

TRANSPORT IMPACT ASSESSMENT

31 Maida Vale Road

Maida Vale

December 2018

Rev B



HISTORY AND STATUS OF THE DOCUMENT

Revision	Date issued	Reviewed by	Approved by	Date approved	Revision type
Rev A	20.09.2018	M Kleyweg	M Kleyweg	21.09.2018	Issued for Review
Rev B	18.12.2018	M Kleyweg	M Kleyweg	18.12.2018	Proposed Layout Amended
Rev C	11.02.2019	M Kleyweg	M Kleyweg	11.02.2019	Proposed Layout Amended

DISTRIBUTION OF COPIES

Revision	Date of issue	Quantity	Issued to
Rev A	21.09.2018	1 (PDF)	Mike Bluntish (Quality Design Solutions)
Rev B	19.12.2018	1 (PDF)	Mike Bluntish (Quality Design Solutions)
Rev C	12.02.2019	1 (PDF)	Mike Bluntish (Quality Design Solutions)

Document Printed	11/02/2019 2:17 PM
File Name	D:\Box\Box Sync\KCTT Projects\KC00000 Current Projects\KC00926.000 31 Maida Vale Road, Maida Vale TIA\Outgoing\Report\190211 Rev C and SIDRA Report\KC00926.000 31 Maida Vale Road, Maida Vale TIA Rev C.docx
Author of the Report	Nemanja Marijanovic
Project Team	Jelena Simic
Project Director / Project Manager	Marina Kleyweg
Name of Project	31 Maida Vale Road, Maida Vale
Name of the Document	31 Maida Vale Road, Maida Vale - Transport Impact Assessment
Document Version	KC00926.000_R01_ Rev C



Table of Contents

1. Executive Summary	4
2. Transport Impact Assessment	5
2.1 Location	5
2.2 Technical Literature Used	5
2.3 Land Uses	6
2.4 Local Road Network Information	6
2.5 Traffic Volumes	8
2.6 Vehicular Crash Information	8
2.7 Parking Requirements	10
2.8 Bicycle Parking	11
2.9 ACROD Parking	12
2.10 Delivery and Service Vehicles	12
2.11 Calculation of Development Generated / Attracted Trips	13
2.12 Traffic Flow Distribution	16
2.13 Vehicle Crossover Requirements	16
2.14 Public Transport Accessibility	17
2.15 Pedestrian Infrastructure	17
2.16 Cyclist Infrastructure	18
2.17 Site Specific Issues and Proposed Remedial Measures	19

Appendices

Appendix 1 - The layout of the proposed development

Appendix 2 - Transport Planning and Traffic Plans

Appendix 3 - Vehicle Turning Circle Plans

Appendix 4 - SIDRA Intersection Analysis

1. Executive Summary

- The project location is 31 Maida Vale Road, Maida Vale. The subject lot fronts Maida Vale Road to the east and Pinker Crescent to the south, and it is currently vacant. The layout plans show a liquor store, an IGA store, a tavern, café, medical centre and an office.
- According to City of Kalamunda Local Planning Scheme No. 3, the proposed development requires 115 parking bays. The plans show 76 parking bays proposed. However, KCTT believe that the following points provide justification for this shortfall:
 - Unit 1 - Liquor Store. KCTT believe that majority of Liquor Store patrons will visit the store after shopping at the proposed Supermarket next door. However, in order to provide sufficient parking space for staff members and patrons with the sole purpose of shopping at the Liquor Store, KCTT believe that not more than 30% of reduction should be applied.
 - Unit 3 - Tavern. The information received from the proponent state that the tavern will only be open for dining hours, and that medical centre and pharmacy will be closed during tavern hours of operation and vice versa. From above table, it is observed that these land uses have similar parking requirements - approximately 35 bays. KCTT believe that a full 100% reduction should be applied to tavern parking requirements given there will be no working hours overlap with the medical centre and pharmacy store. Tavern patrons will have the full 35 bays at their disposal within tavern hours of operation.
 - Unit 4 - Café. KCTT believe that no parking should be provided for the sole purpose of visiting the small takeaway coffee place. The café will most likely be visited by patrons and staff members of other land uses of the proposed development. However, we believe that 1 parking bay should be provided for a café staff member.
 - Unit 5 - Pharmacy is highly likely to be visited after appointments at the medical centre. Furthermore, shopping at the pharmacy might be carried out along with daily/weekly shopping at the proposed Unit 2 supermarket. KCTT believe that 50% reduction should be applied to the pharmacy requirements for providing parking spaces to pharmacy staff members. Patrons of the pharmacy will most like visit the development for other purposes and visit the pharmacy as a secondary task.
 - After applying the above reduction percentages, the proposed development exceeds the requirement by 2 parking bays. With all above in mind, KCTT believe that due to the mixed-use nature of the development and different peak times and hours of operation, the proposed 76 parking bays will successfully cater for the requirements of the development.
- The proposed development requires 2 ACROD parking bays. Plans show 1 ACROD bay proposed therefore another ACROD bay should be accommodated.
- The proposed development is expected to generate additional **1,281 VPD**; **73 VPH** in the AM peak hour; **129 VPH** in the PM peak hour. KCTT believe that the surrounding network will successfully cater for the proposed development generated traffic.
- Five major routes are expected to be utilised for accessing / egressing the proposed development:
 - To the south via Maida Vale Road > Hawtin Road
 - To the west via Maida Vale Road
 - To the north via Maida Vale Road > Priory Road > Kalamunda Road
 - To the southeast via Maida Vale Road > Priory Road or Hawtin Road > Kalamunda Road
 - To the west via Pinker Crescent
- Five public transport routes are available in the 400m radius from the proposed development.
- Although the impact of this development can be deemed high when assessed against WAPC guidelines, we believe the surrounding network has sufficient capacity to cater for the proposed development.

2. Transport Impact Assessment

Note: This document is copyright to KCTT (trading as KC Traffic and Transport Pty Ltd). The information provided in this TIA report has been developed by KCTT over a period of years and has been presented in accordance with the requirements of a number of our clients. The information in this report is therefore intended to be commercial in confidence and is not to be shared with external parties at any time, unless a Director of KCTT provides written authorisation that the document may be shared at a specific time to a specific party, or parties. The terms and conditions associated with the receipt of this material is that it is not shared or distributed without our express, and written consent.

If you have received this information in error, KCTT must be notified immediately. We request the immediate destruction of all formats of this document, inclusive of paper and electronic copies should you have received this document in error.

2.1 Location

Lot Number	Lot 320
Street Number	No. 31
Road Name	Maida Vale Road
Suburb	Maida Vale
Description of Site	The site is currently vacant. Subject lot fronts Pinker Crescent to the south, Maida Vale Road to the east. The plans show mixed-use development with a liquor store, an IGA supermarket, a tavern, café, medical centre and an office.

2.2 Technical Literature Used

Local Government Authority	City of Kalamunda
Type of Development	Mixed-use (no residential)
Are the R-Codes referenced?	NO
<i>If YES, nominate which:</i>	
Is the NSW RTA Guide to Traffic Generating Developments Version 2.2 October 2002 (referenced to determine trip generation / attraction rates for various land uses) referenced?	YES
Which WAPC Transport Impact Assessment Guideline should be referenced?	Volume 4 - Individual Developments
Are there applicable LGA schemes for this type of development?	YES
<i>If YES, Nominate:</i>	
Number of Scheme	No. 3
Name of Scheme	City of Kalamunda Local Planning Scheme
Are Austroads documents referenced?	YES
Are there applicable DAP schemes for this type of development?	NO

Is the Perth Transport Plan for 3.5 million and Beyond referenced? NO

2.3 Land Uses

Are there any existing Land Uses NO

If YES, Nominate:

Proposed Land Uses

How many types of land uses are proposed?	Five (5) main and one (1) ancillary land use.
Nominate land use type and yield	1. Shop - 3 units - approximately 858m² GFA i. Unit 1 - Liquor Store ii. Unit 2 - Supermarket iii. Unit 5 - Pharmacy 2. Tavern - Unit 3 - 177.87m² GFA 3. Café - Unit 4 - 41.09m² GFA 4. Medical Centre - Unit 6 approximately 409m² - 4 practitioners; 1 dentist; 3 staff members 5. Office - Approximately 50m² GFA
	Two Warehouses - ancillary to shop units 1 and 2 - approximately 183m ²

*Note - Warehouses will not generate additional traffic or require additional parking bays. Calculations for main land uses will include traffic generation and parking provisions for these ancillary land uses.

Are the proposed land uses complimentary with the surrounding land-uses? YES

2.4 Local Road Network Information

How many roads front the subject site? Two (2)

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

Road 1

Road Name	Maida Vale Road
Number of Lanes	two way, one lane each direction, undivided
Road Reservation Width	approximately 20m
Road Pavement Width	approximately 10m
Classification	Significant Urban Local Road / Distributor B
Speed Limit	SLK [0.00-0.44] – 50km/h SLK [0.44-3.02] – 60km/h
Bus Route	YES
<i>If YES Nominate Bus Routes</i>	296; 298
On-street parking	NO

Road 2

Road Name	Pinker Crescent
Number of Lanes	two way, one lane (no linemarking), undivided

Road Reservation Width	approximately 16m
Road Pavement Width	approximately 6m
Classification	Urban Local Road / Access Road
Speed Limit	50kph
Bus Route	YES
<i>If YES Nominate Bus Routes</i>	296; 298
On-street parking	NO

Name of Other Roads within 400m radius of site, or roads likely to take increased traffic due to the development:

Road 1

Road Name	Hawtin Road
Number of Lanes	two way, one lane each direction, undivided
Road Reservation Width	approximately 20m
Road Pavement Width	approximately 7m
Classification	Significant Urban Local Road / Distributor A
Speed Limit	60kph
Bus Route	YES
<i>If YES Nominate Bus Routes</i>	286; 288; 294
On-street parking	NO

Road 2

Road Name	Priory Road
Number of Lanes	two way, one lane each direction, undivided
Road Reservation Width	approximately 20m
Road Pavement Width	approximately 7.2m
Classification	Significant Urban Local Road / Local Distributor
Speed Limit	60kph
Bus Route	YES
<i>If YES Nominate Bus Routes</i>	294
On-street parking	NO

Road 3

Road Name	Kalamunda Road
Number of Lanes	two way, two lanes per direction, divided
Road Reservation Width	approximately 30m
Road Pavement Width	approximately 7m per direction with a 4.5 chevron median
Classification	Significant Urban Local Road / Distributor A
Speed Limit	SLK [3.84-4.65] – 60km/h SLK [4.65-5.41] – 70km/h
Bus Route	YES
<i>If YES Nominate Bus Routes</i>	294; 295; 297; 299
On-street parking	NO

2.5 Traffic Volumes

Road Name	Location of Traffic Count	Vehicles Per Day (VPD)	Vehicles per Peak Hour (VPH)				Heavy Vehicle %	Year	
			AM Peak Time	AM Peak - Peak VPH	PM Peak Time	PM Peak - Peak VPH		Date of Traffic Count	If older than 3 years multiply with a growth rate
Maida Vale Road	North of Pinker Crescent	6,497	08:00 – 596		17:00 – 701		6.1%	2017	–
	North West of Myerson Crescent	6,518	08:00 – 616		17:00 – 670		5.3%	2018	–
Hawtin Road	East of Lilian Road	10,691	08:00 – 870		15:00 – 1,166		5.3%	2018	–
Kalamunda Road	West of Hawtin Road	19,738	08:00 – 1,555		16:45 – 1,627		8.5%	2015/2016	–
Priory Road	South of Billara Street	4,896	07:00 – 446		16:00 – 410		6.3%	2017	–

2.6 Vehicular Crash Information

Is Crash Data Available on Main Roads WA website? YES

If YES, nominate important survey locations:

Location 1

Maida Vale Road (Between Priory Road and Pinker Crescent)

Location 2

Intersection of Maida Vale Road and Priory Road

KCTT have checked the report data for the below period at intersection of Pinker Crescent and Maida Vale Road, and for the section of Pinker Crescent in front of the development and no crash data was recorded in the 5-year period.

Period of crash data collection

01/01/2013 - 31/12/2017

Road Name	SLK	Functional Classification	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
Maida Vale Road	0.32 - 0.44	Significant Urban Local Road	Distributor B	50 kph	0	0	1	0
No of MVKT Travelled at Location					approximately 7,000 VPD * 365 * 5 years * 0.12km = 1.53 MVKT			
KSI Crash Rate					0 KSI crashes / 1.53 MVKT = 0 KSI crashes/MVKT			
All Crash Rate					1 crash / 1.53 MVKT = 0.65 crashes/MVKT			
Comparison with Crash Density and Crash Rate Statistics					0.65 crashes / MVKT is lower than the network average of 0.81 crashes / MVKT.			

Intersection of Maida Vale Road and Priors Road	N/A	Significant Urban Local Road / Urban Local Road	Distributor B / Access Road	50 kph / 50 kph	0	1	0	2
No of MVKT Travelled at Location					approximately 9,000 VPD * 365 * 5 years * 0.3km = 4.93 MVKT			
KSI Crash Rate					0 KSI crashes / 4.93 MVKT = 0 KSI crashes/MVKT			
All Crash Rate					3 crashes / 4.93 MVKT = 0.61 crashes/MVKT			
Comparison with Crash Density and Crash Rate Statistics					0.61 crashes / MVKT is lower than the network average of 1.73 crashes / MVKT.			

The following table shows the Crash Density and Crash Rates on Metropolitan Local Roads as obtained from Main Roads WA on the 14th May 2018 by email request: -

Crash Density and Crash Rate on Metropolitan Local Roads Network only

	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 Local Road - Midblock	2.99	0.81	0.13	0.03
Metro Local Road - All	6.41	1.73	0.26	0.07

Note: Based on 5-years data for the period 2013 to 2017.

In order to identify black spots being the locations noted for a high incidence of crashes involving death and injury, it is important to conduct the crash criteria analysis as shown in the table below. If the below crash criteria are met, there is a way to measure the cost-effectiveness of the proposed treatment. It is called BCR and it ensures that the black spot exhibits a significant number of crashes that are correctable by infrastructure treatment.

Table 3.1: Crash criteria for the State Black Spot Program

Crash Criteria	Highways and Main Roads		Local Roads	
	Metro	Rural	Metro	Rural
<i>Intersection or Mid-block or Short road section (< 3 km)</i>	10 crashes over 5 years	3 crashes over 5 years	5 crashes over 5 years	3 crashes over 5 years
<i>Road length (≥ 3km)</i>	Average of 3 Crashes per km over 5 years	Average of 1 crash per km over 5 years	Average of 2 Crashes per km over 5 years	Average of 1 crash per km over 5 years
Benefit-cost ratio (BCR)	1			

(Main Roads/ WALGA 2004)

2.7 Parking Requirements

Local Government City of Kalamunda
 Local Government Document Utilised Local Planning Scheme No. 3

Description of Parking Requirements in accordance with Scheme:

Medical Centre - 6 bays per practitioner and 1 per staff

Shop - 5 bays per 100m² of NLA

Tavern - 1 bay for every 5m² of bar and public area

Restaurant - 1 bay for every 4 persons to be accommodated

*Note - Warehouses are ancillary to Units 1 and 2 (Liquor Store and Supermarket) and will not require additional parking bays. Calculations for main land uses already include parking provisions for these ancillary land uses.

Calculation of Parking

Land Use	Requirements	Yield	Total Parking	Total Parking after Reduction
Unit 1 - Liquor Store	<i>5 bays per 100m² of NLA</i>	75.97m ² NLA	3.8	2.66
Unit 2 - Supermarket		611.79m ² NLA	30.59	30.59
Unit 5 - Pharmacy		170.27m ² NLA	8.51	4.26
Unit 4 - Tavern	<i>1 bay for every 5m² of bar and public area</i>	Assumed bar area to be 50% of Total GFA. 50% (177.87m ²) = 88.94m ² Public area = 83.83m ² of Alfresco Dining area Total - 172.77m ²	34.55	0
Unit 5 - Café	<i>1 bay for every 4 persons to be accommodated</i>	Café will be a take-away-only coffee place. Assumed 10 persons at most at any time.	2.5	1.25
Unit 6 - Medical Centre	<i>6 bays per practitioner and 1 per staff</i>	5 practitioners + 3 staff members	33	33
Units 7 - Office	<i>4 bays per 100m² of NLA</i>	50m ²	2	2
Total:			114.95	73.76
			115 parking bays	74 parking bays

Total Volume of Parking Provided by Proponent

76

Justification

According to City of Kalamunda Local Planning Scheme No. 3, the proposed development requires 115 parking bays. The plans show 76 parking bays provided. Therefore, the total shortfall without reciprocity is 39 parking bays. However, given the nature of the proposed development and site context, the following points inform KCTT's opinion that the provision is capable of meeting the development requirements:

- Unit 1 - Liquor Store. KCTT believe that majority of Liquor Store patrons will visit the store after shopping at the proposed Supermarket next door. However, in order to provide sufficient parking space for staff

members and patrons with the sole purpose of shopping at the Liquor Store, KCTT believe that not more than **30%** of reduction should be applied.

- Unit 2 - Supermarket. KCTT believe that no reduction should be applied to the parking requirements.
- Unit 3 - Tavern. The information received from the proponent state that the tavern will only be open for dining hours, and that medical centre and pharmacy will be closed during tavern hours of operation and vice versa. From above table, it is observed that these land uses have similar parking requirements - approximately 35 bays. KCTT believe that a full **100%** reduction should be applied to tavern parking requirements given there will be no working hours overlap with the medical centre and pharmacy store. Tavern patrons will have the full 35 bays at their disposal within tavern hours of operation.
- Unit 4 - Café. KCTT believe that no parking should be provided for the sole purpose of visiting the small takeaway coffee place. The café will most likely be visited by patrons and staff members of other land uses of the proposed development. However, we believe that 1 parking bay should be provided for a café staff member.
- Unit 5 - Pharmacy is highly likely to be visited after appointments at the medical centre. Furthermore, shopping at the pharmacy might be carried out along with daily/weekly shopping at the proposed Unit 2 supermarket. KCTT believe that **50%** reduction should be applied to the pharmacy requirements for providing parking spaces to pharmacy staff members. Patrons of the pharmacy will most like visit the development for other purposes and visit the pharmacy as a secondary task.
- Unit 6 - Medical Centre. As stated above, the medical centre shall have full parking requirements provided. After Medical Centre closes for the day, Tavern opens, and these parking bays will entirely be at the disposal of their customers.
- Unit 7 - Office. KCTT believe that no reduction should be applied for the parking requirements.

After applying the above reduction percentages, the proposed development exceeds the requirement by 2 parking bays. With all above in mind, KCTT believe that due to the mixed-use nature of the development and different peak times and hours of operation, the proposed 76 parking bays will successfully cater for the requirements of the development.

Have Vehicle Swept Paths been checked for YES
Parking?

If YES, provide description of performance:

The navigability of the crossovers and parking area has been checked with B99 passenger vehicle and with 8.5m Service Truck. No navigability issues were found.

2.8 Bicycle Parking

Local Government City of Kalamunda

Reference Document Utilised N/A

Description of Parking Requirements in accordance with Scheme:

The City of Kalamunda does not stipulate requirements for the provision of bicycle parking.

Justification

KCTT believe that some bicycle parking should be provided to promote the alternative means of transport. Since the proposed development is a mixed-use building, it can be expected that some of the patrons (visitors of smaller shops but not visitors of the supermarket and medical centre) and staff members could utilise bicycles to visit the development or come to work.

2.9 ACROD Parking

Class of Building Class 6 - a shop or other building for the sale of goods by retail or the supply of services directly to the public (Example: café, restaurant, kiosk, hairdressers, showroom or service station):

Class 9a - a health care building, including those parts of the building set aside as a laboratory

Does this building class require specific provision of ACROD Parking? YES

Reference Document Utilised Building Code of Australia

Description of Parking Requirements:

Class 6 - Up to 1,000 carparking space - 1 space for every 50 carparking spaces or part thereof;

Class 9a - 1 space for every 50 carparking spaces or part thereof;

Parking Requirement in accordance with regulatory documents

Land Use	Requirements	Yield	Total Parking
Shops	1 space for every 50 carparking spaces or part thereof	76	2
Medical Centre			

Total Volume of Parking Provided by Proponent

ACROD Parking	1
---------------	---

Justification

The plans show 1 ACROD bay proposed. Provision of another ACROD bay should be considered.

2.10 Delivery and Service Vehicles

Guideline Document used as reference NSW RTA Guide to Traffic Generating Developments

Requirements

Supermarkets, shops and restaurants (all spaces adequate for trucks): 1 space per 400m² (if GFA < 2,000m²) or 5 + 1 space per 1,000m² over 2,000m² (if GFA > 2,000m²);

Other uses (50% of spaces adequate for trucks) – 1 space per 2,000m²

Parking Requirement in accordance with regulatory documents

Land Use	Requirements	Yield	Total Parking
Shops	1 space per 400m ² (if GFA < 2,000m ²)	app 858m ² GFA	2.1
Medical Centre	1 space per 2,000m ²	app 400m ² GFA	0.2
Total:			3.3

Total Volume of Parking Provided by Proponent

Service and Delivery Parking	2
------------------------------	---

Justification

The layout plan shows 2 loading/delivery bays - 1 loading zone and 1 passenger vehicle size delivery bay.

If necessary, the loading zone could accommodate two Medium Rigid Vehicles. However, it is unlikely that this will happen, since it is expected that different shops will arrange different loading / delivery times. Loading zone will also be utilised for bin collecting. KCTT believe that the 2 loading/delivery spaces will be adequate to cater for the requirements of the proposed development.

2.11 Calculation of Development Generated / Attracted Trips

What are the likely hours of operation?

Medical Centre and Pharmacy - 08:00 - 17:00
 Liquor Store and Supermarket - 09:00 - 20:00
 Office - 09:00-17:00
 Tavern - 18:00 - 22:00
 Café - 09:00 - 20:00

What are the likely peak hours of operation?

The expected joint peak usage of these land uses is expected to be between 08:00 - 09:00 in the morning (AM Peak) and between 16:30 - 17:30 in the afternoon (PM Peak).

Do the development generated peaks coincide with existing road network peaks?

YES

If YES, Which:

AM and PM peak times

Guideline Document Used

WAPC Transport Assessment Guidelines for Developments

Rates from above document:

Office and Commercial Area - 2 per 100m² of GFA in the PM Peak hour. The same rate is assumed for the AM peak. An 80% IN / 20% OUT split has been assumed for the AM peak and the reverse for the PM peak.

Retail (with significant food retail component) - 10 vehicular trips per 100m² of NLA for PM Peak and 2.5 trips per 100m² for the AM peak hour. A 50%IN / 50%OUT split has been adopted for the PM peak and an 80%IN / 20%OUT split for the AM peak hour;

Entertainment venues / Restaurant - 5 vehicular trips per 100m² GFA or 10 trips per 100 seats (based on 2m² GFA per person). For most developments of this type, the peak hour(s) are likely to be outside the normal AM and PM peak hours;

Café / Restaurant - 60 vehicular trips per 100m² of GFA
 NSW RTA Guide to Traffic Generating Developments

Guideline Document Used

Rates from above document:

Office and Commercial Area - 10 vehicular trips per 100m² of GFA;

Retail - 121 vehicular trips per 100m² of NLA;

Guideline Document Used

Rates from above document:

ITE Trip Generation Handbook 9th edition

Pharmacy - 90.06 trips per KSF² (96.94 vehicular trips per 100m² NLA) on a weekday

AM Peak - 2.94 trips per KSF² (3.16 vehicular trips per 100m² NLA)

PM Peak - 8.40 trips per KSF² (9.04 vehicular trips per 100m² NLA)

KSF² = Units of 1,000 square feet.

We have used a reciprocity ratio of 50% of all Pharmacy clientele is coming directly from the Medical Centre

Given that the above-mentioned guideline documents do not offer daily vehicular trip generation rate for this land use, KCTT have assumed the following to apply:

Medical Centres are likely to be used by people who live in the vicinity of the subject development. We have based our conclusions on the expected number of practitioners which is a total of 5 (Assume 2 general practitioners, 2

specialists and 1 dentist) for the proposed medical centre. It is expected that consultations with general practitioners are booked in 10-15 minutes slots (a maximum of 36 clients per day); 30 minutes for specialist practitioners (a maximum of 15 clients per day); and 60 minutes for a dentist (a maximum of 8 clients per day). Based on this ratio and the fact that the entire development will have 5 practitioners (2 general practitioners, 2 specialists and 1 dentist), we believe that on a working day there might be up to 72 clients per day for the general practice, up to 30 clients for specialist practice, and up to 8 dentist clients. Using a 100% vehicular attraction rate, this equates to a total of 144 (general practice); 60 (specialist practice) and 16 (dentist) vehicular movements per day for the potential maximum number of clients this site can generate. Peak hours are estimated as 20% of daily traffic.

Land Use Type	Rate above	Yield	Daily Traffic Generation (After Reduction)	Peak Hour Traffic Generation (Joint Development Peak - After Reduction)	
				AM	PM
Units 1 - Liquor Store	Daily - 121 VPD per 100m ² NLA AM peak - 2.5 VPH per 100m ² NLA	75.97m ² NLA	92 (64)	2 (2)	8 (6)
Unit 2 - Supermarket	PM peak - 10 VPH per 100m ² NLA	611.79m ² NLA	740	15	61
Unit 3 - Tavern	Daily - 60 VPD per 100m ² GFA Although the above rate state 5 VPH in peak times, KCTT believe that a higher rate should be applied because of the Tavern working hours (18:00 - 22:00). KCTT adopted 20 VPH in the PM Peak hour.	261.77m ² GFA	157	N/A (Tavern not open)	52 (0)
Unit 4 - Café	Daily - 60 VPD per 100m ² GFA AM peak - 5 VPH per 100m ² GFA PM peak - 5 VPH per 100m ²	41.09m ² GFA	25 (4)	2 (1)	2
Unit 5 - Pharmacy	Daily - 96.94 vehicular trips per 100m ² NLA AM Peak - 3.16 vehicular trips per 100m ² NLA PM Peak - 9.04 vehicular trips per 100m ² NLA	170.27m ²	165 (83)	6 (3)	16 (8)
Unit 6 - Medical Centre	General Practice Patients 72 VPD per 1 practitioner; 20% VPD = VPH	2 practitioners	144	29	29
	Specialist Practice Patients 30 VPD per 1 practitioner; 20% VPD = VPH	2 practitioners	60	12	12

Dentist Patients	8 VPD per 1 practitioner; 20% VPD = VPH	1 practitioner	8	2	2
Staff Members	2 VPD per staff member; 1 VPH per staff member	5 practitioners and 3 staff members = 8	16	8	8
Unit 7 - Office	Daily - 10 VPD per 100m ² GFA AM peak - 2 VPH per 100m ² GFA PM peak - 2 VPH per 100m ² GFA	50m ²	5	1	1
Total:			1,412 (1,281)	77 (73)	191 (129)

*Note - Warehouses will not generate additional traffic. Calculations for main land uses include traffic generation for these ancillary land uses.

Justification

It is expected that the proposed development will generate up to 1,412 VPD and 191 VPH after completion. In a similar manner to the parking calculations, KCTT believe that the same reduction percentages should be applied to traffic generation of these land uses:

- 30% for the liquor store
- 50% for Pharmacy
- Café is expected to be used only by patrons and staff members of other land uses, since it will be a small coffee take-away place. KCTT believe that the only traffic generation will come from staff members and deliveries for the café.
- The above PM total generation represents a total cumulative generation from all land uses. However, since the tavern will not be open during the joint development PM peak time, it was deducted from the PM peak total traffic generation.
- After applying these reduction percentages, the total additional traffic from the proposed development is expected to be **1,281 VPD**; **73 VPH** in the AM peak hour; **129 VPH** in the PM peak hour.

Does the site have existing trip generation / attraction? NO

What is the total impact of the new proposed development?

The total impact of the proposed development is high. KCTT believe that the surrounding network will successfully cater for the additional traffic generated by the development.

2.12 Traffic Flow Distribution

What is the total traffic impact of the development? **1,281 VPD; AM - 73 VPH; PM - 129 VPH**

How many routes are available for access / egress to the site? Five (5)

Route 1

Provide details for Route No 1 To the south via Maida Vale Road > Hawtin Road

Percentage of Vehicular Movements via Route No 1 30% [385 VPD; AM 22 VPH; PM 39 VPH]

Route 2

Provide details for Route No 2 To the west via Maida Vale Road

Percentage of Vehicular Movements via Route No 2 25% [320 VPD; AM 18 VPH; PM 32 VPH]

Route 3

Provide details for Route No 3 To the north via Maida Vale Road > Priory Road > Kalamunda Road

Percentage of Vehicular Movements via Route No 3 15% [192 VPD; AM 11 VPH; PM 19 VPH]

Route 4

Provide details for Route No 4 To the southeast via Maida Vale Road > Priory Road or Hawtin Road > Kalamunda Road

Percentage of Vehicular Movements via Route No 4 25% [320 VPD; AM 18 VPH; PM 32 VPH]

Route 5

Provide details for Route No 5 To the west via Pinker Crescent

Percentage of Vehicular Movements via Route No 5 5% [64 VPD; AM 4 VPH; PM 7 VPH]

2.13 Vehicle Crossover Requirements

Are vehicle crossovers required onto existing road networks? YES

How many existing crossovers? None

How many proposed crossovers? Two (one full movement crossover on Pinker Crescent; one Left Out only crossover on Maida Vale Road)

If there are greater numbers of new crossovers, than existing, provide justification:

The subject site is currently vacant, therefore the crossovers to the surrounding network were not required.

How close are proposed crossovers to existing intersections?

- Crossover on Pinker Crescent - approximately 30m from the intersection of Maida Vale Road and Pinker Crescent
- Crossover on Maida Vale Road - approximately 20m from the intersection of Maida Vale Road and Priory Road

Does this meet existing standards? YES

Justification

The table above shows that for Access driveways other than domestic, and for speed of 50km/h (both Maida Vale and Pinker Crescent in front of the development have 50km/h speed limit), the minimum SSD should be 45m.

2.14 Public Transport Accessibility

How many bus routes are within 400 metres of the subject site?

Five (5)

How many rail routes are within 800 metres of the subject site?

None

Bus Route	Description	Peak Frequency	Off-Peak Frequency
286	Perth - Maida Vale via Belmont Forum	Three times a weekday	No service on weekends
288	Perth - Maida Vale via Belmont Forum & Forrestfield	20 minutes	60 minutes on weekends
294	Midland Station - Westfield Carousel via Forrestfield and High Wycombe	20 minutes	120 minutes on Saturday
296	Perth - Kalamunda via Gooseberry Hill Road	20 minutes	120 minutes on weekends
298	Perth - Maida Vale via Belmont Forum & Abernethy Road	Three times a weekday	No service on weekends

Walk Score Rating for Accessibility to Public Transport

35 | Some Transit. A few nearby public transportation options.

Is the development in a Greenfields area?

NO

2.15 Pedestrian Infrastructure

Describe existing local pedestrian infrastructure within a 400m radius of the site:

Classification	Road Name
"Other Shared Path (Shared by Pedestrians and Cyclists)"	Maida Vale Road; Myerson Crescent; Pimelea Street; Priors Road; Pinker Crescent; Kalamunda Road; Hawtin Road
Does the site have existing pedestrian facilities	YES
Does the site propose to improve pedestrian facilities?	NO
What is the Walk Score Rating?	
20 Car-Dependent. Almost all errands require a car.	

2.16 Cyclist Infrastructure

Are there any PBN Routes within an 800m radius of the subject site? YES

If YES, describe:

Classification	Road Name
"Other Shared Path (Shared by Pedestrians and Cyclists)"	Maida Vale Road; Myerson Crescent; Pimelea Street; Priory Road; Pinker Crescent; Kalamunda Road; Hawtin Road
"Good Road Riding Environment"	Maida Vale Road; Myerson Crescent; Pimelea Street; Priory Road
"Bicycle Lanes or Sealed Shoulder Either Side"	Hawtin Road

Are there any PBN Routes within a 400m radius of the subject site? YES

If YES, describe:

Classification	Road Name
"Other Shared Path (Shared by Pedestrians and Cyclists)"	Maida Vale Road; Myerson Crescent; Pimelea Street; Priory Road; Pinker Crescent; Kalamunda Road; Hawtin Road;
"Good Road Riding Environment"	Maida Vale Road; Myerson Crescent; Pimelea Street; Priory Road; Gilba Place
"Bicycle Lanes or Sealed Shoulder Either Side"	Hawtin Road; Roe Highway

Does the site have existing cyclist facilities? YES

Does the site propose to improve cyclist facilities? NO

2.17 Site Specific Issues and Proposed Remedial Measures

How many site-specific issues need to be discussed? One (1)

Site Specific Issue No 1

Remedial Measure / Response

Parking Shortfall

According to City of Kalamunda Local Planning Scheme No. 3, the proposed development requires 115 parking bays. The plans show 76 parking bays proposed. However, KCTT believe that the following points provide justification for this shortfall:

- Unit 1 - Liquor Store. KCTT believe that majority of Liquor Store patrons will visit the store after shopping at the proposed Supermarket next door. However, in order to provide sufficient parking space for staff members and patrons with the sole purpose of shopping at the Liquor Store, KCTT believe that not more than 30% of reduction should be applied.
- Unit 3 - Tavern. The information received from the proponent state that the tavern will only be open for dining hours, and that medical centre and pharmacy will be closed during tavern hours of operation and vice versa. From above table, it is observed that these land uses have similar parking requirements - approximately 35 bays. KCTT believe that a full 100% reduction should be applied to tavern parking requirements given there will be no working hours overlap with the medical centre and pharmacy store. Tavern patrons will have the full 35 bays at their disposal within tavern hours of operation.
- Unit 4 - Café. KCTT believe that no parking should be provided for the sole purpose of visiting the small takeaway coffee place. The café will most likely be visited by patrons and staff members of other land uses of the proposed development. However, we believe that 1 parking bay should be provided for a café staff member.
- Unit 5 - Pharmacy is highly likely to be visited after appointments at the medical centre. Furthermore, shopping at the pharmacy might be carried out along with daily/weekly shopping at the proposed Unit 2 supermarket. KCTT believe that 50% reduction should be applied to the pharmacy requirements for providing parking spaces to pharmacy staff members. Patrons of the pharmacy will most like visit the development for other purposes and visit the pharmacy as a secondary task.

After applying the above reduction percentages, the proposed development exceeds the requirement by 2 parking bays. With all above in mind, KCTT believe that due to the mixed-use nature of the development and different peak times and hours of operation, the proposed 76 parking bays will successfully cater for the requirements of the development.