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**TRANSPORT IMPACT ASSESSMENT
PROPOSED MIXED USE DEVELOPMENT
SITES 2A & 3A, PRECINCT B
WALKER STREET
RHODES**

Ref: 10-110

NOVEMBER 2010

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1. INTRODUCTION

The Practice of Thompson Stanbury Associates has been commissioned by Billbergia Group to prepare a transport impact assessment report to accompany a Part 3A Application to the Department of Planning for a new mixed use development within Sites 2A and 3A within Precinct B of Rhodes West.

The Rhodes Peninsula comprises a number of large former industrial sites occupying the western side of the peninsula between the Northern Railway Line and Homebush Bay. The proposed development is consistent with the current Rhodes West Masterplan comprising 733 residential apartments within three tower buildings ranging between 19 – 24 storeys in conjunction with two lower level buildings being in the order of five storeys each. In addition, the development is proposed to provide some retail floor space and community facilities including a gymnasium located at ground floor level. On-site parking for passenger vehicles is proposed to be primarily provided within two basement parking levels accessed via Gauthorpe Street and Timbrol Avenue. No vehicular access to Walker Street is proposed.

The purpose of this report is to assess and document likely transport impacts resulting from the development proposal and to recommend, where appropriate, treatments to ameliorate such impacts. To this end, this report undertakes the following:

- Describes the strategic context of the subject development by investigating the various strategy documents relating to the surrounding area and proposed use;
- Determines the suitability and safety of the proposed access and internal circulation arrangements as relevant to the site and the local conditions;
- Assesses the adequacy of the proposed parking provision with reference to the development yield, the available public transport facilities in the subject vicinity and the planned implementation of the abovementioned various strategy documents relating to the surrounding area;
- Assesses the existing transport conditions within the vicinity of the site;
- Describes the alterations to existing transport conditions associated with the planned development of the Rhodes Peninsula;
- Distinguishes traffic likely to be generated by the proposed development based on the proposed yield and the Roads & Traffic Authority established trip generation rates; and
- Identifies the scope of road upgrades required to accommodate the additional traffic movements associated with the subject development in conjunction with the planned development of the Rhodes Peninsula.

This report has been prepared with reference to the following documents:

- The Roads & Traffic Authority's *Guide to Traffic Generating Developments*;
- Sydney Regional Environmental Plan No. 29 – *Rhodes Peninsula*;
- The City of Canada Bay's *Draft Development Control Plan: Rhodes West*;
- The City of Canada Bay's *Draft Rhodes West Master Plan 2009 / VPA Policy*;
- Masson Wilson Twiney's *Transport Management Plan: Redevelopment of Rhodes Peninsula* (2000);
- Masson Wilson Twiney's *Traffic Report: Rhodes Peninsula – Traffic and Transport Analysis for Additional Development* (2009);
- The Australian Standard for *Parking Facilities Part 1: Off-Street Car Parking* (AS2890.1-2004);
- The Australian Standard for *Parking Facilities Part 2: Commercial Vehicle Facilities* (AS2890.2-2002);
- NSW Government's *Integrating Land Use and Transport Policy Package*;
- NSW Government's *NSW State Plan 2010*;
- NSW Government's *Action for Bikes; Bike Plan 2010*;
- NSW Government's *Metropolitan Transport Plan 2010*; and
- State Environmental Planning Policy (*Infrastructure*) 2007.

The report should be read in conjunction with the site plans prepared by SJB Architects, reduced copies of which are included as **Appendix 1**.

2. SITE DETAILS

2.1 Site Location

The subject site is situated on the western side of Walker Street providing northern and southern frontages to Timbrol Avenue and Gauthorpe Street in conjunction with a western frontage to Shoreline Avenue, being located within the central portion of the Rhodes Peninsula. This location is represented in the neighbourhood context overleaf as **Figure 1**, being an extract of UBDs *Australian City Streets*, Version 4.

2.2 Site Description

The site comprises two allotments known as Sites 2A and 3A providing a street address of 40 Walker Street, Rhodes. The land forms an irregularly shaped site providing frontages of approximately 145m, 115m, 125m, and 90m to Walker Street, Gauthorpe Street, Timbrol Avenue and Shoreline Avenue respectively.

2.3 Existing Use

The land is currently vacant being part of the remediated former industrial lands lying between Homebush Bay and the Northern Railway Line.

2.4 Surrounding Uses

The Rhodes Peninsula comprises a number of large former industrial sites occupying the western side of the peninsula extending between Homebush Bay and the Northern Railway Line. Land to the immediate north and south accommodates recently constructed high density residential development.

The Northern Railway Line is located to the east on the opposite side of Walker Street whilst low density residential development is located further east. Rhodes Shopping Centre is located further to the south whilst land to the west immediately adjoining Homebush Bay is largely awaiting redevelopment (similar to that proposed for the subject site).

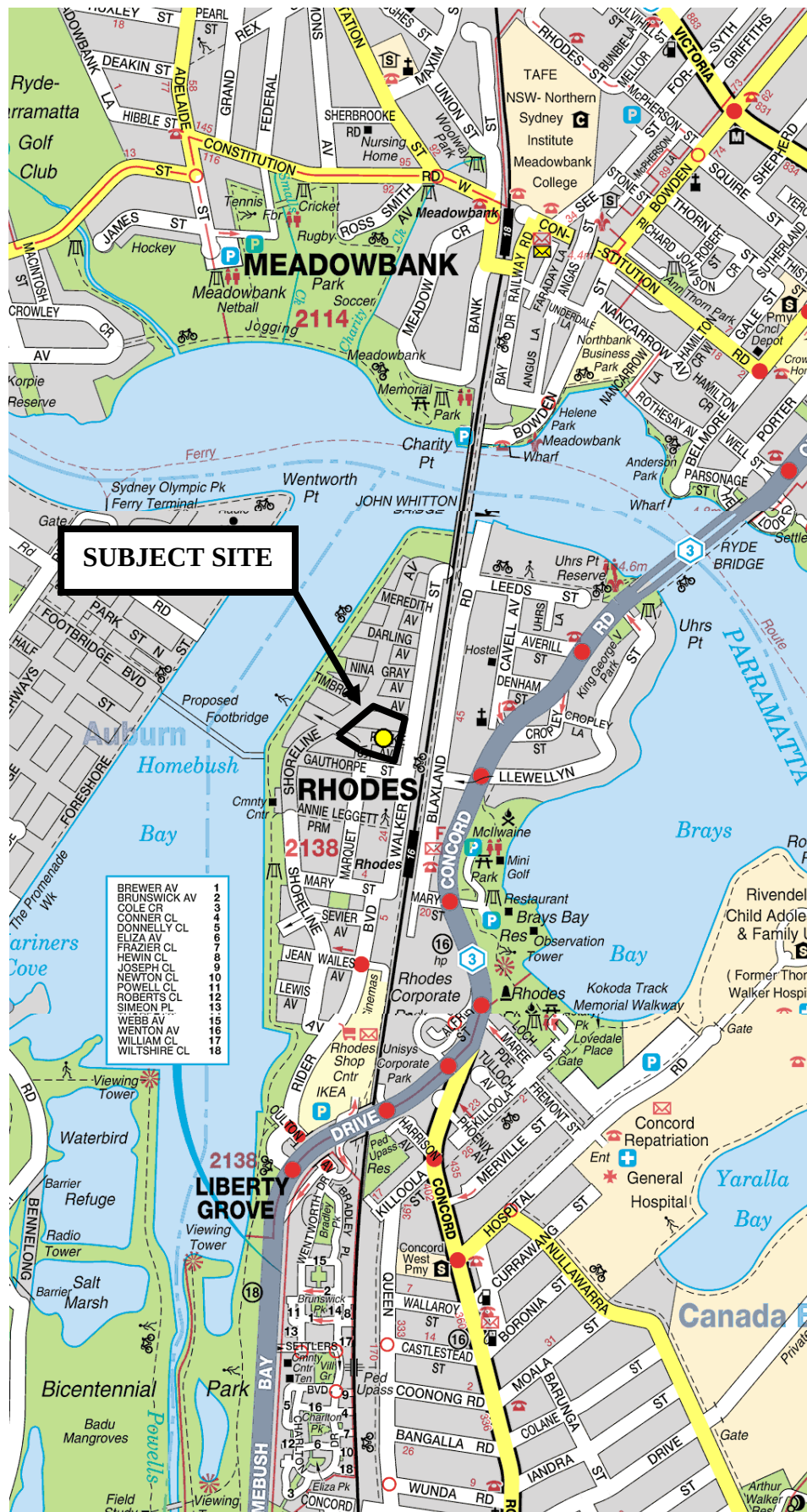


FIGURE 1 – SITE LOCATION

3 **STRATEGIC CONTEXT**

3.1 **Sydney Regional Environmental Plan 29**

Development of the Rhodes Peninsula was undertaken under the *Renewing Rhodes Development Control Plan 2000* (RRDCP 2000) prepared by the Department of Planning in 2001 under the Sydney Regional Environmental Plan 29: *Rhodes Peninsula* (SREP 29). SREP 29 and RRDCP provided for the Peninsula to be redeveloped to ultimately incorporate over 3,000 residential dwellings, 50,000m² of office space, 25,000m² of retail area, 15,000m² showroom area and 12,000m² of hi-tech industrial uses.

SREP 29 set out the following planning principles with respect to accessibility, movement and parking:

- Transport and traffic should be managed in accordance with a comprehensive plan that provides for the coordinated provision of infrastructure and the staging of its provision;
- Access to and use of public transport is to be optimised through appropriate land use and density distribution;
- Appropriate urban form, public transport infrastructure and services are to be provided which increases the use of public transport;
- Development should accommodate users of all modes of transport including public transport, cycling and walking;
- The provision for vehicular movement is to be consistent with the development of a high quality pedestrian environment within the road system;
- A high degree of accessibility is to be provided to places in Rhodes Peninsula for both able and disabled persons;
- The street pattern should have a clear hierarchy, be interconnected and integrate the western and eastern parts of the Rhodes Peninsula through improved and increased linkages; and
- Parking controls are to support public transport strategies of the Government and reflect road network capacities.

To address these planning principles, a Transport Management Plan was prepared by Masson Wilson Twiney in 2001 entitled *Redevelopment of Rhodes Peninsula*. This Plan estimated that the redevelopment of Rhodes would generate nearly 4,000 person trips during the morning peak hour and 7,000 person trips during the afternoon peak hour, translating into approximately 1,100 and 2,100 morning and evening peak hour vehicle trips.

The 2001 Transport Management Plan recommended a number of traffic and transport measures to support the redevelopment of Rhodes West and minimise impacts on the surrounding area from excessive traffic generation. In summary these works included:

- Rail services – provide more capacity on the Northern Rail Line, improve disabled access, pedestrian overpass, better timetabling and information;
- Bus services- more bus shelters and better information on schedules, provide new services west of the railway line;
- Parking policy – introduce a restrictive parking policy;
- Pedestrian and cycle linkages – enhance access to foreshore / ferry, provide recreational cycle along foreshore linking to Homebush Bay and John Whitton bridge; provide pedestrian overpass for the Digital site to the new retail areas; provide railway overpass to Concord West and the public school; provide a commuter cycleway route along Walker Street linking to the railway station; and
- Traffic facilities – road improvements at Oulton Avenue (signalisation), Concord Road and Homebush Bay Drive (new turn lanes), Concord Road and Averill Street (new signals and road widening), Blaxland Street and Cavell Avenue (traffic calming).

Much of the works identified by the Plan are complete, however the remaining works are to be completed in the final phases of development (including the subject site).

RRDCP 2000 set out the planning controls for development within the Peninsula, identifying the following with respect to transport considerations:

- A preferred road network layout;
- A suggested road hierarchy;
- Geometric requirements for street types (generally comprising one traffic and one parking lane in each direction with footpaths on each side of the road);
- A pedestrian network that is continuous, comfortable, unambiguous, safe and equitable to promote walking as a transport mode;
- A cycle strategy including a preferred commuter cycleway along Walker Street parallel to the railway connecting to existing regional cycleway/s;
- A public transport strategy promoting the use of Rhodes Railway Station and bus services operating along Homebush Bay Drive, Concord Road and Blaxland Street; and

- Parking requirements that promote the use of the surrounding public transport facilities.

3.2 Rhodes West Development Control Plan 2010

RRDCP 2000 has now been superseded by the *Rhodes West DCP 2010* following the delegation of Canada Bay Council as the consent authority for development within the precinct in 2009. At the same time, Council prepared the *Rhodes West Masterplan* largely for the northern part of the peninsula. During this process, the development yield for the Peninsula was reviewed in line with the State Government's Metropolitan Strategy which set a target of an additional 10,000 dwellings in the City of Canada Bay by 2031.

The Masterplan provides for an additional 787 apartments (over and above the 4,500 dwellings previously planned) in conjunction with additional or upgraded facilities for pedestrians and cyclists including the provision of additional public open space. The increased development yield is cognisant of the fact that the area is well serviced by existing infrastructure such as public transport, regional roads and community facilities such as hospitals, shopping centres and educational establishments. Development in the area will allow more people to live close to areas with employment opportunities such as Rhodes Corporate Park and Rhodes Shopping Centre. In this regard, the *Rhodes West DCP 2010* provides the following (amongst other) objectives and sub-objectives:

- Optimise the use of public transport and reduce travel demand;
- Minimise public and private car parking in all developments; and
- Minimise car dependence by encouraging car sharing by providing dedicated on-street spaces for car share companies to use.

The subject site is located within Precinct B being approximately midway along the Peninsula. Precinct B consists of eight development lots, five of which are yet to be development. The Masterplan provides an increased yield in the order 30,000m² of gross floor area which equates to approximately 290 dwellings.

The Masterplan was accompanied by a supporting traffic report prepared by Masson Wilson Twiney (*Traffic Report: Rhodes Peninsula – Traffic and Transport Analysis for Additional Development, 2009*) which concluded that:

- The impact of the additional traffic generation on the road system would be moderate and intersections would essentially maintain their existing levels of performance; and
- The public transport network would be able to accommodate the anticipated public transport trips as a result of the additional development.

Details of the Masterplan and particularly that of Precinct B are provided in extracts contained within **Appendix 2**.

4. PROPOSED DEVELOPMENT

4.1 Built Form

The proposed development is to comprise 733 residential apartments within a total of five buildings as follows:

- A 24 storey building containing 251 residential dwellings in conjunction with 221m² of retail floor space located at ground floor level;
- A five storey building containing 65 residential dwellings;
- A 19 storey building containing 160 residential dwellings;
- A 24 storey building containing 207 residential dwellings in conjunction with 434m² of retail floor space provided a podium floor level; and
- A five storey building containing 50 residential dwellings in conjunction with 395m² of retail floor space located at ground floor level.

The total development is therefore proposed to provide 733 residential dwellings (comprising 286 one bedroom, 417 two bedroom and 30 three bedroom dwellings) in conjunction with a total retail floor space of 1,050m².

On-site parking for passenger vehicles is proposed to be primarily provided within two basement parking levels accessed via Gauthorpe Street and Timbrol Avenue containing 428 and 312 spaces respectively. In addition, a small at grade parking area accessed via Timbrol Avenue is proposed to contain 34 spaces. The total site wide parking provision is therefore 774 spaces.

No vehicular access to Walker Street is proposed.

Architectural details of the proposed development are provided within plans prepared by SJB Architects, reduced copies of which are contained as **Appendix 1**.

5. EXISTING TRANSPORT CONDITIONS

5.1 Surrounding Road Network

5.1.1 Local Road Network

The existing local street network from the Renewing Rhodes DCP has been extensively developed in Precinct A and C and partially development in Precinct B providing a strong structure of an interconnected network of streets to pedestrian and vehicular circulation. **Figure 2** overleaf reproduces the road hierarchy within and immediately adjoining the subject area as provided within the Rhodes West DCP.

Figure 2 indicates that Walker Street with Oulton Avenue and Rider Boulevard performs the main distributor road function within the Peninsula providing a north-south connection between Homebush Bay Drive and Blaxland Road, which provides the main north-south route servicing the eastern side of the peninsula. Adjacent to the site, Walker Street provides a 13m wide carriageway providing one through lane of traffic in each direction in conjunction with parallel parking along both sides.

In the vicinity of the site, Walker Street intersects with Gauthorpe Street and Timbrol Avenue with both junctions operating under major / minor priority control with Walker Street forming the priority route. Gauthorpe Street performs an east-west local road function extending to the west along from Walker Street to intersect with Marquet Street. It is planned to be further extended to the west to connect with Shoreline Avenue. Gauthorpe Street provides a 13m wide pavement providing one through lane of traffic in each direction in conjunction with parallel parking.

Timbrol Avenue performs a lower order local road function providing an access role to land immediately adjoining the north and south (being the subject site), terminating in the vicinity of the north-western corner of the site. It provides a narrow pavement providing one through lane of traffic in each direction in conjunction with formalised intended parallel parking along both alignments.

South of the subject site, Walker Street provides indented 90 degree angled parking along the eastern alignment on approach to Rhodes Railway Station. Immediately adjacent to the Railway Station, the Walker Street pavement narrows to accommodate through traffic only with formalised set-down / pick-up bays being indented. A marked and raised pedestrian crossing is provided over Walker Street within this narrowed section connecting with the Railway Station.

A dog leg in the north-south distributor route is provided between Walker Street and Rider Boulevard via Mary Street. Rider Boulevard provides a 13m wide pavement providing one through lane of traffic in each direction in conjunction with formalised parallel parking along both kerb alignments. Rider Street intersects with Jean Wailes Avenue and a northern vehicular access to the Rhodes Shopping Centre under traffic signal control. Rider Boulevard intersects with Oulton Avenue and a southern vehicular access to the Rhodes Shopping Centre at its southern extremity,

Oulton Avenue extends to the south to provide on and off ramps to the north and southbound Homebush Bay Drive carriageways.



FIGURE 2
EXISTING RHODES WEST PENINSULA ROAD HIERARCHY

5.1.2 Regional Road Network

Homebush Bay Drive performs a State Road function under the care and control of the Roads & Traffic Authority. It forms part of Metroad 3 comprising Mona Vale Road, Ryde Road, Church Street, Concord Road and King Georges Road which provides an important north-south arterial route through the Sydney Metropolitan Area. To this extent, it connects with the major east-west motorways servicing Sydney being the M2, M4 and M5.

In the vicinity of Rhodes, Homebush Bay Drive provides three lanes in each direction being separated by a raised concrete median. It intersects with major approach roads under traffic signal control, where pavement widening facilitates the provision of exclusive turning lanes. In this regard, Homebush Bay Drive intersects with Averill Street, Llewellyn Street, Mary Street, Alfred Street, Concord Road and the Australand Car Park Access Road under traffic signal control within the local vicinity. Further, on and off ramps are provided between Oulton Avenue and Homebush Bay Drive as previously presented.

Concord Road performs a State Road function providing a north-south arterial function between Homebush Bay Drive in the vicinity of the study area and Parramatta Road in the south. Concord Road primarily provides two through lanes in each direction however localised pavement widening is provided on approach to major intersections (which primarily operate under traffic signal control) to accommodate additional exclusive turning lanes.

5.2 Existing Traffic Demands and Road Network Operation

Existing (or recent) traffic demands within and adjoining Rhodes Peninsula are reported within the 2009 Masson Wilson Twiney report: *Rhodes Peninsula – Traffic and Transport Analysis for Additional Development*. **Table 1** overleaf provides a summary of the reported peak hour traffic demands whilst full details are contained within **Appendix 3** for reference.

TABLE 1 EXISTING (2008) PEAK HOUR TRAFFIC VOLUMES		
Road	AM Peak	PM Peak
Averill Street (west of Concord Road)		
Eastbound	352	282
Westbound	280	199
Concord Road (North of Averill Street)		
Northbound	3,098	3,611
Southbound	4,081	3,649
Mary Street (west of Concord Road)		
Eastbound	70	279
Westbound	279	49
Concord Road (south of Homebush Bay Drive)		
Northbound	1,165	1,358
Southbound	1,403	1,351
Oulton Avenue (north of Homebush Bay Drive)		
Northbound	558	499
Southbound	246	534
Homebush Bay Drive (south of Oulton Avenue)		
Northbound	2,797	3,066
Southbound	2,762	2,705

Table 1 indicates that traffic volumes within the State Road network (Homebush Bay Drive and Concord Road) are significant. Traffic volumes within the primary Rhodes Peninsula access roads comprising Averill Street, Mary Street and Oulton Avenue are significantly lower commensurate with their reduced functional order of these streets.

The operational performance of the abovementioned Peninsula access road intersections with the adjoining State Road network were assessed utilising the SCATES intersection analysis program and presented within the 2009 Masson Wilson Twiney Report. **Table 2** provides a summary of the modelling results.

TABLE 2 EXISTING (2008) PEAK HOUR INTERSECTION OPERATION		
Intersection	AM Peak	PM Peak
Concord Road / Averill Street		
Average Vehicle Delay	18	<10
Level of Service	B	A
Concord Road / Mary Street		
Average Vehicle Delay	16	27
Level of Service	B	C
Homebush Bay Drive / Oulton Avenue		
Average Vehicle Delay	<10	<10
Level of Service	A	A

Table 2 indicates that traffic volumes within Concord Road and Homebush Bay Drive are significant, access into and out of the Rhodes Peninsula is largely quite acceptable with levels of service ranging between 'A' representing good operation with spare capacity to 'C' representing satisfactory operation.

5.3 Public Transport and Non-Car Travel

The Rhodes West Peninsular with well serviced by public transport facilities and is located in close proximity to regional pedestrian and cycle networks. **Figure 3** overleaf reproduces a map of the existing public transport facilities servicing the Peninsula as provided within the Rhodes West DCP.

5.3.1 Rail

The subject site is located less than 300m from Rhodes Railway Station, with a formalised footpath being provided along the western side of Walker Street. Rhodes Railway Station is part of the Northern Railway Line linking the City in the east to Hornsby and the Central Coast in the north. Train service frequency at Rhodes is approximately 15 minutes in the weekday peak direction (i.e. city bound or southbound during the morning peak and northbound during the evening peak) as follows:

- 12 southbound and 10 northbound services operate between 6.00am and 9.00am; and
- 11 southbound and 12 outbound services operate between 4.00pm and 7.00pm.

5.3.2 Bus

Sydney Buses operates two bus services along Homebush Bay Drive as follows:

- Route 458 Burwood to Macquarie University; and
- Route 459 Strathfield to Macquarie University.

Route 459 operates along Homebush Bay Drive / Concord Road thereby travelling along the southern and western boundaries of the Peninsula however, the Route 458 is diverted to service the Rhodes Peninsula, operating along Oulton Avenue, Rider Boulevard, Walker Street, Leeds Street and Averill Street.

The following provides a summary of the frequency of the above services:

- Route 458 provides 8 services to Burwood and 6 services to Macquarie University between 6.00am and 9.00am;
- Route 458 provides 6 services to Burwood and 10 services to Macquarie University between 4.00pm and 7.00pm;
- Route 459 provides 3 services to Strathfield and 4 services to Macquarie University between 6.00am and 9.00am; and
- Route 459 provides 6 services to Strathfield and 3 services to Macquarie University between 4.00pm and 7.00pm.



FIGURE 3
EXISTING PUBLIC TRANSPORT FACILITIES SERVICING
RHODES

5.3.3 Ferry

The closest Ferry wharf is located at Meadowbank, approximately 700m to the north of the subject site. Regular services are available at this wharf as part of the Circular Quay to Parramatta services. Access to the Meadowbank ferry service from Rhodes is via the John Whitton Bridge which is a pedestrian footpath / cycleway.

There are approximately 6 services in the peak direction during morning and evening commuter peaks.

5.3.4 Cycle

Rhodes West is located near the intersection of Sydney's two regional cycleways as follows:

- The Parramatta Valley Cycleway; and
- The Botany to Ryde Cycleway.

The Parramatta Valley Cycleway runs between Putney Park in the east and Parramatta in the west, primarily running along the northern foreshore of the Parramatta River. A link between Rhodes and the cycleway is facilitated via the John Whitton Bridge which has been converted to facilitate bicycle and pedestrian crossing movements.

The Botany to Ryde Cycleway runs between Settlers Park in Ryde and travels over the Parramatta River via the Ryde Bridge to the north of Rhodes prior to travelling through Gough Whitlam Park and finishing at Botany Bay.

Rhodes West is ideally placed to provide recreational and commuter cycle links to these and other regional networks, which have in part been achieved with the partial completion of the foreshore recreational cycleway and the Walker Street commuter cycleway.

The cycle strategy for Rhodes as provided within Rhodes West DCP is reproduced overleaf as **Figure 4**. The cycle network provides safe and convenient access to Rhodes Station, the shopping centre and other public facilities, as well as creating links to abovementioned existing regional cycle routes.



FIGURE 4
PLANNED RHODES WEST CYCLE STRATEGY

6. PROJECTED TRANSPORT GENERATION & IMPACTS

The transport generating capacity of the total Rhodes West redevelopment has been estimated and assessed with respect to impacts on the surrounding road network and transport infrastructure within the 2009 Masson Wilson Twiney *Traffic Report for Rhodes Peninsular – Traffic and Transport Analysis for Additional Development*. The following sub-sections provide a summary of the projected site based transport generation and impacts utilising the assumptions provided within that report.

6.1 Traffic Generation

The following provides a summary of the traffic generation rates applied to the land uses proposed within the subject development within the 2009 Masson Wilson Twiney report:

- 0.29 peak hour vehicle trips per residential dwelling; and
- 4.0 peak hour trips per 100m² of net leasable retail floor area.

Based on the provision of 733 residential dwellings and 1,050m² of retail floor space, the subject development is projected to generate in the order of 255 peak hour vehicle trips.

The above traffic generation estimate includes approximately 42 peak hour trips associated with the retail component. We however note that the retail component is most likely to service the residential development component or indeed those developments within the immediate vicinity of the subject site. In this regard, no vehicular parking has been provided for the retail component (discussed in greater detail in subsequent sections of this report) which thereby suggests that all retail customers will access the site via walk or cycle trips. Accordingly, the actual traffic generation of the subject development is more likely to be closer to 200 peak hour trips.

We acknowledge that the subject development incorporates the provision of a gymnasium however, similar to that described above for the retail component, we expect that this development component will largely (if not totally) services on-site or immediately surrounding residents. No traffic generation has therefore been applied to this development component.

6.2 Trip Assignment

The previously described site generated peak hour vehicle movements will be distributed to the north and south of the subject site along Walker Street (via Gauthorpe Street and Timbrol Avenue) with some minor movements along Shoreline Avenue (via the extended Gauthorpe Street). In terms of greater road network trip assignment, the following trip assignment was identified within the 2009 Masson Wilson Twiney report for residential trips:

- 50% of traffic will travel to the north via Concord Road;
- 15% of traffic will travel to the south-east via Concord Road; and
- The remaining 35% of traffic will travel to the south-west via Homebush Bay Drive.

6.3 Traffic Impacts

The assessment undertaken in conjunction with the preparation of the Rhodes West Masterplan (the 2009 Masson Wilson Twiney report) presented that traffic flow along the section of Walker Street adjoining the subject site will be moderate and capable of accommodating the additional traffic projected to be generated by the development. The reasonably consistent vertical and horizontal alignment of Walker Street, Gauthorpe Street and Timbrol Avenue indicates that turning movements at the adjoining public road junctions are provided with good sight distance thereby suggesting that vehicles can travel between Walker Street and the subject site with a good level of safety and efficiency.

The operational performance of the Peninsular access intersections in the immediate vicinity (incorporating the total redevelopment of Rhodes West including the subject site) was also assessed within the 2009 Masson Wilson Twiney report. **Table 3** below provides a summary of the SCATES modelling results.

TABLE 3				
PEAK HOUR INTERSECTION OPERATION				
Intersection	Existing 2008		Projected Conditions	
	AM Peak	PM Peak	AM Peak	PM Peak
Concord Road / Averill Street				
Average Vehicle Delay	18	<10	45	<10
Level of Service	B	A	D	A
Concord Road / Mary Street				
Average Vehicle Delay	16	27	50	27
Level of Service	B	C	D	C
Homebush Bay Drive / Oulton Avenue				
Average Vehicle Delay	<10	<10	<10	<10
Level of Service	A	A	A	A

The Masson Wilson Twiney modelling indicates that the additional traffic projected to be generated by the total redevelopment of Rhodes West is likely to result in the Concord Road intersections with Averill Street and Mary Street operating with a worst case level of service of 'D', representing operation near capacity. Whilst this represents a reduction in the level of service at these intersections, the report concluded that *'the intersection analysis results indicate that generally the additional traffic from the additional proposed development (incorporating the subject development) would not create measurable adverse impact when compared with the traffic conditions under the approved development levels.'*

The level of service of the junction of Homebush Bay Drive and Oulton Avenue is projected to remain at 'A' incorporating the full redevelopment of Rhodes West, representing good operation with spare capacity. Notwithstanding this, we note from discussions with the Roads & Traffic Authority that this junction has a notable accident history largely associated with the merge of vehicles from Oulton Avenue into the through southbound Homebush Bay Drive traffic flow.

In regard to the above, we understand that the Authority have requested that Council investigate measures to improve road safety at the subject intersection (likely to be achieved through the full signalisation of right turn movements from Oulton Avenue). In response to this, it is further understood that Council has advised the Roads & Traffic Authority that such intersection upgrade works could be funded through a Voluntary Planning Agreement (VPA). Accordingly, it is anticipated that further consultation shall be undertaken in this regard between the Department of Planning, the Roads & Traffic Authority and Council to determine the funding mechanisms for the any future road works.

6.4 Public Transport Generation & Impacts

The public transport trips generated by the total Rhodes West redevelopment (incorporating the subject development) has been assessed and reported within the 2009 Masson Wilson Twiney report. This report projects that the additional development within the peninsula (comprising approximately 800 residential dwellings, 5,500m² commercial floor space and 1,750m² retail floor space) is expected to generate in the order of 280 additional peak public transport trips as follows:

- 179 morning and 192 evening peak train trips;
- 74 morning and 81 evening peak bus trips; and
- 8 morning and 8 evening peak ferry trips.

The additional rail patronage is expected to result in Rhodes being comparable in terms of patronage to the three busiest stations on the Northern line, being Pennant Hills, West Ryde and Meadowbank. The additional train loading due to the additional development is expected to be about 10% of the capacity of a single train and thus train capacity is not expected to be an issue. We understand that this finding has been confirmed by State Rail.

Further to the above, the NSW Premier announced in February 2010 that as part of the new Metropolitan Transport Plan: Connecting the City of Cities, a proposed new upgrade of the Western Express City Rail Service would mean that extra capacity on the system would be greater, and specifically, four additional services on the Northern line to the CBD via Rhodes would be achieved.

The projected additional bus trips are significantly less than that described above and accordingly, it is expected that there should not be any issue in accommodating the additional demand. The 2009 Masson Wilson Twiney report states that '*as is usual in*

Sydney, it is anticipated that bus services would be augmented over time to meet increasing travel demands as they arise’.

Further, it is understood that Sydney Buses recently advised Council that a new bus route, Metro bus Route M41, providing a service between Hurstville and Macquarie Park, will be in operation from mid 2011. The new bus service will have stops along Concord Road and will therefore be accessed by residents of the subject development (and indeed the entire Rhodes Peninsula). It is further understood that Council will lobby Sydney Buses to provide a diversion of this route to service Rhodes Railway Station.

The projected increase in ferry demand is anticipated to be negligible.

7. SITE ACCESS & INTERNAL CONSIDERATIONS

7.1 Access Arrangements

7.1.1 Access Design

Access to the development is proposed as follows:

- A separated ingress / egress driveway is to service Gauthorpe Street in the south-western corner of the site providing 4.5m wide ingress and ingress laneways separated by a 1m wide raised concrete median; and
- A separated ingress / egress driveway is to service Timbrol Avenue approximately 45m to the west of Walker Street providing 3m wide ingress and egress laneways separated by a 1m wide raised concrete median.

In order to assess the suitability of the design of the proposed access arrangements, reference is made to the Roads & Traffic Authority's *Guide to Traffic Generating Developments*. These documents provide driveway design recommendations based on a number of site characteristics such as the number of parking spaces provided on-site and the functional hierarchy of the access road.

Based on the Gauthorpe Street and Timbrol Avenue driveways servicing a total of 428 and 346 spaces respectively, and the minor function of the two access roadways, the Roads & Traffic Authority recommend at minimum, combined ingress / egress driveways of between 6 – 9m wide. The proposed separated access arrangements therefore comply with such minimum requirements.

7.1.2 Access Locations

Figure 81 of the *Draft Rhodes West DCP* specifies that the preferred site access location for the subject development site is via Timbrol Avenue only. However, given the extent of on-site parking proposed it is considered desirable to split the site access as proposed between Timbrol Avenue and Gauthorpe Street in order to minimise development generated impacts. It is understood that this issue has been discussed and agreed to by Council officers during pre-lodgement liaison and we note that the proposed access driveways have been located appropriately outside the areas nominated as vehicle access restrictions by Figure 76 of the *Draft Rhodes West DCP*.

The consistent vertical and horizontal alignment of both Gauthorpe Street and Timbrol Avenue is such good sight distance is provided between the frontage roads and the site access locations, according with the minimum requirements specified with AS2890.1-2004. In consideration of this and the above discussion, the proposed access locations are considered to be satisfactory.

7.2 Internal Circulation

7.2.1 Passenger Vehicles

On-site parking for passenger vehicles is proposed to be primarily provided within two basement parking levels accessed as presented via Gauthorpe Street and Timbrol Avenue whilst a small at grade parking area is also proposed, accessed via Timbrol Avenue. The on-site passenger vehicle parking areas are primarily proposed to comprise a series of 90 degree parking rows serviced by adjoining parking aisles accommodating two-way traffic.

Vehicular access to the at grade and basement parking areas serviced by Timbrol Avenue will be governed by a roller shutter located within the access driveway operated by a remote control or swipe cards held by residents. A small public visitor car parking area is proposed to be serviced by the Gauthorpe Street access driveway located in the south-western corner of the site. Vehicular connectivity from this area to the private residential parking areas is proposed to be governed by boom gates operated by remote control held or swipe cards by residents.

The parking areas have generally been designed in accordance with the minimum specifications of AS2890.1-2004, providing the following base dimensions:

- Normal 90 degree parking space width = 2.4m;
- Disabled / accessible 90 degree parking space width = 3.6m;
- Normal parallel parking space width = 2.4m;
- Normal parallel parking space length = 7.0m;
- 90 degree parking space length = 5.4m;
- Parking aisle width = 5.8m;
- One-way roadway width = 3.0m;
- Two-way roadway width = 5.5m;
- Column off-set from space opening = 0.75 – 1.75m;
- Maximum ramp grade = 1 in 5;
- Maximum change in grade = 1 in 8;
- Minimum length of ramp transition = 2m; and
- Maximum grade within parking module = 1 in 45.

A number of the parking aisles form dead end aisles. The dead end aisles within the resident parking areas are proposed to be provided within the aisle extensions of at least 1.0m to ensure that vehicles parked within the end parking bays have adequate manoeuvring room to exit the aisle in a forward direction. The publically accessible visitor parking area located within the south-western corner of the site also forms a dead end aisle, however vehicles are able to turn around within the vicinity of the dead end aisle by utilising the indented boom gate area servicing the private residential parking area access. In consideration of this and the previous discussion with respect to the minimum dimensional provisions of the parking area, the proposed internal passenger vehicle parking areas are considered to be satisfactory with respect to passenger vehicle manoeuvrability.

7.2.2 Garbage Vehicle Servicing

Servicing of the site with respect to garbage collection is proposed to occur within the south-western corner of the site via the Gauthorpe Street access driveway. An indented loading area providing dimensions of 15m x 6m is proposed to extend to the east from the site access roadway. This area will be accessed by garbage collection vehicles with a height clearance of 3.8m.

In order to undertake an assessment of this loading area to accommodate the manoeuvring requirements of garbage collection vehicles, this Practice has prepared a turning path plan by overlaying the standard swept paths of 8.8m long Medium Rigid Vehicles (MRVs) as provided within AS2890.2-2002 on the architectural plans, a copy of which is contained within **Appendix 4**.

The swept path plan (prepared utilising V-Path computer based software) illustrates that such vehicles are capable of accessing the site in a forward direction via Gauthorpe Street, reversing into the loading area, prior exiting the loading area and thence the site into Gauthorpe Street in a forward direction. The swept path plans illustrate that the above movements can be satisfactorily undertaken without any unreasonable encroachment on adjoining access driveway or parking area kerbing, structural columns or walls and parking spaces.

It is acknowledged that the above manoeuvring of the garbage collection vehicle could potentially impede trailing passenger vehicle site ingress movements however such impedance is likely to be minor, i.e. only a few seconds as the collection vehicle reverses from the access roadway into the indented collection area. In any case, we note that the garbage collection activities are most likely to be undertaken during non-peak operational periods of the passenger vehicle car park as is community expectation and indeed, industry procedure.

7.2.3 Other Servicing

Other servicing of the site is expected to occur from mall delivery vans associated with the retail tenancies through to larger residential removalist vehicles. The small delivery vans are proposed to be accommodated within specifically signposting and allocated loading bays provided within the Gauthorpe Street access driveway. These spaces are proposed to be slightly wider than normal to accommodate the loading / unloading activities.

Larger delivery and removalist vehicles are proposed to service the site via sign posting loading zones provided within the adjoining street frontages. These loading zones can be signposted to be only operational during certain times or be time limited to ensure impacts on adjoining on-street parking provision is minimised and ensure adequate turnover as considered to be required.

8. PARKING PROVISION

8.1 Vehicular Parking

8.1.1 Council Requirements

The City of Canada Bay provides locally sensitive parking requirements for development within the subject area within its Rhodes West DCP. The following requirements are provided with respect to the subject development:

Residential

Maximum 1 resident space per dwelling

Maximum 1 visitor space per 10 apartments

Maximum 1 service vehicle space per 50 apartments

Commercial

1 space per 40m²

Retail

1 space per 40m²

Application of the above parking requirements to the subject development results in a requirement of 733 resident spaces, 74 resident visitor spaces and 27 retail spaces. The total site-wide parking requirement according to Council is therefore 834 spaces.

8.1.2 Parking Provision

It is proposed that each residential dwelling be provided with a single parking space and a small number (four) of dwellings be allocated two spaces resulting in 737 resident spaces. In addition, it is proposed that 37 residential visitor spaces be provided.

No parking is proposed to be provided for the retail floor area.

8.1.3 Discussion on Parking Provision

It is apparent from the above discussion that the proposed parking provision will rely on public transport utilisation and other non-car relating travel, particularly in relation to the proposed retail and residential visitor development components. Numerous policies and strategies documented by State Government agencies identify the preferable planning objectives of locating high density housing near railway stations and retail facilities and encouraging a reduction in the reliance on private motor vehicle travel.

Planning New South Wales' *'Integrating Land Use and Transport; The Right Place for Business and Services – Planning Policy'* states that residential and employment generating forms of development should be located in close proximity to public transport facilities in order to generate fewer and shorter private vehicle trips. This document was prepared to accompany State Environmental Planning Policy No. 66 ('Integration of Land Use and Transport'). SEPP 66 states that parking for residential

and retail / commercial developments should be provided in accordance with ‘*set maximum limits in order to discourage car use in areas with good public transport access*’. Furthermore, SEPP 66 states that parking requirements for new developments should be ‘*designed to discourage car use in area with good public transport access*’.

Council’s Rhodes West DCP is somewhat cognisant of this when stating that ‘*the higher density and mixed use envisaged for the Rhodes Peninsula will enhance public transport use and viability, and reduce travel demand*’. It would therefore appear that Council’s parking requirements discussed previously refer to maximum parking provisions rather than minimum parking provisions.

The Roads & Traffic Authority have been particularly supportive of reduced parking provision for high density residential development in close proximity to public transport facilities through the provision of lower parking rates published within its *Guide to Traffic Generating Developments*. With specific reference to Rhodes West, the Authority has recommended that significantly reduced parking be provided for residential development, whereby a parking rate of 1 space per two dwellings has been recommended.

Whilst Council has indicated that the above Roads & Traffic Authority recommendation is not practical due to various market forces, it is clear that there is scope to provide a reduced parking provision as proposed in the subject instance. Council has committed to engaging a specialist Travel Planner to prepare a detailed Travel Plan (or a Green Travel Plan) to assist with coordination of services and promoting non car-based modes of travel to incoming residents.

A Green Travel Plan provides a series of voluntary travel behaviour change initiatives aimed at encouraging the use of more sustainable transport such as walking, cycling, car pooling and public transport. The aim of the Plan is to achieve travel behaviour change through raising awareness of alternatives to motor vehicle use. The development of a Peninsula based Plan will focus on providing better information, offering incentives and mode specific actions to optimise the use of sustainable travel (public transport, cycling, walking and car pooling).

Following the preparation of the detailed Green Travel Plan for the Rhodes Precinct by Council, a site based Plan (or Transport Management Plan / Travel Access Guide) can be prepared for the subject development which addresses the provision of advice to prospective residential apartment purchasers and tenants about the reduced level of car parking in the area and the public transport options which are available, including the provision of a publicly accessible car share scheme (involving the provision of a number of Go-Get type vehicles for shared public use within specifically signposted and designated on-street parking areas immediately adjacent to the subject site. Whilst we acknowledge that a site based Plan will be based on the findings of the abovementioned Council commissioned Peninsula Green travel Plan, a summary of the objectives and potential inclusions of a site based Plan is provided within **Appendix 5** for reference.

It is further noted that on-street parking is available immediately adjoining and surrounding the subject site. This parking is available for all users, subject to the restrictions that may apply (such as time restrictions). It is common for on-street parking to be shared between a number of uses such as residential, recreational, retail and commercial. The development site provides a combined street frontage of approximately 475m which is capable of accommodating some 70 – 80 passenger vehicle parking spaces. It is therefore anticipated that there will be adequate parking to cater for the likely demand for non residential uses as most users would be local who would walk or cycle to them (as would be the case the adjoining recreational and community facilities).

In consideration of the above discussion and the previously presented excellent access to surrounding public transport facilities, it is appropriate for the subject development to provide a reduced parking provision as proposed.

8.2 Bicycle and Motor Cycle Parking

8.2.1 Bicycle Parking

The City of Canada Bay provides the following requirements for bicycle and motorcycle parking within the Rhodes West DCP:

Bicycle Parking Requirements

Minimum 1 resident space per 3 apartments

Minimum 1 visitor space per 12 apartments

Minimum 1 visitor space per 25m² retail (assumed to be cafes)

Application of the above parking requirements to the subject development results in a requirement of 245 resident spaces, 62 resident visitor spaces, 74 resident visitor and 42 retail spaces.

A total of 90 resident, 77 residential visitor and 60 retail bicycle spaces are proposed to be provided. These spaces are proposed to be provided in a range of parking facilities (lock-up and publicly accessible areas) in accordance with the appropriate Austroads requirements.

Whilst it is acknowledged that the proposed bicycle parking provision does not fully accord with Council's requirements, it is understood that during pre-lodgement discussions with Council, they have advised the applicant that they will favourably consider the provision of all visitor parking requirements in the public domain as proposed. Further, Council has indicated that private parking can be provided in a combination of conveniently located racks and storage cages allocated to individual apartments (provided in addition to the standard storage requirements).

8.2.2 Motorcycle Parking

The Rhodes West DCP states the following with respect to motorcycle parking:

Motorcycle parking equivalent to 2 spaces per 100 parking spaces, is to be provided in every building with on-site parking.

Based on a parking provision of 774 passenger vehicle parking spaces, a total of 16 motorcycle parking spaces are required to be provided. The development provides for a total of 7 motorcycle spaces within the on-site parking areas. The remaining 9 spaces could reasonably be provided on-street immediately adjacent to the site.

9. PEDESTRIANS & CYCLISTS

The redevelopment of the Rhodes Peninsula has made extensive provision for pedestrian and cyclist movements as detailed within Sections 5.3.4 of this report. The proposed development continues the development of the public domain through the following:

- The provision of footways along each of the frontage roadways (where not already provided);
- The provision of localised footway widening at the Walker Street intersections with Gauthorpe Street and Timbrol Avenue to minimise the extent of roadway pedestrians are required to cross and to facilitate a low speed traffic environment;
- The provision of a diagonal through pedestrian link from the Walker Street / Gauthorpe Street corner to Peak Street and the Homebush Bay foreshore;
- The provision of available bicycle parking areas conveniently located in close proximity to the various retail tenancies; and
- The provision of appropriate and safe levels of lighting.

The layout of the consolidated site development consists of the abovementioned attractive series of internal paths, which link each building enabling residential to walk / cycle through the development in a non-vehicular environment. Further, the connection of the above internal paths of the existing overall Rhodes West pedestrian and cyclist network results in safe and convenient pedestrian linkages to / from the nearby Rhodes Railway Station.

The limitation of the site vehicular access locations to two driveways located off Gauthorpe Street and Timbrol Avenue significantly enhances the safety and amenity of pedestrians by minimising the number of potential pedestrian / vehicle conflict points.

10. CONSTRUCTION ISSUES

10.1 Construction Traffic Management Plan

The scale of the subject development is such that the construction will occur over a significant period of time during which an integrated series of traffic and pedestrian management measures will be required to be implemented. It is understood that as part of the development consent process, the applicant will be required to prepare a detailed site management plan providing traffic and pedestrian management measures to be implemented during construction including but not being limited to:

- Construction vehicle transport routes;
- Construction site access locations and management measures;
- Construction personnel parking controls;
- Stage by stage construction traffic generation; and
- Impacts of construction on adjoining traffic and pedestrian movements, in particular the Rhodes Railway Station and Shopping Centre precinct located to the south of the site.

The current site access location (approximately midblock along Walker Street) utilised for the preliminary site clearing is considered appropriate and should be maintained during the development construction process in order to eliminate construction vehicle access movements along the lower order Gauthorpe Street and Timbrol Avenue. This site access is to be supervised by appropriately qualified traffic controllers. Further, site access movements by construction vehicles should be reduced where practicable during periods of peak commuter periods (6.00am – 9.00am and 4.00pm – 7.00pm) to minimise impacts on adjoining traffic flow and indeed pedestrian cycle movements to form Rhodes Railway Station.

Construction vehicle transit routes to and from the site will be appropriately selected to minimise the impact on adjoining arterial road network capacities with routes governed by load limits being avoided as necessary.

The scale of the subject site is such that portions of the site can be utilised by construction personnel and vehicles rather than occupying the adjoining road network.

Whilst it is noted that a notable level of traffic will be generated to and from the site during the construction phases, it is not expected that this traffic will exceed that which is projected to be generated by the proposed development following construction. Accordingly, incorporating the implementation of appropriate traffic and pedestrian management measures as determined by the management plan (which can reasonably be imposed as a condition of consent) and based on the traffic impact assessment provided in this report, it is not envisaged that the construction will result in unreasonable impacts on the surrounding road network.

11. CONCLUSION

This transport impact assessment report accompanies a Part 3A Application to the Department of Planning for a new mixed use development within Sites 2A and 3A within Precinct B of Rhodes West. Having regard to the findings of this report, the following conclusions are provided:

- Whilst traffic demands within Concord Road and Homebush Bay Drive are significant, access into and out of the Rhodes Peninsula is largely quite acceptable with levels of service ranging between 'A' representing good operation with spare capacity to 'C' representing satisfactory operation;
- The Rhodes West Peninsular with well serviced by public transport facilities and is located in close proximity to regional pedestrian and cycle networks;
- The transport generating capacity of the total Rhodes West redevelopment (incorporating the subject development) has been estimated and assessed with respect to impacts on the surrounding road network and transport infrastructure within the 2009 Masson Wilson Twiney *Traffic Report for Rhodes Peninsular – Traffic and Transport Analysis for Additional Development*;
- The subject development is projected to generate up to approximately 250 peak hour vehicle trips;
- The Masson Wilson Twiney report concluded that *'the intersection analysis results indicate that generally the additional traffic from the additional proposed development (incorporating the subject development) would not create measurable adverse impact when compared with the traffic conditions under the approved development levels.*
- Notwithstanding this, the Roads & Traffic Authority has suggested that an investigation into possible measures to improve safety concerns at the junction of Homebush Bay Drive and Oulton Avenue be undertaken. We understand that such an investigation and indeed any resultant intersection upgrade works are proposed to be funded through a Voluntary Planning Agreement (VPA);
- The existing public transport facilities (which are planned to be upgraded) are considered to be capable of accommodating the additional demand generated by the subject development;
- The proposed access arrangements internal circulation are anticipated to provide for safe and efficient vehicular and pedestrian movements and servicing during peak times;
- The proposed parking provision generally reflects the guidelines and requirements of recent State Government policies with respect to the high level of accessibility in relation to the nearby retail and public transport

facilities subject to appropriate site Transport Management Plan or Travel Access Guide incorporating publicly accessible car share scheme being prepared. This Plan should be based upon the findings of a detailed Green Travel Plan which Council has committed to preparing to assist with promoting non car based modes of travel to incoming residents (and include initiatives provided within **Appendix 5** of this report).;

- The site layout of provides attractive internal paths which link each building enabling residential to walk / cycle through the development and connect to the existing overall Rhodes West pedestrian and cyclist network resulting in safe and convenient pedestrian linkages to / from the nearby Rhodes Railway Station; and
- Incorporating the implementation of appropriate traffic and pedestrian management measures outlined in Section 10 of this report and included within a detailed construction site management plan (which can reasonably be imposed as a condition of consent), it is not envisaged that the construction will result in unreasonable impacts on the surrounding road network.

In consideration of the conclusions abovementioned, it is considered that the development scheme will not have any unreasonable traffic, transport or parking implications.