TRAFFIC & PARKING ASSESSMENT

ALTERATIONS AND ADDITIONS TO SERVICE STATION

LOT 4 IN DP 565623
4 DUNHEVED ROAD, WERRINGTON COURT

PREPARED FOR: KDC PTY LTD

MARCH 2017

REF: 16/163

TRAFFIC & PARKING ASSESSMENT
KDC PTY LTD

ALTERATIONS & ADDITIONS TO SERVICE STATION
LOT 4 IN DP 565623
4 DUNHEVED ROAD, WERRINGTON COURT

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This document has been prepared, checked and released in accordance with the Quality Control Standards established by Intersect Traffic Pty Ltd.

Issue	Date	Description	By
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This document has been authorised by

Date 15TH March 2017

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EXECUTIVE SUMMARY

Intersect Traffic Pty Ltd (Intersect) was engaged by KDC Pty Ltd on behalf of Caltex Australia Pty Ltd to prepare a traffic and parking assessment report for the alterations and additions to an existing service station on Lot 4 in DP 565623, 4 Dunheved Road, Werrington Court. The site is located on the north-western corner of the Dunheved Road / Henry Lawson Avenue intersection. This traffic and parking assessment is required to support a development application to Penrith City Council. Development concept plans are provided within ***Appendix 1***. The assessment has determined the following;

- Existing peak hour weekday traffic volumes on Dunheved Road and Henry Lawson Avenue are approximately 1,709 vtph and 293 vtph respectively.
- The likely two way mid-block road capacity of Dunheved Road is 2,800 vtph (LoS D) while the environmental capacity of Henry Lawson Avenue is 500 vtph.
- As existing traffic volumes and future 2026 traffic volumes are less than the two way mid-block capacity of Dunheved Road and the environmental capacity of Henry Lawson Avenue the local and state road network has sufficient spare capacity to cater for some development in the area.
- The proposed development is only likely to result in a negligible increase in traffic on the road network as the new infrastructure replaces existing infrastructure on the site.
- Therefore the road network capacity in both 2016 and 2026 will not reach its technical or environmental capacity as a result of this development and it is reasonable to conclude that subject to satisfactory intersection performance the development will not adversely impact on the state and local road network.
- The existing signalised intersection of Dunheved Road and Henry Lawson Avenue is currently operating with good levels of service and the proposed development will not result in any change to this situation. Therefore the development will not adversely impact on the operation of this or other intersections on the local and state road network.
- The proposed access arrangements for the development are satisfactory for use with the completed development and compliant with Australian Standard *AS 2890.1 – 2004 Parking facilities – Part 1: Off-street car parking*.
- By providing 21 on-site car parks and the drive through lane shown on the development plans the development provides sufficient and suitable on-site car parking and queuing areas to meet the expected peak parking demand generated by the development.
- The proposed on-site car parking is considered to comply with the minimum standards required of Australian Standard AS 2890.1-2004 *"Parking Facilities Part 1 – Off street car parking".*
- The proposed development can be suitably serviced by the largest service vehicles required for servicing with forward entry and exit from the site.
- The type of development proposed is unlikely to generate any significant, if any demand, for public transport services. Therefore it is concluded that no additional public transport facilities will be needed as a result of the development.
- Whilst this type of development may generate a very small amount of pedestrian and cycleway traffic, it would not be sufficient to require additional infrastructure. Concrete footpaths exist around the site and are suitable for the pedestrian traffic generated by the development.

Having carried out this traffic and parking assessment for the alterations and additions to the existing Caltex service station on Lot 4 in DP 565623, 4 Dunheved Road, Werrington Court it is recommended the proposal can be supported from a traffic impact perspective. It does not adversely impact on the local and state road network and complies with all relevant Penrith City Council, Australian Standards and NSW Roads and Maritime Services (RMS) requirements.

CONTENTS

APPENDICES

FIGURES

PHOTOGRAPHS

TABLES

1. INTRODUCTION

Intersect Traffic Pty Ltd (Intersect) was engaged by KDC Pty Ltd on behalf of Caltex Australia Pty Ltd to prepare a traffic and parking assessment report for the alterations and additions to an existing service station on Lot 4 in DP 565623, 4 Dunheved Road, Werrington Court. The site is located on the north-western corner of the Dunheved Road / Henry Lawson Avenue intersection. This traffic and parking assessment is required to support a development application to Penrith City Council. The development involves the demolition of the existing workshop, convenience store and car park and the construction of a new convenience store with a take away food outlet with drive through facilities. The existing fuel bowsers, fuel tanks and canopy will remain. This development will also provide additional on-site car parking. Development concept plans are provided within ***Appendix 1***.

The assessment was carried out in accordance with the guidelines contained within the NSW Roads and Maritime Services (NSW RMS) *RTA's Guide to Traffic Generating Developments* and includes an assessment of the local road networks capacity to cater for the development within a future horizon period of 10 years and compliance with Penrith City Council's DCP 2014 as well as Australian Standards *AS2890.1-2004 Parking facilities – Part 1 Off-street car parking* in regard to on-site parking and access. This report is required to support a development application to Penrith City Council and presents the findings of the traffic and parking assessment including:

1. An outline of the existing road network in the vicinity of the proposed development.
2. An assessment of the likely traffic impacts of the proposal on the adjacent road network as a result of the development. Road, intersection and access capacities / conditions have been assessed.
3. An assessment of the development's compliance with Penrith City Council's DCP 2014 in regard to on-site parking and access.
4. An assessment of the development's compliance with Australian Standard *AS2890.1-2004 Parking facilities – Part 1 Off-street car parking* in regard to on-site parking, loading/delivery facilities and access.
5. Presentation of conclusions and any recommendations.

2. SITE LOCATION

The development site is located on the north-western corner of the Dunheved Road and Henry Lawson Avenue intersection, Werrington Court. It is located directly opposite the Werrington Court local neighbourhood shopping village and approximately 4.5 km's north east of the Penrith CBD area. The existing site development consists of the existing service station incorporating 4 fuel bowsers covered with a canopy, a convenience store, workshop building and car wash.

The site is titled Lot 4 in DP 565623 and is addressed as 4 Dunheved Road, Werrington County and has a total area of 3,670 m^2. The existing service station bowser area is accessed via separate entry and exit driveways off Dunheved Road as well as a combined entry / exit off Henry Lawson Avenue to the rear of the site all constructed in reinforced concrete. These access conditions allow all vehicles to enter and exit the site in a forward direction.

Photograph 1 below shows the existing site development and access driveways off Dunheved Road. ***Photograph 2*** shows the existing vehicular access off Henry Lawson Avenue while ***Figure 1*** shows the locality of the site.

Photograph 1: Existing Site Development and Dunheved Road access

Photograph 2: Existing Site Access – Henry Lawson Avenue

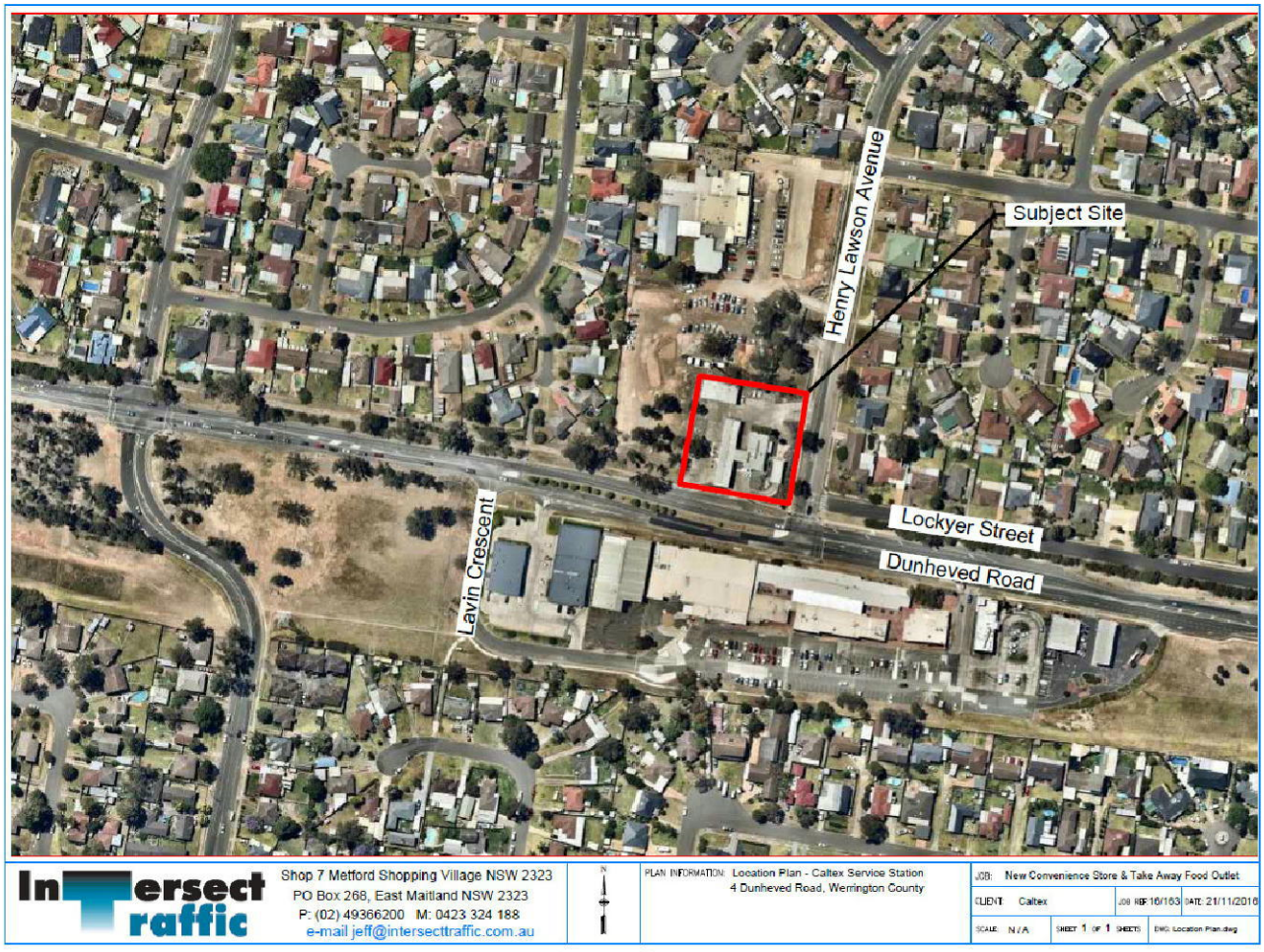


Figure 1: Site Location

3. EXISTING ROAD NETWORK

3.1 Dunheved Road

The main road servicing the proposed development is Dunheved Road which is a regional road (RR 7288) which connects Richmond Road to the Great Western Highway at Penrith. As a regional road it is under the care and control of Penrith City Council however the NSW Roads and Maritime Services (RMS) would contribute to the maintenance of the road. Under a functional road hierarchy it would be considered a major collector road, collecting and distributing traffic from the Werrington area to the Great Western Highway at Penrith via Parker Street.

Near the site Dunheved Road is a two lane two way urban road though additional through and turning lanes are provided at intersections along the road including at the Henry Lawson Avenue intersection adjacent to the site. The travel lanes are approximately 3.3 to 3.5 metres wide with upright kerb along both sides of the road and a 50 km/h speed zone is in effect past the site. At the time of inspection Dunheved Road was in good condition and showed evidence of recent upgrading works. ***Photograph 3*** below shows Dunheved Road near the site.

Photograph 3 – Dunheved Road near the site.

3.2 Henry Lawson Avenue

Henry Lawson Avenue is a local collector road under the care and control of Penrith City Council. It predominately conveys traffic to and from Dunheved Road from the residential areas to the north of the site as well as providing vehicular access to residential dwellings along its length. It is a two-way two-lane road with upright kerb and gutter along its length with a carriageway width of 12.5 metres which allows for an on-street parking lane on both sides of the road. Travel lanes are approximately 3.1 metres wide and a 50 km/h speed zoning applies near the site. At the time of inspection Henry Lawson Avenue was found to be in good condition near the site as shown in ***Photograph 4*** below.

Photograph 4 – Henry Lawson Avenue near the site.

4. ROAD NETWORK IMPROVEMENTS

A review of Penrith City Council's forward works program has determined that there are no immediate road network improvements that will impact on the proposed development or will result in an increase in the road network capacity. Future road network upgrades could occur in line with future Penrith City Council works programs.

5. TRAFFIC VOLUMES

Roar Data on behalf of Intersect Traffic Pty Ltd undertook manual traffic counts at the Dunheved Road / Henry Lawson Avenue intersection on Monday 21st November 2016 (7:00 AM to 9:030 AM and 4:00 PM to 6:00 PM) to determine traffic volumes and distributions on the local road network. The manual peak hour traffic count sourced from the Roar Data counts are shown within ***Appendix 2.***

The AM and PM peak period hours were found to be between 8 am and 9 am and 4.45 pm and 5.45 pm, respectively. These 2016 peak hour traffic figures have then been increased by 1.0 % per annum for a further 10 years to estimate likely traffic volumes in 2026.

The resultant 2016 and 2026 peak hour traffic volumes adopted within this report for road network capacity assessment are as shown below in ***Table 1***;

Table 1 – Roar Data Peak Hour Data Collection results

Road	2016 AM peak (vtph)	2016 PM peak (vtph)	2026 AM peak (vtph)	2026 PM peak (vtph)
Dunheved Road east	1584	1679	1750	1855
Dunheved Road west	1709	1696	1888	1874
Henry Lawson Avenue	283	293	313	324

6. ROAD CAPACITIES

The capacity of urban roads is generally determined by the capacity of intersections. However, Tables 4.3 and 4.4 of the RTA's *Guide to Traffic Generating Developments* provides some guidance on mid-block capacities for urban roads and likely levels of service. These tables are reproduced below.

Table 4.3
Typical mid-block capacities for urban roads with interrupted flow

Type of Road	One-Way Mid-block Lane Capacity (pcu/hr)	
Median or inner lane:	Divided Road	1,000
	Undivided Road	900
Outer or kerb lane:	With Adjacent Parking Lane	900
	Clearway Conditions	900
	Occasional Parked Cars	600
4 lane undivided:	Occasional Parked Cars	1,500
	Clearway Conditions	1,800
4 lane divided:	Clearway Conditions	1,900

Table 4.4
Urban road peak hour flows per direction

Level of Service	One Lane (veh/hr)	Two Lanes (veh/hr)
A	200	900
B	380	1400
C	600	1800
D	900	2200
E	1400	2800

Source: - RTA's Guide to Traffic Generating Developments (2002).

A desirable level of service on an urban road is generally considered to be a level of service (LoS) C however on major urban collector roads a LoS D is also considered satisfactory. Noting a LoS E on a single lane of flow occurs when mid-block traffic volumes exceed 1,400 vtph the one way one lane mid-block traffic volume threshold for a LoS D is 1,400 vtph. This means the two-way two lane mid-block traffic volume threshold for a LoS D is 2,800 vtph. Therefore, it is considered that Dunheved Road near the site, as a two-lane two-way major urban collector road, has a mid-block road capacity of 2,800 vtph.

As Henry Lawson Avenue is primarily a residential road the environmental capacity goals are considered relevant to ensure the residential amenity of the area is maintained. The environmental capacity goals recommended within Table 4.6 of the *RTA's Guide to Traffic Generating Developments (2002)* are reproduced below and noting Henry Lawson Avenue's function as a local collector results in an environmental capacity for Henry Lawson Drive of 500 vtph.

Table 4.6
Environmental capacity performance standards on residential streets

Road class	Road type	Maximum Speed (km/hr)	Maximum peak hour volume (veh/hr)
Local	Access way	25	100
	Street	40	200 environmental goal
			300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

Note: Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to 85th percentile speed.

Source: - RTA's Guide to Traffic Generating Developments (2002).

From the traffic data collected in ***Section 5*** and noting the likely technical road capacity of Dunheved Road is more than the existing and predicted 2026 traffic volumes and the environmental capacity of Henry Lawson Avenue is more than the existing and predicted 2026 traffic volumes it is considered that the local road network adjacent to the development site is operating within its relevant capacity and has scope to cater for additional traffic generated by new development.

7. ALTERNATE TRANSPORT MODES

Public transport to the site is available by bus. Busways Western Sydney runs two routes past the site (see ***Figure 2***) being;

- Route 780 – Penrith to Cambridge Park, Ropes Crossing and Mt Druitt; and
- Route 782 – Penrith to St Marys via Cambridge Park and Werrington Station.

These services provide regular public transport services on weekdays (30 minute frequency) and weekends (1 hour frequency) that provide access to major business and retail areas within the Penrith CBD and St Mary's as well as to residential areas in Penrith, St Marys, Cambridge Park and Werrington. Route 782 provides a service to Werrington Railway Station which is on the Sydney Trains Western line thereby allowing connection to the Sydney CBD and inner Sydney areas.

The nearest bus stops are located on Dunheved Road immediately east of Henry Lawson Avenue (see ***Photograph 5***) within easy walking distance of the site (50 metres).

Figure 2 – Local Bus Route Extract

The local area around the site has an excellent concrete pedestrian path network providing connection to the site from the Werrington County shops, bus stops and residential areas north of the site including suitable safe road crossing facilities via pedestrian phases within the signalised intersection of Dunheved Road and Henry Lawson Avenue (see ***Photograph 6***).

There were no on or off road cycle ways observed near the site during the site inspection therefore cyclists accessing the site would be required to share the travel lanes with all other vehicles. On Dunheved Road this would only be suited to experienced cyclists due to the existing traffic volumes on the road.

Photograph 5 – Bus Stop adjacent to the site.

Photograph 6 –Pedestrian road crossing facilities near site

8. PROPOSED DEVELOPMENT

The development involves alterations and additions to the existing Caltex service station including the provision of a new convenience store and take away food store with a drive through facility. Development concept plans are provided within ***Appendix 1***.

The development on the site will specifically include.

- Retaining the existing fuel bowsers, storage tanks and canopy;
- Demolition of the existing convenience store and car wash;
- Demolition of the existing workshop once its use as a temporary shop during the convenience store construction is complete;
- Construction of new convenience store with takeaway food outlet (168 m^2 GFA Sales Area);
- Provision of a drive through ordering, paying and collection facility for the take away food outlet;
- Retention of existing vehicular accesses to the site;
- Provision of 21 on-site car parking spaces; ‘
- Landscaping and property drainage works.

9. TRAFFIC GENERATION

General guidelines on traffic generation are provided within the RMS' *RTA's Guide to Traffic Generating Development.* Regarding this development however as the site already contains a service station, convenience store, car wash and workshop (3 work bays) and the altered development will result in a service station, convenience store and a small takeaway food outlet (30 seats) with drive through it is argued the increase in traffic generation from the site would be negligible as demonstrated below;

The *RTA's Guide to Traffic Generating Development* indicates traffic generation potential for a KFC style take away food outlet with drive through is 100 vtph of which 50 % is passing traffic i.e. already on the road network. Whilst no operator for the take away food outlet is known as yet it is likely that it will be more an independent style take away than a large franchise due to the size of the outlet. Therefore the 100 vtph traffic generation rate would be considered to be at the top end of the scale of likely traffic generation and based on seating numbers (30 seats) being on average half a normal KFC seating capacity a more likely traffic generation rate would be 50 vtph. It is also noted that the removal of the work shop will reduce traffic generation to the site and with 3 bays working on approximately 5 jobs per day would result in a peak traffic generation of in the order of 15 vtph in the AM drop off and PM pick up periods. The car wash also has the potential to generate a peak hour traffic generation of 10 vtph based on a 6 minute wash cycle time.

Therefore it is more than likely that the loss of facilities on the site would cancel out the additional traffic generated by the small take away food outlet being provided on the site and it is reasonable to conclude that the additional traffic generated by the alterations and additions to the service station would be negligible.

10. PEAK PARKING DEMAND

Section C10 - Transport, Access and Parking of Penrith City Council's DCP (2014) sets out the off street parking requirements for new development in the LGA. The relevant rates contained in the DCP are as follows;

Service Station & Convenience Stores

- *6 spaces per work bay plus 4 spaces per 100m^2 of gross floor area of convenience store.*

The Penrith City Council DCP (2014) does not provide a specific parking supply rate for take away food outlets with drive through facilities however the *RTA's Guide to Traffic Generating Developments* provides the following rate;

Drive-in take away food outlets

- *Developments with on-site seating and drive-through facilities greater of.*
  1 space per 2 seats (internal), or.1 space per 3 seats (internal and external).

In addition to this, an exclusive area for queuing of cars for a drive through facility is required (queue length of 5 to 12 cars measured from pick up point; see below for details). There should also be a minimum of four car spaces for cars queued from ordering point.

As it is standard practice in NSW to adopt the RTA rates if a specific rate is not available within the local DCP this rate has been adopted for the take away food facility within this assessment. Noting from the plans the following variables the following on-site car parking requirement can be calculated;

- Convenience store selling area = 168 m^2 GFA; and
- The take-away outlet provides 19 indoor seats and 12 outdoor seats.

On-site car parking requirement = 168 / 100 x 4 + 31/3 = 17.05 say 18 spaces.

11. TRAFFIC IMPACT ASSESSMENT

11.1 Road Network Capacity

This assessment (***Section 5***) has determined that the existing road network around the site Dunheved Road and Henry Lawson Avenue currently carries during the weekday peak hour near the site a maximum of 1,709 vtph and 293 vtph, respectively. ***Section 6*** of this report determined that the likely mid-block two-way capacity of the road network was in the order of 2,800 vtph for Dunheved Road and the environmental capacity for Henry Lawson Avenue was 500 vtph. This indicates the local and state road network is currently operating within its technical and environmental capacity and with satisfactory levels of service as existing traffic volumes are below the identified capacity thresholds. ***Section 9*** of this report determined that the proposed alterations and additions to the existing service station complex are only likely to result in a negligible increase in traffic from the site. Therefore the development will not increase traffic on the local and state road network sufficiently to result in any change in level of service for motorists.

It is therefore reasonable to conclude that the proposed alterations and additions to the service station complex will not adversely impact on the local and state road network near the site.

11.2 Intersection Capacity

The main intersection impacted by the development is the Dunheved Road / Henry Lawson Avenue signalised intersect. Sidra modelling of this intersection has shown that it currently operates satisfactorily in both the AM and PM peak with an all vehicles level of service B in both peaks.

The Sidra software package predicts likely delays, queue lengths and thus levels of service that will occur at intersections. Assessment is then based on the level of service requirements of the RMS shown below;

Table 4.2
Level of service criteria for intersections

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

Source: - RTA's Guide to Traffic Generating Developments (2002).

Assumptions made in this modelling were;

- Intersection was modelled as per current layout for both the 2016 AM and PM peaks.
- Traffic volumes used in the modelling were as recorded by Roar Data on Monday 21st November 2016.

The Sidra Movement Summary Sheets for the modelling are provided in ***Appendix 3***.

With the alterations and additions to the service station complex only resulting in a negligible increase in traffic from the site it is reasonable to conclude that the proposal will not adversely

impact on the operation of the existing intersection which is currently good in both the AM and PM peaks.

11.3 Access

The site access conditions do not change as a result of the alterations and additions to the service station. The existing left in and left out only separate entry and exit driveways off Dunheved Road and the combined entry / exit driveway off Henry Lawson Avenue will remain in use and as such the proposal will not impact on road safety on the local and state road network.

The accesses were inspected on Thursday 24th November 2016 and the vehicular sight distances from the entry driveways were observed to be in excess of the requirements under Figure 3.2 of Australian Standard *AS 2890.1 – 2004 Parking facilities – Part 1: Off-street car parking* being 45 to 70 metres for a 50 km/h speed zone. Similarly the pedestrian sight lines at the exit driveways were in excess of the requirements of Figure 3.3 of Australian Standard *AS 2890.1 – 2004 Parking facilities – Part 1: Off-street car parking.*

This assessment therefore has concluded that the existing access arrangements for the service station are satisfactory for use with the completed development and compliant with Australian Standard *AS 2890.1 – 2004 Parking facilities – Part 1: Off-street car parking*.

11.4 On-Site Parking

The development plans show on-site car parking provision of 21 car spaces including 1 accessible space therefore it is considered the proposal exceeds the on-site car parking requirements of the Penrith City Council DCP (2014). The plans also show queuing space within the drive through lane for 8 vehicles spaces behind the collection point including 4 spaces behind the ordering point therefore the drive through lane complies with the requirements of the *RTA's Guide to Traffic Generating Developments* and therefore is considered suitable.

The on-site car parking is also required to comply with Australian Standard *AS2890.1-2004 Parking facilities – Part 1 – Off-street car parking* in regard to design and layout. Regarding this development the on-site parking as short term Class 3A parking, spaces are required to be 2.6 metres wide x 5.4 metres long and aisle widths are required to be 6.6 metres. The development plans have been reviewed by scaling and ait is considered that they would be compliant with Australian Standard *AS2890.1-2004 Parking facilities – Part 1 – Off-street car parking* ensuring forward entry and exit from the site.

It can therefore be concluded that by providing the 21 on-site car parks and the drive through lane shown on the development plans the development provides sufficient and suitable on-site car parking and queuing areas to meet the expected peak parking demand generated by the development.

The service vehicles using the site to service the convenience store and take away food outlet will enter the site in a forward direction from Dunheved Road and reverse into the loading area in front of the service yard before exiting the site in a forward direction via Dunheved Road as shown with the swept turn paths on the development plans. The swept turn paths show a standard heavy rigid service vehicle (SV) servicing the convenience store and take away food outlet as this will be the largest size vehicle used for this purpose.

Swept paths are also shown on the development plans for the fuel delivery vehicle (19 metre articulated vehicle (AV)) with entry via Dunheved Road and forward exit via Dunheved Road. This operation does not change as a result of this development and replicates the existing servicing of the site by the fuel tankers.

It is therefore concluded that the proposed development can be suitably serviced by the largest service vehicles required for servicing with forward entry and exit from the site.

11.5 Alternate Transport Modes

As previously discussed in ***Section 7***, the site is serviced by public transport with accessibility to rail and bus services and bus stops in close vicinity to the site. Whilst this may be of some use to employees it is unlikely to be used by customers to access the development. The type of development proposed is unlikely to generate any significant, if any demand, for public transport services. Therefore it is concluded that no additional public transport facilities will be needed as a result of the development.

Whilst this type of development may generate a very small amount of pedestrian and cycleway traffic, it would not be sufficient to require additional infrastructure. Concrete footpaths exist around the site and are suitable for the pedestrian traffic generated by the development.

12. CONCLUSIONS

This traffic and parking assessment for the alterations and additions to the existing Caltex service station on Lot 4 in DP 565623, 4 Dunheved Road, Werrington Court has determined the following;

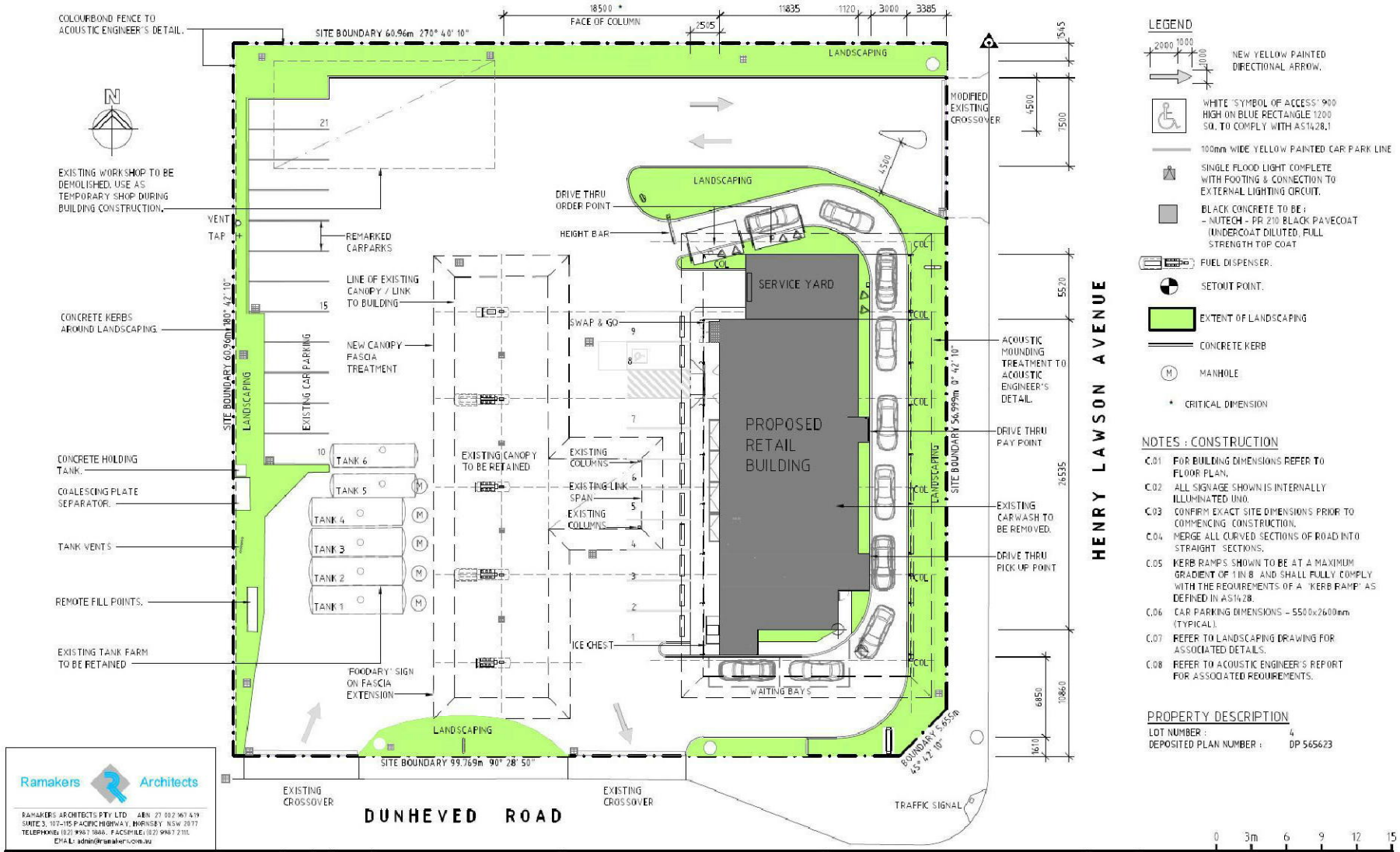
- Existing peak hour weekday traffic volumes on Dunheved Road and Henry Lawson Avenue are approximately 1,709 vtph and 293 vtph respectively.
- The likely two way mid-block road capacity of Dunheved Road is 2,800 vtph (LoS D) while the environmental capacity of Henry Lawson Avenue is 500 vtph.
- As existing traffic volumes and future 2026 traffic volumes are less than the two way mid-block capacity of Dunheved Road and the environmental capacity of Henry Lawson Avenue the local and state road network has sufficient spare capacity to cater for some development in the area.
- The proposed development is only likely to result in a negligible increase in traffic on the road network as the new infrastructure replaces existing infrastructure on the site.
- Therefore the road network capacity in both 2016 and 2026 will not reach its technical or environmental capacity as a result of this development and it is reasonable to conclude that subject to satisfactory intersection performance the development will not adversely impact on the state and local road network.
- The existing signalised intersection of Dunheved Road and Henry Lawson Avenue is currently operating with good levels of service and the proposed development will not result in any change to this situation. Therefore the development will not adversely impact on the operation of this or other intersections on the local and state road network.
- The proposed access arrangements for the development are satisfactory for use with the completed development and compliant with Australian Standard *AS 2890.1 – 2004 Parking facilities – Part 1: Off-street car parking*.
- By providing 21 on-site car parks and the drive through lane shown on the development plans the development provides sufficient and suitable on-site car parking and queuing areas to meet the expected peak parking demand generated by the development.
- The proposed on-site car parking is considered to comply with the minimum standards required of Australian Standard AS 2890.1-2004 *"Parking Facilities Part 1 – Off street car parking".*
- The proposed development can be suitably serviced by the largest service vehicles required for servicing with forward entry and exit from the site.
- The type of development proposed is unlikely to generate any significant, if any demand, for public transport services. Therefore it is concluded that no additional public transport facilities will be needed as a result of the development.
- Whilst this type of development may generate a very small amount of pedestrian and cycleway traffic, it would not be sufficient to require additional infrastructure. Concrete footpaths exist around the site and are suitable for the pedestrian traffic generated by the development.

13. RECOMMENDATION

Having carried out this traffic and parking assessment of the proposed alterations and additions to the existing Caltex service station on Lot 4 in DP 565623, 4 Dunheved Road, Werrington Court it is recommended that the proposal can be supported from a traffic impact perspective as it will not adversely impact on the local and state road network and the development complies with all relevant Penrith City Council, Australian Standards and NSW Roads and Maritime Services requirements in regard to access, on-site car parking and servicing.

JR Garry BE (Civil), Masters of Traffic
Director
Intersect Traffic Pty Ltd

APPENDIX 1
DEVELOPMENT PLANS



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A.01

CALTEX
Caltex Australia Petroleum Pty Ltd

REV.	BY	DATE	DESCRIPTION OF CHANGE
A	GM	------	DA ISSUE

REVISION

PROJECT
WERRINGTON NSW
CNR DUNHEVED RD &
HENRY LAWSON AVE

TITLE
PROJECT OYSTER
SITE PLAN - PROPOSED

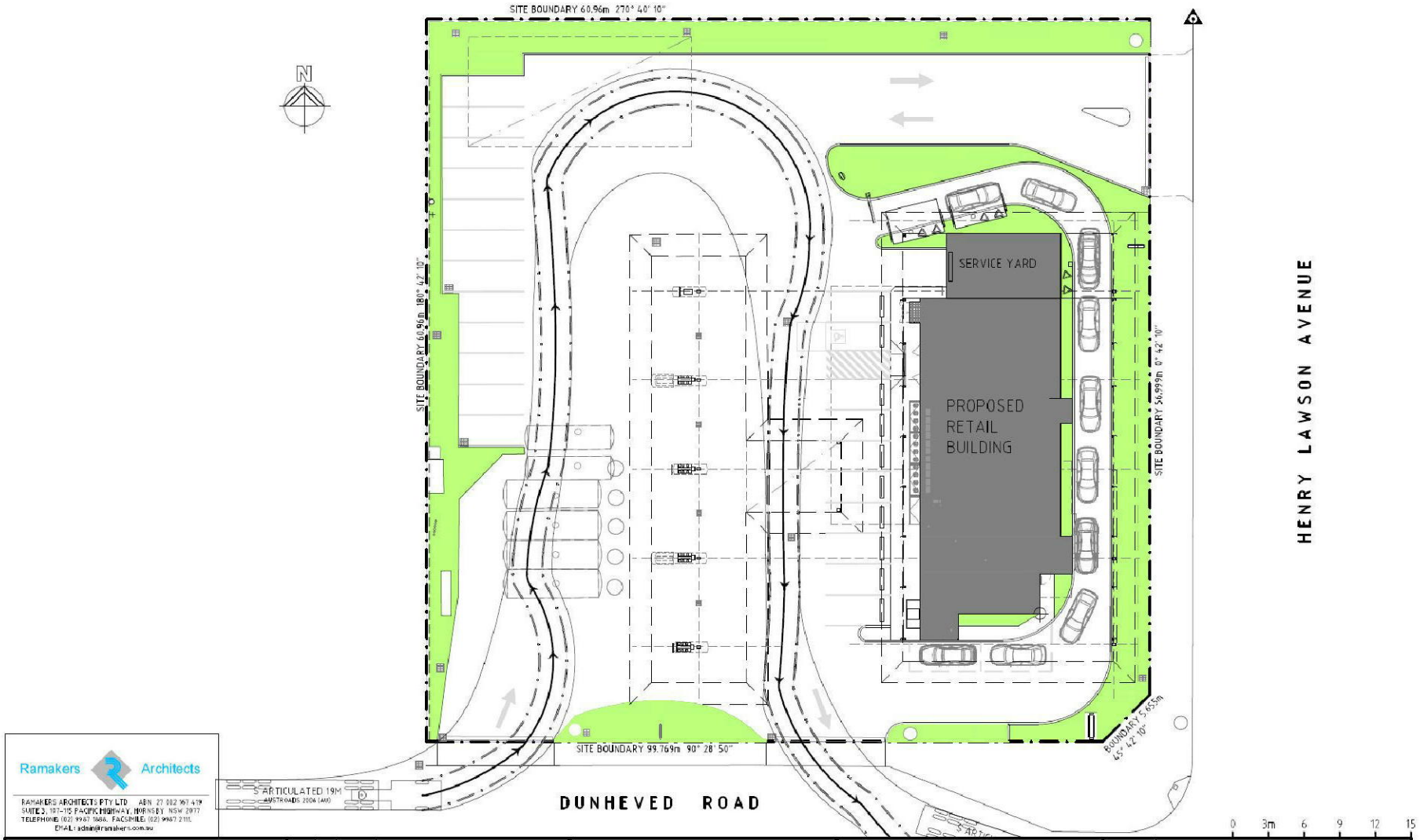
SCALE 1:300

SIZE A3

DEVELOPMENT APPLICATION

APPROVED | DATE

DRAWING No. 28569-DA04 | REV. -



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A	GM	------	DA ISSUE

REVISION

PROJECT
WERRINGTON NSW
CNR DUNHEVED RD &
HENRY LAWSON AVE

TITLE
PROJECT OYSTER
SITE PLAN
TANKER TURNING PATH

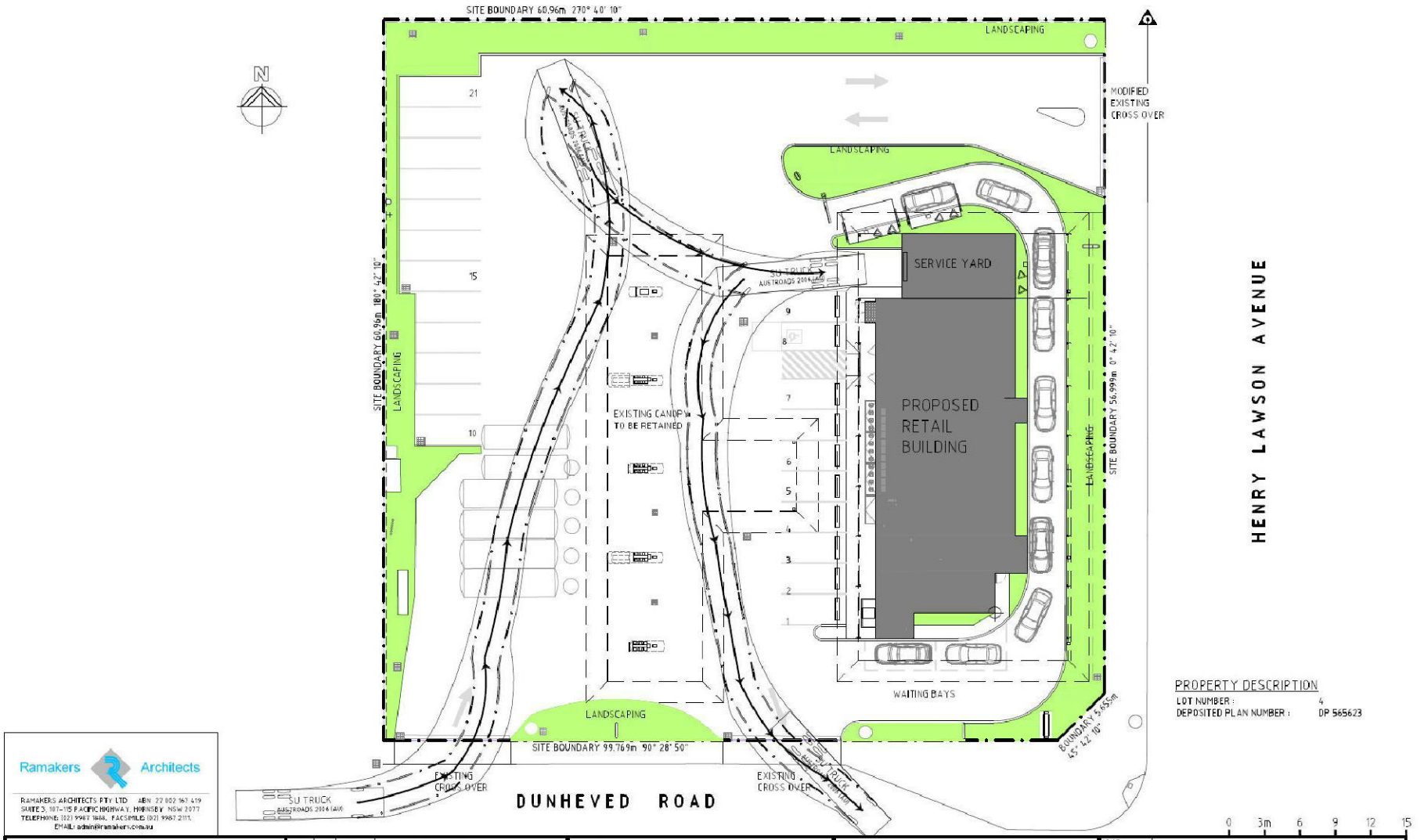
SCALE 1:300

SIZE A3

DEVELOPMENT APPLICATION

APPROVED | DATE

DRAWING No. 28569-DA05 | REV. -



PROPERTY DESCRIPTION
LOT NUMBER : 4
DEPOSITED PLAN NUMBER : DP 565623

Ramakers Architects
RAMAKERS ARCHITECTS PTY LTD ABN: 22 802 967 419
SUITE 3, 107-115 PACIFIC HIGHWAY, HORNSBY NSW 2077
TELEPHONE: (02) 9987 1888. FACSIMILE (02) 9987 2111.
EMAIL: admin@ramakers.com.au

CONSULTANT REF. - 2873 A.01

CALTEX
Caltex Australia Petroleum Pty Ltd

REV.	BY	DATE	DESCRIPTION OF CHANGE
A	GM	--.--.--	DA ISSUE

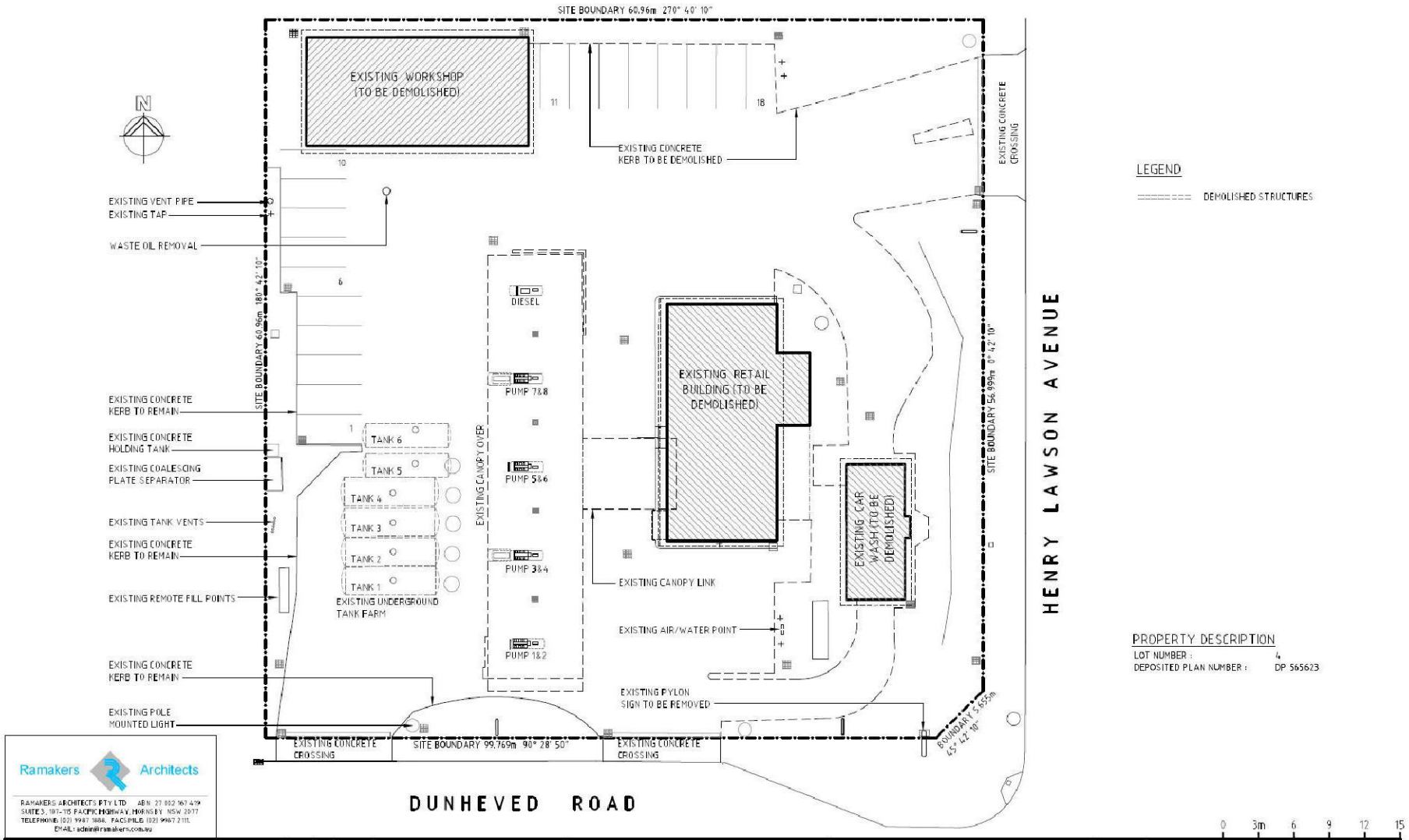
REVISION

PROJECT
WERRINGTON NSW
CNR DUNHEVED RD &
HENRY LAWSON AVE

TITLE
PROJECT OYSTER
SITE PLAN -
REFUSE TRUCK TURNING PATH

SCALE 1:300
SIZE A3

DEVELOPMENT APPLICATION
APPROVED
DATE
DRAWING No. 28569-DA06
REV. -



Ramakers Architects
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CONSULTANT REF. - 2873 A.01

CALTEX
Caltex Australia Petroleum Pty Ltd

REV.	BY	DATE	DESCRIPTION OF CHANGE
A	WP	------	DA ISSUE

REVISION

PROJECT
WERRINGTON NSW
CNR DUNHEVED RD & HENRY LAWSON AVE

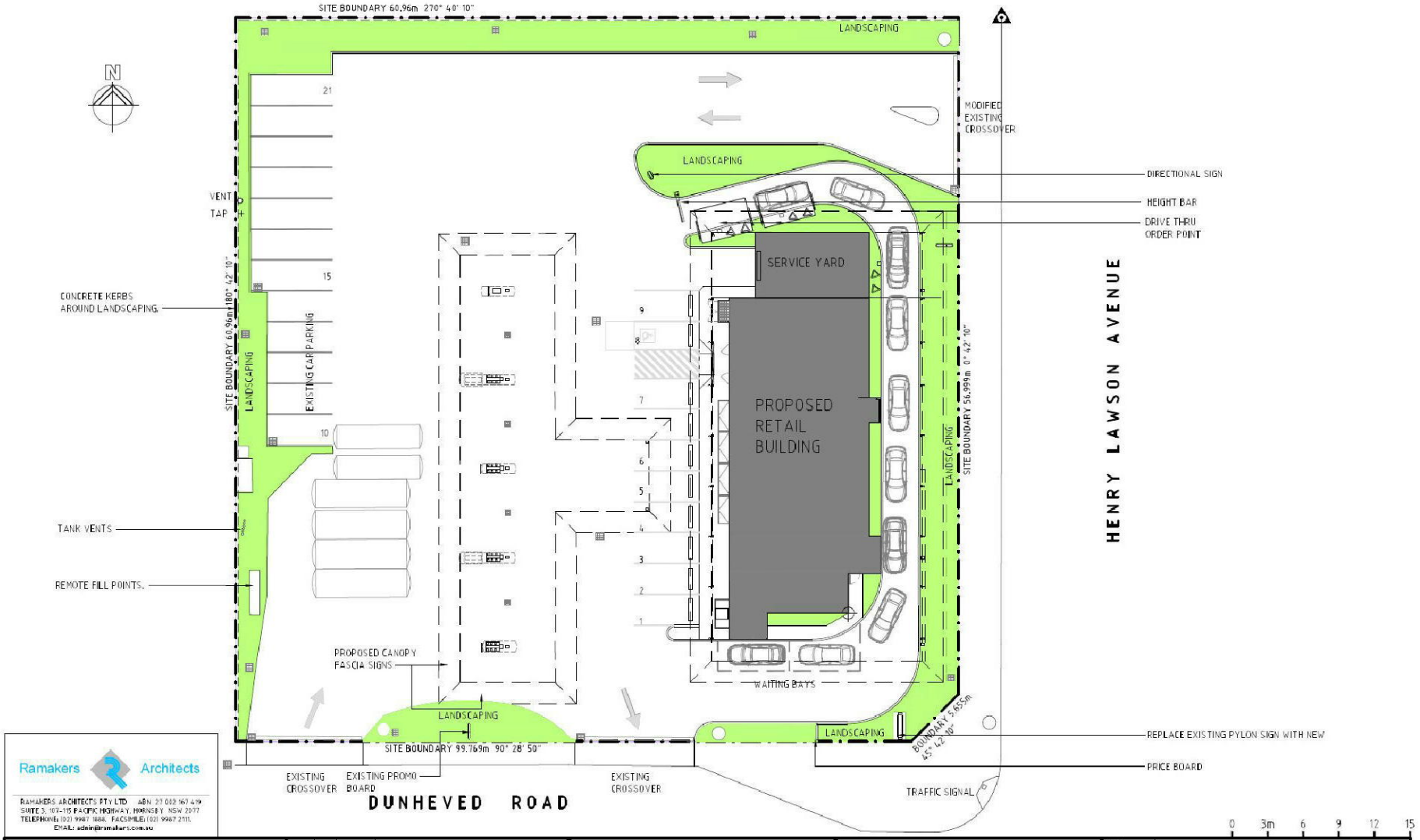
TITLE
PROJECT OYSTER
SITE PLAN - EXISTING

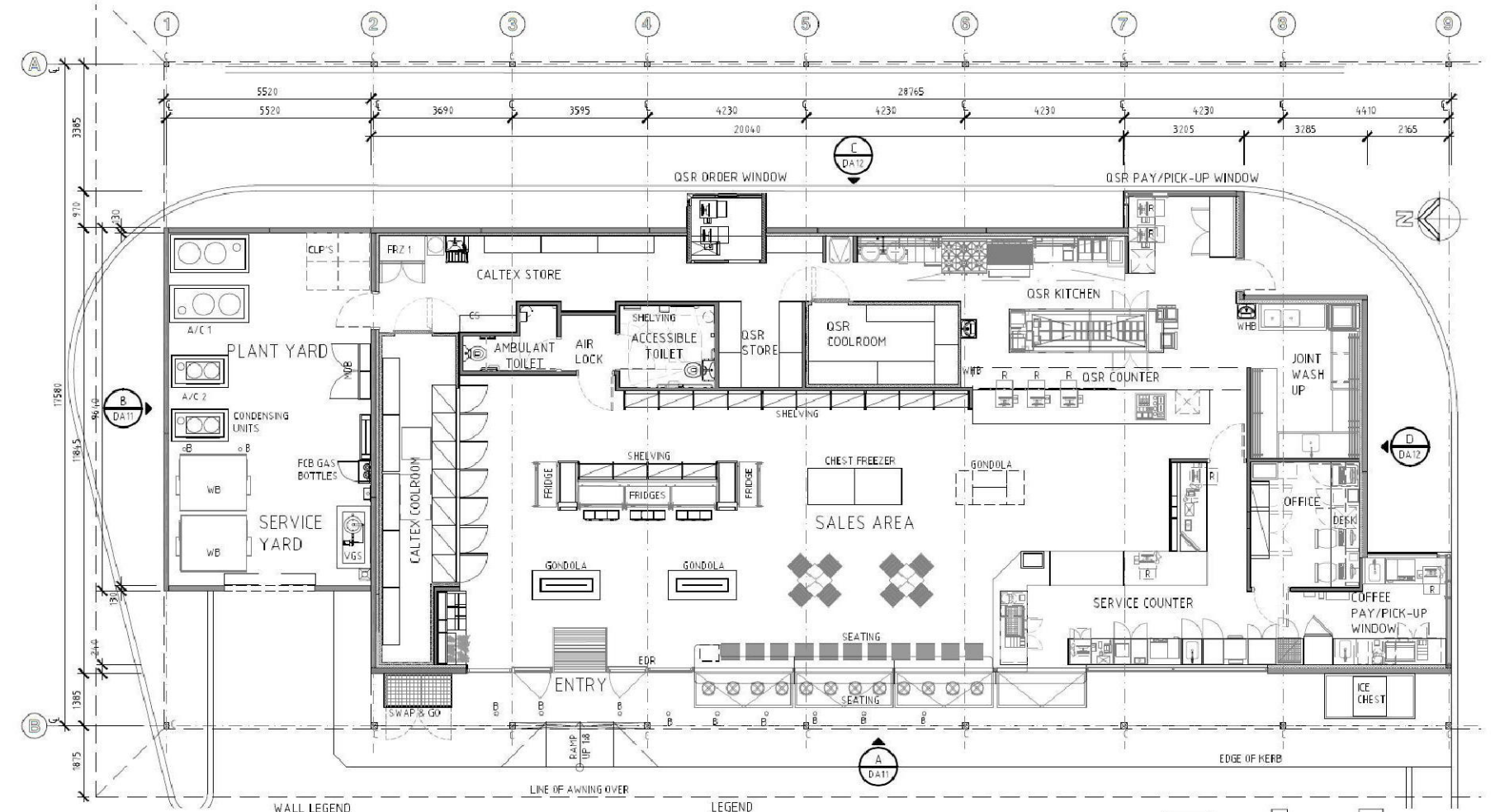
SCALE 1:300

DEVELOPMENT APPLICATION

APPROVED | DATE

SIZE A3 | DRAWING No. 28569-DA07 | REV. -





Ramakers Architects

RAMAKERS ARCHITECTS PTY LTD ABN 27 002 167 419
SUITE 3, 107-115 PACIFIC HIGHWAY, HORNSBY NSW 2077
TELEPHONE (02) 9987 1866, FACSIMILE (02) 9987 2111,
EMAIL: admin@ramakers.com.au

WALL LEGEND

- 130mm CONCRETE PANEL WALLS PLUS 76mm STRAPPING AND 9mm VILLABOARD LINING WITH R2.0 70mm BATT INSULATION TO MEET SECTION J REQUIREMENTS. (MODIFY TO SUIT SITE SPECIFIC SECTION J REPORT.)
- INTERNAL METAL STUD FRAMED WALL WITH 9mm VILLABOARD LINING ON ALL EXPOSED SURFACES
- COOLROOM & FREEZER PANELLING, REFER TO REFRIGERATION DRAWINGS.
- GLAZED SHOPFRONT

LEGEND

A/C 1	AIR CONDITIONING CONDENSOR UNIT	EDR	EMERGENCY AUTO DOOR RELEASE BUTTON ON COLUMN
ATM	AUTOMATIC TELLER MACHINE	MDB	MAIN DISTRIBUTION BOARD
B	BOLLARD	MSB	MAIN SWITCHBOARD
CLP	STACKABLE DELIVERY TROLLEYS	R	POS REGISTER
C	METAL COLUMN TO STRUCTURAL ENGINEER'S DETAIL	VGS	VERTICAL GREASE SEPERATOR
CS	CLEANER'S SINK	WB	DUMPSTER BIN
		WHB	WASH HAND BASIN

TOTAL SALES ROOM AREA : 168m²
BUILDING G.F.A.–PROPOSED : 373m²

0 1m 2 3 4 5

CONSULTANT REF. – 2873 A.01

CALTEX
Caltex Australia Petroleum Pty Ltd

REV.	BY	DATE	DESCRIPTION OF CHANGE
A	GM	--.--.--	DA ISSUE

REVISION

PROJECT
WERRINGTON NSW
CNR DUNHEVED RD &
HENRY LAWSON AVE

TITLE
PROJECT OYSTER
SHOP : FLOOR PLAN

SCALE 1:100

DEVELOPMENT APPLICATION

APPROVED | DATE

SIZE A3 | DRAWING No. 28569-DA10 | REV. -

APPENDIX 2
MANUAL TRAFFIC COUNT DATA

R.O.A.R. DATA

Reliable, Original & Authentic Results

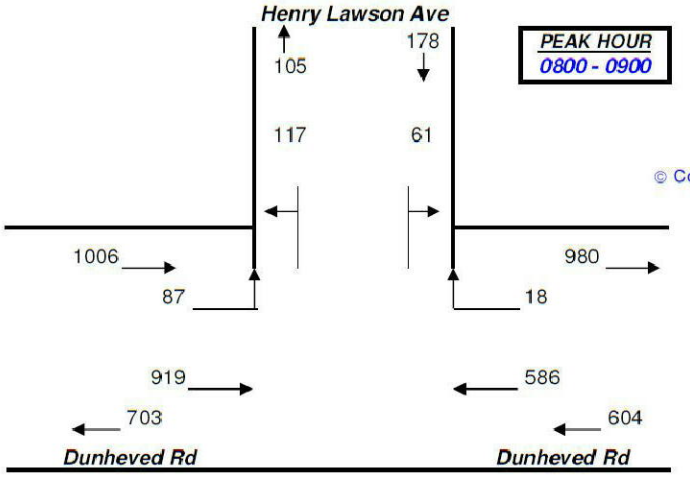
Ph.88196847, Mob.0418-239019

Client : InTersect Traffic
Job No/Name : 6296 WERRINGTON COUNTY Henry Lawson Ave
Day/Date : Monday 21st November 2016

All Vehicles

	WEST		NORTH		EAST		
	Dunheved		*Henry*		*Dunheved*		
Time Per	L	T	R	L	T	R	TOTAL
0700 - 0715	4	210	7	15	108	9	353
0715 - 0730	5	269	15	19	103	5	416
0730 - 0745	5	233	14	24	116	4	396
0745 - 0800	8	270	12	20	105	1	416
0800 - 0815	11	222	29	18	122	5	407
0815 - 0830	17	251	25	17	160	1	471
0830 - 0845	25	234	33	14	152	4	462
0845 - 0900	34	212	30	12	152	8	448
Period End	109	1901	165	139	1018	37	3369

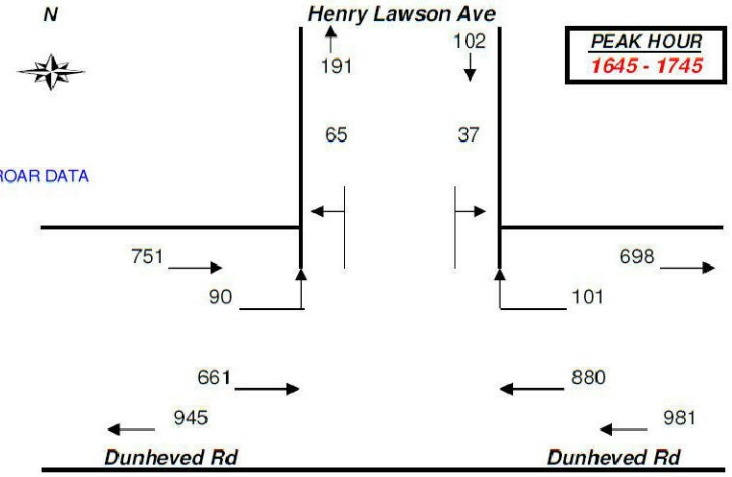
	WEST		NORTH		EAST		
	Dunheved		*Henry*		*Dunheved*		
Peak Per	L	T	R	L	T	R	TOTAL
0700 - 0800	22	982	48	78	432	19	1581
0715 - 0815	29	994	70	81	446	15	1635
0730 - 0830	41	976	80	79	503	11	1690
0745 - 0845	61	977	99	69	539	11	1756
0800 - 0900	87	919	117	61	586	18	1788
PEAK HR	87	919	117	61	586	18	1788



All Vehicles

	WEST		NORTH		EAST		
	Dunheved		*Henry*		*Dunheved*		
Time Per	L	T	R	L	T	R	TOTAL
1600 - 1615	13	164	19	6	215	17	434
1615 - 1630	19	131	25	7	237	25	444
1630 - 1645	13	158	12	5	233	17	438
1645 - 1700	25	161	22	5	211	26	450
1700 - 1715	27	155	10	15	220	24	451
1715 - 1730	22	181	21	7	232	19	482
1730 - 1745	16	164	12	10	217	32	451
1745 - 1800	18	155	15	11	210	23	432
Period End	153	1269	136	66	1775	183	3582

	WEST		NORTH		EAST		
	Dunheved		*Henry*		*Dunheved*		
Peak Per	L	T	R	L	T	R	TOTAL
1600 - 1700	70	614	78	23	896	85	1766
1615 - 1715	84	605	69	32	901	92	1783
1630 - 1730	87	655	65	32	896	86	1821
1645 - 1745	90	661	65	37	880	101	1834
1700 - 1800	83	655	58	43	879	98	1816
PEAK HOUR	90	661	65	37	880	101	1834



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob.0418-239019

Client : InTersect Traffic
Job No/Name : 6296 WERRINGTON COUNTY Henry Laws
Day/Date : Monday 21st November 2016

Peds	WEST	NORTH	EAST	
	Dunheved Rd	*Henry Lawsdon*	*Dunheved Rd*	
Time Period	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOTAL
0700 - 0715	0	2	0	**2**
0715 - 0730	0	0	0	**0**
0730 - 0745	0	0	2	**2**
0745 - 0800	0	0	0	**0**
0800 - 0815	0	1	6	**7**
0815 - 0830	1	3	8	**12**
0830 - 0845	0	0	4	**4**
0845 - 0900	0	0	3	**3**
Period End	**1**	**6**	**23**	**30**

PEAK HOUR
0800 - 0900

Peds	WEST	NORTH	EAST	
	Dunheved Rd	*Henry Lawsdon*	*Dunheved Rd*	
Peak Period	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0700 - 0800	0	2	2	**4**
0715 - 0815	0	1	8	**9**
0730 - 0830	1	4	16	**21**
0745 - 0845	1	4	18	**23**
0800 - 0900	1	4	21	**26**
PEAK HR	**1**	**4**	**21**	**26**

Peds	WEST	NORTH	EAST	
	Dunheved Rd	*Henry Lawsdon*	*Dunheved Rd*	
Time Period	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOTAL
1600 - 1615	0	0	0	**0**
1615 - 1630	0	0	2	**2**
1630 - 1645	0	0	5	**5**
1645 - 1700	0	0	3	**3**
1700 - 1715	0	0	3	**3**
1715 - 1730	0	0	4	**4**
1730 - 1745	0	0	5	**5**
1745 - 1800	0	0	3	**3**
Period End	**0**	**0**	**25**	**25**

PEAK HOUR
1645 - 1745

Peds	WEST	NORTH	EAST	
	Dunheved Rd	*Henry Lawsdon*	*Dunheved Rd*	
Peak Period	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1600 - 1700	0	0	10	**10**
1615 - 1715	0	0	13	**13**
1630 - 1730	0	0	15	**15**
1645 - 1745	0	0	15	**15**
1700 - 1800	0	0	15	**15**
PEAK HR	**0**	**0**	**15**	**15**

APPENDIX 3
SIDRA MOVEMENT SUMMARY TABLES

MOVEMENT SUMMARY

Site: 2016 AM

Dunheved Road / Henry Lawson Avenue
Werrington County
Signals - Fixed Time Isolated Cycle Time = 52 seconds (Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
East: Dunheved Road											
5	T1	586	10.0	0.549	11.8	LOS A	8.0	60.8	0.76	0.65	50.2
6	R2	18	5.0	0.087	29.1	LOS C	0.4	3.2	0.92	0.69	39.6
Approach		604	9.9	0.549	12.3	LOS A	8.0	60.8	0.76	0.65	49.8
North: Henry Lawson Avenue											
7	L2	61	5.0	0.733	32.1	LOS C	4.9	36.1	1.00	0.91	38.5
9	R2	117	5.0	0.733	32.1	LOS C	4.9	36.1	1.00	0.91	38.4
Approach		178	5.0	0.733	32.1	LOS C	4.9	36.1	1.00	0.91	38.4
West: Dunheved Road											
10	L2	87	5.0	0.419	17.2	LOS B	5.9	44.2	0.75	0.68	48.0
11	T1	919	10.0	0.882	22.5	LOS B	21.8	165.8	0.93	1.02	43.6
Approach		1006	9.6	0.882	22.0	LOS B	21.8	165.8	0.91	0.99	43.9
All Vehicles		1788	9.2	0.882	19.7	LOS B	21.8	165.8	0.87	0.86	45.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P2	East Full Crossing	20	20.4	LOS C	0.0	0.0	0.89	0.89
P3	North Full Crossing	10	12.5	LOS B	0.0	0.0	0.69	0.69
All Pedestrians		30	17.7	LOS B			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Organisation: INTERSECT TRAFFIC PTY LTD | Processed: Tuesday, December 6, 2016 12:00:32 PM
Project: Not Saved

MOVEMENT SUMMARY

Site: 2016 PM

Dunheved Road / Henry Lawson Avenue
Werrington County
Signals - Fixed Time Isolated Cycle Time = 52 seconds (Practical Cycle Time)
Variable Sequence Analysis applied. The results are given for the selected output sequence.

Movement Performance - Vehicles

Mov ID	OD Mov	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 per veh	Average Speed km/h
East: Dunheved Road											
5	T1	880	10.0	0.865	20.0	LOS B	18.0	136.5	0.86	0.91	45.1
6	R2	101	5.0	0.488	30.9	LOS C	2.6	19.1	0.98	0.77	38.9
Approach		981	9.5	0.865	21.1	LOS B	18.0	136.5	0.87	0.89	44.4
North: Henry Lawson Avenue											
7	L2	37	5.0	0.414	28.7	LOS C	2.5	18.4	0.95	0.77	39.9
9	R2	65	5.0	0.414	28.6	LOS C	2.5	18.4	0.95	0.77	39.8
Approach		102	5.0	0.414	28.7	LOS C	2.5	18.4	0.95	0.77	39.8
West: Dunheved Road											
10	L2	90	5.0	0.313	16.6	LOS B	4.1	31.0	0.70	0.65	48.1
11	T1	661	10.0	0.659	12.8	LOS A	10.7	81.3	0.82	0.73	49.2
Approach		751	9.4	0.659	13.3	LOS A	10.7	81.3	0.81	0.72	49.1
All Vehicles		1834	9.2	0.865	18.3	LOS B	18.0	136.5	0.85	0.82	45.9

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P2	East Full Crossing	20	20.4	LOS C	0.0	0.0	0.89	0.89
P3	North Full Crossing	10	12.5	LOS B	0.0	0.0	0.69	0.69
All Pedestrians		30	17.7	LOS B			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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