# TRAFFIC AND ACCESS ASSESSMENTS TO ACCOMPANY A DEVELOPMENT APPLICATION

# FOR

# REZONING AND MASTERPLAN TO PROVIDE RESIDENTIAL AND INDEPENDENT LIVING ON SMALLS ROAD GRASMERE

Ref. 11131r

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# 1.0 INTRODUCTION

This report has been prepared as a Traffic Impact Assessment on behalf of the applicant "Carrington Centennial Care Board" to accompany a proposed rezoning and development masterplan for staged residential development to be located off Smalls Road at Grasmere.

The current land use zoning for the Smalls Road site was adopted by Camden Council in 2006 after a significant master planning and negotiation process. Recent discussions by the Carrington Centennial Care Board have highlighted that the currently approved land use zonings and master plan do not adequately provide for the long term growth of the various aged care facilities that Carrington envisages being required for the area and being able to provide on their sites.

Consequently, Carrington Centennial Care Board has initiated a review of the current master plan for the Smalls Road site. Once agreement has been reached with Camden Council on the contents and direction of the Master Plan, this will be followed by more detailed local environmental studies to inform the subsequent land use rezoning investigations.

The longer term proposal detailed in this application involves a residential development comprising:

- 112 independent living units;
- 95 apartment units; and
- 120 bed aged car facility.

In addition the non residential uses (conceptual at this stage) comprise:-

- A 30 place child care facility;
- Administration centre (including specialist medical rooms for visiting doctors) and cafe.

Access is proposed from Smalls Road at 2 locations and from Werombi Road left in / out only at 1 location.

These assessments have been prepared in accordance with the aims and objectives of State Environmental Planning Policy Infrastructure ISEPP and in accordance with the guidelines and procedures for traffic generating developments as prepared by the Traffic Authority of NSW 2002 Ver 2.0.

This report also references the planning controls of Camden Council and considers the following matters:

- The site and adjoining road layouts;
- Vehicular access to Smalls Road and Werombi Road;
- Public transport provisions;
- Traffic Generation; and
- Future traffic impacts and car parking requirements.

This study is based on the site master plan and the site layouts prepared by Jackson Teece Architects.

# 2.0 SITE DETAILS

## 2.1 Site Location

The subject land, approximately 27 hectares in area, is located on the western side of Werombi Road and south side of Smalls Road of Camden township with access from Smalls Road west of the Werombi Road roundabout.

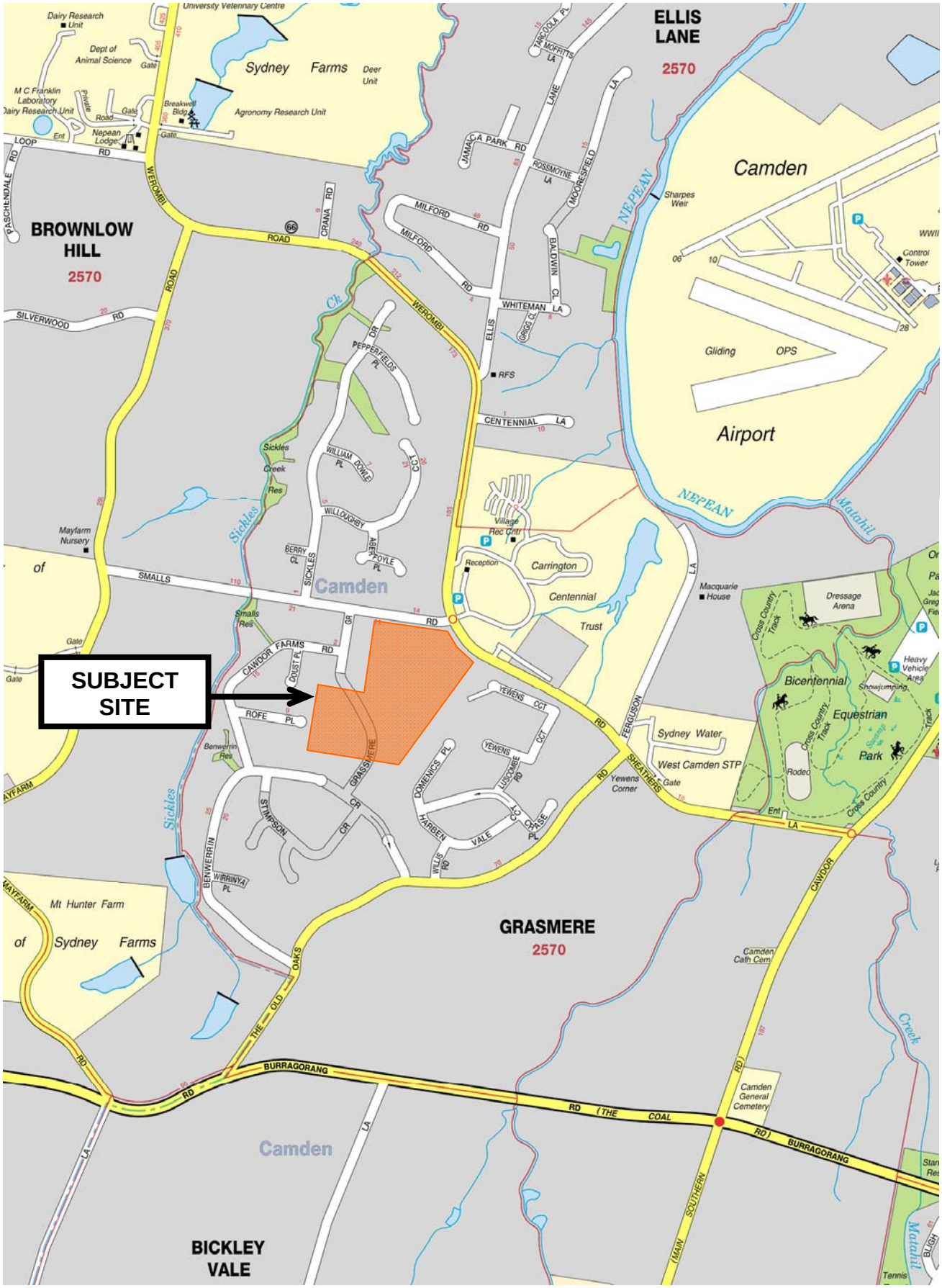
The location of the land in the regional context is shown in **Figure 1** and in the local context in **Figure 2**.

## 2.2 Site Description and Existing Development

Except for minor rural improvements the subject land is described as Lot 201 in DP 734620, the site is currently vacant with a moderate level of scrub and light tree vegetation.

## 2.3 Adjoining Development

Adjoining developments consist primarily of historic Carrington Village and buildings to the north east and newer freestanding residential and rural residential dwellings to the north, west and south.

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**N**

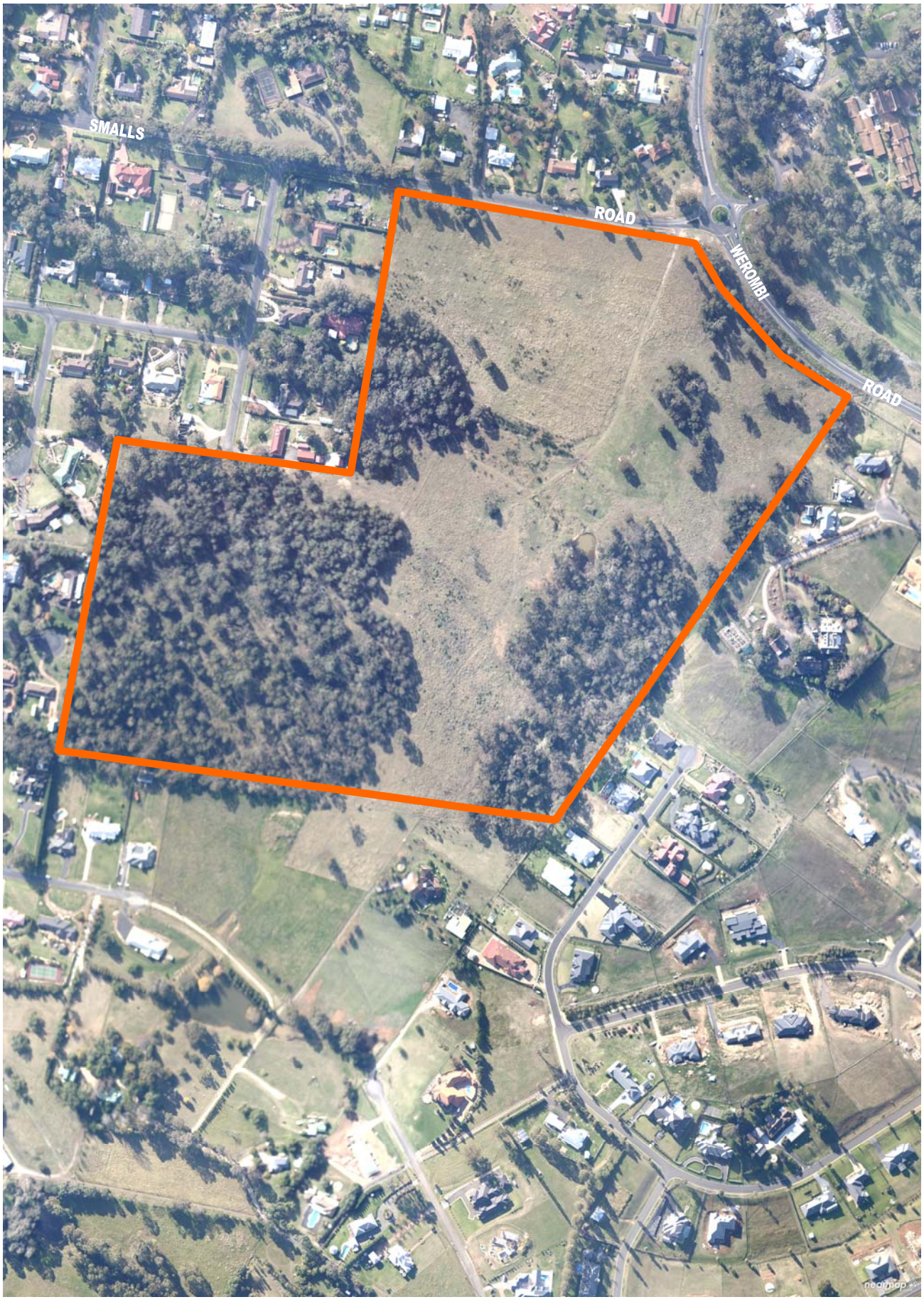
**NOT TO SCALE**

# FIGURE 1

WEROMBI ROAD AND SMALLS ROAD, GRASMERE

## SITE LOCATION

JOB NO. 11131

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# FIGURE 2

WEROMBI ROAD AND SMALLS ROAD, GRASMERE

## SUBJECT SITE

JOB NO. 11131

# 3.0 DEVELOPMENT PROPOSAL

## 3.1 Development Concept

The concept Masterplan is designed to integrate the proposed development elements:

**Vehicular connectivity**

The plan proposed two access points along Smalls Road, one main entrance and the other a secondary entry point. An additional entry from Werombi Road is proposed primarily as a service access.

**Pedestrian connectivity**

A key feature of the concept Masterplan is the north-south pedestrian walkway "spine" through the centre of the site. This connects to a pedestrian walk proposed at the Carrington Centennial Care sites to the north of Werombi Road providing a continuous link to facilities and amenities between the sites to their residents. The pedestrian link is to be made via a proposed pedestrian crossing at/or to the south of the Werombi Road Smalls Road roundabout.

**Built Form**

The Masterplan proposal involves a mix of medium density units and an aged care residential facility as shown in the concept layout plan (**Appendix 1**) prepared by Jackson Teece Architects.

The ultimate staged development proposes a mix of medium density (1 to 2 bedroom) and residential dwelling, non residential proposals including:

- 112 independent living units;
- 95 apartment units;
- 120 bed aged car facility;
- 30 place child care facility; and
- Administration centre (including specialist medical rooms) and cafe.

## 3.2 Road Layout and Guideline Standards

The internal and private road layout is proposed generally in accordance with Landcom and Council Subdivision Guidelines where a hierarchical road network is essential to maximise road safety, residential amenity and legibility. Access roads within the site will serve a distinct set of residential functions and will be designed accordingly. The design will convey to motorists the predominant low volume, low speed function of the internal streetscape.

Within the site the access roads will reflect a role in the road hierarchy by its visual appearance and related physical design standards. Access roads will 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 junctions that a resident or visitor is required to undertake to reach a particular address within the development will be minimised.

Low speeds are desirable in lightly trafficked access roads to protect pedestrian / cyclists and allow them to share the accessway with vehicles

Existing bus services to the Grasmere area may be extended from Smalls Road into the site to loop around inside the proposed development. Future bus stops will be within acceptable walking distance of all dwellings.

The aims of the proposed road system within the site 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, emergency and service vehicles.
- A quality product that minimises maintenance costs.
- An opportunity for street landscaping.
- Convenient parking for visitors.

Landcom via Amcord Guidelines recommends the following standards for the various classes of roads in new subdivisions including private roads.

## 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 |

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<br>Street<br>Street | 25<br>40<br>40 | 100<br>200 environmental goal<br>300 maximum |
| Collector | Street<br>Street | 50<br>50 | 300 environmental goal<br>500 maximum |

The development proposes an access street design and carriageway width (including kerbing) in accordance with Council's sub division code, i.e. AADT <500 veh/day and carriageway width nominally 5.0m to 6.0m.

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

- The streets intersect at right angles;
- The landform allows clear sight distance on each of the approach legs of the intersection;
- The minor street intersects the convex side of the major street;
- 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.

## 3.3 Council Guidelines

Camden Council DCP 2011 for residential subdivisions indicates amongst other development standards that:-

The provision of a road system within a subdivision is to be designed so as to achieve the following aims:

- Provide convenient and safe access to all allotments for pedestrians, vehicles and cyclists;
- Provide safe, logical and hierarchical transport linkages with the existing street system;
- Provide appropriate access for buses, emergency and service vehicles;
- Provide for a quality product that minimises maintenance costs;
- Provide a convenient way for public utilities;
- Provide an opportunity for street landscaping;
- Provide convenient parking for visitors;
- Have appropriate regard for the climate, geology and topography of the area.

- **Car Parking**

1. The parking requirements for normal levels of activity associated with any land use should be accommodated on site in accordance with Camden Shire Council's Development Control Plan 2011 and development conditions.

2. All off street parking should be designed in accordance with Development Control Plan 2006 Part D Car Parking which indicates:

| | |
|---|---|
| SEPP (Seniors Living) 2004: | |
| (a) Crown Development | 1 space per 5 dwellings |
| (b) Private Self Contained Units | 0.5 spaces for dwellings less than $55m^2$<br>0.85 spaces for dwellings between $55m^2$ and $85m^2$<br>1 spaces for dwellings greater than $85m^2$ |
| (c) Nursing/Hostel<br>Convalescent Homes | 1 per 10 beds; plus<br>1 per 2 employees; plus<br>1 ambulance space |

- **Bus Routes**

1. Council will normally identify bus routes. Roads identified as bus routes shall be designed to local distributor standards.

**TABLE 3.1**

**BUS BAY AND BUS SHELTER REQUIREMENTS**

| Road | Carriageway Width (Min) | Stops (Spacings) | Bays |
|---|---|---|---|
| Access | 9m | 400 metre* | Single |
| Collector | 11m | 400 metre | Shelters ** and Bays |
| Local Distributor | 13m | 400 metre | Shelters ** and Bays |

** Loop Roads with single entry/exit only require stops and bays on one side road.*
*** Shelters are subject to Council's requirements.*

## 3.4 Access

The site is accessed via Werombi Road, thence Smalls Road. Two way access and pedestrian access to the site is proposed from Smalls Road at 2 locations firstly approximately 80 metres west of Werombi Road and secondly approximately 200 metres west of Werombi Road.

Left turn only in / out service vehicle access is also proposed from Werombi Road at the southern end of the site. It is likely that a central median will be required at this access to provide a right turn movement. Pedestrian only access is proposed to Werombi Road at the northern end of the site utilising the existing roundabout splitter islands as a refuge to cross Werombi Road to the east side of Werombi Road and Carrington Village.

A hierarchy of entry points is provided to ensure efficient access into the development. The main entry into the site is off Smalls Road, from the access point nearest to the Werombi Road, Smalls Road roundabout. This access point is flanked by village centre type development and uses the act as gateways into the site to establish a clearly legible entrance into the development. This main entry provides direct access to the village hub of the development consisting of the commercial and community uses of the site.

A secondary entry is provided further west along Smalls Road. This provides additional access options for the resident on the site and offers them the choice of bypassing the village hub when accessing their dwellings.

A third, primarily service related access point is proposed along Werombi Road. This would provide service access to the Residential Aged Care Facility and commercial/community uses in the village hub avoiding the need for service traffic to travel through the village centre.

### Vehicular circulation

The road network consists of a hierarchy of routes to establish a legible and efficient means of circulation through the site. The roads from the two Smalls Road access points are the primary vehicular circulation routes in the development. These intersect near the centre of the site to form a primary circulation loop that services the southern half of the site.

In the northern half of the site a network of secondary vehicular circulation routes link the primary routes to service the development in this area, establishing a highly permeable road network. In the southern half of the site, secondary spur routes off the primary route services the residential community. Together, the primary and secondary routes provide a highly permeable road network with access to the various uses within the site and the residential communities.

# 4.0 THE EXISTING SITUATION

## 4.1 Access Roads

Werombi Road is an undivided 2 lane semi rural road speed zoned to 60km/h and having a 6.5m – 7.0 metre sealed pavement and includes 1-2 metre gravel shoulders. The existing alignments approaching Smalls Road are curved and undulating with moderate to good sight lines.

Smalls Road is also a 2 lane undivided semi rural road speed zoned to 60km/hr and having a sealed pavement 6.3m to 6.5 metre and 0.5 to 1.0 metre gavel shoulders. The existing alignment west of Werombi Road are generally level and straight.

## 4.2 Existing Intersection

The existing 4 way intersection of Werombi Road, Smalls Road and "Carrington Village" access is conditioned by a one lane roundabout (10 metre annulus).

## 4.3 Existing Traffic Volumes

### 4.3.1 Average Daily Traffic

Existing average Monday – Friday daily traffic volumes on Werombi Road and Smalls Road adjacent to the site are:

- Werombi Road NB 3,000veh/day + SB 3,000veh/day 2 way 6,000veh/day
- Smalls Road EB 750veh/day + WB 750veh/day 2 way 1,500veh/day

### 4.3.2 Peak Hour Volumes

Recent AM and PM peak and Saturday peak hour traffic counts undertaken for the assessment are attached in **Appendix 2** and summarised as follows:

**TABLE 4.1**

**PEAK HOURLY VOLUMES – NOVEMBER 2011**

| Day | Time | Werombi Road | | | Smalls Road | | |
|---|---|---|---|---|---|---|---|
| | | Northb'd veh/hr | Southb/d veh/hr | 2 way veh/hr | Eastb'd veh/hr | Westb'd veh/hr | 2 way veh/hr |
| Wed | 7-8am | 159 | 274 | **433** | 87 | 30 | **117** |
| | 8-9am | 153 | 350 | **503** | 87 | 34 | **121** |
| Sat | 11am-noon | 250 | 262 | **512** | 67 | 81 | **148** |
| | noon-1pm | 253 | 236 | **489** | 49 | 68 | **117** |
| Wed | 3.30-4.30pm | 293 | 217 | **510** | 45 | 89 | **134** |
| | 4.30-5.30pm | 302 | 243 | **545** | 44 | 85 | **129** |

In summary, two way peak hour volumes on Werombi Road are in the order of 500 to 550 vehicles per hour and 120 to 150 vehicles per hour on Smalls Road.

## 4.4 Existing Service Levels

To assess the existing operation of the Werombi Road and Smalls Road roundabout intersections during peak hours, a SIDRA analysis has been undertaken using the existing geometry for the intersections and the peak hour volumes shown in **Appendix 2** above.

SIDRA is an RTA approved traffic simulation model and assesses the operational performance of intersections under traffic signal, roundabout or sign control. Criteria for interpreting Level of Service (LOS) modelling results are reproduced below Table 4.2.

For intersections controlled by Give Way or Stop signs, satisfactory intersection performance is achieved where no individual movement (highest movement delay) through the intersection experiences a delay greater than 40 secs.

The results of the modelling are shown below and reveal that the existing Tee intersection currently operates at a satisfactory Level of Service (LOS) 'A' operation with acceptable average vehicle delays.

**TABLE 4.2**

**EXISTING PEAK HOUR SIDRA ANALYSIS FOR WEROMBI ROAD AND SMALLS ROAD INTERSECTION ROUNDABOUT CONTROL – YEAR 2011**

| | | AM Peak | | | | PM Peak | | | | Saturday Midday | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | DS | LOS | AVD | 95% back of Vehicles | DS | LOS | AVD | 95% back of Vehicles | DS | LOS | AVD | 95% back of Vehicles |
| South: Werombi Rd | | | | | | | | | | | | | |
| 1 | L | 0.122 | A | 6.7 | 0.7 | 0.220 | A | 6.7 | 1.3 | 0.191 | A | 6.7 | 1.1 |
| 2 | T | 0.122 | A | 6.6 | 0.7 | 0.220 | A | 6.6 | 1.3 | 0.191 | A | 6.6 | 1.1 |
| 3 | R | 0.122 | A | 11.0 | 0.7 | 0.218 | A | 11.0 | 1.3 | 0.191 | A | 11.0 | 1.1 |
| Approach | | 0.122 | A | 7.4 | 0.7 | 0.220 | A | 6.8 | 1.3 | 0.191 | A | 7.0 | 1.1 |
| East: Carrington Village | | | | | | | | | | | | | |
| 4 | L | 0.024 | A | 9.1 | 0.1 | 0.037 | A | 8.4 | 0.2 | 0.036 | A | 8.6 | 0.2 |
| 5 | T | 0.024 | A | 8.2 | 0.1 | 0.038 | A | 7.5 | 0.2 | 0.036 | A | 7.7 | 0.2 |
| 6 | R | 0.024 | A | 12.6 | 0.1 | 0.037 | A | 12.0 | 0.2 | 0.035 | A | 12.1 | 0.2 |
| Approach | | 0.024 | A | 9.6 | 0.1 | 0.037 | A | 8.7 | 0.2 | 0.036 | A | 8.8 | 0.2 |
| North: Werombi Rd | | | | | | | | | | | | | |
| 7 | L | 0.273 | A | 8.0 | 1.7 | 0.175 | A | 7.5 | 1.0 | 0.186 | A | 7.8 | 1.1 |
| 8 | T | 0.276 | A | 7.3 | 1.7 | 0.170 | A | 6.9 | 1.0 | 0.188 | A | 7.1 | 1.1 |
| 9 | R | 0.274 | A | 11.6 | 1.7 | 0.171 | A | 11.2 | 1.0 | 0.191 | A | 11.3 | 1.1 |
| Approach | | 0.276 | A | 7.5 | 1.7 | 0.170 | A | 7.1 | 1.0 | 0.188 | A | 7.2 | 1.1 |
| West: Smalls Rd | | | | | | | | | | | | | |
| 10 | L | 0.090 | A | 8.2 | 0.5 | 0.049 | A | 8.6 | 0.2 | 0.069 | A | 8.4 | 0.3 |
| 11 | T | 0.088 | A | 71 | 0.5 | 0.050 | A | 7.6 | 0.2 | 0.070 | A | 7.4 | 0.3 |
| 12 | R | 0.090 | A | 11.6 | 0.5 | 0.049 | A | 12.1 | 0.2 | 0.069 | A | 11.9 | 0.3 |
| Approach | | 0.090 | A | 11.1 | 0.5 | 0.049 | A | 11.3 | 0.2 | 0.069 | A | 11.5 | 0.3 |
| **All Vehicles** | | **0.276** | **A** | **8.2** | **1.7** | **0.220** | **A** | **7.3** | **1.3** | **0.191** | **A** | **7.7** | **1.1** |

Where:
LS Level of Service
DS Degree of Saturation
AVD Average Vehicle Delay in seconds
95% 95% back of queuing vehicles

| LOS | Roundabouts | Highest Movement Delay (in seconds) |
|---|---|---|
| A | Good | 0-14 |
| B | Acceptable delays and spare capacity | 15-28 |
| C | Satisfactory but accident study required | 29-42 |
| D | Near capacity and accident study required | 43-56 |
| E | At capacity and requires other Control Delays Mode | 57-70 |
| F | Unsatisfactory and requires other Control Mode | >70 |

The above SIDRA output summary indicates the existing intersection operates at a LOS A with minimal vehicle delays.

## 4.5 Road Safety

A review of Police records for the above intersection did not reveal any recorded accidents at the site in the last three years to end 2009. The intersection approach and exit sight lines satisfy Austroad and RTA standards for intersections and stopping sight distances within a 60km/h zone. Accordingly, it is our view that there are no current sight distance constraints or road safety issues with the existing intersection.

Existing sight lines at the proposed Smalls Road (and Werombi Road) access locations satisfy the minimum Austroad requirements SISD for 60km/h speed environments.

## 4.6 Public Transport

Werombi Road and adjoining Smalls Road are both access corridors linking to Camden and the broader Macarthur road system. Bus connections are available along Werombi Road providing access to Camden and Narellan town centres.

# 5.0 TRAFFIC GENERATION AND IMPLICATIONS

## 5.1 Trip Generation

Trip generation for the proposal has been determined in order to assess the likely impact of the development on road safety and network efficiency. The proposal's trip generation rate can also be utilised to assess the impact on the adjoining intersections.

The Roads and Traffic Authority's Guide to Traffic Generating Developments (2002 Ver 2.2) provides the following trip generation rates for aged, disabled person and medium density residential developments:

**Housing for Aged and Disabled Persons**

***Rates***

- *Daily vehicle trips = 1-2 per dwelling*
- *Evening peak hour vehicle trips = 0.1-0.2 per dwelling*

***Factors***

*These figures at the lower end of the above rates are based on research conducted by the Authority. This research concentrates on subsidised developments (often run by religious organisations). Generation rates of resident funded developments are often greater, as indicated at the higher end of the range.*

The primary level of traffic generation is more likely to relate to staff trips at shift changeover times i.e. 7.00-9.00am and 2.30-4.00pm and able bodied resident trips 8.30-9.30am (outbound) and 4.00-5.00pm (inbound).

**Child Care Facilities**

The RTA's Guide also suggests that Long Day Care Centres have the following traffic generation rates and characteristics during the AM and PM peak periods:

- *0.8 trips / child in the 2 hour AM arrival period between 7.00am – 9.00am;*
- *0.7 trips / child in the 2 hour PM pick up period between 4.00pm – 6.00pm;*
- *Vehicle occupancy of 1.2 children per vehicle.*
- *Mode split by car – 94%*

Adopting the RTA traffic generation rates and assuming that a 60% proportion of trips will occur over the 1 hour in the 8-9am and 5-6pm periods then the peak hour traffic generation of the proposed Long Day Care Centre (30 children) will be:

- 17 arrivals and 17 departures in the AM peak hour (i.e. 14 trips); and
- 6 arrivals and 7 departures in the PM peak hour (i.e. 13 trips).

NB: This assumes that no traffic trips relate to staff working on site.

**Admin Centre**

The Administration Centre is primarily an ancillary use (and would include admin staff operating the aged care facility) to other site activities but assuming a floor area of 200m² and the RTA Traffic Generation rates of 2 PM peak hour trips per 100m² of floor area.

Then the PM peak should realise 4 peak hour trips.

**Specialist Medical Rooms**

RTA data is not available for specialist medical rooms, but assuming the rooms (3) are open for appointments 8.00am to 6.00pm Monday to Friday and each appointment duration is 15 minutes, then each room can be expected to turn over up to 5 patients per hour 8.00am to 6.00pm.

With three specialist rooms available, this would evaluate to 30 vehicle trips per hour if every patient is a single vehicle self drive trip i.e. 15 arrivals and 15 departures/trips.

**Café**

The café is specifically for use of on site residents, workers and visitors and to this end ancillary to all other site uses and activities and unlikely to generate any additional traffic (apart from servicing) in its own right.

**TABLE 5.1**

**PROJECTED TRAFFIC GENERATION LEVELS**
**Vehicle trips per hour**

| Use | Time | | | | | |
|---|---|---|---|---|---|---|
| | **6.30-7.30am** | **7.30-8.30am** | **8.30-9.30am** | **2-3pm** | **3-4pm** | **4-5pm** |
| 112 Independent Living Units | 12 | 17 | 22 | 12 | 17 | 22 |
| 95 Apartment Units | 10 | 15 | 19 | 10 | 15 | 19 |
| 120 Bed Aged Care | 4 | 8 | 4 | 4 | 8 | 4 |
| Child Care | 5 | 14 | 11 | 10 | 13 | 7 |
| Administration | 1 | 1 | 4 | 0 | 1 | 4 |
| Specialist Medical | Closed | 15 | 30 | 30 | 30 | 30 |
| Cafe | - | - | - | - | - | - |
| **TOTALS** | **32veh/hr** | **70 veh/hr** | **90 veh/hr** | **66veh/hr** | **71veh/hr** | **79 veh/hr** |

The projected AM/PM peak hours are 8.30-9.30am with 90 vehicles per hour and 4.00-5.00pm with 79 vehicles per hour entering or leaving site including staff and visitor trips.

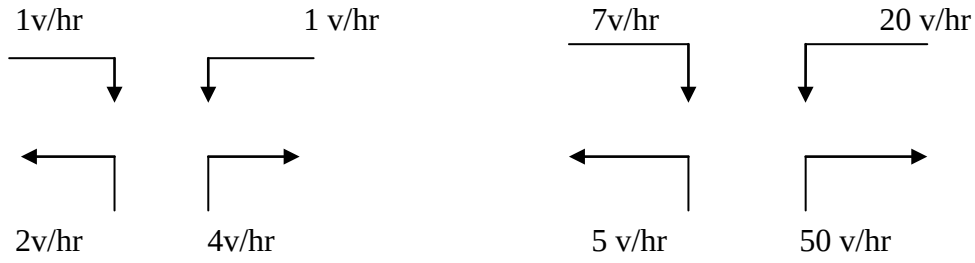
## 5.2 Post Development Traffic Impacts

### 5.2.1 Trip Assignments

An assignment of projected design (peak) hour traffic movements to/from the site via Smalls Road is shown below.

**AM Peak**
**90 trips**

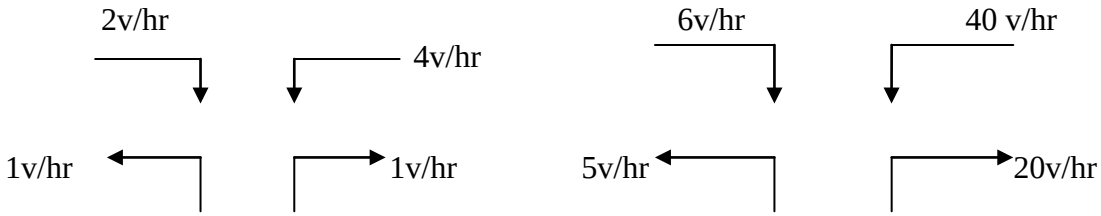
**Smalls Road**




**Access 1** **Access 2**

**PM Peak**
**79 trips**

**Smalls Road**




**Access 2** **Access 1**

The post development traffic assignments, (excluding services vehicles) equates to about 1 vehicle movement every 40 seconds in the AM peak (ie. 90 trips) and 1 vehicle movement every 45 seconds in the PM peak (ie. 79 trips) realising a an increase in existing AM (+74%) and PM (+61%) traffic generation levels on Smalls Road. But not beyond any capacity or environmental threshold.

### 5.2.2 Traffic Impacts

Two way vehicular access and egress to / from the on site car parking area is proposed from Smalls Road (at 2 locations). The additional post development peak traffic flows are expected to be (at a maximum) an additional +90 trips per hour AM and 79 trips per hour PM over existing traffic levels.

One additional vehicle movement (every 40 to 45 seconds AM and PM) upon Smalls Road or to / from adjacent intersections is unlikely to compromise existing traffic accessibility or road safety entering or exiting the site at any time.

## 5.3 Service Levels

The impact of up to 90 additional, generally inbound or outbound, vehicle movements from Smalls Road or at adjoining intersections commensurate with AM and PM is unlikely to realise any noticeable traffic impact on existing favourable traffic service levels on Smalls Road or at the Werombi Road access intersections during these times as shown in Table 4.2.

## 5.4 Car Parking and Servicing

### 5.4.1 Car Parking

On site car parking for residents, staff and visitors is proposed about the site in marked spaces in accord with Council's Car Parking DCP 2006 Part D, allocated as follows:

- ***Residential***

| | | | |
|---|---|---|---|
| - | Independent living units | 112 x .85 | = 95.2 spaces |
| - | Apartment units | 95 x .5 | = 47.5 spaces |
| - | Visitor Spaces (say 1 space per 10 units) | | = 20.7 spaces |
| | | **Sub-total** | **= 164 spaces** |

- ***Aged Care***

| | | | |
|---|---|---|---|
| - | Staff | | = 10 spaces |
| - | Visitors | | = 10 spaces |
| | | **Subtotal** | **= 20 spaces** |

- ***Child Care***

| | | | |
|---|---|---|---|
| - | Staff | | = 5 spaces |
| - | Parent/Carers | | = 3 spaces |
| | | **Subtotal** | **= 8 spaces** |

- ***Administration***

| | | | |
|---|---|---|---|
| - | Staff | | = 4 spaces |
| - | Visitors | | = 2 spaces |
| | | **Subtotal** | **= 6 spaces** |

- ***Specialist Medical***

| | | |
|---|---|---|
| - Staff | | = 3 spaces |
| - Visitors/Patients | | = 3 spaces |
| | **Subtotal** | **= 6 spaces** |

- ***Cafe*** ***Nil***

A total of **204** on site car parking spaces, displaced about the site is envisaged in the masterplan.

It is our view that for developments requiring 3 or more off-street parking spaces, parking areas should be designed to enable all vehicles to enter and leave a site in a forward direction with sufficient room provided so as to require only one reversing movement to enter or leave a parking space. These objectives in our view will be achieved with this proposal.

### 5.4.2 Servicing and Manoeuvring

Service vehicle traffic generated by the proposed development is to be confined to business hours. It is intended that only medium rigid, service and courier vehicles will access this site. A review of the road network serving the site and the traffic conditions on that road network indicates that the majority of trucks traffic generated by the proposed development and up to 90% will approach / depart the site via Werombi Road.

Truck manoeuvring areas to access service areas and the like should be adequate in width. This width should allow all MRV vehicles (to 8.8 metres), to drive into manoeuvring aisleways and reverse into the loading dock areas provided and depart the site in a forward direction to Werombi Road or Smalls Road as required.

No loading or unloading should occur within the on-site access driveway nor the entrance to the site. Operations within the property regarding loading and unloading and waiting to unload will be no different from similar strata residential unit developments. All loading and / or unloading will occur within the site. There is no possibility of queuing occurring at Werombi or Smalls Road due to loading and unloading.

Traffic arrivals and departures can generally be expected at 20% northbound and 80% southbound to/from Werombi.

# 7.0 CONCLUSIONS

This report examines the traffic access and parking impacts of a rezoning and Masterplan proposal to provide residential independent living and aged care facilities on a land parcel located on the south west corner of Werombi Road and Smalls Road at Grasmere. The use is permissible with the consent of Council.

The development proposal envisages 112 independent living units, 95 apartment units and 120 bed aged care facilities. The proposal also includes a 30 place child care facility, administration centre (including specialist consulting rooms) and ancillary cafe for residents, staff and visitors.

Car parking for 204 cars on site for residents, staff and visitors is proposed.

The village hub of the development is located along the Werombi Road, Smalls Road frontage is in the vicinity of the roundabout. It would have a street presence suitable to its function and location in this semi rural setting and be seen in relation to other existing aged care related facilities to the north of the site along Werombi Road.

The village hub is the focal centre for the proposed retirement community with the proposed commercial and community uses creating a more active public realm. It would also service the surrounding communities fostering social interaction between the proposed aged car community and the surrounding residential community helping to integrate the different communities. The range of public uses and circulation patterns encourage passive surveillance.

An assessment of the proposal based on RTA Guidelines and similar use surveys indicates that there will be a maximum (indicative) traffic generation level of up to 90 vehicle trips per hour during the morning peak hours and 79 vehicle trips per hour in the afternoon peak hour, i.e. about one additional vehicle every 40 seconds in peak times.

Peak hour traffic generation varies from 40 vh/hr 7.30am – 8.30am to 26 vh/hr 2.00pm – 3.00pm commensurate with shift change over times.

The existing traffic conditions on the adjoining Werombi Road and Smalls Road network surrounding the site are acceptable with a Level of Service A operation in Monday – Friday peak hours and will remain at these acceptable service levels post development.

The access to and from the site is proposed from two way entry / exit driveways and adjoining roads. The entry/exit access will generally operate as one way in before shift changes and one way out after shift changes.

The sight distances at the access location is good and meets Austroad requirements for the 60km/h operating speed limits within the precinct and on the adjoining access roads.

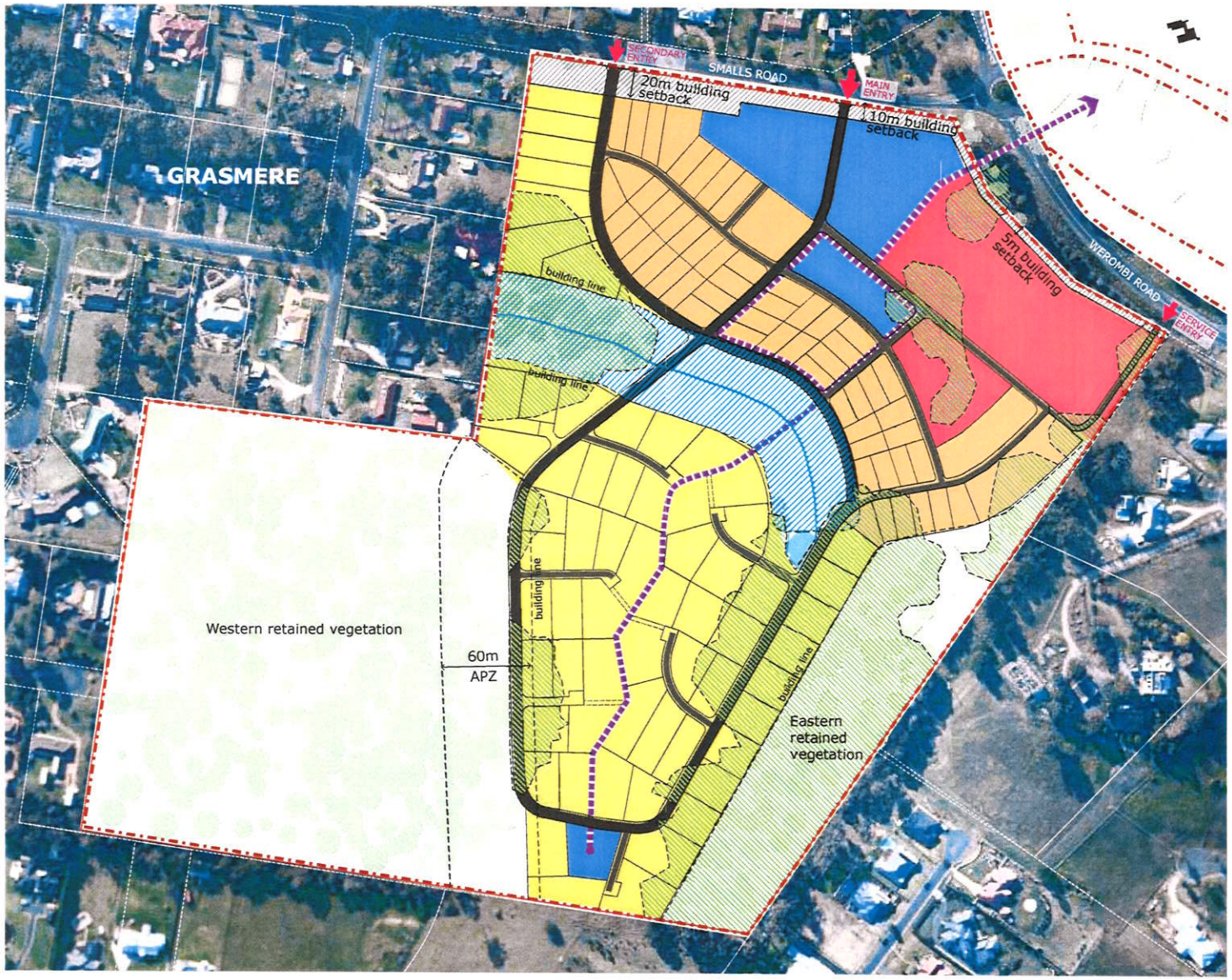
The proposal in terms of vehicle manoeuvring provisions is proposed in accordance with AS 2890.1

In concluding the proposal is a 7 day use low traffic generating development in shoulder peaks and in off peak times and will result in minimal traffic impacts on the adjacent road network. The proposal will have adequate car parking available in the proposed on site car park areas and the internal low volume vehicle circulation and manoeuvring for the 85$^{th}$% design vehicle is considered to be satisfactory.

The impact of increased traffic and car parking demands as a result of the proposal on the adjoining area or road system during overlapping peak hours is minimal and within the available capacity of the site and access road network.

It is **recommended** that Camden Council approve this application so that the proposed seniors living and aged care facilities can proceed.

# APPENDIX 1




KEY

- Site Boundary
- Commercial and community uses
- RACF
- Northern precinct – medium sized lots
- Southern precinct – large sized lots
- 20 m building setback – Camden Council DCP, 2011
- 10 m building setback – proposed (to be discussed with Council)
- 5 m building setback – proposed (to be discussed with Council)
- Existing vegetation
- 60m Asset Protection Zone (APZ) – under review
- Managed land – APZ compliant
- Riparian Zone – APZ compliant
- Primary vehicular circulation route
- Secondary vehicular circulation route
- Access
- Key pedestrian spine

Scale 1:3000

0 20m 50m 100m

# APPENDIX 2

# Joray Enterprises Pty Ltd

ABN 80 061 513 933
Telephone and Fax : (02) 9624 5472
1 Ajax Place Blacktown, NSW 2148

| | | | | | |
|---|---|---|---|---|---|
| Count Number | J11-117 | Client | TRANSPORT & URBAN PLANNING | Count Date | Wednesday 09 November 2011 |
| Location | CARRINGTON CENTENNIAL TRUST/ WEROMBI RD/SMALLS RD | | | Suburb | GRASMERE |
| Weather | Fine | | | Job Number | |

Comments

## Vehicle Movements

### Lights

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 7:00 - 7:15 | 0 | 40 | 0 | 2 | 0 | 0 | 4 | 18 | 5 | 1 | 0 | 12 | 82 |
| 7:15 - 7:30 | 2 | 39 | 4 | 6 | 0 | 0 | 4 | 16 | 3 | 3 | 0 | 21 | 98 |
| 7:30 - 7:45 | 0 | 40 | 0 | 2 | 0 | 2 | 8 | 23 | 7 | 2 | 0 | 21 | 105 |
| 7:45 - 8:00 | 1 | 50 | 2 | 3 | 0 | 0 | 6 | 29 | 13 | 5 | 0 | 20 | 129 |
| 8:00 - 8:15 | 0 | 46 | 0 | 3 | 0 | 1 | 3 | 23 | 4 | 7 | 0 | 17 | 104 |
| 8:15 - 8:30 | 2 | 52 | 0 | 1 | 0 | 1 | 4 | 24 | 10 | 0 | 1 | 23 | 118 |
| 8:30 - 8:45 | 2 | 64 | 1 | 5 | 0 | 0 | 10 | 16 | 7 | 2 | 0 | 14 | 121 |
| 8:45 - 9:00 | 3 | 78 | 1 | 5 | 1 | 1 | 3 | 31 | 7 | 1 | 0 | 21 | 152 |
| Period Ending | 10 | 409 | 8 | 27 | 1 | 5 | 42 | 180 | 56 | 21 | 1 | 149 | 909 |

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 7:00 - 8:00 | 3 | 169 | 6 | 13 | 0 | 2 | 22 | 86 | 28 | 11 | 0 | 74 | 414 |
| 7:15 - 8:15 | 3 | 175 | 6 | 14 | 0 | 3 | 21 | 91 | 27 | 17 | 0 | 79 | 436 |
| 7:30 - 8:30 | 3 | 188 | 2 | 9 | 0 | 4 | 21 | 99 | 34 | 14 | 1 | 81 | 456 |
| 7:45 - 8:45 | 5 | 212 | 3 | 12 | 0 | 2 | 23 | 92 | 34 | 14 | 1 | 74 | 472 |
| 8:00 - 9:00 | 7 | 240 | 2 | 14 | 1 | 3 | 20 | 94 | 28 | 10 | 1 | 75 | 495 |

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| Weather | Fine | | | Job Number | |

Comments

## Heavy

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 7:00 - 7:15 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 8 | 0 | 1 | 0 | 0 | 11 |
| 7:15 - 7:30 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 5 | 1 | 1 | 0 | 0 | 11 |
| 7:30 - 7:45 | 0 | 4 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 6 |
| 7:45 - 8:00 | 0 | 8 | 0 | 1 | 0 | 0 | 0 | 6 | 0 | 0 | 0 | 0 | 15 |
| 8:00 - 8:15 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 5 |
| 8:15 - 8:30 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 0 | 7 |
| 8:30 - 8:45 | 0 | 9 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 12 |
| 8:45 - 9:00 | 0 | 5 | 0 | 1 | 0 | 0 | 1 | 2 | 1 | 0 | 0 | 0 | 10 |
| Period Ending | 0 | 37 | 1 | 2 | 0 | 0 | 3 | 29 | 2 | 3 | 0 | 0 | 77 |

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 7:00 - 8:00 | 0 | 17 | 0 | 1 | 0 | 0 | 2 | 20 | 1 | 2 | 0 | 0 | 43 |
| 7:15 - 8:15 | 0 | 18 | 0 | 1 | 0 | 0 | 1 | 15 | 1 | 1 | 0 | 0 | 37 |
| 7:30 - 8:30 | 0 | 18 | 0 | 1 | 0 | 0 | 1 | 12 | 0 | 1 | 0 | 0 | 33 |
| 7:45 - 8:45 | 0 | 23 | 1 | 1 | 0 | 0 | 0 | 13 | 0 | 1 | 0 | 0 | 39 |
| 8:00 - 9:00 | 0 | 20 | 1 | 1 | 0 | 0 | 1 | 9 | 1 | 1 | 0 | 0 | 34 |

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| Location | CARRINGTON CENTENNIAL TRUST/ WEROMBI RD/SMALLS RD | | | Suburb | GRASMERE |
| Weather | Fine | | | Job Number | |

Comments

## Combined

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 7:00 - 7:15 | 0 | 41 | 0 | 2 | 0 | 0 | 5 | 26 | 5 | 2 | 0 | 12 | 93 |
| 7:15 - 7:30 | 2 | 43 | 4 | 6 | 0 | 0 | 4 | 21 | 4 | 4 | 0 | 21 | 109 |
| 7:30 - 7:45 | 0 | 44 | 0 | 2 | 0 | 2 | 9 | 24 | 7 | 2 | 0 | 21 | 111 |
| 7:45 - 8:00 | 1 | 58 | 2 | 4 | 0 | 0 | 6 | 35 | 13 | 5 | 0 | 20 | 144 |
| 8:00 - 8:15 | 0 | 48 | 0 | 3 | 0 | 1 | 3 | 26 | 4 | 7 | 0 | 17 | 109 |
| 8:15 - 8:30 | 2 | 56 | 0 | 1 | 0 | 1 | 4 | 26 | 10 | 1 | 1 | 23 | 125 |
| 8:30 - 8:45 | 2 | 73 | 2 | 5 | 0 | 0 | 10 | 18 | 7 | 2 | 0 | 14 | 133 |
| 8:45 - 9:00 | 3 | 83 | 1 | 6 | 1 | 1 | 4 | 33 | 8 | 1 | 0 | 21 | 162 |
| Period Ending | 10 | 446 | 9 | 29 | 1 | 5 | 45 | 209 | 58 | 24 | 1 | 149 | 986 |

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 7:00 - 8:00 | 3 | 186 | 6 | 14 | 0 | 2 | 24 | 106 | 29 | 13 | 0 | 74 | 457 |
| 7:15 - 8:15 | 3 | 193 | 6 | 15 | 0 | 3 | 22 | 106 | 28 | 18 | 0 | 79 | 473 |
| 7:30 - 8:30 | 3 | 206 | 2 | 10 | 0 | 4 | 22 | 111 | 34 | 15 | 1 | 81 | 489 |
| 7:45 - 8:45 | 5 | 235 | 4 | 13 | 0 | 2 | 23 | 105 | 34 | 15 | 1 | 74 | 511 |
| 8:00 - 9:00 | 7 | 260 | 3 | 15 | 1 | 3 | 21 | 103 | 29 | 11 | 1 | 75 | 529 |

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| Count Number | J11-117 | Client | TRANSPORT & URBAN PLANNING | Count Date | Wednesday 09 November 2011 |
| Location | CARRINGTON CENTENNIAL TRUST/ WEROMBI RD/SMALLS RD | | | Suburb | GRASMERE |
| Weather | Fine | | | Job Number | |

Comments

## Pedestrian Movements

### All Pedestrians

| | NORTH | EAST | SOUTH | WEST | |
|---|---|---|---|---|---|
| Time Period | Werombi Rd | Carrington C.T. | Werombi Rd | Smalls Rd | Total |
| 7:00 - 7:15 | 0 | 0 | 0 | 0 | 0 |
| 7:15 - 7:30 | 0 | 2 | 0 | 0 | 2 |
| 7:30 - 7:45 | 0 | 2 | 0 | 0 | 2 |
| 7:45 - 8:00 | 0 | 0 | 0 | 0 | 0 |
| 8:00 - 8:15 | 0 | 0 | 0 | 0 | 0 |
| 8:15 - 8:30 | 0 | 0 | 0 | 0 | 0 |
| 8:30 - 8:45 | 0 | 0 | 0 | 0 | 0 |
| 8:45 - 9:00 | 0 | 0 | 0 | 0 | 0 |
| Period Ending | 0 | 4 | 0 | 0 | 4 |

| | NORTH | EAST | SOUTH | WEST | |
|---|---|---|---|---|---|
| Time Period | Werombi Rd | Carrington C.T. | Werombi Rd | Smalls Rd | Total |
| 7:00 - 8:00 | 0 | 4 | 0 | 0 | 4 |
| 7:15 - 8:15 | 0 | 4 | 0 | 0 | 4 |
| 7:30 - 8:30 | 0 | 2 | 0 | 0 | 2 |
| 7:45 - 8:45 | 0 | 0 | 0 | 0 | 0 |
| 8:00 - 9:00 | 0 | 0 | 0 | 0 | 0 |

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|---|---|---|---|---|---|
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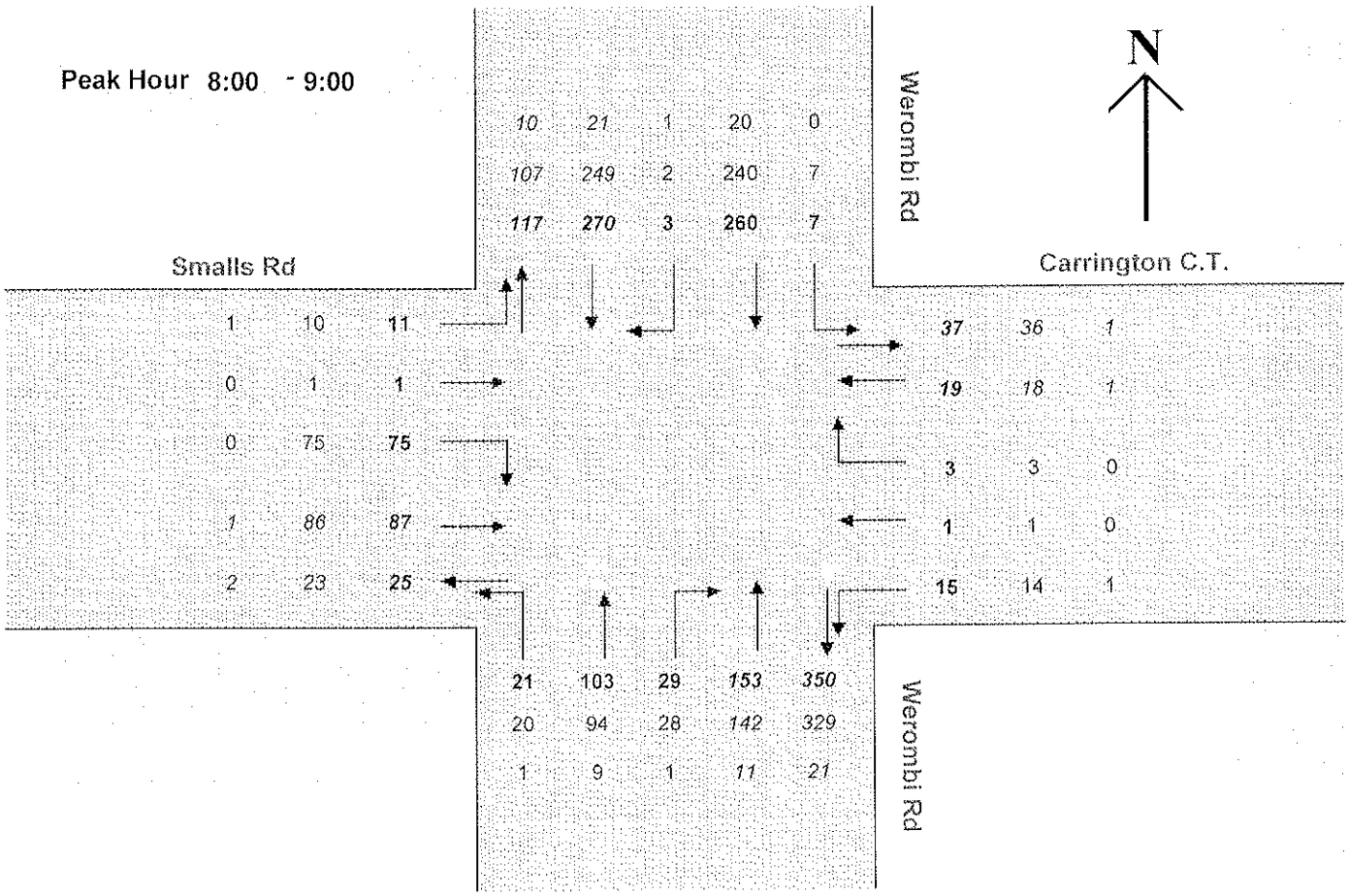
| Location | CARRINGTON CENTENNIAL TRUST/ WEROMBI RD/SMALLS RD | | | Suburb | GRASMERE |
| Weather | Fine | | | Job Number | |

Comments

| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Class | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| Lights | 7 | 240 | 2 | 14 | 1 | 3 | 20 | 94 | 28 | 10 | 1 | 75 | 495 |
| Heavy | 0 | 20 | 1 | 1 | 0 | 0 | 1 | 9 | 1 | 1 | 0 | 0 | 34 |
| Total | 7 | 260 | 3 | 15 | 1 | 3 | 21 | 103 | 29 | 11 | 1 | 75 | 529 |

| PEDESTRIAN | Werombi Rd | Carrington C.T. | Werombi Rd | Smalls Rd | |
|---|---|---|---|---|---|
| All Pedestrians | 0 | 0 | 0 | 0 | 0 |
| Total | 0 | 0 | 0 | 0 | 0 |



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|---|---|---|---|---|---|
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| Location | CARRINGTON CENTENNIAL TRUST/ WEROMBI RD/SMALLS RD | | | Suburb | GRASMERE |
| Weather | Fine | | | Job Number | |

Comments

## Vehicle Movements

### Lights

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 15:30 - 15:45 | 0 | 33 | 1 | 12 | 1 | 1 | 17 | 45 | 6 | 3 | 0 | 11 | 130 |
| 15:45 - 16:00 | 0 | 40 | 0 | 9 | 0 | 0 | 18 | 41 | 8 | 2 | 0 | 8 | 126 |
| 16:00 - 16:15 | 0 | 36 | 2 | 5 | 0 | 0 | 21 | 46 | 6 | 1 | 1 | 6 | 124 |
| 16:15 - 16:30 | 0 | 32 | 1 | 4 | 2 | 1 | 21 | 43 | 2 | 0 | 0 | 8 | 114 |
| 16:30 - 16:45 | 0 | 45 | 2 | 16 | 0 | 0 | 16 | 50 | 2 | 1 | 0 | 7 | 139 |
| 16:45 - 17:00 | 1 | 38 | 2 | 2 | 0 | 0 | 18 | 48 | 4 | 3 | 1 | 10 | 127 |
| 17:00 - 17:15 | 0 | 49 | 2 | 5 | 0 | 1 | 24 | 59 | 3 | 2 | 0 | 6 | 151 |
| 17:15 - 17:30 | 1 | 41 | 0 | 6 | 0 | 2 | 17 | 49 | 2 | 2 | 0 | 11 | 131 |
| Period Ending | 2 | 314 | 10 | 59 | 3 | 5 | 152 | 381 | 33 | 14 | 2 | 67 | 1042 |

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 15:30 - 16:30 | 0 | 141 | 4 | 30 | 3 | 2 | 77 | 175 | 22 | 6 | 1 | 33 | 494 |
| 15:45 - 16:45 | 0 | 153 | 5 | 34 | 2 | 1 | 76 | 180 | 18 | 4 | 1 | 29 | 503 |
| 16:00 - 17:00 | 1 | 151 | 7 | 27 | 2 | 1 | 76 | 187 | 14 | 5 | 2 | 31 | 504 |
| 16:15 - 17:15 | 1 | 164 | 7 | 27 | 2 | 2 | 79 | 200 | 11 | 6 | 1 | 31 | 531 |
| 16:30 - 17:30 | 2 | 173 | 6 | 29 | 0 | 3 | 75 | 206 | 11 | 8 | 1 | 34 | 548 |

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| Weather | Fine | | | Job Number | |

Comments

## Heavy

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 15:30 - 15:45 | 0 | 3 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 0 | 1 | 7 |
| 15:45 - 16:00 | 0 | 4 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 0 | 0 | 8 |
| 16:00 - 16:15 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 5 | 0 | 1 | 0 | 1 | 12 |
| 16:15 - 16:30 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 5 | 0 | 0 | 0 | 0 | 9 |
| 16:30 - 16:45 | 0 | 2 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 1 | 9 |
| 16:45 - 17:00 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 17:00 - 17:15 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 4 |
| 17:15 - 17:30 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 4 |
| **Period Ending** | **0** | **17** | **2** | **0** | **0** | **0** | **7** | **22** | **0** | **3** | **0** | **3** | **54** |

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 15:30 - 16:30 | 0 | 11 | 1 | 0 | 0 | 0 | 4 | 15 | 0 | 3 | 0 | 2 | 36 |
| 15:45 - 16:45 | 0 | 10 | 1 | 0 | 0 | 0 | 6 | 17 | 0 | 2 | 0 | 2 | 38 |
| 16:00 - 17:00 | 0 | 7 | 1 | 0 | 0 | 0 | 6 | 14 | 0 | 1 | 0 | 2 | 31 |
| 16:15 - 17:15 | 0 | 8 | 0 | 0 | 0 | 0 | 4 | 10 | 0 | 0 | 0 | 1 | 23 |
| 16:30 - 17:30 | 0 | 6 | 1 | 0 | 0 | 0 | 3 | 7 | 0 | 0 | 0 | 1 | 18 |

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| Count Number | J11-117 | Client | TRANSPORT & URBAN PLANNING | Count Date | Wednesday 09 November 2011 |
| Location | CARRINGTON CENTENNIAL TRUST/ WEROMBI RD/SMALLS RD | | | Suburb | GRASMERE |
| Weather | Fine | | | Job Number | |

Comments

## Combined

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 15:30 - 15:45 | 0 | 36 | 1 | 12 | 1 | 1 | 17 | 47 | 6 | 4 | 0 | 12 | 137 |
| 15:45 - 16:00 | 0 | 44 | 0 | 9 | 0 | 0 | 18 | 44 | 8 | 3 | 0 | 8 | 134 |
| 16:00 - 16:15 | 0 | 37 | 3 | 5 | 0 | 0 | 24 | 51 | 6 | 2 | 1 | 7 | 136 |
| 16:15 - 16:30 | 0 | 35 | 1 | 4 | 2 | 1 | 22 | 48 | 2 | 0 | 0 | 8 | 123 |
| 16:30 - 16:45 | 0 | 47 | 2 | 16 | 0 | 0 | 18 | 54 | 2 | 1 | 0 | 8 | 148 |
| 16:45 - 17:00 | 1 | 39 | 2 | 2 | 0 | 0 | 18 | 48 | 4 | 3 | 1 | 10 | 128 |
| 17:00 - 17:15 | 0 | 51 | 2 | 5 | 0 | 1 | 25 | 60 | 3 | 2 | 0 | 6 | 155 |
| 17:15 - 17:30 | 1 | 42 | 1 | 6 | 0 | 2 | 17 | 51 | 2 | 2 | 0 | 11 | 135 |
| Period Ending | 2 | 331 | 12 | 59 | 3 | 5 | 159 | 403 | 33 | 17 | 2 | 70 | 1096 |

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 15:30 - 16:30 | 0 | 152 | 5 | 30 | 3 | 2 | 81 | 190 | 22 | 9 | 1 | 35 | 530 |
| 15:45 - 16:45 | 0 | 163 | 6 | 34 | 2 | 1 | 82 | 197 | 18 | 6 | 1 | 31 | 541 |
| 16:00 - 17:00 | 1 | 158 | 8 | 27 | 2 | 1 | 82 | 201 | 14 | 6 | 2 | 33 | 535 |
| 16:15 - 17:15 | 1 | 172 | 7 | 27 | 2 | 2 | 83 | 210 | 11 | 6 | 1 | 32 | 554 |
| 16:30 - 17:30 | 2 | 179 | 7 | 29 | 0 | 3 | 78 | 213 | 11 | 8 | 1 | 35 | 566 |

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| Location | CARRINGTON CENTENNIAL TRUST/ WEROMBI RD/SMALLS RD | | | Suburb | GRASMERE |
| Weather | Fine | | | Job Number | |

Comments

## Pedestrian Movements

### All Pedestrians

| | NORTH | EAST | SOUTH | WEST | |
|---|---|---|---|---|---|
| Time Period | Werombi Rd | Carrington C.T. | Werombi Rd | Smalls Rd | Total |
| 15:30 - 15:45 | 0 | 0 | 0 | 0 | 0 |
| 15:45 - 16:00 | 0 | 0 | 0 | 0 | 0 |
| 16:00 - 16:15 | 0 | 0 | 0 | 0 | 0 |
| 16:15 - 16:30 | 0 | 1 | 0 | 0 | 1 |
| 16:30 - 16:45 | 2 | 3 | 0 | 0 | 5 |
| 16:45 - 17:00 | 0 | 0 | 0 | 0 | 0 |
| 17:00 - 17:15 | 0 | 0 | 0 | 0 | 0 |
| 17:15 - 17:30 | 0 | 0 | 0 | 0 | 0 |
| Period Ending | 2 | 4 | 0 | 0 | 6 |

| | NORTH | EAST | SOUTH | WEST | |
|---|---|---|---|---|---|
| Time Period | Werombi Rd | Carrington C.T. | Werombi Rd | Smalls Rd | Total |
| 15:30 - 16:30 | 0 | 1 | 0 | 0 | 1 |
| 15:45 - 16:45 | 2 | 4 | 0 | 0 | 6 |
| 16:00 - 17:00 | 2 | 4 | 0 | 0 | 6 |
| 16:15 - 17:15 | 2 | 4 | 0 | 0 | 6 |
| 16:30 - 17:30 | 2 | 3 | 0 | 0 | 5 |

# Joray Enterprises Pty Ltd

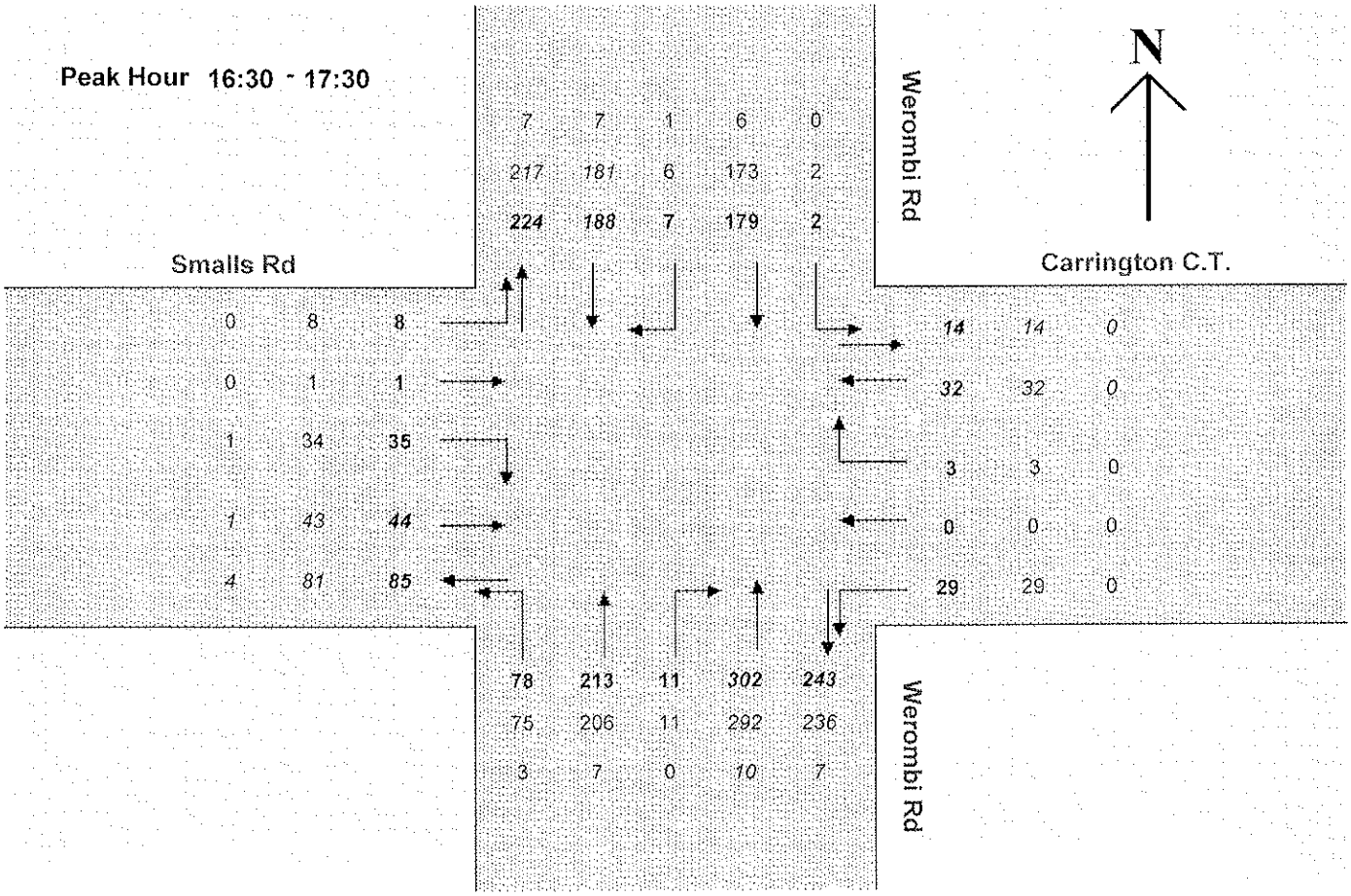
ABN 80 061 513 933
Telephone and Fax : (02) 9624 5472
1 Ajax Place Blacktown, NSW 2148

| | | | | | |
|---|---|---|---|---|---|
| Count Number | J11-117 | Client | TRANSPORT & URBAN PLANNING | Count Date | Wednesday 09 November 2011 |
| Location | CARRINGTON CENTENNIAL TRUST/ WEROMBI RD/SMALLS RD | | | Suburb | GRASMERE |
| Weather | Fine | | | Job Number | |

Comments

| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Class | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| Lights | 2 | 173 | 6 | 29 | 0 | 3 | 75 | 206 | 11 | 8 | 1 | 34 | 548 |
| Heavy | 0 | 6 | 1 | 0 | 0 | 0 | 3 | 7 | 0 | 0 | 0 | 1 | 18 |
| Total | 2 | 179 | 7 | 29 | 0 | 3 | 78 | 213 | 11 | 8 | 1 | 35 | 566 |

| PEDESTRIAN | Werombi Rd | Carrington C.T. | Werombi Rd | Smalls Rd | |
|---|---|---|---|---|---|
| All Pedestrians | 2 | 3 | 0 | 0 | 5 |
| Total | 2 | 3 | 0 | 0 | 5 |



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| | | | | | |
|---|---|---|---|---|---|
| Count Number | J11-118 | Client | TRANSPORT & URBAN PLANNING | Count Date | Saturday 12 November 2011 |
| Location | CARRINGTON CENTENNIAL TRUST/WEROMBI RD/SMALLS RD | | | Suburb | GRASMERE |
| Weather | Fine | | | Job Number | |

Comments NO PEDESTRIANS DURING SURVEY

## Vehicle Movements

### Lights

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 11:00 - 11:15 | 0 | 40 | 2 | 6 | 0 | 0 | 17 | 41 | 4 | 0 | 1 | 15 | 126 |
| 11:15 - 11:30 | 2 | 52 | 0 | 3 | 1 | 1 | 18 | 47 | 3 | 4 | 0 | 15 | 146 |
| 11:30 - 11:45 | 1 | 39 | 2 | 5 | 0 | 0 | 19 | 32 | 4 | 1 | 0 | 23 | 126 |
| 11:45 - 12:00 | 0 | 44 | 1 | 6 | 0 | 0 | 18 | 34 | 9 | 1 | 0 | 9 | 122 |
| 12:00 - 12:15 | 0 | 46 | 1 | 12 | 1 | 1 | 21 | 47 | 8 | 0 | 0 | 10 | 147 |
| 12:15 - 12:30 | 0 | 31 | 3 | 8 | 0 | 0 | 12 | 48 | 2 | 1 | 0 | 13 | 118 |
| 12:30 - 12:45 | 0 | 50 | 0 | 1 | 0 | 1 | 11 | 32 | 5 | 0 | 1 | 10 | 111 |
| 12:45 - 13:00 | 0 | 36 | 3 | 5 | 2 | 0 | 11 | 46 | 5 | 1 | 0 | 11 | 120 |
| Period Ending | 3 | 338 | 12 | 46 | 4 | 3 | 127 | 327 | 40 | 8 | 2 | 106 | 1016 |

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 11:00 - 12:00 | 3 | 175 | 5 | 20 | 1 | 1 | 72 | 154 | 20 | 6 | 1 | 62 | 520 |
| 11:15 - 12:15 | 3 | 181 | 4 | 26 | 2 | 2 | 76 | 160 | 24 | 6 | 0 | 57 | 541 |
| 11:30 - 12:30 | 1 | 160 | 7 | 31 | 1 | 1 | 70 | 161 | 23 | 3 | 0 | 55 | 513 |
| 11:45 - 12:45 | 0 | 171 | 5 | 27 | 1 | 2 | 62 | 161 | 24 | 2 | 1 | 42 | 498 |
| 12:00 - 13:00 | 0 | 163 | 7 | 26 | 3 | 2 | 55 | 173 | 20 | 2 | 1 | 44 | 496 |

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|---|---|---|---|---|---|
| Count Number | J11-118 | Client | TRANSPORT & URBAN PLANNING | Count Date | Saturday 12 November 2011 |
| Location | CARRINGTON CENTENNIAL TRUST/WEROMBI RD/SMALLS RD | | | Suburb | GRASMERE |
| Weather | Fine | | | Job Number | |
| Comments | NO PEDESTRIANS DURING SURVEY | | | | |

## Heavy

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 11:00 - 11:15 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 |
| 11:15 - 11:30 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 3 |
| 11:30 - 11:45 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 11:45 - 12:00 | 0 | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 3 |
| 12:00 - 12:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12:15 - 12:30 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 |
| 12:30 - 12:45 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 4 |
| 12:45 - 13:00 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 3 |
| Period Ending | 0 | 5 | 0 | 1 | 0 | 0 | 6 | 3 | 0 | 0 | 0 | 2 | 17 |

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 11:00 - 12:00 | 0 | 5 | 0 | 0 | 0 | 0 | 3 | 1 | 0 | 0 | 0 | 0 | 9 |
| 11:15 - 12:15 | 0 | 5 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 8 |
| 11:30 - 12:30 | 0 | 4 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 6 |
| 11:45 - 12:45 | 0 | 2 | 0 | 1 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 2 | 8 |
| 12:00 - 13:00 | 0 | 0 | 0 | 1 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 2 | 8 |

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|---|---|---|---|---|---|
| Count Number | J11-118 | Client | TRANSPORT & URBAN PLANNING | Count Date | Saturday 12 November 2011 |
| Location | CARRINGTON CENTENNIAL TRUST/WEROMBI RD/SMALLS RD | | | Suburb | GRASMERE |
| Weather | Fine | | | Job Number | |
| Comments | NO PEDESTRIANS DURING SURVEY | | | | |

## Combined

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 11:00 - 11:15 | 0 | 40 | 2 | 6 | 0 | 0 | 18 | 41 | 4 | 0 | 1 | 15 | 127 |
| 11:15 - 11:30 | 2 | 53 | 0 | 3 | 1 | 1 | 19 | 48 | 3 | 4 | 0 | 15 | 149 |
| 11:30 - 11:45 | 1 | 41 | 2 | 5 | 0 | 0 | 19 | 32 | 4 | 1 | 0 | 23 | 128 |
| 11:45 - 12:00 | 0 | 46 | 1 | 6 | 0 | 0 | 19 | 34 | 9 | 1 | 0 | 9 | 125 |
| 12:00 - 12:15 | 0 | 46 | 1 | 12 | 1 | 1 | 21 | 47 | 8 | 0 | 0 | 10 | 147 |
| 12:15 - 12:30 | 0 | 31 | 3 | 9 | 0 | 0 | 12 | 48 | 2 | 1 | 0 | 13 | 119 |
| 12:30 - 12:45 | 0 | 50 | 0 | 1 | 0 | 1 | 12 | 33 | 5 | 0 | 1 | 12 | 115 |
| 12:45 - 13:00 | 0 | 36 | 3 | 5 | 2 | 0 | 13 | 47 | 5 | 1 | 0 | 11 | 123 |
| **Period Ending** | **3** | **343** | **12** | **47** | **4** | **3** | **133** | **330** | **40** | **8** | **2** | **108** | **1033** |

| | NORTH | | | EAST | | | SOUTH | | | WEST | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
| Time Period | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| 11:00 - 12:00 | 3 | 180 | 5 | 20 | 1 | 1 | 75 | 155 | 20 | 6 | 1 | 62 | 529 |
| 11:15 - 12:15 | 3 | 186 | 4 | 26 | 2 | 2 | 78 | 161 | 24 | 6 | 0 | 57 | 549 |
| 11:30 - 12:30 | 1 | 164 | 7 | 32 | 1 | 1 | 71 | 161 | 23 | 3 | 0 | 55 | 519 |
| 11:45 - 12:45 | 0 | 173 | 5 | 28 | 1 | 2 | 64 | 162 | 24 | 2 | 1 | 44 | 506 |
| 12:00 - 13:00 | 0 | 163 | 7 | 27 | 3 | 2 | 58 | 175 | 20 | 2 | 1 | 46 | 504 |

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|---|---|---|---|---|---|
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| Location | CARRINGTON CENTENNIAL TRUST/WEROMBI RD/SMALLS RD | | | Suburb | GRASMERE |
| Weather | Fine | | | Job Number | |
| Comments | NO PEDESTRIANS DURING SURVEY | | | | |

| | Werombi Rd | | | Carrington C.T. | | | Werombi Rd | | | Smalls Rd | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Class | L | T | R | L | T | R | L | T | R | L | T | R | Total |
| Lights | 3 | 181 | 4 | 26 | 2 | 2 | 76 | 160 | 24 | 6 | 0 | 57 | 541 |
| Heavy | 0 | 5 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 0 | 0 | 0 | 8 |
| Total | 3 | 186 | 4 | 26 | 2 | 2 | 78 | 161 | 24 | 6 | 0 | 57 | 549 |