

TRAFFIC ENGINEERING REPORT

941 Wanneroo Road

Wanneroo

March 2023

Rev A

The logo for Kcett features the word "Kcett" in a bold, dark red, sans-serif font. The letter "K" is stylized with three parallel diagonal lines above its top bar. The letters "c" and "t" are lowercase, while "e" and "t" are lowercase. The logo is positioned in the lower half of the page, above a solid orange horizontal bar that spans the entire width of the page.

Kcett

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Table of Contents

1. Executive Summary	4
2. Traffic Engineering Report.....	5
2.1 Location	5
2.2 Land Uses	5
2.3 Local Road Network Information.....	6
2.4 Traffic Volumes	6
2.5 Vehicular Crash Information.....	7
2.6 Calculation of Development Generated / Attracted Trips.....	8
2.7 Traffic Flow Distribution	9

1. Executive Summary

Site Context

- The subject site is currently a closed hand car wash and detailing facility. It was also temporarily used as a COVID testing clinic.
- The existing facilities are being upgraded to a fully automatic 'touchless' car wash. Vehicular access is provided from Wanneroo Road and egress will be to the rear on to Pupil Lane, as per previous operations.

Technical Findings

- The proposed development is expected to generate up to 140 daily vehicular trips and 12 vehicular trips in the peak hours. This is considered moderate impact as per WAPC Guidelines.
- Compared to the hand car wash, the proposed automated car wash would generate additional 60 daily vehicular trips and 4 vehicular trips in the peak hours.
- There is no data on traffic attraction by this site while it functioned as a COVID testing facility.

Conclusion

- As stated above the additional traffic attracted to the subject site is expected to be a maximum of 140 vehicular trips per day.
- Wanneroo Road is classified as a Primary Distributor as per MRWA with around 25,000 vehicles per day. Therefore, the added traffic from the subject site the street can be considered negligible.
- Pupil Lane is a rear access laneway currently carrying around estimated 174 vehicles per day. The projected maximum volume of traffic for laneways as per Liveable Neighbourhoods (2015) is 300 vehicles per day. The additional traffic from the subject site of 70 vehicles per day on Pupil Lane adds up to 244 vehicles per day keeping the traffic volumes within desirable limits for laneways.
- With the car wash in operation, the traffic on laneway is still likely to be below the notional capacity, with approximately 60 vehicles of spare capacity.
- Other surrounding roads would absorb significantly less traffic than Wanneroo Road and Pupil Lane, moreover, the traffic would be dispersed so that the impact can be considered negligible.
- In summary KCTT believe that the proposed development will not have a negative impact on the surrounding road network.

2. Traffic Engineering Report

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2.1 Location

Lot Number	88
Street Number	941
Road Name	Wanneroo Road
Suburb	Wanneroo
Description of Site	<p>The subject site is currently a closed hand car wash and detailing facility. It was also temporarily used as a COVID testing clinic.</p> <p>The existing facilities are being upgraded to a fully automatic 'touchless' car wash. Vehicular access is provided from Wanneroo Road and egress will be to the rear on to Pupil Lane.</p>

2.2 Land Uses

Are there any existing Land Uses	YES – not in operation
<i>If YES, Nominate:</i>	Hand car wash and detailing (approximately 80m ²) – 6 service bays: <ul style="list-style-type: none">• 2 washing bays• 2 vacuuming bays• 2 detailing bays

Proposed Land Uses

How many types of land uses are proposed?	One
Nominate land use type and yield	Automatic 'touchless' car wash – 2 automated bays
Are the proposed land uses complementary with the surrounding land-uses?	YES

2.3 Local Road Network Information

How many roads front the subject site? 2

Name of Roads Fronting Subject Site / Road Classification and Description:

Road Name	Wanneroo Road
Number of Lanes	two way, two lanes per direction, divided
Road Reservation Width	40.0m
Road Pavement Width	23.0m inclusive of 4.5m median
Classification	Primary Distributor
Speed Limit	60kph
Bus Route	YES
If YES Nominate Bus Routes	389, 486
On-street parking	NO
Road Name	Pupil Lane
Number of Lanes	two way, one lane (no linemarking), undivided
Road Reservation Width	5.0m
Road Pavement Width	5.0m
Classification	ROW
Speed Limit	50kph
Bus Route	NO
On-street parking	NO

2.4 Traffic Volumes

Road Name	Location of Traffic Count	Vehicles Per Day (VPD)	Vehicles per Peak Hour (VPH)				Heavy Vehicle % <i>If HV count is Not Available, are HV likely to be in higher volumes than generally expected?</i>	Date of Traffic Count	<i>If older than 3 years multiply with a growth rate</i>
			AM Peak Time	AM Peak VPH	PM Peak Time	PM Peak VPH			
Wanneroo Road	South of Dundebur Road	25,254	06:45 – 2,348		16:30 – 2,280		8.9%	20/21	–
	North of Dundebur Road	30,043	07:45 – 2,541		16:30 – 2,746		8.3%	20/21	–

As there are no available traffic volumes for Pupil Lane, KCTT will provide a rough estimate on the traffic flows based on a desktop review of the area.

There are currently 19 lots with rear access from Pupil Lane. These lots are occupied by:

- 13 residential dwellings * 9 VPD = 117 VPD
- 6 commercial facilities with several tenants (approximately 3,000m²) * 10 VPD/100m² = 300 VPD
- 1 service station (8 stalls) * 162.78 VPD/stall = 1,324 VPD
- subject site existing car wash (not operational)
- **TOTAL = 1,741 VPD**

It is not expected that more than 10% (174 VPD) of the total traffic from these lots would be Pupil Lane traffic.

2.5 Vehicular Crash Information

Is Crash Data Available on Main Roads WA website? YES – for Wanneroo Road

If YES, nominate important survey locations:

Location 1 Wanneroo Road SLK [21.56 - 21.77]

Period of crash data collection 01/01/2017 - 31/12/2021

Road Name	SLK	Road Hierarchy	Speed Limit	Crash Statistics			
				No of KSI Crashes	No of Medical Attention Crashes	No of PDO Major Crashes	No of PDO Minor Crashes
Wanneroo Road	21.56 - 21.77	Primary Distributor	60kph	0	0	2	1
MR Type	Involving Overtaking	Involving Parking	Involving Animal	Involving Pedestrian	Entering / Leaving Driveway		Other / Unknown
Count	1	0	0	1	0		1
No of MVKT Travelled at Location				≈ 25,000 VPD * 365 * 5 years * 0.21 km = 9.58 MVKT			
KSI Crash Rate				0 KSI crashes / 9.58 MVKT = 0 KSI crashes/MVKT			
All Crash Rate				3 crashes / 9.58 MVKT = 0.31 crashes/MVKT			
Comparison with Crash Density and Crash Rate Statistics				0.31 crashes/MVKT is lower than the network average of 0.37 crashes/MVKT for midblock crashes on state roads			

The following tables shows crash rates and crash densities in Perth Metropolitan area on local roads and state roads for the period from 2017 to 2022, as obtained from Main Roads WA on the 31st May 2022 by email request:

	All Crashes		Serious Injury Crashes (Fatal+Hospital)	
	Average Annual Crash Density (All Crashes/KM)	Average Annual Crash Rate (All Crashes/MVKT)	Average Annual Crash Density (Ser. Inj. Crashes/KM)	Average Annual Crash Rate (Ser. Inj. Crashes/MVKT)
Metro State Roads - Midblock	20.12	0.37	0.89	0.02
Metro State Roads - All	46.28	0.85	1.80	0.03

Note: Based on 5-years data for the period 2017 to 2021.

2.6 Calculation of Development Generated / Attracted Trips

What are the likely hours of operation?	05:00 – 21:00
What are the likely peak hours of operation?	AM peak - 10:00 – 11:00 PM peak - 16:00 – 17:00 Based on information received from the client for one of their other automated car wash locations.
Do the development generated peaks coincide with existing road network peaks?	YES - PM peak
Guideline Document Used	Transportation Engineers (ITE) Common Trip Generation Rates (9th edition)
Rates from above document:	Automated Car Wash: Daily – N/A AM peak – N/A PM peak – 14.12 VPH / KSF ² = 15.2 VPH / 100m ²

Given the available data from guideline documents is fairly limited and provided for small sample sizes KCTT have derived rates for the existing and proposed development based on current operations of the hand car wash and information received from the client for one of their other automated car wash locations.

Currently the hand car wash is not in operation, however for the purpose of comparing the impact between the hand and automated car wash the traffic from the subject site will be calculated for both.

There are currently 6 bays at the subject site – 2 washing bays, 2 vacuuming bays and 2 detailing bays. As the client noted there are 40 vehicles per day (80 vehicular trips) on average going through the car wash. It is assumed that a maximum of 10% of total traffic would be peak hour traffic.

For the proposed automated car wash the client provided the following data for one of their other automated car wash locations:

- 104 vehicles daily on average for 3 bays – 35 vehicles per bay (70 vehicular trips)
- 9 vehicles in the peak hours on average for 3 bays – 3 vehicles per bay (6 vehicular trips)

Given that two car washing stations have the area of approximately 46m², the observed data is in line with the ITE rates specified above.

This data will be used to derive the traffic generation of the proposed automated car wash.

Land Use Type	Rate above	Yield	Daily Traffic Generation	Peak Hour Traffic Generation
Automatic 'touchless' car wash	70 VPD / bay 6 VPH / bay	2 bays	140	12
Total:			140	12

Does the site have existing trip generation / attraction?	YES
No of Daily Trips	80 VPD
No of Peak Hour Trips	8 VPH

What is the total impact of the new proposed development?	The proposed development is expected to generate up 140 daily vehicular trips and 12 vehicular trips in the peak hours. This is considered a moderate impact as per WAPC Guidelines.
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Compared to the hand car wash, the proposed automated car wash would generate additional 60 daily vehicular trips and 4 vehicular trips in the peak hours.

Note: There is no data on traffic attraction on the site during the operation of COVID testing facilities.

2.7 Traffic Flow Distribution

How many routes are available for access / egress to the site? 3 routes – 50% IN / 50% OUT directional split

Route 1 / Movement 1

Provide details for Route No 1 From Wanneroo Road south

Percentage of Vehicular Movements via Route No 1 50% - 70 VPD / 6 VPH

Route 2 / Movement 2

Provide details for Route No 2 To Pupil Lane north

Percentage of Vehicular Movements via Route No 2 40% - 56 VPD / 5 VPH

Route 3 / Movement 3

Provide details for Route No 1 To Pupil Lane south

Percentage of Vehicular Movements via Route No 1 10% - 14 VPD / 1 VPH