transcore 20 years anniversary

transport planning
traffic engineering
modelling

Proposed Fast Food Outlets

Lot 769 & 770 Montana Cres, Alkimos

PREPARED FOR:
Alkimos Combine Pty Ltd

September 2022

Document history and status

Author	Revision	Approved by	Date approved	Revision type
Waihin Tun	r01	B Bordbar	14/07/2022	Draft
Roger Bajwa	r01a	R White	09/09/2022	Final
Roger Bajwa	r01b	B Bordbar	16/09/2022	Final 2nd Revision

File name: t22.091.rb.r01b

Author: Roger Bajwa

Project manager: Behnam Bordbar

Client: Alkimos Combine Pty Ltd

Project: Lots 769 & 770 Montana Crescent, Alkimos

Document revision: r01b

Project number: t22.091

TABLE OF CONTENTS

1 SUMMARY 1

2 INTRODUCTION 2

3 EXISTING SITUATION 4

3.1 Existing Site Use, Access and Parking 4
3.2 Existing Road Network 4
3.3 Existing Traffic Volumes on Roads 6
3.4 Public Transport Access 7
3.5 Pedestrian and Cyclist Facilities 8
3.6 Crash Data 8

4 DEVELOPMENT PROPOSAL 9

4.1 Proposed Site Use 9
4.2 Proposed Access for all Modes 9

5 CHANGES TO SURROUNDING TRANSPORT NETWORKS 11

6 INTEGRATION WITH SURROUNDING AREA 12

7 HOURS OF OPERATION 13

8 TRAFFIC ASSESSMENT 14

8.1 Assessment Period 14
8.2 Trip Generation and Distribution 14
8.2.1 Existing Traffic Generation 14
8.2.2 Proposed Development Traffic Generation 14
8.3 Traffic Flows 16
8.4 Analysis of Local Intersection & Development's Crossovers 19
8.5 Impact on Surrounding Roads 23
8.6 Impact on Neighbouring Areas 23
8.7 Traffic Noise and Vibration 23

9 PARKING 24

10 PROVISION FOR SERVICE VEHICLES 25

11 DRIVE-THROUGH QUEUE ANALYSIS 26

11.1 NSW Guidelines 26
11.2 Drive-Through queue length analysis model 27

12 PUBLIC TRANSPORT ACCESS 32

13 PEDESTRIAN AND CYCLIST ACCESS 33

14 CONCLUSIONS 34

APPENDIX A: PROPOSED DEVELOPMENT PLANS

APPENDIX B: TURN PATH PLANS

APPENDIX C: SIDRA RESULTS

REPORT FIGURES

Figure 1. Location of the subject site 2

Figure 2. Southbound View along Montana Crescent 4

Figure 3. Northbound View along Marmion Avenue 5

Figure 4. Existing peak hours traffic counts at Marmion Avenue/Sanderling Street intersection and Sanderling Street/Montana Crescent intersection 6

Figure 5. Existing bus routes (source: Transperth) 7

Figure 6. Locations of the proposed crossovers 10

Figure 7. Existing traffic flows at the intersection of Marmion Avenue/Sanderling Street and the intersection of Sanderling Street/Montana Crescent - Weekday AM & PM peak hours 16

Figure 8. Post development traffic flows – Weekday AM and PM peak hours 17

Figure 9. 10-year post development traffic flows – Weekday AM and PM peak hours 18

Figure 10. SIDRA layout – Existing intersections of Marmion Avenue/Sanderling Street and Sanderling Street/Montana Crescent 20

Figure 11. SIDRA Network layout for post development scenarios (the year 2023 and 2033) 21

Figure 12. Peak fast-food restaurant 1 drive-through weekday morning hour queuing analysis 28

Figure 13. Peak fast-food restaurant 2 drive-through weekday morning hour queuing analysis 29

Figure 14. Peak fast-food restaurant 3 drive-through weekday morning hour queuing analysis 31

REPORT TABLES

Table 1. Estimated peak hour trips for the proposed development 15

Table 2. SIDRA results for the intersection of Sanderling Street and Montana Crescent – Weekday AM peak period (Existing) 48

Table 3. SIDRA results for the intersection of Sanderling Street and Montana Crescent – Weekday PM peak period (Existing) 48

Table 4. SIDRA results for the intersection of Marmion Avenue/Sanderling Street – Weekday AM peak period (Existing) 49

Table 5. SIDRA results for the intersection of Marmion Avenue/Sanderling Street – Weekday AM peak period (Existing) 49

Table 6. SIDRA results for full movement crossover (crossover 1) – Weekday AM peak period (Post development – Year 2023) 50

Table 7. SIDRA results for full movement crossover (crossover 1) – Weekday PM peak period (Post development – Year 2023) 50

Table 8. SIDRA results for full movement crossover (crossover 2) – Weekday AM peak period (Post development – Year 2023) 51

Table 9. SIDRA results for full movement crossover (crossover 2) – Weekday PM peak period (Post development – Year 2023) 51

Table 10. SIDRA results for the intersection of Sanderling Street/Montana Crescent – Weekday AM peak period (Post development – Year 2023) 52

Table 11. SIDRA results for the intersection of Sanderling Street/Montana Crescent – Weekday PM peak period (Post development – Year 2023) 52

Table 12. SIDRA results for the intersection of Marmion Avenue/Sanderling Street – Weekday AM peak period (Post development – Year 2023) 53

Table 13. SIDRA results for the intersection of Marmion Avenue/Sanderling Street – Weekday PM peak period (Post development – Year 2023) 53

Table 14. SIDRA results for full movement crossover (crossover 1) – Weekday AM peak period (10-Year Post development – Year 2033) 54

Table 15. SIDRA results for full movement crossover (crossover 1) – Weekday PM peak period (10-Year Post development – Year 2033) 54

Table 16. SIDRA results for full movement crossover (crossover 2) – Weekday AM peak period (10-Year Post development – Year 2033) 55

Table 17. SIDRA results for full movement crossover (crossover 2) – Weekday PM peak period (10-Year Post development – Year 2033) 55

Table 18. SIDRA results for the intersection of Sanderling Street/Montana Crescent – Weekday AM peak period (10-Year Post development – Year 2033) 56

Table 19. SIDRA results for the intersection of Sanderling Street/Montana Crescent – Weekday PM peak period (10-Year Post development – Year 2033) 56

Table 20. SIDRA results for the intersection of Marmion Avenue/Sanderling Street – Weekday AM peak period (10-Year Post development – Year 2033) 57

Table 21. SIDRA results for the intersection of Marmion Avenue/Sanderling Street – Weekday PM peak period (10-Year Post development – Year 2033) 57

1 Summary

This Transport Impact Assessment (TIA) has been prepared by Transcore with respect to the proposed fast-food outlets development to be located at Lots 769 & 770 Montana Crescent, Alkimos in the City of Wanneroo. The development proposal contemplates three new fast-food outlets with drive-through facilities at the subject site.

The subject site is currently vacant and is located to the west of Marmion Avenue and east of Montana Crescent. The proposed development entails two full movement crossovers on Montana Crescent.

In accordance with the WAPC *"Transport Impact Assessment Guidelines, Volume 4 – Individual Developments (2016)"*, a Transport Impact Assessment is required for developments that generate more than 100 vehicles per hour. Accordingly, a *Transport Impact Assessment* is warranted in this case.

The proposed development layout has been assessed with respect to the traffic circulation including service vehicles. Swept path analysis confirms that the proposed entry and exit arrangements and site layout facilitate satisfactory and efficient vehicle movements including service vehicles.

Accordingly, the aim of this Transport Impact Assessment is to assess the traffic impact of the development proposal by estimating the traffic which will be generated by the development and establishing the resultant traffic pattern on the surrounding road network. This assessment will include the capacity analysis of the proposed crossovers on Montana Crescent and the priority-controlled 'T' intersection of Sanderling Street/Montana Crescent and left-in/left out only intersection of Marmion Avenue/Sanderling Street.

2 Introduction

This Transport Impact Assessment (TIA) has been prepared by Transcore on behalf of Alkimos Combine Pty Ltd with regard to the proposed three fast-food outlets at Lots 769 & 770 Montana Cres, Alkimos in the City of Wanneroo.

The subject site is vacant land and at present it does not entail any crossovers. The subject site is bound by Montana Crescent to the west, a vacant land and a service station to the immediate north, Marmion Avenue to the east and vacant land to immediate south as shown in **Figure 1.**

Figure 1. Location of the subject site

It is proposed to provide two full movement crossovers on Montana Crescent to serve the proposed development. This crossover and access/egress system is necessary for the development to achieve satisfactory circulation, particularly for service vehicles.

This TIA will estimate the trip generation and distribution of the proposed development and will assess the impact of the proposed development traffic on the surrounding roads.

The key issue that will be addressed in this report include the traffic generation of the proposed development, the resultant traffic pattern on the surrounding road network and capacity analysis of the proposed development's crossovers and the existing priority-controlled 'T' intersection of Sanderling Street/Montana Crescent and left in/left out only intersection of Marmion Avenue/Sanderling Street.

3 Existing Situation

3.1 Existing Site Use, Access and Parking

The proposed development is located to the west of Marmion Avenue and to the east of Montana Crescent. The subject site is currently vacant and at present it does not entail any crossovers.

3.2 Existing Road Network

Montana Crescent, in the immediate vicinity of the subject site, is constructed as a single carriageway, two-lane undivided road with a pedestrian footpath on the eastern side of the road. Refer to **Figure 2** for more information.

Montana Crescent is classified as a *Local Road* in the Main Roads WA Functional Road Hierarchy and operates under the default speed limit of 50km/h in the vicinity of the subject site.

There are no formal traffic counts available for this road. However, based on the peak hour traffic counts undertaken by Transcore, it is estimated that this road carries 155vph between 8:00am to 9:00am and 118vph between 3:00pm to 4:00pm. Montana Crescent forms a priority controlled 'T' intersection with Sanderling Street at the northern end.

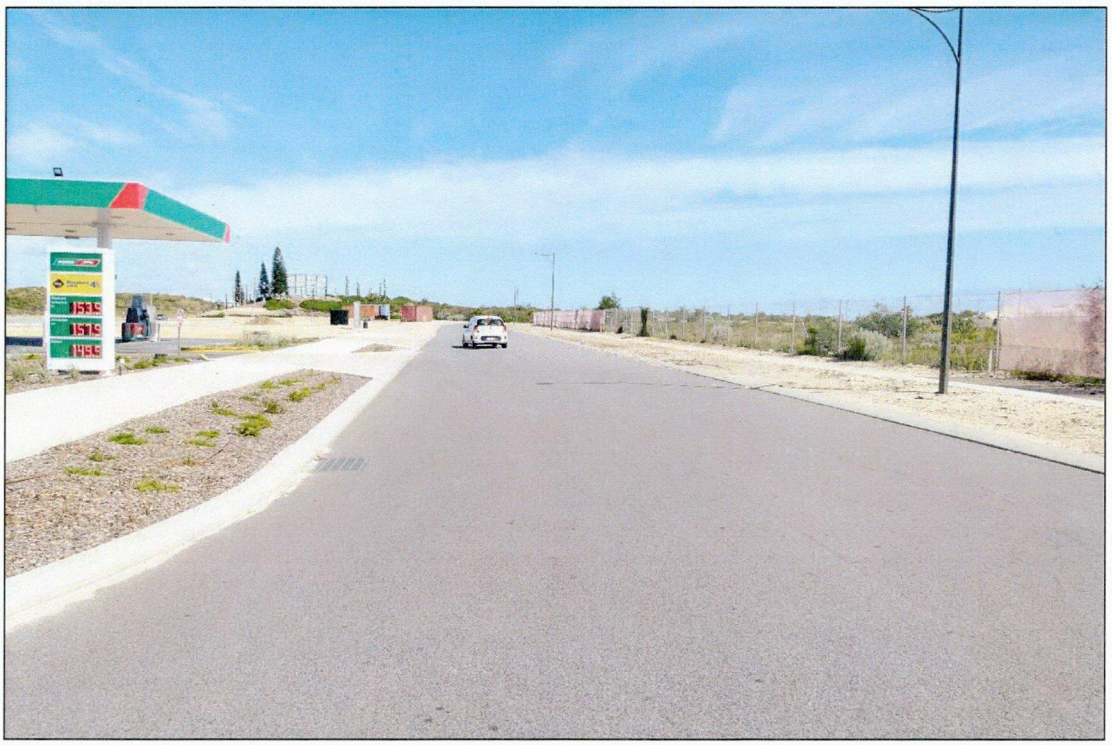


Figure 2. Southbound View along Montana Crescent

Marmion Avenue in the vicinity of the subject site is constructed as a four-lane divided dual carriageway with landscaped median. Pedestrian footpaths are in place on both sides of Marmion Avenue in the vicinity of the subject site. Refer to **Figure 3** for more details.

Marmion Avenue is classified as a *Primary Distributor* in the Main Roads WA Functional Road Hierarchy and operates under the sign posted speed limit of 80km/h in the vicinity of the subject site.

According to the latest available traffic count data sourced from Main Roads WA, Marmion Avenue (north of Romeo Road) carried approximately 26,043vpd on a regular weekday in 2021/22. The morning peak of 2,203vph was recorded at this location between 8:00-9:00 AM while the afternoon peak of 2,328vph was recorded between 3:00-4:00 PM.

Figure 3. Northbound View along Marmion Avenue

3.3 Existing Traffic Volumes on Roads

Transcore undertook manual traffic counts for the turn movements at the existing intersections of Marmion Avenue/Sanderling Street and Sanderling Street/Montana Crescent on Wednesday 8th June, 2022 between 8:00am to 9:00am and 3:00pm to 4:00pm. The existing peak hour turn counts are shown in **Figure 4**.

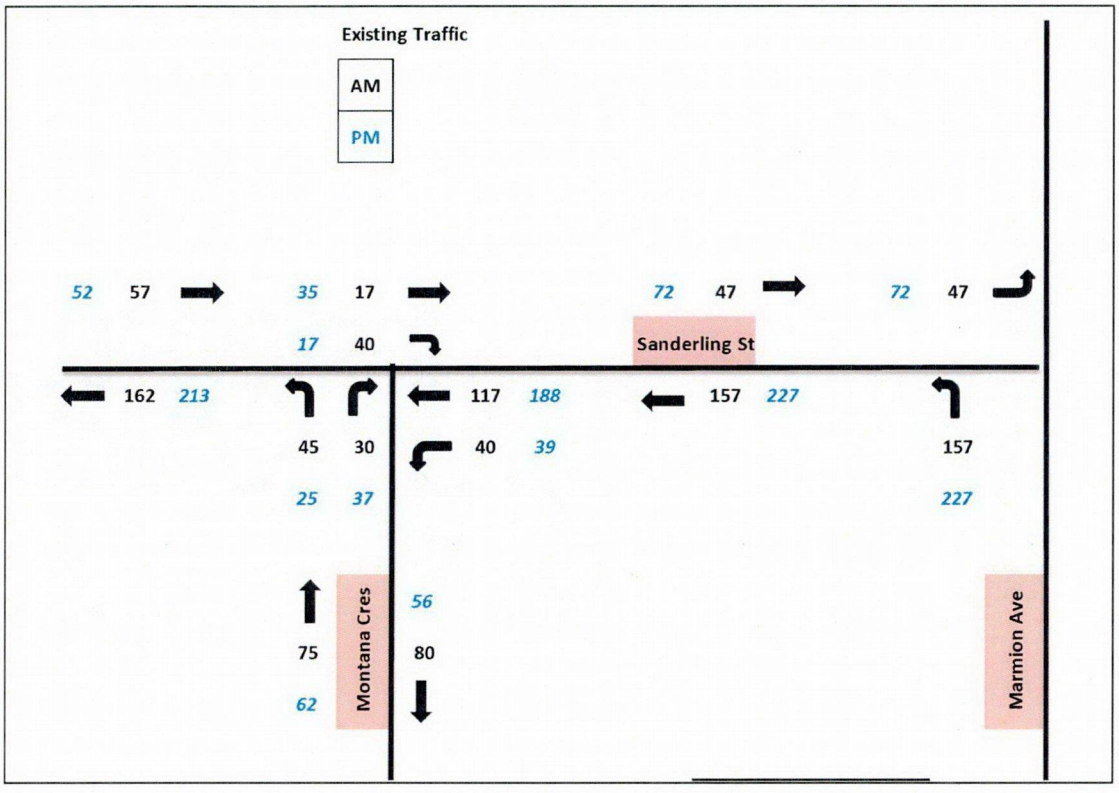


Figure 4. Existing peak hours traffic counts at Marmion Avenue/Sanderling Street intersection and Sanderling Street/Montana Crescent intersection

3.4 Public Transport Access

Public transport services in the vicinity of the subject site are shown in **Figure 5**. The closest bus services to the subject site are Transperth bus routes 490 and 491, which travel along Marmion Avenue, east of the subject site. The nearest bus stop is located on Marmion Avenue approximately 150m south of the subject site which is accessible from the subject site via the existing footpath network in the locality. These bus routes provide links to Butler and Clarkson train stations.

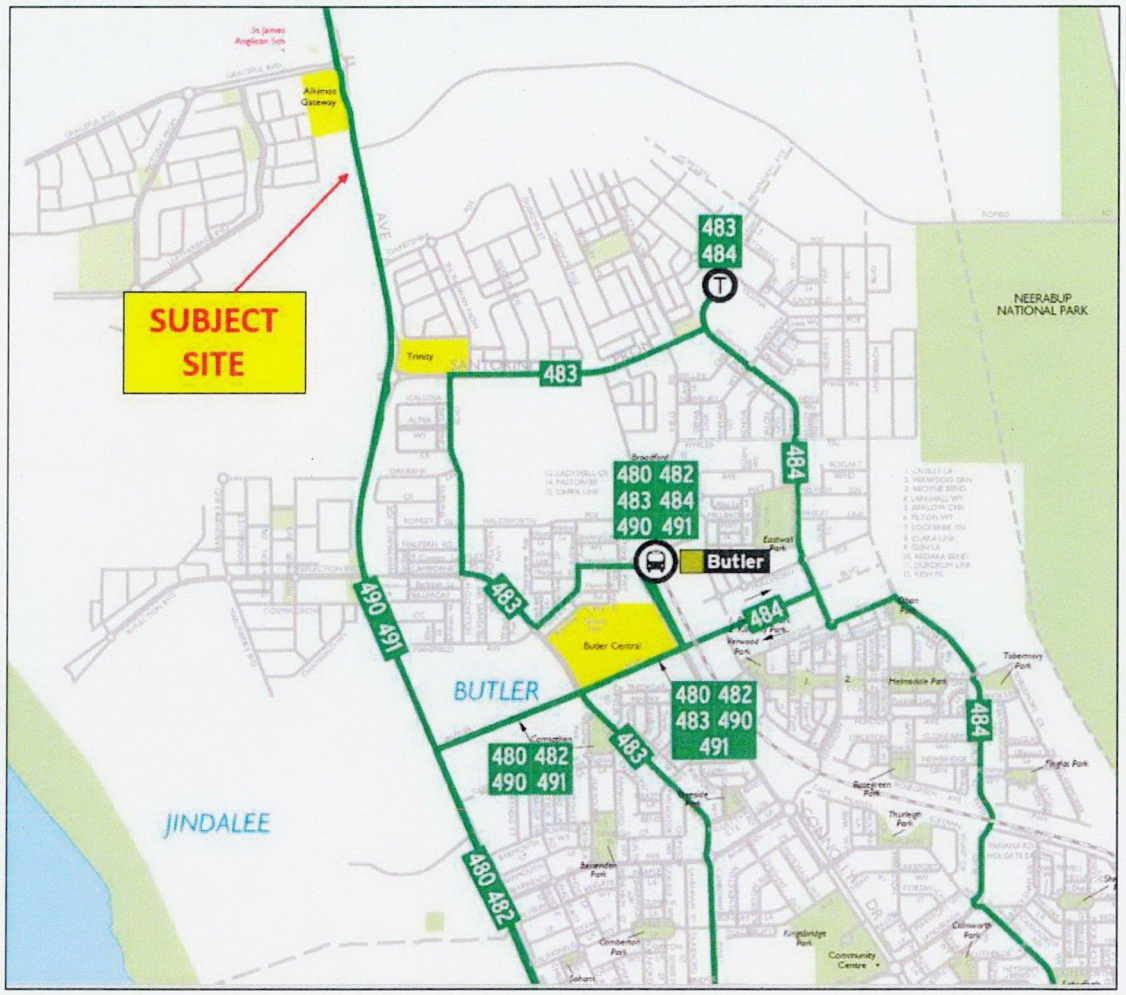


Figure 5. Existing bus routes (source: Transperth)

3.5 Pedestrian and Cyclist Facilities

Pedestrian paths in the vicinity of the subject site are provided on both sides of Marmion Avenue and on the west of Montana Crescent. Pedestrian crossing facilities are available at the Marmion Avenue/Sanderling Street intersection and Sanderling Street/Montana Crescent intersection.

A dedicated cycling lane with sealed shoulder is available to the east of Marmion Avenue.

3.6 Crash Data

Crash statistics information available on the Main Roads WA website indicates that no crashes were recorded at Marmion Avenue/Sanderling Street intersection and Sanderling Street/Montana Crescent intersection during the five-year period ending in December 2021.

4 Development Proposal

4.1 Proposed Site Use

The proposed development is for three fast food outlets with drive through facilities. Outlet 1 has dual-lane drive-through configuration which merges into a single lane incorporating a cashier and servery facility. Outlets 2 and 3 have single-lane drive-through facilities. The proposed building floor areas for outlets 1, 2 and 3 are approximately 270m^2, 137m^2 and 177m^2 GFA respectively.

The proposed development will provide a total of 30 parking bays including three ACROD bays, two drive through waiting bays and two click and collect bays. Further, a total of 32 stacking space within the drive through facilities are provided. It is assumed that the parking supply for the development will satisfy the relevant requirements.

The layout of the proposed development is shown in the site plan included in **Appendix A**.

4.2 Proposed Access for all Modes

As part of the proposed development, it is proposed to provide two full movement crossovers on Montana Crescent. This access/egress system is necessary for the development to achieve satisfactory circulation, particularly for service vehicles. **Figure 6** shows the locations of the proposed crossovers.

Service vehicles access, egress and circulation are discussed further in **Section 10** of this report.

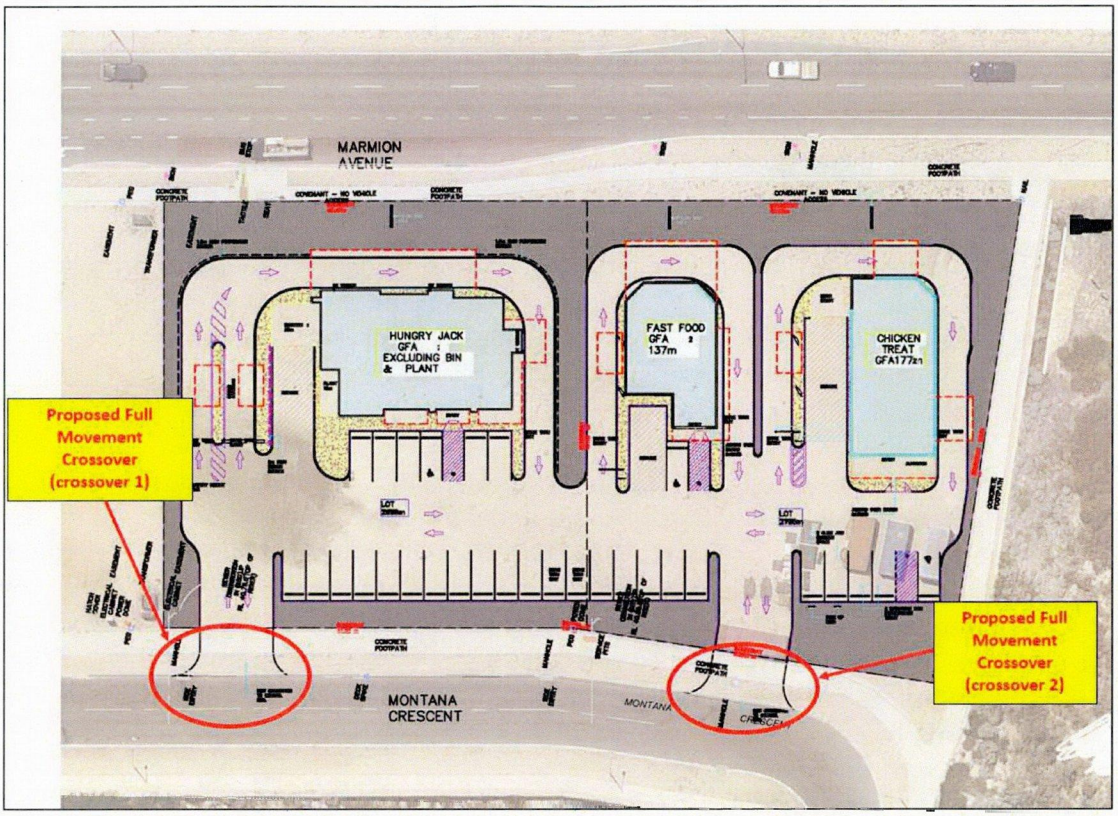


Figure 6. Locations of the proposed crossovers

5 Changes to Surrounding Transport Networks

The proposed development does not contemplate any changes to the surrounding road networks.

The proposed changes on the road network are simply associated with the two new full movement crossovers on Montana Crescent at the subject site.

6 Integration with Surrounding Area

The proposed development comprises three fast food restaurants with drive through facilities which are in line with the current zoning for the subject site. The proposed development is of a commercial/ retail character and is expected to address the existing and future demand for this type of services along Marmion Avenue and surrounding existing and future land uses in the locality.

7 Hours of Operation

The proposed development is anticipated to operate 24 hours per day and 7 days per week.

8 Traffic Assessment

8.1 Assessment Period

It is anticipated that the combination of the traffic expected to be generated by the proposed development and the peak road network traffic periods is likely to result in the greatest demand on the road network during the typical weekday morning peak hour between 8:00am - 9:00am and afternoon peak hour between 3:00pm - 4:00pm. As such, trip generation is estimated and traffic analysis for the proposed development is undertaken for these periods.

For the purpose of this assessment, it is assumed that the proposed development would be fully constructed and activated by 2023. Therefore, the assessment year that has been adopted for this analysis is year 2023 which represents the assumed post-development scenario and 2033 for 10-year post development scenario.

8.2 Trip Generation and Distribution

8.2.1 Existing Traffic Generation

The subject site is presently vacant and does not generate any traffic.

8.2.2 Proposed Development Traffic Generation

Traffic generation rates for the proposed fast-food restaurants were sourced from the *Institute of Transportation Engineers - Trip Generation Manual 11th Edition* (ITE) using *"Fast-Food Restaurant with Drive-Through Window (934)"* land use as a reference.

The trip rates which were used to estimate the traffic generation for the proposed development are as follows:

Fast-Food Restaurant with Drive-Through Window (934) - 1000 Sq. Ft. GFA

- Weekday daily: 467.48 trips per 1000 Sq. Ft. GFA/ 0.929 = 503.21vpd/ 100m^2 GFA;
- Weekday AM peak hour: 44.61 trips per 1000 Sq. Ft. GFA/ 0.929 = 48.02vph/ 100m^2 GFA; and,
- Weekday PM peak hour: 33.03 trips per 1000 Sq. Ft. GFA/ 0.929 = 35.55vph/ 100m^2 GFA.

Accordingly, it is estimated that the traffic generations for the proposed development are:

Outlet 1

- Weekday daily: 503.21 x 2.7 (GFA) = 1,359vpd;
- Weekday AM: 48.02 x 2.7 (GFA) = 130vph;
- Weekday PM: 35.55 x 2.7 (GFA) = 96vph.

Outlet 2

- Weekday daily: 503.21 x 1.37 (GFA) = 689vpd;
- Weekday AM: 48.02 x 1.37 (GFA) = 66vph;
- Weekday PM: 35.55 x 1.37 (GFA) = 49vph.

Outlet 3

- Weekday daily: 503.21 x 1.77 (GFA) = 891vpd;
- Weekday AM: 48.02 x 1.77 (GFA) = 85vph;
- Weekday PM: 35.55 x 1.77 (GFA) = 63vph.

There is typically cross-trade between the proposed fast-food outlets as they are co-located within the same site. However, for the purpose of a robust assessment, no cross-trades between the proposed fast-food outlets are applied in this assessment. Accordingly, it is conservatively estimated that the proposed development would generate approximately **2,939** vehicular trips per typical weekday, with about **280** trips during the typical weekday AM and about **208** trips during the typical weekday PM peak hours. These totals include both inbound and outbound vehicle movements.

Fast food outlets attract significant proportion of their customers as passing trade from traffic already passing the site on the adjacent road network. Data from the ITE Trip Generation Handbook indicates that the passing trade is typically around 50% for fast food outlets with drive through facility. Accordingly, 50% of passing trade was assumed for the analysis for both AM and PM peak hours. Therefore, the net additional traffic when accounting for passing trade is conservatively +1,470vpd (daily), +140vph (AM peak hour) and +104vph (PM peak hour) on the surrounding road network as shown in **Table 1**.

Table 1. Estimated peak hour trips for the proposed development

Passing Trade	Daily Trips	AM		PM		Non-passing Trade	Daily Trips	AM		PM	
		IN	OUT	IN	OUT			IN	OUT	IN	OUT
50%	1469	70	70	52	52	50%	1469	70	70	52	52
	1469	**70**	**70**	**52**	**52**		**1469**	**70**	**70**	**52**	**52**

The directional split of inbound/outbound trips for the proposed developments is assumed to be about 50/50 for inbound/outbound trips during the peak hours.

8.3 Traffic Flows

The existing traffic flows used as the base for traffic assessment are presented in **Figure 7** which is the outcome of the traffic survey undertaken by Transcore on 8th June, 2022 and the weekday traffic volumes of Marmion Avenue sourced from the latest Main Roads WA traffic data (north of Romeo Road).

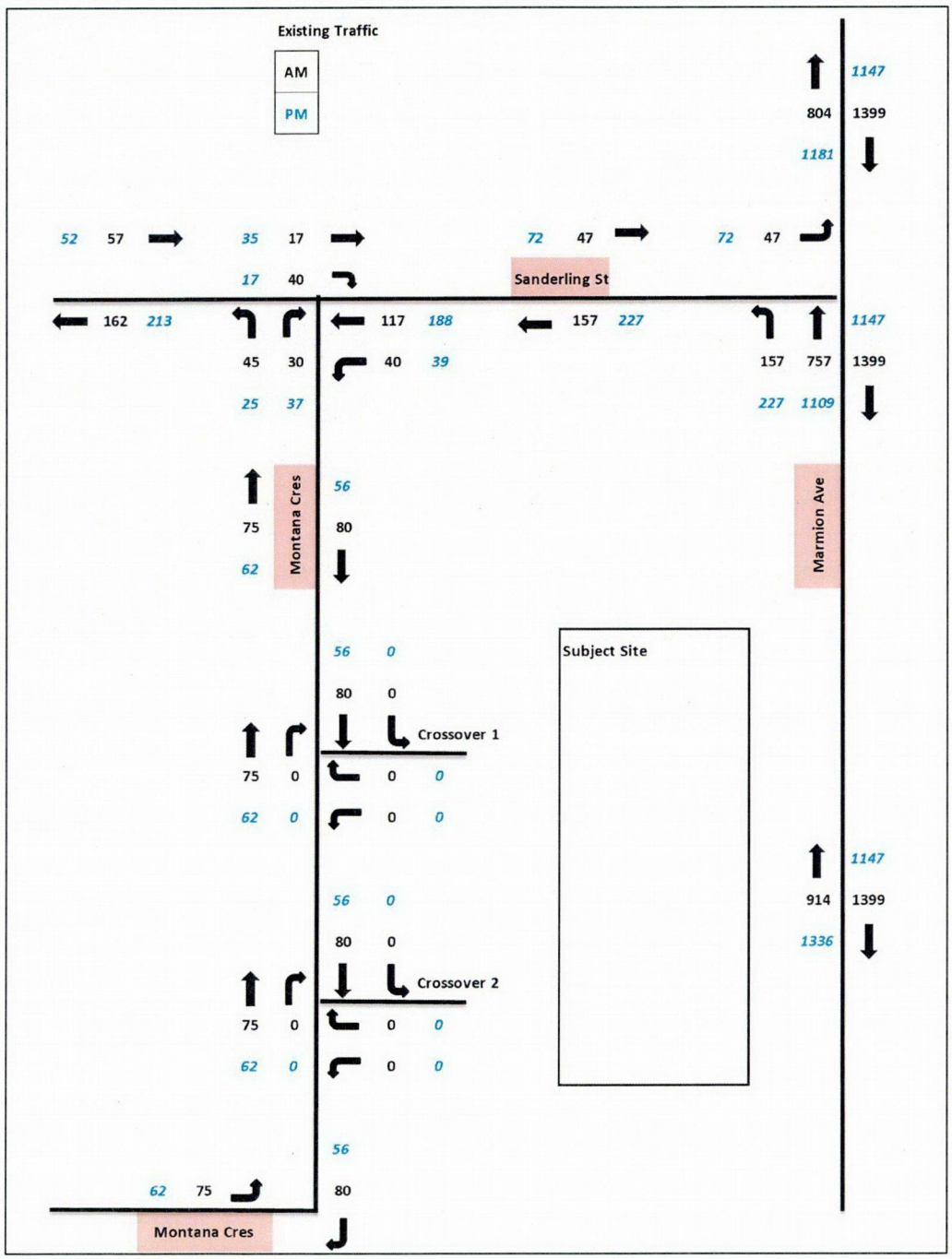


Figure 7. Existing traffic flows at the intersection of Marmion Avenue/Sanderling Street and the intersection of Sanderling Street/Montana Crescent - Weekday AM & PM peak hours

The combined base and development traffic volumes for the post development scenario (the year 2023) is presented in **Figure 8**.

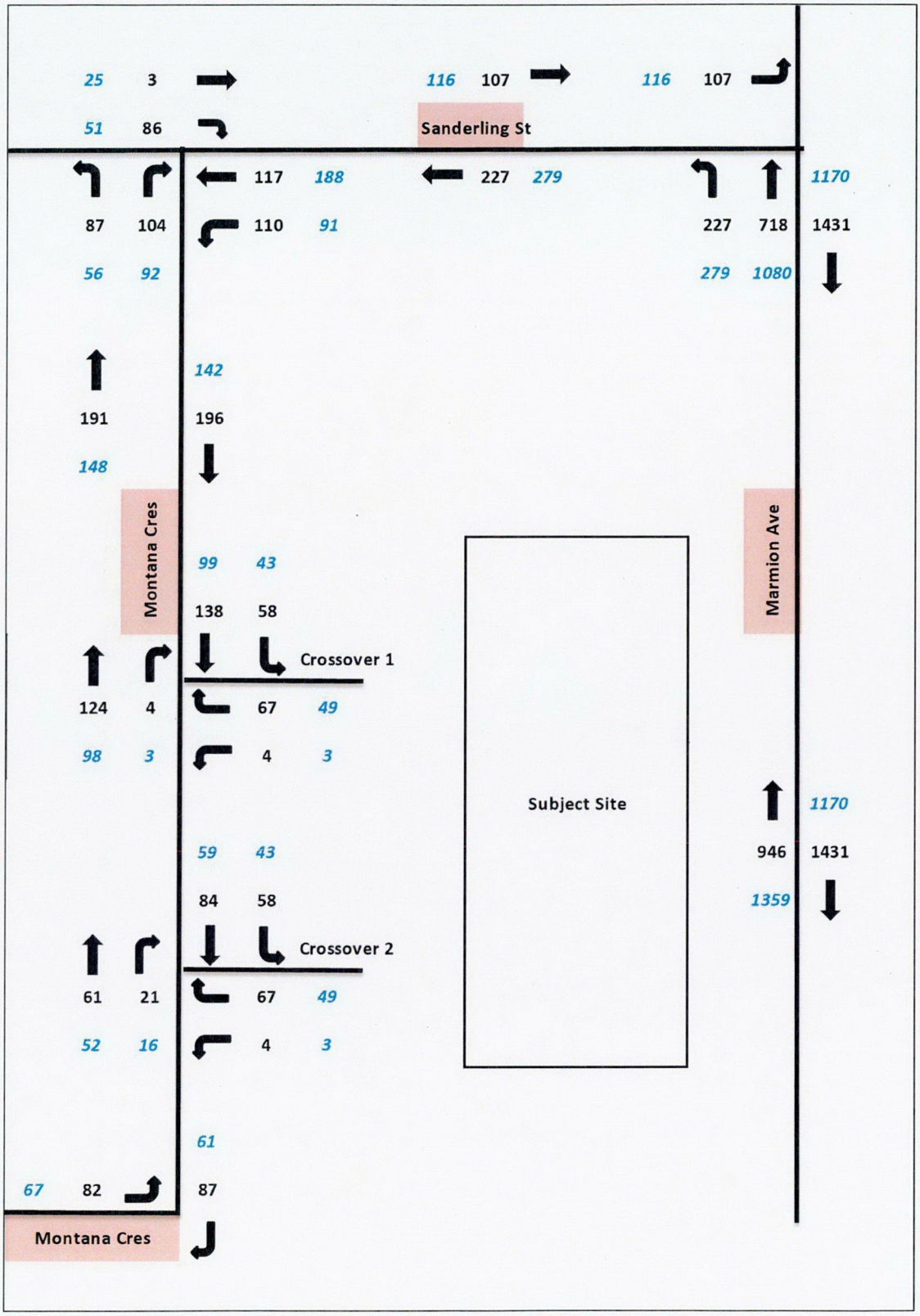


Figure 8. Post development traffic flows – Weekday AM and PM peak hours

In line with a recent similar approved development located further south of the subject site (corner of Marmion Avenue and Hawksbill Drive, a traffic growth rate of 40.5% for Marmion Avenue over the 10-year period was assumed, which equates to an average growth rate of 4.05% per annum. Further, 2% per annum growth was conservatively assumed for Montana Crescent and Sanderling Street to forecast the future background traffic volumes for the 10-year post development (the year 2033) scenario. The resulting total 10-year post development traffic volumes are presented in **Figure 9**.

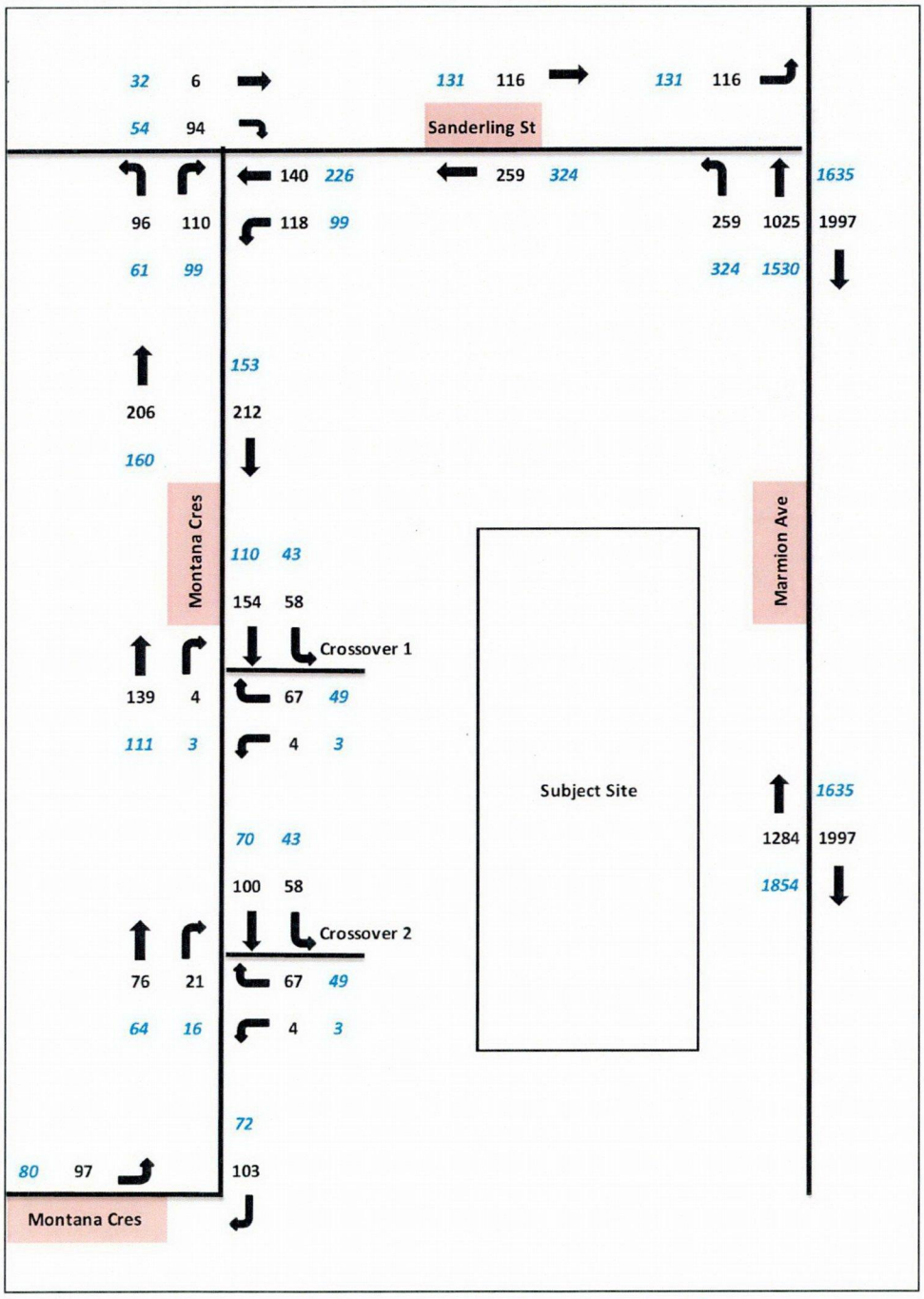


Figure 9. 10-year post development traffic flows – Weekday AM and PM peak hours

8.4 Analysis of Local Intersection & Development's Crossovers

SIDRA 9.0 intersection analysis has been undertaken for the subject site crossovers on Montana Crescent, priority-controlled 'T' intersection of Sanderling Street/Montana Crescent and left in/left out only 'T' intersection of Marmion Avenue/Sanderling Street in order to assess their operations in the existing and post development scenarios (2023 and 10-year post development 2033) for weekday AM and PM peak hours. For the purpose of this assessment, relevant heavy vehicle settings and parameters were updated in accordance with Main Roads WA's latest requirements.

The SIDRA package is a commonly used intersection-modelling tool 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 items 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 varied 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 layout of the existing intersections is illustrated in **Figure 10** and the layout of the modelled network for the post development scenarios is illustrated in **Figure 11**.

The results of SIDRA analysis of two proposed full movement crossovers on Montana Crescent and the intersections of Marmion Avenue/Sanderling Street and Sanderling Street/Montana Crescent for the post-development scenarios (2023 and 2033) during AM and PM peak traffic periods are reported in **Table 2** to **Table 21** in **Appendix C** and discussed in the following paragraphs.

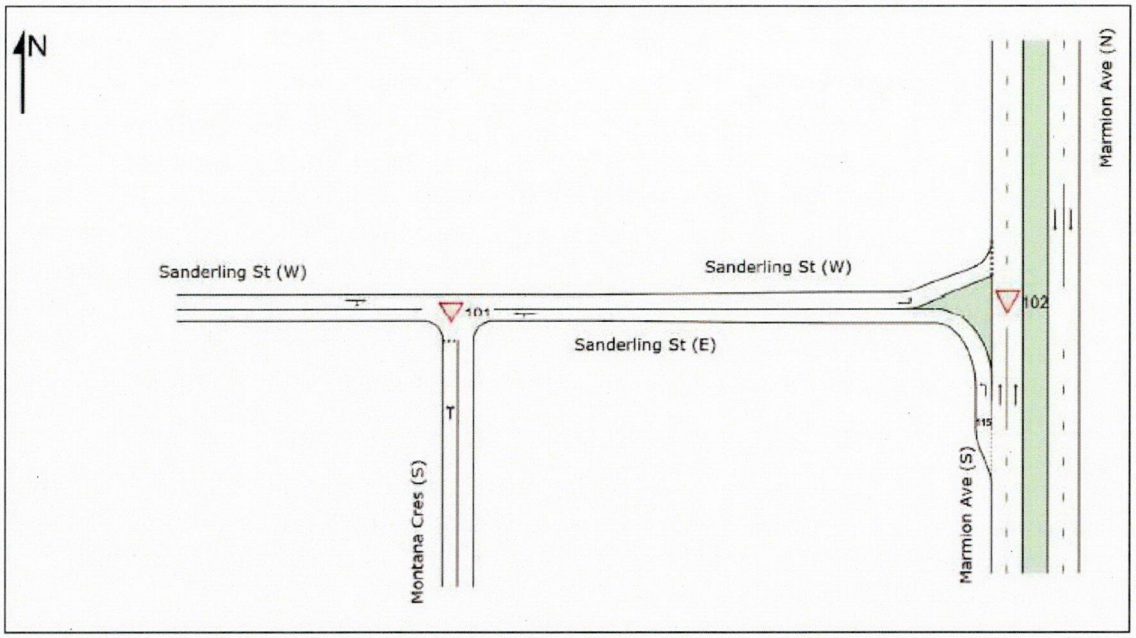


Figure 10. SIDRA layout – Existing intersections of Marmion Avenue/Sanderling Street and Sanderling Street/Montana Crescent

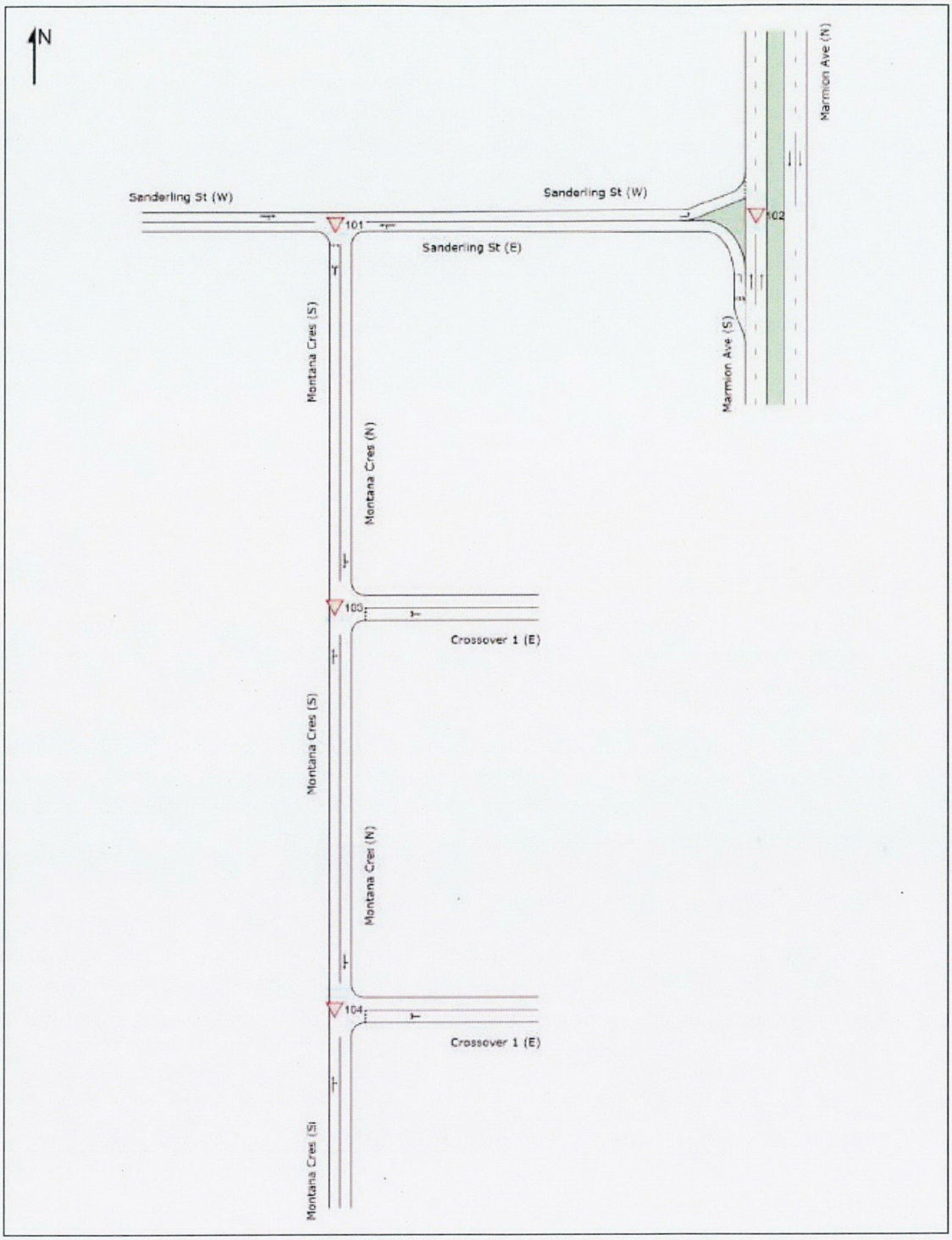


Figure 11. SIDRA Network layout for post development scenarios (the year 2023 and 2033)

Montana Crescent full movement northern crossover (crossover 1)

The SIDRA results for the full movement northern crossover (crossover 1) on Montana Crescent indicate that this crossover would operate at a very good overall Level of Service (LoS) A during typical AM and PM peak periods in the post development scenarios (both 2023 and 2033).

Montana Crescent full movement southern crossover (crossover 2)

The SIDRA results for the full movement southern crossover (crossover 2) on Montana Crescent indicate that this crossover would also operate at a very good overall Level of Service (LoS) A during typical AM and PM peak periods in the post development scenarios (both 2023 and 2033).

Intersection of Sanderling Street and Montana Crescent

Existing and post development scenario

SIDRA results indicate that this intersection is currently operating with very good overall Level of Service A with less than one vehicle queue on Montana Crescent during both AM and PM peak periods.

The SIDRA results for the post development scenario confirms that the addition of traffic generated by the proposed development will not have a material impact on the operation of this intersection which retains the current level of services and records marginal increases in queues and delays in this scenario.

Year 2033 – 10 Year post development scenario

Based on the SIDRA results by 2033, it is reported that this intersection will still operate with current very good Level of Service A with approximately one vehicle queue on Montana Crescent and recorded marginal increases in queues and delays in this 10-year post development scenario.

Left-in/Left out only intersection of Marmion Avenue and Sanderling Street

Existing and post development scenario

SIDRA results for this intersection also indicate that this intersection is currently operating with very good overall Level of Service A during both AM and PM peak periods.

With the addition of traffic generated by the proposed development, it is confirmed that this intersection will retain the current level of services and records marginal increases in queues and delays in this scenario.

Year 2033 – 10 Year post development scenario

Based on the SIDRA results by 2033, it is reported that this intersection will still operate with current very good Level of Service A with one vehicle queue on Sanderling Street and recorded marginal increases in queues and delays in this 10-year post development scenario.

Therefore, it is considered that the impacts of the development traffic on the nearby intersections are not significant and the traffic operations are satisfactory.

8.5 Impact on Surrounding Roads

The WAPC Transport Impact Assessment Guidelines (2016) provides guidance on the assessment of traffic impacts:

"As a general guide, an increase in traffic of less than 10 per cent of capacity would not normally be likely to have a material impact on any particular section of road, but increases over 10 per cent may. All sections of road with an increase greater than 10 per cent of capacity should therefore be included in the analysis. For ease of assessment, an increase of 100 vehicles per hour for any lane can be considered as equating to around 10 per cent of capacity. Therefore, any section of road where the structure plan traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis."

The proposed development will not increase traffic flows near the quoted WAPC threshold to warrant further detailed analysis.

8.6 Impact on Neighbouring Areas

The traffic generated by the proposed development will have an insignificant impact on the surrounding areas.

8.7 Traffic Noise and Vibration

The proposed developments will not increase traffic volumes or noise on surrounding roads to an unacceptable level.

9 Parking

The proposed fast food restaurants development provides a total of 30 parking bays including three ACROD bays, two drive through waiting bays and two click and collect bays for the use of customers and staff. Further, a total of 32 stacking space within the drive through facilities are provided.

It is Transcore's understanding that sufficient parking supply is provided to address the parking requirements of the proposed development.

10 Provision for Service Vehicles

Fast-food outlet 01 will use a 12.5m service vehicle the fast-food outlet 02 & fast-food outlet 03 will use an 8.8m service vehicle. Delivery and service trucks are anticipated to enter/ exit the subject site via the proposed full movement crossovers (both crossover 1 and crossover 2) on Montana Crescent.

It is anticipated that delivery and service trucks will enter the site outside peak operating hours of the proposed development for the safe manoeuvring of the trucks within the site.

Swept path analysis was undertaken for service vehicles and drive through lanes to confirm the satisfactory access, egress and circulation within the subject site. The swept path diagrams are included in **Appendix B**.

11 Drive-Through Queue Analysis

11.1 NSW Guidelines

Section 5.8.1 of the New South Wales *Guide to Traffic Generating Developments*[1] document deals with the parking requirements for the drive-in, take-away food outlets. This clause states that:

According to this document, *an exclusive area for queuing of cars for a drive through is required (queue length of 5 to 12 cars measured from pick up point). There should also be a minimum of four car spaces for cars queued from the ordering point.*

Fast food restaurant 1

The proposed fast-food restaurant 1 proposes a two-lane drive through facility with two Customer Order Booths (COB). This facility merges into a single lane for payment and pickup. The proposed drive through facility entails provision of 14 car stacking capacity within the drive through facility including a combined stacking space for at least four cars at the COBs.

Fast food restaurant 2

The proposed fast-food restaurant 2 proposes a single drive through lane with one Customer Order Booth (COB). The proposed drive through facility entails provision of 8 car stacking capacity within the drive through facility with a space for at least three cars at the COB.

Fast food restaurant 3

The proposed fast-food restaurant 3 proposes a single drive through lane with one Customer Order Booth (COB). The proposed drive through facility entails provision of 10 car stacking capacity within the drive through facility including a space for at least three cars at the COB.

[1] Guide to Traffic Generating Developments, Version 2.2, October 2002.

11.2 Drive-Through queue length analysis model

A queue length analysis was undertaken to assess the provision of storage for vehicles within the drive through lanes. For this purpose, an M/M/1 queuing model was adopted for each COB. The M/M/1 is a single-server queue model that can be used to approximate simple systems.

The queuing model adopts the following assumptions:

- Vehicles arrive randomly following Poisson's probability distribution;
- Service time is exponentially distributed;
- There is one server per queue, i.e., there are two queues, one for each COB, instead of a single queue being served by two COBs;
- The capacity of the queue in which arriving users wait before being served is infinite (for the purposes of identifying queue space requirements);
- The population of users (i.e., the pool of users) available to join the system is infinite; and,
- The queue is serviced on a first come, first served basis.

Fast food restaurant 1

Based on the peak hour trip generation, the proposed fast-food restaurant 1 is estimated to generate a total of 130vph (65vph inbound and 65vph outbound) during the critical morning peak hour. It is further estimated that, allowing for walk-in trade dispensation of 5%, and a 60/40 drive-through/park'n'sit ratio typical for such type of restaurants, it is estimated that there could be around 37 drive-through transactions/customers/cars during the weekday morning peak hour period.

According to the advice provided, the average order-taking cycle is estimated at approximately 45 seconds, translating into a service rate of 80 vehicles per hour (maximum capacity of the single COB drive through system). However, in order to provide for a robust assessment, it is assumed that the order-taking cycle would average 1min equating 60 vehicles per hour service rate capacity. It is assumed that two COBs will be in operation during the peak periods, giving a theoretical order taking service rate of 120 vehicles per hour. It is also assumed that cars would enter the COB with the shortest queue, therefore over the peak hour the transactions at each COB would be more or less evenly split.

The results of the queuing analysis are detailed in **Figure 12**.

M/M/s - Drive Through Queuing Analysis (Poisson Arrival and Service Rates)

M/M/s

	vph	vps
Arrival rate	37	0.010278
Service rate	60	0.016667
Number of servers	2	2

Utilization	**30.83%**		**30.83%**	
P(0), probability that the system is empty	**0.5287**		**0.5287**	
Lq, expected queue length	**0.0648**	(cars)	**6.0000**	(metres)
L, expected number in system	**0.6815**	(cars)	**6.0000**	(metres)
Wq, expected time in queue	**0.0018**	(hours)	**6.3034**	(seconds)
W, expected total time in system	**0.0184**	(hours)	**66.3034**	(seconds)
Probability that a customer waits	**0.1453**		**0.1453**	
95% Queue	**2.0000**	(cars)	**12.0000**	(metres)

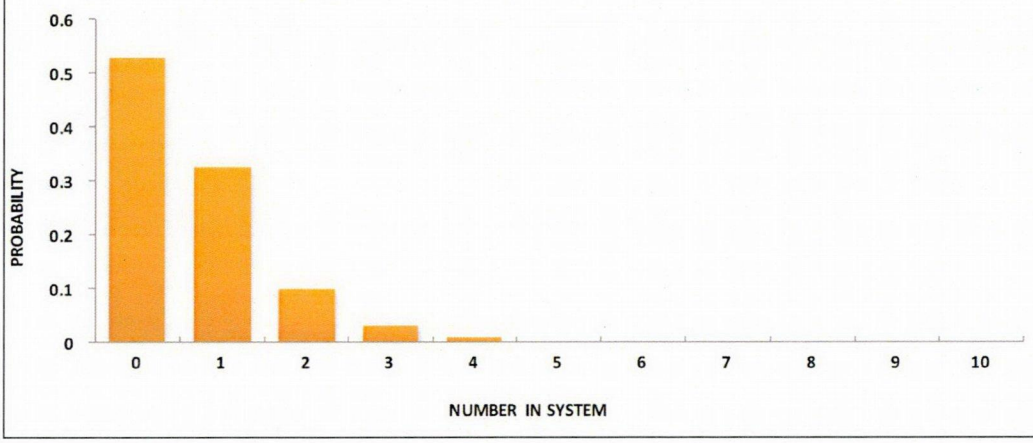


Figure 12. Peak fast-food restaurant 1 drive-through weekday morning hour queuing analysis

In summary, critical peak hour queuing analysis of the drive through system established the following for each COB:

- There is zero queuing 53% of the time;
- The expected number of vehicles in the system is one;
- The expected time in the queue is 7 seconds; and,
- The 95th percentile queue is maximum two vehicles at each COB.

Fast food restaurant 2

Based on the peak hour trip generation, the proposed fast-food restaurant 2 is estimated to generate a total of 66vph (33vph inbound and 33vph outbound) during the critical morning peak hour. It is further estimated that, allowing for walk-in trade dispensation of 5%, and a 60/40 drive-through/park'n'sit ratio typical for such type of restaurants, it is estimated that there could be around 19 drive-through transactions/customers/cars during the weekday morning peak hour period. It is also assumed that the order-taking cycle would average 1min equating 60 vehicles per hour service rate capacity.

The results of the queuing analysis are detailed in **Figure 13**.

M/M/s - Drive Through Queuing Analysis (Poisson Arrival and Service Rates)

M/M/s	vph	vps
Arrival rate	19	0.005278
Service rate	60	0.016667
Number of servers	1	1

Utilization	31.67%		31.67%	
P(0), probability that the system is empty	0.6833		0.6833	
Lq, expected queue length	0.1467	(cars)	6.0000	(metres)
L, expected number in system	0.4634	(cars)	6.0000	(metres)
Wq, expected time in queue	0.0077	(hours)	27.8049	(seconds)
W, expected total time in system	0.0244	(hours)	87.8049	(seconds)
Probability that a customer waits	0.3167		0.3167	
95% Queue	2.0000	(cars)	12.0000	(metres)

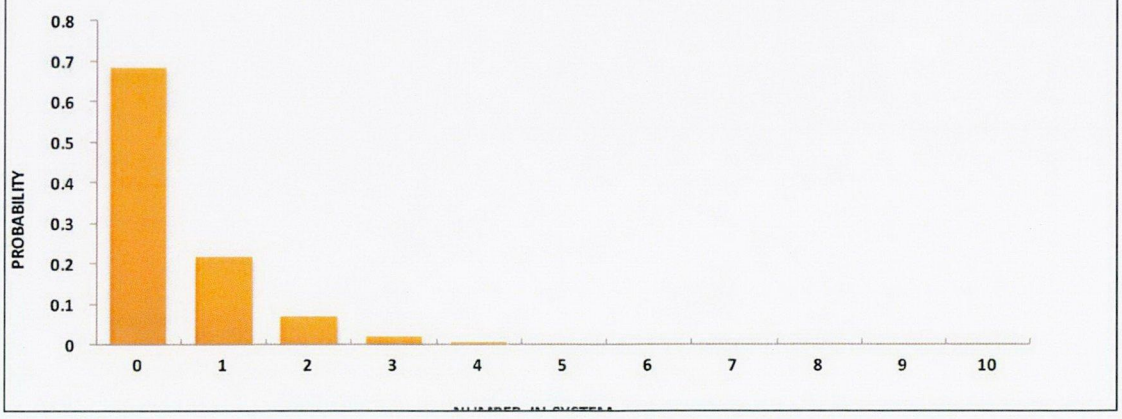


Figure 13. Peak fast-food restaurant 2 drive-through weekday morning hour queuing analysis

In summary, critical peak hour queuing analysis of the drive through system established the following for each COB:

- There is zero queuing 68% of the time;
- The expected number of vehicles in the system is one;
- The expected time in the queue is 28 seconds; and,
- The 95th percentile queue is maximum two vehicles at the COB.

Fast food restaurant 3

Based on the peak hour trip generation, the proposed fast-food restaurant 3 is estimated to generate a total of 85vph (42vph inbound and 42vph outbound) during the critical morning peak hour. It is further estimated that, allowing for walk-in trade dispensation of 5%, and a 60/40 drive-through/park'n'sit ratio typical for such type of restaurants, it is estimated that there could be around 24 drive-through transactions/customers/cars during the weekday morning peak hour period. It is also assumed that the order-taking cycle would average 1min equating 60 vehicles per hour service rate capacity.

The results of the queuing analysis are detailed in **Figure 14**.

M/M/s - Drive Through Queuing Analysis (Poisson Arrival and Service Rates)

M/M/s

	vph	vps
Arrival rate	24	0.006667
Service rate	60	0.016667
Number of servers	1	1

Utilization	40.00%		40.00%	
P(0), probability that the system is empty	0.6000		0.6000	
Lq, expected queue length	0.2667	(cars)	6.0000	(metres)
L, expected number in system	0.6667	(cars)	6.0000	(metres)
Wq, expected time in queue	0.0111	(hours)	40.0000	(seconds)
W, expected total time in system	0.0278	(hours)	100.0000	(seconds)
Probability that a customer waits	0.4000		0.4000	
95% Queue	3.0000	(cars)	18.0000	(metres)

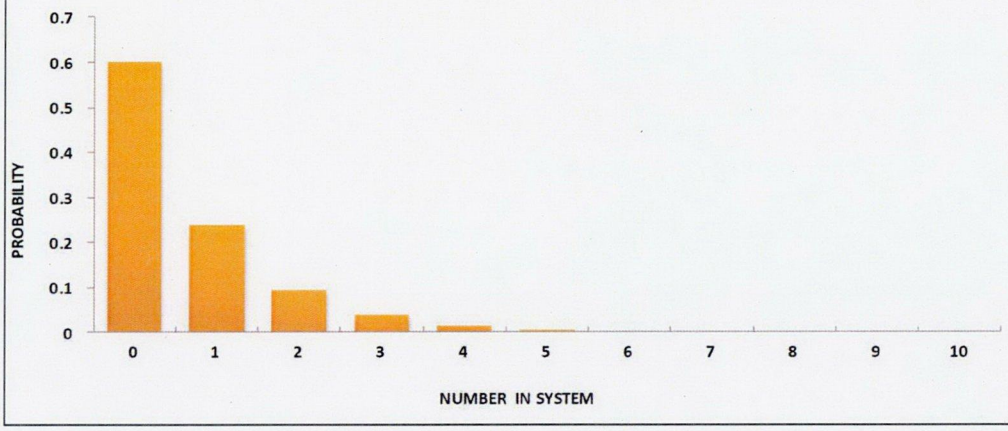


Figure 14. Peak fast-food restaurant 3 drive-through weekday morning hour queuing analysis

In summary, critical peak hour queuing analysis of the drive through system established the following for each COB:

- There is zero queuing 60% of the time;
- The expected number of vehicles in the system is one;
- The expected time in the queue is 40 seconds; and,
- The 95th percentile queue is maximum three vehicles at the COB.

The queue length usually adopted for robust analysis is the 95th percentile queue. This queue length will not be exceeded 95% of the time. Based on the queue estimation models, it is concluded that under typical peak conditions the queue backing from COB of each proposed fast-food restaurant will be accommodated within the drive through facility with no impact on internal circulation and surrounding road network.

12 Public Transport Access

The existing public transport services in the area are described in **Section 3.4** of this report.

13 Pedestrian and Cyclist Access

Pedestrian and cyclist's facilities are described in **Section 3.5** of this report.

14 Conclusions

This Transport Impact Assessment (TIA) has been prepared by Transcore on behalf of Alkimos Combine Pty Ltd with respect to the proposed fast-food outlets to be located at Lots 769 & 770 Montana Crescent, Alkimos in the City of Wanneroo. The subject site is currently vacant and is located to the west of Marmion Avenue and east of Montana Crescent.

The development proposal contemplates three new fast-food outlets with drive-through facilities at the subject site. Outlet 1 has dual-lane drive-through configuration which merges into a single lane incorporating a cashier and servery facility. Outlets 2 and 3 have single-lane drive-through facility.

The proposed development entails two full movement crossovers on Montana Crescent. This access/egress system is necessary for the development to achieve satisfactory circulation, particularly for service vehicles.

The proposed fast food restaurants development provides a total of 30 parking bays including three ACROD bays, two drive through waiting bays and two click and collect bays for the use of customers and staff. Further, a total of 32 stacking space within the drive through facilities are provided. It is Transcore's understanding that sufficient parking supply is provided to address the parking requirements of the proposed development.

Swept path analysis undertaken for service vehicles and drive through lanes confirms satisfactory access, egress and circulation within the subject site.

The results of SIDRA network analysis undertaken indicate that the developments crossovers operate satisfactorily with acceptable queues and delays for both post development (2023) and 10-year post development (2033) scenarios. The analysis further demonstrates that the addition of development traffic for post development scenarios (both 2023 and 2033) will have insignificant impact on the traffic operations of the priority-controlled 'T' intersection of Sanderling Street/Montana Crescent and left-in/left-out only intersection of Marmion Avenue/Sanderling Street.

Accordingly, it is concluded that the development traffic will not have a significant impact on the operations of the surrounding roads and intersections.

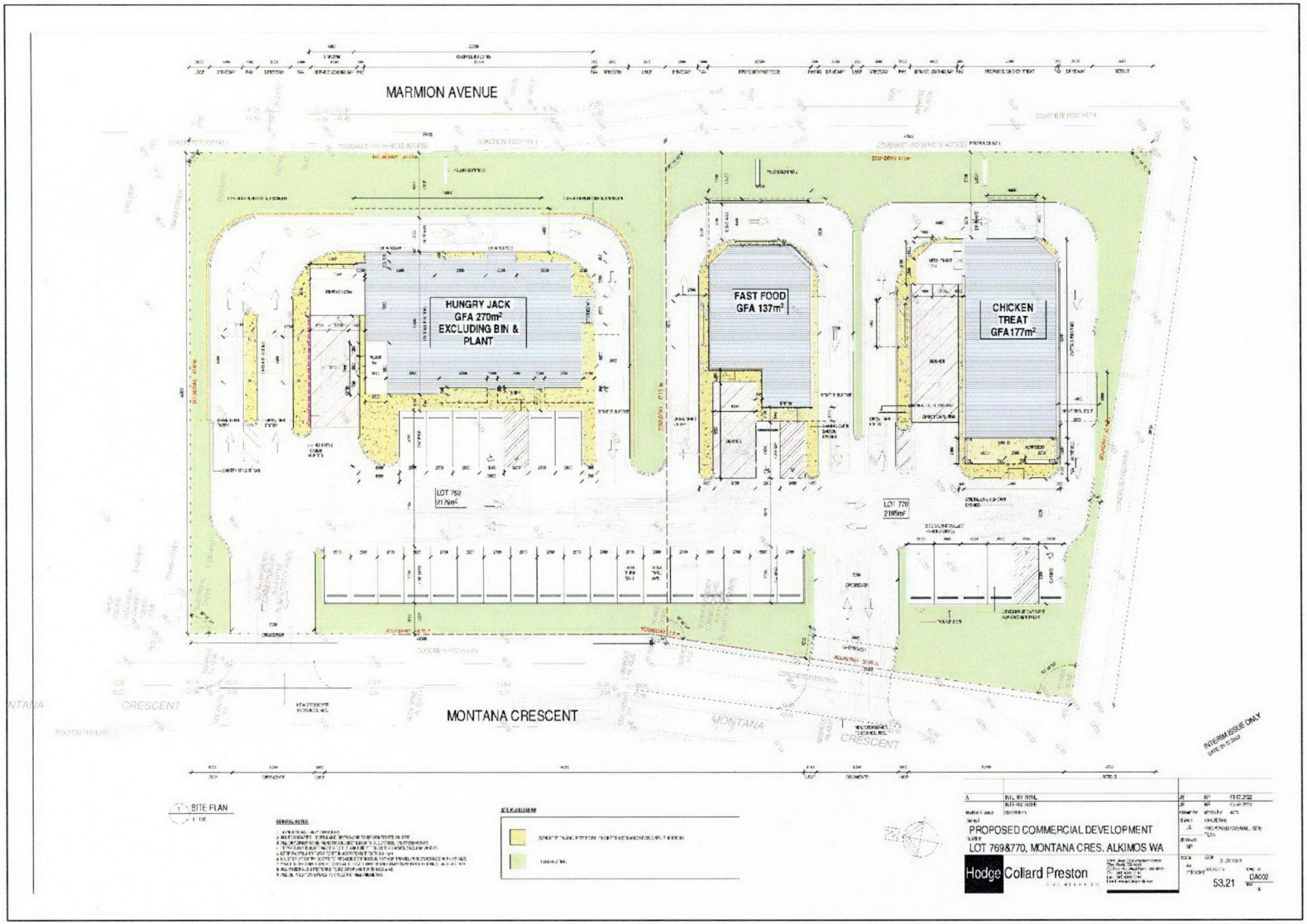
In conclusion, the findings of this Transport Impact Assessment are supportive of the proposed development.

Appendix A

PROPOSED DEVELOPMENT PLANS

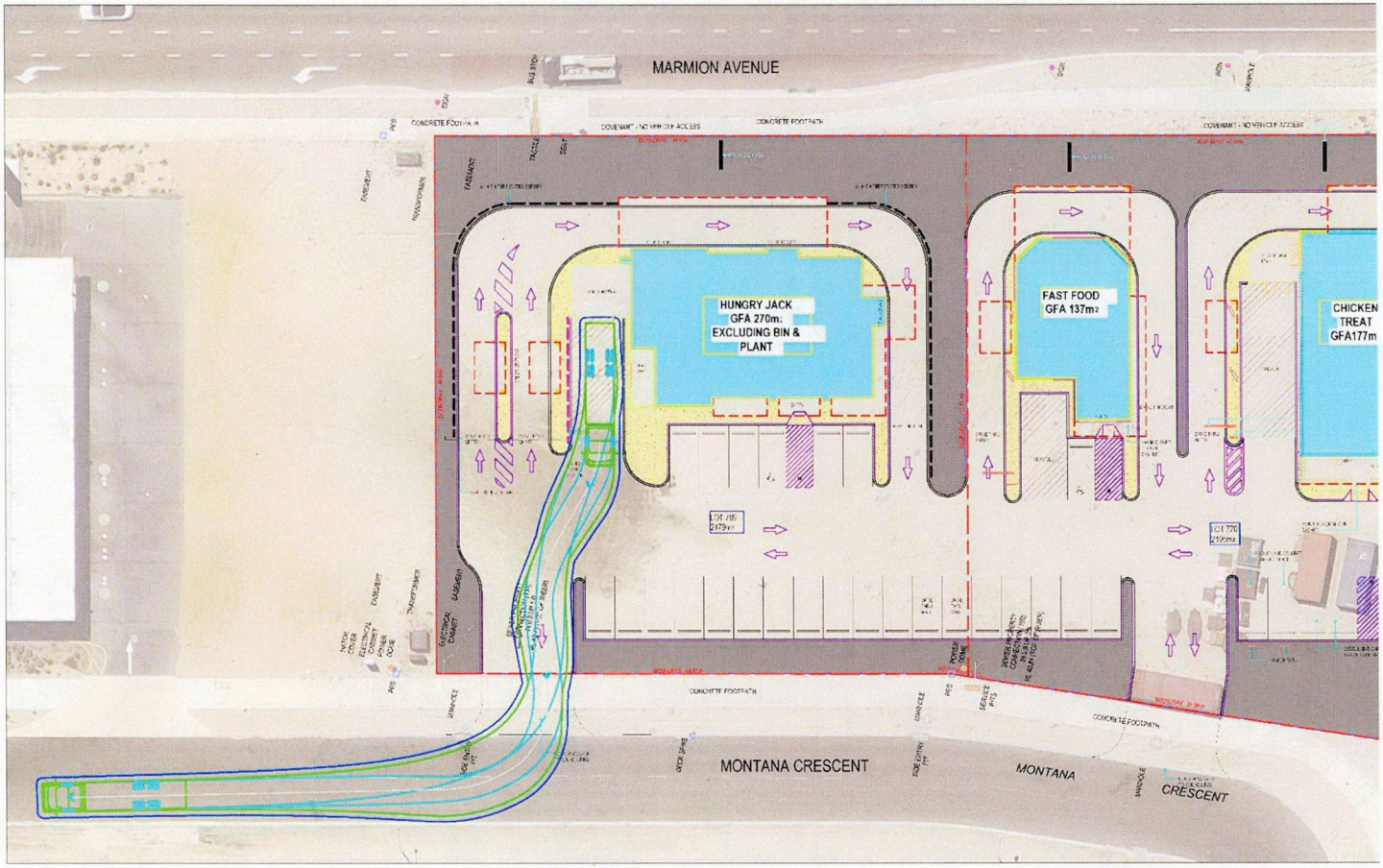
transcore
20 years anniversary

transport planning
traffic engineering
modelling



Appendix B

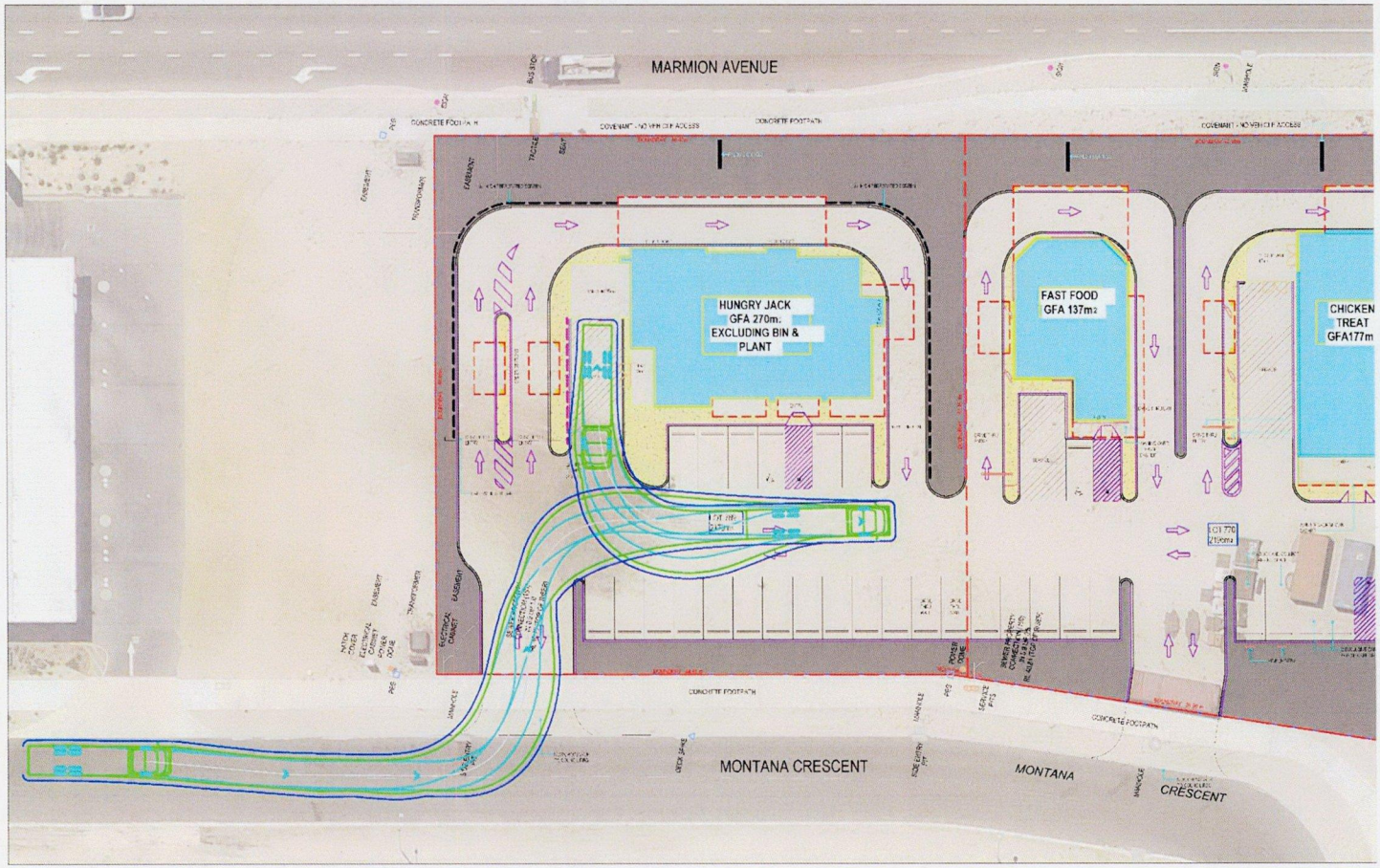
TURN PATH PLANS



Lot 769 & 770 Montana Crescent, Alkimos
Austroads 2013: 12.5m Service Vehicle
Service vehicle exit from Hungry Jack fast food restaurant

LEGEND
Vehicle Body
Wheel Path
500mm Clearance

t22.091.sk03b
15/09/2022
Scale: 1:300 @ A3

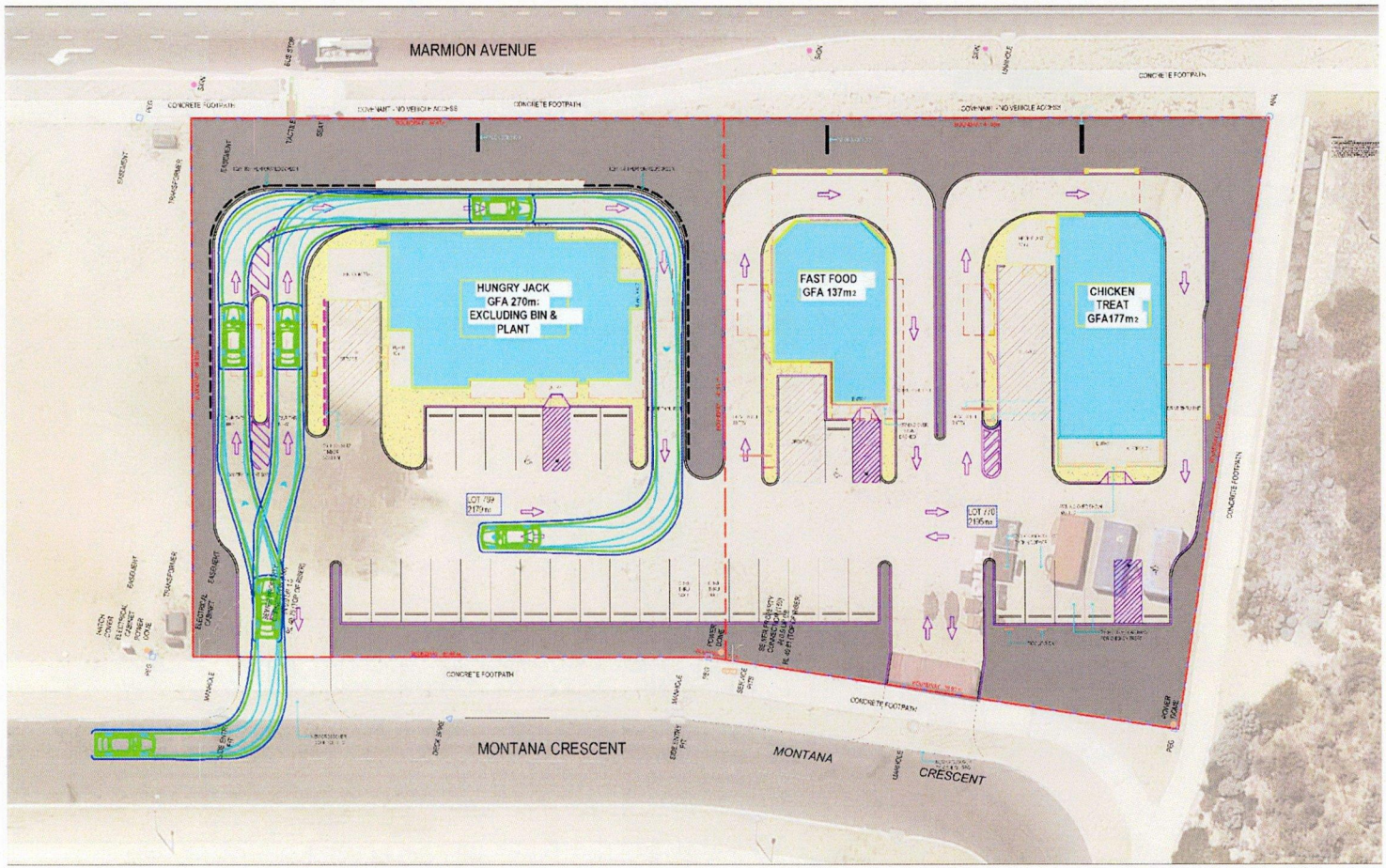


Lot 769 & 770 Montana Crescent, Alkimos
Austroads 2013: 12.5m Service Vehicle
Service vehicle entry to Hungry Jack fast food restaurant

LEGEND
Vehicle Body
Wheel Path
500mm Clearance

t22.091.sk02c
15/09/2022
Scale: 1:300 @ A3

transcore



Lot 769 & 770 Montana Crescent, Alkimos

Austroads 2013: B99 Passenger Vehicle

Passenger vehicle circulating at Hungry Jack fast food restaurant

LEGEND

Vehicle Body

Wheel Path

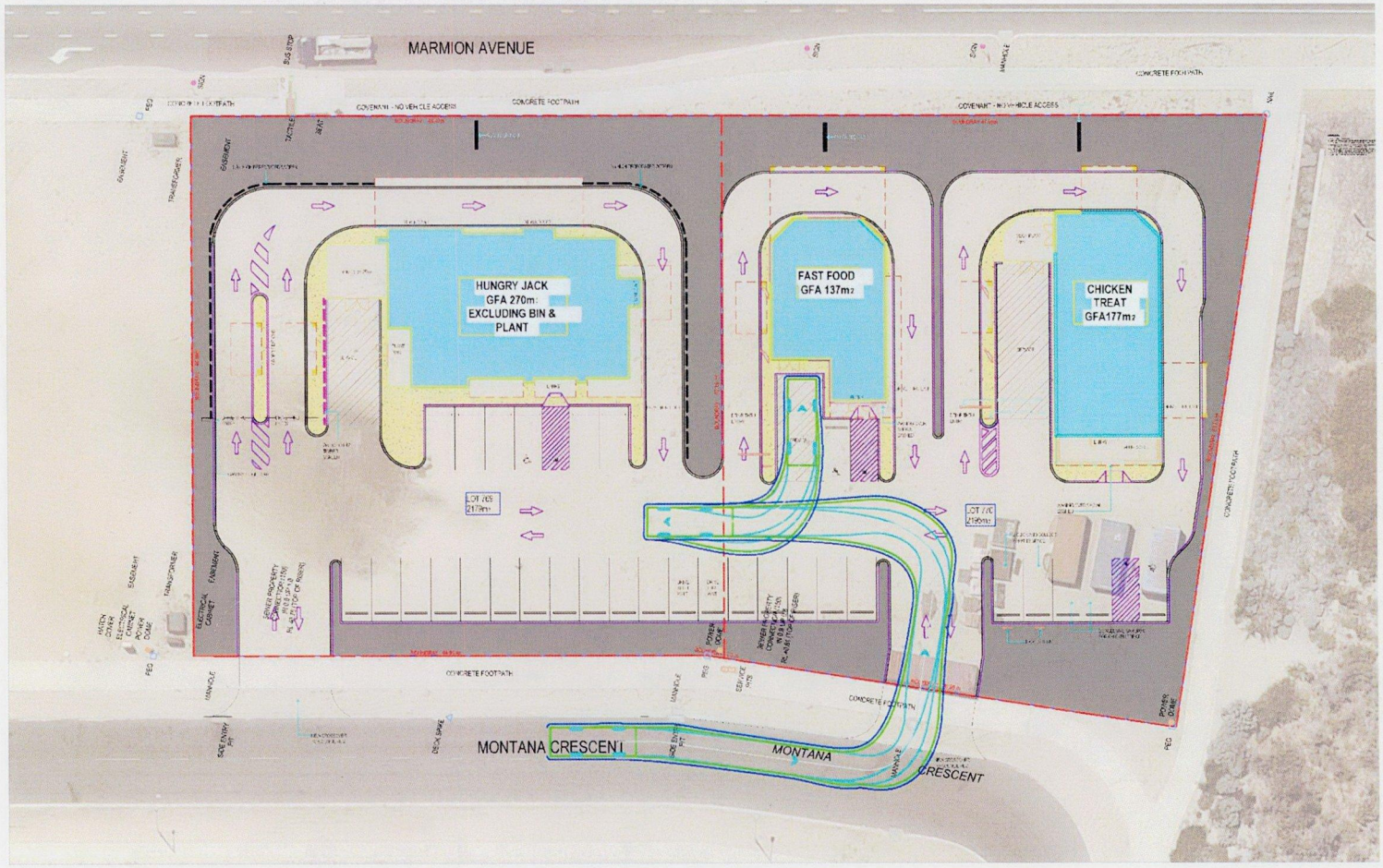
300mm Clearance

t22.091.sk04a

11/07/2022

Scale: 1:300 @ A3

transcore

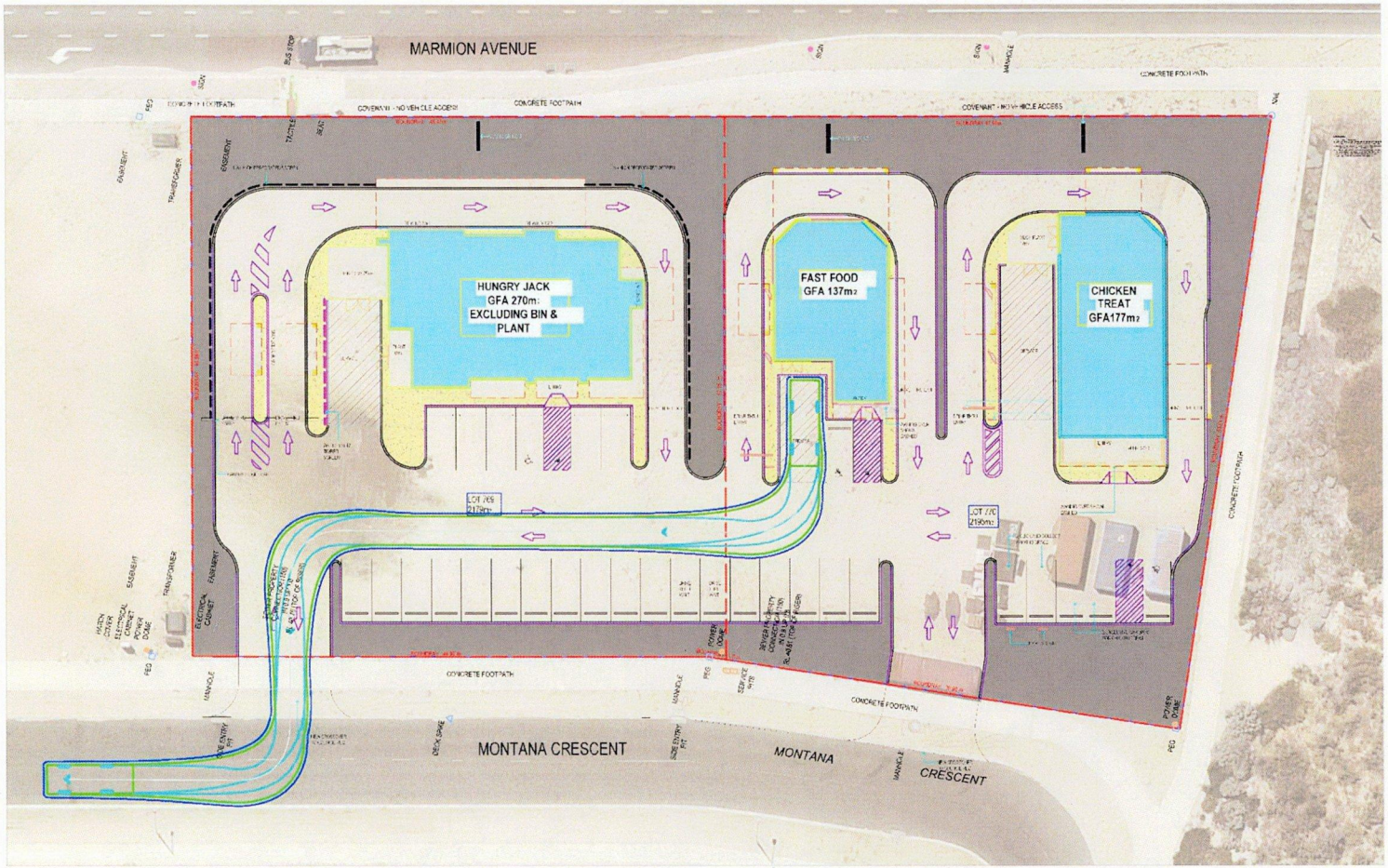


Lot 769 & 770 Montana Crescent, Alkimos
7.5m Service Vehicle
Service vehicle entry to the 2nd fast food restaurant

LEGEND
Vehicle Body
Wheel Path
300mm Clearance

t22.091.sk07a
11/07/2022
Scale: 1:300 @ A3

transcore



Lot 769 & 770 Montana Crescent, Alkimos

7.5m Service Vehicle

Service vehicle exit from the 2nd fast food restaurant

LEGEND

Vehicle Body

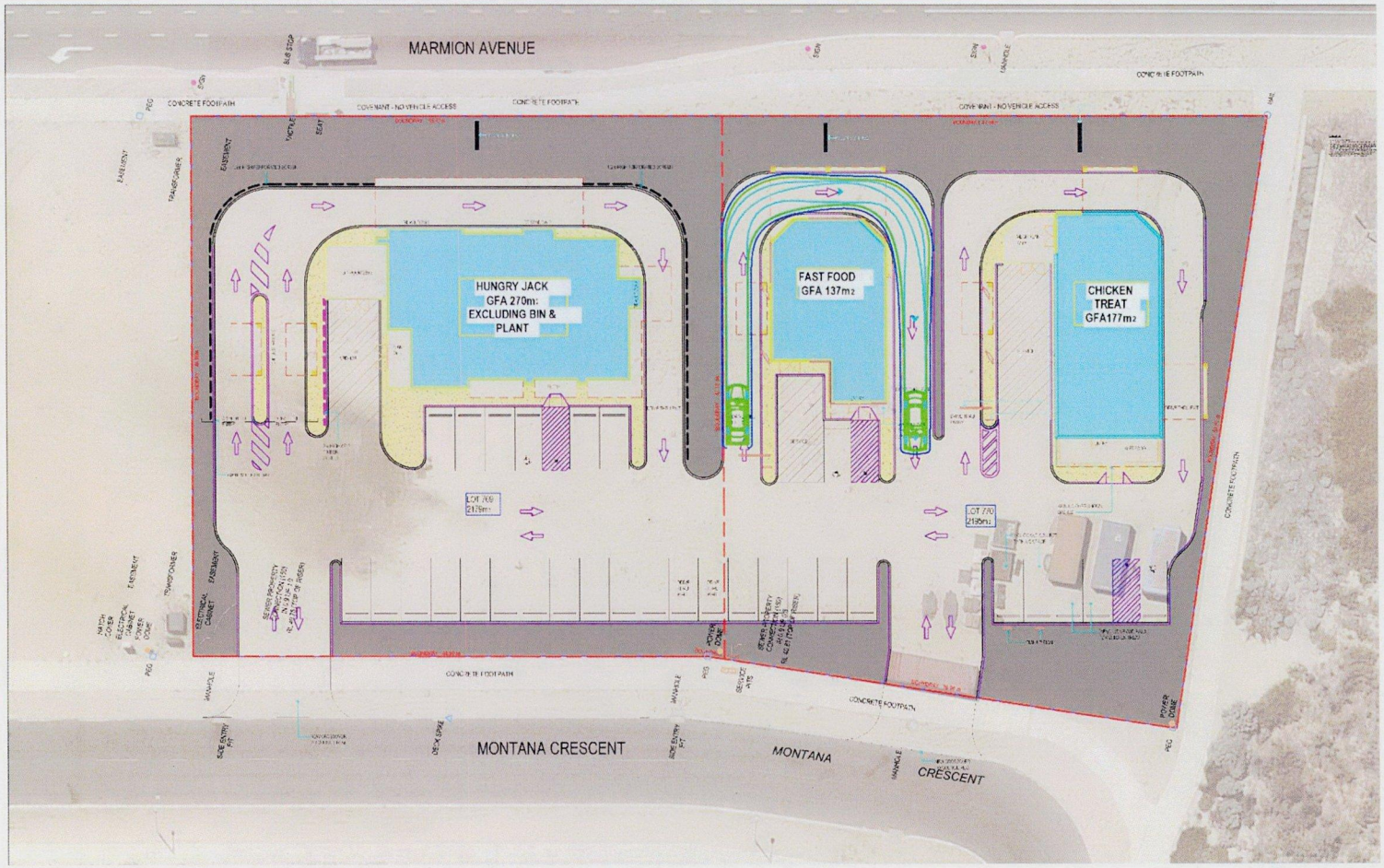
Wheel Path

300mm Clearance

t22.091.sk08a

11/07/2022

Scale: 1:300 @ A3

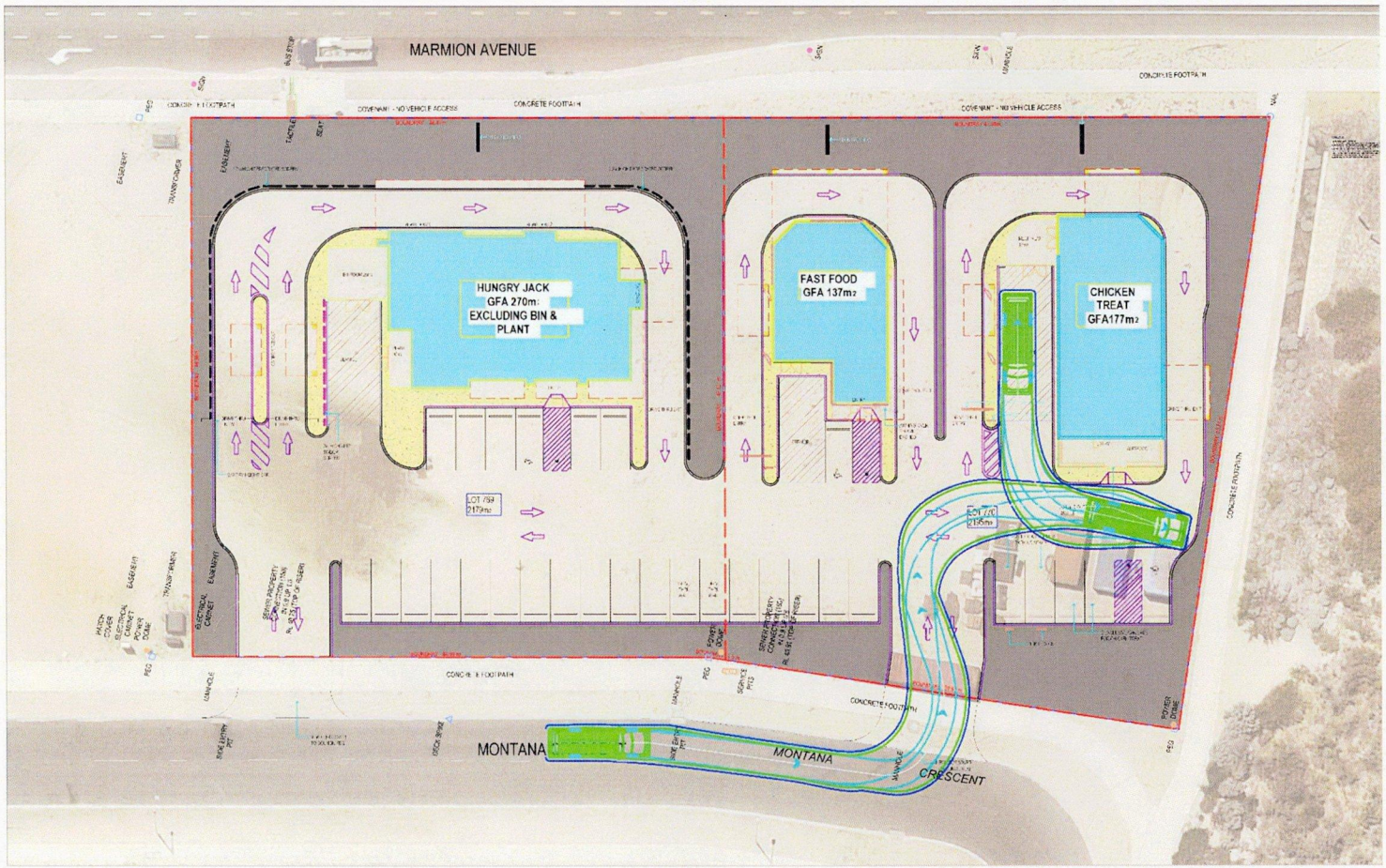


Lot 769 & 770 Montana Crescent, Alkimos
Austroads 2013: B99 Passenger Vehicle
Passenger vehicle circulating at 2nd fast food restaurant

LEGEND
Vehicle Body
Wheel Path
300mm Clearance

t22.091.sk09a
11/07/2022
Scale: 1:300 @ A3

transcore

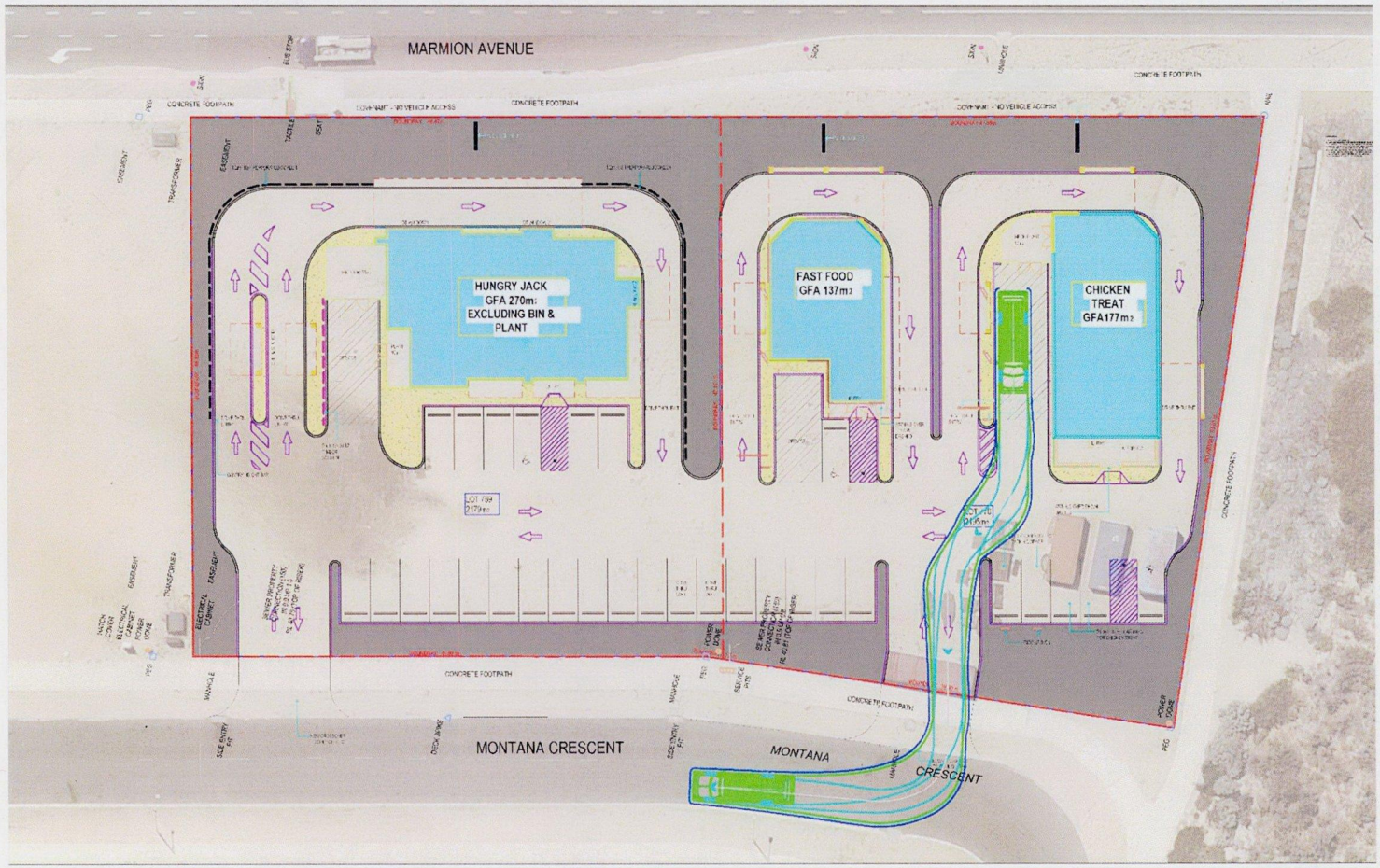


Lot 769 & 770 Montana Crescent, Alkimos
Austroads 2013: 8.8m Service Vehicle
Service vehicle entry to Chicken Treat fast food restaurant

LEGEND
Vehicle Body
Wheel Path
300mm Clearance

t22.091.sk10a
11/07/2022
Scale: 1:300 @ A3

transcore



Lot 769 & 770 Montana Crescent, Alkimos

Austroads 2013: 8.8m Service Vehicle

Service vehicle exit from Chicken Treat fast food restaurant

LEGEND

Vehicle Body

Wheel Path

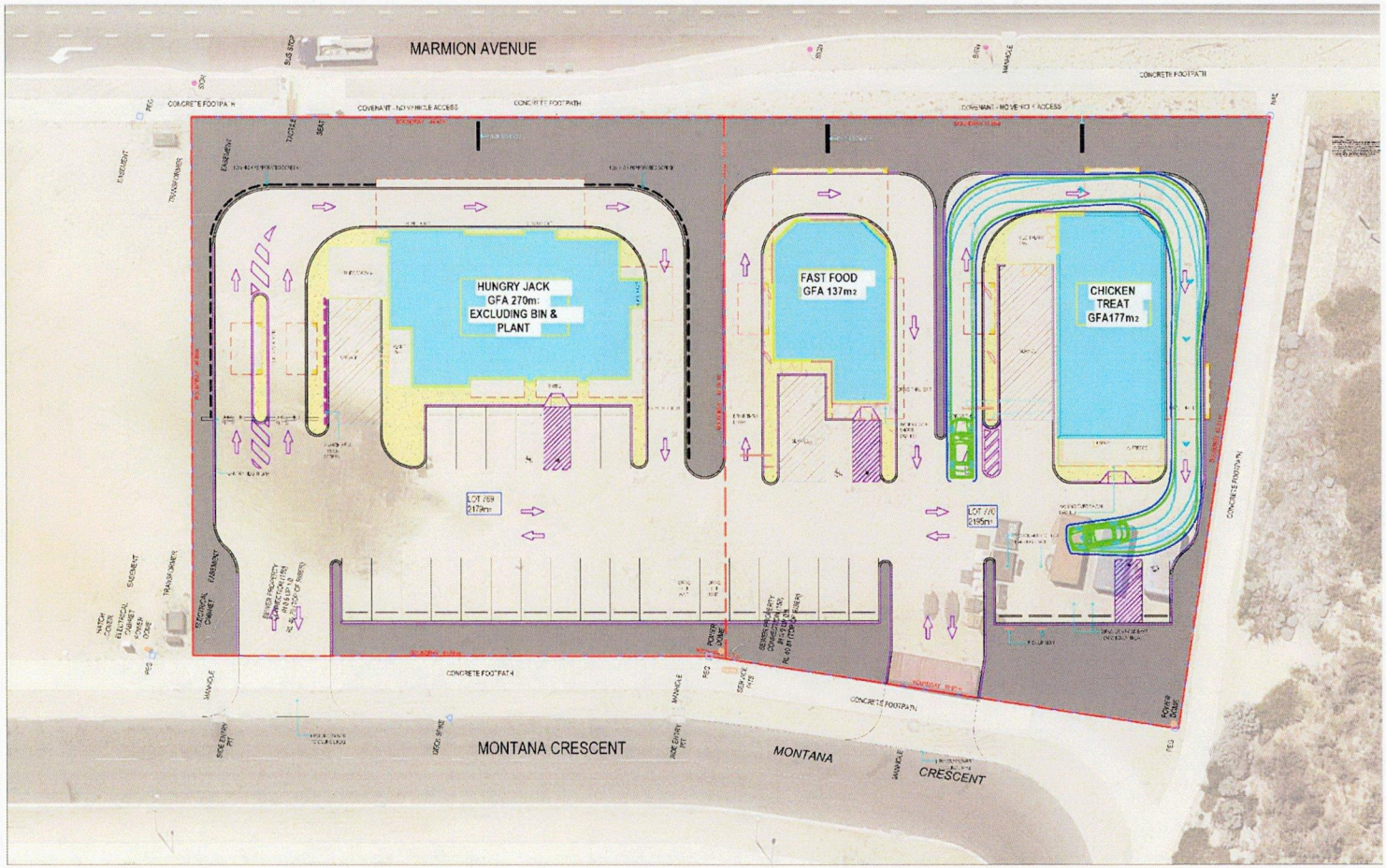
300mm Clearance

t22.091.sk11a

11/07/2022

Scale: 1:300 @ A3

transcore



Lot 769 & 770 Montana Crescent, Alkimos

Austroads 2013: B99 Passenger Vehicle

Passenger vehicle circulating at Chicken Treat fast food restaurant

LEGEND

Vehicle Body

Wheel Path

300mm Clearance

t22.091.sk12a

11/07/2022

Scale: 1:300 @ A3

transcore

Appendix C

SIDRA Results

Table 2. SIDRA results for the intersection of Sanderling Street and Montana Crescent – Weekday AM peak period (Existing)

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
South: Montana Cres (S)														
4	L2	47	0.0	47	0.0	0.061	4.9	LOS A	0.2	1.7	0.23	0.53	0.23	41.4
6	R2	32	0.0	32	0.0	0.061	5.3	LOS A	0.2	1.7	0.23	0.53	0.23	36.9
Approach		79	0.0	79	0.0	0.061	5.1	LOS A	0.2	1.7	0.23	0.53	0.23	40.2
East: Sanderling St (E)														
7	L2	42	0.0	42	0.0	0.087	4.3	LOS A	0.0	0.0	0.00	0.14	0.00	45.7
8	T1	123	0.0	123	0.0	0.087	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	47.3
Approach		165	0.0	165	0.0	0.087	1.1	NA	0.0	0.0	0.00	0.14	0.00	46.9
West: Sanderling St (W)														
2	T1	18	0.0	18	0.0	0.037	0.5	LOS A	0.2	1.2	0.26	0.38	0.26	39.2
3	R2	42	0.0	42	0.0	0.037	5.0	LOS A	0.2	1.2	0.26	0.38	0.26	42.0
Approach		60	0.0	60	0.0	0.037	3.7	NA	0.2	1.2	0.26	0.38	0.26	41.4
All Vehicles		304	0.0	304	0.0	0.087	2.6	NA	0.2	1.7	0.11	0.29	0.11	43.5

Table 3. SIDRA results for the intersection of Sanderling Street and Montana Crescent – Weekday PM peak period (Existing)

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
South: Montana Cres (S)														
4	L2	26	0.0	26	0.0	0.058	5.2	LOS A	0.2	1.5	0.30	0.57	0.30	41.1
6	R2	39	0.0	39	0.0	0.058	5.6	LOS A	0.2	1.5	0.30	0.57	0.30	36.4
Approach		65	0.0	65	0.0	0.058	5.4	LOS A	0.2	1.5	0.30	0.57	0.30	39.0
East: Sanderling St (E)														
7	L2	41	0.0	41	0.0	0.126	4.3	LOS A	0.0	0.0	0.00	0.09	0.00	46.5
8	T1	198	0.0	198	0.0	0.126	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	48.1
Approach		239	0.0	239	0.0	0.126	0.7	NA	0.0	0.0	0.00	0.09	0.00	47.8
West: Sanderling St (W)														
2	T1	37	0.0	37	0.0	0.032	0.4	LOS A	0.1	0.8	0.22	0.18	0.22	43.2
3	R2	18	0.0	18	0.0	0.032	5.3	LOS A	0.1	0.8	0.22	0.18	0.22	44.2
Approach		55	0.0	55	0.0	0.032	2.0	NA	0.1	0.8	0.22	0.18	0.22	43.7
All Vehicles		359	0.0	359	0.0	0.126	1.8	NA	0.2	1.5	0.09	0.19	0.09	45.2

Table 4. SIDRA results for the intersection of Marmion Avenue/Sanderling Street – Weekday AM peak period (Existing)

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
South: Marmion Ave (S)														
7	L2	165	0.0	165	0.0	0.088	7.6	LOS A	0.0	0.0	0.00	0.60	0.00	60.7
8	T1	797	11.7	797	11.7	0.229	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		962	9.7	962	9.7	0.229	1.3	NA	0.0	0.0	0.00	0.10	0.00	76.5
North: Marmion Ave (N)														
2	T1	1473	9.0	1473	9.0	0.410	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.6
Approach		1473	9.0	1473	9.0	0.410	0.0	NA	0.0	0.0	0.00	0.00	0.00	79.6
West: Sanderling St (W)														
4	L2	49	0.0	49	0.0	0.058	6.2	LOS A	0.2	1.5	0.44	0.62	0.44	41.5
Approach		49	0.0	49	0.0	0.058	6.2	LOS A	0.2	1.5	0.44	0.62	0.44	41.5
All Vehicles		2484	9.1	2484	9.1	0.410	0.7	NA	0.2	1.5	0.01	0.05	0.01	77.9

Table 5. SIDRA results for the intersection of Marmion Avenue/Sanderling Street – Weekday AM peak period (Existing)

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
South: Marmion Ave (S)														
7	L2	239	0.0	239	0.0	0.127	7.6	LOS A	0.0	0.0	0.00	0.60	0.00	60.7
8	T1	1167	9.4	1167	9.4	0.326	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.7
Approach		1406	7.8	1406	7.8	0.326	1.3	NA	0.0	0.0	0.00	0.10	0.00	76.5
North: Marmion Ave (N)														
2	T1	1207	11.0	1207	11.0	0.343	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.7
Approach		1207	11.0	1207	11.0	0.343	0.0	NA	0.0	0.0	0.00	0.00	0.00	79.7
West: Sanderling St (W)														
4	L2	76	0.0	76	0.0	0.114	7.8	LOS A	0.4	2.9	0.54	0.75	0.54	38.8
Approach		76	0.0	76	0.0	0.114	7.8	LOS A	0.4	2.9	0.54	0.75	0.54	38.8
All Vehicles		2689	9.0	2689	9.0	0.343	0.9	NA	0.4	2.9	0.02	0.07	0.02	77.1

Table 6. SIDRA results for full movement crossover (crossover 1) – Weekday AM peak period (Post development – Year 2023)

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
South: Montana Cres (S)														
2	T1	131	0.0	131	0.0	0.069	0.0	LOS A	0.0	0.2	0.02	0.02	0.02	47.8
3	R2	4	0.0	4	0.0	0.069	4.8	LOS A	0.0	0.2	0.02	0.02	0.02	47.9
Approach		135	0.0	135	0.0	0.069	0.2	NA	0.0	0.2	0.02	0.02	0.02	47.8
East: Crossover 1 (E)														
4	L2	4	0.0	4	0.0	0.075	0.4	LOS A	0.2	1.8	0.33	0.29	0.33	15.6
6	R2	71	0.0	71	0.0	0.075	1.6	LOS A	0.2	1.8	0.33	0.29	0.33	15.6
Approach		75	0.0	75	0.0	0.075	1.6	LOS A	0.2	1.8	0.33	0.29	0.33	15.6
North: Montana Cres (N)														
7	L2	61	0.0	61	0.0	0.106	4.6	LOS A	0.0	0.0	0.00	0.16	0.00	27.6
8	T1	145	0.0	145	0.0	0.106	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	41.5
Approach		206	0.0	206	0.0	0.106	1.4	NA	0.0	0.0	0.00	0.16	0.00	35.4
All Vehicles		416	0.0	416	0.0	0.106	1.0	NA	0.2	1.8	0.07	0.14	0.07	34.6

Table 7. SIDRA results for full movement crossover (crossover 1) – Weekday PM peak period (Post development – Year 2023)

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
South: Montana Cres (S)														
2	T1	103	0.0	103	0.0	0.054	0.0	LOS A	0.0	0.2	0.02	0.02	0.02	48.1
3	R2	3	0.0	3	0.0	0.054	4.5	LOS A	0.0	0.2	0.02	0.02	0.02	48.1
Approach		106	0.0	106	0.0	0.054	0.2	NA	0.0	0.2	0.02	0.02	0.02	48.1
East: Crossover 1 (E)														
4	L2	3	0.0	3	0.0	0.051	0.3	LOS A	0.2	1.2	0.27	0.23	0.27	16.0
6	R2	52	0.0	52	0.0	0.051	1.3	LOS A	0.2	1.2	0.27	0.23	0.27	16.0
Approach		55	0.0	55	0.0	0.051	1.2	LOS A	0.2	1.2	0.27	0.23	0.27	16.0
North: Montana Cres (N)														
7	L2	45	0.0	45	0.0	0.077	4.6	LOS A	0.0	0.0	0.00	0.17	0.00	27.5
8	T1	104	0.0	104	0.0	0.077	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	41.3
Approach		149	0.0	149	0.0	0.077	1.4	NA	0.0	0.0	0.00	0.17	0.00	35.2
All Vehicles		311	0.0	311	0.0	0.077	0.9	NA	0.2	1.2	0.05	0.13	0.05	34.9

Table 8. SIDRA results for full movement crossover (crossover 2) – Weekday AM peak period (Post development – Year 2023)

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
South: Montana Cres (S)														
2	T1	103	0.0	103	0.0	0.054	0.0	LOS A	0.0	0.2	0.02	0.02	0.02	48.3
3	R2	3	0.0	3	0.0	0.054	5.0	LOS A	0.0	0.2	0.02	0.02	0.02	48.3
Approach		106	0.0	106	0.0	0.054	0.2	NA	0.0	0.2	0.02	0.02	0.02	48.3
East: Crossover 1 (E)														
4	L2	3	0.0	3	0.0	0.051	0.3	LOS A	0.2	1.2	0.27	0.23	0.27	26.7
6	R2	52	0.0	52	0.0	0.051	1.3	LOS A	0.2	1.2	0.27	0.23	0.27	16.0
Approach		55	0.0	55	0.0	0.051	1.2	LOS A	0.2	1.2	0.27	0.23	0.27	17.2
North: Montana Cres (N)														
7	L2	45	0.0	45	0.0	0.077	4.1	LOS A	0.0	0.0	0.00	0.16	0.00	22.2
8	T1	104	0.0	104	0.0	0.077	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	44.6
Approach		149	0.0	149	0.0	0.077	1.2	NA	0.0	0.0	0.00	0.16	0.00	36.7
All Vehicles		311	0.0	311	0.0	0.077	0.9	NA	0.2	1.2	0.05	0.13	0.05	36.7

Table 9. SIDRA results for full movement crossover (crossover 2) – Weekday PM peak period (Post development – Year 2023)

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
South: Montana Cres (S)														
2	T1	103	0.0	103	0.0	0.054	0.0	LOS A	0.0	0.2	0.02	0.02	0.02	48.3
3	R2	3	0.0	3	0.0	0.054	5.0	LOS A	0.0	0.2	0.02	0.02	0.02	48.3
Approach		106	0.0	106	0.0	0.054	0.2	NA	0.0	0.2	0.02	0.02	0.02	48.3
East: Crossover 1 (E)														
4	L2	3	0.0	3	0.0	0.051	0.3	LOS A	0.2	1.2	0.27	0.23	0.27	26.7
6	R2	52	0.0	52	0.0	0.051	1.3	LOS A	0.2	1.2	0.27	0.23	0.27	16.0
Approach		55	0.0	55	0.0	0.051	1.2	LOS A	0.2	1.2	0.27	0.23	0.27	17.2
North: Montana Cres (N)														
7	L2	45	0.0	45	0.0	0.077	4.1	LOS A	0.0	0.0	0.00	0.16	0.00	22.2
8	T1	104	0.0	104	0.0	0.077	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	44.6
Approach		149	0.0	149	0.0	0.077	1.2	NA	0.0	0.0	0.00	0.16	0.00	36.7
All Vehicles		311	0.0	311	0.0	0.077	0.9	NA	0.2	1.2	0.05	0.13	0.05	36.7

Table 10. SIDRA results for the intersection of Sanderling Street/Montana Crescent – Weekday AM peak period (Post development – Year 2023)

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
South: Montana Cres (S)														
4	L2	92	0.0	92	0.0	0.170	5.0	LOS A	0.7	4.8	0.27	0.57	0.27	38.5
6	R2	109	0.0	109	0.0	0.170	5.7	LOS A	0.7	4.8	0.27	0.57	0.27	27.2
Approach		201	0.0	201	0.0	0.170	5.4	LOS A	0.7	4.8	0.27	0.57	0.27	34.6
East: Sanderling St (E)														
7	L2	116	0.0	116	0.0	0.127	4.3	LOS A	0.0	0.0	0.00	0.26	0.00	35.8
8	T1	123	0.0	123	0.0	0.127	0.0	LOS A	0.0	0.0	0.00	0.26	0.00	45.2
Approach		239	0.0	239	0.0	0.127	2.1	NA	0.0	0.0	0.00	0.26	0.00	42.9
West: Sanderling St (W)														
2	T1	3	0.0	3	0.0	0.064	0.8	LOS A	0.3	2.1	0.34	0.54	0.34	36.4
3	R2	91	0.0	91	0.0	0.064	5.3	LOS A	0.3	2.1	0.34	0.54	0.34	36.4
Approach		94	0.0	94	0.0	0.064	5.2	NA	0.3	2.1	0.34	0.54	0.34	36.4
All Vehicles		534	0.0	534	0.0	0.170	3.9	NA	0.7	4.8	0.16	0.43	0.16	38.1

Table 11. SIDRA results for the intersection of Sanderling Street/Montana Crescent – Weekday PM peak period (Post development – Year 2023)

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
South: Montana Cres (S)														
4	L2	59	0.0	59	0.0	0.144	5.2	LOS A	0.5	3.9	0.33	0.60	0.33	38.1
6	R2	97	0.0	97	0.0	0.144	6.0	LOS A	0.5	3.9	0.33	0.60	0.33	26.7
Approach		156	0.0	156	0.0	0.144	5.7	LOS A	0.5	3.9	0.33	0.60	0.33	33.2
East: Sanderling St (E)														
7	L2	96	0.0	96	0.0	0.155	4.3	LOS A	0.0	0.0	0.00	0.18	0.00	39.3
8	T1	198	0.0	198	0.0	0.155	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	46.6
Approach		294	0.0	294	0.0	0.155	1.4	NA	0.0	0.0	0.00	0.18	0.00	45.7
West: Sanderling St (W)														
2	T1	26	0.0	26	0.0	0.053	0.9	LOS A	0.2	1.8	0.37	0.39	0.37	38.7
3	R2	54	0.0	54	0.0	0.053	5.5	LOS A	0.2	1.8	0.37	0.39	0.37	38.7
Approach		80	0.0	80	0.0	0.053	4.0	NA	0.2	1.8	0.37	0.39	0.37	38.7
All Vehicles		529	0.0	529	0.0	0.155	3.1	NA	0.5	3.9	0.15	0.33	0.15	40.6

Table 12. SIDRA results for the intersection of Marmion Avenue/Sanderling Street – Weekday AM peak period (Post development – Year 2023)

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
South: Marmion Ave (S)														
7	L2	239	0.0	239	0.0	0.127	7.6	LOS A	0.0	0.0	0.00	0.60	0.00	60.7
8	T1	756	11.7	756	11.7	0.217	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.9
Approach		995	8.9	995	8.9	0.217	1.9	NA	0.0	0.0	0.00	0.14	0.00	75.2
North: Marmion Ave (N)														
2	T1	1506	9.0	1506	9.0	0.419	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.6
Approach		1506	9.0	1506	9.0	0.419	0.0	NA	0.0	0.0	0.00	0.00	0.00	79.6
West: Sanderling St (W)														
4	L2	113	0.0	113	0.0	0.128	6.2	LOS A	0.5	3.4	0.45	0.64	0.45	41.5
Approach		113	0.0	113	0.0	0.128	6.2	LOS A	0.5	3.4	0.45	0.64	0.45	41.5
All Vehicles		2614	8.5	2614	8.5	0.419	1.0	NA	0.5	3.4	0.02	0.08	0.02	76.7

Table 13. SIDRA results for the intersection of Marmion Avenue/Sanderling Street – Weekday PM peak period (Post development – Year 2023)

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
South: Marmion Ave (S)														
7	L2	294	0.0	294	0.0	0.157	7.6	LOS A	0.0	0.0	0.00	0.60	0.00	60.7
8	T1	1137	9.4	1137	9.4	0.317	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		1431	7.5	1431	7.5	0.317	1.6	NA	0.0	0.0	0.00	0.12	0.00	75.8
North: Marmion Ave (N)														
2	T1	1232	11.0	1232	11.0	0.350	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	79.7
Approach		1232	11.0	1232	11.0	0.350	0.0	NA	0.0	0.0	0.00	0.00	0.00	79.7
West: Sanderling St (W)														
4	L2	122	0.0	122	0.0	0.179	7.9	LOS A	0.6	4.7	0.55	0.77	0.55	38.8
Approach		122	0.0	122	0.0	0.179	7.9	LOS A	0.6	4.7	0.55	0.77	0.55	38.8
All Vehicles		2784	8.7	2784	8.7	0.350	1.2	NA	0.6	4.7	0.02	0.10	0.02	76.3

Table 14. SIDRA results for full movement crossover (crossover 1) – Weekday AM peak period (10-Year Post development – Year 2033)

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
South: Montana Cres (S)														
2	T1	146	0.0	146	0.0	0.077	0.0	LOS A	0.0	0.2	0.02	0.02	0.02	48.0
3	R2	4	0.0	4	0.0	0.077	4.8	LOS A	0.0	0.2	0.02	0.02	0.02	48.0
Approach		151	0.0	151	0.0	0.077	0.2	NA	0.0	0.2	0.02	0.02	0.02	48.0
East: Crossover 1 (E)														
4	L2	4	0.0	4	0.0	0.077	0.5	LOS A	0.3	1.9	0.35	0.32	0.35	15.4
6	R2	71	0.0	71	0.0	0.077	1.8	LOS A	0.3	1.9	0.35	0.32	0.35	15.4
Approach		75	0.0	75	0.0	0.077	1.7	LOS A	0.3	1.9	0.35	0.32	0.35	15.4
North: Montana Cres (N)														
7	L2	61	0.0	61	0.0	0.115	4.6	LOS A	0.0	0.0	0.00	0.15	0.00	27.7
8	T1	162	0.0	162	0.0	0.115	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	42.0
Approach		223	0.0	223	0.0	0.115	1.3	NA	0.0	0.0	0.00	0.15	0.00	36.2
All Vehicles		448	0.0	448	0.0	0.115	1.0	NA	0.3	1.9	0.07	0.13	0.07	35.4

Table 15. SIDRA results for full movement crossover (crossover 1) – Weekday PM peak period (10-Year Post development – Year 2033)

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
South: Montana Cres (S)														
2	T1	146	0.0	146	0.0	0.077	0.0	LOS A	0.0	0.2	0.02	0.02	0.02	48.1
3	R2	4	0.0	4	0.0	0.077	4.6	LOS A	0.0	0.2	0.02	0.02	0.02	48.1
Approach		151	0.0	151	0.0	0.077	0.1	NA	0.0	0.2	0.02	0.02	0.02	48.1
East: Crossover 1 (E)														
4	L2	3	0.0	3	0.0	0.054	0.3	LOS A	0.2	1.3	0.31	0.27	0.31	15.8
6	R2	52	0.0	52	0.0	0.054	1.5	LOS A	0.2	1.3	0.31	0.27	0.31	15.8
Approach		55	0.0	55	0.0	0.054	1.4	LOS A	0.2	1.3	0.31	0.27	0.31	15.8
North: Montana Cres (N)														
7	L2	45	0.0	45	0.0	0.083	4.6	LOS A	0.0	0.0	0.00	0.15	0.00	27.7
8	T1	116	0.0	116	0.0	0.083	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	41.9
Approach		161	0.0	161	0.0	0.083	1.3	NA	0.0	0.0	0.00	0.15	0.00	35.9
All Vehicles		366	0.0	366	0.0	0.083	0.8	NA	0.2	1.3	0.05	0.11	0.05	36.3

Table 16. SIDRA results for full movement crossover (crossover 2) – Weekday AM peak period (10-Year Post development – Year 2033)

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
South: Montana Cres (S)														
2	T1	80	0.0	80	0.0	0.055	0.2	LOS A	0.1	1.0	0.13	0.12	0.13	40.1
3	R2	22	0.0	22	0.0	0.055	5.1	LOS A	0.1	1.0	0.13	0.12	0.13	41.4
Approach		102	0.0	102	0.0	0.055	1.2	NA	0.1	1.0	0.13	0.12	0.13	40.4
East: Crossover 1 (E)														
4	L2	4	0.0	4	0.0	0.070	0.3	LOS A	0.2	1.7	0.28	0.24	0.28	26.7
6	R2	71	0.0	71	0.0	0.070	1.3	LOS A	0.2	1.7	0.28	0.24	0.28	16.0
Approach		75	0.0	75	0.0	0.070	1.2	LOS A	0.2	1.7	0.28	0.24	0.28	17.1
North: Montana Cres (N)														
7	L2	61	0.0	61	0.0	0.086	4.1	LOS A	0.0	0.0	0.00	0.20	0.00	21.8
8	T1	105	0.0	105	0.0	0.086	0.0	LOS A	0.0	0.0	0.00	0.20	0.00	43.6
Approach		166	0.0	166	0.0	0.086	1.5	NA	0.0	0.0	0.00	0.20	0.00	34.5
All Vehicles		343	0.0	343	0.0	0.086	1.4	NA	0.2	1.7	0.10	0.19	0.10	33.1

Table 17. SIDRA results for full movement crossover (crossover 2) – Weekday PM peak period (10-Year Post development – Year 2033)

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
South: Montana Cres (S)														
2	T1	67	0.0	67	0.0	0.045	0.1	LOS A	0.1	0.8	0.10	0.11	0.10	41.2
3	R2	17	0.0	17	0.0	0.045	4.9	LOS A	0.1	0.8	0.10	0.11	0.10	42.4
Approach		84	0.0	84	0.0	0.045	1.1	NA	0.1	0.8	0.10	0.11	0.10	41.5
East: Crossover 1 (E)														
4	L2	3	0.0	3	0.0	0.049	0.2	LOS A	0.2	1.2	0.23	0.20	0.23	27.0
6	R2	52	0.0	52	0.0	0.049	1.1	LOS A	0.2	1.2	0.23	0.20	0.23	16.4
Approach		55	0.0	55	0.0	0.049	1.0	LOS A	0.2	1.2	0.23	0.20	0.23	17.5
North: Montana Cres (N)														
7	L2	45	0.0	45	0.0	0.062	4.1	LOS A	0.0	0.0	0.00	0.21	0.00	21.7
8	T1	74	0.0	74	0.0	0.062	0.0	LOS A	0.0	0.0	0.00	0.21	0.00	43.4
Approach		119	0.0	119	0.0	0.062	1.6	NA	0.0	0.0	0.00	0.21	0.00	34.1
All Vehicles		258	0.0	258	0.0	0.062	1.3	NA	0.2	1.2	0.08	0.17	0.08	33.4

Table 18. SIDRA results for the intersection of Sanderling Street/Montana Crescent – Weekday AM peak period (10-Year Post development – Year 2033)

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
South: Montana Cres (S)														
4	L2	101	0.0	101	0.0	0.189	5.1	LOS A	0.7	5.4	0.30	0.58	0.30	38.3
6	R2	116	0.0	116	0.0	0.189	6.0	LOS A	0.7	5.4	0.30	0.58	0.30	27.0
Approach		217	0.0	217	0.0	0.189	5.6	LOS A	0.7	5.4	0.30	0.58	0.30	34.5
East: Sanderling St (E)														
7	L2	124	0.0	124	0.0	0.145	4.3	LOS A	0.0	0.0	0.00	0.25	0.00	36.3
8	T1	147	0.0	147	0.0	0.145	0.0	LOS A	0.0	0.0	0.00	0.25	0.00	45.4
Approach		272	0.0	272	0.0	0.145	2.0	NA	0.0	0.0	0.00	0.25	0.00	43.4
West: Sanderling St (W)														
2	T1	6	0.0	6	0.0	0.074	0.9	LOS A	0.3	2.5	0.37	0.54	0.37	36.5
3	R2	99	0.0	99	0.0	0.074	5.5	LOS A	0.3	2.5	0.37	0.54	0.37	36.5
Approach		105	0.0	105	0.0	0.074	5.2	NA	0.3	2.5	0.37	0.54	0.37	36.5
All Vehicles		594	0.0	594	0.0	0.189	3.8	NA	0.7	5.4	0.17	0.42	0.17	38.4

Table 19. SIDRA results for the intersection of Sanderling Street/Montana Crescent – Weekday PM peak period (10-Year Post development – Year 2033)

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
South: Montana Cres (S)														
4	L2	64	0.0	64	0.0	0.163	5.4	LOS A	0.6	4.4	0.37	0.63	0.37	37.9
6	R2	104	0.0	104	0.0	0.163	6.3	LOS A	0.6	4.4	0.37	0.63	0.37	26.3
Approach		168	0.0	168	0.0	0.163	6.0	LOS A	0.6	4.4	0.37	0.63	0.37	32.9
East: Sanderling St (E)														
7	L2	104	0.0	104	0.0	0.181	4.3	LOS A	0.0	0.0	0.00	0.16	0.00	39.9
8	T1	238	0.0	238	0.0	0.181	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	46.8
Approach		342	0.0	342	0.0	0.181	1.3	NA	0.0	0.0	0.00	0.16	0.00	46.0
West: Sanderling St (W)														
2	T1	34	0.0	34	0.0	0.062	1.1	LOS A	0.3	2.1	0.40	0.38	0.40	38.8
3	R2	57	0.0	57	0.0	0.062	5.7	LOS A	0.3	2.1	0.40	0.38	0.40	38.8
Approach		91	0.0	91	0.0	0.062	4.0	NA	0.3	2.1	0.40	0.38	0.40	38.8
All Vehicles		601	0.0	601	0.0	0.181	3.0	NA	0.6	4.4	0.16	0.33	0.16	40.9

Table 20. SIDRA results for the intersection of Marmion Avenue/Sanderling Street – Weekday AM peak period (10-Year Post development – Year 2033)

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
South: Marmion Ave (S)														
7	L2	273	0.0	273	0.0	0.145	7.6	LOS A	0.0	0.0	0.00	0.60	0.00	60.7
8	T1	1079	11.7	1079	11.7	0.310	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.8
Approach		1352	9.3	1352	9.3	0.310	1.6	NA	0.0	0.0	0.00	0.12	0.00	75.9
North: Marmion Ave (N)														
2	T1	2102	9.0	2102	9.0	0.585	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.3
Approach		2102	9.0	2102	9.0	0.585	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.3
West: Sanderling St (W)														
4	L2	122	0.0	122	0.0	0.174	7.7	LOS A	0.6	4.6	0.54	0.76	0.54	39.1
Approach		122	0.0	122	0.0	0.174	7.7	LOS A	0.6	4.6	0.54	0.76	0.54	39.1
All Vehicles		3576	8.8	3576	8.8	0.585	0.9	NA	0.6	4.6	0.02	0.07	0.02	76.9

Table 21. SIDRA results for the intersection of Marmion Avenue/Sanderling Street – Weekday PM peak period (10-Year Post development – Year 2033)

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
South: Marmion Ave (S)														
7	L2	341	0.0	341	0.0	0.182	7.6	LOS A	0.0	0.0	0.00	0.60	0.00	60.7
8	T1	1611	9.4	1611	9.4	0.449	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.6
Approach		1952	7.7	1952	7.7	0.449	1.4	NA	0.0	0.0	0.00	0.11	0.00	76.3
North: Marmion Ave (N)														
2	T1	1721	11.0	1721	11.0	0.489	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	79.5
Approach		1721	11.0	1721	11.0	0.489	0.1	NA	0.0	0.0	0.00	0.00	0.00	79.5
West: Sanderling St (W)														
4	L2	138	0.0	138	0.0	0.304	12.2	LOS B	1.2	8.7	0.74	0.91	0.88	33.1
Approach		138	0.0	138	0.0	0.304	12.2	LOS B	1.2	8.7	0.74	0.91	0.88	33.1
All Vehicles		3811	8.9	3811	8.9	0.489	1.2	NA	1.2	8.7	0.03	0.09	0.03	76.3