

Seniors Housing Development, Scottish Hospital
Paddington - Transport Assessment

16 June 2010

Prepared for
**Presbyterian Church (NSW) Property
Trust**

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1 Introduction

Presbyterian Aged Care NSW & ACT (PAC) proposes to expand its aged care services on the Scottish Hospital Site, Paddington.

PAC is a Ministry of the Presbyterian Church in NSW and the ACT. Its charter is to provide care and accommodation for older people, with a commitment to excellence inspired by the Christian faith. PAC provides residential care, community care and seniors housing at sites across NSW and the ACT. PAC has been providing aged care and health services at the Scottish Hospital Site for over 100 years and currently operates the 88 bed aged care building on the site that provides nursing home and hostel accommodation.

With a rapidly ageing population and fewer opportunities available for older people to secure accommodation in Inner Sydney, the redevelopment of the site will greatly assist in addressing the insufficient supply of aged care accommodation across all welfare levels.

PAC seeks to develop on the site:

- 78 independent living units on the site ranging in size from 1 through to 3 bedroom apartments;
- 112 residential care beds in nursing home style accommodation with a proportion set aside for dementia patients; and
- ancillary care services to facilitate an ageing in place care model.

This report has been prepared for PAC to examine the transport implications of a proposed expansion of aged care facilities. The now terminated hospital function on the site would be displaced by the proposed aged care facilities, but existing heritage buildings would be retained.

This report addresses issues pertaining to site access, parking and internal traffic arrangements, traffic generation and its impact on the surrounding road system and intersections. It also addresses pedestrian and public transport access to the site.

It is organised into the following chapters:

- Chapter 2 describes the existing traffic conditions in the vicinity of the site;
- Chapter 3 examines the proposed development, its internal traffic arrangement and its predicted traffic generation;
- Chapter 4 examines the site access and any implications this will have on the neighbouring roads;
- Chapter 5 presents a summary and conclusion.

This report updates and builds on earlier 1997 and 2001 Halcrow (formerly Masson Wilson Twiney) studies for similar schemes on the hospital site.

2 Background Situation

2.1 *Site Location*

The Scottish Hospital site is located in Paddington in Sydney's Eastern Suburbs. The campus is surrounded by residential areas and is bounded by Brown Street/Neild Avenue, Cooper Street, Stephen Street and a reserve on its northern side. Development on the site comprises the Scottish Hospital building on the southern side and an aged care building on the western side.

The site has one main vehicle access on Neild Avenue, almost opposite Dillon Street. This entry provides access to the car park and the main entrance to the hostel and nursing home. The front entry to the former hospital is located on Cooper Street. There is no vehicle access at this entrance but there is an ambulance bay. There is also a loading bay on Stephen Street that was used by the hospital when operating.

The location of the site is indicated on **Figure 1**.

2.2 *Development on the Site*

2.2.1 *Scottish Hospital*

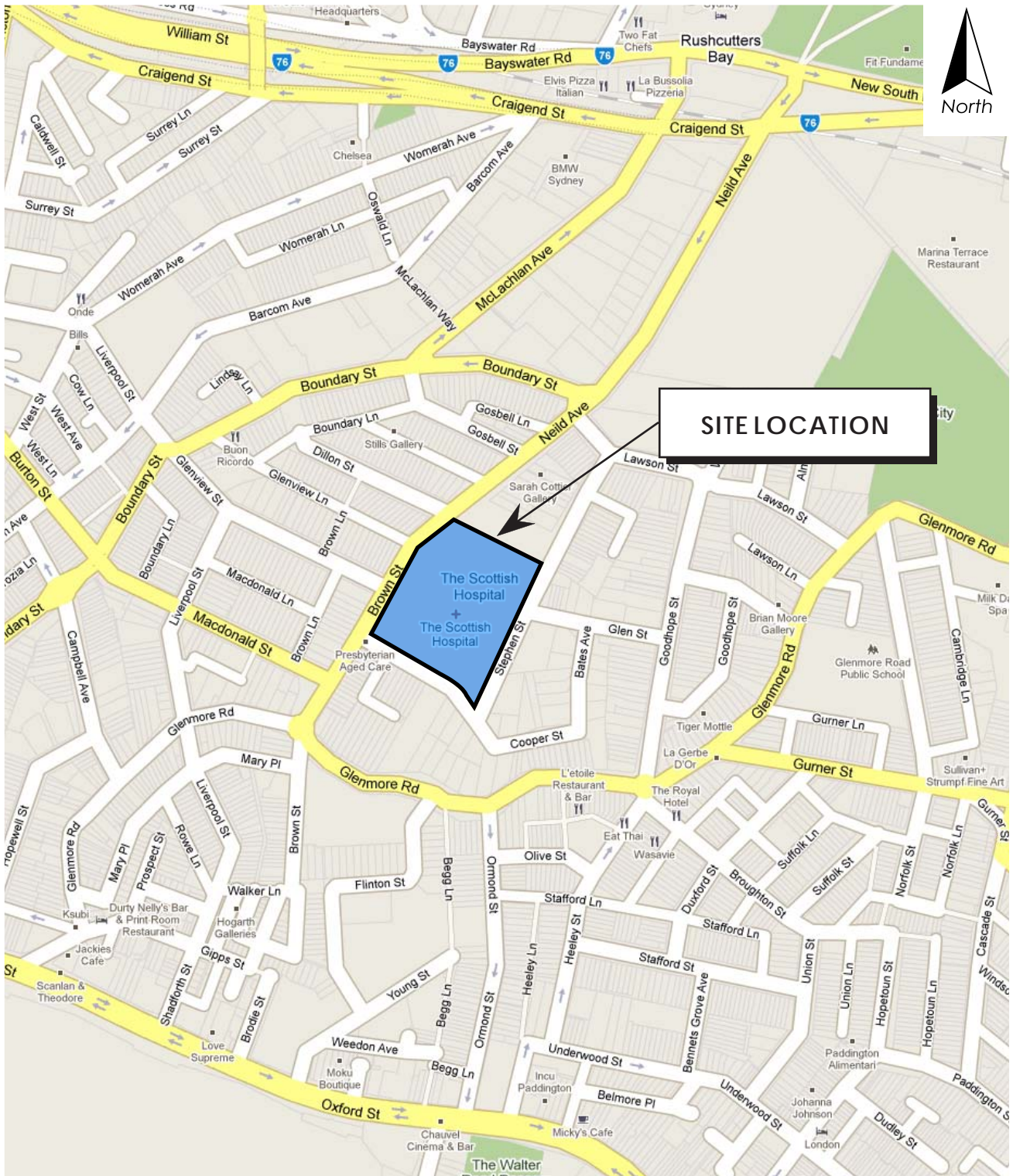
The Scottish Hospital was a private hospital formerly under the care of Impact Health Pty Ltd. After the dissolution of this company in 1997, the hospital ceased to operate.

The hospital is housed in a 150 year old building which has had additions made at various times. The site ground level falls from south to north. There are two floor levels of the hospital above the level of Cooper Street at the southern end of the site. The northern end of the site consists of a landscaped area and car park which is set well below the level of the main ward block.

The main entrance to the hospital building is on Cooper Street and is a pedestrian only entrance. The existing car park on the lower level of the site accessed via the vehicle entrance on Neild Avenue, provided parking for staff and visitors to both the hospital and the nursing home.

SITE LOCATION

SENIORS HOUSING DEVELOPMENT, SCOTTISH HOSPITAL



The hospital provided between 54 and 60 beds when operating. It had operating rooms in which both day surgery and overnight care surgery were performed.

2.2.2 Nursing Home/Hostel

An aged care facility comprising a nursing home and hostel is located in a separate building on the western end of the site, with its lower level at the same level as the car park. The aged care facility has always been run separately from the hospital by PAC.

The aged care facility is still operational and has 88 beds. There is a car park underneath with parking for 12 cars. Previously, when the Scottish Hospital operated, the aged care building was allocated a further 9 spaces in the open. It now has full use of all car parking on the site. The complex also has one space dedicated for a 19 seater minibus which is used for resident outings.

2.3 Description of the Road System

2.3.1 Local Road Network

The main road that serves the area is Brown Street, which changes name to Neild Avenue near the site access. These roads serve as a collector route in the road hierarchy which provides a southbound access function to/from New South Head Road, an arterial route. Parking is restricted along one or both sides of Brown Street and Neild Avenue in the vicinity of the site to ensure that one free flowing travel lane is provided for traffic each way

Cooper Street is a narrow local street cul-de-sac. Parking is allowed on the southern side but not on the northern side (adjacent to the hospital building). Lawson Street operates as a collector road between Neild Avenue and Glenmore Road. It has parking on each side plus one travel lane each way.

Stephen Road is a local street. Between Lawson Street and Glen Street it is relatively wide for a local street with one parking lane and one traffic lane each way. At Glen Street it forms a cul-de-sac and tapers to afford only one travel lane between parking on each side of the road.

2.3.2 *Traffic Flows*

In order to determine the traffic currently generated by the nursing home and hostel, weekday morning and evening traffic counts at the site access on Neild Avenue were undertaken during the first week of December, 2009.

These peak hour traffic flows are presented on **Table 2.1** along with historic traffic counts carried out in 1999 for an earlier study of the site.

Table 2.1 – Existing Traffic Flows at Site Access, Neild Avenue

| | Inbound | Outbound | Two-way |
|---------------------|---------|----------|---------|
| Morning Peak | | | |
| - 2009 Survey | 3 | 3 | 6 |
| - 1999 Survey | 4 | 3 | 7 |
| Evening Peak | | | |
| - 2009 Survey | 2 | 2 | 4 |
| - 1999 Survey | 9 | 9 | 18 |

Table 2.1 shows that the morning peak traffic generation has remained fairly constant, whilst the evening peak flows indicate a drop in evening peak traffic generation. Part of the drop of evening traffic generation is explained by the fact that in 1999, 95 care beds were in operation whereas the number now is 88. However, as staff shift changes do not take place during the evening peak period, the change is most likely attributable to changed visitor patterns.

Not only are the 1999 surveyed flows higher, they were average results for a week long survey of traffic to/from the site. Therefore, the 1999 results are considered to provide the more suitable and conservative reflection of the site's traffic generating potential.

The 1999 survey also indicated that on average the facility generated 208 vehicle movements per day.

By applying the 95 care beds to the 1999 average survey results, an indicative trip generation by care bed for the existing nursing home can be calculated. The resulting trip rates from this calculation are:

- Morning peak hour – 0.08 vehicles / hour / bed;
- Evening peak hour – 0.19 vehicles / hour / bed; and
- Daily – 0.46 vehicles / day / bed.

Traffic surveys of local intersections were also undertaken in December 2009 at the same time as the site access counts above.

The traffic counts were undertaken at the following intersections:

- Brown Street / MacDonald Street;
- Brown Street / Cooper Street;
- Neild Avenue / Dillon Street / hospital entrance;
- Neild Avenue / Lawson Street;
- Stephen Street / Glen Street.

Details of the 2009 peak hour traffic flows on the road network surrounding the site are summarised in **Table 2.2** and **Figure 2**.

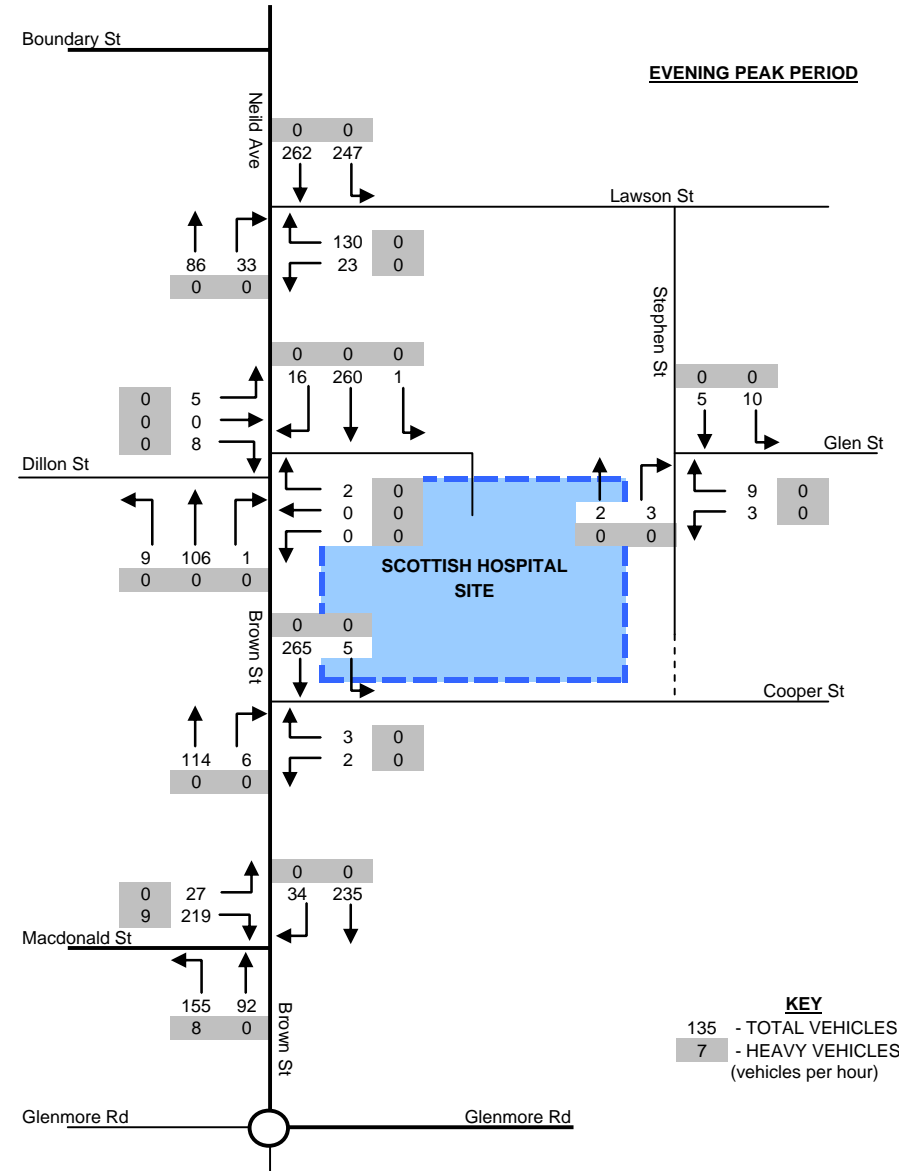
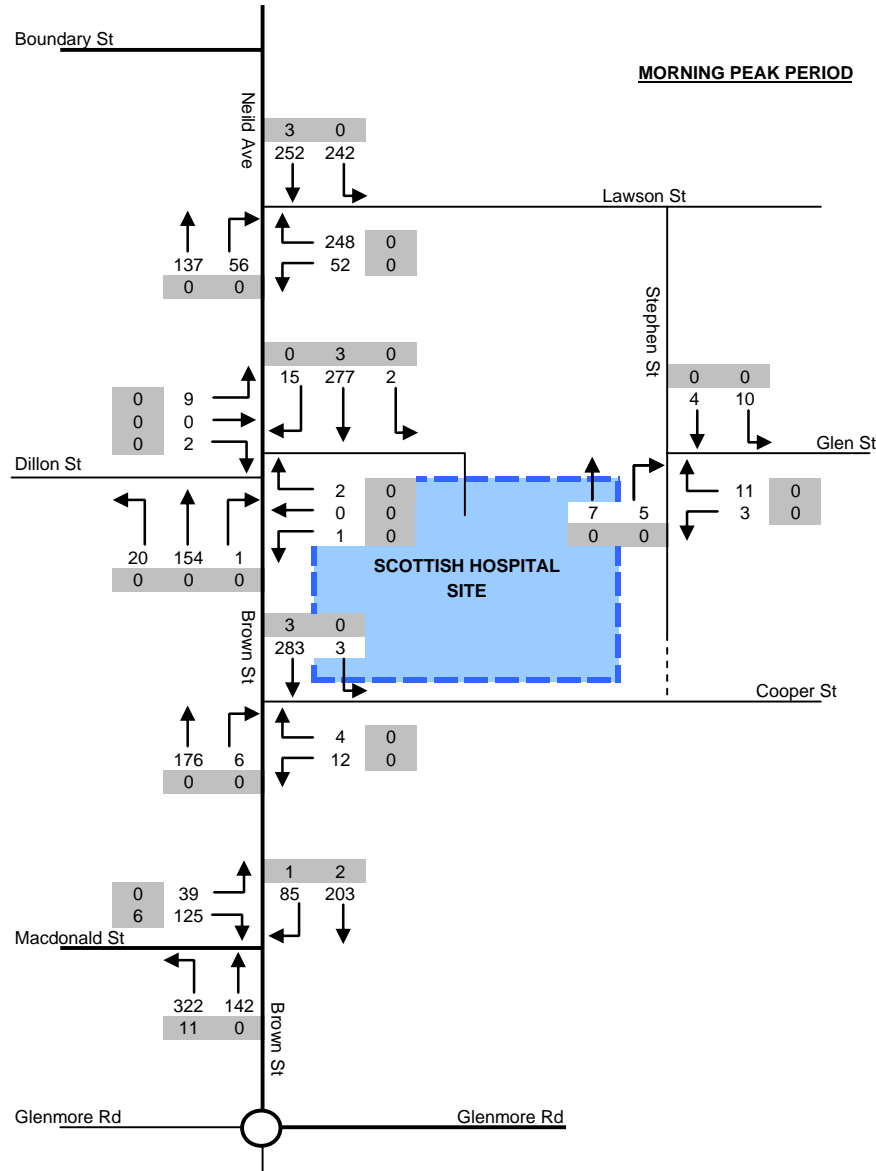
Table 2.2 – Existing 2009 Traffic Flows

| Street | Location | Function | Morning Peak Hour | Evening Peak Hour |
|--------------|----------------|-----------|-------------------|-------------------|
| Brown St | S of Dillon St | Collector | 459 | 390 |
| Cooper St | E of Brown St | Local | 25 | 16 |
| MacDonald St | W of Brown St | Collector | 571 | 435 |
| Dillon St | W of Neild Ave | Local | 46 | 38 |
| Neild Ave | S of Lawson St | Collector | 497 | 404 |
| Lawson St | E of Neild Ave | Collector | 598 | 433 |
| Stephen St | N of Glen St | Local | 32 | 26 |
| Stephen St | S of Glen St | Local | 19 | 13 |

Ideally traffic flows on a local road should be below 300 vehicles per hour and on collector roads below 500 vehicles per hour. Traffic flows on local roads near the site are within the limit. However because of the topography of the area and the way that the road system developed over time, traffic flows on Lawson and MacDonald Streets exceed the limits for collector roads.

2009 BACKGROUND TRAFFIC FLOWS

SCOTTISH HOSPITAL DEVELOPMENT - PADDINGTON



KEY
 135 - TOTAL VEHICLES
 7 - HEAVY VEHICLES
 (vehicles per hour)

2.3.3 *Intersection Operation*

The critical intersections in the immediate vicinity of the site are that of MacDonald Street with Brown Street and Lawson Street with Neild Avenue. From inspection, all other intersections operate well within capacity.

To examine their operation, these intersections were analysed using the SIDRA intersection analysis program.

The analysis found that both intersections operated well at a Level of Service (LoS) A in both the morning and evening peak periods. LoS A is the highest operating level of service. LoS D is usually the lowest acceptable level of service in an urban road system and LoS F represents failed operation with traffic levels exceeding capacity

2.4 *Public Transport*

The nearest bus service is the 389 that runs along MacDonald Street / Brown Street / Glenmore Road local to the site, as shown on **Figure 3**. The nearest bus stops for the service are:

- Approximately 100m walk from the southwest corner of the site, on Brown Street between MacDonald Street and Glenmore Road for the city bound service; and
- Approximately 180m walk on MacDonald Street east of Liverpool Street for eastbound (towards Bondi) services.

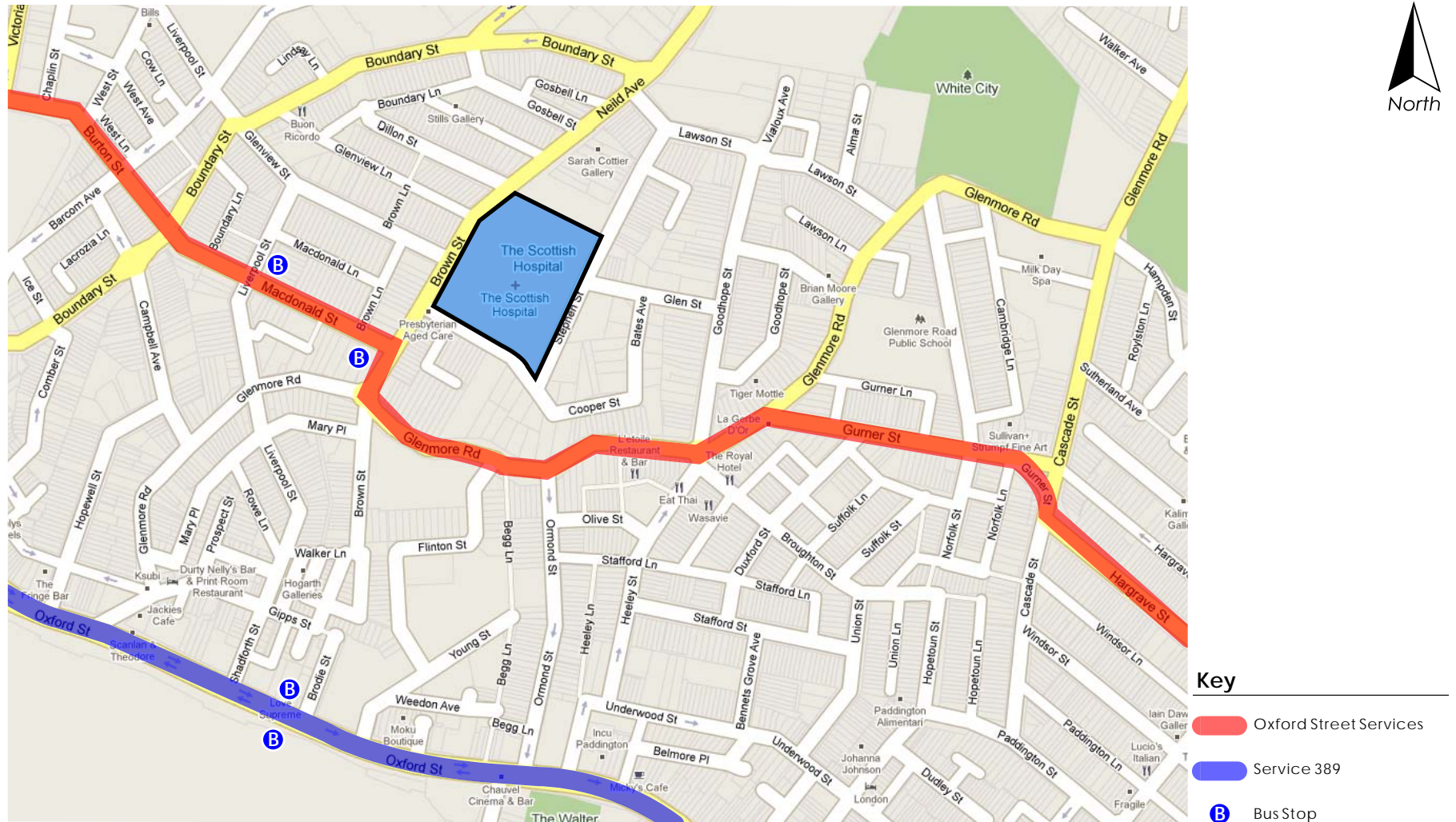
Service 389 links Circular Quay in the west with North Bondi in the east and travels via Martin's Place, Burton Street in Darlinghurst, Bondi Junction and Bondi Beach. The frequencies of Service 389 are:

- Every 10mins on weekdays and Saturdays; and
- Every 15mins on Sundays and Public Holidays.

In addition to the public bus service, the care facility on the site operates a minibus to take residents on outings.

LOCAL BUS SERVICES

SENIORS HOUSING DEVELOPMENT, SCOTTISH HOSPITAL



2.5 Walking and Cycling

Streets in the area all tend to have a sealed footpath on each side.

There is a marked pedestrian crossing over Brown Street on its approach to Glenmore Road and over Glenmore Road on one side of the roundabout that controls their intersection. There are also marked pedestrian crossings over MacDonald Street east of Liverpool Street and over Neild Avenue north of Lawson Street.

Otherwise pedestrians need to cross the nearby roads by waiting for gaps in the passing traffic.

Near the site there is a bike route along MacDonald Street/Brown Street/Glenmore Road. This route connects to Queen Street and other cycle routes in the east and to Darlington across Boundary Street in the west.

Future bike routes are proposed along Boundary Street and Lawson Street and along Neild Avenue north of the site.

These routes will be of future use to staff but would not be of major benefit to future residents given their age and the topography of the area.

3 Proposed Development

3.1 *Aged Care Facility*

The proposal incorporates 78 Independent Living Units (ILUs) and 112 new nursing home beds to replace the existing 88 beds. Relevant architectural plans for the proposal are attached at **Appendix A**.

In terms of bedrooms, the proposed 78 ILUs consist of:

- 4 x 1 bedroom units;
- 27 x 2 bedroom units; and
- 47 x 3 bedroom units.

Therefore, the ILUs provide a total of 199 bedrooms.

During the busiest period of the day for the site, up to 26 staff could be on duty, consisting of 22 staff for the nursing home and 4 staff servicing the ILUs.

3.2 *Parking and Loading Facilities*

Approximately 135 on-site parking spaces are proposed. These will consist of about:

- 125 spaces over one and a half basement levels; and
- 10 spaces on the access road from Brown Street.

All parking will be designed in accordance with AS2890.1/6 (to be adopted in May 2011 by the Building Code of Australia) requirements for the appropriate user class.

A loading bay for the aged care facility is to be provided with access from Stephen Street.

In order to improve the access to the new loading dock some on-street parallel parking spaces would have to be removed adjacent to it. In order to ensure that there was no net-loss in available on-street parking for local residents it is proposed to provide 8 ×

90° parking spaces in place of parallel spaces on the western side of Stephen Street, north of Glen Street. Provision of these would necessitate dedication of a small part of the site as road widening.

4 Traffic Analysis

4.1 *Site Access*

The existing site access is located on a bend at the junction of Brown Street and Neild Avenue. At this location sight distance is good along Neild Avenue but because of vegetation and the bend in Neild Avenue, sight distance is poor along Brown Street.

It is proposed that this problem be rectified by cutting back vegetation for a distance of about 3 metres opposite Dillon Street and removing part of the boundary wall. This will yield the minimum sight distance of 55m recommended by the Australian Standard. Relocation of the aged care building's garbage enclosure from this area will further improve conditions at the gate.

4.2 *Estimated Traffic Generation*

The RTA's *Guide to Traffic Generating Development* provides indicative traffic generation rates for housing for the aged. During the evening peak hour, 0.1-0.2 vehicle trips per dwelling are expected. The lower number is for subsidised dwellings and the higher number for self funded facilities. To be conservative, it is assumed that each new ILU would generate 0.2 trips during the peak hour and 2.0 trips daily.

As set out in Section 2.3.2, trip rates by bed have been calculated for the existing care facility. These site specific trip rates have been used in the following traffic generation analysis as they provide the best basis upon which to forecast the future traffic generation of the proposed nursing home beds.

Table 4.1 below presents the forecast traffic generation for the full site upon completion of the proposed development consisting of 78 new ILUs and a total of 112 new nursing home beds.

Table 4.1 – Estimate of Future Traffic Generation

| Period | 78 ILUs | | 112 Care Beds | | Total |
|--------------|--------------------------|---------------------|--------------------------|---------------------|---------------------|
| | Gen. Rate veh/hr/unit | Trips veh/period | Gen. Rate veh/hr/unit | Trips veh/period | Trips veh/period |
| Morning Peak | 0.2 | 16 | 0.07 | 8 | 24 |
| Evening Peak | 0.2 | 16 | 0.19 | 21 | 37 |
| Daily | 2.0 | 156 | 2.17 | 243 | 399 |

In summary, when compared with the 2009 survey data, the forecast additional traffic generation of the proposal is:

- Morning peak hour - 18 veh/hr
- Evening peak hour - 33 veh/hr

This level of traffic generation is very low given the existing volume of 400 to 450 vehicles per hour passing the site on Brown Street and the fact that the generated traffic would spread in two directions on Brown Street and Neild Avenue.

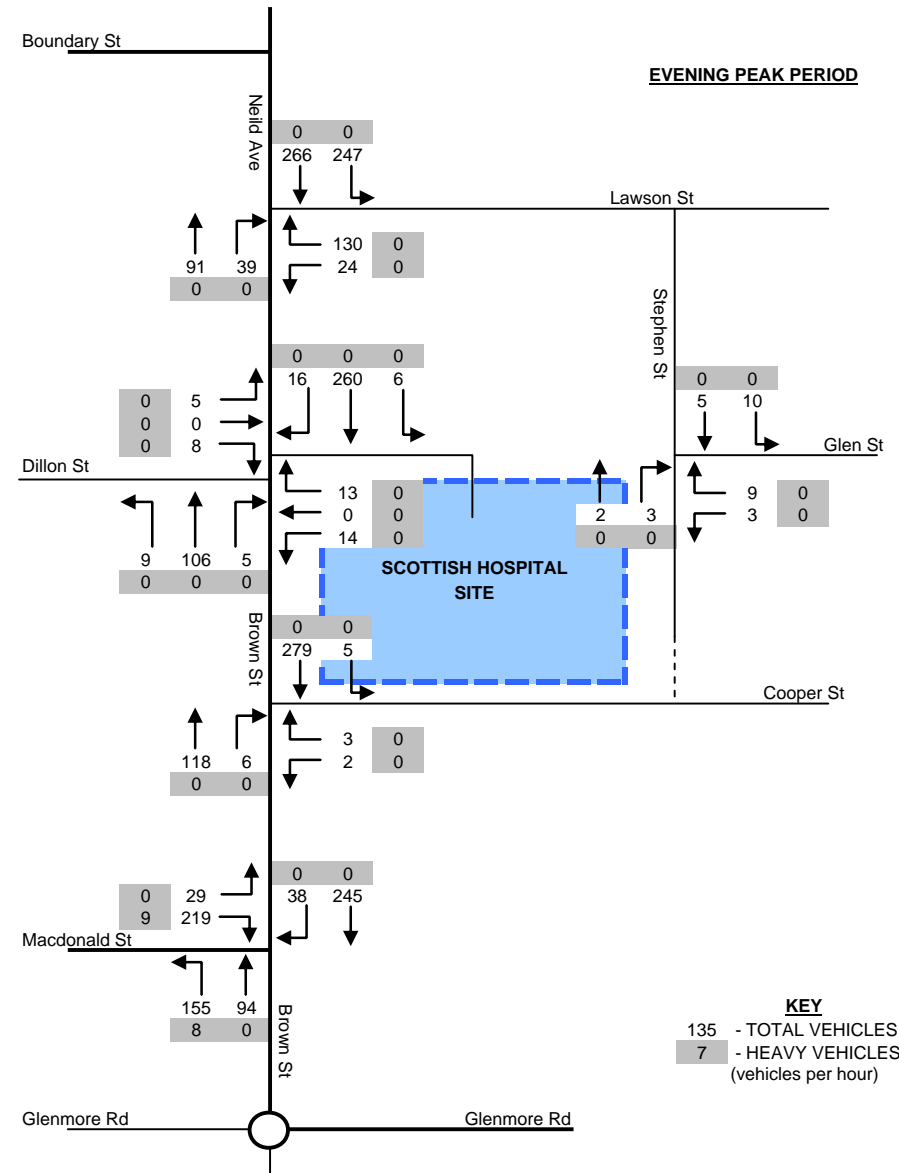
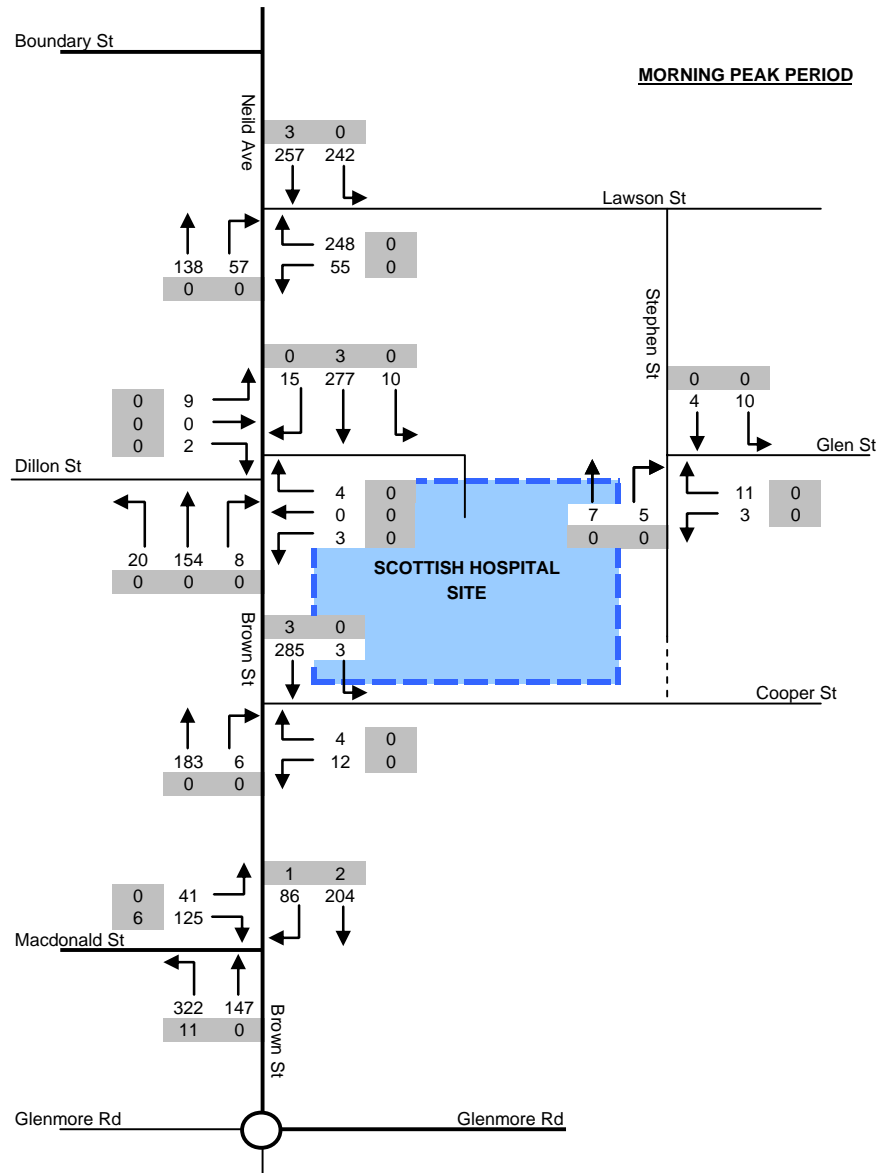
The loading bay in Stephen Street would generate up to 40 visits per week depending on supplier contracts and waste collection frequency. Allowing for reduced visits on weekends, there would be around 7 or 8 visits per day. Thus the loading bay would add about 2 or 3 vehicle movements per hour to Stephen Street.

4.3 Traffic Impact on Local Road Network

The additional traffic generation arising from the development was added to the surveyed existing traffic to produce estimates of future traffic levels. These are presented on **Figure 4** and summarised in **Table 4.2** below.

FUTURE TRAFFIC FLOWS

SCOTTISH HOSPITAL DEVELOPMENT - PADDINGTON



KEY
 135 - TOTAL VEHICLES
 7 - HEAVY VEHICLES
 (vehicles per hour)

Table 4.2 – Traffic Changes as a Result of Proposal (veh/hr)

| Street | Location | Morning Peak | | Evening Peak | |
|--------------|----------------|--------------|--------|--------------|--------|
| | | 2009 | Future | 2009 | Future |
| Brown St | S of Dillon St | 459 | 469 | 390 | 406 |
| Cooper St | E of Brown St | 25 | 25 | 16 | 16 |
| MacDonald St | W of Brown St | 571 | 574 | 435 | 441 |
| Dillon St | W of Neild Ave | 46 | 46 | 38 | 38 |
| Neild Ave | S of Lawson St | 497 | 507 | 404 | 420 |
| Lawson St | E of Neild Ave | 598 | 602 | 433 | 440 |
| Stephen St | N of Glen St | 32 | 32 | 26 | 26 |
| Stephen St | S of Glen St | 19 | 19 | 13 | 13 |

Table 4.2 indicates that the traffic changes would be very low.

The SIDRA intersection analysis has been repeated for the intersections of Macdonald Street with Brown Street and Lawson Street with Neild Avenue. The results are presented in the following **Table 4.3** alongside the SIDRA result for the existing 2009 traffic flows.

Table 4.3 – SIDRA Analysis Results

| Intersection | Control Type | Level of Service | | Average Delay (sec) | |
|-------------------------------|--------------|------------------|--------|---------------------|--------|
| | | Existing | Future | Existing | Future |
| Morning Peak | | | | | |
| MacDonald Street-Brown Street | Roundabout | A | A | 13.5 | 13.6 |
| Lawson Street-Neild Street | Priority | A | A | 8.1 | 8.2 |
| Evening Peak | | | | | |
| MacDonald Street-Brown Street | Roundabout | A | A | 12.8 | 13.1 |
| Lawson Street-Neild Street | Priority | A | A | 7.8 | 7.9 |

Average Delay is for the worst movement at priority and roundabouts.

The results in **Table 4.3** confirm that the development would have a negligible impact on the operation of the two intersections, which will continue to operate well at a Level of Service A.

As indicated above, the additional service vehicles would be unlikely to exceed about 2 or 3 movements in any one hour. To put this in context, if the site's frontage below the Stephen Street stops was developed with terrace houses, it could accommodate about 8 to 10 such houses. The peak traffic generation of these would be 5 to 7 vehicles per peak hour. Thus the traffic generation of the loading would not be numerically inconsistent with that of prevailing other uses in the area.

To minimise potential impacts of service vehicles on local amenity it is proposed that all deliveries and collections would take place in accordance with a management plan specific to the site.

4.4 *Parking Implications*

4.4.1 *Parking Provision*

Parking provision on the site is required to comply with SEPP (Seniors Living) 2004.

SEPP (Seniors Living) 2004 requires that parking be provided as follows:

- 1 space per 10 nursing home beds (for residents and visitors);
- 1 space per 15 nursing home beds for dementia patients (for residents and visitors);
- 1 space per 2 staff on duty at any one time (for staff); and
- 1 space per 2 ILU bedrooms (for residents and visitors).

SEPP Seniors indicates the following parking provision:

| | | |
|------------------|-----------------------------|----------------------|
| ILUs | 199 bedrooms @ 1/2 bedrooms | = 99.5 spaces |
| Nursing home | 89 normal beds @ 1/10 | = 8.9 spaces |
| | 23 dementia beds @ 1/15 | = 1.5 spaces |
| | 26 staff @ 1/2 staff | = <u>13.0 spaces</u> |
| Total (rounding) | | 123 spaces |

About 135 parking spaces are proposed; therefore, the parking provision will be satisfactory. It will include an allowance for visitors to the ILUs, which is not strictly a requirement of SEPP Seniors.

4.4.2 *On-Street Parking*

As previously mentioned, improving access to the loading bay will result in the loss of public parallel parking on Stephen Street. To offset this loss in parking, a total of 10x90 degree public parking spaces are proposed in Stephen Street.

4.5 *Pedestrians*

The proposed development will provide internal vertical and horizontal circulation to allow pedestrians to interconnect easily either with the upper street level at Cooper Street in the south, at a midpoint street level on Brown Street about mid block along the frontage of the site and at the lower level on Brown Street at the northern end of the site. Thus staff and residents would be able to use any entrance without having to negotiate steps.

The principal pedestrian desire lines will be to from bus stops on the northern side of MacDonald Street and on the western side of Brown Street and to from Glenmore Road or towards New South Head Road on Neild Avenue.

The major deficiency in this route is the absence of a crossing point on Brown Street near MacDonald Street. To remedy this it is proposed, with the agreement of Woollahra Council, to provide a pedestrian refuge in the centre of Brown Street near MacDonald Street.

4.6 *Promotion of Travel by Sustainable Modes*

The nature of an aged care home is that:

- full care residents tend to only travel when driven by someone else so there is no individual use of private vehicles; and
- independent living residents tend to be on average over 75 years of age.

In relation to the ILU residents, many do not drive. Those that do drive do so only to a limited extent. For their non-car journeys, these will be catered for by a resident bus that will take residents shopping and on excursions, or by public buses. As mentioned, improved walking access to bus stops is proposed.

Because most staff work shifts involving night work or start before 7.00am, they would have difficulty using public transport. Accordingly, car parking is essential for staff.

Notwithstanding the above, four bicycle parking spaces will be provided.

Finally, it is proposed to provide a small resident staffed shop on the site to allow residents and staff to purchase essential supplies without leaving the site.

5 Summary and Conclusions

The following are the key findings of this investigation:

- The Scottish Hospital site is presently occupied by the now disused hospital building and an 88 bed aged care facility;
- It is proposed to redevelop the site to provide 112 aged care places plus 78 independent living units;
- The existing aged care building would be demolished while the heritage listed hospital building would be refurbished to accommodate some of the independent living units;
- Approximately 135 parking spaces are proposed in a basement car park and on the entry road. This provision exceeds with the requirements of SEPP Seniors and is considered to be satisfactory;
- Principal vehicular access will be provided off Brown Street in the same location as at present. The driveway will be modified to improve visibility along Brown Street;
- A loading bay is proposed to serve the aged care facility off Stephen Street. This in effect will re-activate the existing disused hospital loading bay in Stephen Street;
- The loading bay will generate only a low level of traffic that would be equivalent to or less than that which would have occurred if that part of the site was developed with Terrace housing. Its hours of use will be restricted and managed by way of a management plan;
- As some parking in Stephen Street would be lost through the provision of the service bay, compensating 90° parking in Stephen Street is proposed with this requiring a small length of road dedication;
- The proposed development is expected to generate about 18 additional vehicle trips in the morning peak hour and 33 in the evening peak hour. At other times the traffic generation would typically be less;
- The additional traffic generation would split into two directions on Brown Street and Neild Avenue and would be low enough to have negligible impact on operation of the adjoining road network;

- The nearest bus stops are located in Brown Street near MacDonald Street and in MacDonald Street. These are respectively 100m to the city bound stop and 180m to the Bondi bound stop. These services operate every 10 to 15 minutes; and
- To improve access to these stops it is proposed to provide a pedestrian refuge in Brown Street near MacDonald Street. This would be subject to agreement with Woollahra Council.

Overall it is the conclusion of this investigation that the proposed parking provision is satisfactory. The proposed use is a very benign one in terms of traffic generation, its traffic impacts would be low and overall traffic effects would also be satisfactory.

Appendix A Development Plans