DRAFT

TRAFFIC IMPACT AND ACCESS ASSESSMENT

FOR

PROPOSED STAGE 2
69 LOT RESIDENTIAL REZONING

AT

NO. 187. 195 & 203

TURNER ROAD CURRANS HILL

Ref. 15097r3

June 2015
Revised November 2019

Prepared By

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CONTENTS

FIGURES

1.0 INTRODUCTION

This report has been prepared as a Traffic Impact Assessment on behalf of Turner Road Developments and Ken and Lynne Broome to accompany a rezoning application in respect of a proposed 69 lot residential subdivision to be located off Turner Road at Currans Hill.

The existing zoning permits 63 lots ie. 6 lots less than this proposal.

This report supports the planning to adjust the zoning which currently allows 63 single lots within stage 2 of the residential subdivision to 69 residential allotments accessed from New Market Street and Ascot Drive to the east at one midblock new intersection locations.

This study has been prepared in accordance with the aims and objectives of State Environmental Planning Policy Infrastructure 2007 (formerly SEPPII) and in accordance with the guidelines and procedures for traffic generating developments as prepared by the Roads and Maritime Services (RMS) of NSW and with reference to with the provisions of Camden Council DCP 2011.

This report considers the following matters:

- The subdivision and road layouts
- Cycleway and pedestrian access
- Public transport provisions
- Traffic Generation
- Vehicular access to New Market Street and Geraldton Drive
- Future traffic impacts

This study is based on the Masterplan of the land prepared by John M Daly and Associates Pty Limited dated October 2019 and identified as Drawing No. 14194E13

The Masterplan includes the lots approved under Camden Council DA525/2017 as well as the proposed lot layout which is being considered as part of the current rezoning application.

2.0 THE SITE AND ZONING

2.1 Site Location

The subject land is located on the north side of Turner Road west of Stockmann Road within the Currans Hill residential precinct.

The location of the land in the local context is shown in **Figure 1** and **2** overleaf.

2.2 Site Description

In 2015 the subject land was described as Lots 36, 37 and 38 in DP28024. Recent subdivisions have resulted in Lots 37 and 38 being subdivided. Therefore, the subject land is now Lot 36 in DP28024 and Lot 105 in DP1210084.

2.3 Existing Development

The subject site consists of three adjoining lots (land parcels) to be ultimately subdivided to residential allotments. In 2015 the existing development on the site consisted of two larger rural residential homes, one of which has been removed since then. The remaining lands are mostly vacant.

2.4 Adjoining Development

The adjoining development consists of a mix of new residential housing to the east and south and older freestanding single level and 2 storey brick and tile residential dwellings on larger road parcels to the north and west within a newer 50km/h residential area.

Within the adjoining residential precinct to the east accessed via Ascot Drive, Newmarket Street, Gereladton Drive, Oaklawn Street, Caufield Street and Penola Street there are some 110 residential lots with 5 dwellings under construction (not occupied).

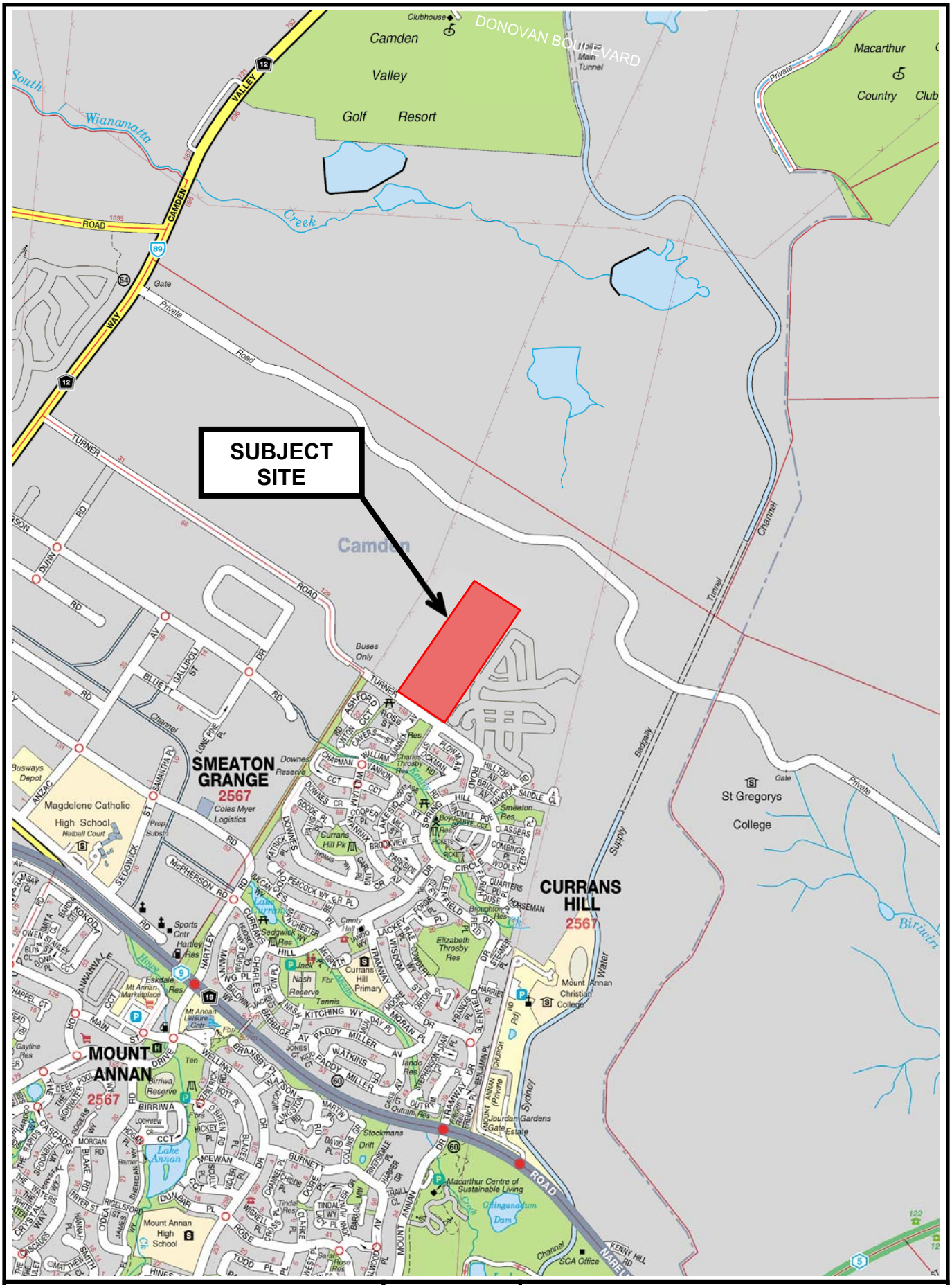
To the north and east of Turner Road via Ascot Drive a further 90 residential dwellings are also under construction.

2.5 Zoning

DA525/2017 allows approximately 40 new residential lots to be created in the subject lands and recently 4 lots were created along Turner Road.

The current zoning of these lands comprise of mixed zoning and includes R1 General Residential, E2 Environmental Conservation and E4 Environmental Living. The residential subdivision of land is permissible within the R1 and E4 zoning; however, residential development is a prohibited use within the E2 zoning.

Development that is permissible with consent in the E2 zone is limited to environmental protection works; flood mitigation works; recreation areas; roads; and water reticulation systems. While the construction and provision of roads within this zone is permissible with consent, the subdivision of land for future residential purposes is prohibited in the E2 zone and cannot be supported by Council.



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NOT TO SCALE

FIGURE 1

PROPOSED SUBDIVISION
187, 195 & 203 TURNERS RD, CURRANS HILL

SITE LOCATION

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NOT TO SCALE

FIGURE 2

PROPOSED SUBDIVISION
187, 195 & 203 TURNERS RD, CURRANS HILL

SUBJECT SITE

JOB NO. 15097

2.6 Access

Access to the area is generally from Narellan Road via Hartley Road and the roundabout junction at Currans Hill Drive.

Circuitous access is also available from Camden Valley Way via Anderson Road through the Smeaton Grange Industrial Area. No motor car access is available to Camden Valley Way via Turner Road.

3.0 DEVELOPMENT PROPOSAL

3.1 Development Subdivision

The development lies within the Manooka Valley and involves the Stage 2 subdivision of the land to accommodate 69 residential allotments with a minimum lot area of 500m^2 (over two land parcels) as shown in **Appendix 1** for future development, road construction, drainage, landscaping and associated site works, including construction and embellishment of a riparian zone as shown in the subdivision master plan prepared by John M Daly and Associates Pty Ltd attached as **Appendix 2**. As we further understand Stage 1 for 40 lots already has DA approval.

We understand development applications for the multiple land parcels will be lodged with each other over a number of stages.

3.2 Road Layout and Guideline Standards

The subdivision layout has been designed generally in accord with AMCORD Guidelines and Camden Council's DCP 2011 Part C for new residential subdivisions.

Generally the road widths should comply with the provision of the Camden DCP 2011. However road widths of 12.5m are proposed adjacent to the riparian corridor compared to the 14m to 14.4m widths specified in the DCP.

A hierarchical road network is essential to maximise road safety, residential amenity and legibility. Each local access road in the subdivision will serve a distinct set of residential functions and has been designed accordingly. The design will convey to motorists the predominant low volume, low speed function of the road.

Within the subdivision each access road will reflect its role in the road hierarchy by its visual appearance and related physical design standards. All new access roads should differ in alignment and design standard according to the volume they are intended to carry, the desirable traffic speeds and other factors.

The number of turning movements at intersections or junctions that a visitor is required to undertake to reach a particular address within the development will be minimised.

Low speeds are desirable in lightly trafficked streets to protect pedestrians, cyclists and allow them to share the street with vehicles.

Future bus routes serving the area should be within acceptable walking distance (400 metres) of all dwellings.

The aims of the proposed local road system within the subdivision are to achieve:

- Convenient and safe access to all allotments for pedestrians, vehicles and cyclists.
- Safe, logical and hierarchical transport linkages with existing street system.
- Appropriate access for emergency and service vehicles.
- A quality product that minimises maintenance costs.
- A convenient way for public utilities.
- An opportunity for street landscaping.
- Convenient on and off street parking for visitors.

AMCORD recommends the following standards for the various classes of roads in new subdivisions.

TABLE 1

AMCORD RECOMMENDED GUIDELINES

Road Classification	Recommended Pavement Width	Max. Flow veh/day	Max. Road Length	Max. Dwellings Served
Access Place	3.5 – 3.7 metres	300	100 metres	30
Local Access Streets (A)	5.0 – 5.5 metres	1000	250 metres	100
Local Access Streets (B)	5.5 or 7.0 metres	2000	N/A	200
Collector Road	7.0 – 7.5 metres	3000	N/A	N/A

NB. Any roads that are bushfire affected will contain 8m wide pavement.

These roads should in terms of amenity and road safety afford the following environmental capacity/performance standards.

Road Class	Road Type	Desirable Max. Speed (km/hr)	Desirable Max. Peak Hour Volume (veh/hr)
Local	Accessway (with footpath) Street Street Street	25 40 40	100 200 environmental goal 300 maximum
Collector	Street Street	50 50	300 environmental goal 500 maximum

Past analysis of traffic volumes for new residential sub divisions has focussed on allotting appropriate maximum traffic volumes for new areas. *The Australian Model Code for Residential Development,* (1990), cites daily volume maximum of 1,000-2,000 veh/day for different types of local access streets, and 6,000 veh/day for trunk collector streets. This subject is discussed further in Section 7 of these guidelines.

Environmental Capacity for residential streets is best estimated by considering a range of differing perceptions and attitudes to traffic impacts in a particular area. The environmental expectations of residents often varies significantly, even within the same district. It is accepted that the performance standard usually occurs at the top end of a range. While it can be argued that there is no particular threshold beyond which problems may emerge, this standard is subject to the same constraints as all other standards. Engineering standards are often based on concepts of good practice, with a concerted focus on safety factors. While it is generally accepted that a departure from this standard may be accommodated to a degree. Table 1 sets out the recommended Environmental Capacity performance standards now for residential precincts. This table relates to streets with direct access to residential properties.

The proposed intersections are generally located in such a way that:

- New Roads intersect at right angles;
- The landform allows clear sight distance on each of the approach legs of the intersection;
- The vertical grade lines at the intersection do not impose undue driving difficulties;

- The vertical grade lines at the intersection will allow for any direct surface drainage.

Adequate stopping and sight distances will be provided for horizontal and vertical curves at all intersections as follows:

- 40kph minimum stopping sight distance 30 metres
- 50kph minimum stopping sight distance 40 metres
- 60kph minimum stopping sight distance 55 metres

Source: AUSTROAD Guide to Traffic Engineering Practice 1992

3.3 Subdivision Access

Initially all vehicle access to the Stage 1 subdivision will be via Ascot Drive and New Market Street to the east. In the longer term a further link to Turner Road will be provided over the most western land parcel no. 3 (refer subdivision masterplan).

Photo 1
Proposed Access from Geraldton Avenue

Photo 2
Proposed Access from Ascot Drive

In addition, advice (to date), from Council, indicates that:

- There will be no link via Turner Road to Camden Valley Way or the Smeaton Grange area; and

- There will be no link to the Gregory Hills residential area, to the north, from Manooka Valley.

3.4 Parking

Camden Council's Off Street car parking policy DCP 2011 Part B suggests on-site car parking be provided for larger residential dwellings at two (2) spaces per dwelling.

Future on-site car parking will be proposed for the various components of the subdivision in accordance with Council's car parking policy and the relevant codes.

3.5 Pedestrian and Cycleway Facilities

It is proposed that a shared pathway be extended along the riparian corridor and connected to the existing shared pathway in Gregory Hills promoting pedestrian activity throughout the entire Currans Hill and Gregory Hills district, including:

- Pedestrian paths are to be provided for pedestrian movement through the open spaces in Manooka Valley in the riparian corridor and connected into the wider Currans Hill area.

- Bridges, boardwalks and other landscape devices are to be used to limit pedestrian access into areas of high vegetation sensitivity, and to provide views of special interest points and the broader landscape.

- Dedicated cycle routes will be provided in accordance with the DCP.

3.6 Public Transport

In a broader regional context the future subdivision can be serviced by public transport comprising buses and taxis. Regular bus services are provided to Campbelltown, Narellan and Camden, Oran Park and Liverpool.

Bus services are provided by (local) private bus operators who provide regular services for the general public as well as school bus services.

- The layout of bus routes are shown in the Manooka Valley Masterplan.

- Bus route shall be extended into Manooka Valley along the Collector Road, in order to increase the number of dwellings within a reasonable walking distance to public transport.

Taxis are available in Narellan and Camden between the adjoining towns for people who choose not to use buses or who need to get from their residence to the shops or the railway station at Campbelltown.

Future release areas and land subdivisions can affect the delivery of public transport services by providing more people and good traffic circulation routes encouraging private bus operators to extend and increase the frequency of services.

4.0 EXISTING TRAFFIC CONDITIONS

4.2 Access Roads

The main access roads serving the Currans Hill Area are Narellan Road (north and south) and Camden Valley Way (east – west). Both routes are multi lane divided state roads. Access into Currans Hill from Narellan Road is via the Hartley Road traffic signals. Secondary, circuitous access to Camden Valley Way is also available via the Anderson Road traffic signals and through the Smeaton Grange industrial area.

Currans Hill Drive to Turner Road is an undivided two way two lane residential collector road, 13.0 metres wide kerb to kerb, with a marked parking lane either side. Currans Hill Drive and Ascot Drive are speed zoned to 50km/h. Newmarket Street and Geraldton Drive are both two way 2 lane local access roads with roll kerbs, linking to Ascot Drive and servicing the adjoining newer and adjoining residential subdivision.

4.2 Daily Traffic Flows

Recent (2015) RMS AADT daily vehicle counts on Narellan Road and Camden Valley Way indicate average daily passenger vehicle equivalents are as follows:

- Narellan Road east of Hartley Drive - 62,000 veh/day
- Camden Valley Way south of Cobbitty Road - 31,500 veh/day

Average daily traffic volumes on Hartley Road, at Narellan Road based on our original **Appendix 3** traffic counts are projected at 17,000 veh/day.

Average daily traffic volumes on Currans Hill Drive, Turner Road, Ascot Drive and Tramway Drive are shown below.

TABLE 4.1

EXISTING AVERAGE 5 DAY VOLUMES - 2018

Location	EB	85th% km/h	WB	85th% km/h	Two way
Currans Hill Drive east of Tramway Drive	2885	56	2760	56.9	**5645**
Turner Road west of Ascot Drive	285	40.4	268	42.4	**555**
	WB	**85th% km/h**	**SB**	**85th% km/h**	**Two way**
Ascot Drive at Turner road	286	53.8	324	51.4	**610**
Tramway Drive at Currans Hill Drive	1918	52.2	1834	53.5	**3752**

4.2.2 Peak Hour Volumes

Current AM and PM peak hour volumes on Narellan Road, Hartley Road and Ascot Drive are summarised as follows:

TABLE 4.2

PEAK AM AND PM VOLUMES VEH/HOUR

	Narellan Road at Hartley Road					
AM	EB	4389	WB	3012	**2 Way**	**7401**
PM	EB	4246	WB	5079	**2 Way**	**9325**
	Hartley Road at Narellan Road					
AM	NB	910	SB	676	**2 Way**	**1586**
PM	NB	730	SB	1188	**2 Way**	**1918**
	Ascot Drive at Turner Road					
AM	NB	30	SB	5	**2 Way**	**35**
PM	NB	10	SB	10	**2 Way**	**20**

More recent 2018 traffic volume and data analysis for Currans Hill Drive, Turner Road and Ascot Drive and Tramway Drive is shown below.

TABLE 4.3

EXISTING PEAK HOUR VOLUMES AND SERVICE LEVELS - 2018

Location	**Time**	**Vehicles per Hour Direction/LOS**					
		EB	**LoS**	**WB**	**LoS**	**Two Way**	**LoS**
Currans Hill Drive east of Tramway Drive	6-7am	181	A	52	A	233	A
	7-8am	251	B	75	A	326	A
	8-9am	294	B	130	A	424	B
	3-4pm	162	A	307	B	469	B
	4-5pm	197	A	307	B	504	B
	5-6pm	190	A	348	B	538	B
Turner Road West of Ascot Drive	6-7am	11	A	14	A	25	A
	7-8am	14	A	15	A	29	A
	8-9am	30	A	26	A	56	A
	3-4pm	25	A	29	A	54	A
	4-5pm	29	A	24	A	53	A
	5-6pm	31	A	25	A	56	A

	Time	**NB**	**LoS**	**SB**	**LoS**	**Two Way**	**LoS**
Ascot Drive at Turner Road	6-7am	7	A	23	A	30	A
	7-8am	10	A	37	A	47	A
	8-9am	14	A	36	A	50	A
	3-4pm	24	A	17	A	41	A
	4-5pm	28	A	19	A	47	A
	5-6pm	38	A	24	A	62	A
Tramway Drive at Currans Hill Drive	6-7am	84	A	120	A	284	A
	7-8am	127	A	185	A	312	A
	8-9am	235	B	201	B	436	B
	3-4pm	197	A	135	A	332	A
	4-5pm	168	A	147	A	315	A
	5-6pm	185	A	167	A	352	A

NB: Level of service is based on RMS Traffic Generation Guidelines 2002, Table 4.4.

Quite clearly the above table indicates that during peak times 6-9am and 3-6pm Monday to Friday, the existing four access roads recently surveyed operate at a Level of Service B or better.

NB: LOS B indicates a zone of stable traffic flows mid block free flow where drivers are free to choose their desired speed and manoeuvre within the street stream.

Table 4.6 of the RMS Guidelines indicates that the local streets (Ascot Drive and Turner Road) in residential precincts should operate with a maximum peak flow of up to 300veh per hour and collector roads, Currans Hill Drive and Tramway Drive can operate with peak volumes up to 500 veh per hour.

4.3 Service Levels and Amenity

Existing traffic service levels in Turner Road, Ascot Drive and Currans Hill Drive can be described as very good i.e. low traffic volumes and 85th% free flow speed around 55km/h.

In keeping with the RMS and AMCORD Environmental Capacity Performance Standard for local residential streets of less than 200veh.hr as an environmental goal and up to 300veh/hr as a maximum before amenity is compromised. Ascot Drive and Turner Road currently has a relatively high level of traffic amenity.

Hartley Road from Narellan Road to Currans Hill Drive is a major collector route with a poor level of services in peak times due to excessive queueing and vehicle delays.

4.4 Road Safety

The existing level of road safety along Ascot Drive, Turner Road, Newmarket Street and Geraldton Drive is considered to be acceptable due to good sight distances, low traffic volumes, moderate free flow traffic speeds and minimal traffic, pedestrian and cyclist activity to/from adjoining residential properties.

A review of the RMS PC crash records for the 3 year period to mid 2018 did not reveal any adverse accident history for these local roads.

5.0 TRAFFIC ASSESSMENTS

5.1 Traffic Generation

The propose rezoning (the subject of this application) creates an additional 6 dwellings to a total of up to 69 dwellings with one dwelling per lot.

RMS recommended traffic generation per freestanding residential household is between 8 and 9 movements per day. The peak period is normally 0.9 movements per dwelling per hour and the AM peak period represents only 7% of the daily total.

Based on the above recommended RMS rates we would suggest future traffic generation levels for 69 residential allotments realising 75 dwellings including 10 dual occupancies as follows:

- Daily vehicle trips (69 dwelling houses x 9) = +621 trips daily

- Weekday peak hour vehicle trips (69 dwelling houses x 0.9) = +62 trips

In addition a further 172 peak hour trips can be expected from the existing residential lands to the east (200 lots) and Stage 1 approval (40 lots).

Whilst it is appreciated that the future traffic situation in the subject subdivision is not necessarily an extension of existing low volume conditions, we believe the following factors are relevant in indicating a worst case trip generation scenario for the proposal:

- Car ownership rates are likely to increase in line with those for new middle income subdivision, housing young couples and families; and

- As a worst case the morning and evening peak hour is estimated at 10% of the daily rate.

5.2 Trip Distribution

RMS Guidelines also suggest that a distribution of peak hour arrival and departure journeys be undertaken to evaluate the traffic impacts on the adjoining road system. Normally as 80% outbound in the AM peak and 20% inbound and the reciprocal in the PM peak.

Given the limited access to the west via Turner Road, we have assumed all future traffic enter and exit the area from Narellan Road via Currans Hill Road.

The peak hour distribution of traffic to/from the site will be ultimately influenced by future traffic conditions, levels of service and vehicles origins/destinations regionally.

For the purpose of distributing the projected traffic generation to the existing road network and ultimately determining the extent of any future traffic impacts on the adjoining intersections, we have displaced the estimated AM and PM traffic generation (62 trips) in a proportion north and south of the site as follows:

TABLE 5.1

STAGE 2 - PEAK HOUR TRAFFIC DISTRIBUTION

Origins and Destinations	AM Peak			PM Peak		
	In Trips	Out Trips	Total	In Trips	Out Trips	Total
Narellan and Camden	2	7	9	7	2	9
M5, Macarthur, Campbelltown (Narellan Rd)	4	16	20	16	4	20
Oran Park and Liverpool (Camden Valley Way)	4	17	21	17	4	21
Bringelly and Penrith (Old Northern Road)	2	10	12	10	2	12
Total Trips	**12**	**50**	**62**	**50**	**12**	**62**

The above Stage 2 traffic distribution equates to an additional 50 outbound and 12 inbound trips on the adjoining access roads during the (Monday-Friday) AM peak hour with a reciprocal flow during the PM peak.

NB. This does not include the 172 peak hour trips, still to be fully realised, from the existing adjoining lands under development.

5.3 Post Development Traffic Conditions

Currently Ascot Drove, Geraldton Drive and Newmarket Street are under utilised low volume local access roads. The future development of the subject and adjoining land will increase both daily and peak hour traffic volumes but not beyond any unacceptable threshold levels.

The ease at which traffic can enter or leave the development site will be directly related to future gaps in opposing traffic flows along the adjoining access roads and at the Hartley Road/Narellan Road traffic signals.

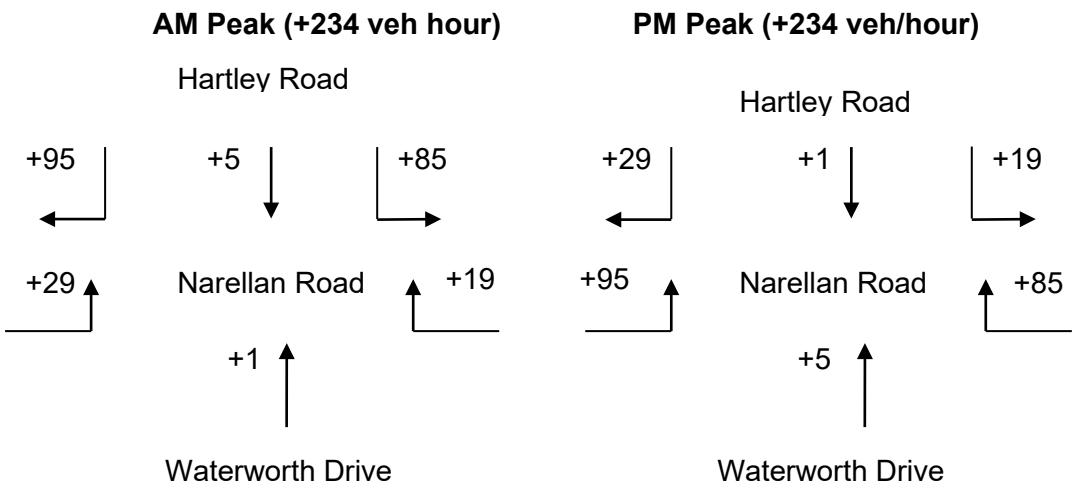
Additional traffic movements to/from the Stage 2 subject land parcels are likely to be around +62veh/hr. The total two way flow of traffic on Ascot Drive at Turner Road will increase to about or approximately 1 vehicle every 50 seconds on average.

In our view, it is unlikely the existing traffic service levels, road safety or amenity threshold will be compromised by the additional traffic volumes or the interaction of traffic entering and exiting the two new (mid block) ‘Tee’ intersections as proposed at Ascot Drive, Newmarket Street or Geraldton Drive.

5.4 Traffic Impacts and Level of Service

The likely post development traffic impacts at Geraldton Drive and Newmarket Street are not likely to be significant however for the purpose of evaluating the likely traffic impact at the Hartley Road and Narellan Road intersection we have run SIDRA models for the existing and post development AM and PM scenarios, assuming all new traffic only to utilise Hartley Road to access and egress the Currans Hill area.

The additional post development peak hour traffic volume for the subject lands (+62 trips) plus adjoining land under development (172 trips) have been assigned to the existing Hartley Road intersection as follows:



A revised summary of the SIDRA output data is shown in Table 5.2 below.

TABLE 5.2

NARELLAN ROAD & HARTLEY ROAD
EXISTING SIGNAL OPERATION – (AT 140 SECOND CL)

Criteria	AM Peak		PM Peak	
	Intersection	Hartley Road	Intersection	Hartley Road
Level of Service	E	D	F	F
Degree of Saturation	0.925	0.881	1.270	1.083
Average Vehicle Delay Hartley Rd	53.8	54.8	103.5	137.3

TABLE 5.3

NARELLAN ROAD & HARTLEY ROAD – (AT 140 SECOND CL)
PROJECTED POST DEVELOPMENT SIGNAL OPERATION

Criteria	AM Peak		PM Peak	
	Intersection	Hartley Road	Intersection	Hartley Road
Level of Service	E	D	F	F
Degree of Saturation	0.941	0.911	1.278	1.091
Average Vehicle Delay Hartley Rd	55.3	56.2	105.7	139.4

NB: This output also includes +172 future trips from the adjoining precinct under construction.

In the AM peak the additional post development traffic will not increase the intersection LoS with an average vehicle delay increasing by around 2 seconds per vehicle. In the PM peak intersection LoS F is unchanged with average vehicle delay increased by around 2 sec per vehicle.

In both the AM and PM peak, with Stage 2 development, average vehicle delays in Hartley Road can be expected to increase by around 2 seconds per vehicle.

In reality, and keeping with the RMS arterial road co-ordination strategy, the LoS on Narellan Road and rate of delay is likely to be better than LOS F due to the favourable signal co-ordination bias to Narellan Road but delay and queue lengths in the side streets (i.e. Hartley Road and Waterworth Drive) may be marginally worse.

Alternatively if access to/from the area was available via Turner Road to Camden Valley Way or through to Gregory Hills to Camden Valley Way the likely post development peak hour traffic impacts at Hartley Road and Narellan Road would reduce significantly (by up to 63%).

5.4.1 Narellan Road and Tramway Drive

Attached at **Appendix 3** are recent AM/PM peak hour traffic counts undertaken for this assessment. Peak hour SIDRA traffic modelling of this major signalised intersection for existing and post development traffic conditions.

Existing peak hour traffic signal operation and service levels are summarised as follows:

TABLE 5.4

EXISTING CONDITIONS – TRAFFIC SIGNALS
NARELLAN ROAD AND TRAMWAY DRIVE

Intersection	AM Peak	PM Peak
Level of Service	C	D
Degree of Saturation	0.903	0.983
Average Movement Delay	34.6 (sec)	53.2 (sec)

At a 150 second cycle time the intersection operates at a congested but, RMS acceptable, LoS C in the AM and LoS D in the PM peaks.

Assuming all post DA peak hour traffic arising from the proposed subdivision, i.e. 62 peak hour additional trips, approaches and leaves the area via Tramway Drive at Narellan road to Currans Hill Drive.

We have re-run our SIDRA models for the following outputs, with 12 inbound + 50 outbound AM trips and reciprocal PM traffic movements as follows.

TABLE 5.5

POST DA CONDITIONS – TRAFFIC SIGNALS
NARELLAN ROAD AND TRAMWAY DRIVE

Intersection	AM Peak	PM Peak
Level of Service	C	D
Degree of Saturation	0.921	0.983
Average Movement Delay	35.3 (sec)	55.4 (sec)

The post development traffic impacts do not alter AM/PM service levels at the intersection and increase average intersection movement delay times per vehicle by less than 1 second AM and 2 seconds in the PM peak.

6.0 SUMMARY AND CONCLUSIONS

Rezoning proposes an additional 6 lots ie. the total lots in Stage 2 increases from 63 to 69 lots.

It is our view that the rezoning to allow 69 lots in Stage 2 as opposed to the existing potential of 63 lots represents an appropriate use of the site economically from both a traffic planning and road safety viewpoint. The conceptual design measures incorporated therein are intended to minimise any affect on adjoining lands. The proposed access treatments to the lands from the state road network are minimal and should not impede the operation, efficiency or safety of the adjoining local road system.

The projected AM and PM peak hour traffic generation based on RMS Guidelines, is +62 peak vehicle trips up from 57 with 63 lots.

The proposed pavement width will allow vehicles to proceed safely at the operating speed (i.e. 40-50 km/h) intended for that level of road in the local and internal network and with only minimal delays in the peak period.

A comprehensive network of on and off road pedestrian links is proposed.

The safety of pedestrians and cyclists where it is intended they use the carriageway will also be assured by providing sufficient width and reducing travel speeds.

The pavement widths and sight lines will also provide for unobstructed access to individual allotments. Motorists should be able to comfortably enter or reverse from an allotment in a single movement, taking into consideration the possibility of a vehicle being parked on the carriageway opposite the driveway.

In accord with RMS traffic generation rates the full development of all allotments (Stage 1 and Stage 2) is likely to result in an additional 234 peak hour trips along Ascot Street. These 234 vehicle movements represents significant increase over existing low volumes during the AM/PM peak hour. However, combined future traffic volumes (i.e. existing plus projected) are still likely to result in two way totals of around 300 vehicles per hour, which is in keeping with the recommended RMS/AMCORD threshold for collector roads.

Importantly, this rezoning application to create 6 additional lots, ie. up to +6 peak hour trips in insignificant when viewed in the context of all Stage 1 and 2 peak traffic projections.

The impact of the additional traffic (6 peak hour trips) generated by this proposal should not diminish the acceptable level of service to existing traffic flows on Ascot Street or Currans Hill Drive in the short term and in the broader sense have a marginal impact on other major road or intersections on the adjacent road network given the existing poor intersection service levels accessing Narellan Road.

Existing local road safety and traffic amenity should not be compromised by the additional traffic likely to arrive and depart the residential development.

The proposed access to/from Ascot Drive, Geraldton Drive and Newmarket Street is in keeping with the intent and function of these routes within the residential precinct. Generally traffic service levels and road safety on these streets will not be adversely impeded by either traffic volumes or vehicle speeds.

Longer term pedestrian and bicycle facilities will be provided in accordance with the DCP throughout existing Currans Hill area.

On site residential parking for each allotment so as not to obstruct through traffic as described in this report is considered to be reasonable and in accordance with Council's residential code.

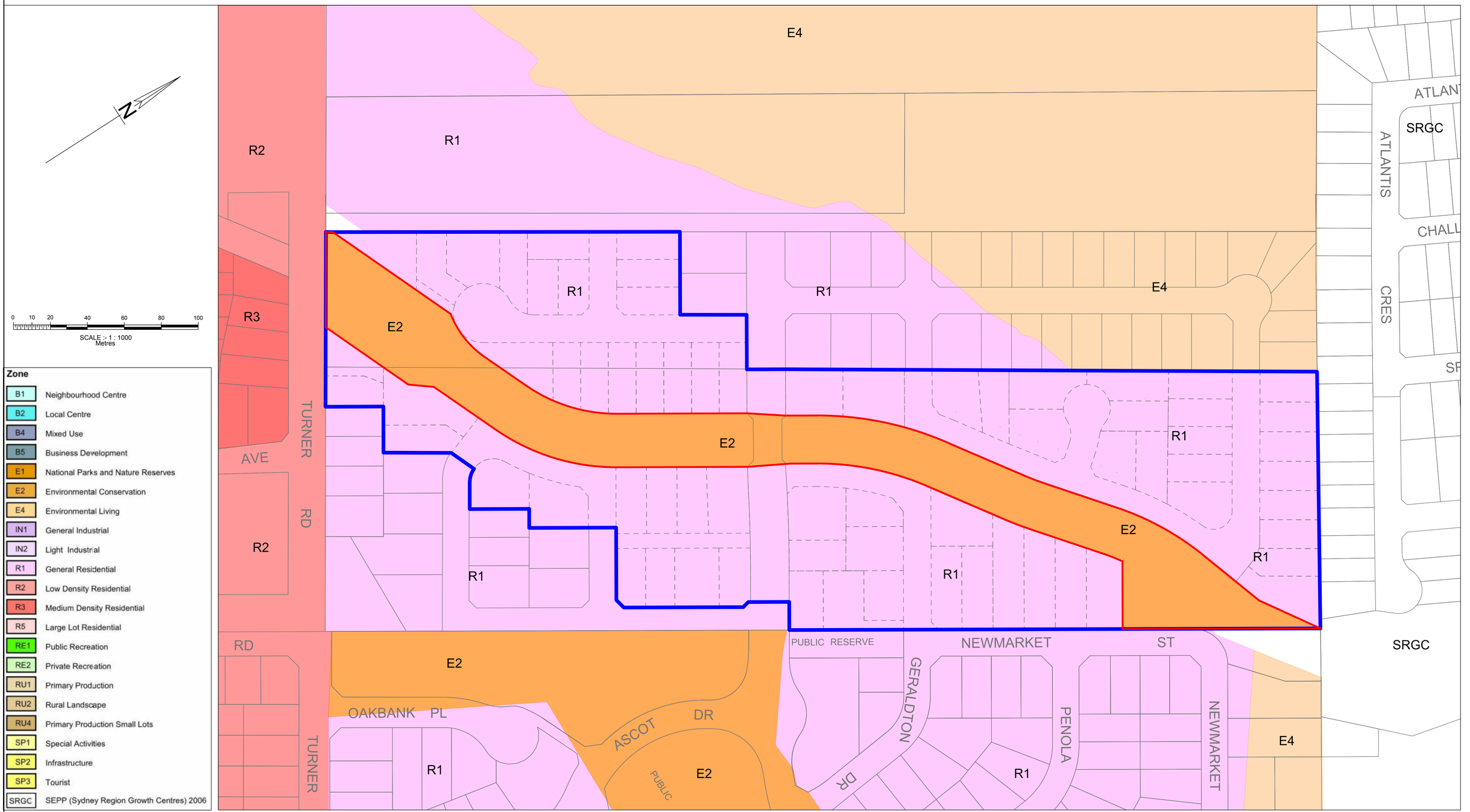
Recommendations

Our findings are that the proposed rezoning for future residential development of this land as proposed above, will not have any detrimental impact on surrounding land uses or the community, and is in keeping with the adjoining zoning and development within the Currans Hill residential precinct.

Conversely, there may be benefits for the local community and traffic conditions generally in that the development of this land to satisfy the demands for residential sites in accordance with Council's residential development strategy may negate the economic and social demand for similar such residential sub divisions in other less desirable locations.

On the basis of these findings, the traffic modelling and assessments made in sections of this report, it is **recommended** that Camden Council approve this proposed rezoning for which will increase the expected number of residential lots within Stage 2 of the development from 63 to 69. It is expected that following the rezoning being approved, a DA will be lodged for Stage 2 almost immediately.

APPENDIX 1



Issue	App	Date	Description
C	S.G.	16-10-2019	LOTS AND SHARED PATHWAYS AMENDED - LOT SIZING PLANS REMOVED
B	S.G.	20-09-2019	REZONING PLANS WITH UPDATED LOTS & DRAINAGE RESERVE BOUNDARY
A	T.H.	22-08-2018	REZONING PLANS COMBINED FOR PLANNING PROPOSAL

Client: TURNER ROAD ROAD DEVELOPMENTS P/L

Designed by : T.H.

Date of Drawing : 22-08-2018

Ratio (A1) : 1:2000

Datum : AHD

Origin of Levels :

Date of Survey :

JMD Development Consultants

John M. Daly & Associates PTY LTD
Surveying A.B.N. 88051977989
Engineering
Project Management
Licensed Water Service Co ordinators

32 Iolanthe Street
P.O. BOX 25
CAMPBELLTOWN N.S.W. 2560

PH. (02) 4625 5055
FAX (02) 4628 2013
email: admin@jmd.com.au

Project : 187 - 203 TURNER ROAD, CURRANS HILL
LOT 36 in DP 28024 & LOT 105 in DP1210084

Sheet 1 of 4 sheets

TURNER ROAD PROPOSED ZONING PLAN

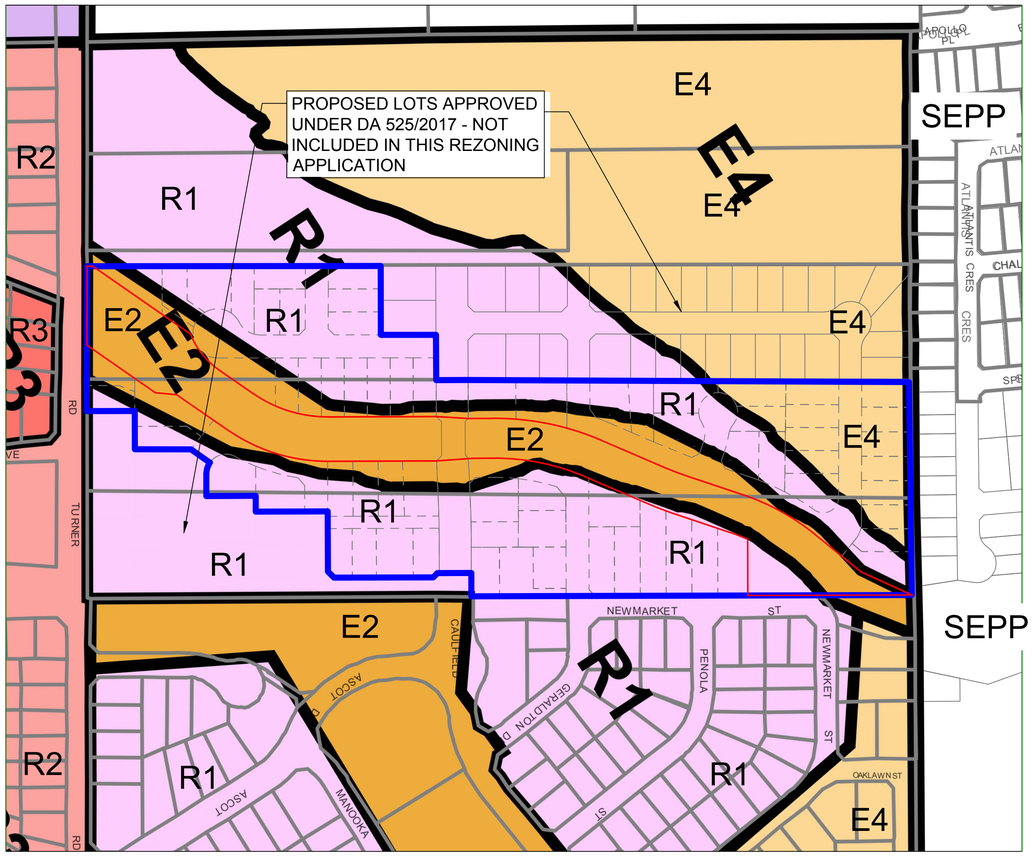
Ref: 14194E13

Locality : CURRANS HILL

L.G.A. : CAMDEN

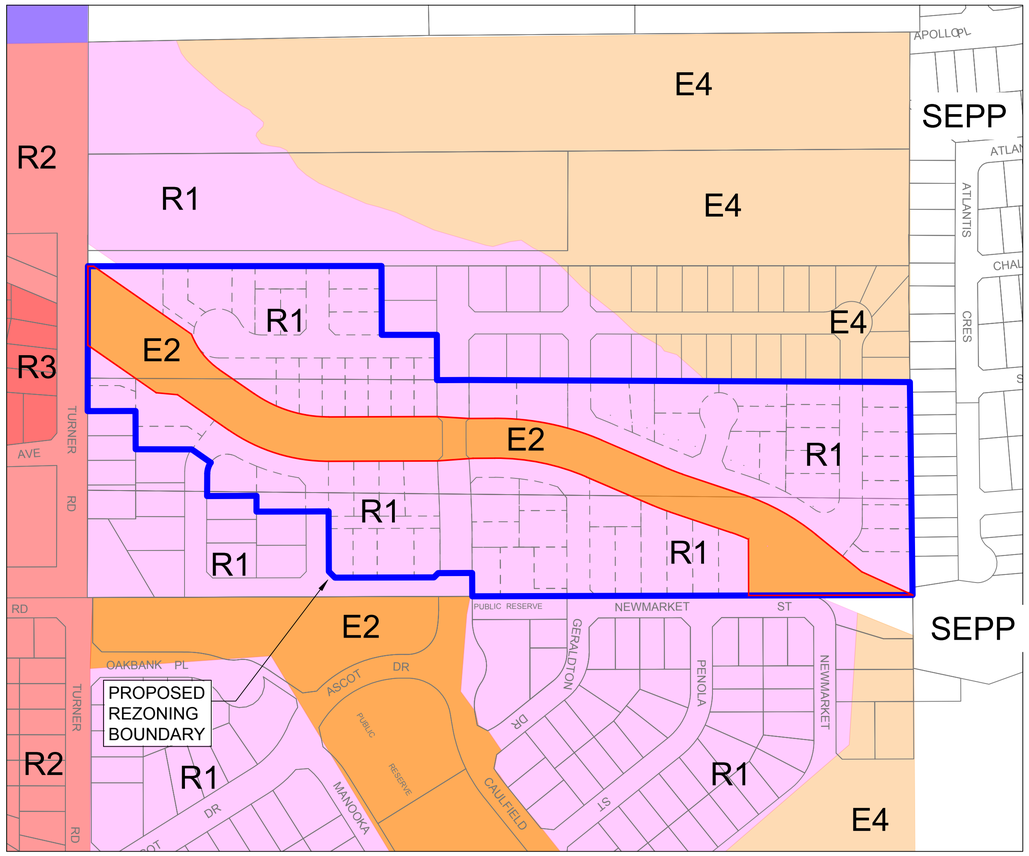
CAD Ref: S:\JOBS\TURNER RD\14194 TURNER RD DEV\EMW\ENG\CAD\E13 - PLANNING PROPOSAL\ZONING PLAN

Zone	
B1	Neighbourhood Centre
B2	Local Centre
B4	Mixed Use
B5	Business Development
E1	National Parks and Nature Reserves
E2	Environmental Conservation
E4	Environmental Living
IN1	General Industrial
IN2	Light Industrial
R1	General Residential
R2	Low Density Residential
R3	Medium Density Residential
R5	Large Lot Residential
RE1	Public Recreation
RE2	Private Recreation
RU1	Primary Production
RU2	Rural Landscape
RU4	Primary Production Small Lots
SP1	Special Activities
SP2	Infrastructure
SP3	Tourist
SRGC	SEPP (Sydney Region Growth Centres) 2006



PLAN OF REZONING BOUNDARIES OVERLAID ON CAMDEN COUNCIL'S EXISTING LAND ZONING MAP - LZN_017

SCALE 1:2000



PLAN OF PROPOSED REZONING LAND ZONING MAP

SCALE 1:2000

SUMMARY OF AREAS*

LAND ZONING	EXISTING AREAS (SQM)**	NEW AREAS (SQM)
E2	26,650	17,533
E4	7,820	0
R1	42,290	59,227
TOTAL AREA	76,760	76,760

* ONLY AREAS WITHIN THE REZONING BOUNDARY HAVE BEEN COMPARED

** EXISTING AREAS BASED ON INTERPOLATION OF PDF VERSION OF EXISTING ZONING MAP IN AUTOCAD

DENOTES REZONING BOUNDARY

DENOTES PROPOSED E2 / R1 ZONING BOUNDARY

0 20 40 80 120 160 200

SCALE :- 1 : 2000
Metres

Issue	App	Date	Description
C	S.G.	16-10-2019	LOTS AND SHARED PATHWAYS AMENDED - LOT SIZING PLANS REMOVED
B	S.G.	20-09-2019	REZONING PLANS WITH UPDATED LOTS & DRAINAGE RESERVE BOUNDARY
A	T.H.	22-08-2018	REZONING PLANS COMBINED FOR PLANNING PROPOSAL

Client: TURNER ROAD ROAD DEVELOPMENTS P/L

Designed by : T.H.

Date of Drawing : 22-08-2018

Ratio (A1) : 1:2000

Datum : AHD

Origin of Levels :

Date of Survey :

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Project : 187 - 203 TURNER ROAD, CURRANS HILL
LOT 36 in DP 28024 & LOT 105 in DP1210084

Sheet 2 of 4 sheets

COMPARISON PLAN DETAILING THE PROPOSED CHANGES TO THE LAND ZONING MAP

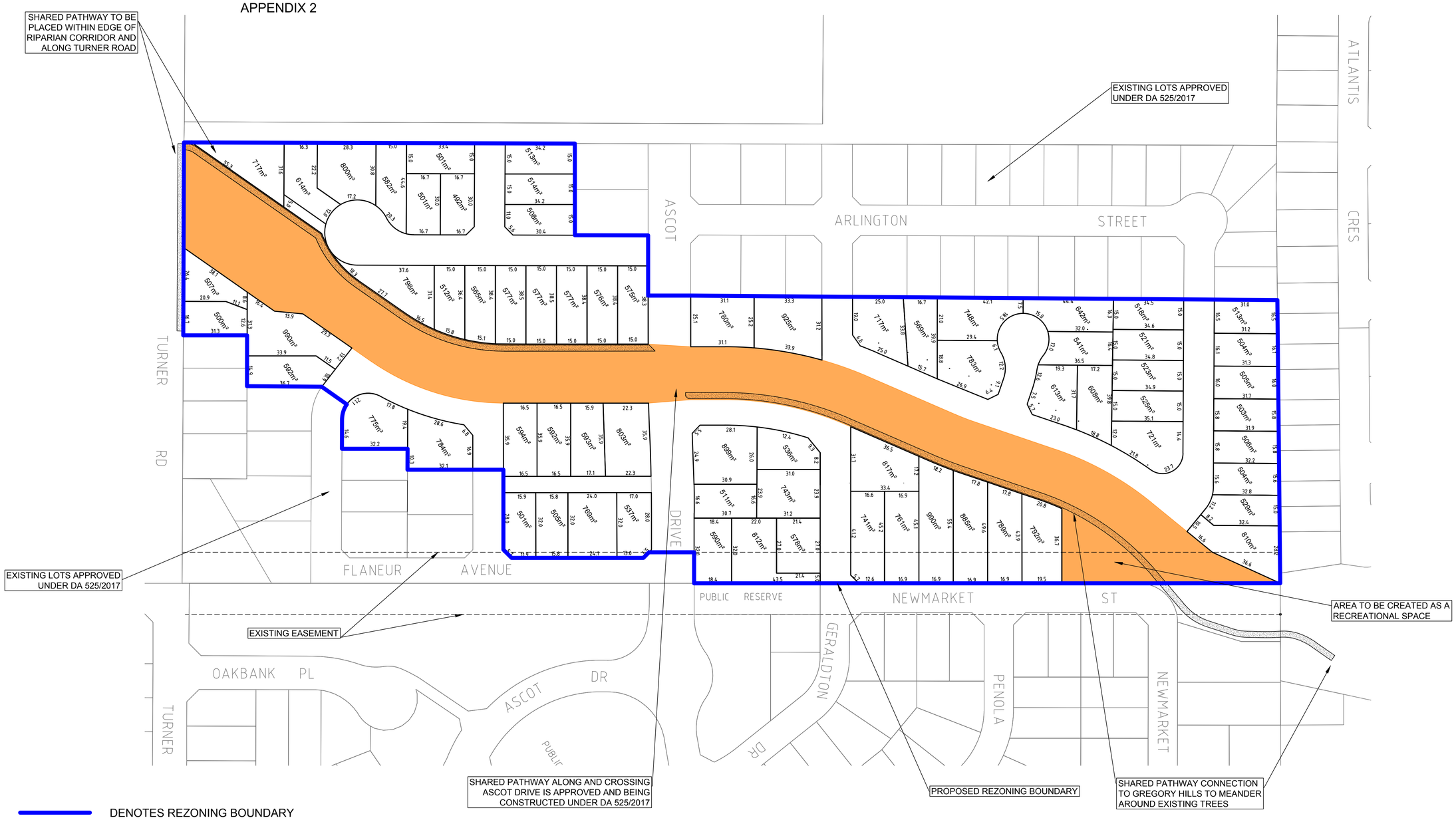
Ref: 14194E13

Locality : CURRANS HILL

L.G.A. : CAMDEN

CAD Ref: S:\JOBS\TURNER RD\14194 TURNER RD DEV\EMW\ENG\CAD\E13 - PLANNING PROPOSAL\ZONING PLAN

APPENDIX 2



DENOTES REZONING BOUNDARY

DENOTES PROPOSED E2 BOUNDARY

0 20 40 60 80 100

SCALE :- 1 : 1000
Metres

Issue	App	Date	Description
C	S.G.	16-10-2019	LOTS AND SHARED PATHWAYS AMENDED - LOT SIZING PLANS REMOVED
B	S.G.	20-09-2019	REZONING PLANS WITH UPDATED LOTS & DRAINAGE RESERVE BOUNDARY
A	T.H.	22-08-2018	REZONING PLANS COMBINED FOR PLANNING PROPOSAL

Client: TURNER ROAD ROAD DEVELOPMENTS P/L

Designed by : T.H.

Date of Drawing : 22-08-2018

Ratio (A1) : 1:2000

Datum : AHD

Origin of Levels :

Date of Survey :

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Project : 187 - 203 TURNER ROAD, CURRANS HILL
LOT 36 in DP 28024 & LOT 105 in DP1210084

Sheet 3 of 4 sheets

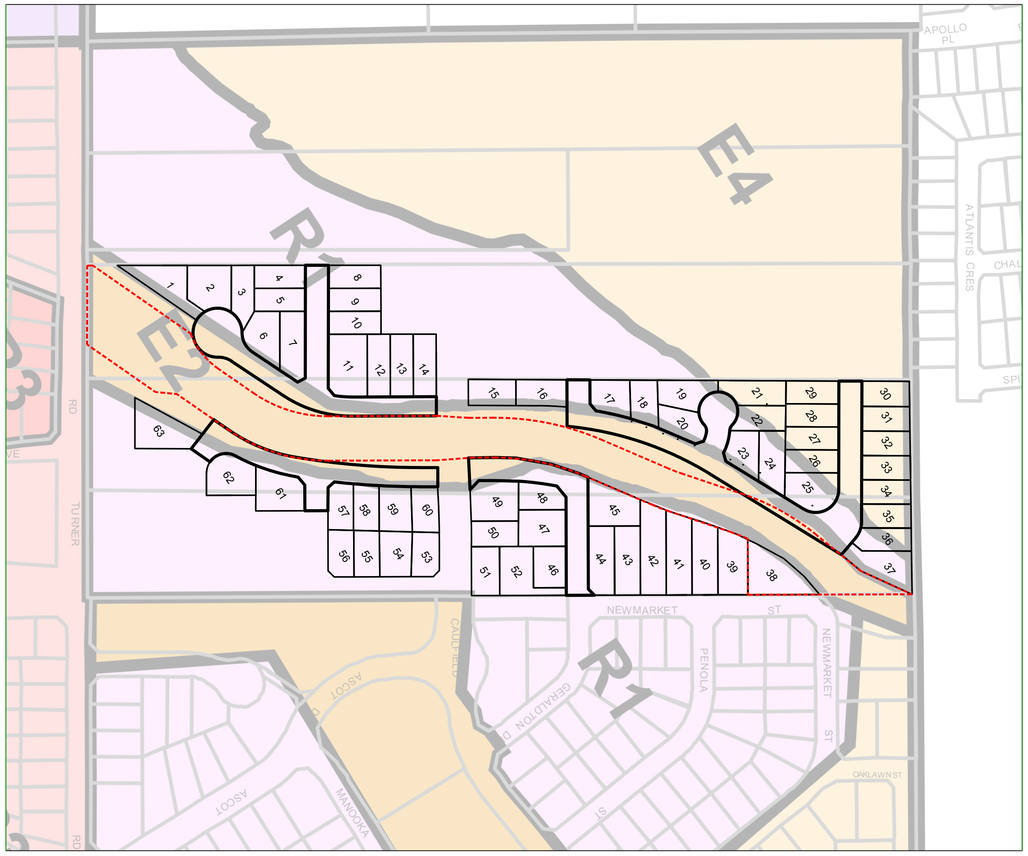
TURNER ROAD STAGE 2 MASTERPLAN - WITH NEARMAP IMAGE

Ref: 14194E13

Locality : CURRANS HILL

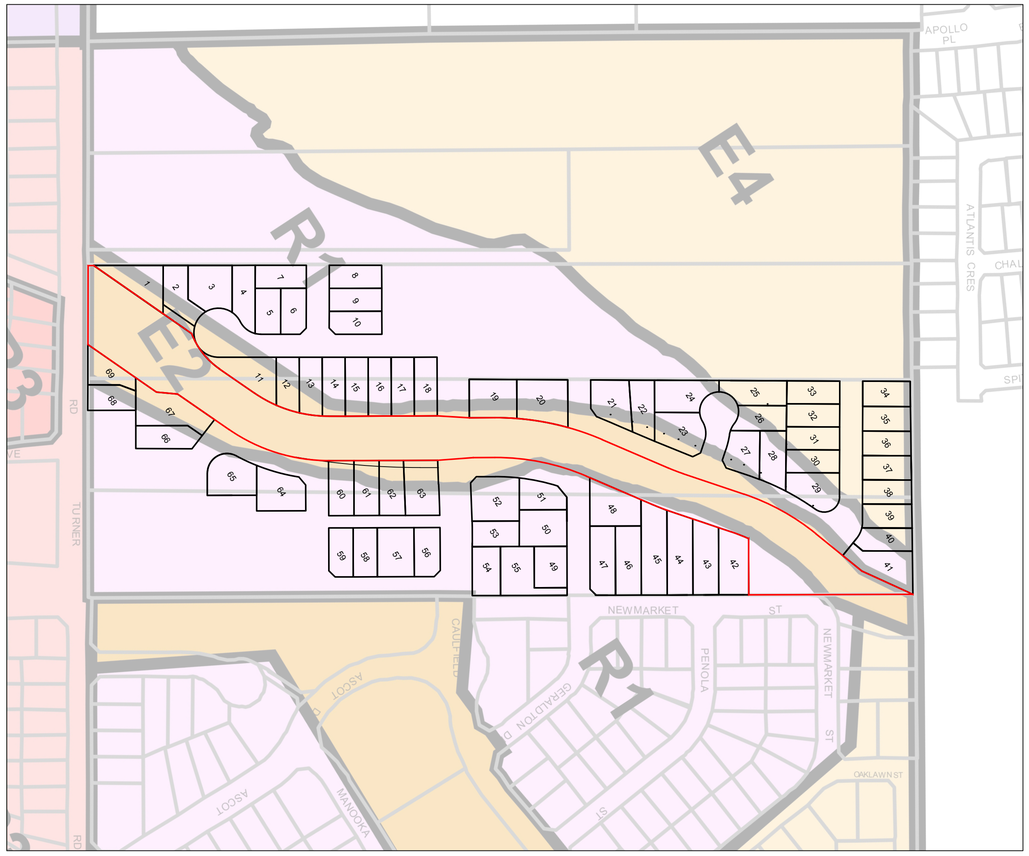
L.G.A. : CAMDEN

CAD Ref: S:\JOBS\TURNER RD\14194 TURNER RD DEV\EMW\ENG\CAD\E13 - PLANNING PROPOSAL\14194E13 - MASTER ALTERNATIVE



PLAN OF POSSIBLE DEVELOPMENT LAYOUT OVERLAID ON CAMDEN COUNCIL'S EXISTING LAND ZONING MAP - LZN_017

SCALE 1:2000



PLAN OF PROPOSED DEVELOPMENT LAYOUT OVERLAID ON CAMDEN COUNCIL'S EXISTING LAND ZONING MAP - LZN_017

SCALE 1:2000

SUMMARY OF LOTS*

LOT TYPE	EXISTING ZONING	NEW AREAS (SQM)
SINGLE RESIDENTIAL LOT	57	64
DUAL OCCUPANCY LOT	6	5
TOTAL No. OF LOTS	63	69

* ONLY AREAS WITHIN THE REZONING BOUNDARY HAVE BEEN COMPARED
** LOTS ARE BASED ON INTERPOLATION OF PDF VERSION OF EXISTING ZONING MAP IN AUTOCAD
*** TOTAL No. OF LOTS SHOWN UNDER THE EXISTING ZONING IS BASED ON ROADS BEING PERMISSIBLE IN THE E2 ZONE WHILE STILL ACHIEVING A RIPARIAN CORRIDOR THAT MEETS ALL GUIDELINES.

0 20 40 80 120 160 200

SCALE :- 1 : 2000
Metres

DENOTES PROPOSED LOT LAYOUT

DENOTES PROPOSED E2 / R1 ZONING BOUNDARY

Issue	App	Date	Description
C	S.G.	16-10-2019	LOTS AND SHARED PATHWAYS AMENDED - LOT SIZING PLANS REMOVED
B	S.G.	20-09-2019	REZONING PLANS WITH UPDATED LOTS & DRAINAGE RESERVE BOUNDARY
A	T.H.	22-08-2018	REZONING PLANS COMBINED FOR PLANNING PROPOSAL

Client: TURNER ROAD ROAD DEVELOPMENTS P/L

Designed by : T.H.

Date of Drawing : 22-08-2018

Ratio (A1) : 1:2000

Datum : AHD

Origin of Levels :

Date of Survey :

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Project : 187 - 203 TURNER ROAD, CURRANS HILL
LOT 36 in DP 28024 & LOT 105 in DP1210084

Sheet 4 of 4 sheets

COMPARISON PLAN COMPARING THE POSSIBLE LOT LAYOUTS FOR THE CURRENT ZONING AND THE PROPOSED REZONING

Ref: 14194E13

Locality : CURRANS HILL

L.G.A. : CAMDEN

CAD Ref: S:\JOBS\TURNER RD\14194 TURNER RD DEV\EMW\ENG\CAD\E13 - PLANNING PROPOSAL\LOT COMPARISON.DWG

R.O.A.R. DATA APPENDIX 3

Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client : TUPA
Job No/Name : 6939 CURRANS HILL Tramway Dr
Day/Date : Wednesday 24th October 2018

Lights

Time Per	NORTH Tramway Dr			WEST Narellan Rd			SOUTH Mount Annan Dr			EAST Narellan Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0645	76	2	2	1	652	2	2	5	167	22	388	19	**1338**
0645 - 0700	92	0	0	1	691	2	0	6	179	25	418	32	**1446**
0700 - 0715	107	1	0	0	708	2	5	6	183	31	335	28	**1406**
0715 - 0730	101	4	6	0	729	2	6	8	238	32	391	28	**1545**
0730 - 0745	116	1	1	1	685	1	4	5	175	37	392	24	**1442**
0745 - 0800	107	7	5	0	765	5	5	5	180	40	556	48	**1723**
0800 - 0815	82	2	2	1	684	8	9	6	193	34	485	38	**1544**
0815 - 0830	94	8	5	4	753	7	2	7	154	47	565	33	**1679**
Period End	**775**	**25**	**21**	**8**	**5667**	**29**	**33**	**48**	**1469**	**268**	**3530**	**250**	**12123**

Heavies

Time Per	NORTH Tramway Dr			WEST Narellan Rd			SOUTH Mount Annan Dr			EAST Narellan Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0645	0	0	0	0	39	0	0	0	0	0	30	1	**70**
0645 - 0700	0	0	0	0	39	0	0	0	0	0	27	0	**66**
0700 - 0715	0	0	0	1	40	1	0	0	0	0	45	2	**89**
0715 - 0730	1	0	0	0	23	1	0	0	0	0	38	3	**66**
0730 - 0745	0	0	0	0	40	0	0	0	1	0	31	1	**73**
0745 - 0800	1	0	0	2	43	0	0	0	0	1	29	0	**76**
0800 - 0815	0	0	1	3	34	2	0	0	1	0	28	2	**71**
0815 - 0830	1	0	0	4	31	0	0	0	1	1	29	1	**68**
Period End	**3**	**0**	**1**	**10**	**289**	**4**	**0**	**0**	**3**	**2**	**257**	**10**	**579**

Lights

Peak Time	NORTH Tramway Dr			WEST Narellan Rd			SOUTH Mount Annan Dr			EAST Narellan Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0730	376	7	8	2	2780	8	13	25	767	110	1532	107	**5735**
0645 - 0745	416	6	7	2	2813	7	15	25	775	125	1536	112	**5839**
0700 - 0800	431	13	12	1	2887	10	20	24	776	140	1674	128	**6116**
0715 - 0815	406	14	14	2	2863	16	24	24	786	143	1824	138	**6254**
0730 - 0830	399	18	13	6	2887	21	20	23	702	158	1998	143	**6388**
PEAK HOUR	**399**	**18**	**13**	**6**	**2887**	**21**	**20**	**23**	**702**	**158**	**1998**	**143**	**6388**

Heavies

Peak Time	NORTH Tramway Dr			WEST Narellan Rd			SOUTH Mount Annan Dr			EAST Narellan Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0730	1	0	0	1	141	2	0	0	0	0	140	6	**291**
0645 - 0745	1	0	0	1	142	2	0	0	1	0	141	6	**294**
0700 - 0800	2	0	0	3	146	2	0	0	1	1	143	6	**304**
0715 - 0815	2	0	1	5	140	3	0	0	2	1	126	6	**286**
0730 - 0830	2	0	1	9	148	2	0	0	3	2	117	4	**288**
PEAK HOUR	**2**	**0**	**1**	**9**	**148**	**2**	**0**	**0**	**3**	**2**	**117**	**4**	**288**

Combined

Time Per	NORTH Tramway Dr			WEST Narellan Rd			SOUTH Mount Annan Dr			EAST Narellan Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0645	76	2	2	1	691	2	2	5	167	22	418	20	**1408**
0645 - 0700	92	0	0	1	730	2	0	6	179	25	445	32	**1512**
0700 - 0715	107	1	0	1	748	3	5	6	183	31	380	30	**1495**
0715 - 0730	102	4	6	0	752	3	6	8	238	32	429	31	**1611**
0730 - 0745	116	1	1	1	725	1	4	5	176	37	423	25	**1515**
0745 - 0800	108	7	5	2	808	5	5	5	180	41	585	48	**1799**
0800 - 0815	82	2	3	4	718	10	9	6	194	34	513	40	**1615**
0815 - 0830	95	8	5	8	784	7	2	7	155	48	594	34	**1747**
Period End	**778**	**25**	**22**	**18**	**5956**	**33**	**33**	**48**	**1472**	**270**	**3787**	**260**	**12702**

Peds

Time Per	NORTH Tramway Dr	WEST Narellan Rd	SOUTH Mount Annan Dr	EAST Narellan Rd	TOT
	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	
0630 - 0645	0	0	0	0	**0**
0645 - 0700	1	5	0	0	**6**
0700 - 0715	0	0	0	0	**0**
0715 - 0730	2	3	0	0	**5**
0730 - 0745	3	2	0	2	**7**
0745 - 0800	1	2	0	0	**3**
0800 - 0815	0	2	0	0	**2**
0815 - 0830	0	0	0	1	**1**
Period End	**7**	**14**	**0**	**3**	**24**

Combined

Peak Time	NORTH Tramway Dr			WEST Narellan Rd			SOUTH Mount Annan Dr			EAST Narellan Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
0630 - 0730	377	7	8	3	2921	10	13	25	767	110	1672	113	**6026**
0645 - 0745	417	6	7	3	2955	9	15	25	776	125	1677	118	**6133**
0700 - 0800	433	13	12	4	3033	12	20	24	777	141	1817	134	**6420**
0715 - 0815	408	14	15	7	3003	19	24	24	788	144	1950	144	**6540**
0730 - 0830	401	18	14	15	3035	23	20	23	705	160	2115	147	**6676**
PEAK HOUR	**401**	**18**	**14**	**15**	**3035**	**23**	**20**	**23**	**705**	**160**	**2115**	**147**	**6676**

Peds

Peak Per	NORTH Tramway Dr	WEST Narellan Rd	SOUTH Mount Annan Dr	EAST Narellan Rd	TOT
	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	
0630 - 0730	3	8	0	0	**11**
0645 - 0745	6	10	0	2	**18**
0700 - 0800	6	7	0	2	**15**
0715 - 0815	6	9	0	2	**17**
0730 - 0830	4	6	0	3	**13**
PEAK HR	**4**	**6**	**0**	**3**	**13**

R.O.A.R DATA

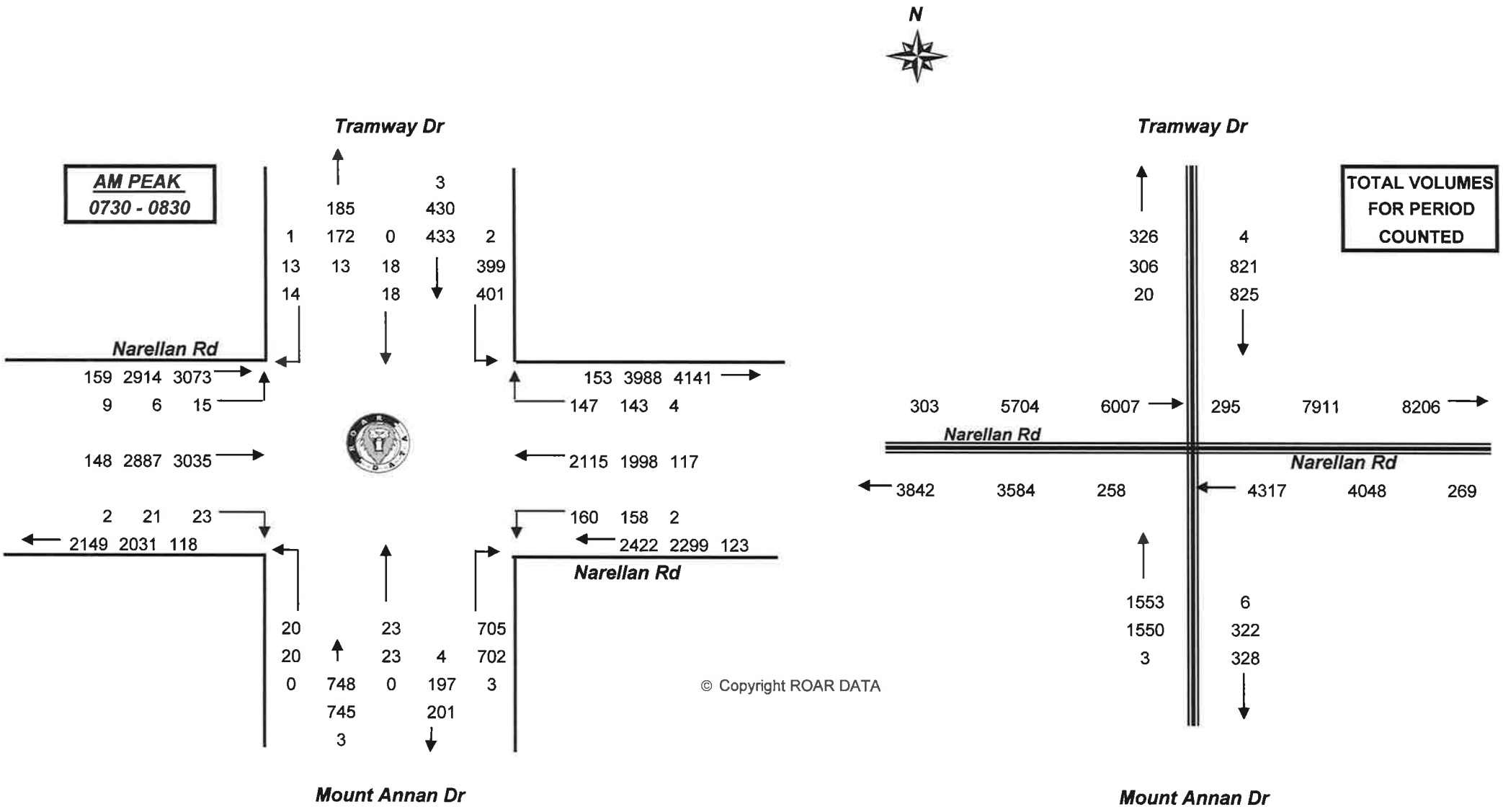
Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client : TUPA

Job No/Name : 6939 CURRANS HILL Tramway Dr

Day/Date : Wednesday 24th October 2018



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Mob. 0418 239019

Client : TUPA
Job No/Name : 6939 CURRANS HILL Tramway Dr
Day/Date : Wednesday 24th October 2018

Lights

Time Per	NORTH Tramway Dr			WEST Narellan Rd			SOUTH Mount Annan Dr			EAST Narellan Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1600 - 1615	41	8	4	12	524	11	7	4	48	123	678	65	1525
1615 - 1630	46	8	6	5	606	9	12	6	49	109	856	55	1767
1630 - 1645	38	9	8	7	582	10	11	6	65	129	633	68	1566
1645 - 1700	35	9	7	7	496	7	9	12	59	150	712	70	1573
1700 - 1715	52	14	13	2	603	9	6	13	55	160	704	75	1706
1715 - 1730	31	10	9	5	637	15	8	10	53	158	828	83	1847
1730 - 1745	39	9	9	13	557	6	8	7	48	149	746	80	1671
1745 - 1800	39	11	7	4	443	11	9	9	39	142	795	90	1599
Period End	**321**	**78**	**63**	**55**	**4448**	**78**	**70**	**67**	**416**	**1120**	**5952**	**586**	**13254**

Heavies

Time Per	NORTH Tramway Dr			WEST Narellan Rd			SOUTH Mount Annan Dr			EAST Narellan Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1600 - 1615	0	0	0	0	16	0	0	0	0	0	21	2	39
1615 - 1630	0	0	0	0	17	0	0	0	0	0	36	1	54
1630 - 1645	0	0	0	0	19	0	0	0	0	0	14	0	33
1645 - 1700	1	0	0	0	16	0	0	0	0	0	24	0	41
1700 - 1715	0	0	0	0	14	0	0	0	0	0	27	1	42
1715 - 1730	1	0	0	0	12	0	0	0	0	0	17	1	31
1730 - 1745	0	0	0	0	12	0	0	0	0	0	12	0	24
1745 - 1800	1	0	0	0	12	0	0	0	0	0	19	1	33
Period End	**3**	**0**	**0**	**0**	**118**	**0**	**0**	**0**	**0**	**0**	**170**	**6**	**297**

Lights

Peak Time	NORTH Tramway Dr			WEST Narellan Rd			SOUTH Mount Annan Dr			EAST Narellan Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1600 - 1700	160	34	25	31	2208	37	39	28	221	511	2879	258	6431
1615 - 1715	171	40	34	21	2287	35	38	37	228	548	2905	268	6612
1630 - 1730	156	42	37	21	2318	41	34	41	232	597	2877	296	6692
1645 - 1745	157	42	38	27	2293	37	31	42	215	617	2990	308	6797
1700 - 1800	161	44	38	24	2240	41	31	39	195	609	3073	328	6823
PEAK HOUR	**161**	**44**	**38**	**24**	**2240**	**41**	**31**	**39**	**195**	**609**	**3073**	**328**	**6823**

Heavies

Peak Time	NORTH Tramway Dr			WEST Narellan Rd			SOUTH Mount Annan Dr			EAST Narellan Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1600 - 1700	1	0	0	0	68	0	0	0	0	0	95	3	167
1615 - 1715	1	0	0	0	66	0	0	0	0	0	101	2	170
1630 - 1730	2	0	0	0	61	0	0	0	0	0	82	2	147
1645 - 1745	2	0	0	0	54	0	0	0	0	0	80	2	138
1700 - 1800	2	0	0	0	50	0	0	0	0	0	75	3	130
PEAK HOUR	**2**	**0**	**0**	**0**	**50**	**0**	**0**	**0**	**0**	**0**	**75**	**3**	**130**

Combined

Time Per	NORTH Tramway Dr			WEST Narellan Rd			SOUTH Mount Annan Dr			EAST Narellan Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1600 - 1615	41	8	4	12	540	11	7	4	48	123	699	67	1564
1615 - 1630	46	8	6	5	623	9	12	6	49	109	892	56	1821
1630 - 1645	38	9	8	7	601	10	11	6	65	129	647	68	1599
1645 - 1700	36	9	7	7	512	7	9	12	59	150	736	70	1614
1700 - 1715	52	14	13	2	617	9	6	13	55	160	731	76	1748
1715 - 1730	32	10	9	5	649	15	8	10	53	158	845	84	1878
1730 - 1745	39	9	9	13	569	6	8	7	48	149	758	80	1695
1745 - 1800	40	11	7	4	455	11	9	9	39	142	814	91	1632
Period End	**324**	**78**	**63**	**55**	**4566**	**78**	**70**	**67**	**416**	**1120**	**6122**	**592**	**13551**

Peds

Time Per	NORTH Tramway Dr	WEST Narellan Rd	SOUTH Mount Annan Dr	EAST Narellan Rd	TOT
	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	
1600 - 1615	0	0	0	0	0
1615 - 1630	1	0	0	1	2
1630 - 1645	0	2	0	0	2
1645 - 1700	0	0	0	1	1
1700 - 1715	0	0	0	2	2
1715 - 1730	0	0	0	0	0
1730 - 1745	0	1	0	1	2
1745 - 1800	1	1	0	0	2
Period End	**2**	**4**	**0**	**5**	**11**

Combined

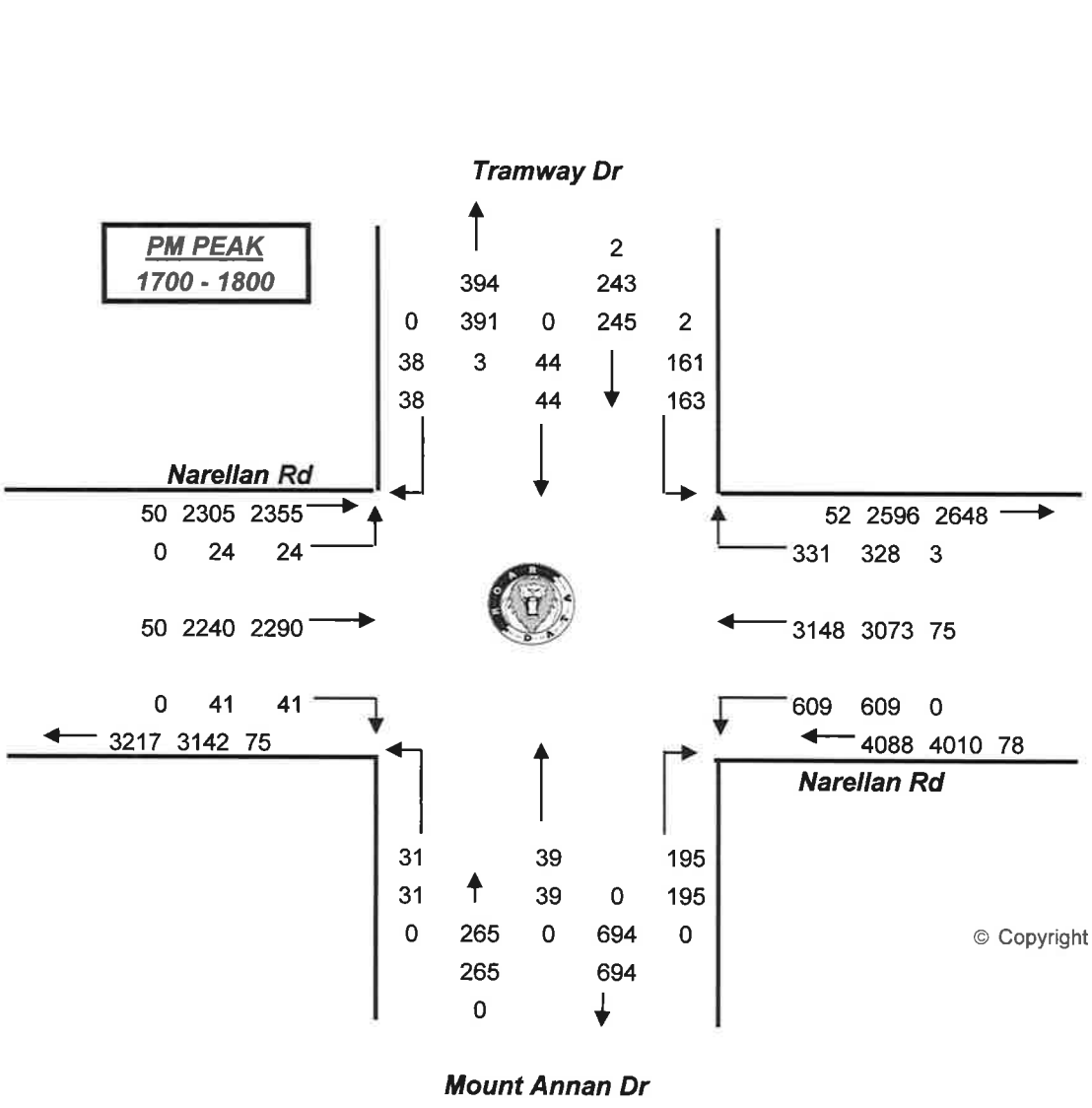
Peak Time	NORTH Tramway Dr			WEST Narellan Rd			SOUTH Mount Annan Dr			EAST Narellan Rd			TOT
	L	T	R	L	T	R	L	T	R	L	T	R	
1600 - 1700	161	34	25	31	2276	37	39	28	221	511	2974	261	6598
1615 - 1715	172	40	34	21	2353	35	38	37	228	548	3006	270	6782
1630 - 1730	158	42	37	21	2379	41	34	41	232	597	2959	298	6839
1645 - 1745	159	42	38	27	2347	37	31	42	215	617	3070	310	6935
1700 - 1800	163	44	38	24	2290	41	31	39	195	609	3148	331	6953
PEAK HOUR	**163**	**44**	**38**	**24**	**2290**	**41**	**31**	**39**	**195**	**609**	**3148**	**331**	**6953**

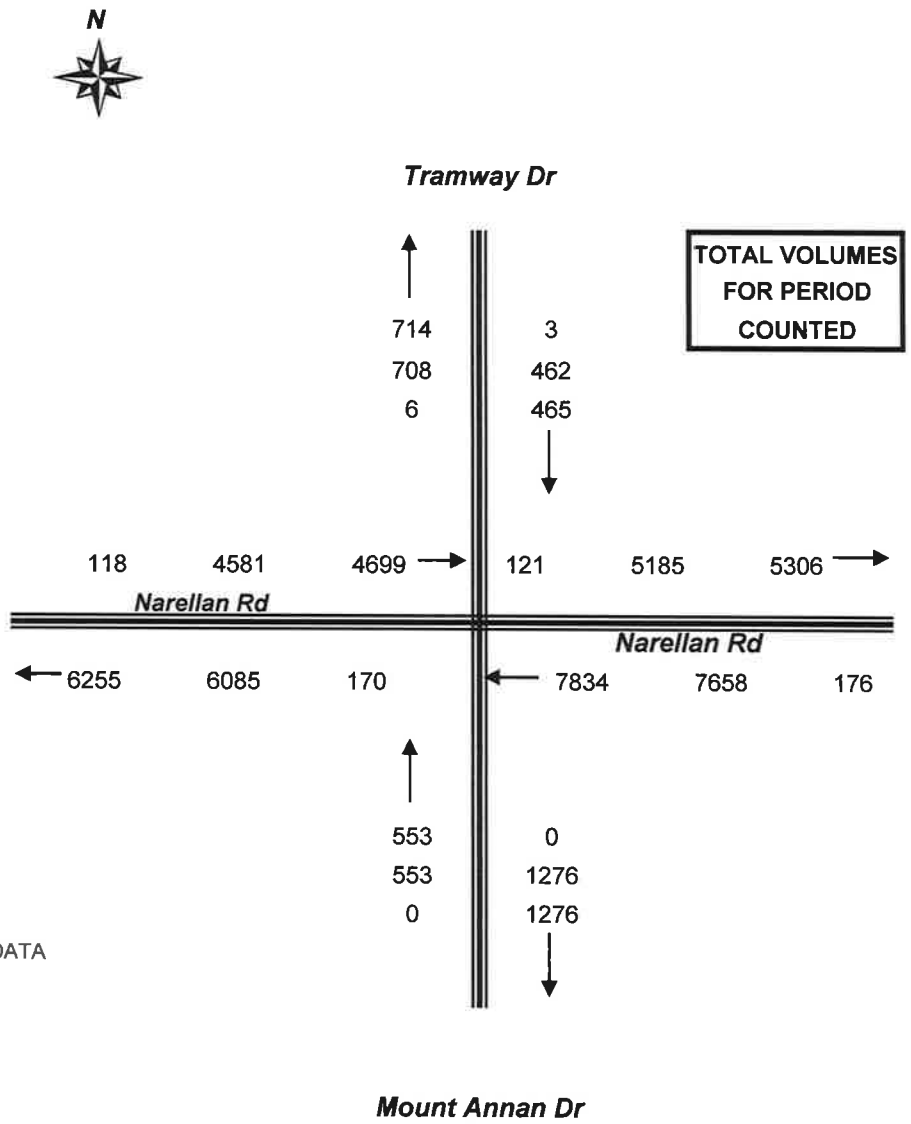
Peds

Peak Per	NORTH Tramway Dr	WEST Narellan Rd	SOUTH Mount Annan Dr	EAST Narellan Rd	TOT
	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	
1600 - 1700	1	2	0	2	5
1615 - 1715	1	2	0	4	7
1630 - 1730	0	2	0	3	5
1645 - 1745	0	1	0	4	5
1700 - 1800	1	2	0	3	6
PEAK HR	**1**	**2**	**0**	**3**	**6**

R.O.A.R DATA
Reliable, Original & Authentic Results
Ph.88196847, Mob. 0418 239019

Client : TUPA
Job No/Name : 6939 CURRANS HILL Tramway Dr
Day/Date : Wednesday 24th October 2018





R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob. 0418 239019

Client : TUPA
Job No/Name : 5672 MT. ANNAN Hartley Rd
Day/Date : Thursday 25th June 2015

Lights

	NORTH			WEST			SOUTH			EAST			
	Hartley Rd			*Narellan Rd*			*Waterworth Dr*			*Narellan Rd*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0630 - 0645	45	17	16	29	386	10	12	73	159	47	185	63	**1042**
0645 - 0700	59	19	17	51	283	28	21	93	234	84	254	87	**1230**
0700 - 0715	82	40	23	35	298	16	27	70	212	39	195	83	**1120**
0715 - 0730	57	29	15	50	252	11	36	71	179	64	233	46	**1043**
0730 - 0745	58	34	11	45	301	37	24	115	149	77	258	52	**1161**
0745 - 0800	62	56	24	51	268	22	22	116	169	77	285	51	**1203**
0800 - 0815	60	59	63	37	194	25	22	110	161	96	207	69	**1103**
0815 - 0830	48	65	34	43	220	36	24	93	144	107	284	69	**1167**
Period End	**471**	**319**	**203**	**341**	**2202**	**185**	**188**	**741**	**1407**	**591**	**1901**	**520**	**9069**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Hartley Rd			*Narellan Rd*			*Waterworth Dr*			*Narellan Rd*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0630 - 0645	16	0	0	1	27	0	0	2	4	2	10	8	**70**
0645 - 0700	22	6	0	2	12	1	0	1	2	6	17	13	**82**
0700 - 0715	26	0	3	1	16	1	2	1	2	4	19	8	**83**
0715 - 0730	15	5	0	0	18	0	0	1	3	1	15	8	**66**
0730 - 0745	14	4	2	0	15	0	1	4	3	4	23	14	**84**
0745 - 0800	28	3	1	3	19	1	0	1	5	0	12	11	**84**
0800 - 0815	22	4	5	1	8	1	2	1	4	4	23	11	**86**
0815 - 0830	16	1	2	2	11	0	0	2	1	3	21	9	**68**
Period End	**159**	**23**	**13**	**10**	**126**	**4**	**5**	**13**	**24**	**24**	**140**	**82**	**623**

Lights

	NORTH			WEST			SOUTH			EAST			
	Hartley Rd			*Narellan Rd*			*Waterworth Dr*			*Narellan Rd*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0630 - 0730	243	105	71	165	1219	65	96	307	784	234	867	279	**4435**
0645 - 0745	256	122	66	181	1134	92	108	349	774	264	940	268	**4554**
0700 - 0800	259	159	73	181	1119	86	109	372	709	257	971	232	**4527**
0715 - 0815	237	178	113	183	1015	95	104	412	658	314	983	218	**4510**
0730 - 0830	228	214	132	176	983	120	92	434	623	357	1034	241	**4634**
PEAK HOUR	**228**	**214**	**132**	**176**	**983**	**120**	**92**	**434**	**623**	**357**	**1034**	**241**	**4634**

Heavies

	NORTH			WEST			SOUTH			EAST			
	Hartley Rd			*Narellan Rd*			*Waterworth Dr*			*Narellan Rd*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0630 - 0730	79	11	3	4	73	2	2	5	11	13	61	37	**301**
0645 - 0745	77	15	5	3	61	2	3	7	10	15	74	43	**315**
0700 - 0800	83	12	6	4	68	2	3	7	13	9	69	41	**317**
0715 - 0815	79	16	8	4	60	2	3	7	15	9	73	44	**320**
0730 - 0830	80	12	10	6	53	2	3	8	13	11	79	45	**322**
PEAK HOUR	**80**	**12**	**10**	**6**	**53**	**2**	**3**	**8**	**13**	**11**	**79**	**45**	**322**

Combined

	NORTH			WEST			SOUTH			EAST			
	Hartley Rd			*Narellan Rd*			*Waterworth Dr*			*Narellan Rd*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0630 - 0645	61	17	16	30	413	10	12	75	163	49	195	71	**1112**
0645 - 0700	81	25	17	53	295	29	21	94	236	90	271	100	**1312**
0700 - 0715	108	40	26	36	314	17	29	71	214	43	214	91	**1203**
0715 - 0730	72	34	15	50	270	11	36	72	182	65	248	54	**1109**
0730 - 0745	72	38	13	45	316	37	25	119	152	81	281	66	**1245**
0745 - 0800	90	59	25	54	287	23	22	117	174	77	297	62	**1287**
0800 - 0815	82	63	68	38	202	26	24	111	165	100	230	80	**1189**
0815 - 0830	64	66	36	45	231	36	24	95	145	110	305	78	**1235**
Period End	**630**	**342**	**216**	**351**	**2328**	**189**	**193**	**754**	**1431**	**615**	**2041**	**602**	**9692**

Peds

	NORTH	WEST	SOUTH	EAST	
	Hartley Rd	*Narellan Rd*	*Waterworth Dr*	*Narellan Rd*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0630 - 0645	0	2	0	0	**2**
0645 - 0700	1	0	0	0	**1**
0700 - 0715	0	0	1	0	**1**
0715 - 0730	0	1	0	0	**1**
0730 - 0745	0	2	0	0	**2**
0745 - 0800	1	2	0	1	**4**
0800 - 0815	3	13	0	0	**16**
0815 - 0830	0	2	1	0	**3**
Period End	**5**	**22**	**2**	**1**	**30**

Combined

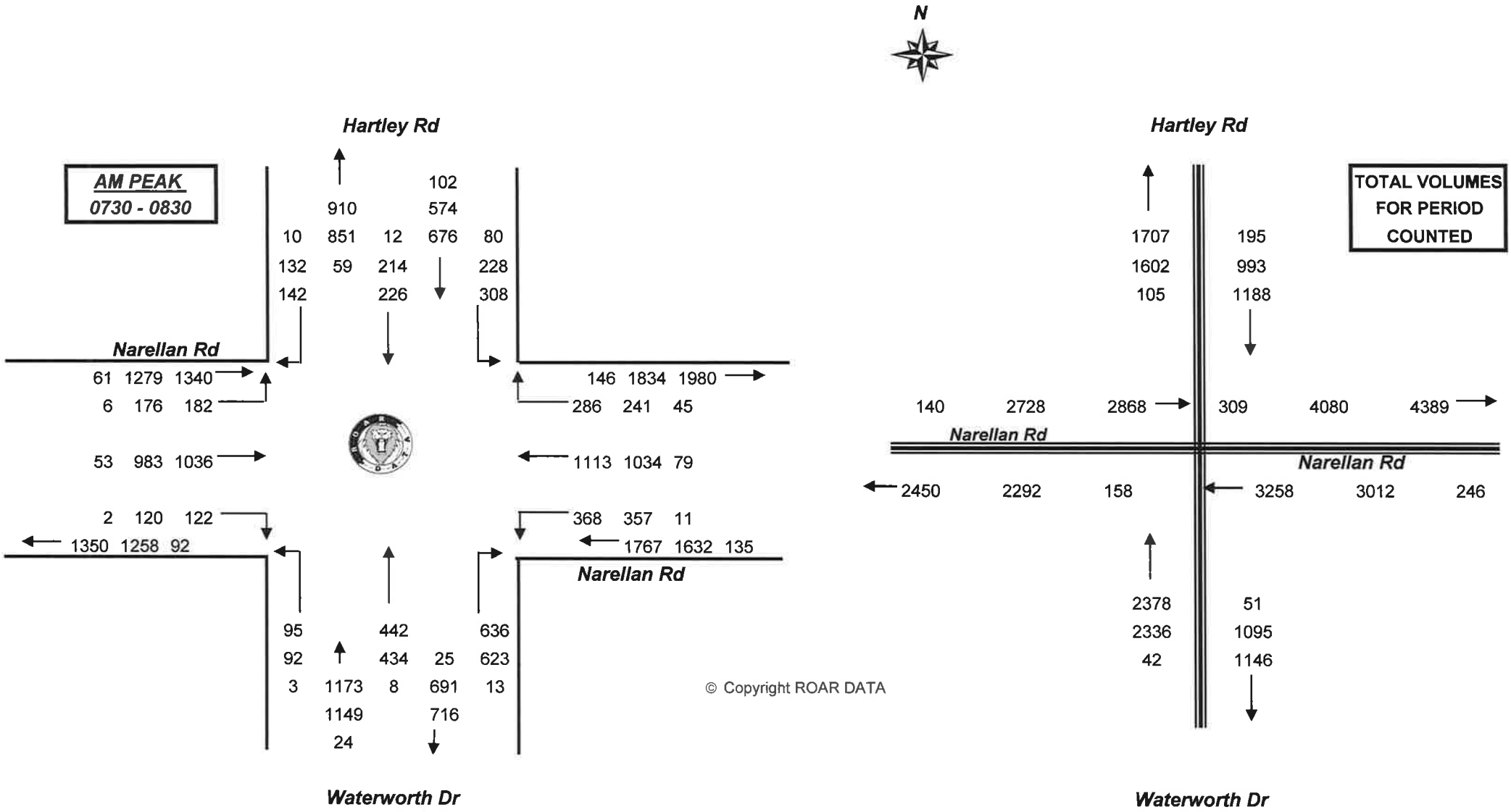
	NORTH			WEST			SOUTH			EAST			
	Hartley Rd			*Narellan Rd*			*Waterworth Dr*			*Narellan Rd*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
0630 - 0730	322	116	74	169	1292	67	98	312	795	247	928	316	**4736**
0645 - 0745	333	137	71	184	1195	94	111	356	784	279	1014	311	**4869**
0700 - 0800	342	171	79	185	1187	88	112	379	722	266	1040	273	**4844**
0715 - 0815	316	194	121	187	1075	97	107	419	673	323	1056	262	**4830**
0730 - 0830	308	226	142	182	1036	122	95	442	636	368	1113	286	**4956**
PEAK HOUR	**308**	**226**	**142**	**182**	**1036**	**122**	**95**	**442**	**636**	**368**	**1113**	**286**	**4956**

Peds

	NORTH	WEST	SOUTH	EAST	
	Hartley Rd	*Narellan Rd*	*Waterworth Dr*	*Narellan Rd*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
0630 - 0730	1	3	1	0	**5**
0645 - 0745	1	3	1	0	**5**
0700 - 0800	1	5	1	1	**8**
0715 - 0815	4	18	0	1	**23**
0730 - 0830	4	19	1	1	**25**
PEAK HR	**4**	**19**	**1**	**1**	**25**

R.O.A.R DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob. 0418 239019

Client : TUPA
Job No/Name : 5672 MT. ANNAN Hartley Rd
Day/Date : Thursday 25th June 2015



R.O.A.R. DATA

Reliable, Original & Authentic Results

Ph.88196847, Fax 88196849, Mob. 0418 239019

Client : TUPA
Job No/Name : 5672 MT. ANNAN Hartley Rd
Day/Date : Thursday 25th June 2015

Lights

	NORTH			WEST			SOUTH			EAST			
	Hartley Rd			*Narellan Rd*			*Waterworth Dr*			*Narellan Rd*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1615	146	126	47	54	339	103	39	77	125	196	336	67	1655
1615 - 1630	109	128	31	46	314	108	27	74	115	199	344	61	1556
1630 - 1645	114	120	35	38	335	98	26	53	97	215	340	59	1530
1645 - 1700	95	146	38	39	286	149	29	53	107	212	294	59	1507
1700 - 1715	118	115	64	34	271	137	34	67	101	221	317	38	1517
1715 - 1730	72	104	26	58	337	134	29	64	86	230	385	61	1586
1730 - 1745	62	126	40	51	365	133	32	80	144	222	375	48	1678
1745 - 1800	81	120	32	25	188	111	25	83	101	192	364	57	1379
Period End	797	985	313	345	2435	973	241	551	876	1687	2755	450	12408

Heavies

	NORTH			WEST			SOUTH			EAST			
	Hartley Rd			*Narellan Rd*			*Waterworth Dr*			*Narellan Rd*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1615	4	2	1	0	8	0	0	0	4	4	19	16	58
1615 - 1630	17	1	1	0	3	0	0	1	1	2	8	10	44
1630 - 1645	12	2	1	1	6	0	1	0	3	3	15	9	53
1645 - 1700	10	0	2	1	6	0	0	1	1	3	25	11	60
1700 - 1715	14	1	0	1	4	0	0	1	2	2	12	6	43
1715 - 1730	13	0	0	1	3	0	0	1	1	2	11	5	37
1730 - 1745	9	2	1	1	4	0	0	0	3	0	6	5	31
1745 - 1800	5	1	1	0	4	0	0	1	1	3	7	3	26
Period End	84	9	7	5	38	0	1	5	16	19	103	65	352

Lights

	NORTH			WEST			SOUTH			EAST			
	Hartley Rd			*Narellan Rd*			*Waterworth Dr*			*Narellan Rd*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1700	464	520	151	177	1274	458	121	257	444	822	1314	246	6248
1615 - 1715	436	509	168	157	1206	492	116	247	420	847	1295	217	6110
1630 - 1730	399	485	163	169	1229	518	118	237	391	878	1336	217	6140
1645 - 1745	347	491	168	182	1259	553	124	264	438	885	1371	206	6288
1700 - 1800	333	465	162	168	1161	515	120	294	432	865	1441	204	6160
PEAK HOUR	464	520	151	177	1274	458	121	257	444	822	1314	246	6248

Heavies

	NORTH			WEST			SOUTH			EAST			
	Hartley Rd			*Narellan Rd*			*Waterworth Dr*			*Narellan Rd*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1700	43	5	5	2	23	0	1	2	9	12	67	46	215
1615 - 1715	53	4	4	3	19	0	1	3	7	10	60	36	200
1630 - 1730	49	3	3	4	19	0	1	3	7	10	63	31	193
1645 - 1745	46	3	3	4	17	0	0	3	7	7	54	27	171
1700 - 1800	41	4	2	3	15	0	0	3	7	7	36	19	137
PEAK HOUR	43	5	5	2	23	0	1	2	9	12	67	46	215

Combined

	NORTH			WEST			SOUTH			EAST			
	Hartley Rd			*Narellan Rd*			*Waterworth Dr*			*Narellan Rd*			
Time Per	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1615	150	128	48	54	347	103	39	77	129	200	355	83	1713
1615 - 1630	126	129	32	46	317	108	27	75	116	201	352	71	1600
1630 - 1645	126	122	36	39	341	98	27	53	100	218	355	68	1583
1645 - 1700	105	146	40	40	292	149	29	54	108	215	319	70	1567
1700 - 1715	132	116	64	35	275	137	34	68	103	223	329	44	1560
1715 - 1730	85	104	26	59	340	134	29	65	87	232	396	66	1623
1730 - 1745	71	128	41	52	369	133	32	80	147	222	381	53	1709
1745 - 1800	86	121	33	25	192	111	25	84	102	195	371	60	1405
Period End	881	994	320	350	2473	973	242	556	892	1706	2858	515	12760

Peds

	NORTH	WEST	SOUTH	EAST	
	Hartley Rd	*Narellan Rd*	*Waterworth Dr*	*Narellan Rd*	
Time Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1600 - 1615	0	1	0	1	2
1615 - 1630	1	1	0	0	2
1630 - 1645	0	0	0	0	0
1645 - 1700	1	0	0	0	1
1700 - 1715	0	2	0	2	4
1715 - 1730	0	0	1	0	1
1730 - 1745	0	1	0	0	1
1745 - 1800	0	0	0	0	0
Period End	2	5	1	3	11

Combined

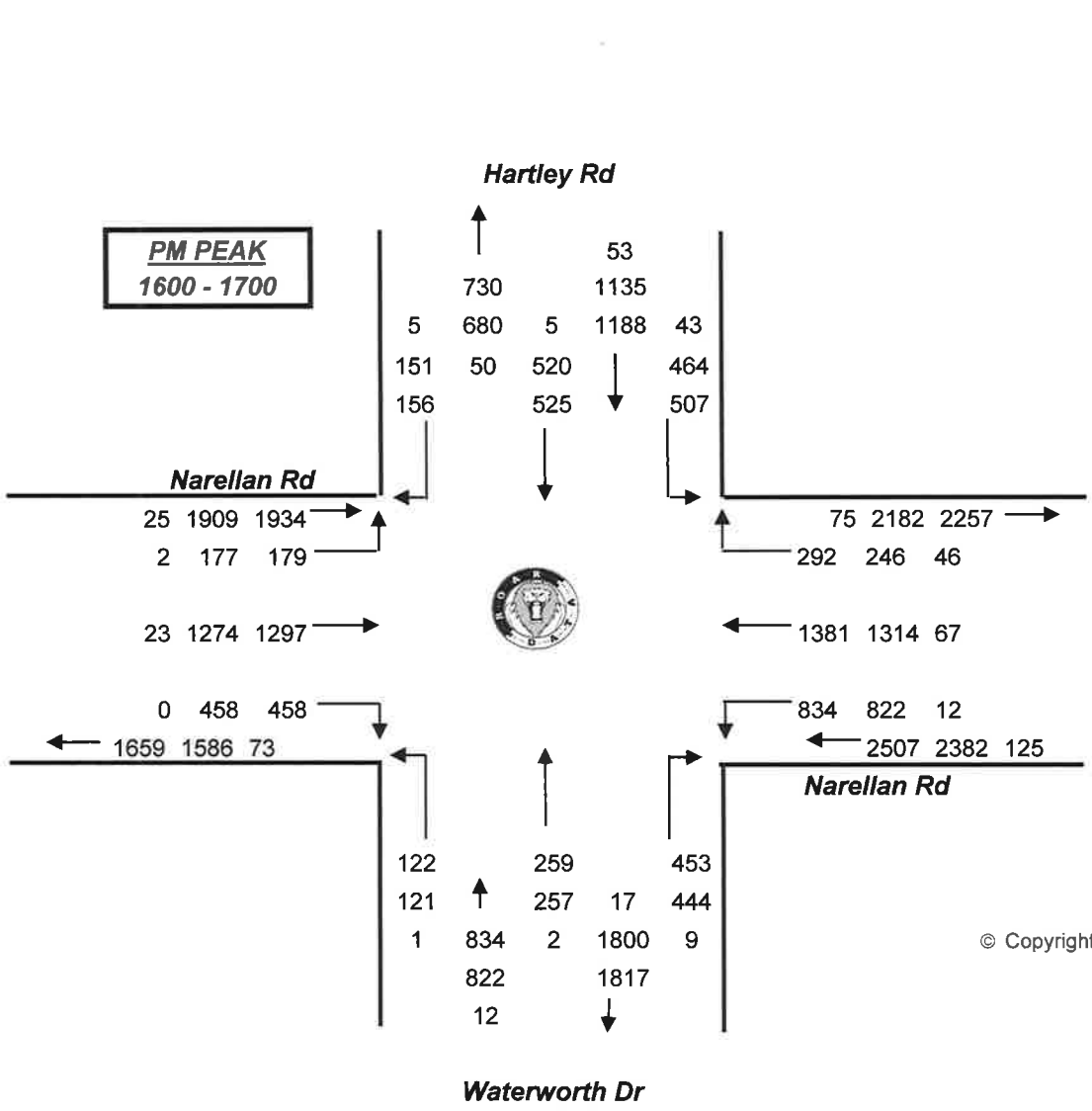
	NORTH			WEST			SOUTH			EAST			
	Hartley Rd			*Narellan Rd*			*Waterworth Dr*			*Narellan Rd*			
Peak Time	L	T	R	L	T	R	L	T	R	L	T	R	TOT
1600 - 1700	507	525	156	179	1297	458	122	259	453	834	1381	292	6463
1615 - 1715	489	513	172	160	1225	492	117	250	427	857	1355	253	6310
1630 - 1730	448	488	166	173	1248	518	119	240	398	888	1399	248	6333
1645 - 1745	393	494	171	186	1276	553	124	267	445	892	1425	233	6459
1700 - 1800	374	469	164	171	1176	515	120	297	439	872	1477	223	6297
PEAK HOUR	507	525	156	179	1297	458	122	259	453	834	1381	292	6463

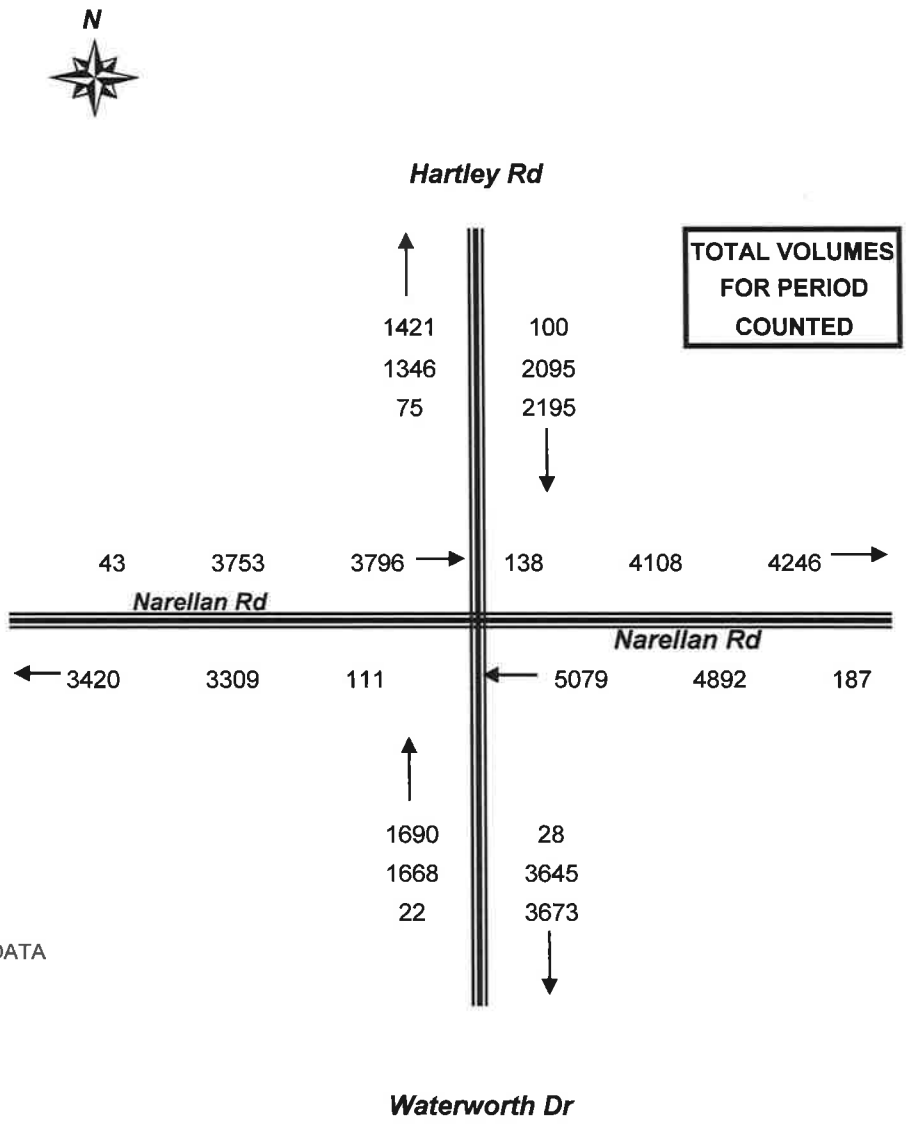
Peds

	NORTH	WEST	SOUTH	EAST	
	Hartley Rd	*Narellan Rd*	*Waterworth Dr*	*Narellan Rd*	
Peak Per	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	TOT
1600 - 1700	2	2	0	1	5
1615 - 1715	2	3	0	2	7
1630 - 1730	1	2	1	2	6
1645 - 1745	1	3	1	2	7
1700 - 1800	0	3	1	2	6
PEAK HR	2	2	0	1	5

R.O.A.R DATA
Reliable, Original & Authentic Results
Ph.88196847, Fax 88196849, Mob. 0418 239019

Client : TUPA
Job No/Name : 5672 MT. ANNAN Hartley Rd
Day/Date : Thursday 25th June 2015



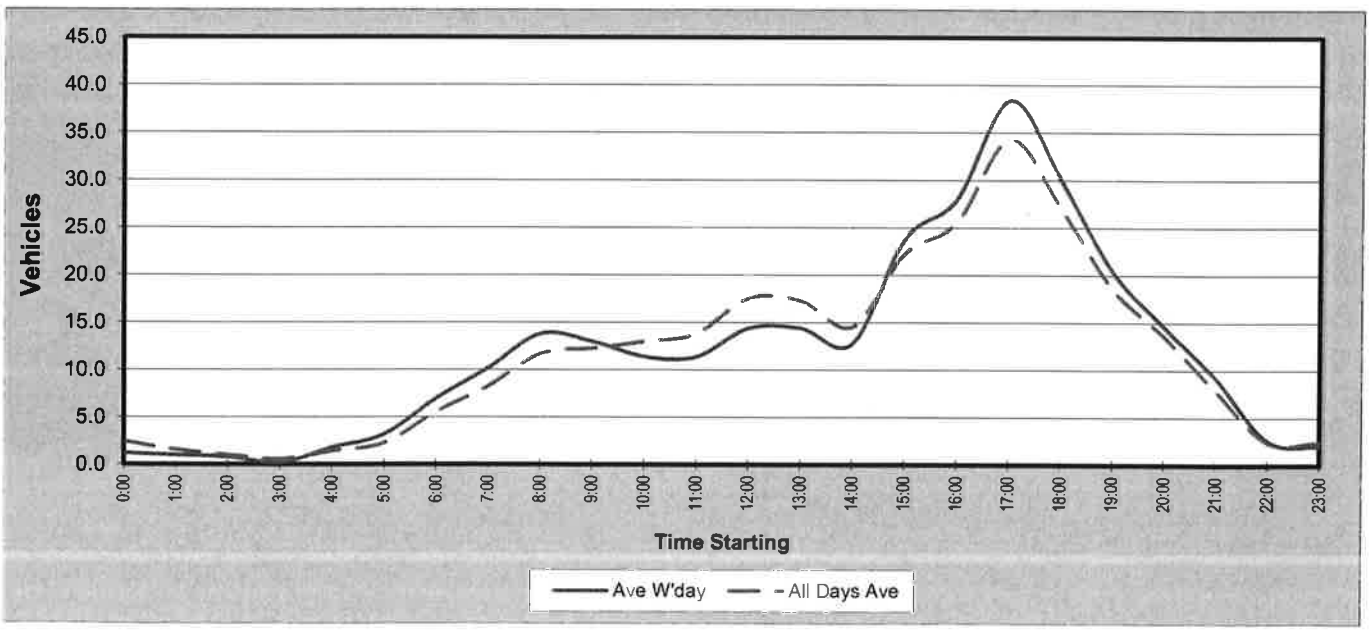


austraffic

Road	Ascot Drive
Location	At Turner Road (North/South of Turner Road)
Suburb	Currans Hill
Site No.	850304
Start Date	Friday 26/10/2018
Direction	Northbound

Average Weekday	286
All Day Average	277
Weekday Heavy's	13.2%
All Day Heavy's	12.1%

Starting Time	Day of Week							Ave W'day	All Days Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	29-Oct	30-Oct	31-Oct	1-Nov	26-Oct	27-Oct	28-Oct		
AM Peak	**13**	**21**	**20**	**16**	**16**	**18**	**23**		
PM Peak	**32**	**39**	**43**	**41**	**39**	**26**	**26**		
0:00	0	0	1	2	3	4	7	1	2
1:00	1	1	0	2	1	1	5	1	2
2:00	0	1	2	1	0	2	1	1	1
3:00	1	0	0	0	0	1	2	0	1
4:00	2	4	0	2	1	1	0	2	1
5:00	4	2	4	1	5	0	0	3	2
6:00	5	5	9	10	6	2	2	7	6
7:00	12	7	14	9	9	5	2	10	8
8:00	8	15	20	16	10	6	7	14	12
9:00	11	21	13	14	6	7	14	13	12
10:00	7	13	8	13	16	18	16	11	13
11:00	13	11	11	7	15	17	23	11	14
12:00	22	10	12	14	14	26	25	14	18
13:00	15	13	11	21	12	23	26	14	17
14:00	15	17	12	9	11	19	19	13	15
15:00	28	22	20	20	29	17	20	24	22
16:00	32	26	25	35	22	17	22	28	26
17:00	30	39	43	41	39	23	25	38	34
18:00	25	34	23	35	33	26	13	30	27
19:00	18	19	20	23	22	19	9	20	19
20:00	16	12	13	20	12	16	6	15	14
21:00	10	9	10	9	8	6	3	9	8
22:00	3	2	2	4	2	4	0	3	2
23:00	2	0	2	4	2	5	2	2	2
Total	**280**	**283**	**275**	**312**	**278**	**265**	**249**	**286**	**277**
% Heavies	**13.9%**	**14.8%**	**11.3%**	**12.8%**	**12.9%**	**9.8%**	**8.4%**	**13.2%**	**12.1%**

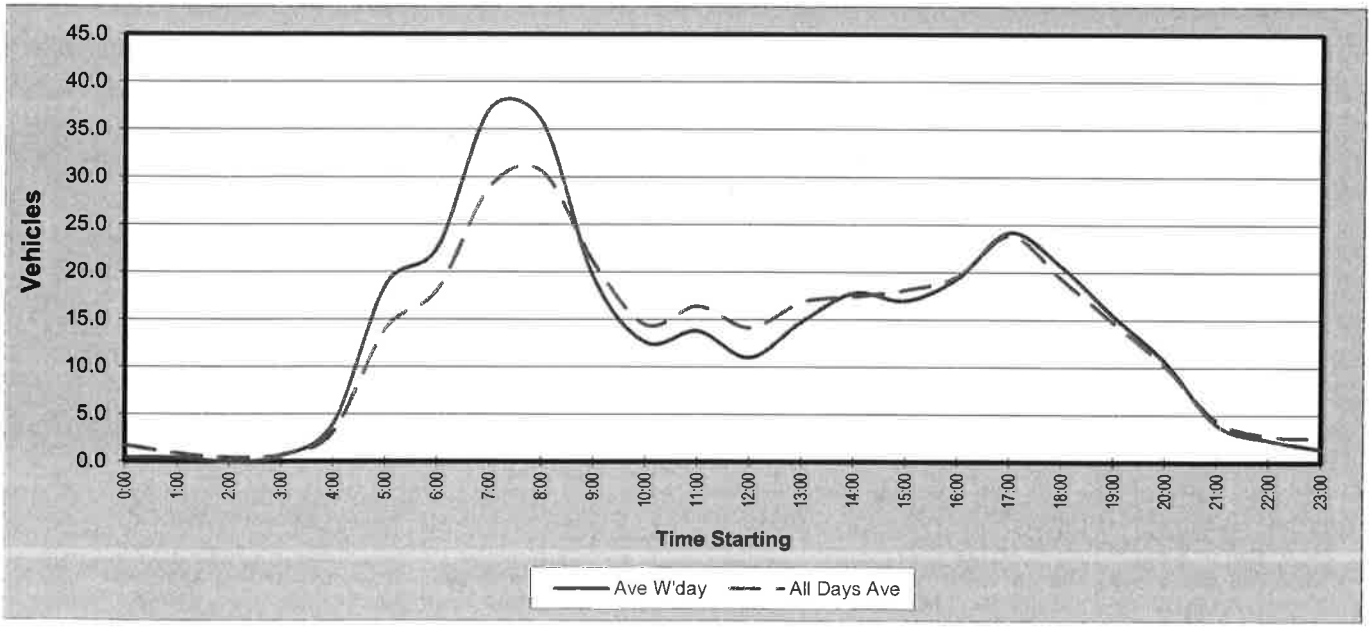


austraffic

Road	Ascot Drive
Location	At Turner Road (North/South of Turner Road)
Suburb	Currans Hill
Site No.	850304
Start Date	Friday 26/10/2018
Direction	Southbound

Average Weekday	324
All Day Average	314
Weekday Heavy's	8.0%
All Day Heavy's	7.0%

Starting Time	Day of Week							Ave W'day	All Days Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	29-Oct	30-Oct	31-Oct	1-Nov	26-Oct	27-Oct	28-Oct		
AM Peak	37	39	45	36	39	27	27		
PM Peak	25	25	26	26	26	23	29		
0:00	0	0	1	1	0	2	8	0	2
1:00	1	1	0	0	0	1	3	0	1
2:00	0	0	0	0	0	1	2	0	0
3:00	1	1	0	0	1	1	1	1	1
4:00	6	5	3	2	4	0	2	4	3
5:00	15	16	18	21	23	4	1	19	14
6:00	23	24	22	25	19	10	4	23	18
7:00	37	36	41	33	39	10	7	37	29
8:00	31	39	45	36	28	24	11	36	31
9:00	21	23	24	16	13	23	27	19	21
10:00	16	11	9	15	12	15	23	13	14
11:00	12	10	20	11	16	27	19	14	16
12:00	13	7	13	8	14	20	24	11	14
13:00	18	12	14	13	17	21	23	15	17
14:00	20	18	20	17	14	16	17	18	17
15:00	18	20	14	14	19	13	29	17	18
16:00	25	20	18	21	13	20	20	19	20
17:00	19	25	26	25	26	23	23	24	24
18:00	21	19	16	26	21	21	11	21	19
19:00	14	18	14	13	18	17	9	15	15
20:00	9	7	11	14	12	13	5	11	10
21:00	6	2	1	3	8	10	1	4	4
22:00	5	1	1	4	1	7	1	2	3
23:00	0	0	1	1	5	9	2	1	3
Total	**331**	**315**	**332**	**319**	**323**	**308**	**273**	**324**	**314**
% Heavies	**10.0%**	**7.0%**	**9.0%**	**6.6%**	**7.4%**	**3.6%**	**4.4%**	**8.0%**	**7.0%**

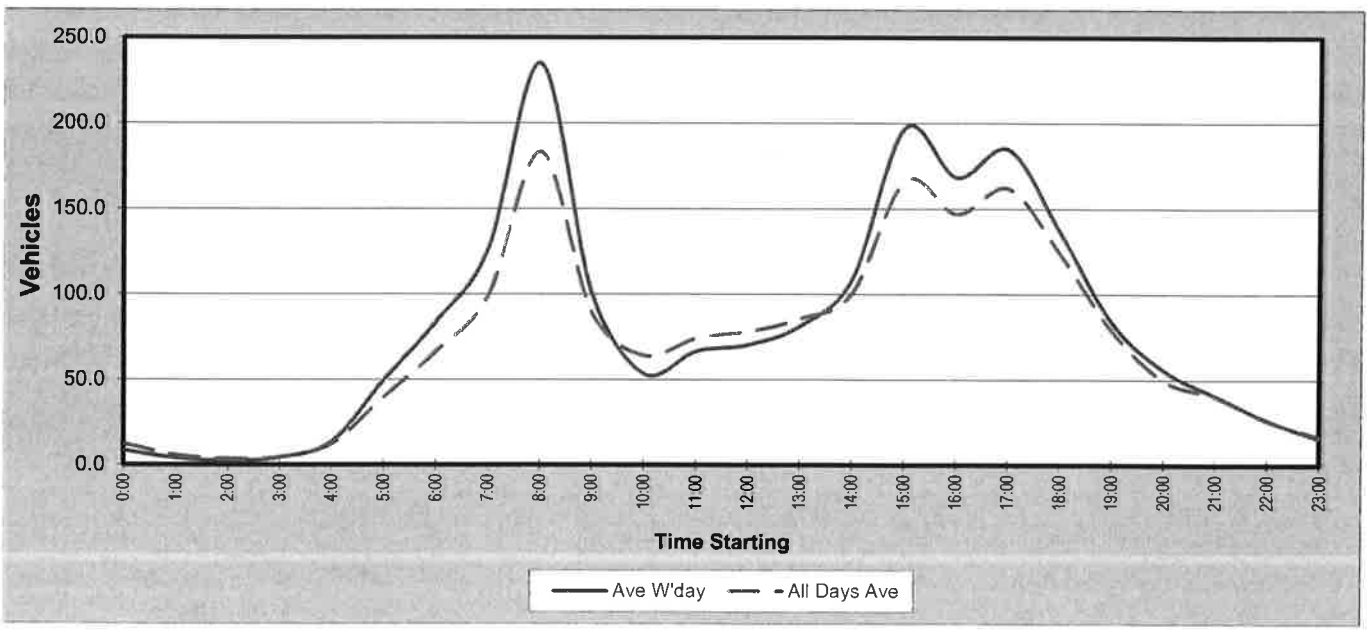


austraffic

Road	Tramway Drive
Location	At Currans Hill Drive
Suburb	Currans Hill
Site No.	850302
Start Date	Friday 26/10/2018
Direction	Northbound

Average Weekday	1918
All Day Average	1728
Weekday Heavy's	4.6%
All Day Heavy's	4.1%

Starting Time	Day of Week							Ave W'day	All Days Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	29-Oct	30-Oct	31-Oct	1-Nov	26-Oct	27-Oct	28-Oct		
AM Peak	**235**	**217**	**250**	**230**	**243**	**104**	**93**		
PM Peak	**190**	**206**	**209**	**210**	**181**	**116**	**96**		
0:00	6	5	11	11	9	23	21	8	12
1:00	2	4	1	6	7	13	7	4	6
2:00	2	0	3	3	4	8	6	2	4
3:00	4	3	4	5	6	6	4	4	5
4:00	15	15	12	12	15	14	5	14	13
5:00	39	59	58	48	45	21	9	50	40
6:00	89	87	79	85	80	33	13	84	67
7:00	134	124	131	130	114	42	19	127	99
8:00	235	217	250	230	243	79	26	235	183
9:00	116	102	84	105	95	75	46	100	89
10:00	34	69	46	53	65	104	78	53	64
11:00	57	69	65	68	74	93	93	67	74
12:00	67	69	70	71	75	107	88	70	78
13:00	67	87	67	88	98	97	96	81	86
14:00	116	90	95	116	127	89	71	109	101
15:00	190	196	209	210	181	108	68	197	166
16:00	173	170	189	149	161	99	88	168	147
17:00	174	206	196	179	168	116	94	185	162
18:00	131	121	156	141	132	104	80	136	124
19:00	80	69	97	89	83	67	65	84	79
20:00	41	65	72	44	56	41	28	56	50
21:00	30	28	42	48	56	46	31	41	40
22:00	21	20	21	29	41	36	14	26	26
23:00	8	15	7	19	29	32	7	16	17
Total	**1831**	**1890**	**1965**	**1939**	**1964**	**1453**	**1057**	**1918**	**1728**
% Heavies	**5.0%**	**5.1%**	**4.7%**	**4.7%**	**3.5%**	**2.5%**	**2.2%**	**4.6%**	**4.1%**

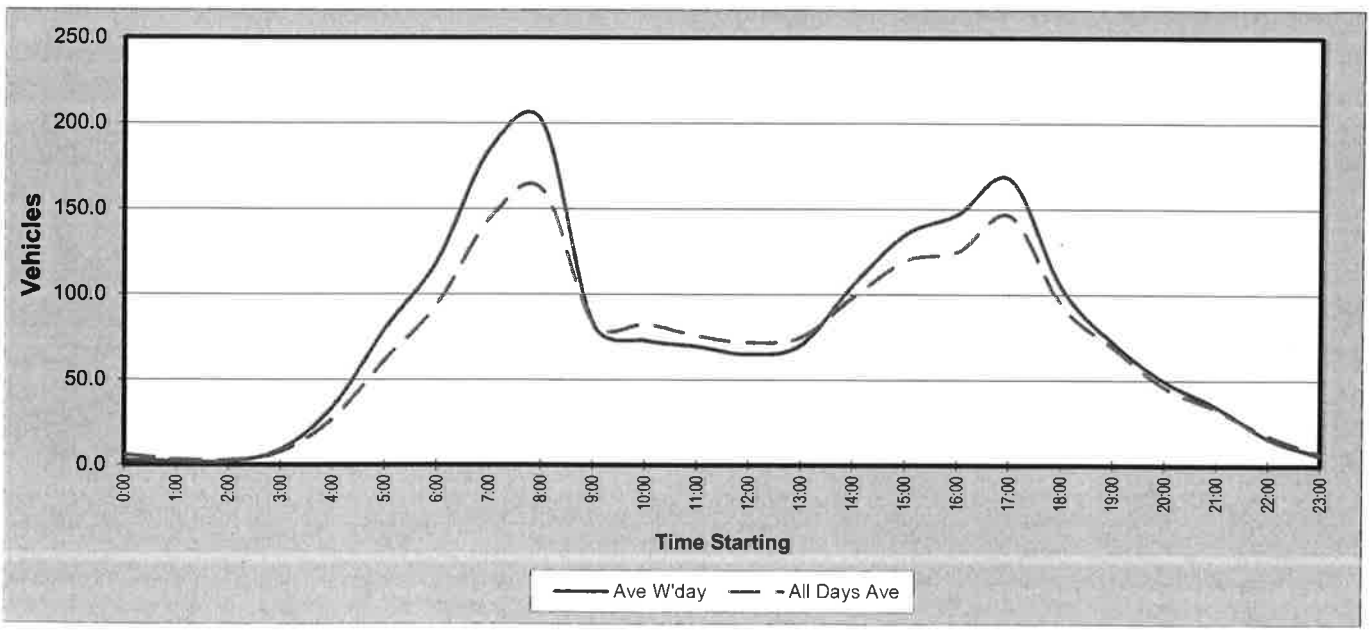


austraffic

Road	Tramway Drive
Location	At Currans Hill Drive
Suburb	Currans Hill
Site No.	850302
Start Date	Friday 26/10/2018
Direction	Southbound

Average Weekday	1834
All Day Average	1653
Weekday Heavy's	3.5%
All Day Heavy's	3.1%

Starting Time	Day of Week							Ave W'day	All Days Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	29-Oct	30-Oct	31-Oct	1-Nov	26-Oct	27-Oct	28-Oct		
AM Peak	**193**	**200**	**238**	**206**	**190**	**110**	**102**		
PM Peak	**148**	**159**	**182**	**194**	**168**	**110**	**84**		
0:00	3	0	2	4	4	8	21	3	6
1:00	1	4	3	1	1	5	7	2	3
2:00	2	3	1	1	3	6	3	2	3
3:00	9	9	12	7	9	7	2	9	8
4:00	36	33	37	33	31	11	9	34	27
5:00	71	79	82	89	78	23	10	80	62
6:00	123	119	111	134	112	47	13	120	94
7:00	185	200	189	188	164	56	27	185	144
8:00	193	178	238	206	190	70	56	201	162
9:00	90	88	85	76	74	97	74	83	83
10:00	75	81	71	68	70	110	102	73	82
11:00	62	68	73	79	66	96	85	70	76
12:00	72	49	59	75	70	92	84	65	72
13:00	75	57	70	72	79	101	72	71	75
14:00	100	100	93	104	132	101	60	106	99
15:00	123	127	141	135	150	97	64	135	120
16:00	148	112	171	160	144	67	72	147	125
17:00	134	159	182	194	168	110	76	167	146
18:00	90	92	125	103	112	78	58	104	94
19:00	61	70	89	78	62	74	51	72	69
20:00	28	46	63	49	61	45	29	49	46
21:00	27	29	40	39	38	42	17	35	33
22:00	14	16	8	16	26	37	6	16	18
23:00	6	6	0	5	13	12	7	6	7
Total	**1728**	**1725**	**1945**	**1916**	**1857**	**1392**	**1005**	**1834**	**1653**
% Heavies	**3.7%**	**3.9%**	**3.5%**	**3.2%**	**3.1%**	**1.9%**	**1.4%**	**3.5%**	**3.1%**

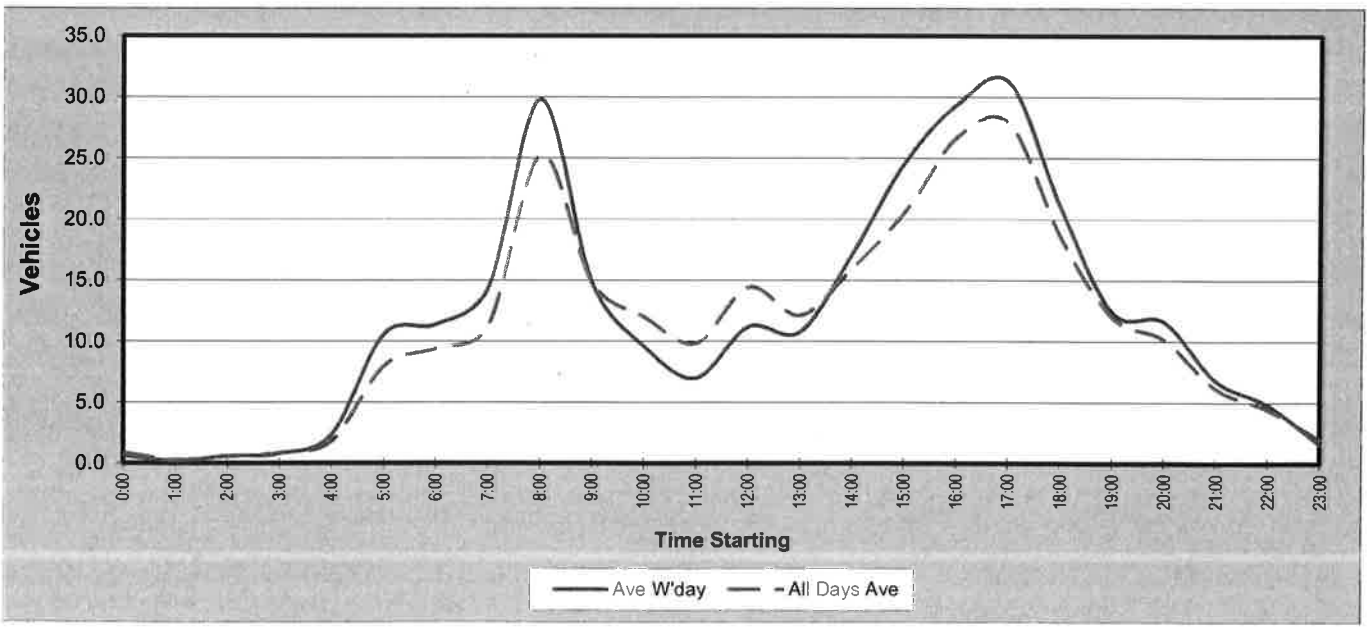


austraffic

Road	Turner Road
Location	At Ascot Drive (West of Ascot Dr)
Suburb	Currans Hill
Site No.	850303
Start Date	Friday 26/10/2018
Direction	Eastbound

Average Weekday	285
All Day Average	266
Weekday Heavy's	2.5%
All Day Heavy's	2.3%

Starting Time	Day of Week							Ave W'day	All Days Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	29-Oct	30-Oct	31-Oct	1-Nov	26-Oct	27-Oct	28-Oct		
AM Peak	**27**	**32**	**30**	**34**	**26**	**19**	**18**		
PM Peak	**27**	**34**	**38**	**31**	**34**	**31**	**19**		
0:00	1	1	0	0	1	0	3	1	1
1:00	1	0	0	0	0	0	1	0	0
2:00	0	2	1	0	0	0	1	1	1
3:00	1	1	0	0	2	0	2	1	1
4:00	2	3	3	4	0	0	1	2	2
5:00	11	11	8	11	12	2	1	11	8
6:00	15	10	9	11	12	7	2	11	9
7:00	13	13	23	12	11	6	1	14	11
8:00	27	32	30	34	26	19	9	30	25
9:00	13	21	15	13	12	13	17	15	15
10:00	11	8	5	11	13	18	18	10	12
11:00	7	2	8	9	9	19	15	7	10
12:00	12	10	11	15	8	31	14	11	14
13:00	13	8	9	15	9	16	15	11	12
14:00	19	17	19	15	16	13	13	17	16
15:00	27	24	20	22	30	9	12	25	21
16:00	23	34	30	29	31	21	19	29	27
17:00	27	26	38	31	34	20	19	31	28
18:00	14	23	26	21	21	14	11	21	19
19:00	7	13	25	11	6	12	10	12	12
20:00	9	7	13	17	12	10	3	12	10
21:00	9	8	3	9	5	8	1	7	6
22:00	2	5	4	4	9	6	1	5	4
23:00	0	0	1	5	2	6	0	2	2
Total	**264**	**279**	**301**	**299**	**281**	**250**	**189**	**285**	**266**
% Heavies	**1.9%**	**2.2%**	**2.3%**	**3.3%**	**2.8%**	**2.0%**	**1.1%**	**2.5%**	**2.3%**

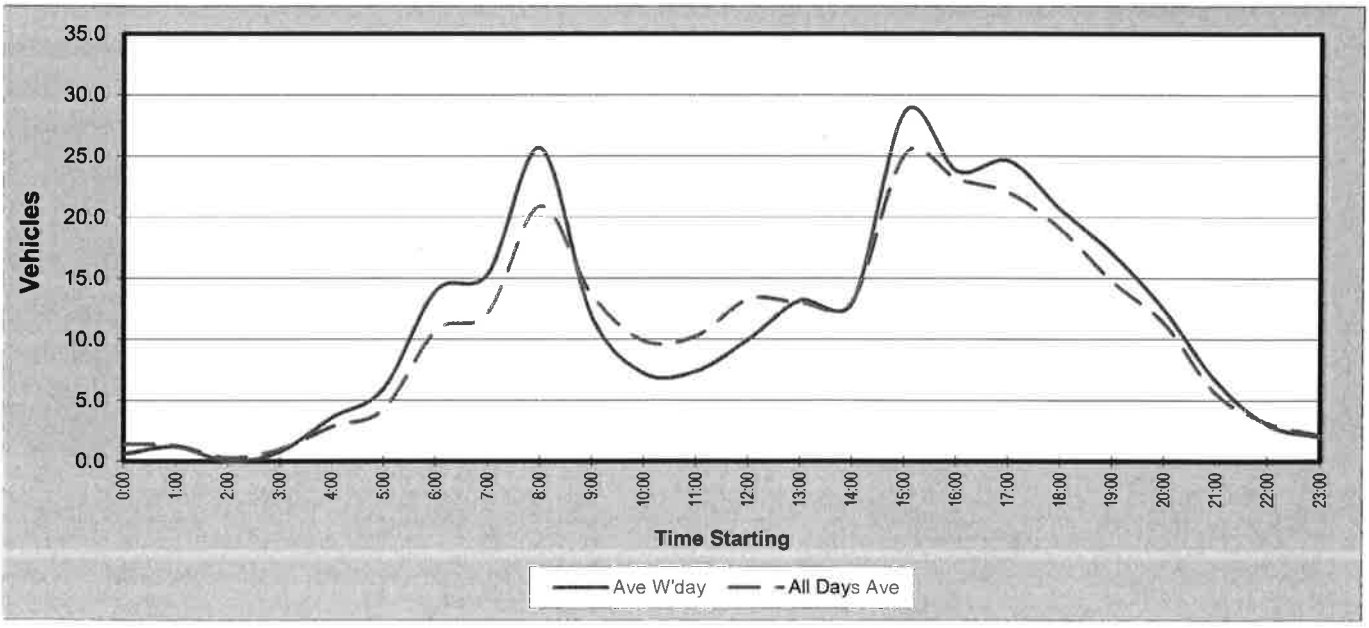


austraffic

Road	Turner Road
Location	At Ascot Drive (West of Ascot Dr)
Suburb	Currans Hill
Site No.	850303
Start Date	Friday 26/10/2018
Direction	Westbound

Average Weekday	268
All Day Average	254
Weekday Heavy's	2.4%
All Day Heavy's	2.0%

Starting Time	Day of Week							Ave W'day	All Days Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	29-Oct	30-Oct	31-Oct	1-Nov	26-Oct	27-Oct	28-Oct		
AM Peak	**27**	**24**	**26**	**26**	**25**	**21**	**17**		
PM Peak	**27**	**26**	**30**	**30**	**32**	**25**	**21**		
0:00	1	1	0	0	1	4	3	1	1
1:00	2	1	1	1	1	0	3	1	1
2:00	0	0	0	0	0	1	1	0	0
3:00	1	2	0	0	1	1	2	1	1
4:00	2	4	4	5	3	1	1	4	3
5:00	7	6	6	3	8	0	0	6	4
6:00	16	14	15	15	10	3	2	14	11
7:00	12	19	11	17	18	6	2	15	12
8:00	27	24	26	26	25	11	7	26	21
9:00	11	14	12	12	10	21	15	12	14
10:00	5	4	14	9	4	16	17	7	10
11:00	12	2	5	9	9	18	17	7	10
12:00	10	5	12	12	11	25	18	10	13
13:00	13	9	15	16	13	9	16	13	13
14:00	13	15	13	16	8	16	11	13	13
15:00	27	26	30	28	32	17	16	29	25
16:00	23	26	15	30	25	22	21	24	23
17:00	26	25	27	21	24	15	16	25	22
18:00	17	19	26	28	13	16	14	21	19
19:00	13	14	25	20	13	8	10	17	15
20:00	10	14	17	11	10	10	7	12	11
21:00	6	6	6	7	8	5	1	7	6
22:00	1	4	5	2	3	7	0	3	3
23:00	1	3	2	2	2	4	1	2	2
Total	**256**	**257**	**287**	**290**	**252**	**236**	**201**	**268**	**254**
% Heavies	**3.1%**	**2.7%**	**2.4%**	**1.4%**	**2.4%**	**0.8%**	**1.0%**	**2.4%**	**2.0%**

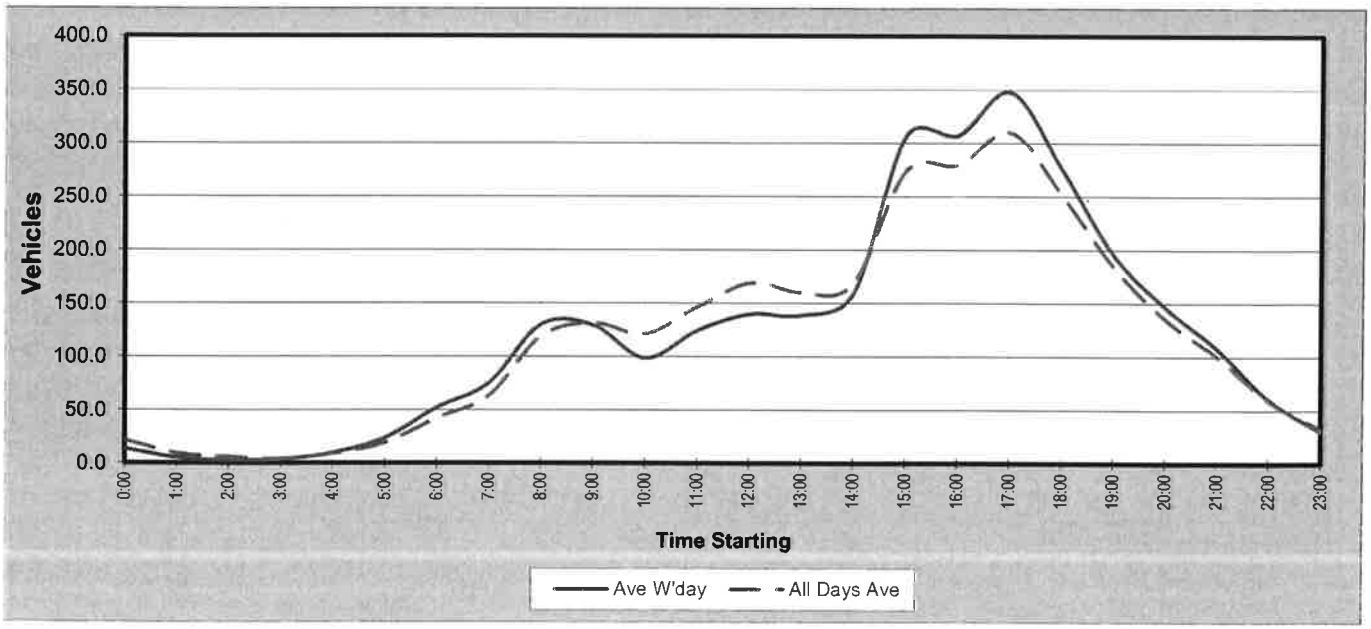


austraffic

Road	Currans Hill Drive
Location	East of Tramway Drive
Suburb	Currans Hill
Site No.	850301
Start Date	Friday 26/10/2018
Direction	Eastbound

Average Weekday	2885
All Day Average	2817
Weekday Heavy's	4.6%
All Day Heavy's	4.3%

Starting Time	Day of Week							Ave W'day	All Days Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	29-Oct	30-Oct	31-Oct	1-Nov	26-Oct	27-Oct	28-Oct		
AM Peak	**132**	**152**	**140**	**138**	**142**	**214**	**187**		
PM Peak	**338**	**374**	**335**	**336**	**356**	**260**	**224**		
0:00	10	10	17	12	19	35	47	14	21
1:00	3	4	4	6	9	16	23	5	9
2:00	1	4	4	1	3	11	16	3	6
3:00	5	2	4	3	5	2	7	4	4
4:00	11	15	6	10	7	11	4	10	9
5:00	21	25	26	26	21	6	10	24	19
6:00	48	57	52	60	44	25	11	52	42
7:00	72	69	91	68	77	44	24	75	64
8:00	132	111	128	138	142	112	70	130	119
9:00	125	152	140	112	118	166	108	129	132
10:00	106	77	95	95	120	201	153	99	121
11:00	114	120	140	112	137	214	187	125	146
12:00	125	136	136	130	172	260	224	140	169
13:00	132	133	141	144	144	217	207	139	160
14:00	170	143	149	151	184	203	184	159	169
15:00	307	291	326	283	327	209	176	307	274
16:00	315	301	320	294	306	225	192	307	279
17:00	338	374	335	336	356	226	205	348	310
18:00	252	264	307	288	266	207	176	275	251
19:00	173	184	218	199	204	158	154	196	184
20:00	117	125	186	174	130	134	81	146	135
21:00	75	96	128	131	111	108	55	108	101
22:00	33	57	53	76	82	82	30	60	59
23:00	16	27	24	35	49	60	16	30	32
Total	**2701**	**2777**	**3030**	**2884**	**3033**	**2932**	**2360**	**2885**	**2817**
% Heavies	**5.0%**	**5.1%**	**4.1%**	**4.2%**	**4.7%**	**3.5%**	**3.1%**	**4.6%**	**4.3%**

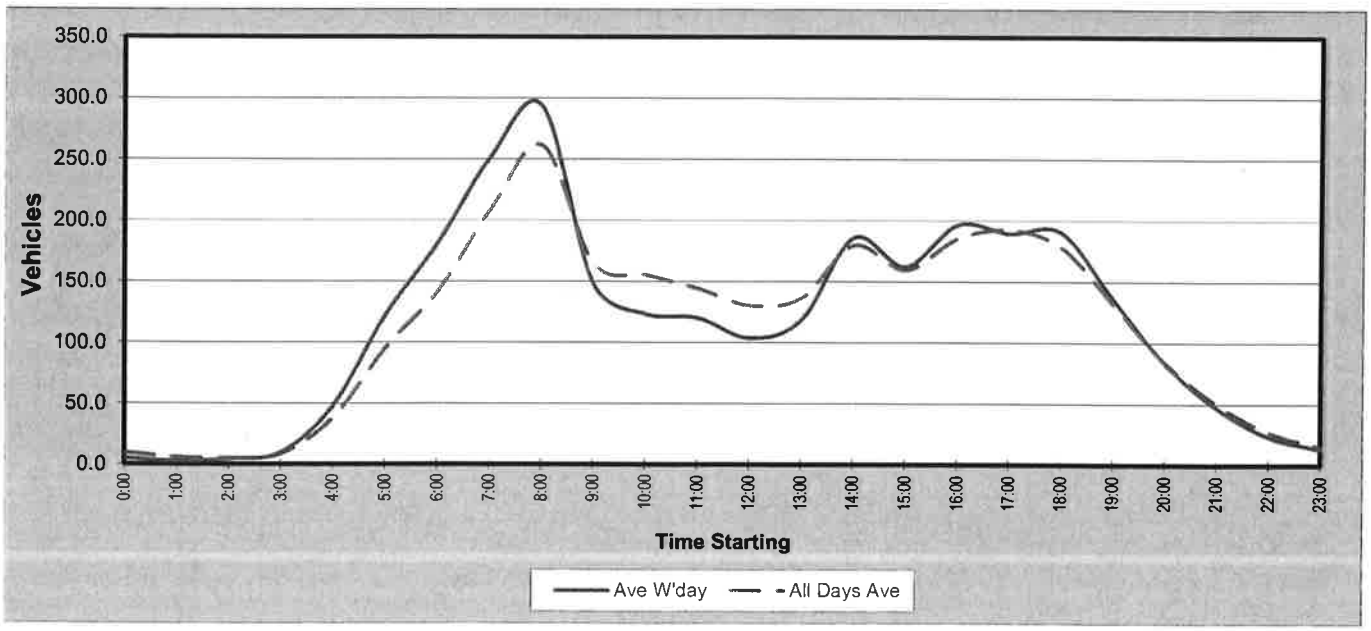


austraffic

Road	Currans Hill Drive
Location	East of Tramway Drive
Suburb	Currans Hill
Site No.	850301
Start Date	Friday 26/10/2018
Direction	Westbound

Average Weekday	2760
All Day Average	2710
Weekday Heavy's	5.5%
All Day Heavy's	5.0%

Starting Time	Day of Week							Ave W'day	All Days Ave
	Mon	Tue	Wed	Thu	Fri	Sat	Sun		
	29-Oct	30-Oct	31-Oct	1-Nov	26-Oct	27-Oct	28-Oct		
AM Peak	**284**	**291**	**318**	**276**	**299**	**245**	**225**		
PM Peak	**202**	**187**	**222**	**200**	**216**	**211**	**194**		
0:00	4	2	5	9	5	13	30	5	10
1:00	3	3	2	4	1	10	19	3	6
2:00	4	7	5	2	4	3	9	4	5
3:00	10	8	12	9	10	5	6	10	9
4:00	47	51	48	51	43	14	13	48	38
5:00	116	115	124	136	121	41	15	122	95
6:00	170	180	194	192	171	66	21	181	142
7:00	253	260	257	246	241	133	70	251	209
8:00	284	291	318	276	299	219	143	294	261
9:00	144	145	163	135	154	225	187	148	165
10:00	135	134	103	107	138	245	225	123	155
11:00	105	111	141	123	121	218	192	120	144
12:00	86	89	106	105	133	200	194	104	130
13:00	121	116	127	98	131	195	171	119	137
14:00	180	184	174	183	208	163	165	186	180
15:00	147	155	167	156	186	167	140	162	160
16:00	202	176	219	186	200	177	138	197	185
17:00	145	187	200	200	216	211	188	190	192
18:00	164	178	222	179	208	173	123	190	178
19:00	108	125	174	139	133	137	106	136	132
20:00	61	71	90	94	101	113	58	83	84
21:00	38	47	50	40	61	81	35	47	50
22:00	18	23	16	24	36	54	19	23	27
23:00	8	7	10	14	27	34	6	13	15
Total	**2553**	**2665**	**2927**	**2708**	**2948**	**2897**	**2273**	**2760**	**2710**
% Heavies	**5.5%**	**5.6%**	**5.1%**	**5.6%**	**5.4%**	**4.2%**	**3.3%**	**5.5%**	**5.0%**



Annexure "G"
Landscape Plans

PLAN
1:750

LOT42 PARK PLAN
1:200

LEGEND

- SITE BOUNDARY
- ROCK WORK / RIP RAP
- SANDSTONE BLOCK WALL
- ACCESS PATH
- EXISTING CULVERT (APPROXIMATE LOCATION BASED ON AERIAL)
- EXISTING CREEKLINE (APPROXIMATE LOCATION BASED ON AERIAL)
- EXISTING TREES TO BE RETAINED (APPROXIMATE LOCATION BASED ON AERIAL)
- STREET TREE PLANTING
- RIPARIAN TREE PLANTING
- ZONE 1: LOW FLOW AREAS
- ZONE 2: DETENTION BASIN BATTERS
- ZONE 3: REVEGETATION
- VERGE
- ROCK DROP STRUCTURES

INDICATIVE PLANT LIST

STREETSCAPES

Symbol	Botanical Name	Common Name
	STREET TREE PLANTING	
	Trisaniopsis laurina	Water Gum
	Elaeocarpus eumundi	Quandong
	Waterhousia floribunda	Weeping Lilly Pilly

RIPARIAN ZONE PLANTING

Symbol	Botanical Name	Common Name
	TREE PLANTING	
	Eucalyptus tereticornis	Forest Red Gum
	Angophora floribunda	Rough-Barked Apple
	SEDGES	
	Baumea articulata	Jointed Twig-rush
	Bolboschenus fluviatilis	Marsh Club-rush
	Carex appressa	Tall Sedge
	Juncus usitatus	Common Rush
	SEDGES, RUSH, REEDS & GRASSES	
	Carex appressa	Tall Sedge
	Dianella longifolia	Blueberry Lily
	Juncus usitatus	Common Rush
	NATIVE GRASSES AND GROUNDCOVERS	
	Dichondra repens	Kidney Weed
	Microleana stipoides	Weeping Meadow Grass
	Rytidosperma racemosa	Wallaby Grass

DIALOGUE

1. 1:5 Turf embankment provides a transition from road to park
2. Open turf kickabout area centrally located
3. Screen planting to edge of park provides a buffer to residential lot
4. Exercise area for groups to meet
5. Public Art opportunity
6. Timber viewing deck with seating
7. 3000mm wide shared path

DRAFT

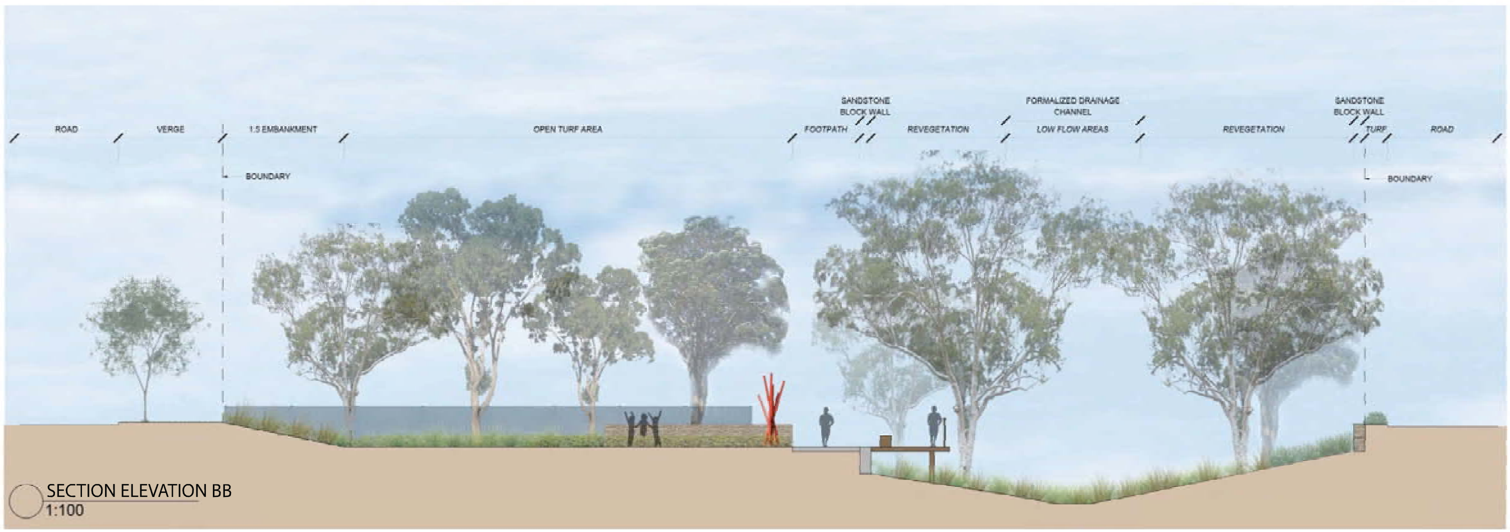
TaylorBrammer

TURNER ROAD
CURRENS HILL

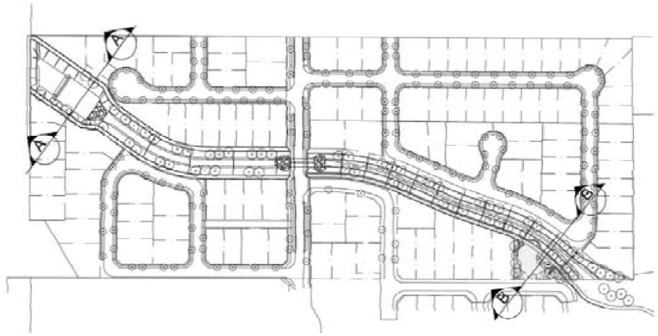
DARTANYON PTY LTD

LC01 F

SECTION ELEVATION AA
1:100



SECTION ELEVATION BB
1:100



KEY PLAN

DRAFT

ISSUE	DESCRIPTION	DATE
B	For DA Submission 1. Section CC Removed. Footpaths removed from sections.	29.10.2019
A	For DA Submission	14.10.2019

TaylorBrammer

PROJECT:
TURNER ROAD
CURRENS HILL

DRAWING TITLE:
LANDSCAPE CROSS SECTIONS

CLIENT:
DARTANYON PTY LTD

DRAWING NO. LC02
REVISION B

Annexure "H"
Flooding Impacts and Stormwater Management Assessment