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Job Number: 24NL128-T2

Date: 14th November, 2024

Traffic Management Report for 8 Robertson Road, Chester Hill, NSW

Prepared for: Development Application Approval

Report No.	Issue No.	Issue Date	Details
24NL128-T1	1	08/11/2024	Issued for Coordination
24NL128-T2	2	14/11/2024	Issued for Development Application Approval

Prepared by

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1. Introduction

Loka Consulting Engineers Pty Ltd has been engaged by Campbell Hill Group Pty Ltd to provide a Traffic Management Report for the site at 8 Robertson Road, Chester Hill, NSW located within Canterbury-Bankstown Council (refer to Figure 1-1 and Figure 1-2) for Development Application Approval.

A Traffic Management Plan and Report is required for the proposed development to identify the impacts of the proposal on the local street network and mitigation measures required to ameliorate any impacts. This includes:

- A description of the site and details of the development proposal;
- A review of the road network in the vicinity of the site, and traffic conditions on that road network;
- A review of the geometric design features of the proposed car parking facilities for compliance with the relevant codes and standards; and
- An assessment of the adequacy and suitability of the quantum of off-street car parking provided on site.



Figure 1-1 Subject site (Source: SIX Maps)

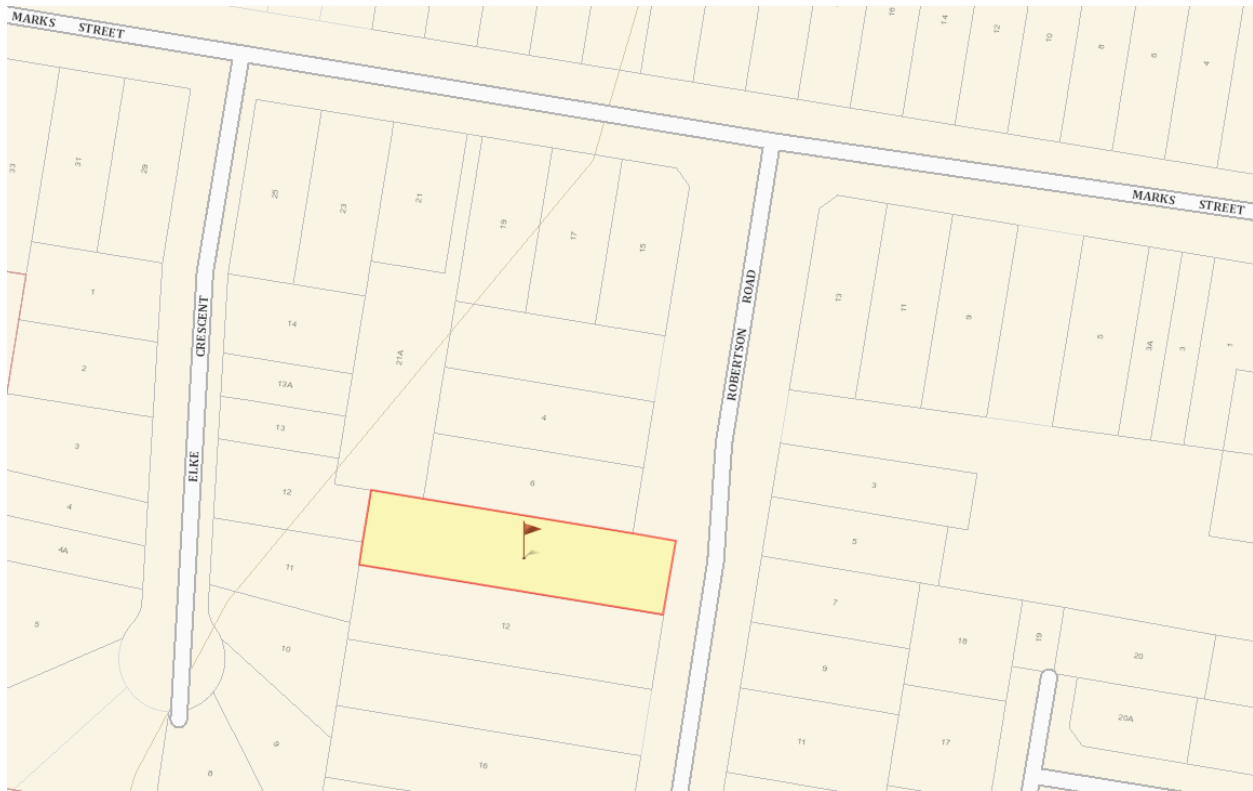


Figure 1-2 Site location (Source: SIX Maps)

2. Proposed Development

The proposed new development will involve the demolition of existing single dwelling and the construction of a childcare development within a total site area of 1201 m².

The proposed development is bounded by

- Robertson Road on the East;
- No. 11 & 12 Elke Crescent on the West;
- No. 6 Robertson Road & No. 21A Marks Street on the North, and
- No. 12 Robertson Road on the South.

The development consists of basement level primarily for car parking with entry from Robertson Road and 2 upper levels with 4 playrooms to accommodate 70 children.

Robertson Road

Robertson Road is a local road and not classified by Transport for New South Wales (TfNSW).

Robertson Road is approximately 9 metres wide with kerbs and gutters on both sides. It provides linkage to Marks Street and cul-de-Sac. It has an undivided travel lane for both directions with kerbside parking on both sides.

Marks Street

Marks Street is a local road and not classified by TfNSW.

Marks Street is approximately 11 metres wide with kerbs and gutters on both sides. It provides connection from Hector Street to Chester Hill Road. It has an undivided travel lane for both directions with kerbside parking on both sides.

2.1.Public Transportations

1. It takes 5 minutes walking (350m) from the site to Hector St opp Palmer St bus stop (refer to figure 2-1).
2. It takes 9 minutes walking (600m) from the site to Chester Hill Rd at Marks St bus stop (refer to figure 2-2).

Table 2-1 shows the bus line name; routes and the time between two successive trips. Refer to Transport NSW for accurate details.

Table 2-1 Bus line, route, and time

Stop No.	Line Name	Route	Weekday hours	Weekday interval	Weekend hours	Weekend interval
1	M91	Parramatta to Hurstville via Chester Hill & Padstow	05:23 - 20:32	20 min	06:49 - 21:32	20 min
2	911	Bankstown to Auburn via Georges Hall	06:04 - 18:03	30 min	06:33 - 17:33	60 min

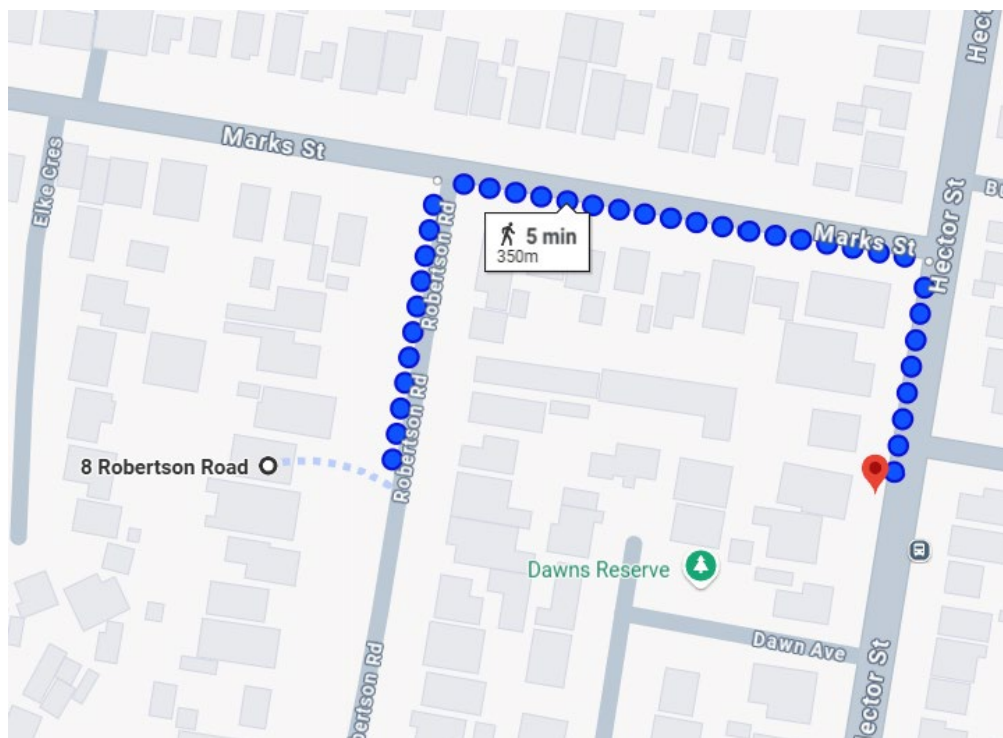


Figure 2-1 Subject Site to Hector St opp Palmer St bus stop (Source: Google Maps)

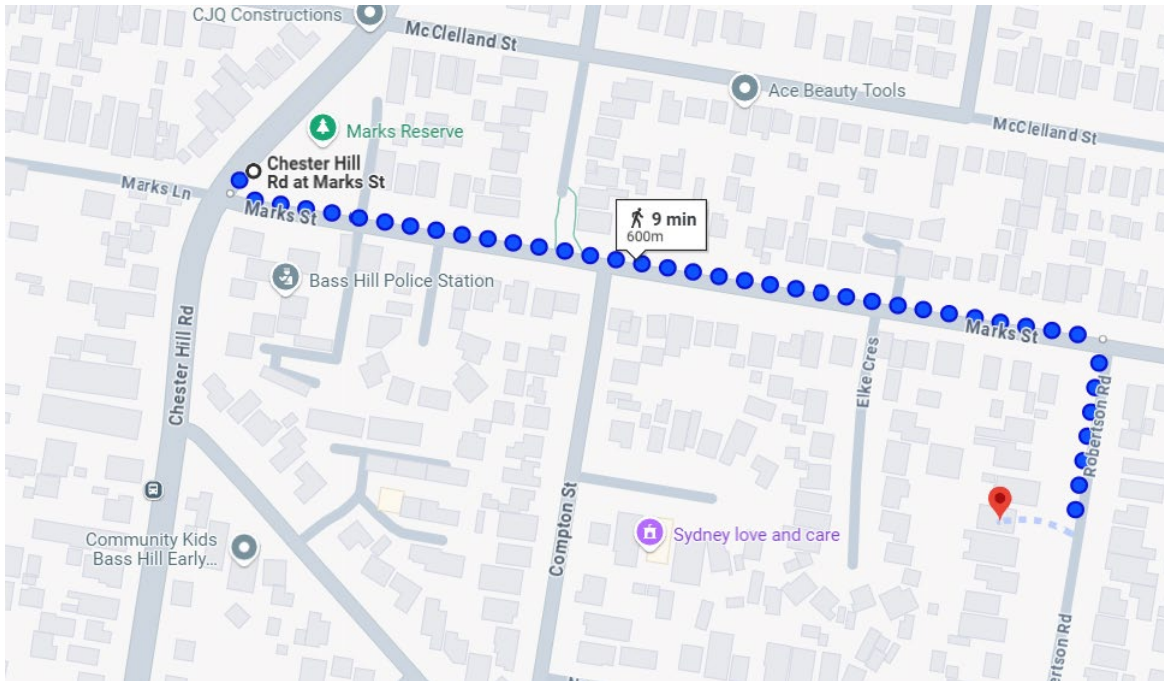


Figure 2-2 Subject Site to Chester Hill Rd at Marks St (Source: Google Maps)

3. Off Street Parking Provision

3.1. Car parking

According to Canterbury Bankstown DCP 2021–Chapter 3.2, the following minimum parking spaces shown in Table 3-1 must be provided for a Residential Flat Buildings.

Table 3-1 Off-street car parking space provision rate

Land use	Minimum car parking spaces required
child care centre	1 car space per 4 children; and 2 additional car spaces for the exclusive use of any associated dwelling.

Accordingly, the car parking spaces required for the proposed development is shown in the below Table 3-2.

Table 3-2 Required minimum car parking spaces

Type	rate	No. of children	Parking required	Parking proposed
child care centre	1 / 4 children	70	18	20

According to the table above, Minimum number of off-street parking spaces required is 18 and the site has provided a total of 20 car parking which includes one accessible parking space. Hence, the total car parking spaces comply with Canterbury Bankstown Council DCP.

According to NSW regulations the number of staff should be as per below table

Child age	Ratio	Number of children	Number of staff
0-24 months	1 / 4 children	15	4
24-36 months	1 / 5 children	20	4
Over 36 months	1 / 10 children	35	4
Total number of staff			12

The proposed childcare centre has carefully considered the ratio of staff and customer parking spaces, providing 8 parking spaces for customers and 12 parking spaces for staff. Additionally, three bicycle spaces are designated, which staff can utilize. These provisions ensure convenient and accessible parking options for all users complying with NSW Regulation 123 (Educators to child ratios – centre-based services). Moreover, the development is well-connected to public transport routes, facilitating easy access for both staff and customers and supporting a sustainable approach to transportation.

The architectural plans of the proposed development have been prepared by Campbell Hill and is attached in Appendix A.

3.2.Bicycle parking

According to Canterbury Bankstown DCP 2021–Chapter 3.2, the following bicycle parking shown in Table 3-3 must be provided for a childcare centre.

Table 3-3 Off-street bicycle parking space provision rate

Type	Minimum bicycle spaces required
child care centre	1 space per 4 staff.

Required minimum parking spaces for the proposed development is shown in Table 3-4.

Table 3-4 Required minimum bicycle parking spaces

Type	rate	No. of staff	Parking required	Parking proposed
child care centre	1 / 4 staff	12	3	3

The design is complied with the requirement from Canterbury Bankstown Council DCP 2021.

4. Car Park and Driveway Layout

4.1. Driveway and Ramp Design

The design of the driveway, internal roadways & ramps, and car parking spaces must comply with relevant Australian Standards; details are shown in the architectural plan. Table 4-1 and Table 4-2 assess the compliance of the site to Australian Standard.

Table 4-1 Driveway and ramp design

FEATURE	AS 2890.1:2004 & AS 2890.2:2018	Architectural Plan	Compliance
Driveway width	• 3.0 to 5.5 for Category 1. • 6.0 to 9.0 for Category 2.	5.57m at boundary	The design is complied with AS 2890.1
Ramp width	• One-way – 3.0m minimum between kerbs • Two-way – 5.5m minimum between kerbs • Note: 300mm clearance on both side when there is a high kerb or barrier on both sides.	5.57m between 300mm kerb on both sides	The design is complied with AS 2890.1
Ramp grade	Longer than 20m – 1:5 maximum. Up to 20m long – 1:4 maximum. Transition grade no more than 1:8. First 6m no more than 1:20. Changes of grade no more than 1:8.	<u>GF to basement 1</u> 2.65% @ 2m 21.13% @ 6m 25.28% @ 5m 35.5% @ 2m 2.5% @ 8.25m 5% @ 11.655m 5% @ 11.655m	The design is not complied with AS 2890.1. Please refer to section 4.3 for the proposed traffic signal system for pedestrian safety.
Gradient within parking module	5% parallel 6.25% other direction for all parking spaces except; 2.5% for accessible parking space and the shared zone	Max. 5% for all parking spaces other than accessible parking space and shared zone Max. 2.5% for accessible parking space and the shared zone	The design is complied with AS 2890.1.
Headroom	2.2m min between the floor and an overhead obstruction. Headroom above each dedicated space and adjacent	The ramp with GF: 2.5m Basement: 3m without slab thickness & mechanical services.	The design is complied with AS 2890.1.

	shared area should be a minimum of 2.5m.	Ensure min. 2.2m overall & 2.5m at disabled parking at CC stage	
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4.2. Dimensions of Parking Spaces

The design of the car parking spaces should be in compliance with AS 2890.1 & AS 2890.3&6.

Table 4-2 Dimensions of parking spaces

FEATURE	AS/NZS 2890.1 AS 2890.2:2018	Architectural Plan	Compliance
Staff parking space	5.4m x 2.4m. Additional 300mm when adjacent a wall	5.4m x 2.4m	The design is complied with AS 2890.1.
Visitor parking space	5.4m x 2.6m. Additional 300mm when adjacent a wall	5.4m x 2.6m	The design is complied with AS 2890.1.
Accessible parking space	5.4m x 2.4m adjacent a 5.4m x 2.4m shared zone	5.4m x 2.5m adjacent a 5.4m x 3.1m shared zone	The design is complied with AS 2890.6.
Aisle Widths	5.8m minimum	8.1m	The design is complied with AS 2890.1.
Parking envelope	According to AS2890.1 Figure 5.2	Complying with AS 2890.1	The design is complied with AS 2890.1
Bicycle parking space	1.8m x 0.5m horizontal 1.2m x 0.5m vertical	1.5m x 0.5m	The design is complied with AS2890.3.
Bicycle parking aisle	1.5m	1.929m	The design is complied with AS2890.3.

As required in AS 2890.1:2004, a triangular area with 2.5m (face to driveway) by 2.0m (face to street) will be kept clear of obstructions to visibility (Refer to Figure 4-1).

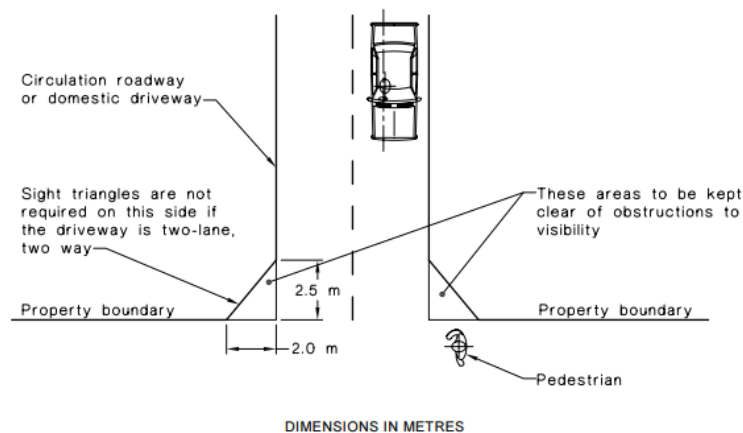


Figure 4-1 AS 2890.1:2004 requirement

In accordance with AS 2890.1:2004, sight triangle is hatched in red and shown in the following Figure 4-2.

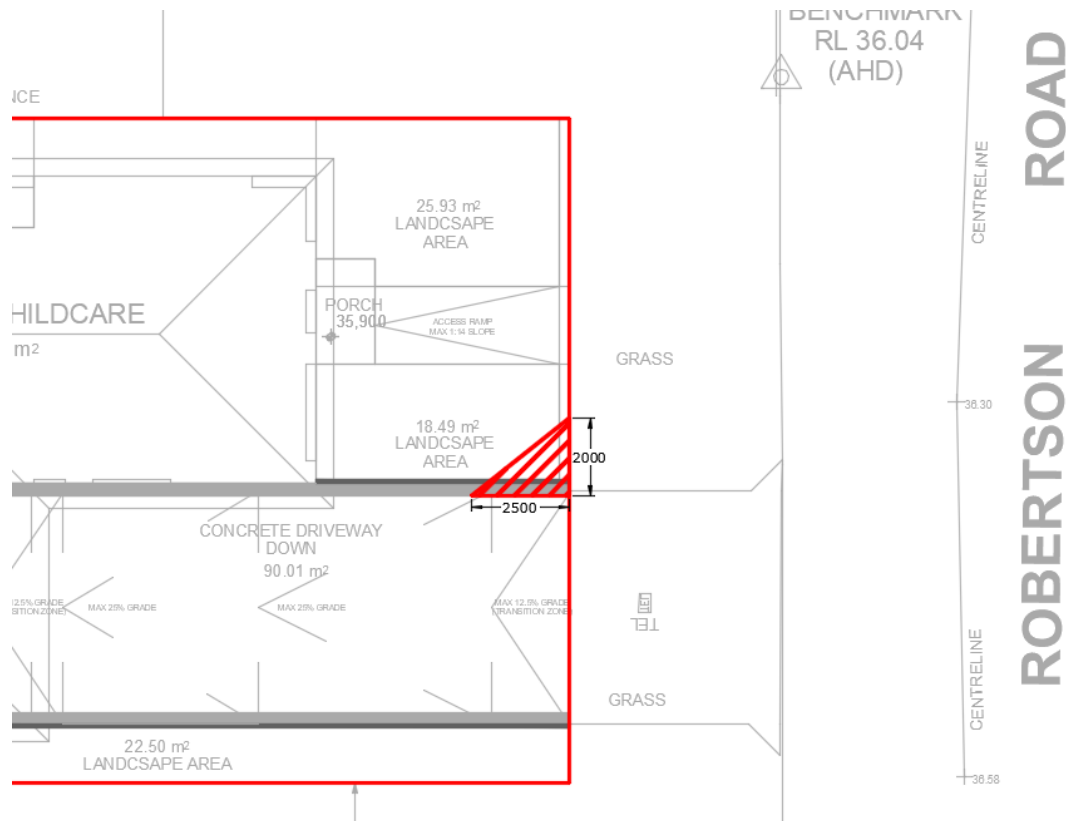


Figure 4-2 Sight triangle

Ensure any object within the sight triangle is max. 1.15m high or 50% transparent above 0.9m if higher than 1.15m.

4.3. Proposed Traffic Signal System for Pedestrian Safety

To address the non-compliance of the ramp gradients with AS2890.1, specifically the requirement for the first 6 meters to be at a 5% gradient, an enhanced traffic signal system is proposed. This system will ensure pedestrian safety as vehicles enter and exit the basement. The solution includes the installation of a laser detection system that triggers flashing lights and warning signs to alert pedestrians (Refer to Figure 4-3).

The traffic signal system will be comprised of:

1. **Laser detection sensors:** Positioned at the ramp to detect when vehicles are approaching the exit.
2. **Flashing warning yellow lights:** Activated by the laser sensors on each side of the ramp to signal pedestrians that a vehicle is about to exit.

3. **Warning signs:** External signs mentioning 'WATCH OUT: VEHICLES EXITING WHEN FLASHING YELLOW' on each side of the ramp are proposed to further inform pedestrians of the potential hazard if yellow light flashes. The signs will feature clear, bold text in a high-visibility format to maximize awareness.

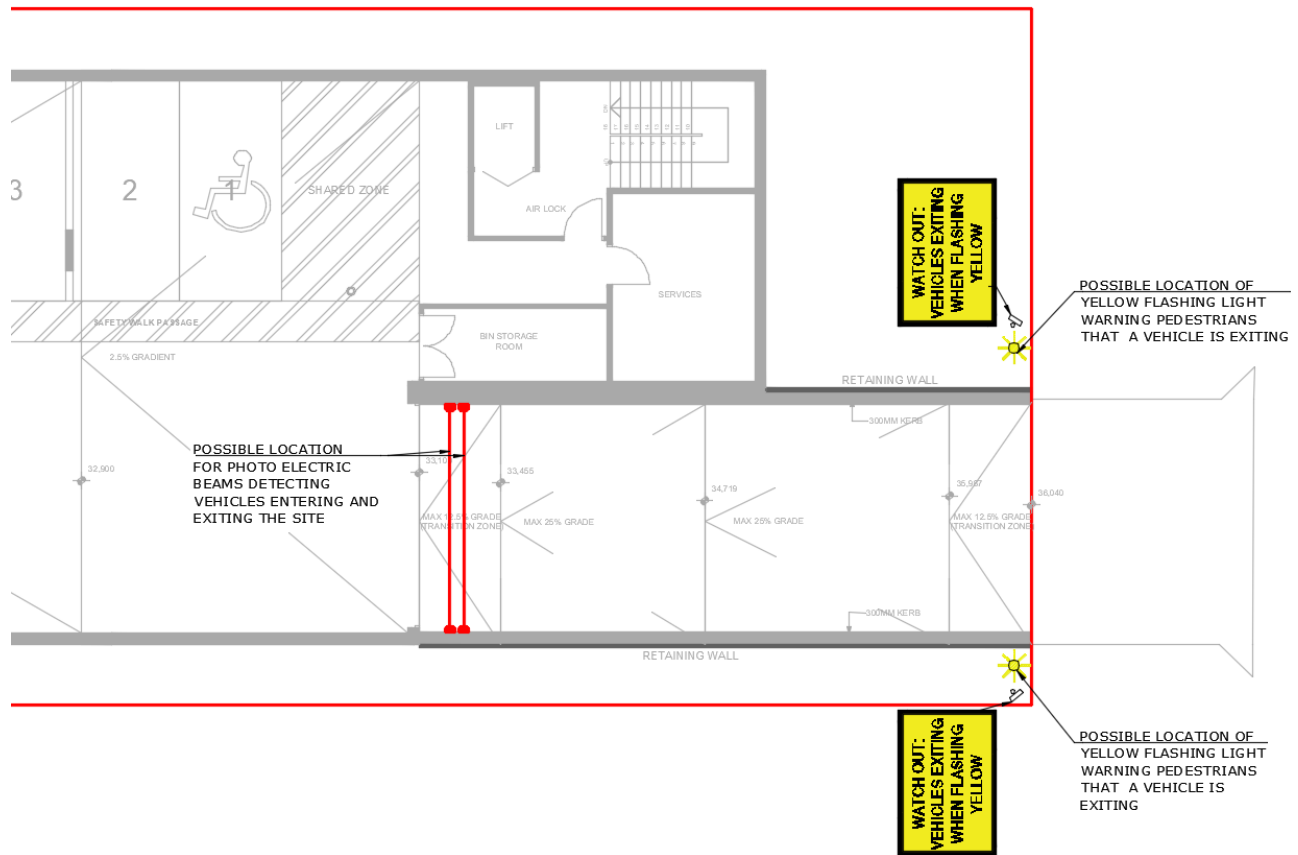


Figure 4-3 Proposed Traffic Signal System Components for Pedestrian Safety

5. Traffic Flows and Volumes

5.1. Daily Traffic Data

Road and Maritime Service (RMS) collect traffic volume information from roadside traffic collection devices across the NSW network.

From RMS's average daily traffic volume map the nearest traffic counting station is station ID 25022 at 30m West of St Davids Road, Ashfield 2131 located approximately 15 km East of the subject site.

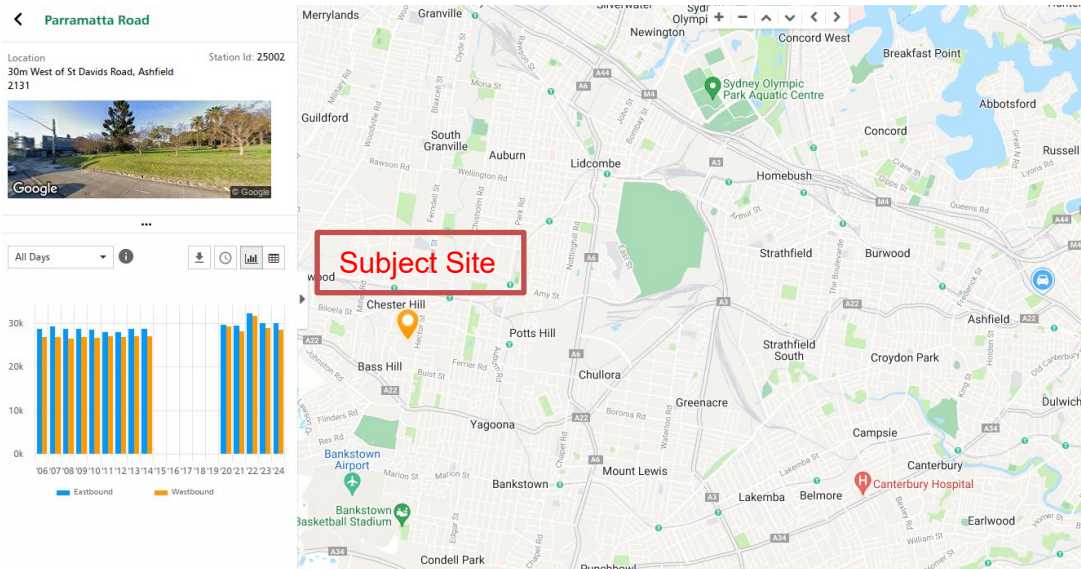


Figure 5-1 Traffic Count Station

From the counts undertaken at Station ID 25022 in 2024 average daily traffic account of 30,069 vehicles Eastbound and 28,594 vehicles Westbound were counted on average per day passing across Parramatta Road.

5.2. Traffic Survey

Traffic Counts were undertaken during the morning and afternoon peak periods to gauge the performance of the current road system.

Traffic Survey is performed by Trans Traffic Survey PTY LTD on Tuesday 22nd of October, 2024 in the morning between 7:00am to 9:00am and in the afternoon between 4:00pm to 6:00pm at one (1) location:

- T-junction at Robertson Rd & Marks St.



Figure 5-2 Locations of Traffic Survey

The full result of the traffic analysis is summarised in Figure 5-3 & 5-4 below.

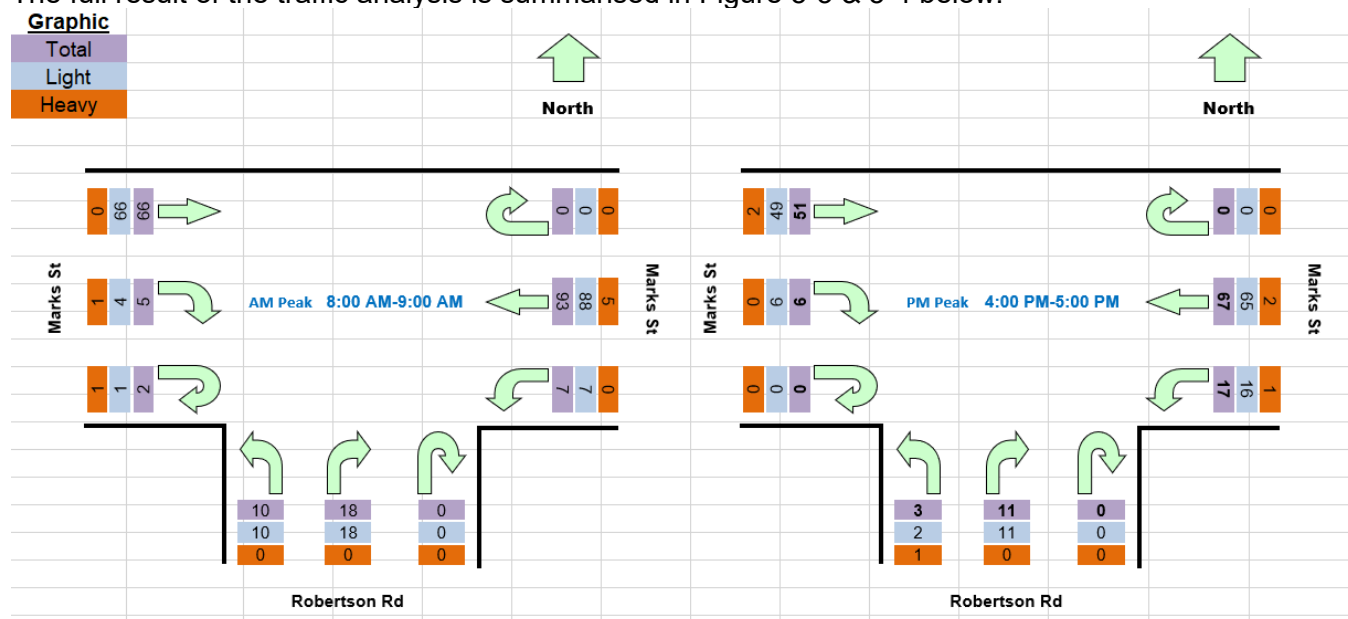


Figure 5-3 Traffic Survey at Robertson Rd & Marks St Tuesday

5.3.Existing Road Service Level

The capacity of the urban road is generally determined by the capacity of intersections. Tables from the RMS's 'Guide to Traffic Generating Developments' provide guidance on mid-block capacities for urban roads and likely levels of service. The tables are shown in table 5-1 & 5-2.

Table 5-1 Typical mid-block capacities for urban roads with interrupted flow

Type of Road	One-Way Mid-block Lane Capacity (pcu/hr)	
Median or inner lane	Divided Road	1000
	Undivided Road	900
Outer or kerb lane	With Adjacent Parking Lane	900
	Clearway Conditions	900
	Occasional Parked Cars	600
4 lane undivided	Occasional Parked Cars	1500
	Clearway Conditions	1800
4 lane divided	Clearway Conditions	1900

Table 5-2 Urban road peak hour flows per direction

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

Robertson Road

Based on the traffic analysis and roadside environment (occasional parked cars), it is considered that Robertson Road operates within the mid-block capacity for an urban road with interrupted flow. Robertson Road is currently functioning at a level of service **A** in peak hour conditions (at maximum **28 vehicles in one lane at peak hour**).

The RMS guide states a service level A, *'This, the top level is a condition of free flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent.'*

Marks Street

Based on the traffic analysis and roadside environment (occasional parked cars), it is considered that Marks Street operates within the mid-block capacity for an urban road with interrupted flow. Marks Street is currently functioning at a level of service **A** in peak hour conditions (at maximum **103 vehicles in one lane at peak hour**).

The RMS guide states a service level A, *'This, the top level is a condition of free flow in which individual drivers are virtually unaffected by the presence of others in the traffic stream. Freedom to select desired speeds and to manoeuvre within the traffic stream is extremely high, and the general level of comfort and convenience provided is excellent.'*

5.4.Intersection Assessment

The existing intersection operating performance of the surveyed intersection for the weekday morning and afternoon peak hours were assessed using the SIDRA software package (version 8.0) to determine the Degree of Saturation (DS), Average Delay (AVD in seconds) and Level of Service (LoS).

SIDRA program provides Level of Service Criteria shown in table 5-3.

Table 5-3 Level of Service Criteria

LoS	Traffic Signal / Roundabout	Give Way / Stop Sign / T-Junction control
A	Good operation	Good operation
B	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	Satisfactory	Satisfactory, but accident study required
D	Operating near capacity	Near capacity & accident study required
E	At capacity, at signals incidents will cause excessive delays.	At capacity, requires other control mode
F	Unsatisfactory and requires additional capacity, Roundabouts require other control mode	At capacity, requires other control mode

The Average Vehicle Delay (AVD) provides a measure of the operational performance of an intersection as indicated below shown in table 5-4, which relates AVD to LOS. The AVD's should be taken as a guide only as longer delays could be tolerated in some locations (i.e., inner city conditions) and on some roads (i.e. minor side street intersecting with a major arterial route). For traffic signals, the average delay over all movements should be taken. For roundabouts and priority control intersections (sign control) the critical movement for level of service assessment should be that movement with the highest average delay.

Table 5-4 The Average Vehicle Delay (AVD) to Level of service (LOS)

LoS	Average Delay per Vehicles (seconds/vehicle)
A	Less than 14
B	15 to 28
C	29 to 45-49
D	43 to 56
E	57 to 70
F	>70

The degree of saturation (DS) is another measure of the operational performance of individual intersections. For intersections controlled by traffic signals, both queue length and delay increase rapidly as DS approaches 1. It is usual to attempt to keep DS to less than 0.9. Degrees of Saturation in the order of 0.7 generally represent satisfactory intersection operation. When DS exceed 0.9 queues can be anticipated.

The full SIDRA outputs are presented in the Appendix B for the existing conditions as well as proposed conditions.

6. Traffic Generation

An indication of the traffic generation potential of the development proposal is provided in accordance with Roads and Maritime Services (RMS) publication 'Guide to Traffic Generating Developments 2002'.

The RMS guidelines are based on extensive survey of a wide range of land uses.

For the existing site, there is one single dwellings

Rates.

Daily vehicle trips = 9.0 per dwelling

Week day peak hour vehicle trips = 0.85 per dwelling

The hourly traffic generation for existing dwellings is $0.85 \times 1 = 0.85$

The subject site is identified as Child Care Centre

Rates

Table 6-1 Child Care Centres Traffic Generation Potential

Centre type	Peak Vehicle Trips / Child		
	7:00 – 9:00 AM	2:30 – 4:00 PM	4:00 – 6:00 PM
Pre-school	1.4	0.8	-
Long-day Care	0.8	0.3	0.7
Before/After Care	0.5	0.2	0.7

For the subject site, the total number of children accommodated is 70, consists of 15 children from 0 to 2 years old, 20 children from 2 to 3 years old and 35 children from 3 to 5 years old. The childcare centre will provide long-day care service. The expected traffic generation is shown as following:

Table 6-2 Project Increase in Peak Hour Traffic Generation Potential

Centre type	Peak Vehicle Trips		
	7:00 – 9:00 AM	2:30 – 4:00 PM	4:00 – 6:00 PM
Pre-school	-	-	-
Long-day care	56	21	49
Before/after care	-	-	-

This value should be discounted by the expected existing volume of traffic, to determine the net increase (or decrease) in future expected traffic. This is shown in Table 6-3 below.

Table 6-3 Project Net Increase in Peak Hour Traffic Generation Potential

Traffic Generation Potential	Land Use	7:00 – 9:00 AM	2:30 – 4:00 PM	4:00 – 6:00 PM
Future	Child care	$56/2 = 28/\text{hr}$	$21/1.5 = 14/\text{hr}$	$49/2 = 25/\text{hr}$
Existing	Dwelling	1	-	1
Net increase per hour		+ 27	+ 14	+ 24

According to the table above, it is likely that the proposed development will result in an increase in the traffic generated, by maximum 55 vehicle trips during peak hours 7am – 9am (i.e., 27 vehicles per hour) and 48 trips during peak hours 4pm – 6pm (i.e., 24 vehicles per hour).

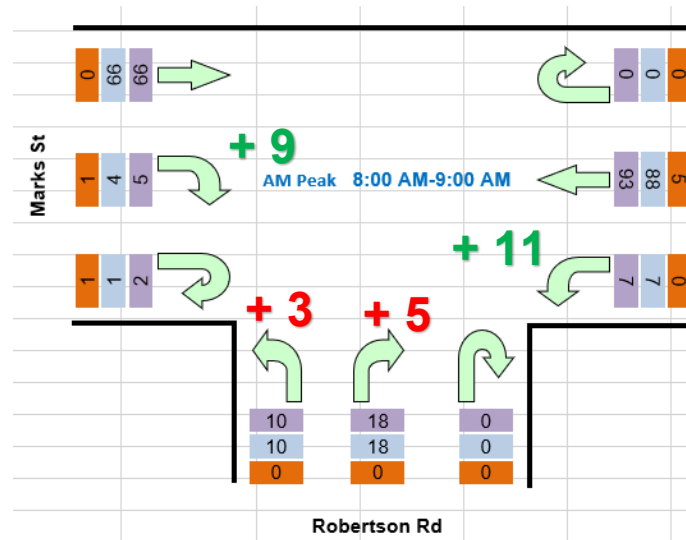
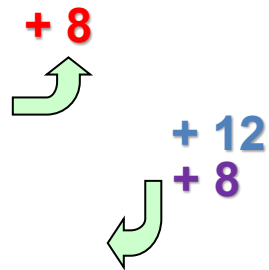
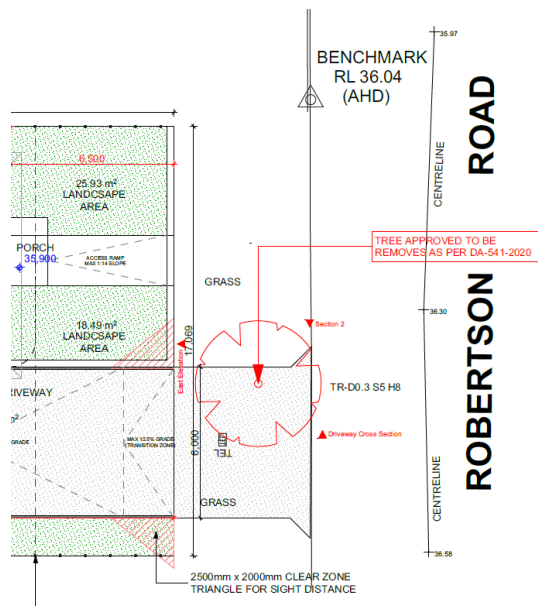


Figure 6-1 traffic generated by the proposed development at morning peak hour
(Assuming 12 staff members will enter the development while there will be 8 parents enter & exit the development at morning peak hour)

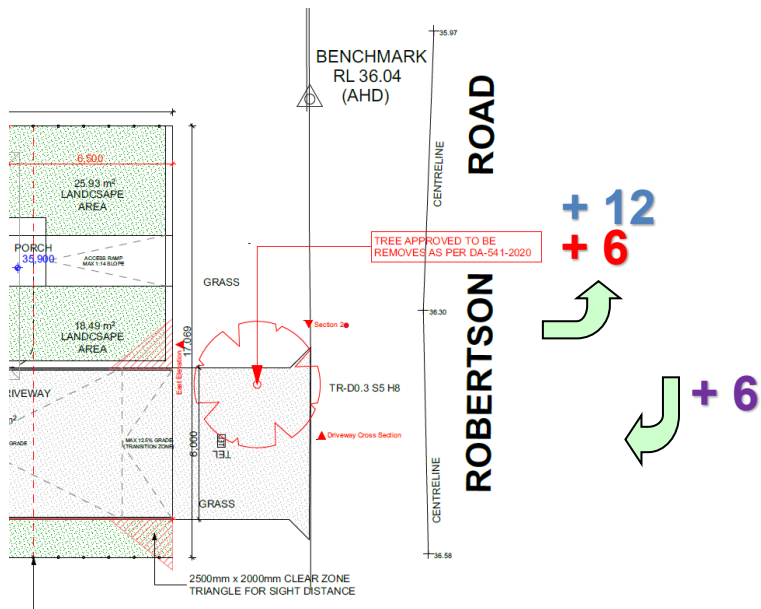
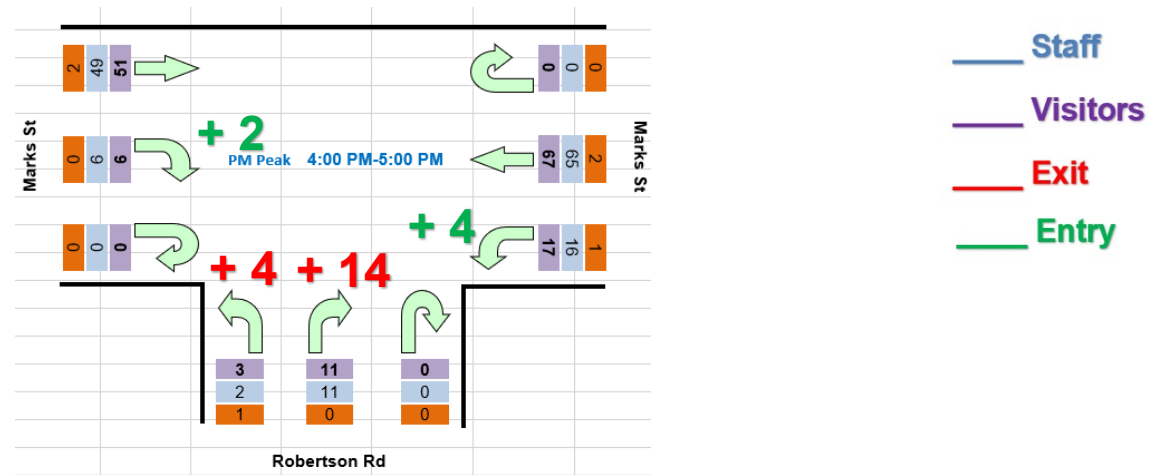


Figure 6-2 traffic generated by the proposed development at evening peak hour
(Assuming 6 parents will enter & exit development while the 12 staff members will exit at evening peak hour)

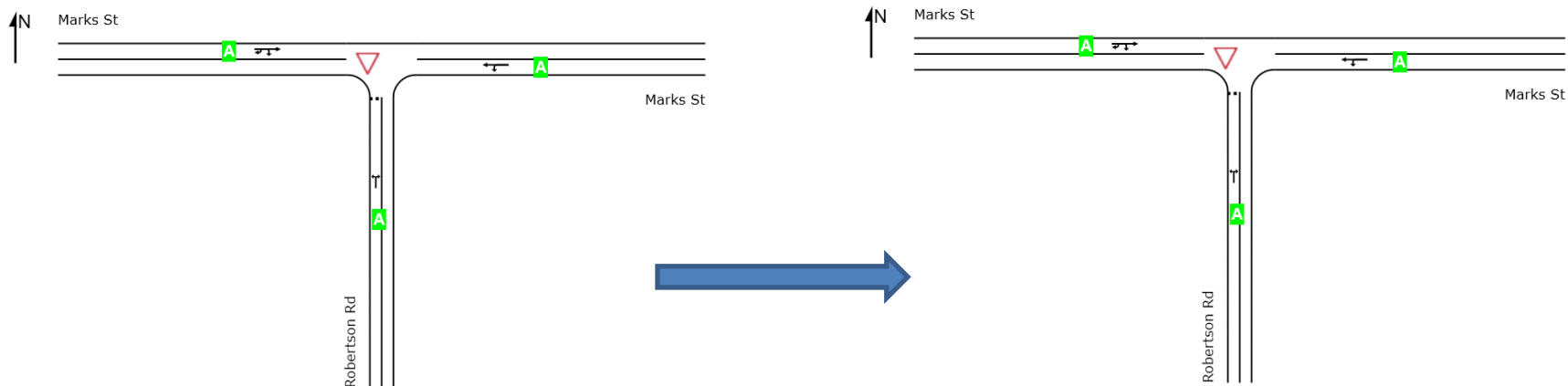


Figure 6- 3: level of service pre and post development at Robertson Rd & Marks St in morning peak hours

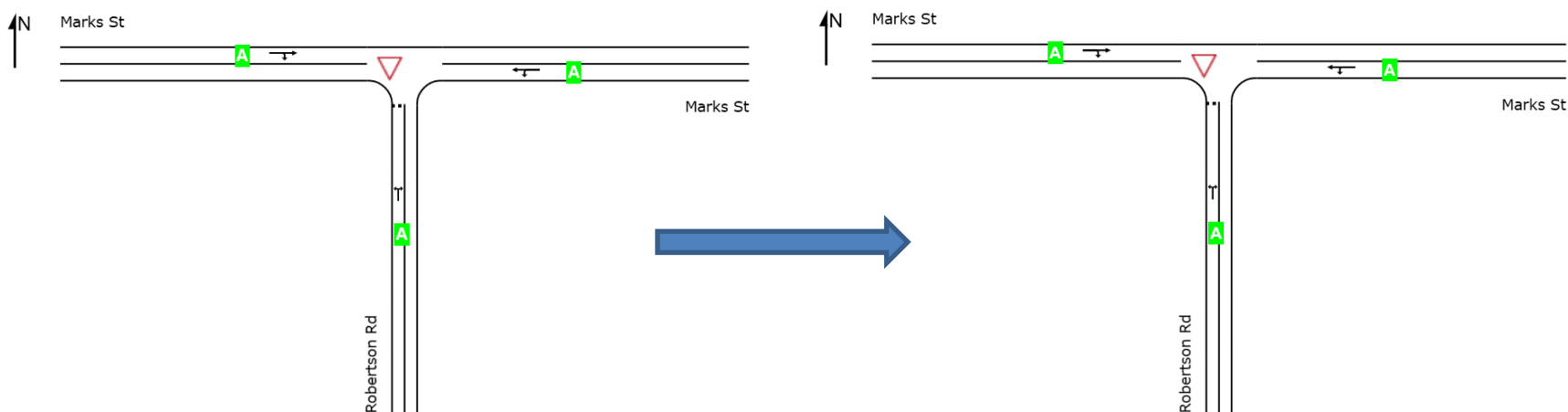


Figure 6- 4: level of service pre and post development at Robertson Rd & Marks St in evening peak hours

7. Swept Path Analysis

To ensure all vehicles enter and exit the site in a forward direction & two vehicles could pass each other in the basement, swept path analysis has been conducted in the Appendix C.

It is our opinion that the proposed car parking and driveway comply with Australia Standard.

8. Conclusion

This traffic assessment has been prepared in accordance with the requirement of the RMS 'Guide to Traffic Generating Developments'.

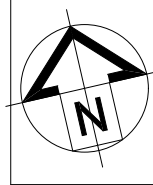
Traffic Generation by the development does not affect the level of service at all intersections.

The site is located within public bus transportation. This would minimize the need for staff and visitors of the proposed development to drive their own vehicles to and from their various activities.

The Traffic Management Report concludes that the proposed residential development is suitable in relation to internal traffic according to AS2890 and is suitable for the subject location in relation to the impact of traffic.

APPENDIX A

Architectural Plan



LEGEND

S	SINK
↓	REDUCED LEVEL
S/O	STOVE/OVEN COOKTOP
(SA)	SMOKE ALARM
W	WASHING MACHINE
D	DRYER
F	FRIDGE
DW	DISHWASHER
DP	DOWNPIPE
T.O.R	TOP OF ROOF
T.O.P	TOP OF PARAPET
B.I.R	BUILD IN ROBE
W.I.R	WALK IN ROBE
→	WATER FLOW DIRECTION
X°	ROOF PITCH
(FW)	FLOOR WASTE
L/C	LINEN CUPBOARD
P.O.S	PRIVATE OPEN SPACE
LP	LIGHT POLE

GENERAL NOTES

- THE BUILDER SHALL CHECK AND VERIFY ALL DIMENSIONS AND VERIFY ALL ERRORS AND OMISSIONS TO THE ARCHITECT. DO NOT SCALE THE DRAWINGS. DRAWINGS SHALL NOT BE USED FOR CONSTRUCTION PURPOSES UNTIL ISSUED BY THE ARCHITECT FOR CONSTRUCTION.

- CHECK ALL DIMENSIONS ON THE JOB PRIOR TO COMMENCEMENT OF KITCHEN DRAWINGS OR FABRICATION ANY DISCREPANCIES TO BE REFERRED TO THE ARCHITECT/ENGINEER/ DESIGNER PRIOR TO COMMENCEMENT OF WORK.

- ALL WORK TO BE IN ACCORDANCE WITH THE BUILDING CODE OF AUSTRALIA, HNSW DESIGN STANDARDS, THE LOCAL COUNCIL AND AUSTRALIAN STANDARDS.

- ALL DRAWINGS SHOULD BE READ IN CONJUNCTION WITH ARCHITECTURAL SPECIFICATION AND SCHEDULES, CONSULTANTS DOCUMENTATION.

- DRAWINGS ARE NOT TO BE SCALED FOR DIMENSIONING PURPOSES, FIGURED DIMENSIONS SHALL PREVAIL.

- FOOTINGS AND BEAMS TO ENGINEERS DRAWING AND DETAIL.

- TIMBER USED SHALL BE IN ACCORDANCE WITH AS 1684 OF TIMBER FRAMING CODE.

- PROVIDE 50mm SETDOWN TO SLAB TO WET AREA (GROUND FLOOR).

- WET AREAS TO BE IN ACCORDANCE WITH AS3740 WATERPROOFING OF WET AREAS WITHIN RESIDENTIAL BUILDINGS.

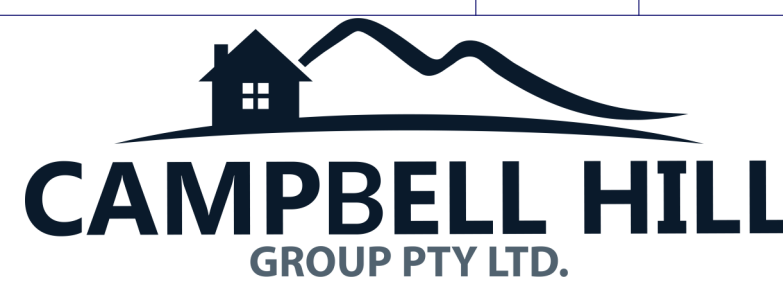
- SMOKE ALARMS ARE TO BE INSTALLED IN ACCORDANCE WITH AS3786. ALARMS TO BE POSITIONED ON THE CEILING AND SET BACK A MINIMUM DISTANCE 300mm FROM ANY WALL.

- ALL GROUND LINES ARE APPROXIMATE ONLY AND ARE TO BE VERIFIED ON SITE

- ALL WINDOW SIZES ARE APPROXIMATE ONLY AND FINAL SIZES MUST BE DETERMINED BY THE BUILDER

- CONCEALED METAL FASTENED SHEET TO BE USED FOR ALL SKILLION ROOF COVERING

REVISION	NAME	DATE
REVISION A - CONCEPT	M.N	00/00/00
REVISION B - CONCEPT	M.N	00/00/00
REVISION C - FINALISE PLANS	K.N	24/09/24
REVISION D - DA ISSUE	M.M	11/10/24
REVISION E - ACCESS CHANGES	M.M	01/11/24



Contact: 0433 375 386
Email: campbellhillgroup@hotmail.com



BUILDING DESIGNERS
ASSOCIATION OF AUSTRALIA

Client
NAME

Project Name
CHILDCARE

At
8 ROBERSTON RD, CHESTER HILL

Drawing Title:
- Basement/Ground Floor Plan
Ground Floor, Basement

BDAA ACCREDITATION NO: 6455

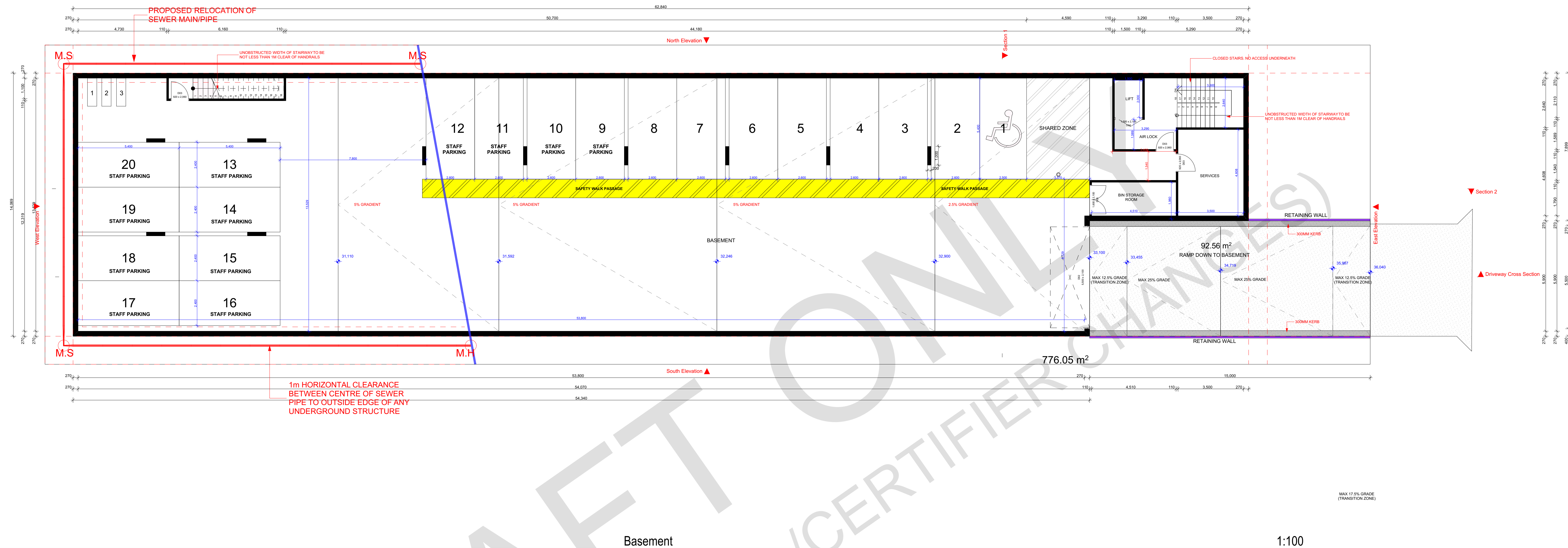
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Designed By: M.N

Project No: #

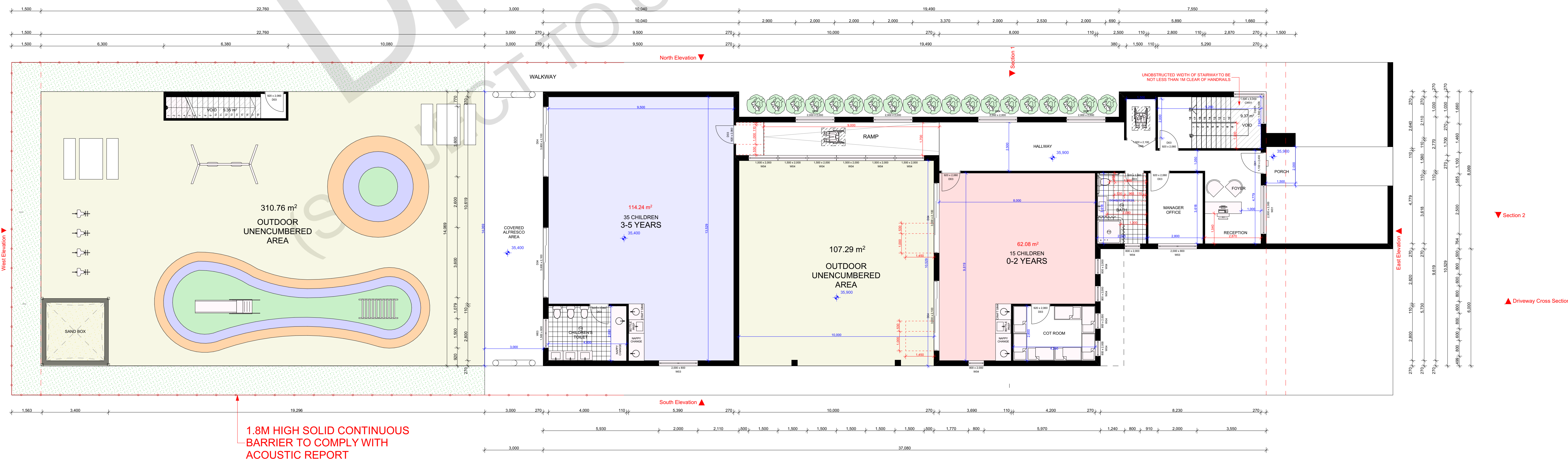
Drawing No.: 10

Date: 14/11/2024



Basement

1:100



Ground Floor

1:100

APPENDIX B

Sidra Intersection Analysis

MOVEMENT SUMMARY

▽ Site: 101 [Robertson Rd & Marks St (Morning) Pre]

New Site
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Robertson Rd												
1	L2	11	0.0	0.024	5.8	LOS A	0.1	0.6	0.21	0.58	0.21	53.0
3	R2	19	0.0	0.024	6.2	LOS A	0.1	0.6	0.21	0.58	0.21	52.3
Approach		29	0.0	0.024	6.1	LOS A	0.1	0.6	0.21	0.58	0.21	52.5
East: Marks St												
4	L2	7	0.0	0.057	5.5	LOS A	0.0	0.0	0.00	0.04	0.00	58.0
5	T1	98	5.4	0.057	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach		105	5.0	0.057	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.5
West: Marks St												
11	T1	69	0.0	0.044	0.1	LOS A	0.1	0.5	0.06	0.06	0.06	59.4
12	R2	5	20.0	0.044	6.3	LOS A	0.1	0.5	0.06	0.06	0.06	55.9
12u	U	2	50.0	0.044	8.2	LOS A	0.1	0.5	0.06	0.06	0.06	54.6
Approach		77	2.7	0.044	0.7	NA	0.1	0.5	0.06	0.06	0.06	59.0
All Vehicles		212	3.5	0.057	1.3	NA	0.1	0.6	0.05	0.12	0.05	58.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table B1 Movement Summary of Robertson Rd & Marks St morning Peak Hour Existing Conditions

MOVEMENT SUMMARY

▽ Site: 101 [Robertson Rd & Marks St (Morning) Post]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Robertson Rd												
1	L2	14	0.0	0.031	5.8	LOS A	0.1	0.7	0.22	0.58	0.22	53.0
3	R2	24	0.0	0.031	6.3	LOS A	0.1	0.7	0.22	0.58	0.22	52.3
Approach		38	0.0	0.031	6.1	LOS A	0.1	0.7	0.22	0.58	0.22	52.5
East: Marks St												
4	L2	19	0.0	0.063	5.5	LOS A	0.0	0.0	0.00	0.10	0.00	57.5
5	T1	98	5.4	0.063	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	59.1
Approach		117	4.5	0.063	0.9	NA	0.0	0.0	0.00	0.10	0.00	58.8
West: Marks St												
11	T1	69	0.0	0.051	0.2	LOS A	0.1	0.9	0.11	0.12	0.11	58.7
12	R2	15	20.0	0.051	6.3	LOS A	0.1	0.9	0.11	0.12	0.11	55.3
12u	U	2	50.0	0.051	8.2	LOS A	0.1	0.9	0.11	0.12	0.11	54.0
Approach		86	4.6	0.051	1.4	NA	0.1	0.9	0.11	0.12	0.11	58.0
All Vehicles		241	3.8	0.063	1.9	NA	0.1	0.9	0.07	0.18	0.07	57.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table B2 Movement Summary of Robertson Rd & Marks St Robertson Rd & Marks St morning Peak Hour Post Development

MOVEMENT SUMMARY

Site: 101 [Robertson Rd & Marks St (Evening) Pre]

New Site
Site Category: (None)
Giveaway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Robertson Rd												
1	L2	3	33.3	0.013	6.2	LOS A	0.0	0.3	0.19	0.58	0.19	51.7
3	R2	12	0.0	0.013	6.1	LOS A	0.0	0.3	0.19	0.58	0.19	52.4
Approach		15	7.1	0.013	6.1	LOS A	0.0	0.3	0.19	0.58	0.19	52.2
East: Marks St												
4	L2	18	5.9	0.048	5.6	LOS A	0.0	0.0	0.00	0.12	0.00	57.1
5	T1	71	3.0	0.048	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	58.9
Approach		88	3.6	0.048	1.1	NA	0.0	0.0	0.00	0.12	0.00	58.5
West: Marks St												
11	T1	54	3.9	0.033	0.0	LOS A	0.0	0.3	0.04	0.07	0.04	59.2
12	R2	6	0.0	0.033	5.9	LOS A	0.0	0.3	0.04	0.07	0.04	56.8
Approach		60	3.5	0.033	0.7	NA	0.0	0.3	0.04	0.07	0.04	59.0
All Vehicles		163	3.9	0.048	1.4	NA	0.0	0.3	0.03	0.14	0.03	58.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table B3 Movement Summary of Robertson Rd & Marks St evening Peak Hour Existing Conditions

MOVEMENT SUMMARY

Site: 101 [Robertson Rd & Marks St (Evening) Post]

New Site
Site Category: (None)
Giveway / Yield (Two-Way)

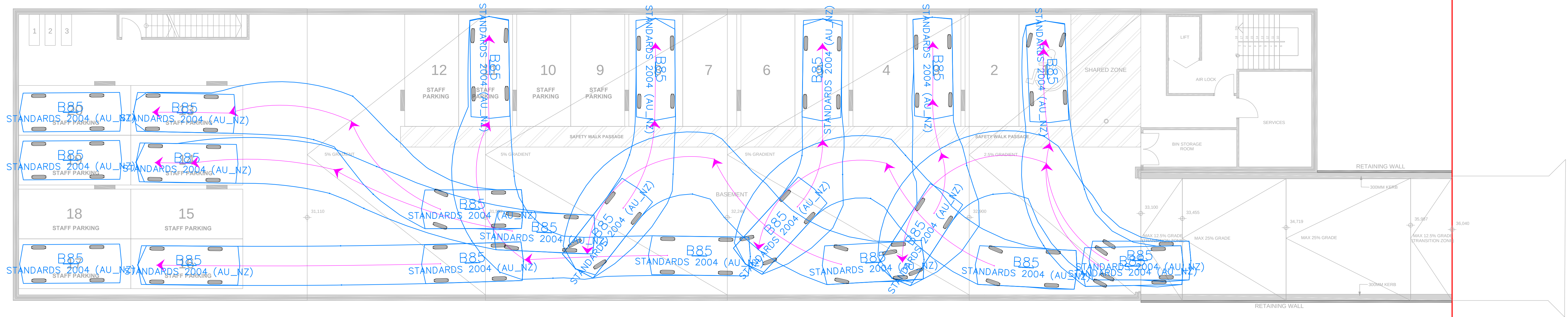
Movement Performance - Vehicles													
Mov ID	Turn	Total veh/h	Demand Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h	
South: Robertson Rd													
1	L2	7	33.3	0.029	6.2	LOS A	0.1	0.7	0.19	0.58	0.19	51.6	
3	R2	26	0.0	0.029	6.1	LOS A	0.1	0.7	0.19	0.58	0.19	52.4	
Approach		34	7.3	0.029	6.1	LOS A	0.1	0.7	0.19	0.58	0.19	52.2	
East: Marks St													
4	L2	22	5.9	0.050	5.6	LOS A	0.0	0.0	0.00	0.14	0.00	56.9	
5	T1	71	3.0	0.050	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	58.7	
Approach		93	3.7	0.050	1.3	NA	0.0	0.0	0.00	0.14	0.00	58.3	
West: Marks St													
11	T1	54	3.9	0.034	0.1	LOS A	0.1	0.4	0.06	0.09	0.06	59.0	
12	R2	8	0.0	0.034	5.9	LOS A	0.1	0.4	0.06	0.09	0.06	56.6	
Approach		62	3.4	0.034	0.8	NA	0.1	0.4	0.06	0.09	0.06	58.7	
All Vehicles		188	4.2	0.050	2.0	NA	0.1	0.7	0.05	0.20	0.05	57.2	

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table B4 Movement Summary of Robertson Rd & Marks St Robertson Rd & Marks St evening Peak Hour Post Development

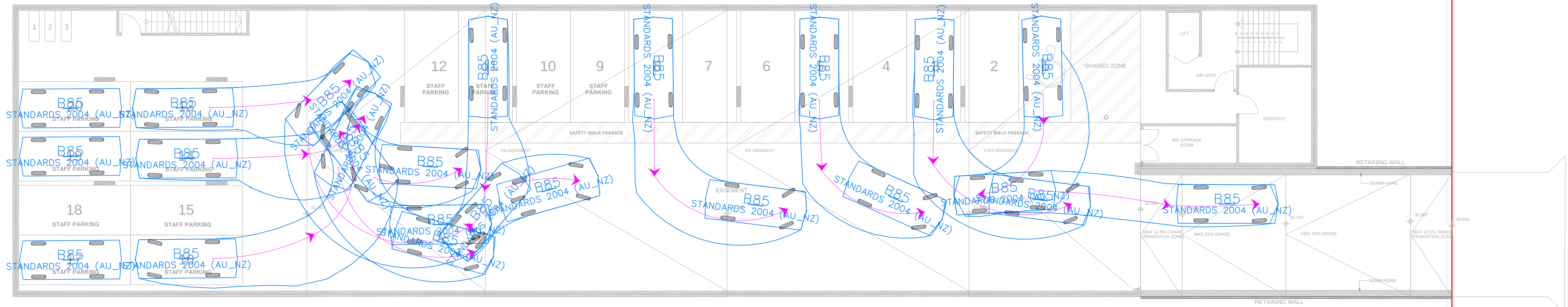
APPENDIX C

Swept Path Analysis



SWEPT PATH ANALYSIS ENTRY

SCALE 1:100



SWEPT PATH ANALYSIS EXIT

SCALE 1:100

A1 0 1 2 3 4 5 6 7 8 9 10

NOT FOR CONSTRUCTION

No	AMENDMENT	ENG	DRAFT	DATE	No	AMENDMENT	ENG	DRAFT	DATE
C	FOR D.A. APPROVAL	B.V.	B.V.	14-11-24					
B	FOR D.A. APPROVAL	B.V.	B.V.	06-11-24					
A	FOR D.A. APPROVAL	B.V.	B.V.	28-10-24					

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PROJECT
PROPOSED CHILDCARE CENTRE
AT 8 ROBERTSON ROAD,
CHESTER HILL, NSW
CONSENT AUTHORITY:
CANTERBURY-BANKSTOWN COUNCIL

SHEET SUBJECT
**SWEPT PATH ANALYSIS ENTRY
& EXIT**

PROJECT 8 ROBERTSON ROAD, CHESTER HILL, NSW			
DATE OCT 24	DRAWN B.V.	DESIGNED N.L.	CHECKED N.L.
SCALE @ A1 1 : 100 U.N.O		JOB No 24NL128	
AUTHORISED NERMEIN LOKA		DWG No T01	REV C

