

T T W



**Consulting Engineers**

---

# **Traffic and Parking Report for New Mental Health Facilities Hornsby Ku-ring-gai Hospital**

---

## **for Health Infrastructure**

June 2011<sub>v5</sub>

Job No: 101762UT

**TTW NSW Pty Ltd**

L3, 48 Chandos Street  
St Leonards NSW 2065  
Phone: (02) 9439 7288  
Fax: (02) 9439 3146  
Email: [urap@ttw.com.au](mailto:urap@ttw.com.au)  
ABN 24 101 643 010  
ACN 101 643 010



**Quality  
Endorsed  
Company**  
ISO 9001  
QEC 6625/01

## TABLE OF CONTENTS

<b>1</b>	<b>INTRODUCTION.....</b>	<b>1</b>
1.1	Background.....	1
1.2	The Study Area.....	2
1.3	Scope of the Report.....	2
<b>2</b>	<b>EXISTING CONDITIONS .....</b>	<b>3</b>
2.1	Site Characteristics.....	3
2.2	Existing Peak Hour Traffic Volumes.....	4
2.3	Intersection Operation.....	5
2.4	Parking Supply.....	6
2.5	Public Transport.....	7
<b>3</b>	<b>PROPOSAL CONCEPT PLAN.....</b>	<b>8</b>
3.1	Future Population .....	8
3.2	Development Proposal .....	8
3.3	Parking.....	10
3.4	Access .....	11
3.5	Impact of the Development.....	12
3.6	Transport Accessibility .....	14
<b>4</b>	<b>CONCLUSION.....</b>	<b>17</b>

# **1 INTRODUCTION**

## **1.1 Background**

The proposed project is to provide access to mental health services at Hornsby Hospital for the Northern Sydney Local Health District (NSLHD) residents.

The project involves a purpose built 12 bed Child and Adolescent Mental Health (CAMHS) inpatient unit and a 35 bed Adult Mental Health (AMHU) in-patient unit at Hornsby Hospital.

The project is planned to be located in the North West Precinct of Hornsby Hospital on the corner of Palmerston Road and Lowe Road. The proposed development requires the demolition of existing Buildings 6 and the construction of a two storey building which will house the new Mental Health Unit.

Hornsby Ku-Ring-Gai Hospital (HKH) was identified as the preferred location for the area-wide CAMHS Inpatient service. This was due to its central location and the redevelopment of the HKH site in 2005 to provide a dedicated Mental Health precinct on the site. through the recently constructed MHICU facility and the proposed replacement of the existing Adult Acute facility on the site.

The HKH site is located approximately one kilometre to the east of Hornsby CBD. It occupies an area of about 6.4 hectares and provides a range of Level 4 health care services.

The proposal is to develop sections of the HKH campus to accommodate the new facilities. The proposed concept options are detailed as part of the Master Plan for the site.

The purpose of this report is to provide an assessment of traffic and parking requirements for the proposed developments within the HKH campus. This is an updated report which originally was issued in February 2009 and subsequently in December 2010.

## 1.2 The Study Area

The Study Area is shown in **Figure 1.1** and comprises:

- The proposed Mental Health grounds and car parking areas,
- Palmerston and Lowe Roads being the streets giving the major access to the site,
- The north western corner of HKH campus which has been identified as the Mental Health Services Zone.

## 1.3 Scope of the Report

The report is divided into four sections, following the introduction.

- Section 2; Existing Conditions.
- Section 3; Development Proposal
- Section 4; Conclusions



Figure 1.1

Site Location

## **2 EXISTING CONDITIONS**

### **2.1 Site Characteristics**

The proposed redevelopment site occupies an area south of Lowe Road and east of Palmerston Road. The site is located at the northern end of the HKH campus and is accessed via the entrance points known as Gates 3 and 4.

Surveys of HKH staff, outpatients and visitors on the mode of travel to and from the HKH campus have revealed that about 73% of staff drive cars while 11% walk and over 11% use the bus or train as their mode of travel. About 92% of outpatients and visitors use a car as their mode of travel with about 6% using public transport as their means of transport (Draft Report Hornsby Ku-ring-gai Hospital Traffic Report; TTW, 2003-2005).

#### **APPROACH ROUTES**

The major approach routes to the site are from Palmerston and Derby Roads to Lowe Road.

Palmerston Road is a four lane undivided carriageway with a parking lane along each side. A section of the road is one-way (north direction) between Burdett Street and Northcote Road.

Lowe Road, forms the northern boundary of the site has a two travel lanes with parking on each side. Angle parking is available on its northern side.

Derby Road has angle parking on its western side and has a carriageway with two travel lanes and parking on each side.

Burdett Street is treated with a traffic calming scheme and provides two travel lanes with angle parking.

The intersections of Burdett Street with Palmerston Road and Derby Street are controlled with stop signs, giving priority to Palmerston Road and Burdett Street, respectively.

The intersection of Palmerston Road and Northcote Road is T-junction with medians in Palmerston Road giving priority to movement to/from Northcote Road.

A pedestrian crossing is located in Palmerston Road near the entrance to the Hospital. Bus zones are located in Palmerston and Lowe Roads near the Hospital entrances.

Direction signposting to the Hospital has been provided by the Roads and Traffic Authority (RTA) at Edgeworth David Avenue and Pacific Highway to direct visitors to the Hospital site.

## 2.2 Existing Peak Hour Traffic Volumes

Traffic volume counts for the intersection of Lowe Road with Derby and Palmerston Roads were carried out during a peak hour period on February 2011. The findings showed a lower traffic volume along these routes in comparison to the results from September 2005 and March 2009 surveys.

The results of the survey indicated that Lowe Road experiences a peak traffic volume of 112 vehicles per hour (vph) (in comparison to 210 vph in 2005) while Derby and Palmerston Roads (at south of Lowe Road) having peak traffic volumes of 109 vph and 206 vph respectively (note: a higher traffic volume was observed on March 2005 i.e. 130 vph and 215 vph while 2009 data indicated lower traffic volumes in comparison to 2005 data).

**Table 2.1 Peak Hourly Traffic Volumes (vph) – AM and (PM)**

Street	Eastbound/NB	Westbound/SB	Total
Lower Rd	54 (73)	53 (39)	106 (112)
Palmerston Rd	146 (42)	60 (73)	206 (115)
Derby Road	42 (29)	67 (58)	109 (87)
Northcote Rd	102 (24)	170 (200)	272 (224)

Key: AM (PM)

## 2.3 Intersection Operation

The adequacy of the capacity of an intersection is judged by whether it can physically and operationally cater for the traffic using it.

The performances of the intersections have been assessed using the intersection modelling software. The model provides parameters of the performance of an intersection including the degree of saturation (DoS) and the average delay per vehicle.

Satisfactory operation of an intersection would normally continue up to 42 seconds as Average Delay/Vehicle. At this Level of Service (LoS) operating speeds are still reasonable and acceptable delays are experienced.

The recommended criteria for evaluating capacity of intersections are shown in **Table 2.2**.

**Table 2.2 Criteria for Evaluating Capacity of Intersection**

Level of Service	Degree of Saturation (DoS)	Ave. Delay/Veh. (Secs)
A/B good operation	less than 0.80	Less than 28
C satisfactory	0.80 to 0.85	29-42
D poor but manageable	0.85 to 0.90	43-56
E at capacity	0.90 to 1.0	57-70
F unsatisfactory, extra capacity required	Over 1.0	Over 70

Accordingly, an assessment of intersections performances were carried out using a traffic modelling software and the existing intersection layouts with consideration to the morning and afternoon commuter peak hour traffic volumes. The results of the assessment revealed that the all intersections i.e. Palmerston Road with Northcote Road and Derby Road with Lowe Road are operating at a good level of service during the morning and afternoon commuter peak hours on a weekday. The average delay for all vehicles at these intersections is well below the 28 seconds per vehicle (i.e. very good level of service), indicating an ample capacity at these intersections. Since the allowable maximum average delay for vehicles is about 70 seconds per vehicle.

**Table 2.3 Performance of Intersections**  
**AM and PM Commuter Peak Hour Traffic on a Weekday**

Intersection	Traffic Controls	Degree of Saturation DoS	Level of Service LoS	Average Delay/Veh Sec/Veh (approach)*
<b>AM PEAK HOUR</b>				
Palmerston Rd & Northcote	T- Junction	0.14	A	4.9 (6.0-2R)
Lowe Rd & Derby Rd	T- Junction	0.04	A	5.0 (5.7-1R)
<b>PM PEAK HOUR</b>				
Palmerston Rd & Northcote	T- Junction	0.10	A	5.2 (6.3-2R)
Lowe Rd & Derby Rd	T- Junction	0.05	A	5.2 (5.7-2R)

\* Highest delay on a major approach

The results of the assessment revealed that the above intersections are operating at a good level of service during the morning and afternoon commuter peak hours on a weekday. The average delay for all vehicles at these intersections is well below the reasonable maximum of 70 seconds per vehicle.

## 2.4 Parking Supply

An inventory of the parking spaces existing within the Study Area (related to the proposed redevelopment) has been undertaken, the results being summarised in **Table 2.4**.

**Table 2.4 Parking Supply in the Study Area** (development sites only)

CARPARK AREA	No of Spaces
Area A (near Maternity Unit)	70
Area B (south of Maternity Unit)	25
<b>Sub-Total</b>	<b>95</b>
On Street Parking - Lowe Road (bet Palmerston & Derby)	79
On Street Parking – Palmerston Road (north of Northcote Rd)	20
<b>TOTAL</b>	<b>194</b>

Note: 22 parking spaces are available off Gate 4 next to Bldgs. 6 and 51

The above figures for on street represent only parking areas that are within close walking distance to the proposed redevelopment site. It should be noted that there are additional on street parking spaces available in streets surrounding the Hospital campus.

## Use of Parking Spaces

Currently, the majority of parking areas within the above area are being used by the Hospital's staff and visitors. A utility rate of 100% is observed within the Mental Health Zone's ground between 10 AM to 2.30 PM during a weekday.

An observation of on street parking showed that Palmerston and Lowe Roads are being well utilised with a utility rate of over 80%.

**Table 2.5 Parking Occupancy - Number of Parked Cars**

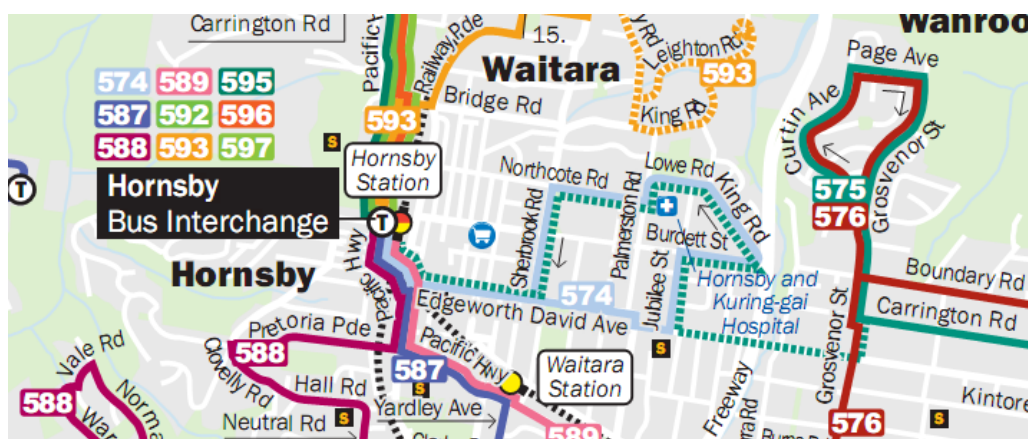
Area	Capacity	900	1000	1200	1400	1530	1700
Area A	70	69	83	80	83	62	35
Area B	25	20	21	20	17	20	18
<b>Sub Total</b>	<b>95</b>	<b>89</b>	<b>104</b>	<b>100</b>	<b>100</b>	<b>82</b>	<b>53</b>
Palmerston	20	20	20	20	18	18	8
Lowe	79	78	79	77	79	73	37
<b>Sub Total (street)</b>	<b>119</b>	<b>98</b>	<b>119</b>	<b>97</b>	<b>97</b>	<b>91</b>	<b>45</b>
<b>Total</b>	<b>194</b>	<b>187</b>	<b>223</b>	<b>197</b>	<b>197</b>	<b>173</b>	<b>98</b>

Survey Date: Wednesday 9.2.2011

## 2.5 Public Transport

Bus services (Route 574 and Route 575) are provided to the site by Shorelink Bus Company. Bus Route 575 provides a direct service between Hornsby Train Station and the HKH between the hours of 6.00 am and 9.00 pm, weekday (about every half an hour or 15 to 20 minutes during peak hours).

A number of bus routes provide services along the Pacific Highway within walking distance of the Hospital. Hornsby Railway Station is located about 1.4 km from the Hospital.



**Figure 2**

**Bus Routes**

### **3 PROPOSAL CONCEPT PLAN**

#### **3.1 Future Population**

The redevelopment site includes an in-patient Unit of 12 beds with a CAMHS Community service and a 35 bed Acute Adult In-patient Mental Health Unit.

In total the development has the potential to offer an additional 98 jobs to the Hornsby Ku-ring-gai site. Of these additional staff, it is expected that there will be a maximum of approximately 65 employees at the hospital with effective attendance of 54 staff at any one time. Appendix A provides the existing and future staff numbers for the site.

Considering the shift working hours and staff roster arrangements and 73% drive car as mode of travel among staff, some **40** additional staff would be present at the site during main working hours.

Due to the function of the proposed facilities, only a limited number of visitors to the site would be expected.

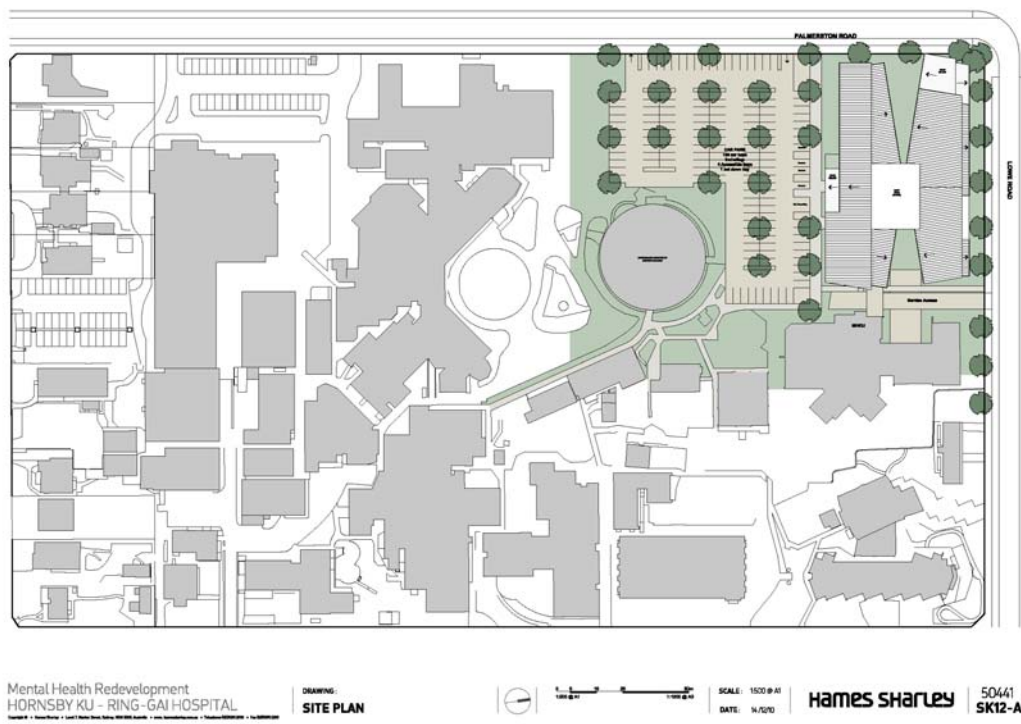
#### **3.2 Development Proposal**

The proposed works involve the extension and refurbishment of designated sites with the following decanting strategy:

1. Utilise buildings 2 (previous Emergency Department, 3 (previous Paediatrics), 20 (previous cafeteria), 38 (previous sewing room) and 22 (Workshop/Storage area) for permanent relocations
2. Utilise the existing Audiology House for on-call accommodation, requiring a minor extension to the rear.

The proposal includes the construction of a new two storey Inpatient Mental Health facilities to house:

- > A 35 bed Adult Acute Mental Health Unit, replacing the existing 25 bed Lindsay Madew Unit, currently on the eastern side of the site. This existing building is now dysfunctional and not large enough to accommodate the demand. The building is no longer considered appropriate to contemporary medical practice;
- > A 12 bed Child and Adolescence Mental Health Services (CAMHS);
- > Staff office and support facilities for both of the units will be co-located over both floors.
- > Staff office and support facilities for the CAMHS Community Team building which will be located on the first floor and integrated with the inpatient Unit. The CAMHS Community Service will relocate the existing Hornsby Sector team into new accommodation and will consolidate a number of staff who are currently located at Hillview in Turrumurra; and
- Provision of 155 car parking spaces to meet the required demand for the site,
- Development of associated landscaping and signage



**Figure 3.1**

**Development Proposal**

### 3.3 Parking

The proposal requires a maximum of **50** additional parking spaces as part of the new facilities. This includes 40 spaces for staff and 10 spaces for visitors including deliveries or patient transfer and occasional staff/other use. The parking demand for staff is based on 73% of car use (73% x 54 new staff). The provision for visitors' parking is based on activity of similar facilities. Patients generally are visited by friends or relatives during after-hours with an average stay of 1 hour. Due to the nature of the Unit, a very low level of visitors is expected. The parking requirement for visitors, deliveries and patient transfers amounts to a maximum of 5 spaces. Therefore, some 5 spaces are available for occasional staff or other uses.

Therefore, the required car parking supply/demand for the site will be to replace the existing 105 spaces on site plus 50 additional car parking spaces as part of the additional demand for the development which totals to **155** spaces.

The proposed parking strategy will involve the following car parking provision (155 spaces total) for the site:

1. **115** car parking spaces at MHU site including 26 VMO spaces
2. **25** car parking spaces at rear of buildings 12 and 19
3. **9** car spaces on the revised MICHU entry road
4. Creation of a net **4** additional spaces through revised line marking to the immediate north of building 2 (space for ambulance unloading (1 only) to be retained)
5. Creation of **2** spaces at the rear of building 31.

As the above strategy indicates an additional of some **50** spaces will be provided as part of the proposed parking measures to meet the required demand for the proposed development. Considering that not all the employees will be working at the same time and all the mental health patients will be transported to the site, the proposed parking provision will be appropriate for the proposed developments. The proposed parking supply consists of 155 spaces around the new buildings and within the Hospital's Campus. Parking for disabled are also provided at the main entry to the new buildings as shown in the architectural drawings.

### **3.4 Access**

The main pedestrian access routes to the site will be from Palmerston, Lowe and Derby Roads. The main pedestrian access to the site will be via Lowe Road.

Vehicular access points will be maintained via Palmerston Road while access for service vehicles will be off Lowe Road.

The site redevelopment will be designed on the basis of best practice and current guidelines, catering for disabled access and parents with prams.

The main vehicular access to the Hospital campus will be from the following points:

- Palmerston Road: Access to emergency, to the new carpark and to the pick up and set down facility at the Hospital Entrance.
- Lowe Road: Access to proposed redevelopment area for service vehicles;
- Derby Road: Access to the Hospital Campus.
- Burdett Street: Access to HKH campus and proposed parking area.

The proposed access arrangements will improve the existing access situation to the Hospital and will serve the Hospital's needs adequately.

Access points to the car parks will be 6.0 metre wide in accordance with Council's code, Roads and Traffic Authority's Guidelines and the Australian Standards. If it would be required, some car parking areas could be controlled by boom gates.

Deliveries and collection of linen, food and waste, etc. will be made from the existing hospital services areas which are accessed via the existing covered way network. It is expected that a very low level of such activities will occur as the result of the redevelopment i.e. 1 to 2 deliveries per day.

The emergency evacuation and public access for the site are based on the current standards and regulations and the existing plans for the Hospital Campus.

The key components of this proposal in relation to the movement of traffic and pedestrians are:

- Entry and exit for ambulance and service vehicles is proposed off Lowe Road between the proposed building and the exiting Mental Health Intensive Care Unit (MHICU) building to the South, and will service both this proposed MHU building and the existing MHICU.
- Access to the CAMHS, AAMH and CAMHS Community Team Units for both cars and pedestrians will be via Palmerston Road. This will lead into the car parking area for all of these facilities. The Palmerston Road car park will cater for 97 car parking spaces (4 disabled).
- Patient and Visitor Access to the AAMHU Inpatient Unit will be located in a dedicated entrance on the southern face of the building directly in front of the car park for ease of access.
- Patient and Visitor Access to the CAMHS Inpatient Unit and the CAMHS Community Team unit will be located in a dedicated entrance on the southern face of the building, separate to the AAMHU Inpatient Unit, and directly in front of the car park for ease of access.
- The new facilities are to be linked to the existing Main Hospital circulation system by a covered pedestrian footpath to provide for staff access and hotel services including linen, food and waste.
- Pedestrian links are provided to the existing adjacent MICHU to facilitate patient movement from the new Adult Acute Unit.

### **3.5 Impact of the Development**

The proposed development is expected to have a minimal impact on the road system and intersection performance of the area.

The current use of the site is similar to its future use with an additional capacity of some 50 parking spaces.

An assessment of traffic generation for the proposed development has been considered and findings indicate that any increase in traffic from the proposed development is minimal and is within the capacity of the current operation of the road network in the area. The following illustrates these findings.

- The additional peak hour traffic generation for the site will be at about **40-45** vehicle trips (35 staff (out of 50 during one hour period who drive/arrive to work by car) and 5 visitors/deliveries). Considering that staff arrive or depart within a 2-3 hour period, a lower peak hour traffic generation would be expected (staff working shift hours, part-time staff such as medical officers etc).
- This level of hourly traffic amounts for about less than 1 trip per 1 minute. Therefore, it has no adverse impact on the performances of the road network or intersection operation within the study area or street system in the vicinity of the HKH campus.

Nevertheless, the operations of the road system adjacent to the site are at a very good level of service and they can easily accommodate any possible increase of such traffic.

It is worth noting that the activities of the proposed development are spread during the whole day and therefore its impact on the operation of peak hour traffic would be very minimal. Therefore it should be noted that due to the confined nature of the proposed development and its low traffic generation (less than 1 vehicle per minute), no adverse impact will be experienced along road network system including Edgeworth David Avenue and its side streets.

**Table 3.1** **Future Performance of Intersections**  
**AM and PM Commuter Peak Hour Traffic on a Weekday**

Intersection	Traffic Controls	Degree of Saturation DoS	Level of Service LoS	Average Delay/Veh Sec/Veh (approach)*
<b>AM PEAK HOUR</b>				
Palmerston Rd & Northcote	T- Junction	0.19	A	5.2 (6.3-2R)
Lowe Rd & Derby Rd	T- Junction	0.07	A	5.2 (6.0-1R)
<b>PM PEAK HOUR</b>				
Palmerston Rd & Northcote	T- Junction	0.12	A	5.0 (6.1-2R)
Lowe Rd & Derby Rd	T- Junction	0.07	A	5.3 (6.0-2R)

\* Highest delay on a major approach

## 3.6 Transport Accessibility<sup>1</sup>

### **By Train and Bus**

The nearest railway stations are Waitara and Hornsby. Hornsby is accessible via both the main North line and the North Shore line. Waitara is on the North Shore line.

The Shorelink Bus service number 574 and 575 travel to Hornsby Ku-ring-gai Hospital from Hornsby Railway Station (near Station Street). These pick up and set down at the front entrance of the Hospital, in Palmerston Road. A timetable is available in the Appendix. Frequency of service is about every 30 minutes during peak hours and the total trip takes 50 minutes. To walk from Hornsby train station to the Hospital, it takes about 30 minutes.

There are no bus services to Hornsby Ku-ring-gai Hospital available from Waitara railway station.

Hornsby railway station has a ramp and a lift, so it is a more suitable choice for people with mobility issues.

### **By Car**

Hornsby Hospital is situated on Sydney's upper north shore and located 5 minutes from the F3 expressway. Main approach routes such as Pacific Highway and Edgeworth David Avenue provide main access links to the Hospital's surroundings. Off street parking is sometimes available at Lowe and Derby Roads, 2 hour parking spots are available in Palmerston Road between Burdett Street and Edgeworth David Avenue. Some parking areas are assigned for ambulances, medical staff and other special purposes.

---

<sup>1</sup> HKH Website; Transport

**By Taxi**

Hornsby Hospital covers a large area and Taxis can drop off/pick up at the exact point. Free taxi phones are located in the main entrance and emergency department.

**By Air**

The closest domestic and international airport is Sydney Airport. Trains are available from the airport via the City. Airport Express buses run between Central Railway Station and Sydney Airport.

**Walking**

The Hospital's website provides directions for walking to the Hospital and nearby railway stations as detailed below

.

1. From Waitara Station:

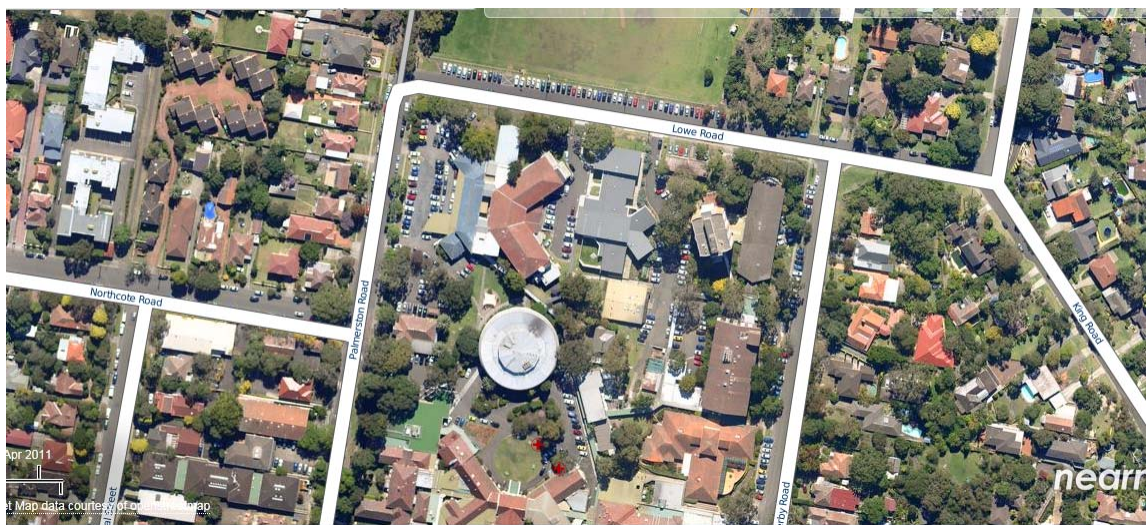
The distance to the Hospital from Waitara Station is approximately 1.5 km. You will need to leave the station on the Alexandria Avenue side. Cross at the pedestrian crossing to reach Waitara Avenue (it will be slightly to your right).

Walk along to the end of Waitara Avenue and take the pathway through to Edgeworth David Avenue. Just to your left there will be traffic lights where you may safely cross the road to the other side of Edgeworth David Avenue. Continue to your right along Edgeworth David Avenue until you reach Palmerston Road and turn left into Palmerston Road. You will come to the main Hospital entrance on your right hand side, soon after you cross Burdett Street.

2. From Hornsby Station

The distance to the Hospital from Hornsby Station is approximately 1.8 km. No matter which route is taken, part of the walk will be 'uphill'. You would need to leave the station on the George Street side, and it is safest to use the pedestrian overpass, which will bring you out near the mall. Walk down through the Mall and continue down Florence Street to the 'T' intersection. Turn left and walk down Sherbrook Road until you reach the intersection with Burdett Street. Cross to the opposite side of Burdett Street at the lights. Then cross at the lights on that side to walk on the footpath up the hill along Burdett Street. Continue to walk up Burdett Street. Eventually you will come to Palmerston Road. If you then turn left and walk along you will soon come to the main Hospital entrance on your right hand side.

It is envisaged that Hospital management to provide guidelines and incentives to encourage active and public transport particularly among staff, such as UP4Health and Go Active 2 Work (*Health Promotion* January – June 2009; NSCCAHS). Bicycle racks are be placed at appropriate locations within the Campus. The current and proposed pedestrian footpaths/walkways and facilities for cyclist together with *Health Promotions* will provide better amenity and information for the users of the Hospital and hence reduce car dependency.



Source: [nearmap.com](http://nearmap.com)

## **4 CONCLUSION**

The routes to the site are Burdett Street, Lowe, Derby and Palmerston Roads. These roads have a satisfactory level of service and will continue to have a similar level of service once the proposed CAMHS and other related works are completed.

The proposed redevelopment site will be designed on the basis of best practice and current guidelines, catering for disabled access and parents with prams. Pedestrian footpaths are available along Lowe, Derby and Palmerston Roads.

The vehicular access lay out to the proposed redevelopment site should be in accordance with the Roads and Traffic Authority's (RTA) Guidelines, Australian Standard and Council's Code.

It has been estimated that about 40 vehicles during a peak hour could be generated by the proposed development. Thus this level of vehicular traffic resulting from the subject development will not be significant and the road network will continue to have good operational characteristics.

The proposed development provides an additional 50 parking spaces as part of its parking management scheme. This provides an appropriate level of parking for the development site (including a surplus of 5 car parking spaces in addition to its parking demand) – considering Hospital's management efforts to encourage staff to use public and/or active transport as their means of travel to and from the Hospital. Accordingly, this complies with RTA's Guide for Traffic Generating Developments and Council's code (on the basis of needs assessment).

**References:**

Draft Traffic Report, Hornsby Ku-ring-gai Hospital, TTW 2003

Traffic and Parking Report, Mental Health Intensive Care Unit Hornsby Hospital; URaP-TTW, 2005

Health Promotion, *Project Actions January – June 2009*; NSW Health NSCCAHS

Hornsby Ku-Ring Gai Hospital Mental Health Unit Project Decanting and Carparking Strategies  
TSA Management, Matters for Design 24 March 2011

## **APPENDIX A**

## **Hornsby MHU**

### **Staff Numbers for Parking Calculations.**

#### **1.0 Adult Inpatient Unit**

##### **1.1 Existing Adult MHU**

Estimate of current staff occupying existing LMU

Morning - (nursing, medical, allied health and clerical) about 20

Afternoon ( handover / overlap period between about 1 pm - 3pm ) - 24

##### **1.2 New Adult MHU**

Morning - ( nursing, medical, allied health and clerical) about 38 / 40

Afternoon - (handover/overlap period between about 1 pm - 3pm) 50

This is based on all staff being on duty on any given day which does not occur in real

time because of leave /other absences etc.

##### **1.3 Additional staff for Adult MHU = 26**

#### **2.0 CAMHS Community Service & CAMHS Inpatient Unit**

##### **2.1 CAMHS Community Service Current**

Monday to Friday (9-5) 13 staff

##### **2.2 CAMHS Community Service Proposed**

Monday to Friday (9-5) 20 staff in total - additional 7

##### **2.3 New CAMHS Inpatient Unit**

Monday to Friday 9-5 Non Direct Care Staff - 11

Morning (All week) Direct Care Staff - 5

Afternoon (All week) Direct Care Staff 5. With overlap between 1 and 3 - allow

10 Night (All Week) 4 Direct care staff

##### **2.4 Additional staff for CAMHS Community Service & CAMHS Inpatient Unit**

**7+11+10=28**



#### **3.0 Total additional parking spaces**

Subtotal for new staff for Adult & CAMHS = 54

Allow for 73% attendance = 40 + 10 visitors/etc = 50 new spaces


Allow to replace existing 105 on site – total provision for development = 155



Sunday & Public Holidays*										
map ref	Route Number	575	575	575	575	575	575	575	575	575
		am	am	am	am	pm	pm	pm	pm	pm
<b>L</b>	<b>Hornsby Station</b> (Interchange)	8.00	9.00	10.00	11.00	12.00	1.00	2.00	3.00	4.00
<b>K</b>	<b>Lowe Rd &amp; Palmerston Rd</b>	8.04	9.04	10.04	11.04	12.04	1.04	2.04	3.04	4.04
<b>J</b>	<b>Waitara</b> (Jubilee St)	8.07	9.07	10.07	11.07	12.07	1.07	2.07	3.07	4.07
<b>I</b>	<b>Kintore St &amp; Eastern Rd</b>	8.11	9.11	10.11	11.11	12.11	1.11	2.11	3.11	4.11
<b>H</b>	<b>Wahroonga East Shops</b>	8.12	9.12	10.12	11.12	12.12	1.12	2.12	3.12	4.12
<b>G</b>	<b>Turramurra Station</b> (Rohini St)	8.19	9.19	10.19	11.19	12.19	1.19	2.19	3.19	4.19
<b>F</b>	<b>Boronia Ave &amp; Kissing Point Rd</b>	8.23	9.23	10.23	11.23	12.23	1.23	2.23	3.23	4.23
<b>E</b>	<b>Turramurra High School</b>	8.27	9.27	10.27	11.27	12.27	1.27	2.27	3.27	4.27
<b>D</b>	<b>Parker Ave &amp; Comenarra Pkwy</b>	8.34	9.34	10.34	11.34	12.34	1.34	2.34	3.34	4.34
<b>C</b>	<b>Fontenoy Rd &amp; Lane Cove Rd</b>	8.41	9.41	10.41	11.41	12.41	1.41	2.41	3.41	4.41
<b>B</b>	<b>Macquarie Centre</b> (Herring Rd)	8.46	9.46	10.46	11.46	12.46	1.46	2.46	3.46	4.46
<b>A</b>	<b>Macquarie University</b>	8.48	9.48	10.48	11.48	12.48	1.48	2.48	3.48	4.48

- A – Bus diverts to West Pymble P.S.
- C – Bus diverts via Catalpa Cr, near Godfrey Ave.
-  – Accessible buses operate this service (For operational requirements TransdevTSL reserves the right to substitute conventional buses).

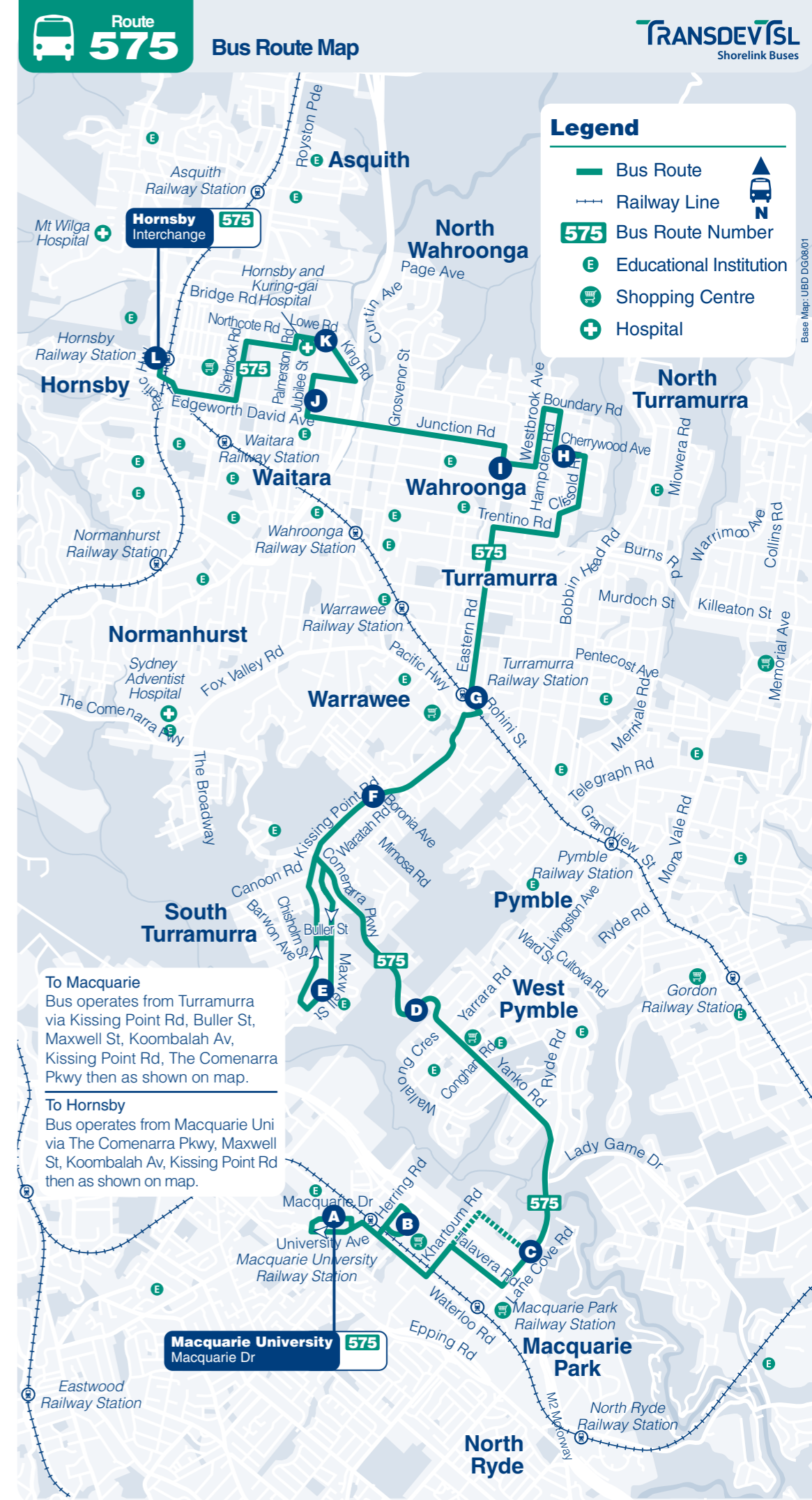
**i** Easter Saturday services run to Public Holidays timetable. \* No service on Christmas Day.

 See other side for →  
services to Hornsby

# Get your group around town quickly and safely

with TransdevTSL - Shorelink Buses bus charter

TransdevTSL - Shorelink Buses has a fleet of nearly 100 modern buses which are capable of fulfilling almost any requirement. Buses can seat up to 57 adult passengers. To discuss your requirements, please telephone us between 8.30am to 5.00pm Monday - Friday on 9457 8888.



Count Number 7237

Lat/Long : S33 42 04.1 / E151 06 47.7

UBD 133 N-16

Street LOWE ROAD, HORNSBY : Between PALMERSTON ROAD &amp; KING ROAD (bidirectional)

Location Between Palmerston Road and Derby Road, ELP MC9166

Start Date 29-MAR-11

Start Time 1400

Duration 7 DAYS

Interval 1 HOUR

Speed Limit 50

EAST

WEST

COMBINED

Weekly 50th Percentile Speed

37

35

36

Weekly 85th Percentile Speed

48

46

48

Five Day AADT

800

517

1317

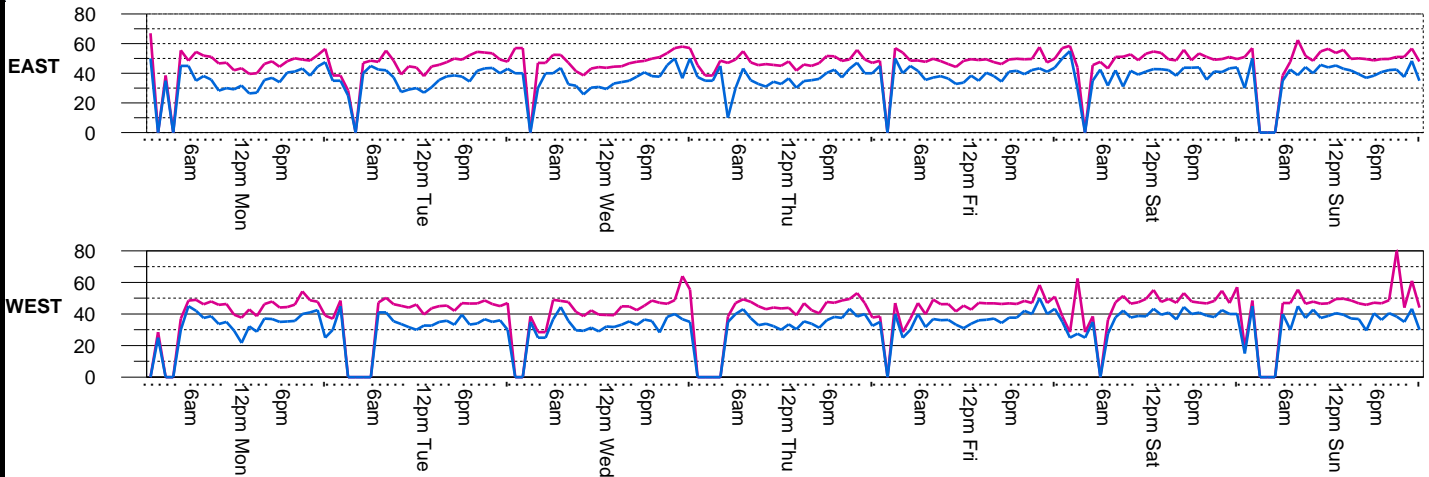
Seven Day AADT

698

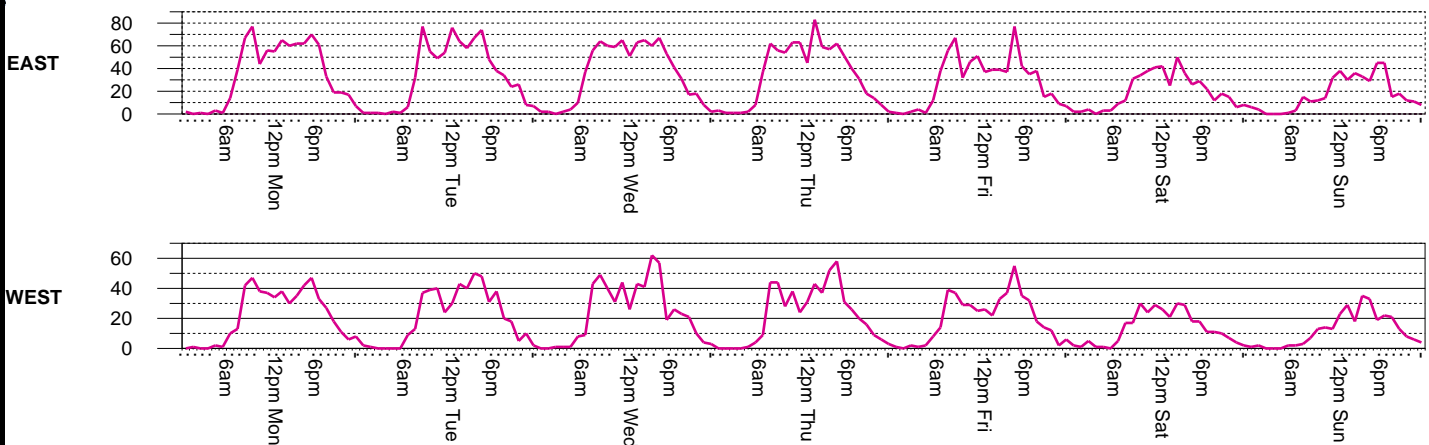
456

1154

	MON 04-APR-11			TUE 29-MAR-11			WED 30-MAR-11			THU 31-MAR-11			FRI 01-APR-11			SAT 02-APR-11			SUN 03-APR-11			SEVENDAY AVERAGE		
	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir	EAST	WEST	BiDir
85%ile	47.3	45.6	46.7	47.7	45.5	46.9	47.2	44.5	46.2	47.5	45.6	46.8	48.5	46.9	47.9	51.3	48.8	49.8	52.4	47.9	49.7	48.9	46.4	47.7
50%ile	34.2	34.6	34.4	35.3	34.5	34.9	34.5	33.2	33.9	35.8	34.2	35.1	37.7	36.3	37.1	41.3	39.3	40.5	41.7	38.1	40.4	37.2	35.8	36.6
> 60 k	7	2	9	6	3	9	6	7	13	5	3	8	6	3	9	5	4	9	11	3	14	6.571	3.571	10.14
%age	.8	.4	.7	.7	.6	.7	.7	1.2	.9	.6	.6	.6	.9	.6	.8	1.1	1.3	1.1	2.6	1.0	2.0	1.1	.8	1.0
> 70 k	2	0	2	0	1	1	2	2	4	1	1	2	2	3	5	1	0	1	1	2	3	1.286	1.286	2.571
%age	.2	.0	.1	.0	.2	.1	.2	.4	.3	.1	.2	.1	.3	.6	.4	.2	.0	.1	.2	.7	.4	.2	.3	.2



Short %	91.4	92.3	91.7	92.9	92.2	92.6	90.1	89.1	89.7	92.8	92.7	92.8	92.5	93.7	93.0	91.7	92.5	92.0	96.9	95.5	96.3	92.3	92.3	92.3
Med %	4.6	4.0	4.4	4.0	3.4	3.8	5.1	7.5	6.1	3.5	3.6	3.6	4.3	4.2	4.2	3.2	2.5	2.9	1.4	1.4	1.4	4.0	4.1	4.0
Long %	4.1	3.7	3.9	3.1	4.4	3.6	4.8	3.4	4.2	3.7	3.6	3.6	3.3	2.1	2.8	5.1	5.0	5.1	1.7	3.1	2.3	3.7	3.6	3.7
AM Pk Vo	77	47	123	77	40	114	65	49	113	63	44	105	67	39	104	41	30	70	32	14	45	60	38	96
PM Pk Vo	70	47	117	76	50	122	67	62	124	83	58	126	77	55	132	50	30	80	45	35	68	67	48	110
7-7pm 24Hr Tot	718	436	1154	692	433	1125	704	481	1185	695	456	1151	558	399	957	386	270	656	340	229	569	585	386	971
	834	520	1354	803	500	1303	837	562	1399	821	524	1345	703	479	1182	468	319	787	418	288	706	698	456	1154
Class 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 1	761	478	1239	745	460	1205	753	500	1253	757	485	1242	647	448	1095	426	294	720	405	275	680	642	420	1062
Class 2	1	2	3	1	1	2	1	1	2	5	1	6	3	1	4	3	1	4	0	0	0	2	1	3
Class 3	33	13	46	24	14	38	34	27	61	19	14	33	24	15	39	12	4	16	6	2	8	22	13	34
Class 4	5	5	10	7	2	9	9	10	19	7	4	11	5	2	7	3	3	6	0	2	2	5	4	9
Class 5	0	3	3	1	1	2	0	5	5	3	1	4	1	3	4	0	1	1	0	0	0	1	2	3
Class 6	0	0	0	0	0	0	1	1	1	1	0	1	1	1	1	0	0	0	0	0	0	0	0	0
Class 7	0	0	0	0	1	1	1	0	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
Class 8	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 13	33	19	52	25	21	46	38	19	57	29	19	48	22	9	31	24	16	40	7	9	16	25	16	41



Count Number 7237 Ref : URAP Lat/Long : S33 42 04.1 / E151 06 47.7 UBD 133 N-16  
 Street LOWE ROAD, HORNSBY : Between PALMERSTON ROAD & KING ROAD (bidirectional) :  
 Location Between Palmerston Road and Derby Road, ELP MC9166 Carriageway

Start Date 29-MAR-11  
 Start Time 1400  
 Duration 7 DAYS  
 Interval 1 HOUR

Weekly 50th Percentile Speed 36  
 Weekly 85th Percentile Speed 48  
 Five Day AADT 1317  
 Seven Day AADT 1154

## TOTAL COUNT MATRIX

	MON 4TH	TUE 29TH / 5TH	WED 30TH	THU 31ST	FRI 1ST	SAT 2ND	SUN 3RD	5 Day Total Average		7 Day Total Average	
Midnight - 1am	2	3	2	3	2	4	7	12	2	23	3
1am - 2am	1	2	2	1	0	3	6	6	1	15	2
2am - 3am	1	1	1	1	4	9	0	8	2	17	2
3am - 4am	0	0	3	1	5	1	0	9	2	10	1
4am - 5am	5	2	5	3	3	4	0	18	4	22	3
5am - 6am	2	1	18	12	20	3	3	53	11	59	8
6am - 7am	24	15	46	46	52	14	5	183	37	202	29
7am - 8am	52	45	99	106	95	29	18	397	79	444	63
8am - 9am	109	114	113	100	104	48	18	540	108	606	87
9am - 10am	124	94	100	82	61	64	25	461	92	550	79
10am - 11am	82	89	90	101	75	62	28	437	87	527	75
11am - Midday	93	78	109	87	76	70	45	443	89	558	80
Midday - 1pm	89	106	77	76	63	68	61	411	82	540	77
1pm - 2pm	103	107	106	126	61	46	59	503	101	608	87
2pm - 3pm	90	98	106	96	72	80	54	462	92	596	85
3pm - 4pm	97	117	122	109	74	65	68	519	104	652	93
4pm - 5pm	104	122	124	120	132	44	62	602	120	708	101
5pm - 6pm	117	79	72	82	77	47	64	427	85	538	77
6pm - 7pm	94	76	67	66	67	33	67	370	74	470	67
7pm - 8pm	60	54	54	51	56	23	36	275	55	334	48
8pm - 9pm	37	42	38	34	29	28	31	180	36	239	34
9pm - 10pm	30	31	28	23	30	22	20	142	28	184	26
10pm - 11pm	23	18	12	14	11	10	17	78	16	105	15
11pm - Midnight	15	9	5	5	13	10	12	47	9	69	10
Total	1354	1303	1399	1345	1182	787	706	6583	1316	8076	1153

Count Number 7238

Lat/Long : S33 42 05.0 / E151 06 41.7

UBD 133 M-16

Street PALMERSTON ROAD, HORNSBY : Between EDGEWORTH DAVID AVENUE &amp; LOWE ROAD (bidirectional)

Location Just north of Northcote Road, House No. 61, ELP MC9135

Start Date 06-JUN-11

Start Time 1200

Duration 7 DAYS

Interval 1 HOUR

Speed Limit 50

NORTH

SOUTH

COMBINED

Weekly 50th Percentile Speed

35

34

34

Weekly 85th Percentile Speed

45

41

44

Five Day AADT

1163

790

1953

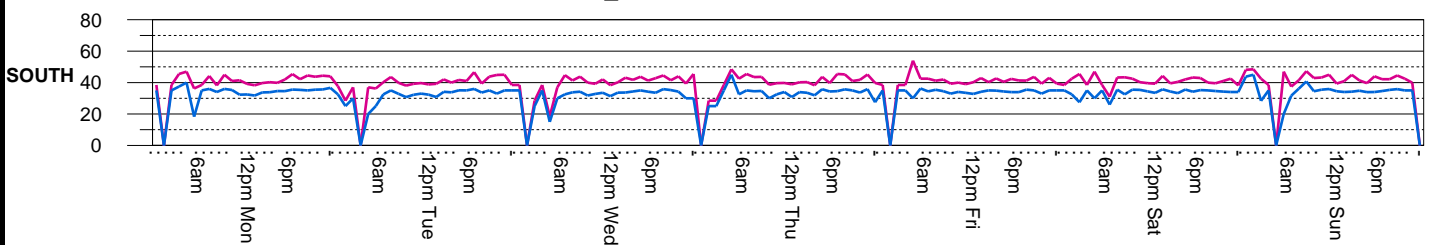
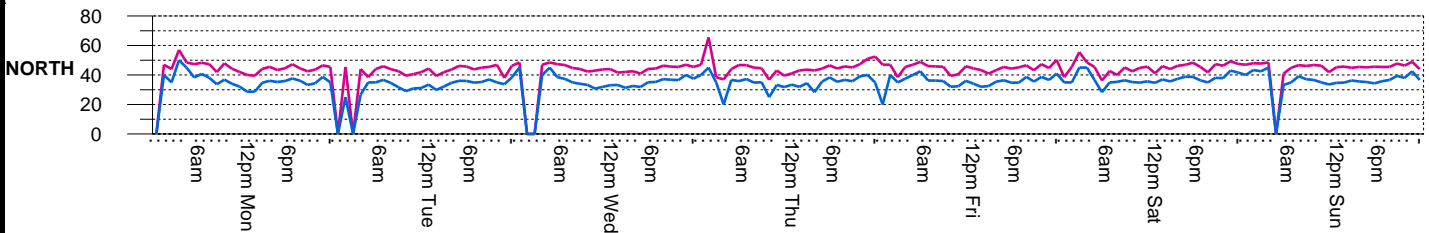
Seven Day AADT

1029

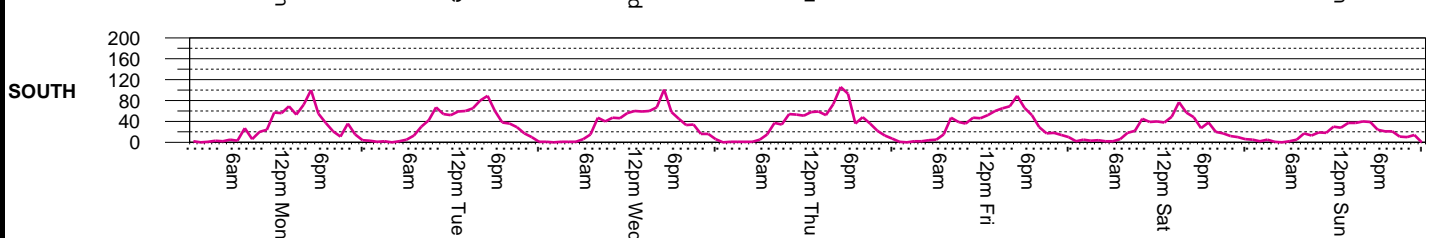
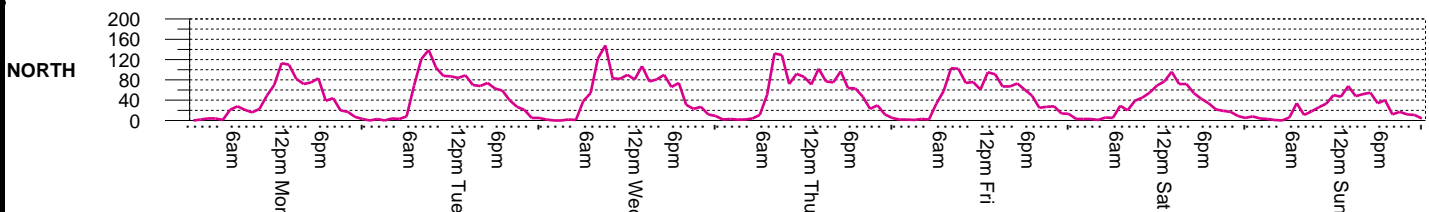
705

1735

	MON 06-JUN-11			TUE 07-JUN-11			WED 08-JUN-11			THU 09-JUN-11			FRI 10-JUN-11			SAT 11-JUN-11			SUN 12-JUN-11			SEVENDAY AVERAGE		
	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir	NORTH	SOUTH	BiDir
85%ile	44.4	41.0	43.3	43.6	40.3	42.6	44.2	41.8	43.4	44.2	41.3	43.3	45.0	41.1	43.8	45.4	41.0	44.1	45.7	43.2	44.9	44.7	41.4	43.6
50%ile	34.3	34.2	34.2	33.4	33.5	33.4	34.1	33.7	33.9	34.2	33.8	34.0	35.1	34.4	34.7	36.3	34.6	35.5	35.7	35.0	35.4	34.7	34.2	34.5
> 60 k	0	3	3	1	0	1	1	1	2	3	1	4	2	4	6	0	0	0	1	0	1	1.143	1.286	2.429
%age	0	4	2	1	0	0	1	1	1	2	1	2	2	5	3	0	0	0	2	0	1	1	2	1
> 70 k	0	2	2	1	0	1	0	1	1	2	1	3	0	1	1	0	0	0	0	0	0	0	0	0
%age	0	3	1	1	0	0	0	1	0	2	1	1	0	1	1	0	0	0	0	0	0	0	0	0



Short %	93.0	92.5	92.8	93.6	92.5	93.2	93.4	90.9	92.4	91.7	92.3	91.9	93.8	92.5	93.3	97.0	96.9	97.0	97.0	97.5	97.2	93.8	93.1	93.6
Med %	5.2	6.2	5.6	4.7	6.6	5.5	4.7	7.6	5.8	5.9	6.4	6.1	4.4	6.5	5.3	2.4	2.6	2.5	1.9	2.3	2.0	4.4	5.8	5.0
Long %	1.8	1.3	1.6	1.7	.9	1.4	1.9	1.5	1.7	2.4	1.3	1.9	1.8	1.0	1.5	.6	.5	.6	1.2	.3	.8	1.7	1.0	1.4
AM Pk Vo	70	57	127	139	67	181	148	56	188	132	54	169	103	47	150	69	45	109	50	30	80	102	51	143
PM Pk Vo	113	100	179	89	89	163	107	101	191	102	106	203	95	89	162	96	77	149	68	40	105	96	86	165
7-7pm 24Hr Tot	753	576	1329	1046	696	1742	1101	686	1787	1060	706	1766	919	668	1587	676	498	1174	482	323	805	862	593	1456
	904	679	1583	1231	815	2046	1300	816	2116	1252	856	2108	1127	785	1912	798	587	1385	594	399	993	1029	705	1735
Class 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 1	838	628	1466	1149	751	1900	1209	741	1950	1148	788	1936	1050	724	1774	770	567	1337	575	389	964	963	655	1618
Class 2	3	0	3	3	3	6	5	1	6	0	2	2	7	2	9	4	2	6	1	0	1	3	1	5
Class 3	38	33	71	48	46	94	53	60	113	53	46	99	42	47	89	17	10	27	11	8	19	37	36	73
Class 4	6	5	11	8	7	15	8	2	10	13	8	21	6	2	8	2	4	6	0	1	1	6	4	10
Class 5	3	4	7	2	1	3	0	0	0	8	1	2	2	2	4	0	1	1	0	0	0	2	1	3
Class 6	0	0	0	0	0	0	0	0	0	1	1	0	1	0	1	0	0	0	0	0	0	0	0	0
Class 7	0	2	2	2	1	0	4	0	4	5	0	0	1	0	1	1	0	1	1	0	1	2	0	2
Class 8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Class 9	0	1	1	1	0	2	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0
Class 12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Class 13	16	6	22	18	5	23	21	12	33	23	10	33	17	8	25	4	3	7	5	1	6	15	6	21



Count Number 7238 Ref : URAP Lat/Long : S33 42 05.0 / E151 06 41.7 UBD 133 M-16  
 Street PALMERSTON ROAD, HORNSBY : Between EDGEWORTH DAVID AVENUE & LOWE ROAD (bidirectional) :  
 Location Just north of Northcote Road, House No. 61, ELP MC9135 Carriageway

Start Date 06-JUN-11  
 Start Time 1200  
 Duration 7 DAYS  
 Interval 1 HOUR

Weekly 50th Percentile Speed 34  
 Weekly 85th Percentile Speed 44  
 Five Day AADT 1953  
 Seven Day AADT 1735

## TOTAL COUNT MATRIX

	MON 13TH / 6TH	TUE 7TH	WED 8TH	THU 9TH	FRI 10TH	SAT 11TH	SUN 12TH	5 Day Total Average		7 Day Total Average	
Midnight - 1am	2	3	3	2	3	5	13	13	3	31	4
1am - 2am	2	4	0	4	2	8	6	12	2	26	4
2am - 3am	5	2	1	3	3	6	8	14	3	28	4
3am - 4am	7	4	3	3	5	5	2	22	4	29	4
4am - 5am	3	5	2	5	6	8	0	21	4	29	4
5am - 6am	26	13	44	16	38	7	8	137	27	152	22
6am - 7am	31	82	69	66	73	35	39	321	64	395	56
7am - 8am	48	151	169	169	150	38	28	687	137	753	108
8am - 9am	22	181	188	163	141	61	31	695	139	787	112
9am - 10am	43	171	130	126	110	90	45	580	116	715	102
10am - 11am	73	142	128	145	123	94	51	611	122	756	108
11am - Midday	127	139	146	137	107	109	80	656	131	845	121
Midday - 1pm	169	143	141	129	147	115	75	729	146	919	131
1pm - 2pm	179	149	166	161	151	145	105	806	161	1056	151
2pm - 3pm	135	135	137	129	132	149	85	668	134	902	129
3pm - 4pm	144	148	148	148	136	129	92	724	145	945	135
4pm - 5pm	175	163	191	203	162	102	94	894	179	1090	156
5pm - 6pm	138	123	124	157	127	70	58	669	134	797	114
6pm - 7pm	76	97	119	99	101	72	61	492	98	625	89
7pm - 8pm	65	76	64	95	54	42	33	354	71	429	61
8pm - 9pm	31	56	57	59	44	36	28	247	49	311	44
9pm - 10pm	53	38	43	52	46	29	22	232	46	283	40
10pm - 11pm	22	15	28	25	28	19	25	118	24	162	23
11pm - Midnight	7	6	15	12	23	11	4	63	13	78	11
Total	1583	2046	2116	2108	1912	1385	993	9765	1953	12143	1734