



# 9 Lincoln Street, Eastwood Traffic Impact Assessment

Prepared for:

Lincoln Eastwood Pty Ltd

20 October 2022

The Transport Planning Partnership

# 9 Lincoln Street, Eastwood

## Traffic Impact Assessment

Client: Lincoln Eastwood Pty Ltd

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## Table of Contents

1	Introduction .....	1
2	Existing Conditions .....	2
2.1	Site Description .....	2
2.2	Road Network .....	2
2.3	Public Transport.....	3
2.4	Pedestrian and Cycling Infrastructure .....	4
2.5	Existing Traffic Volumes .....	5
3	Proposed Development.....	7
3.1	Development Description .....	7
4	Parking Assessment.....	8
4.1	Car Parking Requirements.....	8
4.2	Accessible Parking Requirement .....	9
4.3	Bicycle Parking.....	9
4.4	Waste Management and Deliveries .....	9
4.5	Car Park Layout .....	9
5	Traffic Assessment .....	11
5.1	Traffic Generation.....	11
5.2	Trip Distribution Assumptions.....	11
5.3	Intersection Modelling Criteria .....	12
5.4	Intersection Traffic Flows .....	12
5.5	Intersection Capacity Assessment .....	13
5.6	Mid-block Capacity / Residential Amenity .....	14
6	Summary and Conclusion .....	16

## Tables

Table 2.1:	Public Transport Facilities and Services.....	4
Table 4.1:	DCP Car Parking Requirements.....	8
Table 5.1:	Traffic Generation of Proposed Development.....	11
Table 5.2:	Level of Service Criteria for Intersection Operation.....	12
Table 5.3:	Intersection Performance .....	14

## Figures

Figure 2.1:	Locality Plan.....	2
Figure 2.2:	Public Transport Stop Locations.....	3
Figure 2.3:	Cycleway Routes .....	5
Figure 2.4:	Existing Traffic Volumes .....	6
Figure 5.1:	Existing Case Traffic Flows .....	13
Figure 5.2:	Post Development Case .....	13

## APPENDICES

- A. SIDRA RESULTS
- B. ARCHITECTURAL PLANS
- C. SWEPT PATH ANALYSIS

# 1 Introduction

This traffic impact assessment (TIA) report relates to a proposed childcare centre development at 9 Lincoln Street, Eastwood. The proposed development involves construction of a two-storey childcare centre that accommodates 91 children and a basement car park with 18 car parking spaces.

A development application (DA) is being prepared for lodgement with City of Ryde (Council) seeking approval for the proposed development.

The Transport Planning Partnership (TPPP) has been commissioned by Lincoln Eastwood Pty Ltd to prepare this traffic impact assessment report to accompany the development application.

This report has been prepared to assess the traffic and parking implications of the proposed development. The report is set out as follows:

- Chapter 2 discusses the existing conditions including a description of the site
- Chapter 3 presents a brief description of the proposed development
- Chapter 4 assesses the proposed on-site parking provision and internal layout
- Chapter 5 examines the traffic generation and its impact, if any, and
- Chapter 6 presents the conclusions of the assessment.

## 2 Existing Conditions

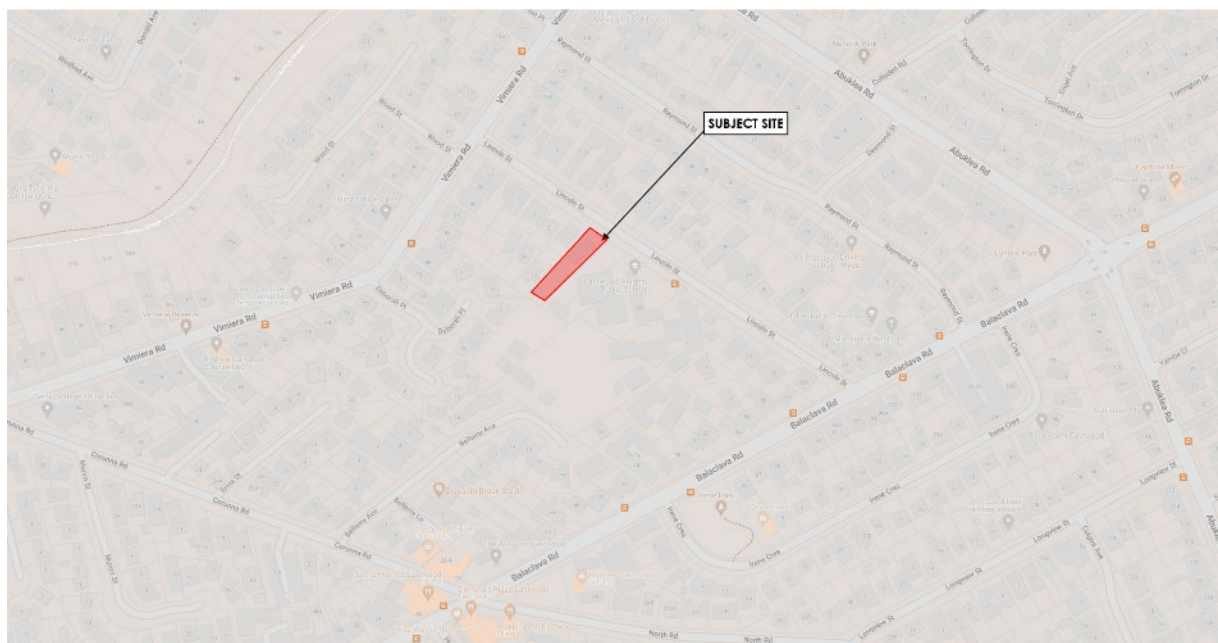
### 2.1 Site Description

The subject site is located at 9 Lincoln Street, Eastwood within the City of Ryde local government area. The subject site is currently occupied by a low-density residential building, large portal frame warehouse, garaging and storage accessed via Ragland Street with an approximate area of 1,512m<sup>2</sup>.

The site is bounded by low density residential buildings and Eastwood Heights Public School. Additionally, Wallsend Public School is located approximately 550m to the south-west of the site, and Wallsend Village is located approximately 750m to the west.

The location of the subject site and its surrounding environs are presented in Figure 2.1.

**Figure 2.1: Locality Plan**



Basemap Source: SixMap

### 2.2 Road Network

**Lincoln Street** is a two-way local road providing access to local properties and Eastwood Heights Public School. In proximity to the site, Lincoln Street has unrestricted parking on both sides of the street, however the school frontage is subject to a 'No Parking' restriction during school peak times, allowing pick-up and set-down. Lincoln Street intersects with Vimiera Road to its north and Balaclava Road to its south, both at priority-controlled T-junctions. It has a posted speed limit of 50km/h, with a School Zone 40km/h limit from 8am to 9:30am and 2:30pm to 4pm during school days.



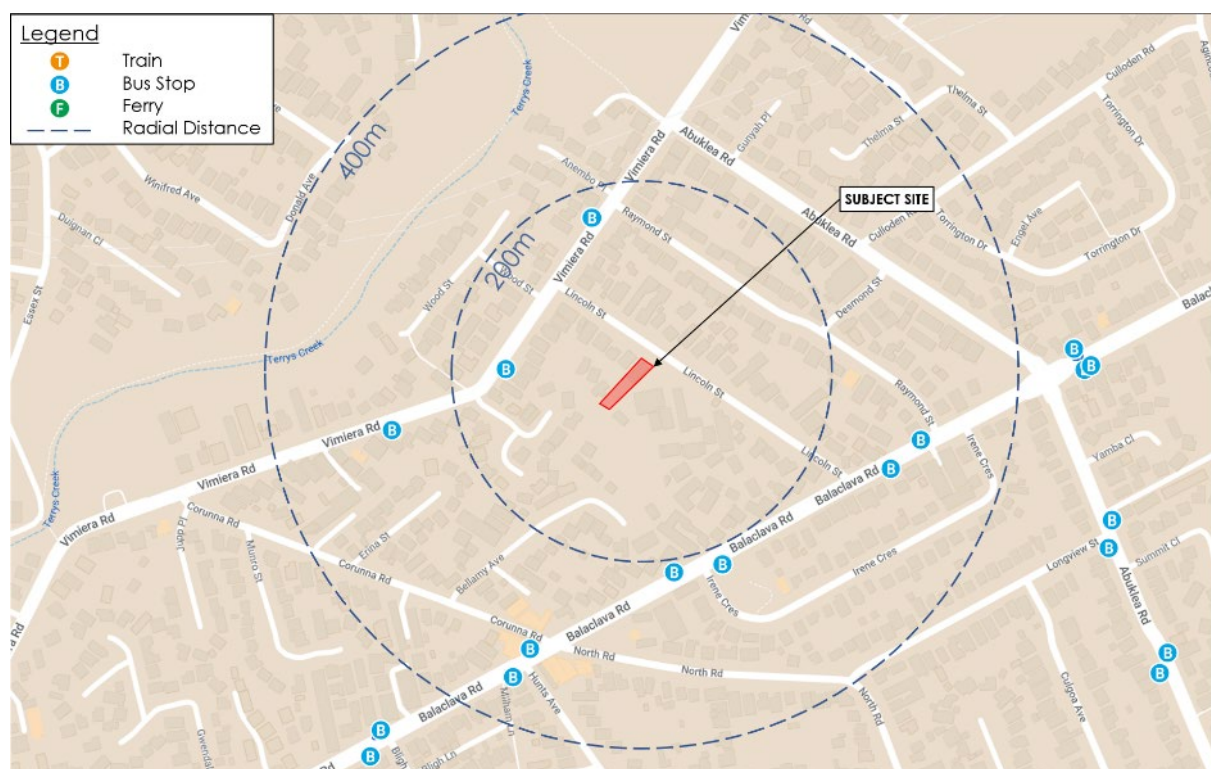
**Vimiera Road** is a two-way local road which is bounded by Epping Road to its east and Blaxland Road to its west. There is no provided kerbside parking on either side of the road, however full-time on-road cycle lanes are provided on both sides. The posted speed limit of Thomas Street within the immediate vicinity of the site is 50km/h.

**Balaclava Road** is a secondary state road that links Epping Road to its east and Blaxland Road to its west. The road is generally configured as a two-way road with one lane in each direction. Unrestricted kerbside parking is permitted on both sides of the road, the posted speed limit is 60km/h.

## 2.3 Public Transport

The subject site is located within 350m (4 minutes) walking distance to the nearest bus stops on Balaclava Road which provides regular services to Eastwood Station, Macquarie Centre and Parramatta. Figure 2.2 below shows the proximity of the public transport stop locations relative to the site.

**Figure 2.2: Public Transport Stop Locations**



Basemap Source: Google Maps

Table 2.1 below presents a summary of the public transport services in the vicinity of the site.

**Table 2.1: Public Transport Facilities and Services**

Route no.	Route Description	Typical Weekday Frequency
551	Bosco Road to Eastwood	<ul style="list-style-type: none"> <li>3 services between 7am and 9am to Eastwood</li> <li>2 services between 3:30pm and 4:30pm to Busaco Road</li> </ul>
544	Macquarie Centre to Auburn via Eastwood	<ul style="list-style-type: none"> <li>Services every 30 minutes during peak times</li> <li>Services every 60 minutes during off-peak</li> </ul>
545	Parramatta to Macquarie Park	<ul style="list-style-type: none"> <li>Services every 10 minutes during peak times</li> <li>Services every 15-30 minutes during off-peak</li> </ul>

Source: Transport for NSW (last accessed 15/07/2022)

Additionally, Eastwood Station is located 1.5km away from the site which takes 9 minutes by bus from the subject site. High frequency train services are provided at Eastwood Station 1.5km away which takes 9 minutes by bus from the subject site. This offers connectivity to the wider region of Sydney such as Parramatta, Sydney CBD and Hornsby.

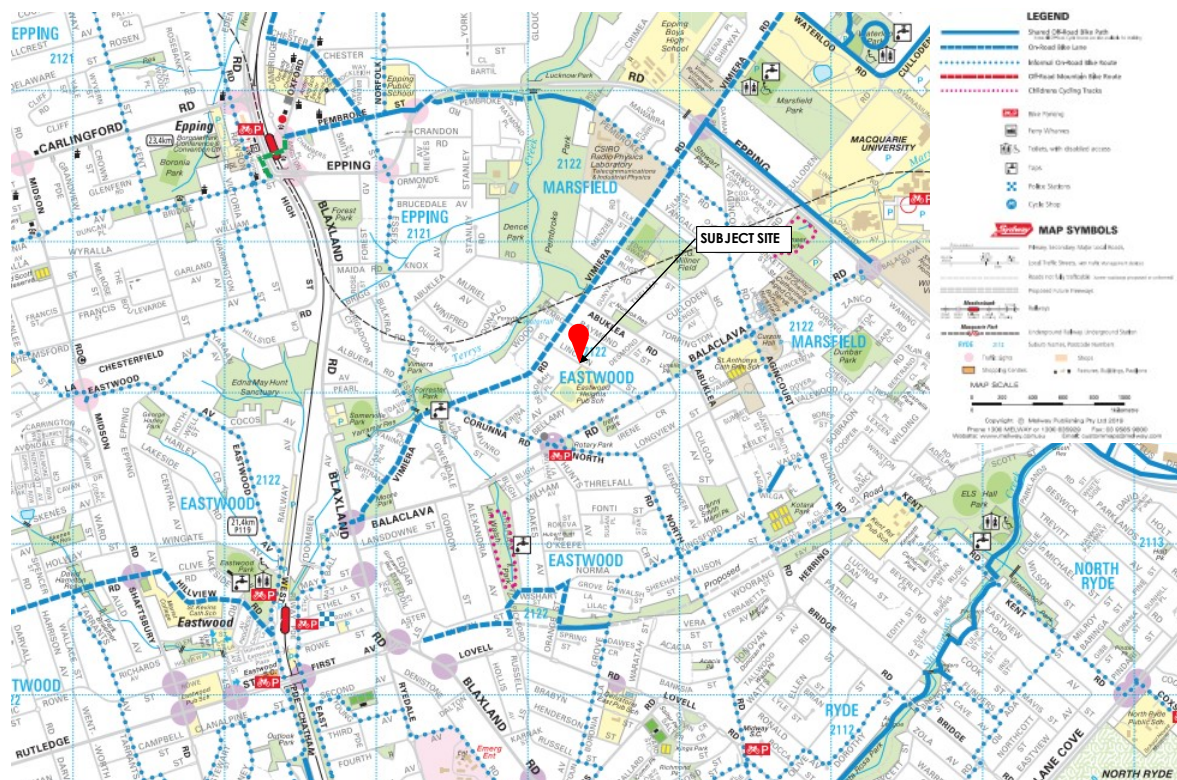
## 2.4 Pedestrian and Cycling Infrastructure

Well-established footpaths are generally provided along both sides of the road in the near vicinity of the site. A pedestrian crossing is provided 100m to the west of the site on Lincoln Street in front of Eastwood Heights Public School, and a pedestrian refuge island is provided on the eastern leg of the Balaclava Road and Lincoln Street intersection, providing a safe crossing opportunity for pedestrians across Balaclava Road.

On-road cycle lanes are provided on either side of Vimiera Road, which offers connectivity to Macquarie University, Epping Station, Eastwood station and surrounding suburbs as evident in Figure 2.3.



**Figure 2.3: Cycleway Routes**



Source: City of Ryde bike map (accessed 15/07/2022)

## 2.5 Existing Traffic Volumes

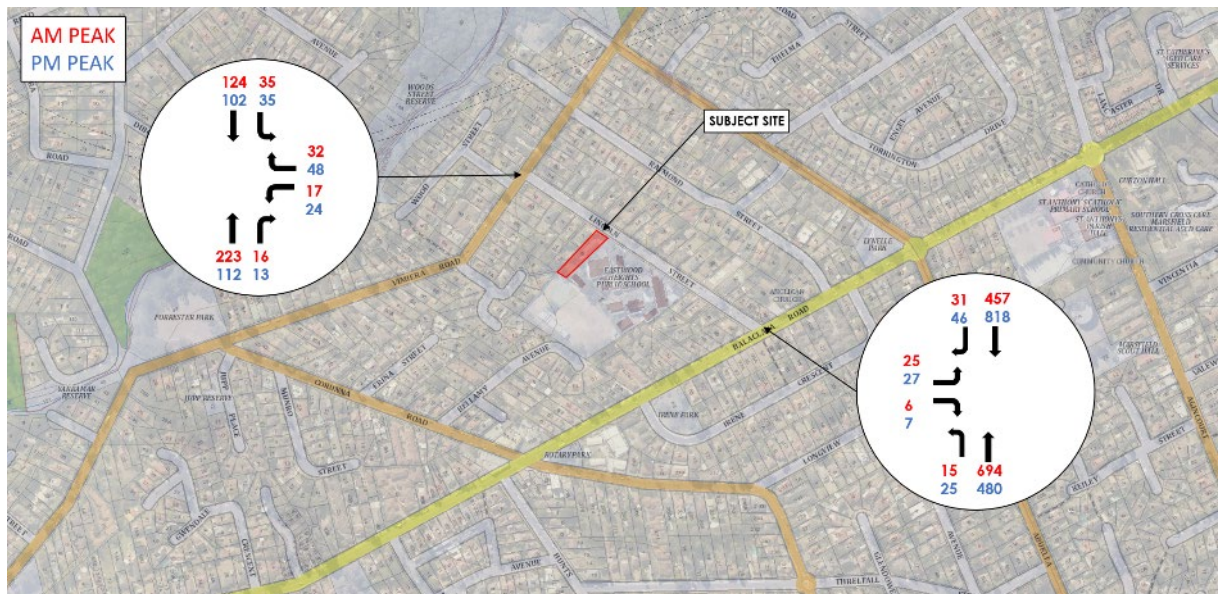
TTPP commissioned a turning movement count survey at the Thomas Street and Raglan Street intersection during the morning and evening peak periods for a childcare centre (7am-9am and 2pm-4pm) on Monday 25 July 2022:

The nominated survey periods coincide with the typical childcare drop-off and pick-up times.

The morning peak hour occurred between 8am and 9am, and the afternoon peak hour occurred between 2:45pm and 3:45pm.

Figure 2.4 shows the existing traffic volumes of the Lincoln Street intersections with Balacclava Road and Vimiera Road during the AM and PM peak hours.

**Figure 2.4: Existing Traffic Volumes**



## 3 Proposed Development

### 3.1 Development Description

The proposed development involves the demolition of the existing residential building on site and construction of a two-storey purpose built childcare centre, with an additional floor for a basement car park.

The proposed childcare centre is designed to accommodate 91 children ranging between 0 years old and 6 years old. The proposed childcare centre comprises the following:

- Indoor play areas for 16 children of 0-2 years old including cot room
- Indoor play area for 30 children of 2-3 years old
- Two indoor play area for 45 children of 3-6 years old
- Three outdoor play areas located on the ground floor of the development
- One outdoor play area located on the upper floor of the development
- Staff offices, kitchen, laundry, lift and toilets.

In addition, the proposed development is providing a basement car park with 18 car parking spaces. Vehicular and pedestrian access to the proposed development is via Lincoln Street.

The site layout plan of the proposed at-grade car park is provided in Appendix B.

## 4 Parking Assessment

### 4.1 Car Parking Requirements

The City of Ryde DCP 2014 stipulates that the car parking rate to be provided is 1 space per 2 employees, in addition to 1 space per 8 children. The proposed development accommodates up to 91 children, hence giving a requirement of 20 car parking spaces for the childcare centre.

A summary of the car parking assessment based on the City of Ryde DCP is presented in Table 4.1.

**Table 4.1: DCP Car Parking Requirements**

Occupancy Type	Size	Parking Rate	Required	Provided
Childcare Centre	15 staff	1 space 2 staff members	8	8
	91 children	1 space per 8 children	12	10
<b>Total</b>			<b>20</b>	<b>18</b>

The proposed development will provide a total of 20 car parking spaces on-site, consisting of 8 staff spaces as staff parking, and 10 visitor spaces including 1 accessible space. Thus, the development has a shortfall of 2 spaces compared to the DCP requirements.

However, the provision is considered acceptable for the following reasons:

- Additional pick-up/set-down parking activity can be accommodated within available kerbside parking along Lincoln Street. 10 metres to the south of the site, approximately 7 pick-up/set-down places spaces (45 metres) are available due to the 'No Parking' restriction during school peak hours outside the school. Additionally, the site's frontage allows for 3 kerbside parking spaces. As the 'School Zone' speed limit will be enforced during the peak hours for the childcare centre, these parking spaces are deemed convenient and safe.
- Transport for NSW (TfNSW) published the *Validation Trip Generation Surveys – Child Care Centre 2015* (Survey) which determined a car parking rate of 1 space per 6 children (for centres with 70 to 100 children). This would result in a requirement of 16 parking spaces, which is 4 below Council's DCP requirements. The proposed parking provision adheres to the most recent TfNSW survey data which are based upon extensive surveys. Therefore, it is reasonable to rely on these extensive surveys to calculate a parking requirement. It is not known on which empirical basis that Council's parking requirements are based.

Based on the reasons outlined above, the proposed development is considered acceptable and satisfies the car parking requirement.

## 4.2 Accessible Parking Requirement

One off-street accessible parking space is required by City of Ryde DCP 2014 for childcare centres. It is proposed to provide 1 accessible space for visitors which meets Council's requirements.

## 4.3 Bicycle Parking

City of Ryde DCP 2014 does not require bicycle parking for new buildings with floor space less than 600m<sup>2</sup>. The proposal provides 5 bicycle parking spaces and end of trip facilities which exceeds Council's requirements.

The design and layout of the bicycle parking has been provided in accordance with Council's DCP requirements.

## 4.4 Waste Management and Deliveries

Waste pickup would be undertaken on the existing kerbside parking lane along the frontage of the site by a private contractor outside of peak hours. As such, waste collection vehicles do not enter the car park.

Service vehicles and deliveries will be able to access the basement car park drop off spaces between 10am and 2pm (non-childcare drop off times).

## 4.5 Car Park Layout

The proposed car park is to comply with design requirements set out in the relevant Australian Standard for car parking facilities, namely AS2890.1:2004 and AS2890.6:2009.

The development has provided Class 3 spaces for visitors which are 2.6m wide by 5.4m long, which is the minimum requirement for parents and guardians undertaking pick-up/drop-off activities. Stacked class 1A spaces are provided for staff of the childcare centre, which are 2.4m wide by 5.4m long. Stacked staff parking spaces are permitted by City of Ryde Council DCP.

Accessible parking is to be provided as per AS2890.6, with dimensions 2.4m wide by 5.4m long with an adjoining shared area of the same dimension.

A compliance review of the car park indicates that the layout complies with Australian Standards.



A swept path analysis is presented in Appendix C for the ingress and egress movements at the driveway to and from Lincoln Avenue and key internal movements. The swept path diagram indicates that all movements provide adequate clearance.

On the above basis, the design satisfies the dimensional requirements in AS2890.1:2004 and AS2890.6:2009. The details of this review indicate that the proposed car parking layout is expected to operate satisfactorily.

## 5 Traffic Assessment

### 5.1 Traffic Generation

Transport for NSW (TfNSW, formerly RMS) provide traffic generation rates for different land uses in the *Guide to Traffic Generating Developments* (the Guide).

Based on the Guide, the traffic generation rates for a childcare centre are as follows:

- AM Peak: 0.8 vehicle trips per child
- PM Peak: 0.7 vehicle trips per child.

A summary of the traffic generation of the proposed development is presented in Table 5.1.

**Table 5.1: Traffic Generation of Proposed Development**

Land Use	Size	Trip Rate		Trip Generation	
		AM Peak	PM Peak	AM Peak	PM Peak
Childcare	91 Children	0.8 vehicles per child	0.7 vehicles per child	73	64

Based on Table 5.1, the proposed development would generate 73 vehicle trips per hour (vph) in the AM peak hour and 64 vph in the PM peak hour.

### 5.2 Trip Distribution Assumptions

The distribution (i.e. inbound/ outbound) and direction (to the road network) of development traffic is based on many factors including the land use characteristics, the configuration of the arterial road network, location of employment centres in relation to the site and access arrangements of the subject site. For this model, traffic has been split by the existing ratio of entry and exit traffic volumes into Lincoln Street from Balaclava Road and Vimiera Road.

In addition, the following typical inbound/ outbound splits have been assumed:

- Child care: 50 per cent inbound/ 50 per cent outbound in both peak periods.

On the above basis, this would equate to 37 vph entering and 36 vph exiting the site in the AM peak hour. Similarly, there would be 32 vph entering and 32 vph leaving the site in the PM peak hour. The traffic generated has been added to the TPPP commissioned turning movement count survey at the Thomas Street and Raglan Street intersection during the morning and evening peak periods (7am-9am and 3pm-5pm) on Monday 7 July 2022. This is to assess the impact of the development on the existing intersection. The nominated survey periods coincide with the typical childcare drop-off and pick-up times.



## 5.3 Intersection Modelling Criteria

The existing operation of the nearby major intersection to the site has been assessed using SIDRA Intersection version 9.0, a computer-based modelling package which assesses intersection performance under prevailing traffic conditions.

SIDRA calculates intersection performance as a level of service (LoS). SIDRA provides analysis of the operating conditions which can be compared to the performance criteria set out in Table 5.2.

**Table 5.2: Level of Service Criteria for Intersection Operation**

Level of Service	Average Delay (seconds per vehicle)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	Less than 15	Good operation	Good operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity and 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
F	Greater than 71	Unsatisfactory with excessive queuing	Unsatisfactory with excessive queuing; requires other control mode

Source: TfNSW's Guide to Traffic Generating Developments 2002

## 5.4 Intersection Traffic Flows

The following figures show the AM and PM peak traffic movements at the intersections for the existing case using the survey data. The proposed case used the survey data and added the traffic generation calculated for the site, applying the specified trip distribution assumptions.

Figure 5.1: Existing Case Traffic Flows

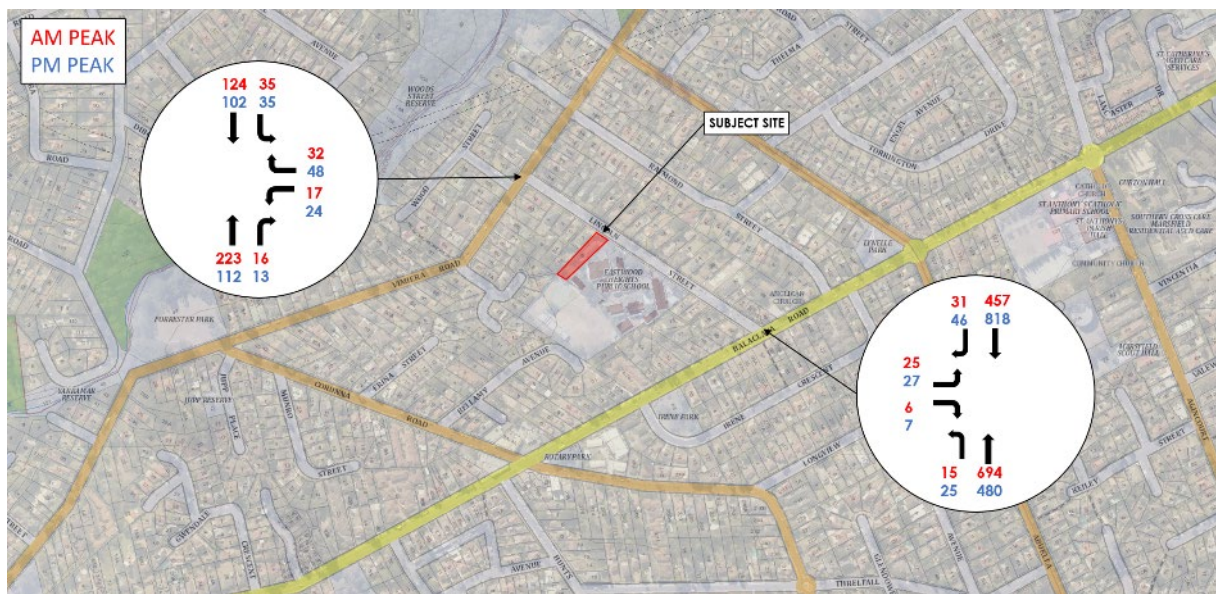
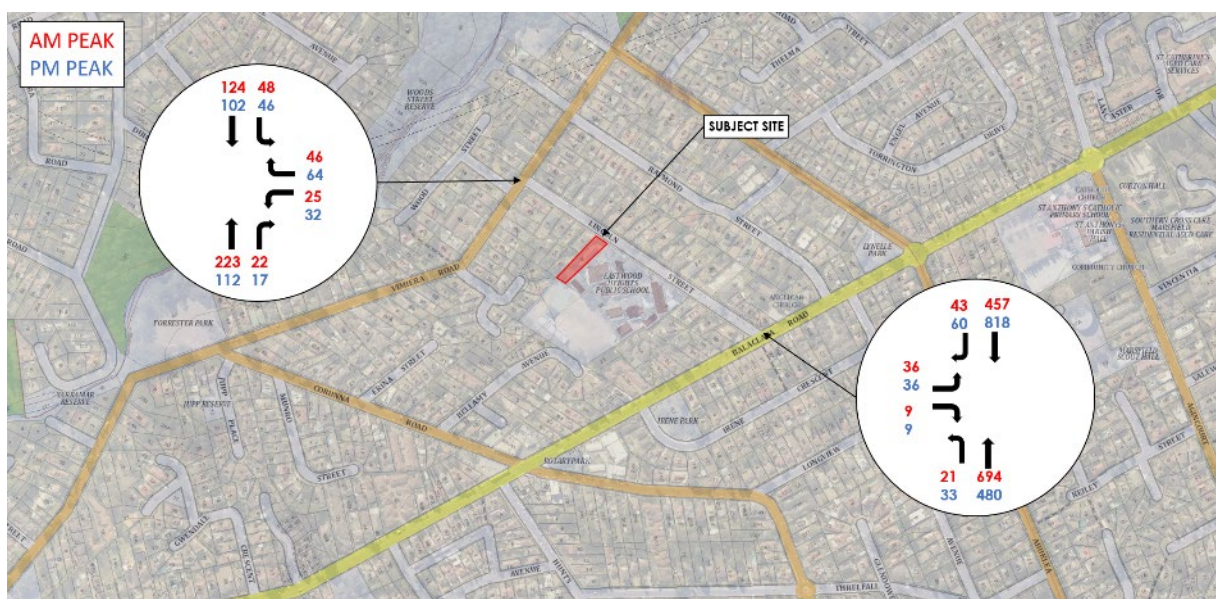


Figure 5.2: Post Development Case



## 5.5 Intersection Capacity Assessment

To assess the traffic implications arising from the proposed development, intersection capacity has been assessed for the intersections of Lincoln Street with Balaclava Road and Vimiera Road. The operational levels of service in each scenario during the AM and PM peak periods are summarised in Table 5.3. For these intersections, the worst performing movement was reported.

**Table 5.3: Intersection Performance**

Intersection	Intersection Operation	AM Peak				PM Peak			
		Existing		Post Development		Existing		Post Development	
		Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service	Delay (sec/veh)	Level of Service
Vimiera Road – Lincoln Street	Priority (Give Way)	7	A	7	A	6	A	7	A
Balaclava Road – Lincoln Street	Priority (Stop)	23	C	24	C	32	D	34	D

The Vimiera Road and Lincoln Street intersection operates at a good level of service during the AM and PM peak, with a negligible increase in delay between the existing and post development cases.

For the Balaclava Road and Lincoln Street intersection the worst performing movement in all cases was the right turn out of Lincoln Street into Balaclava Road, which can be expected for a right turn onto a road with heavy traffic. This turning movement operates at LoS C for the AM peak in both the existing and post development case, the additional delay of 1 second between them is deemed to be negligible.

During the PM peak the intersection operates at LoS D, with a slight increase in delay between the existing and post development case. It is worth noting that all through movements for Balaclava Road operate at LoS A across all cases.

In all cases, the increase in delay between the existing and post development cases is minor, therefore, the traffic generated by the proposed development is not anticipated to impose any adverse impacts on the surrounding road network. In this regard, no mitigation measures are required.

SIDRA results are provided in Appendix A.

## 5.6 Mid-block Capacity / Residential Amenity

Increased traffic volumes along residential roads have the potential to impact some aspects of amenity for residents in low density residential neighbourhoods. Over certain traffic thresholds, the ability for aged or impaired pedestrians to cross the road and the ability for children to play safely on the street are reduced and the ambient noise can become noticeable to residents. The *RTA Guide to Traffic Generating Developments* suggest environmental thresholds for local streets to assess the environmental capacity.

Road class	Road type	Maximum Speed (km/hr)	Maximum peak hour volume (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

Lincoln Street would be classified as a Local Street, which correlates to a maximum peak hour volume (vehicles/hour) of 300, with 200 being the environmental goal.

Using the data collected from the traffic survey, the maximum mid-block vehicles during peak hour on Lincoln Street would be as follows:

- Existing case: 120 veh/hr
- Post development case: 159 veh/hr

Therefore, in both cases the mid-block traffic remains within the environmental goal according to the environmental capacity performance standards.

## 6 Summary and Conclusion

This report examines the traffic and parking implications of a proposed childcare centre at 9 Lincoln Street, Eastwood. The salient findings of this report are presented below.

- The proposed development involves the construction of a two-storey childcare centre accommodating 91 children ranging between 0 years old and 6 years old, and a basement car park with 20 car spaces.
- In accordance with the City of Ryde Council DCP, the proposed development would require a total provision of 20 car parking spaces. The proposed development has provided 18 car parking spaces, resulting in a shortfall of two spaces, this is considered acceptable for the following reasons.
  - Additional pick-up/set-down parking activity can be accommodated within available kerbside parking along Lincoln Street.
  - In addition, based on the most recent extensive surveys by TfNSW, the parking requirement for childcare centres are approximately 1 space per 6 children, which results in a required parking rate of 16 spaces. The proposed development satisfies these requirements.
- Applying traffic generation rates published in the TfNSW Guide to Traffic Generating Developments, the proposed development is anticipated to generate 73 vehicle trips in the AM peak and 64 vehicle trips in the PM peak.
- An intersection capacity assessment using SIDRA 9.0 was undertaken of the intersections between Lincoln Street and Vimeria Road and Balaclava Road. The SIDRA modelling results show that the above intersections would operate satisfactorily, and the additional traffic generated by the proposed development would not cause adverse impacts on the surrounding road network.

Overall, there would be no adverse traffic and parking implications resulting from the proposed development.

## Appendix A

### SIDRA Results



# MOVEMENT SUMMARY

Site: 101 [Vimiera Road - Lincoln Street (Site Folder: AM Peak Existing)]

New Site  
Site Category: (None)  
Give-Way (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 %	[ Total veh/h	HV %	v/c	sec		[ Veh. veh	Dist ] m				km/h
South: Lincoln Street														
1	L2	17	0.0	18	0.0	0.050	5.9	LOS A	0.2	1.2	0.28	0.61	0.28	50.6
3	R2	32	0.0	34	0.0	0.050	7.1	LOS A	0.2	1.2	0.28	0.61	0.28	48.5
Approach		49	0.0	52	0.0	0.050	6.7	LOS A	0.2	1.2	0.28	0.61	0.28	49.3
East: Vimiera Road														
4	L2	35	0.0	37	0.0	0.087	5.5	LOS A	0.0	0.0	0.00	0.13	0.00	55.7
5	T1	124	0.0	131	0.0	0.087	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	58.0
Approach		159	0.0	167	0.0	0.087	1.2	NA	0.0	0.0	0.00	0.13	0.00	57.4
West: Vimiera Road														
11	T1	223	0.0	235	0.0	0.132	0.1	LOS A	0.1	0.9	0.05	0.04	0.05	59.0
12	R2	16	0.0	17	0.0	0.132	6.0	LOS A	0.1	0.9	0.05	0.04	0.05	56.3
Approach		239	0.0	252	0.0	0.132	0.5	NA	0.1	0.9	0.05	0.04	0.05	58.8
All Vehicles		447	0.0	471	0.0	0.132	1.4	NA	0.2	1.2	0.06	0.14	0.06	57.0

Site Level of Service (LOS) Method: Delay (SIDRA). 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.  
Delay Model: SIDRA Standard (Geometric Delay is included).  
Queue Model: SIDRA Standard.  
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.



# MOVEMENT SUMMARY

 **Site: 101 [Balaclava Road - Lincoln Street (Site Folder: AM Peak Existing)]**

New Site  
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 ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
East: Balaclava Road														
5	T1	457	0.0	481	0.0	0.290	0.8	LOS A	0.7	4.8	0.15	0.04	0.17	57.7
6	R2	31	0.0	33	0.0	0.290	10.8	LOS B	0.7	4.8	0.15	0.04	0.17	54.6
Approach		488	0.0	514	0.0	0.290	1.4	NA	0.7	4.8	0.15	0.04	0.17	57.5
North: Lincoln Street														
7	L2	25	0.0	26	0.0	0.076	12.8	LOS B	0.2	1.7	0.68	0.99	0.68	43.0
9	R2	6	0.0	6	0.0	0.076	23.0	LOS C	0.2	1.7	0.68	0.99	0.68	44.5
Approach		31	0.0	33	0.0	0.076	14.8	LOS B	0.2	1.7	0.68	0.99	0.68	43.3
West: Balaclava Road														
10	L2	15	0.0	16	0.0	0.383	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	57.5
11	T1	694	0.0	731	0.0	0.383	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.6
Approach		709	0.0	746	0.0	0.383	0.2	NA	0.0	0.0	0.00	0.01	0.00	59.5
All Vehicles		1228	0.0	1293	0.0	0.383	1.0	NA	0.7	4.8	0.08	0.05	0.09	58.1

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

▽ Site: 101 [Vimiera Road - Lincoln Street (Site Folder: PM Peak Existing)]

New Site  
Site Category: (None)  
Give-Way (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 ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
South: Lincoln Street														
1	L2	24	0.0	25	0.0	0.066	5.9	LOS A	0.2	1.6	0.24	0.59	0.24	50.9
3	R2	48	0.0	51	0.0	0.066	6.4	LOS A	0.2	1.6	0.24	0.59	0.24	48.7
Approach		72	0.0	76	0.0	0.066	6.2	LOS A	0.2	1.6	0.24	0.59	0.24	49.5
East: Vimiera Road														
4	L2	35	0.0	37	0.0	0.075	5.5	LOS A	0.0	0.0	0.00	0.15	0.00	55.4
5	T1	102	0.0	107	0.0	0.075	0.0	LOS A	0.0	0.0	0.00	0.15	0.00	57.7
Approach		137	0.0	144	0.0	0.075	1.4	NA	0.0	0.0	0.00	0.15	0.00	57.0
West: Vimiera Road														
11	T1	112	0.0	118	0.0	0.069	0.1	LOS A	0.1	0.6	0.06	0.06	0.06	58.6
12	R2	13	0.0	14	0.0	0.069	5.9	LOS A	0.1	0.6	0.06	0.06	0.06	56.0
Approach		125	0.0	132	0.0	0.069	0.7	NA	0.1	0.6	0.06	0.06	0.06	58.3
All Vehicles		334	0.0	352	0.0	0.075	2.2	NA	0.2	1.6	0.07	0.21	0.07	55.5

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

 **Site: 101 [Balaclava Road - Lincoln Street (Site Folder: PM Peak Existing)]**

New Site  
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 ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
East: Balaclava Road														
5	T1	818	0.0	861	0.0	0.489	0.5	LOS A	1.1	7.9	0.12	0.04	0.16	58.3
6	R2	46	0.0	48	0.0	0.489	9.8	LOS A	1.1	7.9	0.12	0.04	0.16	55.1
Approach		864	0.0	909	0.0	0.489	1.0	NA	1.1	7.9	0.12	0.04	0.16	58.1
North: Lincoln Street														
7	L2	27	0.0	28	0.0	0.089	10.6	LOS B	0.3	2.0	0.61	0.93	0.61	42.7
9	R2	7	0.0	7	0.0	0.089	32.2	LOS D	0.3	2.0	0.61	0.93	0.61	44.2
Approach		34	0.0	36	0.0	0.089	15.0	LOS C	0.3	2.0	0.61	0.93	0.61	43.0
West: Balaclava Road														
10	L2	25	0.0	26	0.0	0.273	5.6	LOS A	0.0	0.0	0.00	0.03	0.00	57.4
11	T1	480	0.0	505	0.0	0.273	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.4
Approach		505	0.0	532	0.0	0.273	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.3
All Vehicles		1403	0.0	1477	0.0	0.489	1.1	NA	1.1	7.9	0.09	0.06	0.12	58.0

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 101 [Vimiera Road - Lincoln Street (Site Folder: AM Peak Post Development)]

New Site  
Site Category: (None)  
Give-Way (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 ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
South: Lincoln Street														
1	L2	25	0.0	26	0.0	0.073	5.9	LOS A	0.3	1.8	0.28	0.62	0.28	50.6
3	R2	46	0.0	48	0.0	0.073	7.2	LOS A	0.3	1.8	0.28	0.62	0.28	48.4
Approach		71	0.0	75	0.0	0.073	6.7	LOS A	0.3	1.8	0.28	0.62	0.28	49.2
East: Vimiera Road														
4	L2	48	0.0	51	0.0	0.094	5.5	LOS A	0.0	0.0	0.00	0.17	0.00	55.2
5	T1	124	0.0	131	0.0	0.094	0.0	LOS A	0.0	0.0	0.00	0.17	0.00	57.5
Approach		172	0.0	181	0.0	0.094	1.6	NA	0.0	0.0	0.00	0.17	0.00	56.8
West: Vimiera Road														
11	T1	223	0.0	235	0.0	0.136	0.1	LOS A	0.2	1.2	0.07	0.05	0.07	58.7
12	R2	22	0.0	23	0.0	0.136	6.1	LOS A	0.2	1.2	0.07	0.05	0.07	56.1
Approach		245	0.0	258	0.0	0.136	0.6	NA	0.2	1.2	0.07	0.05	0.07	58.4
All Vehicles		488	0.0	514	0.0	0.136	1.8	NA	0.3	1.8	0.07	0.18	0.07	56.2

Site Level of Service (LOS) Method: Delay (SIDRA). 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.  
 Delay Model: SIDRA Standard (Geometric Delay is included).  
 Queue Model: SIDRA Standard.  
 Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).  
 HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

# MOVEMENT SUMMARY

 **Site: 101 [Balaclava Road - Lincoln Street (Site Folder: AM Peak Post Development)]**

New Site  
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 ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
East: Balaclava Road														
5	T1	457	0.0	481	0.0	0.308	1.1	LOS A	1.0	6.9	0.20	0.06	0.24	56.9
6	R2	43	0.0	45	0.0	0.308	11.0	LOS B	1.0	6.9	0.20	0.06	0.24	53.9
Approach		500	0.0	526	0.0	0.308	1.9	NA	1.0	6.9	0.20	0.06	0.24	56.6
North: Lincoln Street														
7	L2	36	0.0	38	0.0	0.113	12.9	LOS B	0.4	2.6	0.69	1.00	0.69	42.7
9	R2	9	0.0	9	0.0	0.113	23.8	LOS C	0.4	2.6	0.69	1.00	0.69	44.3
Approach		45	0.0	47	0.0	0.113	15.1	LOS C	0.4	2.6	0.69	1.00	0.69	43.1
West: Balaclava Road														
10	L2	21	0.0	22	0.0	0.387	5.6	LOS A	0.0	0.0	0.00	0.02	0.00	57.4
11	T1	694	0.0	731	0.0	0.387	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.5
Approach		715	0.0	753	0.0	0.387	0.3	NA	0.0	0.0	0.00	0.02	0.00	59.4
All Vehicles		1260	0.0	1326	0.0	0.387	1.4	NA	1.0	6.9	0.10	0.07	0.12	57.4

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

Site: 101 [Vimiera Road - Lincoln Street (Site Folder: PM Peak Post Development)]

New Site  
Site Category: (None)  
Give-Way (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 ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
South: Lincoln Street														
1	L2	32	0.0	34	0.0	0.089	5.9	LOS A	0.3	2.2	0.25	0.59	0.25	50.9
3	R2	64	0.0	67	0.0	0.089	6.5	LOS A	0.3	2.2	0.25	0.59	0.25	48.7
Approach		96	0.0	101	0.0	0.089	6.3	LOS A	0.3	2.2	0.25	0.59	0.25	49.5
East: Vimiera Road														
4	L2	46	0.0	48	0.0	0.081	5.5	LOS A	0.0	0.0	0.00	0.18	0.00	55.0
5	T1	102	0.0	107	0.0	0.081	0.0	LOS A	0.0	0.0	0.00	0.18	0.00	57.2
Approach		148	0.0	156	0.0	0.081	1.7	NA	0.0	0.0	0.00	0.18	0.00	56.5
West: Vimiera Road														
11	T1	112	0.0	118	0.0	0.072	0.1	LOS A	0.1	0.8	0.08	0.08	0.08	58.2
12	R2	17	0.0	18	0.0	0.072	5.9	LOS A	0.1	0.8	0.08	0.08	0.08	55.7
Approach		129	0.0	136	0.0	0.072	0.9	NA	0.1	0.8	0.08	0.08	0.08	57.8
All Vehicles		373	0.0	393	0.0	0.089	2.6	NA	0.3	2.2	0.09	0.25	0.09	54.8

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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# MOVEMENT SUMMARY

 **Site: 101 [Balaclava Road - Lincoln Street (Site Folder: PM Peak Post Development)]**

New Site  
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 ] %	[ Total veh/h	HV ] %				[ Veh. veh	Dist ] m				
East: Balaclava Road														
5	T1	818	0.0	861	0.0	0.505	0.7	LOS A	1.5	10.6	0.15	0.05	0.22	57.8
6	R2	60	0.0	63	0.0	0.505	10.0	LOS B	1.5	10.6	0.15	0.05	0.22	54.6
Approach		878	0.0	924	0.0	0.505	1.3	NA	1.5	10.6	0.15	0.05	0.22	57.6
North: Lincoln Street														
7	L2	36	0.0	38	0.0	0.120	10.6	LOS B	0.4	2.6	0.62	0.94	0.62	42.5
9	R2	9	0.0	9	0.0	0.120	33.9	LOS D	0.4	2.6	0.62	0.94	0.62	44.1
Approach		45	0.0	47	0.0	0.120	15.3	LOS C	0.4	2.6	0.62	0.94	0.62	42.8
West: Balaclava Road														
10	L2	33	0.0	35	0.0	0.278	5.6	LOS A	0.0	0.0	0.00	0.04	0.00	57.3
11	T1	480	0.0	505	0.0	0.278	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	59.3
Approach		513	0.0	540	0.0	0.278	0.4	NA	0.0	0.0	0.00	0.04	0.00	59.1
All Vehicles		1436	0.0	1512	0.0	0.505	1.4	NA	1.5	10.6	0.11	0.07	0.15	57.4

Site Level of Service (LOS) Method: Delay (SIDRA). 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.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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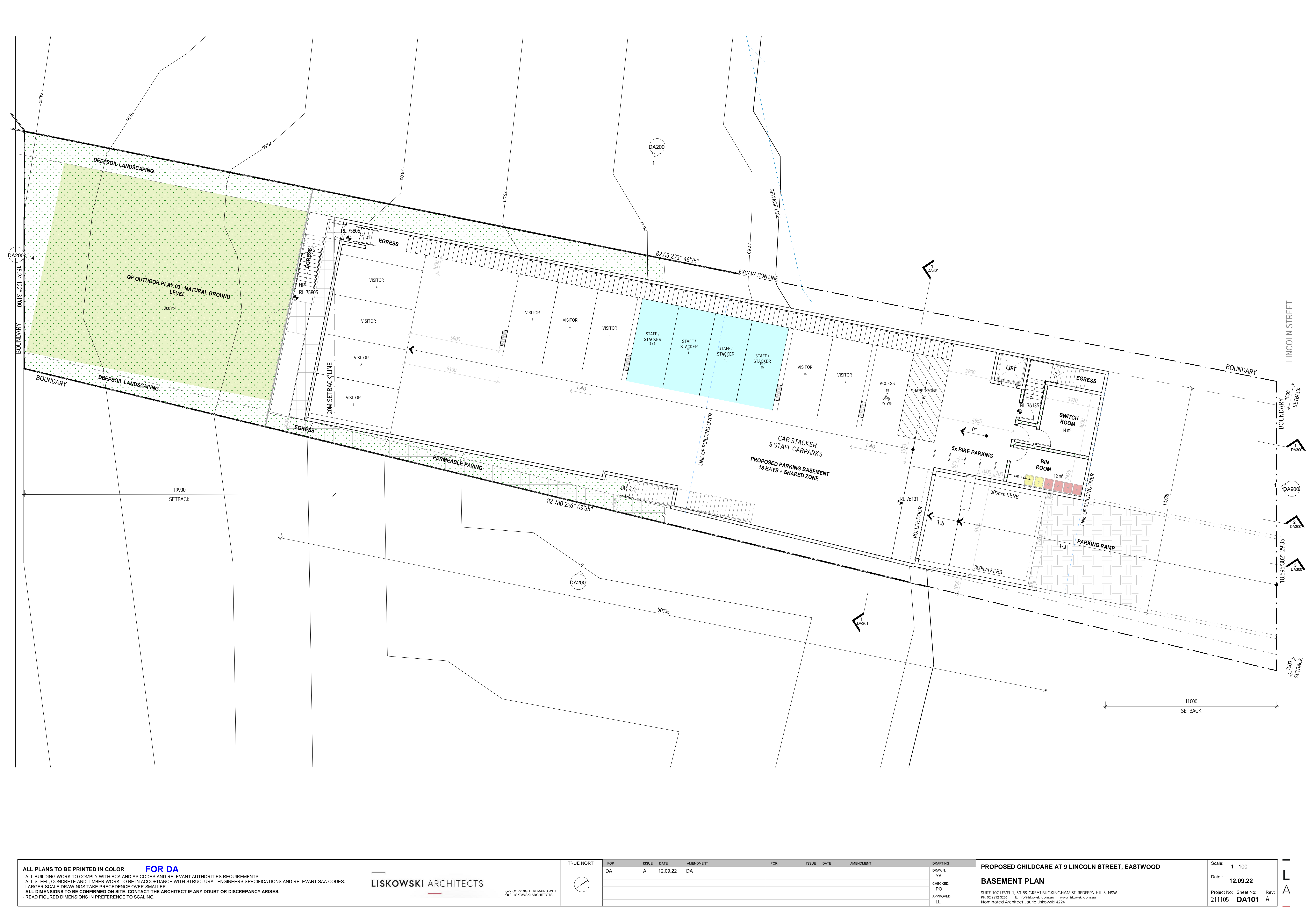
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## Appendix B

### Architectural Plans



ALL PLANS TO BE PRINTED IN COLOR **FOR DA**

- ALL BUILDING WORK TO COMPLY WITH BCA AND AS CODES AND RELEVANT AUTHORITIES REQUIREMENTS.
- ALL STEEL, CONCRETE AND TIMBER WORK TO BE IN ACCORDANCE WITH STRUCTURAL ENGINEERS SPECIFICATIONS AND RELEVANT SAA CODES.
- LARGER SCALE DRAWINGS TAKE PRECEDENCE OVER SMALLER.
- ALL DIMENSIONS TO BE CONFIRMED ON SITE. CONTACT THE ARCHITECT IF ANY DOUBT OR DISCREPANCY ARISES.
- READ FIGURED DIMENSIONS IN PREFERENCE TO SCALING.

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DA	A	12.09.22	DA

FOR	ISSUE	DATE	AMENDMENT

DRAFTING
DRAWN: YA
CHECKED: PO
APPROVED: LL

PROPOSED CHILDCARE AT 9 LINCOLN STREET, EASTWOOD

BASEMENT PLAN

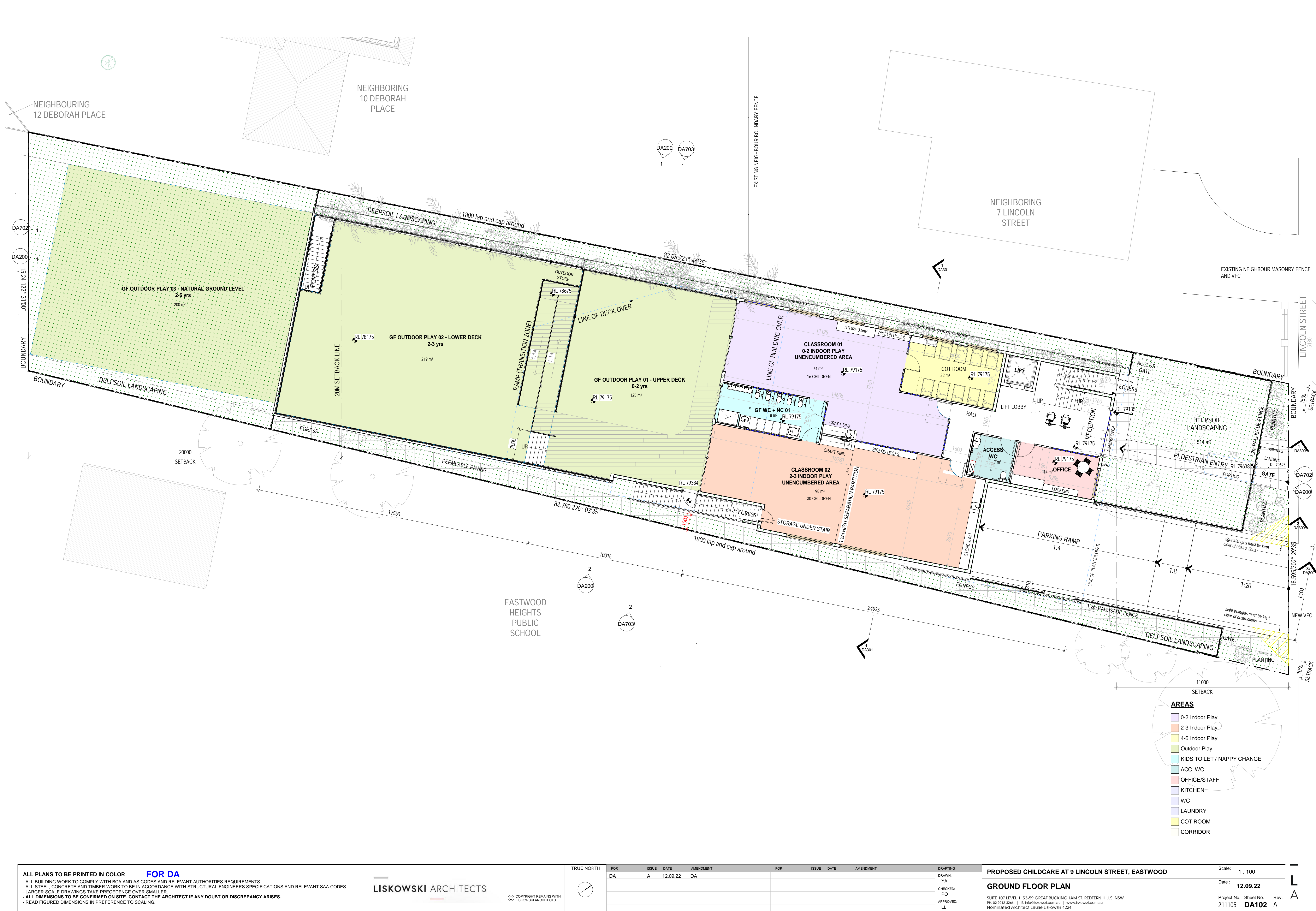
SUITE 107 LEVEL 1, 53-59 GREAT BUCKINGHAM ST, REDFERN HILLS, NSW  
PH: 02 9212 3266 | E: info@liskowski.com.au | www.liskowski.com.au  
Nominated Architect Laurie Liskowski 4224

Scale: 1 : 100

Date : 12.09.22

Project No: 211105 Sheet No: DA101 Rev: A



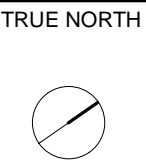


ALL PLANS TO BE PRINTED IN COLOR **FOR DA**

- ALL BUILDING WORK TO COMPLY WITH BCA AND AS CODES AND RELEVANT AUTHORITIES REQUIREMENTS.
- ALL STEEL, CONCRETE AND TIMBER WORK TO BE IN ACCORDANCE WITH STRUCTURAL ENGINEERS SPECIFICATIONS AND RELEVANT SAA CODES.
- LARGER SCALE DRAWINGS TAKE PRECEDENCE OVER SMALLER.
- ALL DIMENSIONS TO BE CONFIRMED ON SITE. CONTACT THE ARCHITECT IF ANY DOUBT OR DISCREPANCY ARISES.
- READ FIGURED DIMENSIONS IN PREFERENCE TO SCALING.

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DA	A	12.09.22	DA				

DRAFTING
DRAWN: YJA
CHECKED: PO
APPROVED: LL

PROPOSED CHILDCARE AT 9 LINCOLN STREET, EASTWOOD

GROUND FLOOR PLAN

SUITE 107 LEVEL 1, 53-59 GREAT BUCKINGHAM ST. REDFERN HILLS, NSW  
PH: 02 9212 3266 | E: info@liskowski.com.au | www.liskowski.com.au  
Nominated Architect Laurie Liskowski 4224

Scale: 1 : 100

Date: 12.09.22

Project No: 211105 Sheet No: DA102 Rev: A



## Appendix C

### Swept Path Analysis

VEHICLE ENTERING

VEHICLE EXITING



**KEY:**

Wheel path	Forward	Reverse
Body envelope		
300mm clearance		

**Vehicle Diagram:**

B99 Vehicle (Realistic min radius) (2004)

Overall Length	5200mm
Overall Width	1940mm
Overall Body Height	1878mm
Min Body Ground Clearance	272mm
Track Width	1840mm
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6250mm

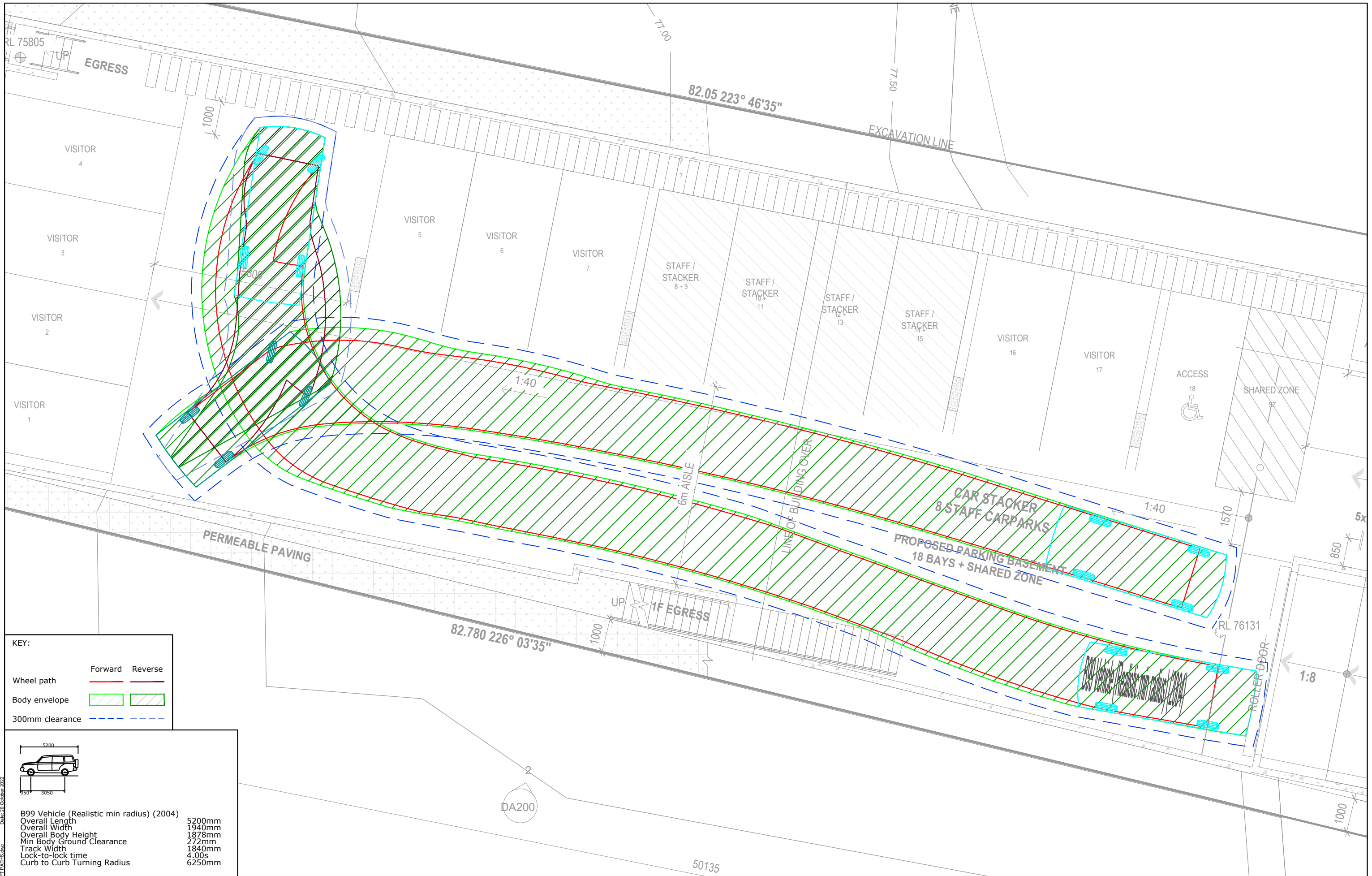
REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	JG	OF	KH	20/10/22



PROJECT: 9 LINCOLN STREET, EASTWOOD

TITLE: SWEPT PATH ANALYSIS  
AS2890.1 5.2m B99 VEHICLE - ACCESSIBLE CAR SPACE

DWG No.	21514CAD004		
	FIGURE 2		
DATE STAMP	20 OCTOBER 2022		
PROJECT No.	SCALE	REV.	
21514	1:150 @A3	A	



KEY:

Wheel path	Forward	Reverse
Body envelope		
300mm clearance		

B99 Vehicle (Realistic min radius) (2004)	5200mm
Overall Length	1940mm
Overall Width	1878mm
Overall Body Height	272mm
Min Body Ground Clearance	1840mm
Track Width	4.00s
Lock-to-lock time	6250mm
Curb to Curb Turning Radius	

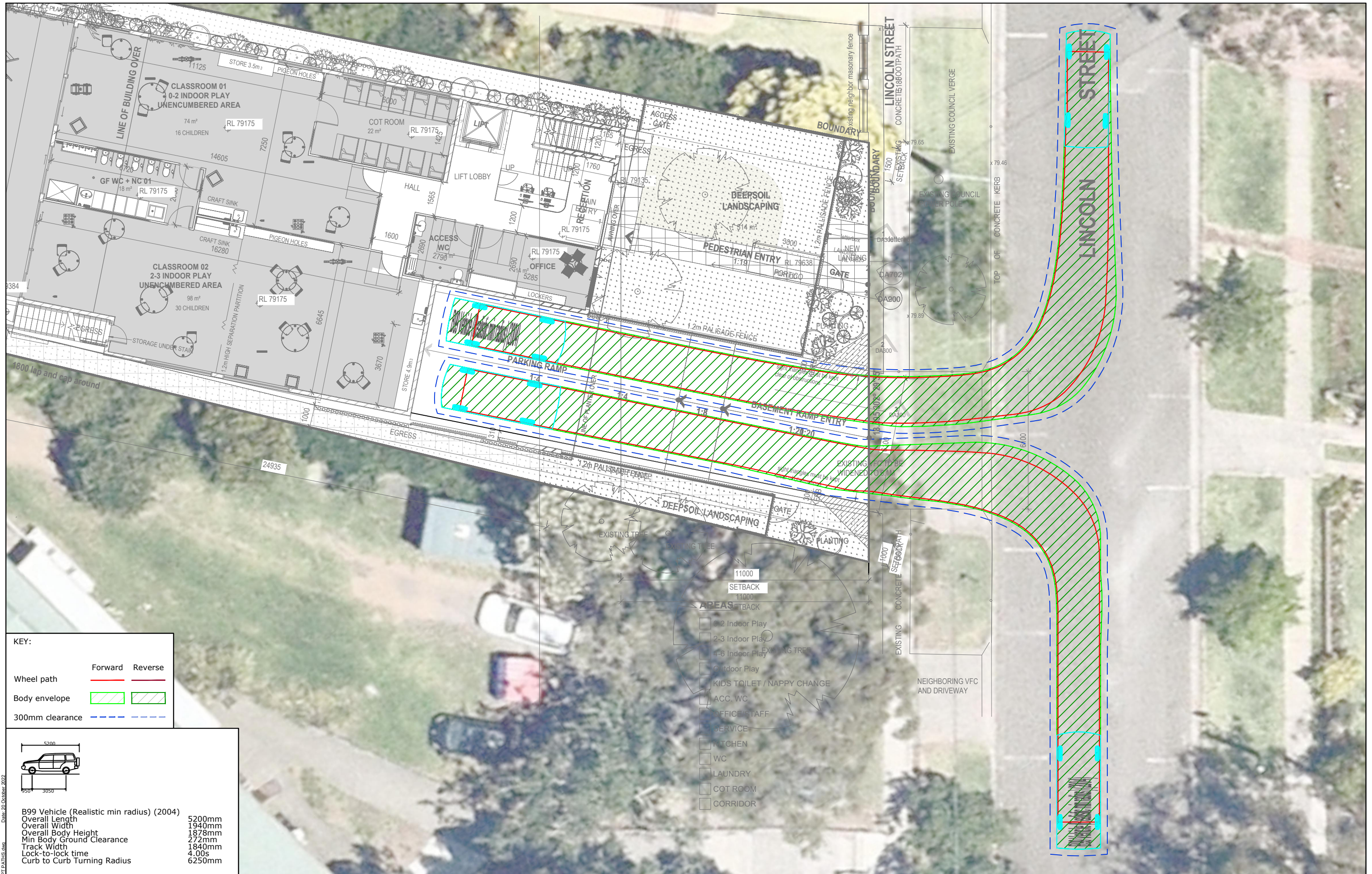
REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	JG	OF	KH	20/10/22



PROJECT	9 LINCOLN STREET, EASTWOOD
TITLE	SWEPT PATH ANALYSIS AS2890.1 5.2m B99 VEHICLE - TURNING BAY

DWG No.	21514CAD004
FIGURE 2	
DATE STAMP	20 OCTOBER 2022
PROJECT No.	21514
SCALE	1:100 @A3
REV.	A





KEY:

Wheel path	Forward	Reverse
Body envelope		
300mm clearance		

B99 Vehicle (Realistic min radius) (2004)	
Overall Length	5200mm
Overall Width	1940mm
Overall Body Height	1878mm
Min Body Ground Clearance	272mm
Track Width	1840mm
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6250mm

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	JG	OF	KH	20/10/22



PROJECT	9 LINCOLN STREET, EASTWOOD
TITLE	SWEPT PATH ANALYSIS AS2890.1 5.2m B99 VEHICLE - DRIVEWAY

DWG No.	21514CAD004
FIGURE 2	
DATE STAMP	20 OCTOBER 2022
PROJECT No.	21514
SCALE	1:150 @A3
REV.	A



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St Leonards NSW 2065

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