Yanchep Central Stage 1 Lot 50 Development

Transport Impact Assessment

PREPARED FOR:
FRP Capital

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REPORT TABLES

1.0 Introduction

This Transport Impact Assessment has been prepared by Transcore in relation to the proposed Yanchep Central Stage 1 Lot 50 development in Yanchep in the City of Wanneroo.

Lot 50 is located on the eastern side of Marmion Avenue and south of Peony Boulevard, as shown in Figure 1. The site is located opposite the existing Woolworths anchored shopping centre on the northern side of Peony Boulevard. Figure 1 depicts the zones and reservations of the Metropolitan Region Scheme (MRS) overlaid on a current aerial photograph and shows the Other Regional Roads Reservations (blue road) for Marmion Avenue and Yanchep Beach Road.

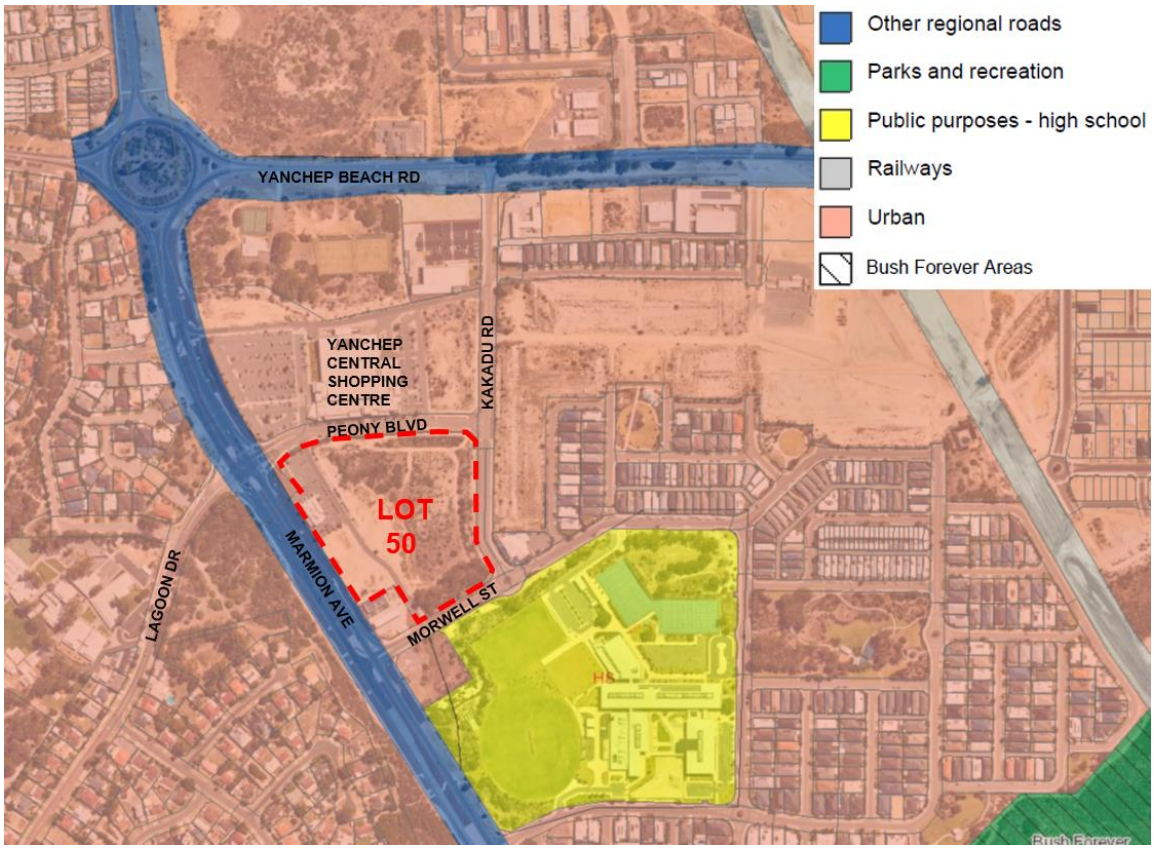


Figure 1: Site location

Key issues that will be addressed in this report include access arrangements, intersection capacity and parking provision.

2.0 Development Proposal

The overall layout of the proposed development is shown on the proposed site plan in Figure 2 and at Appendix A.

Figure 2: Proposed Stage 1 Lot 50 Development

The existing shopping centre consists of:

- Woolworths supermarket and specialty stores (total 6,184m^2 NLA) north of Peony Blvd; and
- McDonalds restaurant (489m^2 NLA) south of Peony Blvd.

The proposed Stage 1 Lot 50 Development consists of:

- New supermarket and specialty stores (total 4,885m^2 NLA);
- Medical / health (680m^2 NLA)

- Child care centre (565m^2 NLA)
- Two fast food restaurants (285m^2 and 265m^2 NLA)
- Fuel outlet (217m^2 NLA)
- Stage 1 subtotal: 6,897m^2 NLA

Therefore, the total floor area of Yanchep Central after completion of Stage 1 will be 13,570m^2 NLA

Ultimately, it is anticipated that the remaining vacant areas of precinct (at the northwest, northeast and southeast corners of the precinct) will also be developed as part of the overall Yanchep Central Master Plan in future but details of that potential future development and timing are currently unknown. Such future expansion is not part of the current development application and would be subject to a separate development application process. Land ownership and contractual arrangements are different for the north and south sites and cannot be treated as a single site. The proposed Stage 1 Lot 50 Development does not involve any changes on the northern site.

Accordingly, this report focusses on the current development application for the Stage 1 Lot 50 Development only.

As can be seen on Figure 2, the overall precinct is located on two lots divided by an east west "main street" (Peony Boulevard), which connects from Marmion Avenue on the western side of the site to Kakadu Road on the eastern side of the precinct.

Access is currently provided by the following key intersections:

- Marmion Ave / Yanchep Central left in only driveway (northern site only)
- Marmion Ave / Peony Blvd / Lagoon Dr signalised 4-way intersection (central)
- Marmion Ave / Morwell St T-intersection (south)
- Peony Blvd 4-way intersection with north south driveways 60m east of Marmion Ave

For the proposed Stage 1 Lot 50 Development the 4-way driveway intersection on Peony Boulevard is proposed to be modified by realigning the southern driveway about 35m eastwards, as seen on Figure 2. In particular, this will eliminate conflicts between the right turn movements into the southern driveway and out from the northern driveway, significantly improving the capacity for these critical right turn movements.

The proposed Stage 1 Lot 50 Development will be served by the following driveway crossovers:

- New left turn exit only onto Peony Blvd from proposed fuel site;
- Realigned accessway driveway for pad sites south of Peony Blvd (as discussed above);
- New driveway to new car park on south side of Peony Blvd;
- New driveway to new supermarket loading zone and childcare centre on south side of Peony Blvd;
- New driveway on Kakadu Road; and

- Existing access driveway for pad sites north of Morwell Street.

Delivery vehicles for the Stage 1 Lot 50 Development will approach the new supermarket loading zone via the eastern end of Peony Boulevard from Kakadu Road. Medium-sized delivery vehicles (up to 8.8m trucks) to the pad sites south of Peony Boulevard would be able to access from either end of the pad sites' accessway but any larger trucks servicing the pad sites (eg. larger delivery trucks or semi-trailer fuel tankers) would only access via the southern end at Morwell Street.

3.0 Existing Situation

3.1 Existing Land Use

As shown in Figure 3, most of the northern half of the site (north of Peony Boulevard) is occupied by the existing shopping centre and most of Lot 50 (south of Peony Boulevard) is currently vacant land, apart from an existing McDonalds restaurant on one of the pad sites fronting Marmion Avenue.

Figure 3: Existing land use (April 2021)

The Ampol service station at the corner of Marmion Avenue and Morwell Street is not within the subject site.

Other development shown on Figure 2 includes an Aldi supermarket and Yanchep Sports Club north of the existing shopping centre and Yanchep Secondary College south of Morwell Street

Substantial residential development has already occurred on the western side of Marmion Avenue and east of the subject site around Yanchep Secondary College.

3.2 Existing Road Network

Marmion Avenue is covered by an Other Regional Roads reservation in the MRS as shown in Figure 1. All of Marmion Avenue south of Yanchep Beach Road is now a State Road under the care and control of Main Roads WA and it is classified as a Primary Distributor in the Main Roads WA functional road hierarchy.

Marmion Avenue is constructed as a dual carriageway road with two lanes in each direction. This section of Marmion Avenue has a posted speed limit of 60km/h and no direct driveway access from abutting residential or commercial properties, apart from a left in only driveway connection (constructed to intersection standard with left turn deceleration lane on Marmion Avenue) at the north-western corner of the existing shopping centre.

Peony Boulevard runs eastwards from Marmion Avenue to Kakadu Road. It is classified as an Access Road in the Main Roads WA functional road hierarchy and the default built up area speed limit of 50km/h applies. Most of its length is constructed as one lane each way (3.5m traffic lanes) separated by a 2m-wide raised median, with parking bays indented in both verges. There is no parking on the western 60m section of Peony Boulevard, with left and right turn lanes added on approach to the signalised intersection at Marmion Avenue.

Morwell Street is classified as an Access Road in the Main Roads WA functional road hierarchy and the default built up area speed limit of 50km/h applies. It is constructed as a two-lane, single-carriageway urban road with a full-movement T-intersection on Marmion Avenue at its western end and a single-lane roundabout at its intersection with Kakadu Road.

Kakadu Road is classified as an Access Road in the Main Roads WA functional road hierarchy and the default built up area speed limit of 50km/h applies. It is constructed as a two-lane, single-carriageway urban road with a left in / left out T-intersection on Yanchep Beach Road at its northern end and terminates in the single-lane roundabout at Morwell Street .

The Marmion Ave / Peony Blvd / Lagoon Dr intersection is constructed as a signalised 4-way intersection with left and right turn lanes provided on each approach, as shown in Figure 4.

Figure 4: Existing Marmion Ave / Peony Blvd / Lagoon Dr intersection

3.3 Existing Traffic Flows

Traffic volume data from the Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection indicates average weekday traffic flows on each road as shown in **Table 1**.

Table 1: Existing Traffic Volumes

Road	Date	AM Peak Hour	PM Peak Hour	Average Weekday Traffic
Marmion Ave (N of Peony Blvd)	Feb 2021	1064vph (8-9AM)	984vph (3-4PM)	11,630vpd
Marmion Ave (S of Peony Blvd)	Feb 2021	1068vph (8-9AM)	968vph (3-4PM)	11,236vpd
Peony Blvd (E of Marmion Ave)	Feb 2021	375vph (8-9AM)	463vph (3-4PM)	4,804vpd
Lagoon Dr (W of Marmion Ave)	Feb 2021	576vph (8-9AM)	426vph (2-3PM)	4,675vpd

Manual turn traffic counts were also undertaken for this project on Thursday 25 March 2021 (8-9AM and 3-4PM) and Saturday 27 March 2021 (11AM-12PM) at the Marmion Ave / Morwell St T-intersection and at the left in driveway intersection on Marmion Avenue north of Peony Boulevard. The results of those peak hour traffic counts and corresponding Thursday and Saturday peak hour flows from the November 2020 SCATS data at the signalised intersection are shown in Figure 5.

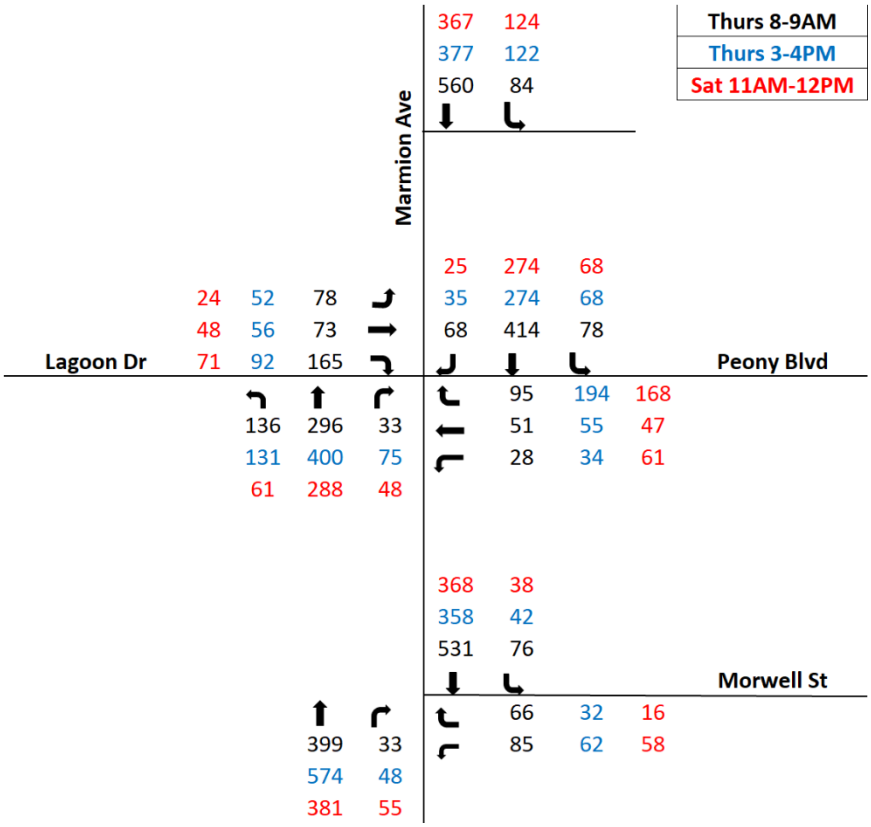


Figure 5: Existing peak hour traffic flows (2021)

Traffic count information previously obtained from the City of Wanneroo indicated that Marmion Avenue (south of Peony Boulevard) carried approximately 7,850 vehicles per weekday in 2013. **Table 1** indicates this had increased to 11,236vpd in 2021, which represents a traffic growth rate of approximately 5.4% per year.

3.4 Road Safety

Information available on the Main Roads WA website indicates the following crashes were recorded at the four intersections around the subject site during the 2016 – 2020 five-year period.

- Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection:
  - 7 crashes total
  - 1 injury requiring medical treatment, 5 PDO major, 1 PDO minor
  - 4 right turn / through and 3 rear end crashes
- Marmion Ave / Morwell St T-intersection:
  - 1 crash total
  - 1 PDO minor
  - 1 rear end crash
- Peony Blvd / Kakadu Rd T-intersection:
  - 1 crash total
  - 1 PDO minor
  - 1 right angle crash
- Morwell St / Kakadu Rd roundabout:
  - No crashes recorded

3.5 Public Transport

The closest existing Transperth bus routes to the subject site are route 490 (Butler Train Station – Two Rocks) and route 491 (Butler Station – Yanchep), which both travel along Marmion Avenue adjacent to the subject site, as shown in Figure 6.

Route 490 currently provides hourly service on all days and more frequent service during weekday AM and PM peak periods.

Route 491 currently provides hourly service on weekdays (two-hourly on Saturdays, Sundays and public holidays) and more frequent service during weekday AM and PM peak periods.

The closest bus stops are located on Marmion Avenue between Peony Boulevard and Morwell Avenue.

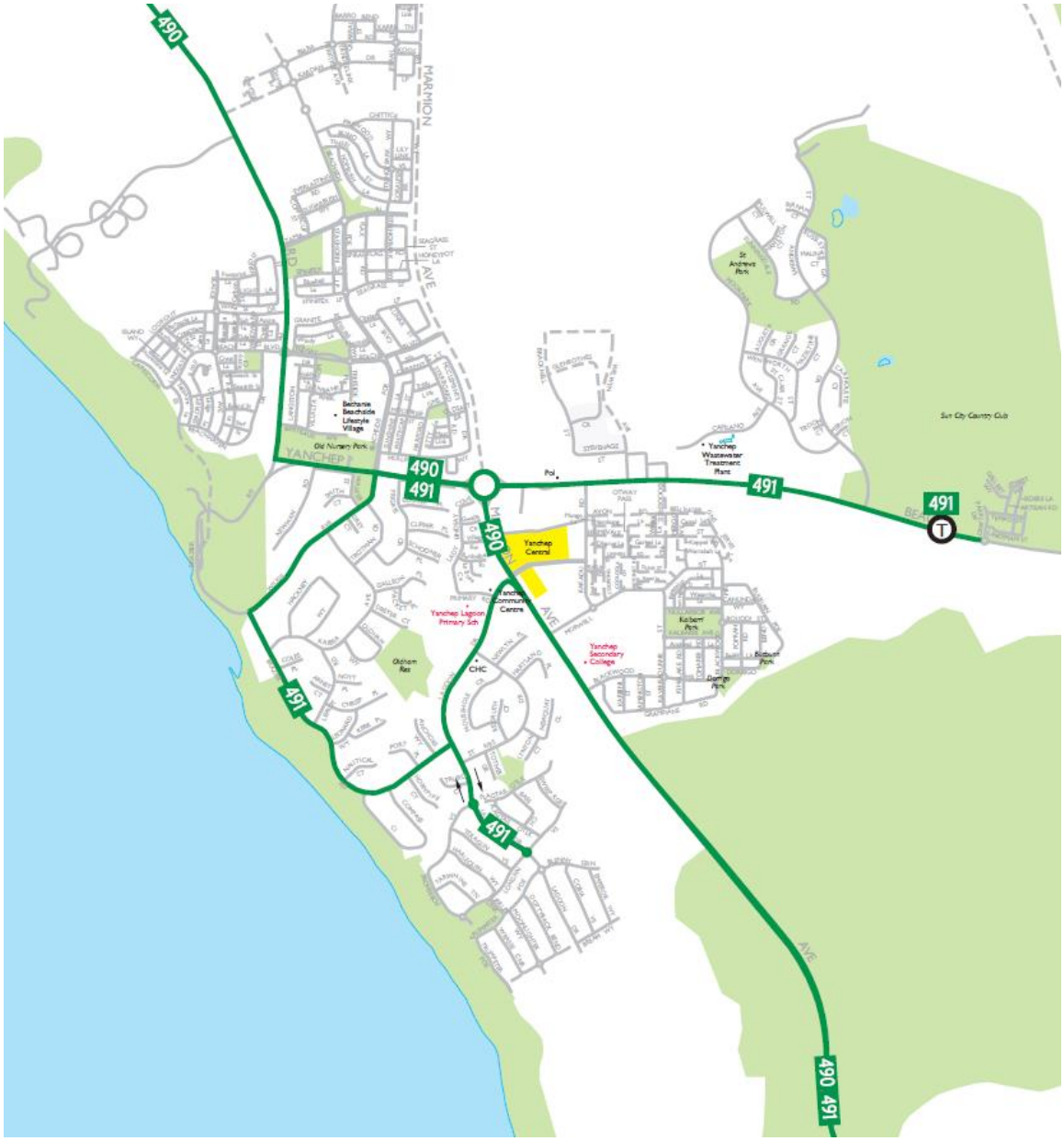


Figure 6: Existing public transport

3.6 Pedestrian and Cyclist Facilities

There is an existing 3m wide red asphalt path on the eastern verge of Marmion Avenue south of Yanchep Beach Road to Morwell Street, then 2.5m concrete path south of Morwell Street. The western verge of Marmion Avenue has 2.0m to 2.5m concrete path from 90m south of the Yanchep Beach Rd roundabout to about 170m south of Morwell Street.

Morwell Street has a 1.5m concrete path on the northern verge adjacent to the Ampol service station and a 2.5m concrete path on the southern verge adjacent to the school site.

Peony Boulevard has about 30m of 2.5m concrete path on the southern verge east of Marmion Avenue and 2.5m concrete path on the northern verge for the full length of the road.

Kakadu Road has a 2.5m concrete path on the eastern verge from Peony Boulevard to Morwell Street and on the western verge north of the subject site.

There is also a path on the northern side of the existing shopping centre car park connecting from Marmion Avenue to the Woolworths anchored shopping centre and other paths connecting to that existing shopping centre and the McDonald's restaurant.

Marmion Avenue has 2m-wide on-road cycle lanes and 1.2 to 1.5m cycle lanes on the Peony Blvd and Lagoon Dr approaches to the signalised intersection.

The Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection includes pedestrian facilities across all four approaches, as can be seen in Figure 4.

3.7 Changes to Surrounding Road Network

City of Wanneroo *Local Planning Policy 3.8: Marmion Avenue Arterial Road Access* includes information on the type and location of vehicular access points on Marmion Avenue and other roads including Yanchep Beach Road. The relevant section of the spatial plan from LPP3.8 is shown in Figure 7.

Future intersection treatments shown on this plan at key intersections relevant to Yanchep Central are as follows:

- Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection (existing);
- Marmion Ave / Morwell St full movement T-intersection (existing);
- Marmion Ave left in / left out access at the northern side of the existing shopping centre (currently left in only);
- Marmion Ave / Yanchep Beach Rd roundabout (existing); and
- Yanchep Beach Rd / Kakadu Rd full movement T-intersection (currently left in / left out only).

Figure 7: Local Planning Policy 3.8: Marmion Avenue Arterial Road Access

Figure 7 also shows the future railway alignment crossing Yanchep Beach Road further east from the subject site. It shows future train stations at Yanchep (north of Yanchep Beach Road) and Yanchep South (south of Yanchep Beach Road). This railway line is currently under construction and due to open in 2022, although the future Yanchep South train station is not included in the current construction project.

3.8 Integration with Surrounding Area

The subject site is included within the Yanchep Town Centre zone, as shown in Figure 7. Accordingly, the proposed land uses are consistent with the general planning intent and the surrounding area has been planned to integrate with this use of the subject site.

4.0 Traffic Assessment

4.1 Assessment Period

The proposed Stage 1 Lot 50 Development is proposed to be completed by 2023. In accordance with WAPC Transport Impact Assessment Guidelines the traffic assessment is to be undertaken for the year of opening and 10 years after opening, so an assessment year of 2033 has been adopted for this transport impact assessment.

The proposed shopping centre development would have highest traffic generation during the Saturday late morning / midday peak period, road network peaks occur during the weekday AM and PM peak hours and the combined peak of shopping centre and road network traffic would occur during the weekday PM peak period. Accordingly, traffic analysis has been undertaken for 2023 and 2033 weekday AM peak, PM peak and Saturday peak periods.

4.2 Traffic Generation

The traffic volume anticipated to be generated by the proposed shopping centre has been calculated using trip rates provided in the New South Wales *Guide to Traffic Generating Developments – Updated Traffic Surveys* (TDT 2013/04a). Trip rates for service stations and fast-food outlets have been sourced from the ITE publication *Trip Generation (10th Edition)*.

It should be noted that shopping centre traffic generation (per square metre of floor area) declines slightly as a shopping centre increases in size, as customers have greater opportunity to combine multiple shopping activities in each trip to a larger shopping centre due to the greater range and variety of land uses available within the site. There will also be cross trade (internal trips) between the service stations, fast food outlets and shopping centre that is not already factored into these trip rates. It is anticipated that approximately 30% of the service station and fast food trips will be internal trips between themselves and the shopping centre. Accordingly, these cross trade internal trips will not be assigned onto the surrounding road network during weekday PM peak and Saturday peak hours. There is less potential for this type of cross trade during the AM peak period when most of the shops in the shopping centre are not pen for business, so no cross trade is assumed during the AM peak period.

Table 2: Peak Hour Traffic Generation (with Stage 1 Lot 50 Development)

Land use	Quantity	AM Peak trip rate	Sat Peak trip rate	PM peak trip rate	AM Peak vph	Sat Peak vph	PM peak vph
Existing land uses							
Service Station	8	12.47	19.46	13.99	100	156	112
Fast food	489	0.351	0.591	0.351	172	289	172
Shopping centre	6184	0.0155	0.075	0.062	96	464	383
Additional land uses (Stage 1 expansion)							
Service Station	8	12.47	19.46	13.99	100	156	112
Fast food	550	0.351	0.591	0.351	193	325	193
Shopping centre	6130	0.0155	0.075	0.062	95	460	380
Total traffic (with Stage 1 expansion only)					**755**	**1848**	**1352**
- Internal trips (cross trade: 30% of fast food & service station trips, nil in AM peak)					**0**	**-277**	**-177**
Total external traffic generation (with Stage 1 expansion only)					**755**	**1571**	**1175**

These land uses can also attract a significant proportion of their customers from the traffic that is already passing the site on the surrounding road network. The ITE Trip Generation Handbook (3rd Edition) provides useful guidance on the proportion to trips that are attracted as pass-by trips rather than primary trips where the trip is specifically undertaken to visit the land uses at the subject site.

The proportion of trips that are pass-by trips for these three land uses are as follows:

- Service station with convenience store: 56%
- Fast food outlet with drive through: 50%
- Shopping centre: 26%

4.3 Traffic Distribution

The distribution of trips that will be attracted to the subject site has been estimated based on the distribution of surrounding residential areas and the catchment area of other competing shopping centres that are planned in this area. Pass-by trips will be more strongly oriented to southbound traffic flows on Marmion Avenue, particularly for the service station and fast-food outlets fronting Marmion Avenue.

The resulting modelled traffic distribution of the proposed development is summarised in Table 3.

Table 3: Traffic distribution

Approach / departure route	Shopping centre		Service station and fast-food	
	Primary Trips	Pass-by Trips	Primary Trips	Pass-by Trips
Marmion Ave north	20%	40%	20%	70%
Marmion Ave south	30%	20%	30%	10%
Lagoon Dr west	30%	-	30%	-
Peony Blvd east	15%	20%	15%	10%
Morwell St east	5%	20%	5%	10%

The traffic movements generated by the proposed development have been manually assigned on the adjacent road network and the resulting traffic movements generated by this development are shown in **Appendix B**. Figure B1 shows the additional traffic flows generated by the Stage 1 Extensions that are the subject of this development application.

4.4 Future Traffic Flows

As documented in section 3.3, existing traffic flows on Marmion Avenue (south of Peony Boulevard) have grown by 5.4% per year between 2013 and 2021. However, Main Roads WA has advised that future traffic volumes on this section of Marmion Avenue are projected to increase at a compound growth rate of 7.82% per year.

Accordingly, future year base traffic flows (without the proposed development) have been estimated by factoring up the current through traffic flows on Marmion Avenue by applying a compound growth rate of 7.82% per year.

The future total traffic flows during peak hours with the proposed development are shown in **Appendix B**. Figure B2 shows 2023 total traffic flows with the proposed Stage 1 extensions and Figure B3 shows 2033 total traffic flows with the proposed Stage 1 extensions .

4.5 Analysis of Intersections and Development Accesses

Key intersections and driveways shown in Figures B1 to B3 (in Appendix B) have been analysed as a network of intersections using Network analysis in the SIDRA computer software package, for the 2023 and 2033 AM, PM and Saturday peak hour traffic flows shown in Figures B2 (2023) and B3 (2033).

SIDRA is an intersection modelling tool commonly used by traffic engineers for all types of intersections. SIDRA outputs are presented in the form of Degree of Saturation, Level of Service, Average Delay and 95% Queue. These characteristics are defined as follows:

- Degree of Saturation is the ratio of the arrival traffic flow to the capacity of the approach during the same period. The Degree of Saturation ranges from close to zero for infrequent traffic flow up to one for saturated flow or capacity.
- Level of Service is the qualitative measure describing operational conditions within a traffic stream and the perception by motorists and/or passengers. In general, there are 6 levels of service, designated from A to F, with Level of Service A representing the best operating condition (i.e. free flow) and Level of Service F the worst (i.e. forced or breakdown flow).
- Average Delay is the average of all travel time delays for vehicles through the intersection.
- 95% Queue is the queue length below which 95% of all observed queue lengths fall.

The SIDRA analysis has been undertaken in accordance with current MRWA operational modelling guidelines including separate input of different classes of heavy vehicles and the parameters specified by MRWA for those vehicle classes.

The results of the SIDRA analysis are summarised in Appendix C (2023) and Appendix D (2033).

The SIDRA results at Tables C1a, C1b and C1c indicate that the existing Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection will operate at a degree of saturation ranging from 0.631 to 0.755 in the three 2023 peak periods analysed. Overall intersection level of service would be C in all three peak periods with no movements at level of service E or F. This is considered to represent a very good level of service for this existing signalised intersection with the proposed Stage 1 extensions that are the subject of the current development application.

The SIDRA results at Tables D1a, D1b and D1c indicate that the existing Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection would operate at a degree of saturation ranging from 0.784 to 0.893 in the three 2033 peak periods analysed. Overall intersection level of service would be D in the weekday peak periods (C in the Saturday peak) with no movements at level of service F. This is considered to represent a satisfactory level of service for this existing signalised intersection in 2033.

The existing 4-way intersection of the north south driveways on Peony Boulevard is not considered suitable for the additional traffic generated by the proposed development.

Accordingly, it is proposed to separate the north and south driveways into a staggered T-intersection arrangement by bending the southern driveway about 35m eastwards, as illustrated on the proposed masterplan. In particular, this will eliminate conflicts between the right turn movements into the southern driveway and out from the northern driveway, significantly improving the capacity for these critical right turn movements. Due to different ownership arrangements for the north and south sites and current contractual requirements for the northern site it is understood that it is not feasible to alter the northern driveway as part of the current development application.

SIDRA results for this proposed staggered T-intersection arrangement are documented in Tables C2a-c and D2a-c (2023 and 2033 results for the northern driveway, labelled as the “internal road” in the SIDRA analysis) and Tables C3a-c and D3a-c (2023 and 2033 results for the realigned southern driveway, labelled as “Access 1” in the SIDRA analysis). In the 2023 and 2033 analysis all movements at both driveways will operate at level of service A, indicating very good operation of these staggered intersections.

The existing Marmion Ave / Morwell St T-intersection SIDRA results are presented in Tables C4a-c and D4a-c. This intersection also operates satisfactorily with no movement worse than level of service C in the 2033 analysis.

The existing left in only driveway from Marmion Avenue north of Peony Boulevard (labelled as "Rd 1" in the SIDRA analysis) is assessed in Tables C5a-c and D5a-c (2023 and 2033 respectively). All movements will continue to operate at level of service A indicating very good operation in 2033.

All of the other intersections and driveways with traffic flows shown in Appendix B will have lower traffic flows than the intersections and driveways analysed above. Accordingly, no further analysis of other driveways and intersections would be required.

These results confirm that the existing intersections or proposed upgrades and proposed driveways around the subject site will all have sufficient capacity to accommodate the forecast traffic flows with the proposed Stage 1 Lot 50 Development.

4.6 Impact on Surrounding Roads and Neighbouring Areas

This proposed shopping centre is an integral part of the structure plan for this area and the road network around it is designed to service and accommodate this development and the surrounding structure plan. Accordingly, the impact of the precinct traffic on the surrounding roads and neighbouring areas is not an issue for concern for this proposed development.

4.7 Road Safety

No particular road safety issues have been identified in relation to the proposed development.

5.0 Parking

The Stage 1 Lot 50 Development site plan at Appendix A indicates that the proposed parking provision consists of a total of approximately 785 bays (excluding "click and collect" bays), as follows:

- 430 existing "at grade" bays;
- 312 new "at grade" bays;
- 25 on-street bays; and
- 18 queuing bays (includes click and collect bays).

Existing car parks north of Peony Boulevard will remain unchanged in the Stage 1 Lot 50 Development and existing access arrangements for those car parks will not be changed.

The new southern car parks will be accessed via a number of new or modified access points, as shown on the concept plan at Appendix A and as discussed in section 2.0.

6.0 Public Transport

The existing bus services in this area have been noted in Section 3.5 of this report and will provide a satisfactory level of public transport accessibility to the site, particularly during weekday AM and PM peak periods.

7.0 Pedestrians and Cyclists

The existing pedestrian and cyclist facilities in this area have been noted in Section 3.6 of this report.

Paths will be provided on the verges of Peony Boulevard and Kakadu Road adjacent to the proposed Stage 1 Lot 50 Development.

Pedestrian connections into the proposed development will connect directly to the paths on the surrounding road network and a comprehensive internal network of pathways will be included within this development.

It is anticipated that appropriate bicycle parking facilities for visitors and staff in accordance with the City of Wanneroo requirements would be a condition of approval and will be provided on site.

8.0 Conclusions

This Transport Impact Assessment has been prepared by Transcore in relation to the proposed Yanchep Central Stage 1 Lot 50 Development in Yanchep in the City of Wanneroo.

Lot 50 is located on the eastern side of Marmion Avenue and south of Peony Boulevard, opposite the existing Woolworths anchored shopping centre on the northern side of Peony Boulevard. Land ownership and contractual arrangements are different for the north and south sites and cannot be treated as a single site. The proposed Stage 1 Lot 50 Development does not involve any changes to the existing development on the northern side of Peony Boulevard.

Ultimately, it is anticipated that the remaining vacant areas of the precinct (at the northwest, northeast and southeast corners of the precinct) will also be developed as part of the overall Yanchep Central Master Plan in future but details of that potential future development and timing are currently unknown. Such future expansion is not part of the current development application and would be subject to a separate development application process.

For the proposed Stage 1 Lot 50 Development the 4-way driveway intersection on Peony Boulevard is proposed to be modified by realigning the southern driveway about 35m eastwards to create a pair of staggered T-intersections instead of the existing 4-way intersection. This will eliminate conflicts between the right turn movements into the southern driveway and out from the northern driveway, significantly improving the capacity for these critical right turn movements.

Traffic analysis has been undertaken for weekday AM and PM peak hours and the Saturday peak period of the shopping centre. Analysis has been undertaken for the anticipated year of opening of the proposed Stage 1 Lot 50 Development (2023) and ten years after that (2033) allowing for regional traffic growth on Marmion Avenue.

The traffic analysis undertaken for 2033 confirms that the existing Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection will operate satisfactorily with the proposed Stage 1 Lot 50 Development that are the subject of the current development application.

The results of the traffic analysis confirm that the existing intersections or proposed upgrades and proposed driveways around the subject site will all have sufficient capacity to accommodate the forecast traffic flows for this proposed development.

The traffic signals at the Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection include pedestrian facilities to assist pedestrians and cyclists crossing these roads to and from the existing Woolworths anchored shopping centre and the proposed Stage 1 Lot 50 Development .

Paths will be provided on the verges of Peony Boulevard and Kakadu Road adjacent to the proposed Stage 1 Lot 50 Development and appropriate pedestrian connections into and within the proposed development.

It is anticipated that appropriate bicycle parking facilities for visitors and staff in accordance with the City of Wanneroo requirements would be a condition of approval and will be provided on site.

In conclusion, the findings of this Transport Impact Assessment are supportive of the proposed development.

Appendix A

PROPOSED CONCEPT PLAN

Legend

- Supermarket
- Retail / F&B
- Commercial / Other
- Health and Wellness
- Childcare
- Fast Food
- Fuel
- Existing
- Future Stage

Level	Cars
Existing At Grade Bays	430
At Grade Bays	312
'Street' Bays	25
Queuing Bays*	18
Total	785

*Includes Click and Collect Bays

NLA (New)	m²
Coles	3,600
Supermarket Liquor	200
Retail / F+B	740
Commercial / Other	345
Medical / Health	680
Childcare	565
Fast Food	550
Fuel	217
Sub-Total	6,897
Existing Centre / Fast Food	6,673
Total	**13,570**

Note: Areas are approximate only and are subject to change.

Yanchep Central Shopping Centre
Proposed Plan - Stage 1
City of Wanneroo - Development Application

A
DA9
07 2021

1:1000 @ A1, 1:2000 @ A3
20133

FRP PLAN E TAYLOR ROBINSON CHANEY BRODERICK

Appendix B

FUTURE TRAFFIC FLOWS

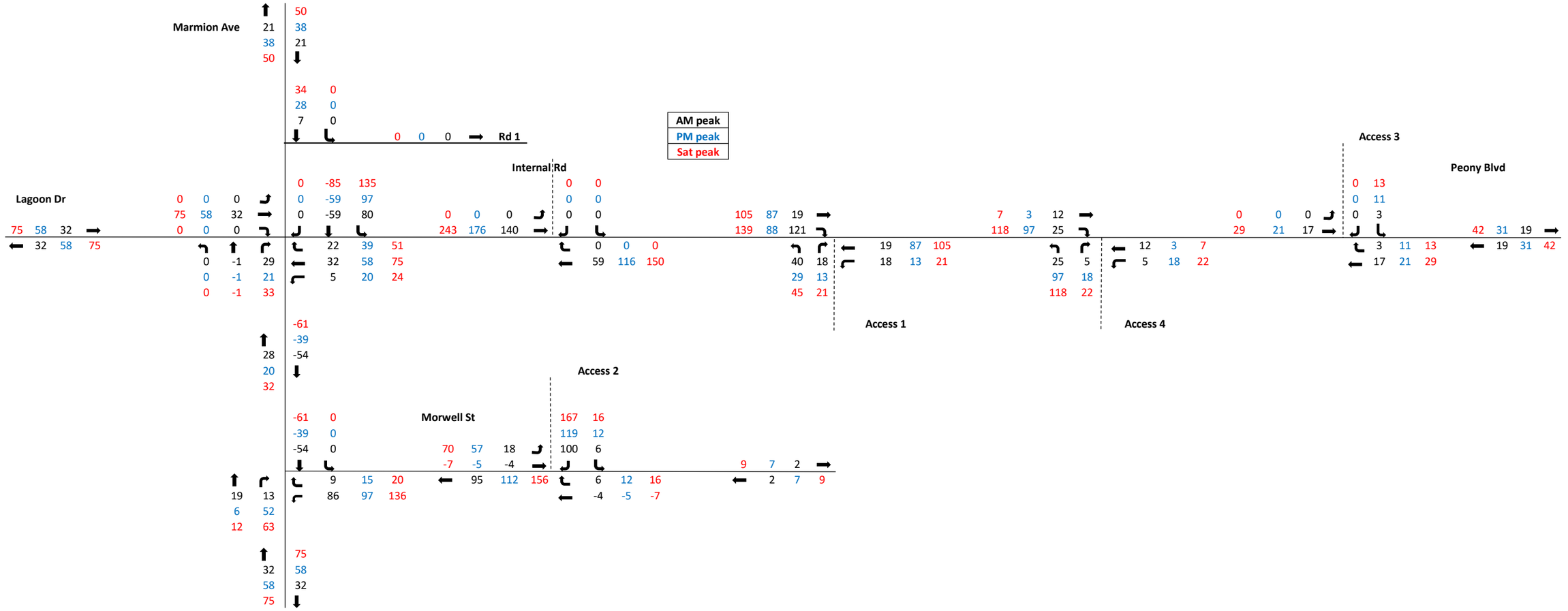


Figure B1: Additional Traffic Flows Generated by Stage 1 Lot 50 Development only

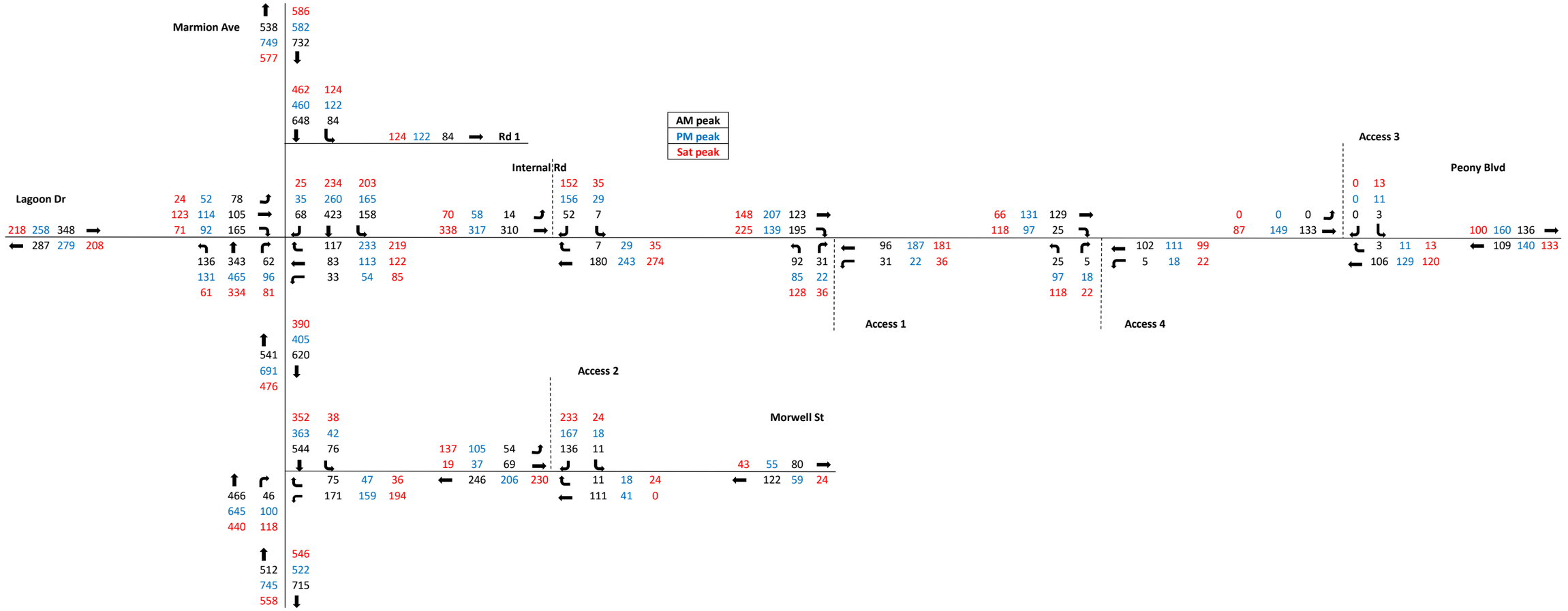


Figure B2: 2023 Peak Hours Total Traffic Flows with Stage 1 Lot 50 Development

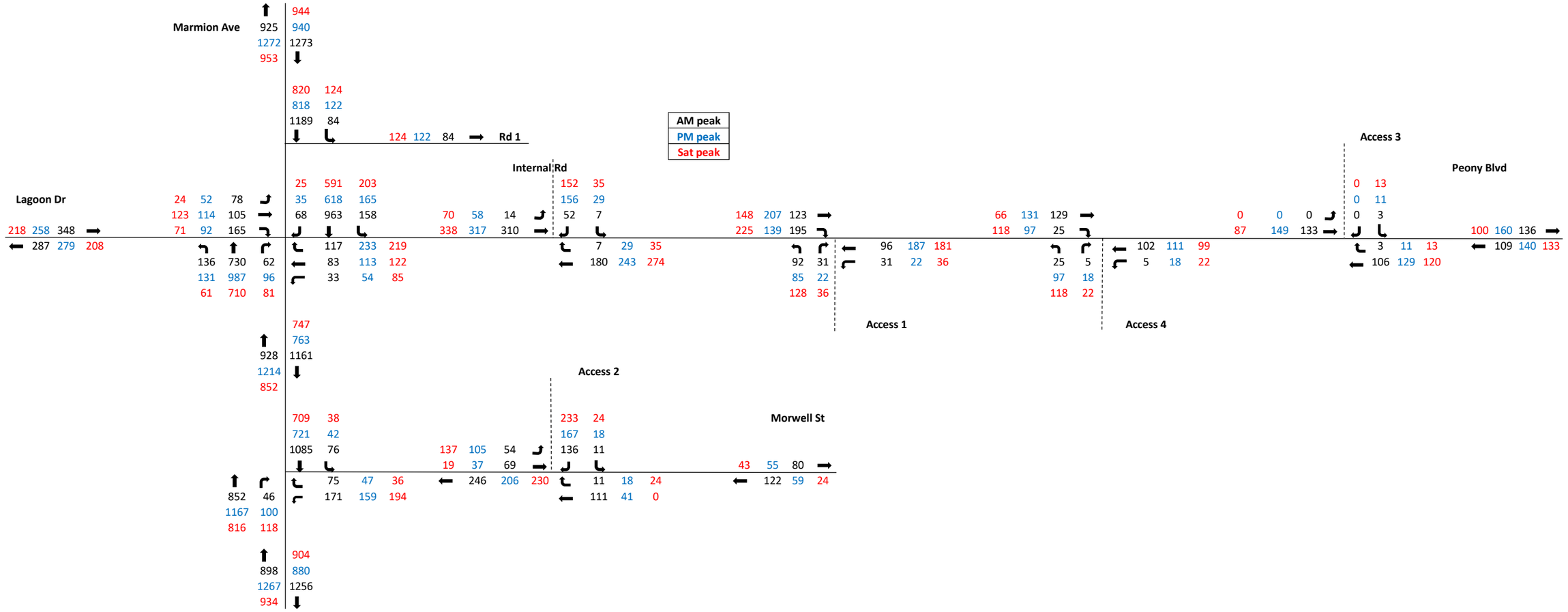
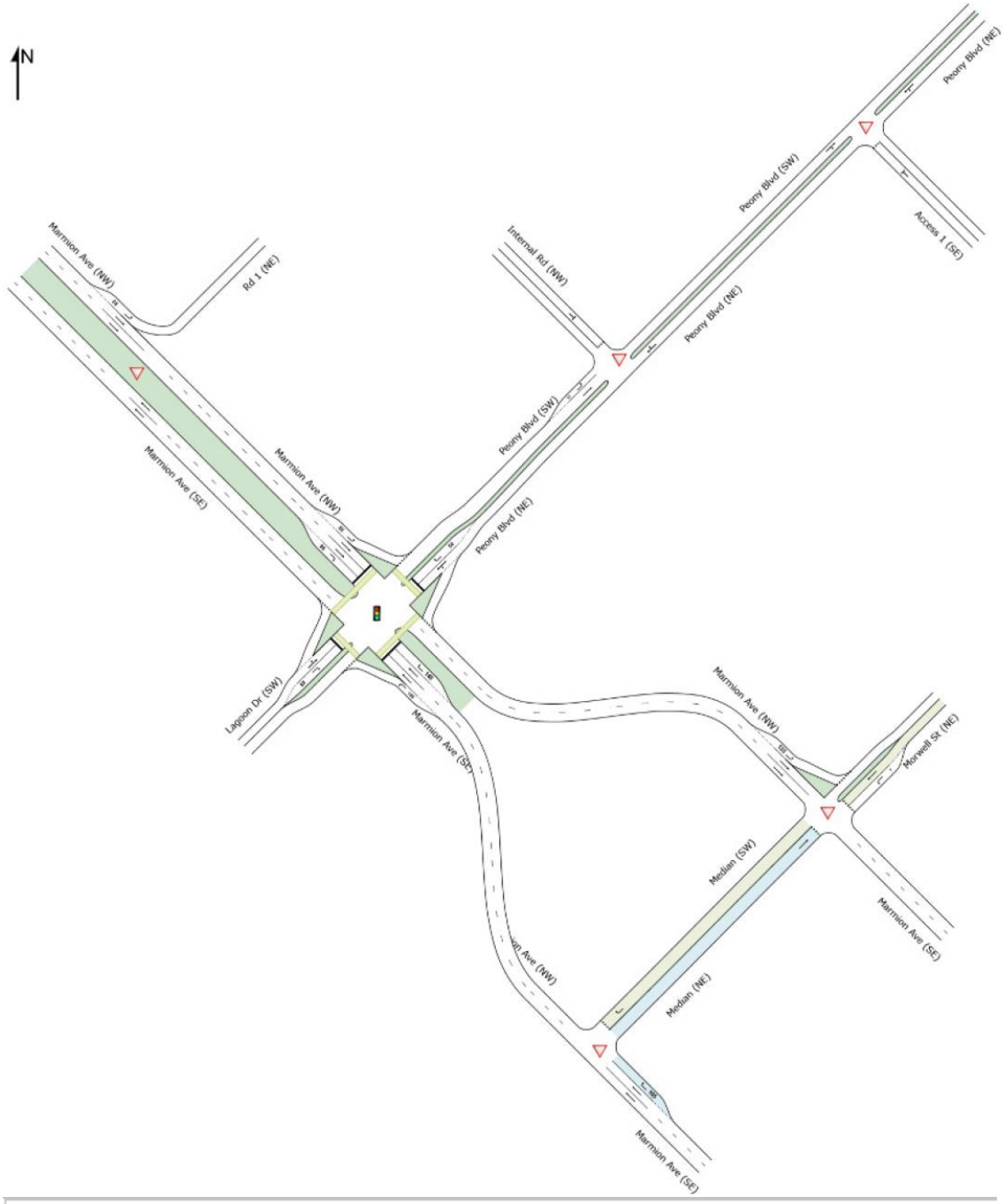


Figure B3: 2033 Peak Hours Total Traffic Flows with Stage 1 Lot 50 Development

Appendix C

2023 SIDRA INTERSECTION ANALYSIS



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽	NA	Marmion Ave & Rd 1 - 2023 - Stage 1 DA - PM
🚦	NA	Marmion Ave & Peony Blvd & Lagoon Dr - 2023 - Stage 1 DA - PM
▽	NA	Peony Blvd & Internal Rd - 2023 - Stage 1 DA - PM
▽	NA	Peony Blvd & Access 1 - 2023 - Stage 1 DA - PM
▽	NA	Marmion Ave & Morwell St - 1st Stage - 2023 - Stage 1 DA - PM
▽	NA	Marmion Ave & Morwell St - 2nd Stage - 2023 - Stage 1 DA - PM

Table C1a: SIDRA results – Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection – 2023 AM peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
10	L2	143	2.0	143	2.0	0.106	6.7	LOS A	0.8	5.8	0.25	0.61	0.25	45.7
11	T1	361	10.4	361	10.4	0.584	34.0	LOS C	6.7	55.6	0.97	0.79	0.97	19.4
12	R2	65	2.0	65	2.0	0.476	46.9	LOS D	2.6	19.9	1.00	0.75	1.00	15.5
Approach		569	7.3	569	7.3	0.584	28.6	LOS C	6.7	55.6	0.79	0.74	0.79	24.5
NorthEast: Peony Blvd (NE)														
1	L2	35	2.0	35	2.0	0.189	15.5	LOS B	2.4	18.1	0.72	0.61	0.72	16.3
2	T1	87	2.0	87	2.0	* 0.189	11.3	LOS B	2.4	18.1	0.72	0.61	0.72	33.2
3	R2	123	2.0	123	2.0	0.539	41.5	LOS D	4.8	35.9	0.98	0.79	0.98	6.3
Approach		245	2.0	245	2.0	0.539	27.1	LOS C	4.8	35.9	0.85	0.70	0.85	15.9
NorthWest: Marmion Ave (NW)														
4	L2	166	2.0	166	2.0	0.131	6.8	LOS A	0.9	7.0	0.25	0.62	0.25	37.4
5	T1	445	10.3	445	10.3	* 0.721	36.6	LOS D	8.9	73.1	1.00	0.89	1.11	13.7
6	R2	72	2.0	72	2.0	* 0.528	47.2	LOS D	2.9	22.0	1.00	0.77	1.02	20.4
Approach		683	7.4	683	7.4	0.721	30.5	LOS C	8.9	73.1	0.82	0.81	0.90	17.4
SouthWest: Lagoon Dr (SW)														
7	L2	82	2.0	82	2.0	0.244	12.4	LOS B	3.0	22.7	0.65	0.61	0.65	33.8
8	T1	111	2.0	111	2.0	0.244	7.8	LOS A	3.0	22.7	0.65	0.61	0.65	33.8
9	R2	174	2.0	174	2.0	* 0.698	43.1	LOS D	7.0	52.8	1.00	0.87	1.12	16.0
Approach		366	2.0	366	2.0	0.698	25.6	LOS C	7.0	52.8	0.82	0.73	0.87	22.2
All Vehicles		1864	5.6	1864	5.6	0.721	28.5	LOS C	8.9	73.1	0.81	0.76	0.85	20.5

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Marmion Ave (SE)											
P4	Full	53	33.4	LOS D	0.1	0.1	0.91	0.91	70.9	45.0	0.63
NorthEast: Peony Blvd (NE)											
P1	Full	53	33.4	LOS D	0.1	0.1	0.91	0.91	63.7	36.4	0.57
NorthWest: Marmion Ave (NW)											
P2	Full	53	33.4	LOS D	0.1	0.1	0.91	0.91	71.7	46.0	0.64
SouthWest: Lagoon Dr (SW)											
P3	Full	53	32.5	LOS D	0.1	0.1	0.90	0.90	61.6	34.9	0.57
All Pedestrians		211	33.2	LOS D	0.1	0.1	0.91	0.91	67.0	40.6	0.61

Table C1b: SIDRA results – Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection – 2023 PM peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
10	L2	138	2.0	138	2.0	0.100	6.6	LOS A	0.7	5.6	0.22	0.61	0.22	45.8
11	T1	489	10.4	489	10.4	* 0.734	40.1	LOS D	10.9	89.4	1.00	0.89	1.10	17.3
12	R2	101	2.0	101	2.0	* 0.711	53.9	LOS D	4.8	36.0	1.00	0.85	1.18	14.0
Approach		728	7.6	728	7.6	0.734	35.7	LOS D	10.9	89.4	0.85	0.83	0.95	20.8
NorthEast: Peony Blvd (NE)														
1	L2	57	2.0	57	2.0	0.283	16.7	LOS B	3.1	23.0	0.77	0.67	0.77	15.2
2	T1	119	2.0	119	2.0	0.283	12.5	LOS B	3.1	23.0	0.77	0.67	0.77	32.0
3	R2	245	2.0	245	2.0	* 0.755	45.7	LOS D	11.1	83.4	1.00	0.90	1.13	5.8
Approach		421	2.0	421	2.0	0.755	32.4	LOS C	11.1	83.4	0.91	0.80	0.98	12.9
NorthWest: Marmion Ave (NW)														
4	L2	174	2.0	174	2.0	0.135	7.1	LOS A	1.3	9.6	0.27	0.62	0.27	36.7
5	T1	274	10.3	274	10.3	0.410	35.5	LOS D	5.4	44.8	0.92	0.74	0.92	14.0
6	R2	37	2.0	37	2.0	0.262	50.3	LOS D	1.6	12.2	0.98	0.73	0.98	19.7
Approach		484	6.7	484	6.7	0.410	26.5	LOS C	5.4	44.8	0.69	0.70	0.69	18.8
SouthWest: Lagoon Dr (SW)														
7	L2	55	2.0	55	2.0	0.287	21.1	LOS C	4.4	33.3	0.78	0.69	0.78	26.6
8	T1	120	2.0	120	2.0	* 0.287	16.6	LOS B	4.4	33.3	0.78	0.69	0.78	26.6
9	R2	97	2.0	97	2.0	0.301	40.1	LOS D	3.8	28.6	0.91	0.76	0.91	16.8
Approach		272	2.0	272	2.0	0.301	25.9	LOS C	4.4	33.3	0.83	0.72	0.83	22.0
All Vehicles		1905	5.4	1905	5.4	0.755	31.2	LOS C	11.1	89.4	0.82	0.78	0.87	19.0

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Marmion Ave (SE)											
P4	Full	53	38.4	LOS D	0.1	0.1	0.92	0.92	75.9	45.0	0.59
NorthEast: Peony Blvd (NE)											
P1	Full	53	38.4	LOS D	0.1	0.1	0.92	0.92	68.7	36.4	0.53
NorthWest: Marmion Ave (NW)											
P2	Full	53	38.4	LOS D	0.1	0.1	0.92	0.92	76.7	46.0	0.60
SouthWest: Lagoon Dr (SW)											
P3	Full	53	34.7	LOS D	0.1	0.1	0.88	0.88	63.8	34.9	0.55
All Pedestrians		211	37.5	LOS D	0.1	0.1	0.91	0.91	71.3	40.6	0.57

Table C1c: SIDRA results – Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection – 2023 Saturday peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
10	L2	64	2.0	64	2.0	0.047	6.6	LOS A	0.3	2.4	0.21	0.60	0.21	45.9
11	T1	352	10.4	352	10.4	* 0.597	38.8	LOS D	7.4	61.1	0.98	0.80	0.98	17.7
12	R2	85	2.0	85	2.0	* 0.600	52.4	LOS D	3.9	29.5	1.00	0.80	1.07	14.3
Approach		501	7.9	501	7.9	0.600	37.0	LOS D	7.4	61.1	0.88	0.77	0.89	19.7
NorthEast: Peony Blvd (NE)														
1	L2	89	2.0	89	2.0	0.266	12.9	LOS B	3.2	24.0	0.66	0.62	0.66	18.3
2	T1	128	2.0	128	2.0	0.266	8.7	LOS A	3.2	24.0	0.66	0.62	0.66	35.2
3	R2	231	2.0	231	2.0	* 0.631	40.8	LOS D	9.6	72.0	0.97	0.82	0.97	6.4
Approach		448	2.0	448	2.0	0.631	26.0	LOS C	9.6	72.0	0.82	0.72	0.82	15.2
NorthWest: Marmion Ave (NW)														
4	L2	214	2.0	214	2.0	0.165	7.4	LOS A	1.7	13.1	0.29	0.63	0.29	36.2
5	T1	246	10.3	246	10.3	0.419	37.4	LOS D	5.0	41.3	0.94	0.75	0.94	13.5
6	R2	26	2.0	26	2.0	0.187	49.9	LOS D	1.1	8.6	0.97	0.71	0.97	19.8
Approach		486	6.2	486	6.2	0.419	24.9	LOS C	5.0	41.3	0.65	0.70	0.65	19.3
SouthWest: Lagoon Dr (SW)														
7	L2	25	2.0	25	2.0	0.295	28.4	LOS C	4.0	29.8	0.82	0.74	0.82	22.7
8	T1	129	2.0	129	2.0	* 0.295	23.8	LOS C	4.0	29.8	0.82	0.74	0.82	22.7
9	R2	75	2.0	75	2.0	0.310	44.0	LOS D	3.1	23.2	0.94	0.76	0.94	15.8
Approach		229	2.0	229	2.0	0.310	30.9	LOS C	4.0	29.8	0.86	0.75	0.86	19.9
All Vehicles		1665	5.0	1665	5.0	0.631	29.7	LOS C	9.6	72.0	0.80	0.73	0.80	18.6

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Marmion Ave (SE)											
P4	Full	53	38.4	LOS D	0.1	0.1	0.92	0.92	75.9	45.0	0.59
NorthEast: Peony Blvd (NE)											
P1	Full	53	38.4	LOS D	0.1	0.1	0.92	0.92	68.7	36.4	0.53
NorthWest: Marmion Ave (NW)											
P2	Full	53	38.4	LOS D	0.1	0.1	0.92	0.92	76.7	46.0	0.60
SouthWest: Lagoon Dr (SW)											
P3	Full	53	36.5	LOS D	0.1	0.1	0.90	0.90	65.6	34.9	0.53
All Pedestrians		211	37.9	LOS D	0.1	0.1	0.92	0.92	71.7	40.6	0.57

Table C2a: SIDRA results – Peony Blvd / internal road T-intersection – 2023 AM peak hour

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Peony Blvd (NE)														
2	T1	189	2.0	189	2.0	0.105	0.1	LOS A	0.1	0.6	0.04	0.02	0.04	46.0
3	R2	7	2.0	7	2.0	0.105	4.8	LOS A	0.1	0.6	0.04	0.02	0.04	25.7
Approach		197	2.0	197	2.0	0.105	0.3	NA	0.1	0.6	0.04	0.02	0.04	41.9
NorthWest: Internal Rd (NW)														
4	L2	7	2.0	7	2.0	0.091	1.2	LOS A	0.4	2.7	0.51	0.45	0.51	17.5
6	R2	55	2.0	55	2.0	0.091	3.8	LOS A	0.4	2.7	0.51	0.45	0.51	17.5
Approach		62	2.0	62	2.0	0.091	3.5	LOS A	0.4	2.7	0.51	0.45	0.51	17.5
SouthWest: Peony Blvd (SW)														
7	L2	15	2.0	15	2.0	0.009	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	36.4
8	T1	326	2.0	326	2.0	0.162	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		341	2.0	341	2.0	0.162	0.2	NA	0.0	0.0	0.00	0.02	0.00	47.9
All Vehicles		600	2.0	600	2.0	0.162	0.6	NA	0.4	2.7	0.07	0.07	0.07	35.2

Table C2b: SIDRA results – Peony Blvd / internal road T-intersection – 2023 PM peak hour

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Peony Blvd (NE)														
2	T1	256	2.0	256	2.0	0.242	0.4	LOS A	0.4	2.9	0.13	0.06	0.13	39.2
3	R2	31	2.0	31	2.0	0.242	5.1	LOS A	0.4	2.9	0.13	0.06	0.13	25.0
Approach		286	2.0	286	2.0	0.242	0.9	NA	0.4	2.9	0.13	0.06	0.13	33.4
NorthWest: Internal Rd (NW)														
4	L2	31	2.0	31	2.0	0.455	3.2	LOS A	1.8	13.2	0.60	0.79	0.83	15.7
6	R2	164	2.0	164	2.0	0.455	7.3	LOS A	1.8	13.2	0.60	0.79	0.83	15.7
Approach		195	2.0	195	2.0	0.455	6.6	LOS A	1.8	13.2	0.60	0.79	0.83	15.7
SouthWest: Peony Blvd (SW)														
7	L2	61	2.0	61	2.0	0.035	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	36.4
8	T1	334	2.0	334	2.0	0.166	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		395	2.0	395	2.0	0.166	0.7	NA	0.0	0.0	0.00	0.08	0.00	44.4
All Vehicles		876	2.0	876	2.0	0.455	2.1	NA	1.8	13.2	0.18	0.23	0.23	26.4

Table C2c: SIDRA results – Peony Blvd / internal road T-intersection – 2023 Saturday peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Peony Blvd (NE)														
2	T1	288	2.0	288	2.0	0.234	0.5	LOS A	0.5	3.7	0.15	0.07	0.15	37.8
3	R2	37	2.0	37	2.0	0.234	5.4	LOS A	0.5	3.7	0.15	0.07	0.15	24.9
Approach		325	2.0	325	2.0	0.234	1.1	NA	0.5	3.7	0.15	0.07	0.15	32.4
NorthWest: Internal Rd (NW)														
4	L2	37	2.0	37	2.0	0.413	2.9	LOS A	1.8	13.5	0.62	0.79	0.83	15.5
6	R2	160	2.0	160	2.0	0.413	7.8	LOS A	1.8	13.5	0.62	0.79	0.83	15.5
Approach		197	2.0	197	2.0	0.413	6.9	LOS A	1.8	13.5	0.62	0.79	0.83	15.5
SouthWest: Peony Blvd (SW)														
7	L2	74	2.0	74	2.0	0.043	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	36.4
8	T1	356	2.0	356	2.0	0.177	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		429	2.0	429	2.0	0.177	0.7	NA	0.0	0.0	0.00	0.09	0.00	43.9
All Vehicles		952	2.0	952	2.0	0.413	2.1	NA	1.8	13.5	0.18	0.23	0.23	26.7

Table C3a: SIDRA results – Peony Blvd / access 1 T-intersection – 2023 AM peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Access 1 (SE)														
4	L2	97	2.0	97	2.0	0.105	0.3	LOS A	0.4	3.1	0.20	0.13	0.20	17.4
6	R2	33	2.0	33	2.0	0.105	2.6	LOS A	0.4	3.1	0.20	0.13	0.20	24.9
Approach		129	2.0	129	2.0	0.105	0.9	LOS A	0.4	3.1	0.20	0.13	0.20	20.3
NorthEast: Peony Blvd (NE)														
7	L2	33	2.0	33	2.0	0.070	4.3	LOS A	0.0	0.0	0.00	0.13	0.00	36.9
8	T1	101	2.0	101	2.0	0.070	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	41.5
Approach		134	2.0	134	2.0	0.070	1.1	NA	0.0	0.0	0.00	0.13	0.00	40.0
SouthWest: Peony Blvd (SW)														
2	T1	129	2.0	129	2.0	0.199	0.4	LOS A	1.0	7.9	0.26	0.32	0.26	37.2
3	R2	205	2.0	205	2.0	0.199	3.6	LOS A	1.0	7.9	0.26	0.32	0.26	31.5
Approach		335	2.0	335	2.0	0.199	2.4	NA	1.0	7.9	0.26	0.32	0.26	34.1
All Vehicles		598	2.0	598	2.0	0.199	1.8	NA	1.0	7.9	0.19	0.24	0.19	32.0

Table C3b: SIDRA results – Peony Blvd / access 1 T-intersection – 2023 PM peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Access 1 (SE)														
4	L2	89	2.0	89	2.0	0.098	0.7	LOS A	0.4	2.8	0.31	0.21	0.31	16.5
6	R2	23	2.0	23	2.0	0.098	3.4	LOS A	0.4	2.8	0.31	0.21	0.31	24.2
Approach		113	2.0	113	2.0	0.098	1.2	LOS A	0.4	2.8	0.31	0.21	0.31	19.0
NorthEast: Peony Blvd (NE)														
7	L2	23	2.0	23	2.0	0.114	4.3	LOS A	0.0	0.0	0.00	0.06	0.00	39.5
8	T1	197	2.0	197	2.0	0.114	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	45.9
Approach		220	2.0	220	2.0	0.114	0.5	NA	0.0	0.0	0.00	0.06	0.00	44.9
SouthWest: Peony Blvd (SW)														
2	T1	218	2.0	218	2.0	0.216	0.6	LOS A	1.0	7.6	0.29	0.23	0.29	39.5
3	R2	146	2.0	146	2.0	0.216	4.0	LOS A	1.0	7.6	0.29	0.23	0.29	34.2
Approach		364	2.0	364	2.0	0.216	2.0	NA	1.0	7.6	0.29	0.23	0.29	37.7
All Vehicles		697	2.0	697	2.0	0.216	1.4	NA	1.0	7.6	0.20	0.17	0.20	36.0

Table C3c: SIDRA results – Peony Blvd / access 1 T-intersection – 2023 Saturday peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Access 1 (SE)														
4	L2	135	2.0	135	2.0	0.153	0.7	LOS A	0.6	4.6	0.31	0.23	0.31	16.4
6	R2	38	2.0	38	2.0	0.153	3.8	LOS A	0.6	4.6	0.31	0.23	0.31	24.1
Approach		173	2.0	173	2.0	0.153	1.4	LOS A	0.6	4.6	0.31	0.23	0.31	19.0
NorthEast: Peony Blvd (NE)														
7	L2	38	2.0	38	2.0	0.119	4.3	LOS A	0.0	0.0	0.00	0.09	0.00	38.3
8	T1	191	2.0	191	2.0	0.119	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	43.8
Approach		228	2.0	228	2.0	0.119	0.7	NA	0.0	0.0	0.00	0.09	0.00	42.6
SouthWest: Peony Blvd (SW)														
2	T1	156	2.0	156	2.0	0.248	0.8	LOS A	1.4	10.2	0.37	0.35	0.37	36.3
3	R2	237	2.0	237	2.0	0.248	4.1	LOS A	1.4	10.2	0.37	0.35	0.37	30.5
Approach		393	2.0	393	2.0	0.248	2.8	NA	1.4	10.2	0.37	0.35	0.37	33.2
All Vehicles		794	2.0	794	2.0	0.248	1.9	NA	1.4	10.2	0.25	0.25	0.25	31.9

Table C4a: SIDRA results – Marmion Ave / Morwell St T-intersection – 2023 AM peak hour

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Morwell St (NE)														
1	L2	180	2.0	180	2.0	0.142	5.6	LOS A	0.7	5.5	0.39	0.56	0.39	41.5
2	T1	79	2.0	79	2.0	0.122	8.4	LOS A	0.5	4.0	0.58	0.72	0.58	19.8
Approach		259	2.0	259	2.0	0.142	6.4	LOS A	0.7	5.5	0.45	0.61	0.45	37.8
NorthWest: Marmion Ave (NW)														
3	L2	80	2.0	80	2.0	0.059	5.8	LOS A	0.2	1.5	0.10	0.53	0.10	42.6
4	T1	573	10.3	573	10.3	0.162	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		653	9.3	653	9.3	0.162	0.7	LOS A	0.2	1.5	0.01	0.06	0.01	58.0
SouthWest: Median (SW)														
5	T1	48	2.0	48	2.0	0.051	1.9	LOS A	0.2	1.5	0.45	0.34	0.45	24.7
Approach		48	2.0	48	2.0	0.051	1.9	LOS A	0.2	1.5	0.45	0.34	0.45	24.7
All Vehicles		960	7.0	960	7.0	0.162	2.3	NA	0.7	5.5	0.15	0.23	0.15	52.6

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
2	T1	491	10.4	491	10.4	0.139	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	48	2.0	48	2.0	0.026	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	44.9
Approach		539	9.6	539	9.6	0.139	0.5	NA	0.0	0.0	0.00	0.05	0.00	58.2
NorthEast: Median (NE)														
1	R2	79	2.0	79	2.0	0.088	3.9	LOS A	0.3	2.2	0.44	0.64	0.44	13.9
Approach		79	2.0	79	2.0	0.088	3.9	LOS A	0.3	2.2	0.44	0.64	0.44	13.9
All Vehicles		618	8.7	618	8.7	0.139	0.9	NA	0.3	2.2	0.06	0.13	0.06	56.2

Table C4b: SIDRA results – Marmion Ave / Morwell St T-intersection – 2023 PM peak hour

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Morwell St (NE)														
1	L2	167	2.0	167	2.0	0.121	5.1	LOS A	0.6	4.6	0.31	0.52	0.31	42.0
2	T1	49	2.0	49	2.0	0.061	6.6	LOS A	0.3	2.0	0.47	0.61	0.47	22.7
Approach		217	2.0	217	2.0	0.121	5.4	LOS A	0.6	4.6	0.35	0.54	0.35	39.9
NorthWest: Marmion Ave (NW)														
3	L2	44	2.0	44	2.0	0.034	6.0	LOS A	0.1	0.9	0.16	0.53	0.16	42.2
4	T1	382	10.3	382	10.3	0.108	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		426	9.4	426	9.4	0.108	0.6	LOS A	0.1	0.9	0.02	0.05	0.02	58.3
SouthWest: Median (SW)														
5	T1	105	2.0	105	2.0	0.095	1.2	LOS A	0.4	2.9	0.38	0.26	0.38	25.8
Approach		105	2.0	105	2.0	0.095	1.2	LOS A	0.4	2.9	0.38	0.26	0.38	25.8
All Vehicles		748	6.2	748	6.2	0.121	2.1	NA	0.6	4.6	0.16	0.22	0.16	51.3

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
2	T1	679	10.4	679	10.4	0.192	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	105	2.0	105	2.0	0.058	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	44.9
Approach		784	9.3	784	9.3	0.192	0.8	NA	0.0	0.0	0.00	0.08	0.00	57.3
NorthEast: Median (NE)														
1	R2	49	2.0	49	2.0	0.071	5.2	LOS A	0.2	1.7	0.53	0.73	0.53	11.2
Approach		49	2.0	49	2.0	0.071	5.2	LOS A	0.2	1.7	0.53	0.73	0.53	11.2
All Vehicles		834	8.8	834	8.8	0.192	1.0	NA	0.2	1.7	0.03	0.12	0.03	56.2

Table C4c: SIDRA results – Marmion Ave / Morwell St T-intersection – 2023 Saturday peak hour

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Morwell St (NE)														
1	L2	204	2.0	204	2.0	0.147	5.1	LOS A	0.8	5.7	0.31	0.53	0.31	42.0
2	T1	38	2.0	38	2.0	0.046	6.5	LOS A	0.2	1.5	0.46	0.59	0.46	22.9
Approach		242	2.0	242	2.0	0.147	5.3	LOS A	0.8	5.7	0.33	0.54	0.33	40.7
NorthWest: Marmion Ave (NW)														
3	L2	40	2.0	40	2.0	0.032	6.1	LOS A	0.1	0.8	0.17	0.53	0.17	42.1
4	T1	371	10.3	371	10.3	0.105	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		411	9.5	411	9.5	0.105	0.6	LOS A	0.1	0.8	0.02	0.05	0.02	58.3
SouthWest: Median (SW)														
5	T1	124	2.0	124	2.0	0.111	1.2	LOS A	0.4	3.4	0.38	0.26	0.38	25.8
Approach		124	2.0	124	2.0	0.111	1.2	LOS A	0.4	3.4	0.38	0.26	0.38	25.8
All Vehicles		777	6.0	777	6.0	0.147	2.2	NA	0.8	5.7	0.17	0.24	0.17	50.6

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
2	T1	463	10.4	463	10.4	0.131	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	124	2.0	124	2.0	0.068	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	44.9
Approach		587	8.6	587	8.6	0.131	1.2	NA	0.0	0.0	0.00	0.13	0.00	56.0
NorthEast: Median (NE)														
1	R2	38	2.0	38	2.0	0.044	4.0	LOS A	0.1	1.1	0.45	0.63	0.45	13.6
Approach		38	2.0	38	2.0	0.044	4.0	LOS A	0.1	1.1	0.45	0.63	0.45	13.6
All Vehicles		625	8.2	625	8.2	0.131	1.4	NA	0.1	1.1	0.03	0.16	0.03	55.2

Table C5a: SIDRA results – Marmion Ave / Yanchep Central driveway (left in only) – 2023 AM peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
2	T1	566	10.4	566	10.4	0.160	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		566	10.4	566	10.4	0.160	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
NorthWest: Marmion Ave (NW)														
7	L2	88	2.0	88	2.0	0.048	7.5	LOS A	0.0	0.0	0.00	0.64	0.00	40.9
8	T1	682	10.3	682	10.3	0.193	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		771	9.3	771	9.3	0.193	0.9	NA	0.0	0.0	0.00	0.07	0.00	54.7
All Vehicles		1337	9.8	1337	9.8	0.193	0.5	NA	0.0	0.0	0.00	0.04	0.00	57.6

Table C5b: SIDRA results – Marmion Ave / Yanchep Central driveway (left in only) – 2023 PM peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
2	T1	788	10.4	788	10.4	0.223	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		788	10.4	788	10.4	0.223	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
NorthWest: Marmion Ave (NW)														
7	L2	128	2.0	128	2.0	0.070	7.5	LOS A	0.0	0.0	0.00	0.64	0.00	40.9
8	T1	484	10.3	484	10.3	0.137	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		613	8.6	613	8.6	0.137	1.6	NA	0.0	0.0	0.00	0.14	0.00	51.6
All Vehicles		1401	9.6	1401	9.6	0.223	0.7	NA	0.0	0.0	0.00	0.06	0.00	57.0

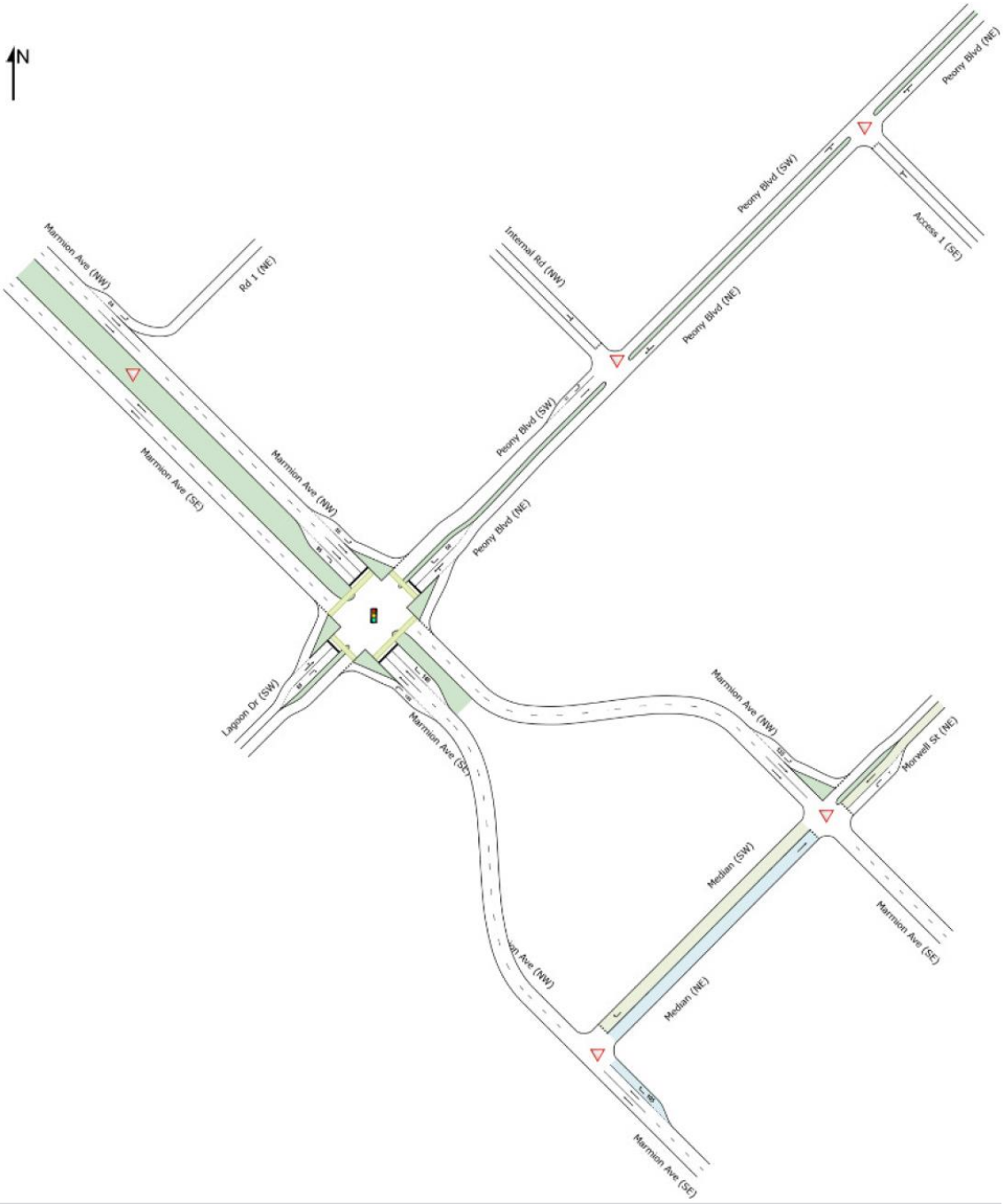
Table C5c: SIDRA results – Marmion Ave / Yanchep Central driveway (left in only) – 2023 Saturday peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
2	T1	607	10.4	607	10.4	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		607	10.4	607	10.4	0.172	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
NorthWest: Marmion Ave (NW)														
7	L2	131	2.0	131	2.0	0.071	7.5	LOS A	0.0	0.0	0.00	0.64	0.00	40.9
8	T1	486	10.3	486	10.3	0.138	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		617	8.5	617	8.5	0.138	1.6	NA	0.0	0.0	0.00	0.14	0.00	51.5
All Vehicles		1224	9.5	1224	9.5	0.172	0.8	NA	0.0	0.0	0.00	0.07	0.00	56.5

Appendix D

2033 SIDRA INTERSECTION ANALYSIS



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽	NA	Marmion Ave & Rd 1 - 2033 - Stage 1 DA - PM
🚦	NA	Marmion Ave & Peony Blvd & Lagoon Dr - 2033 - Stage 1 DA - PM
▽	NA	Peony Blvd & Internal Rd - 2033 - Stage 1 DA - PM
▽	NA	Peony Blvd & Access 1 - 2033 - Stage 1 DA - PM
▽	NA	Marmion Ave & Morwell St - 1st Stage - 2033 - Stage 1 DA - PM
▽	NA	Marmion Ave & Morwell St - 2nd Stage - 2033 - Stage 1 DA - PM

Table D1a: SIDRA results – Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection – 2033 AM peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
10	L2	143	2.0	143	2.0	0.102	6.8	LOS A	0.9	7.0	0.22	0.61	0.22	45.6
11	T1	768	10.4	768	10.4	0.640	30.2	LOS C	15.9	131.2	0.90	0.78	0.90	21.0
12	R2	65	2.0	65	2.0	0.595	59.3	LOS E	3.4	25.5	1.00	0.78	1.08	13.0
Approach		977	8.6	977	8.6	0.640	28.7	LOS C	15.9	131.2	0.81	0.76	0.81	23.4
NorthEast: Peony Blvd (NE)														
1	L2	35	2.0	35	2.0	0.236	26.6	LOS C	3.9	29.7	0.81	0.70	0.81	10.2
2	T1	87	2.0	87	2.0	* 0.236	22.4	LOS C	3.9	29.7	0.81	0.70	0.81	25.6
3	R2	123	2.0	123	2.0	0.674	54.4	LOS D	6.2	46.9	1.00	0.84	1.10	4.9
Approach		245	2.0	245	2.0	0.674	39.1	LOS D	6.2	46.9	0.90	0.77	0.95	12.2
NorthWest: Marmion Ave (NW)														
4	L2	166	2.0	166	2.0	0.122	6.8	LOS A	1.1	8.4	0.23	0.61	0.23	37.3
5	T1	1014	10.3	1014	10.3	* 0.893	46.9	LOS D	28.8	237.3	0.99	1.08	1.26	11.3
6	R2	72	2.0	72	2.0	* 0.660	60.0	LOS E	3.8	28.3	1.00	0.81	1.14	17.5
Approach		1252	8.7	1252	8.7	0.893	42.3	LOS D	28.8	237.3	0.89	1.00	1.11	13.0
SouthWest: Lagoon Dr (SW)														
7	L2	82	2.0	82	2.0	0.306	18.0	LOS B	4.6	34.4	0.76	0.68	0.76	28.5
8	T1	111	2.0	111	2.0	0.306	13.4	LOS B	4.6	34.4	0.76	0.68	0.76	28.5
9	R2	174	2.0	174	2.0	* 0.873	62.1	LOS E	9.7	73.1	1.00	1.02	1.40	12.3
Approach		366	2.0	366	2.0	0.873	37.5	LOS D	9.7	73.1	0.87	0.84	1.06	17.6
All Vehicles		2840	7.2	2840	7.2	0.893	36.7	LOS D	28.8	237.3	0.86	0.88	0.99	16.9

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Marmion Ave (SE)											
P4	Full	53	43.3	LOS E	0.1	0.1	0.93	0.93	80.8	45.0	0.56
NorthEast: Peony Blvd (NE)											
P1	Full	53	43.3	LOS E	0.1	0.1	0.93	0.93	73.7	36.4	0.49
NorthWest: Marmion Ave (NW)											
P2	Full	53	43.3	LOS E	0.1	0.1	0.93	0.93	81.7	46.0	0.56
SouthWest: Lagoon Dr (SW)											
P3	Full	53	26.0	LOS C	0.1	0.1	0.72	0.72	55.1	34.9	0.63
All Pedestrians		211	39.0	LOS D	0.1	0.1	0.88	0.88	72.8	40.6	0.56

Table D1b: SIDRA results – Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection – 2033 PM peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
10	L2	138	2.0	138	2.0	0.095	6.7	LOS A	1.0	7.3	0.19	0.60	0.19	45.7
11	T1	1039	10.4	1039	10.4	* 0.842	44.8	LOS D	30.7	253.1	0.99	0.96	1.10	16.0
12	R2	101	2.0	101	2.0	0.603	64.9	LOS E	6.0	45.1	1.00	0.79	1.03	12.1
Approach		1278	8.8	1278	8.8	0.842	42.3	LOS D	30.7	253.1	0.90	0.91	0.99	17.8
NorthEast: Peony Blvd (NE)														
1	L2	57	2.0	57	2.0	0.379	30.3	LOS C	5.1	38.8	0.88	0.77	0.88	9.0
2	T1	119	2.0	119	2.0	0.379	26.1	LOS C	5.1	38.8	0.88	0.77	0.88	23.7
3	R2	245	2.0	245	2.0	* 0.817	60.4	LOS E	13.0	97.9	1.00	0.93	1.18	4.5
Approach		421	2.0	421	2.0	0.817	46.6	LOS D	13.0	97.9	0.95	0.86	1.05	9.7
NorthWest: Marmion Ave (NW)														
4	L2	174	2.0	174	2.0	0.127	7.4	LOS A	1.7	12.5	0.24	0.62	0.24	36.2
5	T1	651	10.3	651	10.3	0.598	38.0	LOS D	16.2	133.4	0.90	0.78	0.90	13.3
6	R2	37	2.0	37	2.0	* 0.407	69.5	LOS E	2.2	16.9	1.00	0.73	1.00	15.9
Approach		861	8.3	861	8.3	0.598	33.2	LOS C	16.2	133.4	0.77	0.74	0.77	15.5
SouthWest: Lagoon Dr (SW)														
7	L2	55	2.0	55	2.0	0.383	39.2	LOS D	6.8	51.2	0.88	0.83	0.88	18.1
8	T1	120	2.0	120	2.0	* 0.383	34.7	LOS C	6.8	51.2	0.88	0.83	0.88	18.1
9	R2	97	2.0	97	2.0	0.292	50.6	LOS D	5.0	37.4	0.91	0.76	0.91	14.3
Approach		272	2.0	272	2.0	0.383	41.3	LOS D	6.8	51.2	0.89	0.81	0.89	16.5
All Vehicles		2832	7.0	2832	7.0	0.842	40.1	LOS D	30.7	253.1	0.87	0.84	0.93	15.9

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Marmion Ave (SE)											
P4	Full	53	53.3	LOS E	0.2	0.2	0.94	0.94	90.8	45.0	0.50
NorthEast: Peony Blvd (NE)											
P1	Full	53	53.3	LOS E	0.2	0.2	0.94	0.94	83.7	36.4	0.44
NorthWest: Marmion Ave (NW)											
P2	Full	53	53.3	LOS E	0.2	0.2	0.94	0.94	91.7	46.0	0.50
SouthWest: Lagoon Dr (SW)											
P3	Full	53	29.5	LOS C	0.1	0.1	0.70	0.70	58.5	34.9	0.60
All Pedestrians		211	47.4	LOS E	0.2	0.2	0.88	0.88	81.2	40.6	0.50

Table D1c: SIDRA results – Marmion Ave / Peony Blvd / Lagoon Dr signalised intersection – 2033 Saturday peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
10	L2	64	2.0	64	2.0	0.045	6.5	LOS A	0.3	2.5	0.19	0.59	0.19	46.0
11	T1	747	10.4	747	10.4	*0.784	40.1	LOS D	18.2	149.6	0.99	0.93	1.09	17.3
12	R2	85	2.0	85	2.0	*0.778	62.2	LOS E	4.6	34.6	1.00	0.88	1.30	12.5
Approach		897	9.0	897	9.0	0.784	39.8	LOS D	18.2	149.6	0.93	0.90	1.04	18.2
NorthEast: Peony Blvd (NE)														
1	L2	89	2.0	89	2.0	0.351	18.0	LOS B	4.7	35.5	0.79	0.70	0.79	14.0
2	T1	128	2.0	128	2.0	*0.351	13.8	LOS B	4.7	35.5	0.79	0.70	0.79	30.8
3	R2	231	2.0	231	2.0	*0.742	50.0	LOS D	11.4	86.0	1.00	0.89	1.11	5.3
Approach		448	2.0	448	2.0	0.742	33.2	LOS C	11.4	86.0	0.90	0.80	0.95	12.8
NorthWest: Marmion Ave (NW)														
4	L2	214	2.0	214	2.0	0.160	7.4	LOS A	1.9	14.1	0.27	0.63	0.27	36.2
5	T1	622	10.3	622	10.3	0.653	35.3	LOS D	13.6	112.4	0.94	0.81	0.94	14.1
6	R2	26	2.0	26	2.0	0.242	57.2	LOS E	1.3	9.9	0.99	0.71	0.99	18.1
Approach		862	8.0	862	8.0	0.653	29.1	LOS C	13.6	112.4	0.78	0.76	0.78	16.9
SouthWest: Lagoon Dr (SW)														
7	L2	25	2.0	25	2.0	0.327	36.2	LOS D	5.0	37.8	0.86	0.79	0.86	19.3
8	T1	129	2.0	129	2.0	0.327	31.7	LOS C	5.0	37.8	0.86	0.79	0.86	19.3
9	R2	75	2.0	75	2.0	0.243	44.1	LOS D	3.2	24.3	0.91	0.75	0.91	15.7
Approach		229	2.0	229	2.0	0.327	36.2	LOS D	5.0	37.8	0.87	0.78	0.87	18.0
All Vehicles		2437	6.7	2437	6.7	0.784	34.5	LOS C	18.2	149.6	0.87	0.82	0.92	16.9

Pedestrian Movement Performance

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Effective Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
SouthEast: Marmion Ave (SE)											
P4	Full	53	43.3	LOS E	0.1	0.1	0.93	0.93	80.8	45.0	0.56
NorthEast: Peony Blvd (NE)											
P1	Full	53	43.3	LOS E	0.1	0.1	0.93	0.93	73.7	36.4	0.49
NorthWest: Marmion Ave (NW)											
P2	Full	53	43.3	LOS E	0.1	0.1	0.93	0.93	81.7	46.0	0.56
SouthWest: Lagoon Dr (SW)											
P3	Full	53	31.3	LOS D	0.1	0.1	0.79	0.79	60.4	34.9	0.58
All Pedestrians		211	40.3	LOS E	0.1	0.1	0.90	0.90	74.1	40.6	0.55

Table D2a: SIDRA results – Peony Blvd / internal road T-intersection – 2033 AM peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Peony Blvd (NE)														
2	T1	189	2.0	189	2.0	0.105	0.1	LOS A	0.1	0.7	0.04	0.02	0.04	46.0
3	R2	7	2.0	7	2.0	0.105	4.7	LOS A	0.1	0.7	0.04	0.02	0.04	25.7
Approach		197	2.0	197	2.0	0.105	0.3	NA	0.1	0.7	0.04	0.02	0.04	41.9
NorthWest: Internal Rd (NW)														
4	L2	7	2.0	7	2.0	0.091	1.2	LOS A	0.4	2.7	0.51	0.45	0.51	17.5
6	R2	55	2.0	55	2.0	0.091	3.8	LOS A	0.4	2.7	0.51	0.45	0.51	17.5
Approach		62	2.0	62	2.0	0.091	3.5	LOS A	0.4	2.7	0.51	0.45	0.51	17.5
SouthWest: Peony Blvd (SW)														
7	L2	15	2.0	15	2.0	0.009	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	36.4
8	T1	326	2.0	326	2.0	0.162	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		341	2.0	341	2.0	0.162	0.2	NA	0.0	0.0	0.00	0.02	0.00	47.9
All Vehicles		600	2.0	600	2.0	0.162	0.6	NA	0.4	2.7	0.07	0.07	0.07	35.2

Table D2b: SIDRA results – Peony Blvd / internal road T-intersection – 2033 PM peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Peony Blvd (NE)														
2	T1	256	2.0	256	2.0	0.163	0.4	LOS A	1.1	8.5	0.13	0.06	0.13	39.2
3	R2	31	2.0	31	2.0	0.163	5.1	LOS A	1.1	8.5	0.13	0.06	0.13	25.0
Approach		286	2.0	286	2.0	0.163	0.9	NA	1.1	8.5	0.13	0.06	0.13	33.4
NorthWest: Internal Rd (NW)														
4	L2	31	2.0	31	2.0	0.575	4.9	LOS A	2.0	15.0	0.60	0.91	0.96	14.9
6	R2	164	2.0	164	2.0	0.575	9.0	LOS A	2.0	15.0	0.60	0.91	0.96	14.9
Approach		195	2.0	195	2.0	0.575	8.3	LOS A	2.0	15.0	0.60	0.91	0.96	14.9
SouthWest: Peony Blvd (SW)														
7	L2	61	2.0	61	2.0	0.035	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	36.4
8	T1	334	2.0	334	2.0	0.166	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		395	2.0	395	2.0	0.166	0.7	NA	0.0	0.0	0.00	0.08	0.00	44.4
All Vehicles		876	2.0	876	2.0	0.575	2.5	NA	2.0	15.0	0.18	0.26	0.26	25.6

Table D2c: SIDRA results – Peony Blvd / internal road T-intersection – 2033 Saturday peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Peony Blvd (NE)														
2	T1	288	2.0	288	2.0	0.290	0.5	LOS A	0.5	3.7	0.15	0.07	0.15	37.8
3	R2	37	2.0	37	2.0	0.290	5.4	LOS A	0.5	3.7	0.15	0.07	0.15	24.9
Approach		325	2.0	325	2.0	0.290	1.1	NA	0.5	3.7	0.15	0.07	0.15	32.4
NorthWest: Internal Rd (NW)														
4	L2	37	2.0	37	2.0	0.504	4.0	LOS A	2.0	14.8	0.62	0.87	0.93	15.0
6	R2	160	2.0	160	2.0	0.504	8.9	LOS A	2.0	14.8	0.62	0.87	0.93	15.0
Approach		197	2.0	197	2.0	0.504	8.0	LOS A	2.0	14.8	0.62	0.87	0.93	15.0
SouthWest: Peony Blvd (SW)														
7	L2	74	2.0	74	2.0	0.043	4.3	LOS A	0.0	0.0	0.00	0.53	0.00	36.4
8	T1	356	2.0	356	2.0	0.177	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
Approach		429	2.0	429	2.0	0.177	0.7	NA	0.0	0.0	0.00	0.09	0.00	43.9
All Vehicles		952	2.0	952	2.0	0.504	2.4	NA	2.0	14.8	0.18	0.24	0.24	26.2

Table D3a: SIDRA results – Peony Blvd / access 1 T-intersection – 2033 AM peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Access 1 (SE)														
4	L2	97	2.0	97	2.0	0.105	0.3	LOS A	0.4	3.1	0.20	0.13	0.20	17.4
6	R2	33	2.0	33	2.0	0.105	2.6	LOS A	0.4	3.1	0.20	0.13	0.20	24.9
Approach		129	2.0	129	2.0	0.105	0.9	LOS A	0.4	3.1	0.20	0.13	0.20	20.3
NorthEast: Peony Blvd (NE)														
7	L2	33	2.0	33	2.0	0.070	4.3	LOS A	0.0	0.0	0.00	0.13	0.00	36.9
8	T1	101	2.0	101	2.0	0.070	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	41.5
Approach		134	2.0	134	2.0	0.070	1.1	NA	0.0	0.0	0.00	0.13	0.00	40.0
SouthWest: Peony Blvd (SW)														
2	T1	129	2.0	129	2.0	0.199	0.4	LOS A	1.0	7.9	0.26	0.32	0.26	37.2
3	R2	205	2.0	205	2.0	0.199	3.6	LOS A	1.0	7.9	0.26	0.32	0.26	31.5
Approach		335	2.0	335	2.0	0.199	2.4	NA	1.0	7.9	0.26	0.32	0.26	34.1
All Vehicles		598	2.0	598	2.0	0.199	1.8	NA	1.0	7.9	0.19	0.24	0.19	32.0

Table D3b: SIDRA results – Peony Blvd / access 1 T-intersection – 2033 PM peak hour

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Access 1 (SE)														
4	L2	89	2.0	89	2.0	0.105	0.7	LOS A	0.4	2.8	0.31	0.22	0.31	16.5
6	R2	23	2.0	23	2.0	0.105	3.4	LOS A	0.4	2.8	0.31	0.22	0.31	24.2
Approach		113	2.0	113	2.0	0.105	1.2	LOS A	0.4	2.8	0.31	0.22	0.31	19.0
NorthEast: Peony Blvd (NE)														
7	L2	23	2.0	23	2.0	0.122	4.3	LOS A	0.0	0.0	0.00	0.06	0.00	39.5
8	T1	197	2.0	197	2.0	0.122	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	45.9
Approach		220	2.0	220	2.0	0.122	0.5	NA	0.0	0.0	0.00	0.06	0.00	44.9
SouthWest: Peony Blvd (SW)														
2	T1	218	2.0	218	2.0	0.216	0.6	LOS A	1.0	7.6	0.29	0.23	0.29	39.5
3	R2	146	2.0	146	2.0	0.216	4.0	LOS A	1.0	7.6	0.29	0.23	0.29	34.2
Approach		364	2.0	364	2.0	0.216	2.0	NA	1.0	7.6	0.29	0.23	0.29	37.7
All Vehicles		697	2.0	697	2.0	0.216	1.4	NA	1.0	7.6	0.20	0.17	0.20	36.0

Table D3c: SIDRA results – Peony Blvd / access 1 T-intersection – 2023 Saturday peak hour

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Access 1 (SE)														
4	L2	135	2.0	135	2.0	0.153	0.7	LOS A	0.6	4.6	0.31	0.23	0.31	16.4
6	R2	38	2.0	38	2.0	0.153	3.8	LOS A	0.6	4.6	0.31	0.23	0.31	24.1
Approach		173	2.0	173	2.0	0.153	1.4	LOS A	0.6	4.6	0.31	0.23	0.31	19.0
NorthEast: Peony Blvd (NE)														
7	L2	38	2.0	38	2.0	0.119	4.3	LOS A	0.0	0.0	0.00	0.09	0.00	38.3
8	T1	191	2.0	191	2.0	0.119	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	43.8
Approach		228	2.0	228	2.0	0.119	0.7	NA	0.0	0.0	0.00	0.09	0.00	42.6
SouthWest: Peony Blvd (SW)														
2	T1	156	2.0	156	2.0	0.248	0.8	LOS A	1.4	10.2	0.37	0.35	0.37	36.3
3	R2	237	2.0	237	2.0	0.248	4.1	LOS A	1.4	10.2	0.37	0.35	0.37	30.5
Approach		393	2.0	393	2.0	0.248	2.8	NA	1.4	10.2	0.37	0.35	0.37	33.2
All Vehicles		794	2.0	794	2.0	0.248	1.9	NA	1.4	10.2	0.25	0.25	0.25	31.9

Table D4a: SIDRA results – Marmion Ave / Morwell St T-intersection – 2033 AM peak hour

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Morwell St (NE)														
1	L2	180	2.0	180	2.0	0.190	7.3	LOS A	0.9	7.1	0.57	0.70	0.57	39.7
2	T1	79	2.0	79	2.0	0.259	18.1	LOS C	1.1	8.2	0.80	0.94	0.90	11.6
Approach		259	2.0	259	2.0	0.259	10.6	LOS B	1.1	8.2	0.64	0.77	0.67	32.6
NorthWest: Marmion Ave (NW)														
3	L2	80	2.0	80	2.0	0.059	5.8	LOS A	0.2	1.5	0.10	0.53	0.10	42.6
4	T1	1142	10.3	1142	10.3	0.323	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1222	9.8	1222	9.8	0.323	0.4	LOS A	0.2	1.5	0.01	0.03	0.01	58.8
SouthWest: Median (SW)														
5	T1	48	2.0	48	2.0	0.089	5.6	LOS A	0.3	2.4	0.66	0.66	0.66	19.0
Approach		48	2.0	48	2.0	0.089	5.6	LOS A	0.3	2.4	0.66	0.66	0.66	19.0
All Vehicles		1529	8.2	1529	8.2	0.323	2.3	NA	1.1	8.2	0.13	0.18	0.14	54.0

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
2	T1	897	10.4	897	10.4	0.254	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	48	2.0	48	2.0	0.026	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	44.9
Approach		945	10.0	945	10.0	0.254	0.3	NA	0.0	0.0	0.00	0.03	0.00	58.9
NorthEast: Median (NE)														
1	R2	79	2.0	79	2.0	0.138	6.7	LOS A	0.4	3.3	0.63	0.81	0.63	9.2
Approach		79	2.0	79	2.0	0.138	6.7	LOS A	0.4	3.3	0.63	0.81	0.63	9.2
All Vehicles		1024	9.4	1024	9.4	0.254	0.8	NA	0.4	3.3	0.05	0.09	0.05	56.9

Table D4b: SIDRA results – Marmion Ave / Morwell St T-intersection – 2033 PM peak hour

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Morwell St (NE)														
1	L2	167	2.0	167	2.0	0.145	6.0	LOS A	0.7	5.4	0.46	0.60	0.46	41.2
2	T1	49	2.0	49	2.0	0.097	10.3	LOS B	0.4	3.0	0.63	0.79	0.63	17.3
Approach		217	2.0	217	2.0	0.145	7.0	LOS A	0.7	5.4	0.50	0.65	0.50	37.9
NorthWest: Marmion Ave (NW)														
3	L2	44	2.0	44	2.0	0.034	6.0	LOS A	0.1	0.9	0.16	0.53	0.16	42.2
4	T1	759	10.3	759	10.3	0.215	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		803	9.8	803	9.8	0.215	0.4	LOS A	0.1	0.9	0.01	0.03	0.01	59.0
SouthWest: Median (SW)														
5	T1	105	2.0	105	2.0	0.133	3.1	LOS A	0.5	3.9	0.54	0.50	0.54	22.5
Approach		105	2.0	105	2.0	0.133	3.1	LOS A	0.5	3.9	0.54	0.50	0.54	22.5
All Vehicles		1125	7.6	1125	7.6	0.215	1.9	NA	0.7	5.4	0.15	0.19	0.15	53.7

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
2	T1	1228	10.4	1228	10.4	0.363	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	105	2.0	105	2.0	0.058	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	44.9
Approach		1334	9.7	1334	9.7	0.363	0.5	NA	0.0	0.0	0.00	0.05	0.00	58.2
NorthEast: Median (NE)														
1	R2	49	2.0	49	2.0	0.150	11.0	LOS B	0.4	3.2	0.78	0.89	0.78	6.0
Approach		49	2.0	49	2.0	0.150	11.0	LOS B	0.4	3.2	0.78	0.89	0.78	6.0
All Vehicles		1383	9.5	1383	9.5	0.363	0.9	NA	0.4	3.2	0.03	0.08	0.03	56.8

Table D4c: SIDRA results – Marmion Ave / Morwell St T-intersection – 2033 Saturday peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
NorthEast: Morwell St (NE)														
1	L2	204	2.0	204	2.0	0.176	6.0	LOS A	0.9	6.7	0.46	0.61	0.46	41.2
2	T1	38	2.0	38	2.0	0.073	9.9	LOS A	0.3	2.2	0.62	0.76	0.62	17.7
Approach		242	2.0	242	2.0	0.176	6.7	LOS A	0.9	6.7	0.49	0.63	0.49	39.1
NorthWest: Marmion Ave (NW)														
3	L2	40	2.0	40	2.0	0.032	6.1	LOS A	0.1	0.8	0.17	0.53	0.17	42.1
4	T1	746	10.3	746	10.3	0.211	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		786	9.9	786	9.9	0.211	0.3	LOS A	0.1	0.8	0.01	0.03	0.01	59.1
SouthWest: Median (SW)														
5	T1	124	2.0	124	2.0	0.154	3.1	LOS A	0.6	4.6	0.55	0.50	0.55	22.6
Approach		124	2.0	124	2.0	0.154	3.1	LOS A	0.6	4.6	0.55	0.50	0.55	22.6
All Vehicles		1153	7.4	1153	7.4	0.211	2.0	NA	0.9	6.7	0.17	0.21	0.17	53.2

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
2	T1	859	10.4	859	10.4	0.243	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
3	R2	124	2.0	124	2.0	0.068	5.5	LOS A	0.0	0.0	0.00	0.60	0.00	44.9
Approach		983	9.3	983	9.3	0.243	0.7	NA	0.0	0.0	0.00	0.08	0.00	57.5
NorthEast: Median (NE)														
1	R2	38	2.0	38	2.0	0.068	6.6	LOS A	0.2	1.6	0.63	0.80	0.63	9.2
Approach		38	2.0	38	2.0	0.068	6.6	LOS A	0.2	1.6	0.63	0.80	0.63	9.2
All Vehicles		1021	9.1	1021	9.1	0.243	0.9	NA	0.2	1.6	0.02	0.10	0.02	56.6

Table D5a: SIDRA results – Marmion Ave / Yanchep Central driveway (left in only) – 2033 AM peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
2	T1	974	10.4	974	10.4	0.276	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		974	10.4	974	10.4	0.276	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
NorthWest: Marmion Ave (NW)														
7	L2	88	2.0	88	2.0	0.048	7.5	LOS A	0.0	0.0	0.00	0.64	0.00	40.9
8	T1	1252	10.3	1252	10.3	0.554	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.1
Approach		1340	9.8	1340	9.8	0.554	0.6	NA	0.0	0.0	0.00	0.04	0.00	56.0
All Vehicles		2314	10.0	2314	10.0	0.554	0.4	NA	0.0	0.0	0.00	0.02	0.00	58.2

Table D5b: SIDRA results – Marmion Ave / Yanchep Central driveway (left in only) – 2033 PM peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
2	T1	1339	10.4	1339	10.4	0.379	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach		1339	10.4	1339	10.4	0.379	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
NorthWest: Marmion Ave (NW)														
7	L2	128	2.0	128	2.0	0.070	7.5	LOS A	0.0	0.0	0.00	0.64	0.00	40.9
8	T1	861	10.3	861	10.3	0.244	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		989	9.2	989	9.2	0.244	1.0	NA	0.0	0.0	0.00	0.08	0.00	54.1
All Vehicles		2328	9.9	2328	9.9	0.379	0.4	NA	0.0	0.0	0.00	0.04	0.00	58.0

Table D5c: SIDRA results – Marmion Ave / Yanchep Central driveway (left in only) – 2033 Saturday peak hour

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
SouthEast: Marmion Ave (SE)														
2	T1	1003	10.4	1003	10.4	0.284	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1003	10.4	1003	10.4	0.284	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
NorthWest: Marmion Ave (NW)														
7	L2	131	2.0	131	2.0	0.071	7.5	LOS A	0.0	0.0	0.00	0.64	0.00	40.9
8	T1	863	10.3	863	10.3	0.244	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		994	9.2	994	9.2	0.244	1.0	NA	0.0	0.0	0.00	0.08	0.00	54.0
All Vehicles		1997	9.8	1997	9.8	0.284	0.5	NA	0.0	0.0	0.00	0.04	0.00	57.7