20 September 2024
Our Ref: 23GCT0211-LT02

Attention: Alyssa Norton

Town Planning Alliance

By email

Dear Alyssa,

RE: 10 Grand Parade, Casuarina Specialist Medical Centre- Response to Information Request

TTM has been commissioned to conduct a traffic assessment for the proposed development at 10 Grand Parade, Casuarina. This letter addresses the Information Request from the Department of Planning, Housing, and Infrastructure concerning the site. It is understood that additional assessments of traffic, parking, and site access are required.

Traffic, Parking and Access

Item – 1 Traffic

A number of submissions have raised concerns about traffic, parking, and access, including Sunray Lane's ability to cater to the anticipated traffic generated by the proposal.

Response

Development's Traffic Generation:

TTM references the Traffic Report dated March 6, 2024, for detailed information on trip generation rates and volumes. The trip generation rate for the type of development is adopted from TfNSW's Guide to Traffic Generating Developments Issue 2.2. Table 1 represents the adopted trip generation rate for the proposed development.

Table 1: Adopted trip generation rate for the proposed development

Development	AM Peak Hour trip rate	PM Peak Hour trip rate
Medical Centre	4.4 trips/100m^2 GFA	3.1 trips/100m^2 GFA

Trips from the proposed development will be 117vph during the AM peak hour and 83vph during the PM peak hour of the operation stage of the development.

The in:out a split of 70%:30% and 20%:80% have been assumed for AM peak hour and PM peak hour respectively. Table 2 represents the peak hours' trip generation from/into the proposed development. This trip generation estimate adopts a conservative approach. Typically, all doctors do not work on-site simultaneously, as they also have shifts at hospitals on other days.

Table 2: Peak Hour Inbound and Outbound Trip Generation

Land use	Peak hour	Trip Generation (vph)	Split In: Out (%)	Trips (In: Out)
Medical Centre	AM Peak	117	70:30	82:35
	PM Peak	83	20:80	17:66

Traffic generated from the development disperses across the existing road network via Sunray Lane. Trips from the development would be distributed to the existing road network based on proximity and destination. Traffic from/into the development distributes significantly from Grand Parade to Casuarina Way and Tweed Coast Road. Some assumptions below are considered to estimate traffic distribution.

- For traffic accessing and egressing the development, it is assumed to be 70% inbound and 30% outbound trips on Sunray Lane during AM peak hour, and 20% inbound and 80% outbound on Sunray Lane during PM peak hour.
- Among the inbound and outbound traffic, a further distribution of 40% of trips travel via Candlenut Street to Grand Parade and 60% of trips travel via Habitat Drive to Grand Parade. Therefore, 40% trips from/into the proposed development will use eastern section of Sunray Lane (east to the site access) while 60% trips will use western section of Sunray Lane (west to the site access).

Predicted trip distributions on each internal road are outlined in Table 3.

Table 3: Traffic volume on the Sunray Lane

Road Network	Direction	% of total AM peak trips	% of total PM peak trips	AM Peak hour volume (vph)	PM Peak hour volume (vph)
Sunray Lane (West to site access)	Inbound	42%	12%	49	10
	Outbound	18%	48%	21	40
Sunray Lane (east to site access)	Inbound	28%	8%	33	7
	Outbound	12%	32%	14	26
Total		**100%**	**100%**	**117**	**83**

From Table 3, it is projected that Sunray Lane (west) will accommodate 70vph in the AM peak and 50vph in the PM peak, while Sunray Lane (east) will handle 47vph and 33vph during the respective peak hours. On

average, this translates to no more than 2 vehicles per minute combined for inbound and outbound directions on either side of Sunray Lane. This low traffic volume would not significantly impact the peak hour operation of Sunray Lane.

Daily Traffic on Sunray Lane:

Sunray Lane is classified as a laneway, and according to the Tweed Shire Council Development Control Plan (Section A5 of the Subdivision Manual), the maximum allowable traffic volume for such a lane is 300 vehicles per day (vpd). Similarly, the IPWEA Street Design Manual sets a maximum traffic volume of less than 400vpd for laneways.

As projected, the western section of Sunray Lane is expected to accommodate 70vph during the AM peak and 50vph during the PM peak. Meanwhile, the eastern section is expected to accommodate 47vph and 33vph during the AM and PM peak hours, respectively. The trip generation rates for these projections are based on TfNSW's Guide to Traffic Generating Developments, derived from surveys in the Sydney region. However, due to the lower population density and different demographics in this area, it is likely that the actual trip generation will be significantly lower, as Sydney-based rates may not be directly applicable here. Furthermore, specialist doctors at the proposed medical centre will not be available every day, and their longer appointment times (approximately one hour per patient) will reduce the total number of patient trips.

An estimate of the number of doctors, staff, and patients expected to visit the proposed medical centre has been made based on the capacity and services of the clinics. Table 4 provides an approximation of the number of staff and patients.

Table 4: Estimated Approximate Number of Staff and Patients visiting the proposed medical centre per Day

Tenancies	Number of Doctors	Number of Other Staff	Number of Patients	Average Stay Time per Patient (minutes)
Ground Floor (Clinic 1, 2a and 2b)	1	4	50	44
Level 1 (Clinic 3, 4 and 5)	4	5	98	83
Level 2 (Clinic 6, 6a, 6b and 7)	3	7	60	48
Total	**8**	**16**	**208**	**58**

Based on the estimated number of doctors, staff, and patients, the proposed medical centre will accommodate 8 doctors, 16 staff members, and approximately 208 patients each day, with an average stay time of 58 minutes per patient. This results in a total of 464 daily trips (232 inbound and 232 outbound). This estimate is conservative, as the 10 on-street parking spaces along Grand Parade, located at the site's frontage, are expected to be primarily used by patients. This would reduce traffic on Sunray Lane by more than 10%, or approximately 53 vehicle trips per day, assuming an average parking duration of 1.5 hours per vehicle during operating hours. Service-related trips, such as deliveries and maintenance, are excluded from this estimate due to their infrequent occurrence.

In terms of trip distribution, 40% of the trips are expected to travel via Candlenut Street to Grand Parade, while 60% will use Habitat Drive to Grand Parade. This means 40% of trips will use the eastern section of Sunray Lane, and 60% will use the western section. The only existing residential dwelling on Sunray Lane with driveway access, located at 5 Habitat Drive, generates 7.4 trips daily, with all trips using the western section due to its proximity to Grand Parade. Table 5 represents the daily trip distribution on Sunray Lane.

Table 5: Daily Trip Distribution on Sunray Lane

Land use	Total daily trips on Sunray Lane	Daily trips on western section of Sunray Lane	Daily trips on eastern section of Sunray Lane
Medical Centre	464vpd	278vpd (60%)	186vpd (40%)
Existing dwelling	7.4vpd	8vpd (100%)	0vpd (0%)
Total	**472vpd**	**286vpd**	**186vpd**

The western section of Sunray Lane is projected to accommodate 286vpd, and the eastern section is projected to accommodate 186vpd. Both sections will remain below the maximum allowable traffic volume of 300vpd as specified by the Tweed Shire Council Development Control Plan, and well below the limit of 400vpd set by the IPWEA Street Design Manual. Furthermore, the generated traffic volume on Sunray Lane consists primarily of passenger vehicles, which are not expected to have a significant impact on the pavement structure of Sunray Lane. Thus, the projected traffic volumes on Sunray Lane are compliant with the relevant guidelines for laneways.

Trafficable Area Across Sunray Lane:

As per the Northern Rivers Local Government Geometric Road Design Specifications, the required minimum carriageway width for an access street is 6m. However, there is no specified minimum width for a laneway. According to the IPWEA Street Design Manual, the recommended carriageway width, measured between the faces of the barrier kerbs, is 5.5m to 6m. The construction drawings for Sunray Lane indicate a lane width of 5.7m (kerb to kerb), which meets the minimum requirements set out by IPWEA.

Additionally, Sunray Lane features a flush kerb that is level with the road surface, allowing vehicles to manoeuvre along the kerb if necessary. The flush kerb on each side of the road is more than 150mm wide, effectively adding 300mm to the trafficable width of the lane, bringing the total width to 6m. This means the existing width of Sunray Lane satisfies the minimum access street requirements.

Furthermore, the swept path analysis confirms that two-way vehicle movements and cars accessing or exiting driveways will not interfere with opposing traffic. Refer to Appendix C for detailed dimensions of Sunray Lane.

Item – 2 Parking

An assessment of the proposal against the parking requirements of the Council's DCP is required.

Response

TTM has assessed the parking provision for the proposed site against the Tweed Shire Council's Development Control Plan's Section A2-Site Access and Parking Code. Please note that a detailed assessment of the car parking design is beyond the scope of this RFI letter and has not been conducted by TTM.

Parking Supply Requirement and Provision

Council's parking requirements for the development are identified in Table 6.

Table 6: Parking Supply Requirement

Use	Council Requirement	Extent	Requirement	Provision
Medical Centre specialist – Staff – Visitor	 1.6 per consulting room 1.6 per consulting room	 30	 48 48	 48 48
Cafe – Food and Drink – Staff – Visitor	 1 per staff 3.5 per 100m^2 GFA	 1 40m^2	 1 1.4	 1 4
Total			**98.4**	**101**

The proposed car parking area includes a total of 101 spaces: 96 for medical tenancies and 5 for a café. Of these, two spaces are designated for persons with disabilities (PWD). The distribution of parking spaces is as follows: 15 on the ground floor, 42 in basement 1 (including 1 small car bay), and 44 in basement 2 (including 1 small car bay). This provision exceeds the Council's requirement of 99 spaces and is deemed suitable for the proposed development.

Cyclist Requirements

Section A2 of the Council's Development Control Plan (DCP) - Site Access and Parking Code specifies the bicycle parking requirements for medical and café tenancies. Table 7 outlines these requirements.

Table 7: Minimum Bicycle Parking Requirements

Use	Type of parking	Rates	Extent	Requirement	Security Class
Medical Centre-Specialist	Employee	1 per 8 practitioners	30	3.75	Class 2
	Visitor	1 in 4 practitioners		7.5	Class 3
Food and Drink Premise	Employee	1/100m^2 GFA	40m^2	1	Class 1
	Visitor	1/50m^2 GFA		1	Class 3
Total				**13.25**	

It should be noted that the number of practitioners is unknown at this stage. TTM assumes that the number of practitioners will match the number of consulting rooms in the medical centre. Based on this assumption, 14 bicycle parking spaces are required: 9 Class 3 spaces for visitors, 4 Class 2 spaces for employees of the medical centre, and 1 Class 1 space for the food and drink premises.

The proposed site currently provides 13 bicycle parking facilities. This includes 4 Class 2 horizontal parking spaces in both Basement 1 and Basement 2, and 5 vertical parking spaces for visitors on the ground floor. TTM recommends adding one bicycle parking facility for staff within the food and drink premises to meet the Class 1 security requirement, which will ensure compliance with the total bicycle parking requirements for the proposed development. Additionally, TTM recommends designating bicycle parking facilities for staff and visitors in the plans for Basement 1 and Basement 2.

Servicing Requirements

The Council's DCP outlines the service vehicle parking requirements, as shown in Table 8.

Table 8: Minimum Service Vehicle Parking Requirements

Use	Minimum Service Vehicle	Rates	Extent	Requirement
Medical Centre - Specialist	Heavy Rigid Vehicle (HRV)	1 per 10 consulting room	30	3
Restaurant and Café	Heavy Rigid Vehicle (HRV)	1	1	1

According to the Council's Development Control Plan (DCP), HRV service bays are required for the proposed tenancies. However, it is anticipated that no HRV will service the development, with the largest service vehicle being an SRV along with Vans. TTM has been advised that no service vehicle longer than an SRV will be used for deliveries to any medical centre tenancy of the proposed development.

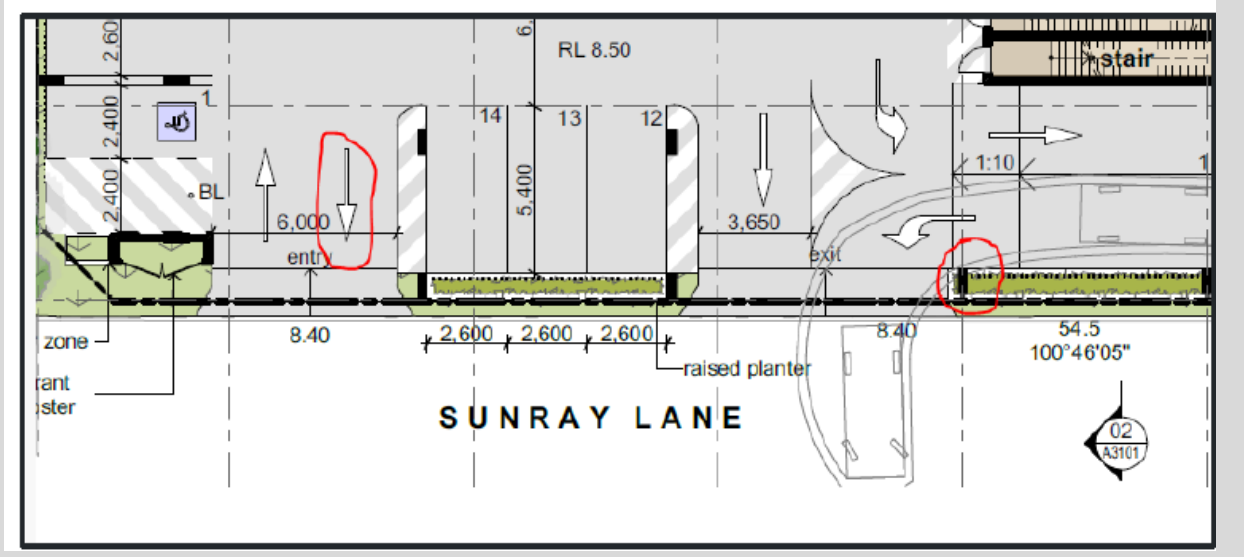
The site includes one SRV parking bay and one van parking bay on the ground floor car park area for the delivery needs of the medical centres and café. It is expected that these bays will be shared by service vehicles for both the medical centres and café. TTM notes that it is highly unlikely for more than two SRVs to be on-site simultaneously. In the unlikely event that an additional delivery vehicle arrives while both service bays are occupied, the vehicle can either wait or temporarily park on Candlenut Street. Given that Candlenut Street is approximately 7.5 meters wide and the SRV is about 2.35 meters wide, temporary on-street waiting or parking of the SRV will not significantly impact traffic movements along Candlenut Street. However, the likelihood of needing on-street servicing is very low. Therefore, the proposed servicing arrangements are suitable for the proposed development and will meet the servicing demand.

Item – 3 Access

The manoeuvrability of vehicles travelling in, out and within the parking area is unclear. Swept path diagrams are to be provided with the following at a minimum:

- *Detail of Sunray Lane in full including the verge and any significant details of the dwellings to the south that may impact on the manoeuvrability of vehicles.*
- *All possible vehicle movement when entering and exiting from Sunray Lane e.g., left and right-hand turns from Sunray Lane into the site.*
- *Access into and out of accessible parking spaces Nos. 1 and 11 and other spaces at corners and junctions.*
- *Inconsistencies corrected as per the below image marked up in red.*

Note: All swept paths, including clearances, shall be free of obstruction and not result in any conflict with oncoming traffic.



Response

TTM has assessed the *manoeuvrability of vehicles travelling in, out and within the parking area by swept path analysis.*

- The details of Sunray Lane, including the verge and significant features of the dwellings to the south, have been updated. Refer to Appendix A for the revised Site Plan, which now includes the full width of Sunray Lane.
- A swept path analysis has been conducted for all possible vehicle movements, including cars and service vehicles, entering and exiting the site via Sunray Lane. The access and exit arrangements comply with all movement requirements. Service vehicles, specifically 6.4m long Small Rigid Vehicles (SRV), can access, park in the dedicated bay, and egress the site using the eastern driveway. All swept paths, including clearances, are free of obstructions and do not conflict with oncoming traffic. Details of the swept path are shown in Appendix B.

  It is important to note that left turns into Sunray Lane from the exit driveway cannot be achieved by cars exiting the basement. These cars require more carriageway width than currently available on Sunray Lane. A restriction on left turns into Sunray Lane is imposed for vehicles exiting the basement by installing a 'Right Turn Only' sign at the eastern part of the exit driveway. Refer to the Ground Floor plan in Appendix A.

  The potential conflict between vehicles turning left from the ground floor and those turning right from the basement can be effectively managed with clear priority signage and lane markings. The 'Give Way' sign and Give Way holding line marking are provided for the ground floor traffic, given its

lower volume compared to basement traffic, to regulate movement. Refer to the Ground Floor Plan in Appendix A. Additionally, implementing speed reduction measures such as a speed hump at the junction will help slow vehicles down and reduce the risk of collisions.

- Access to and from PWD parking spaces (numbered 1 and 11) has been assessed via swept path analysis. Other parking spaces, such as car park space no. 3 and the service bay at the corner, have also been assessed. Compliant swept paths, including clearance, have been achieved. Refer to Appendix B for details of the swept path.

  The swept paths for car accessing, parking, and exiting in Basement 1 and Basement 2 are illustrated in Appendix B. The analysis shows that cars can manoeuvre into parking bays in the basements, including those located at corners or junctions, and exit the basement without any issues. It is to be noted that the end parking bays in basement 1 (numbered 28 and 37) and basement 2 (numbered 28, 37 and 43) are to be allocated for small car parking for staff. Swept path shows that small car can manoeuvring onto these carparks with adequate clearance. The compliant swept path confirms that the basement parking layout is suitable for cars.

- The identified inconsistencies in the site plan, such as the incorrect directional arrow in the western access driveway and the landscape kerb at the edge of the exit driveway, have been corrected in the revised site plan shown in Appendix A. Figure 1 illustrates the corrected directional arrow in the western access driveway and the shortened landscape kerb at the edge of the exit driveway.

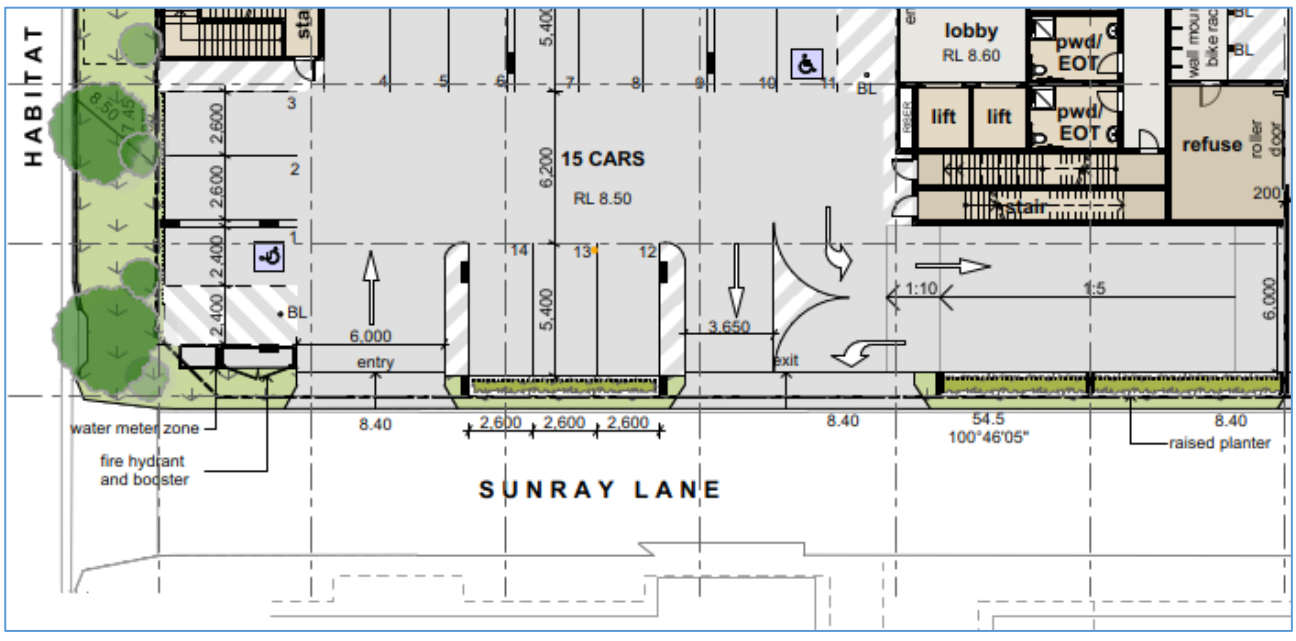


Figure 1: Correction of inconsistencies (snippet from the revised site plan)

Conclusions

Based on the responses contained within this letter, TTM can confirm that the traffic letter satisfactorily addresses the Information Request from the Department of Planning, Housing, and Infrastructure. Following our assessment, TTM sees no traffic engineering reason why the relevant approvals should not be granted.

Yours sincerely,

Mahmud Hasan
Lead Consultant

TTM Consulting Pty

Appendix A – Site Plan

1 basement 2 floor plan

SCALE 1:200

0 1m 2m 5m 10m

issue	date	revision
H	18/09/24	client approval
G	31/07/24	RFI response
F	05/03/24	issue for approval
E	27/02/24	issue for approval
D	23/02/24	issue for approval

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project casuarina specialist centre

address 10 grand parade, casuarina

client infinitec group

drawing title basement 2 floor plan

BIMcloud: SPARC-BIM - BIMcloud Basic for Archicad 27/2396 Grand Parade, Casuarina/2396 Grand Parade, Casuarina

job no.	issue
2396	H

date	scale	drawn	checked	drawing no.
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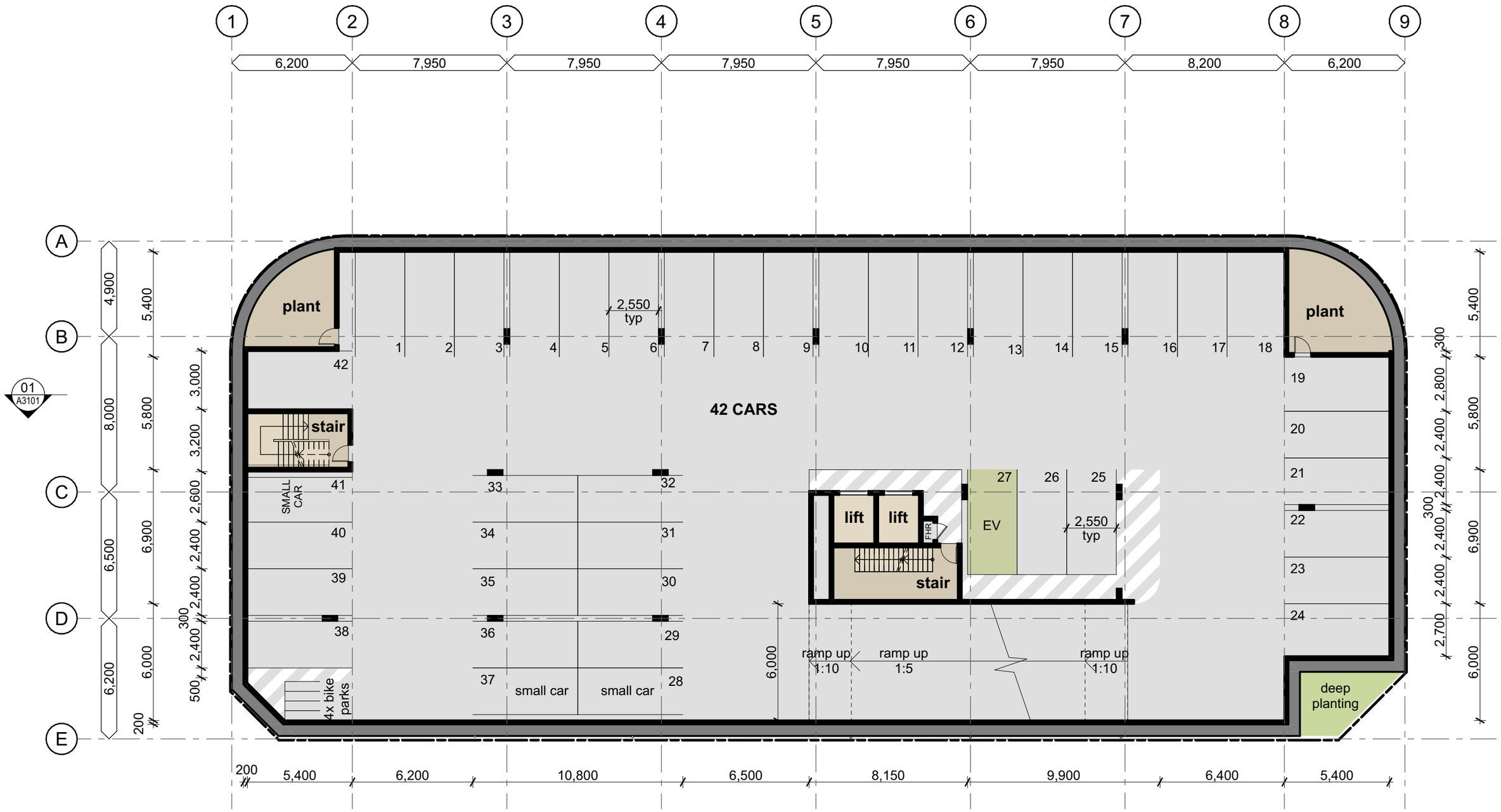

01 A3101

02 A3101

01 basement 1 floor plan

SCALE 1:200

issue	date	revision
P	18/09/24	client approval
O	31/07/24	RFI response
N	05/03/24	issue for approval
M	27/02/24	issue for approval
L	23/02/24	issue for approval

0 1m 2m 5m 10m

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project casuarina specialist centre

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client infinitec group

drawing title basement 1 floor plan

BIMcloud: SPARC-BIM - BIMcloud Basic for Archicad 27/2396 Grand Parade, Casuarina/2396 Grand Parade, Casuarina

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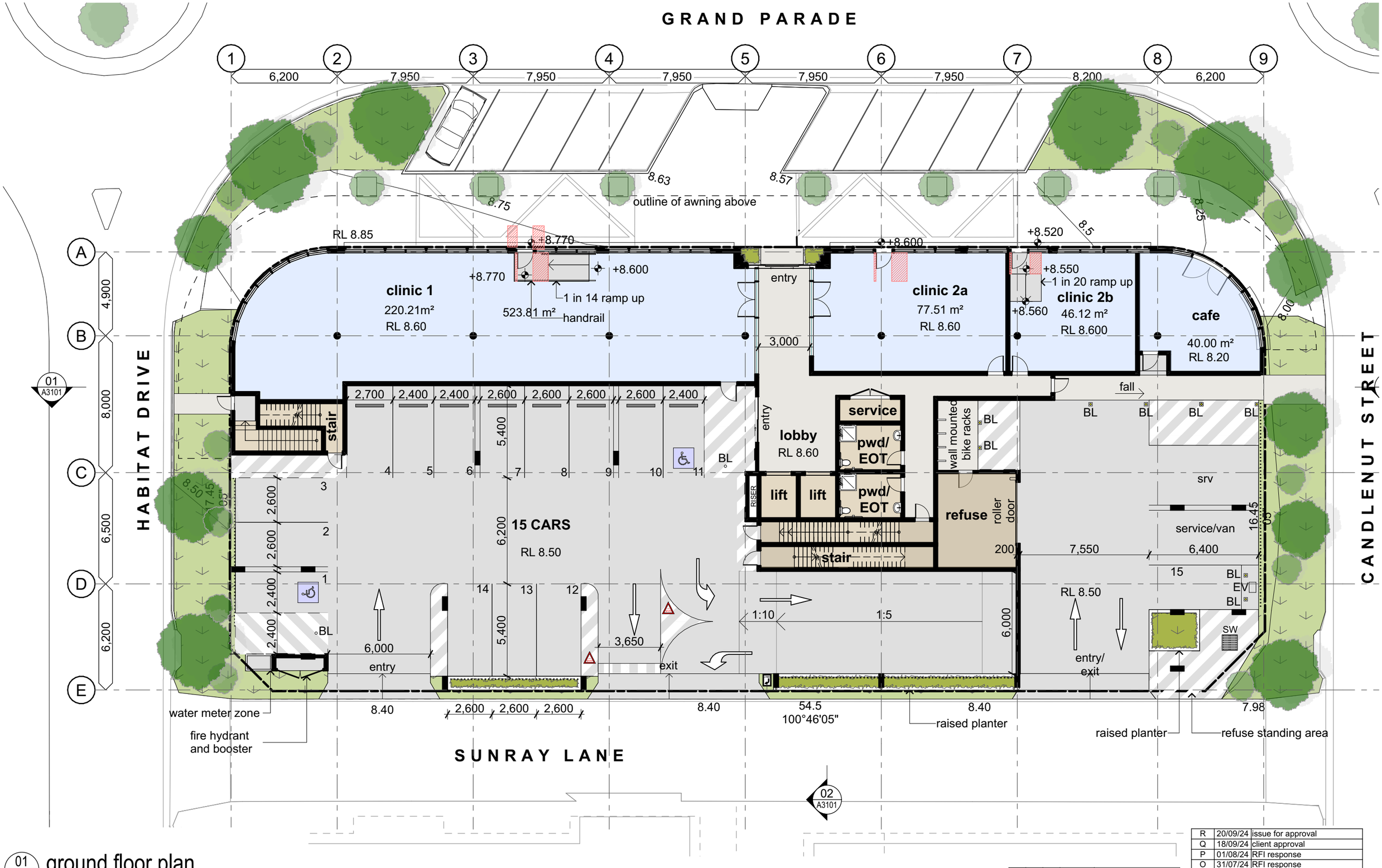

01 ground floor plan
SCALE 1:200

0 1m 2m 5m 10m

issue	date	revision
R	20/09/24	issue for approval
Q	18/09/24	client approval
P	01/08/24	RFI response
O	31/07/24	RFI response
N	05/03/24	issue for approval

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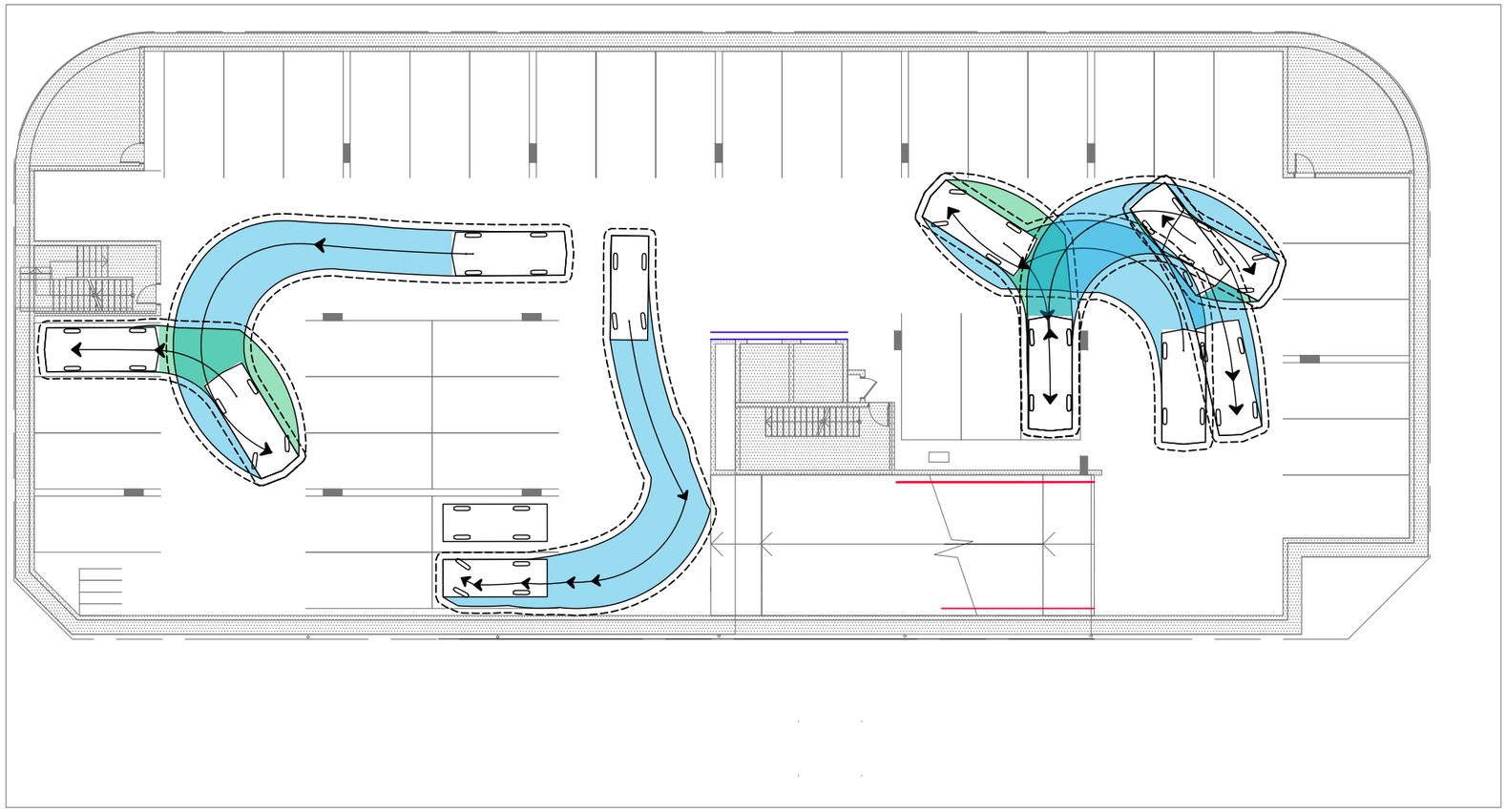
project casuarina specialist centre
address 10 grand parade, casuarina
client infinitec group

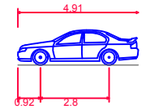
drawing title ground floor plan

job no.	issue
2396	R

date	scale	drawn	checked	drawing no.
20/09/24	1:200@A3	LB	GM	A1003

Appendix B – Swept Path Analysis



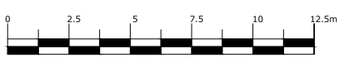


B85 Vehicle (Realistic min radius) (2004)

Overall Length	4.910m
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	5.750m
Design Speed Forward	5.00km/h
Clearance Envelope	0.300m

PRELIMINARY ADVICE ONLY

6 September 2024



SCALE 1:250 AT ORIGINAL SIZE

23GCT0211-SK07 RevA

SWEPT PATH ANALYSIS - BASEMENTS 01 - 4.91m (B85) MEDIAN CAR PASSING 4.91m (B85) MEDIUM CAR

REF: *10 Grande Parade, Casuarina - Specialist Medical.*

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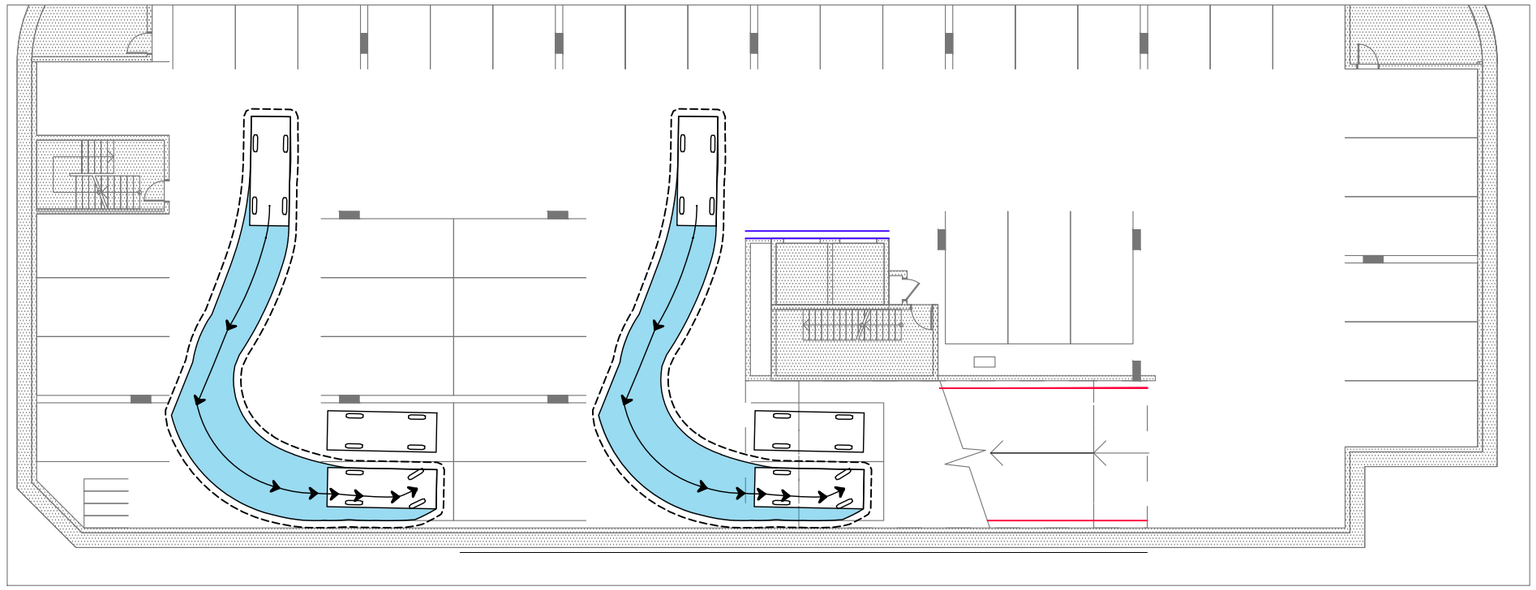
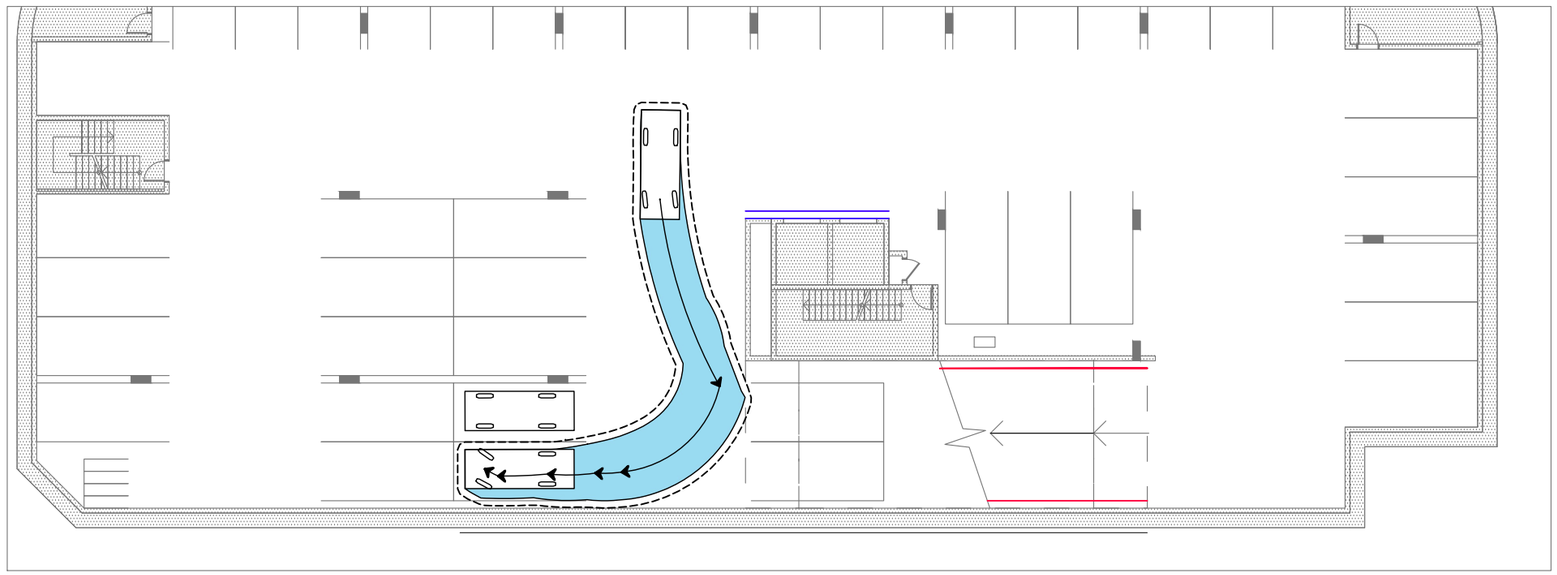
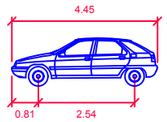




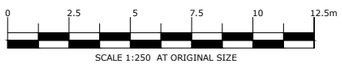


4-45m Small Car

		meters
Width	:	1.60
Track	:	1.40
Lock to Lock Time	:	6.0
Steering Angle	:	34.3
Design Speed Forward	:	5.00km/h
Clearance Envelope	:	0.300m

PRELIMINARY ADVICE ONLY

6 September 2024



SCALE 1:250 AT ORIGINAL SIZE

23GCT0211-SK08 RevA

SWEPT PATH ANALYSIS - BASEMENTS 02 - 4.45m (B50) SMALL CAR ACCESSING PARKING BAYS

REF: *10 Grande Parade, Casuarina - Specialist Medical.*

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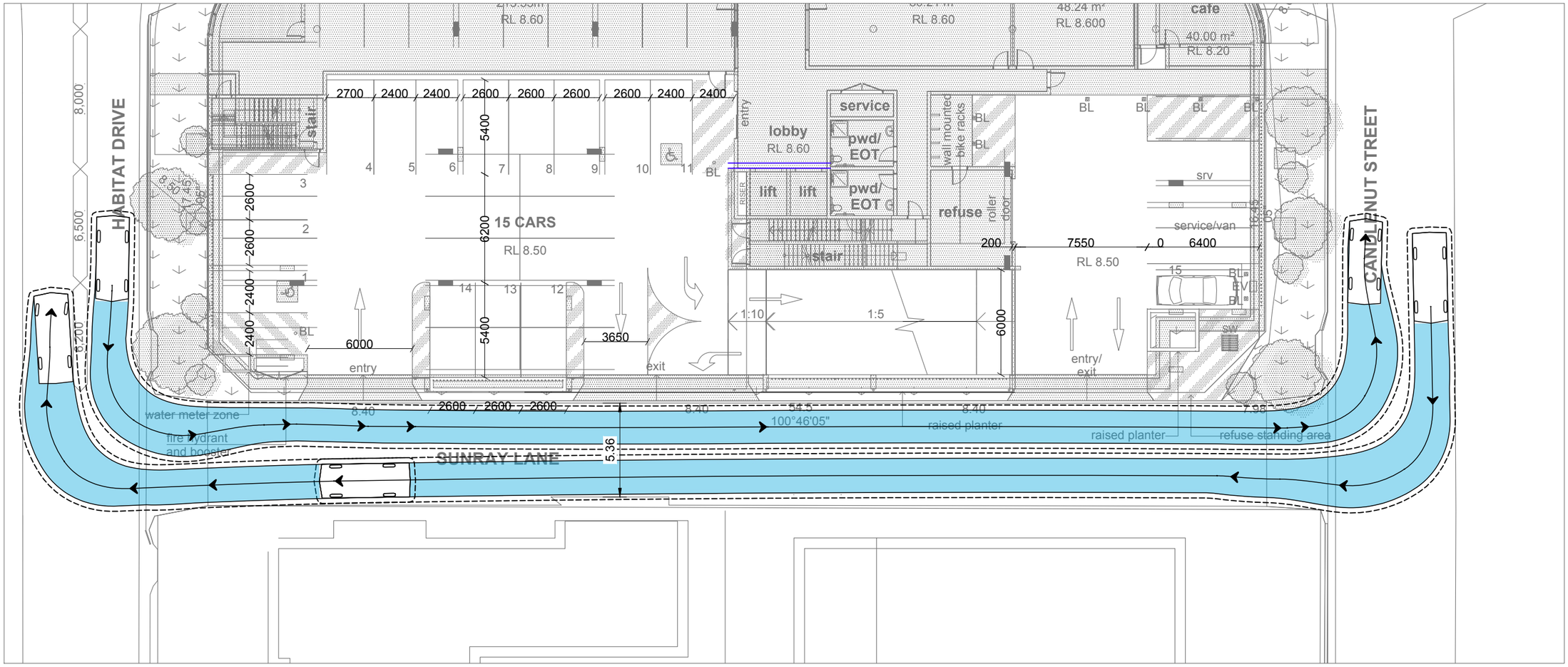
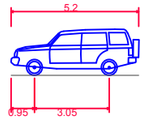
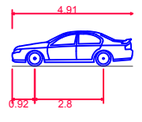




B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m
Design Speed Forward	5.00km/h
Clearance Envelope	0.300m



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Track Width	1.770m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	5.750m
Design Speed Forward	5.00km/h
Clearance Envelope	0.300m

PRELIMINARY ADVICE ONLY

6 September 2024

0 2.5 5 7.5 10 12.5m

SCALE 1:250 AT ORIGINAL SIZE

23GCT0211-SK09 RevA

SWEPT PATH ANALYSIS - GROUND FLOOR - 4.91m (B85) MEDIAN CAR PASSING 4.91m (B85) MEDIUM CAR

REF: *10 Grande Parade, Casuarina - Specialist Medical.*

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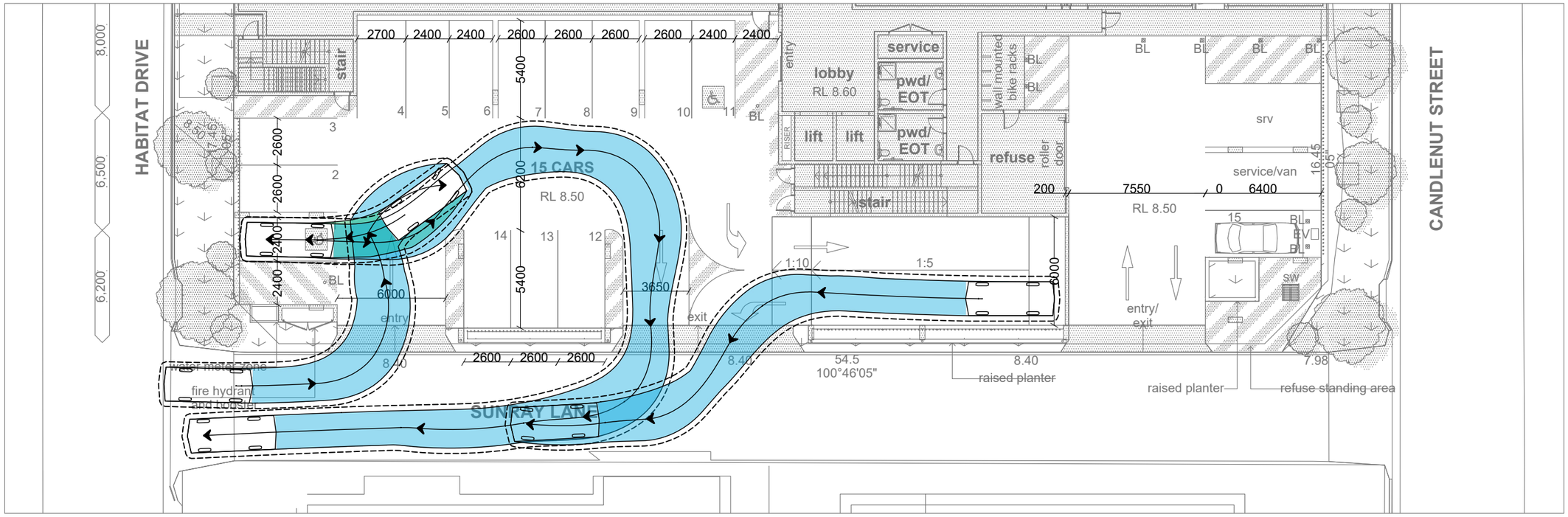
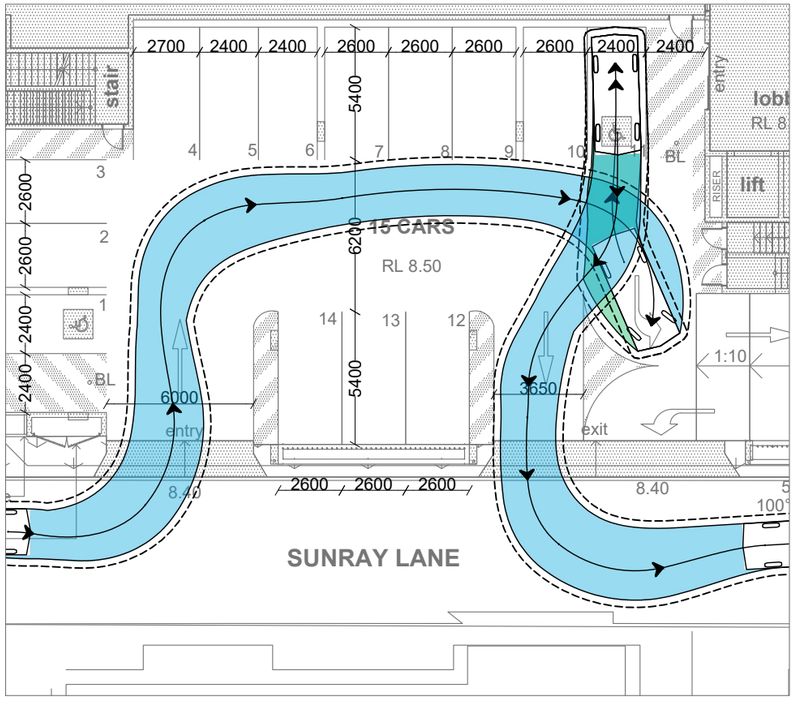
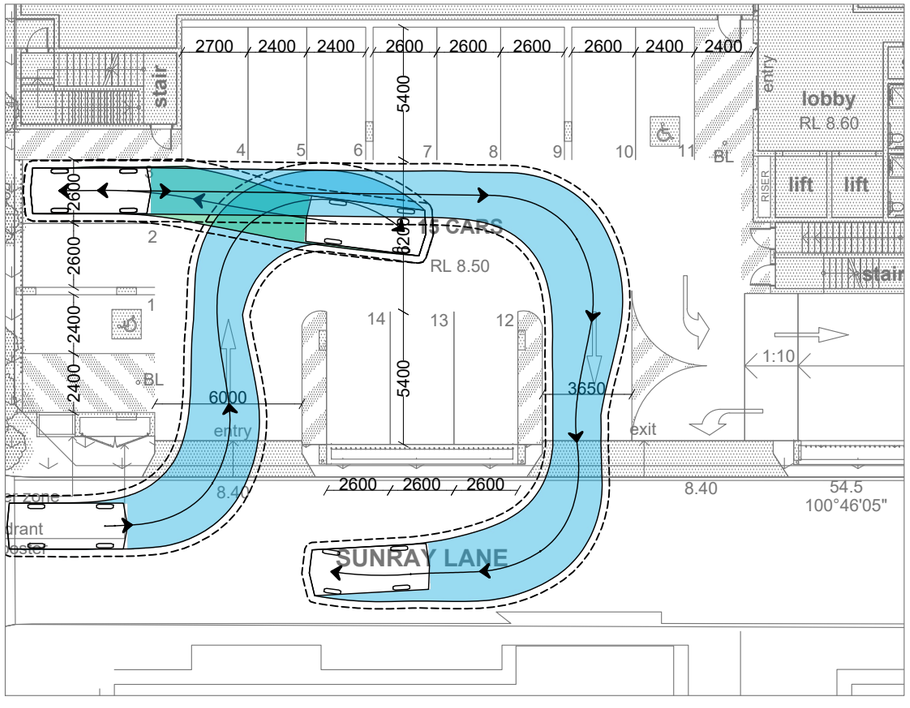
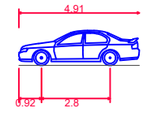
E: ttmbris@ttmgroup.com.au W: www.ttmgroup.com.au









B85 Vehicle (Realistic min radius) (2004)

Overall Length	4.910m
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	5.750m
Design Speed Forward	5.0km/h
Clearance Envelope	0.300m

23GCT0211-SK02 RevB

SWEPT PATH ANALYSIS - 4.91m B85

REF: *10 Grande Parade, Casuarina - Specialist Medical.*

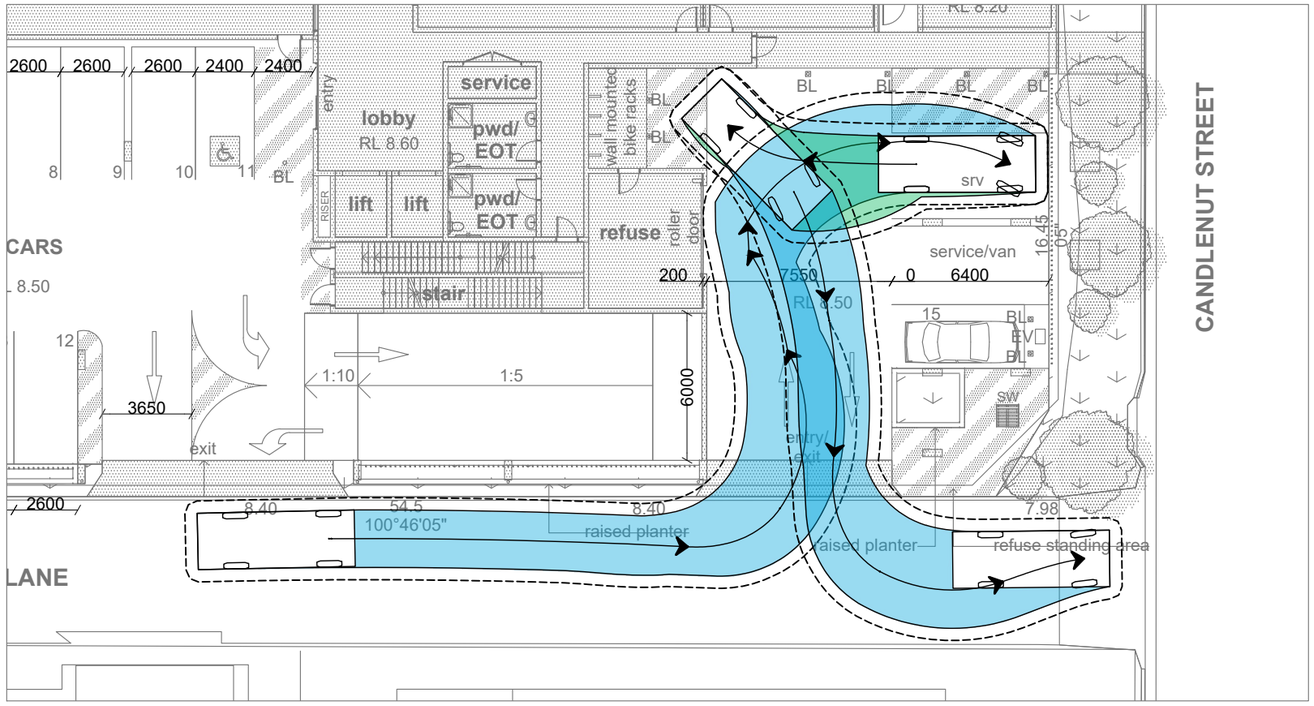
PRELIMINARY ADVICE ONLY

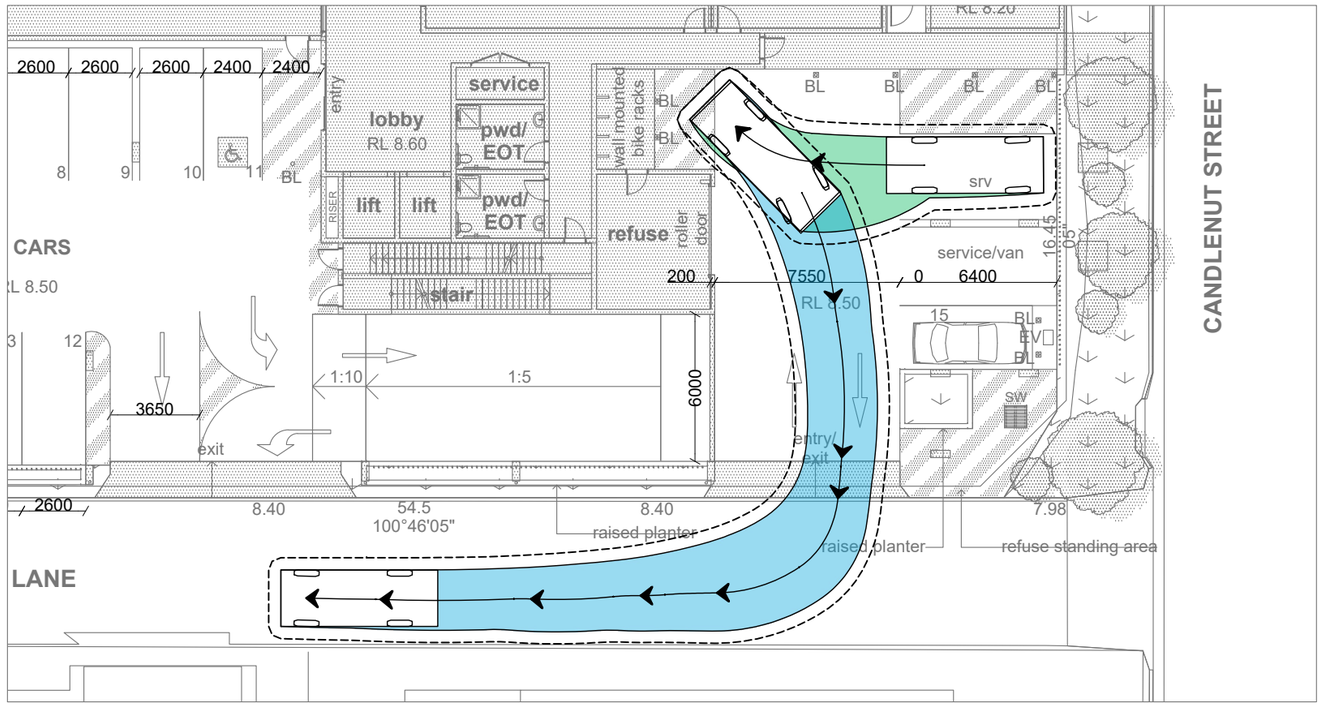
29 July 2024

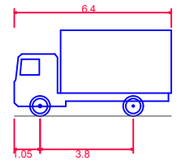
0 2.5 5 7.5 10 12.5m

SCALE 1:250 AT ORIGINAL SIZE

TTM CONSULTING PTY LTD
ABN 65 010 868 621
LEVEL 8, 369 Ann Street, BRISBANE QLD 4000
P.O. BOX 12015, BRISBANE QLD 4003
T: (07) 3327 9500 F: (07) 3327 9501
E: ttmbris@ttmgroup.com.au W: www.ttmgroup.com.au







SRV - Small Rigid Vehicle

Overall Length	6.400m
Overall Width	2.330m
Overall Body Height	3.500m
Min Body Ground Clearance	0.398m
Track Width	2.330m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	7.100m
Design Speed Forward	5.0km/h
Clearance Envelope	0.500m

23GCT0211-SK02 RevB

SWEPT PATH ANALYSIS - 6.41m SRV

REF: *10 Grande Parade, Casuarina - Specialist Medical.*

PRELIMINARY ADVICE ONLY

29 July 2024

0 2.5 5 7.5 10 12.5m

SCALE 1:250 AT ORIGINAL SIZE

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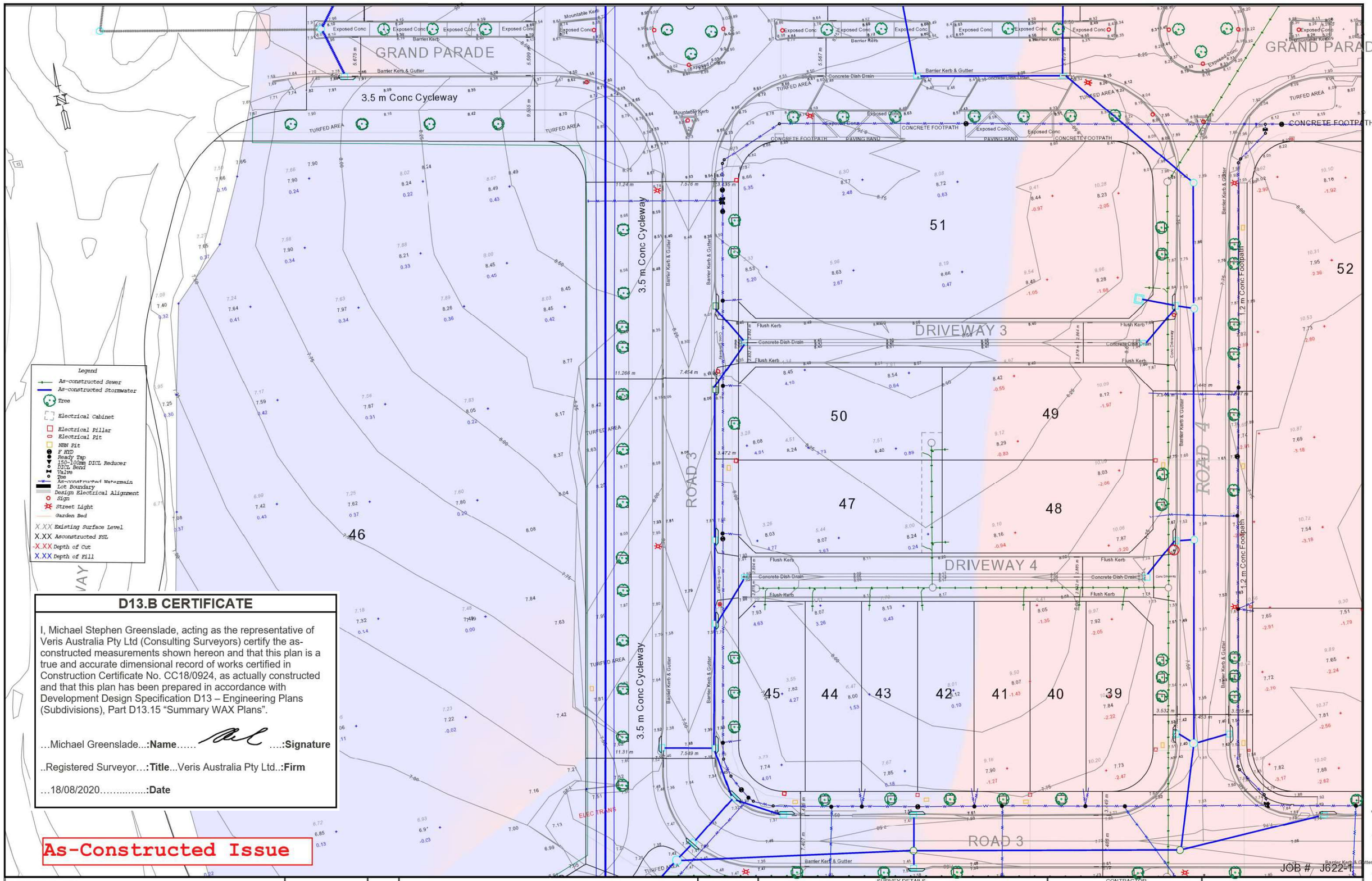
Appendix C – AS-CON Drawing of Sunray Lane



D13.B CERTIFICATE

I, Michael Stephen Greenslade, acting as the representative of Veris Australia Pty Ltd (Consulting Surveyors) certify the as-constructed measurements shown hereon and that this plan is a true and accurate dimensional record of works certified in Construction Certificate No. CC18/0924, as actually constructed and that this plan has been prepared in accordance with Development Design Specification D13 – Engineering Plans (Subdivisions), Part D13.15 "Summary WAX Plans".

…Michael Greenslade...**:Name**…… ….**:Signature**

..Registered Surveyor…**:Title**...Veris Australia Pty Ltd..**:Firm**

…18/08/2020……..…..**:Date**

As-Constructed Issue

NOTES & DISCLAIMERS

- Drawn to scale on an A3 sheet
- Dimensions in meters unless noted otherwise
- Boundary information compiled from data provided by Principal
- Services shown in as-constructed location unless noted otherwise
- Electrical Alignment is Shown Indicative Only, No Survey on Electrical Alignment, Feature Locations Only

TWEED SHIRE COUNCIL

REVISION	AMENDMENTS	DATE
A	Original Issue	29/06/2020

SURVEY DETAILS

SURVEYED: SB
VERT. DATUM: AHD(D)
HORIZ DATUM: MGA56
DRAWN: MF
APPROVED:
CONTOUR INTERVAL: 0.1
SCALE 1:500 at A3

CONTRACTOR

CONSTRUCTING THE FUTURE
ON THE STRENGTH OF OUR PAST
see Civil Pty Ltd
Issue Date: 17/06/2020
Revision Date: N/A

CASUARINA BEACH
TOWN CENTRE- STAGES 1D & 1E
CASUARINA WAY, NSW 2487

SITE PLAN
AS-CONSTRUCTED

SHEET 5 OF 8 | DRG No. ASC_DWG_622-1_001

JOB # J622-1

5. 0. 10. 20. 30. 40. 50. m
SCALE=1:500

P:622-1 Casuarina Town Centre Stage 2>

As-Constructed