PLANNING PROPOSAL FOR A
PROPOSED CAR WASH DEVELOPMENT

LOT 87 DP 1167633

2 HANRAHAN PLACE, ORANGE

Traffic and Parking Assessment Report

2nd May 2022

Ref: 14073

Prepared by

Terraffic Pty Ltd
Traffic and Parking Consultants

Terraffic Pty Ltd ABN 83 078 415 871
PO Box 563, Sylvania Southgate NSW 2224 – Tel : 0411 129 346
Email: logan@terraffic.com.au Web: www.terraffic.com.au

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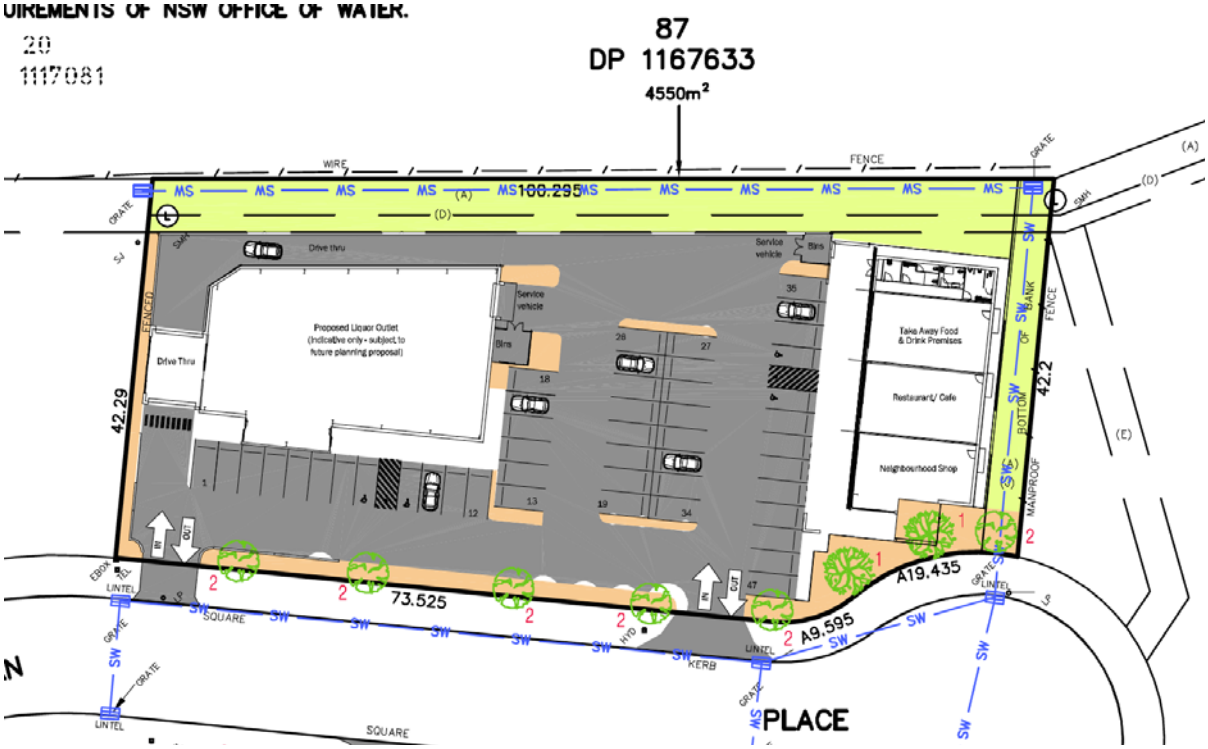
1. INTRODUCTION

This report has been prepared to accompany Planning Proposal to Orange City Council that seeks to amend Schedule 1of the LEP to permit an Additional Permitted Use (APU) for a car wash facility (business premises) at 2 Hanrahan Place, Orange (Figures 1 and 2).

The development site is located at the north-eastern end of Hanrahan Place. The site has an area of 4,550m^2 and 102.6m frontage to Hanrahan Place. The site is currently vacant.

Existing Site Approval

In September 2014, Council granted development consent (DA278/2014(1)) for neighbourhood shops, take away food and drink premises and restaurant or café. In addition to the subject site, DA278/2014(1) also relates to the land opposite known as 5 Hanrahan Place.

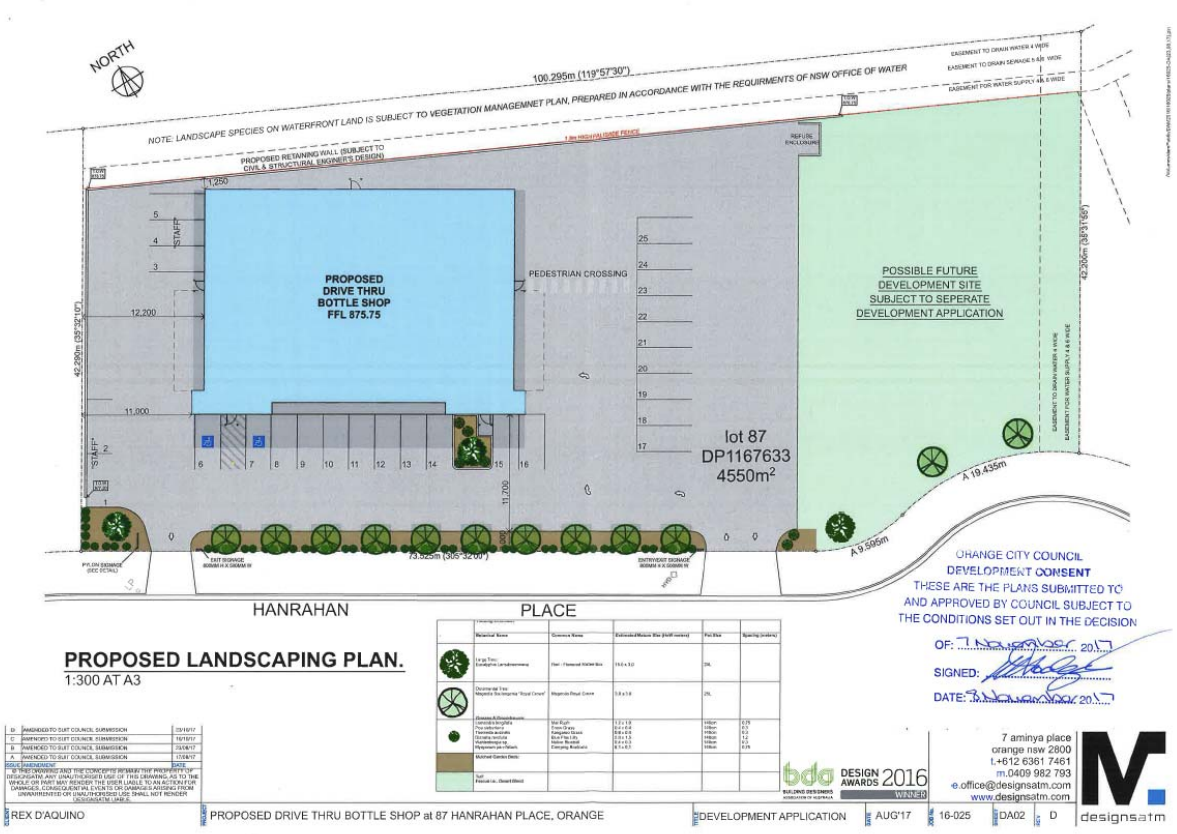


Extract of 2014 approval showing the neighbourhood shops at the eastern end of the site

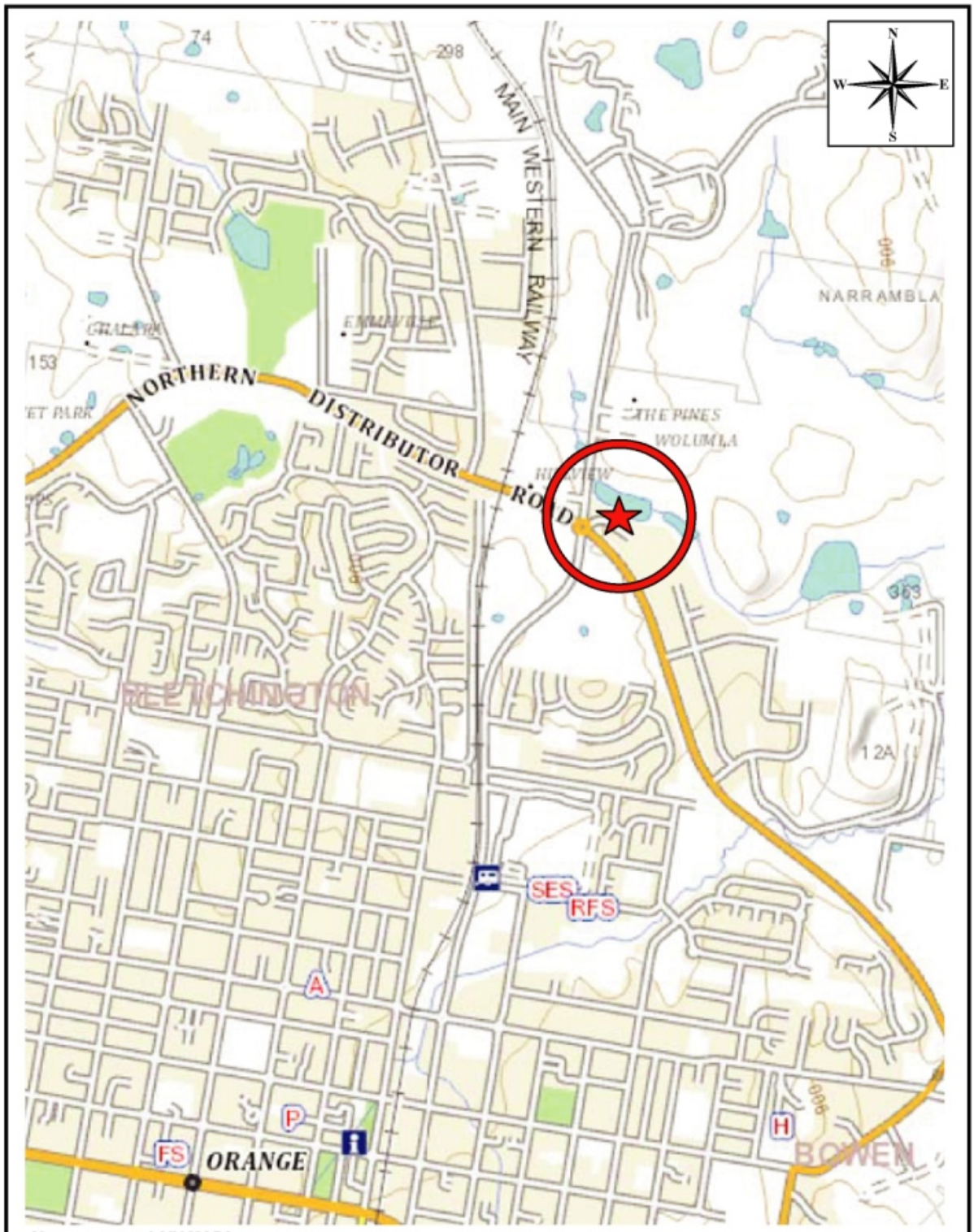
In November 2017, Council granted development consent to DA289/2017(1) for a retail premises (shop), (drive-through liquor shop) and Business Identification Signage at the western end of the subject site (2 Hanrahan Place). In granting this consent, Council imposed a condition requiring the surrender of the original consent (DA278/2014(1)).

The surrender of DA 278/2014(1) had the effect of removing the commercial building that was approved at the eastern end of the subject site. This commercial building comprised of a take away food and drink premises, a restaurant or café, and a neighbourhood shop with a combined total floor area of 338.53m^2.

As such, the subject site only has an approval for a retail Premises (shop), (drive-through liquor shop) and Business Identification Signage.



Approved Site Plan under DA289/2017(1)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NORTHERN DISTRIBUTOR ROAD
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THE PINES
WOLUMLA
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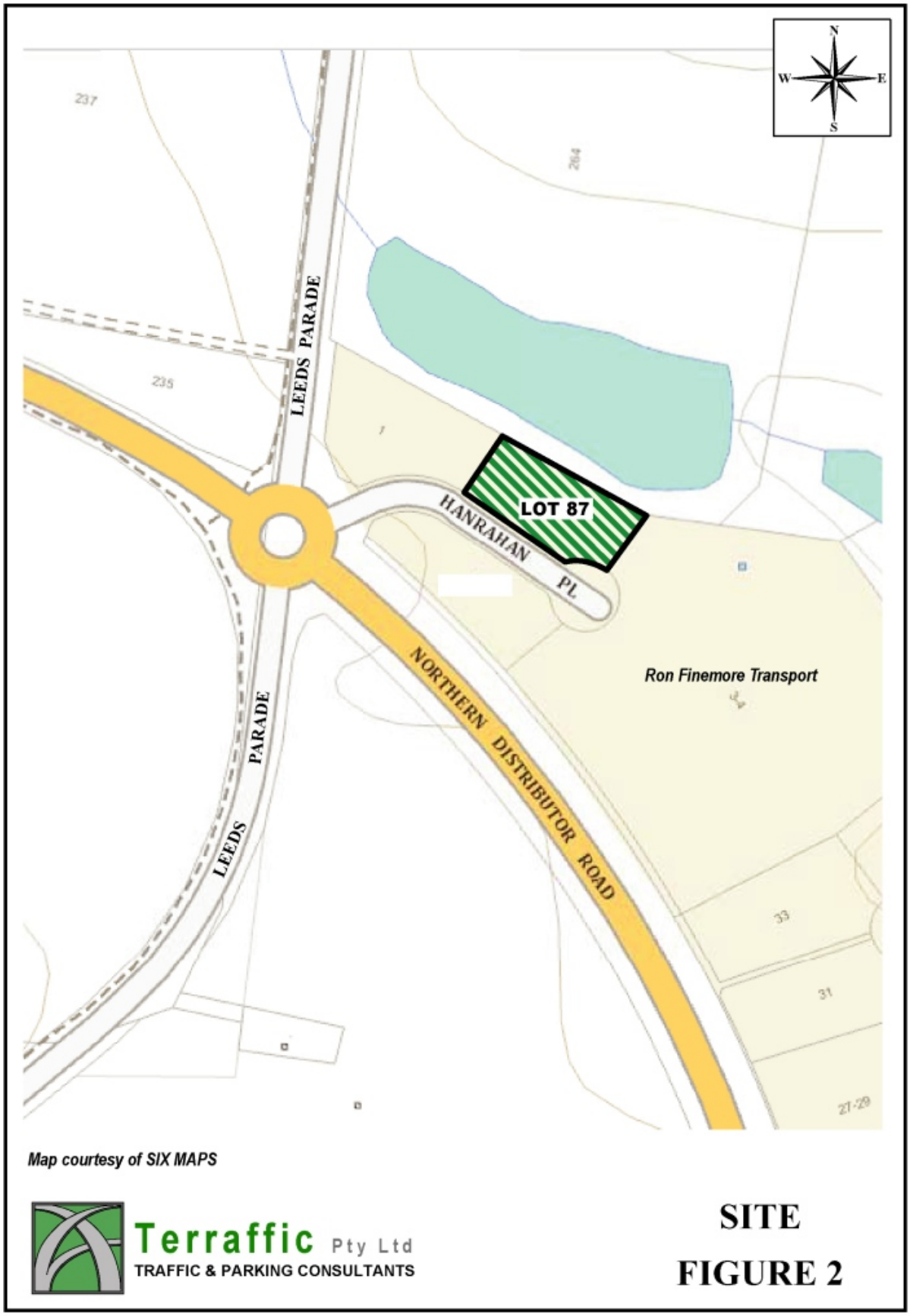
ORANGE
BOWEN
Map courtesy of SIX MAPS
Terraffic Pty Ltd
TRAFFIC & PARKING CONSULTANTS
LOCATION
FIGURE 1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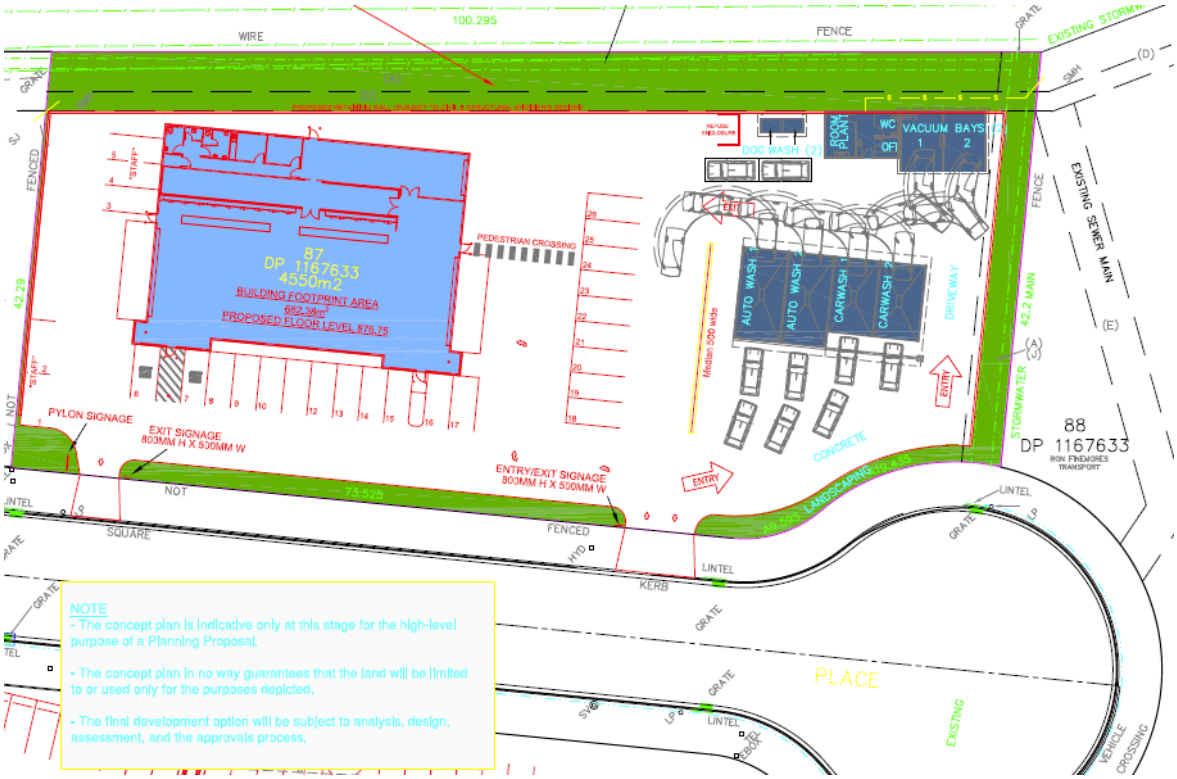
LEEDS PARADE
LOT 87
HANRAHAN PL
Ron Finemore Transport
NORTHERN DISTRIBUTOR ROAD
LEEDS PARADE
33
31
27-29
Map courtesy of SIX MAPS
Terraffic Pty Ltd
TRAFFIC & PARKING CONSULTANTS
SITE
FIGURE 2

Subject Planning Proposal

This Planning Proposal will retain the retail premises (shop and drive-thru liquor shop) and replace the formerly approved neighbourhood shops with a car wash facility. The facility will include the following:

- 2 x auto car wash bays
- 2 x manual car wash bays
- 2 x vacuum bays
- 2 x dog wash bays with 2 adjacent parking spaces
- Plant room and toilet

Vehicular access to the car wash facility will be off Hanrahan Place via the approved 7.0m wide combined entry/exit driveway located towards the cul-de-sac on Hanrahan Place. As can be seen below, vehicles accessing the vacuums or dog wash area are able to circulate around the car washing area. A 500mm wide median island within the site will separate traffic between the car wash facility and adjoining liquor store carpark.



Plan of proposed car wash facility

Operating Characteristics of Regional Car Wash Facilities

The applicant for the proposed car wash facility has not engaged a specific company at this stage to supply and manage the equipment. To that end, the operating characteristics of the subject development can only be based on similar facilities located in regional New South Wales.

In 2012, Terraffic was engaged by Carwash World Pty Ltd to prepare a Traffic Report for a proposed car wash facility in Moruya. At that time, Carwash World Pty Ltd had similar facilities in Wagga Wagga, Ulladulla, Clarendon and Griffith. The facility in Moruya was to contain 1 automatic car wash bay, 3 manual car wash bays, 4 vacuum bays and a dog washing facility.

Based on data collected from their existing facilities, customer traffic is generally spread evenly throughout the day on weekdays however there are weekend peaks between 10.00-11.00am and 2.00-3.00pm with the following flows:

Automatic car wash bays	2 vehicles per hour during weekdays
	5 vehicles per hour during weekend peaks
Manual car wash bays	1 vehicle per hour during weekdays
	3 vehicles per hour during weekend peaks

The maximum capacities of the automatic and manual car wash bays are as follows:

Automatic car wash bay	12 vehicles per hour (5 minutes per vehicle)
Manual car wash bay	4 vehicles per hour (15 minutes per vehicle)

Carwash World also indicated that only 20% of customers utilise the vacuums while only 5 cars per day typically visit their dog wash facilities.

The purpose of this report is to assess the traffic and parking implications of the development proposal.

2. PARKING ASSESSMENT

As to be expected, a car parking requirement for the car wash facility is not stated in Council's Development Control Plan. With the exception of customers using the dog wash facilities, vehicles will not be parking on the site. Customers will instead be queuing (or waiting) to access one of the four proposed car wash bays.

In the event that customer demand exceeds the capacity of the car wash system, any surge in customer traffic should be accommodated on site to ensure that customer vehicles do not queue onto Hanrahan Place. To that end, the proposed facility will provide space for up to 7 waiting cars on the approach to the car wash bays. In addition, 2 parking spaces for vehicles associated with the dog wash facility are also proposed.

By applying conventional queuing theory to estimated mean arrival rates and mean service rates during peak periods, the likely queues that will be generated by the proposed car wash can be calculated. Clause 3.5 of the Australian Standard AS/NZS2890.1:2004 notes that storage areas shall be designed to accommodate the 98th percentile queue.

Vehicle queuing analysis for the proposed car wash facility

As noted in the foregoing, the car wash facility comprises 2 automatic car wash bays and 2 manual wash bays. The maximum capacities of the automatic and manual car wash bays are as follows:

Automatic car wash bay	12 vehicles per hour (5 minutes per vehicle)
Manual car wash bay	4 vehicles per hour (15 minutes per vehicle)

The maximum capacity of the proposed facility will therefore be 32 vehicles per hour comprising 24 vehicles through the 2 automatic cleaners and 8 vehicles through the 2 manual cleaners.

Based on the information provided by Carwash World in Chapter 1 of this report, the projected traffic generating potential of the car wash facility will be as follows:

	Weekday Peak Periods			Weekend Peak Periods		
Time period	Auto Wash (2 bays)	Self Serve Wash (2 bays)	Total	Auto Wash (2 bays)	Self Serve Wash (2 bays)	Total
8am-9am	2	2	4	2	2	4
9am-10am	2	2	4	6	4	10
10am-11am	4	2	6	10	6	16
11am-Midday	4	2	6	8	5	13
Midday-1pm	4	2	6	6	4	10
1pm-2pm	4	2	6	8	5	13
2pm-3pm	4	2	6	10	6	16
3pm-4pm	4	2	6	6	4	10
4pm-5pm	2	2	4	2	2	4
5pm-6pm	2	2	4	2	2	4
Daily Total	**32**	**20**	**52**	**60**	**40**	**100**

As can be seen, the car wash facility will generate approximately 4 vehicles per hour during the weekday morning and evening peak periods. The peak operating times on the weekend is generally between 10am-11am and 2pm-3pm where 16 vehicles attend the site.

By applying this data to conventional queuing theory, it can be determined that the 98th percentile queue will be 5 vehicles calculated as follows:

1. Peak period ***Arrival Rate (r)*** will be 16 vehicles per hour

2. ***Service Rate (s)*** refers to the capacity of the queuing system and is 32 vehicles per hour

3. The ***Utilisation Factor (p)*** is similar to Degree of Saturation and is calculated as follows:

   Utilisation factor (p) = r / s
   (p) = 16 / 32 = 0.50

4. The expected (mean) number of vehicles in the queue will be 1 car calculated as follows:

   E(n) = r / (s – r)
   E(n) = 16 / (32-16)
   E(n) = 16 / 16 = 1.0 vehicle in the queue

5. The probability that the queue will extend further than 5 vehicles can be calculated as follows:

   $P(n>5) = p^{1+5}$
   $P(n>7) = 0.50^6 = 0.0156$
   There will be a 1.5% chance of there being more than 5 vehicles in the queue

As noted above, the proposed facility will provide storage for up to 7 cars waiting to enter the car wash facility. Based on the above queuing analysis, the ability to store 7 vehicles on-site will ensure that the 98th percentile queue will not extend onto Hanrahan Place or obstruct access to the dog wash facility or vacuum bays. The queuing provision therefore satisfies Clause 3.5 of the Australian Standard AS/NZS2890.1:2004.

Vacuum Bay Usage

As noted in the foregoing, data collated by Carwash World indicates that only 1 in 5 (20%) of customers vacuum their vehicle after washing. Based on a peak weekend flow of 16 vehicles per hour, it is anticipated that only 3 of those vehicles will utilise the vacuum bays. As noted in the foregoing, the proposal will incorporate 2 vacuum bays which will comfortably accommodate its likely demand and will not create any on-site queuing implications.

Parking requirement for dog wash facility

Carwash World indicated that dog wash facilities only generate in the order of 5 vehicles per day. This equates to approximately one vehicle every 2 hours. As noted in the foregoing, 2 parking spaces are provided adjacent to the 2 dog wash bays. These bays will comfortably accommodate the likely parking demand of users.

In the circumstances, it can be concluded that the proposed development has no unacceptable parking or queuing implications.

3. TRAFFIC ASSESSMENT

Projected Traffic Generation Potential

As noted in Chapter 2 of this assessment, the car wash facility will generate approximately 4 vehicles during the weekday morning and evening peak periods and 16 vehicles during the weekend peaks. To that end, the proposed development will generate 8vtph (4 in / 4 out) during weekday peak periods and 32vtph (16 in /16 out) during the weekend peaks.

The traffic generation of the proposed car wash facility should be discounted by the 338.53m^2 neighbourhood shop complex that was formerly approved on the site. Section 3.11 of the RMS publication *"Guide to Traffic Generating Developments"* (October 2002) specifies the following traffic generating rates that can apply to specialty retail:

Friday Evening Peak Periods	5.6vtph per 100m^2
Saturday Midday Peak Periods	10.7vtph per 100m^2

Application of the abovementioned RMS traffic generating rates to the former shopping complex yields the following:

Friday Afternoon Peak Period

338.56m^2 @ 5.6vtph per 100m^2 19vtph

Saturday Midday Peak Period

338.56m^2 @ 10.7vtph per 100m^2 36vtph

Based on this analysis, there will be a net reduction in traffic generated by the site as follows:

Friday Afternoon Peak Period

Approved Retail Shops	19vtph
Proposed Car Wash Facility	8vtph
Reduction in traffic generation	*11vtph*

Saturday Midday Peak Period

Approved Retail Shops	36vtph
Proposed Car Wash Facility	32vtph
Reduction in traffic generation	*4vtph*

In circumstances where a proposed development generates less traffic than a formerly approved development, it can be concluded that the proposal has no unacceptable traffic implications.