Ref: 23049
Date: June 2024
Issue: E

Planning Proposal for Proposed Mixed-Use Development 131 St Vincent Street, Ulladulla

Traffic & Parking Assessment

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1.0 Introduction

This report has been prepared to accompany a Planning Proposal to Shoalhaven City Council for an envisaged mixed-use development at 131 St Vincent Street, Ulladulla (Figure 1).

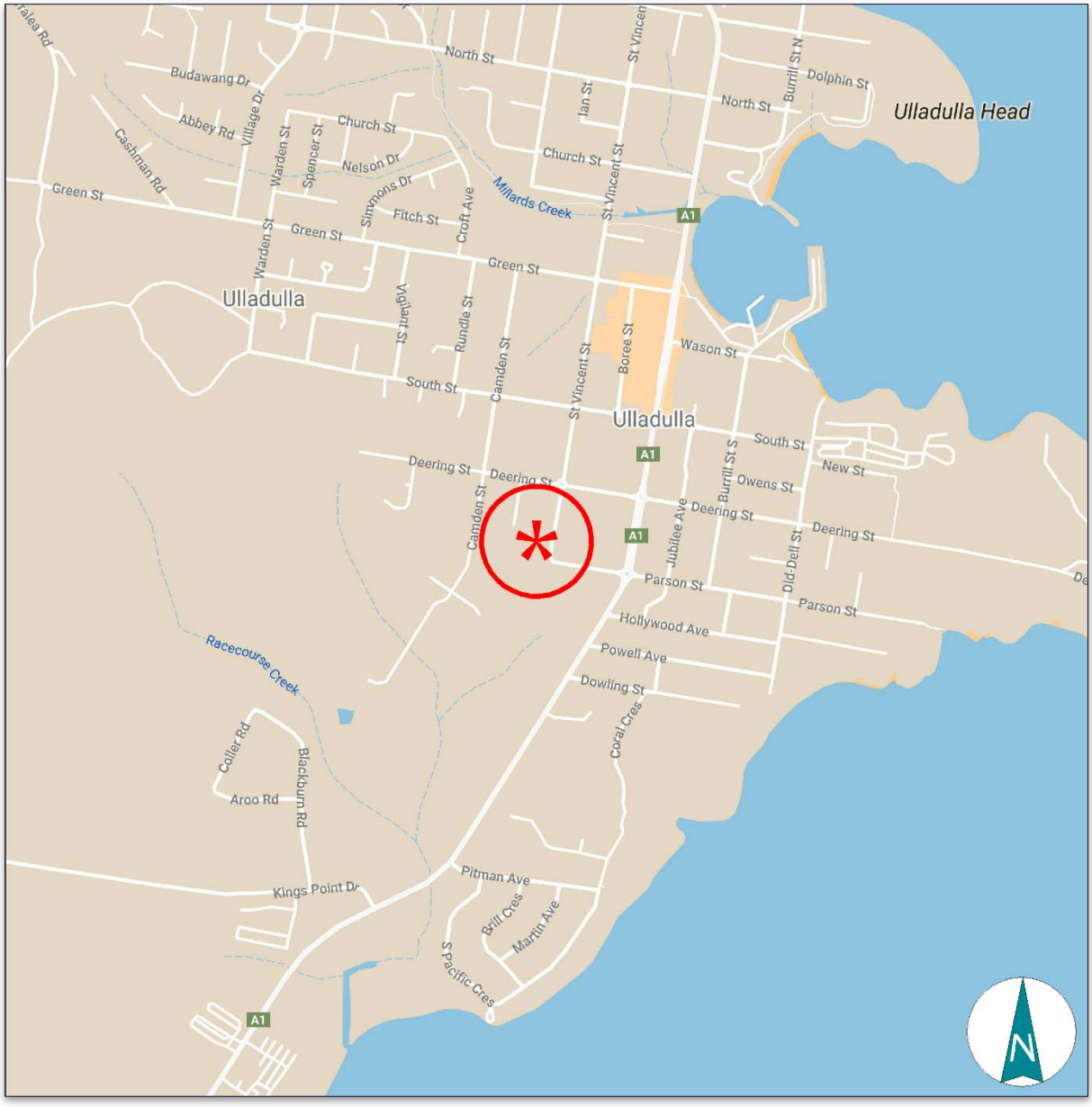


Figure 1 - Site Location

The site is currently occupied by Bunnings Warehouse and consent has been granted to develop a new Bunnings on a site just to the south. The Planning Proposal envisages a development scheme for the site comprising:

- Residential and affordable apartments.
- Commercial Tenancies.
- Child Care Centre.
- Restaurant/Bar.

The purpose of this report is to:

- describe the site, its context and the envisaged development scheme.
- describe the existing road network, traffic and transport circumstances.
- describe the future/envisaged road network, and traffic circumstances.
- assess the suitability of the envisaged vehicle access arrangements.
- assess the potential traffic implications, including the compound development outcome.
- assess the adequacy of the envisaged parking provision.
- assess the envisaged vehicle access, internal circulation and servicing arrangements.

2.0 Planning Proposal

2.1 Site, Context & Existing Circumstances

The site (Figure 2) is Lot 1 of Section 26 in DP 759018, which occupies a rectangular-shaped area of 1.01ha with frontage to the western side of St Vincent Street and the eastern side of Witherington Avenue.

The area which surrounds the subject site comprises:

- The Dunn Lewis Community Centre to the south.
- Industrial uses to the west.
- Commercial uses to the east extending to the Princes Highway.
- The residential uses adjoining the site to the north and extending beyond the commercial uses to the east and west of the Princes Highway.
- The Ulladulla sports park to the south.
- The Ulladulla town centre to the north of the site.

Figure 2 - Site Boundary

The site is currently a bulky goods warehouse premise occupied by Bunnings Warehouse which comprises:

Total Floorspace	4,580m^2
Parking	117 spaces

The vehicle access arrangements include car park access on St. Vincent Street, truck ingress on Witherington Avenue, and egress on St Vincent Street.

2.2 Envisaged Development Scheme

The existing building and structures would be demolished, and the site excavated to provide for basement parking and a level building platform. The envisaged mixed-use development is to be split across 4 separate buildings, providing 182 residential dwellings and 5,980m^2 of commercial and other uses in the following breakdown:

Table 1 - Envisaged Development Elements

Building No.	Use	GFA/Units
1	Pub Commercial Tenancies Residential	600m^2 1,400m^2 52 Units
2	Commercial Tenancies Residential	780m^2 80 Units
3	Commercial Tenancies Childcare Centre	2,530m^2 1,270m^2 (120 Children)
4	Affordable Housing	50 units

Details of the envisaged development are provided on the concept plans prepared by Cox Architecture which are reproduced in part in Appendix A.

2.3 Other Development

Consent has been granted to demolish the existing buildings and clear a site at 189-197 Princes Highway Ulladulla to provide for the relocated Bunnings Warehouse.

The approved Bunnings Warehouse development (DA/20/1068) is currently under construction and comprises the following:

Warehouse		5,786.8m^2
Nursery / Bagged Goods		1,925m^2
TTS / BM & LY		2,615m^2
	Total	**10,326.8m^2**
BM & LY		790m^2
Goods Inward Yard		285m^2

Parking will be provided for a total of 166 cars with the vehicle access provisions being staged as the road system develops as follows:

Interim Access (Bunnings Responsibility)

- St Vincent Street extended southerly to accommodate separate car park (ingress/egress) and truck (egress) driveways.
- A roundabout constructed at the Princes Highway and Dowling Street intersection.
- Separate carpark access (left turn IN/OUT only) and truck ingress (left turn only) with left turn deceleration lanes on the Princes Highway frontage.

Ultimate Access

- New access roadway constructed connecting into the Princes Highway/Dowling Street roundabout and a further extension of St Vincent Street to connect with the new road.
- Closure of the temporary Bunnings Warehouse access connections on the highway frontage.

3.0 Road Network and Traffic Conditions

3.1 Existing Road Network

The existing road network serving the site (Figure 3) comprises:

- *Princes Highway* – a State Road and arterial route being the principal coastal route connecting between Sydney and Melbourne
- *St Vincent Street* – a collector road route running parallel and to the west of the highway
- *North Street, Green Street and South Street* – east-west collector routes
- *Deering Street and Parson Street* – minor collector routes crossing the highway
- *Hollywood Avenue, Dowling Street and Powell Street* – local access roads to the east of the highway

The Princes Highway, which is located some 220m to the east of the site, is generally relatively straight through the town centre, with one traffic lane in each direction. The southern section of St Vincent Street is only constructed for a short distance south of Parson Street and extends north relatively straight before intersecting the Princes Highway. Witherington Avenue is a local access road of some 8m in width with a traffic lane and unrestricted parking in each direction.

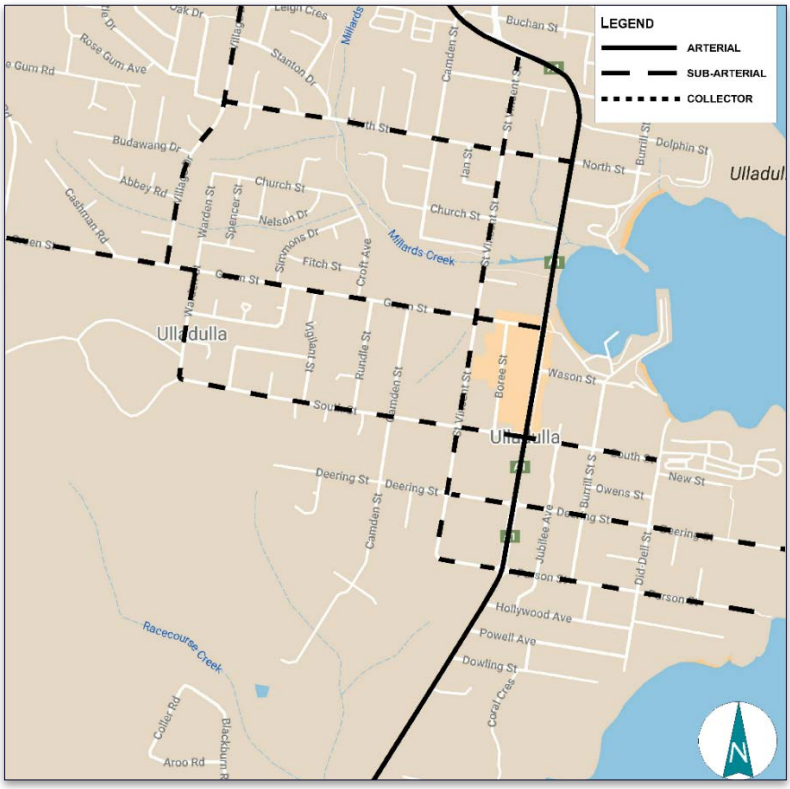


Figure 3 - Road Network

3.2 Traffic Controls

The existing traffic controls on the road network (Figure 4) comprise:

- the 60 kmph restriction on the highway and 50kmph restrictions on the local and collector road system
- the roundabouts on the highway at the Parson Street and Deering Street intersections
- the GIVE WAY sign control on Powell Street and Dowling Street at the highway intersections
- the roundabout at the St. Vincent Street and Parson Street intersection
- the roundabout at the St. Vincent Street and Deering Street intersection

Figure 4 - Traffic Controls

3.3 Traffic Conditions

Traffic surveys have been undertaken at the access intersections and at the existing Bunnings Warehouse access during the weekday morning and afternoon periods. The results of these surveys are provided in Appendix B and summarised in Figure 5 and Figure 6.

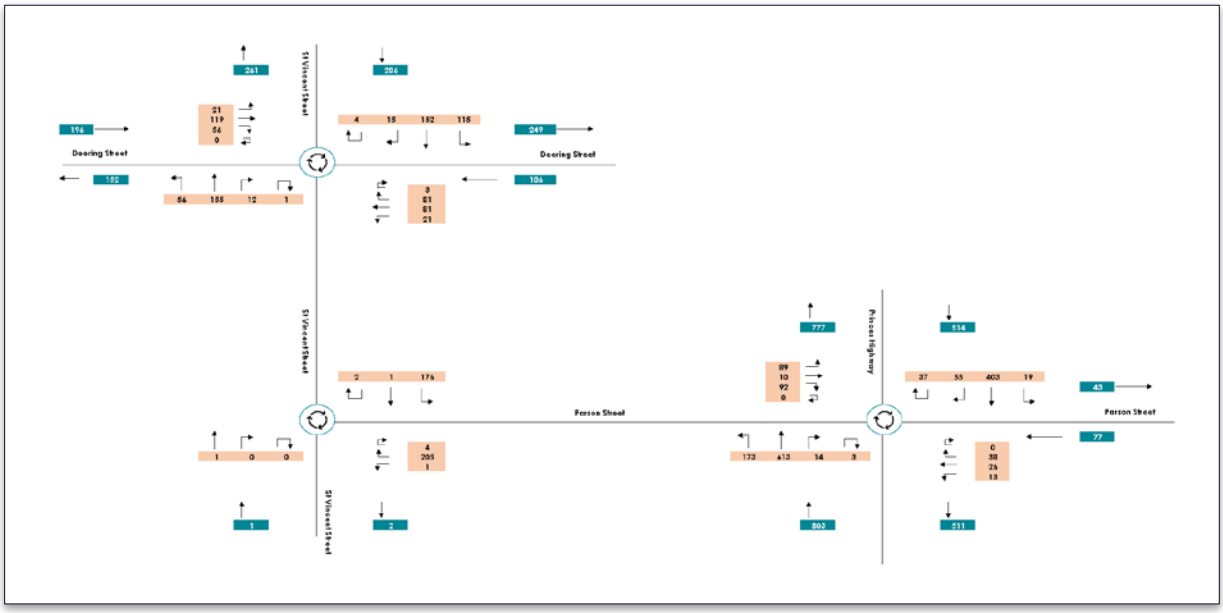


Figure 5 - Existing AM Traffic Movements

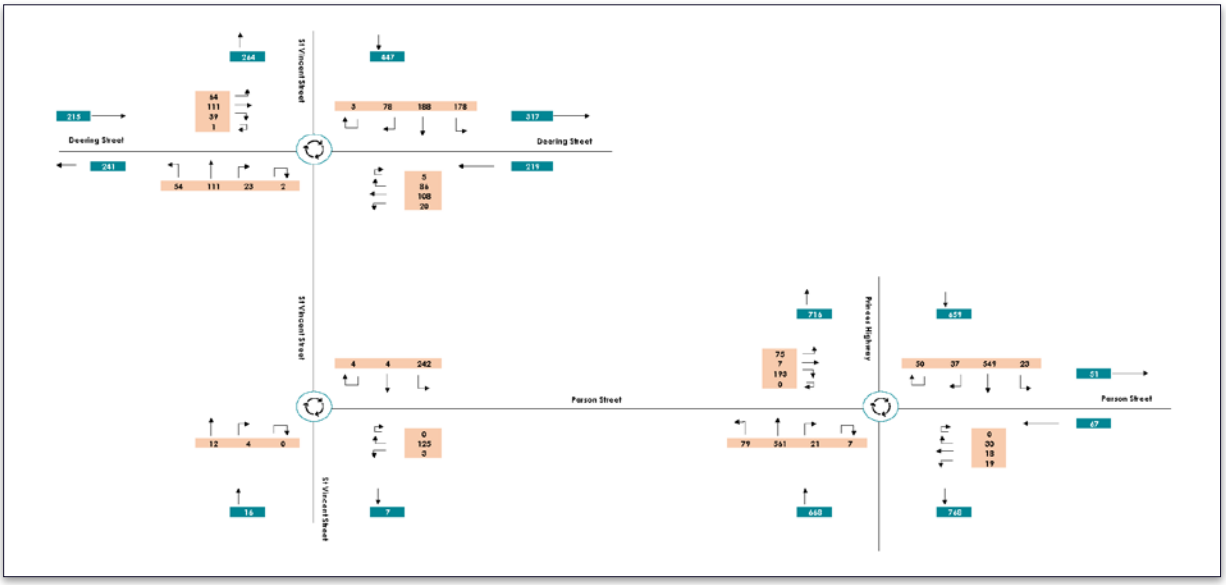


Figure 6 - Existing PM Traffic Movements

The operational performance of the intersections have been assessed using SIDRA with the results of that assessment provided in Appendix C and summarised in the following table, while the criteria for interpreting SIDRA results are reproduced overleaf.

Table 2 - Existing Intersection Performance

	Weekday AM		Weekday PM	
	LOS	**AVD**	**LOS**	**AVD**
Deering Street & St Vincent Street	A	5.7	A	5.8
St Vincent Street & Parsons Street	A	5.4	A	4.8
Parsons Street & Princes Highway	A	7.2	A	8.1

The results indicate that these intersections operate quite satisfactorily at the present time.

3.4 Proposed Upgraded Road Network

There are two proposed upgrades to the road network, namely:

- The Federal Government has announced a proposed $3.8 billion Infrastructure Program, and this announcement included confirmation that construction of the long-awaited Ulladulla-Milton Bypass will be funded under this program. This bypass road will connect to the highway to the south of the development site, and as a result, the traffic flow along the highway past the site will be significantly reduced when the bypass is completed.
- As part of the Bunnings Warehouse development, St Vincent Street will be extended to connect with a new access roadway connecting into the Princes Highway and Dowling Street intersection.

Criteria for Interpreting Results of SIDRA Analysis

1. Level of Service (LOS)

LOS	Traffic Signals and Roundabouts	Give Way and Stop Signs
'A'	Good	Good
'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 and Accident Study required
'E'	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
'F'	Unsatisfactory and requires additional capacity	Unsatisfactory and requires other control mode

2. Average Vehicle Delay (AVD)

The AVD provides a measure of the operational performance of an intersection as indicated on the table below, which relates AVD to LOS. The AVD's listed in the table should be taken as a guide only as longer delays could be tolerated in some locations (ie inner city conditions) and on some roads (ie minor side street intersecting with a major arterial route).

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabouts	Give Way and Stop Signs
A	Less than 14	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 and requires other control mode

3. Degree of Saturation (DS)

The DS is another measure of the operational performance of individual intersections.

For intersections controlled by **traffic signals**[1] both queue length and delay increase rapidly as DS approaches 1, and it is usual to attempt to keep DS to less than 0.9. Values of DS in the order of 0.7 generally represent satisfactory intersection operation. When DS exceeds 0.9 queues can be anticipated.

For intersections controlled by a **roundabout or GIVE WAY or STOP signs**, satisfactory intersection operation is indicated by a DS of 0.8 or less.

[1] *the values of DS for intersections under traffic signal control are only valid for cycle length of 120 secs*

4.0 Access and Traffic

4.1 Access

It is envisaged (as shown in the Appendix A plans) to undertake the following works as part of the development:

- Construct a circulation roadway looping around the site's northern, southern and western boundaries with one-way ingress from Witherington Avenue.
- Realign the roundabout at the St Vincent Street and Parsons Street intersection to accommodate the connection of the southern roadway access.
- Construct access driveways for the car park (ingress/egress) from the centre of the northern and southern laneways with the refuse collection area provided at the south of Building 1.

The envisaged accesses will be located where good sight distances are available and will comply with the design requirements of AS2890.1 and 2.

4.2 Traffic

Surveys of the existing Bunnings revealed the following peak traffic generation rates:

Weekday AM	120 vtph
Weekday PM	145 vtph
Saturday MD	294 vtph

It is noted that the traffic generation during the weekends is not applicable to the envisaged residential and commercial development uses during the peak traffic hours. However, it should be reflected upon that the town of Ulladulla generates a large portion of vehicle movements through tourists during the weekend and therefore the existing roads have sufficient capacity for further development that proposed further weekday peak period traffic generation.

The envisaged development traffic generation was assessed with reference to the TfNSW Guide to Traffic Generating Development criteria for residential, commercial, and restaurant uses, while the childcare centre

criteria were obtained from the RMS Childcare Centre Study and the relevant extracts are provided in Appendix E. A summary of the rates used and their application are provided as follows:

Table 3 - Envisaged Development Traffic Generation

Use	Peak Hour Rate		Floor Space/Units	Peak Hour Traffic Generated	
	AM	PM		AM	PM
Residential	0.53 per unit	0.32 per unit	132 units	70	42
Affordable housing	0.53 per unit	0.32 per unit	50 units	27	16
Commercial	2 per 100m^2 GFA		4,710m^2	95	95
Restaurants	-	5 per 100m^2	600m^2	-	30
Childcare Centre	0.66 per child	0.68 per child	120 children	79	82
			TOTAL	**271**	**265**

Accordingly, the projected increase in traffic generation as a result of the envisaged development would be some 120-151 vtph during the peak periods more than the existing Bunnings Warehouse. This outcome, however, is extremely conservative as it assumes single compound applications of the rates rather than a large mixed-use circumstance where there will be dual use and different peaks, resulting in a lower total traffic generation across the development as a whole.

For example, in a mixed-use development, a person living in a residential unit may also work in the development, utilise the Childcare Centre or visit a restaurant located within the development. Similarly, a person working in an office within the development may utilise the Childcare Centre or visit a bar within the same complex. These overlapping visitations can reduce traffic generated by the development, compared to what would be expected for a single-use development applied by the TfNSW guidelines. As a guide, a discount of some 20% would usually be applied in this circumstance. Application of the 20% reduction would result in the following peaks:

AM 217 vtph

PM 212 vtph

It is understood that the peak traffic generated from the envisaged development will never likely exceed that of the existing peak use of the Bunnings Warehouse. While these peaks are understood not to coincide, the current traffic circumstances are similar during these varying peak periods, which exemplifies that the surrounding road network has the capacity for the envisaged traffic generation.

Nevertheless, the traffic movements generated from Table 3 will be applied conservatively to ensure that the intersections operate at acceptable performances in the years prior to the provision of the Ulladulla Bypass, which is currently in the planning phase.

The traffic surveys of the existing Bunnings Warehouse reveal that some 70% of access movements were to/from the north along St Vincent Street and some 30% to/from the east along Parson Street. Regarding the envisaged uses and residential catchment of Ulladulla, it is considered that some 80% of traffic is from the north and some 20% from the south in general terms. The split of vehicle movements from the Bunnings Warehouse to the proposed development is anticipated to be consistent, understanding that the town centre is situated to the north.

Assuming that the vehicle movements are separated between the buildings and their associated parking, this results in the following traffic distribution:

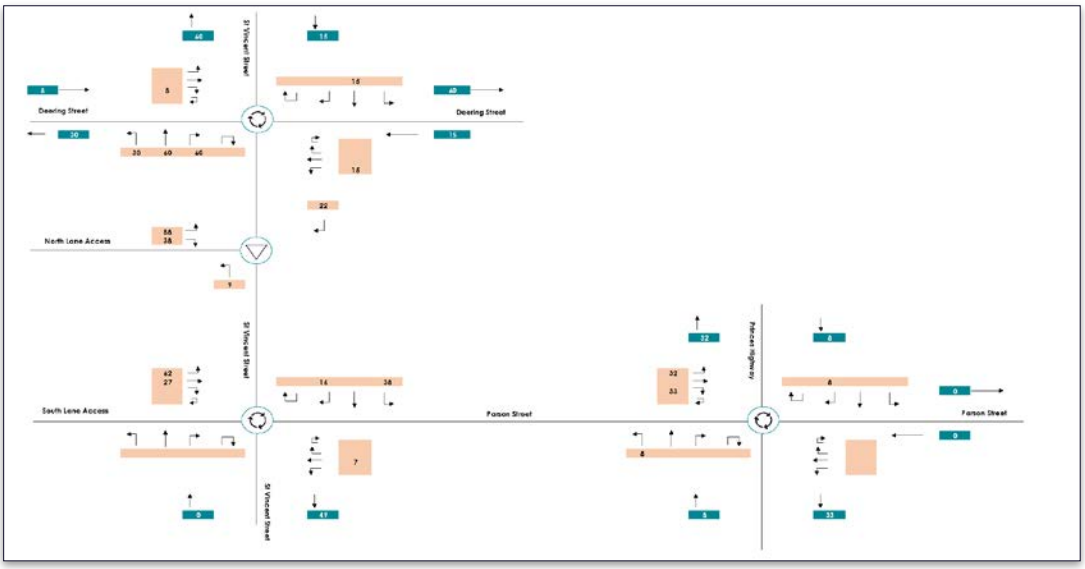


Figure 7 - Envisaged Development AM Traffic Movements

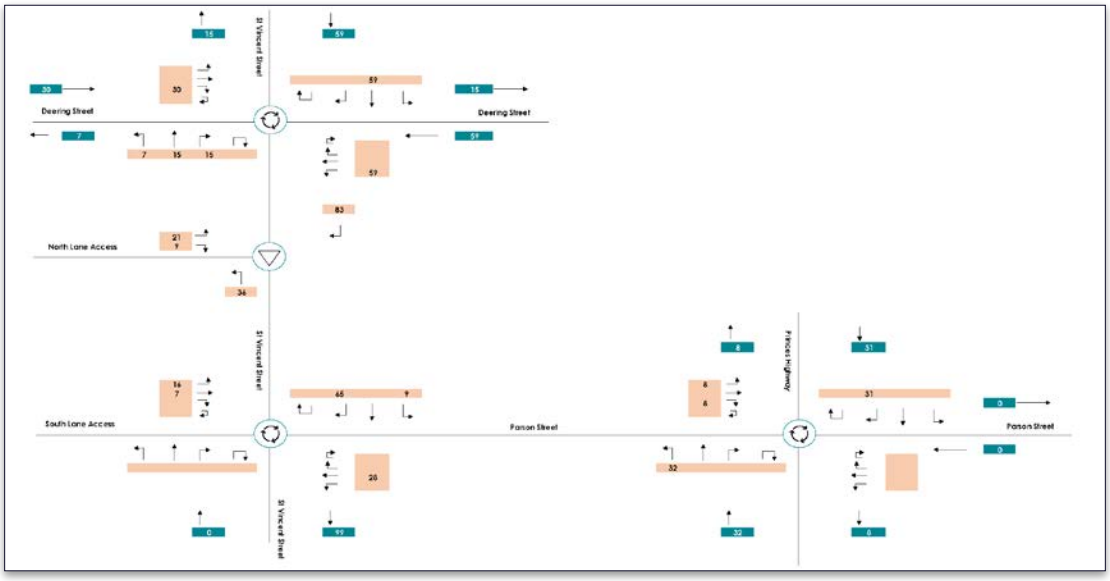


Figure 8 - Envisaged Development PM Traffic Movements

The NSW Government Princes Highway Corridor Strategy (Aug 2016) provides insight into the changes to traffic activity on numerous sections of the highway. The extract provided in Appendix F indicates an average AADT growth on the Princes Highway at a counting station south of Lake Burrill of 1.1% pa.

Council officers often take the view that seasonal / holiday variations in traffic flow need to be accounted for in regard to traffic assessment and quote Austroads criteria in relation to a certain "highest hour". However, the 2nd extract from the Princes Highway Corridor Study shows that while these variations are relatively significant in sections of the highway that have high concentrated flows (e.g. at Bombo), the variations at Burrill Lake / Ulladulla are far more muted and of limited frequency/duration whilst further to the south (e.g. Bega, Eden) they are almost imperceptible.

It is standard practice to identify and assess a "10-year design horizon" in relation to development assessment. For the purposes of establishing the 2033 design horizon, the volumes of the through movements were increased by 15% for the peak periods. The major right/left turn movements to/from the highway at the Parsons Street and St Vincent Street intersections increased by 10%.

The future operational performance of the Princes Highway/Parson Street and St Vincent Street intersections with Deering Street and Parsons Street has been assessed with SIDRA incorporating the relocation of the

Bunnings traffic movements as well as the additional growth at 2033 and envisaged traffic generation rates with the new access lanes. See Figures 9 & 10 for the Future traffic movements with the development in 2033.

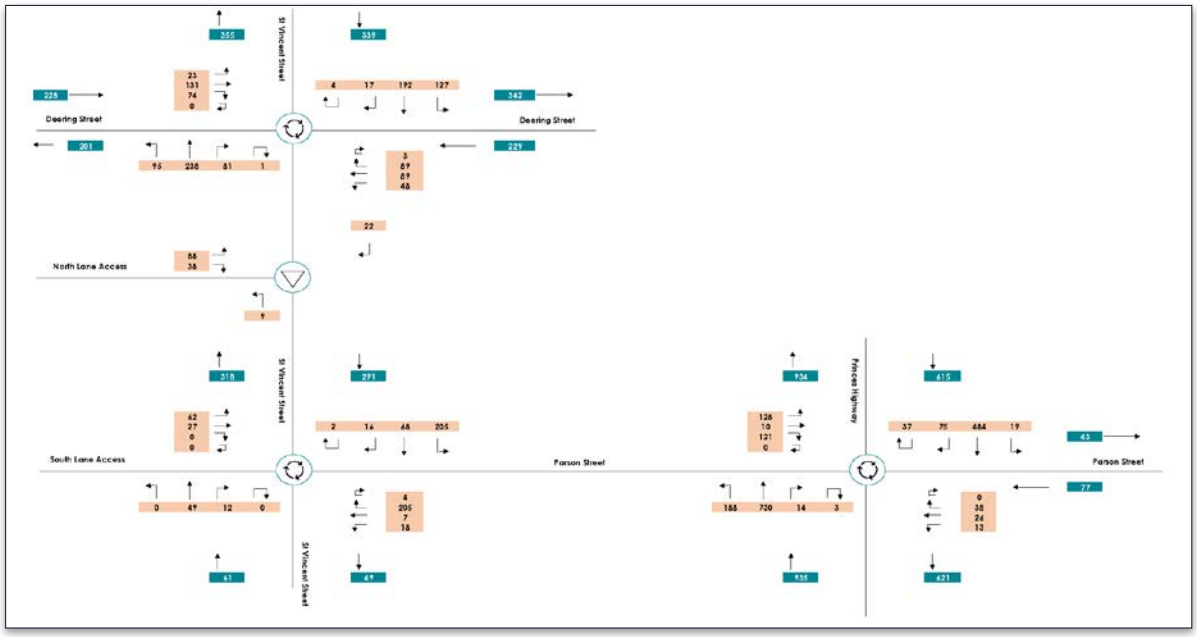


Figure 9 - Future 2033 + Envisaged Development AM Traffic Movements

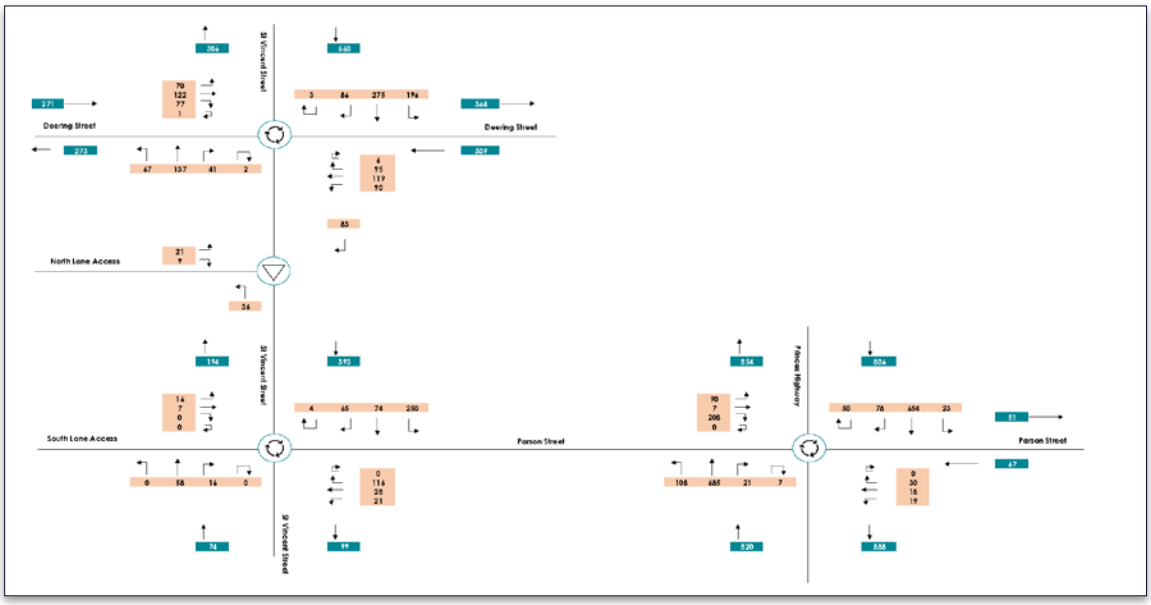


Figure 10 - Future 2033 + Envisaged Development PM Traffic Movements

The results of this assessment are provided in Appendix C and summarised in the following table:

Table 4 - Envisaged Development Traffic Performance

	Weekday AM		Weekday PM	
	LOS	**AVD**	**LOS**	**AVD**
Deering Street & St Vincent Street	A	11.4	A	11.8
St Vincent Street & Noth Laneway	A	7.4	A	7.7
St Vincent Street & Parsons Street	A	9.7	A	9.6
Parsons Street & Princes Highway	A	20.6	A	20.8

The results indicate that satisfactory operational performance will be maintained, and it is apparent that the operational performance of the assessed intersections will be more than satisfactory, given the relevant peak vehicle flows.

5.0 Parking

It is envisaged that parking will be provided on basement levels in accordance with the requirements of Shoalhaven City Council Development Control Plan 2014 and SEPP 2021 (Affordable Housing rates):

Table 5 - Envisaged Development Parking Demand

Use	Rate	Floor Space/Units	Parking
Residential			
One Bedroom	1 space per unit	60 units	60 Spaces
Two Bedroom	1.5 spaces per unit	50 units	75 Spaces
Three Bedroom or more	2 spaces per unit	22 units	44 Spaces
Affordable housing			
One Bedroom	0.5 spaces per unit	30 units	15 Spaces
Two Bedroom	1 space per unit	20 units	20 Spaces
Commercial	1 space per 40m^2	4,710 m^2	118 Spaces
Restaurant	1 space per 6.5m^2	600 m^2	92 Spaces
Child care centre	1 space for every 4 children	120 Children	30 spaces
		TOTAL:	**454 Spaces**

While the Shoalhaven City Council specify and child care centre car parking rate of 1 space for every 3 children, the requirement adds that "*Council may consider a reduction in parking numbers (absolute minimum will be 1 space for every 4 children) only where a suitable pick up/drop off area is designed to promote high turnover*."

Given the high-density residential use of the development, it is anticipated that many residents will utilise the available child care spaces, as such reducing the overall general child care parking demand. Furthermore, child care hours sit outside of restaurant hours which will allow for any overflow parking to be accommodated by the additional 5 spaces available. It is therefore understood that the 1 space for every 4 children will be more than satisfactory for the development.

It is envisaged that the development will provide for some 460 parking spaces which exceed the required spaces of the Shoalhaven DCP however, these additional spaces will provide for residential visitor spaces, which are not mandatory, however advised to be provided in the Shoalhaven DCP.

6.0 Internal Circulation and Servicing

6.1 Internal Circulation

The envisaged design of the car park, including access driveways, aisles, bays and grades, complies with the requirements of AS2890.1 and 6, and generous manoeuvring will be available. Details of the turning path assessment are provided in Appendix D.

6.2 Servicing

Delivery and refuse vehicles (12.5m Heavy Rigid Vehicle maximum) will ingress from Witherington Street and travel along the western and southern boundary to the loading area and exit to St Vincent Street. There will be a very substantial queuing area, and a turning path assessment for trucks provided in Appendix D indicates that adequate provision will be available for trucks to access the site and manoeuvre.

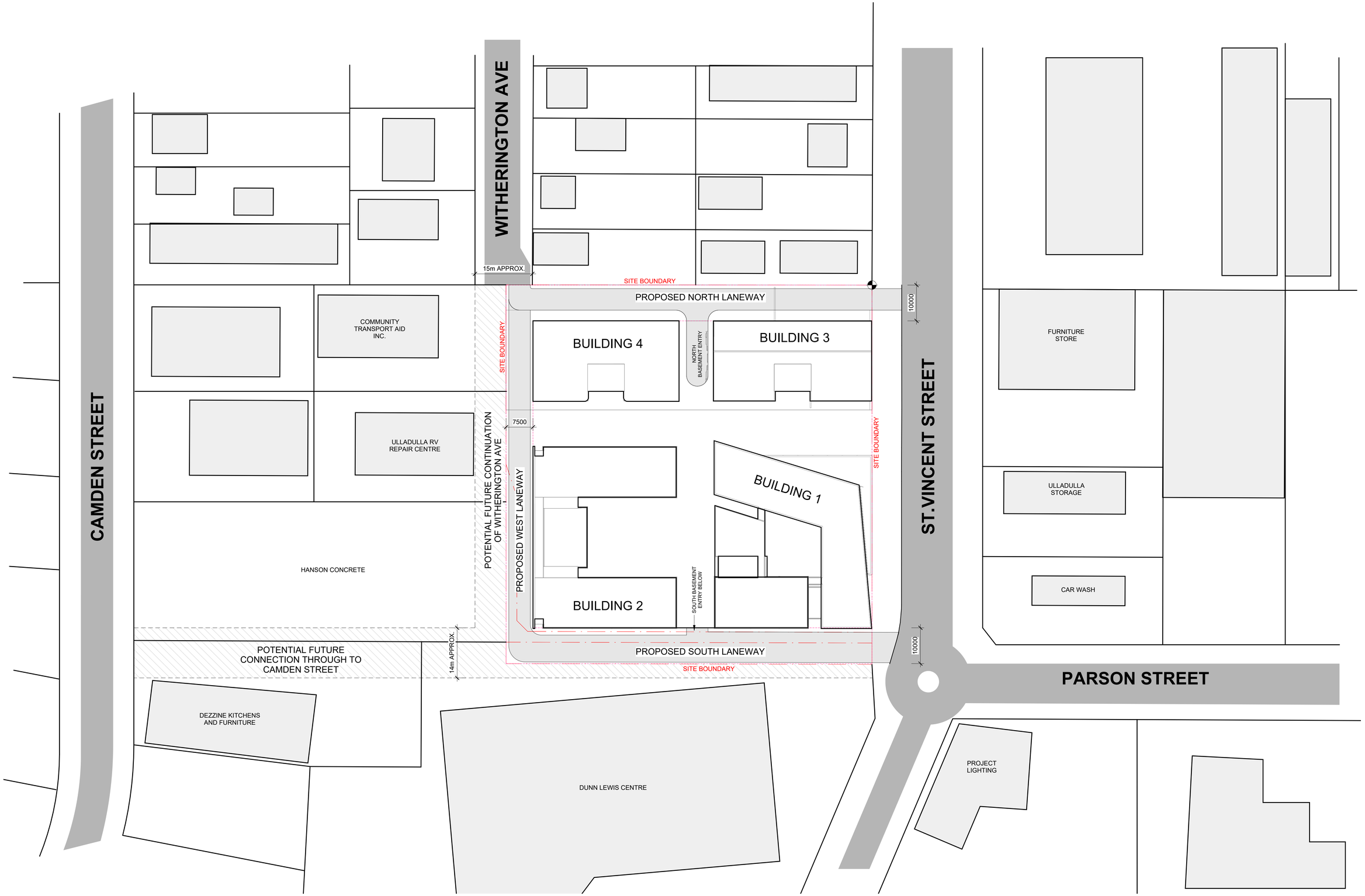
7.0 Conclusion

Assessment of the envisaged development, subject to the Planning Proposal at 131 Vincent Street, Ulladulla, has concluded that:

- There will be no unsatisfactory traffic implications as a result of the modified use of the site.
- The envisaged parking provision will be adequate and comply with Council's DCP
- The envisaged vehicle access, internal circulation and servicing provisions will be suitable and appropriate for the circumstances.

Appendix A
Concept Plans

TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Established 1994



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Project
Fleming Group - Ulladulla

131 St.Vincent Street, Ulladulla

Acknowledgement

Drawing Title:
SITE PLAN

Scale: 1 : 500 @ A1

Date: 13.06.2024

Revision: 4

Drawing Number: PA-11-01

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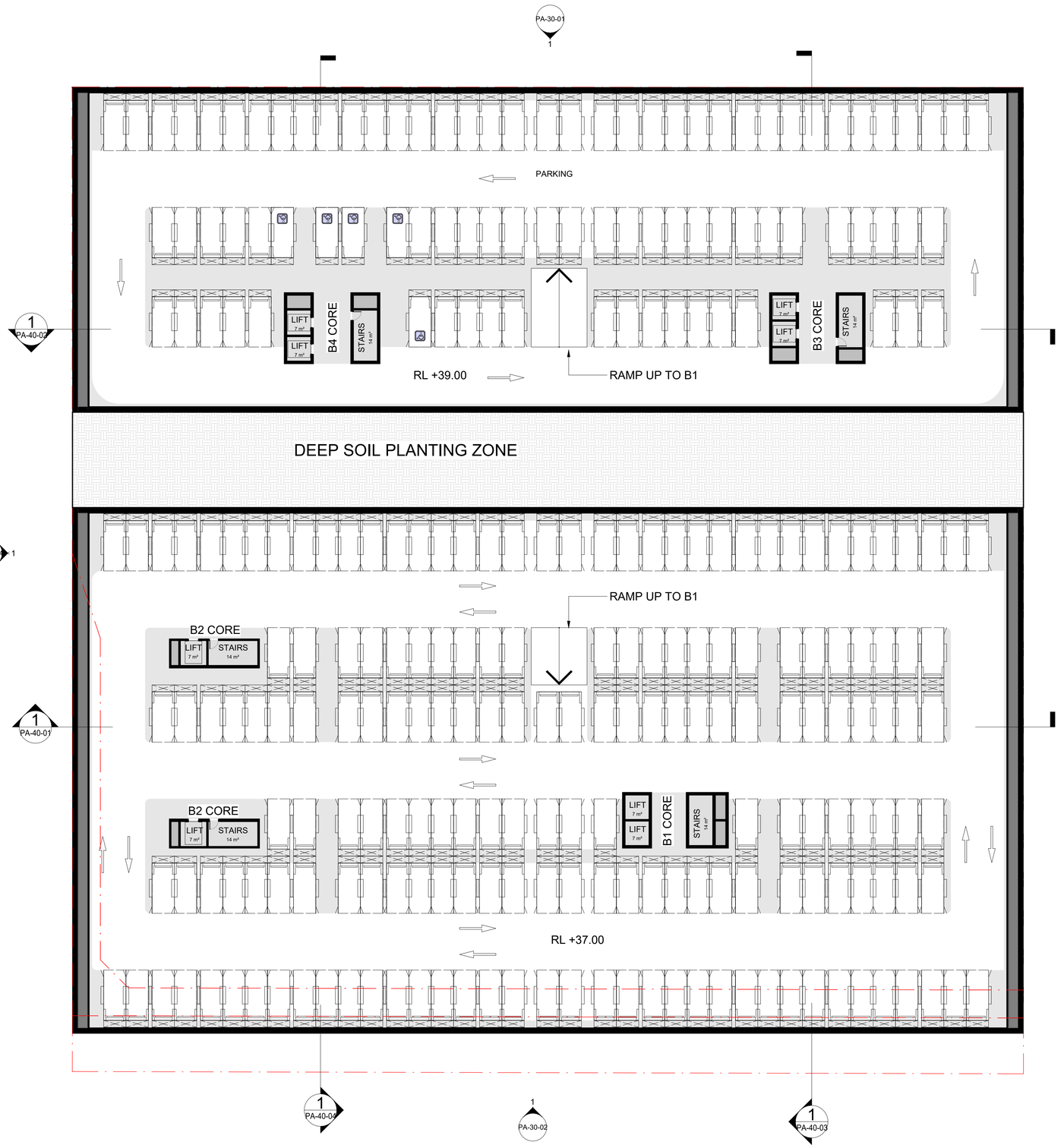

BASEMENT 2 - NORTH

B3 + B4 PARKING
87 CARPARKS

BASEMENT 2 - SOUTH

B1 + B2 PARKING
181 CARPARKS

PARKING SCHEDULE

LEVEL / BASEMENT	NORTH	SOUTH	TOTAL
BASEMENT 2	87	181	268
BASEMENT 1	70	122	192
TOTAL	157	303	**460**

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Project
Fleming Group - Ulladulla

131 St.Vincent Street, Ulladulla

Acknowledgement

Drawing Title:
BASEMENT 2 PLAN

Scale: 1 : 250 @ A1

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Revision: 6

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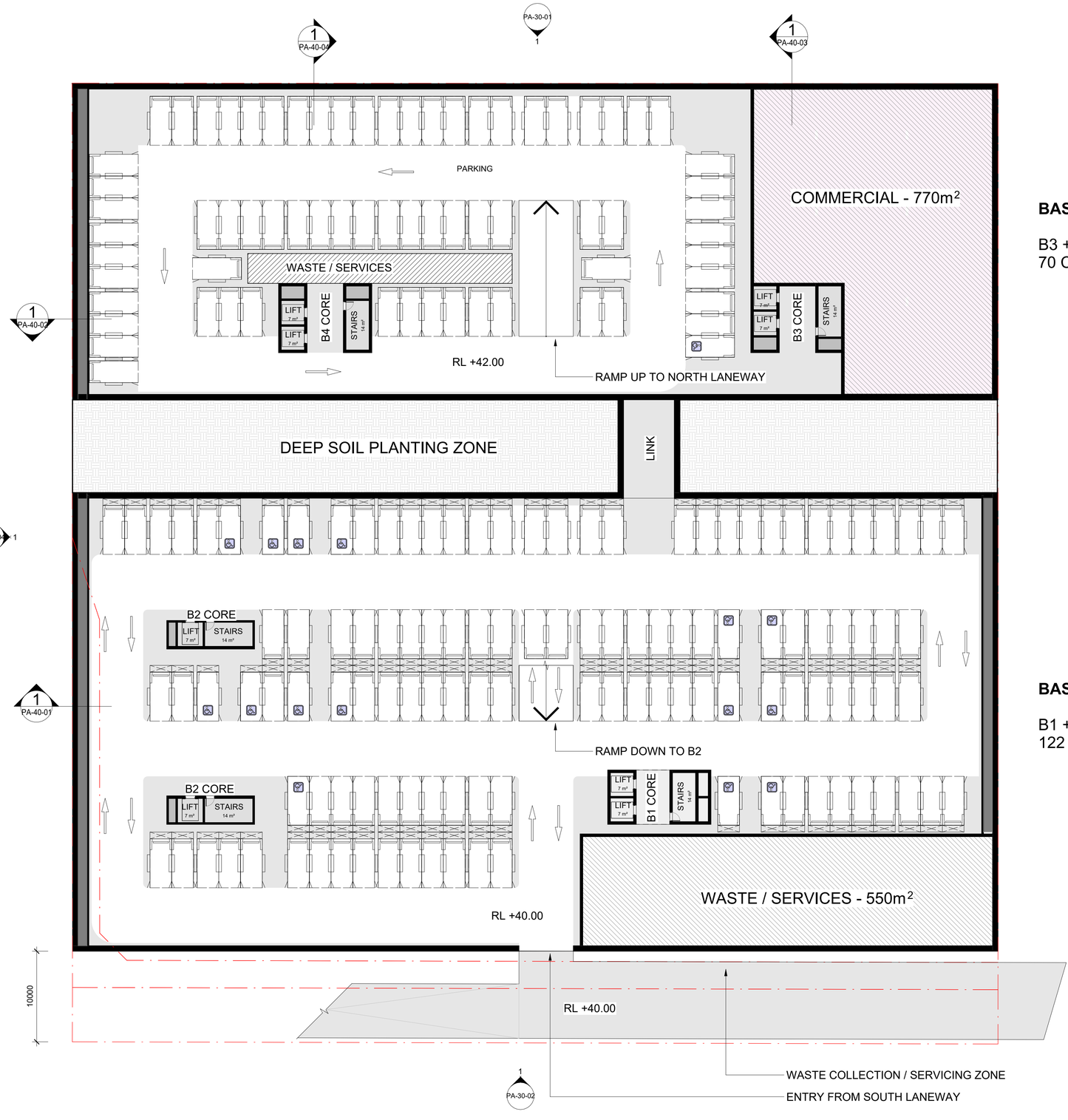

BASEMENT 1 - NORTH

B3 + B4 PARKING
70 CARPARKS

BASEMENT 1 - SOUTH

B1 + B2 PARKING
122 CARPARKS

PARKING SCHEDULE

LEVEL / BASEMENT	NORTH	SOUTH	TOTAL
BASEMENT 2	87	181	268
BASEMENT 1	70	122	192
TOTAL	157	303	**460**

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131 St.Vincent Street, Ulladulla

Acknowledgement

Drawing Title:
BASEMENT 1 PLAN

Scale: 1 : 250 @ A1

Date: 13.06.2024

Revision: 6

Drawing Number: PA-21-02

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BUILDING 4

BUILDING 3

COMMERCIAL (BASEMENT):	770m²
COMMERCIAL(GROUND):	880m²
COMMERCIAL(LEVEL 1):	880m²
CHILDCARE (LEVEL 2 + ROOF)	
INTERNAL:	420m²
EXTERNAL:	850m²
TOTAL:	**3800m²**

BUILDING 2

COMMERCIAL(NORTH):	310m²
COMMERCIAL (WEST):	160m²
COMMERCIAL(SOUTH):	310m²
TOTAL:	**780m²**

BUILDING 1

COMMERCIAL(NORTH):	890m²
COMMERCIAL(WEST):	160m²
COMMERCIAL(SOUTH):	350m²
TOTAL:	**1400m²**

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131 St.Vincent Street, Ulladulla

Acknowledgement

Drawing Title:
GROUND FLOOR PLAN

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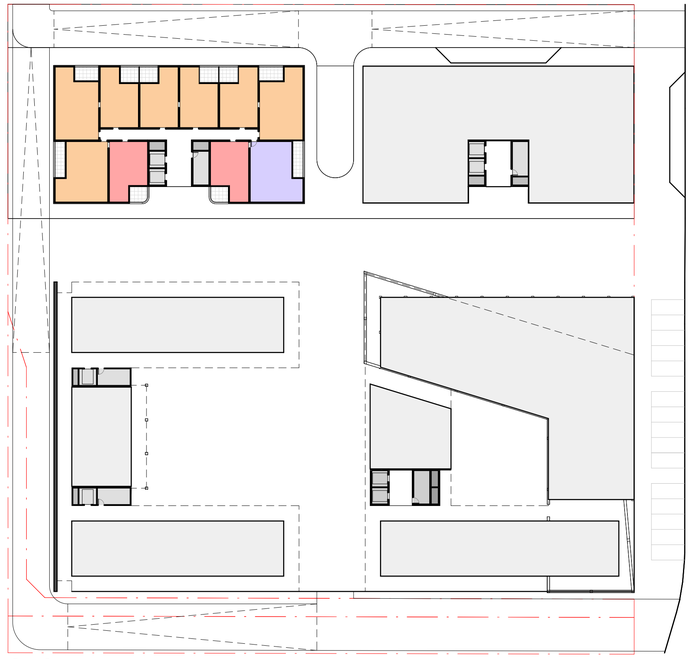

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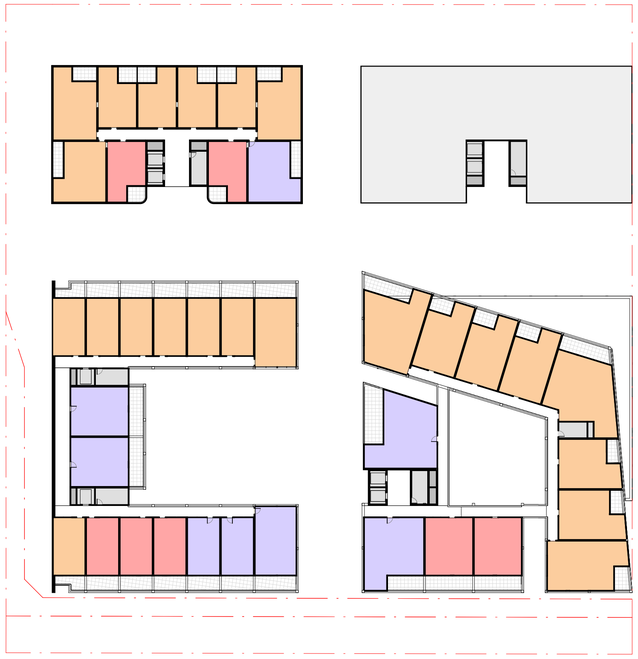

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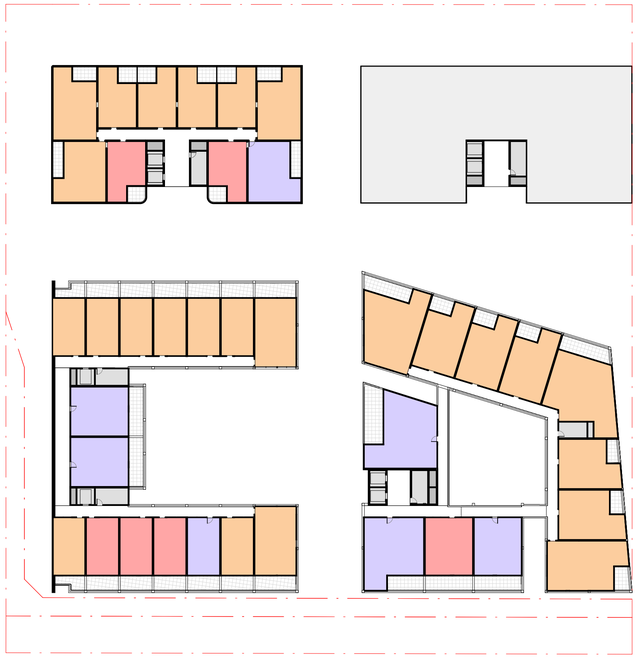

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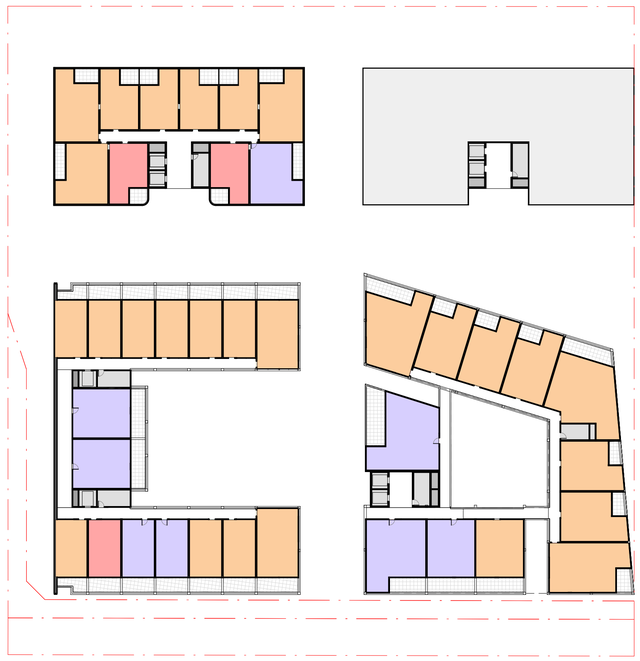

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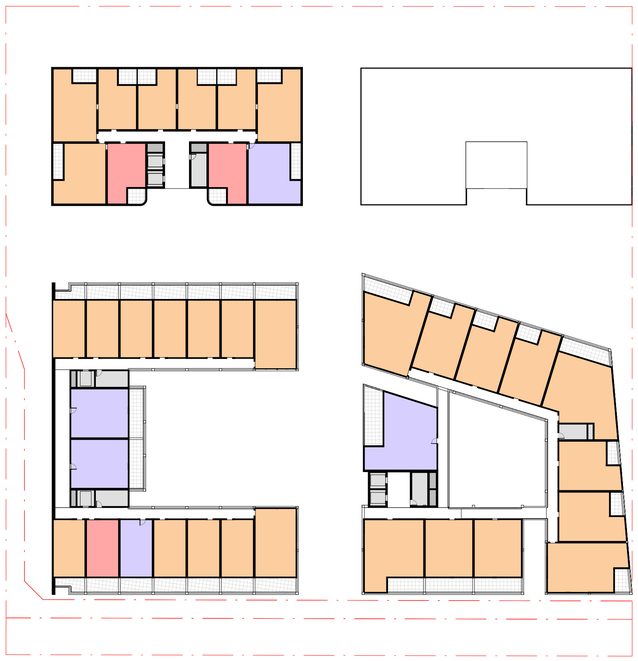

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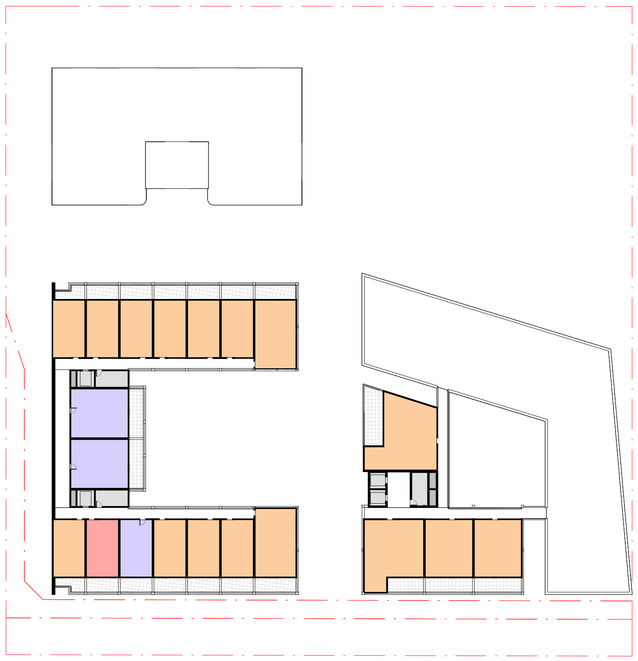


LEVEL 5
SCALE 1 : 500

LEGEND

- MORE THAN 3 HRS
- LESS THAN 3 HRS
- NO SUN
- NON RESIDENTIAL ZONE

SOLAR COMPLIANCE

NUMBER OF UNITS RECIEVING MORE THAN 3 HRS DIRECT SUNLIGHT	127	(70%)
NUMBER OF UNITS RECIEVING LESS THAN 3 HRS DIRECT SUNLIGHT	33	(18%)
NUMBER OF UNITS RECIEVING NO DIRECT SUNLIGHT	22	(12%)
TOTAL UNITS	**182**	

Cox Architecture
Level 1, 19 Eastlake Parade
Kingston ACT 2604
Australia

T + 61 2 6239 6255
coxarchitecture.com.au

Project
Fleming Group - Ulladulla

131 St.Vincent Street, Ulladulla

Acknowledgement

Drawing Title:
SOLAR COMPLIANCE

Scale: 1 : 500 @ A1

Date: 13.06.2024

Revision: 2

Drawing Number: PA-84-01

PLOT STAMP DATE: 13/06/2024 5:37:59 PM

Appendix B
Traffic Survey Results

ttpa TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Established 1994

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

trafficsurvey.com.au

Intersection of Deering St and St Vincent St, Ulladulla

GPS	-35.362041, 150.470763
Date:	Thu 11/05/23
Weather:	Sunny
Suburban:	Ulladulla
Customer:	TTPA

North:	St Vincent St
East:	Deering St
South:	St Vincent St
West:	Deering St

Survey Period	AM:	7:00 AM-9:00 AM
	PM:	4:00 PM-6:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	4:00 PM-5:00 PM

All Vehicles

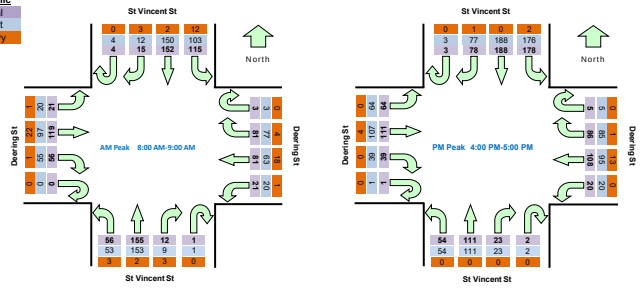
Time		North Approach St Vincent St				East Approach Deering St				South Approach St Vincent St				West Approach Deering St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	1	6	21	8	0	12	10	5	0	4	5	6	0	9	12	6	508	
7:15	7:30	0	3	30	12	0	7	13	4	0	5	15	1	0	5	17	3	534	
7:30	7:45	1	6	27	15	1	3	12	6	0	4	18	6	0	6	22	2	611	
7:45	8:00	1	9	27	20	1	19	10	4	0	7	29	5	0	6	20	1	731	
8:00	8:15	0	1	24	17	0	12	13	4	0	1	17	7	0	10	20	5	892	Peak
8:15	8:30	1	1	41	21	1	14	17	5	0	3	36	10	0	11	29	2		
8:30	8:45	2	5	39	26	1	25	30	4	0	1	49	14	0	14	35	4		
8:45	9:00	1	8	48	51	1	30	21	8	1	7	53	25	0	21	35	10		
16:00	16:15	2	15	44	59	3	20	35	6	0	5	37	14	0	11	38	24	1071	Peak
16:15	16:30	0	36	41	35	1	21	36	5	1	4	26	24	0	8	23	14	1036	
16:30	16:45	0	14	54	48	0	22	16	4	1	4	27	8	1	7	28	13	995	
16:45	17:00	1	13	49	36	1	23	21	5	0	10	21	8	0	13	22	13	959	
17:00	17:15	1	15	47	47	0	36	20	6	0	5	34	13	0	17	17	20	896	
17:15	17:30	1	16	41	45	1	17	23	3	0	2	27	11	0	13	22	12		
17:30	17:45	0	18	43	26	0	15	13	5	0	3	14	7	0	20	26	21		
17:45	18:00	0	20	30	28	0	11	16	0	0	2	17	6	0	10	21	12		

Peak Time		North Approach St Vincent St				East Approach Deering St				South Approach St Vincent St				West Approach Deering St				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	4	15	152	115	3	81	81	21	1	12	155	56	0	56	119	21	892
16:00	17:00	3	78	188	178	5	86	108	20	2	23	111	54	1	39	111	64	1071

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy



Light Vehicles

Time		North Approach St Vincent St				East Approach Deering St				South Approach St Vincent St				West Approach Deering St			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:00	7:15	1	6	21	7	0	12	10	2	0	2	5	6	0	9	11	6
7:15	7:30	0	3	28	12	0	7	10	4	0	5	14	1	0	5	10	3
7:30	7:45	1	6	26	15	1	3	11	6	0	3	17	6	0	6	18	2
7:45	8:00	1	9	27	20	1	19	9	4	0	7	27	5	0	5	16	1
8:00	8:15	0	1	24	17	0	11	11	4	0	0	17	7	0	10	14	5
8:15	8:30	1	1	41	20	1	13	12	5	0	3	35	10	0	10	23	2
8:30	8:45	2	5	38	20	1	24	20	4	0	1	49	12	0	14	30	4
8:45	9:00	1	5	47	46	1	29	20	7	1	5	52	24	0	21	30	9
16:00	16:15	2	15	44	57	3	19	30	6	0	5	37	14	0	11	36	24
16:15	16:30	0	35	41	35	1	21	30	5	1	4	26	24	0	8	23	14
16:30	16:45	0	14	54	48	0	22	15	4	1	4	27	8	1	7	26	13
16:45	17:00	1	13	49	36	1	23	20	5	0	10	21	8	0	13	22	13
17:00	17:15	1	15	47	47	0	36	17	6	0	5	34	13	0	17	17	20
17:15	17:30	1	16	40	45	1	17	23	3	0	2	27	11	0	13	22	12
17:30	17:45	0	18	43	26	0	15	13	5	0	3	14	7	0	20	26	21
17:45	18:00	0	20	30	28	0	11	16	0	0	2	17	6	0	10	21	12

Peak Time		North Approach St Vincent St				East Approach Deering St				South Approach St Vincent St				West Approach Deering St				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	4	12	150	103	3	77	63	20	1	9	153	53	0	55	97	20	820
16:00	17:00	3	77	188	176	5	85	95	20	2	23	111	54	1	39	107	64	1050

Heavy Vehicles

Time		North Approach St Vincent St				East Approach Deering St				South Approach St Vincent St				West Approach Deering St			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:00	7:15	0	0	0	1	0	0	0	3	0	2	0	0	0	0	1	0
7:15	7:30	0	0	2	0	0	0	3	0	0	0	1	0	0	0	7	0
7:30	7:45	0	0	1	0	0	0	1	0	0	1	1	0	0	0	4	0
7:45	8:00	0	0	0	0	0	0	1	0	0	0	2	0	0	1	4	0
8:00	8:15	0	0	0	0	0	1	2	0	0	1	0	0	0	0	6	0
8:15	8:30	0	0	0	1	0	1	5	0	0	0	1	0	0	1	6	0
8:30	8:45	0	0	1	6	0	1	10	0	0	0	0	2	0	0	5	0
8:45	9:00	0	3	1	5	0	1	1	1	0	2	1	1	0	0	5	1
16:00	16:15	0	0	0	2	0	1	5	0	0	0	0	0	0	0	2	0
16:15	16:30	0	1	0	0	0	0	6	0	0	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0
16:45	17:00	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Peak Time		North Approach St Vincent St				East Approach Deering St				South Approach St Vincent St				West Approach Deering St				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	0	3	2	12	0	4	18	1	0	3	2	3	0	1	22	1	72
16:00	17:00	0	1	0	2	0	1	13	0	0	0	0	0	0	0	4	0	21

TRANS TRAFFIC SURVEY

traffictsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Parson St and St Vincent St, Ulladulla

GPS	-35.364003, 150.470375
Date:	Thu 11/05/23
Weather:	Sunny
Suburban:	Ulladulla
Customer:	TTPA

North:	St Vincent St
East:	Parson St
South:	St Vincent St
West:	N/A

Survey Period	AM:	7:00 AM-9:00 AM
	PM:	4:00 PM-6:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	4:15 PM-5:15 PM

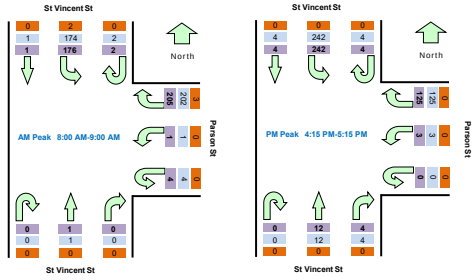
All Vehicles

Time		North Approach St Vincent St			East Approach Parson St			South Approach St Vincent St			Hourly Total	
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	Hour	Peak
7:00	7:15	0	0	26	0	11	0	0	0	0	198	
7:15	7:30	0	0	30	0	20	0	0	0	0	221	
7:30	7:45	0	0	27	0	28	0	0	0	0	263	
7:45	8:00	0	1	23	0	31	0	0	0	1	306	
8:00	8:15	0	0	37	0	23	0	0	0	0	390	Peak
8:15	8:30	0	0	43	0	49	0	0	0	0		
8:30	8:45	1	0	39	3	55	0	0	0	0		
8:45	9:00	1	1	57	1	78	1	0	0	1		
16:00	16:15	0	0	62	1	45	1	0	0	0	380	
16:15	16:30	0	1	56	0	38	0	0	1	0	394	Peak
16:30	16:45	1	0	52	0	32	1	0	0	2	373	
16:45	17:00	3	1	59	0	20	2	0	1	1	370	
17:00	17:15	0	2	75	0	35	0	0	2	9	343	
17:15	17:30	1	0	49	0	25	0	0	0	0		
17:30	17:45	1	1	59	0	22	0	0	0	2		
17:45	18:00	0	0	39	0	21	0	0	0	0		

Peak Time		North Approach St Vincent St			East Approach Parson St			South Approach St Vincent St			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	2	1	176	4	205	1	0	0	1	390
16:15	17:15	4	4	242	0	125	3	0	4	12	394

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic
Total
Light
Heavy



Light Vehicles

Time		North Approach St Vincent St			East Approach Parson St			South Approach St Vincent St		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	0	24	0	9	0	0	0	0
7:15	7:30	0	0	29	0	20	0	0	0	0
7:30	7:45	0	0	26	0	26	0	0	0	0
7:45	8:00	0	1	23	0	30	0	0	0	1
8:00	8:15	0	0	37	0	23	0	0	0	0
8:15	8:30	0	0	43	0	47	0	0	0	0
8:30	8:45	1	0	38	3	54	0	0	0	0
8:45	9:00	1	1	56	1	78	1	0	0	1
16:00	16:15	0	0	60	1	45	1	0	0	0
16:15	16:30	0	1	56	0	38	0	0	1	0
16:30	16:45	1	0	52	0	32	1	0	0	2
16:45	17:00	3	1	59	0	20	2	0	1	1
17:00	17:15	0	2	75	0	35	0	0	2	9
17:15	17:30	1	0	48	0	25	0	0	0	0
17:30	17:45	1	1	59	0	22	0	0	0	2
17:45	18:00	0	0	39	0	21	0	0	0	0

Peak Time		North Approach St Vincent St			East Approach Parson St			South Approach St Vincent St			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	2	1	174	4	202	1	0	0	1	385
16:15	17:15	4	4	242	0	125	3	0	4	12	394

Heavy Vehicles

Time		North Approach St Vincent St			East Approach Parson St			South Approach St Vincent St		
Period Start	Period End	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	0	2	0	2	0	0	0	0
7:15	7:30	0	0	1	0	0	0	0	0	0
7:30	7:45	0	0	1	0	2	0	0	0	0
7:45	8:00	0	0	0	0	1	0	0	0	0
8:00	8:15	0	0	0	0	0	0	0	0	0
8:15	8:30	0	0	0	0	2	0	0	0	0
8:30	8:45	0	0	1	0	1	0	0	0	0
8:45	9:00	0	0	1	0	0	0	0	0	0
16:00	16:15	0	0	2	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	1	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0

Peak Time		North Approach St Vincent St			East Approach Parson St			South Approach St Vincent St			Peak
Period Start	Period End	U	SB	L	U	R	L	U	R	NB	total
8:00	9:00	0	0	2	0	3	0	0	0	0	5
16:15	17:15	0	0	0	0	0	0	0	0	0	0

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY trafficsurvey.com.au

Intersection of Parson St and Princes Hwy, Ulladulla

GPS	-35.364358, 150.472858
Date:	Thu 11/05/23
Weather:	Sunny
Suburban:	Ulladulla
Customer:	TTPA

North:	Princes Hwy
East:	Parson St
South:	Princes Hwy
West:	Parson St

Survey Period	AM:	7:00 AM-9:00 AM
	PM:	4:00 PM-6:00 PM
Traffic Peak	AM:	8:00 AM-9:00 AM
	PM:	4:00 PM-5:00 PM

All Vehicles

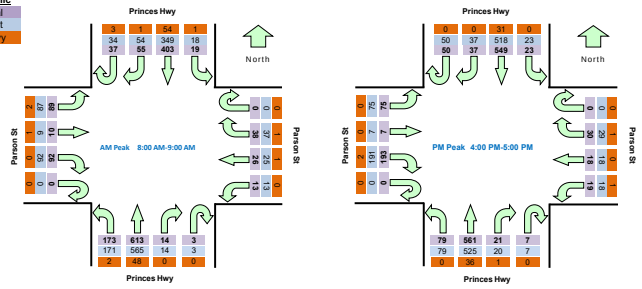
Time		North Approach Princes Hwy				East Approach Parson St				South Approach Princes Hwy				West Approach Parson St				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	9	9	69	1	0	3	1	1	0	2	75	13	1	13	1	16	1063	
7:15	7:30	5	10	90	4	0	5	5	1	1	2	97	15	0	20	1	15	1159	
7:30	7:45	7	13	98	4	0	4	2	1	0	2	92	21	0	20	5	18	1280	
7:45	8:00	11	14	88	2	0	6	4	3	0	2	113	25	0	12	2	9	1414	
8:00	8:15	5	10	87	6	0	7	1	1	0	4	128	25	0	18	0	18	1585	Peak
8:15	8:30	10	17	104	4	0	7	5	3	2	3	143	38	0	25	3	28		
8:30	8:45	9	11	104	3	0	10	8	6	0	6	177	48	0	15	2	22		
8:45	9:00	13	17	108	6	0	14	12	3	1	1	165	62	0	34	5	21		
16:00	16:15	18	15	143	6	0	9	3	7	4	6	148	23	0	61	2	20	1669	Peak
16:15	16:30	13	10	143	8	0	5	9	8	2	7	141	20	0	44	0	13	1622	
16:30	16:45	7	6	125	7	0	9	2	3	0	4	143	21	0	42	1	21	1586	
16:45	17:00	12	6	138	2	0	7	4	1	1	4	129	15	0	46	4	21	1524	
17:00	17:15	15	6	139	4	0	5	6	0	0	2	135	20	0	53	2	31	1470	
17:15	17:30	7	10	152	3	0	4	3	4	1	3	125	16	0	38	5	16		
17:30	17:45	4	8	131	2	0	5	1	1	1	1	107	11	0	41	2	14		
17:45	18:00	6	10	125	3	0	9	0	2	0	2	108	15	0	34	5	17		

Peak Time		North Approach Princes Hwy				East Approach Parson St				South Approach Princes Hwy				West Approach Parson St				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	37	55	403	19	0	38	26	13	3	14	613	173	0	92	10	89	1585
16:00	17:00	50	37	549	23	0	30	18	19	7	21	561	79	0	193	7	75	1669

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total
Light
Heavy



Light Vehicles

Time		North Approach Princes Hwy				East Approach Parson St				South Approach Princes Hwy				West Approach Parson St			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:00	7:15	7	8	60	0	0	3	1	1	0	2	68	12	1	13	1	15
7:15	7:30	4	10	78	4	0	5	4	1	0	2	89	15	0	19	1	15
7:30	7:45	6	13	88	4	0	4	2	1	0	2	83	20	0	20	4	16
7:45	8:00	9	14	78	2	0	6	4	3	0	2	101	24	0	12	2	9
8:00	8:15	5	10	73	6	0	7	1	1	0	4	116	25	0	18	0	18
8:15	8:30	9	16	92	4	0	7	5	3	2	3	135	36	0	25	3	28
8:30	8:45	9	11	94	3	0	10	7	6	0	6	160	48	0	15	2	20
8:45	9:00	11	17	90	5	0	13	12	3	1	1	154	62	0	34	4	21
16:00	16:15	18	15	129	6	0	9	3	7	4	6	136	23	0	59	2	20
16:15	16:30	13	10	135	8	0	5	9	7	2	7	134	20	0	44	0	13
16:30	16:45	7	6	120	7	0	9	2	3	0	4	133	21	0	42	1	21
16:45	17:00	12	6	134	2	0	6	4	1	1	3	122	15	0	46	4	21
17:00	17:15	15	6	132	4	0	5	6	0	0	2	129	20	0	53	2	31
17:15	17:30	7	10	148	3	0	4	3	4	1	3	124	16	0	37	5	16
17:30	17:45	4	8	129	2	0	5	1	1	1	1	106	11	0	41	2	14
17:45	18:00	6	8	121	3	0	9	0	2	0	2	106	15	0	34	5	17

Peak Time		North Approach Princes Hwy				East Approach Parson St				South Approach Princes Hwy				West Approach Parson St				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	34	54	349	18	0	37	25	13	3	14	565	171	0	92	9	87	1471
16:00	17:00	50	37	518	23	0	29	18	18	7	20	525	79	0	191	7	75	1597

Heavy Vehicles

Time		North Approach Princes Hwy				East Approach Parson St				South Approach Princes Hwy				West Approach Parson St			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:00	7:15	2	1	9	1	0	0	0	0	0	0	7	1	0	0	0	1
7:15	7:30	1	0	12	0	0	0	1	0	1	0	8	0	0	1	0	0
7:30	7:45	1	0	10	0	0	0	0	0	0	0	9	1	0	0	1	2
7:45	8:00	2	0	10	0	0	0	0	0	0	0	12	1	0	0	0	0
8:00	8:15	0	0	14	0	0	0	0	0	0	0	12	0	0	0	0	0
8:15	8:30	1	1	12	0	0	0	0	0	0	0	8	2	0	0	0	0
8:30	8:45	0	0	10	0	0	0	1	0	0	0	17	0	0	0	0	2
8:45	9:00	2	0	18	1	0	1	0	0	0	0	11	0	0	0	1	0
16:00	16:15	0	0	14	0	0	0	0	0	0	0	12	0	0	2	0	0
16:15	16:30	0	0	8	0	0	0	0	1	0	0	7	0	0	0	0	0
16:30	16:45	0	0	5	0	0	0	0	0	0	0	10	0	0	0	0	0
16:45	17:00	0	0	4	0	0	1	0	0	0	1	7	0	0	0	0	0
17:00	17:15	0	0	7	0	0	0	0	0	0	0	6	0	0	0	0	0
17:15	17:30	0	0	4	0	0	0	0	0	0	0	1	0	0	1	0	0
17:30	17:45	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0
17:45	18:00	0	2	4	0	0	0	0	0	0	0	2	0	0	0	0	0

Peak Time		North Approach Princes Hwy				East Approach Parson St				South Approach Princes Hwy				West Approach Parson St				Peak
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	total
8:00	9:00	3	1	54	1	0	1	1	0	0	0	48	2	0	0	1	2	114
16:00	17:00	0	0	31	0	0	1	0	1	0	1	36	0	0	2	0	0	72

Appendix C
SIDRA Results

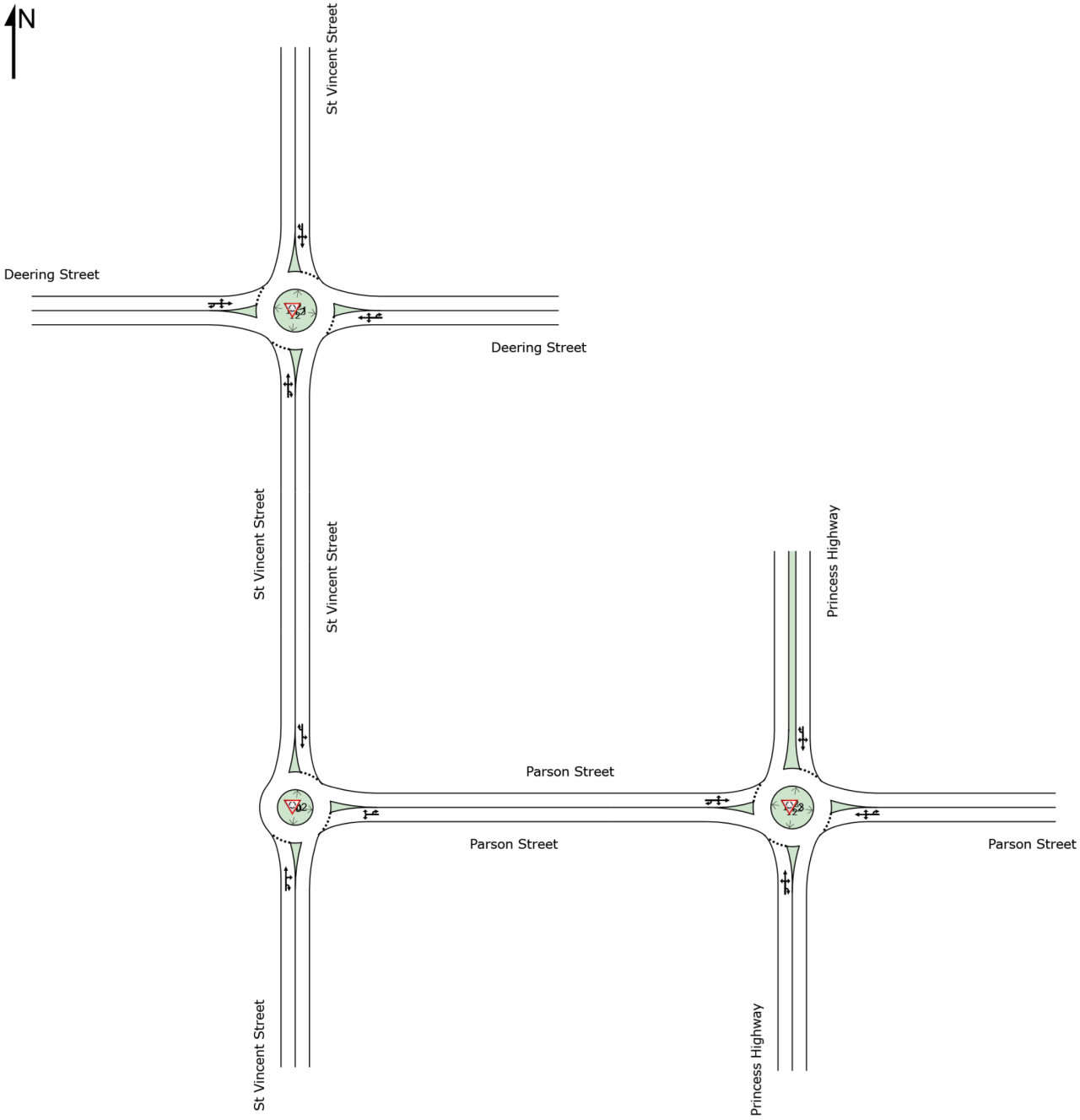
ttpa TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Established 1994

NETWORK LAYOUT

Network: 1 [AM Peak (Network Folder: Existing)]

131 St Vincent Street, Ulludulla
Network Category: Proposed Mixed-Use Development

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
1	NA	St Vincent St & Deering St AM Peak
2	NA	St Vincent St & Parson St AM Peak
3	NA	Princess Hwy & Parson St AM Peak

MOVEMENT SUMMARY

Site: 1 [St Vincent St & Deering St AM Peak (Site Folder: Existing)]

Network: 1 [AM Peak (Network Folder: Existing)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: St Vincent Street														
1	L2	59	5.4	59	5.4	0.218	4.7	LOS A	0.5	3.7	0.44	0.52	0.44	44.9
2	T1	163	1.3	163	1.3	0.218	4.7	LOS A	0.5	3.7	0.44	0.52	0.44	44.9
3	R2	13	25.0	13	25.0	0.218	8.7	LOS A	0.5	3.7	0.44	0.52	0.44	42.3
3u	U	1	0.0	1	0.0	0.218	9.8	LOS A	0.5	3.7	0.44	0.52	0.44	36.9
Approach		236	3.6	236	3.6	0.218	4.9	LOS A	0.5	3.7	0.44	0.52	0.44	44.8
East: Deering Street														
4	L2	22	4.8	22	4.8	0.196	4.9	LOS A	0.4	3.4	0.46	0.60	0.46	35.3
5	T1	85	22.2	85	22.2	0.196	5.3	LOS A	0.4	3.4	0.46	0.60	0.46	44.9
6	R2	85	4.9	85	4.9	0.196	8.5	LOS A	0.4	3.4	0.46	0.60	0.46	43.5
6u	U	3	0.0	3	0.0	0.196	10.0	LOS A	0.4	3.4	0.46	0.60	0.46	42.8
Approach		196	12.4	196	12.4	0.196	6.7	LOS A	0.4	3.4	0.46	0.60	0.46	43.8
North: St Vincent Street														
7	L2	121	10.4	121	10.4	0.281	4.9	LOS A	0.7	5.2	0.47	0.55	0.47	43.3
8	T1	160	1.3	160	1.3	0.281	4.8	LOS A	0.7	5.2	0.47	0.55	0.47	41.4
9	R2	16	20.0	16	20.0	0.281	8.7	LOS A	0.7	5.2	0.47	0.55	0.47	46.2
9u	U	4	0.0	4	0.0	0.281	9.9	LOS A	0.7	5.2	0.47	0.55	0.47	46.5
Approach		301	5.9	301	5.9	0.281	5.1	LOS A	0.7	5.2	0.47	0.55	0.47	42.8
West: Deering Street														
10	L2	22	4.8	22	4.8	0.212	5.1	LOS A	0.5	3.7	0.49	0.60	0.49	45.1
11	T1	125	18.5	125	18.5	0.212	5.4	LOS A	0.5	3.7	0.49	0.60	0.49	45.2
12	R2	59	1.8	59	1.8	0.212	8.6	LOS A	0.5	3.7	0.49	0.60	0.49	43.1
12u	U	1	0.0	1	0.0	0.212	10.2	LOS A	0.5	3.7	0.49	0.60	0.49	47.1
Approach		207	12.2	207	12.2	0.212	6.3	LOS A	0.5	3.7	0.49	0.60	0.49	44.7
All Vehicles		940	8.1	940	8.1	0.281	5.7	LOS A	0.7	5.2	0.46	0.56	0.46	44.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [St Vincent St & Parson St AM Peak (Site Folder: Existing)]

Network: 1 [AM Peak (Network Folder: Existing)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: St Vincent Street														
2	T1	1	0.0	1	0.0	0.003	4.5	LOS A	0.0	0.0	0.35	0.54	0.35	24.2
3	R2	1	0.0	1	0.0	0.003	7.9	LOS A	0.0	0.0	0.35	0.54	0.35	24.2
3u	U	1	0.0	1	0.0	0.003	9.4	LOS A	0.0	0.0	0.35	0.54	0.35	27.6
Approach		3	0.0	3	0.0	0.003	7.2	LOS A	0.0	0.0	0.35	0.54	0.35	25.6
East: Parson Street														
4	L2	1	0.0	1	0.0	0.136	3.6	LOS A	0.3	2.0	0.04	0.62	0.04	35.6
6	R2	216	1.5	216	1.5	0.136	6.9	LOS A	0.3	2.0	0.04	0.62	0.04	35.2
6u	U	4	0.0	4	0.0	0.136	8.5	LOS A	0.3	2.0	0.04	0.62	0.04	35.2
Approach		221	1.4	221	1.4	0.136	6.9	LOS A	0.3	2.0	0.04	0.62	0.04	35.2
North: St Vincent Street														
7	L2	185	1.1	185	1.1	0.119	3.6	LOS A	0.2	1.7	0.05	0.48	0.05	40.0
8	T1	1	0.0	1	0.0	0.119	3.6	LOS A	0.2	1.7	0.05	0.48	0.05	40.2
9u	U	2	0.0	2	0.0	0.119	8.5	LOS A	0.2	1.7	0.05	0.48	0.05	40.0
Approach		188	1.1	188	1.1	0.119	3.6	LOS A	0.2	1.7	0.05	0.48	0.05	40.0
All Vehicles		413	1.3	413	1.3	0.136	5.4	LOS A	0.3	2.0	0.04	0.55	0.04	37.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 3 [Princess Hwy & Parson St AM Peak (Site Folder: Existing)]

Network: 1 [AM Peak (Network Folder: Existing)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Princess Highway														
1	L2	182	1.2	182	1.2	0.701	6.1	LOS A	2.9	21.7	0.67	0.60	0.67	53.1
2	T1	645	7.8	645	7.8	0.701	6.6	LOS A	2.9	21.7	0.67	0.60	0.67	53.5
3	R2	15	0.0	15	0.0	0.701	10.0	LOS A	2.9	21.7	0.67	0.60	0.67	51.9
3u	U	3	0.0	3	0.0	0.701	11.8	LOS A	2.9	21.7	0.67	0.60	0.67	56.4
Approach		845	6.2	845	6.2	0.701	6.6	LOS A	2.9	21.7	0.67	0.60	0.67	53.4
East: Parson Street														
4	L2	14	0.0	14	0.0	0.111	7.3	LOS A	0.3	1.9	0.69	0.73	0.69	50.5
5	T1	27	3.8	27	3.8	0.111	7.5	LOS A	0.3	1.9	0.69	0.73	0.69	43.6
6	R2	40	2.6	40	2.6	0.111	11.0	LOS A	0.3	1.9	0.69	0.73	0.69	45.4
6u	U	1	0.0	1	0.0	0.111	12.5	LOS A	0.3	1.9	0.69	0.73	0.69	47.2
Approach		82	2.6	82	2.6	0.111	9.2	LOS A	0.3	1.9	0.69	0.73	0.69	46.2
North: Princess Highway														
7	L2	20	5.3	20	5.3	0.456	5.3	LOS A	1.5	11.5	0.47	0.55	0.47	46.5
8	T1	424	13.4	424	13.4	0.456	5.8	LOS A	1.5	11.5	0.47	0.55	0.47	53.9
9	R2	58	1.8	58	1.8	0.456	9.1	LOS A	1.5	11.5	0.47	0.55	0.47	37.9
9u	U	39	8.1	39	8.1	0.456	11.1	LOS A	1.5	11.5	0.47	0.55	0.47	44.9
Approach		541	11.5	541	11.5	0.456	6.5	LOS A	1.5	11.5	0.47	0.55	0.47	52.7
West: Parson Street														
10	L2	94	2.2	94	2.2	0.325	9.1	LOS A	0.9	6.3	0.84	0.88	0.84	37.1
11	T1	11	10.0	11	10.0	0.325	9.6	LOS A	0.9	6.3	0.84	0.88	0.84	44.2
12	R2	97	0.0	97	0.0	0.325	12.7	LOS A	0.9	6.3	0.84	0.88	0.84	50.3
12u	U	1	0.0	1	0.0	0.325	14.3	LOS A	0.9	6.3	0.84	0.88	0.84	29.9
Approach		202	1.6	202	1.6	0.325	10.9	LOS A	0.9	6.3	0.84	0.88	0.84	46.1
All Vehicles		1671	7.2	1671	7.2	0.701	7.2	LOS A	2.9	21.7	0.63	0.63	0.63	52.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [St Vincent St & Deering St PM Peak (Site Folder: Existing)]

Network: 2 [PM Peak (Network Folder: Existing)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: St Vincent Street														
1	L2	57	0.0	57	0.0	0.196	5.1	LOS A	0.5	3.2	0.50	0.59	0.50	44.6
2	T1	117	0.0	117	0.0	0.196	5.2	LOS A	0.5	3.2	0.50	0.59	0.50	44.4
3	R2	24	0.0	24	0.0	0.196	8.7	LOS A	0.5	3.2	0.50	0.59	0.50	42.4
3u	U	2	0.0	2	0.0	0.196	10.3	LOS A	0.5	3.2	0.50	0.59	0.50	36.0
Approach		200	0.0	200	0.0	0.196	5.6	LOS A	0.5	3.2	0.50	0.59	0.50	44.3
East: Deering Street														
4	L2	21	0.0	21	0.0	0.240	5.3	LOS A	0.6	4.2	0.55	0.65	0.55	34.8
5	T1	114	12.0	114	12.0	0.240	5.7	LOS A	0.6	4.2	0.55	0.65	0.55	44.8
6	R2	91	1.2	91	1.2	0.240	9.0	LOS A	0.6	4.2	0.55	0.65	0.55	43.2
6u	U	5	0.0	5	0.0	0.240	10.6	LOS A	0.6	4.2	0.55	0.65	0.55	42.4
Approach		231	6.4	231	6.4	0.240	7.1	LOS A	0.6	4.2	0.55	0.65	0.55	43.8
North: St Vincent Street														
7	L2	187	1.1	187	1.1	0.403	4.7	LOS A	1.1	8.0	0.49	0.57	0.49	43.2
8	T1	198	0.0	198	0.0	0.403	4.7	LOS A	1.1	8.0	0.49	0.57	0.49	41.0
9	R2	82	1.3	82	1.3	0.403	8.3	LOS A	1.1	8.0	0.49	0.57	0.49	46.3
9u	U	3	0.0	3	0.0	0.403	9.9	LOS A	1.1	8.0	0.49	0.57	0.49	46.2
Approach		471	0.7	471	0.7	0.403	5.4	LOS A	1.1	8.0	0.49	0.57	0.49	43.4
West: Deering Street														
10	L2	67	0.0	67	0.0	0.212	4.8	LOS A	0.5	3.4	0.45	0.56	0.45	45.5
11	T1	117	3.6	117	3.6	0.212	4.9	LOS A	0.5	3.4	0.45	0.56	0.45	45.8
12	R2	41	0.0	41	0.0	0.212	8.4	LOS A	0.5	3.4	0.45	0.56	0.45	43.7
12u	U	1	0.0	1	0.0	0.212	10.0	LOS A	0.5	3.4	0.45	0.56	0.45	47.5
Approach		226	1.9	226	1.9	0.212	5.5	LOS A	0.5	3.4	0.45	0.56	0.45	45.4
All Vehicles		1127	2.0	1127	2.0	0.403	5.8	LOS A	1.1	8.0	0.50	0.59	0.50	44.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [St Vincent St & Parson St PM Peak (Site Folder: Existing)]

Network: 2 [PM Peak (Network Folder: Existing)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: St Vincent Street														
2	T1	13	0.0	13	0.0	0.015	4.1	LOS A	0.0	0.2	0.28	0.48	0.28	26.7
3	R2	4	0.0	4	0.0	0.015	7.5	LOS A	0.0	0.2	0.28	0.48	0.28	26.7
3u	U	1	0.0	1	0.0	0.015	9.0	LOS A	0.0	0.2	0.28	0.48	0.28	29.6
Approach		18	0.0	18	0.0	0.015	5.2	LOS A	0.0	0.2	0.28	0.48	0.28	27.0
East: Parson Street														
4	L2	3	0.0	3	0.0	0.089	3.6	LOS A	0.2	1.2	0.06	0.61	0.06	35.6
6	R2	132	0.0	132	0.0	0.089	6.9	LOS A	0.2	1.2	0.06	0.61	0.06	35.1
6u	U	1	0.0	1	0.0	0.089	8.5	LOS A	0.2	1.2	0.06	0.61	0.06	35.1
Approach		136	0.0	136	0.0	0.089	6.9	LOS A	0.2	1.2	0.06	0.61	0.06	35.2
North: St Vincent Street														
7	L2	255	0.0	255	0.0	0.163	3.6	LOS A	0.4	2.6	0.05	0.47	0.05	39.9
8	T1	4	0.0	4	0.0	0.163	3.6	LOS A	0.4	2.6	0.05	0.47	0.05	40.1
9u	U	4	0.0	4	0.0	0.163	8.5	LOS A	0.4	2.6	0.05	0.47	0.05	39.9
Approach		263	0.0	263	0.0	0.163	3.7	LOS A	0.4	2.6	0.05	0.47	0.05	39.9
All Vehicles		417	0.0	417	0.0	0.163	4.8	LOS A	0.4	2.6	0.06	0.52	0.06	37.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 3 [Princess Hwy & Parson St PM Peak (Site Folder: Existing)]

Network: 2 [PM Peak (Network Folder: Existing)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Princess Highway														
1	L2	83	0.0	83	0.0	0.574	5.5	LOS A	2.1	15.3	0.54	0.55	0.54	53.5
2	T1	591	6.4	591	6.4	0.574	6.0	LOS A	2.1	15.3	0.54	0.55	0.54	53.9
3	R2	22	4.8	22	4.8	0.574	9.5	LOS A	2.1	15.3	0.54	0.55	0.54	52.1
3u	U	7	0.0	7	0.0	0.574	11.2	LOS A	2.1	15.3	0.54	0.55	0.54	56.7
Approach		703	5.5	703	5.5	0.574	6.1	LOS A	2.1	15.3	0.54	0.55	0.54	53.8
East: Parson Street														
4	L2	20	5.3	20	5.3	0.134	10.2	LOS A	0.4	2.5	0.84	0.83	0.84	49.4
5	T1	19	0.0	19	0.0	0.134	10.0	LOS A	0.4	2.5	0.84	0.83	0.84	42.1
6	R2	32	3.3	32	3.3	0.134	13.7	LOS A	0.4	2.5	0.84	0.83	0.84	44.0
6u	U	1	0.0	1	0.0	0.134	15.2	LOS B	0.4	2.5	0.84	0.83	0.84	46.3
Approach		72	2.9	72	2.9	0.134	11.8	LOS A	0.4	2.5	0.84	0.83	0.84	45.8
North: Princess Highway														
7	L2	24	0.0	24	0.0	0.646	7.0	LOS A	2.7	19.5	0.75	0.70	0.78	45.8
8	T1	578	5.6	578	5.6	0.646	7.4	LOS A	2.7	19.5	0.75	0.70	0.78	53.1
9	R2	39	0.0	39	0.0	0.646	10.9	LOS A	2.7	19.5	0.75	0.70	0.78	35.5
9u	U	53	0.0	53	0.0	0.646	12.7	LOS A	2.7	19.5	0.75	0.70	0.78	44.2
Approach		694	4.7	694	4.7	0.646	8.0	LOS A	2.7	19.5	0.75	0.70	0.78	52.3
West: Parson Street														
10	L2	79	0.0	79	0.0	0.426	9.5	LOS A	1.3	8.8	0.84	0.92	0.90	36.4
11	T1	7	0.0	7	0.0	0.426	9.5	LOS A	1.3	8.8	0.84	0.92	0.90	43.7
12	R2	203	1.0	203	1.0	0.426	13.1	LOS A	1.3	8.8	0.84	0.92	0.90	49.6
12u	U	1	0.0	1	0.0	0.426	14.7	LOS B	1.3	8.8	0.84	0.92	0.90	28.9
Approach		291	0.7	291	0.7	0.426	12.1	LOS A	1.3	8.8	0.84	0.92	0.90	47.5
All Vehicles		1759	4.3	1759	4.3	0.646	8.1	LOS A	2.7	19.5	0.68	0.69	0.71	51.8

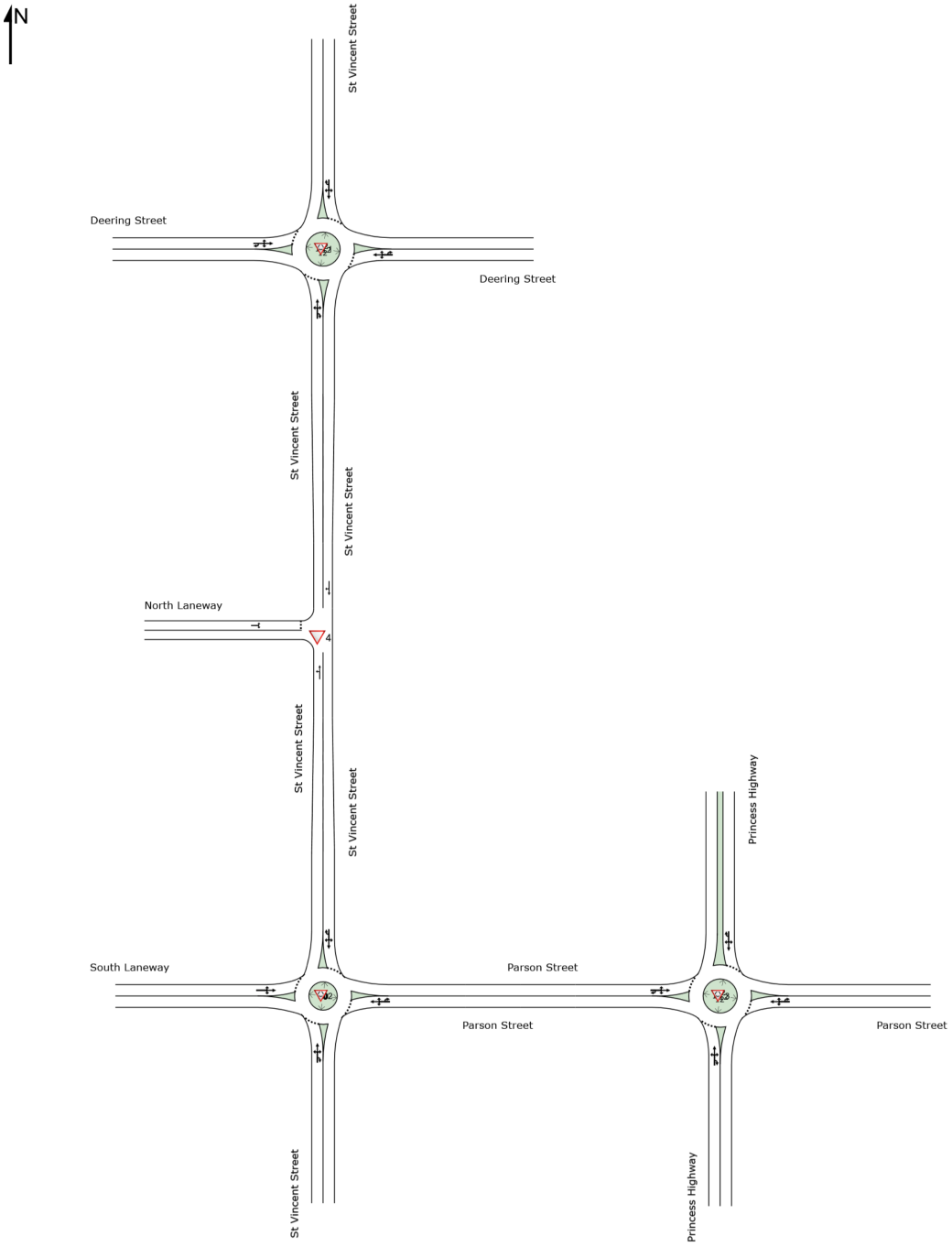
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

NETWORK LAYOUT

Network: 3 [AM Peak (Network Folder: Future 2033 + Development)]

131 St Vincent Street, Ulladulla
Network Category: Proposed Mixed-Use Development

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
1	NA	St Vincent St & Deering St AM Peak
4	NA	St Vincent St & North Laneway AM Peak
2	NA	St Vincent St & Parson St AM Peak
3	NA	Princess Hwy & Parson St AM Peak

MOVEMENT SUMMARY

Site: 1 [St Vincent St & Deering St AM Peak (Site Folder: Future 2033 + Development)]

Network: 3 [AM Peak (Network Folder: Future 2033 + Development)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: St Vincent Street														
1	L2	100	3.2	100	3.2	0.397	5.0	LOS A	1.1	8.0	0.53	0.59	0.53	43.6
2	T1	251	0.8	251	0.8	0.397	5.0	LOS A	1.1	8.0	0.53	0.59	0.53	43.0
3	R2	85	3.7	85	3.7	0.397	8.6	LOS A	1.1	8.0	0.53	0.59	0.53	39.8
3u	U	1	0.0	1	0.0	0.397	10.2	LOS A	1.1	8.0	0.53	0.59	0.53	27.9
Approach		437	1.9	437	1.9	0.397	5.7	LOS A	1.1	8.0	0.53	0.59	0.53	42.7
East: Deering Street														
4	L2	51	2.1	51	2.1	0.254	5.3	LOS A	0.6	4.6	0.54	0.65	0.54	35.0
5	T1	94	20.2	94	20.2	0.254	5.8	LOS A	0.6	4.6	0.54	0.65	0.54	44.8
6	R2	94	4.5	94	4.5	0.254	9.0	LOS A	0.6	4.6	0.54	0.65	0.54	43.3
6u	U	3	0.0	3	0.0	0.254	10.5	LOS A	0.6	4.6	0.54	0.65	0.54	42.6
Approach		241	10.0	241	10.0	0.254	7.0	LOS A	0.6	4.6	0.54	0.65	0.54	43.2
North: St Vincent Street														
7	L2	134	9.4	134	9.4	0.369	5.8	LOS A	1.0	7.2	0.60	0.64	0.60	42.8
8	T1	202	1.0	202	1.0	0.369	5.6	LOS A	1.0	7.2	0.60	0.64	0.60	40.7
9	R2	18	17.6	18	17.6	0.369	9.7	LOS A	1.0	7.2	0.60	0.64	0.60	45.9
9u	U	4	0.0	4	0.0	0.369	10.8	LOS A	1.0	7.2	0.60	0.64	0.60	46.0
Approach		358	5.0	358	5.0	0.369	6.0	LOS A	1.0	7.2	0.60	0.64	0.60	42.1
West: Deering Street														
10	L2	24	4.3	24	4.3	0.285	6.3	LOS A	0.7	5.3	0.64	0.71	0.64	44.5
11	T1	138	16.8	138	16.8	0.285	6.7	LOS A	0.7	5.3	0.64	0.71	0.64	44.4
12	R2	78	1.4	78	1.4	0.285	9.8	LOS A	0.7	5.3	0.64	0.71	0.64	42.2
12u	U	1	0.0	1	0.0	0.285	11.4	LOS A	0.7	5.3	0.64	0.71	0.64	46.5
Approach		241	10.5	241	10.5	0.285	7.7	LOS A	0.7	5.3	0.64	0.71	0.64	43.8
All Vehicles		1277	5.9	1277	5.9	0.397	6.4	LOS A	1.1	8.0	0.57	0.64	0.57	42.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 4 [St Vincent St & North Laneway AM Peak (Site Folder: Future 2033 + Development)]

Network: 3 [AM Peak (Network Folder: Future 2033 + Development)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: St Vincent Street														
1	L2	9	0.0	9	0.0	0.179	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	28.9
2	T1	335	2.0	335	2.0	0.179	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.1
Approach		344	1.9	344	1.9	0.179	0.1	NA	0.0	0.0	0.00	0.02	0.00	47.8
North: St Vincent Street														
8	T1	306	2.0	306	2.0	0.177	0.2	LOS A	0.1	0.6	0.08	0.04	0.08	45.8
9	R2	23	0.0	23	0.0	0.177	6.0	LOS A	0.1	0.6	0.08	0.04	0.08	25.9
Approach		329	1.9	329	1.9	0.177	0.6	NA	0.1	0.6	0.08	0.04	0.08	42.5
West: North Laneway														
10	L2	93	0.0	93	0.0	0.137	5.1	LOS A	0.2	1.4	0.43	0.65	0.43	22.2
12	R2	40	0.0	40	0.0	0.137	7.4	LOS A	0.2	1.4	0.43	0.65	0.43	22.2
Approach		133	0.0	133	0.0	0.137	5.8	LOS A	0.2	1.4	0.43	0.65	0.43	22.2
All Vehicles		806	1.6	806	1.6	0.179	1.2	NA	0.2	1.4	0.10	0.13	0.10	40.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [St Vincent St & Parson St AM Peak (Site Folder: Future 2033 + Development)]

Network: 3 [AM Peak (Network Folder: Future 2033 + Development)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: St Vincent Street														
1	L2	1	0.0	1	0.0	0.062	4.7	LOS A	0.1	0.9	0.41	0.53	0.41	26.1
2	T1	52	0.0	52	0.0	0.062	4.7	LOS A	0.1	0.9	0.41	0.53	0.41	25.9
3	R2	13	0.0	13	0.0	0.062	8.1	LOS A	0.1	0.9	0.41	0.53	0.41	25.9
3u	U	1	0.0	1	0.0	0.062	9.7	LOS A	0.1	0.9	0.41	0.53	0.41	29.1
Approach		66	0.0	66	0.0	0.062	5.4	LOS A	0.1	0.9	0.41	0.53	0.41	26.0
East: Parson Street														
4	L2	19	0.0	19	0.0	0.194	4.1	LOS A	0.4	3.0	0.27	0.59	0.27	35.0
5	T1	7	0.0	7	0.0	0.194	5.2	LOS A	0.4	3.0	0.27	0.59	0.27	34.6
6	R2	216	1.5	216	1.5	0.194	7.4	LOS A	0.4	3.0	0.27	0.59	0.27	34.4
6u	U	4	0.0	4	0.0	0.194	8.9	LOS A	0.4	3.0	0.27	0.59	0.27	34.4
Approach		246	1.3	246	1.3	0.194	7.1	LOS A	0.4	3.0	0.27	0.59	0.27	34.5
North: St Vincent Street														
7	L2	216	1.0	216	1.0	0.219	3.8	LOS A	0.5	3.6	0.19	0.46	0.19	32.3
8	T1	72	0.0	72	0.0	0.219	3.8	LOS A	0.5	3.6	0.19	0.46	0.19	34.9
9	R2	17	0.0	17	0.0	0.219	8.3	LOS A	0.5	3.6	0.19	0.46	0.19	26.9
9u	U	2	0.0	2	0.0	0.219	8.7	LOS A	0.5	3.6	0.19	0.46	0.19	32.3
Approach		306	0.7	306	0.7	0.219	4.1	LOS A	0.5	3.6	0.19	0.46	0.19	32.6
West: South Laneway														
10	L2	65	0.0	65	0.0	0.092	4.4	LOS A	0.2	1.3	0.44	0.57	0.44	27.2
11	T1	28	0.0	28	0.0	0.092	4.8	LOS A	0.2	1.3	0.44	0.57	0.44	27.2
12	R2	1	0.0	1	0.0	0.092	7.9	LOS A	0.2	1.3	0.44	0.57	0.44	30.8
Approach		95	0.0	95	0.0	0.092	4.6	LOS A	0.2	1.3	0.44	0.57	0.44	27.3
All Vehicles		714	0.7	714	0.7	0.219	5.3	LOS A	0.5	3.6	0.27	0.53	0.27	32.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 3 [Princess Hwy & Parson St AM Peak (Site Folder: Future 2033 + Development)]

Network: 3 [AM Peak (Network Folder: Future 2033 + Development)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Princess Highway														
1	L2	198	1.1	198	1.1	0.830	9.0	LOS A	5.7	41.6	0.90	0.74	1.01	52.0
2	T1	768	6.6	768	6.6	0.830	9.5	LOS A	5.7	41.6	0.90	0.74	1.01	52.6
3	R2	15	0.0	15	0.0	0.830	12.9	LOS A	5.7	41.6	0.90	0.74	1.01	51.3
3u	U	3	0.0	3	0.0	0.830	14.7	LOS B	5.7	41.6	0.90	0.74	1.01	55.8
Approach		984	5.3	984	5.3	0.830	9.5	LOS A	5.7	41.6	0.90	0.74	1.01	52.5
East: Parson Street														
4	L2	14	0.0	14	0.0	0.132	8.6	LOS A	0.3	2.4	0.78	0.79	0.78	50.0
5	T1	27	3.8	27	3.8	0.132	8.8	LOS A	0.3	2.4	0.78	0.79	0.78	42.8
6	R2	40	2.6	40	2.6	0.132	12.4	LOS A	0.3	2.4	0.78	0.79	0.78	44.7
6u	U	1	0.0	1	0.0	0.132	13.9	LOS A	0.3	2.4	0.78	0.79	0.78	46.7
Approach		82	2.6	82	2.6	0.132	10.6	LOS A	0.3	2.4	0.78	0.79	0.78	45.5
North: Princess Highway														
7	L2	20	5.3	20	5.3	0.562	5.7	LOS A	2.1	16.2	0.60	0.59	0.60	46.1
8	T1	509	11.2	509	11.2	0.562	6.1	LOS A	2.1	16.2	0.60	0.59	0.60	53.5
9	R2	79	1.3	79	1.3	0.562	9.5	LOS A	2.1	16.2	0.60	0.59	0.60	36.8
9u	U	39	8.1	39	8.1	0.562	11.5	LOS A	2.1	16.2	0.60	0.59	0.60	44.0
Approach		647	9.6	647	9.6	0.562	6.9	LOS A	2.1	16.2	0.60	0.59	0.60	52.4
West: Parson Street														
10	L2	135	1.6	135	1.6	0.560	15.5	LOS B	2.1	14.7	1.00	1.12	1.26	32.1
11	T1	11	10.0	11	10.0	0.560	16.0	LOS B	2.1	14.7	1.00	1.12	1.26	41.2
12	R2	127	0.0	127	0.0	0.560	19.0	LOS B	2.1	14.7	1.00	1.12	1.26	46.9
12u	U	1	0.0	1	0.0	0.560	20.6	LOS B	2.1	14.7	1.00	1.12	1.26	24.2
Approach		274	1.2	274	1.2	0.560	17.2	LOS B	2.1	14.7	1.00	1.12	1.26	41.8
All Vehicles		1987	6.0	1987	6.0	0.830	9.7	LOS A	5.7	41.6	0.81	0.74	0.90	50.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 1 [St Vincent St & Deering St PM Peak (Site Folder: Future 2033 + Development)]

Network: 4 [PM Peak (Network Folder: Future 2033 + Development)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: St Vincent Street														
1	L2	71	0.0	71	0.0	0.264	5.4	LOS A	0.7	4.6	0.56	0.63	0.56	43.5
2	T1	144	0.0	144	0.0	0.264	5.5	LOS A	0.7	4.6	0.56	0.63	0.56	42.8
3	R2	43	0.0	43	0.0	0.264	9.0	LOS A	0.7	4.6	0.56	0.63	0.56	39.8
3u	U	2	0.0	2	0.0	0.264	10.7	LOS A	0.7	4.6	0.56	0.63	0.56	27.5
Approach		260	0.0	260	0.0	0.264	6.1	LOS A	0.7	4.6	0.56	0.63	0.56	42.7
East: Deering Street														
4	L2	95	0.0	95	0.0	0.384	6.6	LOS A	1.0	7.6	0.71	0.76	0.71	33.7
5	T1	125	10.9	125	10.9	0.384	7.0	LOS A	1.0	7.6	0.71	0.76	0.71	44.3
6	R2	100	1.1	100	1.1	0.384	10.3	LOS A	1.0	7.6	0.71	0.76	0.71	42.6
6u	U	6	0.0	6	0.0	0.384	11.8	LOS A	1.0	7.6	0.71	0.76	0.71	41.6
Approach		326	4.5	326	4.5	0.384	8.0	LOS A	1.0	7.6	0.71	0.76	0.71	42.1
North: St Vincent Street														
7	L2	206	1.0	206	1.0	0.542	5.5	LOS A	1.7	12.3	0.65	0.65	0.65	42.6
8	T1	289	0.0	289	0.0	0.542	5.6	LOS A	1.7	12.3	0.65	0.65	0.65	40.2
9	R2	91	1.2	91	1.2	0.542	9.1	LOS A	1.7	12.3	0.65	0.65	0.65	45.9
9u	U	3	0.0	3	0.0	0.542	10.7	LOS A	1.7	12.3	0.65	0.65	0.65	45.7
Approach		589	0.5	589	0.5	0.542	6.1	LOS A	1.7	12.3	0.65	0.65	0.65	42.5
West: Deering Street														
10	L2	74	0.0	74	0.0	0.280	5.2	LOS A	0.7	4.8	0.53	0.63	0.53	45.1
11	T1	128	3.3	128	3.3	0.280	5.4	LOS A	0.7	4.8	0.53	0.63	0.53	45.3
12	R2	81	0.0	81	0.0	0.280	8.9	LOS A	0.7	4.8	0.53	0.63	0.53	43.1
12u	U	1	0.0	1	0.0	0.280	10.5	LOS A	0.7	4.8	0.53	0.63	0.53	47.1
Approach		284	1.5	284	1.5	0.280	6.3	LOS A	0.7	4.8	0.53	0.63	0.53	44.8
All Vehicles		1460	1.5	1460	1.5	0.542	6.6	LOS A	1.7	12.3	0.62	0.67	0.62	43.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 4 [St Vincent St & North Laneway PM Peak (Site Folder: Future 2033 + Development)]

Network: 4 [PM Peak (Network Folder: Future 2033 + Development)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: St Vincent Street														
1	L2	38	0.0	38	0.0	0.129	4.6	LOS A	0.0	0.0	0.00	0.09	0.00	28.1
2	T1	204	5.0	204	5.0	0.129	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	45.7
Approach		242	4.2	242	4.2	0.129	0.7	NA	0.0	0.0	0.00	0.09	0.00	40.3
North: St Vincent Street														
8	T1	414	5.0	414	5.0	0.281	0.3	LOS A	0.3	2.2	0.17	0.10	0.17	41.3
9	R2	87	0.0	87	0.0	0.281	5.7	LOS A	0.3	2.2	0.17	0.10	0.17	24.9
Approach		501	4.1	501	4.1	0.281	1.2	NA	0.3	2.2	0.17	0.10	0.17	35.7
West: North Laneway														
10	L2	22	0.0	22	0.0	0.032	4.5	LOS A	0.0	0.3	0.32	0.56	0.32	22.9
12	R2	9	0.0	9	0.0	0.032	7.7	LOS A	0.0	0.3	0.32	0.56	0.32	22.9
Approach		32	0.0	32	0.0	0.032	5.4	LOS A	0.0	0.3	0.32	0.56	0.32	22.9
All Vehicles		775	4.0	775	4.0	0.281	1.2	NA	0.3	2.2	0.12	0.12	0.12	36.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 2 [St Vincent St & Parson St PM Peak (Site Folder: Future 2033 + Development)]

Network: 4 [PM Peak (Network Folder: Future 2033 + Development)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: St Vincent Street														
1	L2	1	0.0	1	0.0	0.074	4.6	LOS A	0.1	1.0	0.39	0.52	0.39	26.2
2	T1	61	0.0	61	0.0	0.074	4.6	LOS A	0.1	1.0	0.39	0.52	0.39	26.0
3	R2	17	0.0	17	0.0	0.074	8.0	LOS A	0.1	1.0	0.39	0.52	0.39	26.0
3u	U	1	0.0	1	0.0	0.074	9.6	LOS A	0.1	1.0	0.39	0.52	0.39	29.1
Approach		80	0.0	80	0.0	0.074	5.4	LOS A	0.1	1.0	0.39	0.52	0.39	26.1
East: Parson Street														
4	L2	22	0.0	22	0.0	0.151	4.4	LOS A	0.3	2.2	0.33	0.60	0.33	35.6
5	T1	29	0.0	29	0.0	0.151	5.6	LOS A	0.3	2.2	0.33	0.60	0.33	35.2
6	R2	122	0.0	122	0.0	0.151	7.7	LOS A	0.3	2.2	0.33	0.60	0.33	35.2
6u	U	1	0.0	1	0.0	0.151	9.3	LOS A	0.3	2.2	0.33	0.60	0.33	35.2
Approach		175	0.0	175	0.0	0.151	7.0	LOS A	0.3	2.2	0.33	0.60	0.33	35.2
North: St Vincent Street														
7	L2	263	0.0	263	0.0	0.275	3.7	LOS A	0.7	4.9	0.14	0.48	0.14	32.2
8	T1	78	0.0	78	0.0	0.275	3.7	LOS A	0.7	4.9	0.14	0.48	0.14	34.8
9	R2	68	0.0	68	0.0	0.275	8.2	LOS A	0.7	4.9	0.14	0.48	0.14	21.4
9u	U	4	0.0	4	0.0	0.275	8.6	LOS A	0.7	4.9	0.14	0.48	0.14	32.2
Approach		414	0.0	414	0.0	0.275	4.5	LOS A	0.7	4.9	0.14	0.48	0.14	29.7
West: South Laneway														
10	L2	17	0.0	17	0.0	0.023	3.9	LOS A	0.0	0.3	0.36	0.51	0.36	28.6
11	T1	7	0.0	7	0.0	0.023	4.3	LOS A	0.0	0.3	0.36	0.51	0.36	28.6
12	R2	1	0.0	1	0.0	0.023	7.4	LOS A	0.0	0.3	0.36	0.51	0.36	31.6
Approach		25	0.0	25	0.0	0.023	4.1	LOS A	0.0	0.3	0.36	0.51	0.36	28.8
All Vehicles		694	0.0	694	0.0	0.275	5.2	LOS A	0.7	4.9	0.23	0.52	0.23	31.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 3 [Princess Hwy & Parson St PM Peak (Site Folder: Future 2033 + Development)]

Network: 4 [PM Peak (Network Folder: Future 2033 + Development)]

131 St Vincent Street, Ulladulla
Site Category: Proposed Mixed-Use Development
Roundabout

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Princess Highway														
1	L2	114	0.0	114	0.0	0.740	7.0	LOS A	3.8	27.6	0.79	0.66	0.82	52.5
2	T1	721	5.3	721	5.3	0.740	7.4	LOS A	3.8	27.6	0.79	0.66	0.82	53.1
3	R2	22	4.8	22	4.8	0.740	11.0	LOS A	3.8	27.6	0.79	0.66	0.82	51.6
3u	U	7	0.0	7	0.0	0.740	12.6	LOS A	3.8	27.6	0.79	0.66	0.82	56.1
Approach		864	4.5	864	4.5	0.740	7.5	LOS A	3.8	27.6	0.79	0.66	0.82	53.0
East: Parson Street														
4	L2	20	5.3	20	5.3	0.187	13.3	LOS A	0.5	3.8	0.95	0.92	0.95	48.4
5	T1	19	0.0	19	0.0	0.187	13.0	LOS A	0.5	3.8	0.95	0.92	0.95	40.5
6	R2	32	3.3	32	3.3	0.187	16.8	LOS B	0.5	3.8	0.95	0.92	0.95	42.5
6u	U	1	0.0	1	0.0	0.187	18.2	LOS B	0.5	3.8	0.95	0.92	0.95	45.2
Approach		72	2.9	72	2.9	0.187	14.8	LOS B	0.5	3.8	0.95	0.92	0.95	44.4
North: Princess Highway														
7	L2	24	0.0	24	0.0	0.799	10.1	LOS A	5.2	37.5	0.95	0.85	1.13	44.6
8	T1	688	4.7	688	4.7	0.799	10.6	LOS A	5.2	37.5	0.95	0.85	1.13	51.8
9	R2	82	0.0	82	0.0	0.799	14.0	LOS A	5.2	37.5	0.95	0.85	1.13	32.3
9u	U	53	0.0	53	0.0	0.799	15.8	LOS B	5.2	37.5	0.95	0.85	1.13	41.5
Approach		847	3.9	847	3.9	0.799	11.2	LOS A	5.2	37.5	0.95	0.85	1.13	50.7
West: Parson Street														
10	L2	95	0.0	95	0.0	0.596	15.6	LOS B	2.3	16.4	0.99	1.14	1.31	31.7
11	T1	7	0.0	7	0.0	0.596	15.6	LOS B	2.3	16.4	0.99	1.14	1.31	40.9
12	R2	219	1.0	219	1.0	0.596	19.2	LOS B	2.3	16.4	0.99	1.14	1.31	46.5
12u	U	1	0.0	1	0.0	0.596	20.8	LOS B	2.3	16.4	0.99	1.14	1.31	23.8
Approach		322	0.7	322	0.7	0.596	18.1	LOS B	2.3	16.4	0.99	1.14	1.31	43.8
All Vehicles		2105	3.6	2105	3.6	0.799	10.8	LOS A	5.2	37.5	0.89	0.82	1.02	50.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Appendix D
Swept Path Assessment

TRANSPORT AND TRAFFIC PLANNING ASSOCIATES
Established 1994

G 4

2B - TYPE 1 79 m² | 1B - TYPE 1 58 m² | 1B - TYPE 1 57 m² | 1B - TYPE 1 57 m² | 1B - TYPE 1 57 m² | 2B - TYPE 1 79 m²

RL +46.00

2B - TYPE 2 79 m² | 1B - TYPE 2 57 m² | LIFT 7 m² | LIFT 7 m² | STAIRS 14 m² | 1B - TYPE 2 57 m² | 2B - TYPE 2 79 m²

COMMERCIAL 880m²

RL +46.00

LIFT 7 m² | LIFT 7 m² | STAIRS 14 m²

HRV STANDARDS 2018 (AU)

1 PA-40-02

PA-30-04 1

1 WAY ROADWAY

RL +44.00

1 PA-40-01

COMMERCIAL 310m²

RL +44.00

LIFT 7 m² | STAIRS 14 m²

COMMERCIAL 160m²

LIFT 7 m² | STAIRS 14 m²

COMMERCIAL 310m²

RL +44.00

RL +44.00

COMMERCIAL 890m²

RL +44.00

COMMERCIAL 160m²

LIFT 7 m² | LIFT 7 m² | STAIRS 14 m²

COMMERCIAL 350m²

RL +44.00

RL +42.00

1 PA-30-03

ST.VIN

POTENTIAL TO INTRODUCE STREET PARKING

RL +44.00

RL +40.00

RL +40.00

SOUTH BASEMENT ENTRY / EXIT AT LOWER LEVEL

WASTE ROOM LOCATED BELOW BUILDING 1 AT LOWER GROUND LEVEL

PICKUP ZONE FOR WASTE/SERVICE TRUCKS AT LOWER GROUND FLOOR

2 WAY ROADWAY UP TO BASEMENT ENTRY. SHARED BY TRUCK AND CARS

HRV STANDARDS 2018 (AU)

B99 STANDARDS 2004 (AU_NZ)

B99 STANDARDS 2004 (AU_NZ)

B99 STANDARDS 2004 (AU_NZ)

B99 STANDARDS 2004 (AU_NZ)

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

12.50

2.20 6.85

HRV

meters	
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.7

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

5.20

0.95 3.05

B99

meters	
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

TOTAL:

BUILDING 1

ORTH): 310m²
EST): 160m²
UTH): 310m²
780m²

COMMERCIAL(NORTH
COMMERCIAL(WEST)
COMMERCIAL(SOUTH
TOTAL:

T:\WORK23\23049 - 131 ST VINCENT STREET, ULLADULLA\DRAWING\23049-V1.3-SP.dwg

Plotted by Lachlan

131 ST VINCENT STREET, ULLADULLA
CONCURRENT PASSING MOVEMENTS FOR A HEAVY RIGID VEHICLE AND 99TH PERCENTILE VEHICLES
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 01 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 4.0 8.0 1:400

N

DISCLAIMER

This drawing has been prepared using vehicle modelling computer software AutoTurn Pro V12.0 in conjunction with AutoCAD 2023. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

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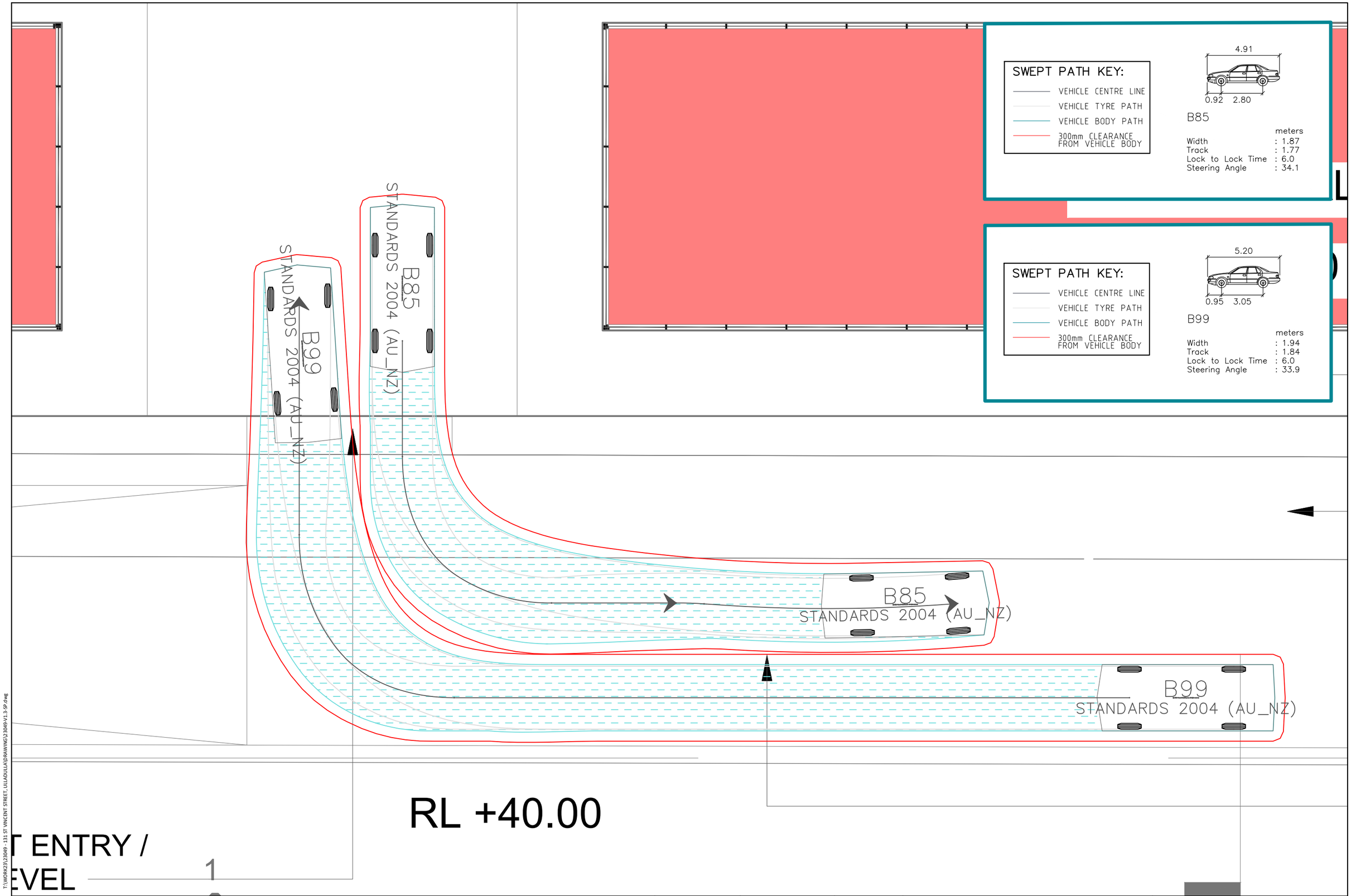

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

B99

	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

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Plotted by Lachlan

131 ST VINCENT STREET, ULLADULLA
CONCURRENT PASSING MOVEMENTS FOR AN 85TH AND 99TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 02 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

N

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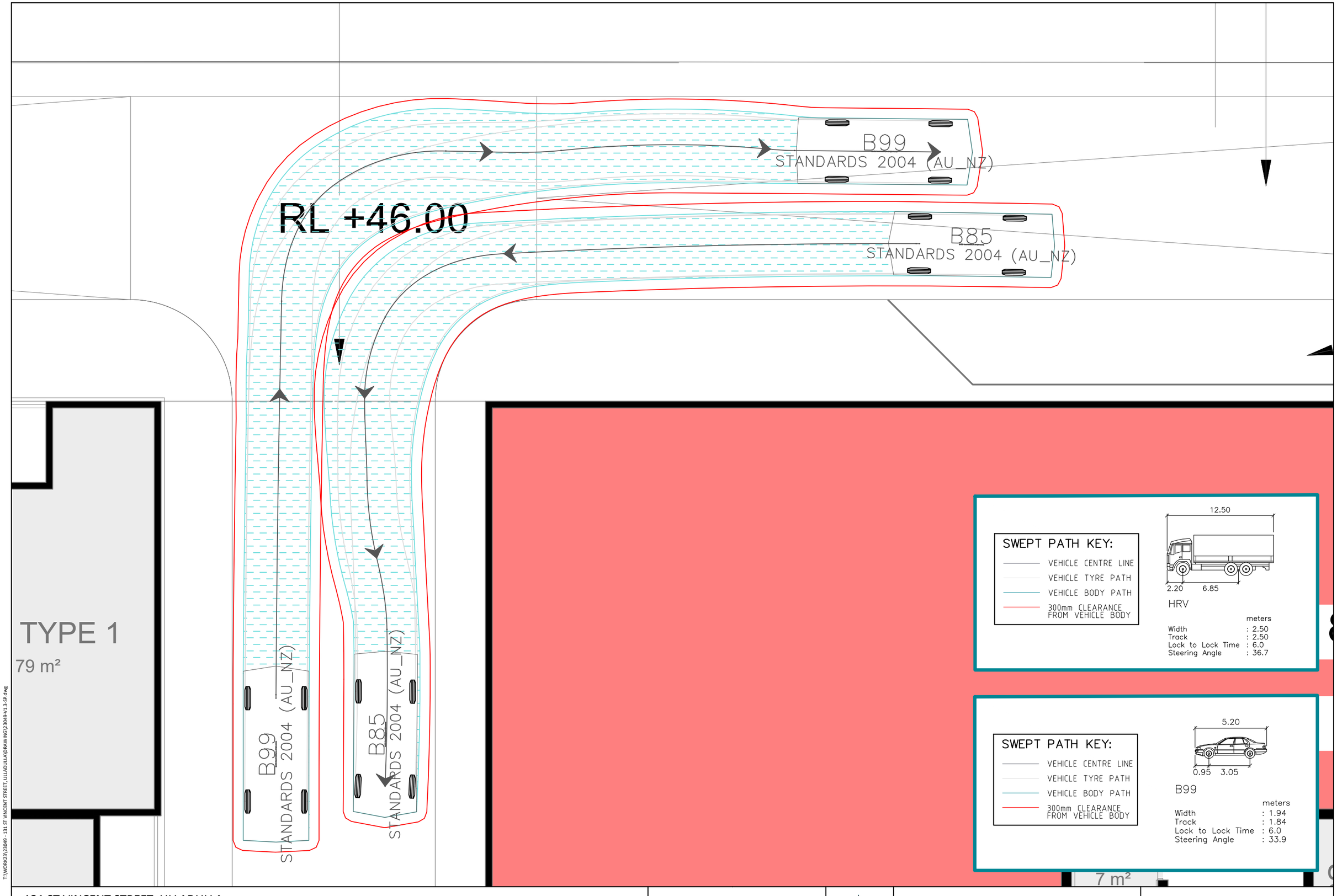

SWEPT PATH KEY:
- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

HRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.7

SWEPT PATH KEY:
- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

B99

	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9

131 ST VINCENT STREET, ULLADULLA
CONCURRENT PASSING MOVEMENTS FOR AN 85TH AND 99TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 03 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

N

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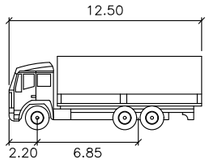
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

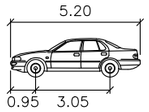


HRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.7

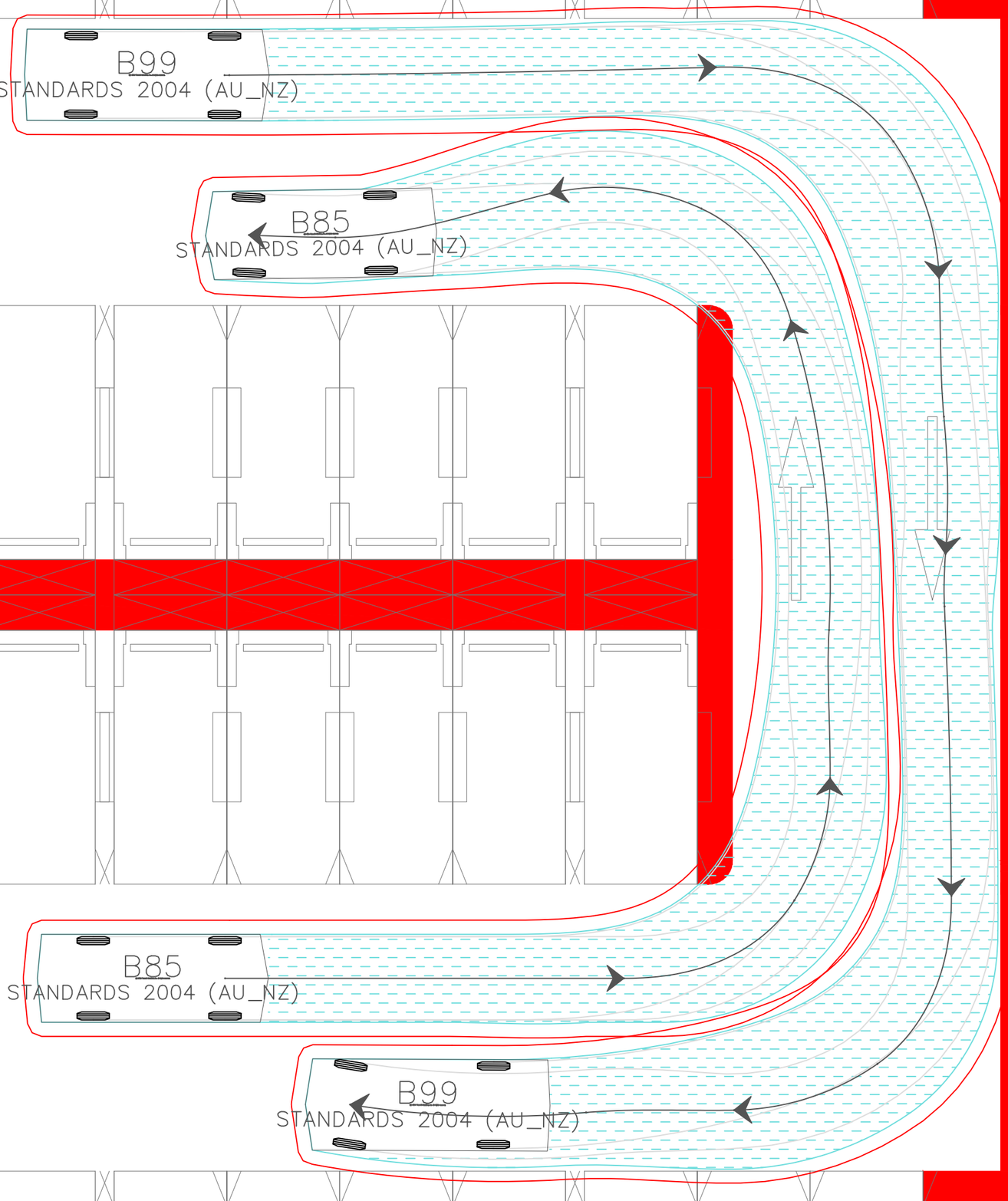
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B99

	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9



O B2

131 ST VINCENT STREET, ULLADULLA
CONCURRENT PASSING MOVEMENTS FOR AN 85TH AND 99TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 04 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

N

DISCLAIMER

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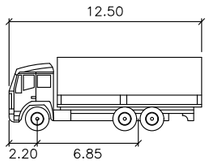
Plotted by Jachlan

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY

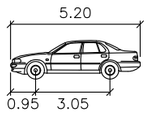


HRV

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.7

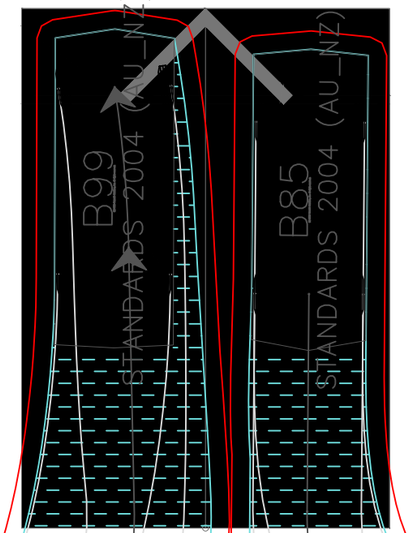
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B99

	meters
Width	: 1.94
Track	: 1.84
Lock to Lock Time	: 6.0
Steering Angle	: 33.9



RL +39.00

B99
STANDARDS 2004 (AU_NZ)

RAMP UP TO B1

B85
STANDARDS 2004 (AU_NZ)

131 ST VINCENT STREET, ULLADULLA
CONCURRENT PASSING MOVEMENTS FOR AN 85TH AND 99TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 05 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

DISCLAIMER

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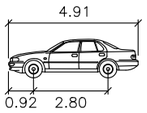
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

PARKING

PARKING

WASTE / SERVICES

ASTE / SERVICES

LIFT 7 m²

LIFT 7 m²

B4 CORE

B4 CORE

STAIRS 14 m²

STAIRS 14 m²

B85 STANDARDS 2004 (AU_NZ)

B85 STANDARDS 2004 (AU_NZ)

B85 STANDARDS 2004 (AU_NZ)

B85 STANDARDS 2004 (AU_NZ)

RL +42.00

RL +42.00

RAMP UP T

DEEP SOIL PLANTING ZONE

EP SOIL PLANTING ZONE

LINK

131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 06 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 2.0 4.0 1:200

N

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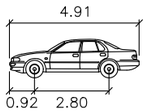
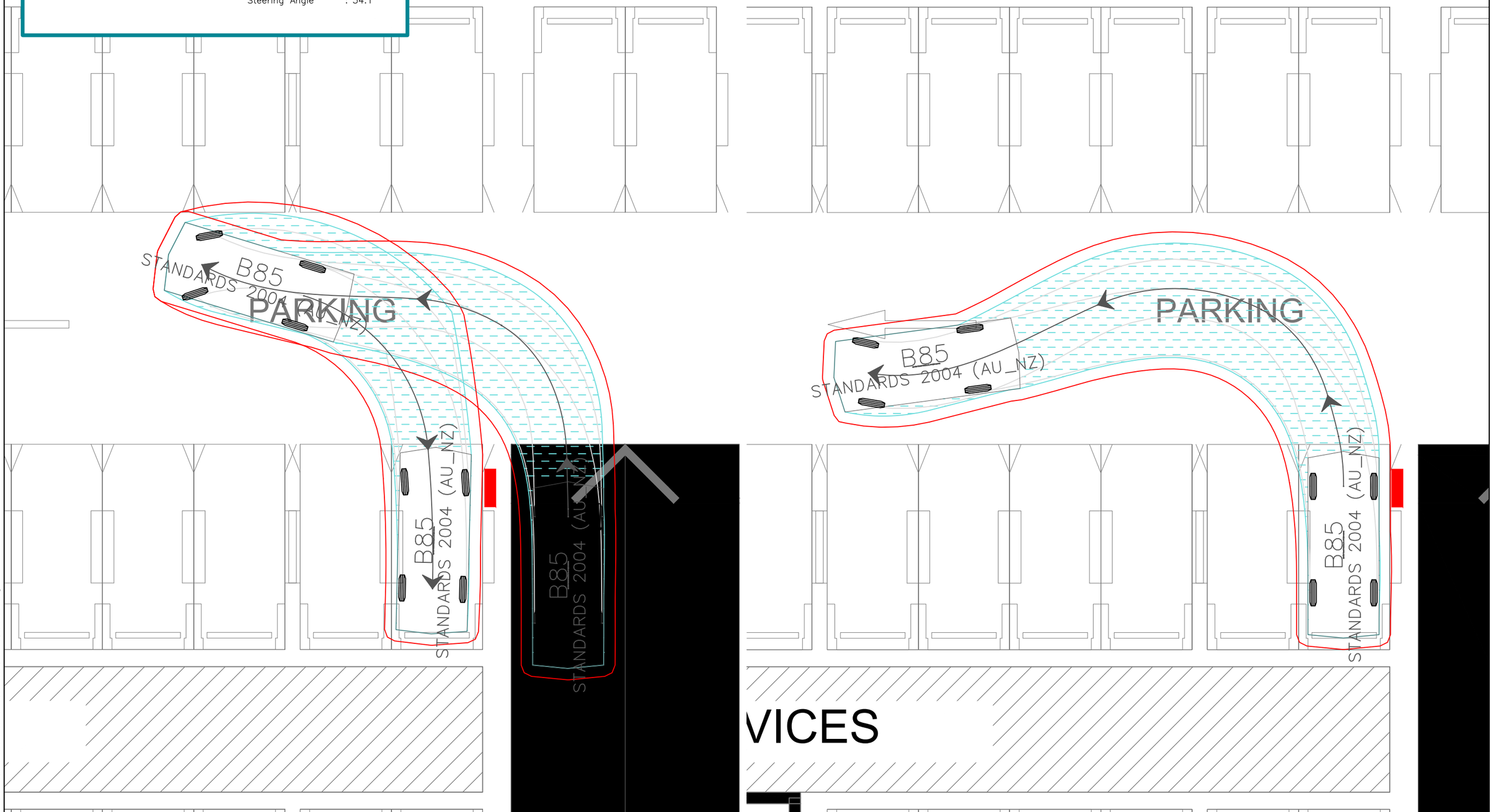
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1



131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 07 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

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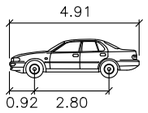
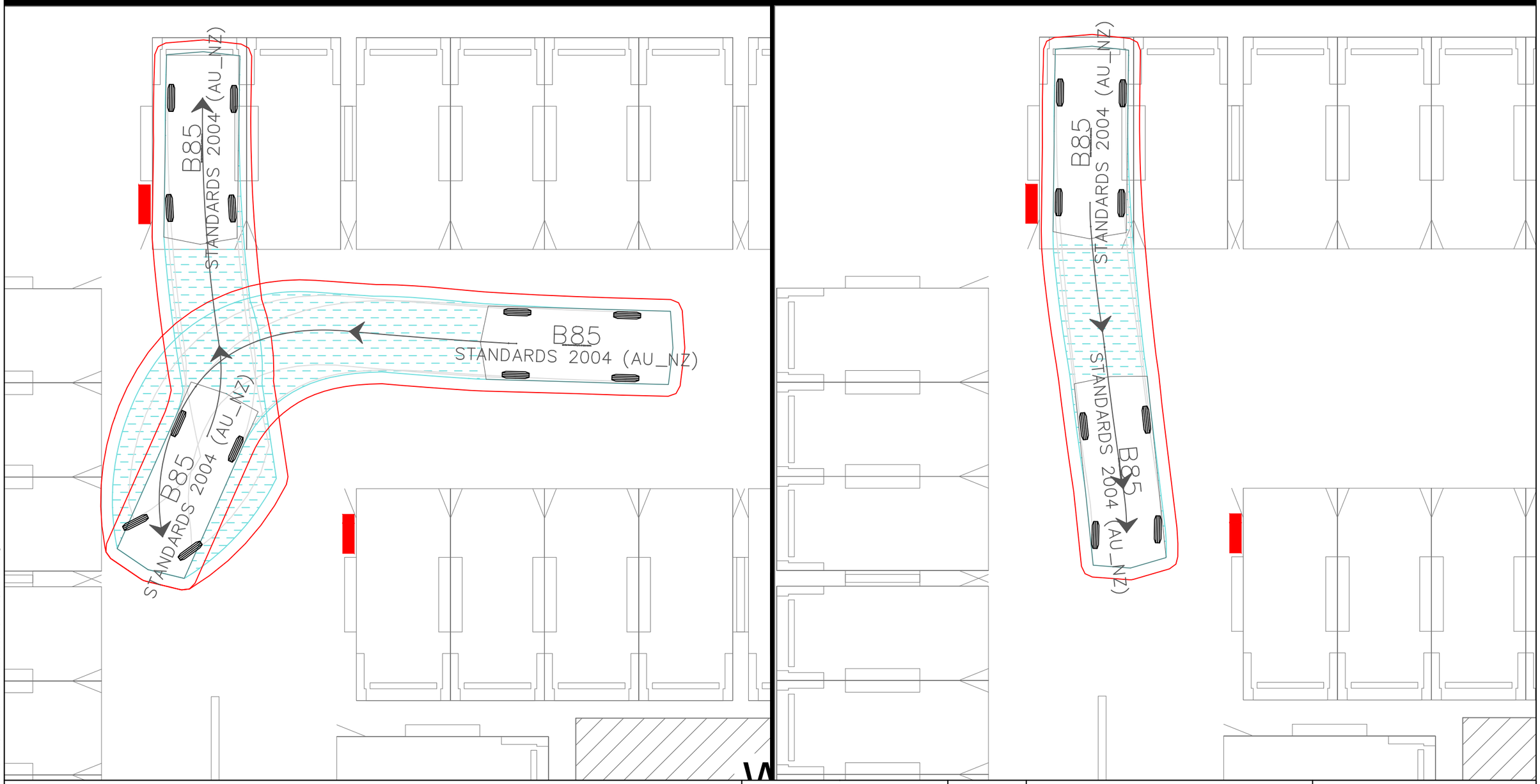
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1



131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 08 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

N

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SWEPT PATH KEY:

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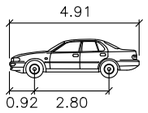
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

B85 STANDARDS 2004 (AU_NZ)

RAMP DOWN TO B2

LIFT 7 m²

LIFT 7 m²

B1 CORE

STAIRS 14 m²

WASTE

RL +40.00

B85 STANDARDS 2004 (AU_NZ)

RAMP DOWN TO B2

LIFT 7 m²

LIFT 7 m²

B1 CORE

STAIRS 14 m²

WASTE / SERVI

RL +40.00

T:\WORK23\23049 - 131 ST VINCENT STREET, ULLADULLA\DRAWINGS\23049-V1.3-SP.dwg

Plotted by Jachlan

131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 09 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 2.0 4.0 1:200

N

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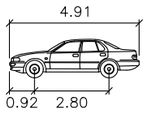
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

B85 STANDARDS 2004 (AU_NZ)

B85 STANDARDS 2004 (AU_NZ)

B85 STANDARDS 2004 (AU_NZ)

B85 STANDARDS 2004 (AU_NZ)

AMP DOWN TO B2

O B2

LIFT 7 m²

LIFT 7 m²

B1 CORE

STAIRS 14 m²

STAIRS 14 m²

131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 10 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

N

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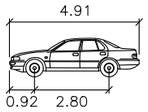
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

B85 STANDARDS 2004 (AU_NZ)

RAMP

LIF
7 m²

LIF
7 m²

T:\WORK23\23049 - 131 ST VINCENT STREET, ULLADULLA\DRAWING\23049-V1.3-SP.dwg

Plotted by Lachlan

131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 11 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

N

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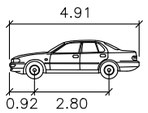
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

B85 STANDARDS 2004 (AU_NZ)

RAMP DOWN T

RAMP DOW

LIFT 7 m²

LIFT 7 m²

B1 CORE

T:\WORK23\23049 - 131 ST VINCENT STREET, ULLADULLA\DRAWING\23049-V1.3-SP.dwg

Plotted by Lachlan

131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 12 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

N

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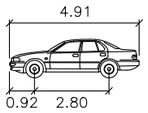
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

B85 STANDARDS 2004 (AU_NZ)

B85 STANDARDS 2004 (AU_NZ)

B85 STANDARDS 2004 (AU_NZ)

B85 STANDARDS 2004 (AU_NZ)

RAMP DOWN TO B2

RAMP DOWN TO B2

LIFT 7 m²

LIFT 7 m²

B1 CORE

STAIRS 14 m²

LIFT 7 m²

LIFT 7 m²

B1 CORE

STAIRS 14 m²

131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 13 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

N

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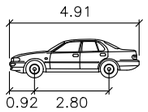
Plotted by Lachlan

SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 14 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

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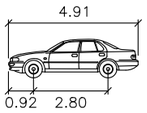
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

PARKING

PARKING

LIFT 7 m²

LIFT 7 m²

B4 CORE

STAIRS 14 m²

B85 STANDARDS 2004 (AU_NZ)

RL +39.60

B85 STANDARDS 2004 (AU_NZ)

B85 STANDARDS 2004 (AU_NZ)

B4 CORE

STAIRS 14 m²

B85 STANDARDS 2004 (AU_NZ)

RL +39.00

B85 STANDARDS 2004 (AU_NZ)

RAMP UP

DEEP SOIL PLANTING ZONE

DEEP SOIL PLANTING ZONE

T:\WORK23\23049 - 131 ST VINCENT STREET, ULLADULLA\DRAWING\23049-V1.3-SP.dwg

Plotted by Lachlan

131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 15 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 2.0 4.0 1:200

N

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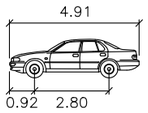
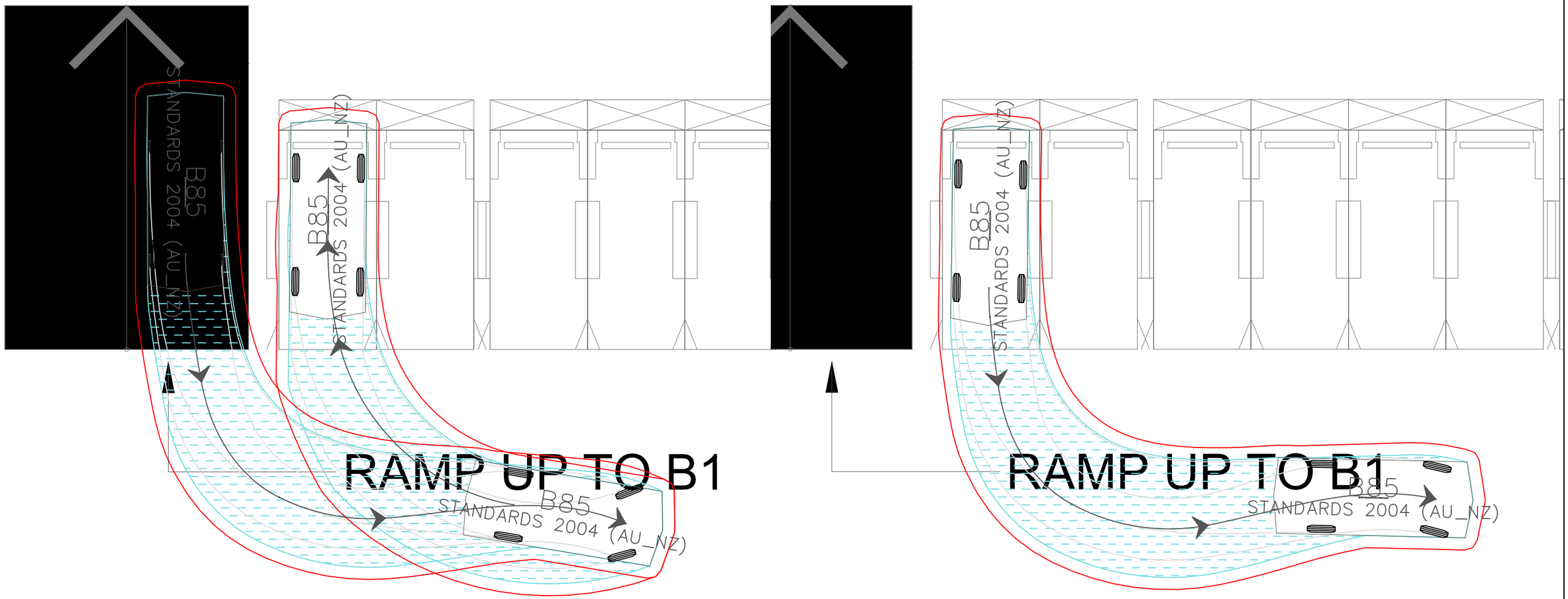
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1



131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 16 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

N

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SWEPT PATH KEY:

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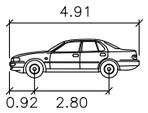
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

RAMP UP TO B1

RAMP UP TO B1

B85 STANDARDS 2004 (AU_NZ)

B85 STANDARDS 2004 (AU_NZ)

B85 STANDARDS 2004 (AU_NZ)

B85 STANDARDS 2004 (AU_NZ)

LIFT 7 m²

LIFT 7 m²

B1 CORE

STAIRS 14 m²

LIFT 7 m²

LIFT 7 m²

B1 CORE

STAIRS 14 m²

RL +37.00

RL +37.00

T:\WORK23\23049 - 131 ST VINCENT STREET, ULLADULLA\DRAWING\23049-V1.3-SP.dwg

Plotted by Lachlan

131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 17 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 2.0 4.0 1:200

N

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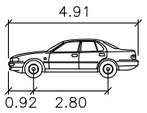
RAMP UP TO B1 — UP TO B1

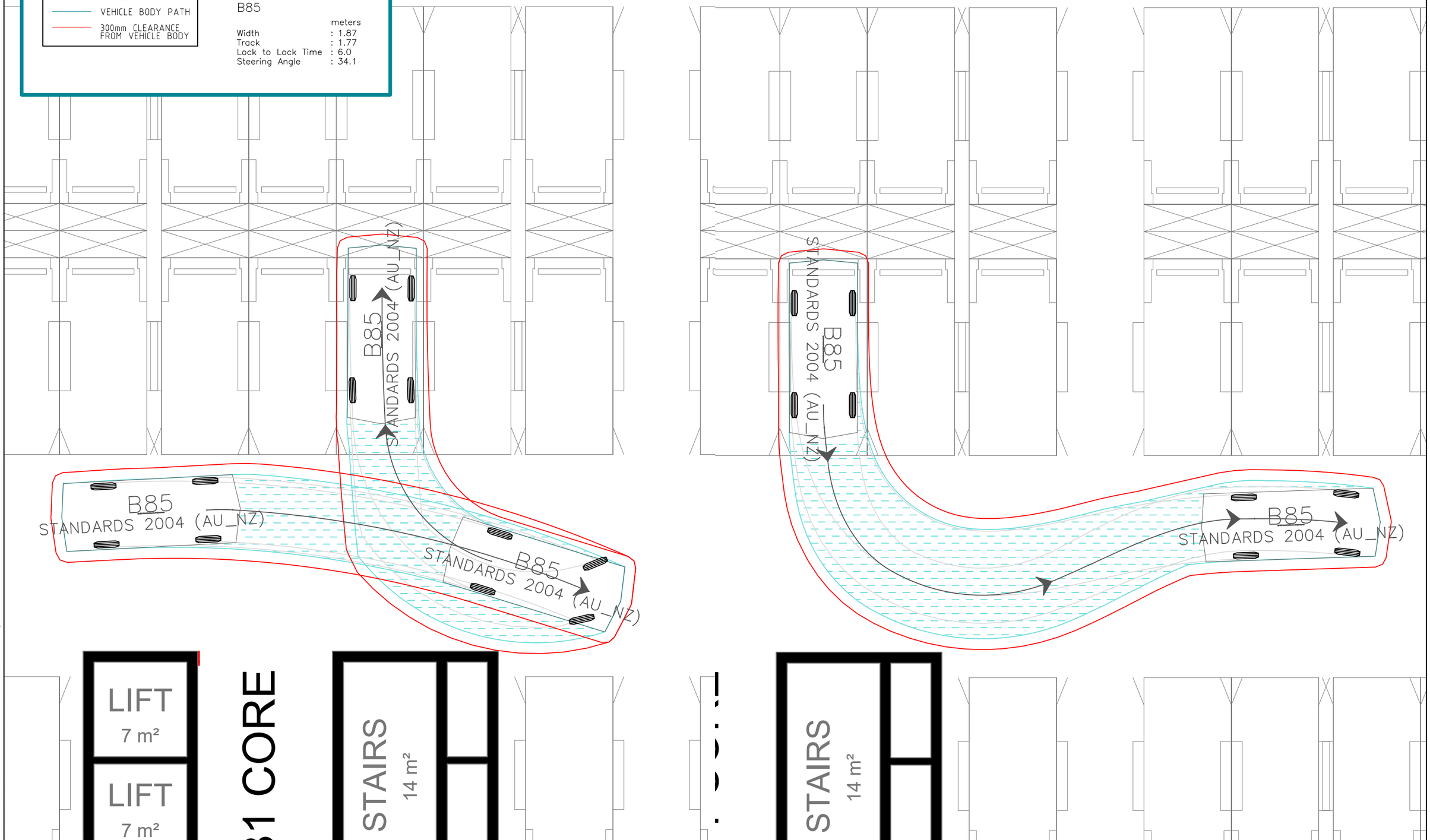
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1



131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 18 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

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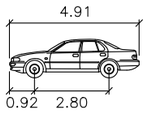
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

B85
STANDARDS 2004 (AU_NZ)

B85
STANDARDS 2004 (AU_NZ)

B85
STANDARDS 2004 (AU_NZ)

B85
STANDARDS 2004 (AU_NZ)

LIFT
7 m²

LIFT
7 m²

LIFT
7 m²

LIFT
7 m²

131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP

SHEET NO. 19 OF 21

ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 — 0 1.0 2.0 — 1:100

N

DISCLAIMER

This drawing has been prepared using vehicle modelling computer software AutoTurn Pro V12.0 in conjunction with AutoCAD 2023. The vehicle used is based upon vehicle data provided by Austroads and incorporates a reasonable degree of tolerance. However, it is not possible to account for all vehicle types/characteristics and/or driver ability.

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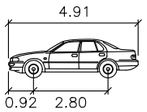
SWEPT PATH KEY:

- VEHICLE CENTRE LINE
- VEHICLE TYRE PATH
- VEHICLE BODY PATH
- 300mm CLEARANCE FROM VEHICLE BODY



B85

	meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 34.1

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Plotted by Lachlan

131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE
SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP SHEET NO. 20 OF 21 ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 0 1.0 2.0 1:100

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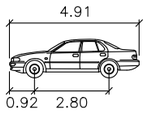

B85

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Width	: 1.87
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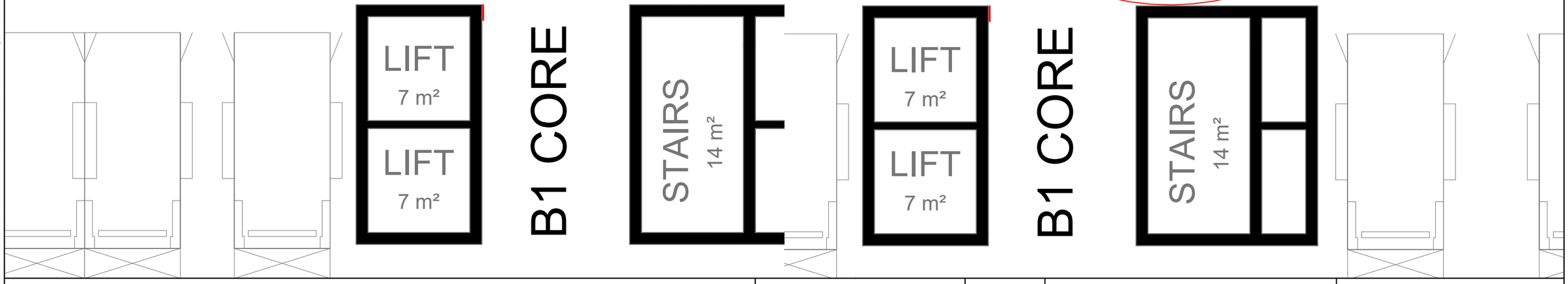

131 ST VINCENT STREET, ULLADULLA
INGRESS AND EGRESS MOVEMENTS FOR AN 85TH PERCENTILE VEHICLE SWEPT PATH ASSESSMENT

DRAWING REF NO. 23049-V1.3-SP

SHEET NO. 21 OF 21

ISSUE DATE 14 June 2024

DESIGNED BY A.GARDNER

SCALE A3 — 0 1.0 2.0 — 1:100

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Plotted by Lachlan

Appendix E
TEF Child Care Centre Analysis Report Extract

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Established 1994

4 Summary

The former Roads and Traffic Authority (RTA, now Roads and Maritime Services) published its Guide to Traffic Generating Developments ("Guide") in the mid-1990s. The trip generation and parking requirement data in the Guide is becoming increasingly out-of-date. The Guide contains trip generation and parking demand information derived from a 1992 survey of 20 Child Care Centres across greater Sydney. Five of the sites were Pre-Schools, nine were Long Day Care and six were Before and After Care. A number of changes have occurred since then in terms of child care centres' mode of operations, services provided and different types of child cares available. Given these changes, there is now a need to validate (or otherwise) the 1992 trip generation and parking demand data for Child Care Centres, to assist with traffic impact assessment and planning.

Twelve (12) sites within the Sydney Metropolitan Area (SMA) and two (2) sites outside SMA were selected in consultation with RMS Project Manager.

There were no technical issues with the conduct of the surveys, except obtaining permissions from the centre operators and collecting information about the year when the centre was opened.

Surveys of trips generation were carried out in June 2015, outside school holidays. Classification counts of vehicles entering and leaving sites were undertaken at each site generally between 6.30 a.m. and 9:30 a.m., and 2:30 p.m. to 6:30 p.m. on Monday, Tuesday, Wednesday or Thursday. Site S4 was chosen for a special survey where the entering and leaving traffic was counted over a full 7-day period, to establish daily and hourly visitation patterns.

4.1 Average rates

A review of the data revealed a number of observations:

- The surveys were undertaken at child care centres with the floor space varying from 112 m^2 to 1041 m^2 and with the total site area varying from 112 m^2 to 3014 m^2.
- The number of staff ranged from 3 to 15 members.
- Number of licensed places for children ranged from 20 to 105 places.
- Number of public parking spaces ranging from 0 to 22 spaces.

Table 4.1 Summary of trip and parking rates.

All sites	Min	Max	Avg	St Dev
Development details:				
Total site area (m^2)	112	3014	1070	823
Total GFA (m^2)	112	1041	445	296
No. of licensed places for children	20	105	56	28
No. of employees	3	15	8	4
Vehicle trips:				
Centre peak hour vehicle trips (in+out) AM	4	93	35	25
Centre peak hour vehicle trips per licensed place (AM)	0.06	1.25	0.66	0.34
Centre peak hour vehicle trips per 100m^2 of total GFA (AM)	1.04	19.31	9.00	5.14
Centre peak hour vehicle trips (in+out) PM	6	77	36	21
Centre peak hour vehicle trips per licensed place (PM)	0.24	1.38	0.68	0.32
Centre peak hour vehicle trips per 100m^2 of total GFA (PM)	1.89	30.36	10.81	8.45
Centre vehicle trips during adjacent road's peak hour (AM)	0	72	24	22
Centre vehicle trips per licensed place during adjacent road's peak hour (AM)	0.00	1.20	0.51	0.40
Centre vehicle trips per 100m^2 of GFA during adjacent road's peak hour (AM)	0.00	14.55	6.32	4.90
Centre vehicle trips during adjacent road's peak hour (PM)	0	50	17	17
Centre vehicle trips per licensed place during adjacent road's peak hour (PM)	0.00	0.70	0.29	0.25
Centre vehicle trips per 100m^2 of GFA during adjacent road's peak hour (PM)	0.00	24.75	5.01	6.31
Parking:				
No of public car spaces	0	22	7	8
Peak parking accumulation	3	16	9	4
Peak parking accumulation per number of licensed places	0.07	0.34	0.19	0.09
Peak parking accumulation per 100m^2 of total GFA	0.39	5.94	2.80	1.61

The results of the analyses for both peak hour and daily trip and parking rates indicated high values of standard deviation in all cases. The base data was therefore regarded as wide-spread. The average rates

Appendix F
Princes Highway Corridor Strategy Extract

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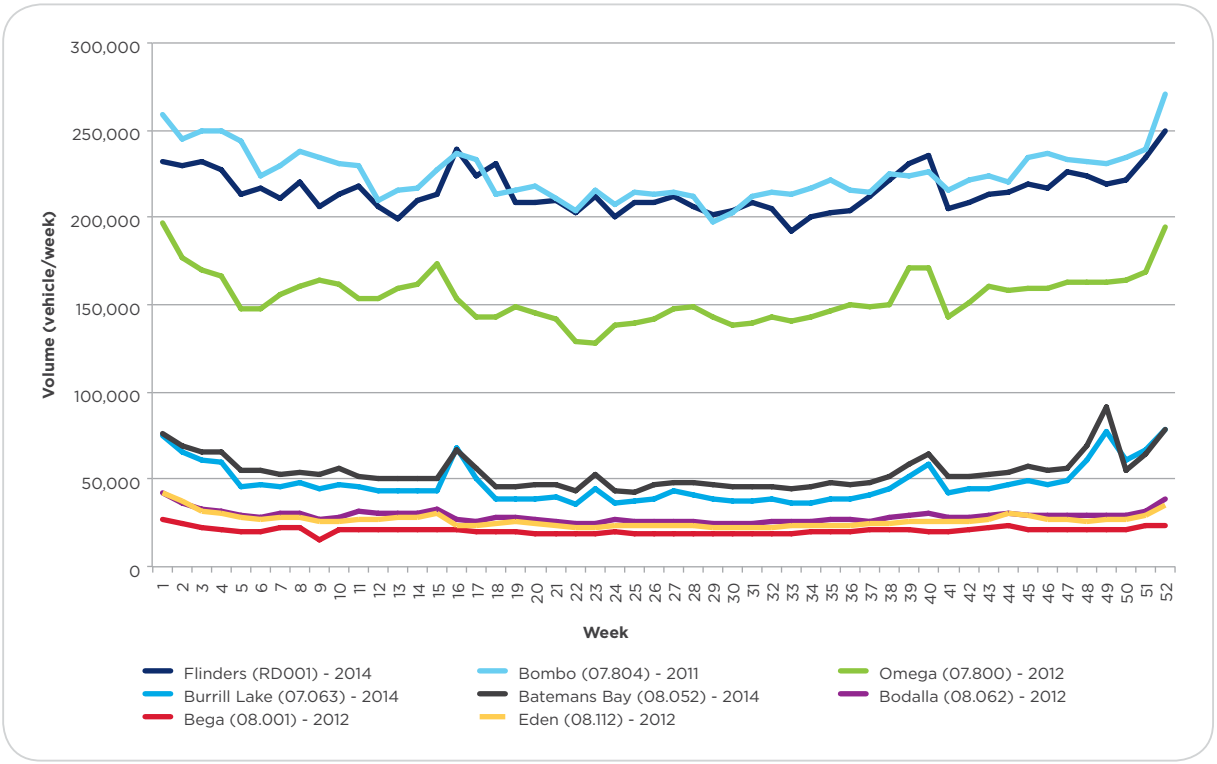
Established 1994

Figure 5-10 Seasonal variations in traffic on the Princes Highway

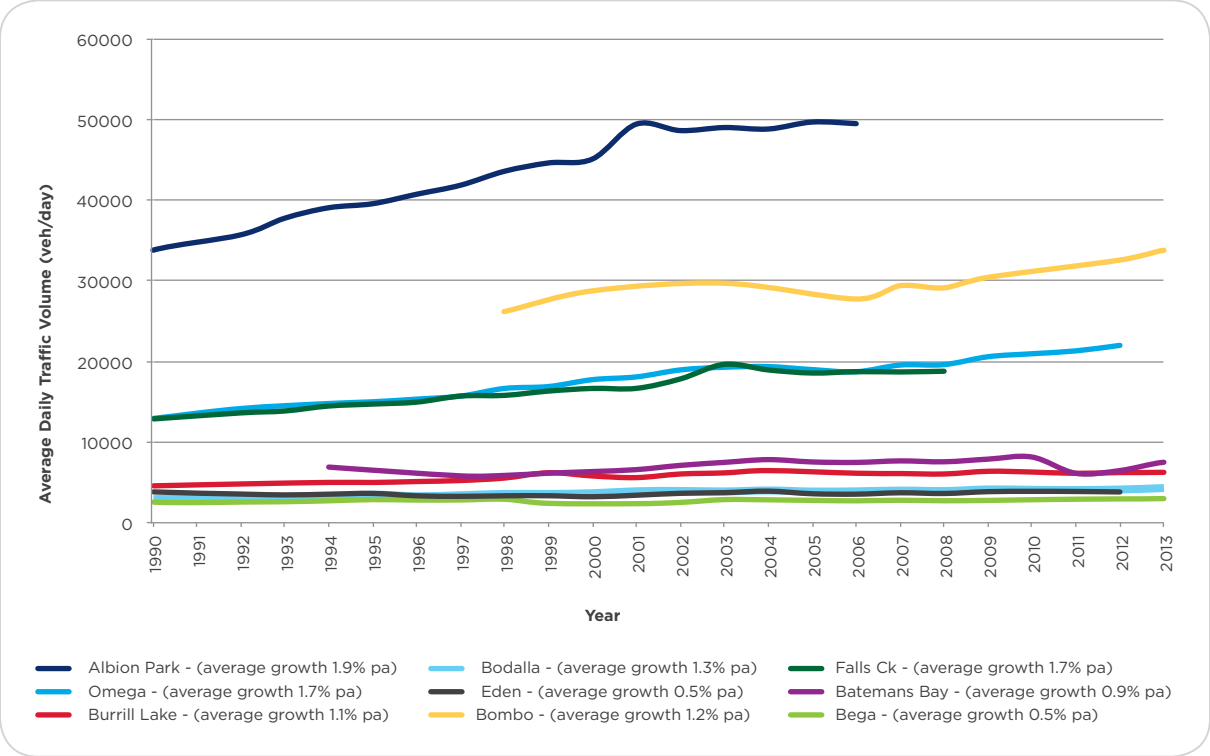


Growth rates and trends

Measuring the volumes of traffic travelling along a route through time can be used to determine a growth rate and forecast a future traffic volume. Vehicle growth rates along a corridor are generally linear unless they are impacted by a significant change in adjacent land use, such as an airport, a freight terminal or a new residential subdivision or regulatory changes such as a gazettal allowing access to new higher productivity vehicles.

The annual traffic growth rate along the Princes Highway ranges from nearly 2.0% in the northern section of the corridor, down to 0.5% at the southern end near Bega and Eden. Areas of the highway near Flinders and Shell Cove, just south of Albion Park Rail, have shown high growth rates and a significant increase in traffic volumes which is reflective of the new housing developments in this area. These growth rates would not be representative of long term sustainable growth rates and have not been included in the analysis. Traffic growth rates for the Princes Highway Corridor are shown in **Figure 5-11**.

Figure 5-11 Traffic growth along the Princes Highway – 1990 to 2013



Number of lanes and level of service

The number of through lanes along a route is a function of either the demand along the route, or a specific commitment to provide a particular standard of route generally between interregional or interstate locations. Rural class 5R roads typically have 2 or more lanes with frequent overtaking opportunities. Rural class 4R roads are generally two lane rural roads, with overtaking lanes spaced to reflect their traffic volumes and the types of vehicles using the route. Rural Class 3R roads typically have two lanes.

The number of through lanes on a class 4R road can be calculated using the level of service rating method. The level of service of highways is used to determine if the capacity of the highway is adequate and is influenced by the number of lanes in each direction on a road and the number and length of overtaking lanes provided.

The Princes Highway corridor between Yallah and Gerringong has two lanes in each direction and between Gerringong and Bomaderry it generally has one lane in each direction. However current and planned projects will provide two lanes in each direction from Waterfall to Jervis Bay Road. From Bomaderry, through Nowra to Jervis Bay Road, the highway generally has two lanes in each direction and from Jervis Bay Road to the Victorian border, the highway generally has one lane in each direction. The Roads and Maritime Network Performance Measures and Network Planning Targets[12] have a target for the number of through lanes on the Princes Highway. The target for the 5R class road, between Yallah and Jervis Bay Road is four lanes on divided carriageway and on 4R and 3R class roads it is two lanes and increased to four if required to provide Level of Service C. If the travel demand for any particular road is such that the target level of service C is forecast to be exceeded within the planning horizon, an assessment should be made as to the viability of increasing the number of lanes available. However, there are several treatments (such as Intelligent

12 NSW Centre for Road Safety 2011, *NSW Speed Zoning Guidelines*, RMS, Sydney