

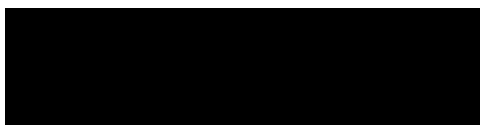
16-18 UPPER STREET, NORTH TAMWORTH

PROPOSED CHILDCARE CENTRE DEVELOPMENT

**TRAFFIC & PARKING
IMPACT ASSESSMENT**

APRIL 2023

***HEMANOTE CONSULTANTS PTY LTD
TRAFFIC ENGINEERING & DESIGN CONSULTANTS***



TRAFFIC & PARKING IMPACT ASSESSMENT
16-18 UPPER STREET, NORTH TAMWORTH
PROPOSED CHILDCARE CENTRE DEVELOPMENT
DATE: 24 APRIL 2023

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Document Management

Traffic & Parking Assessment – 16-18 Upper Street, North Tamworth

Doc. Revision	Prepared by	Reviewed by	Issued by	Issued date
Draft 1 (internally)	S. Payet	R. Selim	S. Payet	10 March 2023
Draft 2 (internally)	S. Payet	R. Selim	S. Payet	13 April 2023
Final Draft (internally)	S. Payet	R. Selim	S. Payet	24 April 2023
Final report (to client)	S. Payet	R. Selim	R. Selim	01 May 2023

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1 INTRODUCTION

This report has been prepared by Hemanote Consultants to assess the traffic and parking implications of the proposed childcare centre to be located at **16-18 Upper Street, North Tamworth**, accommodating up to 120 children places between the ages of 0 to 5 years old.

This report is to be read in conjunction with the architectural plans prepared by Baini Design (reduced copy of the plans is attached in Appendix 'A' of this report) and submitted to Tamworth Regional Council as part of a Development Application.

This report is set as follows:

- *Section 2:* Description of the existing site location and its use;
- *Section 3:* Description of existing traffic conditions near the subject site;
- *Section 4:* Description of the proposal, vehicular access, on-site parking provision, layout and circulation;
- *Section 5:* Assessment of impacts on parking;
- *Section 6:* Assessment of impacts on traffic in the vicinity of the subject site; and
- *Section 7:* Outlines conclusions.

2 EXISTING SITE DESCRIPTION

➤ *Site Location*

The subject site is located on the north eastern side of Upper Street at properties No. 16-18 (legally known as Lot B of DP356592 and Lot 5A of DP366364), within the suburb of North Tamworth. The site has a frontage of 41 metres to Upper Street from the south-west. Refer to Figure 1 for a site locality map.

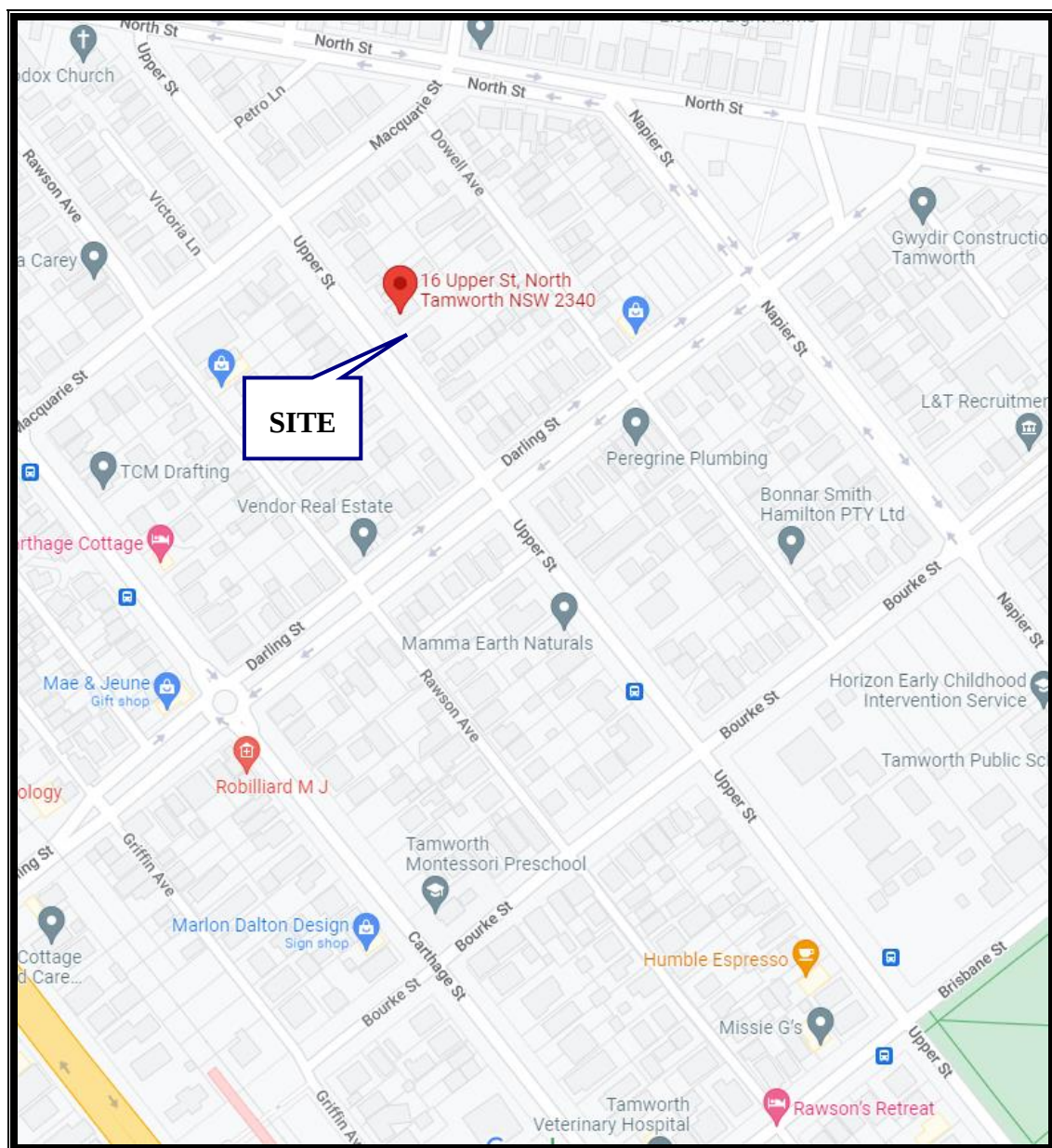


Figure 1: Site Locality Map

➤ ***Existing Site & Surrounding Land Use***

The subject site has an area of 2,065.4m² and is currently occupied by two residential dwellings. It is located in a mainly residential area, characterised by residential dwellings, as well as some nearby retail and commercial sites. The site is located approximately 900 metres from Tamworth Railway Station.

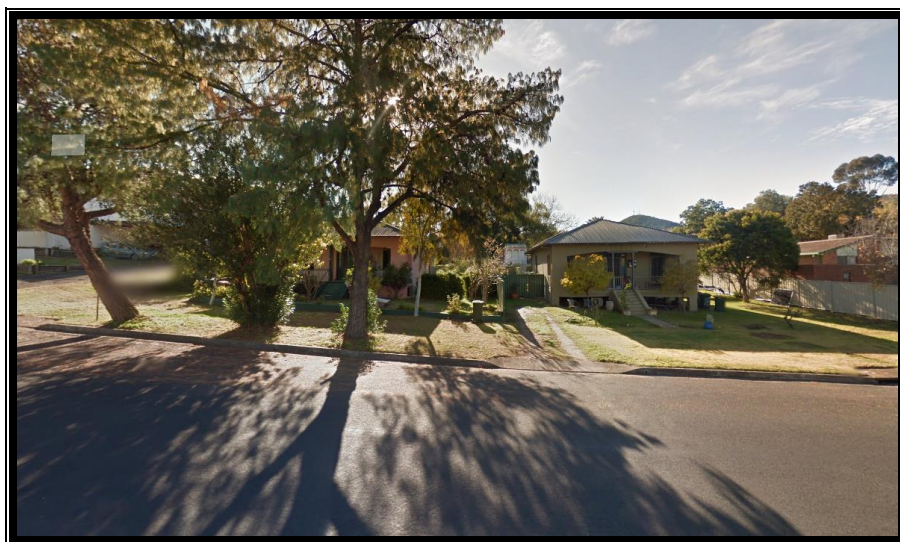


Photo 1: Site frontage to Upper Street

3 EXISTING TRAFFIC CONDITIONS

3.1 Road Network and Classification

Upper Street is a local road that runs in a north-west to south-east direction, between North Street (local road) to the north-west and its cul-de-sac end to the south-east. Upper Street intersects with a number of local roads in the vicinity of the subject site including Macquarie Street and Darling Street.

3.2 Road Description and Traffic Control

Upper Street has a two-way undivided carriageway with a width between kerbs of approximately 17 metres. This carriageway generally provides one travel lane per direction, with kerbside parking available on both sides of the road. At present, unrestricted parking is permitted on both sides of Upper Street in the immediate vicinity of the subject site.

The legal speed limit on Upper Street is signposted at 50km/h, with 40km/h School Zone during morning and afternoon school peak periods. Upper Street intersects with Macquarie Street near the subject site and is controlled by the signposted 'STOP', with priority given to traffic travelling along Upper Street. It also intersects with Darling Street and is controlled by the signposted 'Give Way', with priority given to traffic travelling along Darling Street.



Figure 2: Aerial photograph of the subject site and surrounding road network



Photo 2: Upper Street at the subject site – facing north-west



Photo 3: Upper Street at the subject site – facing south-east

3.3 Current Traffic Flows

A traffic volume count was undertaken by Hemanote Consultants at the cross-intersections of Upper Street / Macquarie Street and Upper Street / Darling Street near the subject site on Wednesday 15 March 2023, during morning period (7.00am to 10.00am) and afternoon period (3.00pm to 6.00pm), considering traffic peak periods.

The current traffic flows in the morning & afternoon peak hours are shown in Tables 1 and 2 below.

Traffic movement	Morning Peak Hour (Vehicles Per Hour)	Evening Peak Hour (Vehicles Per Hour)
	7.45am – 8.45am	3.30pm – 4.30pm
Upper Street (North of Macquarie Street)		
Northbound	104	172
Southbound	148	105
Upper Street (South of Macquarie Street)		
Northbound	104	159
Southbound	152	111
Macquarie Street (East of Upper Street)		
Eastbound	75	75
Westbound	76	74
Macquarie Street (West of Upper Street)		
Eastbound	81	80
Westbound	78	60

Table 1: Current Peak traffic flows in the vicinity of the subject site (on a typical weekday)

Traffic movement	Morning Peak Hour (Vehicles Per Hour)	Evening Peak Hour (Vehicles Per Hour)
	7.45am – 8.45am	3.30pm – 4.30pm
Upper Street (North of Darling Street)		
Northbound	107	123
Southbound	161	114
Upper Street (South of Darling Street)		
Northbound	79	159
Southbound	134	81
Darling Street (East of Upper Street)		
Eastbound	121	238
Westbound	222	137
Darling Street (West of Upper Street)		
Eastbound	145	241
Westbound	245	209

Table 2: Current Peak traffic flows in the vicinity of the subject site (on a typical weekday)

The results of the traffic volume counts undertaken determined that the traffic morning peak period for the intersections of Upper Street / Macquarie Street and Upper Street / Darling Street was between 7.45am to 8.45am and the afternoon peak period was between 3.30pm to 4.30pm on a typical weekday.

The existing traffic flows on Upper Street, Macquarie Street and Darling Street, are typical for local roads, in a mainly residential area, where traffic is generally free flowing without major queuing or delays near the subject site in peak hours, with spare capacity.

It is determined that the existing mid-block level of service on Upper Street and Macquarie Street are at level 'A', in accordance with Table 4.4 of the Roads & Maritime Services' *"Guide to Traffic Generating Developments – 2002"* (shown on the following page).

It is also determined that the existing mid-block level of service on Darling Street ranges between levels 'A' and 'B'.

Level of Service	One Lane (veh/hr)	Two Lanes (veh/hr)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

Table 4.4: Urban road peak hour flows per direction RMS Guide)

➤ **Current Intersection Performance**

Average Vehicle Delay (AVD) and Level of Service (LOS) – The AVD and LOS provide a measure of the operational performance of an intersection, as indicated in Table 4.2 of the Roads & Maritime Services “*Guide to Traffic Generating Developments - 2002*” (shown below).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Table 4.2: Level of Service Criteria for intersections (RMS Guide)

A SIDRA intersection performance analysis was undertaken for the existing cross-intersections of Upper Street / Macquarie Street and Upper Street / Darling Street in the vicinity of the subject site (Pre-development).

Refer to Figure 3 on the following page, showing the intersections layout controlled by cross-intersections with associated 'Stop' signage at the intersection of Upper Street / Macquarie Street and 'Give-Way' signage at the intersection of Upper Street / Darling Street. Upper Street, Macquarie Street and Darling Street have undivided carriageways, with one through traffic lane in each direction.

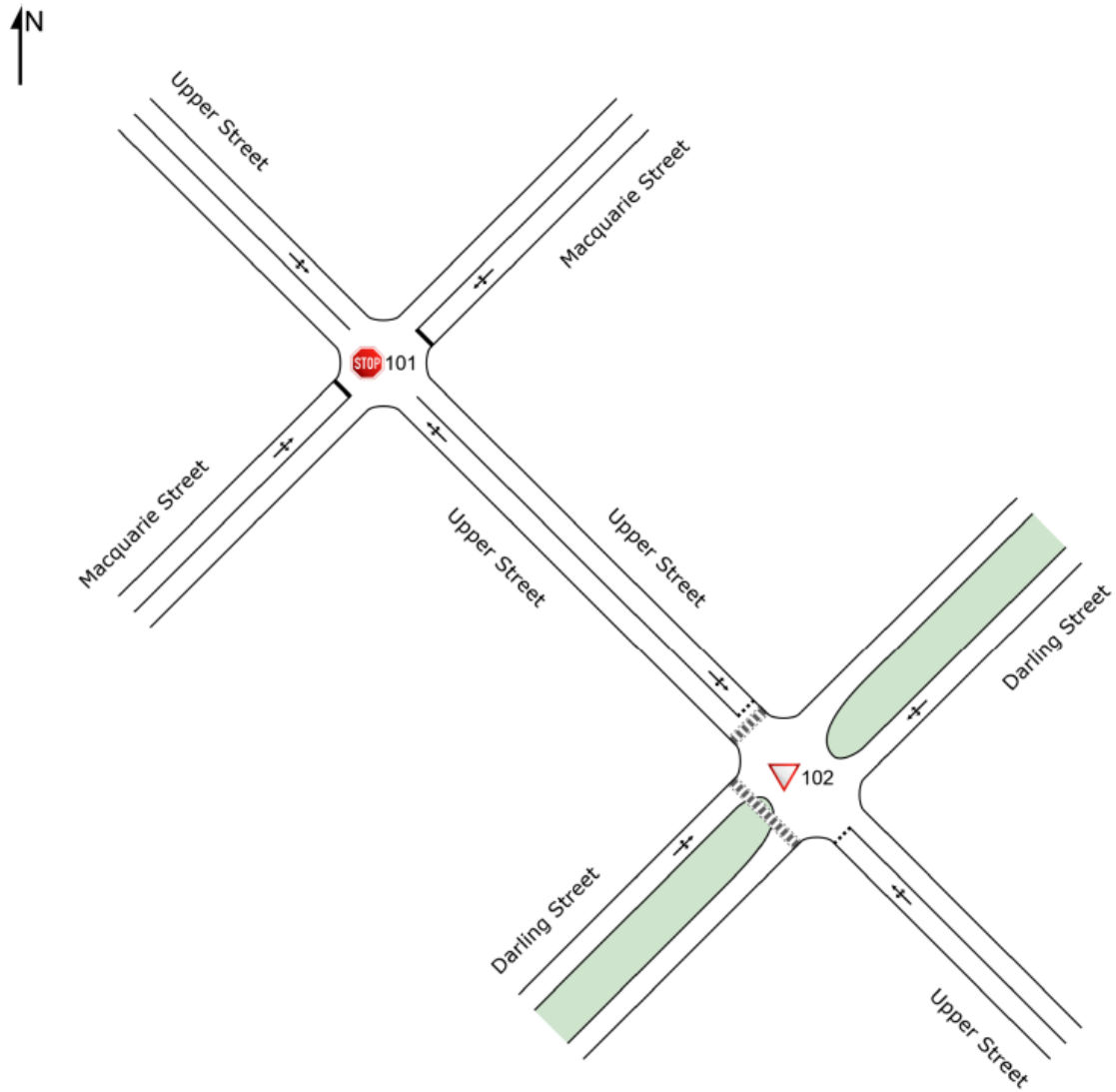


Figure 3: Existing Network Layout

The pre-development SIDRA performance analysis determined that the current operational performance of Upper Street / Macquarie Street and Upper Street / Darling Street at the subject cross-intersections are in good operation at a Level of Service (LOS) 'A', with an average delay of less than 14 seconds per vehicle.

Refer to the summary of the results of the SIDRA intersection performance analysis attached in Appendix 'C' of this report.

3.4 Existing Transportation Services

The subject site has good access to public transport services in the form of trains and buses. The site is located approximately 900 metres from Tamworth Railway Station.

Frequent bus services operate along Upper Street and Carthage Street in close proximity to the subject site (i.e. bus routes 430 and 431).

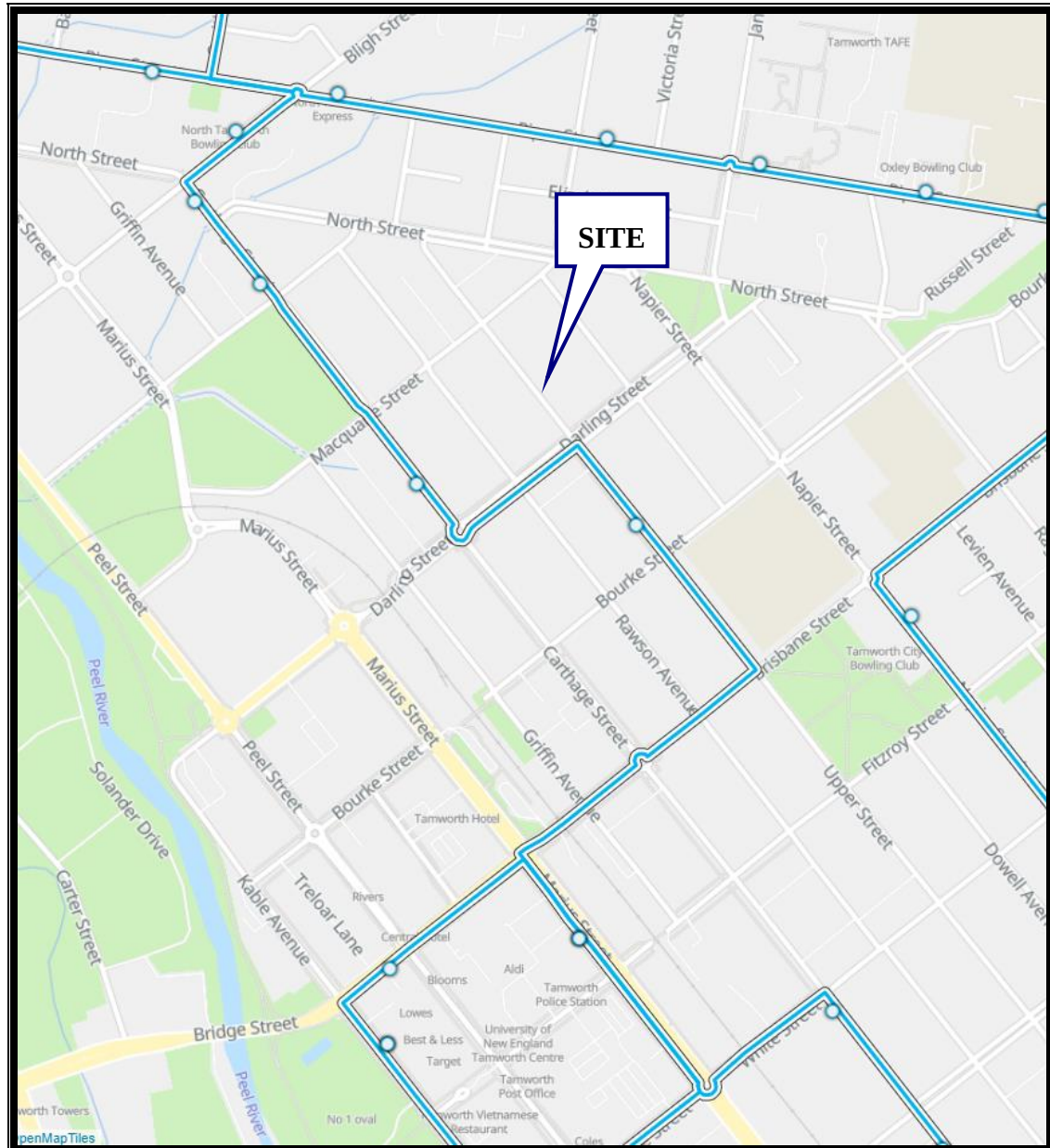


Figure 4: Bus services near the subject site (Bus Routes 431)

4 PROPOSED DEVELOPMENT

4.1 Description of the proposal

The proposed development seeks approval for the demolition of the existing residential dwellings located at **16-18 Upper Street, North Tamworth**, and the construction of a childcare centre accommodating up to 120 children places, with at-grade parking.

The proposed development will include the following:

- Childcare centre accommodating up to one-hundred and twenty (120) children places:
 - 20 children places between the ages of 0 to 2 years old (5 staff members);
 - 40 children places between the ages of 2 to 3 years old (8 staff members);
 - 60 children places between the ages of 3 to 5 years old (6 staff members).
- A total of twenty-four (24) on-site car parking spaces with 17 spaces for staff and 7 spaces for visitors and for drop-off and pick-up of children (including 1 accessible parking space and an adjacent shared area), in addition to one bicycle storage space, at-grade level.
- There will be a maximum of nineteen (19) staff members on-site at any given time. The proposed hours of operation of the centre will be from 7.00am to 6.00pm on weekdays only.

Refer to **Appendix 'A'** for the proposed development plans.

4.2 Vehicular & Pedestrian Access

The vehicular access to and from the off-street parking facilities will be via a new access driveway crossing to be located in Upper Street. The access driveway is to have a width of 5.5 metres, which is adequate for a low volume (Category 1) access driveway in accordance with AS2890.1:2004 – Table 3.2.

The access driveway is to provide two-way vehicular movements, where two vehicles can pass each other at the same time without causing delays or congestion to traffic on the street. The proposed access driveway is located more than 6 metres from the tangent point of the adjacent kerblines, in accordance with Figure 3.1 of AS2890.1:2004.

Vehicular access is to be located and constructed in accordance with the requirements of AS2890.1:2004, where vehicles enter and exit the site in a forward direction at all times.

The existing vehicular crossings located in Upper Street is to be removed and replaced with new kerb, gutter and footpath, to be constructed to Council specifications.

The clear sight line triangle (2.5m x 2m) between the driver's eye view and pedestrians is provided on the exit side of the driveway, as per Figure 3.3 of AS2890.1:2004. A separate pedestrian access gate is also provided at the front of the site, to segregate pedestrians and vehicles and improve safety within the site.

4.3 On-site Parking Provision

Tamworth Regional Development Control Plan 2010, Step 2, requires on-site parking for childcare centres to be provided at a maximum rate of:

- 1 car space per 5 children.

Refer to Table 3 below for the required and proposed car parking provision for the subject development site:

Age Group	0-2 years	2-3 years	3-5 years	Total
Number of Children	20	40	60	120
Staff to children ratio	1 to 4	1 to 5	1 to 10	-
Number of Staff	5	8	6	19
On-site car parking required (24 spaces for staff & parents/visitors)				24
On-site car parking proposed (17 spaces for staff & 7 spaces for parents/visitors)				24
Compliance with on-site car parking				Yes

Table 3: On-site parking requirement and provision

The proposed childcare centre for 120 children places would therefore require a minimum of twenty-four (24) on-site car parking spaces.

The proposed development provides twenty-four (24) on-site car parking spaces with 17 spaces for staff and 7 spaces for visitors and for drop-off and pick-up of children (including 1 accessible parking space and an adjacent shared area), in addition to one (1) bicycle storage space, at-grade level.

Therefore, the proposed on-site parking provision is adequate for the proposed development and in compliance with Council's parking requirements.

4.4 On-site Parking Layout and Circulation

The layout of the on-site car parking area and manoeuvring arrangements has been designed to enhance vehicular and pedestrian access, where vehicles enter and exit the site in a forward direction, through the provision of adequate internal aisle width and turning space.

AS2890.1:2004 Parking facilities Part 1: Off-street car parking requires a minimum parking space width of 2.4 meters (for User Class 1A staff parking) and 2.6 metres (for User Class 3 short-term visitor parking) and a minimum length of 5.4 meters. The proposed off-street car spaces have a minimum width of 2.4 metres (for staff) and a width of 2.6 metres (for visitors) and a length of 5.4 meters each, which is adequate.

The accessible car parking space has a width of 2.4 metres, in addition to an adjacent 2.4 metres wide shared area, which is adequate in accordance with AS2890.6:2009.

Car parking spaces adjacent to walls or obstructions have been made wider than the minimum width, to accommodate full door opening in accordance with Clause 2.4.2(d) of AS2890.1:2004.

Clause 2.4.2 of AS2890.1:2004 requires a minimum aisle width of 5.8 metres for two-way aisles, adjacent to 90° angle parking. The proposed aisle has a minimum width of 7.6 metres, which is adequate for two-way traffic and manoeuvring into and out of parking spaces, as well as undertaking a 3-point turn and exiting the site in a forward direction if all other car parking spaces are occupied.

The ramp to the at-grade parking level has a clear width of 5.5 metres, in addition to a 300mm kerb on either side and has a maximum grade of 1:20 (5%) for the first 6 metres within the site. The maximum grade of the ramp is within the 1:5 (20%) with a change of grade of 1:8 (12.5%) over 2 metres at the bottom of the ramp, which is adequate.

A minimum 2.2 metres headroom clearance is to be provided from the car park level to the underside of all services conduits and suspended stormwater pipelines, in accordance with Clause 5.3.1 of AS2890.1:2004. A "Maximum Headroom Clearance 2.2m" sign is to be erected at the entrance to the car park area and is to be clearly visible to all drivers.

A minimum 2.5 meters headroom clearance is to be provided above the accessible parking space and its adjacent shared zone in accordance with Clause 2.4 of AS2890.6:2009.

A traffic convex mirror is to be installed at the bottom of the vehicular ramp (as shown on the ground floor plan), to provide drivers with further assistance with viewing oncoming traffic, as an additional safety and traffic management measure.

All vehicular manoeuvring within the site has been designed and checked using the B99 and B85 standard design vehicle turning paths from AS2890.1:2004 and Austroads. Refer to the vehicle swept paths diagrams attached in Appendix 'B' of this report.

Therefore, the car parking layout and vehicular circulation are adequate in accordance with AS2890.1:2004 and AS2890.6:2009 where vehicles are to enter and exit the site in a forward direction at all times.

4.5 *Waste Collection*

All waste storage is to take place within the dedicated garbage storage area located in the ground floor. Waste Bins will be transported to the street kerbside for collection on waste collection day.

5 ON-STREET PARKING PROVISION

5.1 Existing Parking Controls

The subject site is located in a mainly residential area, where unrestricted parking is permitted on both sides of Upper Street in the immediate vicinity of the subject site.

5.2 Impacts of Proposed Development on Parking

The parking demand resulting from the proposed childcare centre development can be accommodated within the proposed adequate and compliant on-site car and bicycle parking spaces for staff and visitors. The subject site has good access to existing public transport services.

Therefore, the proposed development will not have adverse impacts on parking in the surrounding area.

6 EXTERNAL TRAFFIC IMPACT

6.1 Estimated Future Traffic Generation

An indication of the potential traffic generation of the proposed development is provided by the *RMS Guide to Traffic Generating Development - 2002*.

The Guide specifies the following traffic generation rates for long-day care centres:

- 0.8 peak period vehicle trips per child between 7.00am and 9.00am; and
- 0.7 peak period vehicle trips per child between 4.00pm and 6.00pm.

Therefore, the proposed development with a total of 120 children places has a total estimated traffic generation as follows:

- **96 morning peak period vehicle trips** (48 In and 48 Out vehicle trips); and
- **84 afternoon peak period vehicle trips** (44 In and 44 Out vehicle trips).

6.2 Projected Intersection Performance

Average Vehicle Delay (AVD) and Level of Service (LOS) – The AVD and LOS provides a measure of the operational performance of an intersection, as indicated in Table 4.2 of the Roads & Maritime Services “*Guide to Traffic Generating Developments - 2002*” (shown below).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

Table 4.2: Level of Service Criteria for intersections (RMS Guide)

A post-development SIDRA intersection performance modelling analysis was undertaken for the cross-intersections of Upper Street / Macquarie Street and Upper Street / Darling Street, in the vicinity of the subject site, in conjunction with the proposed access driveway, and it was modelled as the proposed network as shown in Figure 5 on the following page.

Refer to the summary of the results of the SIDRA intersection performance analysis (undertaken for pre & post development, including the 10-year future growth) attached in Appendix 'C' of this report.

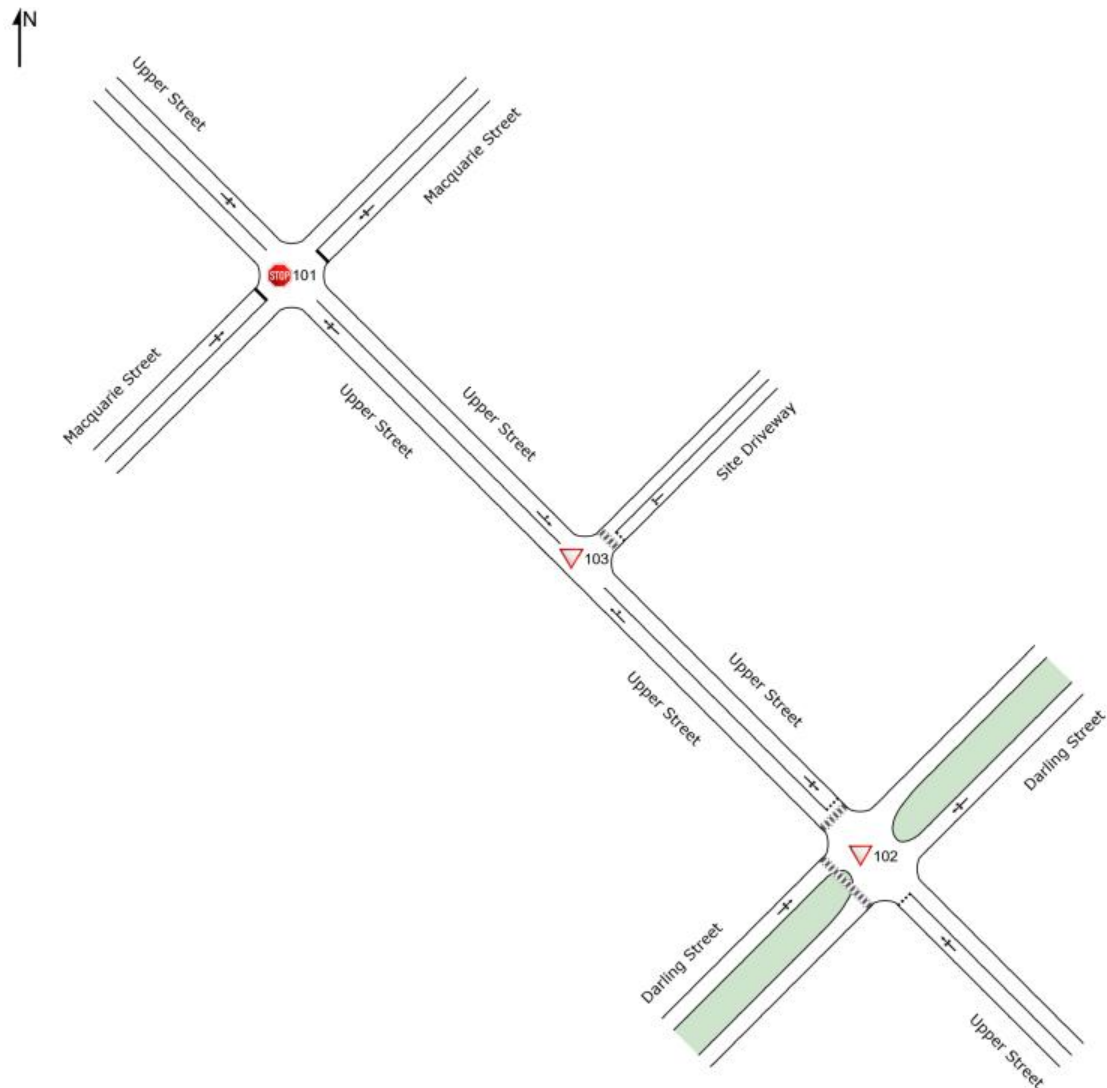


Figure 5: Intersection Network Layout

The following assumptions have been considered and adopted in the SIDRA Network Intersection modelling for the post-development conditions considering that the main access to and from the subject site is through Upper Street:

- Morning and afternoon peak traffic generation from *RMS Guide to Traffic Generating Developments* has been used, as outlined in Section 6.1 of this report.
- AM & PM Traffic generated by the development was equally adopted for inbound and outbound traffic.
- Pre-development network analysis is modelled for the base year (2023) and 10 years of future growth (2033) in surrounding traffic. The annual traffic growth rate for the 10-year future period was based on the SIDRA intersection analysis software, which allows for future analysis in surrounding traffic by applying a uniform growth rate of 2% for each year over the 10-year period.
- Post-development network analysis is modelled for when the Childcare Centre development is in operation and after 10 years of future growth in surrounding traffic.

These assumptions will result in the development trip distribution shown in Figures 6 and 7 for relevant traffic movement and modelled intersections.



TRIP DISTRIBUTION FROM
PROPOSED DEVELOPMENT
AM PEAK: 7.45AM - 8.45AM

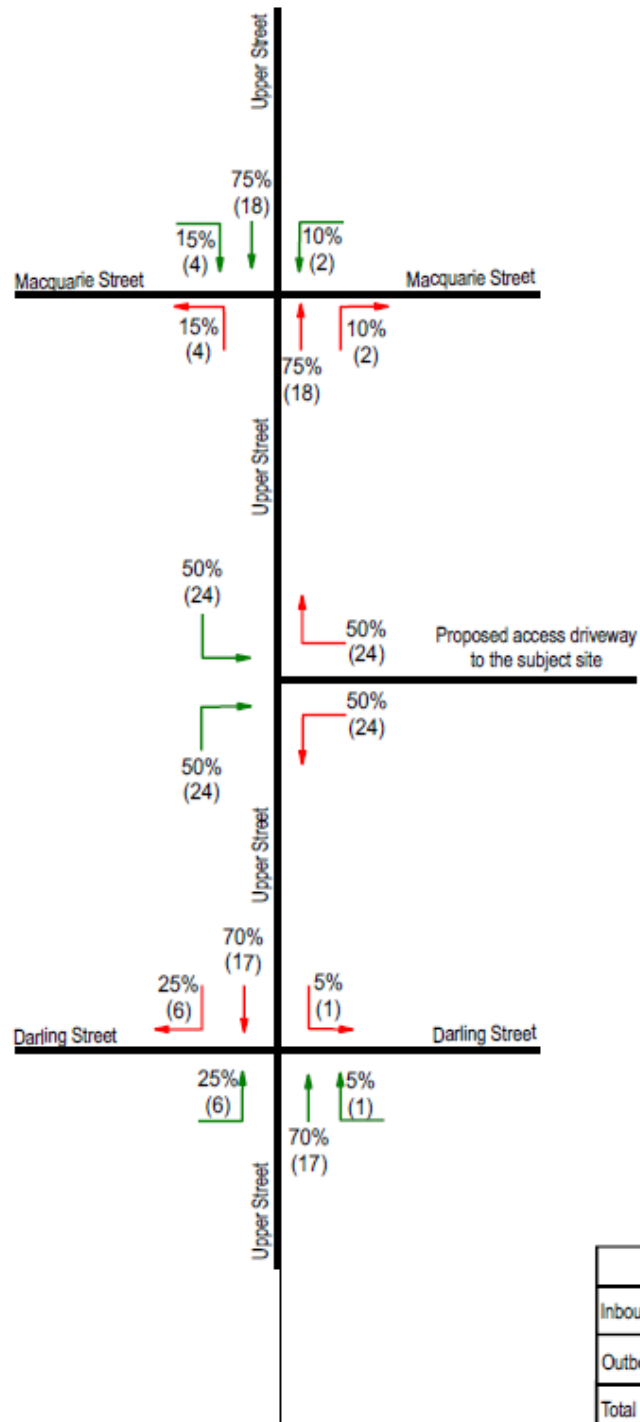


Figure 6: Development Traffic Distribution on the Surrounding Road Network – **AM Peak**



TRIP DISTRIBUTION FROM
PROPOSED DEVELOPMENT
PM PEAK: 3.30PM - 4.30PM

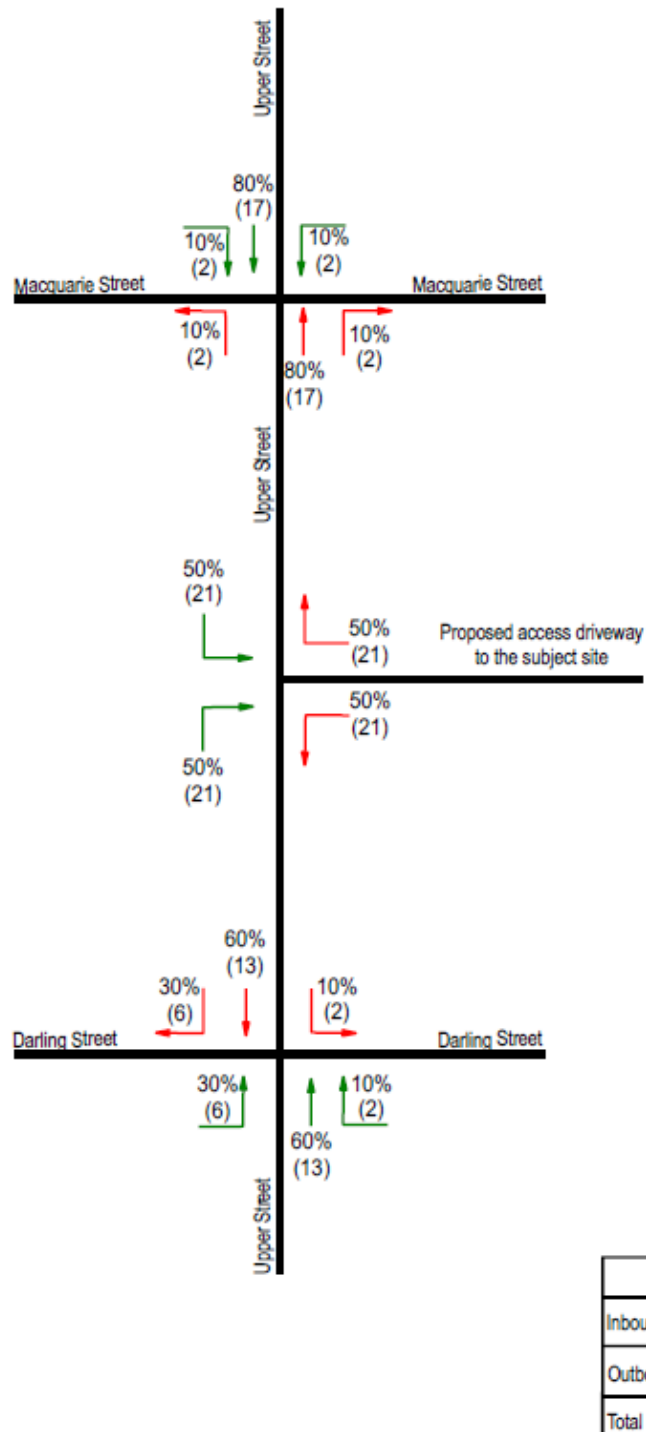


Figure 7: Development Traffic Distribution on the Surrounding Road Network – **PM Peak**

The outcome of the SIDRA modelling

A summary of the results of the SIDRA intersection performance analysis has been provided in Tables 4 to 7 below, as well as the SIDRA Movement Summary Tables attached in Appendix 'C' of this report.

Modelled Peak	Average LOS	Average Delay (sec)	DOS (Veh/C)
Base Year 2022 – Pre-Development	A	4.0	0.094
Base Year 2022 – Post Development	A	3.9	0.105
Future Year 2032 – Pre-Development	A	4.2	0.119
Future Year 2032 – Post Development	A	4.1	0.135

Table 4: Network SIDRA Modelling – Upper Street / Macquarie Street – 7.45am – 8.45am

Modelled Peak	Average LOS	Average Delay (sec)	DOS (Veh/C)
Base Year 2022 – Pre-Development	A	4.1	0.092
Base Year 2022 – Post Development	A	3.9	0.099
Future Year 2032 – Pre-Development	A	4.2	0.118
Future Year 2032 – Post Development	A	4.1	0.128

Table 5: Network SIDRA Modelling – Upper Street / Macquarie Street – 3.30pm – 4.30pm

Modelled Peak	Average LOS	Average Delay (sec)	DOS (Veh/C)
Base Year 2022 – Pre-Development	A	3.5	0.192
Base Year 2022 – Post Development	A	3.7	0.223
Future Year 2032 – Pre-Development	A	3.8	0.251
Future Year 2032 – Post Development	A	4.0	0.292

Table 6: Network SIDRA Modelling – Upper Street / Darling Street – 7.45am – 8.45am

Modelled Peak	Average LOS	Average Delay (sec)	DOS (Veh/C)
Base Year 2022 – Pre-Development	A	3.6	0.160
Base Year 2022 – Post Development	A	3.5	0.160
Future Year 2032 – Pre-Development	A	3.8	0.207
Future Year 2032 – Post Development	A	3.8	0.207

Table 7: Network SIDRA Modelling – Upper Street / Darling Street – 3.30pm – 4.30pm

It can be concluded from the results of the SIDRA modelling that:

- The current operational performance (pre-development) at the cross-intersections of Upper Street / Macquarie Street and Upper Street / Darling Street are currently operating at a Level of Service (LOS) 'A' during weekday AM & PM peak.
- The proposed childcare centre development will not alter the current LOS at the subject intersections and will continue to operate at their current levels of service during weekday AM & PM peak.
- The future 10-year (pre-development) analysis indicates that the subject intersections will operate at a LOS 'A', during weekday AM & PM peak.

- The proposed childcare centre development will not alter the future LOS at the subject intersections and will continue to operate at the predicted future level of service.

Therefore, the estimated traffic generation from the proposed development is of low impact on existing flows on Upper Street and surrounding streets and will not have adverse impacts on the current operational performance of the subject existing intersections, which will continue to operate at the same level of service.

The additional traffic generated by the proposed development can be readily accommodated within the existing road layout, without adverse impacts on the amenity of the area.

7 CONCLUSION

It can be concluded from the traffic and parking impact assessment that the proposed childcare centre development at **16-18 Upper Street, North Tamworth**, will not have adverse impacts on existing traffic or parking conditions and is worthy of Council's support in its present form.

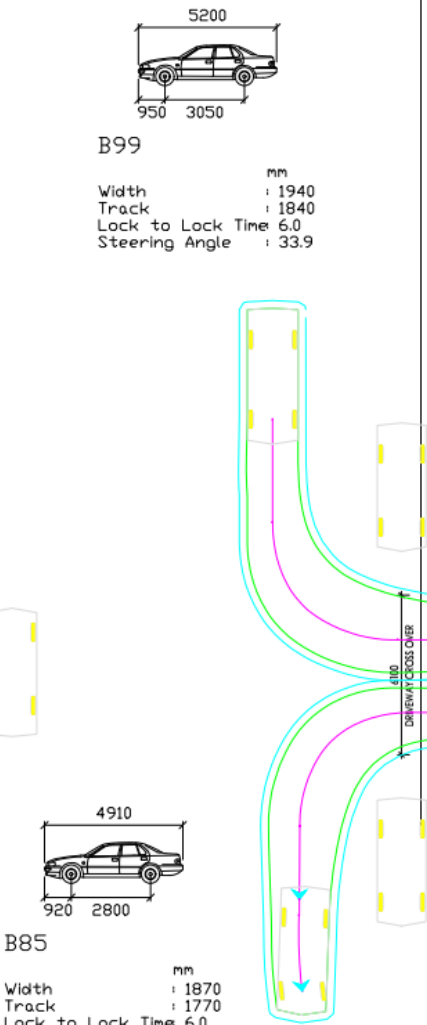
- The existing traffic flows on Upper Street, Macquarie Street and Darling Street, are typical for local roads, in a mainly residential area, where traffic is generally free flowing without major queuing or delays near the subject site in peak hours, with spare capacity.
- The estimated traffic generation from the proposed development is of low impact on existing flows on Upper Street and surrounding streets and will not have adverse impacts on the current operational performance of the subject existing intersections, which will continue to operate at the same levels of service. The traffic generated by the proposed childcare centre development can be readily accommodated within the existing road network.
- The potential increase in the number of vehicle movements in and about Upper Street and adjacent streets will not have adverse impacts on the amenity of the area.
- The parking demand resulting from the proposed childcare centre development can be easily accommodated within the proposed adequate off-street car and bicycle parking for both staff and visitors/parents, which is in compliance with AS2890.1:2004 and Council's parking requirements.
- The on-site vehicular access, car parking layout and vehicular circulation is adequate for the proposed development and in accordance with AS2890.1:2004 and AS2890.6:2009, where vehicles enter and exit the site in a forward direction at all times.
- The subject site has good access to existing public transport services.
- The proposed development will not have adverse impacts on parking in the surrounding area.

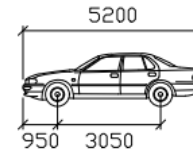
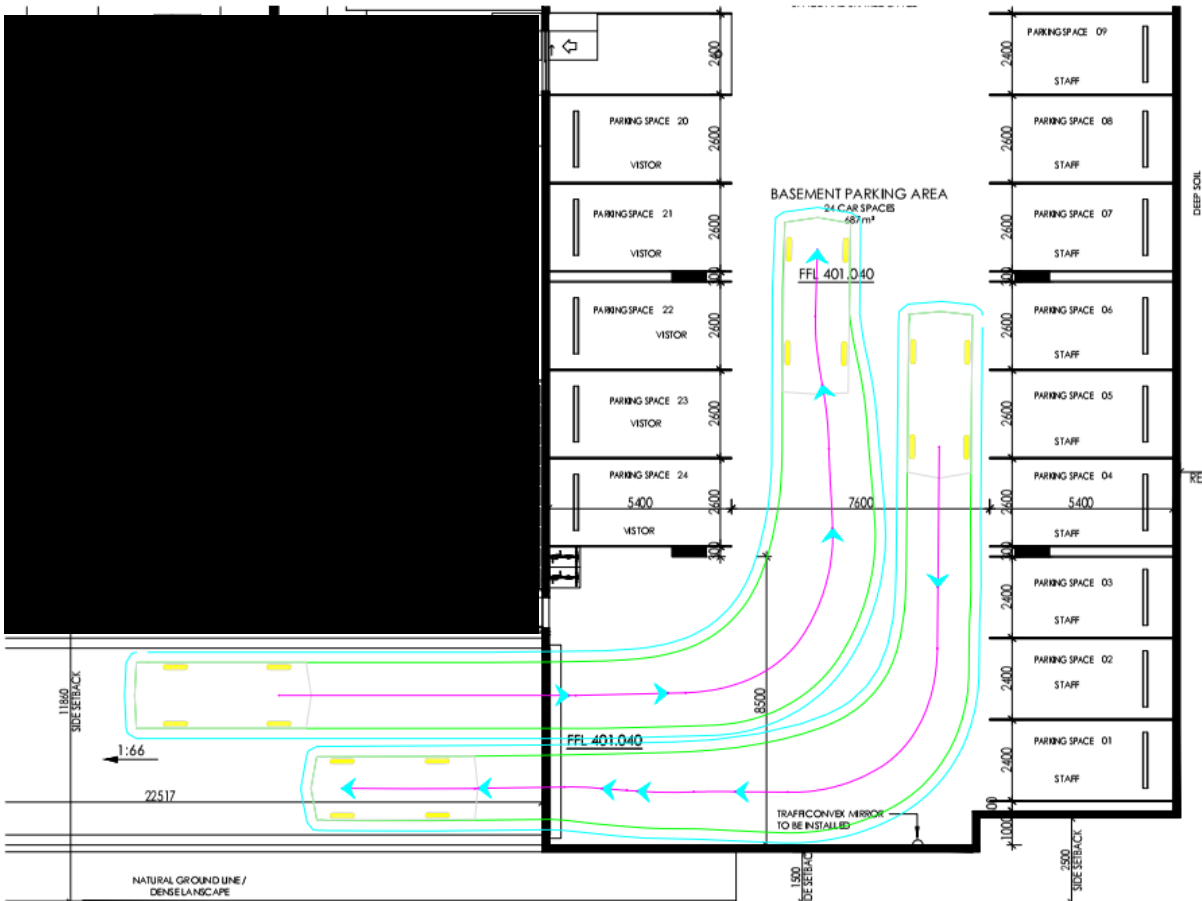
Appendix A – Proposed Development Plans





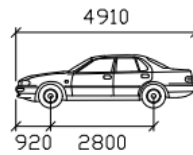
Appendix B – Vehicle Swept Paths





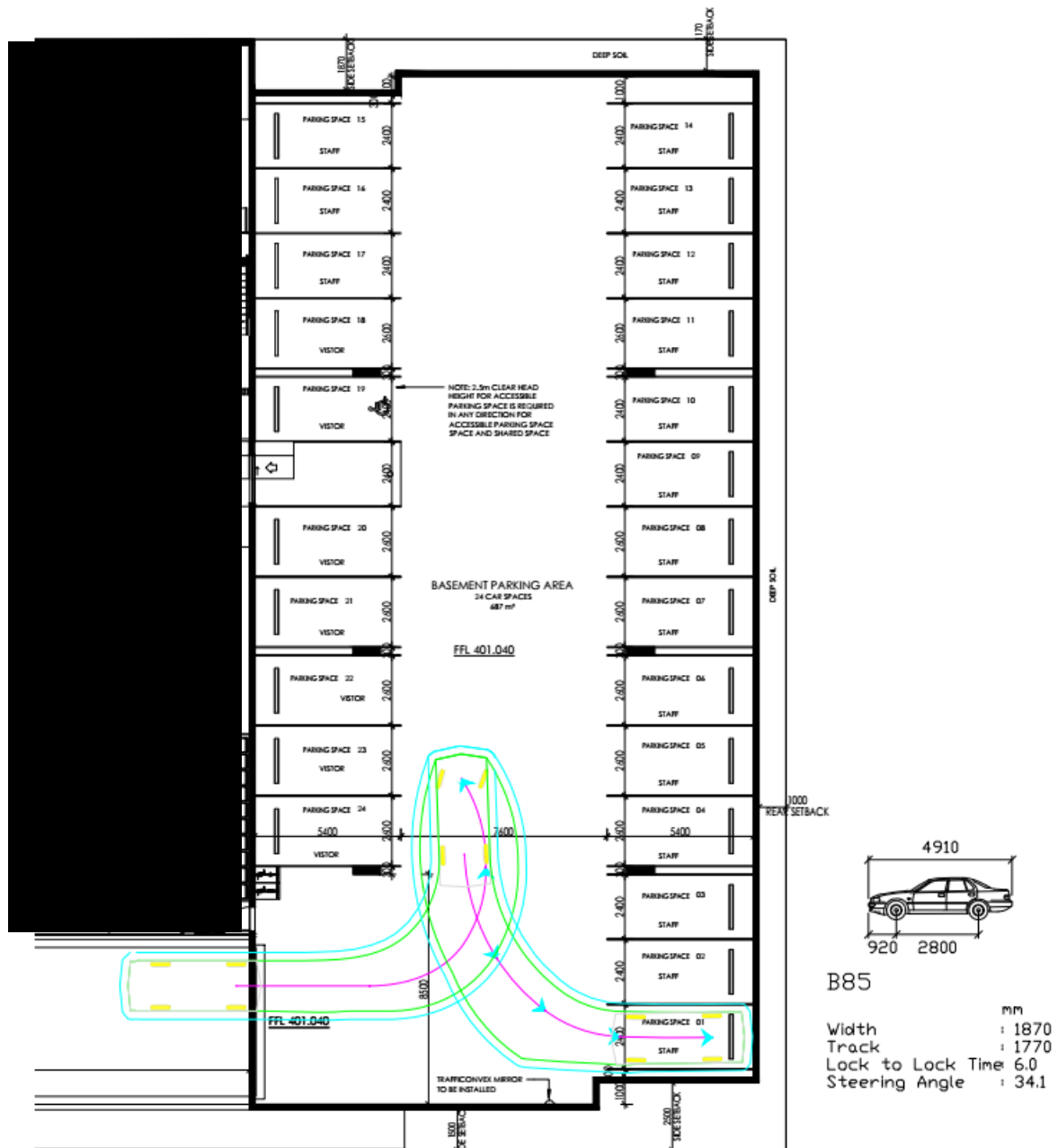
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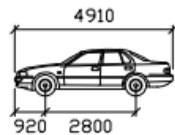
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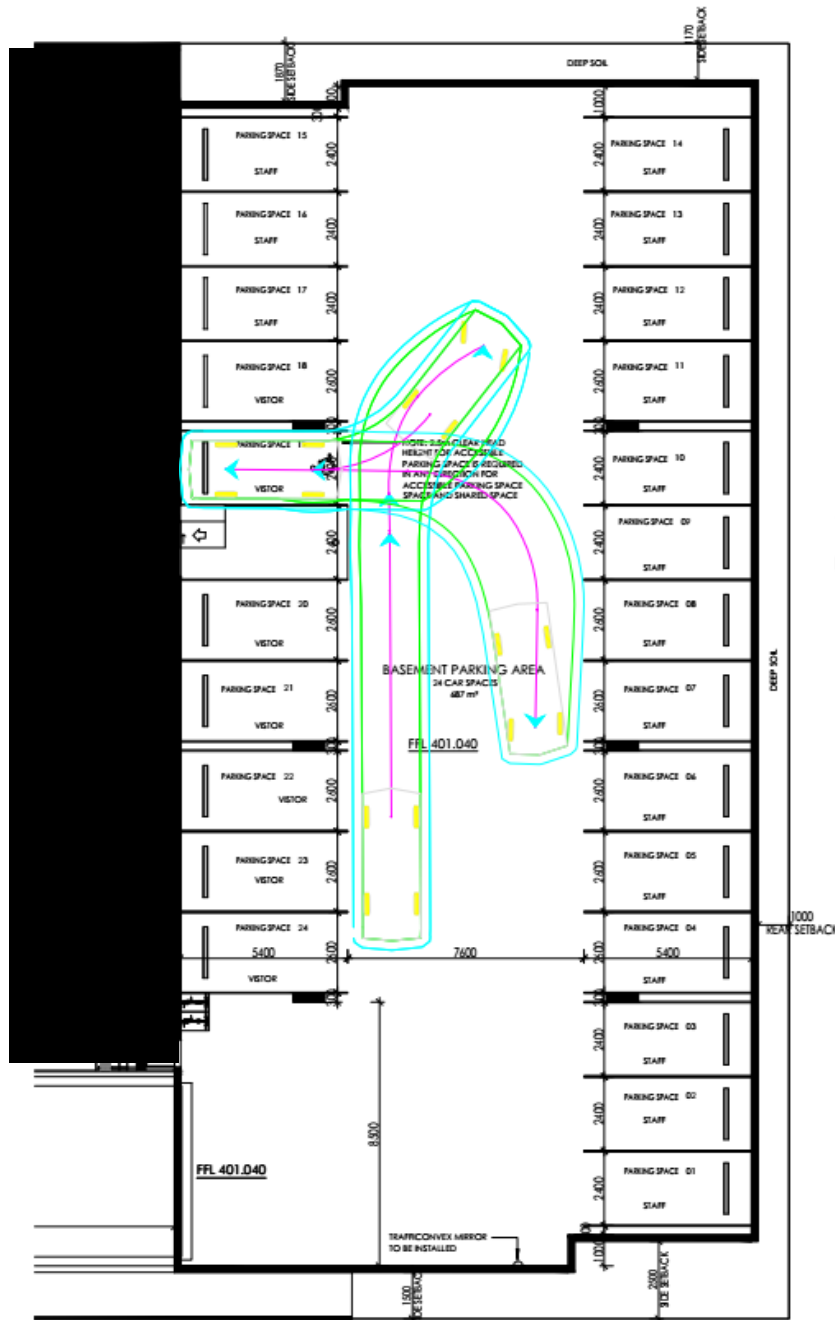
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Lock to Lock Time : 6.0
Steering Angle : 34.1





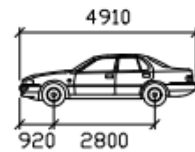
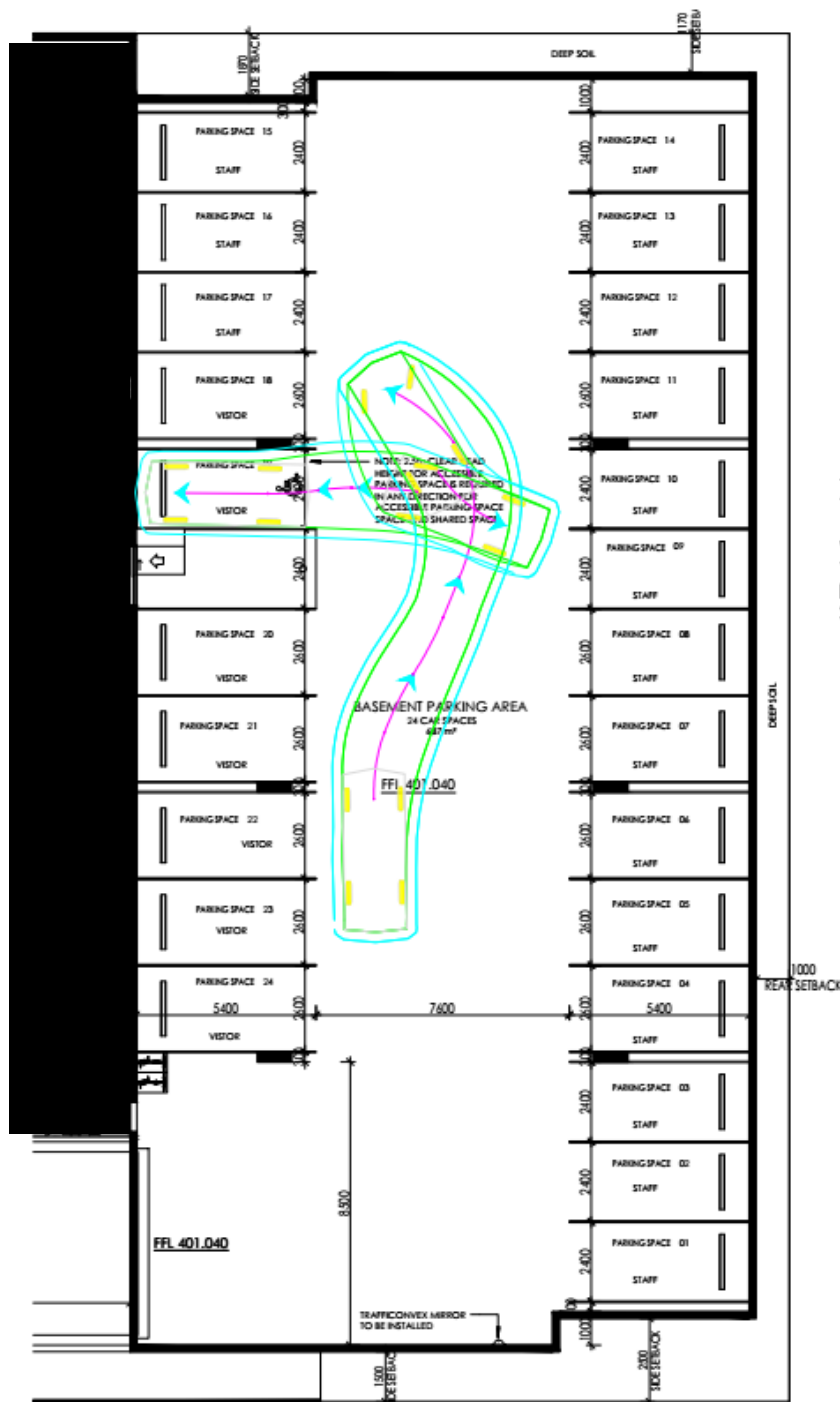
	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	6.0
Steering Angle	: 34.1





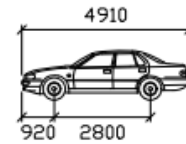
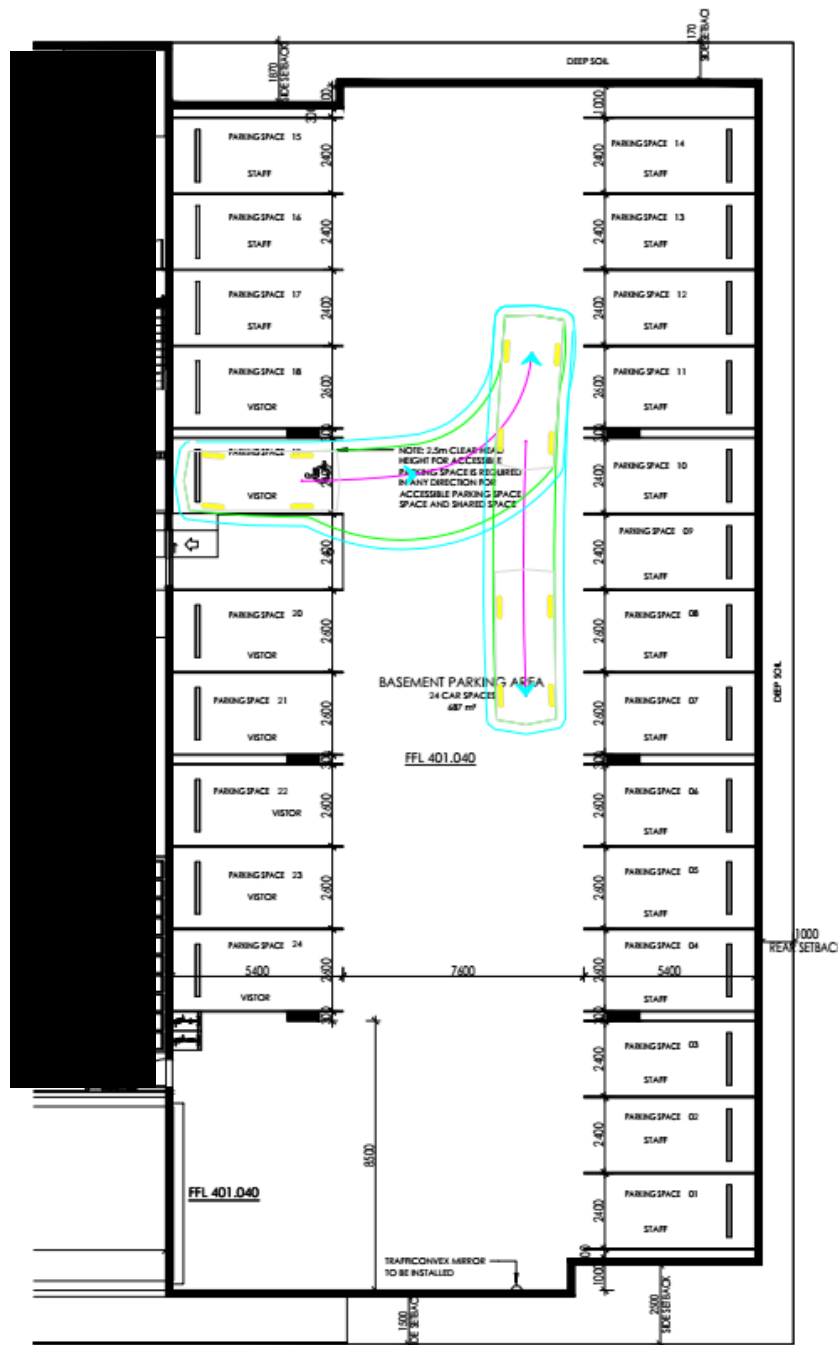
B85

Width : 1870 mm
Track : 1770 mm
Lock to Lock Time : 6.0
Steering Angle : 34.1



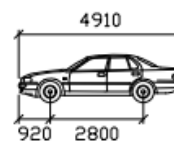
B85

Width : 1870 mm
Track : 1770
Lock to Lock Time : 6.0
Steering Angle : 34.1



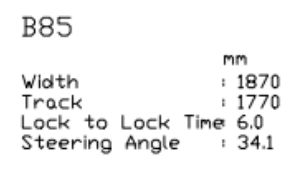
B85

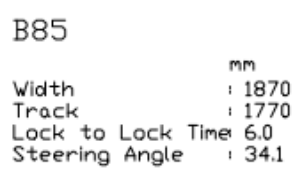
Width : 1870
Track : 1770
Lock to Lock Time : 6.0
Steering Angle : 34.1

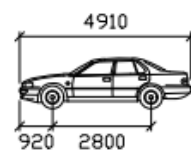


B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	6.0
Steering Angle	: 34.1

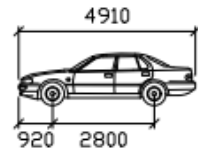
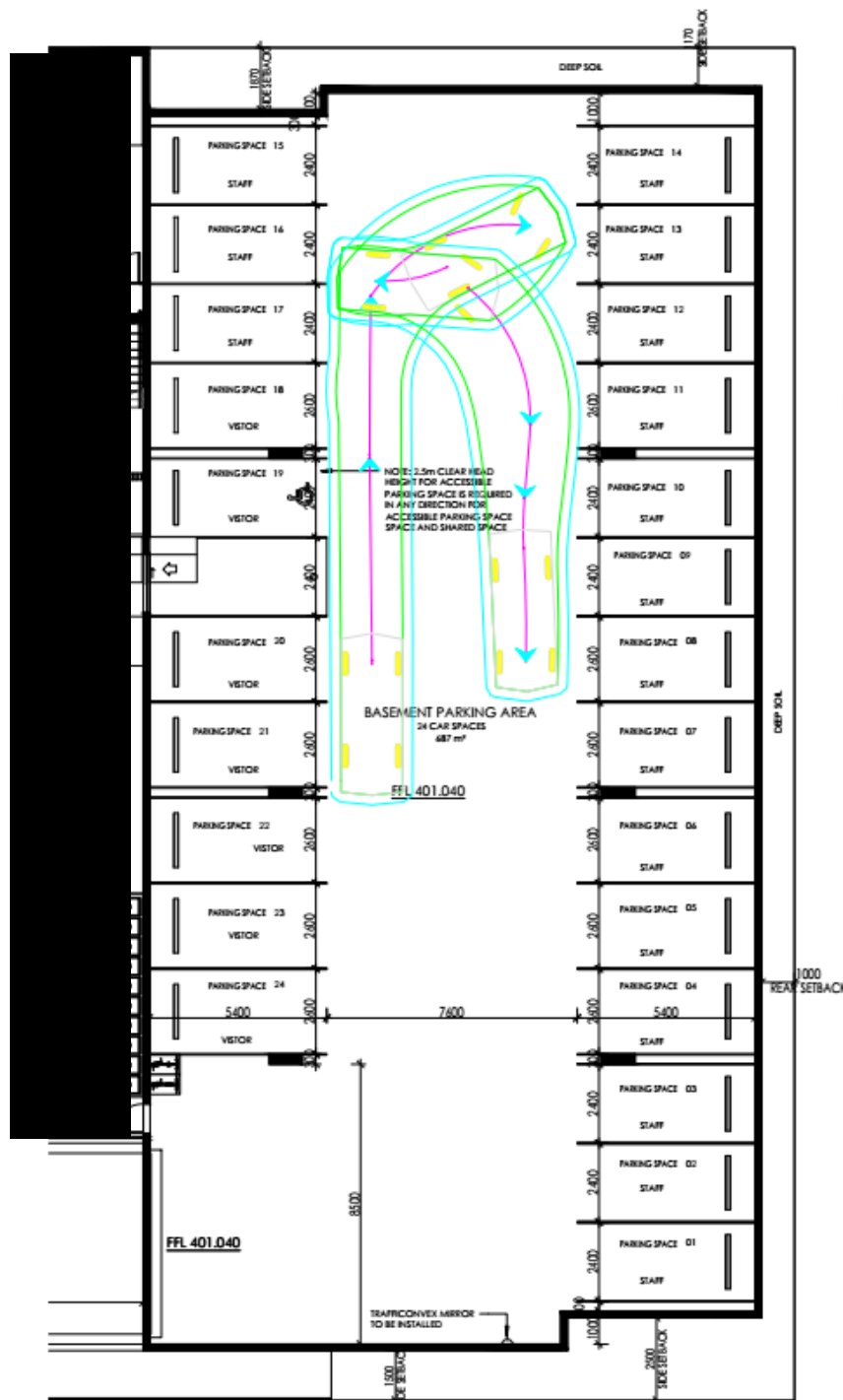






B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1



B85

Width : 1870 mm
 Track : 1770 mm
 Lock to Lock Time : 6.0
 Steering Angle : 34.1

Appendix C – SIDRA Intersection Analysis

MOVEMENT SUMMARY – 7.45am – 8.45am – Base Year 2023 – Upper Street / Macquarie Street

Pre-Development														
Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/s]	[HV %]	[Total HV]	[veh/s %]	v/c	sec		[Veh. veh]	[Dist. m]				km/h
SouthEast: Upper Street														
1	L2	13	0.0	13	0.0	0.055	5.6	LOS A	0.0	0.1	0.02	0.08	0.02	36.2
2	T1	94	0.0	94	0.0	0.055	0.0	LOS A	0.0	0.1	0.02	0.08	0.02	57.7
3	R2	3	0.0	3	0.0	0.055	5.9	LOS A	0.0	0.1	0.02	0.08	0.02	52.8
Approach		109	0.0	109	0.0	0.055	0.8	NA	0.0	0.1	0.02	0.08	0.02	54.3
NorthEast: Macquarie Street														
4	L2	23	0.0	23	0.0	0.084	8.5	LOS A	0.1	0.9	0.31	0.90	0.31	31.5
5	T1	47	0.0	47	0.0	0.084	9.0	LOS A	0.1	0.9	0.31	0.90	0.31	30.9
6	R2	9	0.0	9	0.0	0.084	9.9	LOS A	0.1	0.9	0.31	0.90	0.31	38.0
Approach		80	0.0	80	0.0	0.084	8.9	LOS A	0.1	0.9	0.31	0.90	0.31	31.9
NorthWest: Upper Street														
7	L2	5	0.0	5	0.0	0.080	5.8	LOS A	0.1	0.4	0.08	0.10	0.08	51.4
8	T1	128	0.0	128	0.0	0.080	0.1	LOS A	0.1	0.4	0.08	0.10	0.08	52.8
9	R2	22	0.0	22	0.0	0.080	5.8	LOS A	0.1	0.4	0.08	0.10	0.08	42.1
Approach		155	0.0	156	0.0	0.080	1.1	NA	0.1	0.4	0.08	0.10	0.08	50.2
SouthWest: Macquarie Street														
10	L2	6	0.0	6	0.0	0.094	8.3	LOS A	0.1	1.0	0.33	0.91	0.33	35.9
11	T1	71	0.0	71	0.0	0.094	8.9	LOS A	0.1	1.0	0.33	0.91	0.33	35.0
12	R2	8	0.0	8	0.0	0.094	9.8	LOS A	0.1	1.0	0.33	0.91	0.33	25.2
Approach		85	0.0	85	0.0	0.094	9.0	LOS A	0.1	1.0	0.33	0.91	0.33	34.5
All Vehicles		431	0.0	431	0.0	0.094	4.0	NA	0.1	1.0	0.16	0.41	0.16	43.6

Post-Development														
Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/s]	[HV %]	[Total HV]	[veh/s %]	v/c	sec		[Veh. veh]	[Dist. m]				km/h
SouthEast: Upper Street														
1	L2	17	0.0	17	0.0	0.068	5.7	LOS A	0.0	0.1	0.03	0.10	0.03	30.9
2	T1	113	0.0	113	0.0	0.068	0.0	LOS A	0.0	0.1	0.03	0.10	0.03	56.5
3	R2	5	0.0	5	0.0	0.068	6.0	LOS A	0.0	0.1	0.03	0.10	0.03	50.4
Approach		135	0.0	135	0.0	0.068	1.0	NA	0.0	0.1	0.03	0.10	0.03	51.9
NorthEast: Macquarie Street														
4	L2	25	0.0	25	0.0	0.089	8.6	LOS A	0.1	0.9	0.33	0.90	0.33	31.2
5	T1	47	0.0	47	0.0	0.089	9.3	LOS A	0.1	0.9	0.33	0.90	0.33	30.7
6	R2	9	0.0	9	0.0	0.089	10.2	LOS A	0.1	0.9	0.33	0.90	0.33	37.8
Approach		82	0.0	82	0.0	0.089	9.2	LOS A	0.1	0.9	0.33	0.90	0.33	31.7
NorthWest: Upper Street														
7	L2	5	0.0	5	0.0	0.090	5.9	LOS A	0.1	0.5	0.08	0.09	0.08	51.6
8	T1	147	0.0	147	0.0	0.090	0.1	LOS A	0.1	0.5	0.08	0.09	0.08	53.3
9	R2	22	0.0	22	0.0	0.090	5.9	LOS A	0.1	0.5	0.08	0.09	0.08	42.3
Approach		175	0.0	175	0.0	0.090	1.0	NA	0.1	0.5	0.08	0.09	0.08	50.8
SouthWest: Macquarie Street														
10	L2	6	0.0	6	0.0	0.105	8.4	LOS A	0.2	1.1	0.37	0.91	0.37	35.5
11	T1	71	0.0	71	0.0	0.105	9.2	LOS A	0.2	1.1	0.37	0.91	0.37	34.7
12	R2	13	0.0	13	0.0	0.105	10.2	LOS A	0.2	1.1	0.37	0.91	0.37	24.8
Approach		89	0.0	89	0.0	0.105	9.3	LOS A	0.2	1.1	0.37	0.91	0.37	33.9
All Vehicles		481	0.0	481	0.0	0.105	3.9	NA	0.2	1.1	0.16	0.38	0.16	42.7

MOVEMENT SUMMARY – 7.45am – 8.45am – Base Year 2023 – Upper Street / Darling Street

Pre-Development

Post-Development

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg Satn	Aver Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop Que	Effective Stop Rate	Aver No Cycles	Aver Speed
		[Total veh/h]	[HV %]	[Total HV veh/h]	[HV %]	v/c	sec		[Veh. veh]	[Dist. m]				km/h
SouthEast: Upper Street														
1	L2	22	0.0	22	0.0	0.087	6.1	LOS A	0.1	0.9	0.37	0.61	0.37	32.4
2	T1	47	0.0	47	0.0	0.087	6.0	LOS A	0.1	0.9	0.37	0.61	0.37	40.0
3	R2	14	0.0	14	0.0	0.087	8.2	LOS A	0.1	0.9	0.37	0.61	0.37	41.5
Approach		83	0.0	83	0.0	0.087	6.4	LOS A	0.1	0.9	0.37	0.61	0.37	37.4
NorthEast: Darling Street														
4	L2	16	0.0	16	0.0	0.120	5.9	LOS A	0.1	0.7	0.09	0.11	0.09	51.5
5	T1	188	0.0	188	0.0	0.120	0.1	LOS A	0.1	0.7	0.09	0.11	0.09	54.0
6	R2	29	0.0	29	0.0	0.120	5.9	LOS A	0.1	0.7	0.09	0.11	0.09	49.6
Approach		234	0.0	234	0.0	0.120	1.2	NA	0.1	0.7	0.09	0.11	0.09	53.4
NorthWest: Upper Street														
7	L2	13	0.0	13	0.0	0.192	5.9	LOS A	0.3	2.1	0.40	0.66	0.40	33.6
8	T1	109	0.0	109	0.0	0.192	6.1	LOS A	0.3	2.1	0.40	0.66	0.40	45.6
9	R2	47	0.0	47	0.0	0.192	8.2	LOS A	0.3	2.1	0.40	0.66	0.40	33.2
Approach		169	0.0	169	0.0	0.192	6.7	LOS A	0.3	2.1	0.40	0.66	0.40	41.1
SouthWest: Darling Street														
10	L2	36	0.0	36	0.0	0.079	5.8	LOS A	0.1	0.4	0.10	0.19	0.10	44.8
11	T1	101	0.0	101	0.0	0.079	0.1	LOS A	0.1	0.4	0.10	0.19	0.10	51.0
12	R2	16	0.0	16	0.0	0.079	6.2	LOS A	0.1	0.4	0.10	0.19	0.10	48.6
Approach		153	0.0	153	0.0	0.079	2.1	NA	0.1	0.4	0.10	0.19	0.10	49.7
All Vehicles		639	0.0	639	0.0	0.192	3.5	NA	0.3	2.1	0.21	0.34	0.21	45.0

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg Satn	Aver Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop Que	Effective Stop Rate	Aver No Cycles	Aver Speed
		[Total veh/h]	[HV %]	[Total HV veh/h]	[HV %]	v/c	sec		[Veh. veh]	[Dist. m]				km/h
SouthEast: Upper Street														
1	L2	22	0.0	22	0.0	0.108	6.1	LOS A	0.2	1.1	0.38	0.62	0.38	40.4
2	T1	65	0.0	65	0.0	0.108	6.0	LOS A	0.2	1.1	0.38	0.62	0.38	40.0
3	R2	14	0.0	14	0.0	0.108	8.5	LOS A	0.2	1.1	0.38	0.62	0.38	41.5
Approach		101	0.0	101	0.0	0.108	6.4	LOS A	0.2	1.1	0.38	0.62	0.38	40.3
NorthEast: Darling Street														
4	L2	16	0.0	16	0.0	0.121	5.9	LOS A	0.1	0.7	0.09	0.11	0.09	51.4
5	T1	188	0.0	188	0.0	0.121	0.1	LOS A	0.1	0.7	0.09	0.11	0.09	53.8
6	R2	31	0.0	31	0.0	0.121	6.0	LOS A	0.1	0.7	0.09	0.11	0.09	49.4
Approach		235	0.0	235	0.0	0.121	1.3	NA	0.1	0.7	0.09	0.11	0.09	53.2
NorthWest: Upper Street														
7	L2	14	0.0	14	0.0	0.223	5.6	LOS A	0.3	2.4	0.41	0.66	0.41	26.3
8	T1	127	0.0	127	0.0	0.223	5.8	LOS A	0.3	2.4	0.41	0.66	0.41	41.5
9	R2	54	0.0	54	0.0	0.223	8.2	LOS A	0.3	2.4	0.41	0.66	0.41	25.8
Approach		195	0.0	195	0.0	0.223	6.5	LOS A	0.3	2.4	0.41	0.66	0.41	35.9
SouthWest: Darling Street														
10	L2	42	0.0	42	0.0	0.083	5.8	LOS A	0.1	0.4	0.10	0.20	0.10	44.1
11	T1	101	0.0	101	0.0	0.083	0.1	LOS A	0.1	0.4	0.10	0.20	0.10	50.6
12	R2	16	0.0	16	0.0	0.083	6.2	LOS A	0.1	0.4	0.10	0.20	0.10	48.4
Approach		159	0.0	159	0.0	0.083	2.2	NA	0.1	0.4	0.10	0.20	0.10	49.1
All Vehicles		689	0.0	689	0.0	0.223	3.7	NA	0.3	2.4	0.23	0.36	0.23	43.5

MOVEMENT SUMMARY – 3.30pm – 4.30pm – Base Year 2023 – Upper Street / Macquarie Street

Pre-Development														
Vehicle Movement Performance Mov ID Turn DEMAND FLOWS ARRIVAL FLOWS Deg. Satn Aver. Delay Level of Service AVERAGE BACK OF QUEUE Prop. Que Effective Stop Rate Aver. No. Cycles Aver. Speed [Total HV] [Total HV] [Veh. Dist] [Veh. Dist] v/c sec [Veh. Dist] Stop Rate Cycles km/h veh/h % veh/h % m m														
SouthEast, Upper Street														
1	L2	8	0.0	8	0.0	0.086	5.8	LOS A	0.1	0.4	0.06	0.10	0.06	35.8
2	T1	139	0.0	139	0.0	0.086	0.1	LOS A	0.1	0.4	0.06	0.10	0.06	56.9
3	R2	20	0.0	20	0.0	0.086	5.8	LOS A	0.1	0.4	0.06	0.10	0.06	52.2
Approach		167	0.0	167	0.0	0.086	1.0	NA	0.1	0.4	0.06	0.10	0.06	54.9
NorthEast, Macquarie Street														
4	L2	15	0.0	15	0.0	0.090	8.4	LOS A	0.1	0.9	0.31	0.91	0.31	30.9
5	T1	37	0.0	37	0.0	0.090	9.1	LOS A	0.1	0.9	0.31	0.91	0.31	30.5
6	R2	26	0.0	26	0.0	0.090	10.0	LOS A	0.1	0.9	0.31	0.91	0.31	37.6
Approach		78	0.0	78	0.0	0.090	9.2	LOS A	0.1	0.9	0.31	0.91	0.31	33.2
NorthWest, Upper Street														
7	L2	3	0.0	3	0.0	0.058	6.0	LOS A	0.1	0.4	0.10	0.11	0.10	50.9
8	T1	89	0.0	89	0.0	0.058	0.1	LOS A	0.1	0.4	0.10	0.11	0.10	51.9
9	R2	18	0.0	18	0.0	0.058	5.9	LOS A	0.1	0.4	0.10	0.11	0.10	41.8
Approach		111	0.0	111	0.0	0.058	1.2	NA	0.1	0.4	0.10	0.11	0.10	49.2
SouthWest, Macquarie Street														
10	L2	16	0.0	16	0.0	0.092	8.5	LOS A	0.1	1.0	0.34	0.90	0.34	35.8
11	T1	56	0.0	56	0.0	0.092	9.0	LOS A	0.1	1.0	0.34	0.90	0.34	35.0
12	R2	13	0.0	13	0.0	0.092	9.8	LOS A	0.1	1.0	0.34	0.90	0.34	25.1
Approach		84	0.0	84	0.0	0.092	9.1	LOS A	0.1	1.0	0.34	0.90	0.34	34.2
All Vehicles		440	0.0	440	0.0	0.092	4.1	NA	0.1	1.0	0.17	0.40	0.17	45.1

Post-Development														
Vehicle Movement Performance Mov ID Turn DEMAND FLOWS ARRIVAL FLOWS Deg. Satn Aver. Delay Level of Service AVERAGE BACK OF QUEUE Prop. Que Effective Stop Rate Aver. No. Cycles Aver. Speed [Total HV] [Total HV] [Veh. Dist] [Veh. Dist] v/c sec [Veh. Dist] Stop Rate Cycles km/h veh/h % veh/h % m m														
SouthEast, Upper Street														
1	L2	11	0.0	11	0.0	0.097	5.8	LOS A	0.1	0.5	0.07	0.10	0.07	30.7
2	T1	157	0.0	157	0.0	0.097	0.1	LOS A	0.1	0.5	0.07	0.10	0.07	56.8
3	R2	22	0.0	22	0.0	0.097	5.8	LOS A	0.1	0.5	0.07	0.10	0.07	49.9
Approach		189	0.0	189	0.0	0.097	1.1	NA	0.1	0.5	0.07	0.10	0.07	53.2
NorthEast, Macquarie Street														
4	L2	17	0.0	17	0.0	0.095	8.4	LOS A	0.1	1.0	0.33	0.91	0.33	30.6
5	T1	37	0.0	37	0.0	0.095	9.3	LOS A	0.1	1.0	0.33	0.91	0.33	30.3
6	R2	26	0.0	26	0.0	0.095	10.3	LOS A	0.1	1.0	0.33	0.91	0.33	37.4
Approach		80	0.0	80	0.0	0.095	9.5	LOS A	0.1	1.0	0.33	0.91	0.33	32.9
NorthWest, Upper Street														
7	L2	3	0.0	3	0.0	0.067	6.0	LOS A	0.1	0.4	0.10	0.10	0.10	51.3
8	T1	107	0.0	107	0.0	0.067	0.1	LOS A	0.1	0.4	0.10	0.10	0.10	52.7
9	R2	18	0.0	18	0.0	0.067	6.0	LOS A	0.1	0.4	0.10	0.10	0.10	42.1
Approach		128	0.0	128	0.0	0.067	1.1	NA	0.1	0.4	0.10	0.10	0.10	50.1
SouthWest, Macquarie Street														
10	L2	16	0.0	16	0.0	0.099	8.6	LOS A	0.1	1.0	0.37	0.91	0.37	35.5
11	T1	56	0.0	56	0.0	0.099	9.3	LOS A	0.1	1.0	0.37	0.91	0.37	34.7
12	R2	15	0.0	15	0.0	0.099	10.2	LOS A	0.1	1.0	0.37	0.91	0.37	24.8
Approach		86	0.0	86	0.0	0.099	9.3	LOS A	0.1	1.0	0.37	0.91	0.37	33.8
All Vehicles		484	0.0	484	0.0	0.099	3.9	NA	0.1	1.0	0.17	0.38	0.17	43.8

MOVEMENT SUMMARY – 3.30pm – 4.30pm – Base Year 2023 – Upper Street / Darling Street

Pre-Development														
Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Des. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total HV veh/h]	[HV %]	v/c	sec		[Veh. veh]	[Dist. m]				km/h
SouthEast: Upper Street														
1	L2	76	0.0	76	0.0	0.160	5.9	LOS A	0.3	1.8	0.27	0.59	0.27	32.4
2	T1	64	0.0	64	0.0	0.160	6.2	LOS A	0.3	1.8	0.27	0.59	0.27	40.0
3	R2	27	0.0	27	0.0	0.160	8.3	LOS A	0.3	1.8	0.27	0.59	0.27	41.5
Approach		167	0.0	167	0.0	0.160	6.4	LOS A	0.3	1.8	0.27	0.59	0.27	35.9
NorthEast: Darling Street														
4	L2	8	0.0	8	0.0	0.078	6.2	LOS A	0.1	0.6	0.18	0.15	0.18	49.8
5	T1	106	0.0	106	0.0	0.078	0.3	LOS A	0.1	0.6	0.18	0.15	0.18	51.3
6	R2	29	0.0	29	0.0	0.078	6.3	LOS A	0.1	0.6	0.18	0.15	0.18	45.6
Approach		144	0.0	144	0.0	0.078	1.9	NA	0.1	0.6	0.18	0.15	0.18	50.4
NorthWest: Upper Street														
7	L2	18	0.0	18	0.0	0.141	6.2	LOS A	0.2	1.5	0.42	0.66	0.42	33.4
8	T1	64	0.0	64	0.0	0.141	6.0	LOS A	0.2	1.5	0.42	0.66	0.42	45.2
9	R2	38	0.0	38	0.0	0.141	8.8	LOS A	0.2	1.5	0.42	0.66	0.42	33.0
Approach		120	0.0	120	0.0	0.141	6.9	LOS A	0.2	1.5	0.42	0.66	0.42	39.4
SouthWest: Darling Street														
10	L2	36	0.0	36	0.0	0.128	5.6	LOS A	0.0	0.3	0.04	0.11	0.04	50.8
11	T1	205	0.0	205	0.0	0.128	0.0	LOS A	0.0	0.3	0.04	0.11	0.04	54.9
12	R2	13	0.0	13	0.0	0.128	5.9	LOS A	0.0	0.3	0.04	0.11	0.04	51.0
Approach		254	0.0	254	0.0	0.128	1.1	NA	0.0	0.3	0.04	0.11	0.04	54.2
All Vehicles		685	0.0	685	0.0	0.160	3.6	NA	0.3	1.8	0.19	0.33	0.19	43.5

Post-Development														
Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Des. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h]	[HV %]	[Total HV veh/h]	[HV %]	v/c	sec		[Veh. veh]	[Dist. m]				km/h
SouthEast: Upper Street														
1	L2	76	0.0	76	0.0	0.160	5.9	LOS A	0.3	1.8	0.27	0.59	0.27	40.4
2	T1	64	0.0	64	0.0	0.160	6.2	LOS A	0.3	1.8	0.27	0.59	0.27	40.0
3	R2	27	0.0	27	0.0	0.160	8.3	LOS A	0.3	1.8	0.27	0.59	0.27	41.5
Approach		167	0.0	167	0.0	0.160	6.4	LOS A	0.3	1.8	0.27	0.59	0.27	40.5
NorthEast: Darling Street														
4	L2	8	0.0	8	0.0	0.078	6.2	LOS A	0.1	0.6	0.18	0.15	0.18	49.8
5	T1	106	0.0	106	0.0	0.078	0.3	LOS A	0.1	0.6	0.18	0.15	0.18	51.3
6	R2	29	0.0	29	0.0	0.078	6.3	LOS A	0.1	0.6	0.18	0.15	0.18	45.6
Approach		144	0.0	144	0.0	0.078	1.9	NA	0.1	0.6	0.18	0.15	0.18	50.4
NorthWest: Upper Street														
7	L2	18	0.0	18	0.0	0.141	6.0	LOS A	0.2	1.5	0.42	0.66	0.42	26.2
8	T1	64	0.0	64	0.0	0.141	5.7	LOS A	0.2	1.5	0.42	0.66	0.42	41.2
9	R2	38	0.0	38	0.0	0.141	8.5	LOS A	0.2	1.5	0.42	0.66	0.42	25.7
Approach		120	0.0	120	0.0	0.141	6.6	LOS A	0.2	1.5	0.42	0.66	0.42	33.8
SouthWest: Darling Street														
10	L2	36	0.0	36	0.0	0.128	5.6	LOS A	0.0	0.3	0.04	0.11	0.04	50.8
11	T1	205	0.0	205	0.0	0.128	0.0	LOS A	0.0	0.3	0.04	0.11	0.04	54.9
12	R2	13	0.0	13	0.0	0.128	5.9	LOS A	0.0	0.3	0.04	0.11	0.04	51.0
Approach		254	0.0	254	0.0	0.128	1.1	NA	0.0	0.3	0.04	0.11	0.04	54.2
All Vehicles		685	0.0	685	0.0	0.160	3.5	NA	0.3	1.8	0.19	0.33	0.19	44.1

MOVEMENT SUMMARY – 7.45am – 8.45am – Future Year 2033 – Upper Street / Macquarie Street

Pre-Development														
Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg Satn	Aver Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver No. Cycles	Aver Speed
		[Total veh/s]	[HV %]	[Total HV veh/s]	[HV %]	v/c	sec		[Veh. veh]	[Dist. m]				km/h
SouthEast: Upper Street														
1	L2	15	0.0	15	0.0	0.066	5.6	LOS A	0.0	0.1	0.03	0.08	0.03	36.2
2	T1	112	0.0	112	0.0	0.066	0.0	LOS A	0.0	0.1	0.03	0.08	0.03	57.7
3	R2	4	0.0	4	0.0	0.066	6.0	LOS A	0.0	0.1	0.03	0.08	0.03	52.8
Approach		131	0.0	131	0.0	0.066	0.8	NA	0.0	0.1	0.03	0.08	0.03	54.3
NorthEast: Macquarie Street														
4	L2	28	0.0	28	0.0	0.106	8.6	LOS A	0.2	1.1	0.35	0.91	0.35	31.1
5	T1	57	0.0	57	0.0	0.106	9.3	LOS A	0.2	1.1	0.35	0.91	0.35	30.6
6	R2	11	0.0	11	0.0	0.106	10.5	LOS A	0.2	1.1	0.35	0.91	0.35	37.7
Approach		96	0.0	96	0.0	0.106	9.3	LOS A	0.2	1.1	0.35	0.91	0.35	31.6
NorthWest: Upper Street														
7	L2	6	0.0	6	0.0	0.097	5.9	LOS A	0.1	0.5	0.09	0.10	0.09	51.3
8	T1	154	0.0	154	0.0	0.097	0.1	LOS A	0.1	0.5	0.09	0.10	0.09	52.6
9	R2	27	0.0	27	0.0	0.097	5.9	LOS A	0.1	0.5	0.09	0.10	0.09	42.0
Approach		187	0.0	187	0.0	0.097	1.1	NA	0.1	0.5	0.09	0.10	0.09	50.0
SouthWest: Macquarie Street														
10	L2	8	0.0	8	0.0	0.119	8.4	LOS A	0.2	1.3	0.38	0.92	0.38	35.4
11	T1	85	0.0	85	0.0	0.119	9.3	LOS A	0.2	1.3	0.38	0.92	0.38	34.6
12	R2	10	0.0	10	0.0	0.119	10.5	LOS A	0.2	1.3	0.38	0.92	0.38	24.7
Approach		102	0.0	102	0.0	0.119	9.4	LOS A	0.2	1.3	0.38	0.92	0.38	34.1
All Vehicles		517	0.0	517	0.0	0.119	4.2	NA	0.2	1.3	0.18	0.41	0.18	43.3

Post-Development														
Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg Satn	Aver Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver No. Cycles	Aver Speed
		[Total veh/s]	[HV %]	[Total HV veh/s]	[HV %]	v/c	sec		[Veh. veh]	[Dist. m]				km/h
SouthEast: Upper Street														
1	L2	20	0.0	20	0.0	0.082	5.7	LOS A	0.0	0.2	0.04	0.10	0.04	30.9
2	T1	135	0.0	135	0.0	0.082	0.0	LOS A	0.0	0.2	0.04	0.10	0.04	56.4
3	R2	6	0.0	6	0.0	0.082	6.1	LOS A	0.0	0.2	0.04	0.10	0.04	50.3
Approach		162	0.0	162	0.0	0.082	1.0	NA	0.0	0.2	0.04	0.10	0.04	51.8
NorthEast: Macquarie Street														
4	L2	30	0.0	30	0.0	0.114	8.7	LOS A	0.2	1.2	0.38	0.91	0.38	30.7
5	T1	57	0.0	57	0.0	0.114	9.7	LOS A	0.2	1.2	0.38	0.91	0.38	30.3
6	R2	11	0.0	11	0.0	0.114	11.0	LOS A	0.2	1.2	0.38	0.91	0.38	37.4
Approach		99	0.0	99	0.0	0.114	9.6	LOS A	0.2	1.2	0.38	0.91	0.38	31.3
NorthWest: Upper Street														
7	L2	6	0.0	6	0.0	0.108	6.0	LOS A	0.1	0.6	0.09	0.09	0.09	51.5
8	T1	177	0.0	177	0.0	0.108	0.1	LOS A	0.1	0.6	0.09	0.09	0.09	53.0
9	R2	27	0.0	27	0.0	0.108	6.0	LOS A	0.1	0.6	0.09	0.09	0.09	42.2
Approach		210	0.0	210	0.0	0.108	1.0	NA	0.1	0.6	0.09	0.09	0.09	50.6
SouthWest: Macquarie Street														
10	L2	8	0.0	8	0.0	0.135	8.5	LOS A	0.2	1.4	0.42	0.93	0.42	35.0
11	T1	85	0.0	85	0.0	0.135	9.7	LOS A	0.2	1.4	0.42	0.93	0.42	34.1
12	R2	15	0.0	15	0.0	0.135	11.0	LOS A	0.2	1.4	0.42	0.93	0.42	24.1
Approach		107	0.0	107	0.0	0.135	9.8	LOS A	0.2	1.4	0.42	0.93	0.42	33.3
All Vehicles		577	0.0	577	0.0	0.135	4.1	NA	0.2	1.4	0.18	0.39	0.18	42.4

MOVEMENT SUMMARY – 7.45am – 8.45am – Future Year 2033 – Upper Street / Darling Street

Pre-Development

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE 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
SouthEast: Upper Street														
1	L2	27	0.0	27	0.0	0.114	6.3	LOS A	0.2	1.2	0.41	0.65	0.41	31.9
2	T1	57	0.0	57	0.0	0.114	6.5	LOS A	0.2	1.2	0.41	0.65	0.41	39.0
3	R2	16	0.0	16	0.0	0.114	9.1	LOS A	0.2	1.2	0.41	0.65	0.41	40.8
Approach		100	0.0	100	0.0	0.114	6.8	LOS A	0.2	1.2	0.41	0.65	0.41	36.7
NorthEast: Darling Street														
4	L2	19	0.0	19	0.0	0.145	6.0	LOS A	0.1	0.8	0.10	0.11	0.10	51.3
5	T1	226	0.0	226	0.0	0.145	0.1	LOS A	0.1	0.8	0.10	0.11	0.10	53.8
6	R2	35	0.0	35	0.0	0.145	6.1	LOS A	0.1	0.8	0.10	0.11	0.10	49.3
Approach		280	0.0	280	0.0	0.145	1.3	NA	0.1	0.8	0.10	0.11	0.10	53.2
NorthWest: Upper Street														
7	L2	15	0.0	15	0.0	0.251	6.0	LOS A	0.4	2.8	0.46	0.71	0.46	33.0
8	T1	131	0.0	131	0.0	0.251	6.7	LOS A	0.4	2.8	0.46	0.71	0.46	44.7
9	R2	57	0.0	57	0.0	0.251	9.1	LOS A	0.4	2.8	0.46	0.71	0.46	32.6
Approach		203	0.0	203	0.0	0.251	7.3	LOS A	0.4	2.8	0.46	0.71	0.46	40.3
SouthWest: Darling Street														
10	L2	43	0.0	43	0.0	0.096	5.9	LOS A	0.1	0.5	0.11	0.19	0.11	44.5
11	T1	121	0.0	121	0.0	0.096	0.2	LOS A	0.1	0.5	0.11	0.19	0.11	50.8
12	R2	19	0.0	19	0.0	0.096	6.3	LOS A	0.1	0.5	0.11	0.19	0.11	48.5
Approach		183	0.0	183	0.0	0.096	2.1	NA	0.1	0.5	0.11	0.19	0.11	49.5
All Vehicles		767	0.0	767	0.0	0.251	3.8	NA	0.4	2.8	0.24	0.36	0.24	44.4

Post-Development

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE 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
SouthEast: Upper Street														
1	L2	27	0.0	27	0.0	0.141	6.3	LOS A	0.2	1.5	0.43	0.67	0.43	39.6
2	T1	78	0.0	78	0.0	0.141	6.6	LOS A	0.2	1.5	0.43	0.67	0.43	38.9
3	R2	16	0.0	16	0.0	0.141	9.4	LOS A	0.2	1.5	0.43	0.67	0.43	40.7
Approach		121	0.0	121	0.0	0.141	6.9	LOS A	0.2	1.5	0.43	0.67	0.43	39.4
NorthEast: Darling Street														
4	L2	19	0.0	19	0.0	0.146	6.0	LOS A	0.1	0.9	0.11	0.11	0.11	51.2
5	T1	226	0.0	226	0.0	0.146	0.1	LOS A	0.1	0.9	0.11	0.11	0.11	53.6
6	R2	37	0.0	37	0.0	0.146	6.1	LOS A	0.1	0.9	0.11	0.11	0.11	49.1
Approach		282	0.0	282	0.0	0.146	1.3	NA	0.1	0.9	0.11	0.11	0.11	53.0
NorthWest: Upper Street														
7	L2	16	0.0	16	0.0	0.292	5.8	LOS A	0.5	3.5	0.48	0.73	0.51	25.5
8	T1	153	0.0	153	0.0	0.292	6.6	LOS A	0.5	3.5	0.48	0.73	0.51	40.2
9	R2	64	0.0	64	0.0	0.292	9.4	LOS A	0.5	3.5	0.48	0.73	0.51	25.0
Approach		234	0.0	234	0.0	0.292	7.3	LOS A	0.5	3.5	0.48	0.73	0.51	34.8
SouthWest: Darling Street														
10	L2	51	0.0	51	0.0	0.100	5.8	LOS A	0.1	0.5	0.11	0.20	0.11	43.9
11	T1	121	0.0	121	0.0	0.100	0.2	LOS A	0.1	0.5	0.11	0.20	0.11	50.4
12	R2	19	0.0	19	0.0	0.100	6.3	LOS A	0.1	0.5	0.11	0.20	0.11	48.2
Approach		191	0.0	191	0.0	0.100	2.3	NA	0.1	0.5	0.11	0.20	0.11	48.9
All Vehicles		827	0.0	827	0.0	0.292	4.0	NA	0.5	3.5	0.26	0.39	0.27	42.7

MOVEMENT SUMMARY – 3.30pm – 4.30pm – Future Year 2033 – Upper Street / Macquarie Street

Pre-Development														Post-Development															
Vehicle Movement Performance														Vehicle Movement Performance															
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Dep. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed	Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Dep. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		Total veh/s	HV %	Total HV veh/s	%	veh	sec		[Veh. veh	Dist] m				km/h			Total veh/s	HV %	Total HV veh/s	%	veh	sec		[Veh. veh	Dist] m				km/h
SouthEast: Upper Street														SouthEast: Upper Street															
1	L2	10	0.0	10	0.0	0.103	5.8	LOS A	0.1	0.5	0.07	0.10	0.07	35.8	1	L2	13	0.0	13	0.0	0.117	5.9	LOS A	0.1	0.6	0.08	0.10	0.08	30.6
2	T1	167	0.0	167	0.0	0.103	0.1	LOS A	0.1	0.5	0.07	0.10	0.07	56.8	2	T1	188	0.0	188	0.0	0.117	0.1	LOS A	0.1	0.6	0.08	0.10	0.08	55.7
3	R2	24	0.0	24	0.0	0.103	5.8	LOS A	0.1	0.5	0.07	0.10	0.07	52.1	3	R2	27	0.0	27	0.0	0.117	5.9	LOS A	0.1	0.6	0.08	0.10	0.08	49.8
Approach		201	0.0	201	0.0	0.103	1.0	NA	0.1	0.5	0.07	0.10	0.07	54.9	Approach		227	0.0	227	0.0	0.117	1.1	NA	0.1	0.6	0.08	0.10	0.08	53.1
NorthEast: Macquarie Street														NorthEast: Macquarie Street															
4	L2	18	0.0	18	0.0	0.115	8.4	LOS A	0.2	1.2	0.35	0.92	0.35	30.3	4	L2	20	0.0	20	0.0	0.124	8.5	LOS A	0.2	1.3	0.38	0.93	0.38	29.9
5	T1	44	0.0	44	0.0	0.115	9.5	LOS A	0.2	1.2	0.35	0.92	0.35	30.1	5	T1	44	0.0	44	0.0	0.124	9.8	LOS A	0.2	1.3	0.38	0.93	0.38	29.9
6	R2	32	0.0	32	0.0	0.115	10.6	LOS A	0.2	1.2	0.35	0.92	0.35	37.2	6	R2	32	0.0	32	0.0	0.124	11.1	LOS A	0.2	1.3	0.38	0.93	0.38	36.9
Approach		93	0.0	93	0.0	0.115	9.7	LOS A	0.2	1.2	0.35	0.92	0.35	32.7	Approach		96	0.0	96	0.0	0.124	10.0	LOS A	0.2	1.3	0.38	0.93	0.38	32.4
NorthWest: Upper Street														NorthWest: Upper Street															
7	L2	4	0.0	4	0.0	0.069	6.1	LOS A	0.1	0.4	0.11	0.11	0.11	50.8	7	L2	4	0.0	4	0.0	0.080	6.1	LOS A	0.1	0.5	0.11	0.10	0.11	51.2
8	T1	107	0.0	107	0.0	0.069	0.1	LOS A	0.1	0.4	0.11	0.11	0.11	51.6	8	T1	129	0.0	129	0.0	0.080	0.1	LOS A	0.1	0.5	0.11	0.10	0.11	52.4
9	R2	21	0.0	21	0.0	0.069	6.0	LOS A	0.1	0.4	0.11	0.11	0.11	41.6	9	R2	21	0.0	21	0.0	0.080	6.1	LOS A	0.1	0.5	0.11	0.10	0.11	42.0
Approach		133	0.0	133	0.0	0.069	1.3	NA	0.1	0.4	0.11	0.11	0.11	48.9	Approach		154	0.0	154	0.0	0.080	1.1	NA	0.1	0.5	0.11	0.10	0.11	49.9
SouthWest: Macquarie Street														SouthWest: Macquarie Street															
10	L2	19	0.0	19	0.0	0.118	8.7	LOS A	0.2	1.2	0.38	0.91	0.38	35.4	10	L2	19	0.0	19	0.0	0.128	8.8	LOS A	0.2	1.3	0.41	0.92	0.41	35.0
11	T1	67	0.0	67	0.0	0.118	9.4	LOS A	0.2	1.2	0.38	0.91	0.38	34.5	11	T1	67	0.0	67	0.0	0.128	9.8	LOS A	0.2	1.3	0.41	0.92	0.41	34.2
12	R2	15	0.0	15	0.0	0.118	10.5	LOS A	0.2	1.2	0.38	0.91	0.38	24.6	12	R2	18	0.0	18	0.0	0.128	10.9	LOS A	0.2	1.3	0.41	0.92	0.41	24.2
Approach		101	0.0	101	0.0	0.118	9.4	LOS A	0.2	1.2	0.38	0.91	0.38	33.8	Approach		104	0.0	104	0.0	0.128	9.8	LOS A	0.2	1.3	0.41	0.92	0.41	33.2
All Vehicles		528	0.0	528	0.0	0.118	4.2	NA	0.2	1.2	0.19	0.40	0.19	44.8	All Vehicles		581	0.0	581	0.0	0.128	4.1	NA	0.2	1.3	0.20	0.38	0.20	43.5

MOVEMENT SUMMARY – 3.30pm – 4.30pm – Future Year 2033 – Upper Street / Darling Street

Pre-Development														Post-Development															
Vehicle Movement Performance														Vehicle Movement Performance															
Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective/Aver. Stop Rate	No. Cycles	Aver. Speed	Mov ID	Turn	DEMAND FLOWS		ARRIVAL FLOWS		Deg. Satn	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Que	Effective/Aver. Stop Rate	No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total HV veh/h	%	v/c	sec		[Veh. veh	Dist m				km/h			[Total veh/h	HV %	[Total HV veh/h	%	v/c	sec		[Veh. veh	Dist m			km/h	
SouthEast: Upper Street														SouthEast: Upper Street															
1	L2	91	0.0	91	0.0	0.207	6.0	LOS A	0.3	2.3	0.31	0.62	0.31	32.0	1	L2	91	0.0	91	0.0	0.207	6.0	LOS A	0.3	2.3	0.31	0.62	0.31	39.8
2	T1	77	0.0	77	0.0	0.207	6.8	LOS A	0.3	2.3	0.31	0.62	0.31	39.1	2	T1	77	0.0	77	0.0	0.207	6.8	LOS A	0.3	2.3	0.31	0.62	0.31	39.1
3	R2	33	0.0	33	0.0	0.207	9.2	LOS A	0.3	2.3	0.31	0.62	0.31	40.9	3	R2	33	0.0	33	0.0	0.207	9.2	LOS A	0.3	2.3	0.31	0.62	0.31	40.9
Approach		201	0.0	201	0.0	0.207	6.8	LOS A	0.3	2.3	0.31	0.62	0.31	35.4	Approach		201	0.0	201	0.0	0.207	6.8	LOS A	0.3	2.3	0.31	0.62	0.31	39.8
NorthEast: Darling Street														NorthEast: Darling Street															
4	L2	10	0.0	10	0.0	0.095	6.4	LOS A	0.1	0.8	0.20	0.15	0.20	49.5	4	L2	10	0.0	10	0.0	0.095	6.4	LOS A	0.1	0.8	0.20	0.15	0.20	49.5
5	T1	128	0.0	128	0.0	0.095	0.4	LOS A	0.1	0.8	0.20	0.15	0.20	50.9	5	T1	128	0.0	128	0.0	0.095	0.4	LOS A	0.1	0.8	0.20	0.15	0.20	50.9
6	R2	35	0.0	35	0.0	0.095	6.5	LOS A	0.1	0.8	0.20	0.15	0.20	45.1	6	R2	35	0.0	35	0.0	0.095	6.5	LOS A	0.1	0.8	0.20	0.15	0.20	45.1
Approach		173	0.0	173	0.0	0.095	2.0	NA	0.1	0.8	0.20	0.15	0.20	50.0	Approach		173	0.0	173	0.0	0.095	2.0	NA	0.1	0.8	0.20	0.15	0.20	50.0
NorthWest: Upper Street														NorthWest: Upper Street															
7	L2	21	0.0	21	0.0	0.187	6.4	LOS A	0.3	1.9	0.48	0.71	0.48	32.7	7	L2	21	0.0	21	0.0	0.187	6.1	LOS A	0.3	1.9	0.48	0.71	0.48	25.5
8	T1	77	0.0	77	0.0	0.187	6.6	LOS A	0.3	1.9	0.48	0.71	0.48	44.3	8	T1	77	0.0	77	0.0	0.187	6.3	LOS A	0.3	1.9	0.48	0.71	0.48	40.2
9	R2	45	0.0	45	0.0	0.187	9.9	LOS A	0.3	1.9	0.48	0.71	0.48	32.4	9	R2	45	0.0	45	0.0	0.187	9.6	LOS A	0.3	1.9	0.48	0.71	0.48	25.0
Approach		144	0.0	144	0.0	0.187	7.6	LOS A	0.3	1.9	0.48	0.71	0.48	38.7	Approach		144	0.0	144	0.0	0.187	7.3	LOS A	0.3	1.9	0.48	0.71	0.48	33.0
SouthWest: Darling Street														SouthWest: Darling Street															
10	L2	43	0.0	43	0.0	0.154	5.7	LOS A	0.1	0.4	0.04	0.11	0.04	50.7	10	L2	43	0.0	43	0.0	0.154	5.7	LOS A	0.1	0.4	0.04	0.11	0.04	50.7
11	T1	246	0.0	246	0.0	0.154	0.0	LOS A	0.1	0.4	0.04	0.11	0.04	54.8	11	T1	246	0.0	246	0.0	0.154	0.0	LOS A	0.1	0.4	0.04	0.11	0.04	54.8
12	R2	15	0.0	15	0.0	0.154	6.0	LOS A	0.1	0.4	0.04	0.11	0.04	51.0	12	R2	15	0.0	15	0.0	0.154	6.0	LOS A	0.1	0.4	0.04	0.11	0.04	51.0
Approach		304	0.0	304	0.0	0.154	1.1	NA	0.1	0.4	0.04	0.11	0.04	54.1	Approach		304	0.0	304	0.0	0.154	1.1	NA	0.1	0.4	0.04	0.11	0.04	54.1
All Vehicles		822	0.0	822	0.0	0.207	3.8	NA	0.3	2.3	0.22	0.35	0.22	42.9	All Vehicles		822	0.0	822	0.0	0.207	3.8	NA	0.3	2.3	0.22	0.35	0.22	43.6