ML
Traffic Engineers

TRAFFIC AND PARKING IMPACT ASSESSMENT

Proposed Showroom and tasting area

26 Orchard Road in Brookvale

Prepared for: Nick McDonald

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1. INTRODUCTION

ML Traffic Engineers was commissioned by Nick McDonald to prepare a traffic and parking impact assessment for a proposed showroom and tasting area in 26 Orchard Road in Brookvale. Currently the site is vacant and was previously a mechanical works shop. Artisan beer will be brewed on site

Vehicle access and egress is via Orchard Road and existing concrete driveway leading to Mitchell Road.

This traffic report focuses on the proposed showroom and tasting area and changes in car usage and car park utilisation and additional trips from the proposed showroom and tasting area.

In the course of preparing this assessment, the subject site and its environs have been inspected, plans of the development examined, and all relevant traffic and parking data collected and analysed.

The Scope of Works is as follows for preparing a traffic and parking impact based on qualitative assessment:

- Assess the traffic impacts usage of the proposed showroom and tasting area day on the local road network upon the external road network including nearby intersections
- Assess the parking demand and the parking requirements of the proposed showroom and tasting area

2. BACKGROUND AND EXISTING CONDITIONS

2.1 Location and Land Use

The proposed showroom and tasting area is located in the industrial area of Brookvale with Freshwater Senior Campus on the east. Residential buildings are primarily located at least 215 metres away to the south. Warringah Mall and Denzil Joyce Oval are located south west and east of the proposed showroom and tasting area respectively.

Currently the site is vacant.

Figures 1 shows the location of the proposed showroom and tasting area from the aerial map.

Figures 2 shows the location of the proposed showroom and tasting area from the street map and assessed intersections respectively.

Figures 3 shows the existing site.

Figure 1: Location of the Subject Site on Aerial

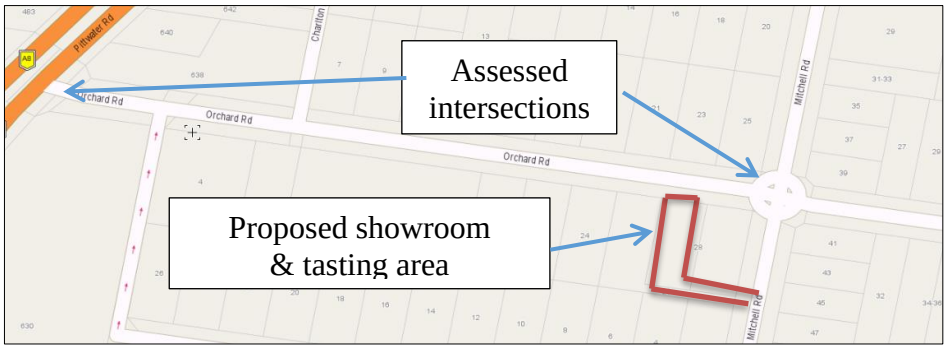


Figure 2: Street Map of the Location of the Proposed showroom and tasting area and assessed intersections

Figure 3: Proposed showroom and tasting area from Orchard Road

Figure 3: Vehicular access to proposed showroom and tasting area from Mitchell Road

2.2 Road Network

This section describes the roads near the proposed showroom and tasting area.

Orchard Road is a local road with one lane each way with a sign posted speed limit of 50km/hr. Time unrestricted on street parking is permitted on both side of the road. One hour restricted on street parking is permitted near the intersection between Pittwater Road and Orchard Road. Figure 4a shows a photograph of Orchard Road.

Mitchell Road is a local road with one lane each way with a sign posted speed limit of 50km/hr. Time unrestricted on street parking is permitted on both side of the road. Figure 4b shows a photograph of Mitchell Road.

Pittwater Road is an arterial road with two lanes each way on a divided carriageway near Orchard Road with a sign posted speed limit of 60km/hr. One hour restricted on street parking is permitted on the both side of the road except on the south bound near the intersection of Pittwater road with Orchard Road. Figure 4c shows a photograph of intersection of Orchard Road with Pittwater Road.

Figure 4: Orchard Road facing West

Figure 4: Mitchell Road facing South

Figure 4: Intersection of Orchard Road with Pittwater Road

2.3 Intersection Description

As part of this traffic impact assessment two intersections are assessed:

- Roundabout intersection of Mitchell Road with Orchard Road
- Priority intersection of Pittwater Road with Orchard Road

External travel to and from the proposed showroom and tasting area are likely to travel through one of the above intersections. The intersections are assessed for the weekday PM hour (5pm to 6pm), Saturday midday (midday to 1pm) and PM peak hour (6pm to 7pm) when the proposed Showroom and tasting area is at its busiest on the weekday and on a weekend. There is very low activity in the weekday or Saturday morning peak hour.

The roundabout intersection of Mitchell Road with Orchard Road is a four-leg intersection with all turn movements permitted. The roundabout has one circulating lane. Figure 5 presents the layout of this intersection using SIDRA – an industry standard intersection software. The numbers on the roundabout island represent the diameter of the island in metres.

The priority intersection of Pittwater Road with Orchard Road is a three-legged intersection with all turn movements. Traffic on Orchard Road must give way to traffic on Pittwater Road. Bus lanes are provided and apply to the weekday commuter period in the direction of travel towards the Sydney CBD. At other times, the kerbside lane is a parking lane.

Figure 6 presents the layout of this intersection using SIDRA – an industry standard intersection software.

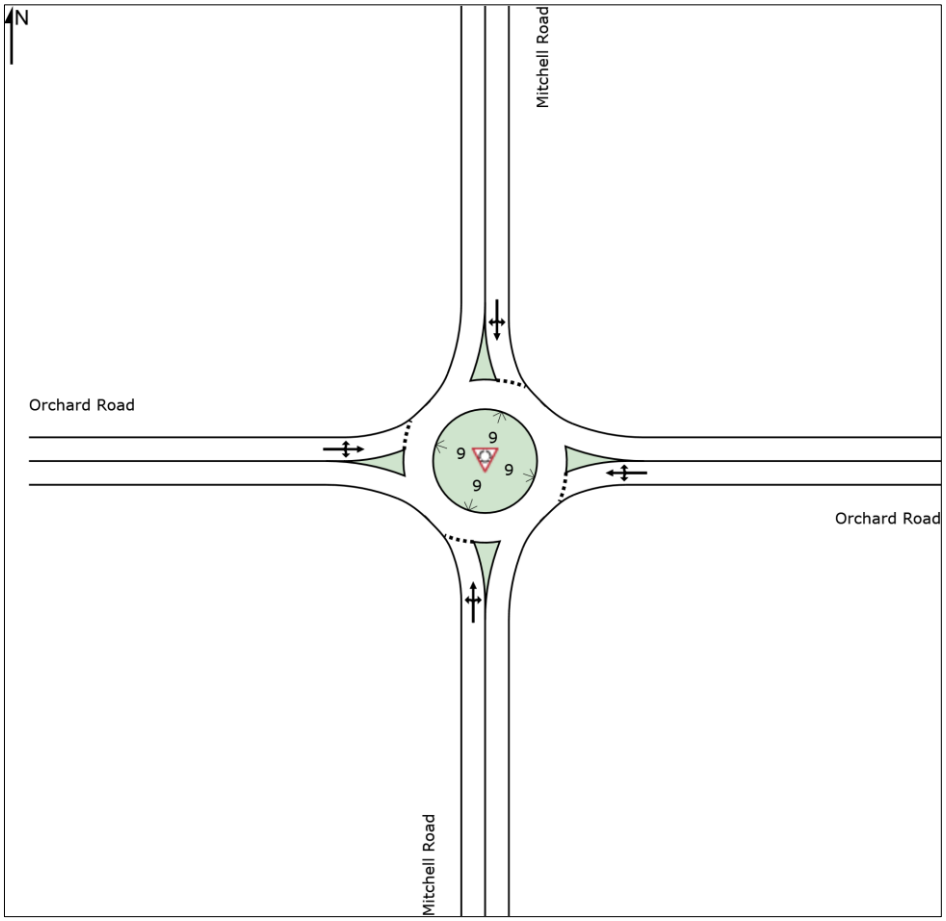


Figure 5: Roundabout Intersection Layout of Mitchell Road with Orchard Road (SIDRA)

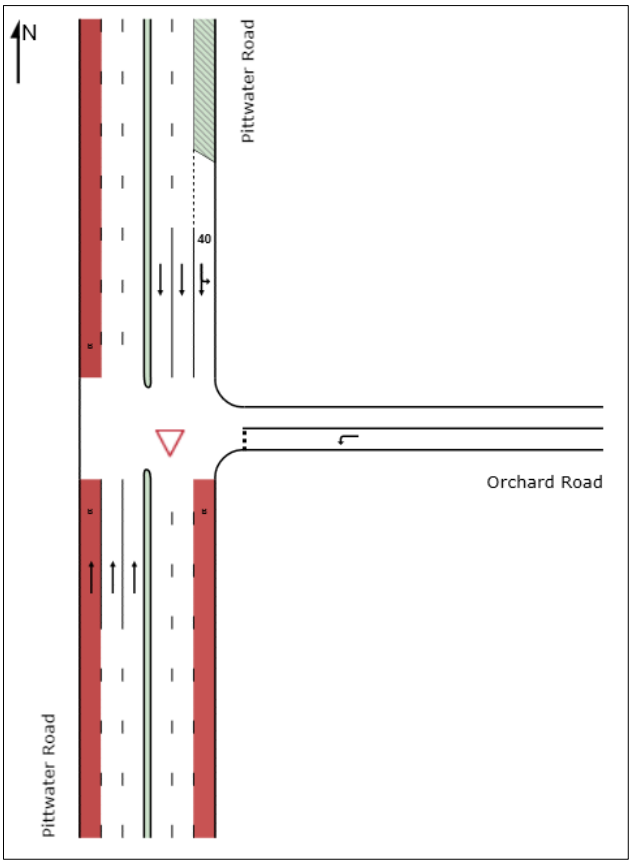


Figure 6: Priority Intersection Layout of Pittwater Road with Orchard Road (SIDRA)

2.4 Traffic Volumes

As part of the traffic assessment, traffic counts have been undertaken at the adjacent intersections for the weekday 5pm to 6pm, Saturday midday (midday to 1pm) and Saturday (6pm-7pm) PM peak period. The PM peak hour were 6 PM to 7 PM for Saturday.

The traffic volumes are presented in the following Figures in vehicle numbers.

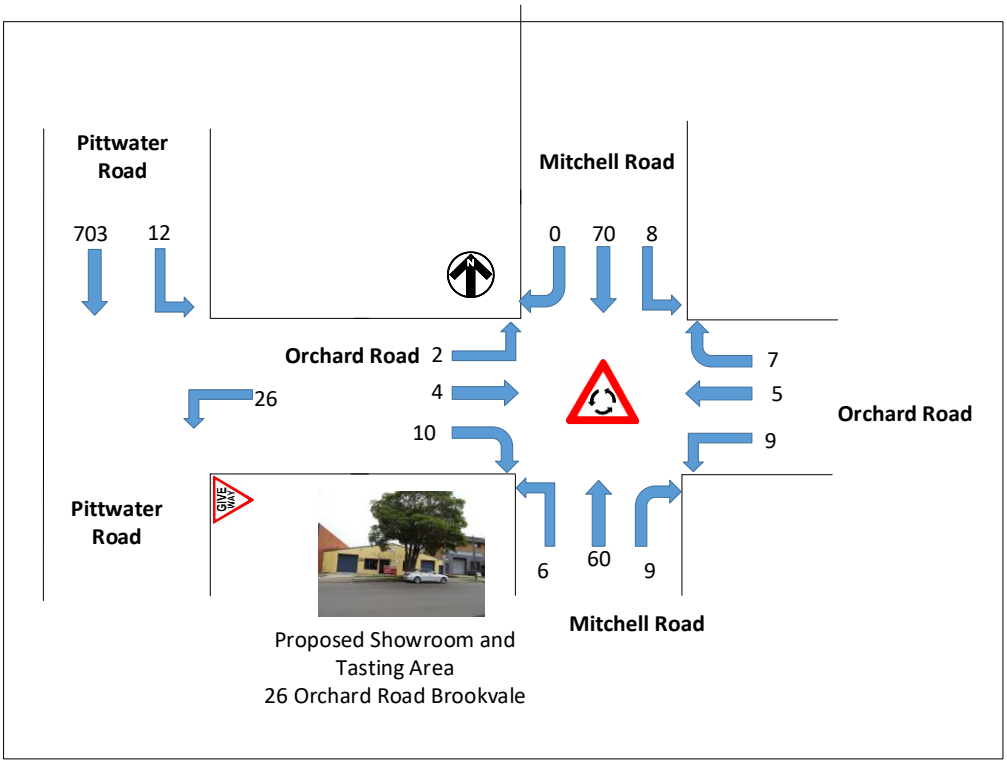


Figure 7: Existing Weekday PM Peak Hour Traffic Volumes

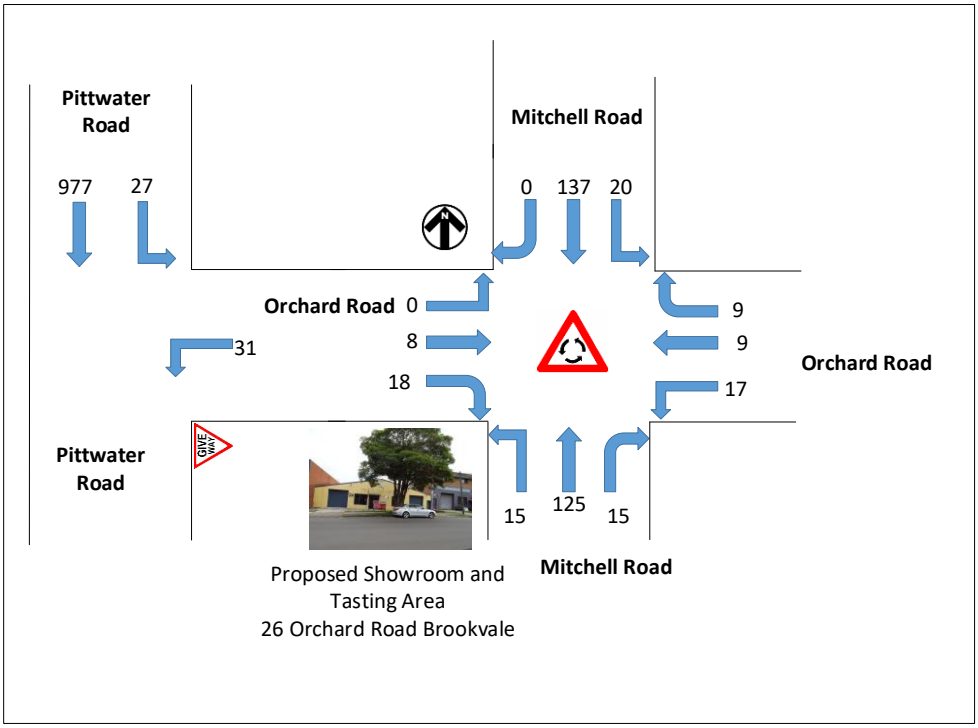


Figure 8: Existing Saturday midday Peak Hour Traffic Volumes

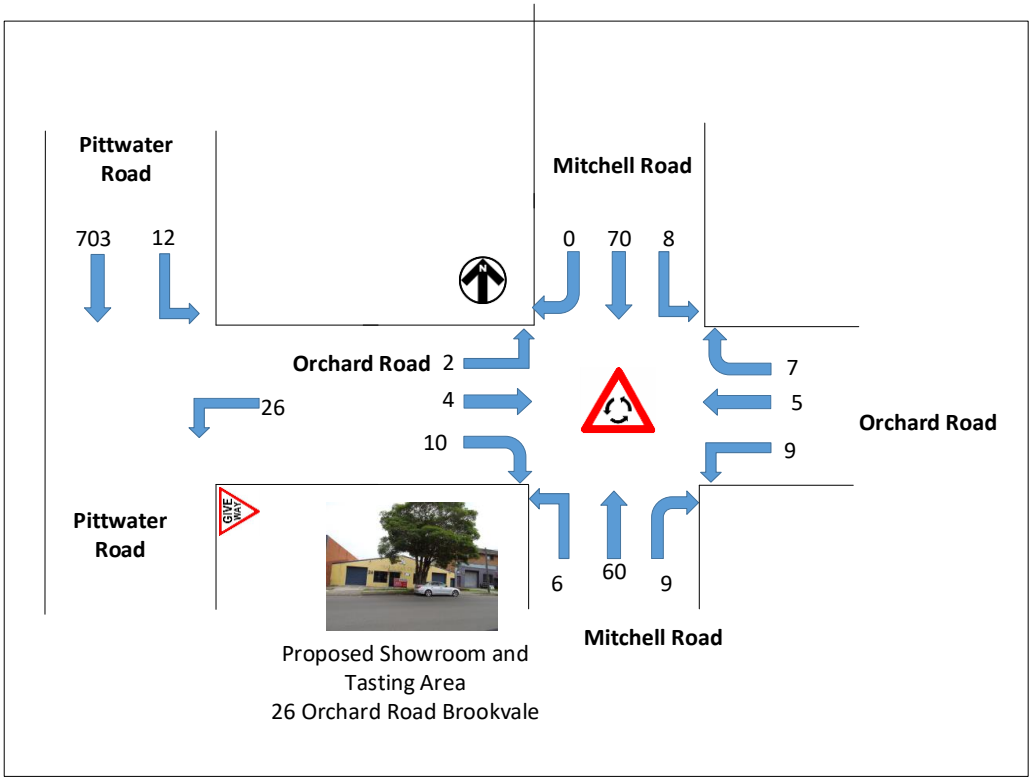


Figure 9: Existing Saturday (6 pm to 7 pm) Peak Hour Traffic Volumes

2.5 Intersection Assessment

This section assesses the two surveyed intersections.

The existing intersection operating performance was assessed using the SIDRA software package (version 8) to determine the Degree of Saturation (DS), Average Delay (AVD in seconds) and Level of Service (LoS) at each intersection. The SIDRA program provides Level of Service Criteria Tables for various intersection types. The key indicator of intersection performance is Level of Service, where results are placed on a continuum from 'A' to 'F', as shown in Table 1.

LoS	**Traffic Signal / Roundabout**	**Give Way / Stop Sign / T-Junction control**
A	Good operation	Good operation
B	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	Satisfactory	Satisfactory, but accident study required
D	Operating near capacity	Near capacity & accident study required
E	At capacity, at signals incidents will cause excessive delays.	At capacity, requires other control mode
F	Unsatisfactory and requires additional capacity, Roundabouts require other control mode	At capacity, requires other control mode

Table 1: Intersection Level of Service

The Average Vehicle Delay (AVD) provides a measure of the operational performance of an intersection as indicated below, which relates AVD to LOS. The AVD's should be taken as a guide only as longer delays could be tolerated in some locations (i.e. inner city conditions) and on some roads (i.e. minor side street intersecting with a major arterial route). For traffic signals, the average delay over all movements should be taken. For roundabouts and priority control intersections (sign control) the critical movement for level of service assessment should be that movement with the highest average delay.

LoS	Average Delay per Vehicles (seconds/vehicle)
A	Less than 14
B	15 to 28
C	29 to 42
D	43 to 56
E	57 to 70
F	>70

Table 2: Intersection Average Delay (AVD)

The degree of saturation (DS) is another measure of the operational performance of individual intersections. For intersections controlled by traffic signals both queue length and delay increase rapidly as DS approaches 1. It is usual to attempt to keep DS to less than 0.9. Degrees of Saturation in the order of 0.7 generally represent satisfactory intersection operation. When DS exceed 0.9 queues can be anticipated.

Roundabout intersection of Mitchell Road with Orchard Road

- The overall intersection has a LoS A for the PM peak hours on the weekday and Saturday
- There is spare capacity at this intersection

Priority intersection of Pittwater Road with Orchard Road

- All turn movements have a LoS A or B for the PM peak hour on weekday and Saturday
- There is spare capacity at this intersection

The full Sidra results are presented in Appendix A.

2.6 Public Transport

The nearest bus stop to the proposed showroom and tasting area is 290 metres away on Pittwater Road. This stop is serviced by Bus Route 193. This public transport service provides access to a range of suburbs including Austlink, Warringah Mall, Frenchs Forest, Belrose, Narraweena, and Beacon Hills.

The proposed showroom and tasting area has access to public bus services.

Figure 10 shows the proximity of the site to public transport services

Figure 10: Nearby Public Bus Services

2.7 Public Parking

On street parking is permitted on Mitchell Road, Orchard Road and surrounding roads near the site. A parking survey was undertaken on the weekday and Saturday in February 2020. The extent of the parking survey and parking area is shown in Figure 11a ,11b and 11c.

The results of the parking survey are presented in Tables 3 and 4 for the weekday and Saturday respectively. The Saturday has a moderate number of vacant car spaces available during the business hours (between 10am to 10pm). There is a larger number of vacant car spaces after 5pm for both weekdays and on the weekend.

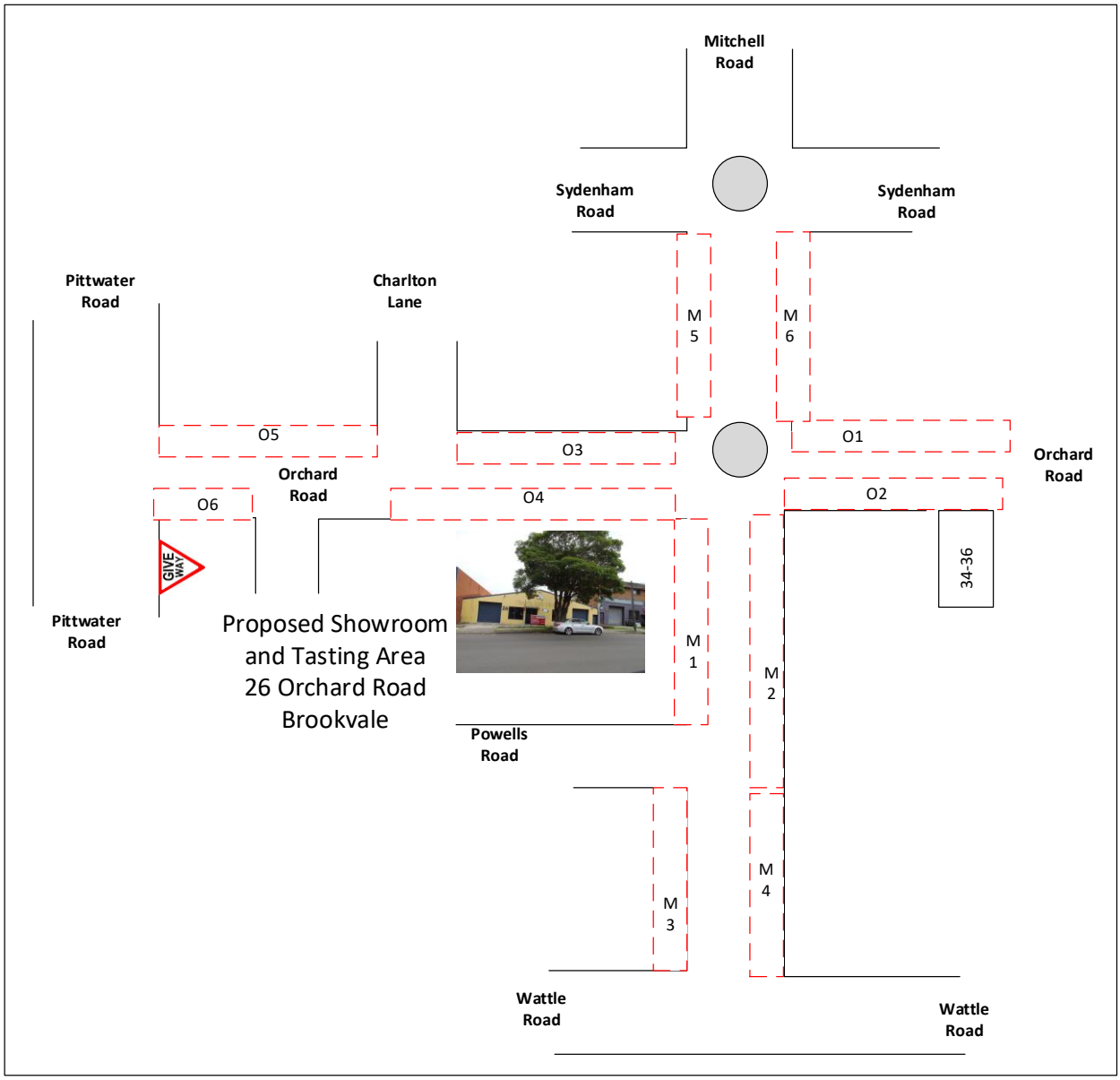


Figure 11a: Public Parking Survey Area

Figure 11b: Orchard Road Parking Survey Areas (O3 and O4)

Figure 11c: Orchard Road Parking Survey Areas (O5 and O6)

			weekday									
Area	Car Spaces	Restriction	Midday	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	10pm
M1	12		12	12	11	11	10	8	5	3	2	2
M2	8		8	8	8	8	7	5	3	4	2	2
M3	12		11	12	12	12	10	9	4	3	3	3
M4	14		13	13	14	14	12	11	6	4	2	3
M5	12		12	12	11	12	11	8	6	5	3	1
M6	7		7	7	7	7	7	7	6	5	2	2
O1	6		6	6	6	6	6	6	4	2	1	1
O2	8		7	8	8	8	7	6	5	4	2	1
O3	18	2 disabled	16	16	15	14	14	10	8	6	4	4
O4	19		19	19	18	18	14	15	10	6	5	2
O5	9	1P 8:30am-6pm Mon-Fri, 8:30pm-12:30pm Saturday	8	8	9	8	4	3	2	2	1	0
O6	4		4	4	4	4	4	4	3	2	0	0
	5		5	5	5	5	5	4	3	2	0	0
Total	134		128	130	128	127	111	96	65	48	27	21
Vacant Car spaces			6	4	6	7	23	38	69	86	107	113

Table 3: Results of the Parking Survey on a Weekday

			Saturday									
Area	Car Spaces	Restriction	10am	11am	midday	1pm	2pm	4pm	6pm	7pm	8pm	10pm
M1	12		10	11	11	10	8	5	4	2	2	2
M2	8		6	6	8	6	6	3	1	1	1	1
M3	12		8	10	11	10	11	5	2	1	1	1
M4	14		11	12	11	10	11	4	3	2	0	0
M5	12		10	11	12	11	8	6	5	4	4	2
M6	7		6	7	7	7	5	2	2	2	0	0
O1	6		5	6	6	6	6	2	2	2	2	1
O2	8		6	7	7	6	5	3	2	1	2	2
O3	18	2 disabled	8	11	10	10	10	6	5	4	4	4
O4	19		10	14	12	12	12	10	6	4	3	4
O5	9	1P 8:30am-6pm Mon-Fri, 8:30pm-12:30pm Saturday	3	4	5	4	3	3	3	2	2	1
O6	4		3	3	3	3	3	2	2	0	0	0
	5		5	5	5	4	4	3	2	2	1	0
Total	134		91	107	108	99	92	54	39	27	22	18
Vacant Car spaces			43	27	26	35	42	80	95	107	112	116

Table 4: Results of the Parking Survey on a Saturday

The parking survey results show that during the peak hours, there are at least four and twenty six car spaces available on weekday and Saturday PM peak hours respectively. A total of 134 car spaces are available within car parking areas on Orchard Road and Mitchell Road.

2.8 Conclusions

The two surveyed intersections have sufficient spare capacity to accommodate additional traffic.

The carpark survey conducted show that there are at least four and twenty six vacant car spaces during the weekday and Saturday peak hours respectively

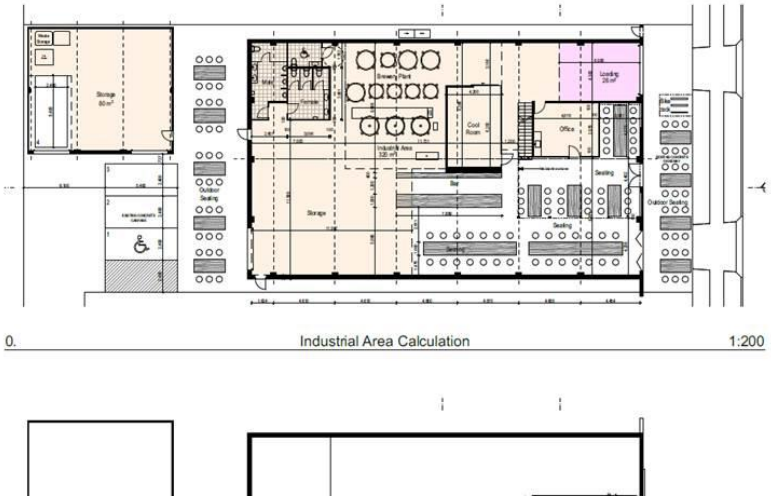
There are vacant public car spaces nearby on a weekday and a Saturday and on surrounding streets.

The site has access to public transport on Pittwater Road.

3. PROPOSED SHOWROOM AND TASTING AREA

Details of the proposed showroom and tasting area are as follows:

Floor Space



Bucketty Brewery
26 Orchard Rd, Brookvale

Site Area	1159 m²
Garage storage	80 m²
Brewery	320 m²
Mezzanine 1	72 m²
Total Industrial Area	**472 m²**
Loading Area	26 m²
Rate of Sales Area	33%
Allowable Sales Area	**156 m²**
Proposed Sales Area	155 m²
External Seating Area	163 m²

Car Spaces

- Four car spaces are provided on the ground level with vehicle entry and egress via existing concrete driveway leading to Mitchell Road. Another vehicle entry and egress is via Orchard Road.

Loading Bays

There are two opening to existing loading bays on Orchard Road

The details of operation are as follows:

- The business will run as a retail area in accordance with the new Artesian Food and Beverage planning controls and the Micro Brewery/Distillery Liquor licence
- Trade and public customers will be able to taste the beer
- Public customers will be restricted to selective time periods
    - Maximum attendance in the tasting room is 120 adults
- Trade customers will be able to sample the beer and discuss commercial arrangements for purchasing beer in a confidential manner
- Public customers will be able to purchase packaged beer
- The hours of operation for Brewery are 6 AM to 6 PM on weekdays

- The hours of operation for Tasting room are 11 AM to 12 PM from Thursday to Sunday
- Staff will be parking in the on-site parking area where possible
- Customers will need to rely on public parking
- A maximum of five staff will be present on site for the Showroom and tasting area and two staff during brewery hours.
- Storage and industry areas will not be active during peak customer periods
- Loading and unloading is mainly small deliveries in and out daily estimated 5 small deliveries via van or ute day to day. We estimate we will receive 1 – 2 large trucks per week. Delivery times for these will be early morning to reduce the impact on parking at the premises. No large deliveries which require a forklift will be accepted during showroom/cellar door hours when customers are present on site.

4. CAR PARKING ASSESSMENT

The requirements for car parking for a general club are presented in Warringah Council's Development Control Plan (2011) in Appendix 1.

The parking requirements are as follows as it applies to this development is as follows:

Shop (showroom and tasting area)

- 6.1 car space per GFA 100m^2

Industry

- 1.3 car space per 100m^2 where the ancillary office is less than 20 percent of the GFA

The parking requirements are in Table 5.

Use	Area (m²)	Car Parking Rate	Car Spaces Required	Car Spaces Provided
Shop (showroom and tasting area)				
Alloawable and outdoor seating	319	6.1 per 100m²	19	4
Industry	472	1.3 per 100m²	6	
Total			**25**	**4**

Table 5: Parking Requirement and Provision

As discussed previously, there are four allocated car spaces. The proposed showroom and tasting area is thirteen car space short of meeting Council's car parking requirements.

The public parking survey (see Section 2.7) on the nearby streets (Mitchell Road and Orchard Road) showed that there are minimum four vacant car spaces during the weekday during the day, and over 60 in the evening.

The parking survey on Saturday showed there were 27 car spaces vacant during the day on a Saturday and more than 60 vacant car spaces in the evening.

The peak period of the tasting area business is in the evening where many people are able to socialise and taste beer. The peak business period is similar to a restaurant. There will be customers during the day but not many since many people will be at work and not all workplaces allow for alcohol consumption during business hours. The location of the proposed showroom is not in a lunch area where people will travel to (unlike the McDonalds Store on Mitchell Road).

The weekday lunchtime will generate a low number of customers (similar to the low number of what occurs at Brookvale Hotel). There will more customers in the tasting area

on the Saturday (weekend) than on the weekday. However, the peak number of tasting area customers will occur on Saturday night.

Overall, the parking demand the tasting area will be met in the on street car parking areas. The peak attendance is in the evening where there are large number of vacant car spaces.

The expected maximum attendance is 120 people and will occur in the evening. The number of people per car is estimated to be two based on the observation of existing tasting room for beer within local area.

The parkin demand for 120 people maximum attendance is 60 cars after 7pm.

There are sufficient vacant car spaces after 7pm on a weekday and Saturday to accommodate the car parking demand.

5. VEHICLE TRAFFIC ASSESSMENT

The RTA *Guide to Traffic Generating Developments Version 2.2* publishes trip rates for showroom and tasting areas as follows for the evening peak hour:

Specialised Retail (showroom and tasting area)

- 5.6 car trip per 100m^2 GFA for weekdays PM peak hour
- 10.2 trips per 100m^2 GFA for Saturday PM peak hour

The storage and industry area are assumed to be not active in the weekday and Saturday peak hours when customers are at the proposed showroom and tasting area.

It is assumed that the staff arrive outside of the peak hours.

Table 6 shows the trip generation for the proposed showroom and tasting areas. The site is a modest trip generator.

	Peak Hour	Use	Area (m²)	Trip Generation Rate per 100m²	Trips Generated
Weekday	PM	Showroom and tasting area	319	5.6	18
Saturday				10.2	33

Table 6: Trip Generation for the Proposed Showroom and Tasting Area for the Weekday Peak Hours

Table 7 shows the trip distribution for the generated trips. It is assumed that more people will be driving into the showroom and tasting area in the evening peak hour.

	Peak Hour	Origin	Destination	Total Trips
Weekday	PM	0	18	18
Saturday		0	33	33

Table 7: Trip Distribution for the Proposed Showroom and Tasting Area

Figures 11, 12 and 13 present the existing with the development trips in red for origin trips and blue for destination trips for the weekday PM peak hour and Saturday midday peak hour and Saturday (6pm-7pm) respectively. The net increase of trips onto the gateway intersection is modest compared to the existing traffic volumes.

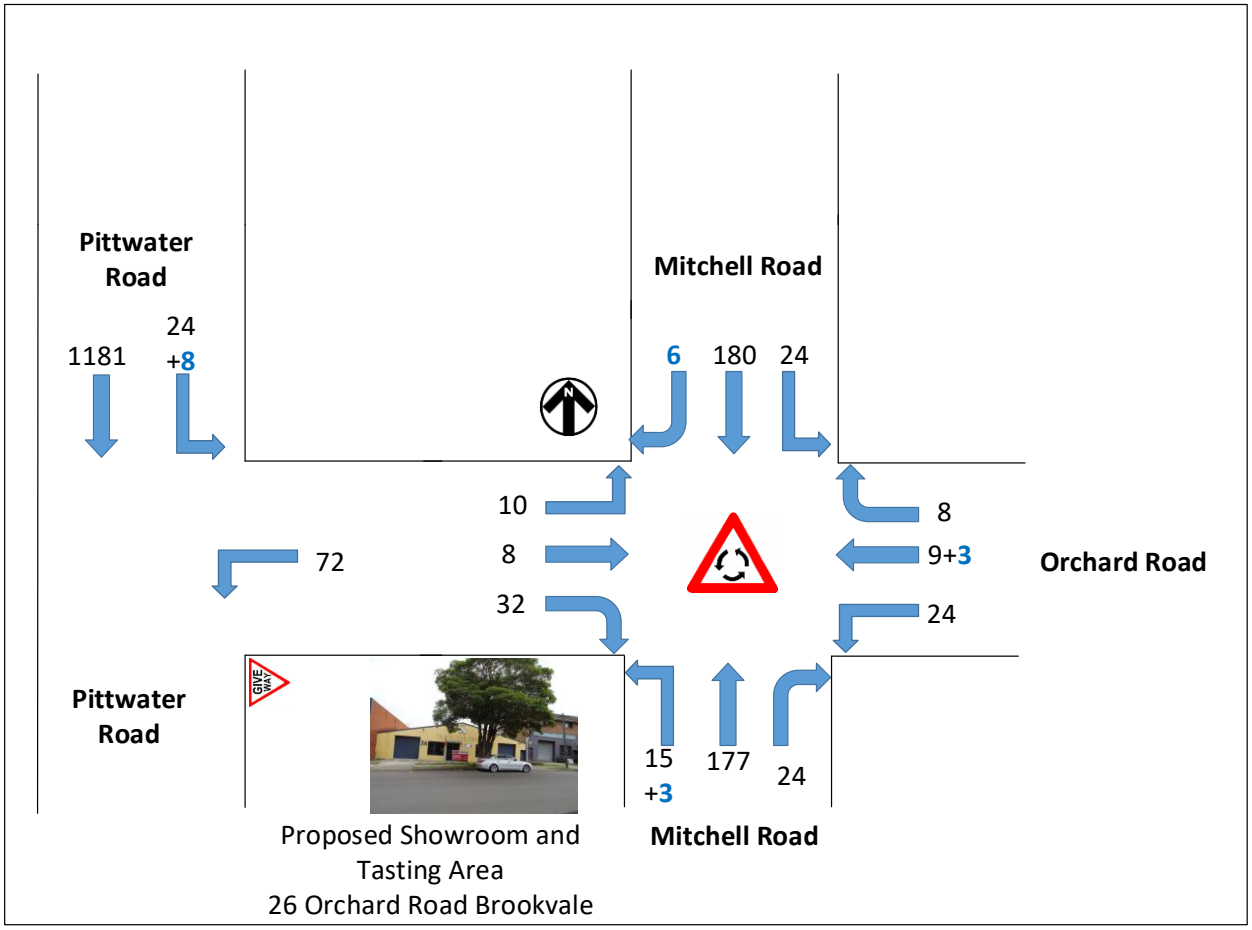


Figure 11: Weekday PM Peak Hour Car Trip Distribution (Development origin trips in red and destination trips in blue)

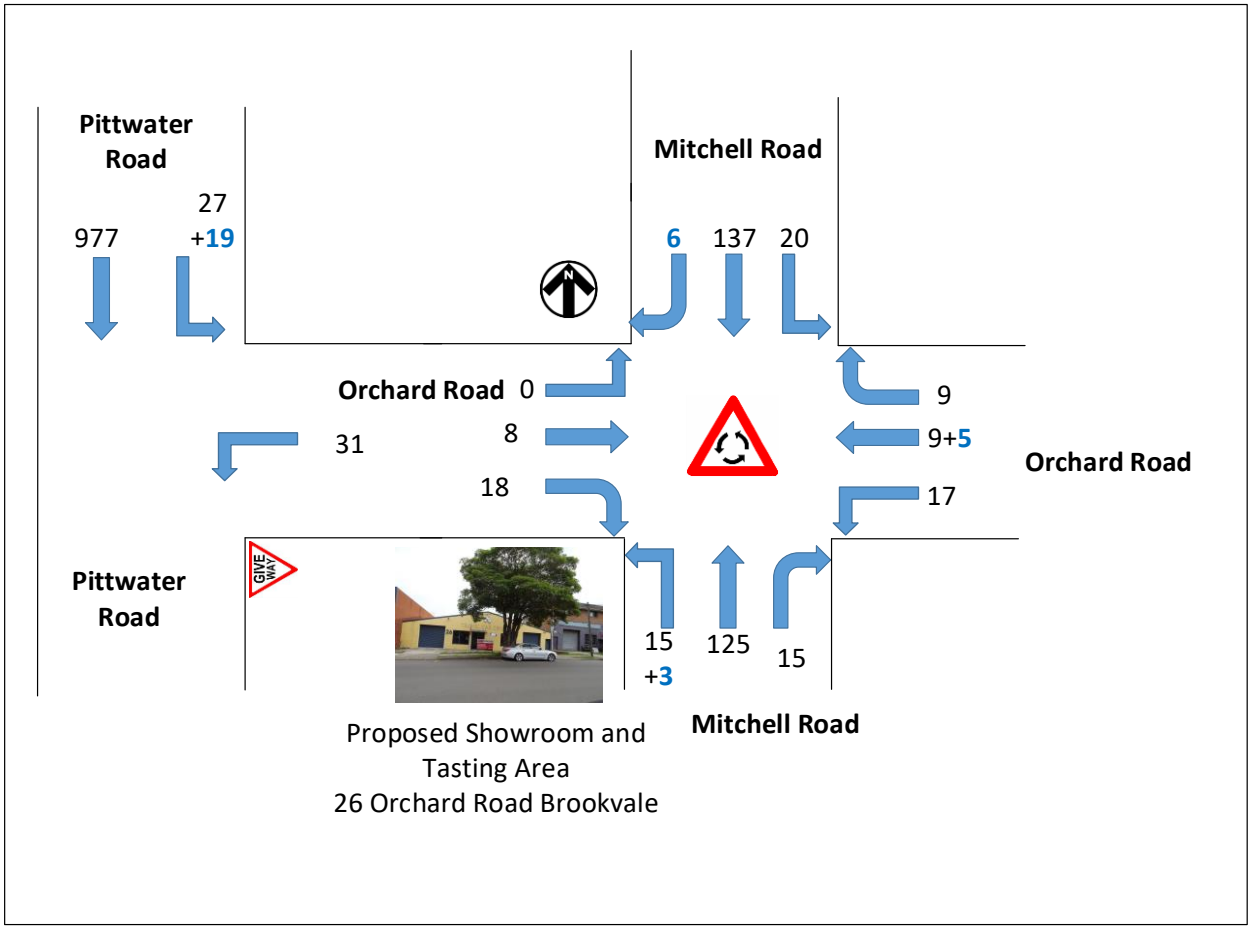


Figure 12: Saturday midday Peak Hour Car Trip Distribution (Development origin trips in red and destination trips in blue)

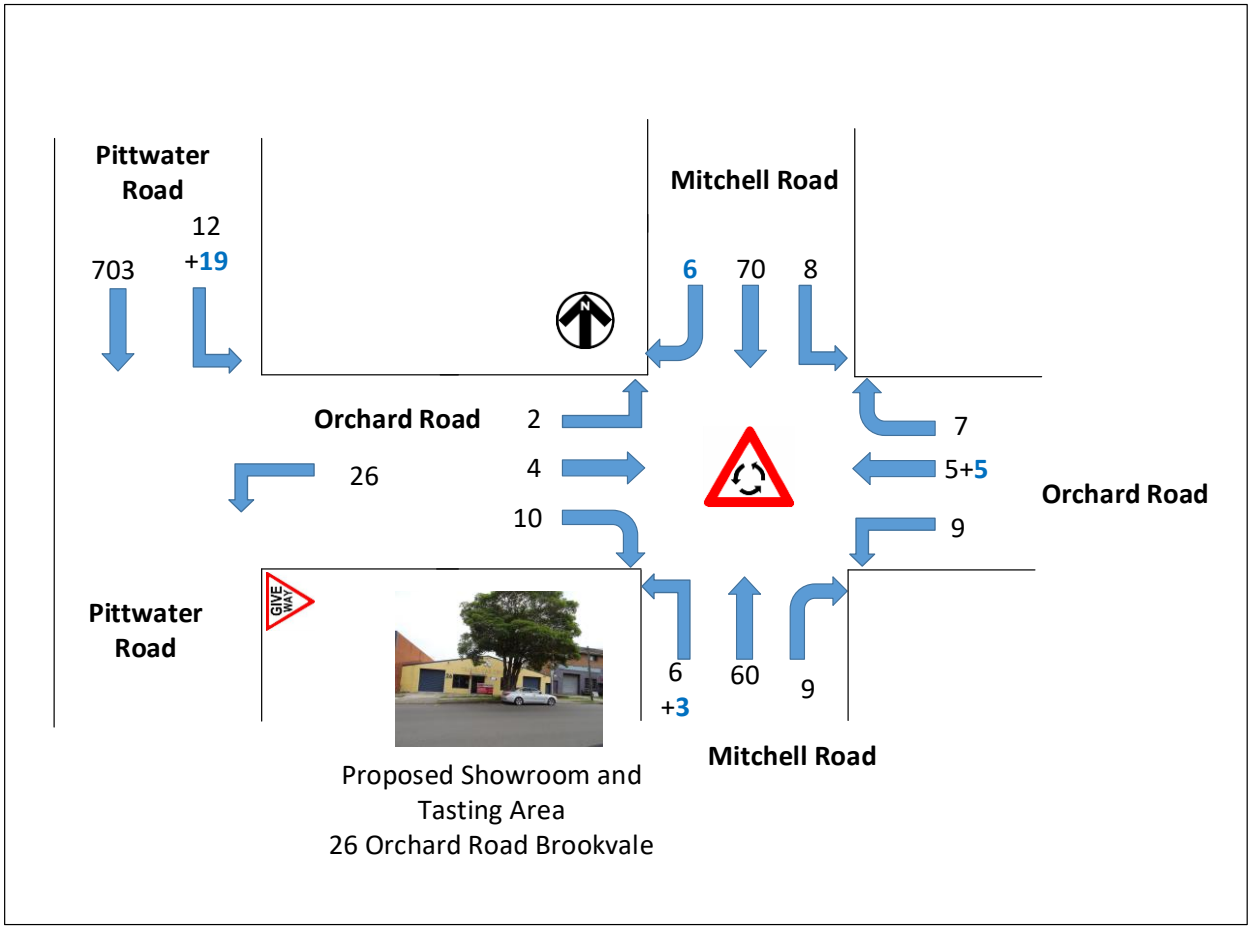


Figure 13: Saturday (6pm to 7pm) Peak Hour Car Trip Distribution (Development origin trips in red and destination trips in blue)

The trip distribution onto the local road and intersections show a small increase in trip numbers and represents a low percentage of the estimated capacity of the intersections concerned. For most drivers the increase in trips will not be noticeable.

5.1 Intersection Assessment for Showroom and Tasting Area Traffic Volumes

An intersection with the additional trips for the weekday PM and Saturday peak hours has been undertaken for the four surveyed intersections

.

The results of the intersection analysis are as presented below:

Roundabout intersection of Mitchell Road with Orchard Road

- The overall intersection has a LoS A for the PM peak hours on the weekday and Saturday
- The additional trips do not change the LoS of the intersection

Priority intersection of Pittwater Road with Orchard Road

- All turn movements have a LoS A for the PM peak hour on weekday and Saturday
- The additional trips do not change the LoS for any turn movement

6. CONCLUSIONS

The traffic and parking assessment of the proposed showroom and tasting area development showed the following:

Car Parking

- The proposed showroom and tasting area development relies on public parking for customers tasting beer ad especially in the evening where customers are more likely to socialise and drink small quantities of beer
- The parking survey shows that there are sufficient vacant car spaces nearby to accommodate the additional car space for the showroom and tasting area customers

Traffic

- The proposed showroom and tasting area is a modest net trip generator
- The expected trips from the proposed showroom and tasting area during the weekday PM and Saturday peak hours are modest and can be accommodated within the local road network and intersections.
- There are no traffic engineering reasons why a development consent for the proposed showroom and tasting area development at 26 Orchard Road in Brookvale should be refused.

APPENDIX A

SIDRA Intersection Results for Existing Traffic Conditions

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Mitchell Road												
1	L2	16	0.0	0.157	4.1	LOS A	0.9	6.3	0.11	0.45	0.11	43.9
2	T1	186	0.0	0.157	3.7	LOS A	0.9	6.3	0.11	0.45	0.11	42.4
3	R2	25	0.0	0.157	6.7	LOS A	0.9	6.3	0.11	0.45	0.11	44.2
Approach		227	0.0	0.157	4.1	LOS A	0.9	6.3	0.11	0.45	0.11	42.8
East: Orchard Road												
4	L2	25	0.0	0.042	5.1	LOS A	0.2	1.4	0.38	0.55	0.38	42.1
5	T1	9	0.0	0.042	4.8	LOS A	0.2	1.4	0.38	0.55	0.38	43.9
6	R2	8	0.0	0.042	7.8	LOS A	0.2	1.4	0.38	0.55	0.38	40.8
Approach		43	0.0	0.042	5.6	LOS A	0.2	1.4	0.38	0.55	0.38	42.3
North: Mitchell Road												
7	L2	25	0.0	0.171	4.3	LOS A	0.9	6.6	0.23	0.44	0.23	41.4
8	T1	189	0.0	0.171	4.0	LOS A	0.9	6.6	0.23	0.44	0.23	42.0
9	R2	1	0.0	0.171	7.0	LOS A	0.9	6.6	0.23	0.44	0.23	42.9
Approach		216	0.0	0.171	4.0	LOS A	0.9	6.6	0.23	0.44	0.23	42.0
West: Orchard Road												
10	L2	11	0.0	0.051	5.1	LOS A	0.2	1.7	0.37	0.60	0.37	39.8
11	T1	8	0.0	0.051	4.8	LOS A	0.2	1.7	0.37	0.60	0.37	43.0
12	R2	34	0.0	0.051	7.8	LOS A	0.2	1.7	0.37	0.60	0.37	42.3
Approach		53	0.0	0.051	6.8	LOS A	0.2	1.7	0.37	0.60	0.37	42.0
All Vehicles		539	0.0	0.171	4.4	LOS A	0.9	6.6	0.20	0.47	0.20	42.3

Table A1: Weekday Roundabout Intersection Performance of Mitchell Road with Orchard Road PM Peak Hour

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Pittwater Road												
2	T1	1	0.0	0.000	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		1	0.0	0.000	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
East: Orchard Road												
4	L2	76	0.0	0.113	8.2	LOS A	0.4	2.8	0.54	0.76	0.54	39.2
Approach		76	0.0	0.113	8.2	LOS A	0.4	2.8	0.54	0.76	0.54	39.2
North: Pittwater Road												
7	L2	25	0.0	0.326	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	55.7
8	T1	1243	0.0	0.326	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
Approach		1268	0.0	0.326	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.3
All Vehicles		1345	0.0	0.326	0.6	NA	0.4	2.8	0.03	0.05	0.03	56.6

Table A2: Weekday Priority Intersection Performance of Pittwater Road with Orchard Road PM Peak Hour

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Mitchell Road												
1	L2	16	0.0	0.116	4.1	LOS A	0.6	4.4	0.11	0.45	0.11	43.9
2	T1	132	0.0	0.116	3.7	LOS A	0.6	4.4	0.11	0.45	0.11	42.4
3	R2	16	0.0	0.116	6.7	LOS A	0.6	4.4	0.11	0.45	0.11	44.2
Approach		163	0.0	0.116	4.0	LOS A	0.6	4.4	0.11	0.45	0.11	42.9
East: Orchard Road												
4	L2	18	0.0	0.034	4.8	LOS A	0.2	1.1	0.32	0.53	0.32	42.2
5	T1	9	0.0	0.034	4.5	LOS A	0.2	1.1	0.32	0.53	0.32	44.0
6	R2	9	0.0	0.034	7.5	LOS A	0.2	1.1	0.32	0.53	0.32	40.9
Approach		37	0.0	0.034	5.4	LOS A	0.2	1.1	0.32	0.53	0.32	42.4
North: Mitchell Road												
7	L2	21	0.0	0.127	4.2	LOS A	0.7	4.6	0.17	0.43	0.17	41.8
8	T1	144	0.0	0.127	3.8	LOS A	0.7	4.6	0.17	0.43	0.17	42.4
9	R2	1	0.0	0.127	6.9	LOS A	0.7	4.6	0.17	0.43	0.17	43.2
Approach		166	0.0	0.127	3.9	LOS A	0.7	4.6	0.17	0.43	0.17	42.3
West: Orchard Road												
10	L2	1	0.0	0.026	4.8	LOS A	0.1	0.8	0.31	0.57	0.31	40.0
11	T1	8	0.0	0.026	4.4	LOS A	0.1	0.8	0.31	0.57	0.31	43.2
12	R2	19	0.0	0.026	7.4	LOS A	0.1	0.8	0.31	0.57	0.31	42.4
Approach		28	0.0	0.026	6.5	LOS A	0.1	0.8	0.31	0.57	0.31	42.6
All Vehicles		395	0.0	0.127	4.3	LOS A	0.7	4.6	0.17	0.46	0.17	42.6

Table A3: Saturday midday Roundabout Intersection Performance of Mitchell Road with Orchard Road PM Peak Hour

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Pittwater Road												
2	T1	1	0.0	0.000	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		1	0.0	0.000	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
East: Orchard Road												
4	L2	33	0.0	0.042	8.0	LOS A	0.1	1.0	0.47	0.69	0.47	44.0
Approach		33	0.0	0.042	8.0	LOS A	0.1	1.0	0.47	0.69	0.47	44.0
North: Pittwater Road												
7	L2	28	0.0	0.271	5.5	LOS A	0.0	0.0	0.00	0.03	0.00	55.8
8	T1	1028	0.0	0.271	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.4
Approach		1057	0.0	0.271	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.2
All Vehicles		1091	0.0	0.271	0.4	NA	0.1	1.0	0.01	0.04	0.01	58.2

Table A4: Saturday midday Priority Intersection Performance of Pittwater Road with Orchard Road PM Peak Hour

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Mitchell Road												
1	L2	6	0.0	0.057	4.0	LOS A	0.3	2.0	0.08	0.46	0.08	44.0
2	T1	63	0.0	0.057	3.7	LOS A	0.3	2.0	0.08	0.46	0.08	42.5
3	R2	9	0.0	0.057	6.7	LOS A	0.3	2.0	0.08	0.46	0.08	44.3
Approach		79	0.0	0.057	4.1	LOS A	0.3	2.0	0.08	0.46	0.08	43.0
East: Orchard Road												
4	L2	9	0.0	0.019	4.4	LOS A	0.1	0.6	0.22	0.52	0.22	42.3
5	T1	5	0.0	0.019	4.0	LOS A	0.1	0.6	0.22	0.52	0.22	44.1
6	R2	7	0.0	0.019	7.1	LOS A	0.1	0.6	0.22	0.52	0.22	41.2
Approach		22	0.0	0.019	5.2	LOS A	0.1	0.6	0.22	0.52	0.22	42.5
North: Mitchell Road												
7	L2	8	0.0	0.063	4.1	LOS A	0.3	2.1	0.11	0.43	0.11	42.1
8	T1	74	0.0	0.063	3.7	LOS A	0.3	2.1	0.11	0.43	0.11	42.7
9	R2	1	0.0	0.063	6.8	LOS A	0.3	2.1	0.11	0.43	0.11	43.5
Approach		83	0.0	0.063	3.8	LOS A	0.3	2.1	0.11	0.43	0.11	42.7
West: Orchard Road												
10	L2	2	0.0	0.014	4.4	LOS A	0.1	0.5	0.21	0.55	0.21	40.4
11	T1	4	0.0	0.014	4.0	LOS A	0.1	0.5	0.21	0.55	0.21	43.5
12	R2	11	0.0	0.014	7.0	LOS A	0.1	0.5	0.21	0.55	0.21	42.8
Approach		17	0.0	0.014	6.0	LOS A	0.1	0.5	0.21	0.55	0.21	42.8
All Vehicles		201	0.0	0.063	4.2	LOS A	0.3	2.1	0.12	0.46	0.12	42.8

Table A5: Saturday (6pm-7pm) Roundabout Intersection Performance of Mitchell Road with Orchard Road PM Peak Hour

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Pittwater Road												
2	T1	1	0.0	0.000	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		1	0.0	0.000	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
East: Orchard Road												
4	L2	27	0.0	0.030	6.1	LOS A	0.1	0.7	0.40	0.59	0.40	41.2
Approach		27	0.0	0.030	6.1	LOS A	0.1	0.7	0.40	0.59	0.40	41.2
North: Pittwater Road												
7	L2	13	0.0	0.193	5.5	LOS A	0.0	0.0	0.00	0.02	0.00	55.8
8	T1	740	0.0	0.193	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.5
Approach		753	0.0	0.193	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.4
All Vehicles		781	0.0	0.193	0.3	NA	0.1	0.7	0.01	0.03	0.01	57.9

Table A6: Saturday (6pm-7pm) Priority Intersection Performance of Pittwater Road with Orchard Road PM Peak Hour

APPENDIX B

SIDRA Intersection Results for Existing Traffic Conditions with Showroom and Tasting Area Trips

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Mitchell Road												
1	L2	19	0.0	0.163	4.1	LOS A	0.9	6.4	0.12	0.45	0.12	43.8
2	T1	186	0.0	0.163	3.7	LOS A	0.9	6.4	0.12	0.45	0.12	42.3
3	R2	25	0.0	0.163	6.8	LOS A	0.9	6.4	0.12	0.45	0.12	44.1
Approach		231	0.0	0.163	4.1	LOS A	0.9	6.4	0.12	0.45	0.12	42.7
East: Orchard Road												
4	L2	25	0.0	0.042	5.2	LOS A	0.2	1.4	0.39	0.55	0.39	42.0
5	T1	9	0.0	0.042	4.8	LOS A	0.2	1.4	0.39	0.55	0.39	43.9
6	R2	8	0.0	0.042	7.9	LOS A	0.2	1.4	0.39	0.55	0.39	40.8
Approach		43	0.0	0.042	5.6	LOS A	0.2	1.4	0.39	0.55	0.39	42.3
North: Mitchell Road												
7	L2	25	0.0	0.175	4.3	LOS A	1.0	6.7	0.23	0.45	0.23	41.4
8	T1	189	0.0	0.175	4.0	LOS A	1.0	6.7	0.23	0.45	0.23	41.9
9	R2	6	0.0	0.175	7.0	LOS A	1.0	6.7	0.23	0.45	0.23	42.8
Approach		221	0.0	0.175	4.1	LOS A	1.0	6.7	0.23	0.45	0.23	41.9
West: Orchard Road												
10	L2	11	0.0	0.051	5.1	LOS A	0.2	1.7	0.38	0.60	0.38	39.7
11	T1	8	0.0	0.051	4.8	LOS A	0.2	1.7	0.38	0.60	0.38	43.0
12	R2	34	0.0	0.051	7.8	LOS A	0.2	1.7	0.38	0.60	0.38	42.3
Approach		53	0.0	0.051	6.8	LOS A	0.2	1.7	0.38	0.60	0.38	42.0
All Vehicles		547	0.0	0.175	4.5	LOS A	1.0	6.7	0.21	0.47	0.21	42.3

Table B1: Weekday Roundabout Intersection Performance of Mitchell Road with Orchard Road PM Peak Hour with Showroom and Tasting Area Trips

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Pittwater Road												
2	T1	1	0.0	0.000	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		1	0.0	0.000	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
East: Orchard Road												
4	L2	76	0.0	0.112	8.1	LOS A	0.4	2.7	0.54	0.76	0.54	39.2
Approach		76	0.0	0.112	8.1	LOS A	0.4	2.7	0.54	0.76	0.54	39.2
North: Pittwater Road												
7	L2	34	0.0	0.328	5.5	LOS A	0.0	0.0	0.00	0.03	0.00	55.4
8	T1	1243	0.0	0.328	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.2
Approach		1277	0.0	0.328	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.1
All Vehicles		1354	0.0	0.328	0.6	NA	0.4	2.7	0.03	0.06	0.03	56.4

Table B2: Weekday Priority Intersection Performance of Pittwater Road with Orchard Road PM Peak Hour with Showroom and Tasting Area Trips

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Mitchell Road												
1	L2	18	0.0	0.118	4.1	LOS A	0.6	4.4	0.11	0.45	0.11	43.9
2	T1	132	0.0	0.118	3.7	LOS A	0.6	4.4	0.11	0.45	0.11	42.4
3	R2	16	0.0	0.118	6.8	LOS A	0.6	4.4	0.11	0.45	0.11	44.2
Approach		165	0.0	0.118	4.0	LOS A	0.6	4.4	0.11	0.45	0.11	42.8
East: Orchard Road												
4	L2	18	0.0	0.034	4.8	LOS A	0.2	1.1	0.33	0.53	0.33	42.1
5	T1	9	0.0	0.034	4.5	LOS A	0.2	1.1	0.33	0.53	0.33	44.0
6	R2	9	0.0	0.034	7.5	LOS A	0.2	1.1	0.33	0.53	0.33	40.9
Approach		37	0.0	0.034	5.4	LOS A	0.2	1.1	0.33	0.53	0.33	42.4
North: Mitchell Road												
7	L2	21	0.0	0.129	4.2	LOS A	0.7	4.7	0.17	0.44	0.17	41.7
8	T1	144	0.0	0.129	3.8	LOS A	0.7	4.7	0.17	0.44	0.17	42.3
9	R2	3	0.0	0.129	6.9	LOS A	0.7	4.7	0.17	0.44	0.17	43.2
Approach		168	0.0	0.129	3.9	LOS A	0.7	4.7	0.17	0.44	0.17	42.3
West: Orchard Road												
10	L2	1	0.0	0.026	4.8	LOS A	0.1	0.8	0.31	0.57	0.31	40.0
11	T1	8	0.0	0.026	4.4	LOS A	0.1	0.8	0.31	0.57	0.31	43.2
12	R2	19	0.0	0.026	7.4	LOS A	0.1	0.8	0.31	0.57	0.31	42.4
Approach		28	0.0	0.026	6.5	LOS A	0.1	0.8	0.31	0.57	0.31	42.6
All Vehicles		399	0.0	0.129	4.3	LOS A	0.7	4.7	0.17	0.46	0.17	42.6

Table B3: Saturday midday Roundabout Intersection Performance of Mitchell Road with Orchard Road PM Peak Hour with Showroom and Tasting Area Trips

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Pittwater Road												
2	T1	1	0.0	0.000	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		1	0.0	0.000	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
East: Orchard Road												
4	L2	33	0.0	0.042	8.0	LOS A	0.1	1.0	0.47	0.68	0.47	44.0
Approach		33	0.0	0.042	8.0	LOS A	0.1	1.0	0.47	0.68	0.47	44.0
North: Pittwater Road												
7	L2	33	0.0	0.272	5.5	LOS A	0.0	0.0	0.00	0.04	0.00	55.7
8	T1	1028	0.0	0.272	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.3
Approach		1061	0.0	0.272	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.1
All Vehicles		1095	0.0	0.272	0.4	NA	0.1	1.0	0.01	0.04	0.01	58.1

Table B4: Saturday midday Priority Intersection Performance of Pittwater Road with Orchard Road PM Peak Hour with Showroom and Tasting Area Trips

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Mitchell Road												
1	L2	9	0.0	0.061	4.0	LOS A	0.3	2.1	0.10	0.46	0.10	43.9
2	T1	63	0.0	0.061	3.7	LOS A	0.3	2.1	0.10	0.46	0.10	42.4
3	R2	9	0.0	0.061	6.7	LOS A	0.3	2.1	0.10	0.46	0.10	44.2
Approach		82	0.0	0.061	4.1	LOS A	0.3	2.1	0.10	0.46	0.10	42.9
East: Orchard Road												
4	L2	9	0.0	0.019	4.4	LOS A	0.1	0.6	0.23	0.52	0.23	42.3
5	T1	5	0.0	0.019	4.1	LOS A	0.1	0.6	0.23	0.52	0.23	44.1
6	R2	7	0.0	0.019	7.1	LOS A	0.1	0.6	0.23	0.52	0.23	41.1
Approach		22	0.0	0.019	5.2	LOS A	0.1	0.6	0.23	0.52	0.23	42.5
North: Mitchell Road												
7	L2	8	0.0	0.067	4.1	LOS A	0.3	2.3	0.11	0.45	0.11	41.9
8	T1	74	0.0	0.067	3.7	LOS A	0.3	2.3	0.11	0.45	0.11	42.5
9	R2	6	0.0	0.067	6.8	LOS A	0.3	2.3	0.11	0.45	0.11	43.3
Approach		88	0.0	0.067	4.0	LOS A	0.3	2.3	0.11	0.45	0.11	42.5
West: Orchard Road												
10	L2	2	0.0	0.014	4.4	LOS A	0.1	0.5	0.21	0.55	0.21	40.4
11	T1	4	0.0	0.014	4.0	LOS A	0.1	0.5	0.21	0.55	0.21	43.5
12	R2	11	0.0	0.014	7.0	LOS A	0.1	0.5	0.21	0.55	0.21	42.8
Approach		17	0.0	0.014	6.0	LOS A	0.1	0.5	0.21	0.55	0.21	42.8
All Vehicles		209	0.0	0.067	4.3	LOS A	0.3	2.3	0.13	0.47	0.13	42.7

Table B5: Saturday (6pm-7pm) Roundabout Intersection Performance of Mitchell Road with Orchard Road PM Peak Hour with Showroom and Tasting Area Trips

Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Pittwater Road												
2	T1	1	0.0	0.000	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
Approach		1	0.0	0.000	0.0	NA	0.0	0.0	0.00	0.00	0.00	60.0
East: Orchard Road												
4	L2	27	0.0	0.029	6.1	LOS A	0.1	0.7	0.39	0.59	0.39	41.2
Approach		27	0.0	0.029	6.1	LOS A	0.1	0.7	0.39	0.59	0.39	41.2
North: Pittwater Road												
7	L2	21	0.0	0.195	5.5	LOS A	0.0	0.0	0.00	0.03	0.00	55.4
8	T1	740	0.0	0.195	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.2
Approach		761	0.0	0.195	0.2	NA	0.0	0.0	0.00	0.02	0.00	59.1
All Vehicles		789	0.0	0.195	0.4	NA	0.1	0.7	0.01	0.04	0.01	57.6

Table B6: Saturday (6pm-7pm) Priority Intersection Performance of Pittwater Road with Orchard Road PM Peak Hour with Showroom and Tasting Area Trips

CARPARK AND DRIVEWAY CERTIFICATION OF A PROPOSED SHOWROOM AND TASTING AREA

26 Orchard Road in Brookvale

Prepared for: Nick McDonald

A1916314N (version 1a)

February 2020

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1. INTRODUCTION

Motion Traffic Engineering was commissioned by Nick McDonald to prepare a traffic and parking impact assessment for a proposed Showroom and tasting area in 26 Orchard Road in Brookvale. It has frontage to Orchard Street. The car park is existing on site car park.

Car parking is provided on the ground level with vehicle access and egress via Mitchell Road.

There are two driveway to a garage loading area on Orchard Road. The loading areas will be used by vas with reverse in and forward out. This is the current arrangement of the previous tenant.

Reference is made to AS2890.1 (2004), AS2890.6 (2009) and Council's Development Control Plan for compliance.

2. DRIVEWAY

The details of the driveway from Mitchell Road into the ground level from the perspective of the inbound movement for description purposes are as follows:

- The driveway is 6.1 metres wide at the property line
- Gradients along the centreline of the ramp are below five percent.

3. CAR SPACES

The details of the car parking area are as follows:

- The car parking aisle is 6.1 metres wide
- The disabled car space is 2.4 metres wide and 5.4 metres long
  - A shared zone with the same dimensions has been provided
- The general 90-degree car spaces are 2.4 metres wide with a length of 5.4 metres
  - Car spaces adjacent to a wall have an additional 300mm clearance

4. SWEPT PATHS

A swept turning path analysis is performed using a B85 car with 4.9 metres in length, as set in the Australian Standards to confirm that vehicle movements are adequate.

The following Swept Paths have been performed:

- B85 car forward inbound and reverse outbound for car space 3 and 4

All swept paths show adequate manoeuvrability. The outbound movement for car space 3 and 4 requires three-point turn.

The swept paths are provided in the Appendix A of this report.

5. SIGHT DISTANCE

The car driver's vehicle sight distance requirement to enter the external road is stated in Figure 3.2 of AS2890.1.

The sight distance varies according to the speed of the external road. Mitchell Road has a sign-posted speed limit of 50 km/hr.

The minimum vehicle sight distance required is 45 metres. Site measurements showed that the minimum sight distance looking left and right is met.

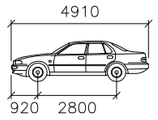
The pedestrian sight distance as set out in Figure 3.3 of AS2890.1 is met as well.

6. CONCLUSIONS AND RECOMMENDATIONS

The car parking area and driveway is generally compliant with Australian Standards and Council's DCP.

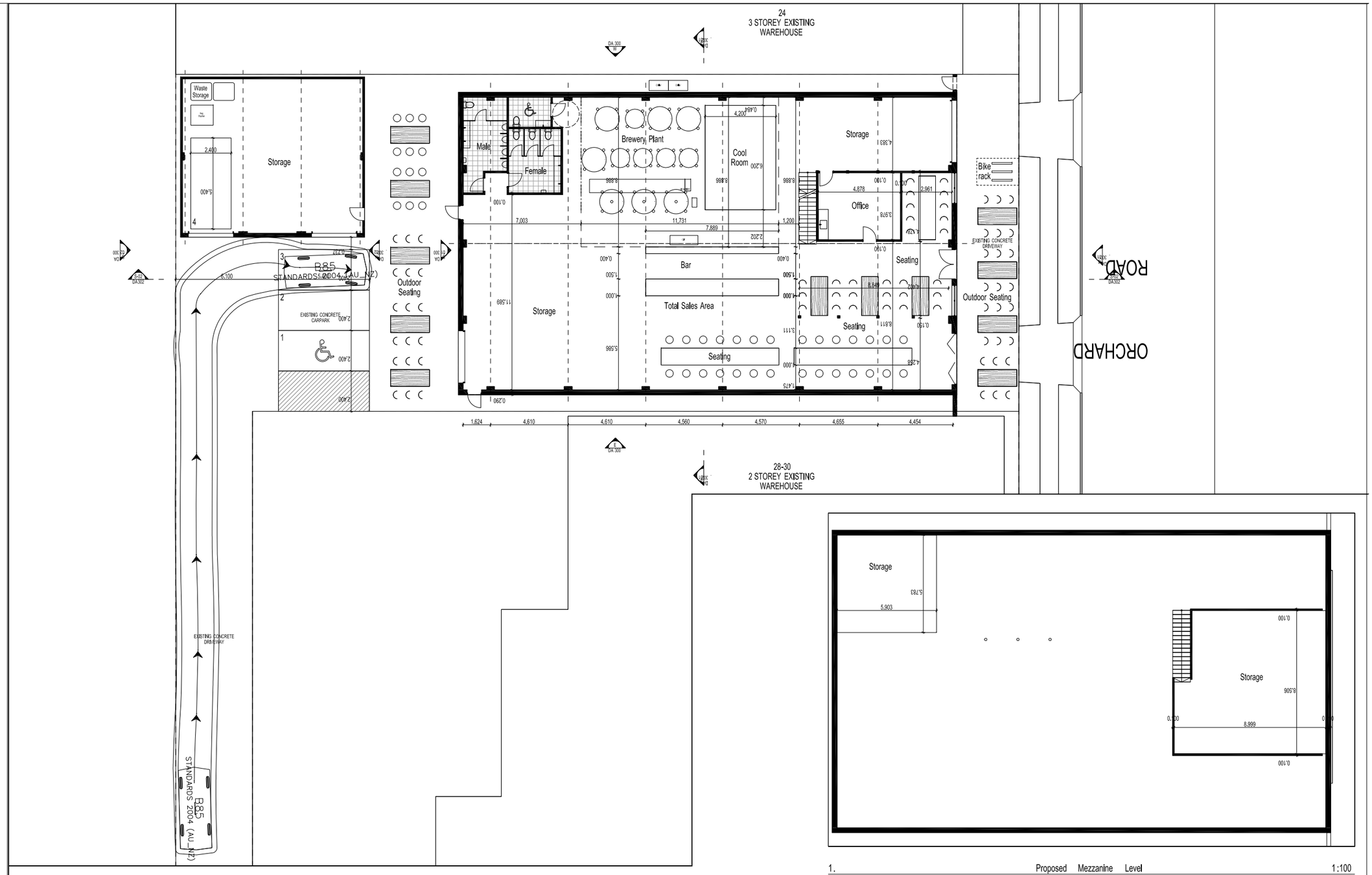
APPENDIX A
Swept Paths

Forward Inbound
car space 3



B85

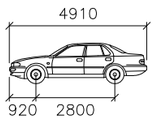
	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1



Rev.	Date	By	Ckd	Description

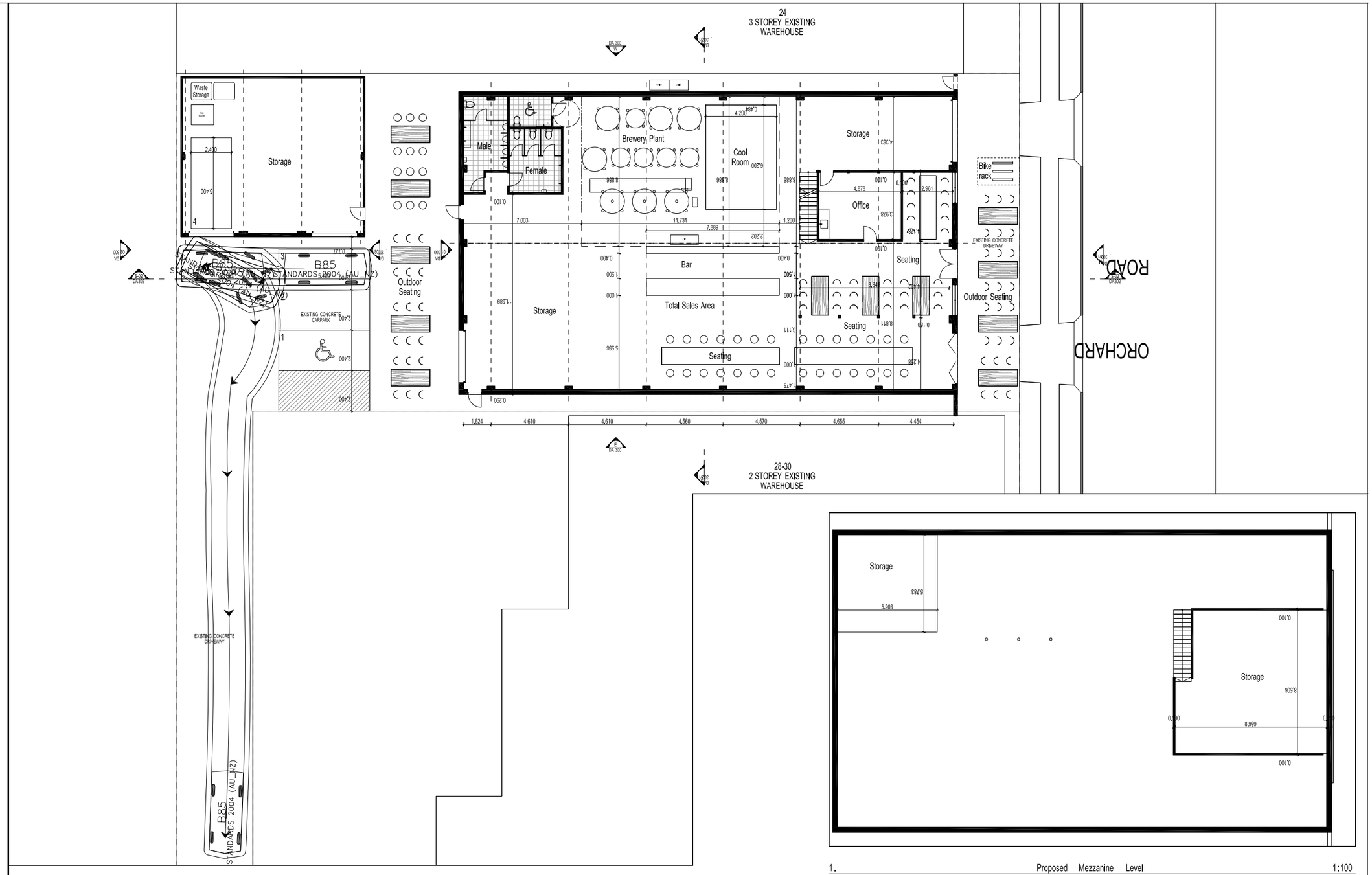
Project Name	Buketty Brewery	Project Number	00069
Project Address	26 Orchard Rd Brookvale NSW 2100	Drawing Name	ProposedGround Floor Plan
		Scale	
		Date	January 2020
Client	Nick McDonald	Drawing Number	DA 202
		Revision	

Reverse Outbound
car space 3



B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1



0. Proposed Ground Floor 1:100

1. Proposed Mezzanine Level 1:100

Rev .	Date	By	Ckd	Description

Project Name	Bukelty Brewery	Project Number	00069
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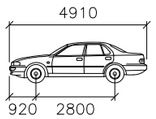
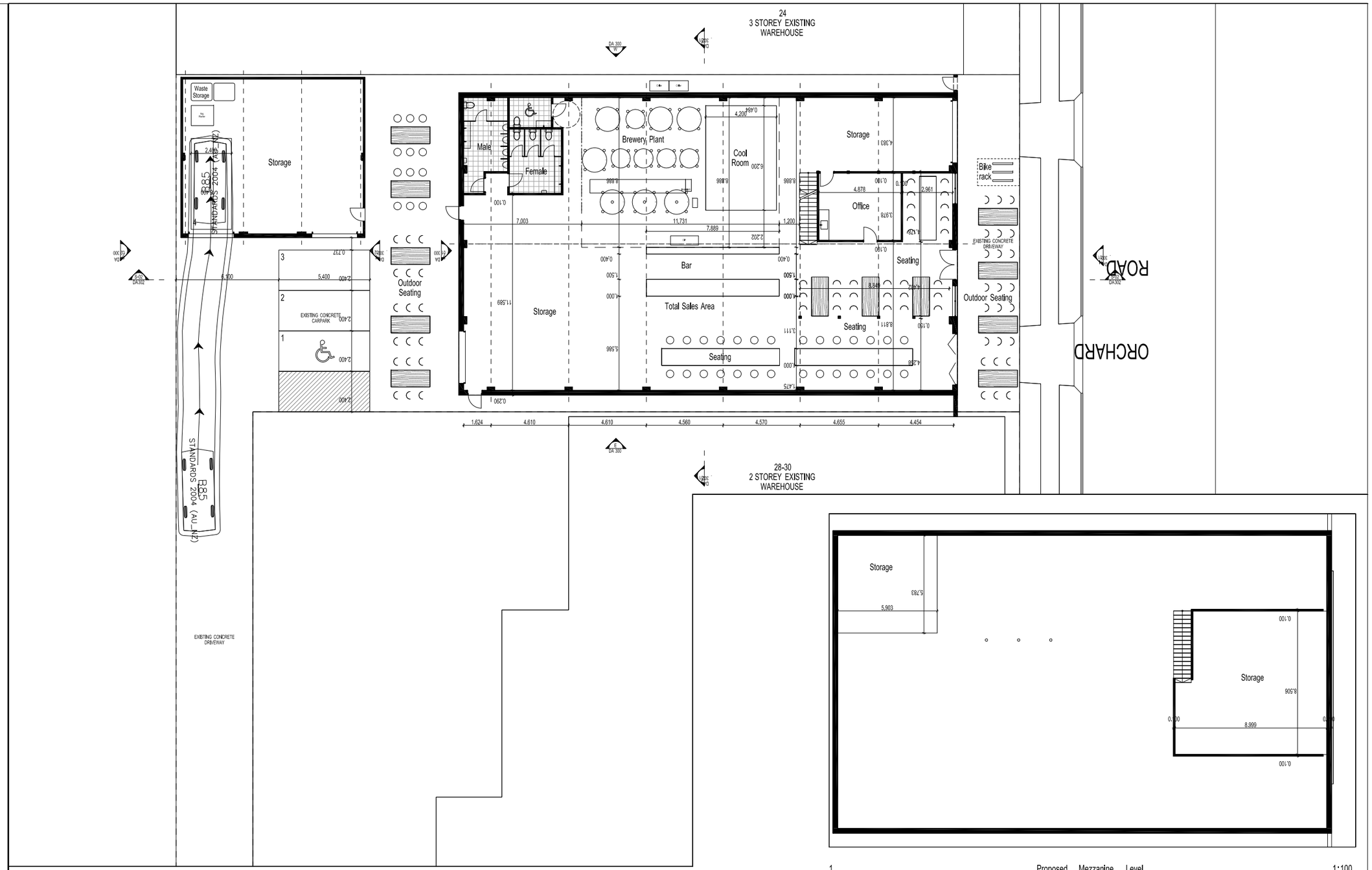
		Scale	
		Date	January 2020
Client	Nick McDonald	Drawing Number	DA 202
		Revision	

Forward Inbound
car space 4



B85

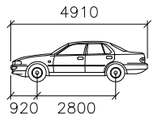
	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1



Rev.	Date	By	Ckd	Description

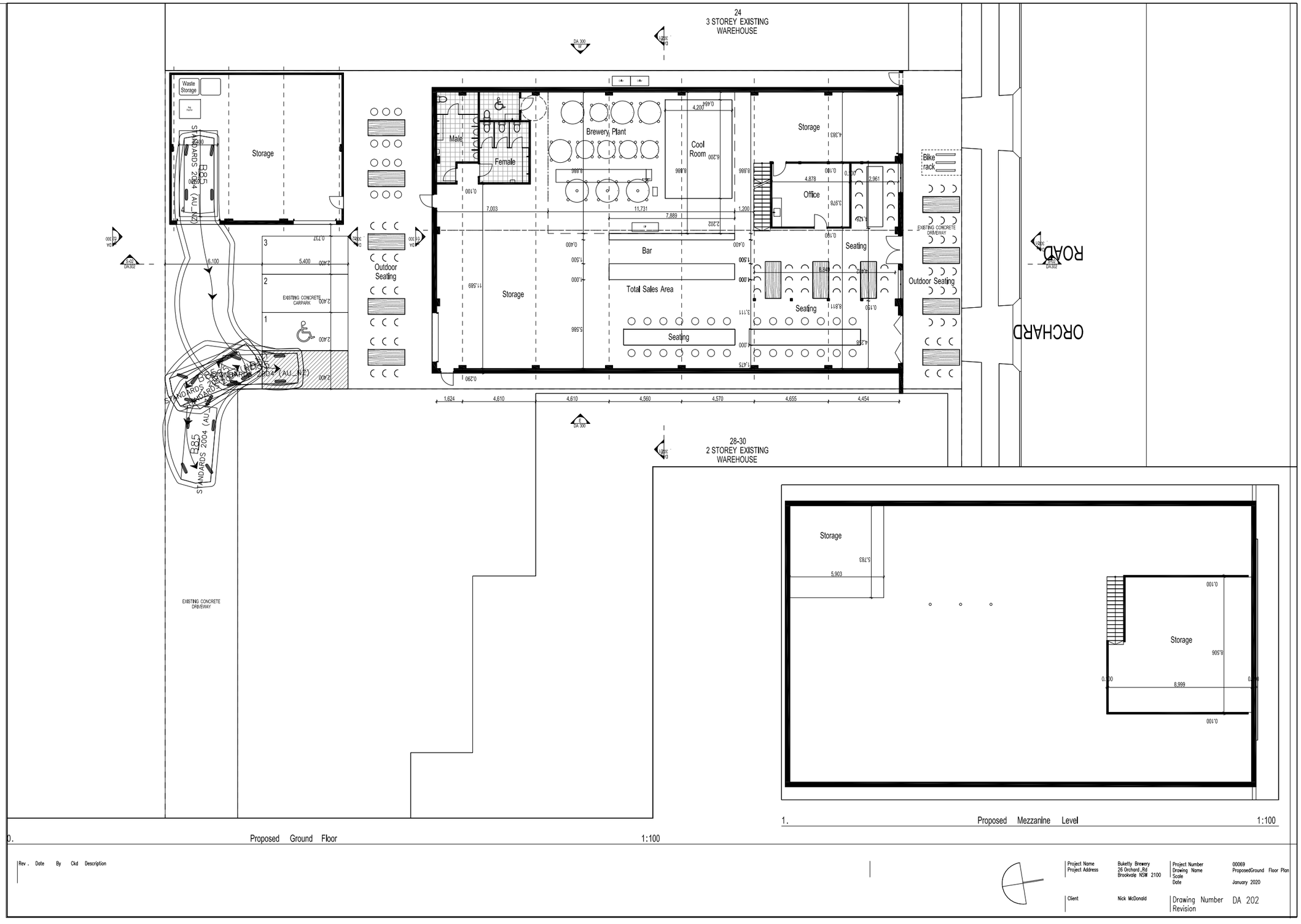
Project Name	Buketty Brewery	Project Number	00069
Project Address	26 Orchard ,Rd Brookvale NSW 2100	Drawing Name	ProposedGround Floor Plan
		Scale	
		Date	January 2020
Client	Nick McDonald	Drawing Number	DA 202
		Revision	

Reverse Outbound
car space 4



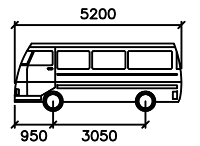
B85

	mm
Width	: 1870
Track	: 1770
Lock to Lock Time	: 6.0
Steering Angle	: 34.1



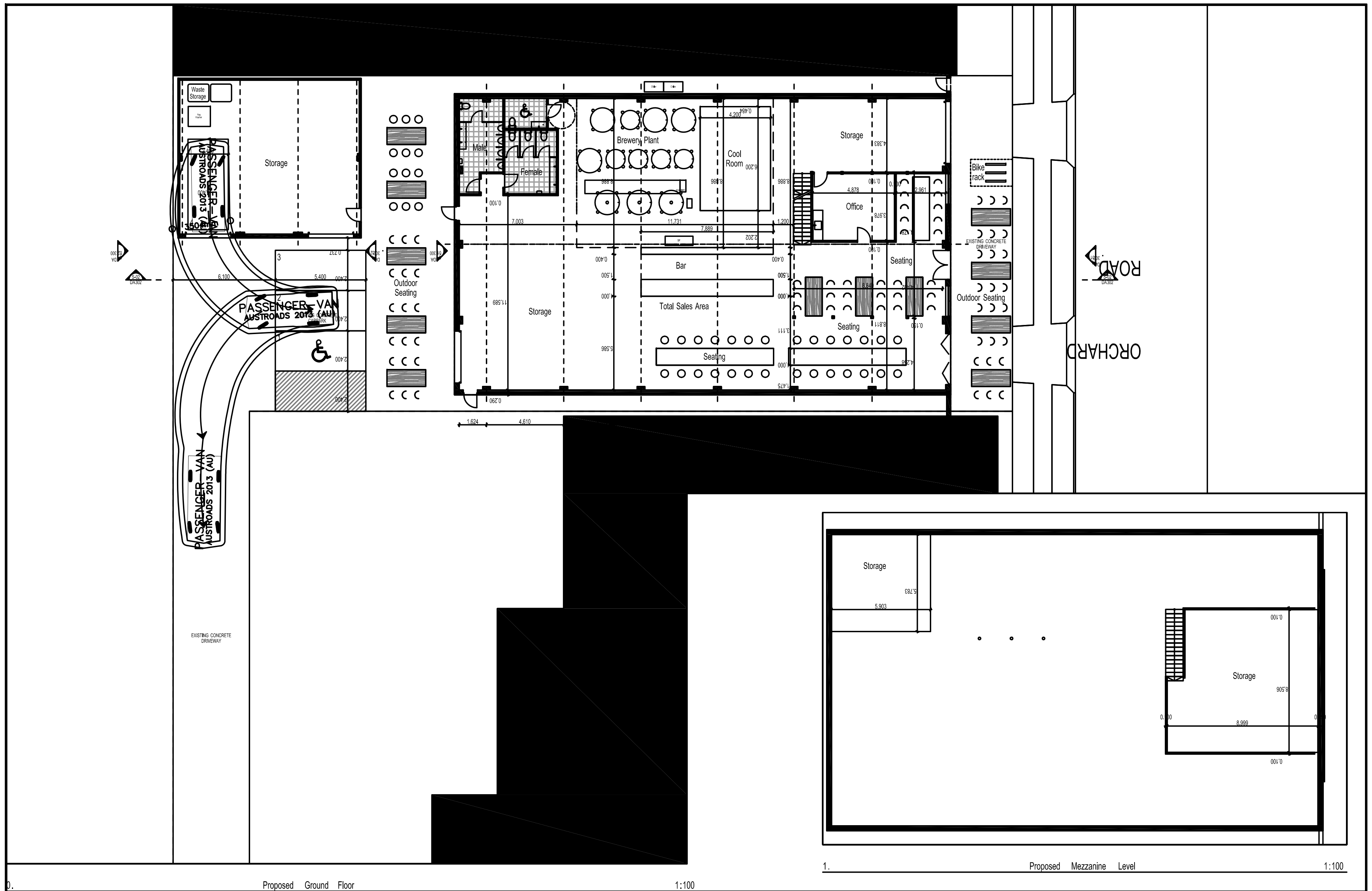
Rev.	Date	By	Ckd	Description

Project Name	Buketty Brewery	Project Number	00069
Project Address	26 Orchard ,Rd Brookvale NSW 2100	Drawing Name	ProposedGround Floor Plan
		Scale	
		Date	January 2020
Client	Nick McDonald	Drawing Number	DA 202
		Revision	



PASSENGER–VAN

	mm
Width	: 1940
Track	: 1840
Lock to Lock Time	: 6.0
Steering Angle	: 33.6



Rev.	Date	By	Chd	Description

Project Name	Bukelly Brewery	Project Number	00089
Project Address	26 Orchard ,Rd Brookvale NSW 2100	Drawing Name	ProposedGround Floor Plan
		Scale	
		Date	January 2020
Client	Nick McDonald	Drawing Number	DA 202
		Revision	