



Engineering a better future for over 20 years!

McDonald's & Carwash Kalamunda

Lots 28 (16) and 29 (14) Canning Road
and 3 (5) Heath Road, Kalamunda

Transport Impact Assessment

PREPARED FOR:
McDonald's Australia Ltd

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1 Introduction

This Transport Impact Assessment has been prepared by Transcore on behalf of McDonald's Australia Limited with respect to a proposed McDonald's restaurant and car wash facility at Lots 28 (No 16) and 29 (No 14) Canning Road and 3 (No 5) Heath Road, Kalamunda, in the City of Kalamunda.

The subject site is located on the southwestern corner of Canning Road and Heath Road intersection, as shown in **Figure 1**.



Figure 1: Location of the subject site

2 Development Proposal

The proposed development is a McDonald's restaurant with drive through facility and an auto car wash, as shown in the site plan at **Appendix A**.

The site plan shows that the proposed development includes:

- McDonald's restaurant (380m² floor area);
- Drive through facility with two ordering lanes, cashier window, servery window and third window (servery window with separate waiting bay) and two waiting bays;
- McDonald's loading bay;
- A three-bay auto car wash with three vacuum bays; and,
- 18 parking bays including 2 ACROD bays.

Access to the proposed development will be provided via two full movement crossovers on Heath Road, as illustrated in **Figure 2** below.

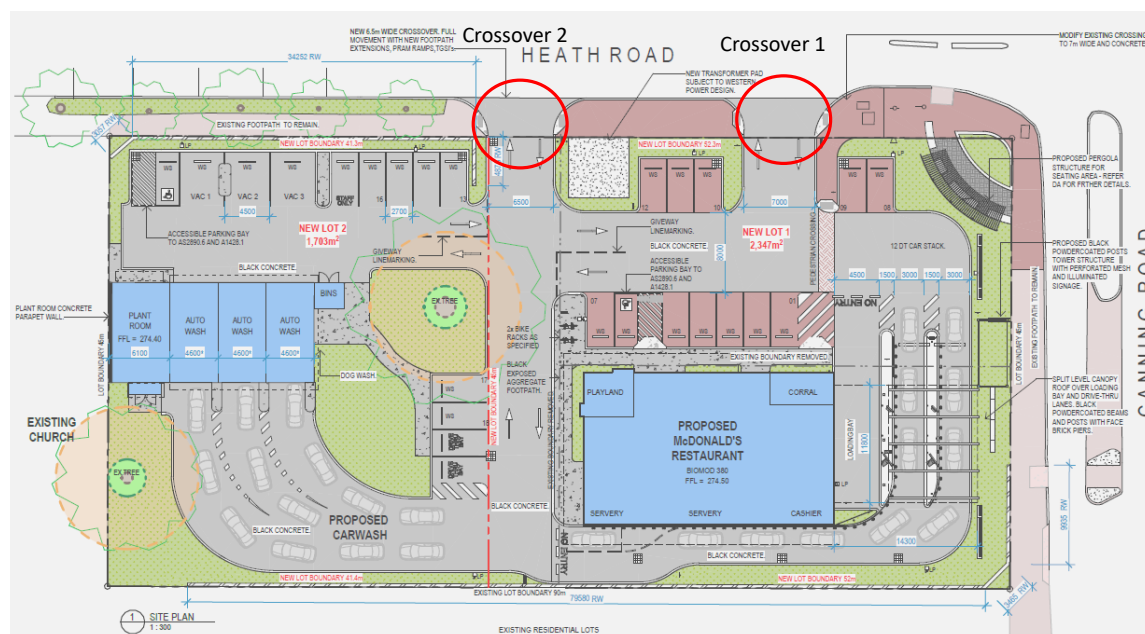


Figure 2: Proposed access arrangements

A loading bay is shown at the east side of the McDonald's building so delivery and waste collection vehicles would access this area via crossover 1, reverse into the bay and exit via crossover 2 in forward gear. The loading bay servicing will be undertaken outside the peak operating times to minimise any internal conflict. Turn path plans have been prepared for entry and exit movements by a 12.5m heavy rigid service vehicle to demonstrate that service vehicles up this size can be accommodated by the proposed site layout. The turn path plans for the drive through facility and the loading bay are presented in **Appendix B**.

A bin store is also provided to the west of the auto wash bays for the proposed car wash. Waste collection and delivery trucks enter the site via crossover 2, reverse to the bin area and exit via crossover 2 in forward gear. Turn path plans for the car wash lanes and 12.5m heavy rigid service vehicle are provided in **Appendix B**.

3 Existing Situation

3.1 Existing Land Use

The subject site is currently occupied by one building (southeast corner of the site) with a crossover on Heath Road.

There is existing residential development to the south, Kalamunda Uniting Church to the west and Kalamunda town centre commercial/retail land uses on the eastern side of Canning Road opposite the subject site.

3.2 Existing Road Network

The subject site is located on the southwestern corner of Canning Road and Heath Road intersection, as shown in **Figure 3**.

Canning Road is classified as a District Distributor A in the Main Roads WA functional road hierarchy and is covered by an Other Regional Roads Reservation in the Metropolitan Region Scheme (MRS).

Canning Road is constructed as a two-lane divided road, with one lane each way and 5m wide painted median with raised traffic islands at various locations, as can be seen in **Figure 3**. There is a short right turn lane on Canning Road at its intersection with Heath Road.

The default built up area speed limit of 50km/h applies on both Canning Road and Heath Road.

Heath Road is classified as a Local Distributor in the Main Roads WA functional road hierarchy. It is constructed as a two-lane, single carriageway urban road with 3.5m traffic lanes and on-street parking on the southern side adjacent to the subject site.

The Canning Road / Heath Road intersection operates as a priority controlled T-intersection with Stop sign control on the Heath Road approach.

Approximately 160m north of the subject site, the Canning Road / Kalamunda Road intersection is constructed as a roundabout.



Figure 3: Existing road network

3.3 Existing Traffic Volumes

Existing traffic flows at Canning Road / Heath Road intersection are sourced from Main Roads WA website dated April 2024. Daily traffic flows for Thursday 18 April 2024 are presented in **Figure 4**.

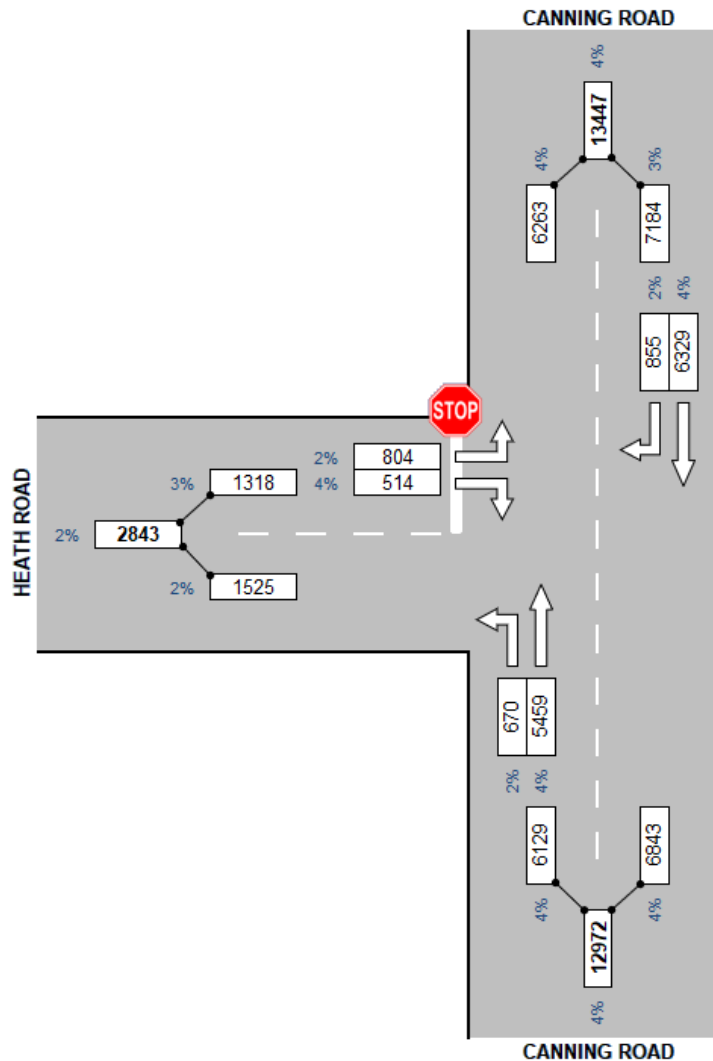


Figure 4: Existing daily traffic - Thursday 18 April 2024

3.4 Public Transport Access

The closest existing bus route to the subject site is Transperth Route 275, which has bus stops on Canning Road north and south of Heath Road. In addition, a number of other bus routes stop at Kalamunda Bus Station on Mead Street, as shown in **Figure 5**. The bus stops on Mead Street are approximately 350m to 400m walk distance (approximately 5 minutes walk) from the subject site.

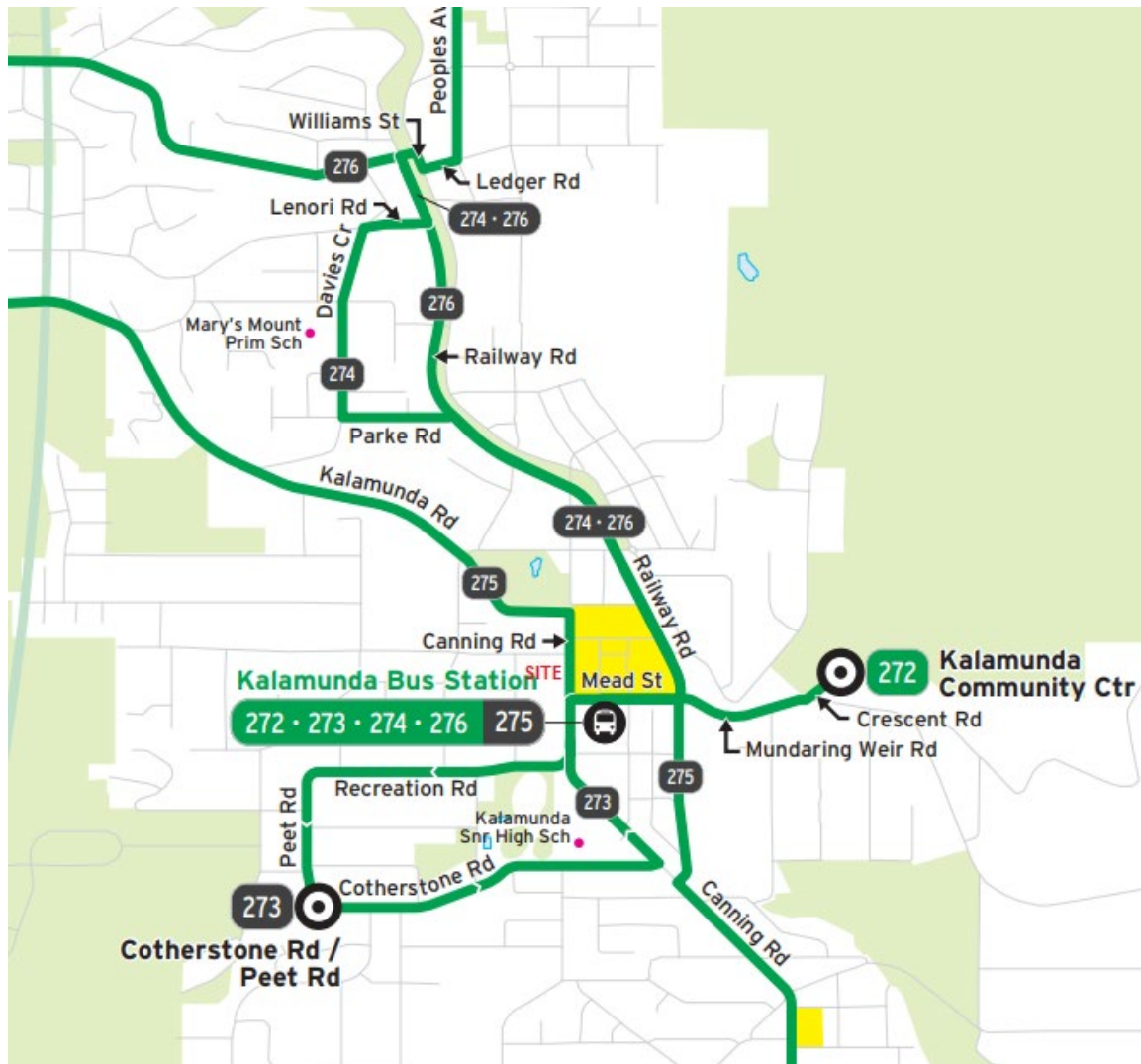


Figure 5: Existing Bus Routes

3.5 Pedestrian and Cyclist Facilities

Canning Road has paved verges on both sides in the vicinity of the subject site. Heath Road has a paved verge on the southern side adjacent to the subject site and a 1.8m footpath on the northern verge.

The traffic islands on Canning Road and on Heath Road in the immediate vicinity of the subject site provide pedestrian facilities in the form of pram ramps and dropped kerbs, as shown in **Figure 3**. There is also a marked pedestrian crossing (zebra crossing) on Canning Road approximately 20m north of Heath Road.

High-level future planning for cycling facilities is now set out in Western Australia's Long Term Cycle Network (LTCN), which identifies an aspirational blueprint to ensure State and local governments continue to work together towards the delivery of a continuous cycling network providing additional transport options, recreational opportunities and support for tourism and commercial activity. The LTCN identifies the function of a route - primary, secondary or local - rather than the form it should

take. Function considers the type of activities that take place along a route, and the level of demand (existing and potential). A route's built form is based on the characteristics of the environment, including space availability, topography, traffic conditions (speed, volumes), primary users, and so on.

The LTCN in this area is illustrated in **Figure 6**, which shows the secondary routes (blue) along Canning Road – Kalamunda Road and Railway Road in this area and a number of local routes (green) further to the north and south.

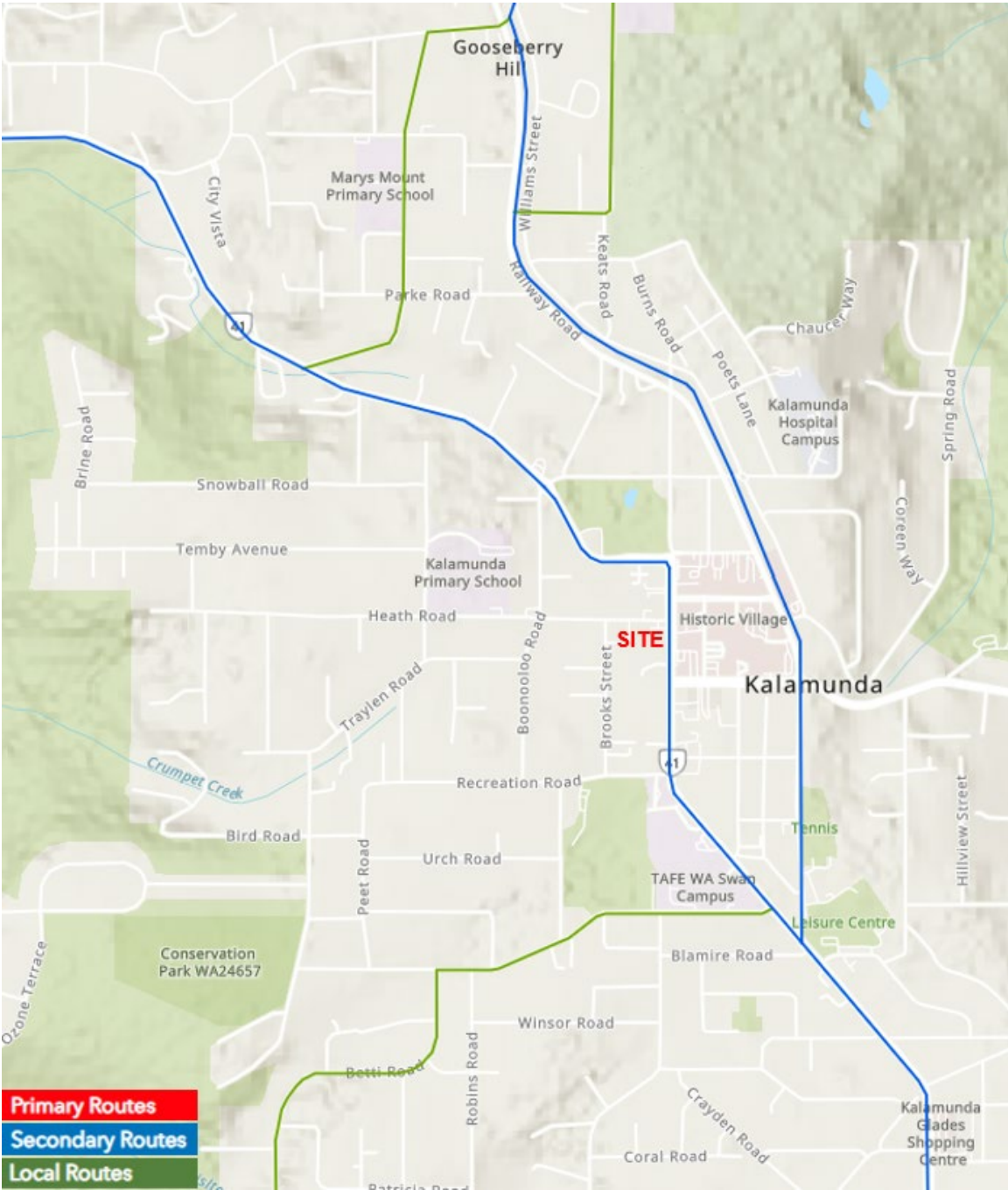


Figure 6: Long Term Cycle Network



3.6 Crash Data

The Main Roads WA website provides crash data for the 5-year period 2019 to 2023.

- No intersection crashes were recorded at the Canning Road / Heath Road intersection during this period.
- 3 rear end crashes occurred at the zebra crossing on Canning Road north of Heath Road, two resulting in PDO major (property damage only) and one requiring medical treatment (not a pedestrian).
- No midblock crashes were recorded on Canning Road adjacent to the subject site during this period.
- 2 midblock crashes were recorded on Heath Road adjacent to the subject site:
- One crash involved a vehicle making an unparking manoeuvre and colliding with another vehicle parked on street resulting in PDO major; and
- One crash involved a car colliding with a non-fixed object on the road resulting in PDO major.

4 Integration with Surrounding Area

The proposed development is consistent with other commercial / retail type developments along Canning Road in the Kalamunda town centre vicinity.

5 Traffic Assessment

5.1 Assessment Period

The peak period for the proposed McDonald's restaurant and car wash is anticipated to be the Saturday lunchtime peak period.

Accordingly, traffic analysis in this report assesses weekday AM and PM peak hours and the Saturday peak hour for the years 2026 (post development) and 2036 (ten years post development).

5.2 Trip Generation and Distribution

5.2.1 *Proposed McDonald's restaurant*

The traffic volumes anticipated to be generated by the proposed development have been estimated using trip generation rates derived from the *ITE Trip Generation Manual (11th Edition)*. The applicable trip rates which were used to estimate the proposed land uses are:

Fast-Food Restaurant with Drive-Through Window (#934)

- Weekday road network AM peak hour: 48.0 vph per 100m² GFA;
- Weekday road network PM peak hour: 35.6 vph per 100m² GFA;
- Saturday peak hour of development: 59.5 vph per 100m² GFA.

Accordingly, it is estimated that the proposed McDonald's restaurant would generate the following total traffic flows:

- Weekday road network AM peak hour: 182 vph;
- Weekday road network PM peak hour: 135 vph;
- Saturday peak hour of development: 226 vph.

5.2.2 *Proposed car wash*

The traffic volumes likely to be generated by the automated car wash have been estimated based on Transcore's experience, information available to Transcore and observations of similar businesses within the Perth Metro area.

The peak patronage of carwashes occur during the weekends which doesn't coincide with the peak hour of the road network. However, for a robust assessment, it is assumed that the road network peak trip generation for the proposed car wash would be 50% of the peak hour trip generation during a weekend.

Accordingly, the trip rate of the proposed auto car wash is reported as below:

Auto Car Wash – per wash bay

- Weekday road network AM peak hour: 6 trips per hour per bay;
- Weekday road network PM peak hour: 6 trips per hour per bay; and,
- Saturday peak hour of development: 12 trips per hour per bay.

Accordingly, the trip generation of the proposed auto car wash are estimated as below:

Auto Car Wash

- Weekday AM peak hour: $6 \times 3 = 18$ trips;
- Weekday PM peak hour: $6 \times 3 = 18$ trips; and,
- Saturday peak hour: $12 \times 3 = 36$ trips.

5.2.3 Total trips

Trips associated with the proposed development may be internal trips, passing-trade trips (trips already on the road network and not specifically generated by the proposed development), or primary trips (new trips only visiting the proposed development).

The ITE *Trip Generation Handbook (3rd Edition)* provides additional information on internal trips within development and on pass-by and primary trips for various types of land use. Based on the information in ITE it is estimated that approximately 10% of the trips visiting the development would be crosstrade/internal, approximately 45% of the trips would be pass-by trips and the balance 45% would be primary trips.

Accordingly, it is estimated that the proposed development would generate about 2,321 daily trips with about 182 AM peak hour trips, 140 PM peak hour trips and 239 Saturday mid-day peak hour trips (refer **Table 1**). **Table 2** summarises the passing trade and primary trips component of the total generated trips.

The distribution of traffic to and from the proposed development was evaluated by considering the catchment area of the proposed development as well as the available access and egress routes to and from the site.

Consequently, the directional distribution of traffic to and from the site is assumed to be as follows:

- 34% Heath Road West;
- 33% Canning Road north; and,
- 33% Canning Road south.

Pass-by trips are assigned 50% from Heath Road and 50% from Canning Road.

Table 1: Trip generation of the proposed development

Land use	Quantity	Daily Rate	AM peak	Sat-PM peak	PM peak	Cross Trade	Daily Trips	AM Trips	Sat-PM Trips	PM Trips	AM		Sat-PM		PM	
											IN	OUT	IN	OUT	IN	OUT
Fast food outlet with drive through	380	5.032	0.480	0.595	0.356	0.10	1721	164	203	122	82	82	102	101	61	61
Car wash	3	72	6	12	6		600	18	36	18	9	9	18	18	9	9
TOTAL TRAFFIC							2,321	182	239	140	91	91	120	119	70	70

Table 2: Passing trade and primary trips component

Passing Trade							Primary Trips							
50% 0%	AM		Sat-PM		PM		AM		Sat-PM		PM			
	Daily Trips	IN	OUT	IN	OUT	IN	OUT	Daily Trips	IN	OUT	IN	OUT	IN	OUT
	860	41	41	51	51	31	30	861	41	41	51	50	30	31
	0	0	0	0	0	0	0	600	9	9	18	18	9	9
	860	41	41	51	51	31	30	1461	50	50	69	68	39	40

5.3 Future Traffic Flows

The peak period traffic flows expected to be generated by the proposed development have been manually assigned on the adjacent road network in line with the directional distribution assumptions outlined in the previous section. Separate traffic distribution was assumed for primary trips (refer **Figure 7**) and pass by trips (refer **Figure 8**).

Traffic flows to and from this proposed development for weekday AM and PM and Saturday peak hours are shown in **Figure 9** which is the addition of the primary trips and pass by trips. The negative numbers in this figure reflects the impact of the pass by trips on background traffic.

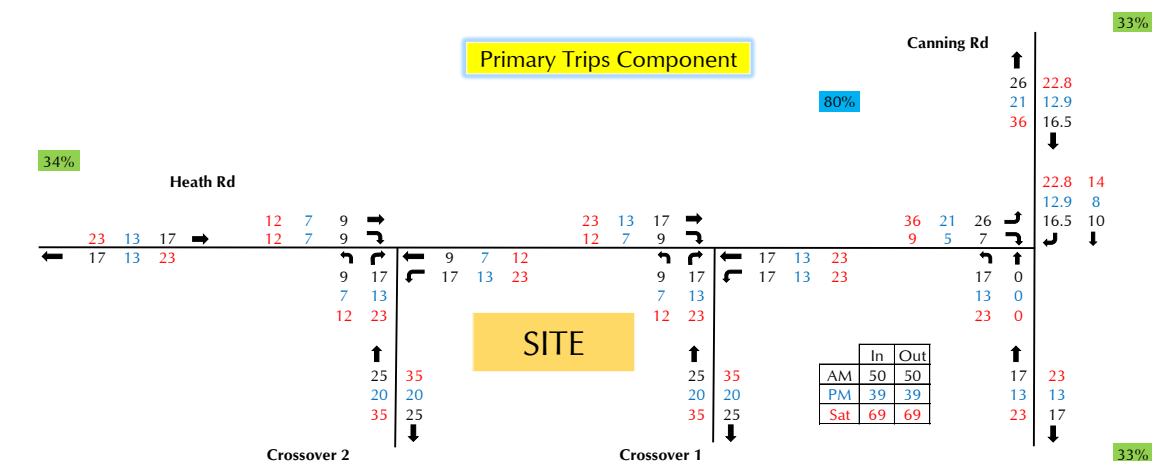


Figure 7: Primary trip component of the development, AM/ PM/Saturday peak hours

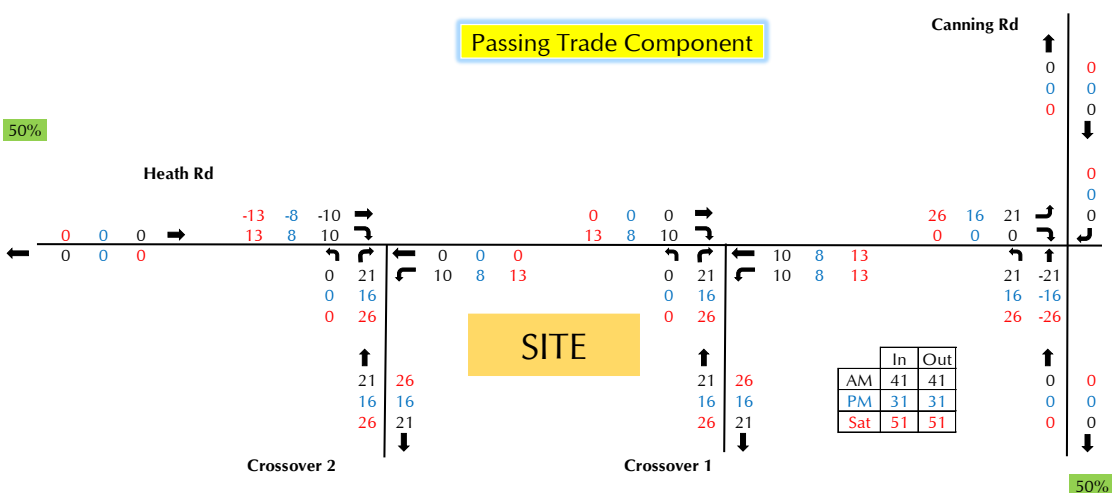


Figure 8: Pass by trip component of the development, AM/ PM/Saturday peak hours

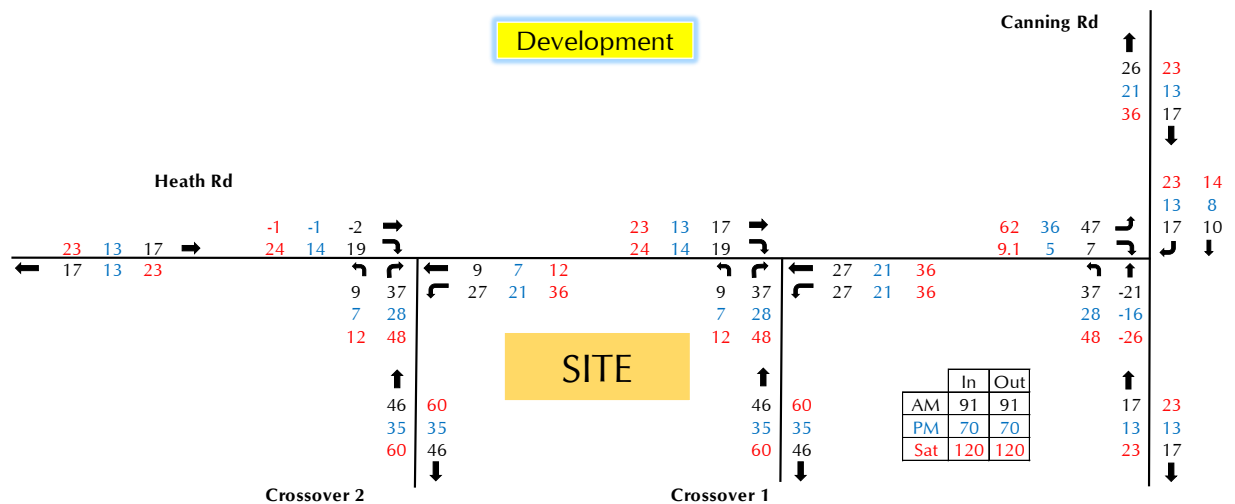


Figure 9: Peak hour traffic flows generated by proposed development, AM/PM/Saturday peak hours

Future 2026 and 2036 total traffic flows with the addition of the proposed development traffic are shown in **Figure 10** and **Figure 11** respectively. For future years a 2% annual traffic growth was applied to the background traffic.

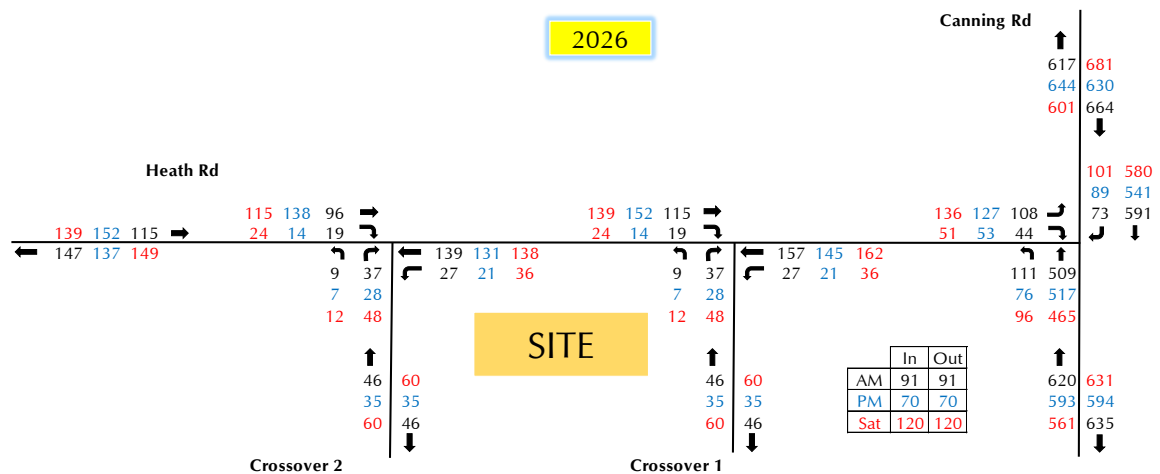


Figure 10: 2026 Future full development traffic flows including proposed development, AM/PM/Saturday peak hours

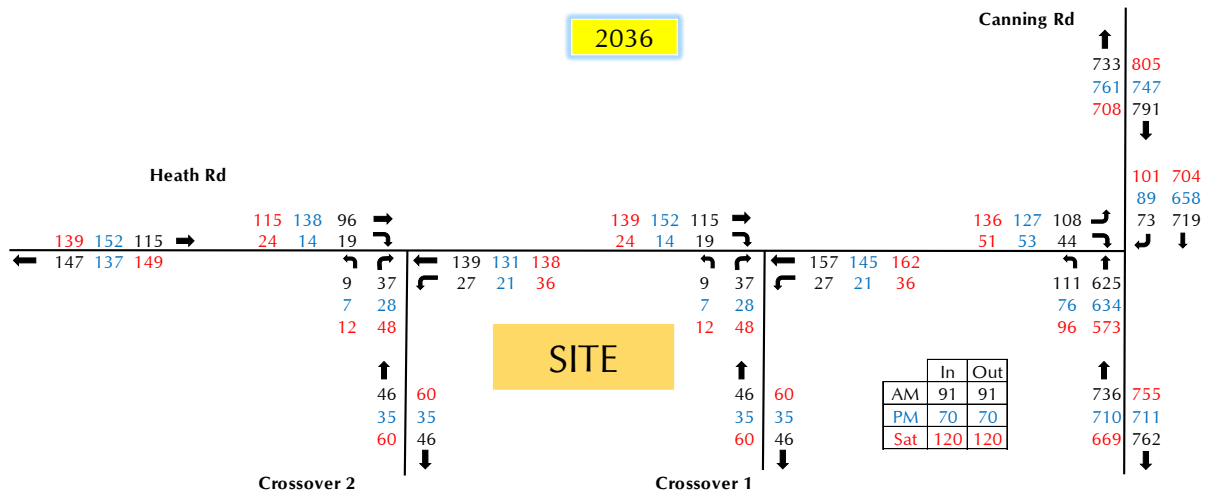


Figure 11: 2036 Future full development traffic flows including proposed development, AM/ PM/ Saturday peak hours

Intersection capacity analysis has been undertaken for the intersection of Canning Road/ Heath Road and the development crossovers during the AM, PM and Saturday peak hours for existing, post development and 10 years post development scenarios.

Capacity analysis of those three intersections was undertaken using the SIDRA computer software package. 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 results of the SIDRA analysis are summarised in **Appendix C**.

5.3.1 Intersection of Canning Road/ Heath Road

The SIDRA results in **Appendix C** indicate that the existing Canning Road / Heath Road intersection is currently operating at degree of saturation ranging from 0.312 to 0.346 in the weekday and Saturday peak periods. The right turn out from Heath Road experiences average delays of 31.3 to 36.9 seconds and operates at level of service D or E.

In the 2026 SIDRA results (with the proposed development and background traffic growth) the degree of saturation increases to 0.393 – 0.423. The right turn out is indicated as level of service E with average delays on that right turn increasing to 41.0 – 42.1 seconds.

In the 2036 SIDRA results (with the proposed development and 10 years growth of background traffic post development) the degree of saturation increases to 0.749 – 0.766. The right turn out is indicated as level of service F with average delays on that right turn increasing to 108.3 – 122.5 seconds.

This SIDRA results indicate the existing Canning Road / Heath Road intersection has sufficient capacity to accommodate the additional traffic flows generated by the proposed development but the modelled growth of existing through traffic on Canning Road over the next decade would be reported to cause increase delays and for the right turn out from Heath Road to Canning Road.

It should be noted that the left turn out from Heath Road to Canning Road will experience much lower delays (level of service A or B in 2036 peak periods) than the right turn out. Therefore, when right turn delays and queues increase in future, it is anticipated that a proportion of those right turners would turn left onto Heath Road , travel north and then make a U-turn at the Canning Road / Kalamunda Road roundabout to travel south.

5.3.2 Development crossovers on Heath Road

The SIDRA results in **Appendix C** indicate that the proposed driveway crossovers on Heath Road would both operate satisfactorily with all movements at level of service A in all peak periods in 2026 and 2036.

5.4 Impact on Surrounding Roads and Neighbouring Areas

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

“As a general guide, an increase in traffic of less than 10 percent of capacity would not normally be likely to have a material impact on any particular section of road, but increases over 10 percent may. All sections of road with an increase greater than 10 percent 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 percent of capacity. Therefore, any section of road where development

traffic would increase flows by more than 100 vehicles per hour for any lane should be included in the analysis.”

As can be seen in **Figure 9**, the proposed development will not increase traffic on any lanes on the surrounding road network by more than 100vph. Therefore, the proposed development will not increase traffic flows at or above the quoted WAPC threshold on the surrounding roads to warrant any further detailed analysis.

5.5 Traffic Noise and Vibration

It generally requires a doubling of traffic volumes on a road to produce a perceptible 3dB(A) increase in road noise. The proposed development traffic will be very much less than half of the future total traffic on adjacent roads so it will not represent a sufficient proportion of total traffic volumes to account for a perceptible increase in noise on the surrounding roads.

5.6 Road Safety

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

6 Parking Assessment

The site plan at **Appendix A** shows that the proposed development includes:

- 22 parking bays including 2 disabled bays and 2 waiting bays.
- McDonald's drive through facility with two ordering lanes (queuing space for 14 cars), cashier window, server window and third window (server window with one separate waiting bay);
- Car wash drive through facility with 3 auto wash bays, 3 vacuum bays and queuing space for 13 vehicles; and
- A separate loading bay adjacent to the McDonald's bin store (corral).

Therefore, a total of 52 cars and one delivery vehicle can be accommodated within the proposed development site.

7 Drive-Through Queue Analysis

NSW Guidelines:

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

“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.”

The proposed McDonald's restaurant 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 at least 14 car queuing capacity within the drive through facility including a combined queuing space for at least six cars at the COBs, plus one space at the third window (second server) and two waiting bays in front of the drive-through exit lane.

Accordingly, the proposed drive through facility meets the NSW guide's recommended drive through queuing area provisions.

Drive-through queue length analysis model

Based on the peak hour trip generation, the proposed McDonald's restaurant is estimated to generate a total of 226vph (113vph inbound and 113vph outbound) during the critical Saturday peak hour. It is further estimated that, allowing for 10% walk-in trade and a 60/40 drive-through/park'n'sit ratio typical for such restaurants, it is estimated that there could be around 61 drive-through transactions/customers/cars during the Saturday peak 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 1 minute equating to 60 vehicles per hour service rate capacity. It is further assumed that two COBs will be in operation during the peak periods, giving a theoretical order taking service rate of 120 vehicles per hour. The analysis model assumes 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.

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.

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

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

	vph	vps
M/M/s		
Arrival rate	61	0.016944
Service rate	60	0.016667
Number of servers	2	2
Utilization	50.83%	50.83%
P(0), probability that the system is empty	0.3260	0.3260
Lq, expected queue length	0.3542 (cars)	6.0000 (metres)
L, expected number in system	1.3709 (cars)	12.0000 (metres)
Wq, expected time in queue	0.0058 (hours)	20.9065 (seconds)
W, expected total time in system	0.0225 (hours)	80.9065 (seconds)
Probability that a customer waits	0.3426	0.3426
95% Queue	4.0000 (cars)	24.0000 (metres)

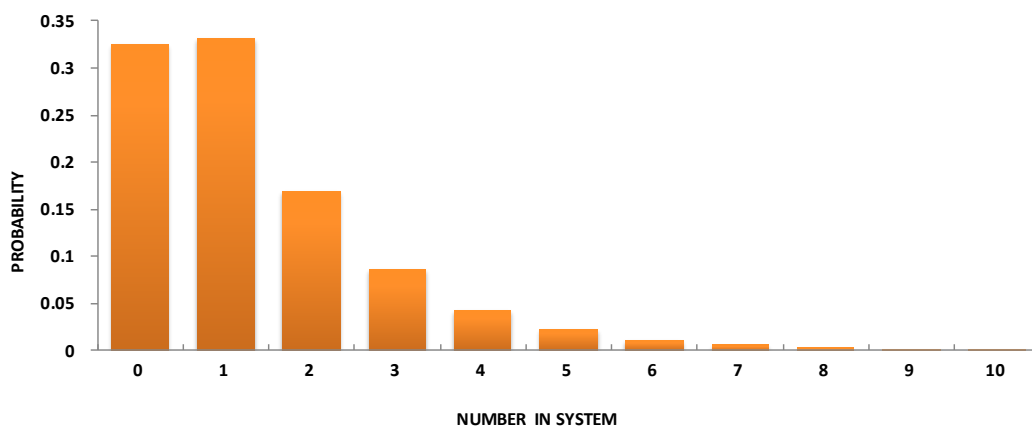


Figure 12: Saturday peak drive-through queuing analysis

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

- ✚ There is zero queuing 32% of the time;
- ✚ The expected (average) number of vehicles in the system is two;
- ✚ The expected (average) total time in the system is 81 seconds; and,
- ✚ The 95th percentile queue is four vehicles at each COB.

The queue length usually adopted for robust analysis is the 95th percentile queue. This queue length reported would not be exceeded 95% of the time.

Based on the queue estimation model, it is concluded that under typical peak conditions the queue backing from each COB will be accommodated within the site with no impact on other internal driveways and surrounding road network.

8 Public Transport Access

Details of the available public transport services in this locality are provided in Section 3.4 of this report.

The subject site is considered to have good public transport access due to proximity to the Kalamunda Bus Station approximately 5 minutes' walk from the site.

9 Pedestrian and Cyclist Access

Details of the pedestrian and cyclist facilities in this locality are provided in Section 3.5 of this report.

The existing facilities in this locality will provide satisfactory pedestrian and cyclist access for the proposed development.

10 Conclusions

This Transport Impact Assessment relates to a proposed McDonald's restaurant and car wash facility at Lots 28 (No 16) and 29 (No 14) Canning Road and 3 (No 5) Heath Road, Kalamunda, in the City of Kalamunda.

The subject site is located on the southwestern side of Canning Road/ Heath Road intersection.

The proposed development is a McDonald's restaurant (380m² floor area) with drive through facility and a three-bay auto car wash with access via two driveway crossovers on Heath Road.

The proposed development includes 18 parking bays (including 2 disabled bays), 14 spaces within the McDonald's drive-through facility, 19 spaces within the car wash facility (including wash, vacuum and queuing lanes) and a separate loading bay adjacent to the bin store (corral). Therefore, a total of 51 cars and one delivery vehicle can be accommodated within the proposed development site.

The proposed development is anticipated to generate a total of approximately 240 vehicle trips (120 in / 120 out) during the critical Saturday peak period.

Intersection analysis indicates that the existing Canning Road / Heath Road intersection has sufficient capacity to accommodate the additional traffic flows generated by the proposed development but the modelled growth of existing through traffic on Canning Road over the next decade would be anticipated to cause additional delays to the right turn out from Heath Road to Canning Road. However, the left turn out from Heath Road to Canning Road will experience much lower delays, so when right turn delays increase in future, it is anticipated that a proportion of those right turners would turn left out from Heath Road instead and make a U-turn at the Canning Road / Kalamunda Road roundabout instead to travel south.

Pedestrian and cyclist access to the proposed development will be accommodated by the existing path network and crossing facilities on the adjacent road network that are already provided for the Kalamunda town centre on the other side of Canning Road.

The subject site is considered to have good public transport access due to proximity to the Kalamunda Bus Station approximately 5 minutes' walk from the site.

No particular transport or safety issues have been identified for the proposed development within the scope of this assessment.

Appendix A

PROPOSED DEVELOPMENT PLANS



Engineering a better future for over 20 years!

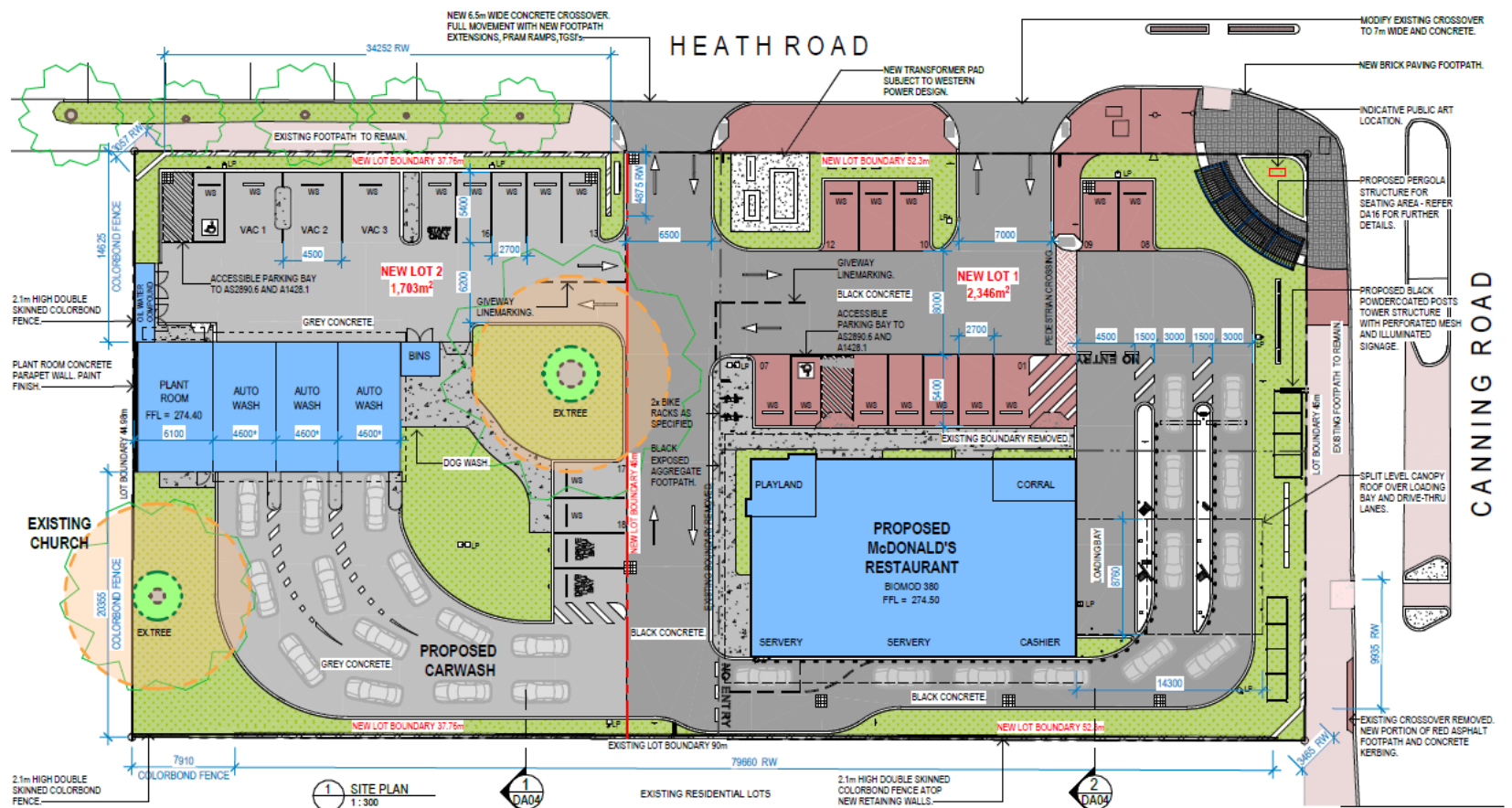
SITE AREA SCHEDULE	
IDENTITY	AREA m ²
ORIGINAL LOT 3,28,29	4048m ²
NEW LOT 1	2346m ²
NEW LOT 2	1703m ²

PARKING SUMMARY - LOT1	
TYPE	NO
ACCESSIBLE BAY	1
STANDARD BAYS	11

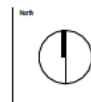
PARKING SUMMARY - LOT2	
TYPE	NO
ACCESSIBLE BAY	1
STANDARD BAYS	6
DRIVE THRU WAITING BAY	2
STAFF BAY	1
VACUUM BAYS	3

LEGEND:

	BLACK EXPOSED AGGREGATE CONCRETE FOOTPATH AS SPECIFIED. REFER STRUCT. ENG'S DWGS FOR DETAILS.		EXISTING RED ASPHALT TO REMAIN.		TREE PROTECTION ZONE. REFER TO ARBORIST REPORT FOR FURTHER DETAILS.		TREE TRUNK.
	NEW SOFT LANDSCAPING BEDS. TOTAL AREA = 916sq OR 22% OF OVERALL SITE.		NEW RED ASPHALT TO MATCH EXISTING.		ROOT PROTECTION ZONE. REFER TO ARBORIST REPORT FOR FURTHER DETAILS.		WS RUBBER WHEELSTOPS AS SPECIFIED. QTY: 25
	NEW RED STENCILLED CONCRETE.						



Revisions	General Notes	Drawing Notes
1. DA 0805 Date: 08/05/2024	Do not scale this drawing. The drawing shows design intent only. All dimensions are to be confirmed by the contractor prior to construction or production. Construction details to be confirmed by the contractor. This is a computer generated drawing. Do not manually hand figure dimensions on this drawing. All dimensions are in millimeters. All dimensions are to be confirmed by the contractor prior to construction or production. All dimensions are to be confirmed by the contractor prior to construction or production.	



Client	McDonald's Australia Limited Unit 4/155 Stirling Highway Nedlands WA 6009 PO Box 190 Nedlands WA 6009 DE 0380 0500 www.hindley.com.au
Project	McDONALD'S STANDARD DOCUMENTS
Location	LOTS 281(15) AND 281(16) CANNING ROAD AND LOT 305 HEALTH ROAD, KALAMUNDA

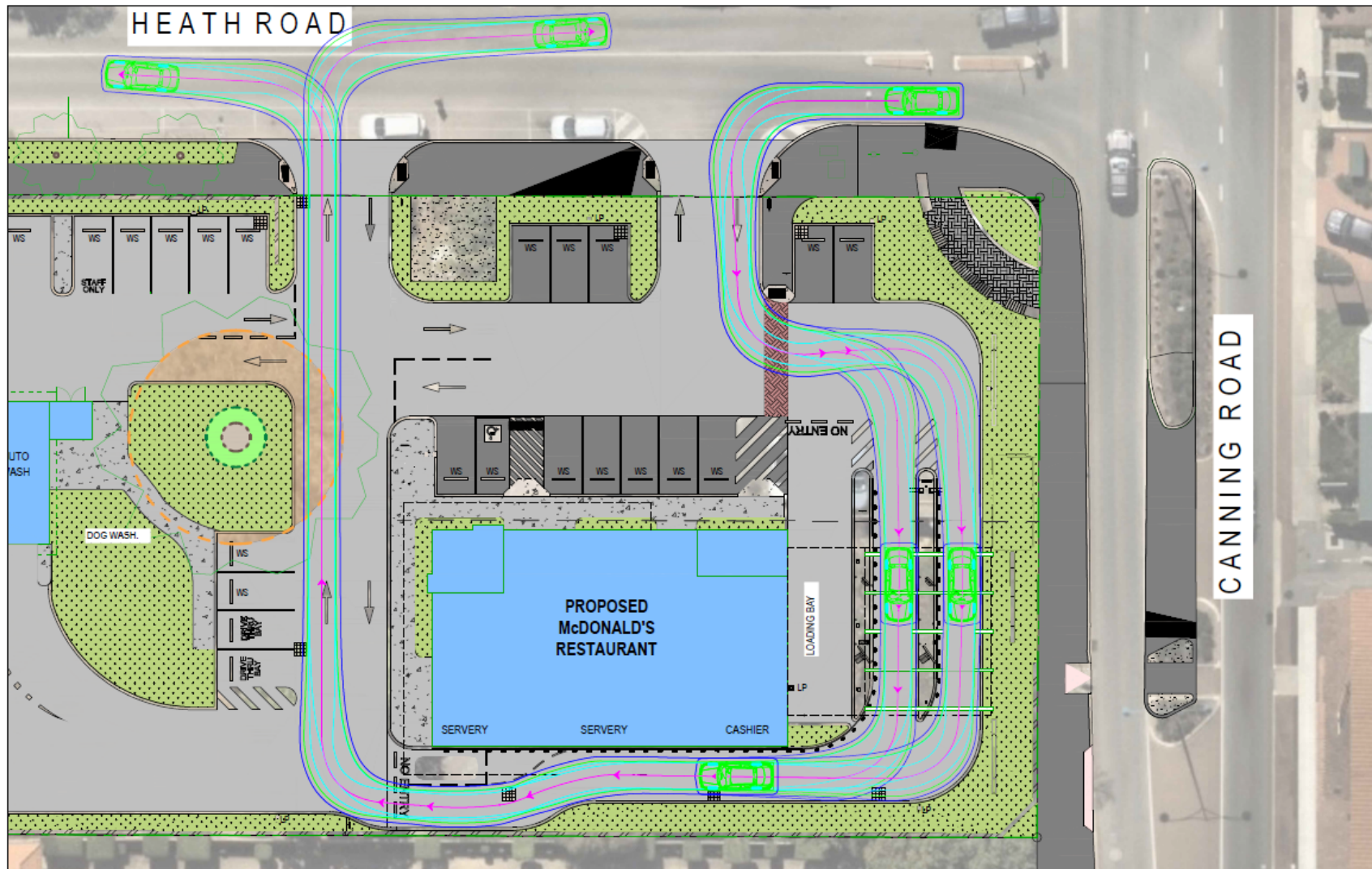
Scale	As indicated @ A3
Drawing	SITE PLAN
Project Number	0882
Drawing Number	DA03
Issue	0

Appendix B

TURN PATH ANALYSIS



Engineering a better future for over 20 years!

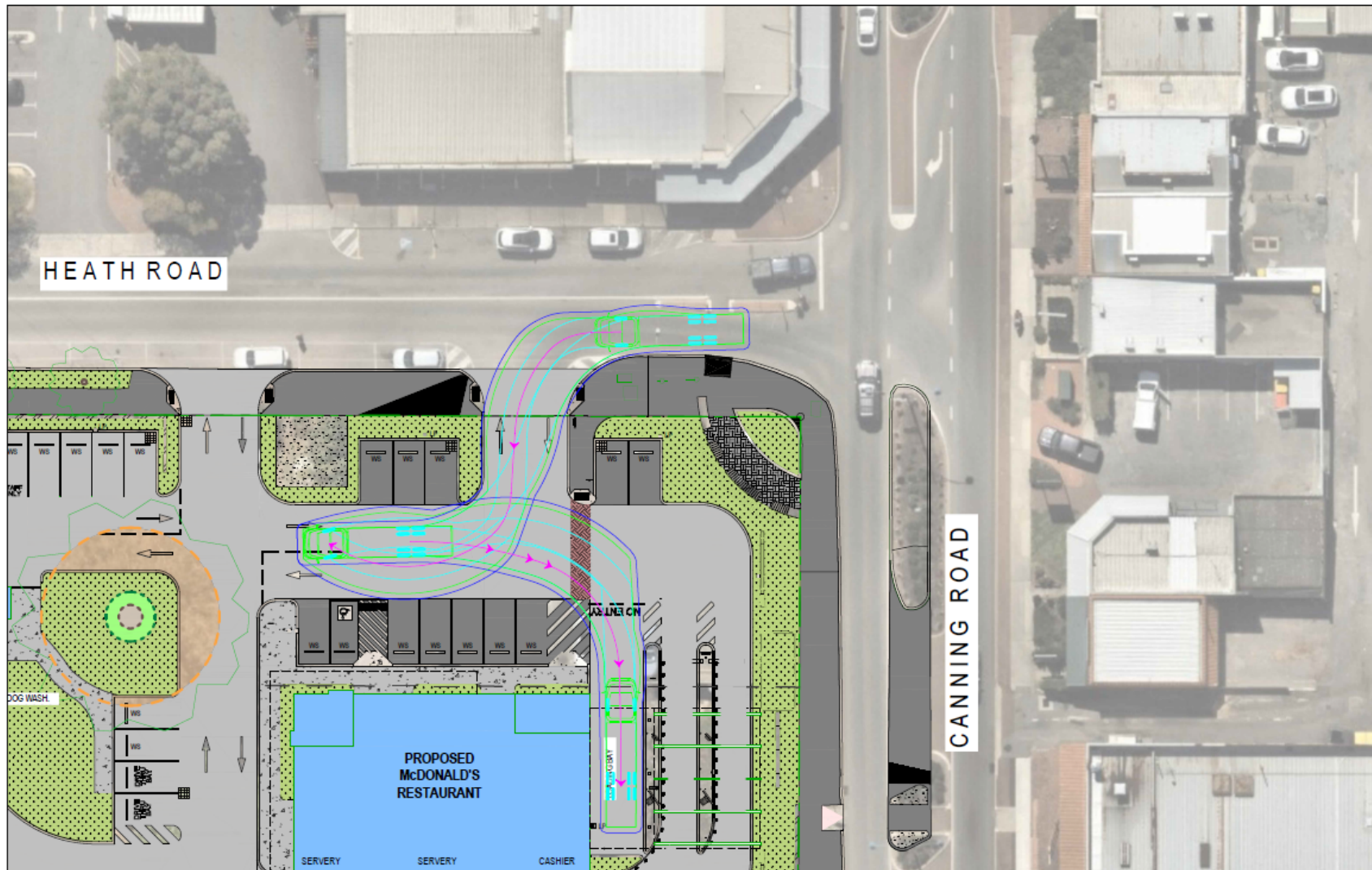


McDonald's Kalamunda
 Austroads 2023: B99 Passenger Car
 Proposed McDonald's Drive Through Circulation

LEGEND
 Vehicle Body
 Wheel Path
 300mm Clearance

t24.140.sk15
 11/12/2024
 Scale: 1:250 @ A3





McDonald's Kalamunda

Austrroads 2023: 12.5m Service Vehicle
Proposed McDonald's Loading Bay Entry

LEGEND

Vehicle Body
Wheel Path
500mm Clearance

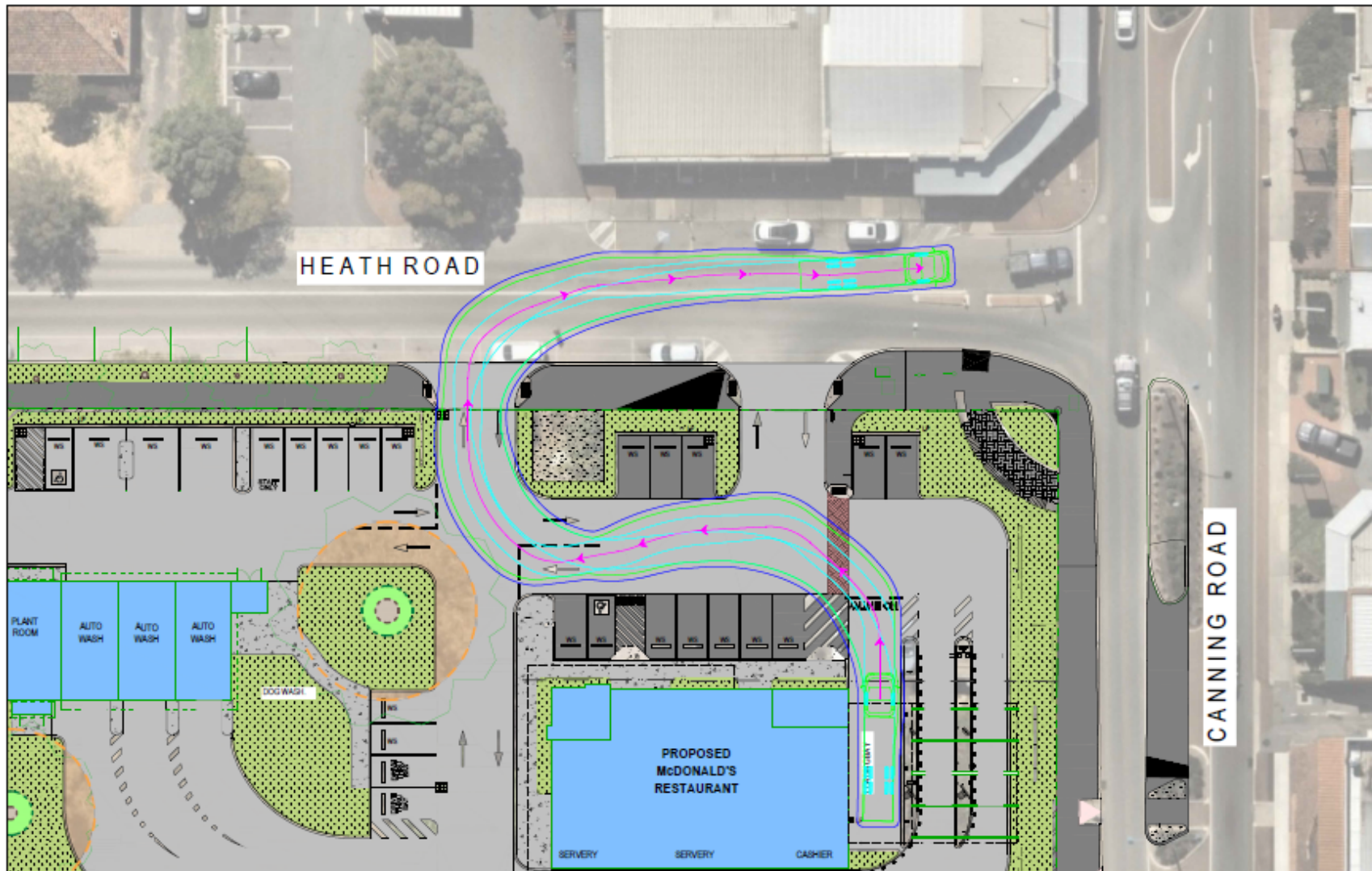


t24.140.sk16

11/12/2024

Scale: 1:300 @ A3



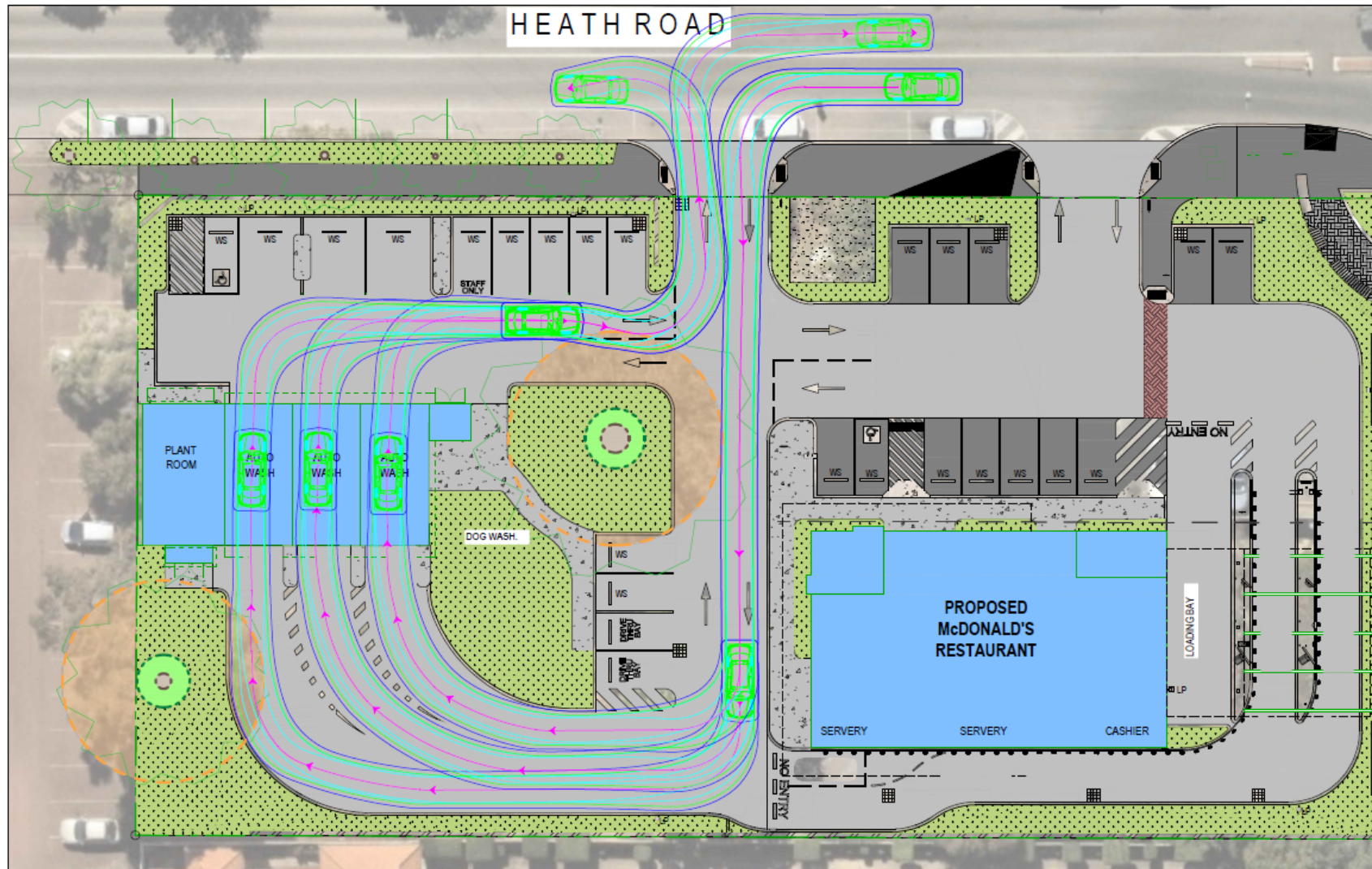


McDonald's Kalamunda
 Austroads 2023: 12.5m Service Vehicle
 Proposed McDonald's Loading Bay Exit

LEGEND
 Vehicle Body
 Wheel Path
 500mm Clearance

t24.140.sk17
 11/12/2024
 Scale: 1:300 @ A3



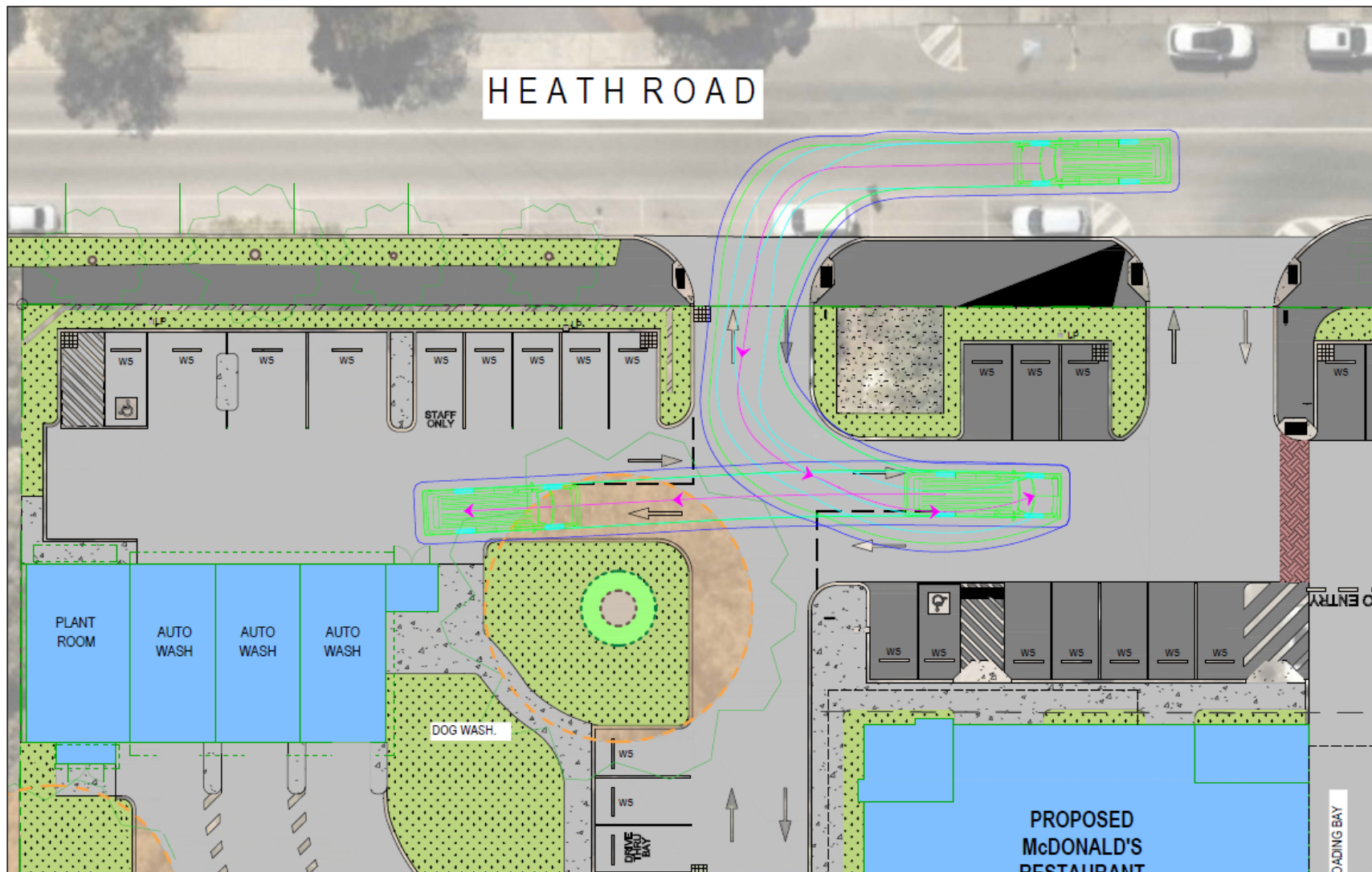


McDonald's Kalamunda
 Austroads 2023: B99 Passenger Car
 Proposed Auto wash Circulation

LEGEND
 Vehicle Body
 Wheel Path
 300mm Clearance

t24.140.sk18
 11/12/2024
 Scale: 1:250 @ A3





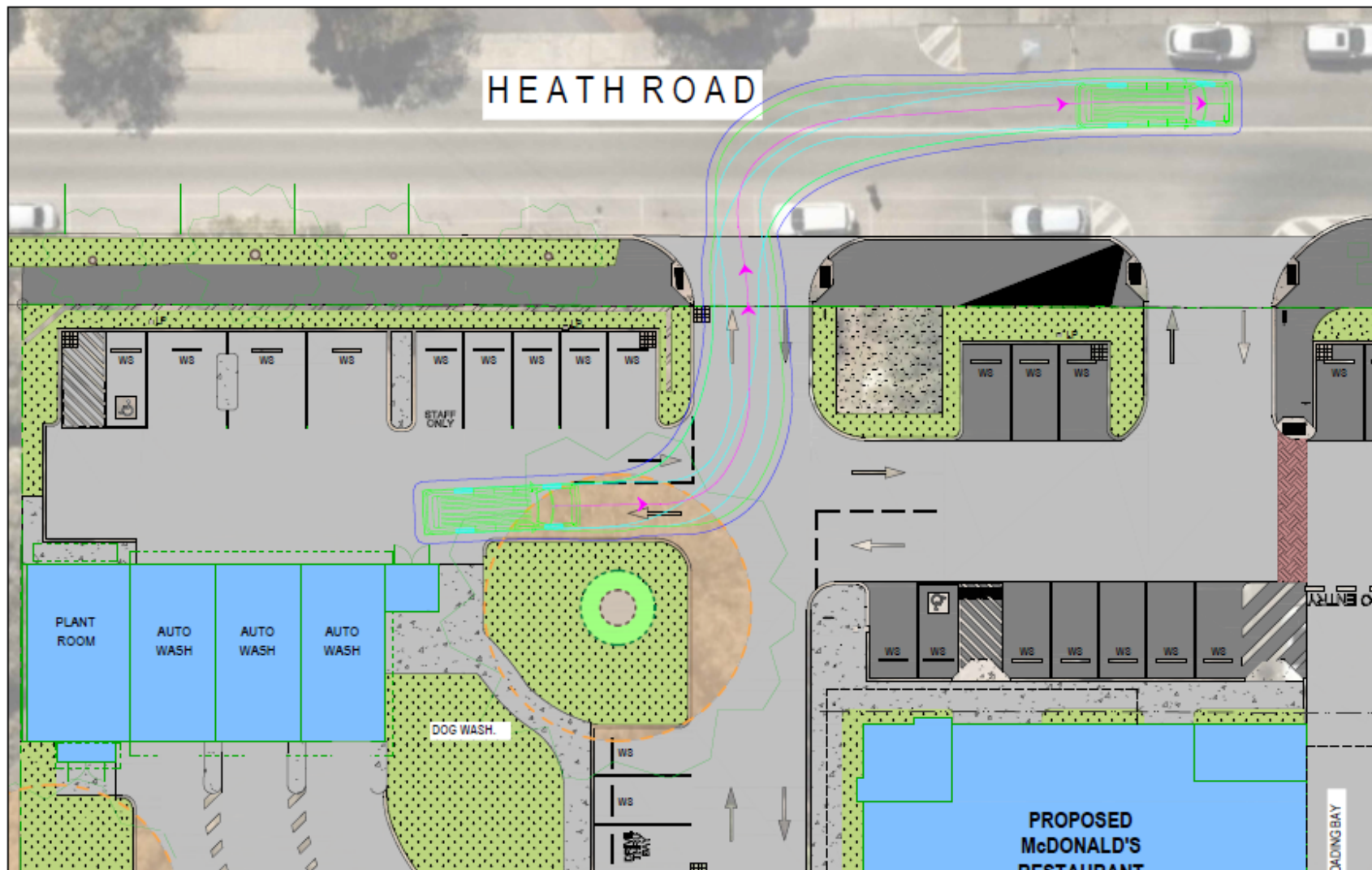
McDonald's Kalamunda
8.8m Waste Collection Truck
Proposed Auto wash Bins Access

LEGEND
Vehicle Body
Wheel Path
500mm Clearance



t24.140.sk19
11/12/2024
Scale: 1:200 @ A3





McDonald's Kalamunda
8.8m Waste Collection Truck
Proposed Carwash Bins Egress

LEGEND
Vehicle Body
Wheel Path
500mm Clearance



t24.140.sk20

11/12/2024

Scale: 1:200 @ A3



Appendix C

SIDRA INTERSECTION ANALYSIS



Engineering a better future for over 20 years!



Figure C1: Road network layout modelled in SIDRA Network

MOVEMENT SUMMARY

 Site: [Canning Rd & Heath Rd - Existing - AM (Site Folder: Existing)]

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Canning Rd														
7	L2	74	1	78	1.4	0.340	5.6	LOS A	0.0	0.0	0.00	0.07	0.00	33.1
8	T1	519	28	546	5.4	0.340	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	57.7
Approach		593	29	624	4.9	0.340	0.7	NA	0.0	0.0	0.00	0.07	0.00	54.2
North: Canning Rd														
2	T1	570	27	600	4.7	0.322	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	56	5	59	8.9	0.071	8.8	LOS A	0.3	2.3	0.58	0.76	0.58	29.6
Approach		626	32	659	5.1	0.322	0.8	NA	0.3	2.3	0.05	0.07	0.05	57.0
West: Heath Rd														
4	L2	61	1	64	1.6	0.087	8.4	LOS A	0.3	2.4	0.54	0.95	0.54	31.4
6	R2	37	2	39	5.4	0.297	36.9	LOS E	1.0	7.7	0.91	1.04	1.04	14.9
Approach		98	3	103	3.1	0.297	19.1	LOS C	1.0	7.7	0.68	0.99	0.73	21.3
All Vehicles		1317	64	1386	4.9	0.340	2.1	NA	1.0	7.7	0.08	0.14	0.08	51.8

MOVEMENT SUMMARY

 Site: [Canning Rd & Heath Rd - Existing - PM (Site Folder: Existing)]

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				v/c	sec				
South: Canning Rd														
7	L2	48	1	51	2.1	0.319	5.6	LOS A	0.0	0.0	0.00	0.05	0.00	33.4
8	T1	522	16	549	3.1	0.319	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	58.4
Approach		570	17	600	3.0	0.319	0.5	NA	0.0	0.0	0.00	0.05	0.00	56.0
North: Canning Rd														
2	T1	523	20	551	3.8	0.293	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	76	2	80	2.6	0.087	8.3	LOS A	0.4	2.7	0.56	0.75	0.56	30.3
Approach		599	22	631	3.7	0.293	1.1	NA	0.4	2.7	0.07	0.09	0.07	56.0
West: Heath Rd														
4	L2	91	2	96	2.2	0.129	8.5	LOS A	0.5	3.7	0.55	0.97	0.55	31.2
6	R2	48	2	51	4.2	0.346	34.9	LOS D	1.2	9.5	0.91	1.06	1.08	15.5
Approach		139	4	146	2.9	0.346	17.6	LOS C	1.2	9.5	0.67	1.00	0.73	22.3
All Vehicles		1308	43	1377	3.3	0.346	2.6	NA	1.2	9.5	0.10	0.17	0.11	50.9

MOVEMENT SUMMARY

 Site: [Canning Rd & Heath Rd - Existing - Sat (Site Folder: Existing)]

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Canning Rd														
7	L2	48	2	51	4.2	0.298	5.6	LOS A	0.0	0.0	0.00	0.05	0.00	33.3
8	T1	481	18	506	3.7	0.298	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	58.3
Approach		529	20	557	3.8	0.298	0.5	NA	0.0	0.0	0.00	0.05	0.00	55.8
North: Canning Rd														
2	T1	555	23	584	4.1	0.312	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	78	0	82	0.0	0.083	7.9	LOS A	0.3	2.5	0.54	0.72	0.54	30.9
Approach		633	23	666	3.6	0.312	1.0	NA	0.3	2.5	0.07	0.09	0.07	56.2
West: Heath Rd														
4	L2	74	0	78	0.0	0.097	7.8	LOS A	0.4	2.7	0.52	0.94	0.52	32.3
6	R2	42	1	44	2.4	0.285	31.3	LOS D	1.0	7.3	0.89	1.04	1.02	16.8
Approach		116	1	122	0.9	0.285	16.3	LOS C	1.0	7.3	0.65	0.97	0.70	23.4
All Vehicles		1278	44	1345	3.4	0.312	2.2	NA	1.0	7.3	0.09	0.15	0.10	51.9

MOVEMENT SUMMARY

 Site: [Canning Rd & Heath Rd - 2026 - AM (Site Folder: 2026)]

 Network: N101 [AM (Network Folder: 2026)]

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total HV] veh/h	%				[Veh. veh	Dist] m				
South: Canning Rd														
7	L2	117	1.4	117	1.4	0.356	5.6	LOS A	0.0	0.0	0.00	0.11	0.00	54.9
8	T1	536	5.4	536	5.4	0.356	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	56.8
Approach		653	4.7	653	4.7	0.356	1.0	NA	0.0	0.0	0.00	0.11	0.00	56.6
North: Canning Rd														
2	T1	622	4.7	622	4.7	0.335	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	77	8.9	77	8.9	0.097	9.2	LOS A	0.4	3.1	0.60	0.79	0.60	29.7
Approach		699	5.2	699	5.2	0.335	1.0	NA	0.4	3.1	0.07	0.09	0.07	56.8
West: Heath Rd														
4	L2	114	1.6	114	1.6	0.151	8.4	LOS A	0.6	4.3	0.55	0.98	0.55	31.3
6	R2	46	5.4	46	5.4	0.393	44.1	LOS E	1.4	10.5	0.93	1.06	1.13	13.1
Approach		160	2.7	160	2.7	0.393	18.8	LOS C	1.4	10.5	0.66	1.00	0.72	21.3
All Vehicles		1512	4.7	1512	4.7	0.393	2.9	NA	1.4	10.5	0.10	0.19	0.11	51.0

MOVEMENT SUMMARY

Site: [Heath Rd & Crossover 1 - 2026 - AM (Site Folder: 2026)]

Network: N101 [AM (Network Folder: 2026)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total HV] veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Crossover 1														
1	L2	9	2.0	9	2.0	0.048	0.5	LOS A	0.2	1.2	0.32	0.29	0.32	17.4
3	R2	39	2.0	39	2.0	0.048	1.9	LOS A	0.2	1.2	0.32	0.29	0.32	17.4
Approach		48	2.0	48	2.0	0.048	1.6	LOS A	0.2	1.2	0.32	0.29	0.32	17.4
East: Heath Rd														
4	L2	28	2.0	28	2.0	0.103	2.7	LOS A	0.0	0.0	0.00	0.08	0.00	36.2
5	T1	165	2.0	165	2.0	0.103	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	42.9
Approach		194	2.0	194	2.0	0.103	0.4	NA	0.0	0.0	0.00	0.08	0.00	40.6
West: Heath Rd														
11	T1	121	2.0	121	2.0	0.078	0.1	LOS A	0.1	1.1	0.10	0.07	0.10	39.8
12	R2	20	2.0	20	2.0	0.078	3.0	LOS A	0.1	1.1	0.10	0.07	0.10	29.1
Approach		141	2.0	141	2.0	0.078	0.6	NA	0.1	1.1	0.10	0.07	0.10	35.8
All Vehicles		383	2.0	383	2.0	0.103	0.6	NA	0.2	1.2	0.08	0.10	0.08	31.4

MOVEMENT SUMMARY

Site: [Heath Rd & Crossover 2 - 2026 - AM (Site Folder: 2026)]

Network: N101 [AM (Network Folder: 2026)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total HV] veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Crossover 2														
1	L2	9	2.0	9	2.0	0.046	0.4	LOS A	0.2	1.2	0.29	0.26	0.29	36.2
3	R2	39	2.0	39	2.0	0.046	1.7	LOS A	0.2	1.2	0.29	0.26	0.29	17.5
Approach		48	2.0	48	2.0	0.046	1.4	LOS A	0.2	1.2	0.29	0.26	0.29	24.9
East: Heath Rd														
4	L2	28	2.0	28	2.0	0.093	2.6	LOS A	0.0	0.0	0.00	0.08	0.00	35.8
5	T1	146	2.0	146	2.0	0.093	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.0
Approach		175	2.0	175	2.0	0.093	0.4	NA	0.0	0.0	0.00	0.08	0.00	48.2
West: Heath Rd														
11	T1	101	2.0	101	2.0	0.067	0.1	LOS A	0.1	1.0	0.11	0.09	0.11	47.3
12	R2	20	2.0	20	2.0	0.067	5.2	LOS A	0.1	1.0	0.11	0.09	0.11	41.8
Approach		121	2.0	121	2.0	0.067	1.0	NA	0.1	1.0	0.11	0.09	0.11	46.2
All Vehicles		344	2.0	344	2.0	0.093	0.8	NA	0.2	1.2	0.08	0.11	0.08	44.8

MOVEMENT SUMMARY

 Site: [Canning Rd & Heath Rd - 2026 - PM (Site Folder: 2026)]  Network: N101 [PM (Network Folder: 2026)]

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total HV]	[%]				[Veh. veh]	[Dist m]				
South: Canning Rd														
7	L2	80	1.4	80	1.4	0.340	5.6	LOS A	0.0	0.0	0.00	0.08	0.00	56.2
8	T1	544	5.4	544	5.4	0.340	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	57.6
Approach		624	4.9	624	4.9	0.340	0.8	NA	0.0	0.0	0.00	0.08	0.00	57.5
North: Canning Rd														
2	T1	569	4.7	569	4.7	0.307	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	94	8.9	94	8.9	0.113	9.0	LOS A	0.5	3.7	0.59	0.78	0.59	30.1
Approach		663	5.3	663	5.3	0.307	1.3	NA	0.5	3.7	0.08	0.11	0.08	56.0
West: Heath Rd														
4	L2	134	1.6	134	1.6	0.180	8.6	LOS A	0.7	5.2	0.56	0.99	0.56	31.1
6	R2	56	5.4	56	5.4	0.423	41.0	LOS E	1.5	11.8	0.92	1.07	1.17	13.8
Approach		189	2.7	189	2.7	0.423	18.1	LOS C	1.5	11.8	0.67	1.01	0.74	21.8
All Vehicles		1477	4.8	1477	4.8	0.423	3.2	NA	1.5	11.8	0.12	0.21	0.13	50.2

MOVEMENT SUMMARY

 Site: [Heath Rd & Crossover 1 - 2026 - PM (Site Folder: 2026)]  Network: N101 [PM (Network Folder: 2026)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total HV]	[%]				[Veh. veh]	[Dist m]				
South: Crossover 1														
1	L2	7	2.0	7	2.0	0.037	0.5	LOS A	0.1	0.9	0.31	0.28	0.31	17.4
3	R2	29	2.0	29	2.0	0.037	1.9	LOS A	0.1	0.9	0.31	0.28	0.31	17.4
Approach		37	2.0	37	2.0	0.037	1.6	LOS A	0.1	0.9	0.31	0.28	0.31	17.4
East: Heath Rd														
4	L2	22	2.0	22	2.0	0.093	2.7	LOS A	0.0	0.0	0.00	0.07	0.00	36.4
5	T1	153	2.0	153	2.0	0.093	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	43.7
Approach		175	2.0	175	2.0	0.093	0.3	NA	0.0	0.0	0.00	0.07	0.00	41.5
West: Heath Rd														
11	T1	160	2.0	160	2.0	0.095	0.1	LOS A	0.1	0.8	0.06	0.04	0.06	43.5
12	R2	15	2.0	15	2.0	0.095	3.0	LOS A	0.1	0.8	0.06	0.04	0.06	29.8
Approach		175	2.0	175	2.0	0.095	0.3	NA	0.1	0.8	0.06	0.04	0.06	39.9
All Vehicles		386	2.0	386	2.0	0.095	0.5	NA	0.1	0.9	0.06	0.08	0.06	33.9

MOVEMENT SUMMARY

Site: [Heath Rd & Crossover 2 - 2026 - PM (Site Folder: 2026)]

Network: N101 [PM (Network Folder: 2026)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %	v/c	sec		[Veh. veh	Dist m				km/h
South: Crossover 2														
1	L2	7	2.0	7	2.0	0.036	0.4	LOS A	0.1	0.9	0.30	0.26	0.30	36.2
3	R2	29	2.0	29	2.0	0.036	1.8	LOS A	0.1	0.9	0.30	0.26	0.30	17.5
Approach		37	2.0	37	2.0	0.036	1.5	LOS A	0.1	0.9	0.30	0.26	0.30	25.0
East: Heath Rd														
4	L2	22	2.0	22	2.0	0.085	2.6	LOS A	0.0	0.0	0.00	0.07	0.00	36.1
5	T1	138	2.0	138	2.0	0.085	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	49.2
Approach		160	2.0	160	2.0	0.085	0.4	NA	0.0	0.0	0.00	0.07	0.00	48.5
West: Heath Rd														
11	T1	145	2.0	145	2.0	0.087	0.1	LOS A	0.1	0.8	0.06	0.05	0.06	48.4
12	R2	15	2.0	15	2.0	0.087	5.1	LOS A	0.1	0.8	0.06	0.05	0.06	42.6
Approach		160	2.0	160	2.0	0.087	0.5	NA	0.1	0.8	0.06	0.05	0.06	47.7
All Vehicles		357	2.0	357	2.0	0.087	0.6	NA	0.1	0.9	0.06	0.08	0.06	46.2

MOVEMENT SUMMARY

Site: [Canning Rd & Heath Rd - 2026 - Sat (Site Folder: 2026)]

Network: N101 [Sat (Network Folder: 2026)]

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %	v/c	sec		[Veh. veh	Dist m				km/h
South: Canning Rd														
7	L2	101	1.4	101	1.4	0.322	5.6	LOS A	0.0	0.0	0.00	0.10	0.00	55.1
8	T1	489	5.4	489	5.4	0.322	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	57.0
Approach		591	4.7	591	4.7	0.322	1.0	NA	0.0	0.0	0.00	0.10	0.00	56.8
North: Canning Rd														
2	T1	611	4.7	611	4.7	0.329	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
3	R2	106	8.9	106	8.9	0.122	8.7	LOS A	0.5	4.0	0.58	0.77	0.58	30.6
Approach		717	5.4	717	5.4	0.329	1.3	NA	0.5	4.0	0.09	0.11	0.09	55.9
West: Heath Rd														
4	L2	143	1.6	143	1.6	0.177	8.1	LOS A	0.7	5.2	0.54	0.97	0.54	31.8
6	R2	54	5.4	54	5.4	0.420	42.0	LOS E	1.5	11.6	0.93	1.07	1.16	13.5
Approach		197	2.7	197	2.7	0.420	17.3	LOS C	1.5	11.6	0.64	1.00	0.71	22.3
All Vehicles		1504	4.7	1504	4.7	0.420	3.3	NA	1.5	11.6	0.12	0.22	0.13	49.9

MOVEMENT SUMMARY

Site: [Heath Rd & Crossover 1 - 2026 - Sat (Site Folder: 2026)]

Network: N101 [Sat (Network Folder: 2026)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %	v/c	sec		[Veh. veh	Dist m				km/h
South: Crossover 1														
1	L2	13	2.0	13	2.0	0.065	0.5	LOS A	0.2	1.6	0.34	0.31	0.34	17.2
3	R2	51	2.0	51	2.0	0.065	2.1	LOS A	0.2	1.6	0.34	0.31	0.34	17.2
Approach		63	2.0	63	2.0	0.065	1.8	LOS A	0.2	1.6	0.34	0.31	0.34	17.2
East: Heath Rd														
4	L2	38	2.0	38	2.0	0.111	2.7	LOS A	0.0	0.0	0.00	0.09	0.00	35.8
5	T1	171	2.0	171	2.0	0.111	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	41.5
Approach		208	2.0	208	2.0	0.111	0.5	NA	0.0	0.0	0.00	0.09	0.00	39.3
West: Heath Rd														
11	T1	146	2.0	146	2.0	0.095	0.2	LOS A	0.2	1.4	0.11	0.08	0.11	39.2
12	R2	25	2.0	25	2.0	0.095	3.1	LOS A	0.2	1.4	0.11	0.08	0.11	29.0
Approach		172	2.0	172	2.0	0.095	0.6	NA	0.2	1.4	0.11	0.08	0.11	35.3
All Vehicles		443	2.0	443	2.0	0.111	0.7	NA	0.2	1.6	0.09	0.12	0.09	30.2

MOVEMENT SUMMARY

Site: [Heath Rd & Crossover 2 - 2026 - Sat (Site Folder: 2026)]

Network: N101 [Sat (Network Folder: 2026)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %	v/c	sec		[Veh. veh	Dist m				km/h
South: Crossover 2														
1	L2	13	2.0	13	2.0	0.062	0.5	LOS A	0.2	1.6	0.31	0.28	0.31	36.1
3	R2	51	2.0	51	2.0	0.062	1.8	LOS A	0.2	1.6	0.31	0.28	0.31	17.5
Approach		63	2.0	63	2.0	0.062	1.6	LOS A	0.2	1.6	0.31	0.28	0.31	25.0
East: Heath Rd														
4	L2	38	2.0	38	2.0	0.098	2.6	LOS A	0.0	0.0	0.00	0.11	0.00	35.4
5	T1	145	2.0	145	2.0	0.098	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	48.8
Approach		183	2.0	183	2.0	0.098	0.5	NA	0.0	0.0	0.00	0.11	0.00	47.7
West: Heath Rd														
11	T1	121	2.0	121	2.0	0.081	0.2	LOS A	0.2	1.3	0.12	0.10	0.12	47.1
12	R2	25	2.0	25	2.0	0.081	5.2	LOS A	0.2	1.3	0.12	0.10	0.12	41.7
Approach		146	2.0	146	2.0	0.081	1.0	NA	0.2	1.3	0.12	0.10	0.12	46.0
All Vehicles		393	2.0	393	2.0	0.098	0.9	NA	0.2	1.6	0.09	0.13	0.09	44.0

MOVEMENT SUMMARY

 Site: [Canning Rd & Heath Rd - 2036 - AM (Site Folder: 2036)]

 Network: N101 [AM (Network Folder: 2036)]

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total HV] veh/h	%				[Veh. veh	Dist] m				
South: Canning Rd														
7	L2	117	1.4	117	1.4	0.422	5.6	LOS A	0.0	0.0	0.00	0.09	0.00	55.6
8	T1	658	5.4	658	5.4	0.422	0.1	LOS A	0.0	0.0	0.00	0.09	0.00	57.2
Approach		775	4.8	775	4.8	0.422	0.9	NA	0.0	0.0	0.00	0.09	0.00	57.0
North: Canning Rd														
2	T1	757	4.7	757	4.7	0.407	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	77	8.9	77	8.9	0.120	10.5	LOS B	0.5	3.7	0.66	0.86	0.66	27.6
Approach		834	5.1	834	5.1	0.407	1.0	NA	0.5	3.7	0.06	0.08	0.06	56.8
West: Heath Rd														
4	L2	114	1.6	114	1.6	0.184	9.8	LOS A	0.7	5.1	0.62	1.01	0.62	29.4
6	R2	46	5.4	46	5.4	0.749	122.5	LOS F	2.8	21.6	0.98	1.16	1.56	5.6
Approach		160	2.7	160	2.7	0.749	42.4	LOS E	2.8	21.6	0.72	1.05	0.89	12.1
All Vehicles		1768	4.8	1768	4.8	0.749	4.7	NA	2.8	21.6	0.09	0.17	0.11	47.2

MOVEMENT SUMMARY

 Site: [Heath Rd & Crossover 1 - 2036 - AM (Site Folder: 2036)]

 Network: N101 [AM (Network Folder: 2036)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total HV] veh/h	%				[Veh. veh	Dist] m				
South: Crossover 1														
1	L2	9	2.0	9	2.0	0.050	0.5	LOS A	0.2	1.2	0.32	0.29	0.32	17.4
3	R2	39	2.0	39	2.0	0.050	1.9	LOS A	0.2	1.2	0.32	0.29	0.32	17.4
Approach		48	2.0	48	2.0	0.050	1.6	LOS A	0.2	1.2	0.32	0.29	0.32	17.4
East: Heath Rd														
4	L2	28	2.0	28	2.0	0.103	2.7	LOS A	0.0	0.0	0.00	0.08	0.00	36.2
5	T1	165	2.0	165	2.0	0.103	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	42.9
Approach		194	2.0	194	2.0	0.103	0.4	NA	0.0	0.0	0.00	0.08	0.00	40.6
West: Heath Rd														
11	T1	121	2.0	121	2.0	0.081	0.1	LOS A	0.1	1.1	0.10	0.07	0.10	39.8
12	R2	20	2.0	20	2.0	0.081	3.0	LOS A	0.1	1.1	0.10	0.07	0.10	29.1
Approach		141	2.0	141	2.0	0.081	0.6	NA	0.1	1.1	0.10	0.07	0.10	35.8
All Vehicles		383	2.0	383	2.0	0.103	0.6	NA	0.2	1.2	0.08	0.10	0.08	31.4

MOVEMENT SUMMARY

Site: [Heath Rd & Crossover 2 - 2036 - AM (Site Folder: 2036)]

Network: N101 [AM (Network Folder: 2036)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total HV] veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Crossover 2														
1	L2	9	2.0	9	2.0	0.046	0.4	LOS A	0.2	1.2	0.29	0.26	0.29	36.2
3	R2	39	2.0	39	2.0	0.046	1.7	LOS A	0.2	1.2	0.29	0.26	0.29	17.5
Approach		48	2.0	48	2.0	0.046	1.4	LOS A	0.2	1.2	0.29	0.26	0.29	24.9
East: Heath Rd														
4	L2	28	2.0	28	2.0	0.093	2.6	LOS A	0.0	0.0	0.00	0.08	0.00	35.8
5	T1	146	2.0	146	2.0	0.093	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.0
Approach		175	2.0	175	2.0	0.093	0.4	NA	0.0	0.0	0.00	0.08	0.00	48.2
West: Heath Rd														
11	T1	101	2.0	101	2.0	0.067	0.1	LOS A	0.1	1.0	0.11	0.09	0.11	47.3
12	R2	20	2.0	20	2.0	0.067	5.2	LOS A	0.1	1.0	0.11	0.09	0.11	41.8
Approach		121	2.0	121	2.0	0.067	1.0	NA	0.1	1.0	0.11	0.09	0.11	46.2
All Vehicles		344	2.0	344	2.0	0.093	0.8	NA	0.2	1.2	0.08	0.11	0.08	44.8

MOVEMENT SUMMARY

Site: [Canning Rd & Heath Rd - 2036 - PM (Site Folder: 2036)] Network: N101 [PM (Network Folder: 2036)]

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total HV] veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Canning Rd														
7	L2	80	1.4	80	1.4	0.407	5.6	LOS A	0.0	0.0	0.00	0.06	0.00	56.7
8	T1	667	5.4	667	5.4	0.407	0.1	LOS A	0.0	0.0	0.00	0.06	0.00	57.9
Approach		747	5.0	747	5.0	0.407	0.6	NA	0.0	0.0	0.00	0.06	0.00	57.8
North: Canning Rd														
2	T1	693	4.7	693	4.7	0.373	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	94	8.9	94	8.9	0.139	10.3	LOS B	0.5	4.4	0.64	0.85	0.64	28.0
Approach		786	5.2	786	5.2	0.373	1.3	NA	0.5	4.4	0.08	0.10	0.08	56.1
West: Heath Rd														
4	L2	134	1.6	134	1.6	0.220	10.1	LOS B	0.8	6.3	0.63	1.01	0.65	29.0
6	R2	56	5.4	56	5.4	0.764	108.3	LOS F	3.0	23.5	0.98	1.19	1.65	6.2
Approach		189	2.7	189	2.7	0.764	39.0	LOS E	3.0	23.5	0.74	1.06	0.95	13.0
All Vehicles		1723	4.8	1723	4.8	0.764	5.1	NA	3.0	23.5	0.12	0.19	0.14	46.2

MOVEMENT SUMMARY

Site: [Heath Rd & Crossover 1 - 2036 - PM (Site Folder: 2036)]

Network: N101 [PM (Network Folder: 2036)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total HV] veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Crossover 1														
1	L2	7	2.0	7	2.0	0.039	0.5	LOS A	0.1	0.9	0.31	0.28	0.31	17.4
3	R2	29	2.0	29	2.0	0.039	1.9	LOS A	0.1	0.9	0.31	0.28	0.31	17.4
Approach		37	2.0	37	2.0	0.039	1.6	LOS A	0.1	0.9	0.31	0.28	0.31	17.4
East: Heath Rd														
4	L2	22	2.0	22	2.0	0.093	2.7	LOS A	0.0	0.0	0.00	0.07	0.00	36.4
5	T1	153	2.0	153	2.0	0.093	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	43.7
Approach		175	2.0	175	2.0	0.093	0.3	NA	0.0	0.0	0.00	0.07	0.00	41.5
West: Heath Rd														
11	T1	160	2.0	160	2.0	0.101	0.1	LOS A	0.1	0.8	0.06	0.04	0.06	43.5
12	R2	15	2.0	15	2.0	0.101	3.0	LOS A	0.1	0.8	0.06	0.04	0.06	29.8
Approach		175	2.0	175	2.0	0.101	0.3	NA	0.1	0.8	0.06	0.04	0.06	39.9
All Vehicles		386	2.0	386	2.0	0.101	0.5	NA	0.1	0.9	0.06	0.08	0.06	33.9

MOVEMENT SUMMARY

Site: [Heath Rd & Crossover 2 - 2036 - PM (Site Folder: 2036)]

Network: N101 [PM (Network Folder: 2036)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total HV] veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Crossover 2														
1	L2	7	2.0	7	2.0	0.036	0.4	LOS A	0.1	0.9	0.30	0.26	0.30	36.2
3	R2	29	2.0	29	2.0	0.036	1.8	LOS A	0.1	0.9	0.30	0.26	0.30	17.5
Approach		37	2.0	37	2.0	0.036	1.5	LOS A	0.1	0.9	0.30	0.26	0.30	25.0
East: Heath Rd														
4	L2	22	2.0	22	2.0	0.085	2.6	LOS A	0.0	0.0	0.00	0.07	0.00	36.1
5	T1	138	2.0	138	2.0	0.085	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	49.2
Approach		160	2.0	160	2.0	0.085	0.4	NA	0.0	0.0	0.00	0.07	0.00	48.5
West: Heath Rd														
11	T1	145	2.0	145	2.0	0.087	0.1	LOS A	0.1	0.8	0.06	0.05	0.06	48.4
12	R2	15	2.0	15	2.0	0.087	5.1	LOS A	0.1	0.8	0.06	0.05	0.06	42.6
Approach		160	2.0	160	2.0	0.087	0.5	NA	0.1	0.8	0.06	0.05	0.06	47.7
All Vehicles		357	2.0	357	2.0	0.087	0.6	NA	0.1	0.9	0.06	0.08	0.06	46.2

MOVEMENT SUMMARY

 Site: [Canning Rd & Heath Rd - 2036 - Sat (Site Folder: 2036)]

 Network: N101 [Sat (Network Folder: 2036)]

Site Category: (None)
Stop (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total HV] veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Canning Rd														
7	L2	101	1.4	101	1.4	0.384	5.6	LOS A	0.0	0.0	0.00	0.09	0.00	55.8
8	T1	603	5.4	603	5.4	0.384	0.1	LOS A	0.0	0.0	0.00	0.09	0.00	57.3
Approach		704	4.8	704	4.8	0.384	0.8	NA	0.0	0.0	0.00	0.09	0.00	57.2
North: Canning Rd														
2	T1	741	4.7	741	4.7	0.399	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
3	R2	106	8.9	106	8.9	0.146	9.8	LOS A	0.6	4.7	0.63	0.84	0.63	28.7
Approach		847	5.3	847	5.3	0.399	1.3	NA	0.6	4.7	0.08	0.11	0.08	56.0
West: Heath Rd														
4	L2	143	1.6	143	1.6	0.212	9.3	LOS A	0.8	6.1	0.59	1.01	0.59	30.2
6	R2	54	5.4	54	5.4	0.766	112.6	LOS F	3.0	23.3	0.98	1.18	1.64	6.0
Approach		197	2.7	197	2.7	0.766	37.4	LOS E	3.0	23.3	0.70	1.05	0.88	13.3
All Vehicles		1748	4.8	1748	4.8	0.766	5.2	NA	3.0	23.3	0.12	0.20	0.14	46.0

MOVEMENT SUMMARY

 Site: [Heath Rd & Crossover 1 - 2036 - Sat (Site Folder: 2036)]

 Network: N101 [Sat (Network Folder: 2036)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total HV] veh/h	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Crossover 1														
1	L2	13	2.0	13	2.0	0.068	0.5	LOS A	0.2	1.6	0.34	0.31	0.34	17.2
3	R2	51	2.0	51	2.0	0.068	2.1	LOS A	0.2	1.6	0.34	0.31	0.34	17.2
Approach		63	2.0	63	2.0	0.068	1.8	LOS A	0.2	1.6	0.34	0.31	0.34	17.2
East: Heath Rd														
4	L2	38	2.0	38	2.0	0.111	2.7	LOS A	0.0	0.0	0.00	0.09	0.00	35.8
5	T1	171	2.0	171	2.0	0.111	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	41.5
Approach		208	2.0	208	2.0	0.111	0.5	NA	0.0	0.0	0.00	0.09	0.00	39.3
West: Heath Rd														
11	T1	146	2.0	146	2.0	0.101	0.2	LOS A	0.2	1.4	0.11	0.08	0.11	39.2
12	R2	25	2.0	25	2.0	0.101	3.1	LOS A	0.2	1.4	0.11	0.08	0.11	29.0
Approach		172	2.0	172	2.0	0.101	0.6	NA	0.2	1.4	0.11	0.08	0.11	35.3
All Vehicles		443	2.0	443	2.0	0.111	0.7	NA	0.2	1.6	0.09	0.12	0.09	30.2

MOVEMENT SUMMARY

Site: [Heath Rd & Crossover 2 - 2036 - Sat (Site Folder: 2036)]

Network: N101 [Sat (Network Folder: 2036)]

Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %	v/c	sec		[Veh. veh	Dist m				km/h
South: Crossover 2														
1	L2	13	2.0	13	2.0	0.062	0.5	LOS A	0.2	1.6	0.31	0.28	0.31	36.1
3	R2	51	2.0	51	2.0	0.062	1.8	LOS A	0.2	1.6	0.31	0.28	0.31	17.5
Approach		63	2.0	63	2.0	0.062	1.6	LOS A	0.2	1.6	0.31	0.28	0.31	25.0
East: Heath Rd														
4	L2	38	2.0	38	2.0	0.098	2.6	LOS A	0.0	0.0	0.00	0.11	0.00	35.4
5	T1	145	2.0	145	2.0	0.098	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	48.8
Approach		183	2.0	183	2.0	0.098	0.5	NA	0.0	0.0	0.00	0.11	0.00	47.7
West: Heath Rd														
11	T1	121	2.0	121	2.0	0.081	0.2	LOS A	0.2	1.3	0.12	0.10	0.12	47.1
12	R2	25	2.0	25	2.0	0.081	5.2	LOS A	0.2	1.3	0.12	0.10	0.12	41.7
Approach		146	2.0	146	2.0	0.081	1.0	NA	0.2	1.3	0.12	0.10	0.12	46.0
All Vehicles		393	2.0	393	2.0	0.098	0.9	NA	0.2	1.6	0.09	0.13	0.09	44.0