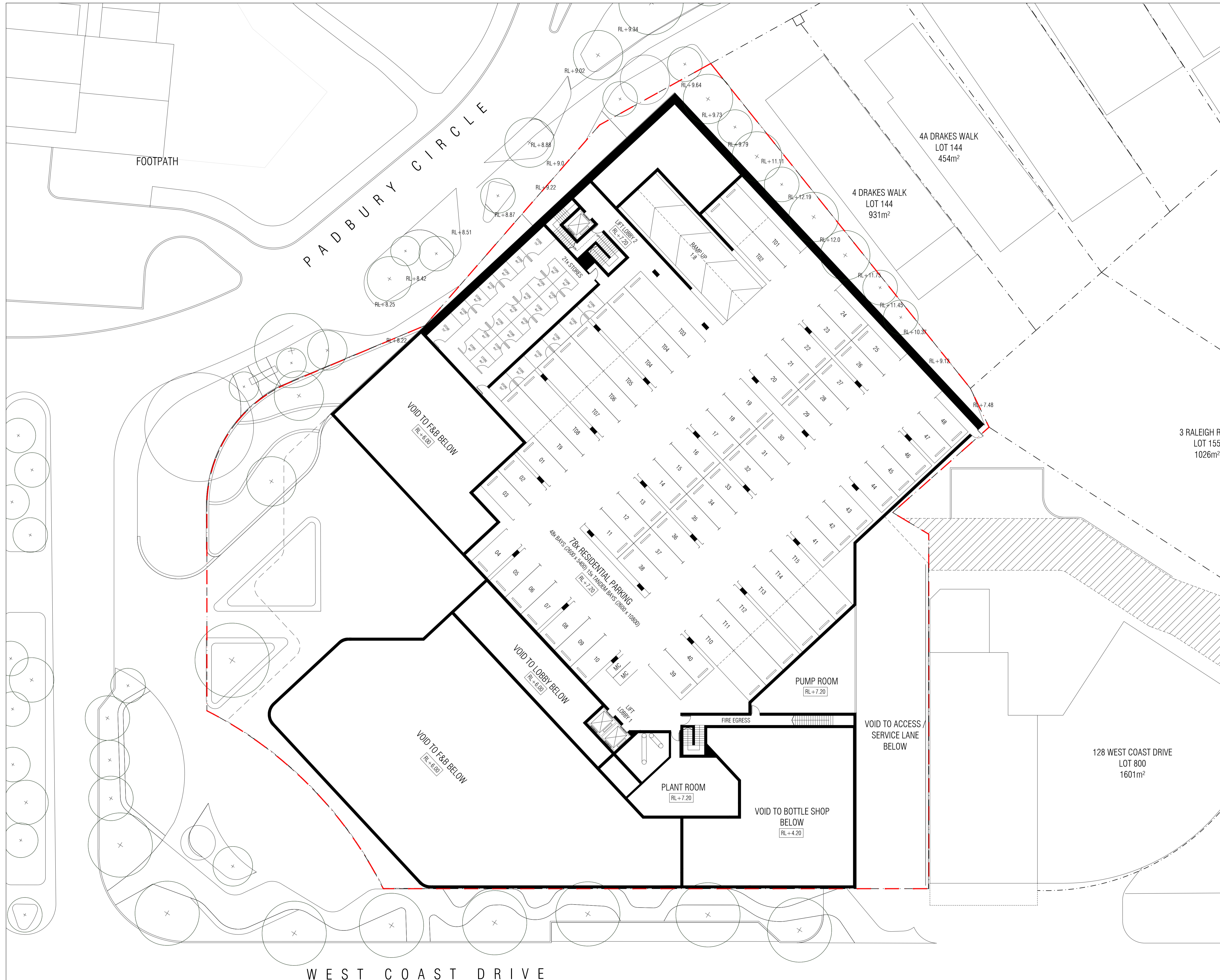
STATUS
DEVELOPMENT APPLICATION

DRAWING
**GENERAL ARRANGEMENT
GROUND FLOOR**

DRAWING NO.	DRAFTER	CHECKED	REV.
1.02	--	TD	

REV.	DATE	AMENDMENT	INIT.
-	17.12.21	DEVELOPMENT APPLICATION	TD
-	15.03.22	FOR INFORMATION / SDRP 2	TD
-	03.05.22	FOR INFORMATION / SDRP 3	TD

PLANNING: PLANNING SOLUTION
LANDSCAPE: ASPECT STUDIO
WASTE: TALIS
TRAFFIC: CARDNO
ENERGY: CUNDALL



CLIENT
MEGARA

PROJECT
SORRENTO ACTIVITY CENTRE

PROJECT ADDRESS
WEST COAST DRIVE
SORRENTO, WA

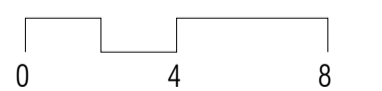
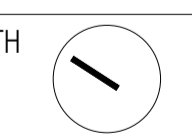
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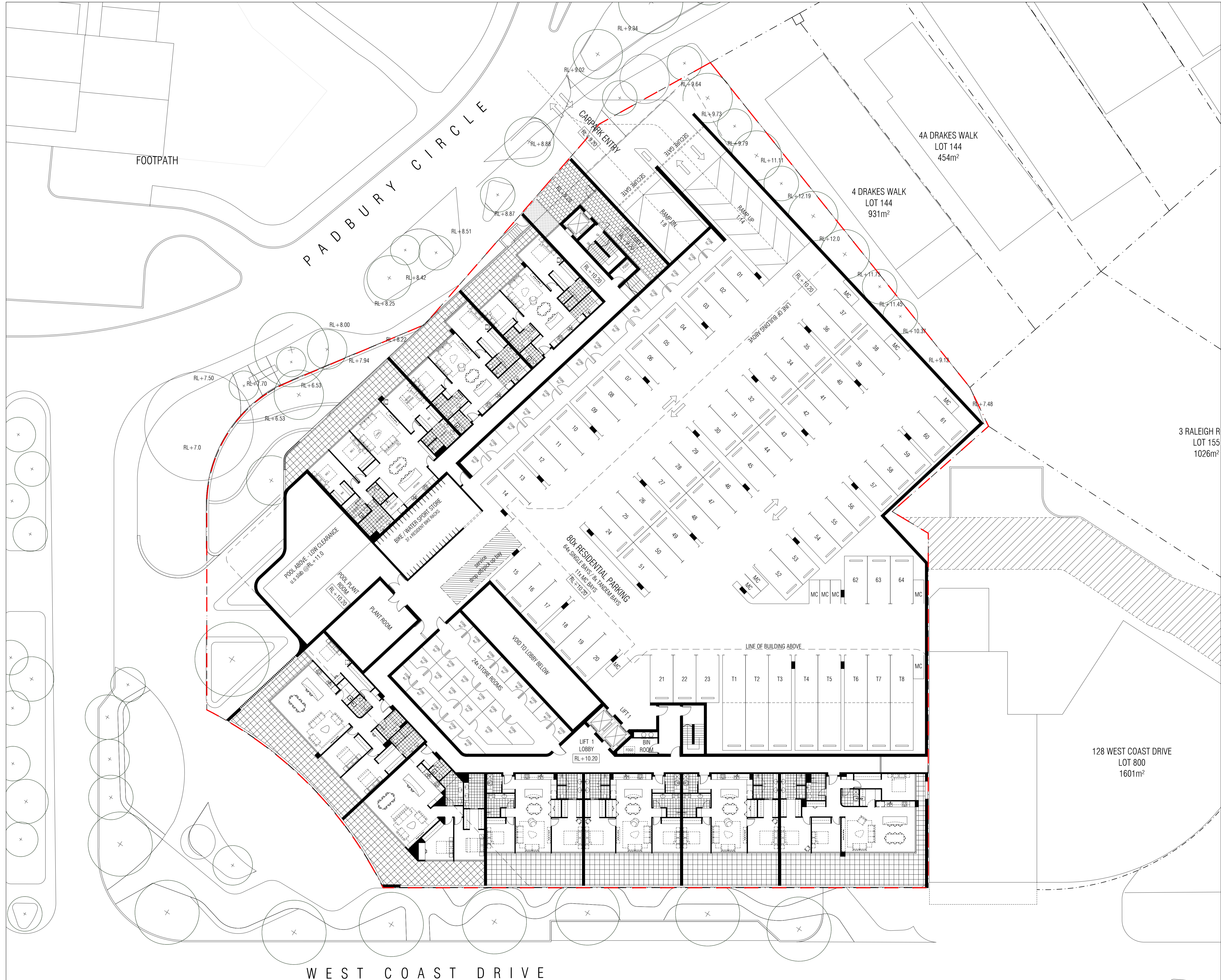
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STATUS
DEVELOPMENT APPLICATION

DRAWING
GENERAL ARRANGEMENT
MEZZANINE FLOOR

DRAWING NO.	DRAFTER	CHECKED	REV.
1.02	--	TD	





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REV.	DATE	AMENDMENT	INIT.
-	17.12.21	DEVELOPMENT APPLICATION	TD
-	15.03.22	FOR INFORMATION / SDRP 2	TD
-	03.05.22	FOR INFORMATION / SDRP 3	TD

PLANNING: PLANNING SOLUTION
 LANDSCAPE: ASPECT STUDIO
 WASTE: TALIS
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 ENERGY: CUNDALL

CLIENT
MEGARA

PROJECT
SORRENTO ACTIVITY CENTRE

PROJECT ADDRESS
**WEST COAST DRIVE
 SORRENTO, WA**

MJA PROJECT NUMBER
20057

SCALE
1:200 @ A1

STATUS
DEVELOPMENT APPLICATION

DRAWING
**GENERAL ARRANGEMENT
 LEVEL 1**

DRAWING NO.	DRAFTER	CHECKED	REV.
1.03	--	TD	