Barton, Block 13 Section 9 Master Plan Traffic Assessment

Draft Final Report

Capital Planners

18 January 2006

MAUNSELL | AECOM

Traffic Assessment

Prepared for

Capital Planners

Prepared by

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Executive Summary

Maunsell Australia Pty Ltd were commissioned by Capital Planners Pty Ltd to provide an assessment of the potential traffic impacts resulting from the proposed development of Block 13 Section 9, Barton, Canberra. The study forms part of a master plan concept design currently being undertaken by Capital Planners for the Department of Finance and Administration (the owners of the site).

Block 13 Section 9 is one of the two remaining public car parking facilities in Barton, the other being the York Park site. Other at-grade car parking facilities in the area tend to be barrier controlled tenant parking, however the larger of these also advertise long-stay parking (at a cost). Parking pressure at Block 13 Section 9 and the York Park site has led to these car parking areas operating well above their design capacity and the use of informal parking locations.

A number of development options have been prepared for the site and assessed with regard to parking, access and potential traffic generation. Option 5 was found to be the best option based on these criteria.

The development of the site under Option 5 has the potential to lead to a critical shortfall in parking supply if not managed correctly. This study has formulated methods of providing for the short-term loss of parking during site construction while providing for the long-term needs of commuters through the provision of public long-stay parking. In order to encourage public transport use the provision of long-stay parking includes a mode shift over time consistent with government policy. A short to medium term decrease in parking demand as a result of greater on-site parking provision in line with employment density is also taken into account.

The timing of development suggests that, based on current demand, a potential parking shortfall of up to 220 spaces between January 2008 (when all on-site parking is lost) and August 2008 (when the multi-storey car parking becomes available). However, future demand needs to be taken into account in order to provide a better assessment. Future parking demand is dependant on the following factors:

- Decreased demand from greater provision of on-site parking from redevelopments throughout Barton;
- Temporary decrease in parking demand as a result of the refurbishment of the Edmund Barton Building; and
- Greater public transport mode split by 2008-09.

Taking these variables into account, analysis indicates that parking demand by 2008/09 will decrease sufficiently to allow for a surplus of 145 temporary car parking spaces. After this time the multi-storey car parking structure will become operational, thereby allowing for additional and permanent long-stay parking.

Emphasis on the provision of on-site parking for approved and future development is expected to result in a fall in off-site long-stay parking demand of up to 500 parking spaces by 2009 throughout Barton/Forrest. A temporary drop in demand for parking is also likely to occur as a result of the refurbishment of the Edmund Barton Building during 2008/09.

An assessment of long-stay parking provision indicates that a structured car parking facility providing about 330 public long-stay spaces would cater for the reasonable needs of commuters in the area. It is likely that no temporary parking will be needed during construction, but this needs monitoring. An opportunity exists to provide temporary parking at York Park.

An assessment of likely future traffic conditions in the area found that traffic generated traffic has a relatively minor impact on the operation of the three key intersections. Site design can ensure that peak flows can be distributed to the surrounding road network and to areas with spare capacity. Additional green time for increased volumes on key turning movements is considered to mitigate any adverse impacts and establish a more efficient road network.

Pedestrian and cyclist trips will be encouraged through the provision of a high standard of pathways and connectivity through the site and to surrounding established networks. The commercial components of the site will provide cycle storage facilities.

In conclusion, the development of the site is expected to have only temporary impacts on long-stay parking supply during construction and minimal impacts on permanent long-stay parking supply. The design and layout of the site will encourage greater trips made by public transport, walking and cycling modes and contribute to government policy to decrease car dependency over time.

1.0 Introduction

1.1 Background

Maunsell Australia Pty Ltd were commissioned by Capital Planners Pty Ltd to provide an assessment of the potential traffic impacts resulting from the proposed development of Block 13 ('the site') Section 9, Barton, Canberra. The study forms part of a master plan concept design currently being undertaken by Capital Planners for the Department of Finance and Administration (the owners of the site).

Block 13 Section 9 is one of the two remaining public car parking facilities in Barton, the other being the York Park site. Other at-grade car parking facilities in the area tend to be barrier controlled tenant parking, however the larger of these also advertise long-stay parking (at a cost). Parking pressure at Block 13 Section 9 and the York Park site has led to these car parking areas operating well above their design capacity and the use of informal parking locations.

The ACT Government and Commonwealth Government are currently investigating the implementation of pay parking in Barton, Forrest and Parkes including for employees. Current indications are that this may be implemented next year.

1.2 Study Objectives

The primary objective of this study is to investigate alternative options for the development of the Block 13 Section 9 site. It is intended that the outcomes of this study would support government policy objectives in both the short and long terms. Specific objectives for the traffic and transport components of this project include:

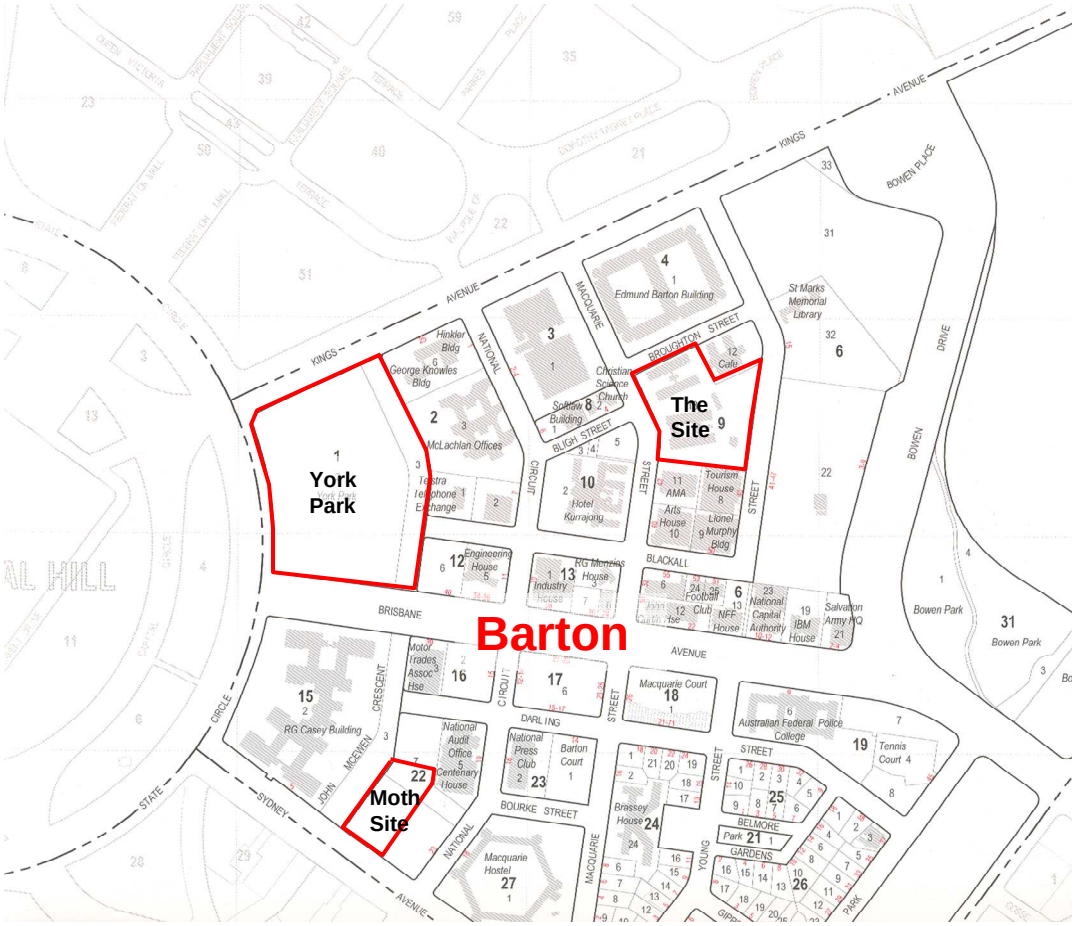
- Confirm current supply and demand of public off street parking in Block 13 Section 9;
- Identify the overall demand and supply of parking in Barton and the surrounding suburbs of Parkes and Forrest;
- Identify the likely impacts of strategic policy shift with regards to approved development and parking supply;
- Provide an assessment of displaced parking from the proposed development of the site; and
- With regard to a preferred development proposal, provide a determination of the ultimate number of parking spaces necessary to satisfy likely future demand and the likely traffic impacts of the proposal.

1.3 Site Location

The suburb of Barton is located between Capital Hill and Lake Burley Griffin, on the southern side of Kings Avenue (as shown in Figure 1-1). Barton is generally bounded by State Circle, Sydney Avenue, New South Wales Crescent, Telopia Park, Bowen Drive and Kings Avenue. The main land uses in the suburb are commercial and medium to high density residential development.

Block 13 (the site) is located within Section 9 Barton, which is bordered by Broughton Street to the north, Blackall Street to the east and south, and Macquarie Street to the west. Block 13 is bounded by:

- Broughton Street and the Edmond Barton Building to the north;
- A café in Section 12 to the north;
- Blackall Street and the Landmark apartment complex to the east;
- Tourism House and the AMA Building to the south; and
- Macquarie Street, a small park and a church to the west.



Source: Maunsell 2005

Figure 1-1: Location of Barton and the Site

Block 13 is currently being used as an at-grade public car parking facility. The Department of Finance and Administration wish to develop the site for commercial and residential purposes. Other at-grade public parking facilities are located within York Park while a possible future car parking facility has been identified as the "Moth Site".

1.4 Report Structure

The remainder of the report is divided into the following sections:

- **Section 2** describes the strategic context of the site in terms of current and future land uses, parking strategies and infrastructure operation and maintenance;
- **Section 3** describes the existing land use and traffic conditions of the road network including car use, parking supply and demand, public transport, pedestrian and cycle facilities;
- **Section 4** provides a description of the development options of the site;
- **Section 5** identifies the preferred option and parking scenario that could be expected to cater for adequate parking supply;
- **Section 6** provides the conclusions to the study.

2.0 Strategic Context

2.1 Planning Responsibility and Parking

The planning and development of Barton falls under the responsibility of both Commonwealth and ACT governments. The Commonwealth administers the National Capital Plan through the National Capital Authority (NCA) while the ACT government is responsible for the administration of the Territory Plan.

The Canberra Spatial Plan is the Territory's key strategic planning document for directing and managing urban growth and change. It provides strategic directions for the development of Canberra over the next 30 years and beyond. The Spatial Plan integrates with *The Sustainable Transport Plan*, which seeks to achieve a more sustainable transport system for Canberra over the next 20 to 30 years.

A summary of key traffic and transport aspects of these documents follows.

2.2 Strategic Plans and Policies and Recent Studies

2.2.1 The National Capital Plan

The National Capital Plan provides a general policy framework for land use and planning in the Territory, and more specifically guides the planning, design and development of areas of the Territory that have been identified as having national capital importance (Designated Areas). It is the overarching strategic plan for the Australian Capital Territory - a land use policy plan that reflects the national significance of Canberra and the Territory.

Matters of national significance in the planning and development of Canberra to be protected as identified in the National Capital Plan include:

- maintaining high quality design for entry points and along approach routes to the Central National Area
- maintaining a legible and functional hierarchy of roads in the Territory
- providing for a system of inter-town public transport
- minimising traffic congestion in the Central National Area

General transport related planning, design and development conditions that apply to the Central National Area include:

- Traffic capacity and traffic arrangements on major routes in the Designated Area will be planned to ensure safe and dignified access for all ceremonial occasions, and for residents, staff, tourists and visitors.
- The transport system within the Designated Area will be planned and managed for volumes of traffic and parking consistent with the significance and use of the Area. Transport infrastructure should foster the use of transport systems which minimise adverse effects from vehicular traffic.
- Direct access to and from major roads will be permitted where practicable and not inconsistent with traffic safety requirements. The design and maintenance of all roadways and parking areas, including their associated landscaping, signs and lighting, will be of a consistently high quality.
- Commonwealth, Kings and Constitution Avenues, the avenues connecting the nodal points of the National Triangle, are of critical significance in delineating the geometric form of Griffin's plan. They are not only the primary movement routes, but they are powerful generators of structure and urban form. Their formal expression is paramount and is to be achieved by strong avenue planting, consistent road design, special lighting and detailing. Building heights and setbacks will be planned to ensure consistency and continuity.

- Building, road and landscape maintenance is to conform with Management Plans prepared by the Authority in consultation with the Department of Arts, Sport, Environment, Tourism and Territories and the ACT Government, which will consider traffic and parking operations, temporary uses and ceremonial events. The Management Plans will also establish levels of maintenance for land, water and infrastructure appropriate to the principles and policies for the Area.

In terms of car parking the NCA's policy decisions are considered to play a primary role in the supply and availability of tenant, off-street and on-street parking throughout Barton and the adjoining areas of Parkes and Forrest. The proximity of Barton to the Parliamentary Triangle and national institutions means that the NCA holds particular interest in redevelopment of existing sites and development of vacant sites with regard to traffic and transport policy.

2.2.2 The Canberra Spatial Plan

One of the goals of the Canberra Spatial Plan is to retain ease of movement and facilitate good travel connections. This goal responds to the very high value that Canberrans place on the ease within which they can get around the city. A closer relationship between jobs, services and homes will enable more people to use walking and cycling as an alternative method of transport that supports a healthy lifestyle.

The relevant key principles underpinning the Spatial Plan include:

- Contain growth within 15km to reduce sprawl
- Increase the number of homes within 7.5km of the City Centre to provide a wider range of housing close to employment and services
- Locate new residential areas close to town centres and transport routes
- Locate employment close to residential areas and transport routes
- Provide good travel connections to minimise journey times and trip lengths

The future major transport connections that form a key part of this Plan are illustrated in Figure 2-1. It shows a trunk public transport route within the Kings Avenue corridor, which is likely to be bus-based initially and light rail in the long-term. This route accommodates direct and frequent public transport movement between Barton (feeding areas to the south and east such as Woden, Fyshwick and Queanbeyan) and Civic (feeding areas to the north and west). These routes are used to service key employment corridors running both north-south and east-west through Central Canberra.

2.2.3 The Sustainable Transport Plan

The Sustainable Transport Plan is a 25 year implementation plan which was developed to sit under *The Territory Plan* and be directly associated with the recommendations made in *The Canberra Spatial Plan*. *The Sustainable Transport Plan* will move Canberra to a transport system that retains Canberra's high levels of accessibility, but with lower per capita costs and less negative impacts. It will also facilitate a shift of travel from cars towards a greater reliance on walking, cycling and public transport. The transport sector is a major contributor to ACT greenhouse gas emission profile and successful implementation of *The Sustainable Transport Plan* is a critical element of the ACT Greenhouse Strategy 2000.

A key to achieving *The Sustainable Transport Plan* is the progressive shift towards an urban form that supports shorter trips and encourages people to walk or cycle. The Spatial Plan provides this urban form. *The Sustainable Transport Plan* encourages improvement of public transport services at activity nodes along key transport corridors. This will support intensification of development along these corridors in line with the urban containment principle of the Spatial Plan.

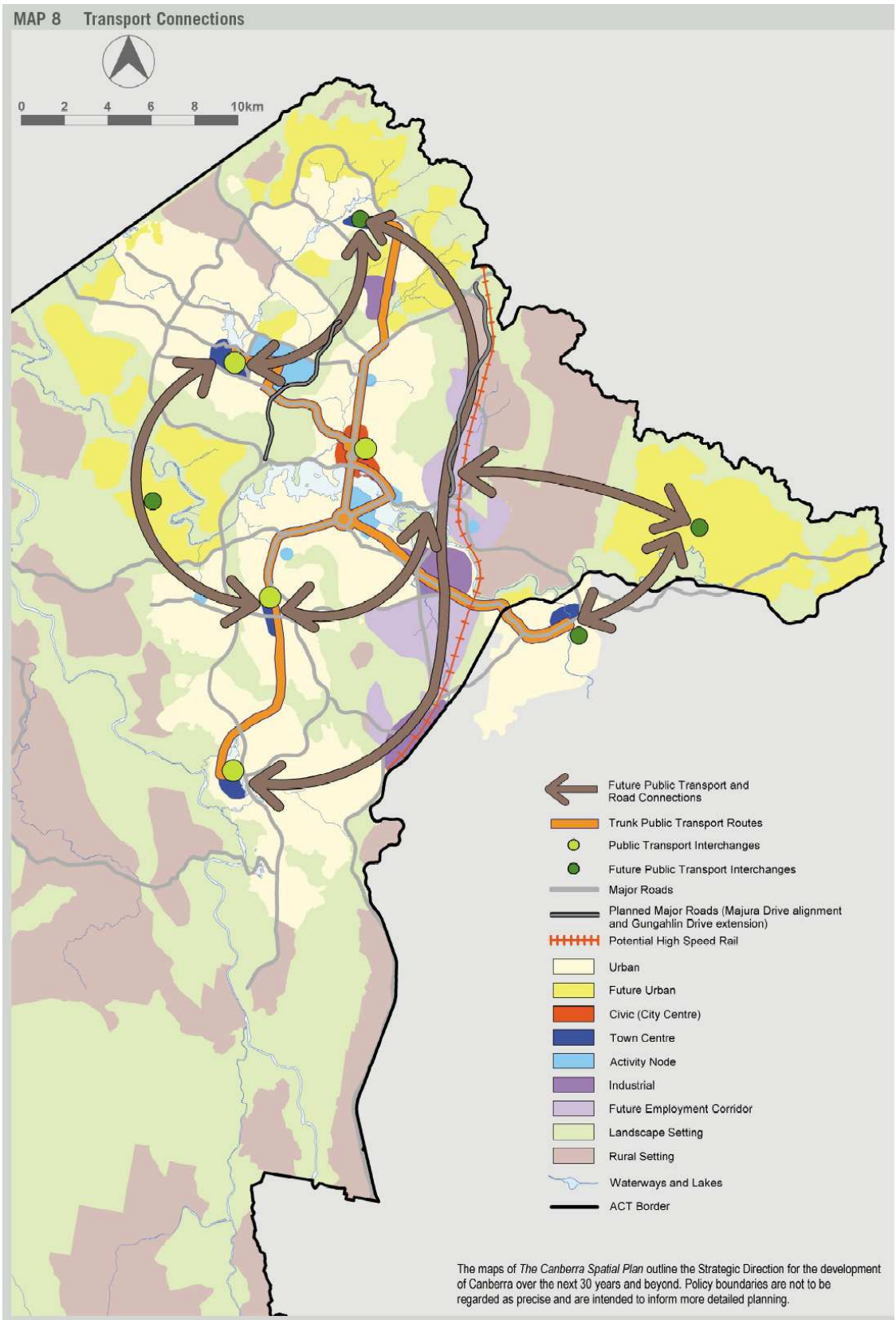


Figure 2-1: Canberra Spatial Plan – Future Transport Connections

The Sustainable Transport Plan proposes the progressive development of a corridor transit system, building onto the existing bus system. Investment in busways will help to reduce public transport travel times on trunk routes and make them more reliable. A range of complementary measures is proposed to support increased public transport patronage. These include the introduction of effective management of parking, real time information for bus passengers, TravelSmart programs, improved interchanges, park and ride facilities and increased services.

The ACT Sustainable Transport Plan (ACT Government, 2005) provides targets for reduced car commuting from 87% (ACT average) in 2001 to 80% in 2011 and 70% in 2026. The contribution of public transport is targeted to increase from 6.7% in 2001 to 16% in 2026.

2.3 Recent Studies

2.3.1 Parliamentary Zone Review

The Parliamentary Zone Review is a strategic planning document that provides the structure for a major review of buildings, car parking spaces and open space in the Zone. The review proposes an increase of up to 8,000 employees in up to 28 redeveloped or new buildings. Car parking needs should be met by underground car parks in each of the new buildings and two new multi-level parking buildings within the Zone. Up to 3,000 publicly accessible spaces could replace the need for the existing surface car parks in the area.

2.3.2 ACT Parking Strategy Study

The ACT Parking Strategy Study for ACTPLA (ARRB, 2005) makes recommendations for more restrictive parking controls being applied to new commercial development. The study makes the following relevant recommendations for the future management of the Parliamentary Zone and adjoining areas:

- Review the strategic planning and administrative control of car parking;
- Implement appropriate enforcement and time restrictions;
- Manage on-street parking as short-stay and off-street parking as long-stay;
- Promote restraint in single occupancy vehicles;
- Integrate mixed use development with car parking structures;
- No additional surface car parks; and
- Apply a sustainable accessibility levy to future development.

2.3.3 ACT: A Capital Future

"Canberra: A Capital Future - Managing Transport Development" states that Canberra's past reliance on road systems is no longer appropriate and aimed simply at satisfying an ever increasing demand for private travel. It further states that a better approach is to aim for an affordable balance between the provision of new roads and the creation of a more effective public transport system as a genuine alternative to private car use.

3.0 Existing Conditions

3.1 Land Use

Land use in Barton is primarily government or private office buildings with supporting uses including churches, clubs and accommodation. Residential development, including low density housing and medium density apartments are also evident, mainly on the eastern side of the area. Ownership is mostly a mixture of Commonwealth Government land and long-term leases that offer "private ownership".

Key land uses adjoining the site include:

- A café within the northeastern corner of the Block (Section 12);
- The Edmund Barton Building on the northern side of Broughton Street;
- The Landmark residential apartment complex on the eastern side of Blackall Street;
- Tourism House and the AMA Building to the south;
- A small park and church to the west; and
- A hotel complex to the south west.

3.2 Parking Supply and Demand

3.2.1 Parking Management

The ACT Government is responsible for the management of parking in Barton including the enforcement of parking restrictions and issueing of infringement notices. Enforcement is limited to public parking areas that display time and/or vehicle (e.g. 'government vehicle only') restrictions. Off-street tenant parking cannot be enforced by parking officers while public parking on private sites (e.g. Section 9 Block 13) can be enforced. There must be some agreement between the Commonwealth and ACT Government to allow informal and illegal parking in Section 9 Block 13 to occur.

3.2.2 Block 13 Section 9

The site is used as an at-grade public parking facility. The formalised paved parking area contains about 470 car parking spaces comprising the following areas:

- Broughton Street (northwest area): 147 marked spaces;
- AMA (southwest area): 193 marked spaces;
- Blackall Street (eastern area): 130 marked spaces.

Previous counts (NCA, 2000) identified up to 645 parking spaces available on the site. These counts are assumed to include all marked spaces, plus spaces in all unpaved and unmarked areas.

Recent counts (Maunsell, November 2005) identified about 630 cars parked within the site, including about 100 cars in the unmarked unpaved areas along the southern perimeter of the site. Counts of the different areas identified the following number of parked cars.

- Broughton Street (northwest area): 170 cars;
- AMA (southwest area): 280 cars, including 50 in the unpaved area;
- Blackall Street (eastern area): 180 cars (including 50 in the unpaved area).

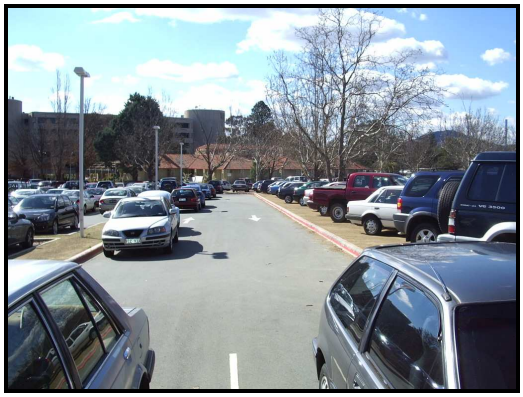
This indicated that the car park is operating at up to 130% of its design capacity, or up to 10% above its capacity if the cars parked on the unpaved areas are excluded. This indicates an obvious parking overflow from surrounding office buildings as parking is free and unrestricted. Typical parking conditions are shown in **Photograph 3.1** to **Photograph 3.4**.

Photograph 3.1 AMA Informal Car Park Area 1

Photograph 3.2 AMA Informal Car Park Area 2

Photograph 3.3 AMA Informal Car Park Area 3

Photograph 3.4 AMA Car Park



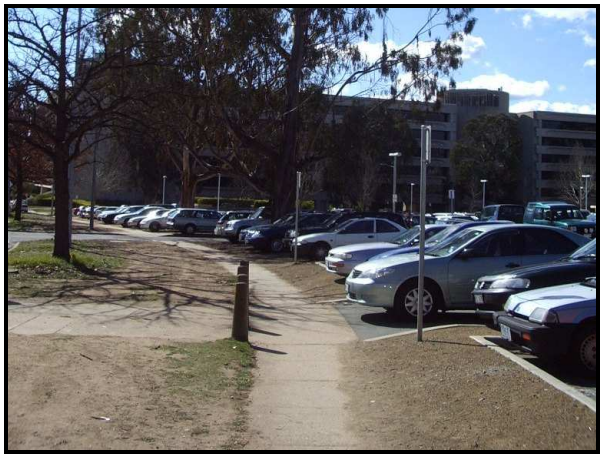
Source: Maunsell 2005

Vehicle Access

Vehicle access to the site from the surrounding road network is via Macquarie Street and Blackall Street. There are three vehicle accesses along Macquarie Street (**Photographs 3.1 to 3.3**), although two of these accesses are generally blocked by parked vehicles. The remaining access serves the various parking aisles located in the western component of the car parking area. Blackall Street has three vehicle access points (**Photographs 3.4 to 3.6**), two of which access the unpaved car parking area.

Photograph 3.1: Macquarie Street Access 1

Photograph 3.2: Macquarie Street Access 2



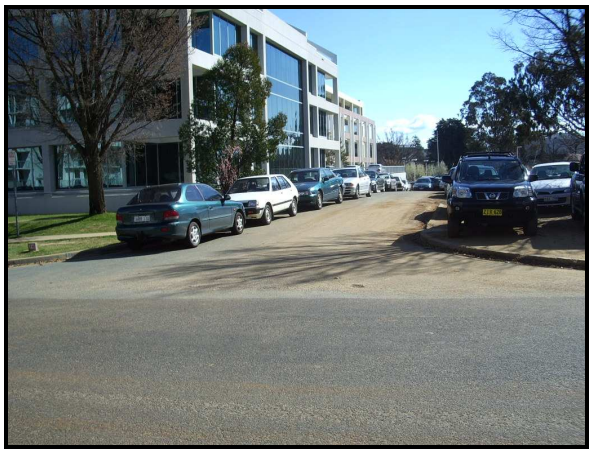
Photograph 3.3: Macquarie Street Access 3

Photograph 3.4: Blackall Street Access 1

Source: Maunsell 2005

Photograph 3.5: Blackall Street Access 2

Photograph 3.2: Blackall Street Access 3



Source: Maunsell 2005

3.2.3 York Park Site

The York Park site comprises a paved public parking area (the southern part of Block 2) and an unpaved area (the central part of Block 2 and parts of Block 3). Current parking supply provides 759 spaces (NCA Parking Strategy), although vehicles are also informally parked within Block 3 (Windsor Walk). Vehicle access to the main car park is via Brisbane Avenue while access to the unpaved area is via the access road through Block 3 to Blackall Street and National Circuit. Additional parking could be provided within Windsor Walk.

3.2.4 'Moth' Site

Section 22 comprises public parking facilities, plus the 'Moth' site, which has been mooted as a potential public parking site. Public parking on the northern part of the site is limited to about 70 spaces which are well utilised. The southern part of the site (Block 3) is presently vacant, however the eastern portion is protected as a 'moth' site while the western portion (shown in Figure 1-1) has been identified as a future temporary car parking site.

3.2.5 Total Supply and Demand in the Barton Area

Parking Issues in Barton (Cardno Young, 2004) has indicated that there are a number of significant issues in relation to parking in the Barton area, particularly in the vicinity of the proposed site. Relevant issues raised in this report include:

- Parking overflow from Barton is being absorbed by parking areas in the Parliamentary Triangle;
- The proposed introduction of pay parking in the Parliamentary Triangle is likely to increase pressure on the already stretched parking resources in the Barton area;
- Public transport usage by workers in the area is unusually low;
- The report projects a need for 6,000 car parking spaces for the suburb in 2007; and
- The current car parking supply is about 4,300 (shown in **Appendix A**).

A survey of the local parking was undertaken as part of the Cardno report. The following survey results and site observations were made in that report:

- Parking utilisation in the public surface car parks is 100 percent with no empty spaces for nearly all of the period between 10am and 3pm. In many cases the demand exceeds the nominal supply with driver's double parking, parking in lanes, on kerbs and on islands etc.
- The time restricted on street spaces are partially occupied in the morning but by around lunch time these spaces are nearly fully utilised.
- Private building car parks are not fully occupied but the percentage of empty spaces would not be greater than 25 percent.
- Designated visitor parking spaces for commercial buildings are about half occupied although the number of spaces is a small proportion of the overall supply in Barton. Observations show that 'outsiders' sometimes use these spaces in exasperation of being unable to find a space near where they are visiting.
- Kerbside parking in the residential areas which are time unrestricted are occupied by commuters, with a five minute or so walk to their place of employment.
- The number of car spaces outside the small number of food outlets (cafes) is very limited and discourages casual diners from visiting.
- Parking demand varies by area and in general is greatest in the northern area and corresponds with the location of the commercial buildings. In the south eastern part near Sydney Avenue on street demand is low particularly near the Macquarie Hostel.

Site observations undertaken as part the study indicated that long stay car parks in the vicinity of the site are operating at full or above capacity (100-110% peak utilisation). These observations also show that there is a significant overflow of parking from the suburb or Barton into the long stay parking facilities in the Parliamentary Triangle. The long stay parking in the Parliamentary Triangle is currently free for use, but the proposal of converting these parking facilities to pay for use is under consideration. Pay parking would be introduced into Barton at the same time.

The peak utilisation appears to be highest in the immediate vicinity and on the subject site. The site peaks at approximately 110 to 120% capacity by 9.00am and there is relatively little movement until 4.30pm to 5.00pm. This reflects the car parks use as a commuter car park servicing the local commercial premises.

3.3 Pedestrian and Bicycle Access

Key pedestrian and cycle routes in Barton are shown in Figure 3-1. The majority of bicycle and pedestrian paths are located alongside the lake whilst the majority of primary footpaths are alongside the public roads.

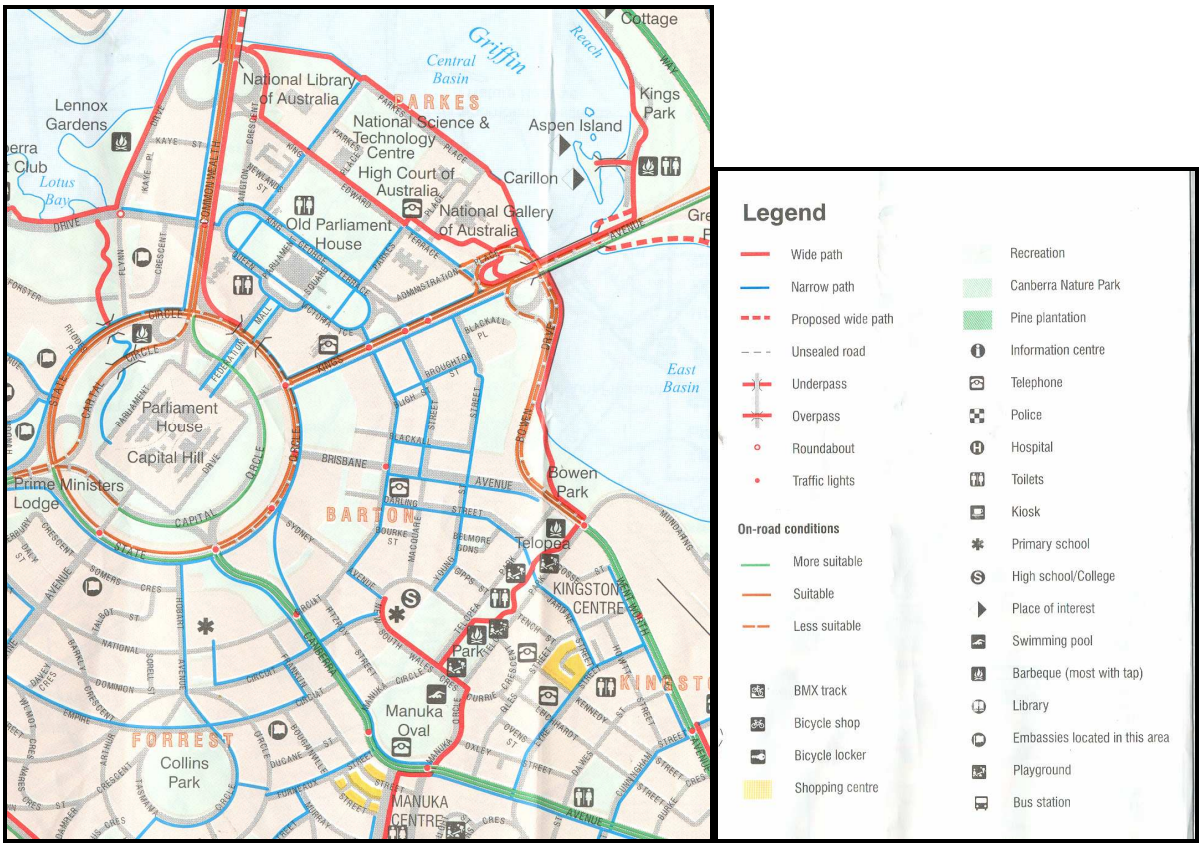


Figure 3-1: Bicycle and Pedestrian Routes in Barton

3.3.1 Pedestrian Access

Pedestrian access around the site and to a variety of destinations is catered for by pedestrian pathways alongside public roads. Pedestrian links to the lake and its surrounding pedestrian network is via several pathways through the Landmark Apartment complex, situated between Blackall Street and Bowen Drive.

Kings Avenue and Brisbane Avenue both present significant pedestrian barriers. However, a signalised pedestrian crossing is provided on Kings Avenue between Macquarie Street and Blackall Street. Brisbane Avenue has three sets of signals along its length which provide pedestrian phases.

3.3.2 Bicycle Access

Access to the ACT bicycle network is provided via Kings Avenue to the north, Brisbane Avenue to the south and the lakeside to the east. The bicycle network is shown on Figure 3-1.

3.4 Public Transport

Barton is relatively well accessed by public bus services. There are thirty five routes that pass through Barton, including three express services. The majority of these routes use either National Circuit or Kings Avenue with about six bus stops located within 10 minutes walk of the site. Typical routes and locations of bus stops are shown in Figure 3-2.

Although the area has a relatively large number of bus services passing though its boundaries, the utilisation of these services by the local working population is poor. This is discussed further in **Section 3.5**.

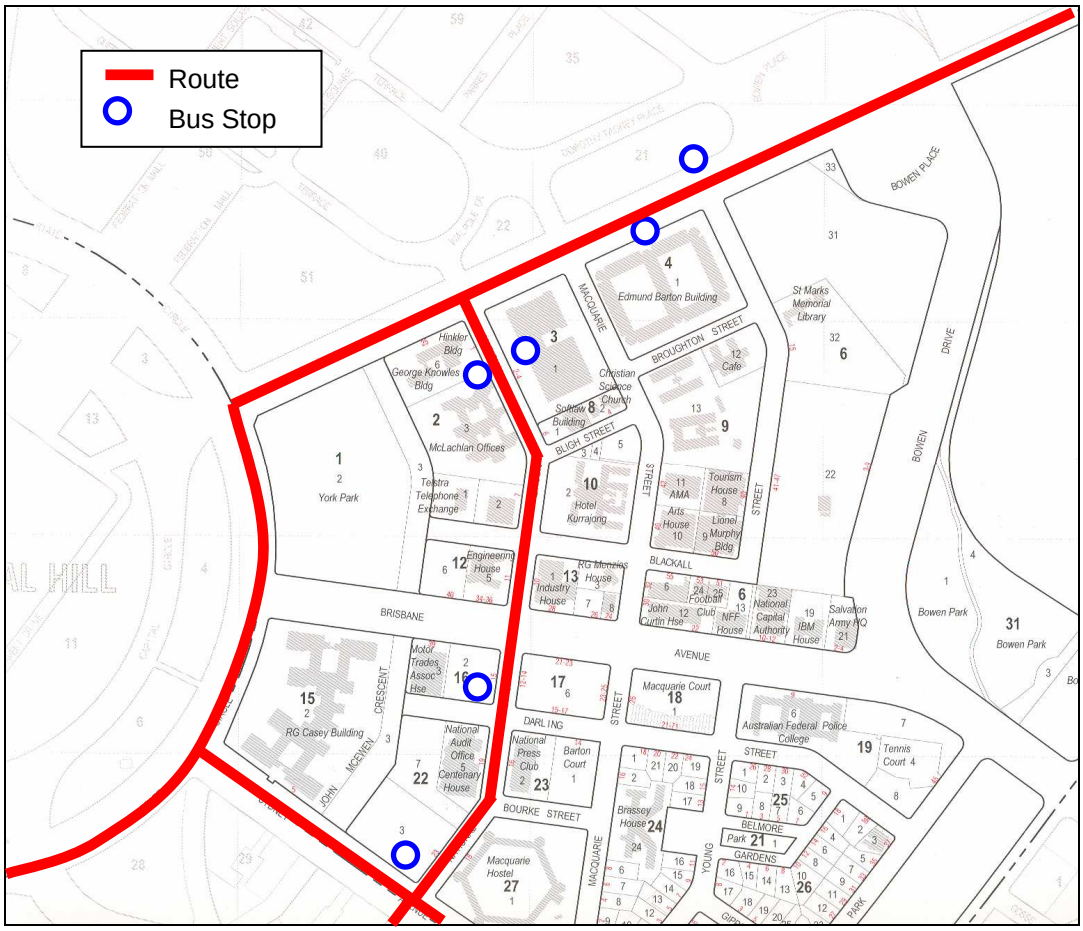


Figure 3-2: Bus Routes and Bus Stops in the Vicinity of the Site

3.5 Road Network

The network immediately surrounding the site is generally controlled by three intersections that provide the majority of access to the site. These are Macquarie Street/Kings Avenue (signalised), Blackall Street/Kings Avenue (priority controlled), and National Circuit/ Brisbane Avenue (signalised). The intersections are shown in Figure 3-3.

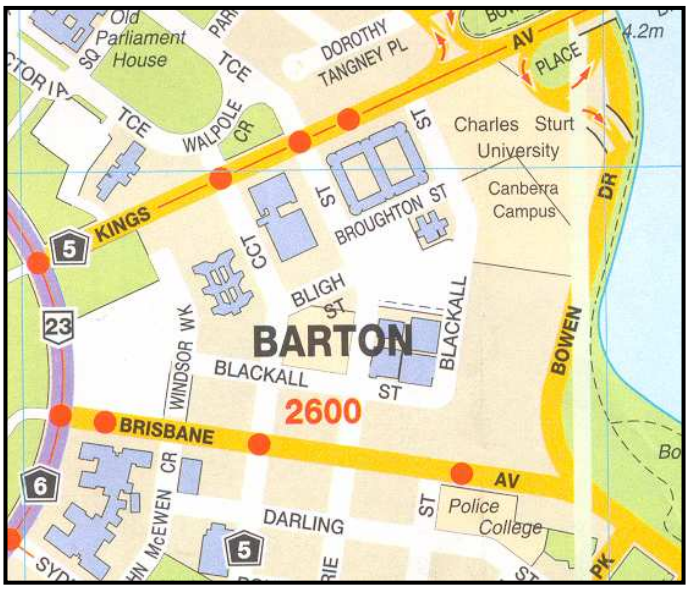


Figure 3-3: Surrounding Road Network

Traffic volumes on surrounding roads generally reflect the classification of the roads, either as arterial routes or local roads providing site access. Both Kings Avenue and Brisbane Avenue are arterial roads. Figure 3-4 shows the surrounding network and recent estimates of daily traffic volumes. Kings Avenue plays a major role in distribution to the regional network while volumes on Brisbane Avenue are significantly lower.

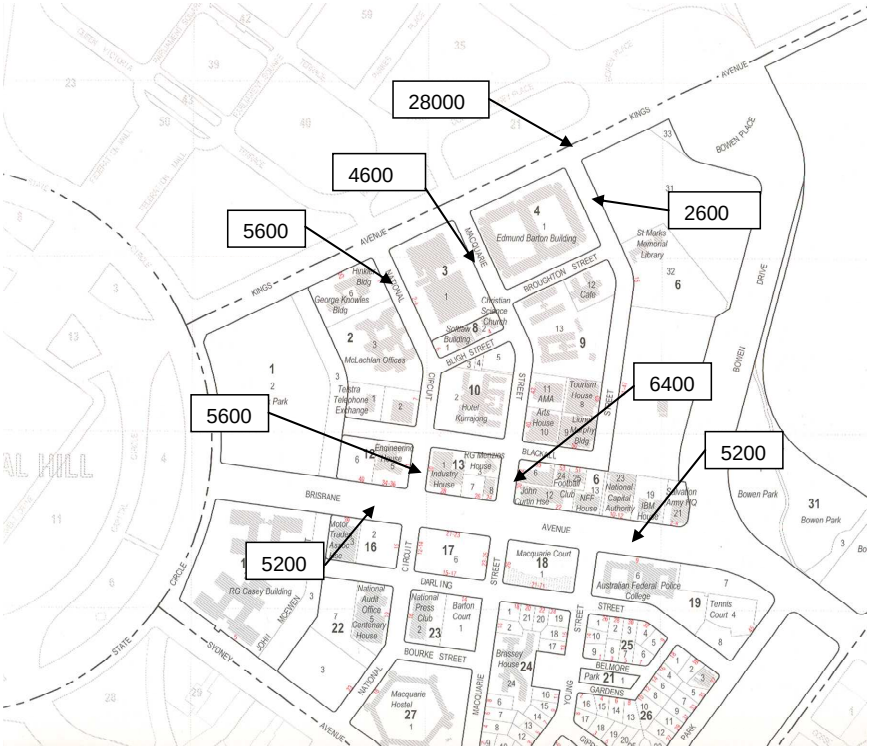


Figure 3-4: Existing Road Network and Traffic Volumes (vpd)

Macquarie Street and Blackall Street are both local roads with a 50km/hr speed limit. Macquarie Street is access controlled with limited on-street parking and carries about 4,000-6,500 vehicles per day. A pedestrian crossing in Macquarie Street between Bligh Street and Blackall Street helps to facilitate pedestrian access across the road.

Blackall Street operates as a local road currently carrying approximately 2,500 vehicles per day. It services St Marks Church, the on site car park, some access to the Landmark apartment complex and some office buildings. It has adequate mid-block capacity and its main capacity constraint is at the Kings Avenue intersection which is not signalised (**Photographs 3.7** and **3.8**). Adjoined by less intensive land uses and some open space Blackall Street is considered to offer significant spare capacity to proposed or future land uses.

Photograph 3.7 Blackall Street and Kings Avenue Intersection

Photograph 3.8 Blackall Street and Kings Avenue Intersection

3.5.1 Intersection Operation

Turning Movements

Turning volumes offer a good indication of intersection operation and spare capacity. A qualitative assessment of the turning movements suggests that the AM peak is the critical peak period with a number of significant turning movements. The critical movement is the right turn from Brisbane Avenue into Macquarie Street with 434 vehicles. High volume turns also include the left turns from Kings Avenue into Blackall Street (366 vehicles) and Macquarie Street (324 vehicles). Intersection operation is not critically affected by these movements and significant spare capacity in the intersections is considered to exist.

Network Performance Indicators

The capacity of an urban road network, where intersections are frequent, is controlled by the capacity of the intersections within that network. Average delay is commonly used to assess intersections performance, with 'level of service' (LoS) used as indicator; 'LoS A' representing a good level of operation and 'LoS F' representing oversaturated conditions, where improvements are required. A summary of the level of service criteria is shown in Table 3-1**.**

Table 3-1: Performance Criteria for Intersections

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

Source: Guide to Traffic Generating Developments, NSW Roads and Traffic Authority, 1993

A quantitative assessment of intersection operation was undertaken using the traffic counts and SCATS data. Analysis of the existing operation of the intersections was undertaken using aaSidra 2.0. The results of this analysis are presented below.

Kings Ave / Blackall St
AM – LoS A, with average delay for right turners out of Blackall St of around 42 seconds.
PM - LoS A, with average delay for right turners out of Blackall St around 47 seconds

Kings Ave / Macquarie St
AM – LoS C, with 95% back of queue lengths over 100m for all approaches
PM – LoS C, with 95% back of queue lengths over 100m on King's Ave approaches only

Brisbane Ave / Macquarie St
AM – LoS B, with minimal delays to all movements
PM – LoS B, with minimal delays to all movements.

The SIDRA results suggest significant capacity in the current network and that any reasonable future increases in traffic at the intersections can be accommodated through appropriate phasing. More detailed results are included in **Appendix B**.

3.6 Journey to Work Data

Journey to Work (JTW) data for ACT from the 2001 Census showed the following travel patterns for the journey to work trip to Barton and Parkes.

Table 3-2: Journey to Work Summary Table

Mode	Barton		Parkes	
	Number	Percentage	Number	Percentage
Bus	383	5.2%	291	5.8%
Car Driver	5746	77.8%	3877	77.2%
Car Passenger	674	9.1%	508	10.1%
Walk	211	2.9%	66	1.3%
Cycle	180	2.4%	141	2.8%
Other	191	2.6%	139	2.8%
Non Trips*	728		510	
TOTAL	**8113**		**5532**	

*Include work from home / did not go to work / not stated

The JTW data shows over 8,000 full-time or part-time staff working in Barton. About 87% of journeys to work are undertaken by private car (as car driver / car passenger). Only 10.5% of trips use public transport, walking or cycling. On any given day the staff absentee rate is about 9%.

3.7 Employment

The Cardno Young Report (2004) provided a brief assessment of employment in Barton. The Report assumed that employment was in the vicinity of 7,000 persons. Using 1996 JTW data to derive vehicle occupancy, part-time employment and proportion of employees working on any given day the report arrived at an assumed parking demand of 4,800 spaces.

3.8 Commercial Development

3.8.1 Completed Development

Commercial development recently completed is likely to reduce demand for surface car parking facilities in Barton / Forrest. Table 3-3 identifies recently completed development, floor area and parking supply. By providing two parking spaces per 100m² GFA on site these developments should cater for long-term parking demand.

Table 3-3: Completed Development

Development	Complete	GFA (m²)		Car Parking	
		was	now	was	now
Engineering House	2005	2,900	6,500	57	123
Dept IT & Arts	2005	0	11,000	0	220
Minter Ellison	2005	0	14,000	0	280

New developments also provide barrier controlled tenant parking. Any excess in parking supply could lead to the availability of long-term non-tenant parking (for a cost). The future acceptance of pay parking will enhance the viability of these car parking spaces. However, this is not likely to reduce demand for parking until pay parking becomes accepted, and even then only a minimal number of spaces may become available.

3.8.2 Approved and Likely Future Development

Future commercial development may affect parking demand as additional spaces are provided on-site. Table 3-4 identifies approved developments and the proposed increase in parking supply.

Table 3-4: Approved and Likely Future Development

Development	Construction		GFA (m²)		On-Site Parking Provision	
	Start	Finish	current	proposed	current	proposed
1 National*	2005	2007	3,611	17,000	64	340
McLachlan Offices	2007	2009	15,000	22,500	60	450
Softlaw Building	2007	2009	2,200	4,600	25	80
Robert Garran Offices	2009	2011	17,000	17,000	90	210

* Approved and currently under construction.

Table 3-4 identifies over 800 additional on-site parking spaces to be constructed by 2011. While many of these spaces will be utilised through the provision of additional employment space, off-site parking demand is expected to decrease significantly. For example the redevelopment of the McLachlan Offices will provide an additional 7,500m² GFA of floor space with 390 parking spaces. Taking the net increase in supply against likely increases in demand, the actual decrease in demand for off-site surface parking throughout Barton/Forrest could reduce by as much as 500 spaces by 2009, as result of planned developments.

3.8.3 Edmond Barton Building Refurbishment

Staff currently occupying the Edmund Barton Building will be relocated to Civic in 2007 and it is likely that the building will then be refurbished. The refurbishment of the Edmund Barton Building is expected to take place between 2007 and 2009. There will be a temporary reduction in employees within the building during that period, which will result in a temporary reduction in demand for off-site parking spaces. The impacts on Block 13, Section 9 will be significant, given the estimated number of employees (1521) and amount of on-site parking (204) associated with the Edmund Barton Building.

3.9 Summary

Current traffic conditions suggest that the AM peak period is the critical peak, with relatively high volumes turning right from Brisbane Avenue into Macquarie Street and left turners from Kings Avenue into Blackall and Macquarie Streets (although not critical movements). Qualitative and quantitative assessments indicate that significant spare capacity exists in the network and that any reasonable increase in future volumes should be catered for within the existing network layout. Longer green time for higher volume movements may be considered to improve network efficiency.

Emphasis on the provision of on-site parking has resulted in many of the above developments providing car parking rates of two per 100m² GFA, rather than the previous standard of one space per 100m² GFA. This is more in line with employment density and therefore limits demand for off-site parking. Demand could be reduced by as much as 500 parking spaces by 2009 throughout Barton/Forrest. A temporary drop in demand for parking could occur as a result of the refurbishment of the Edmund Barton Building between 2007 and 2009.

4.0 Development Options

4.1 Description

The Department of Finance and Administration wish to develop Block 13 Section 9 as a mixed use development containing offices, apartments, retail and parking. **Appendix C** shows the development options.

4.1.1 Option Detail

As shown in **Appendix C** Options 1 - 5 provide the following building layout.

Table 4-1: Description of Development Options

Building	Detail	Option 1	Option 2		Option 3		Option 4	Option 5
A1 & A2 Office Building	**Blg Footprint** **Levels** **GFA** **Parking**	2,730m² 5 12,000m² 240	As Option 1		As Option 1		As Option 1	As Option 1
B1 Apartments			**Opt 2A**	**Opt 2B**	**Opt 3A**	**Opt 3B**		
	Units **Blg Footprint** **Levels** **Parking**	30 640m² 6 45	90 1,200m² 10 & 8 135	64 1,200m² 8 & 6 90	100 640m² 6/8/6 188	100 640m² 6/10/4 188	70 1,200m² 6 & 8 120	100 640m² 10 & 10 160
B2 Apartments	**Units** **Blg Footprint** **Levels** **Parking**	40 640m² 8 41 on-site 20 on-street						
B3 Apartments	**Units** **Blg Footprint** **Levels** **Parking**	20 640m² 5 28 on-site 2 on-street	Nil		Nil		Nil	20 640m² 4 20 undercroft
C Carpark	**Levels** **Cars** **Blg Footprint**	5 500 3,050m²	5 450 2,800		4 460 3,050m²		As Option 3	5 330 1,925m²
A3 / A4 / D Commercial	**Levels** **Blg Footprint** **Parking**	3 300m² Nil	3 (1 retail / 1 comm) 970m² 110 (2 levels)		3.5 1,000m² 60 in C 20 on-site		As Option 3	As Option 3
E Corner Commercial	**Levels** **Blg Footprint** **Parking**	3 300m² no parking	As Option 1		Nil		Nil	Nil

A brief qualitatitive comparison of options follows. A more detailed assessment of the preferred option (option 5) is provided in Chapter 5.

4.2 Analysis

The layout of the development options are fairly similar and differ mainly in the availability of open space and staging possibilities.

4.2.1 Traffic generation

Traffic generation does not vary significantly between the development options.

4.2.2 Vehicular and Pedestrian Access

All development options are considered to provide adequate vehicular and pedestrian access through the provision of laneways connecting between Macquarie Street and Blackall Street. These can be used as one-way or two-way vehicular access.

Pedestrian access is similar for all options through the provision of pedestrian footpaths alongside public roads and laneways plus additional pathways through open space. Pedestrian crossings can be provided at all major desire lines.

4.2.3 Parking Supply

An assessment of parking supply is undertaken for each option component below.

A1 / A2 Office Building: 2 spaces per 100m² GFA for all options;

B1/ B2 / B3 Apartments: 1.5 spaces per unit for Options 1-3 and 5; 1.7 spaces per unit for Option 4; Option 1 depends on on-street parking;

C Car park: 330 spaces for Option 5, 450 spaces for Option 2; 460 spaces for Options 3 & 4, 500 spaces for Option 1;

D Commercial: 2 spaces per 100m² GFA for Options 3-5 (located in Site C); 2.6 spaces per 100m² GFA for Option 1 (located in Site C); 3.7 spaces per 100m² GFA for Option 2;

E Commercial Corner: No parking provided for Options 2, 3 & 5.

In addition, an extra 50 car parking spaces would be provided in the laneway adjacent to Bligh Street.

Option 5 will provide the most suitable level of on-site parking, as will become apparent from information provided in Chapter 5.

4.2.4 Public Transport Access

In terms of access to the public transport network all options provide a similar level of access providing connections to the external pedestrian network are consistent.

4.2.5 Summary

From a traffic perspective there is very little difference between the options. Option 5 is seen as the preferred scenario and it is assessed in **Section 5**.

5.0 Option 5 (Preferred Option)

5.1 Development Summary

A: Office Summary

Construction Start: November 2006
Construction Complete: March 2008
GFA: 12,000m²
Parking Supply: 240 spaces (two spaces per 100m² GFA)

B1: Apartments

Construction Start: January 2008
Construction Complete: December 2008
GFA: 6,400m²
Apartments: 50
Parking Supply: 75 spaces (1.5 spaces per apartment)

B2: Apartments

Construction Start: January 2008
Construction Complete: December 2008
GFA: 6,400m²
Apartments: 50
Parking Supply: 75 spaces (1.5 spaces per apartment)

B3: Apartments

Construction Start: January 2008
Construction Complete: December 2008
GFA: 2,560m²
Apartments: 20
Parking Supply: 30 spaces (1.5 spaces per apartment)

C: Parking Station

Construction Start: January 2008
Construction Complete: August 2008
GFA: 1,925 per level
Five-storey development: 330 parking spaces

D: Office and Retail

Construction Start: January 2008
Construction Complete: November 2008
Retail GFA: 1,000m²
Office GFA: 3,000m²
Parking Supply for Office: 60 spaces in Site C and 20 spaces behind building

5.2 Short Term Parking Assessment

5.2.1 Development Timing

Initial development of the offices on 'Site A' will displace up to 200 parking spaces by November 2006. The establishment of a laneway (permanent site access) along the southern part of the site will initially enable construction vehicle access. Nearing the completion of the site in March 2008 the laneway should become available and be used for parking. Up to 50 90-degree long-stay car parking spaces should be available along the southern side of the laneway from 2008 until the completion of the site, thereafter reverting to short-term parking.

The development of the car parking facility on 'Site C' will require up to 50 marked spaces (excluding illegal and informal spaces) from January 2008. This should coincide with the availability of the laneway spaces. The remaining 220 marked spaces will be required in January 2008 for the development of Site's B and D.

Off-site parking demand from displaced parking spaces during the development of the site is therefore about 200 spaces from November 2006 until January 2008. This increases to 290 spaces from January 2008 to August 2008 when the on-site multi-storey car parking facility becomes available. Other influences on parking demand will also impact on the availability of spaces including the refurbishment and development of commercial buildings throughout the area.

5.2.2 Temporary Off-Site Parking Availability

Off site car parking opportunities include temporary on-street parking along the eastern side of Blackall Street and the development of Windsor Walk in York Park. Further parking may also be available at the rear of the Moth Site.

Blackall Street Temporary Parking

Current parking restrictions prevent car parking along the eastern side of Blackall Street. Analysis shows that up to 40 parallel parking spaces could temporarily be provided on Blackall Street for short-stay parking, to address a short-fall in short-stay parking in the area.

York Park Temporary Parking

Parts of Windsor Walk are currently being used for informal parking. The development of the southern section of Windsor Walk plus an adjoining proportion of York Park would enable more efficient parking plus a greater area to be used. Available space (excluding a landscaped strip along Brisbane Avenue) is in the order of 4,000m², which would provide up to 160 car parking spaces (applying an average rate of 25m² per vehicle/manoeuvring space). Access would preferably be via Brisbane Avenue (left-in/left-out). Access to National Circuit via Blackall Street is possible, but would place greater pressure on the intersection of Blackall Street / National Circuit.

Moth Site

The development of the rear of the Moth Site for temporary parking could provide up to 300 spaces. Access could be provided directly off Sydney Avenue (left-in/left-out). However, potential environmental impacts and community opposition may negate the use of this site.

5.2.3 Actual Demand

Up to 200 temporary long-term parking spaces are available off-site and up to 50 available on-site. The timing of development suggests that, based on current demand, a potential parking shortfall of up to 220 spaces between January 2008 (when all on-site parking is lost) and August 2008 (when the multi-storey car parking becomes available).

However, a more detailed analysis of parking demand/supply is required taking account of the following factors:

- Decreased demand from greater provision of on-site parking in new developments in the area;
- Temporary decrease in parking demand as a result of the refurbishment of the Edmund Barton Building; and
- Greater public transport mode split by 2008-09.

Taking these variables into account, analyses included in Section 5.3 and **Appendix D** indicate that parking demand by 2008/09 could decrease sufficiently to allow for a surplus of 145 temporary car parking spaces. After this time the multi-storey car parking structure will become operational, thereby allowing for additional and permanent long-stay parking. More details of these analyses follow.

5.3 Long Term Parking Assessment

In terms of the long-term use of the site all surrounding on-street parking spaces will revert to short-term parking, consistent with government policy. Commercial development sites will generally cater for the employment rates they support and there will be a decreasing demand for off-site long stay parking.

It is worth considering the management of short-stay parking before discussing issues associated with long-stay parking. There is currently a lack of short-stay parking in the vicinity of the site. This is shown by the negative surplus (or deficit) in Figure 5-1. This deficit can be addressed by:

- Immediately enabling parallel on-street parking on the eastern side of Blackall Street, which requires some simple changes to signage (creating about 40 additional spaces)
- Constructing 50 spaces along the proposed laneway, to be completed in March 2008 (this could be long-stay initially and converted to short-stay later)
- Constructing 20 spaces behind the proposed retail/commercial centre, to be completed in November 2008

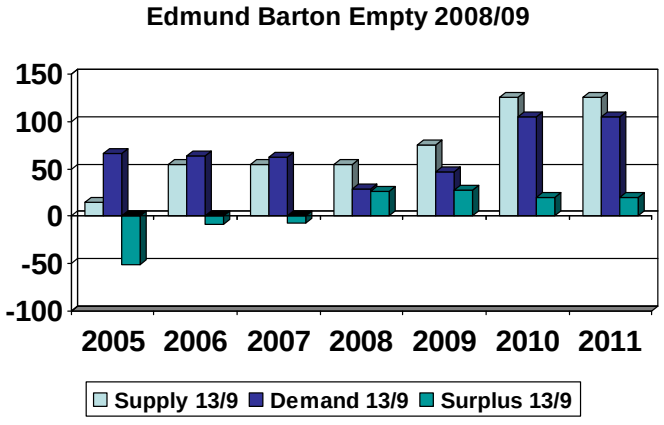


Figure 5-1: Short-stay Parking Supply/Demand

An assessment of parking supply and demand will enable an estimation of the likely level of car parking to be supplied on the site upon the completion of surrounding development and the development of the site itself. Three methods have been used to provide an estimation of future parking demand for the site:

1. Work backwards from 1,400 spaces using NCA's methodology (NCA 2001) and expected changes in development and parking supply assumptions, consistent with achieving the long-term objectives of the ACT Sustainable Transport Plan.

2. Work forwards from the current parking supply/demand situation at Block 13 Section9 using data on expected changes in floor space and parking supply.
3. Working forwards from the current parking supply/demand situation using 2001 Census journey to work data and expected changes in floor space and parking supply.

The workings of the methods are included in **Appendix D**.

A number of future scenarios are possible for future year development. Therefore Methods 2 and 3 are subject to varying assumptions including:

- A percentage of local office employees that would otherwise use the Block 13 Section 9 car park that overspill into Parkes or York Park (i.e., employees of Edmund Barton, Robert Garran, McLachlan and 1 National);
- Changes in employment conditions and journey to work trips, e.g. percentage work at home, casual or part-time work, mode choice, pay parking and other sustainable transport initiatives;
- Staging of development; and
- Occupancy of the Edmund Barton Building.

5.3.1 Method One: NCA Strategy

NCA (2001) identified a requirement for 2,960 parking spaces within three structured car parking buildings, including a 1,400 space car park on Block 13 Section 9. The strategy assumed the provision of one parking space per 100m² GFA on-site (for National Land) and the remainder to be provided off-site.

In reality, 2 spaces per 100sqm has been provided in new buildings since 2001, reducing the requirement for structured car parking by 1/100sqm of new buildings since 2001. We could assume that future buildings to be built on vacant land in Forrest would also provide 2 spaces per 100sqm, further reducing the required size of structured car parks. The result of such an analysis is shown in Figure 3-4, assuming full development by 2015 and no change to the proposed size of the York Park and Moth site car parks. It shows the requirement for a 323 space car park on the site in the long-term, which includes 60 spaces for the commercial development on Site D.

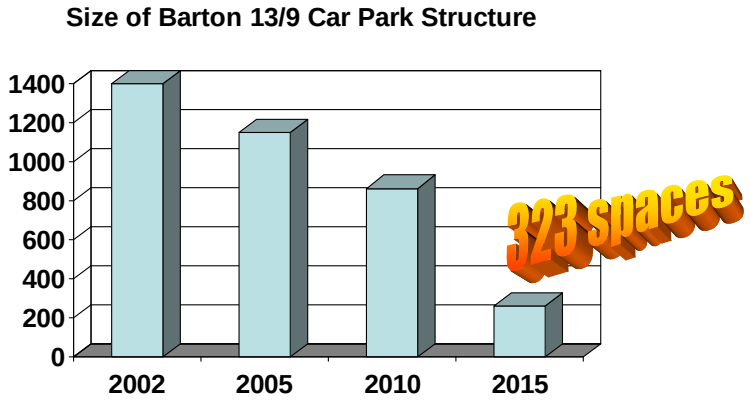


Figure 5-2: Size of Structured Car Park Using NCA Method

5.3.2 Method Two: Using Floor Space and Parking Supply Data

Figure 5-3 shows the results of the analysis using method 2. It shows that a temporary 160 space car park is likely to be needed during construction, prior to the completion of the structured car park.

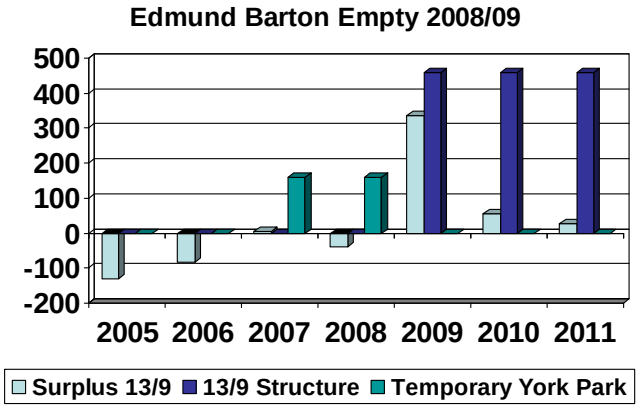


Figure 5-3: Parking Supply/Demand Analysis Using Floor Space and Parking Supply Data

5.3.3 Method Three: Using JTW and Parking Supply Data

The results of the analyses for a range of scenarios are provided using method 3. Figure 5-4 shows the results of an analysis that assumes that the ACT sustainable transport mode split targets are achieved. It is dependent on the implementation of pay parking in Parkes/Barton in 2006. It shows that a temporary 160 space car park may be needed for a short period at York Park, assuming that the Edmund Barton Building is still occupied upon commencement of development on the site. In reality, construction is likely to commence shortly after staff move out of the Edmund Barton Building and no temporary parking will be required.

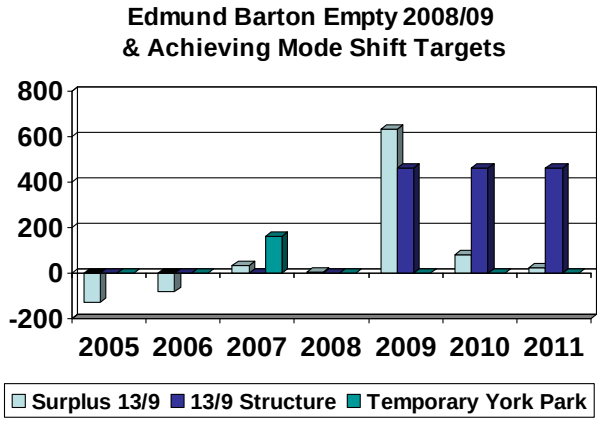


Figure 5-4: Parking Supply/Demand Analysis Using JTW and Parking Supply Data (Scenario 1)

Further analyses were undertaken for a worst case scenario - mode shift targets not achieved and new tenants in Edmund Barton Building (see Figure 5-5). This indicates that up to 460 temporary parking spaces would be needed in 2008, based on parking supply and demand calculations for the site. However, it also reveals that the original deficit of 600 spaces for Barton/Forrest would be reduced to almost nothing by 2007. Thus, there is scope to reduce the temporary parking assuming that there will still be spare parking capacity in Parkes for Barton workers to use (about 500 Barton workers currently use car parks in Parkes, based on a 2002 survey by Datacol).

There is potential to reduce the size of the structured car park on the site and the amount of temporary car parking provided during construction. This is illustrated in Figure 5-6 and Figure 5-7. The latter scenario is closer to reality and shows no temporary parking and a 320 space car park on the site.

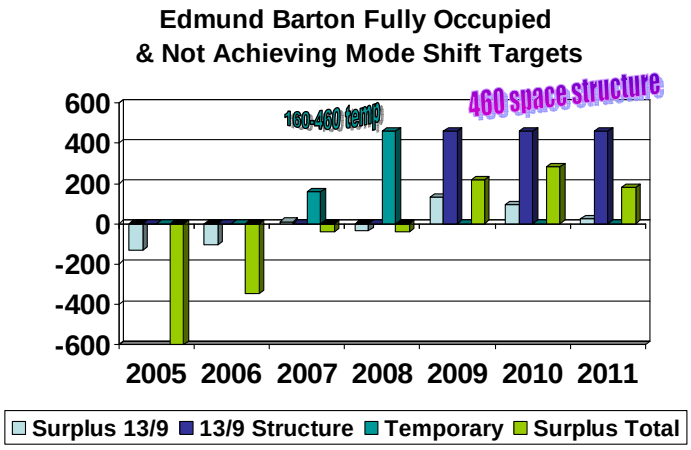


Figure 5-5: Parking Supply/Demand Analysis Using JTW and Parking Supply Data (Scenario 2)

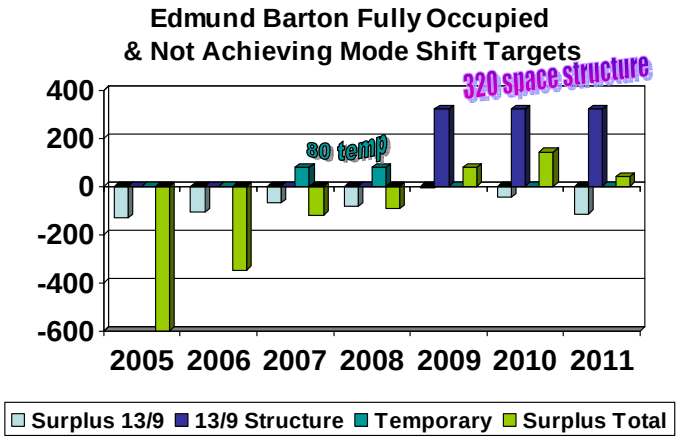


Figure 5-6: Parking Supply/Demand Analysis Using JTW and Parking Supply Data (Scenario 3)

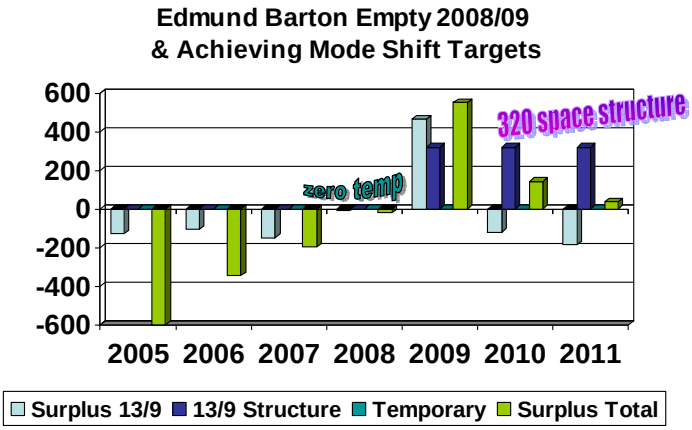


Figure 5-7: Parking Supply/Demand Analysis Using JTW and Parking Supply Data (Scenario 4)

5.3.4 Long Stay Parking Summary

The timing of development suggests that, based on current demand, a potential parking shortfall of up to 220 spaces between January 2008 (when all on-site parking is lost) and August 2008 (when the multi-storey car parking becomes available). However, future demand needs to be taken into account in order to provide a better assessment. Future parking demand is dependant on the following factors:

- Decreased demand from greater provision of on-site parking from redevelopments throughout Barton;
- Temporary decrease in parking demand as a result of the refurbishment of the Edmund Barton Building; and
- Greater public transport mode split by 2008-09.

Taking these variables into account, analysis indicates that parking demand by 2008/09 will decrease sufficiently to allow for a surplus of 145 temporary car parking spaces. After this time the multi-storey car parking structure will become operational, thereby allowing for additional and permanent long-stay parking.

Emphasis on the provision of on-site parking for approved and future development is expected to result in a fall in off-site long-stay parking demand of up to 500 parking spaces by 2009 throughout Barton/Forrest. A temporary drop in demand for parking is also likely to occur as a result of the refurbishment of the Edmund Barton Building during 2008/09.

In summary the three methods of assessment indicate that a structured car parking facility providing about 320 public long-stay spaces would cater for the reasonable needs of commuters in the area. It is likely that no temporary parking will be needed during construction, but this needs monitoring. An opportunity exists to provide temporary parking at York Park.

5.4 Road Network

Potential traffic generated from the development of Block 13 Section 9 may affect the operation of the surrounding road network. This section assesses those potential impacts and provides mitigation measures where necessary.

5.4.1 Traffic Generation

The development of Option 5 will only marginally increase the volume of traffic generated within Block 13 Section 9. Recent counts indicated that 551 vehicles were generated by the site during the peak hour. This reflects a very high arrival rate (about 87% of vehicles parked at the site arrived in the peak hour); in Russell the peak hour arrival rate is about 65% of parking demand.

A total of 590 long-stay spaces are to be provided for commercial uses on the site. In addition, there will be 120 residential units. Assuming a peak trip generation rate of 80% of parking spaces for the commercial car parking and 0.6 veh/hr/unit for residential uses, the site could generate up to 544veh/hr (ie, little change from existing traffic). However, there will be a redistribution of traffic, largely due to the change in use on the site.

The newly generated traffic (544 vehicles) was distributed to the network using current desire patterns (reflected in turn movements at the car park accesses). Account was taken of the changed access arrangements on MacQuarie St and changed traffic patterns on Blackall St (with more residential). In addition, allowance was made for additional traffic on MacQuarie St generated by the redevelopment of part of Robert Garran Offices. It indicated that there will be very little change in traffic on MacQuarie Street, but a small increase on Blackall Street.

5.4.2 Intersection Operation

A qualitative assessment of future traffic generation on the road network suggests that the additional traffic can be accommodated within the existing road network and intersection configuration. The results of a more detailed quantitative assessment are included below.

A quantitative assessment of intersection operation in 2011 was undertaken using current distribution and the following assumptions:

- Background growth of 2% pa;
- Full occupation of approved future developments by 2011;
- Reoccupation of Edmund Barton Building by 2011; and
- 65% occupation of short-term parking on the site and immediately adjoining streets (to take into account visitor parking).

Analysis of the critical AM peak operation of the intersections with the development was undertaken using aaSidra 2.0. The results of the analysis are presented below.

Kings Ave / Blackall St
LoS A, with average delay for right turners out of Blackall St of around 66 seconds.

Kings Ave / Macquarie St
LoS C, with 95% back of queue lengths over 100m for all approaches

Brisbane Ave / Macquarie St
LoS B, with minimal delays to all movements

The SIDRA results suggest that there will be very little change in intersection operation with the development. More detailed results are included in Appendix B.

5.4.3 Site Access

Temporary Access During Construction

The initial development of the offices will facilitate the formalisation of the laneway between Macquarie Street and Blackall Street. This laneway can be used for construction access until completion of the site in about March 2008. The access points to both streets are not considered to cause conflict with other road users, however safety and priority at Macquarie Street should be clearly indicated due to its proximity with Bligh Street. Consideration should be given to one-way in-bound movement into the laneway at this location.

The development of the car park, commercial and residential buildings also involve the establishment of laneways that can be used as construction access.

Permanent Access

All laneways and accessways would have the necessary separation distance from proposed pedestrian crossings and have adequate sight distance. Delays and queueing from accesses will be minimal (1-2 cars 95% of the time)

Surrounding Network

The minor redistribution of traffic generated from the site in future is not likely to have an adverse impact on other intersections within the surrounding network.

5.4.4 Access from Temporary Sites

York Park

The temporary use of parts of Windsor Walk and York Park would require construction of a temporary traffic access from either Brisbane Avenue or Blackall Street. Traffic access off Brisbane Avenue is recommended, to minimise impacts on the Blackall Street/National Circuit intersection.

As with the permanent car parking area two-way access from Brisbane Avenue is enabled through the u-turn lanes between eastbound and westbound carriageways. This will enable multi-directional distribution which should be suitable for the temporary use of the site. The estimated 160 car capacity of the car park can be catered for by this layout without a detrimental impact on the road network.

Moth Site

While the use of the Moth Site is considered to be unlikely construction and temporary traffic access could be gained via a two-way accessway off Sydney Avenue. As with Brisbane Avenue directional distribution is enabled through the u-turn lanes between eastbound and westbound carriageways.

5.4.5 Road Network Summary

In terms of AM and PM peaks the existing road network of Kings Avenue, Blackall Street and Macquarie Street supports a significant number of site related vehicles. The final design of the site will cause a redistribution of vehicles accessing the site and there is sufficient spare capacity in the nearby intersections to support the changes.

5.5 Pedestrians and Cyclists

Pedestrians and cyclists are well catered for in the area through a network of existing pedestrian and cycle paths. Pedestrian and cyclist access through the site will be enhanced through the provision of the two laneways and proposed open space. The northern laneway will provide continuous access along the key pedestrian desire lines between Blackall Street and Bligh Street.

On-site cycle storage and facilities including change-rooms and showers will be provided as part of the commercial developments. This is expected to encourage journey to work trips by bicycle and reduce parking requirements.

The development of the site is expected to enhance to pedestrian and cyclist movement around the site and surrounding area, and contribute to lower demand in car parking spaces in the future.

5.6 Public Transport

A shift in public transport usage from 6.9% in 2001 to 16% in 2016 has been targeted in the Act Sustainable Transport Plan. The introduction of pay parking throughout the area should help to achieve this mode shift. There are a number of easily accessible bus stops within 400 metres walk of major commercial buildings in the area. These are located on Kings Avenue and National Circuit as shown in Figure 3-2. Future pressure on the provision of off-site parking spaces will help to encourage a shift towards higher public transport patronage over time.

6.0 Conclusion

6.1 Parking

Temporary Parking During Construction

- Parking conditions in Parkes/Barton should be regularly monitored and the need for temporary parking at York Park considered if necessary
- 310 spaces available in Windsor Walk (York Park) / Blackall Street / new laneway on-site, but some spaces required for short-stay parking
- Less demand due to nearby buildings being redeveloped and Edmund Barton being empty (possibly refurbished) for a period from late 2007
- Temporary use of Moth Site not preferable and not likely to be required

Final Parking

- It is recommended that a 330 space structured car park be built on Barton Block 13 Section 9, enabling a residential frontage on Blackall Street
- NCA's long-term parking strategy and the assumed provision of 2 spaces per 100sqm in new buildings will reduce the required size of the Barton Block 13 Section 9 structure car park to 323 spaces, assuming no reduction in the size of other planned parking structures in Barton/Forrest
- A 460 space structured car park on Barton 13/9 may be needed to meet likely short-term parking demands in Barton, but a 330 space car park will be adequate in the long-term
- All on-site surface car parking should be for short-stay parkers

6.2 Traffic

- There is significant spare capacity in the adjacent road network.
- There will be very little change in traffic on MacQuarie Street, but a small increase on Blackall Street.

6.3 Public Transport

- The site is well serviced by public transport and is close to a major trunk service route on Kings Avenue.

6.4 Pedestrian and Bicycle Access

- Pedestrian and Cyclist trips will be encouraged through the provision of a high standard of pathways and connectivity through the site and to surrounding established networks.
- The commercial components of the site will provide cycle storage facilities.

Appendix A: Barton Parking Supply

Table A.1: Parking Supply in Barton (Surveyed 2004 by Cardno Young)

Street	Type	Location	Spaces
Brisbane Avenue	On street	Northside	31
Brisbane Avenue	Off street	40 Brisbane Ave	56
Cnr of Brisbane Av & National Cct	Off street	Engineering House	71
Brisbane Avenue	On street	National Cct to Macquarie northside	13
Brisbane Avenue	Off street	Defence Housing Association	115
Brisbane Avenue	Off street	Australian Fisheries Management	at least 25 (unknown)
Brisbane Avenue	On street	Macquarie St to Bowen northside	18
National Farmers Federation	Off street		40
Hassall	Off street		103
IMB	Off street		at least 54 (unknown)
Salvation Army	Off street		78
Brisbane Avenue	On street	Bowen to near Australian Federal Police southside	4
Brisbane Avenue	On street	AFP to near residential southside	14
Brisbane Avenue	On street	Macquarie St to National Cct southside	11
Brisbane Avenue	On street	National Cct to State Circle	15
Motor Trade Association	Off street		115
Pharmacy Guild	Off street		unknown
DFAT	Off street		37
Blackall St	on street	West of National Cct	50
Blackall St	on street	car park at the end	73
Prime Minister and Cabinet			70
Macquarie Street	on street	Brisbane to Blackalll Street	2
Macquarie Street		Blackall St to Bligh St	11
Macquarie Street		Bligh to King	17
National Party Office	off street		52
Robert Garran House	off street		16
Soft Law	off street		25
Kurrajong Motel	off street		9
Blackall Street east of National Cct	on street		28
CA			163
Menzies Building	off street	on Macquarie	18
Kurrajong		Bligh Street	6
Kurrajong		Macquarie St	16
Blackall St - Macquarie Broughton St			69
AMA building	off street		151
Boeing	off street		unknown
Lionel Murphy building	off street		101
Robert Garran Offices	off street		69
Edmund Barton Building	off street		118 + unknown
St Marks Memorial Library	off street		54
Block 13 Section 9	off street	'The Site'	Up to 600

Street	Type	Location	Spaces
Tourism House	off street		136
Attorney Generals	off street		32
Young Street	on street		81
Macquarie St	on street		54
Sydney Avenue	on street		55
Bourke Street	on street		35
Darling St	on street		105
Telopea St	on street		12
Darling Street extension		Behind MTA house	42
Casey building	off street		109
National Press Club	off street		120
Baron Court Hotel	off street		37
Brassey Hotel	off street		26
Tennis Courts	off street		30
York Park	Off street		759
		Total	**4300**

Appendix B: aaSIDRA Results

2005 EXISTING PERFORMANCE

Intersection of Kings Ave and Blackall St (existing AM peak)

Movement	Degree of Saturation (v/c)	95% back of queue length (m)	Average Delay (sec)	Level of Service
Blackall St – south approach				
Left	0.220	6 (1 car)	26	B
Right	0.565	19 (3 cars)	42	C
Kings Ave – east approach				
Left	0.372	0 (0 cars)	8	A
Through	0.372	0 (0 cars)	0	A
Kings Ave – west approach				
Through	0.284	9 (2 cars)	0	A
Right	0.586	22 (4 cars)	36	C

Overall Level of Service 'A', with an average delay to all vehicles of 5 seconds.

Intersection of Kings Ave and Blackall St (existing PM peak)

Movement	Degree of Saturation (v/c)	95% back of queue length (m)	Average Delay (sec)	Level of Service
Blackall St – south approach				
Left	0.301	10 (2 cars)	20	B
Right	0.890	77 (11 cars)	47	D
Kings Ave – east approach				
Left	0.276	0 (0 cars)	8	A
Through	0.275	0 (0 cars)	0	A
Kings Ave – west approach				
Through	0.280	0 (0 cars)	0	A
Right	0.080	2 (0 cars)	16	B

Overall Level of Service 'A', with an average delay of 7 seconds.

Intersection of Kings Ave and Macquarie St (existing AM peak)

Movement	Degree of Saturation (v/c)	95% back of queue length (m)	Average Delay (sec)	Level of Service
Macquarie St – south approach				
Left	0.231	44 (7 cars)	55	D
Through	0.231	44 (7 cars)	47	D
Right	0.788	136 (23 cars)	65	E
Kings Ave – east approach				
Left	0.661	118 (20 cars)	31	C
Through	0.662	121 (20 cars)	22	B
Right	0.624	63 (10 cars)	71	F
King George Tce – north approach				
Left	0.787	139 (23 cars)	65	E
Through	0.787	139 (23 cars)	57	E
Right	0.022	4 (1 car)	52	D
Kings Ave – west approach				
Left	0.804	166 (27 cars)	33	C
Through	0.803	168 (27 cars)	24	B
Right	0.742	75 (13 cars)	73	F

Overall LoS 'C', with an average delay to all vehicles of 39 seconds.

Intersection of Kings Ave and Macquarie St (existing PM peak)

Movement	Degree of Saturation (v/c)	95% back of queue length (m)	Average Delay (sec)	Level of Service
Macquarie St – south approach				
Left	0.355	62 (10 cars)	46	D
Through	0.355	62 (10 cars)	38	C
Right	0.414	70 (12 cars)	46	D
Kings Ave – east approach				
Left	0.761	121 (20 cars)	36	C
Through	0.762	123 (20 cars)	28	B
Right	0.670	37 (6 cars)	68	E
King George Tce – north approach				
Left	0.336	59 (10 cars)	46	D
Through	0.336	59 (10 cars)	38	C
Right	0.048	9 (2 cars)	42	C
Kings Ave – west approach				
Left	0.659	100 (17 cars)	35	C
Through	0.659	101 (17 cars)	26	B
Right	0.187	11 (2 cars)	65	E

Overall LoS 'C', with an average delay to all vehicles of 34 seconds.

Intersection of Brisbane Ave and Macquarie St (existing AM peak)

Movement	Degree of Saturation (v/c)	95% back of queue length (m)	Average Delay (sec)	Level of Service
Macquarie St – south approach				
Left	0.062	1 (1 cars)	9	A
Through	0.340	15 (2 cars)	21	B
Right	0.340	15 (2 cars)	23	B
Brisbane Ave – east approach				
Left	0.154	0 (0 cars)	8	A
Through	0.153	0 (0 cars)	0	A
Right	0.234	20 (3 cars)	21	B
Macquarie St – north approach				
Left	0.112	3 (1 cars)	9	A
Through	0.126	8 (2 cars)	22	B
Right	0.126	8 (2 cars)	23	B
Brisbane Ave – west approach				
Left	0.094	0 (0 cars)	8	A
Through	0.094	0 (0 cars)	0	A
Right	0.393	18 (3 cars)	23	B

Overall LoS 'B' with an average delay to all vehicles of 17 seconds.

Intersection of Brisbane Ave and Macquarie St (existing PM peak)

Movement	Degree of Saturation (v/c)	95% back of queue length (m)	Average Delay (sec)	Level of Service
Macquarie St – south approach				
Left	0.018	0 (0 cars)	9	A
Through	0.122	5 (1 car)	18	B
Right	0.122	5 (1 car)	19	B
Brisbane Ave – east approach				
Left	0.041	0 (0 cars)	8	A
Through	0.041	0 (0 cars)	0	A
Right	0.246	9 (2 cars)	19	B
Macquarie St – north approach				
Left	0.230	7 (1 cars)	9	A
Through	0.316	14 (2 cars)	16	B
Right	0.316	14 (2 cars)	18	B
Brisbane Ave – west approach				
Left	0.058	0 (0 cars)	8	A
Through	0.058	0 (0 cars)	0	A
Right	0.339	16 (3 cars)	16	B

Overall LoS 'B' with an average delay to all vehicles of 15 seconds.

2011 FUTURE PERFORMANCE – AM Peak only

Intersection of Kings Ave and Blackall St (existing AM peak)

Movement	Degree of Saturation (v/c)	95% back of queue length (m)	Average Delay (sec)	Level of Service
Blackall St – south approach				
Left	0.322	10 (2 cars)	28	B
Right	0.828	38 (6 cars)	66	E
Kings Ave – east approach				
Left	0.369	0 (0 cars)	8	A
Through	0.369	0 (0 cars)	0	A
Kings Ave – west approach				
Through	0.295	10 (2 cars)	0	A
Right	0.572	21 (4 cars)	35	C

Overall Level of Service 'A', with an average delay to all vehicles of 6 seconds.

Intersection of Kings Ave and Macquarie St (existing AM peak)

Movement	Degree of Saturation (v/c)	95% back of queue length (m)	Average Delay (sec)	Level of Service
Macquarie St – south approach				
Left	0.247	46 (7 cars)	55	D
Through	0.247	46 (7 cars)	47	D
Right	0.815	143 (24 cars)	66	E
Kings Ave – east approach				
Left	0.728	136 (23 cars)	31	C
Through	0.728	141 (23 cars)	23	B
Right	0.624	63 (10 cars)	71	F
King George Tce – north approach				
Left	0.838	153 (25 cars)	69	E
Through	0.838	153 (25 cars)	61	E
Right	0.022	4 (1 car)	52	D
Kings Ave – west approach				
Left	0.837	180 (30 cars)	33	C
Through	0.836	183 (30 cars)	25	B
Right	0.796	81 (13 cars)	76	F

Overall LoS 'C', with an average delay to all vehicles of 40 seconds.

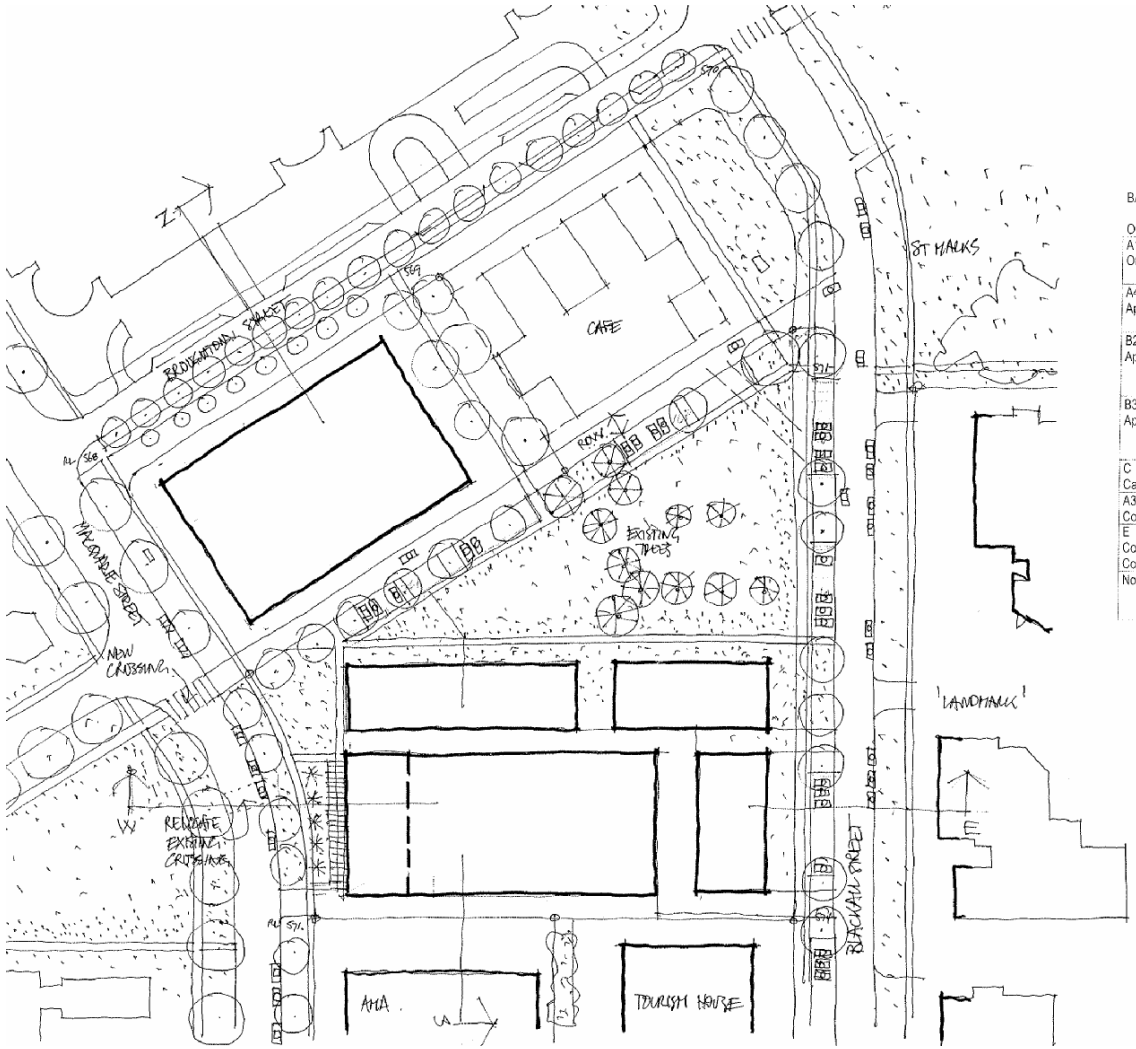
Intersection of Brisbane Ave and Macquarie St (existing AM peak)

Movement	Degree of Saturation (v/c)	95% back of queue length (m)	Average Delay (sec)	Level of Service
Macquarie St – south approach				
Left	0.062	1 (1 cars)	9	A
Through	0.388	17 (3 cars)	25	B
Right	0.388	17 (3 cars)	28	B
Brisbane Ave – east approach				
Left	0.160	0 (0 cars)	8	A
Through	0.160	0 (0 cars)	0	A
Right	0.263	20 (3 cars)	21	B
Macquarie St – north approach				
Left	0.125	3 (1 cars)	9	A
Through	0.153	6 (2 cars)	24	B
Right	0.153	6 (1 car)	25	B
Brisbane Ave – west approach				
Left	0.102	0 (0 cars)	8	A
Through	0.102	0 (0 cars)	0	A
Right	0.477	20 (3 cars)	24	B

Overall LoS 'B' with an average delay to all vehicles of 19 seconds.

Appendix C: Development Options

Option 1 Site Plan



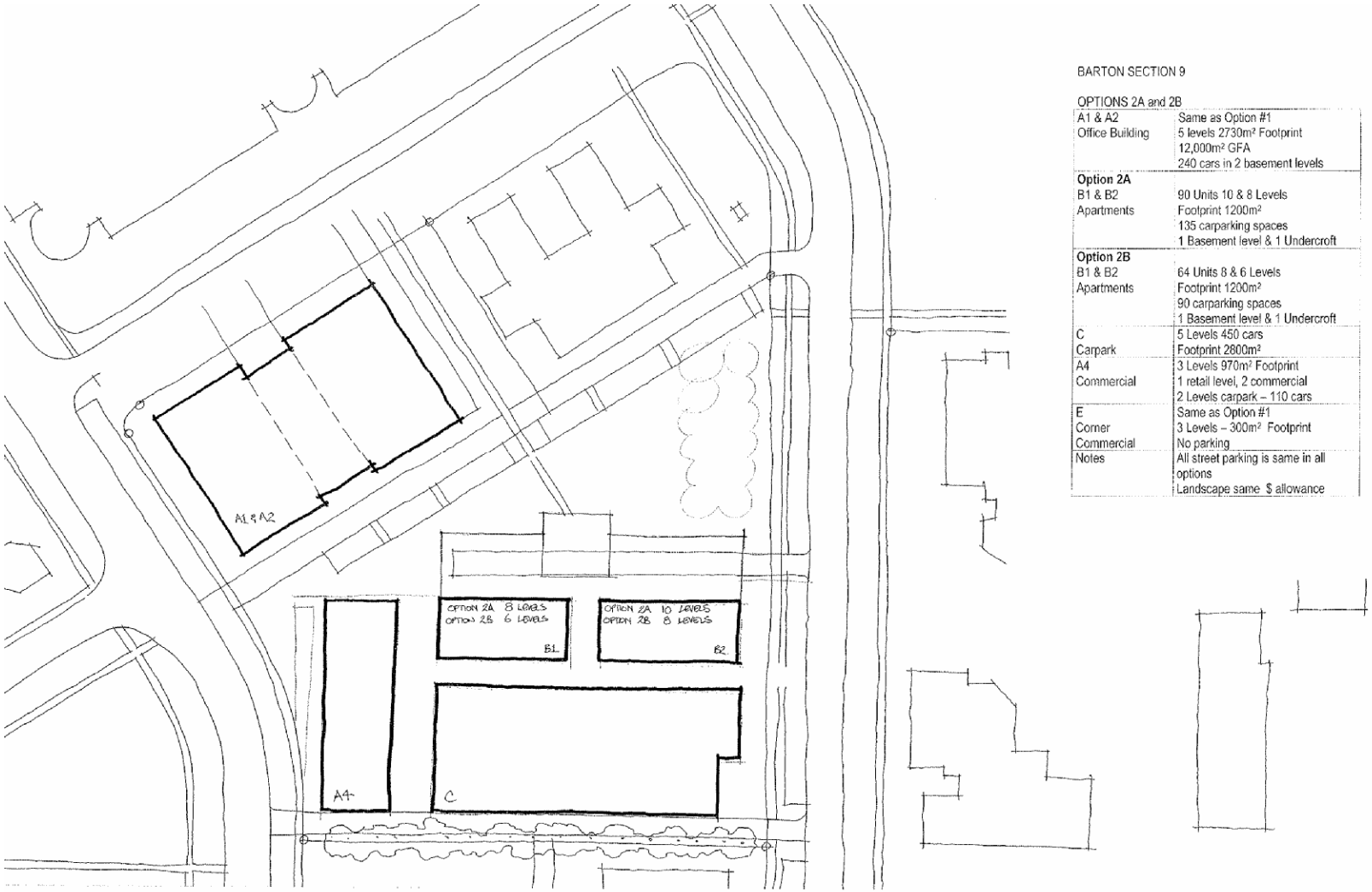
BARTON SECTION 9

OPTION 1

A1 & A2 Office Building	5 levels 2730m² Footprint 12,000m² GFA 240 cars in 2 basement levels
A4 Apartments	30 Units – 6 Levels Footprint 640m² 45 carparking spaces 2 levels
B2 Apartments	40 Units – 8 Levels Footprint 640m² 41 car spaces on 2 levels 20 spaces on street
B3 Apartments	20 Units – 5 Levels Footprint 640m² 28 car spaces, 2 on street 1 Undercroft level
C Carpark	5 Levels 500 cars Footprint 3050m²
A3 Commercial	3 Levels 300m² Footprint (24 car spaces in carpark)
E Corner Commercial	3 Levels – 300m² Footprint No parking
Notes	All street parking is same in all options Landscape same $ allowance

Source: Colin Stewart Architects, November 2005, Option 1 Master Plan

Option 2 Site Plan



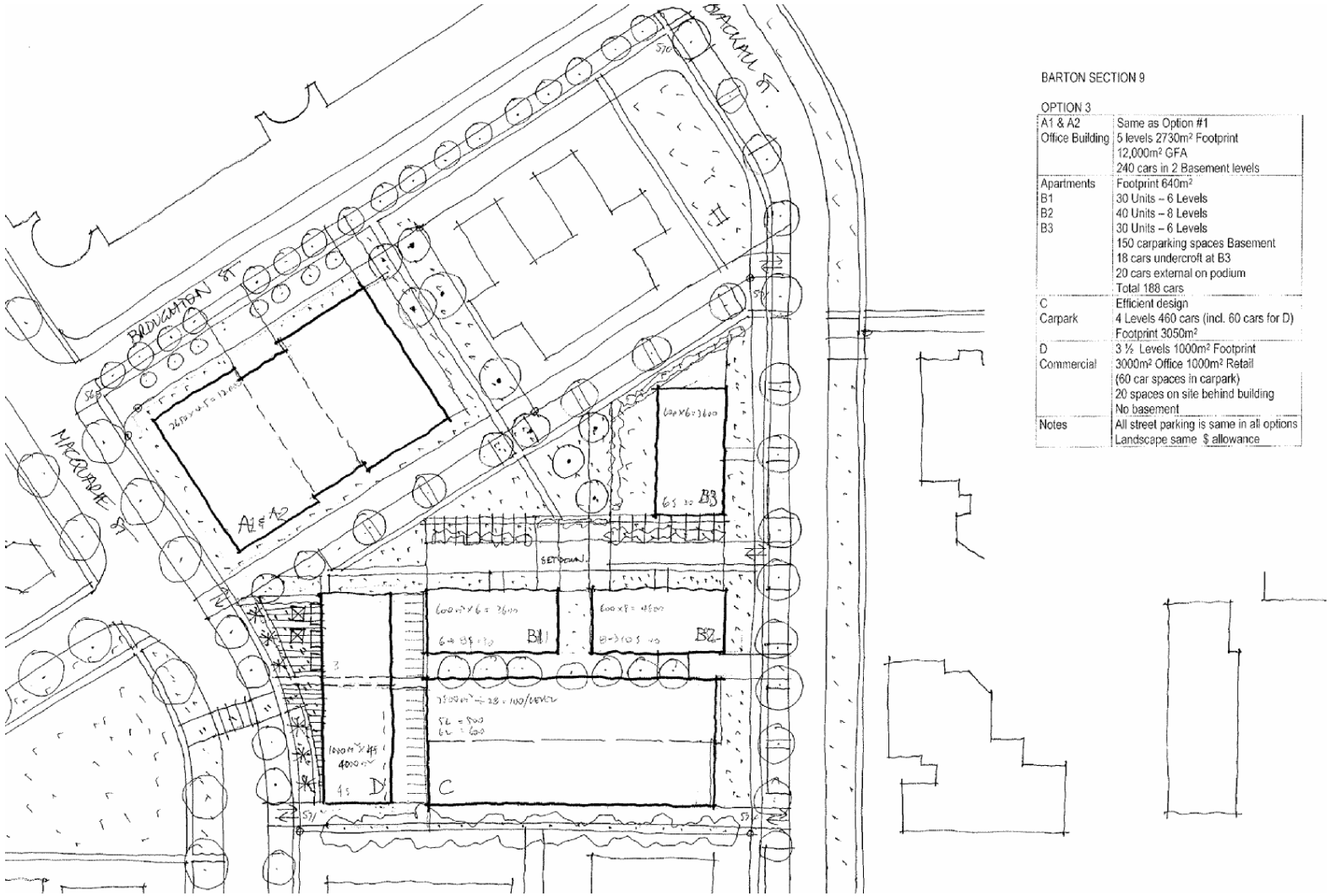
BARTON SECTION 9

OPTIONS 2A and 2B

A1 & A2 Office Building	Same as Option #1 5 levels 2730m² Footprint 12,000m² GFA 240 cars in 2 basement levels
Option 2A	
B1 & B2 Apartments	90 Units 10 & 8 Levels Footprint 1200m² 135 carparking spaces 1 Basement level & 1 Undercroft
Option 2B	
B1 & B2 Apartments	64 Units 8 & 6 Levels Footprint 1200m² 90 carparking spaces 1 Basement level & 1 Undercroft
C Carpark	5 Levels 450 cars Footprint 2600m²
A4 Commercial	3 Levels 970m² Footprint 1 retail level, 2 commercial 2 Levels carpark – 110 cars
E Corner Commercial	Same as Option #1 3 Levels – 300m² Footprint No parking
Notes	All street parking is same in all options Landscape same $ allowance

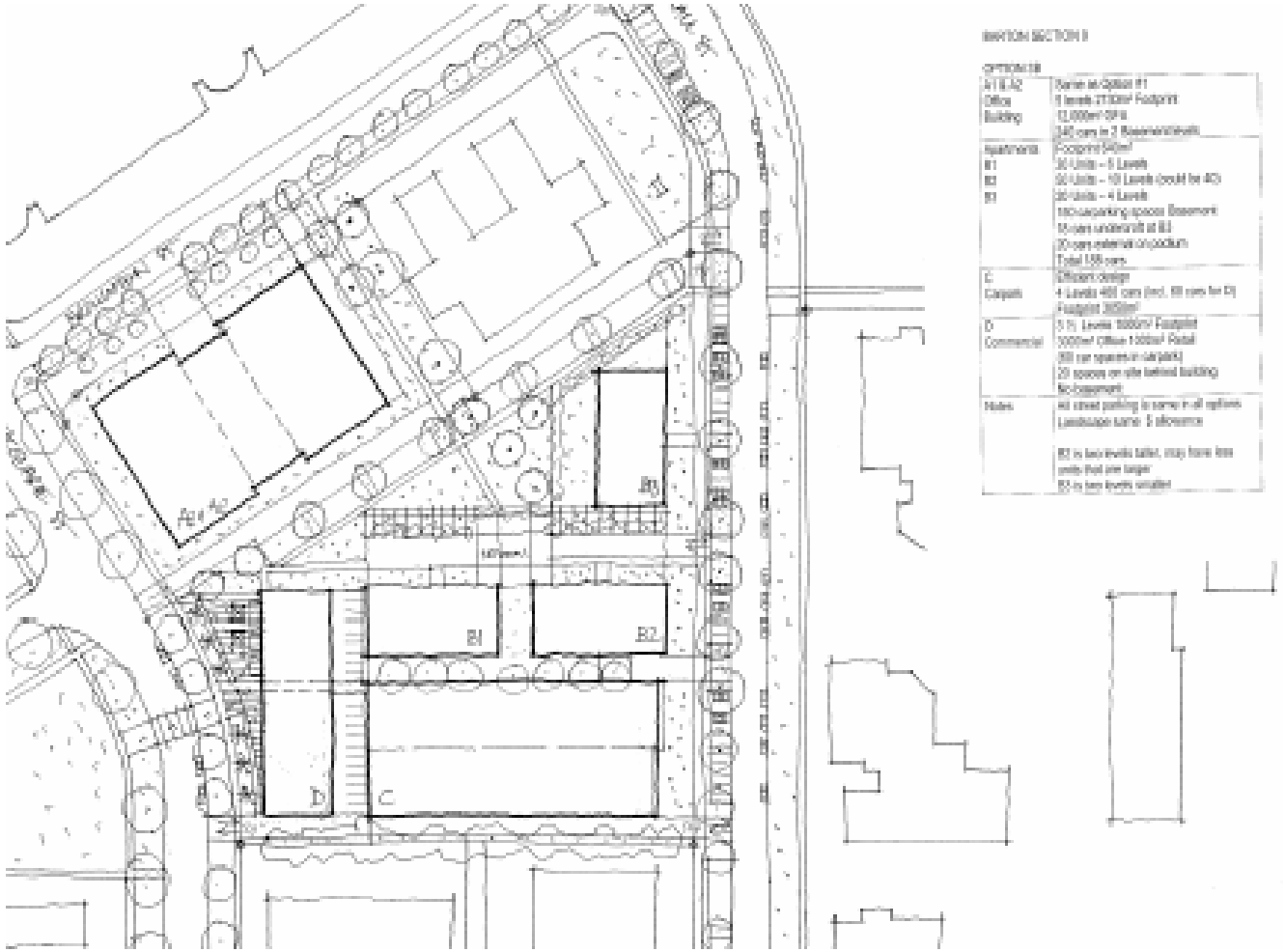
Source: Colin Stewart Architects, November 2005, Option 2 Master Plan

Option 3A Site Plan



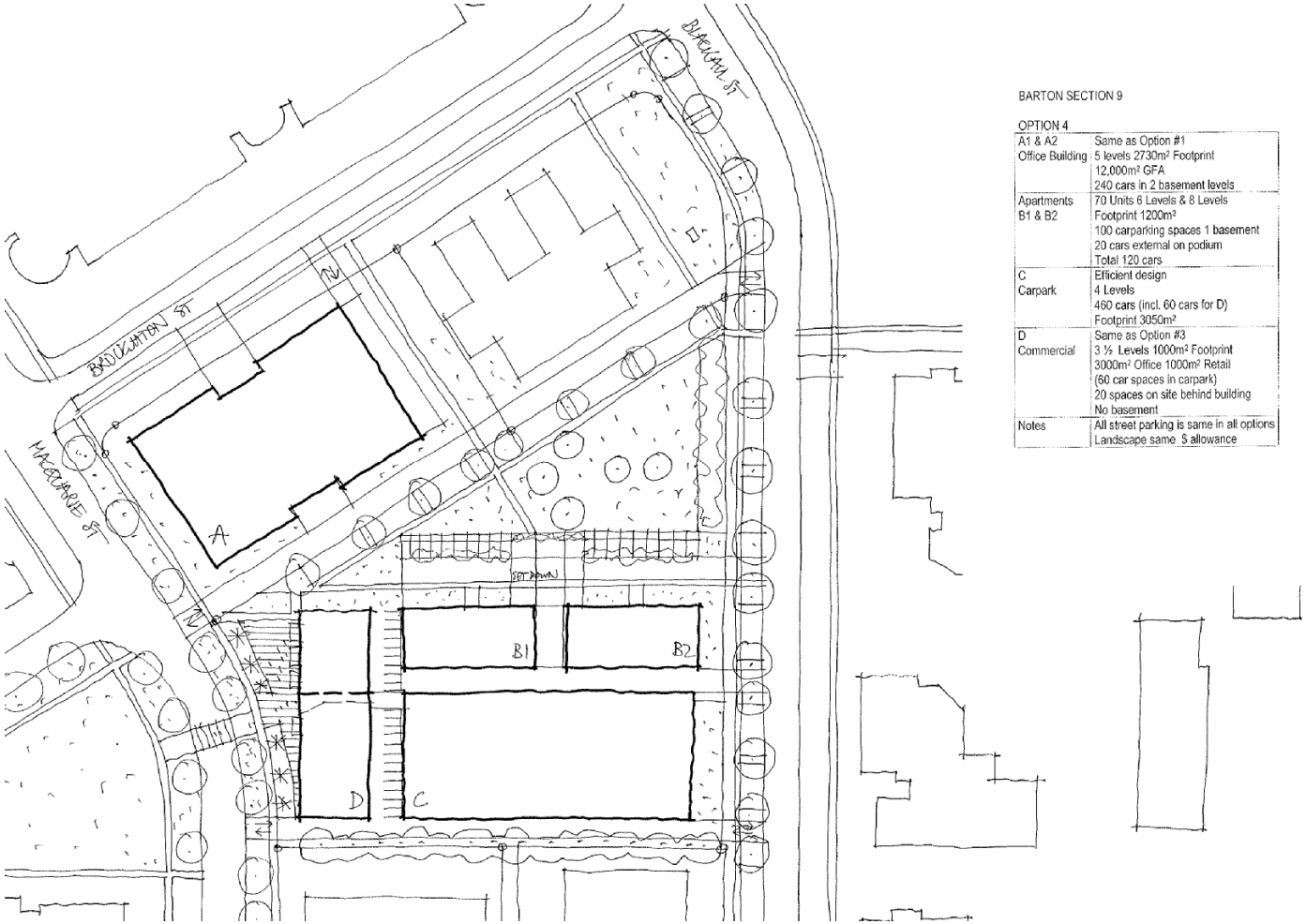
Source: Colin Stewart Architects, November 2005, Option 3A Master Plan

Option 3B Site Plan



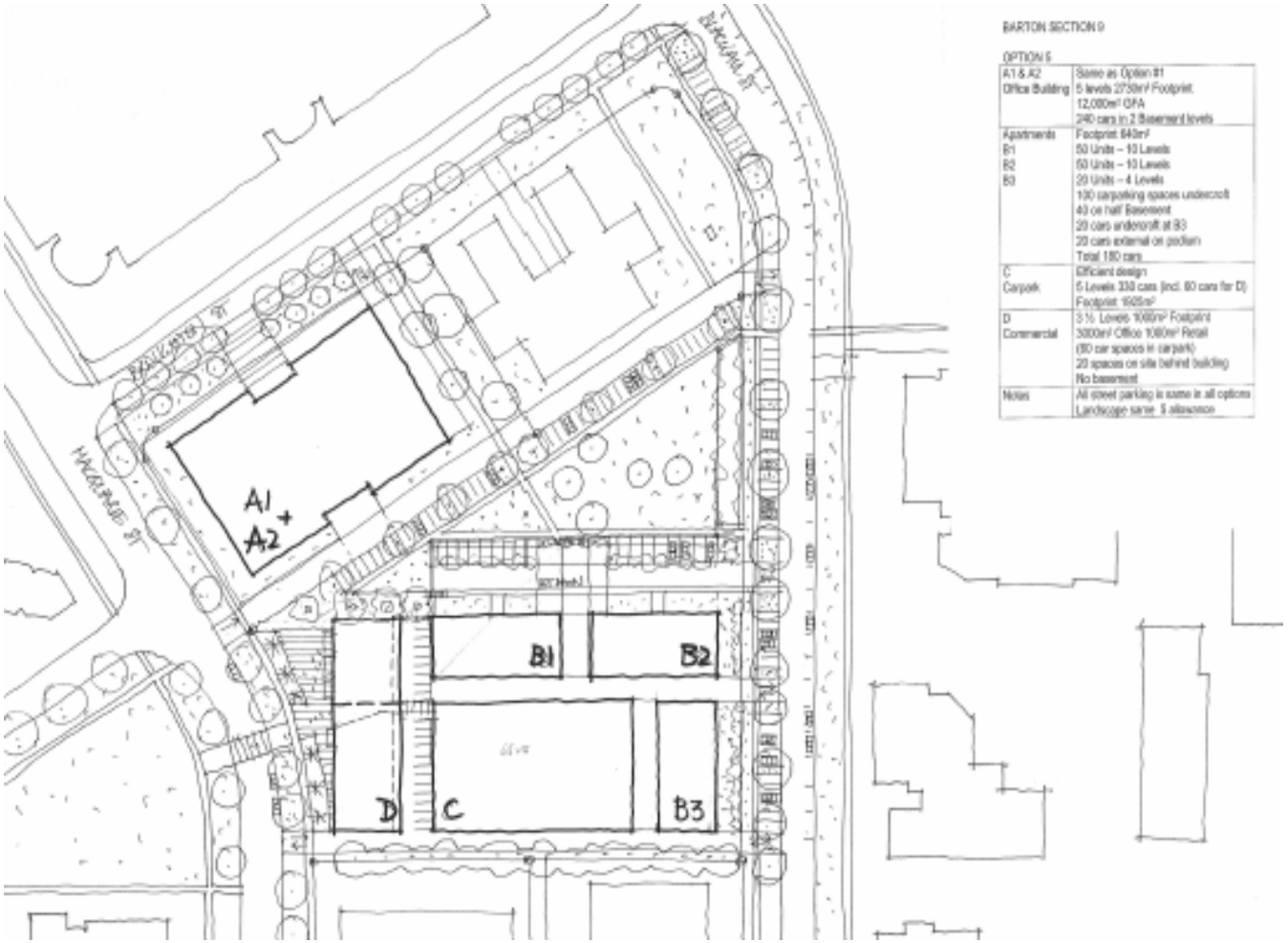
Source: Colin Stewart Architects, November 2005, Option 3B Master Plan

Option 4 Site Plan



Source: Colin Stewart Architects, November 2005, Option 4 Master Plan

Option 5 Site Plan



Source: Colin Stewart Architects, November 2005, Option 5 Master Plan

Appendix D: Parking Analyses

Method 1 – NCA Policy Based Approach

Long Term Parking Strategy

*** More part-time work, more work at home, greater PT use, greater walk/bike use (more housing near workplaces), more ca**

Year			2002		2005		2010		2015
SUPPLY									
Section 9	formal				470				
	actual				600				
DEMAND (DURING WEEKDAYS)									
Barton 13/9 structured car park			1400						
York Park			1000						
Hindmarsh Site			560						
Total			**2960**		**2710**		**1963**		**1178**
							2363		1578
LIKELY DEVELOPMENT									
Engineering House	GFA	0		6750					
(extended)	Parking	0		123	0				
Dept IT & Arts	GFA	0		11000					
	Parking	0		220	110				
Minter Ellison	GFA	0		14000					
	Parking	0		280	140				
1 National	GFA	3611				17000			
	Parking	64				340	8		
McLachlan Offices	GFA	15000				22500			
	Parking	60				450	240		
Softlaw Blg	GFA	2200				4600			
	Parking	25				80	19		
Robert Garran Offices *	GFA	17000				17000			
	Parking	90				210	80		
OTHER POTENTIAL DEVELOPMENT									
2/30 Forrest	GFA							8500	
	Parking							170	85
9/30 Forrest	GFA							4400	
	Parking							88	44
11/30 Forrest	GFA							9000	
	Parking							180	90
York Park	GFA							46100	
	Parking							922	461
Moth Site	GFA							10500	
	Parking							210	105
7/22 Barton	GFA								
Hindmarsh Site	Parking								
Barton 13/9 Dev									
Offices	GFA					12000			
	Parking					240			
Carpark	Parking					400	400		
Other Commercial	GFA					4000			
	Parking					60			

Method 2 – Using Floor Space Data (Scenario 1)

Reduced spaces per 100sqm* and Empty Edmund Barton Bldg in 2008/2009

*** More part-time work, more work at home, greater PT use, greater walk/bike use (more housing near workplaces), more car pooling**

Edmund Barton & Robert Garran Offices 50% **use of Barton 13/9** **McLachlan & 1 National Offices** 20% **use of Barton 13/9**

Year		**2002**		**2005**		**2006**		**2007**		**2008**		**2009**		**2010**		**2011**
SUPPLY																
Section 9	formal			470		470	-200	270	-30	240	460	700	0	700	0	700
	actual			600	-48	552	-66	486	62	548	-73	475	230	705	27	732
York Park	temporary 160	0		0		0	160	160		160	-160	0		0		0
Moth Site	temporary 330	0		0		0		0		0		0		0		0
On-street	Blackall St 90 deg (60)	0		0		0	60	60		60		60		60		60
New laneway	additional 50								50	50		50		50		50
Residential 13/9	basement	0		0		0		0		0	188	188		188		188
Long-stay 13/9	formal			470		470		490		510		810		760		760
Short-stay 13/9		0	15	15	40	55		55		55	20	75	50	125		125
DEMAND (DURING WEEKDAYS)																
Spaces/100sqm	office	2.6		2.5		2.3		2.25		2.2		2.15		2.1		2.05
Residential 13/9	basement (in day)	0		0		0		0		0	47	47		47		47
Long-stay 13/9	actual			600	-48	552	-66	486	62	548	-73	475	230	705	27	732
Short-stay 13/9			66	66	-5	61	-1	60	-32	28	17	45	56	101		101
SURPLUS/DEFICIT (DURING WEEKDAYS)																
Residential 13/9				0		0		0		0		141		141		141
Long-stay 13/9				-130		-82		4		-38		335		55		28
Short-stay 13/9				-51		-6		-5		27		30		24		24
DEVELOPMENT																
Engineering House	GFA		6750													
	Parking	0	123	123												
Dept IT & Arts	GFA		11000													
	Parking	0	220	220												
Minter Ellison	GFA		14000													
	Parking	0	280	280												
1 National	GFA		-3611				17000									
	Parking	64	-64	64		0	340	340		340		340		340		340
McLachlan Offices	GFA		15000				-15000				22500					
	Parking	60	60	60		60	-60	0		0	450	450		450		450
Softlaw Blg	GFA		2200				-2200				4600					
	Parking	25	25	25		25	-25	0		0	80	80		80		80
Robert Garran Offices *	GFA		17000								-17000				17000	
	Parking	90	90	90		90		90		90	-90	45		45	260	210
Edmund Barton Bldg	GFA		26475						-26475				26475			
	Parking	204	204	204		204		204	-204	0		0	204	204		204

Year		**2002**		**2005**		**2006**		**2007**		**2008**		**2009**		**2010**		**2011**
Barton 13/9 Dev																
Offices	GFA								12000							
	Parking								240	240		240		240		240
Carpark	Parking										460	460		460		460
Other Commercial	GFA										4000					
	Parking										20	20		20		20
Residential	GFA										12800					
	Parking										188	188		188		188
Laneway	Parking (short stay)								50	50		50		50		50
On-street Blackall	Parking (short stay)				40	40		40	60	100		100		100		100
Displaced parking	Office & laneway						-200	-200		-200		-200		-200		-200
	Rest of site								-270	-270		-270		-270		-270
Displaced demand	Office & laneway						30									
	Rest of site								100							
Brougham St	Parking	15		15		15		15		15		15		15		15

Other Issues			
Edmund Barton,	Total demand	1166	
Robert Garran &	Parkes	550	47%
McLachlan	Barton/York Park	616	53%
short-stay=10% long-sta	offices	0.1	
short-stay=20% long-sta	mixed-use	0.2	

Note: The following assumptions could vary over time		
McLachlan offices	York Park/Parkes	80%
& 1 National	Barton 13/9	20%
Robert Garran offices	York Park/Parkes	50%
& Softlaw building	Barton 13/9	50%
Edmund Barton	York Park/Parkes	50%
	Barton 13/9	50%

Method 2 – Using Floor Space Data (Scenario 2)

Reduced spaces per 100sqm and Edmund Barton Bldg reoccupied

*** More part-time work, more work at home, greater PT use, greater walk/bike use (more housing near workplaces), more car pooling**

Edmund Barton & Robert Garran Offices 50% **use of Barton 13/9** **McLachlan & 1 National Offices** 20% **use of Barton 13/9**

Year		**2002**		**2005**		**2006**		**2007**		**2008**		**2009**		**2010**		**2011**
SUPPLY																
Section 9	formal			470		470	-200	270	-30	240	460	700	0	700	0	700
	actual			600	-48	552	-66	486	353	839	-80	759	-18	742	27	768
York Park	temporary 160	0		0		0	160	160		160	-160	0		0		0
Moth Site	temporary 330	0		0		0		0	330	330		0		0		0
On-street	Blackall St 90 deg (60)	0		0		0	60	60		60		60		60		60
New laneway	additional 50								50	50		50		50		50
Residential 13/9	basement	0		0		0		0		0	188	188		188		188
Long-stay 13/9	formal			470		470		490		840		810		760		760
Short-stay 13/9		0	15	15	40	55		55		55	20	75	50	125		125
DEMAND (DURING WEEKDAYS)																
Spaces/100sqm	office	2.6		2.5		2.3		2.25		2.2		2.15		2.1		2.05
Residential 13/9	basement (in day)	0		0		0		0		0	47	47		47		47
Long-stay 13/9	actual			600	-48	552	-66	486	353	839	-80	759	-18	742	27	768
Short-stay 13/9			66	66	-5	61	-1	60	26	86	17	103	0	103		103
SURPLUS/DEFICIT (DURING WEEKDAYS)																
Residential 13/9				0		0		0		0		141		141		141
Long-stay 13/9				-130		-82		4		1		51		18		-8
Short-stay 13/9				-51		-6		-5		-31		-28		22		22
DEVELOPMENT																
Engineering House	GFA		6750													
	Parking	0	123	123												
Dept IT & Arts	GFA		11000													
	Parking	0	220	220												
Minter Ellison	GFA		14000													
	Parking	0	280	280												
1 National	GFA		-3611				17000									
	Parking	64	-64	64		0	340	340		340		340		340		340
McLachlan Offices	GFA		15000				-15000				22500					
	Parking	60	60	60		60	-60	0		0	450	450		450		450
Softlaw Blg	GFA		2200				-2200				4600					
	Parking	25	25	25		25	-25	0		0	80	80		80		80
Robert Garran Offices *	GFA		17000								-17000				17000	
	Parking	90	90	90		90		90		90	-90	45		45	260	210
Edmund Barton Bldg	GFA		26475						0				0			
	Parking	204	204	204		204		204	0	0		0	0	204		204

Year		**2002**		**2005**		**2006**		**2007**		**2008**		**2009**		**2010**		**2011**
Barton 13/9 Dev																
Offices	GFA								12000							
	Parking								240	240		240		240		240
Carpark	Parking										460	460		460		460
Other Commercial	GFA										4000					
	Parking										20	20		20		20
Residential	GFA										12800					
	Parking										188	188		188		188
Laneway	Parking (short stay)								50	50		50		50		50
On-street Blackall	Parking (short stay)				40	40		40	60	100		100		100		100
Displaced parking	Office & laneway						-200	-200		-200		-200		-200		-200
	Rest of site								-270	-270		-270		-270		-270
Displaced demand	Office & laneway						30									
	Rest of site								100							
Brougham St	Parking	15		15		15		15		15		15		15		15
Other Issues																
Edmund Barton,	Total demand	1166														
Robert Garran &	Parkes	550	47%													
McLachlan	Barton/York Park	616	53%													
short-stay=10% long-sta	offices	0.1														
short-stay=20% long-sta	mixed-use	0.2														

Note: The following assumptions could vary over time

McLachlan offices & 1 National	York Park/Parkes	80%
	Barton 13/9	20%
Robert Garran offices & Softlaw building	York Park/Parkes	50%
	Barton 13/9	50%
Edmund Barton	York Park/Parkes	50%
	Barton 13/9	50%

Method 2 – Using Floor Space Data (Scenario 3)

Little reduced spaces per 100sqm and Edmund Barton Bldg reoccupied

*** More part-time work, more work at home, some greater PT use, some greater walk/bike use (more housing near workplaces), some more car pooling**

Edmund Barton & Robert Garran Offices 50% **use of Barton 13/9** **McLachlan & 1 National Offices** 20% **use of Barton 13/9**

Year		**2002**		**2005**		**2006**		**2007**		**2008**		**2009**		**2010**		**2011**
SUPPLY																
Section 9	formal			470		470	-200	270	-30	240	460	700	0	700	0	700
	actual			600	-24	576	-66	510	365	875	-69	806	-18	788	35	823
York Park	temporary 160	0		0		0	160	160		160	-160	0		0		0
Moth Site	temporary 330	0		0		0		0	330	330		0		0		0
On-street	Blackall St 90 deg (60)	0		0		0	60	60		60		60		60		60
New laneway	additional 50								50	50		50		50		50
Residential 13/9	basement	0		0		0		0		0	188	188		188		188
Long-stay 13/9	formal			470		470		490		840		810		760		760
Short-stay 13/9		0	15	15	40	55		55		55	20	75	50	125		125
DEMAND (DURING WEEKDAYS)																
Spaces/100sqm	office	2.6		2.5		2.4		2.35		2.3		2.25		2.2		2.15
Residential 13/9	basement (in day)	0		0		0		0		0	47	47		47		47
Long-stay 13/9	actual			600	-24	576	-66	510	365	875	-69	806	-18	788	35	823
Short-stay 13/9			66	66	-3	64	-1	62	28	90	18	108	0	108		108
SURPLUS/DEFICIT (DURING WEEKDAYS)																
Residential 13/9				0		0		0		0		141		141		141
Long-stay 13/9				-130		-106		-20		-35		4		-28		-63
Short-stay 13/9				-51		-9		-7		-35		-33		17		17
DEVELOPMENT																
Engineering House	GFA		6750													
	Parking	0	123	123												
Dept IT & Arts	GFA		11000													
	Parking	0	220	220												
Minter Ellison	GFA		14000													
	Parking	0	280	280												
1 National	GFA		-3611				17000									
	Parking	64	-64	64		0	340	340		340		340		340		340
McLachlan Offices	GFA		15000				-15000				22500					
	Parking	60	60	60		60	-60	0		0	450	450		450		450
Softlaw Blg	GFA		2200				-2200				4600					
	Parking	25	25	25		25	-25	0		0	80	80		80		80
Robert Garran Offices *	GFA		17000								-17000				17000	
	Parking	90	90	90		90		90		90	-90	45		45	260	210
Edmund Barton Bldg	GFA		26475						0				0			
	Parking	204	204	204		204		204	0	0		0	0	204		204

Year		**2002**	**2005**		**2006**		**2007**		**2008**		**2009**		**2010**		**2011**
Barton 13/9 Dev															
Offices	GFA							12000							
	Parking							240	240		240		240		240
Carpark	Parking									460	460		460		460
Other Commercial	GFA									4000					
	Parking									20	20		20		20
Residential	GFA									12800					
	Parking									188	188		188		188
Laneway	Parking (short stay)							50	50		50		50		50
On-street Blackall	Parking (short stay)			40	40		40	60	100		100		100		100
Displaced parking	Office & laneway					-200	-200		-200		-200		-200		-200
	Rest of site							-270	-270		-270		-270		-270
Displaced demand	Office & laneway					30									
	Rest of site							100							
Brougham St	Parking	15	15		15		15		15		15		15		15

Other Issues			
Edmund Barton,	Total demand	1166	
Robert Garran &	Parkes	550	47%
McLachlan	Barton/York Park	616	53%

short-stay=10% long-stay	offices	0.1
short-stay=20% long-stay	mixed-use	0.2

Note: The following assumptions could vary over time		
McLachlan offices	York Park/Parkes	80%
& 1 National	Barton 13/9	20%
Robert Garran offices	York Park/Parkes	50%
& Softlaw building	Barton 13/9	50%
Edmund Barton	York Park/Parkes	50%
	Barton 13/9	50%

Method 3 – Using Census JTW Data (Scenario 1)

Reduced car usage* and Empty Edmund Barton Bldg in 2008/2009

*** More part-time work, more work at home, greater PT use, greater walk/bike use (more housing near workplaces), more car pooling**

Edmund Barton & Robert Garran Offices 80% **use of Barton 13/9** **McLachlan & 1 National Offices** 25% **use of Barton 13/9** **sqm per job** 25

Year		2002		2005		2006		2007		2008		2009		2010		2011
SUPPLY																
Section 9	formal			470		470	-200	270	-30	240	460	700	0	700	0	700
	actual			600	-48	552	-95	457	-112	345	-168	176	504	680	55	734
York Park	temporary 160	0		0		0	160	160	-160	0		0		0		0
Moth Site	temporary 330	0		0		0		0		0		0		0		0
On-street	Blackall St 90 deg (60)	0		0		0	60	60		60		60		60		60
New laneway	additional 50								50	50		50		50		50
Long-stay total	formal	5630	559	6189		6189	275	6464	-344	6120	920	7040	204	7244	260	7504
Residential 13/9	basement	0		0		0		0		0	188	188		188		188
Long-stay 13/9	formal			470		470		490		350		810		760		760
Short-stay 13/9		0	15	15	40	55		55		55	20	75	50	125		125
DEMAND (DURING WEEKDAYS)																
Spaces/100sqm	office	2.6		2.5		2.3		2.25		2.2		2.15		2.1		2.05
Jobs		8800	1126	9926		9926	-8	9918	-579	9339	564	9903	1059	10962	680	11642
Car driver split		77%		76%		72.0%		71.5%		71.0%		70.5%		70.0%		69.5%
No work trip %		0.09		0.1		0.11		0.112		0.114		0.116		0.118		0.12
Demand LT total		6166		6789		6360	30	6327	100	5975		6171		6768		7120
Residential 13/9	basement (in day)	0		0		0		0		0	47	47		47		47
Long-stay 13/9	actual			600	-48	552	-95	457	-112	345	-168	176	504	680	55	734
Short-stay 13/9			66	66	-5	61	-1	60	-32	28	17	45	56	101		101
SURPLUS/DEFICIT (DURING WEEKDAYS)																
Long-stay total		-536		-600		-171		137		145		869		476		384
Residential 13/9				0		0		0		0		141		141		141
Long-stay 13/9				-130		-82		33		5		634		80		26
Short-stay 13/9				-51		-6		-5		27		30		24		24
DEVELOPMENT																
Engineering House	GFA		6750													
	Parking	0	123	123												
Dept IT & Arts	GFA		11000													
	Parking	0	220++	220												
Minter Ellison	GFA		14000													
	Parking	0	280++	280												
1 National	GFA		-3611				17000									
	Parking	64	-64	64		0	340	340		340		340		340		340
McLachlan Offices	GFA		15000				-15000				22500					
	Parking	60	60	60		60	-60	0		0	450	450		450		450
Softlaw Bldg	GFA		2200				-2200				4600					
	Parking	25	25	25		25	-25	0		0	80	80		80		80
Robert Garran Offices *	GFA		17000								-17000				17000	
	Parking	90	90	90		90		90		90	-90	45		45	260	210
Edmund Barton Bldg	GFA		26475						-26475				26475			
	Parking	204	204	204		204		204	-204	0		0	204	204		204
Barton 13/9 Dev																
Offices	GFA								12000							
	Parking								240	240		240		240		240
Carpark	Parking										460	460		460		460
Other Commercial	GFA										4000					
	Parking										20	20		20		20
Residential	GFA										12800					
	Parking										188	188		188		188
Laneway	Parking (short stay)								50	50		50		50		50
On-street Blackall	Parking (short stay)				40	40		40	60	100		100		100		100
Displaced parking	Office & laneway						-200	-200		-200		-200		-200		-200
	Rest of site								-270	-270		-270		-270		-270
Displaced demand	Office & laneway						30									
	Rest of site								100							
Brougham St	Parking	15		15		15		15		15		15		15		15
Other Issues																
Edmund Barton,	Total demand	1166														
Robert Garran &	Parkes	550	47%													
McLachlan	Barton/York Park	616	53%													
short-stay=10% long-sta	offices	0.1														
short-stay=20% long-sta	mixed-use	0.2														
Note: The following assumptions could vary over time																
McLachlan offices	York Park/Parkes	75%														
& 1 National	Barton 13/9	25%														
Robert Garran offices	York Park/Parkes	20%														
& Softlaw building	Barton 13/9	80%														
Edmund Barton	York Park/Parkes	20%														
	Barton 13/9	80%														

Method 3 – Using Census JTW Data (Scenario 2)

Reduced car usage* and Empty Edmund Barton Bldg in 2008/2009

*** More part-time work, more work at home, greater PT use, greater walk/bike use (more housing near workplaces), more car pooling**

Edmund Barton & Robert Garran Offices 80% **use of Barton 13/9** **McLachlan & 1 National Offices** 25% **use of Barton 13/9** **sqm per job** 25

Year		2002		2005		2006		2007		2008		2009		2010		2011
SUPPLY																
Section 9	formal			470		470	-200	270	-30	240	460	700	0	700	0	700
	actual			600	-48	552	-95	457	-112	345	-168	176	504	680	55	734
York Park	temporary 160	0		0		0	160	160	-160	0		0		0		0
Moth Site	temporary 330	0		0		0		0		0		0		0		0
On-street	Blackall St 90 deg (60)	0		0		0	60	60		60		60		60		60
New laneway	additional 50								50	50		50		50		50
Long-stay total	formal	5630	559	6189		6189	275	6464	-344	6120	920	7040	204	7244	260	7504
Residential 13/9	basement	0		0		0		0		0	188	188		188		188
Long-stay 13/9	formal			470		470		490		350		810		760		760
Short-stay 13/9		0	15	15	40	55		55		55	20	75	50	125		125
DEMAND (DURING WEEKDAYS)																
Spaces/100sqm	office	2.6		2.5		2.3		2.25		2.2		2.15		2.1		2.05
Jobs		8800	1126	9926		9926	-8	9918	-579	9339	564	9903	1059	10962	680	11642
Car driver split		77%		76%		72.0%		71.5%		71.0%		70.5%		70.0%		69.5%
No work trip %		0.09		0.1		0.11		0.112		0.114		0.116		0.118		0.12
Demand LT total		6166		6789		6360	30	6327	100	5975		6171		6768		7120
Residential 13/9	basement (in day)	0		0		0		0		0	47	47		47		47
Long-stay 13/9	actual			600	-48	552	-95	457	-112	345	-168	176	504	680	55	734
Short-stay 13/9			66	66	-5	61	-1	60	-32	28	17	45	56	101		101
SURPLUS/DEFICIT (DURING WEEKDAYS)																
Long-stay total		-536		-600		-171		137		145		869		476		384
Residential 13/9				0		0		0		0		141		141		141
Long-stay 13/9				-130		-82		33		5		634		80		26
Short-stay 13/9				-51		-6		-5		27		30		24		24
DEVELOPMENT																
Engineering House	GFA		6750													
	Parking	0	123	123												
Dept IT & Arts	GFA		11000													
	Parking	0	220++	220												
Minter Ellison	GFA		14000													
	Parking	0	280++	280												
1 National	GFA		-3611				17000									
	Parking	64	-64	64		0	340	340		340		340		340		340
McLachlan Offices	GFA		15000				-15000				22500					
	Parking	60	60	60		60	-60	0		0	450	450		450		450
Softlaw Blg	GFA		2200				-2200				4600					
	Parking	25	25	25		25	-25	0		0	80	80		80		80
Robert Garran Offices *	GFA		17000								-17000				17000	
	Parking	90	90	90		90		90		90	-90	45		45	260	210
Edmund Barton Bldg	GFA		26475						-26475				26475			
	Parking	204	204	204		204		204	-204	0		0	204	204		204
Barton 13/9 Dev																
Offices	GFA								12000							
	Parking								240	240		240		240		240
Carpark	Parking										460	460		460		460
Other Commercial	GFA										4000					
	Parking										20	20		20		20
Residential	GFA										12800					
	Parking										188	188		188		188
Laneway	Parking (short stay)								50	50		50		50		50
On-street Blackall	Parking (short stay)				40	40		40	60	100		100		100		100
Displaced parking	Office & laneway						-200	-200		-200		-200		-200		-200
	Rest of site								-270	-270		-270		-270		-270
Displaced demand	Office & laneway						30									
	Rest of site								100							
Brougham St	Parking	15		15		15		15		15		15		15		15
Other Issues																
Edmund Barton,	Total demand	1166														
Robert Garran &	Parkes	550	47%													
McLachlan	Barton/York Park	616	53%													
short-stay=10% long-sta	offices	0.1														
short-stay=20% long-sta	mixed-use	0.2														
Note: The following assumptions could vary over time																
McLachlan offices	York Park/Parkes	75%														
& 1 National	Barton 13/9	25%														
Robert Garran offices	York Park/Parkes	20%														
& Softlaw building	Barton 13/9	80%														
Edmund Barton	York Park/Parkes	20%														
	Barton 13/9	80%														

Method 3 – Using Census JTW Data (Scenario 3)

Reduced car usage and Edmund Barton Bldg reoccupied

*** More part-time work, more work at home, greater PT use, greater walk/bike use (more housing near workplaces), more car pooling**

Edmund Barton & Robert Garran Offices 80% **use of Barton 13/9** **McLachlan & 1 National Offices** 25% **use of Barton 13/9** **sqm per job** 25

Year		2002		2005		2006		2007		2008		2009		2010		2011
SUPPLY																
Section 9	formal			470		470	-200	270	-30	240	460	700	0	700	0	700
	actual			600	-48	552	-95	457	354	811	-179	632	-15	617	56	673
York Park	temporary 160	0		0		0	160	160		160	-160	0		0		0
Moth Site	temporary 330	0		0		0		0	330	330	-330	0		0		0
On-street	Blackall St 90 deg (60)	0		0		0	60	60		60		60		60		60
New laneway	additional 50								50	50		50		50		50
Long-stay total	formal	5630	559	6189		6189	275	6464	350	6814	430	7244	0	7244	260	7504
Residential 13/9	basement	0		0		0		0		0	188	188		188		188
Long-stay 13/9	formal			470		470		490		840		810		760		760
Short-stay 13/9		0	15	15	40	55		55		55	20	75	50	125		125
DEMAND (DURING WEEKDAYS)																
Spaces/100sqm	office	2.6		2.5		2.3		2.25		2.2		2.15		2.1		2.05
Jobs		8800	1126	9926		9926	-8	9918	480	10398	564	10962	0	10962	680	11642
Car driver split		77%		76%		72.0%		71.5%		71.0%		70.5%		70.0%		69.5%
No work trip %		0.09		0.1		0.11		0.112		0.114		0.116		0.118		0.12
Demand LT total		6166		6789		6360	30	6327	100	6641		6831		6768		7120
Residential 13/9	basement (in day)	0		0		0		0		0	47	47		47		47
Long-stay 13/9	actual			600	-48	552	-95	457	354	811	-179	632	-15	617	56	673
Short-stay 13/9			66	66	-5	61	-1	60	26	86	17	103	0	103		103
SURPLUS/DEFICIT (DURING WEEKDAYS)																
Long-stay total		-536		-600		-171		137		173		413		476		384
Residential 13/9				0		0		0		0		141		141		141
Long-stay 13/9				-130		-82		33		29		178		143		87
Short-stay 13/9				-51		-6		-5		-31		-28		22		22
DEVELOPMENT																
Engineering House	GFA		6750													
	Parking	0	123	123												
Dept IT & Arts	GFA		11000													
	Parking	0	220++	220												
Minter Ellison	GFA		14000													
	Parking	0	280++	280												
1 National	GFA		-3611				17000									
	Parking	64	-64	64		0	340	340		340		340		340		340
McLachlan Offices	GFA		15000				-15000				22500					
	Parking	60	60	60		60	-60	0		0	450	450		450		450
Softlaw Blg	GFA		2200				-2200				4600					
	Parking	25	25	25		25	-25	0		0	80	80		80		80
Robert Garran Offices *	GFA		17000								-17000				17000	
	Parking	90	90	90		90		90		90	-90	45		45	260	210
Edmund Barton Bldg	GFA		26475						0				0			
	Parking	204	204	204		204		204	0	0		0	0	204		204
Barton 13/9 Dev																
Offices	GFA								12000							
	Parking								240	240		240		240		240
Carpark	Parking										460	460		460		460
Other Commercial	GFA										4000					
	Parking										20	20		20		20
Residential	GFA										12800					
	Parking										188	188		188		188
Laneway	Parking (short stay)								50	50		50		50		50
On-street Blackall	Parking (short stay)				40	40		40	60	100		100		100		100
Displaced parking	Office & laneway						-200	-200		-200		-200		-200		-200
	Rest of site								-270	-270		-270		-270		-270
Displaced demand	Office & laneway						30									
	Rest of site								100							
Brougham St	Parking	15		15		15		15		15		15		15		15
Other Issues																
Edmund Barton,	Total demand	1166														
Robert Garran &	Parkes	550	47%													
McLachlan	Barton/York Park	616	53%													
short-stay=10% long-stay	offices	0.1														
short-stay=20% long-stay	mixed-use	0.2														
Note: The following assumptions could vary over time																
McLachlan offices	York Park/Parkes	75%														
& 1 National	Barton 13/9	25%														
Robert Garran offices	York Park/Parkes	20%														
& Softlaw building	Barton 13/9	80%														
Edmund Barton	York Park/Parkes	20%														
	Barton 13/9	80%														