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TRAFFIC AND PARKING IMPACTS REPORT
FOR A DEVELOPMENT APPLICATION
FOR A PROPOSED MIXED USE DEVELOPMENT
AT No. 231 WHALE BEACH ROAD, WHALE BEACH NSW 2107
for the purpose of a Section 8.2 review

Property address	231 Whale Beach Road, Whale Beach NSW 2107
Client	Richard Cole Architecture Pty Ltd
Prepared by	O. Sannikov, MEngSc (Traffic Engineering), MIEAust, PEng, FAITPM
Date	06/08/21
Job No.	21078
Report No.	21078 Rep 01

Item	Report
Site location	• Refer to **Figure 1.**
Existing land use	• One (1) triple storey mixed use development ◦ One (1) single storey cafe ◦ 5 residential units
Proposed development	• Mixed use development ◦ Retail development (ground floor and third floor) ▪ Three (3) retail units with possible cafe use of Unit 1 (total Gross Floor Area (GFA): 299 m²) ◦ Residential apartments (first floor to fourth floor) ▪ 5 apartments, comprising • 4 three-bedroom apartments • 1 four-bedroom apartment ◦ Ground level and basement level car park ▪ 18 car parking spaces, comprising • 6 parking spaces for retail • 10 parking spaces for residents • 2 parking spaces for visitors ◦ Including one (1) space for people with disabilities ▪ 2 bicycle spaces ▪ 1 motorcycle space

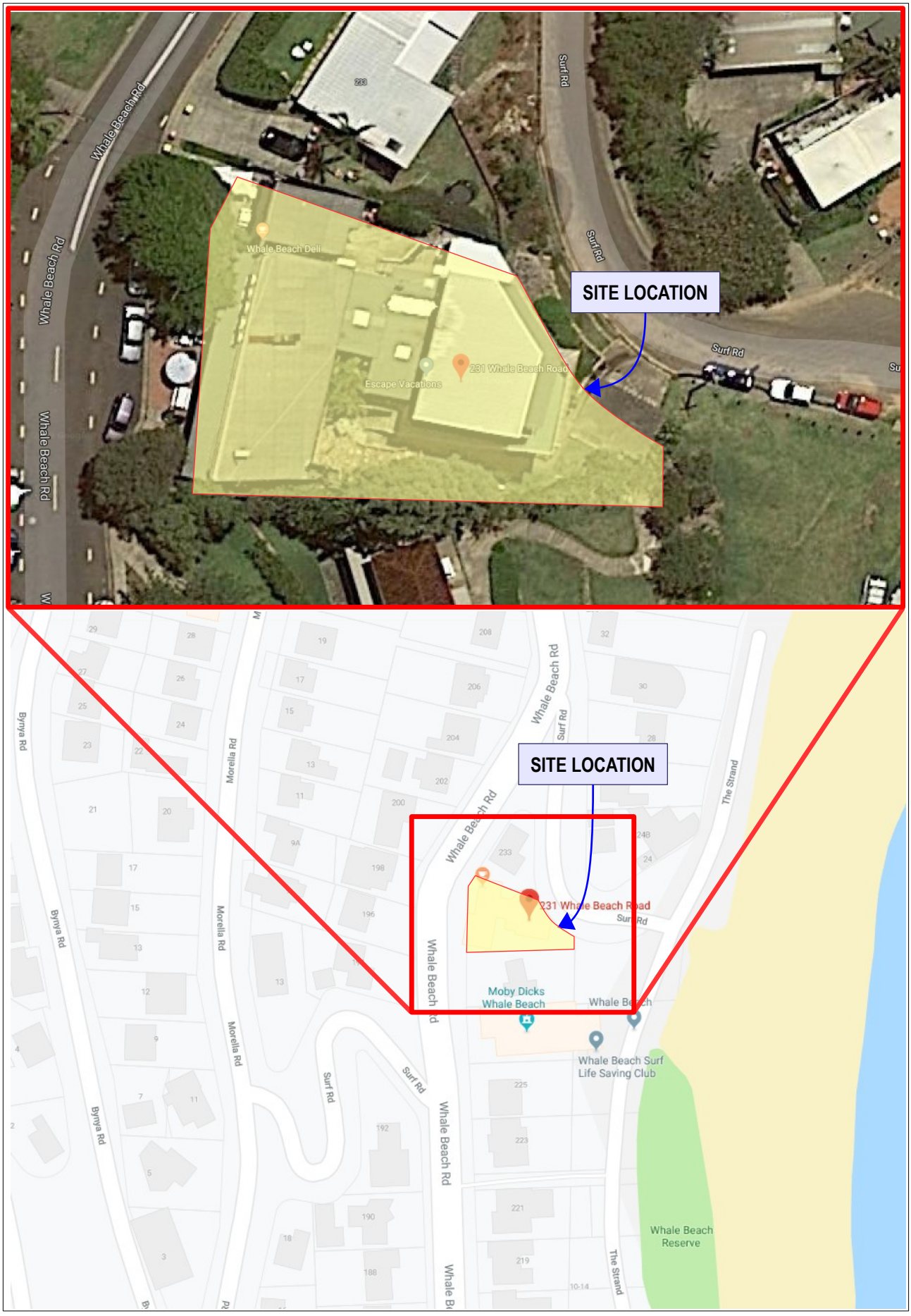
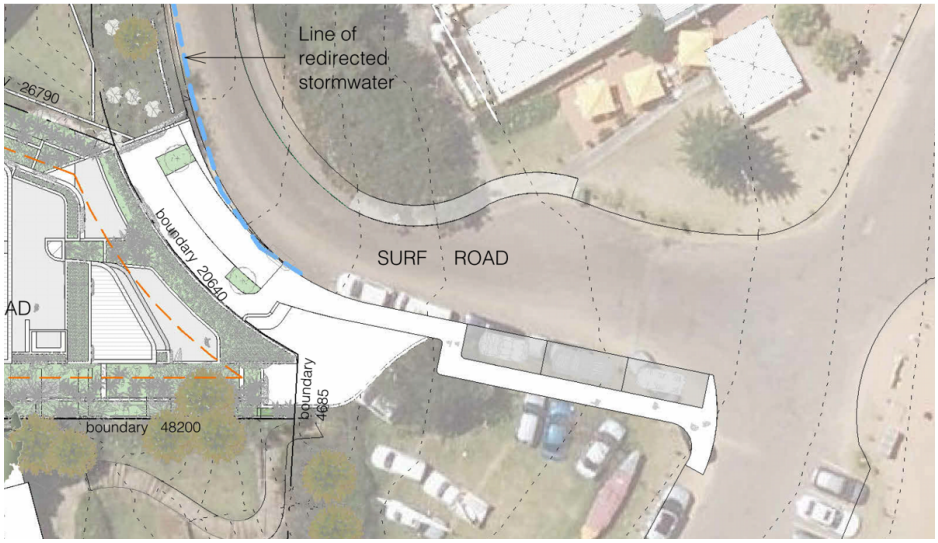


Figure 1. Site location.

Item	Report
	Previous proposal and assessment
	• The present report addresses traffic and parking impacts of an amended development proposal.
	• The original proposal for a development on the same site was submitted in 2020 (DA2020/0442).
	• As part of the development assessment process, Council's Traffic Engineer provided a Referral Response, dated 28/08/2020 (a copy is attached in the Appendix).
	• In response to the Traffic Engineer's Referral Response (TERR), the development proposal has been amended with a view to lodging a Section 8.2 of the DA. The present traffic and parking impact assessment report addresses the amended design and the matters raised in Council's TERR. Due consideration has been give to mitigation measures suggested in Council's TERR (TERR MM).
	• The present report relies on the traffic and parking survey data collected for the preparation of the previous TPIA report (dated 23/04/20). This data is considered to be reliable as it was collected prior to the outbreak of COVID-19 and consequent changes in travel behaviour of the public. Relevant sections of the previous report form parts of the present report.
	• A summary of TERR matters and mitigation measures addressed in this report is as follows.
Matter 1	◦ *"The site frontage is approximately 15m and only one access driveway is permitted under the DCP where the frontage to a local public road is less than 30m."*
Response	◦ The amended design features a single driveway.
Matter 2	◦ *"Swept paths are provided to demonstrate access to parking spaces, however the proposed layout makes circulation within the car park and manoeuvring into designated parking spaces difficult or requiring multiple reversing manoeuvres. This is further complicated when vehicles are entering and exiting at the same time which requires one vehicle to backup to areas within the car park where two vehicles can pass."* ◦ *TERR MM:* ▪ *Widening of access driveway to car parks* ▪ *The proposed access driveway for the basement level is only 3.6m wide, and the curved alignment provides insufficient visibility between entering and exiting vehicles. This can not be improved by a convex mirror and traffic signals are not practical. A minimum combined entry/exit width of 5.5m should be provided from the public road to parking area to allow two way vehicle access.* ▪ *Movements in the ground level are park are restricted, and similarly the access driveway widening to 5.5m should also be considered. The garbage storage area could be relocated if approved by Waste Services. As a minimum requirement the Applicant needs to demonstrate that the car park layout enables vehicles to pass and any required waiting areas are clearly marked so that vehicles entering the ground level car park are not forced to reverse back onto Surf Road. Speed humps should also be installed on the private property approaching the entry/exit to ensure that vehicles slow down prior to crossing Council's Public Road Reserve.*
Response	◦ The amended design now has a much simpler layout and provides for effective manoeuvring with the minimum number of movements. ◦ The amended design provides for uninterrupted sight lines for drivers entering and leaving the car parking area. The access driveway has been widened (with varying widths due to curvilinear alignment, but greater than 5.5 m), to enable the entering vehicle to wait off the road. ◦ The waiting areas are marked on the plan. ◦ The proposed driveway is not different from any other standard driveway to developments of similar size, where the provision of a speed hump is not required normally. However, it can be provided if required.
Matter 3	◦ *"There is a shortfall of 2 spaces for retail [...]"*
Response	◦ The currently proposed shortfall is 4 spaces. This is less than the existing shortfall of 9 spaces. There are abundant parking opportunities in the nearby public car parking areas. Some customers of the proposed cafe and retail shops will be beach-goers who already park in these areas regardless of the proposed development. Please refer to further details on pp. 21-22 of this report

Item	Report
Matter 4	◦ *"[…] no designated provisions for garbage collection, removalists/deliveries"* ◦ *"The Traffic and Parking report specifies that no loading docks are proposed with loading/unloading occurring on Whale Beach Road, and the 2.2m height clearance to the car park would not enable access for a Small Rigid Vehicle."* ◦ *"Deliveries off Whale Beach Road impacts the availability of the existing 1 hour timed parking restrictions provided, and can lead to double parking and congestion and safety issues on Whale Beach Road when these spaces are occupied. These concerns were also raised in a DA submission from residents."* ◦ *"On-site parking should be provided for service vehicles and access driveways should be separated from access used by the general public for access to public parking areas."* ◦ *TERR MM* ▪ *- Provision of Indented service/delivery bay in Surf Road* • *A 2.5m wide indented bay is required for waste and service vehicle access and designed to enable forward in and forward out access for a waste collection vehicle 9.7m in length, as a minimum requirement. The indented bay can be provided in the Council Public Road Reserve between the two access driveways to the basement and ground level car parks. The facility would remove the need for loading/unloading to occur on Whale Beach Road and impacting the existing timed parking spaces.*
Response	◦ The site is not of sufficient size to enable a loading dock inside the property, suitable for trucks of any size. ◦ We were not able to locate any requirements for a loading bay / waste collection bay for heavy vehicles in the Pittwater 21 DCP, which would be applicable to a development with five (5) residential units and a small retail/cafe area within Zone B1 Neighbourhood Centre. ◦ The proposed arrangement in the original submission was the same as the current arrangement, where residential waste is collected by Council off the kerb in Surf Road and the cafe is serviced from Whale Beach Road. With regard to the latter, there is no *additional* impact on the timed parking as this is the current arrangement. Moreover, with the cafe fronting the beach side of the site, rather than the Whale Beach Road side, and ground level pedestrian access from the beach, the pressure for timed parking in Whale Beach Road will likely be significantly reduced. ◦ Nevertheless, an indented bay is proposed in Surf Road as per TERR MM. Due to site limitations, it is not possible to accommodate the required draw-in and draw-out tapers independently, therefore the car park driveway is proposed to be utilised for drawing in. The waste truck would be only two-thirds into the bay when parked. However, this leaves enough roadway width for vehicles to pass the truck. It is an improved arrangement compared with the current situation where waste trucks stop fully on the road carriageway (collecting from the same number of residential units as proposed). This bay will be sufficient for use by delivery SRVs, vans and utility vehicles. ◦ Small deliveries by vans can also be made to visitor spaces in the proposed car park.
Matter 5	◦ *"The traffic generation was reported as 18 trips (7 in / 7 out) during the morning peak and 18 trips (11 in / 7 out) during the afternoon peak hour, with additional trip generation being 9 trips (4 in / 5 out) during the morning peak and 9 trips (5 in / 4 out) during the afternoon peak hour.* ◦ *This calculation should be slightly higher as the projected future generation was based on the retail rate (4.6 trips per 100m² for the total GFA) for all three retail areas, when it is indicated in the SOEE that commercial uses include a café and plans and photo montages show seating for a café for Retail 1, where a rate of 5 trips per 100m² should be applied for restaurants/cafes."*
Response	◦ If the cafe trip generation rate is applied to retail unit 1, the difference is insignificant, 0.4 of a trip. The revised calculations, with adjusted trip rates and floor areas are provided on pp. 26-27 of this report.
Matter 6	◦ *"The actual traffic impacts would be much greater since off-street parking for visitors and retail is on-site and traffic generation is now localised at the access driveways off Surf Road.* ◦ *As the current site does not provide on-site parking for the existing café, the difference in traffic generation at the new access driveways could be up to an additional 17 trips during the morning and peak periods."*

Item	Report	
Response	◦	It appears that the above statement implies that the current absence of off-street parking could mean that the current trip generation could be down to nil. This is not the case. Firstly, the retail/cafe component would generate only 15 out of 18 trips. Secondly, all cafe patrons currently park on Whale Beach Road. A review of video records indicated about 14 trips in and out of the existing cafe (within the visible area), very much the same as estimated for the proposed development.
	◦	Even though most of these trips are likely to be relocated to the proposed driveway, both the development traffic and existing traffic in Surf Road are very low and are not of concern in terms of capacity nor safety..
Matter 7	◦	*TERR MM*
		▪ *- Realignment of kerb between the access driveway to the basement car park and The Strand*
		• *The section of Surf Road between Whale Beach Road and The Strand is narrow and the road width varies from 5.5 from the northern end to 7m. Parking is restricted on both sides of the road except for the section located immediately east of the existing driveway where parallel parking is permitted for approximately 3 vehicles. The access driveway to the basement car park is located on the bend in Surf Road and existing parking narrows the road and obstructs sightlines for vehicles exiting the site. The kerb realignment should retain parking for 3 parallel vehicles and provide a 6m road width for two-way traffic.*
Response	◦	The proposal features kerb realignment and three indented car parking spaces as requested (refer to a drawing below).
		
Matter 8	◦	*TERR MM*
		▪ *- Provision of footpath*
		• *A minimum 1.5m wide footpath is required along the entire Surf Road frontage and extended to the intersection with The Strand. The existing footpath on the opposite side of the road should also be extended to The Strand with the addition of a handrail where required. This is to provide pedestrian facilities and safety where there is high pedestrian activity between Whale Beach Road, access to the proposed café and Whale Beach.*
Response	◦	The current proposal includes a footpath from The Strand to the proposed cafe. Access to the cafe from Whale Beach Road is available via the building entrance from Whale Beach Road and the lifts.
	◦	The requirement to provide additional footpaths along the entire length of Surf Road and particularly on the opposite side cannot be justified by any planning controls nor by impacts assessment as the proposed development is not likely to generate any additional pedestrian traffic on the opposite side of Surf Road and on the same side to the north of the proposed car park access driveway.

Item	Report
	Existing traffic and parking situation
Street characteristics	• Refer to **Figure 2.** • The main roads bounding the proposed development are described below. ◦ Whale Beach Road ▪ Local collector road ▪ 2 travel lanes and parking opportunities on both sides ◦ Surf Road (east) ▪ Local road ▪ 2 travel lane and parking opportunities on southern side ◦ Surf Road (west) ▪ Local road ▪ 1-2 travel lanes and parking opportunities on alternate sides ◦ The Strand ▪ Local road ▪ 2 travel lanes and parking opportunities on both sides ◦ Other streets in the surrounding area are local/local collector roads. Street conditions are typical for a residential area, with low to moderate traffic volumes. ▪ General speed limit is 50 km/h on local streets around the site.
	Public Transport
Bus	• Refer to **Figure 3** and the **Appendix.** • The closest bus stop is located approximately 700 metres from the site. ◦ Bus Route 199 ▪ PrePay-Only – Manly to Palm Beach • 7 services operate during the morning peak hours. • 12 services operate during the afternoon peak hours. ▪ PrePay-Only – Palm Beach to Manly • 7 services operate during the morning peak hours. • 8 services operate during the afternoon peak hours. ◦ Bus Route L90 ▪ PrePay-Only – City Wynyard to Palm Beach (Limited Stops) • 1 service operates during the morning peak hours. • No services operate during the afternoon peak hours. ◦ PrePay-Only – Palm Beach to City Wynyard (Limited Stops) • 1 service operates during the morning peak hours. • 2 services operate during the afternoon peak hours. • The morning peak hours were between 6:30 a.m. and 9:30 a.m. and the afternoon peak hours were between 3:30 p.m. and 6:30 p.m.
NSW Transport on Demand	• Keoride on-demand pick-up and drop-off services are available from any location to and from Palm Beach, south to north Narrabeen, and Mona Vale. Refer to **Figure 4.** ◦ This transport on demand solution offers a flexible pick-up and drop-off schedule from any location through an online booking which takes seconds to confirm. ◦ The Keoride application for smart phones is available on the Google and iOS play stores.

Figure 2. Street characteristics.

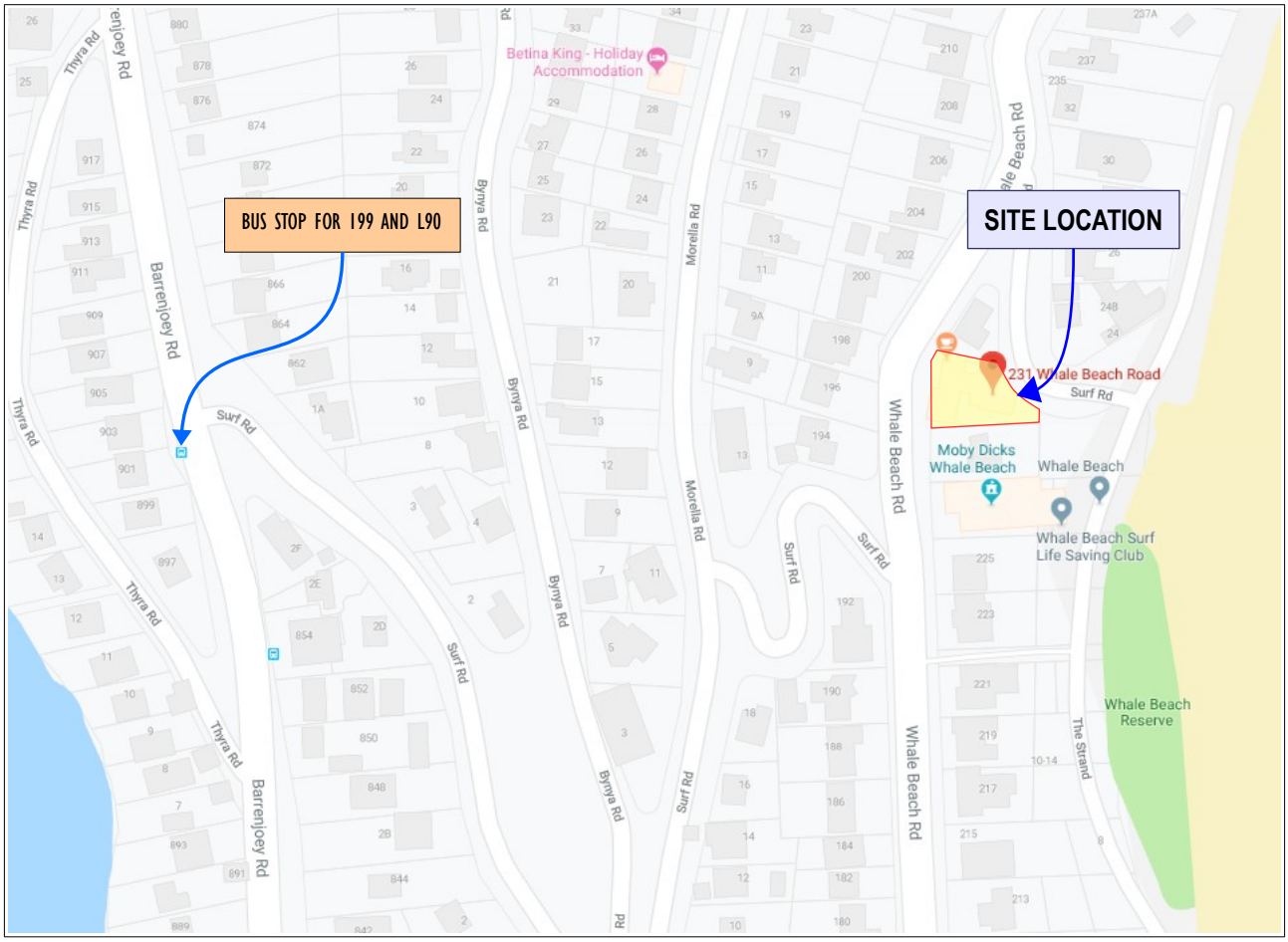


Figure 3. Public transport.

Figure 4. Keoride On Demand Service Areas.

Item	Report
	Surveys and survey results
Parking survey	• Parking demand surveys were conducted on two days due to video malfunctions. ◦ Surveys were conducted on Saturday 7 September 2019 and Saturday 21 September 2019. • Refer to **Figure 5** for survey locations ◦ Areas in red represent a convenient walking distance of up to 150 metres from the site. ◦ Areas in blue represent a close walking distance of 150 – 250 metres from the site.
Survey results (September 7)	• The survey on 7 September 2019 was conducted between 9:00 a.m. and 9:00 p.m. The survey results are shown below. ◦ Refer to **Table 1** for survey results ◦ Areas 1a-5b (within 150 metres walking distance) ◦ The peak occurred at 1:00 p.m. ◦ The survey results indicated that there were at least 70 spaces vacant throughout the day (to a maximum of 120) in the survey area. ◦ Areas 6-8 (between 150 to 250 metres walking distance) ◦ The peak occurred between 12:00 p.m. to 12:30 p.m. ◦ The survey results indicated that there were at least 23 spaces vacant throughout the day (to a maximum of 35) in the survey area. ◦ There are ample on-street parking opportunities near the site.
Survey results (September 21)	◦ The survey on 21 September 2019 was conducted between 9:00 a.m. and 4:00 p.m. The survey results are shown below. ◦ Refer to **Table 2** for survey results ◦ Areas 1a-5b (within 150 metres walking distance) ◦ The peak occurred at 12:00 p.m. ◦ The survey results indicated that there were at least 83 spaces vacant throughout the day (to a maximum of 114) in the survey area. ◦ Areas 6-8 (between 150 to 250 metres walking distance) ◦ The peak occurred between 11:00 p.m. to 11:30 p.m. ◦ The survey results indicated that there were at least 11 spaces vacant throughout the day (to a maximum of 27) in the survey area. ◦ There are ample on-street parking opportunities near the site.

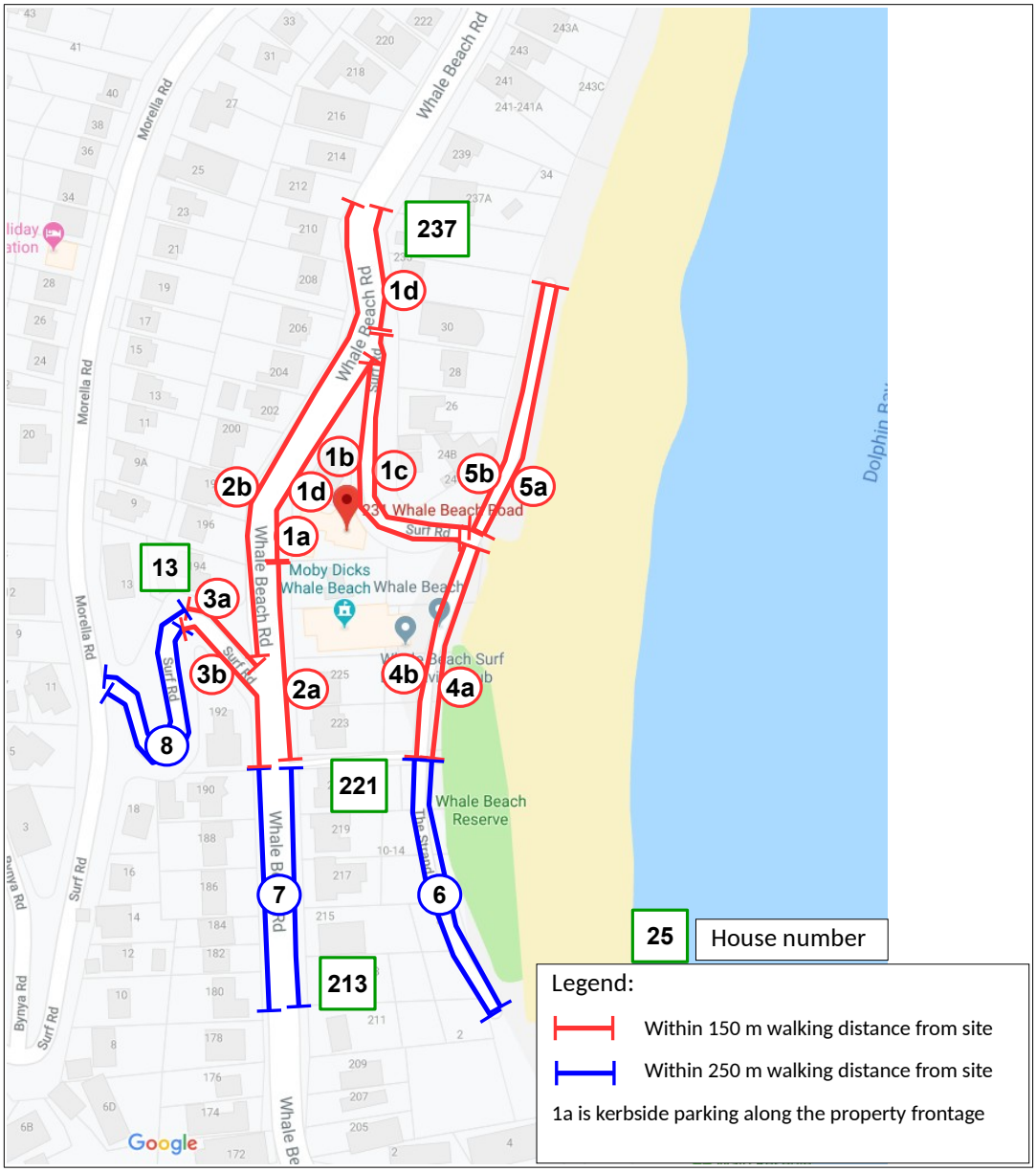


Figure 5. Parking survey locations.

Table 1. Parking survey results (September 7 2019).

07/09/19	Number of parked cars																	
Saturday	Parking Location															Total		
Time	1a	1b	1c	1d	2a	2b	3a	3b	4a	4b	5a	5b	6	7	8	1a-5b	6-8	All
9:00	3	No parking	No parking	3	No parking	7	5	No parking	18	No parking	9	No parking	8	1	4	45	13	58
9:30	3			3		7	5		14		7		8	0	4	48	12	60
10:00	3			3		2	5		21		16		8	4	4	61	16	77
10:30	3			3		7	6		23		19		8	5	3	75	16	91
11:00	3			3		4	7		19		14		8	4	4	67	16	83
11:30	3			3		6	7		21		9		8	4	4	61	16	77
12:00	3			3		7	7		26		7		8	5	4	64	17	81
12:30	3			3		7	7		31		12		8	5	4	79	17	96
13:00	3			3		7	7		27		16		8	5	3	82	16	98
13:30	4			4		6	7		20		10		8	2	1	58	11	69
14:00	3			3		7	7		22		12		9	0	0	63	9	72
14:30	3			3		5	7		16		7		7	0	0	52	7	59
15:00	3			1		6	7		17		7		8	1	0	48	9	57
15:30	3			1		6	7		14		9		7	0	1	44	8	52
16:00	2			1		6	5		16		5		5	4	1	42	10	52
16:30	2			1		6	6		17		3		5	5	1	42	11	53
17:00	2			1		6	5		14		6		5	2	1	41	8	49
17:30	3			3		4	4		7		1		5	0	2	29	7	36
18:00	3			3		4	4		6		1		5	0	3	25	8	33
18:30	2			2		5	6		2		0		4	0	2	17	6	23
19:00	2			1		5	6		2		0		4	0	2	16	6	22
19:30	2			2		6	4		2		1		4	0	1	17	5	22
20:00	2			2		4	4		2		1		4	0	1	15	5	20
20:30	2			2		5	2		2		0		4	1	1	14	6	20
21:00	2			2		5	2		2		0		4	1	1	14	6	20
No of spaces	6	NP	NP	3	NP	7	7	NP	70	NP	40	NP	20	12	8	133	40	173

07/09/19	Number of vacant spaces																	
Saturday	Parking Location															Total		
Time	1a	1b	1c	1d	2a	2b	3a	3b	4a	4b	5a	5b	6	7	8	1a-5b	6-8	All
9:00	3	No parking	No parking	0	No parking	0	2	No parking	52	No parking	31	No parking	12	11	4	88	27	115
9:30	3			0		0	2		56		33		12	12	4	94	28	122
10:00	3			0		5	2		49		24		12	8	4	83	24	107
10:30	3			0		0	1		47		21		12	7	5	72	24	96
11:00	3			0		3	0		51		26		12	8	4	83	24	107
11:30	3			0		1	0		49		31		12	8	4	84	24	108
12:00	3			0		0	0		44		33		12	7	4	80	23	103
12:30	3			0		0	0		39		28		12	7	4	70	23	93
13:00	3			0		0	0		43		24		12	7	5	70	24	94
13:30	2			-1		1	0		50		30		12	10	7	82	29	111
14:00	3			0		0	0		48		28		11	12	8	79	31	110
14:30	3			0		2	0		54		33		13	12	8	92	33	125
15:00	3			2		1	0		53		33		12	11	8	92	31	123
15:30	3			2		1	0		56		31		13	12	7	93	32	125
16:00	4			2		1	2		54		35		15	8	7	98	30	128
16:30	4			2		1	1		53		37		15	7	7	98	29	127
17:00	4			2		1	2		56		34		15	10	7	99	32	131
17:30	3			0		3	3		63		39		15	12	6	111	33	144
18:00	3			0		3	3		64		39		15	12	5	112	32	144
18:30	4			1		2	1		68		40		16	12	6	116	34	150
19:00	4			2		2	1		68		40		16	12	6	117	34	151
19:30	4			1		1	3		68		39		16	12	7	116	35	151
20:00	4			1		3	3		68		39		16	12	7	118	35	153
20:30	4			1		2	5		68		40		16	11	7	120	34	154
21:00	4			1		2	5		68		40		16	11	7	120	34	154

Note: negative numbers indicate vehicles parked illegally

Table 2. Parking survey results (September 21 2019).

21/09/19	Number of parked cars																	
Saturday	Parking Location															Total		
Time	1a	1b	1c	1d	2a	2b	3a	3b	4a	4b	5a	5b	6	7	8	1a-5b	6-8	All
9:00	6	No parking	No parking	0	No parking	5	4	No parking	10	No parking	15	No parking	20	4	2	40	26	66
9:30	6			0		7	7		10		15		20	4	2	45	26	71
10:00	6			1		7	7		10		15		20	4	2	46	26	72
10:30	6			1		8	8		10		15		20	4	2	48	26	74
11:00	6			1		8	8		10		15		20	5	2	48	27	75
11:30	6			1		8	8		2		15		20	5	2	40	27	67
12:00	6			1		8	8		12		15		20	6	3	50	29	79
12:30	6			1		6	7		12		7		5	6	3	39	14	53
13:00	6			1		6	7		12		7		8	10	3	39	21	60
13:30	6			1		6	7		12		12		8	10	3	44	21	65
14:00	4			0		6	7		6		12		8	10	2	35	20	55
14:30	6			0		7	7		6		12		8	10	2	38	20	58
15:00	1			1		7	4		4		4		6	10	2	21	18	39
15:30	1			1		7	4		4		4		6	10	2	21	18	39
16:00	1			1		7	4		4		2		4	7	2	19	13	32
No of spaces	6	NP	NP	3	NP	7	7	NP	70	NP	40	NP	20	12	8	133	40	173

21/09/19	Number of vacant parking spaces																	
Saturday	Parking Location															Total		
Time	1a	1b	1c	1d	2a	2b	3a	3b	4a	4b	5a	5b	6	7	8	1a-5b	6-8	All
9:00	0	No parking	No parking	3	No parking	2	3	No parking	60	No parking	25	No parking	0	8	6	93	14	107
9:30	0			3		0	0		60		25		0	8	6	88	14	102
10:00	0			2		0	0		60		25		0	8	6	87	14	101
10:30	0			2		-1	-1		60		25		0	8	6	85	14	99
11:00	0			2		-1	-1		60		25		0	7	6	85	13	98
11:30	0			2		-1	-1		68		25		0	7	6	93	13	106
12:00	0			2		-1	-1		58		25		0	6	5	83	11	94
12:30	0			2		1	0		58		33		15	6	5	94	26	120
13:00	0			2		1	0		58		33		12	2	5	94	19	113
13:30	0			2		1	0		58		28		12	2	5	89	19	108
14:00	2			3		1	0		64		28		12	2	6	98	20	118
14:30	0			3		0	0		64		28		12	2	6	95	20	115
15:00	5			2		0	3		66		36		14	2	6	112	22	134
15:30	5			2		0	3		66		36		14	2	6	112	22	134
16:00	5			2		0	3		66		38		16	5	6	114	27	141

Note: negative numbers indicate vehicles parked illegally

Item	Report	
	Traffic counts	
Intersection traffic volume counts	Location / type of control	Surf Road / The Strand (T-intersection with Give Way control)
		Surf Road / Whale Beach Road (T-intersection with Give Way control)
		Whale Beach Road / Site (on-street parking near the site)
	Date / Day of the week	Saturday 7 September 2019 (AM and PM) and Saturday 21 September 2019 (AM and PM)
	Time period (AM and PM)	09:00 to 21:00; peak hour occurred between 12:00 p.m. and 1:00 p.m.

- Refer to **Figure 6**.

Intersection operation

- Observations of operation at the intersection indicated no queuing and ample spare capacity due to low traffic volumes (operation at a good Level of Service, LoS A).
  - Refer to the RTA (RMS) definitions of LoS.

Level of service criteria for intersections			
Level of Service	**Average Delay per Vehicle (secs/veh)**	**Traffic Signals, Roundabout**	**Give Way & Stop Signs**
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays; Roundabouts require other control mode	At capacity, requires other control mode

Source: RTA (2002) Guide to Traffic Generating Developments

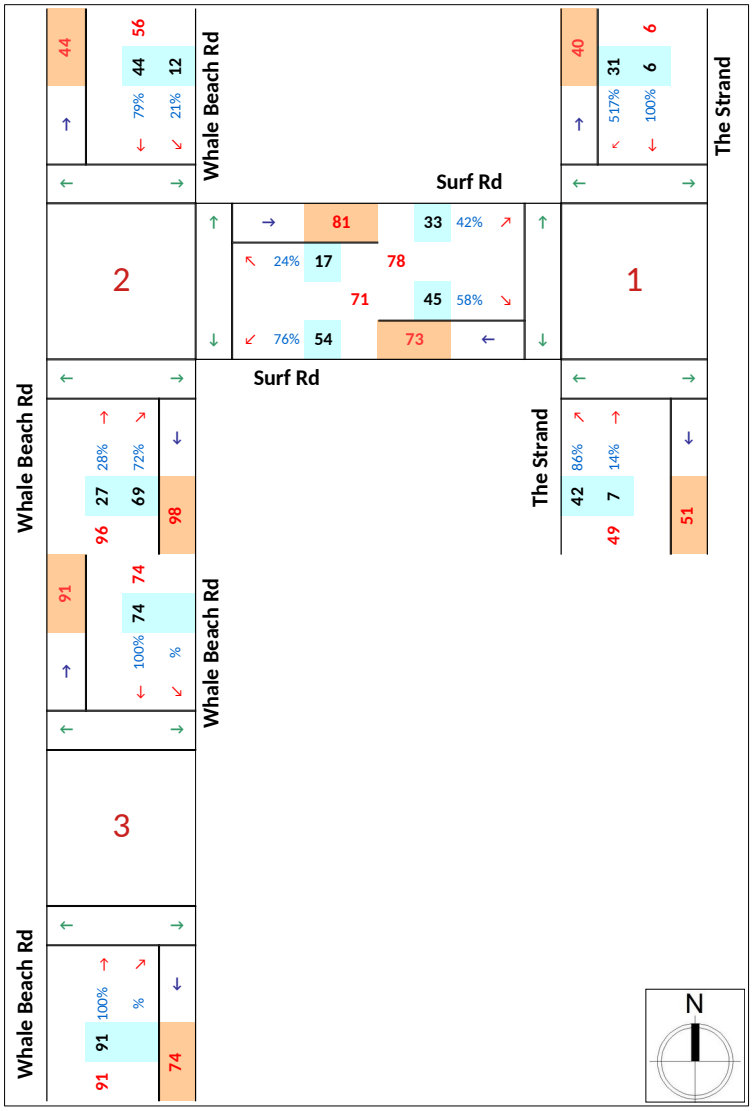


Figure 6. Existing traffic volumes – Saturday peak

Item	Report
Planning control document 1	• Northern Beaches Council ◦ Pittwater 21 Development Control Plan 2004 ▪ Section B – General Controls ▪ Section C – Development Type Controls

Requirement	Compliance
Section B – General Controls	
Section B6 – Access and Parking	
Part 6.1. Access driveways and Works on the Public Road Reserve	
General Requirements	
Access Driveways include the driveway pavements, gutter crossings, supporting retaining walls, suspended slabs and related structures located on the public road reserve between the road edge and property boundary as illustrated in Appendix 10 -Driveway Profiles.	Noted
An Access Driveway to the standards as set out below must be provided for:	
• any new development;	Not applicable
• any alterations and additions where the sum of the additional Gross Floor Area (GFA) of the dwelling exceeds 30 m^2; and	Complies
• where additional car parking spaces and/or garages are proposed.	Complies
Where there is an existing driveway and the applicant proposes to retain the existing driveway, the applicant will be required to demonstrate compliance with this control.	Noted
Access Driveway Design	
The design of all Access Driveways shall be in accordance with the current edition of following Australian Standards:	
• Australian Standard *AS/NZS 2890.1-2004: Parking Facilities – Part 1: Off-Street Car Parking*.	Complies with AS/NZS 2890.1
• Australian Standard *AS/NZS 2890.2-2002: Parking Facilities – Part 2: Off-Street Commercial Vehicle Facilities* except as qualified in this control.	Complies with AS 2890.2-2018
Number of Access Driveways per Allotment	
The number of permissible Access Driveways to an allotment is as follows:	
• where the frontage of an allotment to a local public road is less than 30 m, one only access driveway.	The site's frontage to Surf Road is less than 30 m (15 m). A single driveway is proposed to service the combined car parking area.
• where the frontage of an allotment to a local public road is 30m or more, a second access driveway will be considered on merit.	Satisfactory.
• where the allotment has a frontage to a second local public road, one additional access driveway to the second local road frontage will be considered on merit, based on Council's consideration of the site constraints.	

Item	Report	
	Requirement	**Compliance**
	Council, under the *Local Government Act 1993*, may direct as to which frontage access is to be gained where traffic safety issues are a consideration.	Noted
	Shared Driveways and Access Driveways located in front of adjoining properties	
	Shared Access Driveways shared between adjoining private properties and Access Driveways located in front of adjoining properties will be considered on merit, based on Council's consideration of the site constraints.	Not applicable
	Access Driveway for Service Vehicles to Loading Dock	
	Access Driveways providing access for service vehicles to loading docks must be separated from access used by the general public for access to public parking areas.	No loading docks are proposed. Loading/ unloading will occur on Surf Road, via the service bay. Satisfactory.
	Access Driveways providing access for service vehicles to loading docks shall, where practical, be located on a rear public road frontage providing separation from pedestrian activity.	Not applicable
	Where Access Driveways are located on the same frontage, the minimum distance between an Access Driveway for service vehicles and an Access Driveway for the general public shall be 5 metres from the inside edge to the inside edge of the Access Driveways.	Not applicable
	Access Driveway Location	
	Access Driveways shall be designed and located to provide adequate sight distance to maximise pedestrian and vehicular safety as follows:	
	• minimum clear distance along the road frontage edge of kerb of 50 metres for 40 and 50 kph speed limit roads measured from a point on the centre line of the driveway 2.5 metres from the face of kerb; and	Complies with AS/NZS 2890.1
	• minimum clear distance along the frontage foot way of 5 metres, measured from a point on the centre line of the driveway 2.5 metres from the edge of foot way area closest to property boundary.	Complies with AS/NZS 2890.1
	For corner allotments, the closest point of the Access Driveway shall be located at the maximum practical distance from the intersection of adjoining roads, being no closer than 6m from the tangent point at the kerb.	Not applicable
	For corner allotments adjacent to traffic signals, the location of the Access Driveway will be subject to the approval of the Roads and Maritime Services as the authority responsible for traffic signal facilities.	Not applicable
	For developments in commercial centres where separate entry/exit vehicular access is required, access driveways for entry and exit are to be separated by a minimum distance of 2 metres.	Not applicable
	Access Driveway Width	
	The maximum width of an Access Driveway for	Complies with AS/NZS 2890.1

Requirement	Compliance
dual occupancies, dwellings houses, secondary dwellings, exhibition homes, rural works dwellings and tourist and visitor accommodation shall be as follows:	A more than 5.5 m wide driveway was provided as per Council's request.

Distance Building Line to Boundary	Width at Boundary	Width at Kerb
Nil to 3.5m	Width of car parking area or garage opening	Width of car parking or garage opening plus 0.5m
Greater than 3.5m to 6.5m	4.0m	4.5m
Greater than 6.5m	3.0m	3.5m

Access Driveway width can be varied subject to a merit based consideration.	Noted
Access Driveway Profile and Gradient	
Access Driveway profiles shall conform to the profiles as illustrated in Appendix 10 – Driveway Profiles.	Complies with AS/NZS 2890.1
Access Driveway Construction and Finishes	
All Access Driveways shall be constructed with an impervious pavement and gutter crossing construction.	Capable of compliance at the Construction Certification stage
Gutter crossings are to be in plain concrete.	Capable of compliance at the Construction Certification stage
Access Driveways are to be either in plain concrete or a cosmetic finish consisting of concrete, asphaltic concrete or paver construction in dark earthy tones. Cosmetic Access Driveways on a public road reserve are subject to a Deed of Agreement releasing Council in respect to liability and damage to the driveway by any means.	Capable of compliance at the Construction Certification stage
Access Driveways are to match with the adjacent constructed footpaths or alternatively adjacent constructed footpaths are to be adjusted to provide a continuous surface with no trip points with a maximum 1:14 (V:H) transition.	Capable of compliance at the Construction Certification stage
Part 6.2 – Internal Driveways	
General	
An Internal Driveway must be provided for:	
• any new development;	Not applicable
• development where additional car parking spaces and/or garages are required by Council's plans or policies;	Complies
• any alterations and additions where the sum of the additional Gross Floor Area (GFA) of the dwelling exceeds 30 m^2; and	Complies
• development where additional car parking spaces and/or garages are proposed.	Complies
If the applicant proposes to retain the existing driveway, the applicant will need to demonstrate compliance with the outcomes and driveway standards of this control.	Noted
Internal Driveway	
Internal Driveway Profiles	
Internal Driveways are to be designed and	Complies with AS/NZS 2890.1

Item	Report	
	Requirement	**Compliance**
	constructed to provide safe access and shall have a maximum gradient of 1:5 (V:H). Recommended maximum gradient of an Internal Driveway for a distance of 2m on the approach to a garage, parking area or carport is 1:20 (V:H). There must be a minimum 2 metre long transition between the driveway and the garage/parking area/carport in accordance with the standards.	
	For Internal Driveways on steeply sloping or difficult sites, gradients may be increased up to 1:4 (V:H) over a maximum 20 metre length.	Complies with AS/NZS 2890.1
	Provision is to be made for vehicles to enter and leave the site in a forward direction, where:	Complies
	• the internal driveway grade exceeds 1:4 (V:H);	
	• the land abuts a roadway subject to high pedestrian use (e.g. School, Commercial Centre);	
	• driveways are more than 30m in length; and	
	• the driveway enters onto a classified road.	
	Internal Driveway Construction/Finishes	
	Internal Driveways shall have a stable surface for all weather construction.	Capable of compliance at the Construction Certification stage
	Internal Driveways where visible from a public road or public place are to be constructed of materials that blend with the environment and of dark earthy tones or natural materials.	Capable of compliance at the Construction Certification stage
	Internal Driveway Design for all other uses than dual occupancies, dwelling house, secondary dwellings, exhibition homes, rural works dwellings and tourist and visitor accommodation.	
	The design of all Internal Driveways and ramps shall be in accordance with the current edition of the following Australian Standards:	
	• Australian Standard *AS/NZS 2890.1-2004: Parking Facilities – Off-Street Car Parking*.	Complies with AS/NZS 2890.1
	• Australian Standar *AS/NZS 2890.2-2002: Parking Facilities – Off-Street Commercial Vehicle Facilities* except as qualified in this control.	Complies with AS 2890.2-2018
	Driveway width for dual occupancies, dwellings, secondary dwellings, exhibition homes, rural works dwellings and tourist and visitor accommodation.	Not applicable
	Internal Driveway and Driveway Corridor Width for all other development than dual occupancies, dwellings, secondary dwellings, exhibition homes, rural works dwellings and tourist and visitor accommodation	
	Internal Driveways shall be designed and constructed to the minimum practical pavement width needed to facilitate access and turning movements.	Vehicle manoeuvring diagrams demonstrate compliance with AS/NZS 2890.1 Refer to the **'Appendix'** for further details
	Internal Driveways shall be designed and constructed to minimise the area of impervious	To be addressed by others

Item	Report	
	Requirement	**Compliance**
	pavement within the land. Track style driveways are encouraged where practical.	
	Turning movements are to be in accordance with the turning paths for a B85 vehicle (Australian Standard *AS/NZS 2890.1-2004: Parking Facilities – Part 1: Off-Street Car Parking*).	Complies with AS/NZS 2890.1
	Part B6.3. Off-Street Vehicle Parking Requirements	
	The minimum number of vehicle parking spaces to be provided for off-street parking is as follows for dual occupancies, dwelling houses, secondary dwellings, exhibition homes, rural worker's dwellings and tourist and visitor accommodation:	Not applicable
	For a Secondary Dwelling a minimum of 1 space is required in addition to existing requirement for the principal dwelling (based on number of bedrooms in principal dwelling).	Not applicable
	Minimum dimensions of internal space for on-site parking are:	Complies with AS/NZS 2890.1:2004

Minimum dimensions of internal space for on-site parking are:

Single car parking spaces on hard stand and Single Carport	2.4 metre x 5.5 metre with 0.3m minimum clear space each side for access to doors
Enclosed garage(internal dimension)	3.0 metre x 6.0 metre, with 2.4 metre minimum width entry

	The maximum cross-fall in any direction for an open car parking space is 1:20 (V:H).	Complies with AS/NZS 2890.1:2004
	For all other uses, the minimum number of vehicle parking and service spaces to be provided within the development site for new development and extensions to existing development is to be in accordance with the following:	
	• The total number of spaces as set out in TABLE 1 below;	As below.
	• PLUS the number of on-street parking spaces lost as a direct result of the development due to access and traffic facilities requirements.	Not applicable

TABLE 1: Onsite Car Parking requirements

Development Type	Minimum Number of. Car Spaces	
Multi Dwelling Housing, Residential Flat Buildings and Shop-Top Housing:	1 bedroom dwellings	1 space per dwelling
	2 or more bedroom dwellings	2 spaces per dwelling
	Adaptable Housing in accordance with control C1.9 of the Pittwater 21 Development Control Plan.	1 space per dwelling in accordance with AS 4299-1995: Adaptable Housing.
	The provision of parking for people with disabilities must be provided at a rate of 3% of the required parking spaces, excluding parking required for Adaptable Housing.	
	Separate visitor parking is to be provided at a rate of 1 space per 3 dwellings rounded up.	
	Provision must be made for garbage collection, removalist vans and emergency vehicles.	
	For developments with 10 or more dwellings, a vehicle wash bay is to be provided.	
Retail Premises (Not including Shopping Centre Developments)	1 per 30m² GLA Parking spaces are to be accessible to the public. Adequate space for delivery vehicles is to be provided. Provision of accessible parking spaces for people with disabilities must be at the rate of 3% of the required car parking spaces or part thereof, or 1 space, whichever is greater.	

Item	Report	
	Requirement	**Compliance**
	Car parking required	**Car parking proposed**
	Residential component:	
	Car parking required:	Car parking proposed:
	There are 5 residential dwellings with two or more bedrooms. • 5 x 2 = **10 spaces**	10 spaces are proposed Complies
	Adaptable housing	To be addressed by others
	Car parking required for people with disabilities:	Car parking proposed for people with disabilities
	0.03 * 10 = **0.3 spaces**	Parking for people with disabilities is not required by the National Construction Code for residential developments. However, one of the visitors spaces is designed to cater for people with disabilities.
	Visitor parking required:	Visitor parking proposed:
	5/3 = 1.7, say **2 spaces**	2 spaces are proposed. Complies
		Garbage collection proposed: An indented bay is proposed near the site access driveway on Surf Road, as requested by Council.
	Vehicle wash bay required:	Vehicle wash bay proposed:
	Less than 10 dwellings are proposed, no car wash bays are required.	No car wash bays are proposed. Complies
	Retail component:	
	Car parking required:	Car parking proposed:
	1 per 30 m^2 GFA and the total GFA is 299 m^2. • 299/30 = 9.97, say **10 spaces**	6 spaces are proposed (short by 4 spaces). This considered to be adequate for a number of reasons as described below.
		Firstly, the existing previously approved developments on the site do not provide sufficient parking. The existing cafe (GFA: 126 m^2) and 5 residential (2 two-bedroom and 3 one-bedroom) units require the following car parking provision: • cafe 126 / 30 = 4.2, say 4 car parking spaces (no off-street parking is provided) • residential 3 x 1 + 2 x 2 = 7 car parking spaces (2 spaces are provided) The existing car parking deficit is therefore 4 cafe/ retail spaces and 5 residential spaces, a total of 9 spaces. This deficit should be applied as a credit to the proposed development. The proposed development will have the same deficit of 4 parking spaces for the retail component as currently for the cafe and nil deficit for the residential component, compared with the existing deficit of 5 spaces. This is a reduction of parking deficit by 5 spaces and a positive outcome. Secondly, surveys conducted by TEF Consulting on 7 September 2019 indicate that there were at least 70 spaces vacant throughout the day (to a maximum of 120) within 150 m walking distance from the site. There were at least 23 spaces

Item	Report	
	Requirement	**Compliance**
		vacant (to a maximum of 35) within 150 to 250 metres walking distance from the site. Surveys conducted by TEF on 21 September 2019 indicate that there were at least 83 spaces vacant throughout the day (to a maximum of 114) within 150 m walking distance from the site. There were at least 11 spaces vacant (to a maximum of 27) within 150 to 250 metres walking distance from the site. • Refer to previous section **'Surveys and survey results'** for results and further discussion.
		Thirdly, it is also expected that some of the cafe patrons would also be customers of the retail units and thus there will be overlapping parking demand requiring less provision than if calculated for the independent cafe and retail uses. A proportion of cafe and retail patrons are likely to be beach-goers, who are already parked in the public car park of the Whale Beach. It is typical for beachfront shops, cafes and restaurants to attract such patrons.
	Car parking required for people with disabilities: 0.03 * 10 = 0.3, say **1 space**	Car parking proposed for people with disabilities One (1) space for people with disabilities is proposed (shared with a visitor space for the residential component). Satisfactory due to a low probability of a simultaneous demand for this space from more than one disabled user at a time. Complies
	Parking spaces must be accessible to the public.	Complies
	Adequate space for delivery vehicles to be provided.	Loading/unloading and retail waste collection will occur from the proposed indented bay in Surf Road. Some smaller deliveries by utes, vans and small trucks may occur on Whale Beach Road, same as at present.
	Bicycle Storage	
	For residential development (other than a dwelling house, dual occupancy, secondary dwellings, exhibition homes and rural workers' dwellings), secure bicycle storage facilities must be provided within the building at the rate of 1 bicycle rack per 3 dwellings.	Refer to calculations below
	For Business/Industrial development or additions, comprising of 200m² GFA or more, secure enclosed bicycle storage facilities must be provided within the building at the rate of 1 bicycle rack per 1000m² GFA, or a minimum of 4 bicycle racks, whichever is the greater.	There are no specific bicycle parking requirements for retail developments. Complies
	Bicycle spaces required	**Bicycle spaces proposed**
	There are a total of 5 residential dwellings. • 5/3 = 1.7 spaces, say **2 spaces**	2 spaces are proposed. Complies
	Motor Cycle Parking	
	For Business/Industrial development or additions, comprising of 200m² GFA or more, provision is to be made for motor cycle parking at a rate of 1 motor cycle parking space per 100 motor vehicle spaces.	Refer to calculations overleaf. It is noted that there is no requirement in the DCP to round up decimals in the results of calculations.

Item	Report	
	Requirement	**Compliance**
	Motorcycle parking required	**Motorcycle parking proposed**
	There are a total of 21 car parking spaces. • 21/100 = 0.21, say **nil spaces**	One (1) space is proposed. Complies and exceeds
	On-Site Car Parking Facilities	
	The design of all parking areas shall be in accordance with the current edition of the following Australian Standards:	
	• Australian Standard *AS/NZS 2890.1-2004: Parking Facilities Part 1: Off Street Car Parking;*	Complies with AS/NZS 2890.1:2004
	• Australian Standard *AS/NZS 2890.2-2002: Parking Facilities – Part 2: Off-Street Commercial Vehicle Facilities;*	Complies with AS 2890.2-2018
	• Australian Standard *AS/NZS 2890.3-1993: Parking Facilities Part 3: Bicycle Parking Facilities*; and	Complies with AS 2890.3:2015
	• Australian Standard *AS/NZS 2890.6-2009: Parking Facilities – Part 6: Off-Street Parking for People with Disabilities* except as qualified in this control.	Complies with AS/NZS 2890.6:2009
	Residential Car Parking for Residential Flat Buildings, Shop Top Housing, Mixed Use Development, Multi Dwelling Housing and Seniors Housing	
	The following are applicable in respect of residential car parking areas:	
	• Where there are dwellings with two (2) or more bedrooms in a development, tandem parking spaces may be permitted where all of the following criteria are met:	Not applicable
	• two (2) parking spaces have been allocated per two (2) or more bedroom apartments;	
	• …	
	• Parking spaces for people with disabilities must be appropriately signposted and in accordance with Australian Standard AS/NZS 2890.6-2009: Parking Facilities – Part 6: Off-street Parking for People with Disabilities.	
	Development not included in the above table	
	The minimum number of vehicle parking requirements must be determined using the appropriate guidelines for parking generation and servicing facilities based on development type comparison based on the *Roads and Maritime Services Guide to Traffic Generating Development* or analysis drawn from surveyed data for similar development uses. Provision must be made within the development site for access and parking of all service vehicles servicing the site, visitor parking and parking for people with disabilities.	Not applicable
	Part 6.5. Access Driveways and Works on Road Reserves on or Adjacent to a Main Road	

Item	Report	
	Requirement	**Compliance**
	Egress from an Access Driveway	
	All Access Driveways with access to a Main Road shall be designed to ensure vehicles enter and leave in a forward direction.	Complies
	Access to Alternative Public Road	
	An Access Driveway from allotments adjoining a Main Road is not permitted where alternative access to a local road is available or can be made available via a right-of-way or easement.	Complies
	Part B6.6 – On-Street Parking Facilities	Not applicable
	Part B6.7 – Transport and Traffic Management	
	Transport and Traffic Planning	
	Where development generates pedestrian, cyclist, traffic and transport requirements in excess of the capacity of the existing road and transport network, the capacity of the surrounding public infrastructure and transport network is required to be upgraded to at least match the additional demands generated by the development.	Not applicable
	Any improvement works external to the development site, required to ensure the development complies with this control, must be provided as part of the development at the full cost to the applicant.	Not applicable
	All traffic assessments are to be undertaken in accordance with the Roads and Maritime Services Guidelines for Traffic Generating Developments or similar guidelines.	Complies
	All proposed traffic facilities must comply with the Roads and Maritime Services and/or relevant Australian Standards.	Complies
	An assessment of the impact of traffic generated by the proposed development on the local street system must be undertaken.	An assessment of the traffic impacts is provided through the contents of this report. Complies
	Adequate vehicular entrances to and exits from the site are to be provided so that vehicles using those entrances and exits will not endanger persons using adjoining roads.	Complies with AS/NZS 2890.1:2004
	Adequate space is to be provided within the site of the building or development for the loading, unloading or fuelling of vehicles, and for the picking up and setting down of passengers.	Loading/unloading and retail waste collection will occur on Surf Road, via the service bay. Residential waste will be collected by small trucks at the ground level car park. Satisfactory.
	Traffic and Transport Facilities and Public Utilities Costs	
	The cost for traffic and transport facilities and adjustment of any utility service is the responsibility of the Applicant.	Noted
	Part 6.8 – Access Driveways and Works on the Public Road Reserves on or Adjacent to a	Not applicable

Item	Report	
	Requirement	**Compliance**
	Section C	
	Section C1 – Design Criteria for Residential Development	
	Part C1.18 – Car/Vehicle/Boat Wash Bays	
	A designated wash bay is to be incorporated on the site where developments have more than ten units.	Not applicable
	The wash bay must be designed and constructed so as to not allow polluted waters to enter the storm water drain and storm waters do no enter the sewer.	Not applicable
	Section C2 – Design Criteria for Business Development	
	Part C2.15 – Car/Vehicle/Boat Wash Bays	
	A designated wash bay is to be incorporated on the site.	The retail component of this development will not require a separate vehicle wash bay. No wash bays are proposed. Satisfactory.
	The wash bay must be designed and constructed so as to not allow polluted waters to enter the storm water drain and storm waters do not enter the sewer.	As above.

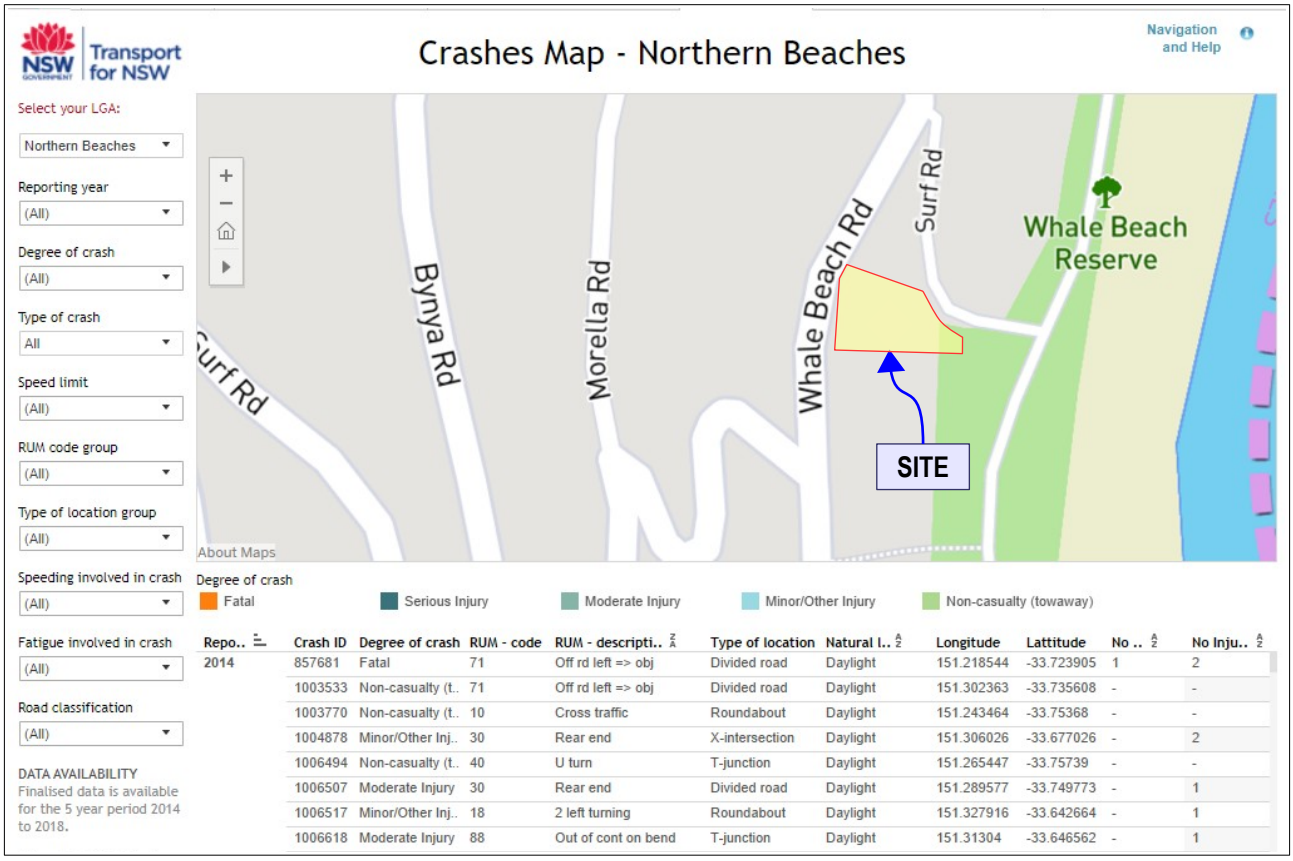
Item	Report
	Traffic impacts
Traffic generation	• Base traffic generation rates ◦ From RMS (2002) Guide to Traffic Generating Developments ▪ Updated statistics from TDT 2013 / 04a • Restaurants • Medium density residential developments • Retail (speciality shops) • **Existing traffic generation** ◦ One (1) single storey cafe (GFA: 126 m²) ▪ Restaurants – Peak hour vehicle trips – 5 trips per 100 m² GFA • 5 x (126/100) = 6.3, say 6 trips (3 trips in and 3 trips out) ◦ 5 medium density residential dwellings ▪ Daily peak hour vehicle trips = 0.5 trips per dwelling • 0.5 x 5 = 2.5, say 3 one way trips (3 exiting in the morning and 3 entering in the afternoon) ◦ **Total** ▪ Morning peak hour • **3 trips in** • 3 + 3 = **6 trips out** ▪ Afternoon peak hour • 3 + 3 = **6 trips in** • **3 trips out** • **Traffic generated by proposed development** ◦ Retail (speciality shops) and cafe – 4.6 and 5.0 trips per 100 m² of GFA respectively (morning peak hour and afternoon peak hour) ▪ GFA: 299 m², comprising 188 m² cafe and 111 m² retail ▪ Morning and afternoon peak hours • 4.6 x (111/100) + 5.0 x (188/100) = 14.5, say 15 trips (in + out) ◦ 8 trips in (morning) / 7 trips in (afternoon) ◦ 7 trips out (morning) / 8 trips in (afternoon) ◦ Medium density residential development ▪ Morning peak hour • Larger units and town houses (three or more bedrooms): 0.65 per dwelling ◦ 0.65 × 5 = 3.25, say 3 trips out ▪ Afternoon peak hour • Larger units and town houses (three or more bedrooms): 0.65 per dwelling ◦ 0.65 × 5 = 3.25, say 3 trips in ▪ **Total** • Morning peak hour ◦ **8 trips in** ◦ 7 + 3 = **10 trips out** • Afternoon peak hour ◦ 7 + 3 = **10 trips in** ◦ **8 trips out**

Item	Report

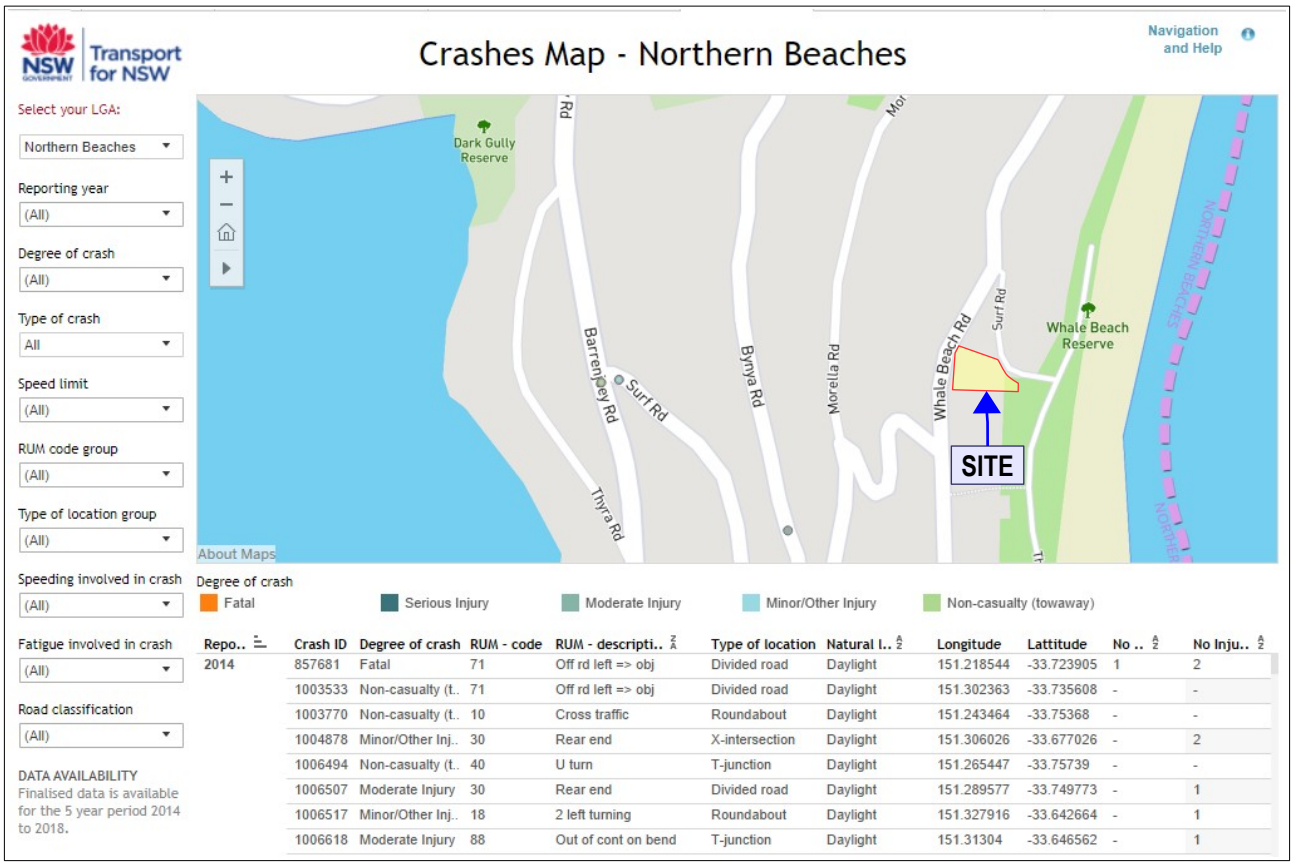
	• **Additional trip generation**
	  • Morning peak hour
	  ◦ 8 – 3 = **5 trips in**
	  ◦ 10 – 6 = **4 trips out**
	  • Afternoon peak hour
	  ◦ 10 – 6 = **4 trips in**
	  ◦ 8 – 3 = **5 trips out**

Safety	• **Accident statistics**
	  ◦ Accident statistics from RMS NSW indicate no crashes in 5 years. Safety risks are very low and do not preclude a mixed use development at the proposed location.
	  ▪ Refer to **Figure 6.**
	  ◦ It is also important to note that the proposed access to the site is not on the main road and is 70 m from the Whale Beach Road / Surf Road intersection.

Conclusion	• Additional trip generation is minor and will have no noticeable impact on the street network operation nor on safety risks.



Repo..	Crash ID	Degree of crash	RUM - code	RUM - descripti..	Type of location	Natural l..	Longitude	Lattitude	No ..	No Inju..
2014	857681	Fatal	71	Off rd left => obj	Divided road	Daylight	151.218544	-33.723905	1	2
	1003533	Non-casualty (t..	71	Off rd left => obj	Divided road	Daylight	151.302363	-33.735608	-	-
	1003770	Non-casualty (t..	10	Cross traffic	Roundabout	Daylight	151.243464	-33.75368	-	-
	1004878	Minor/Other Inj..	30	Rear end	X-intersection	Daylight	151.306026	-33.677026	-	2
	1006494	Non-casualty (t..	40	U turn	T-junction	Daylight	151.265447	-33.75739	-	-
	1006507	Moderate Injury	30	Rear end	Divided road	Daylight	151.289577	-33.749773	-	1
	1006517	Minor/Other Inj..	18	2 left turning	Roundabout	Daylight	151.327916	-33.642664	-	1
	1006618	Moderate Injury	88	Out of cont on bend	T-junction	Daylight	151.31304	-33.646562	-	1



Repo..	Crash ID	Degree of crash	RUM - code	RUM - descripti..	Type of location	Natural l..	Longitude	Lattitude	No ..	No Inju..
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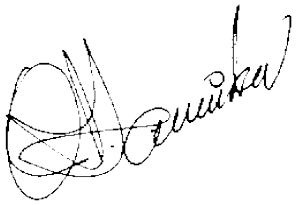
	1003770	Non-casualty (t..	10	Cross traffic	Roundabout	Daylight	151.243464	-33.75368	-	-
	1004878	Minor/Other Inj..	30	Rear end	X-intersection	Daylight	151.306026	-33.677026	-	2
	1006494	Non-casualty (t..	40	U turn	T-junction	Daylight	151.265447	-33.75739	-	-
	1006507	Moderate Injury	30	Rear end	Divided road	Daylight	151.289577	-33.749773	-	1
	1006517	Minor/Other Inj..	18	2 left turning	Roundabout	Daylight	151.327916	-33.642664	-	1
	1006618	Moderate Injury	88	Out of cont on bend	T-junction	Daylight	151.31304	-33.646562	-	1

Figure 6. Crashes map – near the site and in the area.

Conclusions	• Proposed parking provision ◦ Complies with the Council's Development Control Plan requirements for residential car parking provision. ◦ Short by 4 spaces with the Council's Development Control Plan requirements for retail car parking provision, however ▪ The total proposed parking deficit is less than the existing parking deficit ▪ Ample parking opportunities exist in the surrounding streets to cater for the additional parking demand.
	• Traffic impacts ◦ The additional traffic from the proposed development will be minimal and will have no negative impacts on street network operation
	• Design of access, car parking and servicing facilities ◦ Complies with the relevant Standards
	• The proposed development is supportable on traffic and parking grounds.



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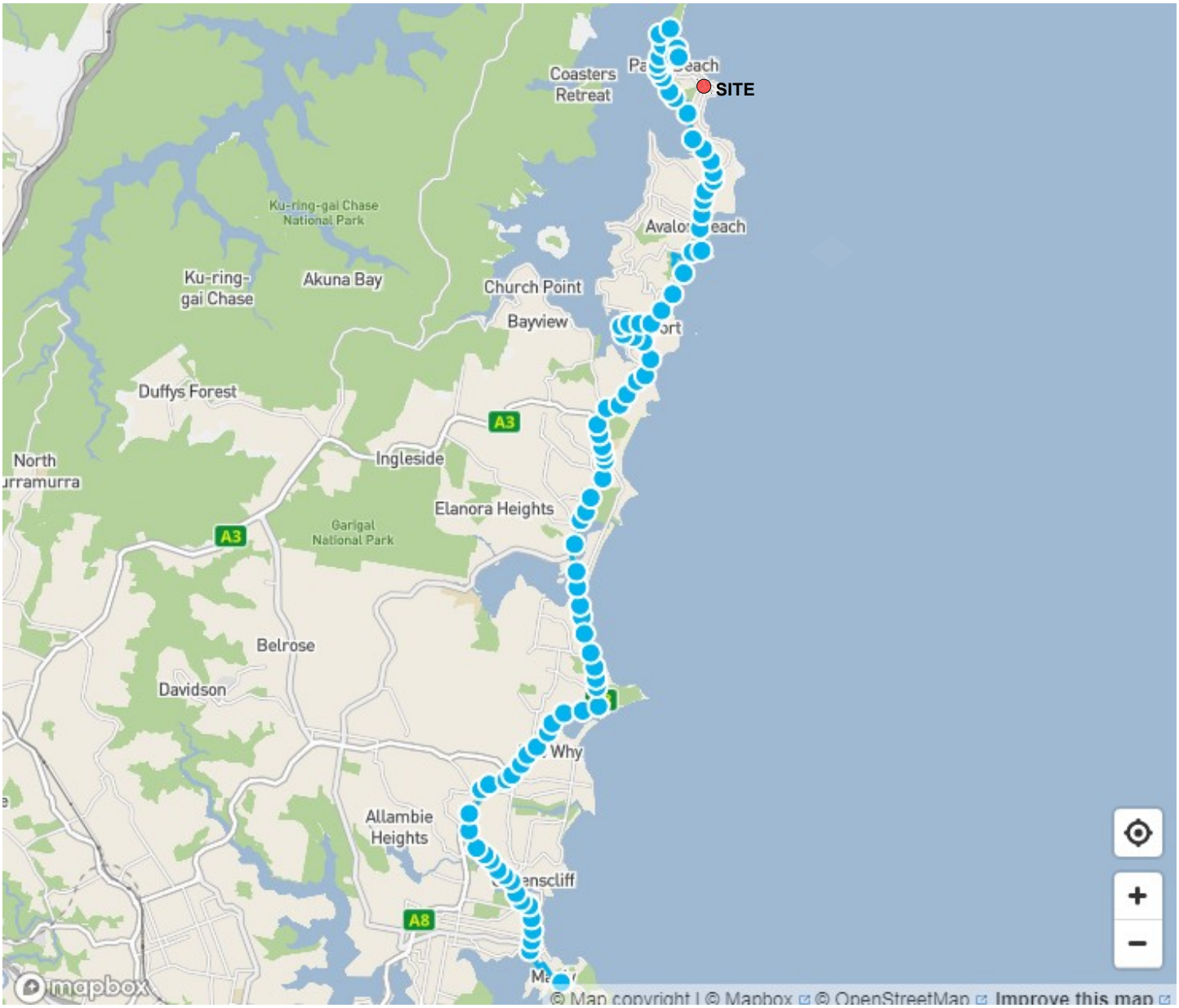
References:

Pittwater 21 Development Control Plan 2011
RMS (2002) Guide to Traffic Generating Developments
AS/NZS 2890.1:2004: Parking Facilities – Off-street car parking
AS 2890.2-2018: Parking Facilities – Off-street commercial vehicle facilities
AS 2890.3:2015: Parking Facilities – Bicycle parking
AS/NZS 2890.6:2009: Parking Facilities – Off-street parking for people with disabilities

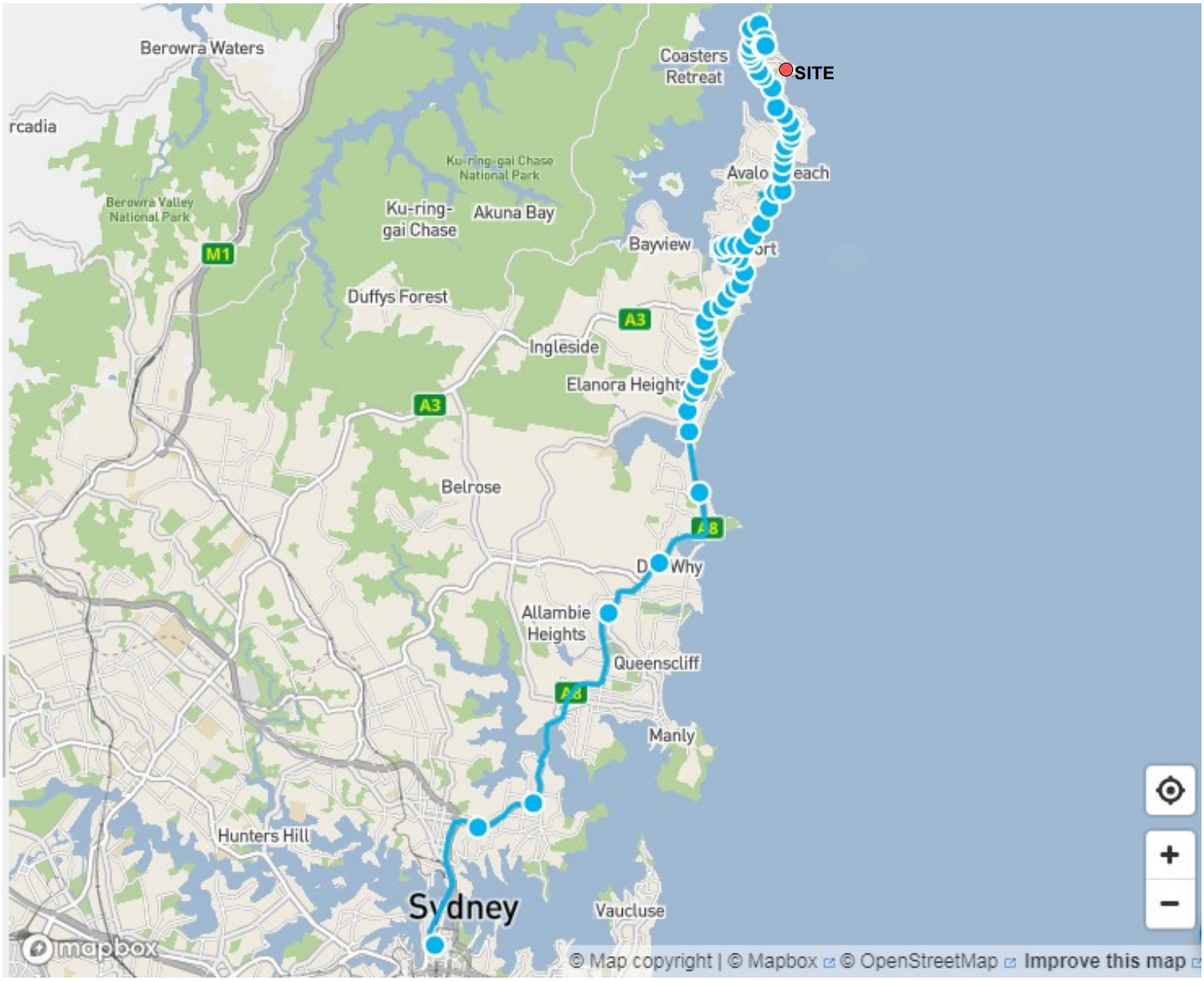
Appendix

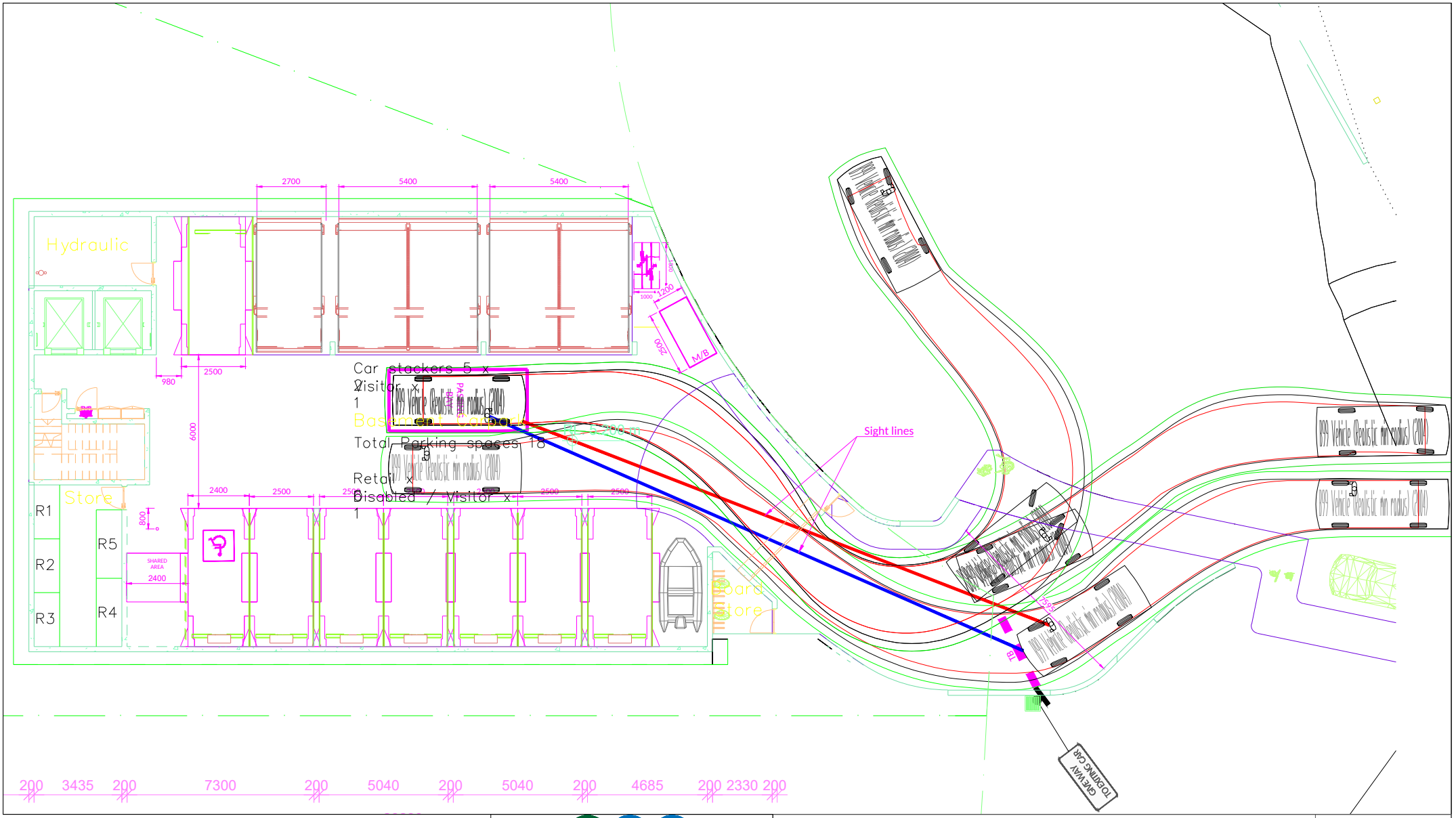
Bus routes
Car park design checks and vehicle turning diagrams

Bus Route 199



Bus Route L90





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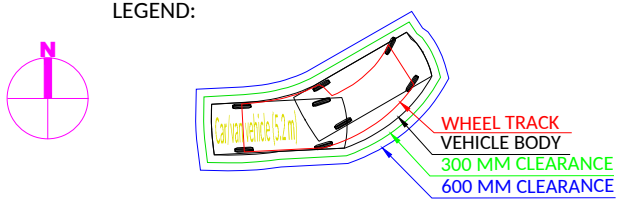

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Proposed car park layout
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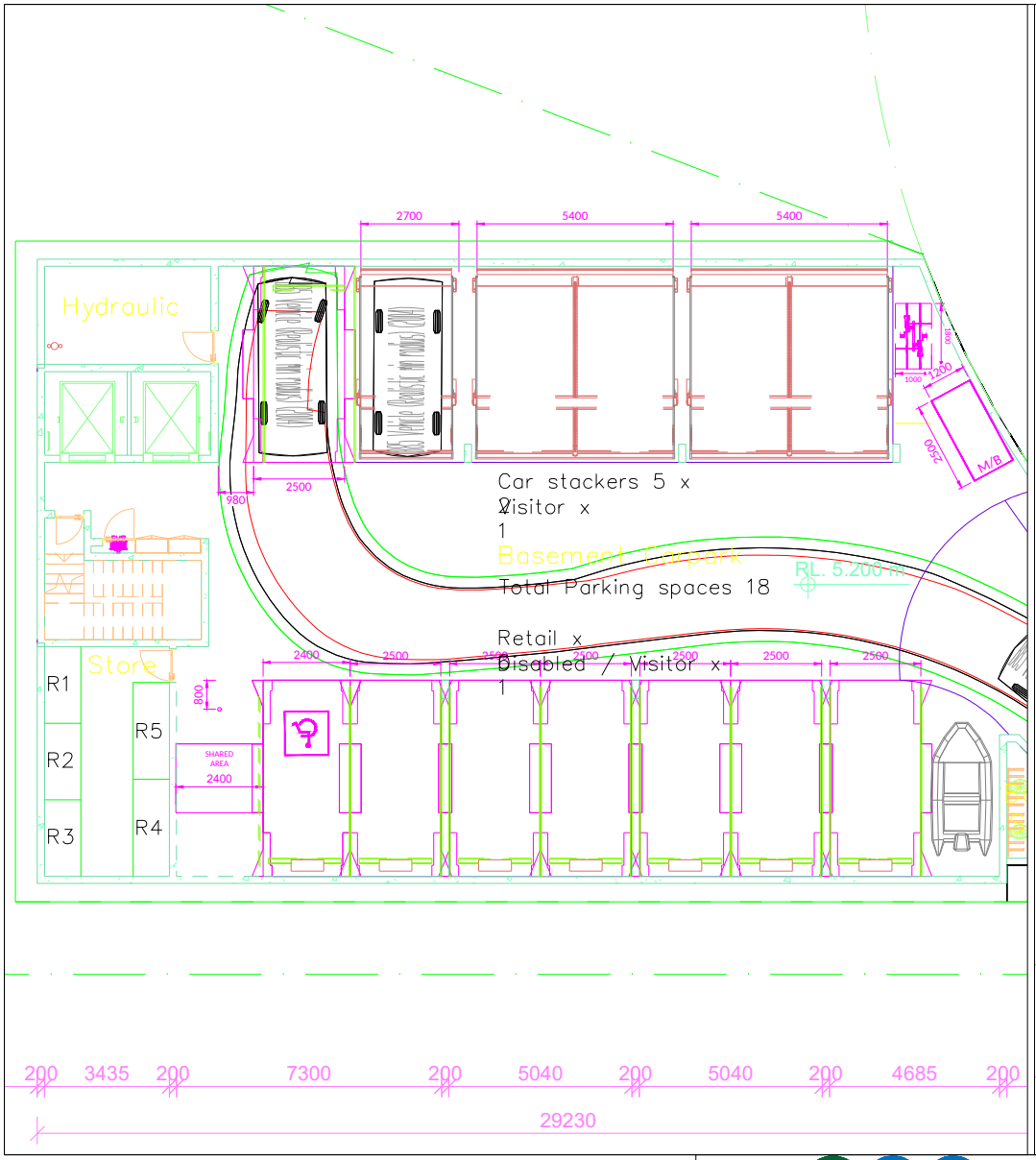

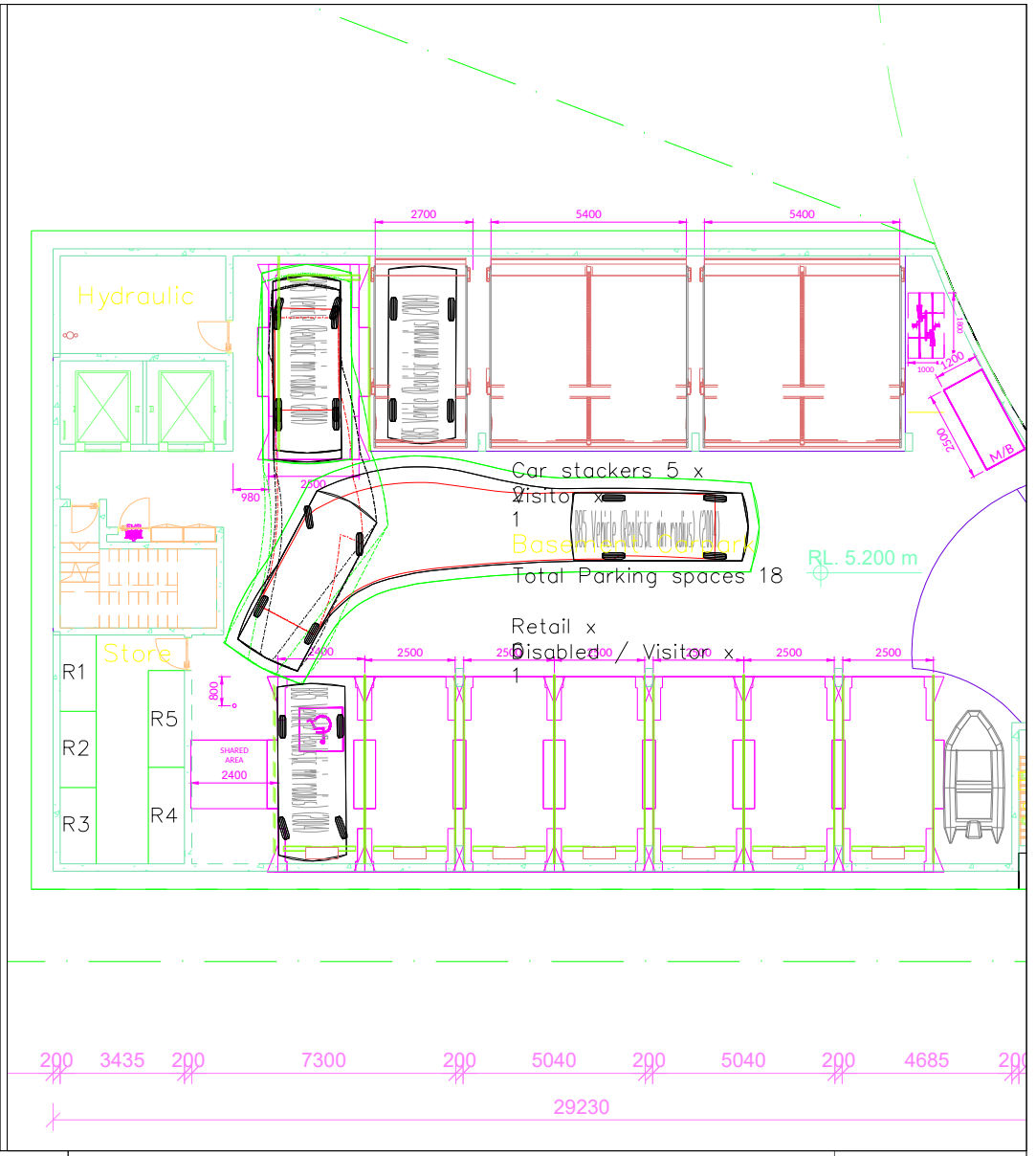

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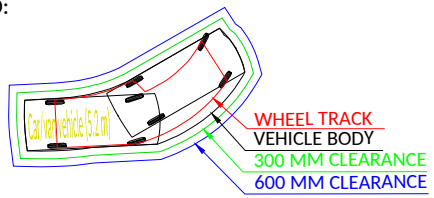

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Option 2

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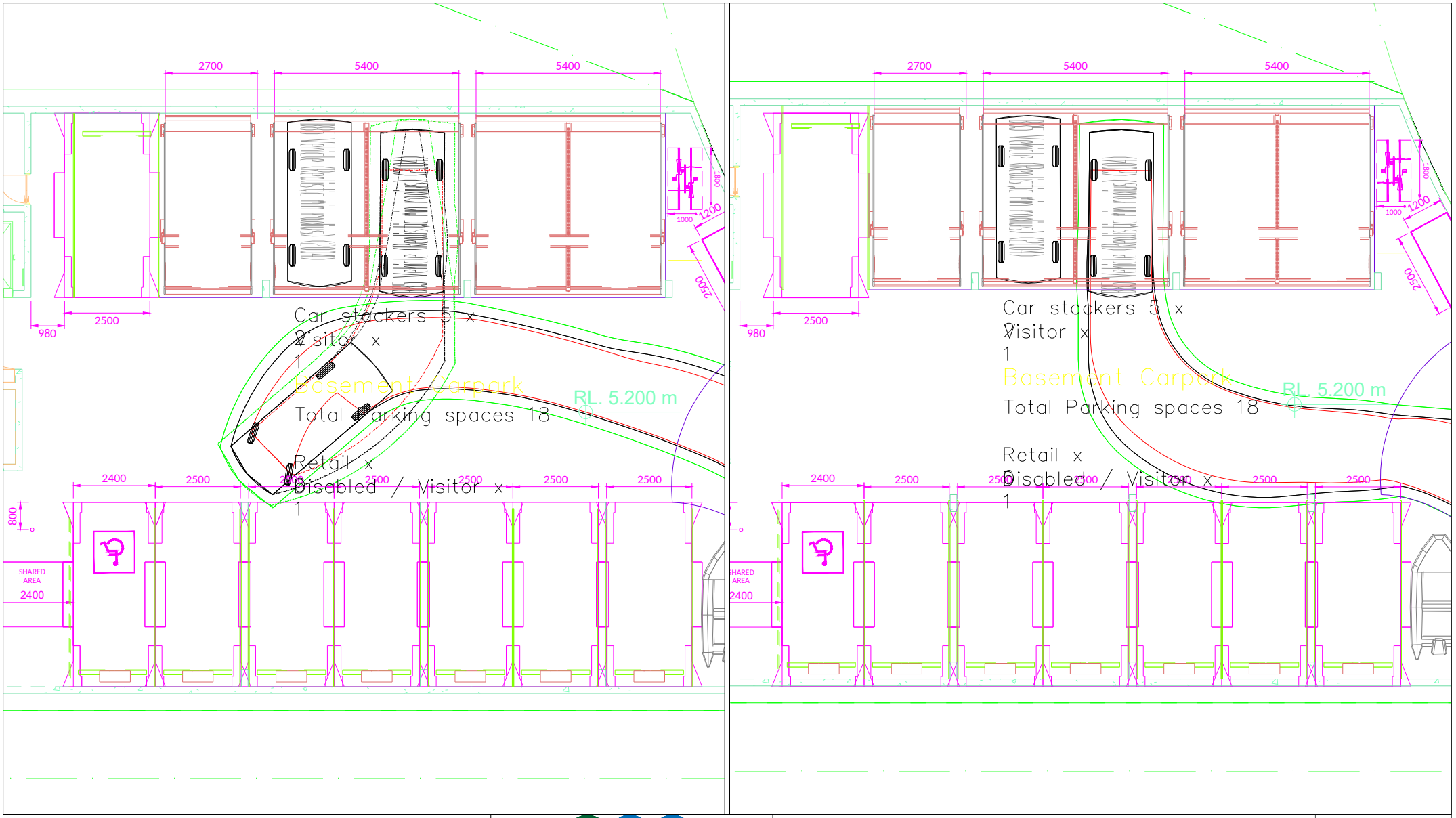

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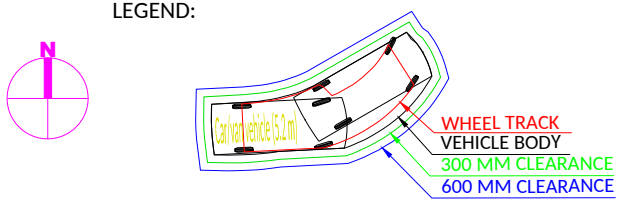

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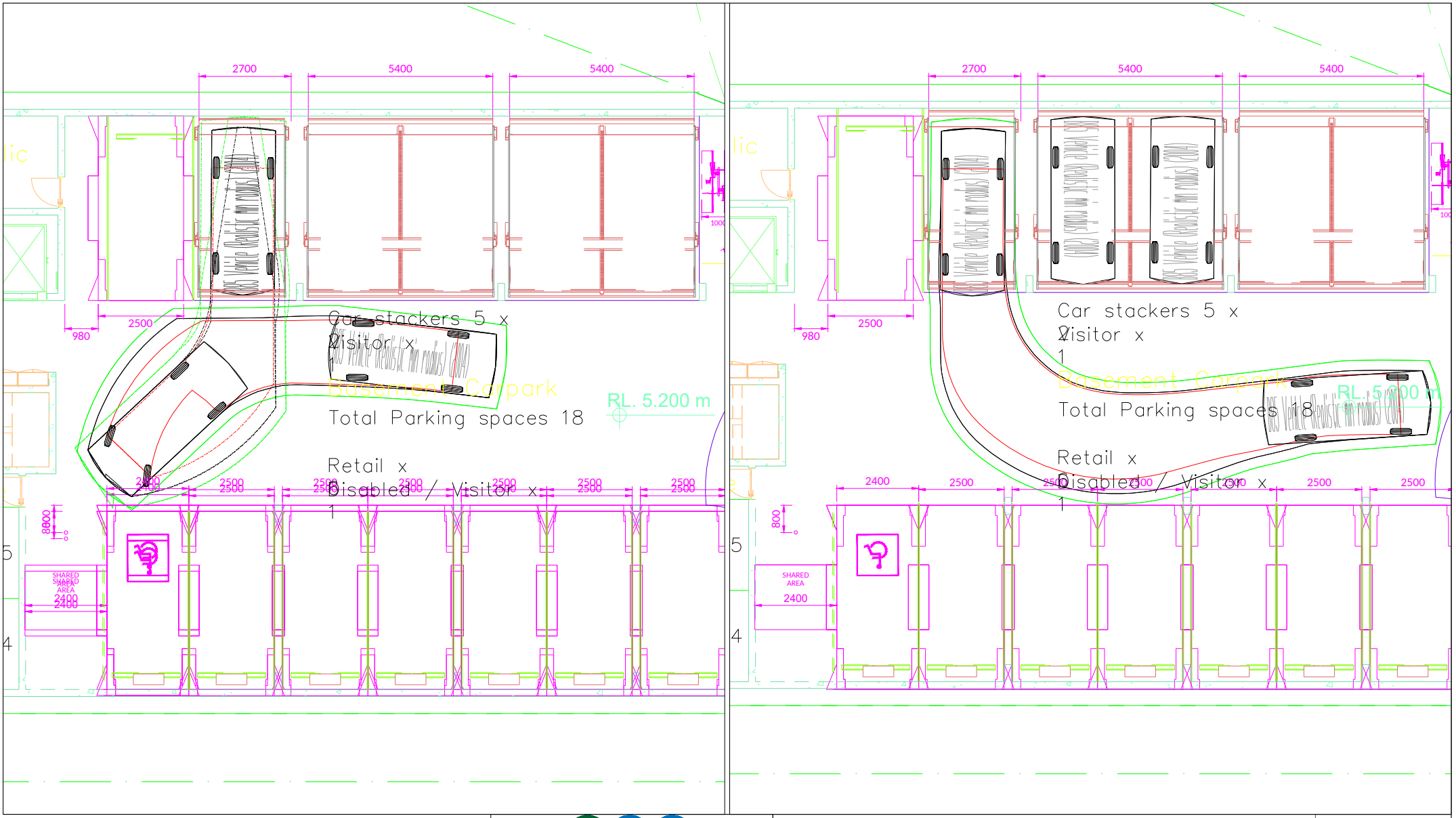

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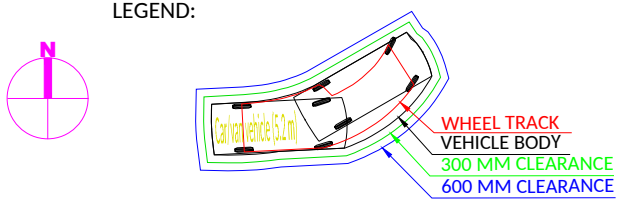

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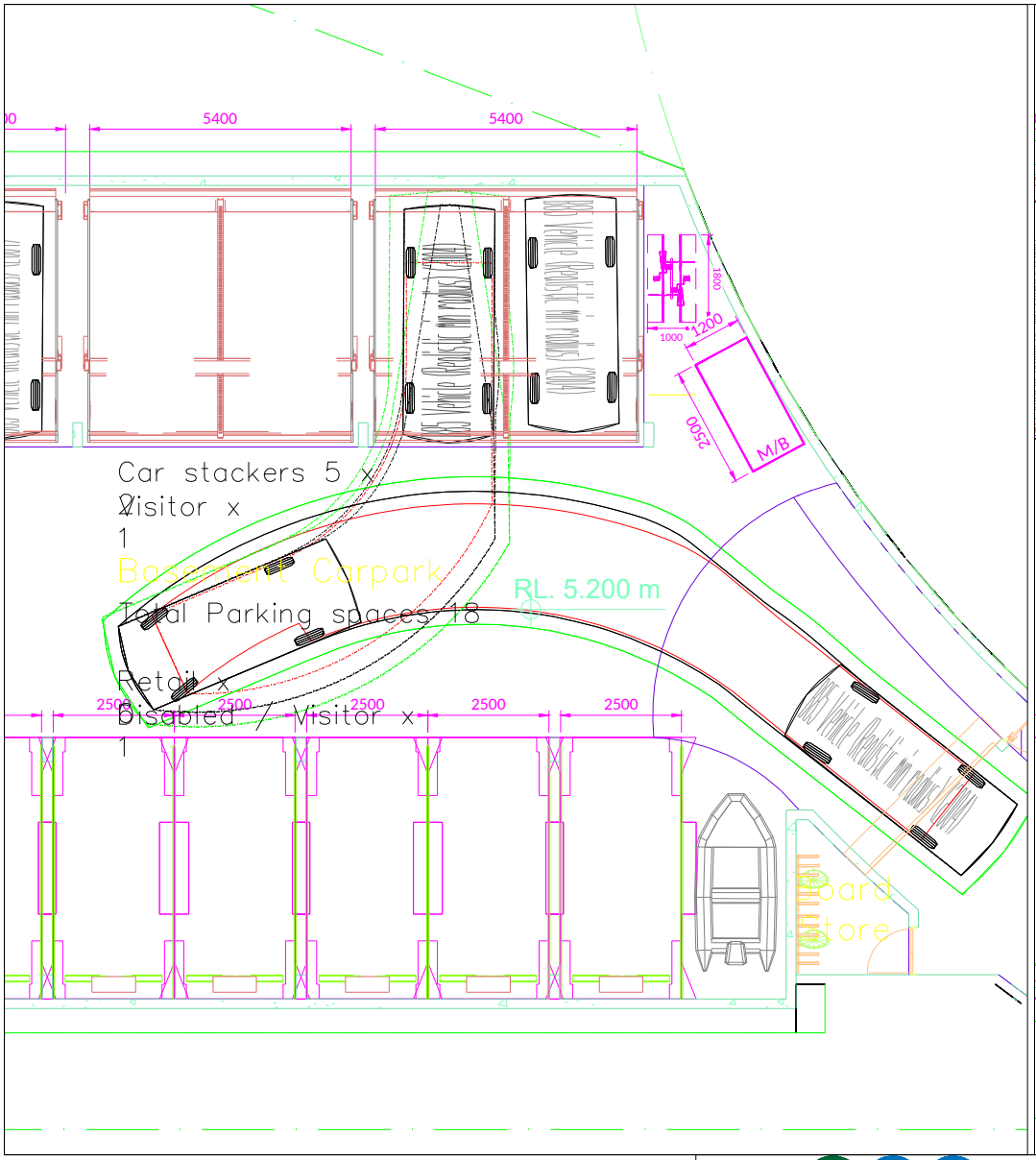

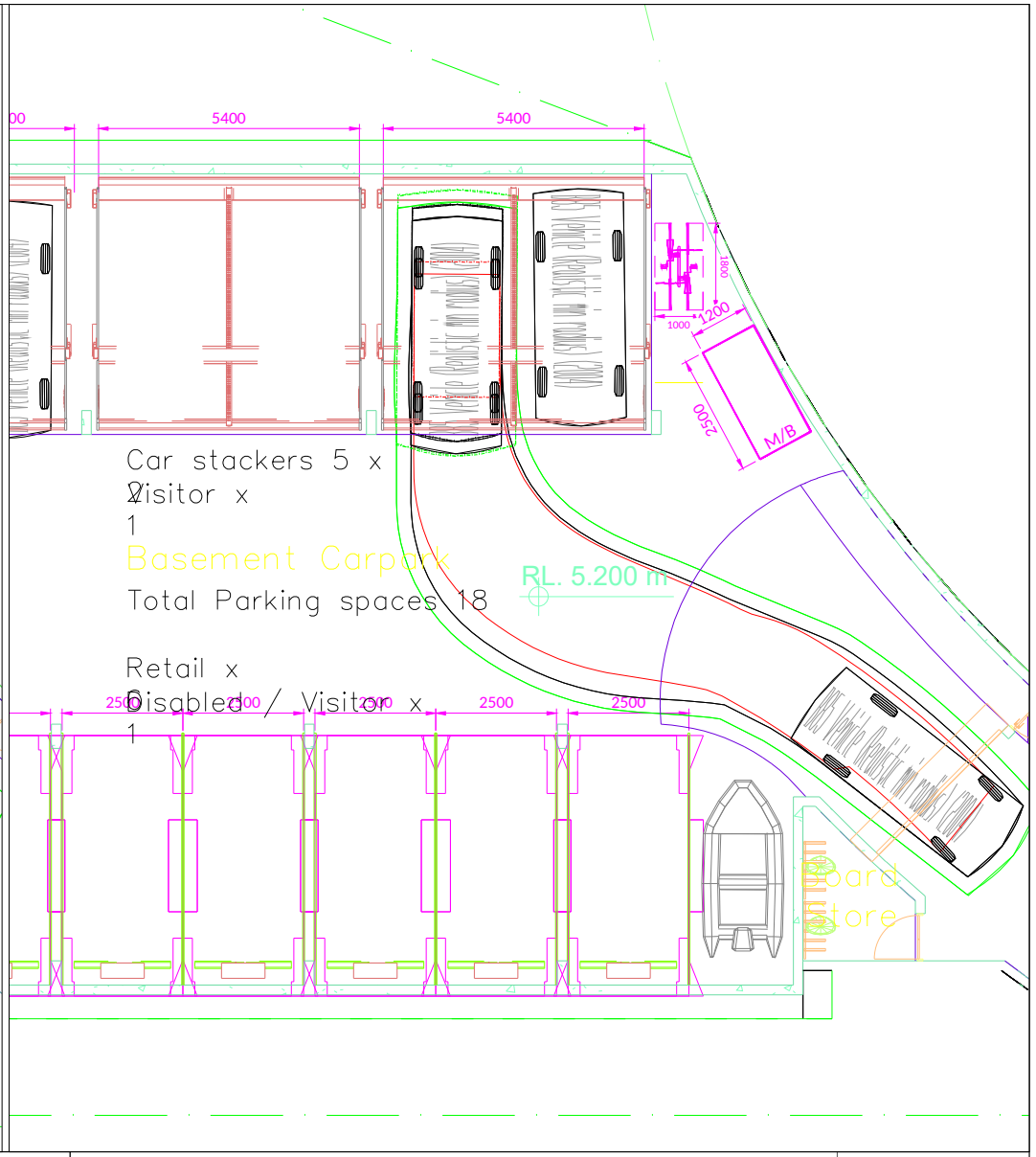

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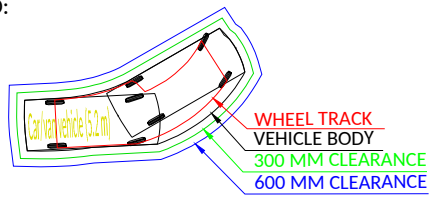

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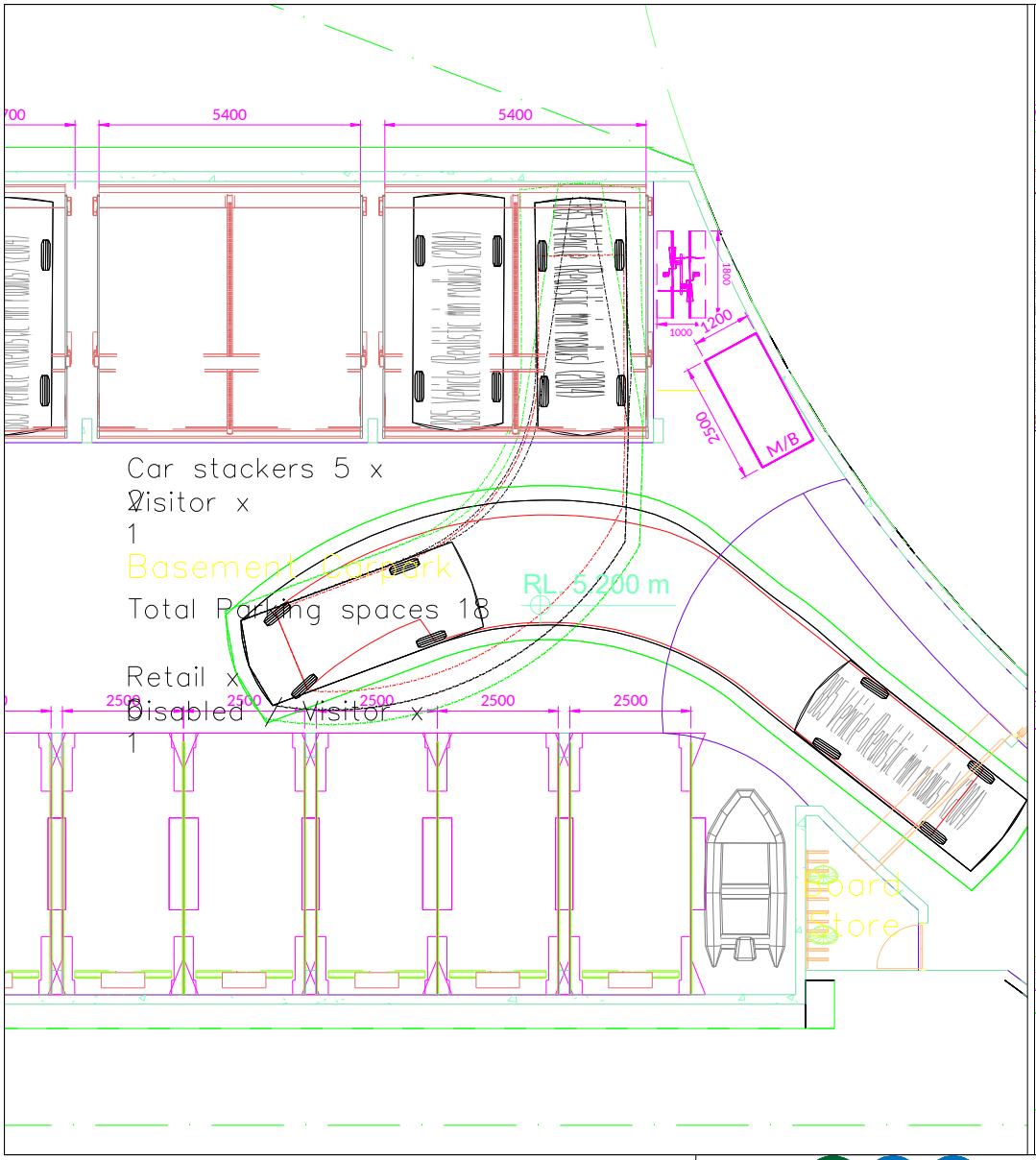

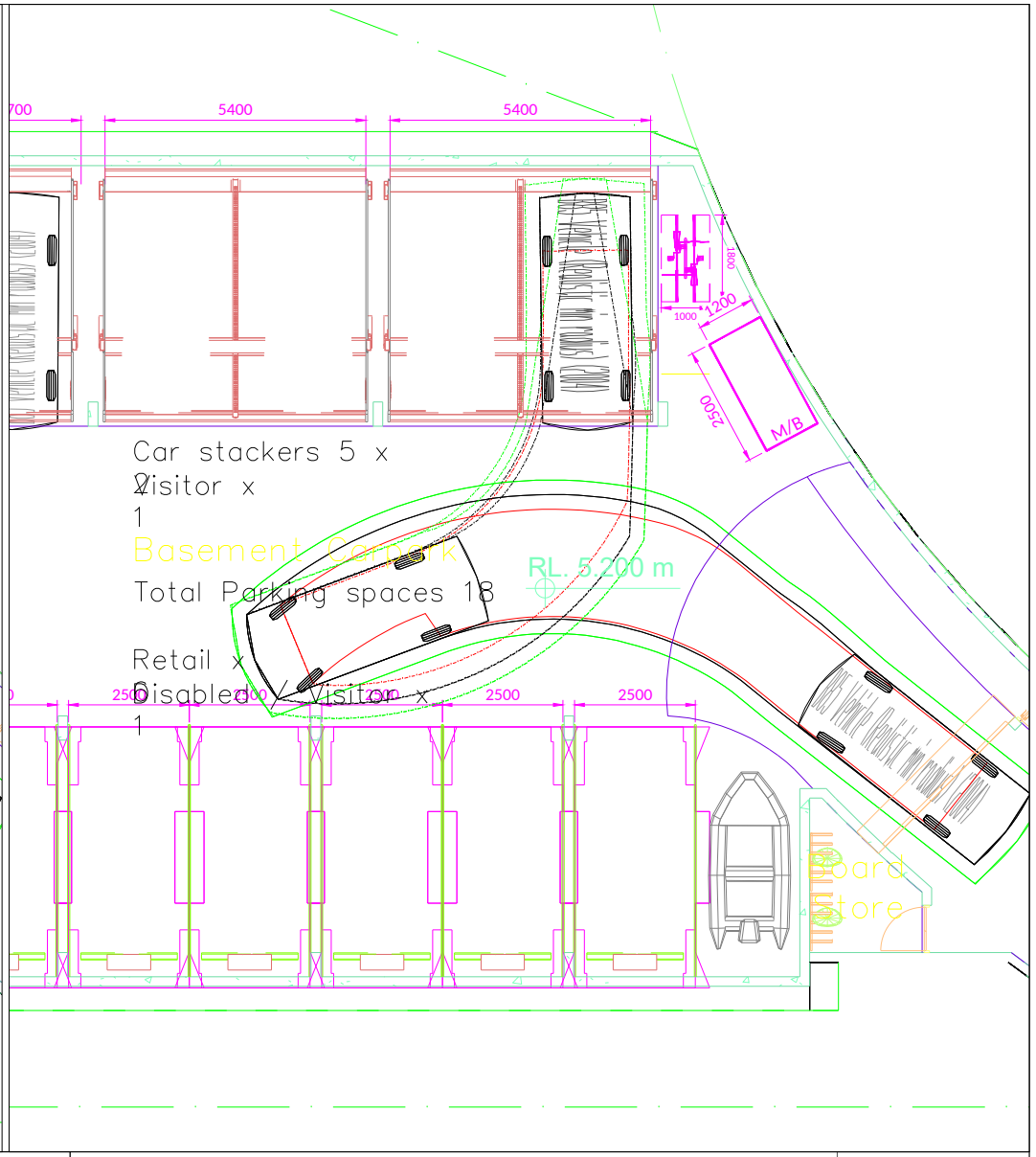

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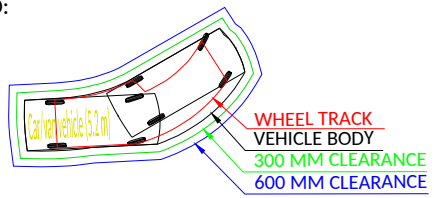

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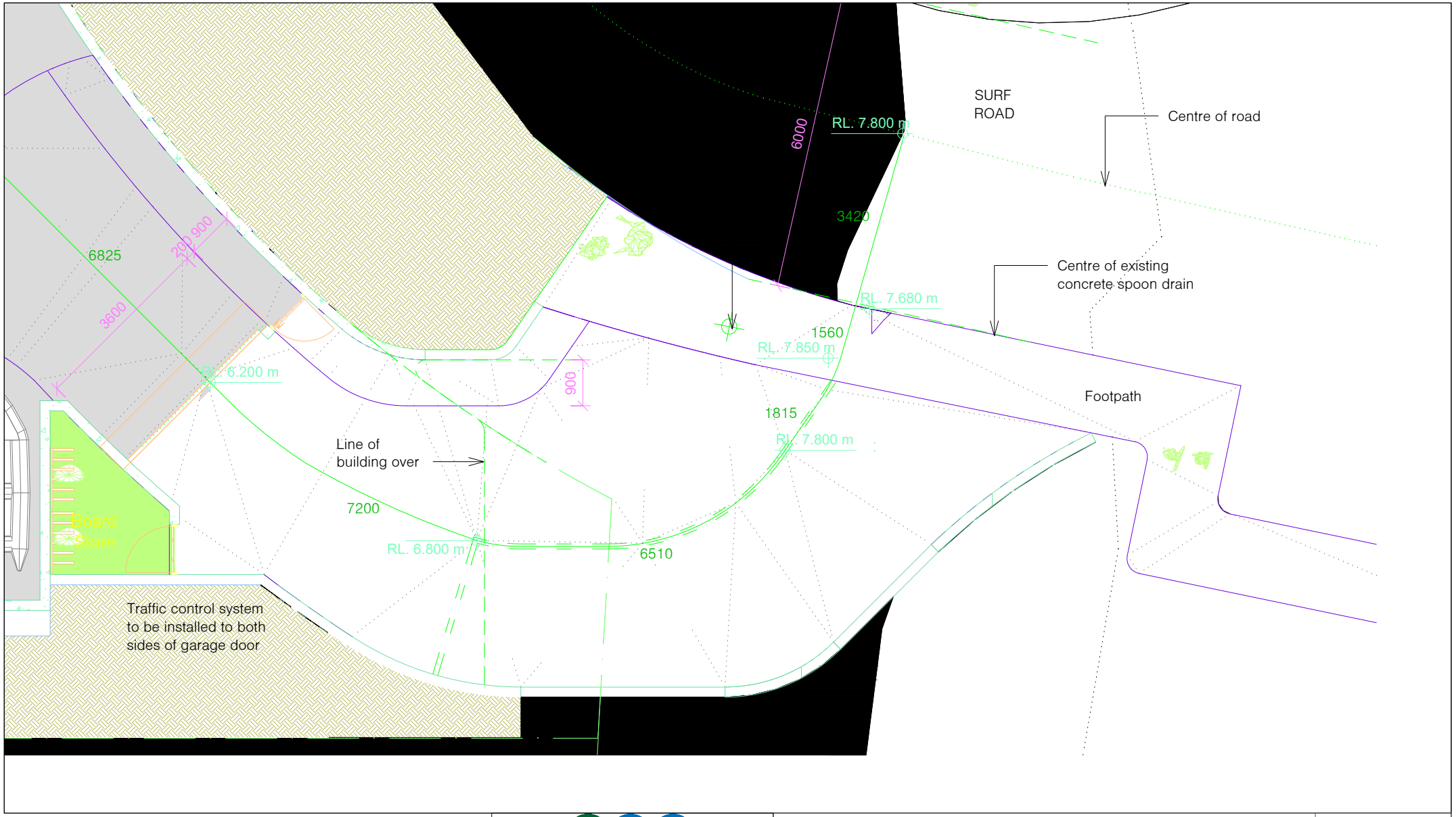

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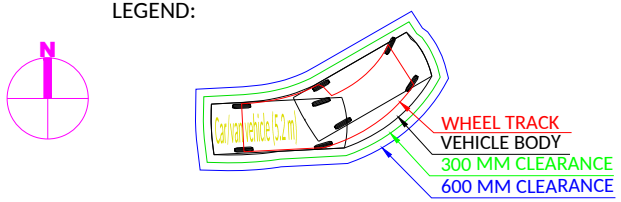

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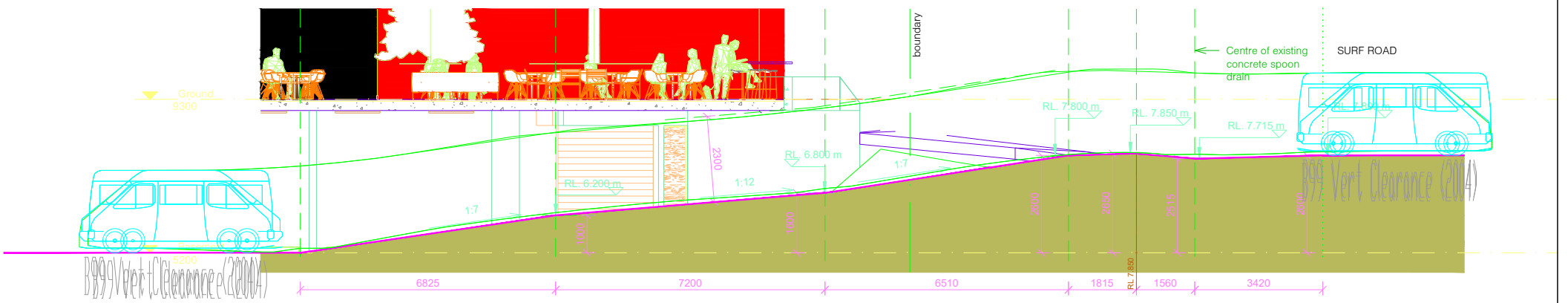

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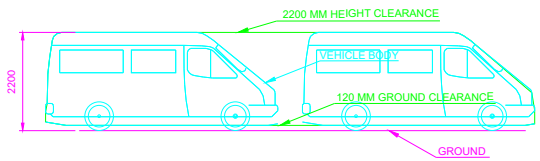

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Client:
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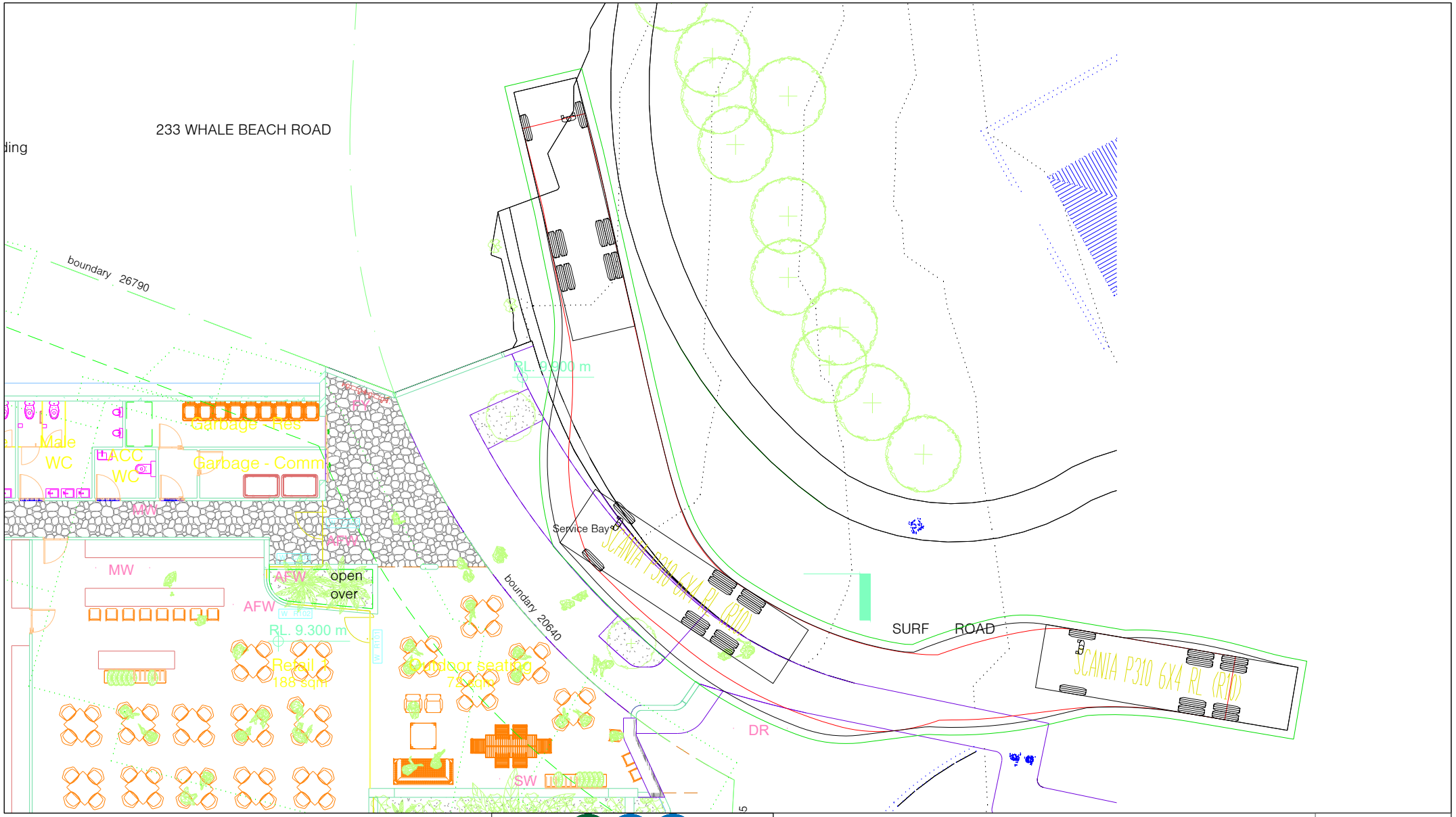

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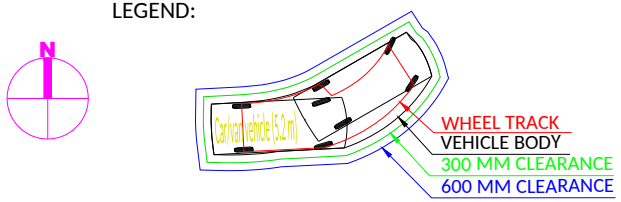

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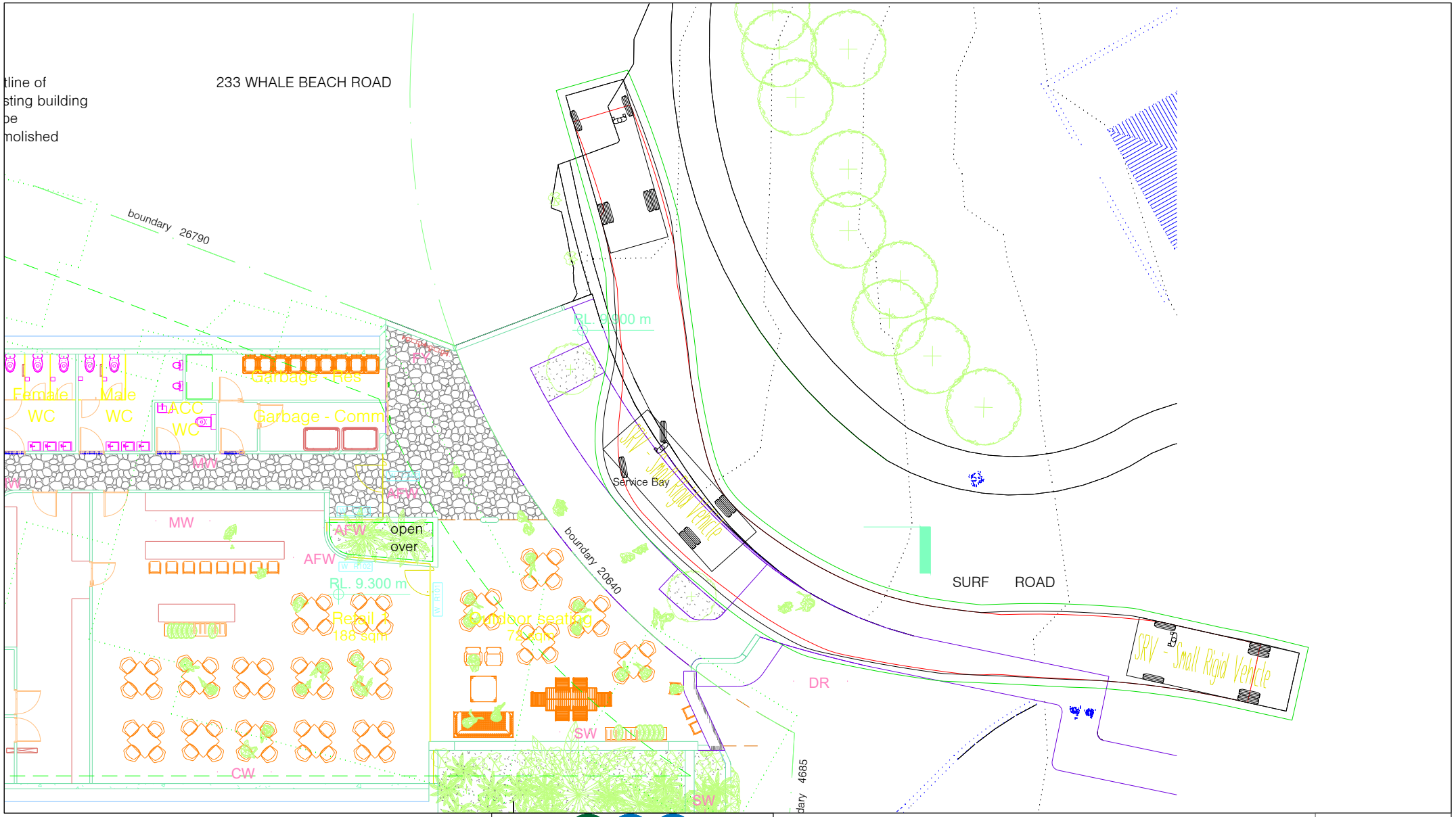

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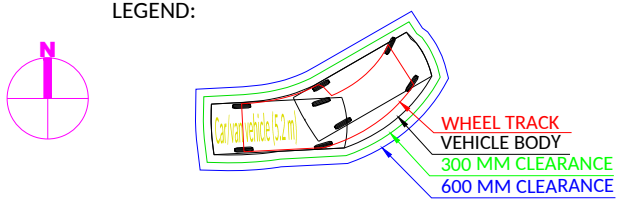

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