Our Ref: 21205

6 March 2023

Dee Why 3 Pty & Dee Why 4 Pty Ltd
Level 25, 88 Phillip Street,
Sydney NSW 2000

Attention: Mr Adam Martinez

Dear Adam,

RE: 4 DELMAR PARADE AND 812 PITTWATER ROAD, DEE WHY
TRAFFIC RESPONSE TO RFIS

As requested, please find herein The Transport Planning Partnership (TTPP)'s response to Council's traffic engineering comments relating to the above proposed development.

Background

A development application (DA) has been submitted to Northern Beaches Council (Council) for a proposed mixed-use development at 812 Pittwater Road & 4 Delmar Parade, Dee Why.

Northern Beaches Council has reviewed the proposal and raised a number of issues in a letter dated 10 January 2023. In response, modifications to the loading dock have been undertaken to the site layout following consultation and agreement with Council on the way forward.

Council's comments and TTPP's response to relevant traffic and parking comments is presented in Table 1.

The Transport Planning Partnership
Suite 402, 22 Atchison Street
ST LEONARDS NSW 2065

Table 1: Response to Council RFI

Council Comment	TTPP response / Report Reference
Parking In terms of DCP requirements the amended development is required to provided 191 residential spaces, 44 visitor spaces, and 34 retail spaces (if the higher retail rate is adopted rather than the commercial rate). A total of 269 parking spaces is required. The developer is also required to provide 1 car share spaces at a rate of 1 car share space for each 25 car spaces. The developer is now proposing to provide 334 parking spaces, well in excess of DCP requirements. The residential parking component is some 68 parking spaces in excess of requirements while the retail parking component is 6 spaces under the DCP requirement. The developer is still not providing any car share spaces. As noted in the original traffic referral comments a DCP objective for the Dee Why Town Centre is that developments should "encourage walking, cycling, public transport and car sharing"	The site is located next to the BLine which encourages public transport use. There is evidence that shows providing low numbers of spaces in residential apartments makes them unsellable and there is a growing body of evidence suggesting that it is the quality of the public transport not the provision of residential parking which encourages public transport use. Residents who commute by public transport still want a car for social / leisure uses where public transport doesn't provide adequate service. If parking is not provided on site, residents will simply park on street. Car share is an effective strategy to reduce reliance on private car ownership when car share spaces are located on grade and outside of a secured basement car parking. Locating third party vehicles (accessible to the public) within a privately owned basement gives rise to concerns associated with maintaining secured access to basement car parking (and storage) for residents of the development as well as potential liability conflicts should there be damage to person or property associated with the use of a car share vehicle. For this reason, car share spaces have not been proposed for within this development. This approach is consistent with that of the recently completed adjoining site at 2 Delmar Parade. The parking rates proposed for this development are also consistent with those used for the recently completed adjoining development at 2 Delmar Parade.
By providing residential parking well in excess of DCP requirements the developer is encouraging higher levels of car ownership and is not encouraging travel by public transport. The absence of car share spaces also does not support reduced levels of private car ownership. Parking space provision should be reduced to levels nearer to the DCP requirement with the required car share spaces provided and sited in locations consistent with the requirements outlined in Part G1 clause 8 of the Warringah DCP	The location of the site is such that it is encouraging travel by public transport and active travel. Government documents agree that a comfortable walking catchment (equivalent to 10-min walking time) for daily local living although they suggest acceptable walks to bus stops is 400m and 800m for trains. TTPP did a study in 2016 for TfNSW which showed that above 50% of people are walking more than 500m to a bus stop for journeys to work especially in those locations with bus priority. Therefore, the nearest bus stops are within 200m from the site and the nearest B-Line stop is within 500mm, which are within a walkable distance.

Traffic Generation As noted in the original traffic referral comments, the applicant's traffic consultant has estimated traffic based on an optimistic assumption that the development will generate traffic at a rate consistent with similar developments located near a rail line. This is not accepted and a more realistic traffic generation rate of 0.29 trips/ residential car space in the AM peak and 0.28 trips/residential car space in the pm should be used given the absence of a rail line and the 500m walking distance to the nearest B-Line bus stop. For the revised development it is considered that more realistic trip rates from the residential component would be 0.29x235 (68) residential trips in AM peak and 0/28x235 (66) residential trips in the PM peak. In addition, there will be 19 AM peak retail/commercial trips and 38 PM peak retail commercial trips i.e. a total AM peak traffic generation of 87 trips/hr and a PM peak traffic generation of 104 trips/hr. The developer's traffic consultant has estimated the existing commercial development on the site to have generated 64 trips/hr in the AM peak and 48 trips/hr in the PM peak. Based upon the above, the PM peak traffic is estimated to increase by 56 vehicles per hour post development.	A modified analysis of traffic generation impacts from the development is detailed in this report under heading "**Traffic Generation**". This "**Traffic Generation**" section concludes that the traffic impacts will be acceptable and makes further recommendations regarding the right turn movement into and out of Delmar Parade during peak periods..
In addition, as noted in the original traffic referral comments the commercial traffic from the existing site would be primarily inbound in the morning and outbound in the evening. The proposed development by contrast would be primarily outbound in the morning and inbound in the evening. The PM peak traffic generated by the high number of residential apartments will generate a high PM peak right turn movement into Delmar Pde which may result in road safety or queuing issues associated with that movement at that time. The developer's traffic consultants do not appear to have undertaken any traffic modelling at this stage which is unacceptable for a development of this size. It is also noted that TfNSW have also requested intersection modelling of the Pittwater Road/Delmar Parade intersection. The required traffic modelling should be provided for review to both Council and TfNSW	Traffic modelling has been undertaken and is detailed in this report under heading "**Traffic Modelling**". This "**Traffic Generation**" section concludes that the traffic impacts will be acceptable and makes further recommendations regarding the right turn movement into and out of Delmar Parade during peak periods..
Property access and traffic circulation As noted in the original traffic referral comments a development providing access to 334 parking spaces is required to provide a category 3 driveway (Table 3.1 of AS/NZS 2890.1) with a 6m wide entry driveway and a 4m to 6m wide exit driveway. The driveways should be separated by 1 to 3 metres. The plans are not compliant as they only make provision for a single driveway of approximately 8.5m in width. The access driveway should be redesigned as a category 3 driveway to provide for suitable separation of entry and exit movements, and more adequate provision for pedestrian safety.	Clause 3.2.1 of AS2890.1 states that Table 3.1 should be used "in the absence" of data "where the traffic flow data of an access driveway is either known or can be determined by separate means more accurately than by use of the categories in Table 3.1". As the traffic generation of the proposed development is known and has been determined to be low (66vph even if we use 0.29 trips per unit as requested by Council), the proposed driveway which enables two-way flow between B99 vehicles is sufficient.
Separate driveways for cars and service vehicles are also required as outlined in Clause 6.4.2 of the RMS Guide to Traffic Generating Development. This would eliminate any conflict between vehicles making deliveries/collecting waste and traffic using the	We assume that Council has referenced Clause 3.4 to determine a queueing requirement of 3 spaces. Clause 3.4 notes that the queueing requirements in this section relates to sites with "casual (short stay)

carpark. The queueing analysis undertaken by the developer's traffic consultant has been prepared on the basis of a lower rate of traffic generation than is considered reasonable for this site. It is considered that inbound traffic movements into the development in the pm peak are likely to be almost double that estimated by the developers traffic consultant (see comments above). It is also likely that there will be a high level of platooning as vehicles turn together from Pittwater Road into Delmar Parade into gaps in the southbound traffic flow. Noting that there is only space for two vehicles to queue north of the loading dock, queuing across the footpath is therefore anticipated to be a likely regular occurrence. Furthermore, any queuing of vehicles waiting for a truck to manoeuvre into or out of the loading dock is considered inconvenient and undesirable. Given the number of parking spaces accessed from the driveway and the number of vehicles using it, queuing space for at least 3 vehicles is required however a separate driveway for access to and from the main loading dock is considered a far superior outcome.	parking", for example a retail car park or tidal traffic for a special event. On this basis, this clause is not applicable for this site which is predominantly residential. Additional queueing analysis has been undertaken and is presented in the heading "**Queuing Analysis**". There are lots of recent examples of where there is a shared driveway with servicing and vehicles entering at the same point. The number of garbage and delivery vehicles is relatively small and will make conflicts rare. In addition, there a number of traffic management measures proposed which will further mitigate the likelihood of possible vehicle conflicts. Platooning might occur if it was a very busy development with lots of traffic entering but with an average of one vehicle movement per minute (and this could be an entry or exit movement), it is unlikely that such queueing would occur. The access and loading arrangements for the site has been modified following consultation and agreement with Council as detailed under "**Proposed Modifications**".
Swept path plots provided in the traffic report reveal that there are a number of locations within both the basement 1 and basement 2 parking levels where the circulation area has not been designed to allow for passing of B85 & B99 vehicle as required by AS2890.1 clause 2.5.2(c). Given that there is a significant over supply of parking in terms of DCP requirements and given the number of vehicles likely to be circulating to and from parking spaces, deletion of some parking spaces and/or widening of circulation aisles to facilitate adequate passing opportunities is required.	If a car park is designed to accord with the Australian standard, it is often not possible for Autoturn to show that two cars can pass each other. However, two-way flows have been provided where sight lines are limited i.e. at the top and bottom of ramps. Within a standard circulation aisle, it is typical for two B99 cars not to pass each other at corners, however, there should be sufficient sight lines to enable drivers to negotiate access, as is the case with any typical car park.
Pedestrian sight lines The amended plans now appear to accommodate a pedestrian sight line triangle at the property boundary that is consistent with AS2890.1 Clause 3.2.4(b)	Latest plans also comply with this requirement.
Loading Bays and servicing It is noted that the amended plans have made allowance for an additional loading bay in basement level 1 capable of accommodating a Small Rigid Vehicle. It is also noted that the applicants traffic consultant has confirmed that the required clearance of 3.5m is available to and from the basement 1 loading bay and that 4.5m headroom clearance is available over the ground floor loading dock as required for access by a Medium Rigid Vehicle. It is noted that the size of the ground floor loading dock has been increased however there is concern that the dual use of this area as a good receiving area and a waste pick up area may lead to the area becoming over congested with bins on waste collection	Following consultation with Council, the ground floor and associated loading dock layout has been modified and the amendments have been generally supported by the Council. Furthermore, it is expected that a condition will be provided (prior to the issue of an occupation certificate) requiring that a loading dock management plan be prepare outlining the usage parameters of the dock.

days. The adequacy of this area to meet waste collection needs should be addressed by Council's waste Services team.	
Additional Waste Officer comments Waste Management Assessment - Amended Plans (16/12/2022) Unsupported - the proposal is unacceptable Specifically: HRV Truck Egress from Ground Floor Loading Dock - unacceptable. The proposal is for a traffic management system on the vehicle access driveway to the property that involves the use of a red light system to stop traffic flow when a vehicle is entering and leaving the ground floor loading dock. Vehicles entering the property from Delmar Parade are stopped by the red light on the driveway a minimum of 12 metres inside the property. This is a point approximately in line with the northern side of the loading dock opening. This is clearly unworkable as a HR truck exiting the loading dock requires the full width of the driveway to make the turn out of the dock and then still requires the full width of the driveway to exit the property. Vehicles stopped at the red light would be forced to reverse out onto Delmar Parade to allow the truck to exit the property. This clash is clearly demonstrated by the swept path diagrams provided on page 6 of Addendum Traffic Report. During discussions held late last year between Council and the applicant it was agreed to investigate the use of a traffic light system. The traffic light system proposed is clearly unworkable and I am not convinced that this is the solution to truck access to and from the property for waste collection purposes. Provision of a separate driveway for access to and from the loading dock is the preferred outcome. This is also the position held by Council's Traffic Engineer. Vehicles will be required to enter and leave the loading dock in a forward direction.	Following consultation with Council, the ground floor and associated loading dock layout has been modified and the amendments have been generally supported by the Council. This is further discussed in this report under the heading "**Proposed Modifications**".

Proposed Modifications

The site layout has been modified following consultation and verbal discussions with Council.

The key change is the relocation of the loading dock to the south of the car park access, to minimise impact to general site traffic during HRV manoeuvres in and of the loading dock.

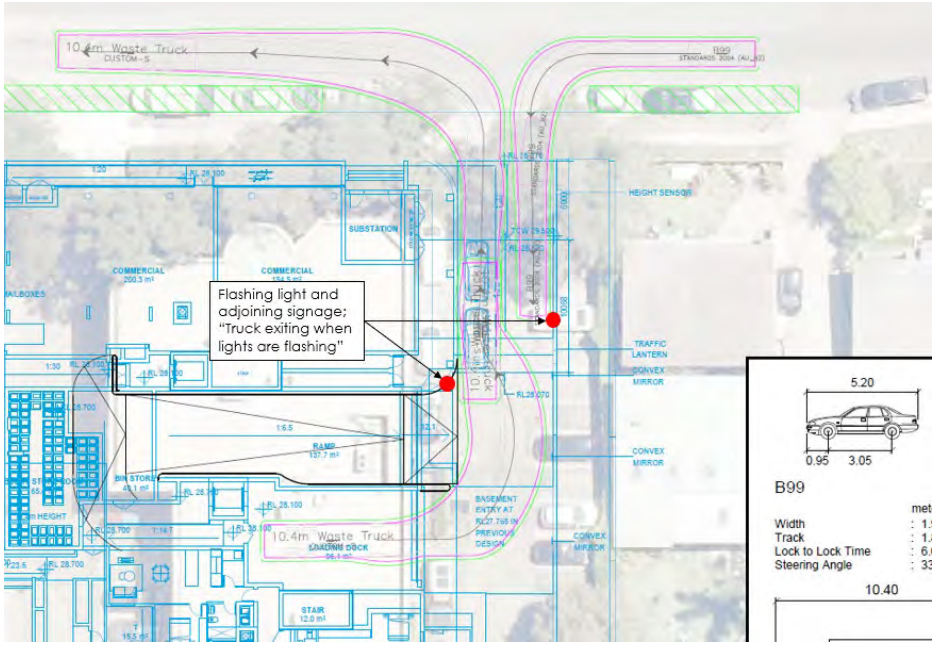
Notably, the modified layout permits cars to negotiate access and passing opportunities against an opposing truck.

Traffic management of vehicles exiting the car park is required, noting that sight lines between the dock and car park ramp with be limited. It is proposed that a flashing light be installed at the top of the ramp with an adjoining sign stating "Truck exiting when lights are flashing".

It is considered that sight lines between traffic entering the site and trucks exiting the dock are sufficient to allow vehicles to negotiate access. Notwithstanding, to improve driver awareness and ensure that cars are stopping at an appropriate location while giving way to an exiting truck, an additional light and signage will be installed on entry, providing adequate space for on-site queueing to accommodate 2x cars without conflicting with the truck exits swept path. The flashing lights would be triggered by a button in the loading dock. A number of convex mirrors are also proposed.

This is shown in Figure 1.

Figure 1: Traffic Management Plan.



Parking Provision

The parking requirements relevant to the proposed development are summarised in Table 2.

Table 2: DCP Car Parking Assessment

Parking User	Size	Car Parking Rate	Parking Requirement	Parking Provision
Residential				
1-bedroom	93	0.6 spaces per dwelling	56	
2-bedroom	87	0.9 spaces per dwelling	79	
3-bedroom	39	1.4 spaces per dwelling	55	258
Visitors	-	1 space per 5 units	44	44
Sub-Total	**219 units**		**234**	**306**
Commercial/ Retail	778 m²	Commercial: 1 space per 40sqm Retail: 4.2 spaces per 100sqm	20-33	32
Total			**254-267**	**334**

The DCP does not specify the above parking rates as a minimum nor a maximum requirement. However, it is noted that the DCP rates for residential development directly match the parking rates recommended by the Apartment Design Guidelines (i.e. from the Roads and Maritime *Guide to Traffic Generating Developments 2002* for a Metropolitan Sub-Regional Centre), which is a minimum requirement.

The parking provision exceeds the DCP requirement for residents. It is considered that this level of parking is acceptable with consideration for the minimum requirements of the Apartment Design Guidelines.

It is further noted that the residential parking rates adopted are generally consistent with the recently completed adjoining development at 2 Delmar Parade.

The tenant proposed for the commercial/ retail tenancy is not known at this stage, however, based on the commercial rate, 20 car spaces are required and based on the retail rate, 323 spaces are required.

The development includes a provision of 32 spaces. This is a one space shortfall from the retail parking requirement, however, is considered acceptable noting that:

- the site fronts Pittwater Road which is well serviced by frequent bus routes
- parking in the surrounding area is time restricted so staff would not have much opportunity to drive and park on-street and thereby would be encouraged to catch public transport.

Given the location of the site being at the southern end of Pittwater Road with limited site frontage, it is unlikely that the commercial / retail development proposed would attract high traffic generating uses.

Traffic Generation

TTPP does not agree with Council's statement that the adopted trip rates are not realistic.

The TfNSW guide contains site throughout Sydney to come up with the average of 0.19. Some were close to rail but not all.

Table 3: Trip Rates by Site in TDT 2013/a

	Sydney Metropolitan Area							
Site No.	Site 1	Site 2	Site 3	Site 4	Site 5	Site 6	Site 7	Site 10
Location	St Leonards	Chatswood	Cronulla	Rockdale	Parramatta	Liberty Grove	Strathfield	Pyrmont
Weekday								
AM Peak Person Trips per Unit	0.64	0.64	0.32	0.81	0.95	0.72	0.52	0.69
AM Peak Person Trips per Car Space	0.39	0.51	0.22	0.47	0.50	0.62	0.43	0.30
AM Peak Person Trips per Bedroom	0.29	0.30	0.13	0.39	0.45	0.29	0.26	0.46
PM Peak Person Trips per Unit	0.54	0.82	0.14	0.53	0.65	0.91	0.42	0.46
PM Peak Person Trips per Car Space	0.54	0.82	0.14	0.53	0.65	0.91	0.42	0.46
PM Peak Person Trips per Bedroom	0.24	0.39	0.06	0.26	0.31	0.37	0.21	0.30
Daily Person Trips per Unit	3.49	5.35	2.96	5.36	5.01	6.50	4.16	3.05
Daily Person Trips per Car Space	2.52	3.35	4.61	4.83	3.85	4.47	4.30	2.01
Daily Person Trips per Bedroom	1.56	2.51	1.19	2.61	2.39	2.67	2.08	2.01
AM Peak Vehicle Trips per Unit	0.14	0.14	0.07	0.32	0.27	0.28	0.10	0.18

Furthermore, Council's own Dee Why Town Centre Traffic Modelling Report superseded the old 0.29 rates with the new 0.19 rates as shown in Figure 2.

Figure 2: Dee Why Town Centre Study Extract

Peak	Residential (Trips per Unit Dwelling)			Commercial (Trips/GFA)	Retail (Trips/GLFA)	School (veh/stu)
	House	High Density Sub-metro	Aged/Disabled Housing			
Updated Trip Generation Rates						
AM	0.95	0.19	0.4	0.016	0.046	0.8
PM	0.99	0.15	0.4	0.012	0.046	0.7
Saturday	0.495	0.075	0.2	0	0.061	0

The update of trip generation rates has resulted in a reduction in the number of trips generated by high-density residential dwellings, and an increase in the number of retail trips. With respect to revisions to the Dee Why Masterplan, the replacement of commercial units with high-density residential dwellings has resulted in a reduction in the overall trip generation associated with potential LEP developments.

Council has requested that the following rates be adopted:

- 0.29 trips per car space in the AM peak
- 0.28 trips per car space in the PM peak.

For a residential development, car parking supply is not an appropriate measure to estimate trip generation. Car ownership does not have a correlative relationship to trip generation as many people own cars for recreational uses and long-distance travel but not for travelling to work (especially when there is an express bus travelling past their front door).

Typically, the car parking provision at commercial developments would have an impact on trip generation as the availability of parking encourages people to drive. Owning a car, however, is not enough to make residents choose driving as a method of travel.

Additionally, congestion on roads have an impact on resident travel choices. With an increase in traffic flows along Pittwater Road, car travel is expected to be a less attractive option and the demand for public transport, especially for an express bus with its own bus lane, would increase.

We note that the development next door (2 Delmar Pde, Dee Why) has been approved based on the rates provided in the TDT 2013/a, and the original submission for the site referred to survey data of three residential developments in the area and concluded as shown in Figure 3.

Figure 3: Trip Rates referred to in previous Delmar Analysis.

Reference to Table 3.1 shows that the average traffic generation for the 3 residential developments is;

- AM Peak hour – 0/19 trips per unit; and
- PM Peak hour – 0.23 trips per unit

When compared to RMS traffic generation rates for high density residential development as contained in its Technical Direction TD2013/04a, which are 0.19 trips/unit and 0.15 trips/unit in the AM and PM peak hours respectively, the surveyed Dee Why rates are either the same as in the AM peak hour, or, slightly higher (but of the same order) in the PM peak hour.

Applying the above rates, the proposed 219 units generate 42vph in the AM and 50vph in the PM. With the inclusion of the commercial/retail component of the development, this is a total of 60vph in the AM and 86vph in the PM peak.

This equates to a net increase of 38 vehicles per hour compared to the existing site's traffic generation, which is estimated to be 64 vph in the AM peak and 48 vph in the PM peak. This is summarised in Table 3.

Table 4: Traffic Generation based on Previous Delmar Pde rates

Land Use	Size	Trip Rate (per unit/ 100m²)		Trips (vehicle trips per hour)	
		AM	PM	AM	PM
Existing (Commercial)	**4,000 m²**	**1.6**	**1.2**	**64**	**48**
Proposed					
Residential	219 units	0.19	0.23	42	50
Commercial/ Retail	778 m²	2.3	4.6	18	36
Proposed Total	**-**	**-**	**-**	**60**	**86**
Net Impact				**-4**	**+38**

Notwithstanding the above, as a sensitivity analysis the traffic generation of the site has also been determined based on the old TfNSW rates as noted in *the Guide to Traffic Generating Developments 2002*, with a rate of 0.29 trips per unit for both peaks.

By applying the old TfNSW rates, the development impact equates to a net increase of up to 51 vehicles per hour compared to the existing site's traffic generation as summarised in Table 4.

Table 5: Traffic Generation based on TfNSW Guide 2002

Land Use	Size	Trip Rate (per unit/ 100m²)		Trips (vehicle trips per hour)	
		AM	PM	AM	PM
Existing (Commercial)	**4,000 m²**	**1.6**	**1.2**	**64**	**48**
Proposed					
Residential	219 units	0.29	0.29	64	64
Commercial/ Retail	778 m²	2.3	4.6	18	36
Proposed Total	**-**	**-**	**-**	**81**	**99**
Net Impact				**+17**	**+51**

Traffic Modelling Results

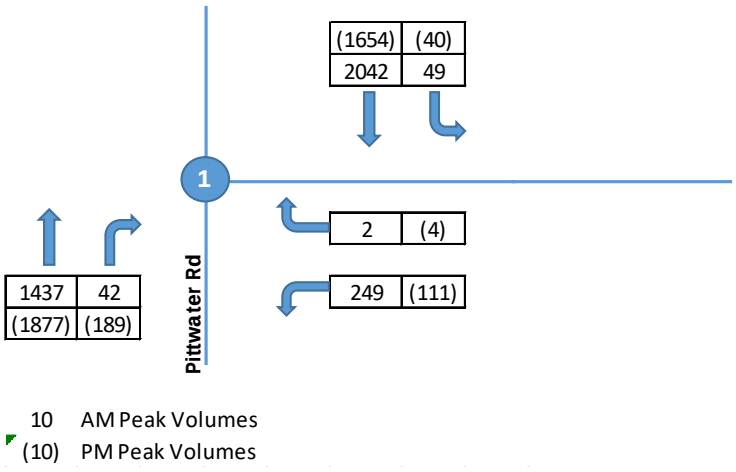
As requested by Council, traffic modelling has been undertaken of the Pittwater Road and Delmar Parade intersection to assess the impact of the development.

Modelling has been undertaken for the following scenarios:

- Scenario 1 - Existing Base Case
- Scenario 2 - Post Development – Based on previous Delmar Pde rates
- Scenario 3 - Post Development – Based on Old TfNSW Guide.

The existing model is based on traffic count data collected on 18 March 2021. The peak hour flows are presented in Figure 4.

Figure 4: Existing Traffic Flows



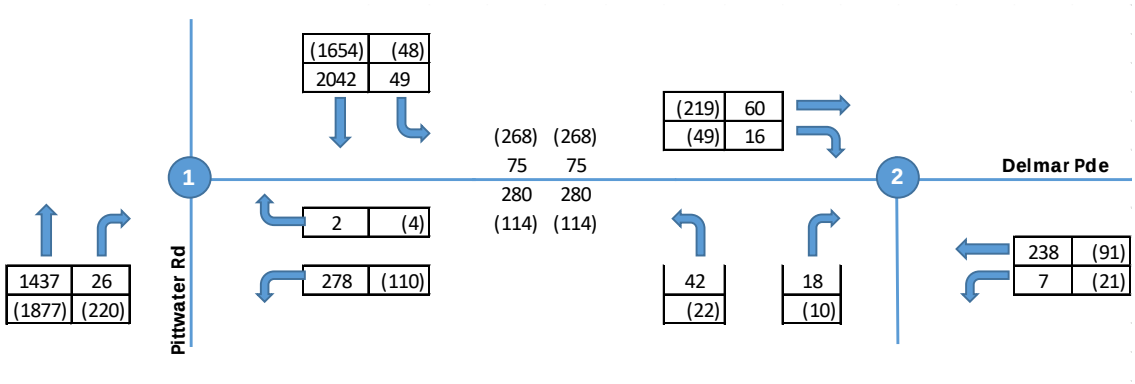
It's noted that the count data indicates that 42 vehicles per hour (around 1 vehicle per minute) are undertaking an illegal right turn manoeuvre from Pittwater Road to Delmar Parade, which has a right turn ban from 6am-10am Monday to Friday. For the purposes of consistency, the right turn movement in the post development case has been retained but no development traffic has been added to the movement.

Existing site traffic has been estimated to have a distribution of 70% to/ from the west (Pittwater Road) and 30% travelling to/from the east and have been reduced from the existing flows on this basis. In addition, the inbound/ outbound split has been assumed to be 80% inbound/ 20% outbound in the AM peak and vice versa in the PM peak.

The proposed development traffic has been distributed assuming a similar 70% distribution to the west and 30% to the east. However, the inbound/ outbound split has been reversed for residential traffic and assumed to be 50% inbound/ 50% outbound for the retail/commercial component of the site.

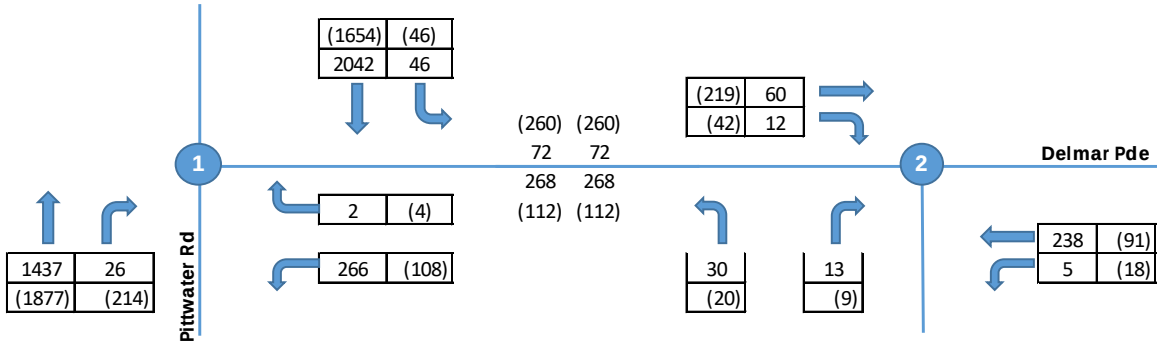
The post development traffic volumes as modelled are presented in Figure 5 and Figure 6.

Figure 5: Post Development –TfNSW Guide 2002 Rates i.e. 0.29 trips per unit



10 AM Peak Volumes
(10) PM Peak Volumes

Figure 6: Post Development – Previous Delmar Parade Rates i.e. 0.19/0.23 trips per unit



10 AM Peak Volumes
(10) PM Peak Volumes

The results of TTPP's modelling exercise is detailed in Figure 6.

Table 6: Modelling Results

Scenario	Approach – Movement	AM Peak			PM Peak		
		Ave Delay (sec)	Veh. Queue (m)	LoS	Ave Delay (sec)	Veh. Queue (m)	LoS
Sc 1 Existing	South – T	4	54	A	0.2	0	A
	South – R	282	54	F	55	42	D
	East – L	12	16	A	5	0	A
	East – R	>1000	16	F	279	13	F
	North – L	5	0	A	5	0	A
	North – T	0	0	A	0	0	A
Sc 2 Post Development (TfNSW Guide 2002 Rates)	South – T	20	211	B	0	0	A
	South – R	746	211	F	129	122	F
	East – L	11	20	A	5	0	A
	East – R	719	14	F	278	13	F
	North – L	5	0	A	5	0	A
	North – T	0	0	A	0	0	A
Sc 3 Post Development (Previous Delmar Parade Rates)	South – T	20	210	B	0	0	A
	South – R	743	210	F	108	100	F
	East – L	11	19	A	5	0	A
	East – R	718	14	F	278	13	F
	North – L	5	0	A	5	0	A
	North – T	0	0	A	0	0	A

Notes:
1. Right turn movements from Pittwater Road to Delmar Parade is banned in the AM peak. The movement was included in the model as several vehicles were illegally undertaking the movement.
2. Heavy delays are experienced in the right turn movement out off Delmar Parade, which is reflected in the low traffic volumes for this movement. Those who undertook the movement, likely accepted a lower gap in traffic than SIDRA allows for. It's noted that the *Dee Why Town Centre Traffic and Parking Study 2007* recommended this movement be banned as it is "unsafe under current conditions".
3. The existing site traffic was removed from the model proportionally based on existing flows. This has resulted in a reduction in the number of vehicles turning right from Delmar Parade, and an associated reduction in the delay to this movement in the post development scenario.
4. T = Through, L = Left turn, R = Right turn

SIDRA analysis indicates that the right turn movements at the Pittwater Road intersection are at capacity, with turning movements required to give-way to heavy through traffic volumes.

The post development scenario results in an increase in the number of vehicles that the right turn movement must give-way to, and, as such, there is an associated increase to delay and queueing on the south approach. Notwithstanding, the through movement operates well with a level of service (LoS) B.

However, the model does not take into account that the south approach right turn movement is banned in the AM peak and therefore, should not affect through traffic. A sensitivity analysis indicates that once the right turn movement is removed in the SIDRA model, the south approach through movement operates at a LoS A with no delays or queueing.

The model shows that there are existing queueing issues relating to the right turns into and out of Delmar Parade. Traffic from the subject development would theoretically add to the queues but in reality, they would probably reroute to avoid these right turns. If some traffic did reroute, it would probably be no more than a handful of vehicles rerouting, which would make no/little difference to any other intersections on the local road network.

There is an existing right turn ban on Pittwater Road (northbound) into Delmar Parade between 6am and 10am.

Council may consider an existing need to extend this right turn ban into the PM peak hour.

A copy of the SIDRA model can be downloaded from the following link:
4 Delmar SIDRA Model

Site Queueing Analysis

We assume that Council has referenced Clause 3.4 to determine a queueing requirement of 3 spaces. Clause 3.4 notes that the queueing requirements in this section relates to sites with "casual (short stay) parking", for example a retail car park or tidal traffic for a special event. On this basis, this clause is not applicable for this site which is predominantly residential.

The delay caused by a loading vehicle accessing the dock is not expected to be much greater than time it takes for a person to use an intercom/ boom gate. On the above basis, the above assessment is the queueing potential has been estimated based on methodology detailed in the Transportation and Traffic Engineering Handbook (ITE).

Even using the 0.29 per unit rate, the development is estimated to generate 69 vph entering the site in the PM peak, when there would be a higher volume of inbound traffic to the site.

Based on 80% of inbound traffic for residential traffic, and a boom gate capacity of 400vph (based on AS2890.1), the 98th percentile queue is estimated to be 1 vehicles for a one lane entry. This is detailed in the following table.

Table 7: Queueing Analysis

System Characteristics				
Arrival Rate (vehicles per hour)				69
Number of Gates				1
Maximum Service Rate per Gate (vehicles per hour)				400.0
Number of Vehicles in the System (n)	Probabilities of Number of Vehicles in the System			Event Percentile
	n	n or more	more than n	
0	86.8%	100.0%	13.3%	86.8%
1	11.5%	13.3%	1.8%	98.2%
2	1.5%	1.8%	0.2%	99.8%
3	0.2%	0.2%	0.0%	100.0%

The development has a queueing capacity of two vehicles on entry which is sufficient to accommodate the estimate queues.

Summary and Conclusion

We trust the above is to your satisfaction. Should you have any queries regarding the above or require further information, please do not hesitate to contact the undersigned on 8437 7800.

Yours sincerely,

Ken Hollyoak
Director

Encl. Attachment One – Architectural Plans
Attachment Two – Swept Paths

Attachment One

Architectural Plans

BUILDING A - DELMAR PDE

LEVEL	RESIDENTIAL	RESIDENTIAL AMENITIES	PARKING	COMMERCIAL	CIRCULATION/ SERVICES	TERRACE	APARTMENTS						TOTAL UNITS
							No. 1 BEDS	No. 1 BEDS PLUS	No. 2 BEDS	No. 2 BEDS PLUS	No. 3 BEDS	No. 3 BEDS PLUS	
BASEMENT 2	0.0 m²	0.0 m²	5385.7 m²	0.0 m²	87.2 m²	0.0 m²	0	0	0	0	0	0	0
BASEMENT 1	0.0 m²	0.0 m²	4980.2 m²	0.0 m²	130.8 m²	0.0 m²	0	0	0	0	0	0	0
GROUND	1016.1 m²	89.8 m²	139.2 m²	339.3 m²	533.8 m²	357.8 m²	4	2	2	2	1	2	13
LEVEL 1	1906.0 m²	0.0 m²	0.0 m²	0.0 m²	227.2 m²	289.5 m²	10	3	5	1	6	0	25
LEVEL 2	2030.5 m²	0.0 m²	0.0 m²	0.0 m²	232.8 m²	297.4 m²	11	1	7	4	4	0	27
LEVEL 3	2030.5 m²	0.0 m²	0.0 m²	0.0 m²	230.8 m²	297.4 m²	11	1	7	4	4	0	27
LEVEL 4	1930.6 m²	0.0 m²	0.0 m²	0.0 m²	218.2 m²	381.9 m²	8	1	7	5	4	0	25
LEVEL 5	484.5 m²	0.0 m²	0.0 m²	0.0 m²	73.8 m²	102.3 m²	0	0	2	0	2	1	5
	9398.2 m²	89.8 m²	10505.1 m²	339.3 m²	1734.5 m²	1726.2 m²	44	8	30	16	21	3	122
							36.1%	6.6%	24.6%	13.1%	17.2%	2.5%	100%

GFA - BLD A	
LEVEL	AREA
GROUND	1808.8 m²
LEVEL 1	2094.6 m²
LEVEL 2	2235.4 m²
LEVEL 3	2236.4 m²
LEVEL 4	2123.9 m²
LEVEL 5	532.8 m²
	11031.9 m²
	(INCLUDING COMMERCIAL)

BUILDING B - PITTWATER RD

LEVEL	RESIDENTIAL	RESIDENTIAL AMENITIES	PARKING	COMMERCIAL	CIRCULATION/ SERVICES	TERRACE	APARTMENTS						TOTAL UNITS
							No. 1 BEDS	No. 1 BEDS PLUS	No. 2 BEDS	No. 2 BEDS PLUS	No. 3 BEDS	No. 3 BEDS PLUS	
GROUND	552.6 m²	0.0 m²	0.0 m²	0.0 m²	489.0 m²	167.0 m²	4	1	1	1	0	1	8
GROUND UPPER	0.0 m²	0.0 m²	0.0 m²	0.0 m²	14.0 m²	0.0 m²	0	0	0	0	0	0	0
LEVEL 1	818.4 m²	0.0 m²	0.0 m²	0.0 m²	213.2 m²	165.6 m²	4	2	6	0	0	0	12
LEVEL 1 UPPER	106.8 m²	0.0 m²	0.0 m²	438.5 m²	53.1 m²	20.5 m²	2	0	0	0	0	0	2
LEVEL 2	741.7 m²	0.0 m²	0.0 m²	0.0 m²	86.2 m²	118.4 m²	4	1	6	0	0	0	11
LEVEL 2 UPPER	483.0 m²	0.0 m²	0.0 m²	0.0 m²	56.5 m²	73.3 m²	2	0	1	1	2	0	6
LEVEL 3	741.8 m²	0.0 m²	0.0 m²	0.0 m²	89.4 m²	118.4 m²	4	1	6	0	0	0	11
LEVEL 3 UPPER	482.9 m²	0.0 m²	0.0 m²	0.0 m²	55.4 m²	73.3 m²	2	0	1	1	2	0	6
LEVEL 4	741.8 m²	0.0 m²	0.0 m²	0.0 m²	89.8 m²	118.4 m²	4	1	6	0	0	0	11
LEVEL 4 UPPER	482.8 m²	0.0 m²	0.0 m²	0.0 m²	55.7 m²	72.9 m²	2	0	1	1	2	0	6
LEVEL 5	622.8 m²	0.0 m²	0.0 m²	0.0 m²	70.1 m²	118.9 m²	4	0	4	0	1	0	9
LEVEL 5 UPPER	431.5 m²	0.0 m²	0.0 m²	0.0 m²	52.2 m²	110.6 m²	1	0	1	2	1	0	5
LEVEL 6 UPPER	489.5 m²	0.0 m²	0.0 m²	0.0 m²	53.9 m²	88.7 m²	1	0	1	0	2	1	5
LEVEL 7 UPPER	489.9 m²	0.0 m²	0.0 m²	0.0 m²	53.9 m²	89.1 m²	1	0	1	0	2	1	5
	7185.5 m²	0.0 m²	0.0 m²	438.5 m²	1432.3 m²	1335.2 m²	35	6	35	6	12	3	97
							36.1%	6.2%	36.1%	6.2%	12.4%	3.1%	100%

GFA - BLD B	
LEVEL	AREA
GROUND	603.8 m²
LEVEL 1	1514.9 m²
LEVEL 2	1377.6 m²
LEVEL 3	1371.0 m²
LEVEL 4	1375.6 m²
LEVEL 5	1151.8 m²
LEVEL 6	529.1 m²
LEVEL 7	529.1 m²
	8452.7 m²
	(INCLUDING COMMERCIAL)

BUILDING A & B SUMMARY

RESIDENTIAL	RESIDENTIAL AMENITIES	PARKING	COMMERCIAL	CIRCULATION/ SERVICES	TERRACE	APARTMENTS						TOTAL UNITS
						No. 1 BEDS	No. 1 BEDS PLUS	No. 2 BEDS	No. 2 BEDS PLUS	No. 3 BEDS	No. 3 BEDS PLUS	
16583.7 m²	89.8 m²	10505.1 m²	777.8 m²	8564.1 m²	3061.5 m²	79	14	65	22	33	6	219
						36.1%	6.4%	29.7%	10.0%	15.1%	2.7%	100%

GFA
AREA
19484.6 m²
19484.6 m²

BASEMENT CARPARKS

Level	CARPARKS			
	Residential	Visitor	Commercial	Total
BASEMENT 2	182	0	0	182
BASEMENT 1	76	44	32	152
GROUND	0	0	0	0
	258	44	32	334

ACCESSIBLE PARKING SPACES: 23

Level	Visitor Bicycle Parks
BASEMENT 2	7
BASEMENT 1	12
GROUND	2

TOTAL TANDEMS: 11

SMALL CARS: 2

AMENDED WARRINGAH DCP 2011

Parking rates within the Dee Why Town Centre

Multi-dwelling housing, Residential flat buildings, Serviced apartments, Shop-top housing:

- 0.6 spaces per 1 bedroom dwelling
- 0.9 spaces per 2 bedroom dwelling
- 1.4 spaces per 3 bedroom dwelling
- 1 visitor space per 5 units or part of dwellings
- 1 car share space per 25 dwellings (for properties with more than 25 dwellings) each with car share space replacing (1) regular car parking space.

Business Premises:

- 1 space per 40m² GFA excluding customer service/access areas
- for customer service/access areas 1 space per 16.4m² GFA

Office Premises:

- 1 space per 40m² GFA

Shop (includes retail/ business component of shop top housing, retail premises and neighbourhood shop):

- 1 space per 23.8m² GLFA (4.2 spaces per 100m² GLFA)

*For preliminary feasibility purposes. Areas are not to be used for purpose of lease or sale agreements. Layouts may not comply with building regulations or other regulatory requirements. The information contained in this schedule is believed to be correct at the time of printing. Areas are generally measured in accordance with the Property Council of Australia Method of Measurement.

Revisions			
A	14.12.2021	DEVELOPMENT APPLICATION	JC
B	11.11.2022	COUNCIL SUBMISSION	JC
C	07.12.2022	COUNCIL SUBMISSION	JC
D	03.03.2023	COUNCIL SUBMISSION	JC

7/03/2023 9:26:35 AM

Client: **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

Project: **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing: **DEVELOPMENT SUMMARY**

Project No: **221054** Date: **03.03.2023** Author: **JC** Scale: @ A1

Drawing No.: **TP10.01 D**

rothelowman

Brisbane, Melbourne, Sydney
www.rothelowman.com.au

Revisions

A	14.12.2021	DEVELOPMENT APPLICATION	JC
B	11.11.2022	COUNCIL SUBMISSION	JC
C	07.12.2022	COUNCIL SUBMISSION	JC
D	16.02.2023	COUNCIL UPDATE	JC
E	03.03.2023	COUNCIL SUBMISSION	JC

6/03/2023 3:29:03 PM

Client **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

Project **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing **GROUND**

Project No **221054**

Date **03.03.2023**

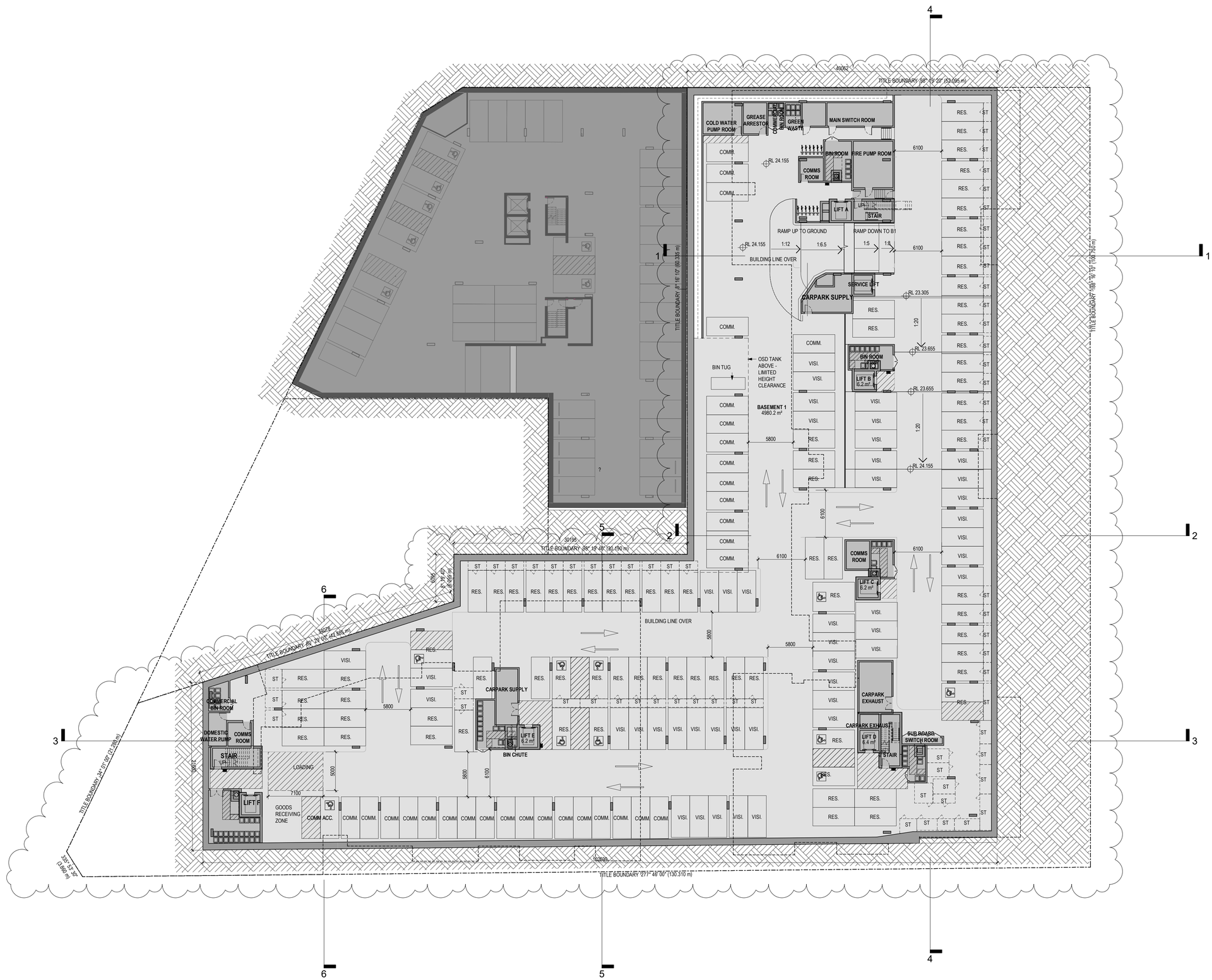
Author **DM**

Scale: @ A1 **1 : 250**

Drawing No. **TP01.03 E**

rothelowman

Brisbane, Melbourne, Sydney
www.rothelowman.com.au



Revisions			
	A	14.12.2021	DEVELOPMENT APPLICATION	JC
	B	11.11.2022	COUNCIL SUBMISSION	JC
	C	07.12.2022	COUNCIL SUBMISSION	JC
	D	16.02.2023	COUNCIL UPDATE	JC
	E	03.03.2023	COUNCIL SUBMISSION	JC

7/03/2023 9:26:11 AM

Client: **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

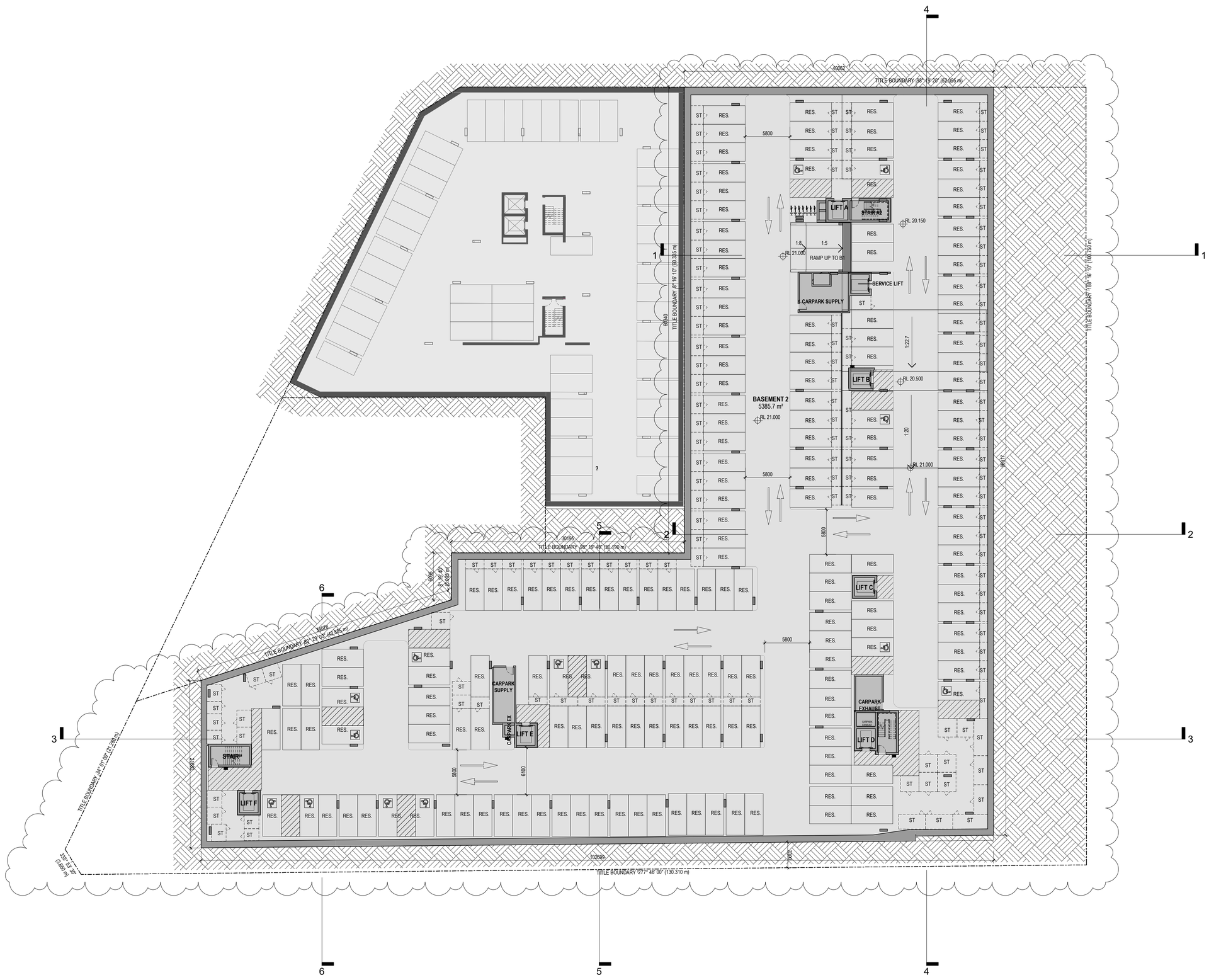
Project: **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing: **BASEMENT 1**

Project No: **221054** Date: **03.03.2023** Author: **BR** Scale: @ A1 **1 : 250** Drawing No.: **TP01.02 E**

rothelowman

Brisbane, Melbourne, Sydney
www.rothelowman.com.au



Revisions				
	A	14.12.2021	DEVELOPMENT APPLICATION	JC
	B	11.11.2022	COUNCIL SUBMISSION	JC
	C	07.12.2022	COUNCIL SUBMISSION	JC
	D	16.02.2023	COUNCIL UPDATE	JC
	E	03.03.2023	COUNCIL SUBMISSION	JC

7/03/2023 9:26:06 AM

Client: **Dee Why 3 Pty Ltd & Dee Why 4 Pty Ltd**

Project: **4 Delmar Pde & 812 Pittwater Rd, Dee Why**

Drawing: **BASEMENT 2**

Project No: **221054**

Date: **03.03.2023**

Author: **BR**

Scale: @ A1 **1 : 250**

Drawing No.: **TP01.01 E**

rothelowman

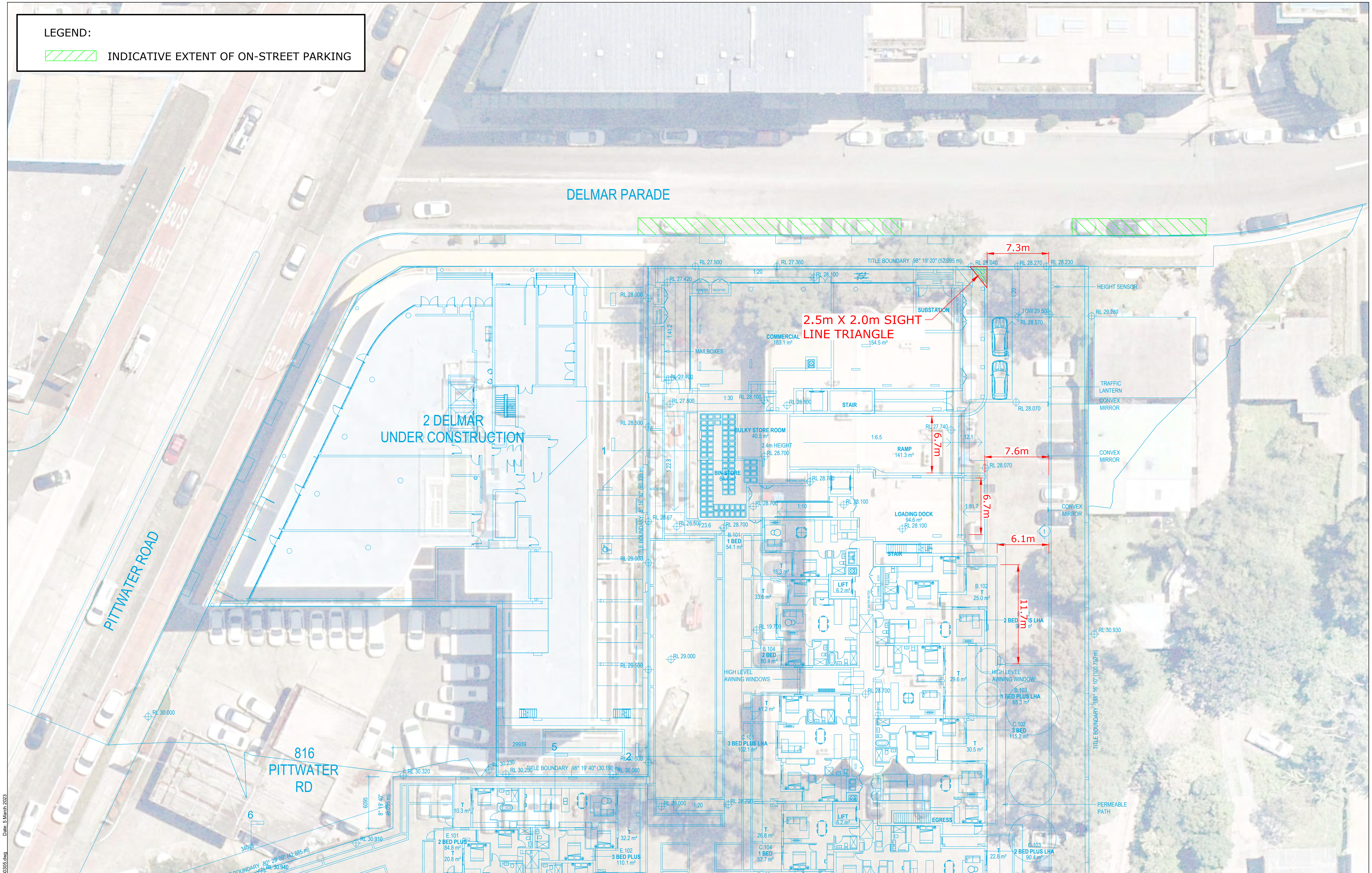
Brisbane, Melbourne, Sydney
www.rothelowman.com.au

Attachment Two

Swept Paths

LEGEND:

INDICATIVE EXTENT OF ON-STREET PARKING



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	SY	OF	KH	05/03/23

ttpp transport planning

PROJECT: 4 DELMAR PARADE & 812 PITTWATER ROAD, DEE WHY

TITLE: GROUND - CONCEPT LAYOUT

DWG No. 21205CAD015 FIGURE 1

DATE STAMP: 5 March 2023

PROJECT No.: 21205 | SCALE: 1:400 @A3 | REV.: A

Filename: 21205CAD015-Swept path-230305.dwg Date: 5 March 2023

LEGEND:

PROPOSED CONVEX MIRROR

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	SY	OF	KH	05/03/23

ttpp transport planning

PROJECT

4 DELMAR PARADE & 812 PITTWATER ROAD, DEE WHY

TITLE

BASEMENT 1 - CONCEPT LAYOUT

DWG No. 21205CAD015 FIGURE 2

DATE STAMP 5 March 2023

PROJECT No. 21205

SCALE 1:400 @A3

REV. A

Filename: 21205CAD015-Swept path-230305.dwg Date: 5 March 2023

LEGEND:

PROPOSED CONVEX MIRROR

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	SY	OF	KH	05/03/23

ttpp transport planning

PROJECT

4 DELMAR PARADE & 812 PITTWATER ROAD, DEE WHY

TITLE

BASEMENT 2 - CONCEPT LAYOUT

DWG No. 21205CAD015 FIGURE 3

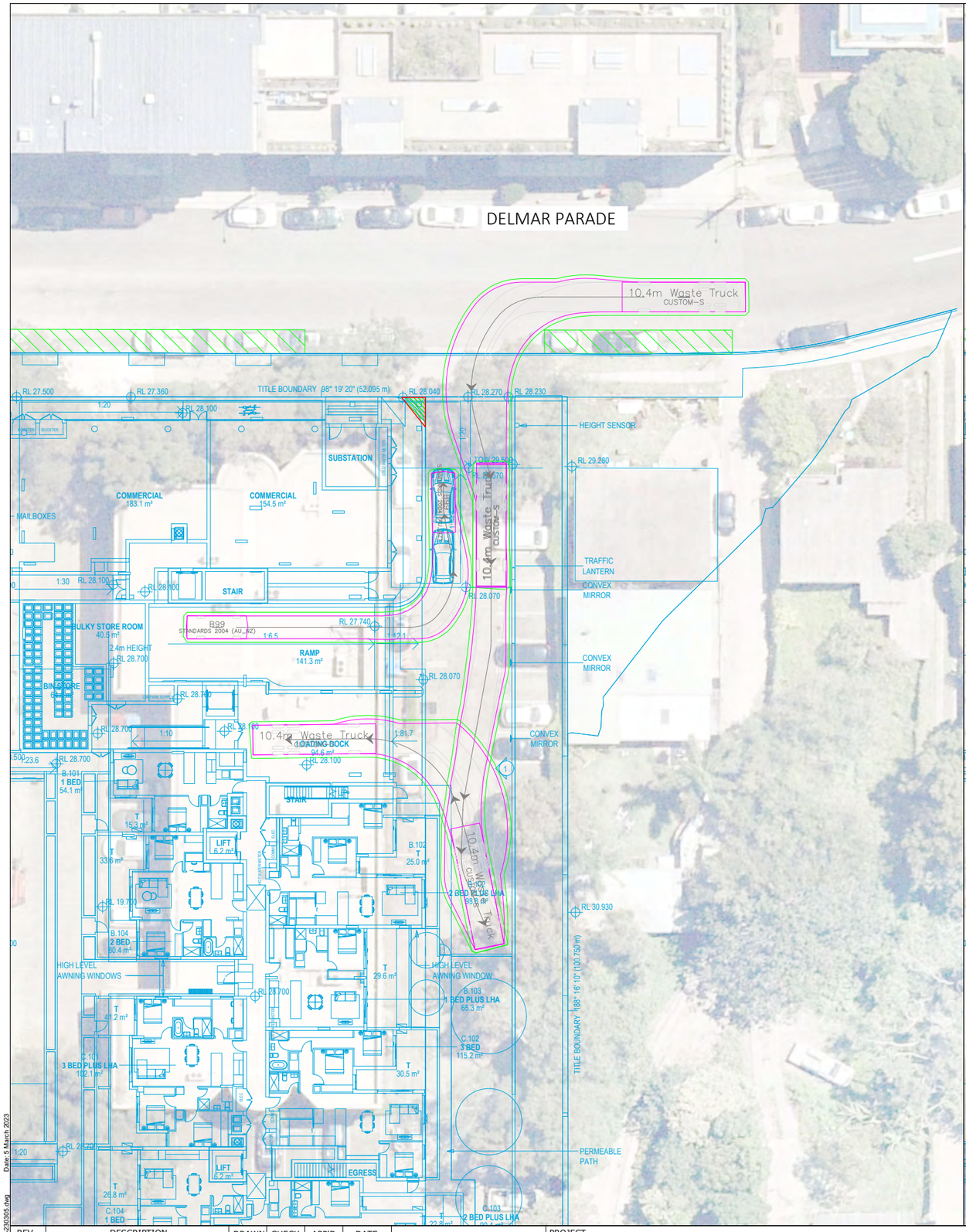
DATE STAMP 5 March 2023

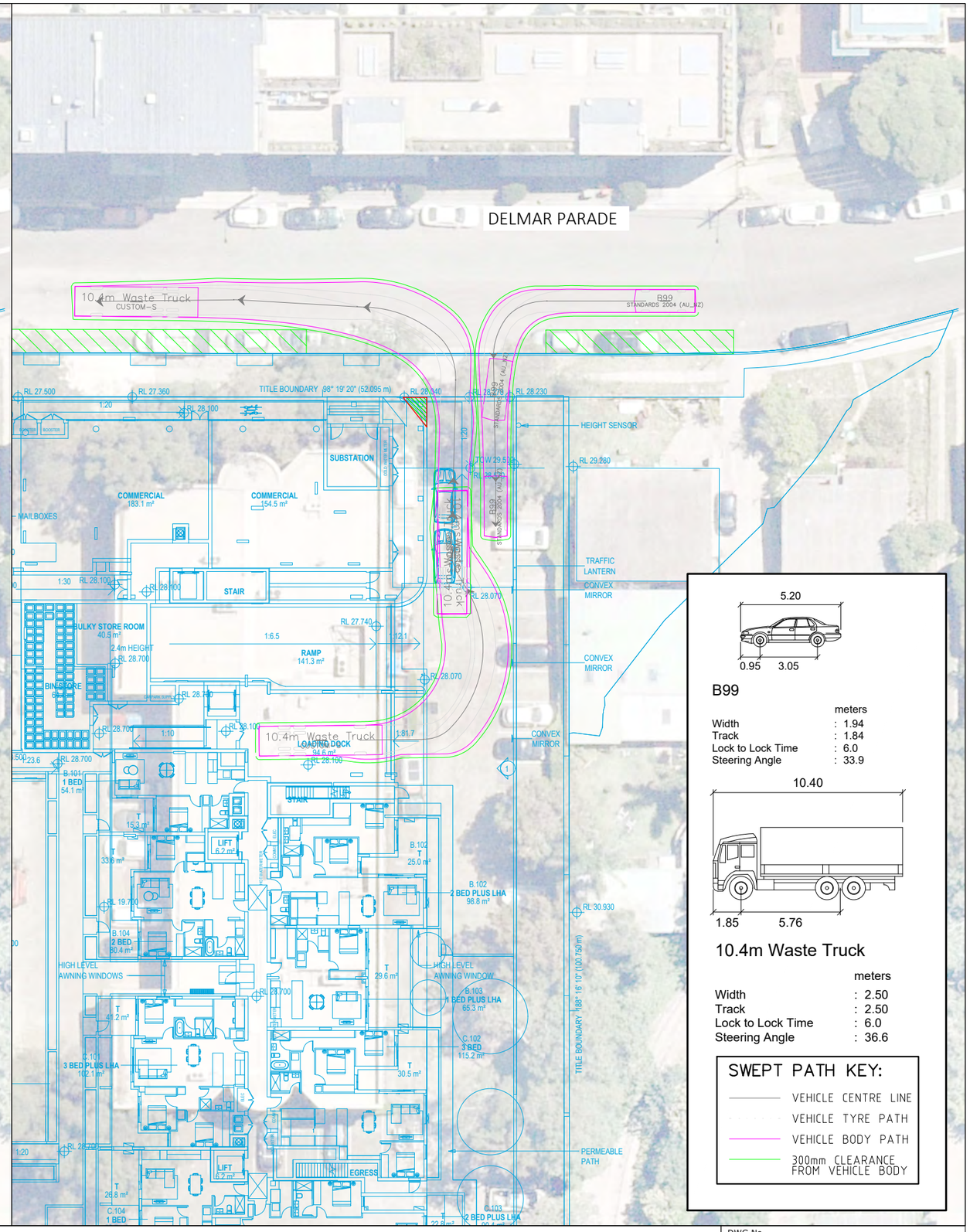
PROJECT No. 21205

SCALE 1:400 @A3

REV. A

Filename: 21205CAD015-Swept path-230305.dwg Date: 5 March 2023





B99

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

10.4m Waste Truck

	meters
Width	: 2.50
Track	: 2.50
Lock to Lock Time	: 6.0
Steering Angle	: 36.6

SWEPT PATH KEY:

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

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	SY	OF	KH	05/03/23

ttpp transport planning

PROJECT

4 DELMAR PARADE & 812 PITTWATER ROAD, DEE WHY

TITLE

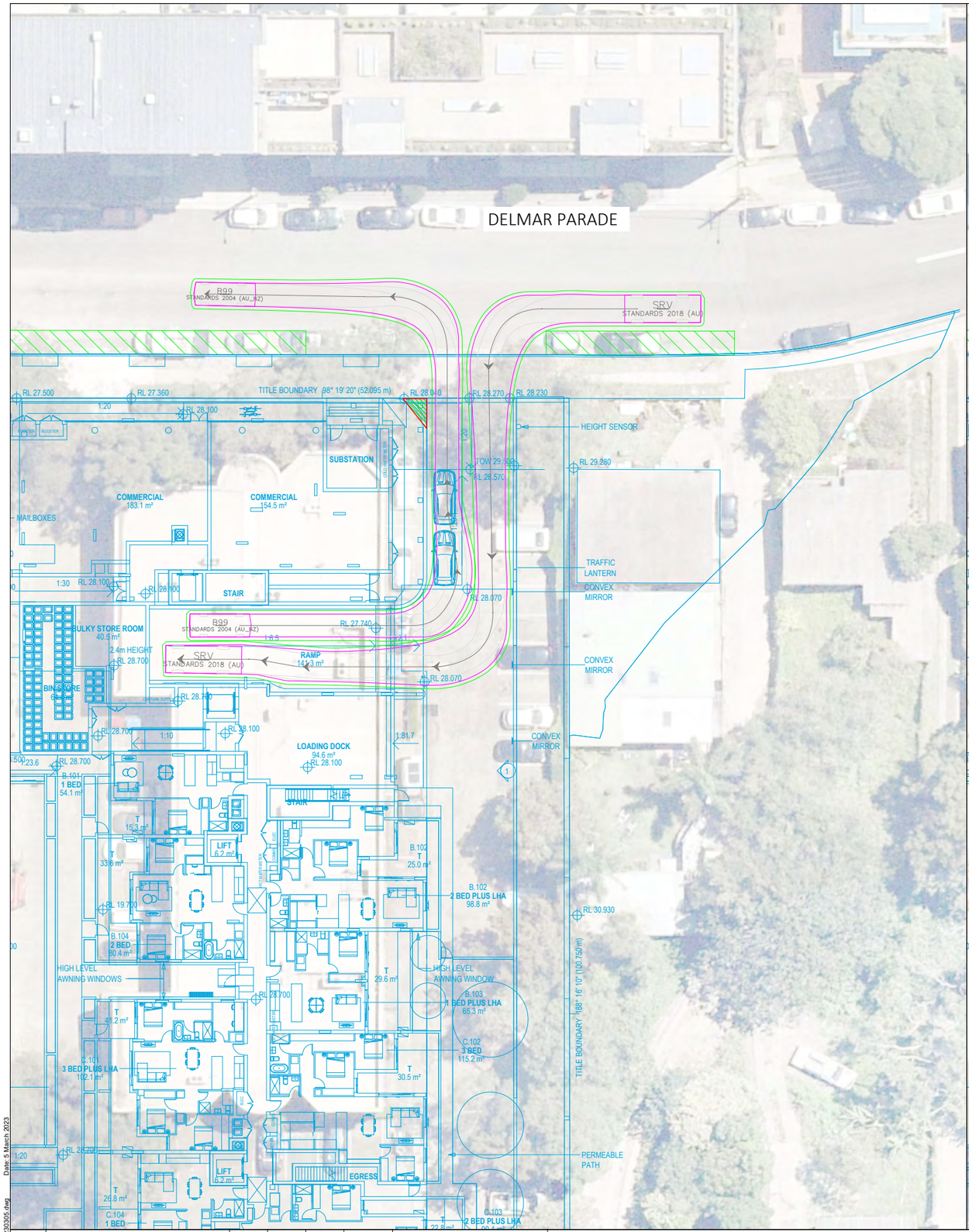
GROUND - SWEPT PATH ASSESSMENT

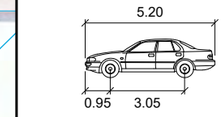
DWG No. 21205CAD015 FIGURE 4

DATE STAMP 5 March 2023

PROJECT No.	SCALE	REV.
21205	1:400 @A3	A

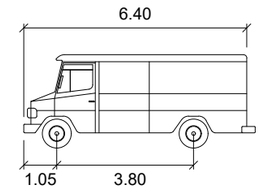
Filename: 21205CAD015-Swept path-230305.dwg Date: 5 March 2023





B99

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



SRV

	meters
Width	: 2.30
Track	: 2.30
Lock to Lock Time	: 6.0
Steering Angle	: 38.1

SWEPT PATH KEY:

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

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	SY	OF	KH	05/03/23

ttpp transport planning

PROJECT

4 DELMAR PARADE & 812 PITTWATER ROAD, DEE WHY

TITLE

GROUND - SWEPT PATH ASSESSMENT

DWG No. 21205CAD015 FIGURE 5

DATE STAMP 5 March 2023

PROJECT No. 21205 | SCALE 1:400 @A3 | REV. A

Filename: 21205CAD015-SweptPath-230305.dwg Date: 5 March 2023

DELMAR PARADE

DELMAR PARADE

2 DELMAR
UNDER CONSTRUCTION

816
PITTWATER
RD

PITTWATER ROAD

B99
STANDARDS 2004 (AU_NZ)

TITLE BOUNDARY 98° 19' 20" (52.095 m)

TITLE BOUNDARY 98° 19' 40" (30.190 m)

TITLE BOUNDARY 188° 16' 10" (60.335 m)

TITLE BOUNDARY 80° 29' 00" (42.885 m)

TITLE BOUNDARY 188° 16' 10" (100.750 m)

COMMERCIAL
183.1 m²

COMMERCIAL
154.5 m²

SUBSTATION

MAILBOXES

STAIR

BULKY STORE ROOM
40.5 m²
2.4m HEIGHT
RL 28.700

BIN STORE

RAMP
141.3 m²

LOADING DOCK
94.6 m²
RL 28.100

LIFT
6.2 m²

EGRESS

HEIGHT SENSOR

TRAFFIC
LANTERN

CONVEX
MIRROR

HIGH LEVEL
AWNING WINDOWS

HIGH LEVEL
AWNING WINDOW

PERMEABLE
PATH

B.101
1 BED
54.1 m²

B.102
2 BED PLUS LHA
98.8 m²

B.103
1 BED PLUS LHA
65.3 m²

B.104
2 BED
80.4 m²

C.101
3 BED PLUS LHA
102.1 m²

C.102
3 BED
115.2 m²

C.103
2 BED PLUS LHA
90.4 m²

C.104
1 BED
52.7 m²

D.103
1 BED

E.101
2 BED PLUS
84.8 m²

E.102
3 BED PLUS
110.1 m²

RL 27.500
RL 27.360
RL 27.420
RL 28.000
RL 28.100
RL 28.140
RL 28.270
RL 28.230
RL 29.280
RL 28.570
RL 27.700
RL 27.800
RL 28.100
RL 28.000
RL 28.070
RL 27.740
RL 28.500
RL 28.700
RL 28.100
RL 28.67
RL 28.500
RL 28.700
RL 29.060
RL 19.700
RL 29.000
RL 29.500
RL 28.700
RL 30.930
RL 30.000
RL 30.320
RL 30.230
RL 30.230
RL 30.080
RL 30.000
RL 29.000
RL 28.700
RL 30.910
RL 30.940

1:20
1:30
1:41.2
1:6.5
1:42.1
1:10
1:81.7
1:23.6
1:20

122.8
6095
34030
29939

T
15.3 m²
T
33.6 m²
T
25.0 m²
T
29.6 m²
T
41.2 m²
T
30.5 m²
T
10.3 m²
T
32.2 m²
T
26.8 m²
T
22.8 m²

1
2
5
6

5.20
0.95
3.05

B99

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

SWEPT PATH KEY:

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

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	SY	OF	KH	05/03/23

ttpp transport planning

PROJECT
4 DELMAR PARADE & 812 PITTWATER ROAD, DEE WHY

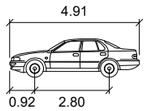
TITLE
GROUND - SWEPT PATH ASSESSMENT

DWG No. 21205CAD015 FIGURE 6

DATE STAMP 5 March 2023

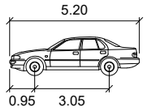
PROJECT No.	SCALE	REV.
21205	1:400 @A3	A

Filename: 21205CAD015-Swept path-230305.dwg Date: 5 March 2023



B85

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



B99

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

SWEPT PATH KEY:

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

VEHICLE ENTERING

VEHICLE EXITING

Date: 5 March 2023

Filename: 21205CAD015-Swept path-230305.dwg

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	SY	OF	KH	05/03/23

ttpp transport planning

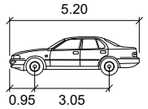
PROJECT: 4 DELMAR PARADE & 812 PITTWATER ROAD, DEE WHY

TITLE: BASEMENT 1 - SWEPT PATH ASSESSMENT

DWG No. 21205CAD015 FIGURE 7

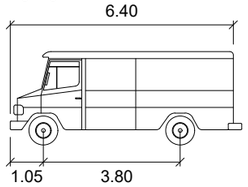
DATE STAMP 5 March 2023

PROJECT No.	SCALE	REV.
21205	1:500 @A3	A



B99

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



SRV

	meters
Width	: 2.30
Track	: 2.30
Lock to Lock Time	: 6.0
Steering Angle	: 38.1

SWEPT PATH KEY:

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

VEHICLE ENTERING

VEHICLE EXITING

Date: 5 March 2023

Filename: 21205CAD015-Swept path-230306.dwg

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	SY	OF	KH	05/03/23

ttpp transport planning

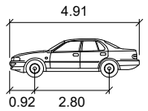
PROJECT: 4 DELMAR PARADE & 812 PITTWATER ROAD, DEE WHY

TITLE: BASEMENT 1 - SWEPT PATH ASSESSMENT

DWG No. 21205CAD015 FIGURE 8

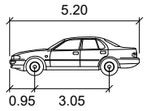
DATE STAMP: 5 March 2023

PROJECT No.	SCALE	REV.
21205	1:500 @A3	A



B85

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



B99

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

SWEPT PATH KEY:

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

VEHICLE ENTERING

VEHICLE EXITING

Date: 5 March 2023

Filename: 21205CAD015-Swept path-230305.dwg

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	SY	OF	KH	05/03/23

ttpp transport planning

PROJECT: 4 DELMAR PARADE & 812 PITTWATER ROAD, DEE WHY

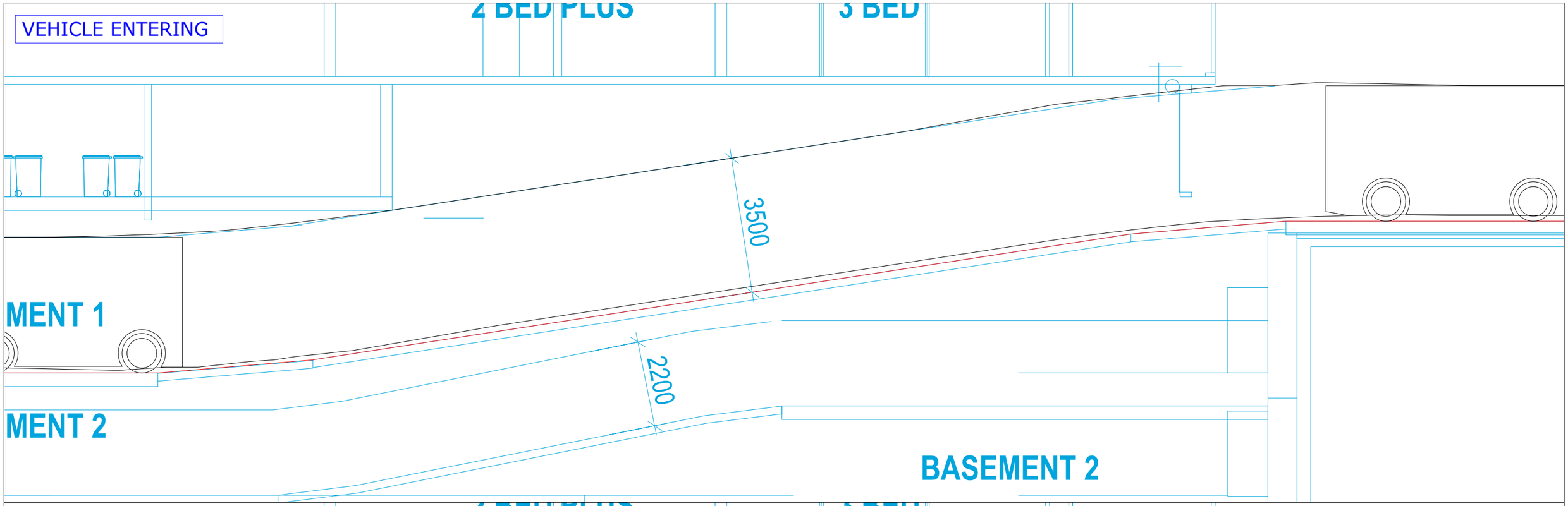
TITLE: BASEMENT 2 - SWEPT PATH ASSESSMENT

DWG No. 21205CAD015 FIGURE 9

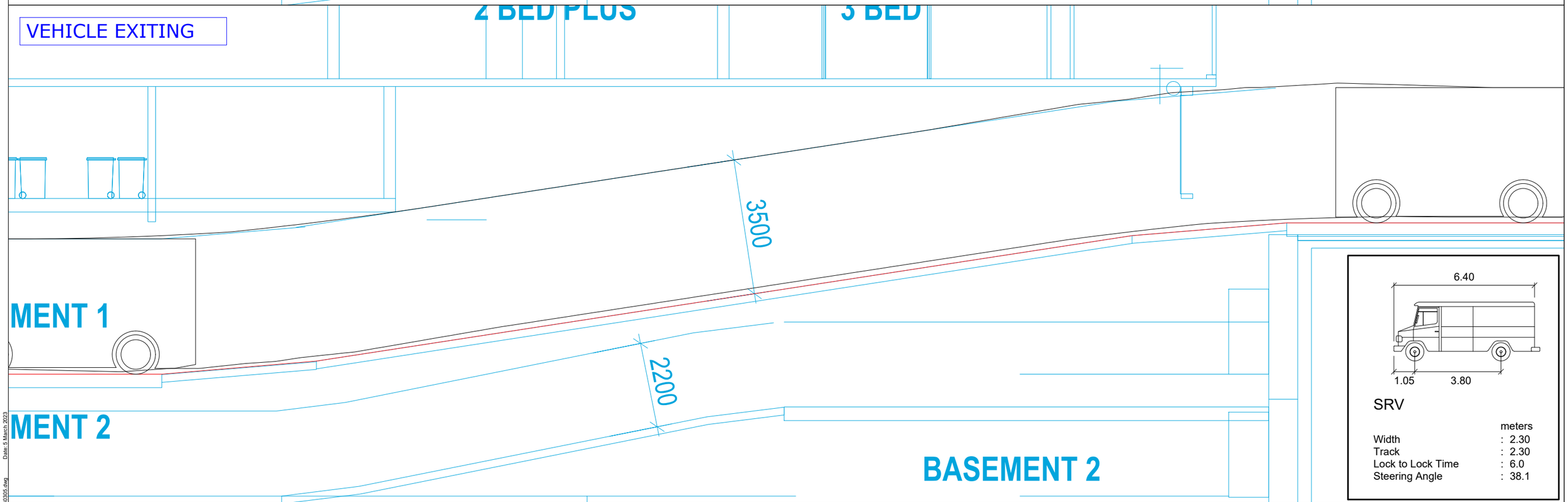
DATE STAMP 5 March 2023

PROJECT No.	SCALE	REV.
21205	1:500 @A3	A

VEHICLE ENTERING



VEHICLE EXITING



SRV

	meters
Width	: 2.30
Track	: 2.30
Lock to Lock Time	: 6.0
Steering Angle	: 38.1

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	SY	OF	KH	05/03/23

ttpp transport planning

PROJECT: 4 DELMAR PARADE & 812 PITTWATER ROAD, DEE WHY

TITLE: GROUND TO B1 RAMP - VERTICAL CLEARANCE ASSESSMENT

DWG No. 21205CAD015 FIGURE 10

DATE STAMP 5 March 2023

PROJECT No. 21205 | SCALE 1:100 @A3 | REV. A

Filename: 21205CAD015-Swept path-230305.dwg Date: 5 March 2023