Fairmead Business
Wentworth Point
Transport Management and Accessibility Plan
Update

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1 Executive summary

1.1 Proposed development

This Transport Management and Accessibility Plan (TMAP) relates to the Wentworth Point Planning Proposal *(*the Proposal*)*. The proposal applies to 24.9 hectares of land at Wentworth Point (formerly known as Homebush Bay West) in the western suburbs of Sydney. The site is located approximately 1km west of Homebush Bay Drive, approximately 3.5kms north of the M4 Western Motorway and Parramatta Road, and approximately 3kms east of Silverwater Road (see Figure 1.1).

Figure 1.1 – Location of Wentworth Point and the proposed Homebush Bay Bridge

Source: Scott Carver

The Homebush Bay West Development Control Plan (*HBW DCP*) for the development of land at Wentworth Point, near Homebush Bay was adopted in 2004. It specified the requirements with which proposed development would need to comply at that time, and within anticipated infrastructure constraints.

The concept of a pedestrian, cycle and public transport bridge linking Wentworth Point with Rhodes, the next peninsula to the east, was developed, and construction of the bridge was approved, subject to conditions, by the Minster for Planning in March 2013. The bridge will improve access between Wentworth Point and the railway station (and other services) at Rhodes. On this basis, a proposal (the Proposal) has been developed to amend the *HBW DCP* to deliver better local and sub-regional outcomes.

The Proposal has been prepared on behalf of Fairmead Business, on behalf of a consortium of Billbergia Group, Sekisui House Australia Pty Ltd, Homebush Bay Properties Pty Ltd, and Homebush

Bay Holdings Pty Ltd. Owners of undeveloped land that are not included in this proposal are the NSW Government agencies of Sydney Olympic Park Authority (SOPA) and NSW Maritime.

The Proposal is for additional floorspace of permissible development, based on the increased accessibility and amenity offered by the proposed Homebush Bay Bridge. In particular, the proposed changes are to:

- Increase residential floor space by approximately 105,000 m^2.
- Increase building heights in a number of areas to 16 to 25 storeys.
- Make changes to streets and local land use to improve the integration of the bridge landing.

The Proposal was submitted to the Department of Planning on the 25 October 2010, along with a request to amend the *HBW DCP*. The Department in response agreed to proceed with the proposed amendment subject to further assessment.

1.2 Transport Management and Accessibility Plan

As part of the assessment process for the proposed amendment to the *HBW DCP*, the Director General of Planning has requested that this TMAP should be prepared. A TMAP contains a comprehensive assessment of the transport impacts arising from a major site development or redevelopment proposal. In particular, it identifies the impacts of the proposed development on the current and proposed transport networks.

This assessment will lead to the identification of a package of service or demand management measures to help manage and accommodate the demand for travel to and from the development, and, in particular, to reduce or discourage the demand for travel by private cars. Overall, this TMAP seeks to deliver a net reduction in traffic compared with what would be generated by the previously permissible development.

1.3 Note on TMAP Update

The TMAP was first completed in September 2012, and was based on the most recent travel data available at that time; the 2006 ABS Census. During the assessment period, data from the 2011 ABS Census has become available. Additionally, there have been significant changes to Government policy that could potentially bear on the assessment of development at Wentworth Point.

This update of the Wentworth Point TMAP has been prepared to ensure that the assessment process is informed by the most accurate and current information available.

1.4 Strategic and transport context

The *Metropolitan Plan 2036*, released in 2010, is the State Government's *current* long-term strategic planning framework. It seeks to *'manage Sydney's growth and strengthen its economic development to 2036 (sustainably) while enhancing its unique lifestyle, heritage and environment'*. The strategy identifies strategic centres that will accommodate mixed employment development including Sydney Olympic Park (SOP) and Rhodes specialised centres. In the 2005 *Metropolitan Strategy*, SOP-Rhodes was identified as a single specialised centre due to the close proximity and similarities of the precincts. However, they have now been recognised as separate and distinct centres.

The key policy settings relevant to this project are to:

- Increase the proportion of homes within 30 minutes by public transport of jobs in a Major Centre, ensuring more jobs are located closer to home.
- Build at least 80 per cent of all new homes within the walking catchments of existing and planned centres of all sizes with good public transport.
- Enable residential and employment growth in areas where there is available or planned public transport capacity.

A *Draft Metropolitan Strategy for Sydney* was released for discussion in March 2013. When adopted, it will replace the *Metropolitan Plan 2036*. If adopted in its current form the draft strategy would not alter the strategic context of Wentworth Point significantly. The draft strategy identifies a series of 'Urban Activation Precincts' that would benefit from special consideration of their design, infrastructure and development processes to ensure that their potential for development was fully realised in a sustainable, efficient and integrated manner. Wentworth Point is identified in the draft strategy as one of these Urban Activation Precincts.

The *NSW 2021: A Plan to Make NSW Number One,* released in September 2011, sets out the Government's long term plan to improve the service delivery across NSW, and outlines measures to track progress towards achieving overall State and transport goals. The key targets relevant to this project are to:

- More than double the mode share of bicycle trips made in the Greater Sydney region, at a local and district level, by 2016.
- Increase the share of walking trips made in the Greater Sydney region, at a local and district level, to 25 per cent of all trips by 2016.
- Increase the share of commuting trips made by public transport:
    - To and from Sydney CBD during peak hours to 80 per cent by 2016.
    - To and from Parramatta CBD during peak hours to 50 per cent by 2016.
- Increase the proportion of total journeys to work by public transport in the Sydney Metropolitan Region to 28 per cent by 2016.
- Increase the percentage of the population living within 30 minutes by public transport of a city or major centre in metropolitan Sydney.
- Facilitate the delivery of 25,000 new dwellings in Sydney per year.

The proposed mixed use residential development at Wentworth Point supports the focus on achieving transit-orientated development and urban renewal.

The approved Homebush Bay Bridge will link the Wentworth Point precinct directly to the specialised centre and the railway station at Rhodes, by pedestrian, cycle and public transport routes.

The bridge will further increase the accessibility and connectivity of the Wentworth Point precinct to the wider public transport network, and advantage sustainable modes of transport significantly over private vehicles.

1.5 Objectives and targets

The TMAP identifies:

- Expected trip generation of the Wentworth Point development, including the current proposal.
- The expected modal split of the trips generated.
- The impacts of these trips.

It recommends ways to manage the transport impacts of the proposed Wentworth Point development. In doing so, it recognises the relatively congested nature of the surrounding regional road network and the considerable opportunities to increase public transport use, walking and cycling over and above what would otherwise be expected.

The bridge, spanning Homebush Bay and providing for buses, pedestrians and cyclists, will bring the transport services and facilities of Rhodes within an easy distance of Wentworth Point. While much of the TMAP's focus is on the weekday peak period when overall travel demand is highest, there will

be considerable benefits to the residents of the broader area in the improved access to entertainment and retail facilities at Rhodes, and to the open space and major event venues within Sydney Olympic Park.

The TMAP objectives, therefore, are to:

- **Increase public transport, walking and cycling use amongst Wentworth Point residents beyond what would otherwise be expected.**
- **Reduce car use amongst Wentworth Point residents below what would otherwise be expected.**
- **Ensure peak period car driver trips remain within previously permitted and expected levels.**
- **Facilitate improved accessibility to facilities, services, open space and entertainment across the Homebush and Rhodes areas.**

The following targets have been adopted:

- Journey to work (JTW) trips originating in Wentworth Point and with a destination in the Sydney CBD will have an 80 per cent public transport mode share.
- JTW trips originating in Wentworth Point and with a destination in the Parramatta CBD will have a 50 per cent public transport mode share.
- JTW trips originating in Wentworth Point regardless of destination will have an average 30 per cent public transport mode share.
- JTW originating in Wentworth Point and 3km or less will have a 50 per cent walk/cycle mode share.
- JTW trips originating in Wentworth Point regardless of trip length will have an average 10 per cent walk/cycle mode share.

These targets support an average JTW mode-share target of 35 per cent non-car modes for Wentworth Point.

1.6 Assessment

1.6.1 Current situation[1]

At the time of the *HBW DCP* Wentworth Point had:

- A high reliance on private vehicles as the main form of JTW, with a car mode share with 83 per cent by car (driver and passenger), which is 10 per cent above the Greater Sydney average.
- The highest mode share by car for JTW trips compared to the surrounding travel zones:
    - Approximately 14 per cent of residents at Wentworth Point use public transport (train, tram, bus and ferry) to get to work, which is lower than both Newington (20 per cent) and Rhodes (29 per cent).
- A lack of viable public transport options:
    - Public transport in Wentworth Point mainly consists of train trips combined with other modes including driving.
    - Trips by ferry and bus only represented 2 per cent and 1 per cent respectively of all JTW trips.

Wentworth Point JTW trip destinations are spread across 35 local government areas (LGAs), but approximately half of all trips (51 per cent) are to just 5 LGAs. The greatest proportion of JTW trips is to Sydney LGA with 19 per cent, followed by local trips within the Auburn LGA (14 per cent), Parramatta (10 per cent) and Ryde (8 per cent).

[1] The assessment of the current situation is based on analysis of 2006 and 2011 Census data as appropriate and available.

1.6.2 Transport supply

The local public transport network focuses on peak hour JTW travel. In terms of access to bus and rail services, and given its peninsular situation, Wentworth Point is unable, at this stage, to justify a more intensive level of public transport service, meaning that for many journeys car travel is the only realistic option.

Intending rail passengers from Wentworth Point would currently have the choice of joining rail services at Olympic Park, Rhodes, North Strathfield or Strathfield stations. The proposed Homebush Bay Bridge will make Rhodes station the closest and most accessible station to Wentworth Point. The distance between the Burroway Road/Hill Road intersection and Rhodes station via the bridge would be just over 1km.

The existing cycling and pedestrian network within the area is limited due to the nature of former industrial and warehousing uses on the site. The internal network will be transformed as part of the planning process under the *HBW DCP* provisions to improve proposed pedestrian and cycle access. The new layout will cater for pedestrian and cyclist desire lines to provide a permeable environment.

1.6.3 Transport demand

Currently permissible development under the *HBW DCP* (approximately 7,000 dwellings) would generate approximately 3,279 peak hour vehicle trips and about 32,800 daily vehicle trips, according to the RTA's *Guide to Traffic Generating Developments*. The proposed development provides for an additional 1,353 dwellings (8,349 dwellings in total).

At full development in 2023 the development proposal is estimated to generate the traffic volumes listed in Table 1.1.

Table 1.1 - Key outputs of the analysis

Total dwellings permissible under *HBW DCP* (no bridge/no uplift)	6,996
Car trips (no bridge/no uplift)	3,297 vehicles/peak hour
Total dwellings (with bridge and with uplift)	8,349
Additional dwellings under the current proposal (with bridge and with uplift)	1,353
Total trips (with no bridge/no uplift)	4,204 trips/peak hour
Total trips (with bridge and with uplift)	5,017 trips/peak hour
2006 JTW mode shares	78% (car driver) 22% (car passenger and other modes)
2011 JTW mode shares	72% (car driver) 28% (car passenger and other modes)
Target JTW mode shares	65% (car driver) 35% (car passenger and other modes)

Based on the travel behaviour of Wentworth Point residents at the time of the Homebush West DCP (2004), vehicle driver trips accounted for 78 per cent of JTW trips. Given this, it has been assumed that the DCP-permissible development would have generated 4,204 peak hour trips, 78 per cent car driver trips and 22 per cent non-car driver trips.

Using this methodology:

- The Proposal will generate 5,017 peak hour trips compared with 4,204 peak hour trips generated by the DCP-permissible development, an additional 813 trips or 19 per cent.
- Of the trips generated by the Proposal, the **JTW car driver mode share would account for a maximum of 65 per cent**, generating no more than 3,261 peak hour vehicle trips.

The proposed Homebush Bay Bridge will help ensure that vehicle trip generation does not exceed that expected from the current DCP-permissible development, for the following reasons:

- The bridge will offer reduced travel times by placing the development within 1km of the rail and bus services focussed on Rhodes station.
- The bridge will accommodate safe shared travel by public transport, walking and cycling, thus facilitating the use of non-car modes for JTW and other trip purposes.
- The bridge will also facilitate non-car travel during off-peak times for a range of trip purposes (recreation, shopping and education).
- Pedestrians and cyclists will not share the bridge with general traffic, thereby increasing its attractiveness for a range of trip purposes.
- The bridge will facilitate direct access into Gauthorpe Street for bus pick-up and set down southbound in Walker Street at Rhodes station.
- For cyclists, the bridge will link well into the existing Hill Road cycleway and the Rhodes foreshore cycleway running along the western side of the Rhodes peninsula. This integration will contribute towards a favourable mode share for both locally based JTW trips and for local and regional recreation trips.
- Whilst a high proportion of bulky goods oriented shopping trips will continue to occur by car, the bridge can accommodate a proportion of the shopping trips between the site and the Rhodes shopping centre that would have otherwise have been undertaken by car.

In addition to the proposed bridge, the target mode share could be improved further through demand management measures, delivering a more sustainable outcome than could be achieved under the DCP-permissible development.

1.7 Summary of findings

The key findings of the TMAP have not altered in light of the most recent data and strategic policy changes, rather these changes support the findings and conclusions of the TMAP. The conclusions of the TMAP are:

- It is quite feasible to achieve the TMAP's targets for mode share and travel management, assuming that the bridge connecting Wentworth Point to Rhodes and, in particular, Rhodes station is delivered in the right way and at the right time.
- While it is now proposed to increase the development size beyond that permitted under the *HBW DCP*, the resultant increased trip generation will be more than contained by increased use of non-car modes.
- Overall, the bridge provides the opportunity to ensure an improved mode-share outcome, reduced number of car trips, and greater levels of accessibility amongst those living at Wentworth Point.
- The design of the Wentworth Point Proposal, including the Homebush Bay Bridge, will:
    - Reduce levels of vehicle kilometres travelled (VKT) during the peak periods and across other times of the day and week.
    - Reduce reliance on private vehicles.
    - Maximise the use of public transport, walking and cycling.
- The destination-based analysis supports the target mode share of 65 per cent car travel as driver. In fact, there is an opportunity to reduce the mode share for car drivers further, through the promotion of walking and cycling.
- With assumed public transport mode shares, 33 per cent of peak hour trips will be made using public transport. Of these trips, 86 per cent will be made by rail and 14 per cent by bus. Table 1.1 summarises these findings.

Table 1.1 - Summary of public transport distribution, based on post-2023 trip generation

Public transport	Trips	% Trips
Train trips	**1,440**	**86%**
Train trips via Rhodes	1,364	82%
Train trips via Rhodes northbound	173	10%
Train trips via Rhodes southbound	1,191	72%
Train trips via SOP	76	5%
Bus trips	**226**	**14%**
Bus trips east	93	6%
Bus trips west	133	8%

In summary, the incremental impacts of the Proposal over those arising from the level of development permissible under the *HBW DCP* are not likely to generate additional car trips. Nor will they place unacceptable demands on public transport services in the area.

On the contrary, the provision of the Homebush Bay Bridge offers the opportunity to improve the mode share for public transport and active transport over the previously permissible development. The improved public transport mode share supports the achievement of State Plan targets for public transport use to Parramatta, Sydney CBD and across the Sydney Metropolitan Area.

1.8 Recommendations

The recommendations of the TMAP are summarised in Table 1.2.

Table 1.2 - Summary of TMAP recommendations

Summary of TMAP recommendations
Homebush Bay Bridge design
B1: Ensure pedestrians a secure and safe segregated right of way, with adequate provision for shelter and refuge at intervals along the bridge.
B2: Integrate bridge design and operation into the existing and proposed transport and road networks effectively and appropriately.
B3: Design should reduce the potential for conflict between users on the bridge and along shared paths in the precinct, by, for example, ensuring that cyclists and pedestrians can each travel safely and appropriate speeds.
B4: Cyclists should be directed and encouraged to use the carriageway, rather than to share the pedestrian space, and the bridge should be designed accordingly.
B5: Taxis should not be allowed to use the proposed bridge.
Infrastructure-based initiatives
IB1: Provide accessible footpaths and cycle paths through the site and to/from the main access points serving the site
IB2: The use of personal non-motorised transport should be encouraged through appropriate layout and road intersection design.
IB3: Bus stop locations and stop infrastructure, including passenger information and signage, in the vicinity of the site and at Rhodes, should be reviewed at regular intervals during the development process to ensure their appropriateness and

effectiveness for evolving transport services.
IB4: The Proponent should discuss with TfNSW the potential to provide secure bike storage facilities at Rhodes station.
IB5: Include walking and cycling facilities linking to bus stops in the design of the development, including walkways and cycleways through the development site linking with the bridge, rail and Metro 41 bus services at Rhodes railway station.
IB6: No infrastructure improvements are considered necessary at Rhodes station.
IB7: The internal design of the pedestrian and cycling environment of the site **should provide direct legible links between the key places of activity.**
Non-infrastructure based initiatives (local transport network)
LT1: The Proponent should liaise regularly with TfNSW, which has the responsibility for planning and funding bus services, to assist with TfNSW's monitoring of demand and its transport needs assessments in the area so as to determine when and how bus services should be introduced or amended.
LT2: TfNSW should consider **minor alterations to local bus routes to use the Homebush Bay Bridge. The recommended initial bus route alterations are:** • **Diverting bus route 533 to travel through Wentworth Point**, with **additional peak services in both directions.** • **Extending Route 526 to Rhodes station.**
LT3: Investigate the provision of peak period express buses to/from the site and Rhodes station via Gauthorpe and Walker Streets (pick up and set down southbound in Walker Street at Rhodes station, to encourage residents of Wentworth Point to use feeder bus services to Rhodes station.
LT4: The area's transport networks should be legible, with way-finding signs to key destinations.
LT5: Local transport options and networks should be promoted through measures such as the TAG (See recommendation DM 1).
Non-infrastructure based initiatives (demand management)
DM1: Introduce a travel behaviour change program for the development (and potentially for other developments in the locality) including transport access guides (TAGs), welcome packs, and workplace travel plans.
DM2: Initiate a marketing and awareness campaign for all new residents on the site and in the locality to promote the demand management initiatives.
DM 3: Consider the introduction of a proponent-designed and -funded car-sharing scheme.

1.9 Conclusions

The TMAP has assessed the potential incremental impacts of the Proposal over the level of development that was permissible under the current planning controls contained in the *HBW DCP 2004*.

The TMAP concludes that the current Proposal, in conjunction with the Homebush Bay Bridge, will not adversely impact upon local road and public transport networks over and above the impacts envisaged for permissible development under the previous controls. The provision of the bridge, and,

in particular, its preferential use by bus services linking to Rhodes station, will favour the use of public transport significantly, especially for journeys to work.

In terms of mode share to public transport, the Proposal has the real potential to deliver better outcomes than most of its neighbouring suburbs. This will contribute to the achievement of State Plan targets for public transport use for trips to Sydney and Parramatta CBDs. It will also deliver a local environment that is conducive to active transport use – cycling and walking – and to making public transport the preferred and most convenient option for journeys to work and a range of other travel. The TMAP makes a series of recommendations to ameliorate any identified impacts, and to optimise the potential for active transport for local residents.

Importantly, the TMAP also concludes that the timely and appropriately-designed provision of the bridge will be critical to achieving the proposed targets for travel demand and mode share. It recommends bridge design and operating principles that will further contribute to the success of the development in relation to its travel impacts.

2 Context

2.1 Introduction

The Homebush Bay West Development Control Plan (*HBW DCP*) was adopted in 2004 for the development of land at Wentworth Point, near Homebush Bay in Sydney, outlining the requirements with which proposed residential development and associated uses would need to comply to be permissible.

In the intervening period, the concept of a bridge linking Wentworth Point with Rhodes, the next peninsula to the east, was developed. The construction of the Homebush Bay Bridge was approved by the Minister for Planning, subject to conditions, in March 2013. The bridge will improve access between Wentworth Point and the railway station (and other services) at Rhodes.

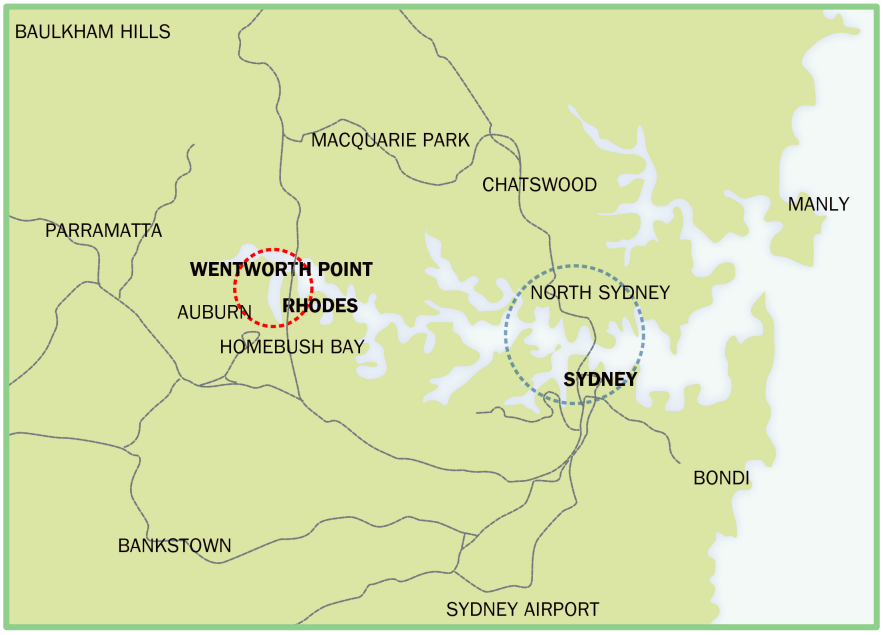
In light of the bridge proposal, to help fund it, and to optimise the investment in the infrastructure, it is now proposed to increase the size of the approved development at Wentworth Point. As part of the approval process for this incremental increase in development, the Director General of Planning has requested that this Transport Management and Accessibility Plan (TMAP) should be prepared.

A TMAP is a comprehensive assessment of the transport impacts arising from a major site development or redevelopment proposal. It identifies the impacts of the proposed development on the current and proposed transport networks, and identifies infrastructure, service or demand management measures to help manage and accommodate the demand for travel and freight movement to and from the development, and to reduce or discourage the demand for travel by private cars and commercial vehicles.

2.2 Strategic context

Wentworth Point is located in the middle ring of the Sydney region, approximately 13 kms from the Sydney city centre. Its location in relation to the immediate region is shown in Figure 2.1. The Proposal would increase the number of dwellings within the proposed development in order to optimise the provision of improved pedestrian and public transport access from the development to the existing transport hub and service centre at Rhodes.

Figure 2.1 – Regional location map



Source: Scott Carver

The Proposal is typical of the kind of infill 'brownfield development' which is critical to the sustainable accommodation of the region's growing population. It occupies a large former industrial site, on the banks of the Parramatta River, on land previously regarded as marginal and fit only for residual uses best located out of the way of main centres. These uses would typically be dependent on the supply of flat, poor quality land with good access by river and road, but not necessarily by rail.

This former industrial land is now considered more viable and desirable for residential development for a number of reasons:

- Increased regional population placing pressure on residential land availability and prices.
- A greater spread of employment locations across the Sydney region, leading to greater diversity of job destinations and more varied peak hour travel patterns.
- Changing social attitudes to apartment and riverside living.
- Structural change in industrial and distribution sector organisation, with greater emphasis on peripheral locations near to major transport links, especially major roads, and manufacturing shifts off-shore.
- Improved awareness of contamination issues and increased feasibility of remediation measures.

As a result of these changes, more former industrial or warehousing sites are now becoming viable for large scale residential development. They deliver popular and good-quality living environments for people wanting to live in accessible locations close to employment opportunities, without the need for long distance rail, bus or car commuting trips.

This is good policy in terms of the broad strategic needs of the region to re-cycle land, and to limit urban sprawl. It also optimises the benefits of public and private investment in infrastructure and social capital, while helping to establish new vibrant communities.

The paradox of this kind of development is that it often requires the provision of new transport links since the former land uses effectively reduced the feasibility of and need for, mass transit, in favour of goods vehicle corridors. So, the corollary of this new style of development is the need to identify the likely type and scale of travel to be undertaken by the new residents, and to ensure that every opportunity is provide for these trips to be made in a sustainable way.

In assessing the potential impacts of the proposed increase in the scale of the approved development, it is necessary to understand the strategic framework within which this assessment must take place, and to recognise the over-arching objectives of government policy that the development supports.

Each level of government with responsibility for the Wentworth Park area has relevant policies and objectives. These are summarised in Figure 2.2 and discussed in more detail, as they affect the site, in subsequent sections.

Figure 2.2 - Strategic planning policies and transport strategies

2.3 NSW planning policy

2.3.1 Metropolitan Plan 2036

The *Metropolitan Plan 2036*, released in 2010, is the State Government's current long-term strategic planning framework. It seeks to *'manage Sydney's growth and strengthen its economic development to 2036 (sustainably) while enhancing its unique lifestyle, heritage and environment'*. The strategy identifies strategic centres that will accommodate development including Sydney Olympic Park (SOP) and Rhodes specialised centres. In the 2005 *Metropolitan Strategy*, SOP-Rhodes was identified as a single specialised centre due to the close proximity and similarities of the precincts. However they have now been recognised as separate and distinct centres.

The key policy settings relevant to this project are to:

- Increase the proportion of homes within 30 minutes by public transport of jobs in a Major Centre, ensuring more jobs are located closer to home.
- Build at least 80 per cent of all new homes within the walking catchments of existing and planned centres of all sizes with good public transport.
- Enable residential and employment growth in areas where there is available or planned public transport capacity.

Projected population growth brings with it the challenge to provide additional housing, employment, and transport in the right places. The required numbers of new dwellings, and the additional employment capacity across Sydney for 2006-2036 for the subregions of importance to this proposed development are shown in Table 2.1.

Table 2.1 - Required new dwellings and employment capacity, 2006-2036

Sub-region	Sub-region additional dwellings	Additional employment capacity
West Central	91,500	113,170
Inner West	37,300	25,100
Sydney total	**699,800**	**713,920**

2.3.2 Draft Metropolitan Strategy for Sydney 2031

A Draft Metropolitan Strategy for Sydney was released for discussion in March 2013. When adopted, it will replace the *Metropolitan Plan 2036*. If adopted in its current form the draft strategy would not alter the strategic context of Wentworth Point significantly. The draft strategy identifies a series of 'Urban Activation Precincts' that would benefit from special consideration of their design, infrastructure and development processes to ensure that their potential for development was fully realised in a sustainable, efficient and integrated manner. Wentworth Point is identified in the draft strategy as one of these Urban Activation Precincts.

2.3.3 Regional planning policy

The draft sub-regional strategies that were developed under the Metropolitan Strategy 2005 are now used as the key planning tool to guide Sydney councils in helping to implement the Metropolitan Plan. They provide dwelling and broader development targets, and help determine the scale of growth across and within sub-region, allied to the provision of the relevant and appropriate infrastructure to service the growth. These strategies would be subject to review once a new Metropolitan Strategy for Sydney is adopted.

Sydney West Central Sub-regional Strategy

The *Sydney West Central Sub-regional Strategy* covers the local government areas of Parramatta, Holroyd, Bankstown and Auburn, including Wentworth Point. The strategy recognises the need to continue to improve the network of cycleway and public transport access in and around SOP. It also recognises the importance of SOP and Parramatta in providing for increased employment opportunities. The employment targets are:

- *Increasing employment capacity in Sydney Olympic Park (specialised centre) from 4,000 in 2006 to 23,000 by 2036*
- *Strengthening Parramatta's role as Sydney's second CBD through planning for increased employment from 43,000 jobs in 2006 to 70,000 jobs by 2036.*

Other key priorities included the requirements to:

- *Develop a Regional City transport strategy for Parramatta City Centre in partnership with Parramatta City Council.*
- (Develop) *the Western Express Program, providing new express train services from Richmond, Penrith, Blacktown and Parramatta, incorporating the City Relief Line to provide a new line through the CBD from Redfern to Wynyard.*
- *Commence the Parramatta to Epping Rail Link.*
- (Provide) *better bus connections through 1,000 growth buses and continued rollout of bus priority measures.*

Sydney Inner West Subregional Strategy

The *Sydney Inner West Subregional Strategy* covers the local government areas of Ashfield, Leichhardt, Burwood and Canada Bay that encompasses Rhodes. The plan supports the investigation

of both improved ferry access and a pedestrian bridge to link Rhodes and Wentworth Point. Other points salient to this study include:

- *Increasing employment capacity in Rhodes (specialised centre) from 10,000 in 2006 to 14,000 by 2036.*
- *Investigate long term corridors for transport and urban renewal, including from Macquarie Park to Sydney Olympic Park or Burwood and Hurstville, and from Westmead to Sydney CBD and Malabar.*
- *Better bus connections through 1,000 growth buses and continued rollout of bus priority measures*[2].

Sydney Regional Environmental Plan 24 – Homebush Bay Area (SREP 24)

The primary aims of the SREP are to define objectives for the Homebush Bay Area that encourage co-ordinated and environmentally sensitive development, and to guide and co-ordinate the development of the Homebush Bay Area. Currently SREP 24 applies to the land at Wentworth Point.

2.3.4 Local planning policy

The key development control at Wentworth Point is the *Homebush Bay West Development Control Plan 2004*, discussed below. Wentworth Point is currently excluded from the *Auburn Local Environmental Plan 2010* and *Auburn Development Control Plan 2010*. The relevant development controls and planning proposals for Wentworth Point are shown in Figure 2.5.

Homebush Bay West Development Control Plan (*HBW DCP*) 2004 Volume 1

The *Homebush Bay West Development Control Plan 2004* (the *HBW DCP*) established a *Structural Design Framework* to guide and co-ordinate the urban renewal of the Homebush Bay precinct. The *HBW DCP* and its accompanying *Public Domain Design Manual* defined the distribution of built form, development use and density as well as allocated development floorspace.

The Homebush Bay West precinct is bounded by Bennelong Road, Hill Road, Homebush Bay and Parramatta River, as identified in *Sydney Regional Environmental Plan 24 – Homebush Bay Area*.

The *HBW DCP* identifies the site as suitable for a mix of uses including residential and commercial. The *HBW DCP* also suggests that the development of the area should consider the possibility of including a primary school within the precinct. The most likely location for this school would be north of the precinct on the Maritime land.

The proposed pedestrian, cycle and public transport networks for Homebush Bay West provided in the *HBW DCP* are shown in Figures 2.3, 2.4, and 2.5.

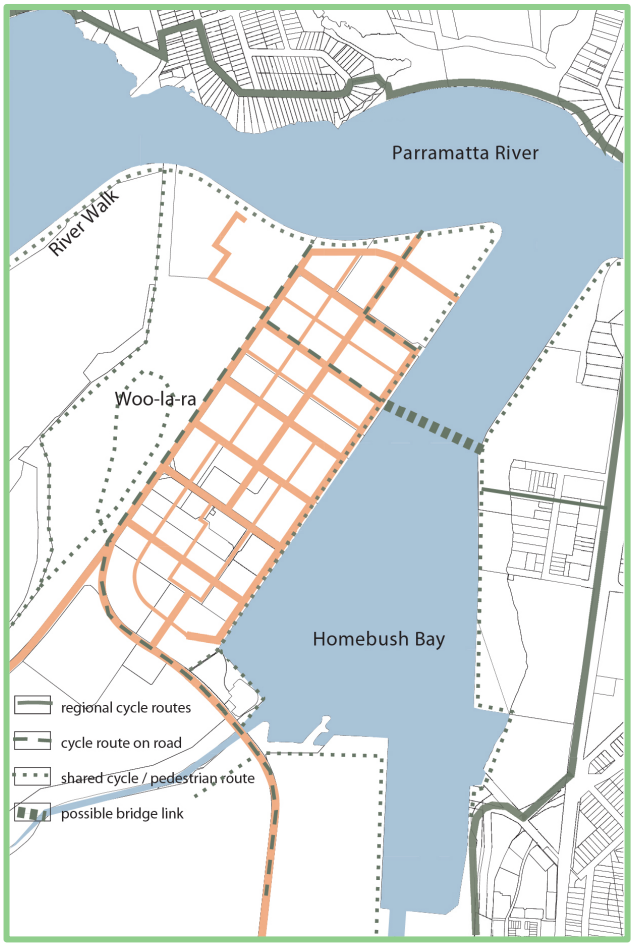
The *HBW DCP* requires amendment to heights, floor space ratios, and dwelling yields, should the Wentworth Point and Homebush Bay Bridge Proposals be approved[3].

The *HBW DCP* states that a pedestrian and cycle bridge between Homebush Bay West and Rhodes Peninsula should be provided for, subject to determination following transport studies and securing appropriate funding arrangements. The *HBW DCP* recognises the benefits of a pedestrian and cycle bridge, a proposal which has now been superseded by the proposal to provide a bridge that also caters for buses. The additional benefits of having public transport services across the bridge in increasing accessibility and connectively of the precinct requires a review of the strategic assumptions and potential dwelling yield[4].

[2] NSW Government, 2010, Metropolitan Plan for Sydney 2036 Fact Sheet - Planning for Subregions
[3] Urban Futures Group, Planning Proposal - Wentworth Point; Draft Auburn LEP 2009, 2010
[4] Urban Futures Group, Planning Proposal - Wentworth Point; Draft Auburn LEP 2009, 2010

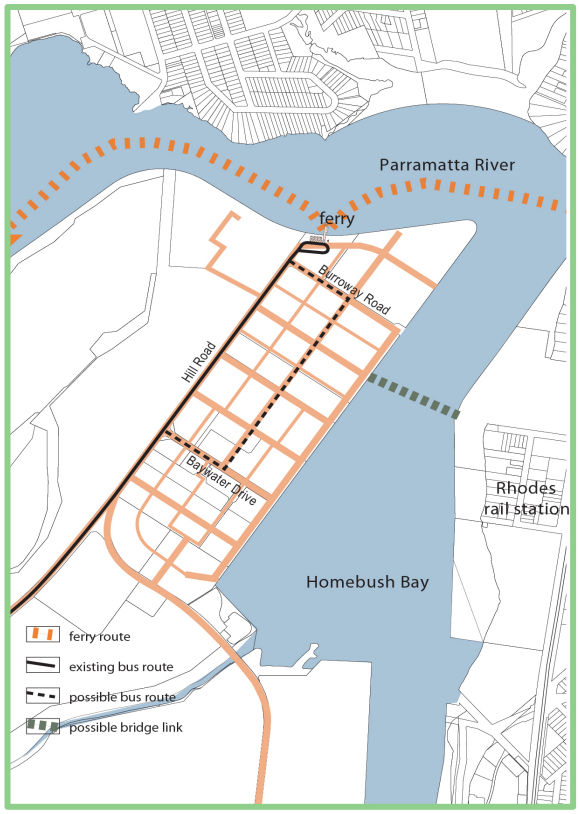
Figure 2.3 - Proposed pedestrian network

Figure 2.4 - Proposed cycle network



Source: HBW DCP 2004, pages 25-26

Figure 2.5 - Proposed public transport network



Source: HBW DCP 2004, page 27

The *HBW DCP* requires car parking and cycle parking provision to be in accordance with the requirements summarised in Tables 2.3 and 2.4.

Table 2.2 - Residential parking controls

Dwelling type	Maximum car spaces per dwelling	Secure bicycle parking facilities per dwelling
Studio	None	None
1 bedroom	1.0	None
2 bedroom	1.5	0.5
3 bedroom	2	0.5
Visitors	0.2	1 per 15 dwellings

Table 2.3 – Non-residential parking controls

Dwelling type	Maximum car spaces per dwelling	Secure bicycle parking facilities per dwelling
Convenience retail	Employees: 2 spaces per tenancy Pa: on-street if GFA<100m^2 Otherwise, 1 space per 40m^2	none
Cafes/restaurants	Employees: 2 spaces per tenancy Patrons: 15 spaces per 100m^2	none
Commercial offices	1 space per 60m^2 GLFA	1 space per 300m^2 GLFA 1 visitor space per 2,500m^2 GLFA

No.1 Burroway Road (deemed) Development Control Plan (DCP) 2006

The *No. 1 Burroway Road DCP*, prepared by Scott Carver on behalf of the land owner Billbergia Group of Companies, applies to 10.97 ha of land on the western shore of Homebush Bay. The site boundary is Burroway Road to the north, Hill Road and Sydney Olympic Park to the west, and industrial land poised for redevelopment to the south.

"The Masterplan proposes to replace the industrial buildings that have been previously approved for demolition with a series of residential neighbourhoods and a mix of smaller scale retail and other commercial uses and facilities within a public domain comprising of streets, a plaza and foreshore and active park".

This Master Plan is applicable to the northern part of the land under the Wentworth Point Planning Proposal for which this TMAP has been prepared. One of the key elements of the Master Plan was integrating the then proposed Homebush Bay West footbridge in the design, linking the Rhodes Peninsula into the civic purposes of the site.

Homebush Bay West – Wentworth Point Master Plan 2005

The Master Plan site covers 20.4 hectares along the Wentworth Point Peninsula. Its boundaries are the southern shore of the Parramatta River and the western shore of Homebush Bay, Burroway Road and The Parklands. The Master Plan site is on the northern boundary of the planning proposal site for which this TMAP is being undertaken.

The Master Plan site has been divided into 5 precincts.

- Maritime precinct - Maritime and recreational boating centre incorporating small craft storage, launch, sales, service and repair, sport and leisure facilities.
- Ferry terminal - The existing ferry services are to be maintained within this precinct. Parking is to be relocated and road reconfigured.
- Foreshore open space – Creation of a Wentworth Point Park and foreshore pedestrian/cycleway that will in time link Homebush Bay Waterfront with Sydney Olympic Parklands, Bicentennial Park and Rhodes Peninsula.
- Retail and commercial centre – Includes cafes and restaurants overlooking the Parramatta River and Foreshore Parklands. Limited residential development on upper floors of mixed use buildings will also be developed.
- Future development – Land to the west of Hill Road will be reserved for future development, predominantly for maritime related purposes.

Car parking provision is to be consistent with the *HBW DCP*. On-street parallel parking is provided on all streets within the master plan site, except the Foreshore Street and the major north-south access where 90 degree parking will be provided to cater for the expected higher trip generation of the precinct.

Homebush Bay West DCP Volume 2 (Public Domain Manual)

The *Homebush Bay West Public Domain Manual* was developed in 2005 originally as part of the *Homebush Bay West Development Control Plan*. It is now one of a suite of public domain plans adopted by Auburn Council. The manual defines the distribution of built form, development use and density as well as allocated development floorspace across the Homebush Bay West precinct. Within the manual it recognises the benefits that the development of a pedestrian and cycle bridge across Homebush Bay would bring to the area as well as to Rhodes.

Rhodes West Development Control Plan (DCP) 2010

The *Rhodes West DCP 2010,* developed by the City of Canada Bay, sets out the new planning guidelines for the precinct, which includes the landing point for the proposed Homebush Bay Bridge. According to the DCP redevelopment in the precinct is now 40 per cent complete and a further 40 per cent is under construction or has planning approval.

The *Rhodes West DCP 2010* has adopted the measures outlined in the *Renewing Rhodes Transport Management and Accessibility Plan (TMAP)*. The *TMAP* was produced in 2001 to support the now superseded *Renewing Rhodes DCP* 2000. Key recommendations of the TMAP included; increased capacity on the Northern Rail Line, new bus services west of the rail line, a parking policy, a number of new traffic management facilities, a system of pedestrian/cyclist linkages through Rhodes West and a long term scheme of building the pedestrian bridge across Homebush Bay.

The Homebush Bay Bridge is recognised in the DCP as increasing accessibility to the peninsula and providing increased access to open space for residents of Rhodes West. Urban design controls in the DCP include the provision of walking and cycling paths that will link to the bridge to provide a connected network.

Car share schemes are promoted in the DCP to reduce parking demand and minimise traffic congestion. One of the vehicle circulation and parking controls is for developments exceeding 200 dwellings to allocate one on-street car space to a car share company, with another one car share space to be allocated for each additional 300 dwellings.

Sydney Olympic Park Master Plan 2030

The Sydney Olympic Park Master Plan is a 22-year plan to 2030 for the sustainable development of the Sydney Olympic Park (SOP) area. It establishes planning principles and controls for the Parks future development. The Master Plan was approved by the Minister for Planning on 8 October 2009.

The modal targets provided in the plan are:

- Increasing the trip mode share to public transport during peak commuter periods to 40 per cent.
- Targeting a specific bicycle/pedestrian mode share split of 10 per cent.

The strategies set out in the Master Plan to cater for the planned development of SOP included;

- Implementing travel demand strategies.
- Providing new transport enhancements, including:
    - Regional road intersection upgrades
    - Local road intersection upgrades
    - Parramatta to Strathfield Strategic Bus Corridor
    - Additional strategic bus corridor services (e.g. North/South)
    - Additional heavy rail services
    - West Metro Rail connection, and/or

- Relevant state road enhancements (e.g. M4 Motorway East tunnel).

- Requiring non-residential developments in the town centre to prepare and implement a Work Place Travel Plan outlining how the development will comply with the Master Plan's transport strategies and relevant mode share targets.
- Summary

The key development controls and planning policies at Wentworth Point and Rhodes are summarised in Table 2.5 and mapped in Figure 2.6.

Table 2.4 – Key development controls and planning proposals at Wentworth Point and Rhodes

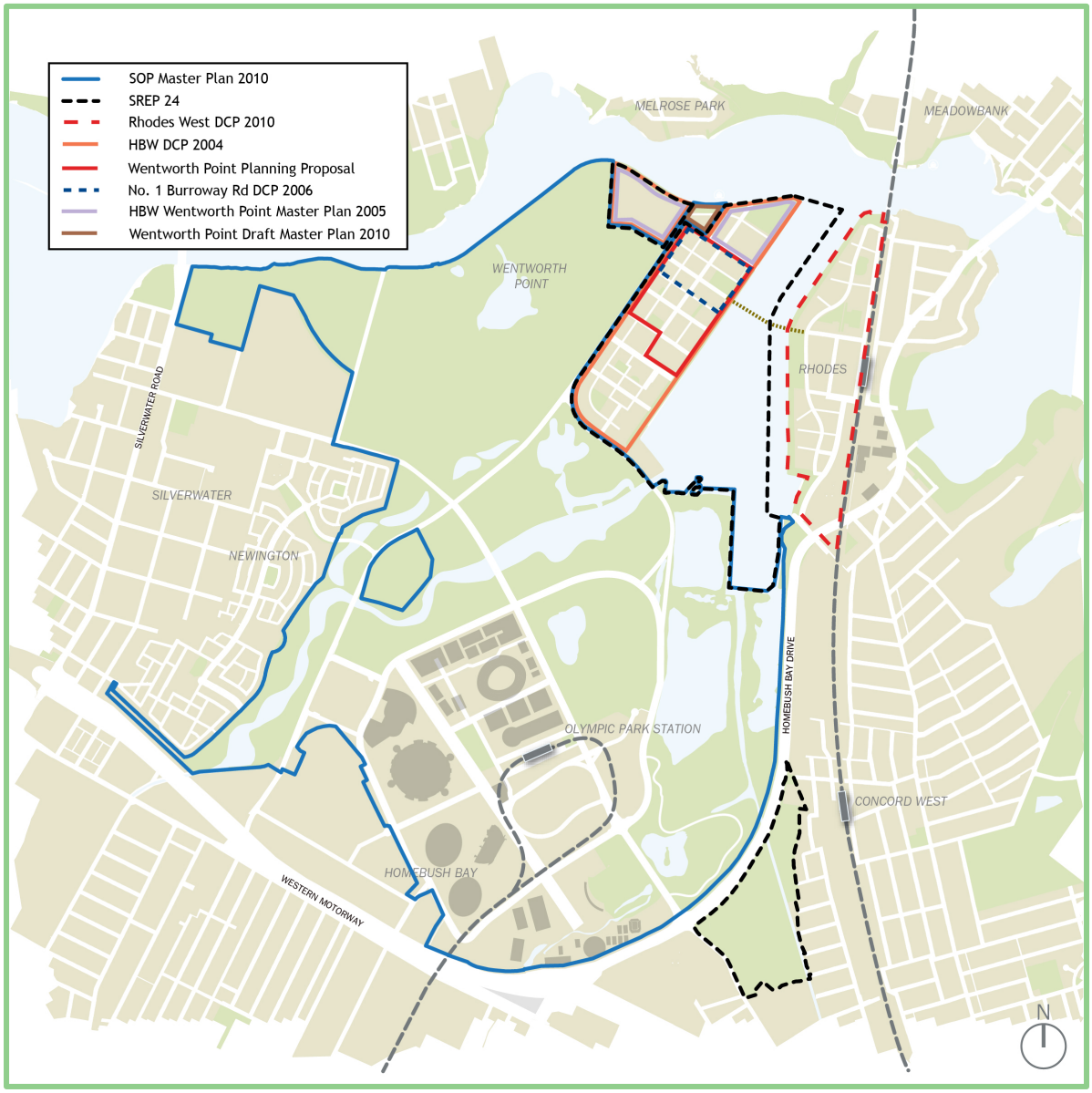
Development controls and planning proposals	Prepared by and date	Details
Planning Proposal - Wentworth Point, Homebush Bay West DCP 2004	Urban Futures Group, 2010	**Proponent:** Billbergia Group, Sekisui House Australia Pty Ltd, Homebush Bay Properties Pty Ltd and Homebush Bay Holdings Pty Ltd **Land it applies to:** 24.9 hectares of land at Wentworth Point bounded by Burroway Road to the north, the shore of Homebush Bay to the east, Hill Road to the west and Baywater Road, Savona Drive and Nuvolari Place to the south. **Development proposal:** Additional development in terms of increased residential floor space by 120,000m^2 and increased building height, to 48.1m to 91.5m. **Development status:** Agreement to proceed to draft DCP amendment stage subject to satisfactory TMAP and Urban Design Review. **Approval authority:** Director General DP&I as Wentworth Point under SREP 24.
Homebush Bay Bridge Preliminary Environmental Assessment Report	Urban Futures Group, 2010	**Proponent:** Billbergia Group, Sekisui House Australia Pty Ltd, Homebush Bay Properties Pty Ltd and Homebush Bay Holdings Pty Ltd **Development proposal:** Proposed public transport and pedestrian/cycleway bridge across Homebush Bay (Wentworth Point to Rhodes) **Development status:** Deemed Part 3A Major Development. Director General's Requirements issued. Environmental Assessment in preparation. **Approval authority:** Minister for Planning
Homebush Bay West - Wentworth Point Master Plan	Architectus Sydney Pty Ltd, 2005	**Proponent:** Prepared for NSW Maritime Authority & Sydney Olympic Park Authority **Land the proposal applies to:** The master plan site is 20.4 hectares bounded by Burroway Road, Hill Road and the Sydney Olympic Parklands, the Parramatta River and Homebush Bay. **Development proposal:** The master plan will see the demolition of all buildings east of Hill Road and their replacement with a recreational maritime precinct, a mixed use retail/commercial centre and parkland. **Development status:** The Preliminary Environmental Assessment for the Wentworth Point Maritime Precinct (New Plan, 2009) deemed a Major Development under Part 3A of the EP&A Act, has been submitted to the Minister and has currently been put on hold. **Approval authority:** Minister for Planning
Wentworth Point Draft Master Plan 2030	SOPA, 2010	**Proponent: SOPA** **Land the proposal applies to:** Land at the northern end of Wentworth Point bounded by Parramatta River to the North, a proposed north/south connecting street to the east, Burroway Road to the south and proposed Hill Road extension to the west. **Development proposal:** Proposal to modify State Environmental Planning Policy (Major Development) 2005, Schedule 3, Part 23, Sydney Olympic Park. The proposal seeks to modify the existing SEPP provisions as they relate

Development controls and planning proposals	Prepared by and date	Details
		to zoning, height of buildings and floor space ratio. **Development status:** Proponent reviewing submissions **Approval authority:** Minister for Planning
Sydney Regional Environmental Plan No. 24 - Homebush Bay Area	NSW Government, 1993	**Land to which the policy applies:** Selected areas in Homebush Bay including the land at Wentworth Point. **Content:** The primary aims of the SREP are to define objectives for the Homebush Bay Area that encourage co-ordinated and environmentally sensitive development, and to guide and co-ordinate the development of the Homebush Bay Area. All SREP's are now deemed State Environmental Planning Policies (SEPPs).
Homebush Bay West Development Control Plan 2004	Department of Planning, 2004	**Land to which the policy applies:** The land is bounded by Bennelong Road, Hill Road, Homebush Bay and Parramatta River, as identified in Sydney Regional Environmental Plan No. 24 – Homebush Bay Area. **Content:** The DCP established a Structural Design Framework to guide and co-ordinate the urban renewal of the Homebush Bay precinct. The *HBW DCP* and its accompanying Public Domain Design Manual defined the distribution of built form, development use and density as well as allocated development floor space. The *HBW DCP* suggests that future development of the area should consider the possibility of including a primary school within the precinct. The most likely location for this school would be north of the precinct on the Maritime land.
No. 1 Burroway Road (Deemed) DCP 2006	Scott Carver, 2006	**Land to which the policy applies:** This Master Plan was approved as a requirement of SREP 24 and is applicable to the northern part of the land under the Wentworth Point Planning Proposal for which this TMAP has been prepared. The site is bounded by Burroway Road to the north, Hill Road and Sydney Olympic Park to the west, and industrial land poised for redevelopment to the south. **Content:** *"The Master Plan proposes to replace the industrial buildings that have been previously approved for demolition with a series of residential neighbourhoods and a mix of smaller scale retail and other commercial uses and facilities within a public domain comprising of streets, a plaza and foreshore and active park".*
State Environmental Planning Policy (Major Development) 2005, Schedule 3 State significant sites, Part 23 Sydney Olympic Park site	SOPA, 2005	**Land to which the policy applies:** The land is bounded by Bennelong Road, Hill Road, Homebush Bay and Parramatta River, as identified in Sydney Regional Environmental Plan No. 24 – Homebush Bay Area. **Content:** Provides planning controls and gives effect to development proposed in the Sydney Olympic Park Master Plan 2030.
Sydney Olympic Park Master Plan 2030	SOPA, 2004	**Land to which the policy applies:** The land is bounded by Bennelong Road, Hill Road, Homebush Bay and Parramatta River, as identified in Sydney Regional Environmental Plan No. 24 – Homebush Bay Area. **Content:** The Sydney Olympic Park Master Plan is a 22-year plan to 2030 for the sustainable development of Sydney Olympic Park area. It will be the development control plan for all new development at SOP. The Master Plan was approved by the Minister for Planning on the 8th October 2009. The modal targets provided in the plan are: • 40 per cent by public transport during peak commuter • 10 per cent by bicycle/pedestrian
Rhodes West Development Control Plan 2010	City of Canada Bay, 2010	**Land to which the policy applies:** The land is bounded by the main northern Rail Line, Oulton Avenue (near Homebush Bay Drive), Homebush Bay and Parramatta River. **Content:** Sets out the new planning guidelines for the precinct, including the landing point for the proposed Homebush Bay Bridge and a new community centre. According to the DCP redevelopment in the precinct is now 40 per

Development controls and planning proposals	Prepared by and date	Details
		cent complete and a further 40 per cent is under construction or has planning approval. The DCP has adopted the measures outlined in the Renewing Rhodes Transport Management Plan (TMAP). Urban design controls in the DCP include the provision of walking and cycling networks that will link with the proposed Homebush Bay Bridge to provide connected networks. Developments exceeding 200 dwellings in the precinct are required to provide at least one car share space for residents.

Note: Approval status as given by the Department of Planning and infrastructure website on 21 June 2011

Figure 2.6 - Development controls and planning proposals at Wentworth Point and Rhodes



Source: Scott Carver

2.4 Transport context

2.4.1 State policies

NSW 2021: A Plan to Make NSW Number One

NSW 2021: A Plan to Make NSW Number One, released in September 2011, sets out the Government's long term plan for how it will improve the service delivery across NSW, and outlines measures to track progress towards achieving its overall goals. The key targets relevant to this project are to:

- More than double the mode share of bicycle trips made in the Greater Sydney region, at a local and district level, by 2016.
- Increase the share of walking trips made in the Greater Sydney region, at a local and district level, to 25% by 2016.
- Increase the share of commuting trips made by public transport:
    - To and from Sydney CBD during peak hours to 80 per cent by 2016.
    - To and from Parramatta CBD during peak hours to 50 per cent by 2016.
- Increase the proportion of total journeys to work by public transport in the Sydney Metropolitan Region to 28 per cent by 2016.
- Increase the percentage of the population living within 30 minutes by public transport of a city or major centre in metropolitan Sydney.
- Facilitate the delivery of 25,000 new dwellings in Sydney per year.

The proposed mixed use residential development at Wentworth Point supports the NSW 2021's focus on achieving transit-orientated development and urban renewal.By connecting Wentworth Point to the Rhodes transport interchange, and Rhodes to the Sydney Olympic Park wharf, the proposed Homebush Bay Bridge would also support goal 8: Grow patronage on public transport, making public transport a more convenient option for residents of these areas who commute throughout the Sydney metropolitan region.

NSW Long Term Transport Master Plan

The NSW Long Term Transport Master Plan (the *Master Plan*) outlines the future direction for transport in Sydney and NSW.

The *Master Plan* is the guiding transport planning and policy supporting the State goals defined in *NSW 2021*. The *Master Plan* will guide the prioritisation of available funds for transport to deliver maximum benefits to NSW. It integrates transport with wider economic, infrastructure, social, housing and land use planning. The *Master Plan* will also inform future detailed plans, such as modal plans, and infrastructure investment and service strategies.

Sydney's Rail Future

Sydney's Rail Future: Modernising Sydney's Trains[5] was released in advance of the *Master Plan*. It foreshadows a range of measures to support the rail network by increasing capacity and service reliability of key corridors of the rail network. The North West and South West Rail Links will expand the existing rail network into the two key growth areas in Western Sydney. The program for improving city centre rail capacity has two components – improving the efficiency of existing rail infrastructure and, in the longer term, providing a new railway line through the city with new stations, which will provide a very significant increase in rail capacity across the whole network. Short-term measures include:

- Timetable changes to introduce standardised and regular stopping pattern, commencing with the introduction of the 2013 timetable.
- Improved management of train dwell times at stations (particularly at Wynyard and Town Hall stations).
- Platform redesign, including de-cluttering to allow clear passenger entrance and exit.
- Better incident recovery management through improved operations and digital train radio systems.

Sydney's Rail Future identifies several actions relevant to this TMAP:

- Service frequency on the North West Rail Link and Epping to Chatswood Rail Link will increase substantially, from a peak service of a train every 15 minutes to a train every 5 minutes.
- Two additional trains will be introduced to service the busy Main North Line Including North Strathfield and Rhodes stations) in the shorter term. In the longer term, additional services will be added in line with demand.
- Improvements will be made on the Western Line leading to the reliable operation of 20 trains per hour in the short term and in the longer-term additional services facilitated by Automatic Train Operation and a second harbour crossing.

Sydney's Bus Future

It is understood that *Sydney's Bus Future* is being developed by TfNSW for release in 2013, and is intended to provide a 20-year bus strategy as part of the *Master Plan*, integrated with State-level land use planning and the other modal strategies.

Details of the proposed strategy are not yet available publicly, but the *Master Plan* set out the direction for bus services. Buses will continue to be a major element of the public transport system in Metropolitan Sydney, providing flexibility, cost effectiveness and service coverage. The vision for *Sydney's Bus Future* is likely to have the following key themes:

- A greater emphasis on a connected network (rather than a radial network) to service off-peak and cross-suburban travel markets. This principle would be supported by the operation of buses to major trunk bus or rail services, as is proposed between Wentworth Point and Rhodes station.

[5] NSW Government: Sydney's Rail Future, June 2012

- Identification of a Core Bus Network, where bus priority capital workswould be focused, with wider stop spacing, for high/reliable average travel speeds.
- Metrobus-style services on major corridors at high all-day frequency (level 1) and detailed/local bus networks (levels 2 and 3) operating around them.
- Maintaining or increasing CBD peak express services.
- Ensuring that the planning and delivery of bus priority capital works, bus service changes and customer improvements are aligned and co-ordinated.

Each service level will have specified operating standards for bus frequency, target speed and customer walking catchment.

Sydney's Ferry Future

It is understood that Sydney's Ferry Future is being developed for release in 2013. It will highlight the longer-term vision, needs and solutions to continue the transformation and modernisation of ferry services for Sydney's growing population and to meet the needs of customers. The plan will identify where additional or adjusted services can be progressively implemented, and improve how ferry services are coordinated with other transport modes.

In the near future, network improvements will be delivered that make better use of the existing fleet and wharf infrastructure.

In the longer term, an optimal network will be implemented in stages using replacement and growth vessels along with new wharves. The changes will provide services better tailored to customer needs and cater for growth in population, jobs and leisure trips.

Integrated Land Use and Transport Policy Package (ILUT)

The *Integrating Land Use and Transport (ILUT) Policy Package* provides a framework for State Government agencies, councils and developers to integrate land use and transport planning at the regional and local levels. The ILUT package, which consists of five documents, aims to guide development so that the following planning objectives can be achieved:

- Improving access to housing, jobs and services by walking, cycling and public transport.
- Increasing the choice of available transport and reducing dependence on cars.
- Reducing travel demand including the number of trips generated by development and the distances travelled, especially by car.
- Supporting the efficient and viable operation of public transport services.
- Providing for the efficient movement of freight.

The accessible development principles outlined in the *Improving Transport Choice* ILUT document are:

1. *Concentrate in centres - Develop concentrated centres containing the highest appropriate densities of housing, employment, services and public facilities within an acceptable walking distance (400 to 1000m) of major public transport nodes, such as railway stations and high frequency bus routes with at least a 15 minute frequency at peak times.*
2. *Mix uses in centres - Encourage a mix of housing, employment, services, public facilities and other compatible land uses, in accessible centres.*
3. *Align centres within corridors - Concentrate high density, mixed use, accessible centres along major public transport corridors within urban areas.*
4. *Link public transport with land use strategies - Plan and implement public transport infrastructure and services in conjunction with land use strategies to maximise access along corridors, and to and from centres.*
5. *Connect streets - Provide street networks with multiple and direct connections to public transport services and efficient access for buses.*
6. *Improve pedestrian access - Provide walkable environments and give greater priority to access for pedestrians, including access for people with disabilities*

7. *Improve cycle access - Maximise cyclists' accessibility to centres, services, facilities and employment locations.*
8. *Manage parking supply - Use the location, supply and availability of parking to discourage car use.*
9. *Improve road management - Improve transport choice and promote an integrated transport approach by managing road traffic flow and priority of transport modes*
10. *Implement good urban design - Design with an emphasis on the needs of pedestrians, cyclists and public transport users*[6].

Healthy Urban Development Checklist

The purpose of the Healthy Urban Development Checklist, released by the NSW Health Department in 2010, is to assist health professionals to provide advice on urban development policies, plans and proposals both in the development and review stage. By using the checklist health professionals will be more equipped to determine what the health impacts of a development policy, plan or proposal would be and how it be improved to provide better health outcomes.

The Checklist states that the following elements of urban form have a positive influence on physical activity and health generally:

- *Mixed land use including housing, industrial, retail, commercial, education, recreation, etc. in close proximity.*
- *More compact developments characterised by higher densities of people, dwellings and employment opportunities.*
- *Quality and proximity of destinations, with a 400-500m radius (considered to be a comfortable walking distance for most people) as a common basis for access to a range of daily needs including shops, open space, community facilities and public transport.*
- *Current NSW guidance recommends that 400ms is considered to be a reasonable walking distance to a bus stop and that for metropolitan railway stations households should be within 800-1000m.*
- *Street connectivity and continuity that promotes directness of routes.*
- *Neighbourhood environment including aesthetic appeal, presence of footpaths, cycleways, shade trees, separation of pedestrians from vehicle travel, interesting streetscapes.*
- *Walking and cycling infrastructure linking key destinations and providing safe and inviting alternatives to automobile travel.*

The proposed Homebush Bay Bridge is a major feature of the ability of the Wentworth Point development to deliver the required transport accessibility for a healthy urban environment in terms of access to Rhodes railway and linkages to the pedestrian and cycle networks.

Service Planning Guidelines

The Service Planning Guidelines for Buses were developed in 2006 by the then Ministry of Transport (MoT). The Guidelines are a "how to" guide for bus planners, network designers and operators. They outline the aims, objectives, anticipated outcomes and principals of bus planning. The Guidelines outline the requirements for Annual Service Plans, which are yearly reviews on bus services within each contract region undertaken by bus operators.

The MoT defined the following network coverage targets applicable for each contract in metropolitan Sydney.

- 90 per cent of households should be within 400m (as the crow flies) of a rail line and/or a Regional or District bus route during peak, inter-peak and daytimes.
- 90 per cent of households should be within 800m (as the crow flies) of a rail line and/or a Regional or District bus route at other times.
- Local services should be considered for households outside the 400/800m bus route criteria.

[6] NSW Department of Urban Affairs and Planning, 2001, Integrating Land Use and Transport, Improving Transport Choice — Guidelines for planning and development

The closest strategic metropolitan bus corridor to Wentworth Point is the Corridor 39, which runs between Burwood and Macquarie Park. Currently the M41 bus services this route. The proposed Homebush Bay Bridge will provide access to this strategic bus corridor.

The guidelines recognise that as the existing road and rail infrastructure changes the bus network needs to be reviewed.

Planning Guidelines for Walking and Cycling

The Planning Guidelines for Walking and Cycling were developed by (the then) DIPNR and RTA in 2004. These guidelines include information, concepts, case studies and illustrations designed to assist planning professional in integrating these good design principles for walking and design into their day-to-day work.

The Guidelines include information on how to reduce car usage when planning new developments including TMAPs, Transport Access Guides (TAGs), end of trip facilities including cycle parking and other behaviour change measures. These are discussed in more detail in section 4.5.2.

2.5 Regional planning policies

Sharing Sydney Harbour Access Plan

The *Sharing Sydney Harbour Access Plan* was released in 2003. The Harbour Access Plan's vision was to improve public access to, and to enhance the recreational enjoyment of Sydney Harbour and its tributaries. Among other aims the Harbour Access Plan seeks to:

- Secure 33km of new walking tracks and on- and off-road cycleways along the foreshores and connections to the foreshore, and
- Increase public access from around 59 per cent to 73 per cent of the total 230km of foreshore.

The contribution of the proposed bridge is recognised in achieving these aims, and is identified as a cycling and walking link in the access network.

2.6 Relevant transport studies

Wentworth Point Strategic Transport Review

The Strategic Transport Review, prepared in 2010 by SCAPE, was developed in support of a Gateway Planning Proposal intending to modify the existing LEP applying to Wentworth Point. The objectives were to:

- Estimate the level of additional trip generation created by an increase in residential density over the existing LEP by 120,000 m^2.
- Demonstrate how a bridge link could benefit the Wentworth Point precinct and the surrounding communities through increased connectivity.

The report *'demonstrates that the increase in density and resultant trip generation could be accommodated if the Homebush Bay bridge link were implemented. It is estimated that with the public transport link supporting the pedestrian and cycle network a potentially achievable mode share for Wentworth Point could reduce car use from around 80 per cent today to around 53 per cent'*[7].

The report recommends that the Wentworth Point Transport Strategy, when developed, should consider the following measures:

- Travel demand management measures.
- Consider parking controls and re-allocation of parking space to cycle parking or car club spaces.

[7] SCAPE, 2010, Wentworth Point Strategic Transport Review, page 31

- Integration of cycle and pedestrian networks between Rhodes, Auburn, Parramatta and Sydney Olympic Park to make best use of the new link.
- End of trip facilities, in particular cycle parking for residents and cycle parking at Rhodes station.
- Diverting bus route 533 to travel through Wentworth Point and running additional peak services in both directions.
- Extending route 526 to Rhodes station.

Homebush Bay West Pedestrian Bridge Transport Assessment

The report, prepared by PBAI in 2005, provides an assessment of the proposed Homebush Bay West Bridge in terms of the potential for improvements to the existing transport networks, estimated use and the requirements of the bridge to ensure it adequately provides for the intended user groups. When this report was developed the bridge proposal did not include the carrying of public transport and was focused solely on pedestrian and cycle access.

The merits of light rail and demand-responsive bus services were discussed, but not considered as offering sufficient benefit. It was concluded that bus based public transport systems are best suited to delivering public transport locally, and many residents will be within easy walking and cycling distance of public transport.

The report concluded that the 'the bridge will offer a significant competitive advantage to pedestrians and cyclists from throughout the Homebush Bay West peninsula who wish to access the rail network and a network of walk- and cycle-friendly routes'.

The key findings of the assessment were that:

- The bridge will offer a significant competitive advantage to pedestrians and cyclists from throughout the Homebush Bay West peninsula who wish to access the rail network and a network of walk and cycle friendly routes.
- Weekday morning peaks are expected to be dominated by pedestrians and cyclists crossing the bridge from Homebush Bay West to access rail services and local employment destinations in Rhodes.
- Recreational use will dominate at weekends, with the bridge forming an important link in the recreational path network around Homebush Bay and the Parramatta River.
- Future planned development in Newington and Sydney Olympic Park, in addition to that in Homebush Bay West and Rhodes, will bring increased activity to the area, increasing bridge use.

Homebush Bay Bridge Social Impact Study Final Report 2005

The *Homebush Bay Bridge Social Impact Study*, undertaken by Heather Nesbitt Planning in 2005, was commissioned by SOPA to manage the then proposed Homebush Bay Pedestrian/Cycleway Bridge. At the time of this study the bridge proposal did not include carrying public transport.

The positive transport impacts from the bridge were assessed as being:

- Improved accessibility to public transport.
- Improved mobility, particularly for target groups.
- Reduced car dependency.

The report identified mitigation measures for some of the potential negative transport impacts of the bridge, including:

- Increase Northern line rail capacity as, despite currently low patronage at Rhodes railway station, services are nearing capacity. This can also help to address road traffic congestion.
- Further research should be undertaken to manage conflict pedestrian/cycle conflict. Deck width, signage and design management of entry/exit points were highlighted as important considerations.

2.7 Proposed development and site history

2.7.1 Site location

The Proposal applies to 24.9 hectares of land at Wentworth Point (formerly known as Homebush Bay West) in the western suburbs of Sydney. The area is bounded by Burroway Road to the north, the shore of Homebush Bay to the east, Hill Road to the west, and Baywater Drive, Savona Drive and Nuvolari Place to the south (see Figure 2.8).

The site is located approximately 3.5km from the M4 'Western Motorway', Parramatta Road and Homebush Bay Drive, and approximately 3km from Silverwater Road.

Figure 2.8 – Location of the Wentworth Point and proposed Homebush Bay Bridge

Source: Scott Carver

The site is not physically well connected, with the only road access being via Hill Road, which joins with Parramatta Road to the south. Hill Road is a wide single lane road with a number of intersections connecting with routes to Silverwater Road and Homebush Bay Drive.

The Wentworth Point precinct is in transition from warehouses and distribution centres to new residential development. These new communities will be located near the Parramatta and Rhodes employment centres, sporting and cultural facilities at SOP, and existing public transport and local active transport networks.

2.7.2 Proposed development

The Proposal is for additional floorspace of permissible development, based on the increased accessibility and amenity offered by the proposed Homebush Bay Bridge. In particular, the proposed changes are to:

- Increase residential floor space by approximately 105,000 m^2.
- Increase building heights in a number of areas to 16 to 25 storeys.
- Make changes to streets and local land use to improve the integration of the bridge landing.

This additional development is based on increased accessibility and amenity offered by proposed Homebush Bay Bridge.

The Proposal has been prepared on behalf of Fairmead Business, a consortium of Billbergia Group, Sekisui House Australia Pty Ltd, Homebush Bay Properties Pty Ltd and Homebush Bay Holdings Pty Ltd. Fairmead Business is the majority landowner at Wentworth Point. The remaining owners that are not included in this proposal are the NSW Government agencies of Sydney Olympic Park Authority (SOPA) and NSW Maritime.

The Proposal was submitted to the Department of Planning on the 25 October 2010 along with a request to amend the *HBW DCP*. To support the proposal document the following suite of related planning initiatives were also developed:

- Wentworth Point – Urban Design Review (Scott Carver, 2010)
- Wentworth Point Strategic Transport Review (SCAPE, 2010)
- Homebush Bay Pedestrian/Bicycle Bridge Social Impact Study Final Report (Heather Nesbitt Planning, 2005)
- Summary of Key Terms of Proposed Homebush Bay Bridge Voluntary Planning Agreement (VPA), (Lindsay Taylor Lawyers, 2010)

2.7.3 Homebush Bay Bridge

A separate approval application by the Wentworth Point landowners for a bridge to span the 400m between Rhodes and Wentworth Point has been assessed by the Department of Planning and Infrastructure. The Minister of Planning has granted approval subject to conditions.

Through the construction of the bridge, the full urban renewal potential of Wentworth Point can be realised. The bridge would be capable of carrying public transport, pedestrians and cyclists and would effectively transform the accessibility of Wentworth Point for its residents, whilst achieving a greater regional cohesion planned by government for Olympic Park and Rhodes.

Development of the bridge concept

The concept of building a bridge across Homebush Bay has been in local and state policies for many years.

In 2003, the Living Centres Team in the Department of Planning, Infrastructure, and Natural Resources (DIPNR) commissioned ARUP to undertake a feasibility study into building a pedestrian/cycle bridge. The contribution of the proposed bridge to local and regional walking and cycling networks was recognised in the Sharing Sydney Harbour Access Plan (DIPNR, 2003). The pedestrian/cycle bridge is also noted in local planning policies including the *Homebush Bay West Development Control Plan Vol 1 2004*, and *Rhodes West Development Control Plan DCP 2010* and in the *Sydney Inner West Sub-regional Strategy* (see Sections 2.3.2 and 2.3.3).

Current proposal

The current bridge proposal is outlined in the *Homebush Bay Bridge Environmental Assessment (Arup, September 2011)*. The proposal is for a public transport-pedestrian/cycleway bridge across Homebush Bay, extending from the Billbergia-owned land to Rhodes.

The purpose of the bridge would be greatly to increase the connectively and accessibility of the Wentworth Point precinct. Wentworth Point residents would live only 1.2km to 1.4km from Rhodes station but would be separated by water, requiring a round trip via Bennelong Road to the nearest railway station at SOP, or further to North Strathfield. Much closer connection to the station would be achieved by the direct bus link, and encouraging public transport use over car use.

Homebush Bay Bridge proposal: Determination Report

The Homebush Bay Bridge Proposal was approved in March 2013. The bridge will provide a shared pedestrian and cycle path segregated from bus lanes for rigid buses up to 12.5 m. In line with the recommendations of the TMAP *(Cattell Cooper, September 2012*) the bridge will not be open to private vehicles, taxis or hire cars, in order to maintain the competitive advantage of public transport and sustainable modes.

The Department of Planning's Determination Report for the proposal notes that:

- 'The Department is of the opinion that the Homebush Bay Bridge would provide an improved commuter and recreational connection between the communities of Wentworth Point and Rhodes. The proposal would enable improved connectivity to and from Wentworth Point, providing Wentworth Point residents with walking and cycle access to retail, service and public transport facilities at Rhodes. It would also provide Rhodes residents with improved access to the Wentworth Point area, the ferry wharf and Sydney Olympic Park facilities, including the Millennium Parklands.' (p14).
- 'The Department agrees with the proponent that the Homebush Bay Bridge is an important component of any increase in public transport mode share among Wentworth Point residents, and notes the support for the proposal from government agencies, particularly TfNSW and RMS. Further, the Department notes that both Auburn City Council and City of Canada Bay Council consider the proposal to have strategic planning merit. In line with masterplanning for the area, and in consideration of TfNSW's support for the proposal, the Department concurs that existing transport services to and from Wentworth Point should be augmented by providing bus services across the Homebush Bay Bridge to sustain this growth.' (p14-15)
- 'The Department considers that the proposal would facilitate increased use of public transport by residents of Wentworth Point and Rhodes, which would ultimately facilitate improved performance on the existing and proposed road network'. (p33)

Funding

The Bridge would be funded by the alliance of Wentworth Point Landowners under a Voluntary Planning Agreement (VPA) subject to approval of the Wentworth Point Planning Proposal.

3 Transport Management and Accessibility Plan

3.1 The role of a Transport Management and Accessibility Plan (TMAP)

A Transport Management and Accessibility Plan (TMAP) is a comprehensive assessment of the transport impacts arising from a major site development or redevelopment proposal.

This assessment is designed to lead to the identification of a package of infrastructure, service or demand management measures to help manage and accommodate the demand for travel and freight movement to and from the development, and, in particular, to reduce or discourage the demand for travel by private cars and commercial vehicles.

This TMAP has been prepared to identify the impacts of the proposed development on the current and proposed transport networks. It then goes on to identify appropriate measures that can be put in place to mitigate any identified impacts or shortfalls in provision, including infrastructure, services and policies. The role of the TMAP in the development approval process is summarised in Figure 3.1.

3.2 TMAP methodology

This TMAP has been prepared in accordance with the *Draft Interim Guidelines on TMAPs* issued by the (then) NSW Department of Transport and the Roads and Traffic Authority of NSW. It addresses the matters issued by the Transport for NSW in relation to the proposal (Appendix A).

The methodology takes the Wentworth Point development permissible under the *HBW DCP* as a starting point and develops the future transport task based on the proposed additional Wentworth Point development and Homebush Bay Bridge.

The development permissible under the *HBW DCP* has been estimated, and constitutes the base case with respect to traffic generation. The base case has been informed by the 2006 Census with the JTW (journey to work) data used to provide a proxy for all peak hour trips. The base case provides a maximum permitted number of peak hour vehicle trips.

Taking the now proposed Wentworth Point development and the base case together, a future target peak period mode share for vehicle and non-vehicle trips has been calculated.

Homebush Bay Bridge will offer the residents of Wentworth Point greatly-improved access to public transport via Rhodes station. It is expected that with the bridge in place, travel by Wentworth Point residents will display a mode split similar to that of Rhodes residents. This change in expected travel behaviour will result wholly from the inclusion of the bridge within the development. Nevertheless this TMAP considers and recommends a series of additional supportive measures.

The target mode share has been verified through a series of steps, including:

- Analysis of the travel time advantages by mode with the bridge, compared to the current situation.
- Analysis of the 2006 Census JTW origin-destination data for Wentworth Point and Rhodes to understand the propensity of Wentworth Point residents to replace car driver trips with public transport, walking or cycling given their trip destination. The analysis considers, for a range of trip destinations, the advantage afforded by the bridge over a car based alternative.
- Analysis of the 2006 Census JTW data for Rhodes and Newington. The suitability of Rhodes and Newington as comparators is further informed by analysis of the latest population and demographic projections for both Wentworth Point and Rhodes.
- Review of 2011 Census JTW data for Wentworth Point, Rhodes, Newington and Breakfast Point.

This analysis informs the future requirements for public transport provision to serve the proposed development at Wentworth Point.

In summary, the TMAP undertakes a comparative analysis between the *HBW DCP* permissible development and the now proposed development, developing and verifying future mode share targets.

The methodology comprises the following steps as follows and also shown in Figures 3.1 and 3.2:

1. Confirm the dwelling numbers for both the *HBW DCP* permissible development and the now proposed development, including the proportion of studio, one and two bedroom apartments (85 per cent) and the proportion of three bedroom and larger apartments (15 per cent).
2. Calculate the expected peak hour vehicle trip generation for the *HBW DCP* permissible development scenario. This calculation was informed by the RTA Guide to Traffic Generating Developments. This level of vehicle trip generation is taken as the base case and will not be exceeded under the now proposed development scenario.
3. Calculate the expected peak hour vehicle trip generation for the now proposed development scenario. This calculation uses the 2006 Census JTW data as a proxy for all peak period trips in the absence of a reliable alternative. With reference to the JTW data analysis, these vehicle trips would represent 78 per cent of all peak hour trips generated by the Wentworth Point development if every resident of the development was to demonstrate travel behaviour similar to the residents living at Wentworth Point in 2006.
4. Confirm the total peak hour trip generation of the now proposed Wentworth Point development. From this total, a revised mode split has been calculated based on the total peak hour trip generation of the now proposed development and the peak hour vehicle trip generation of the development permissible under the *HBW DCP*.
5. Verification of the target mode share
    a. Analysis of travel time advantages by mode afforded by the bridge.
    b. Using JTW data, assessment of the probable distribution of JTW trips originating from the now proposed Wentworth Point development. The available JTW data (2006 Census[8]) for Wentworth Point and Rhodes was combined, and analysed by destination LGA, to give a probable future distribution of trips.
    c. Based on the calculated future JTW distribution, destination based mode splits were then applied, informed by the availability of public transport for the trip and taking into account *NSW 2021* for those trips with a destination in Parramatta and Sydney LGAs. The average public transport mode share across all destinations was compared to the calculated required mode share for the now proposed Wentworth Point development, that is, the minimum mode share required to maintain generated traffic at or below the level expected to be generated by the DCP-permissible development.
    d. Compare the target mode share with the JTW data for Rhodes and Newington to assess the likelihood that it can be achieved given improved public transport access (in comparison to the *HBW DCP*-permissible development).
    e. Based on assumed trip destinations and expected public transport mode share, assumptions were then made as to the transit mode used (bus or rail) and the direction of travel. This served to verify the assumed future mode share target and gave an expected level of use of rail and bus services.
    f. Verification of the mode share targets based on 2011 Census JTW data.

[8] JTW origin-destination data is not available for the 2011 Census yet.

Figure 3.1 – TMAP Methodology Base Case

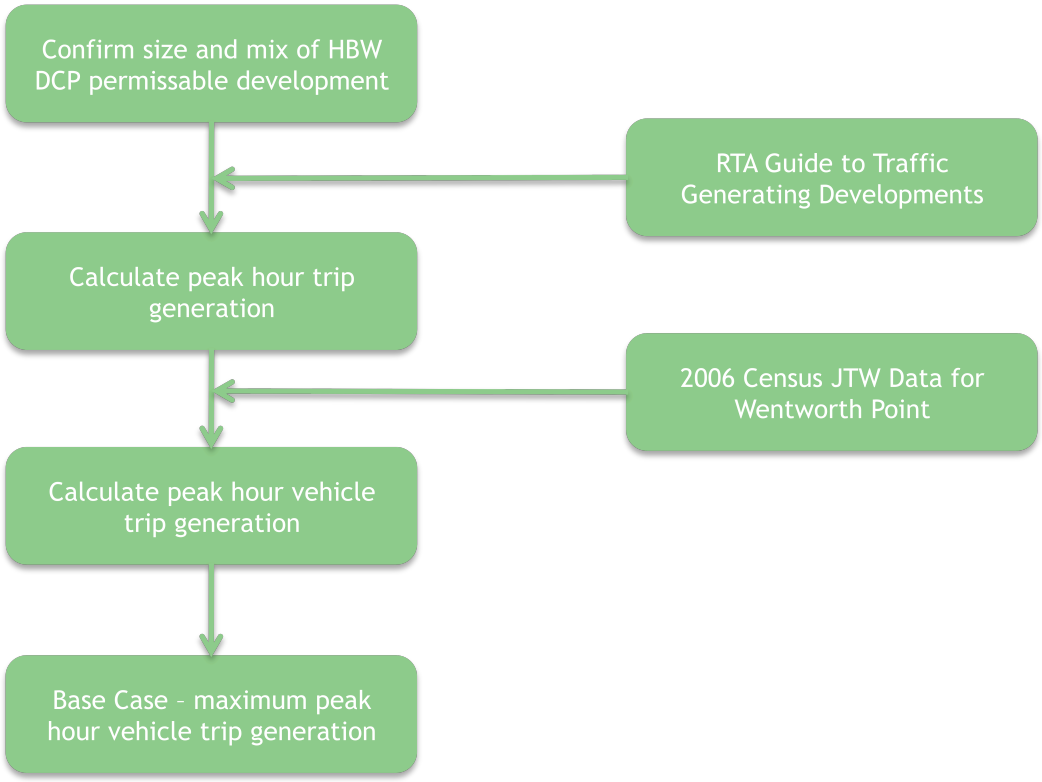


Figure 3.2 – TMAP Methodology Future Situation

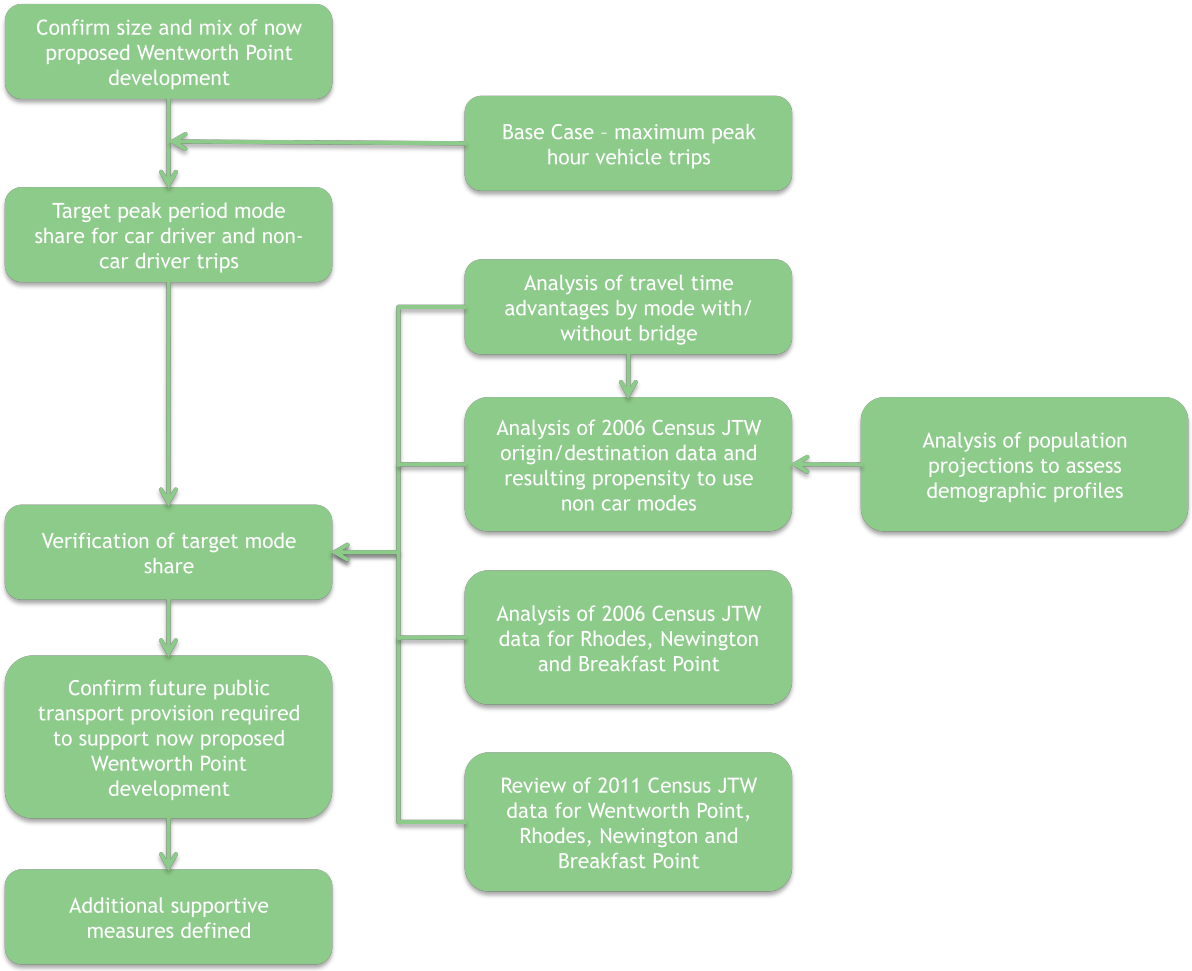
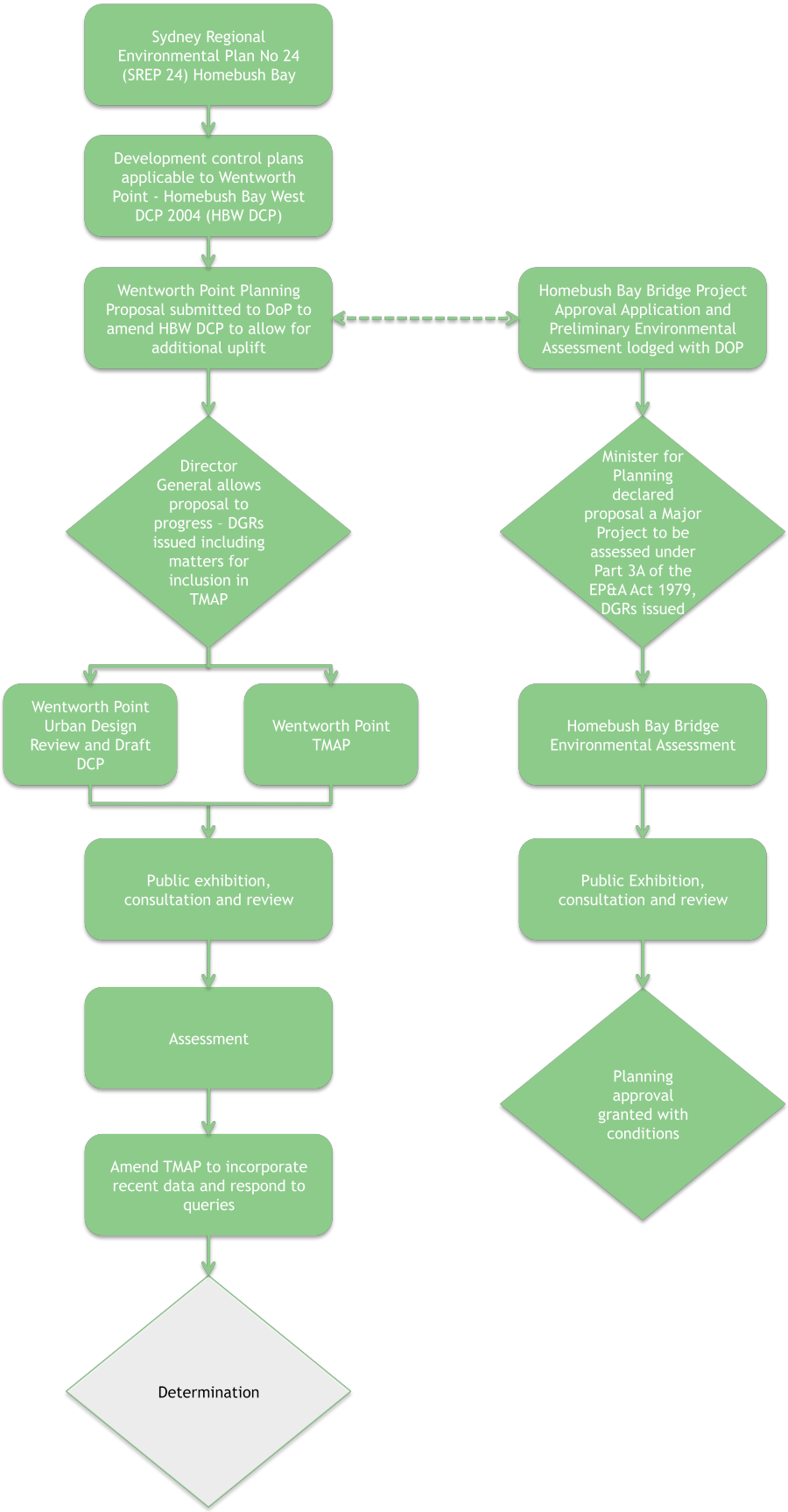


Figure 3.3 – Role of the TMAP in the development approval process



3.3 Note of TMAP update

The TMAP was first completed in September 2012, and was based on the most recent travel data available. During the assessment period, some data from the 2011 ABS Census has become available. Additionally, there have been significant changes to Government policy that could potentially bear on the assessment of development at Wentworth Point.

This update of the Wentworth Point TMAP has been prepared to ensure that the assessment process is informed by the most accurate and current information available.

3.4 Objectives and targets

This TMAP identifies:

- Expected trip generation of the Wentworth Point development including the current proposal.
- The expected modal split of the trips generated.
- The impacts of these trips.

In particular, the TMAP aims to manage the transport impacts of the proposed Wentworth Point development recognising the relatively congested nature of the local road network and the considerable opportunities to increase public transport use, walking and cycling over and above what would otherwise be expected. The opportunity to increase the use of more sustainable modes, and thereby to reduce reliance on private cars amongst residents, is presented through the proposed bridge connecting Wentworth Point with the Rhodes peninsula.

The bridge, spanning Homebush Bay and providing for buses, pedestrians and cyclists, will bring the transport services and considerable facilities of Rhodes within an easy distance of Wentworth Point. While much of the TMAP focus is rightly on the weekday peak period when overall travel demand is highest, there are considerable benefits to the residents of the broader area in the improved access to entertainment and retail facilities at Rhodes and the open space and major event venues within Sydney Olympic Park.

The Wentworth Point development will encompass local grocery retail and services, supporting the local community and facilitating trip containment while having minimal attraction to those living beyond the immediate locality.

The TMAP objectives, therefore, are to:

- Increase public transport, walking and cycling use amongst Wentworth Point residents beyond what would otherwise be expected.
- Reduce car use amongst Wentworth Point residents below what would otherwise be expected.
- Ensure peak period car driver trips remain within previously permissible and expected levels.
- Facilitate improved accessibility to facilities, services, open space and entertainment across the Homebush and Rhodes areas.

The following targets have been adopted:

- Journey to work trips originating in Wentworth Point and with a destination in the Sydney CBD will have an 80 per cent public transport mode share.
- Journey to work trips originating in Wentworth Point and with a destination in the Parramatta CBD will have a 50 per cent public transport mode share.
- Journey to work trips originating in Wentworth Point regardless of destination will have an average 30 per cent public transport mode share.
- Journey to work trips originating in Wentworth Point and 3km or less will have a 50 per cent walk/cycle mode share.
- Journey to work trips originating in Wentworth Point regardless of trip length will have an average 10 per cent walk/cycle mode share.

These targets support an **average journey to work mode-share target of 35 per cent non-car driver modes for Wentworth Point**[9].

The realisation of these targets is possible through the development of the bridge connecting Wentworth Point to Rhodes and, in particular, Rhodes station. While it is now proposed to increase the development size beyond that proposed and permissible under the *HBW DCP*, the resultant increased trip generation is more than contained by increased use of non-car modes. Overall, the bridge provides the opportunity to ensure an improved mode-share outcome, reduced number of car trips, and greater levels of accessibility amongst those living at Wentworth Point.

The design of the development at Wentworth Point, including the Homebush Bay Bridge, will reduce levels of vehicle kilometres travelled (VKT) during the peak periods and across other times of the day and week, reduce reliance on private vehicles, and maximise the use of public transport, walking and cycling.

[9] It is stressed that while the assessment has developed a more detailed mode split for the purposes of testing the development impact, the more detailed mode split is not identified as a target mode share and should not be considered as such.

4 Transport assessment of proposal

4.1 Existing transport context

4.1.1 Existing travel patterns

Journey-to-work (JTW) data from the Census (2006 and 2011) shows the current transport patterns for Wentworth Point in Table 4.1. Mode-splits for neighbouring precincts of Newington, Rhodes and Breakfast Point provide a local and regional context. The boundaries of the travel zones used to define Wentworth Point, Newington and Rhodes are shown in Appendix B. Breakfast Point was defined as the State Suburb. It should be noted that the counts for some of these travel zones are relatively low.

Table 4.1 - Modal split data 2006 and 2011 Census JTW

			Mode of Travel (Journey to Work)						
Suburb	Census year		Car driver	Car passenger	Public transport	Walk only	Bicycle	Other	Total
Wentworth Point	*2006*	*Number*	552	36	96	14	9	0	707
		%	78	5	14	2	1	0	
	2011	*Number*	1,130	79	294	20	11	44	1,578
		%	72	5	19	1	1	3	
	Percentage point change 2006 - 2011		-6	-	+5	-1	-	+3	
Rhodes	*2006*	*Number*	412	42	208	48	3	12	725
		%	57	6	29	7	0	2	
	2011	*Number*	1,157	99	1,100	149	10	51	2,566
		%	45	4	43	6	<1	2	
	Percentage point change 2006 - 2011		-12	-2	+14	-1	-	-	
Newington	*2006*	*Number*	1,504	142	451	48	12	47	2,204
		%	68	6	20	2	1	2	
	2011	*Number*	1,706	115	583	53	31	46	2,534
		%	67	5	23	2	1	2	
	Percentage point change 2006 - 2011		-1	-1	+3	-	-	-	
Breakfast Point	*2006*	*Number*	624	48	167	6	0	23	868
		%	72	6	19	1	-	3	
	2011	*Number*	915	65	258	18	14	32	1,302
		%	70	5	20	1	1	2	
	Percentage point change 2006 - 2011		-2	-1	+1	-	+1	-1	

Source: BTS, Journey to Work Table 12_ExpGMA and 2006 TDC JTW Summary Tables by Local Government Area (GMA) Spreadsheet (S2008/01)
Notes:

- 2006 data (Wentworth Point, Newington and Rhodes) Travel Zones used were Wentworth Point (1613), Newington (1617 and 1621) and Rhodes (1499 and 1500).
- 2011 data (Wentworth Point, Newington and Rhodes) State Suburb boundaries (as identified by ABS) – areas concord with Travel Zones utilised for 2006 data analysis.
- 2006 and 2011 data Breakfast Point – State Suburb boundary (as identified by ABS).
- 'Other' includes motorbike, taxi, and truck.
- Table excludes 'mode not stated', 'worked from home' and 'did not go to work'.
- Totals may not sum to 100% and percentage point differences may not equal overall change due to rounding errors.

The suitability of Rhodes, Newington and Breakfast Point as comparisons to Wentworth Point is explored below. In addition demographic data (for 2021 was analysed (Appendix E). The demographic data suggests that Wentworth Point will have a similar demographic profile to Rhodes.

At the time of the 2006 Census Wentworth Point was highly reliant on private vehicles as the main form of transport to work, with a car mode share with 83 per cent by car (driver and passenger), which is 10 per cent above the Sydney GMA. Wentworth Point also had the highest mode share by car for JTW trips compared to nearby suburbs. Newington had 75 per cent by car and Rhodes had the lowest at 63 per cent. Approximately 14 per cent of residents at Wentworth Point used public transport (train, tram, bus and ferry) to get to work, which was lower than both Newington (20 per cent) and Rhodes (29 per cent). Public transport in Wentworth Point was mainly from train trips combined with other modes including driving. JTW trips by ferry and bus only represented 2 per cent and 1 per cent respectively of all JTW trips. Breakfast Point residents were relatively likely to use a car to travel to work – 78 per cent (driver and passenger), with 19 per cent travelling by public transport.

Analysis of 2011 Census data indicates that car use has fallen in all four suburbs. Rhodes demonstrates the greatest shift with car driver trips falling from 57 per cent to 45 per cent, while public transport trips have increased from 29 per cent to 43 per cent. Wentworth Point data indicates a similar pattern; car driver trips have fallen from 78 per cent to 72 per cent while public transport trips have increased from 14 per cent to 19 per cent.

Table 4.2 - Households 2006 and 2011 Census

Suburb	Census Year		Change 2006 to 2011	
	2006	2011	Number	%
Wentworth Point	524	1,193	+669	128
Rhodes	581	2,170	+1,589	273
Newington	1,647	1,849	+202	12
Breakfast Point	595	1,071	+476	80

Since 2006 all four areas have undergone growth. Newington has grown by only 12 per cent, indicative of a relatively mature development. Breakfast Point, Wentworth Point and Rhodes have undergone much greater growth in terms of the number of households; Breakfast Point has grown by 80 per cent, Wentworth Point by 128 per cent and Rhodes by 273 per cent.

Currently Newington, Wentworth Point and Breakfast Point residents do not have direct access to the rail network. Despite this these suburbs have shown a shift away from car use between 2006 and 2011 and a corresponding increase in public transport use. Car driver trips made by Wentworth Point residents have fallen six percentage points.

Rhodes has demonstrated a considerable shift with car driver trips dropping 12 percentage points and public transport trips increasing by 14 percentage points.

It can be expected that residents of the proposed development at Wentworth Point, in the absence of the Homebush Bay Bridge, would exhibit travel patterns similar to the neighbouring suburb of Newington. Newington is an established residential area that has limited bus services and no rail station within walking distance. With the introduction of the bridge it is considered likely that commuter trips from the Wentworth Point area will become increasingly similar in distribution and mode share to Rhodes. As residents will be able to access the high level of bus and rail services in Rhodes more easily, this will ultimately result in a higher proportion of journey to work trips being undertaken by public transport and a lower proportion by car.

The most recent Census data indicates that there is a general reduction in car use across all four comparison suburbs, with the two exhibiting the greatest shifts being Wentworth Point and Rhodes. These two suburbs have also undergone the greatest level of growth since 2006. The data indicates there has been a considerable change in terms of travel behaviour in both Wentworth Point and Rhodes in recent years and it is reasonable to expect this trend to continue in Wentworth Point with ongoing development and the construction of the Homebush Bay bridge bringing a step change in public transport accessibility.

4.1.2 Distribution of generated trips

JTW data from the 2006 census was further analysed to determine the distribution of commuter journeys (this data is not yet available from the 2011 Census). This analysis assists in understanding the extent to which the Homebush Bay bridge will actually impact the trips Wentworth Point residents are making, and therefore drive a mode shift towards public transport, walking and cycling. Table 4.3 provides a summary of the ten most common destinations and shows the distribution for Wentworth Point.

Table 4.3 - Distribution of journey to work trips (2006 Census)[10]

Origin Travel Zone	Destination LGA	Number	Percentage
Wentworth Point	Sydney	133	*19%*
	Auburn	102	*14%*
	Parramatta	69	*10%*
	Ryde	57	*8%*
	Canada Bay	38	*5%*
	Blacktown	35	*5%*
	Bankstown	26	*4%*
	Holroyd	25	*4%*
	North Sydney	19	*3%*
	Strathfield	19	*3%*
	Other	187	*26%*
	Total	**710**	***100%***
Rhodes	Sydney	204	*26%*
	Canada Bay	147	*19%*
	Parramatta	50	*6%*
	Ryde	48	*6%*
	Willoughby	39	*5%*
	Auburn	30	*4%*
	North Sydney	30	*4%*
	Burwood	29	*4%*
	Blacktown	24	*3%*

[10] Comparable 2011 Census data not yet available.

Origin Travel Zone	Destination LGA	Number	Percentage
	Bankstown	20	*3%*
	Other	152	*20%*
	Total	**773**	***100%***
Newington	Sydney	525	*22%*
	Auburn	489	*21%*
	Parramatta	168	*7%*
	Ryde	138	*6%*
	Canada Bay	127	*5%*
	Strathfield	86	*4%*
	North Sydney	71	*3%*
	Bankstown	65	*3%*
	Burwood	63	*3%*
	Blacktown	61	*3%*
	Other	549	*23%*
	Total	**2,342**	***100%***

Source: BTS, 2011, 2006 Journey to Work Table 07_ExpGMA.

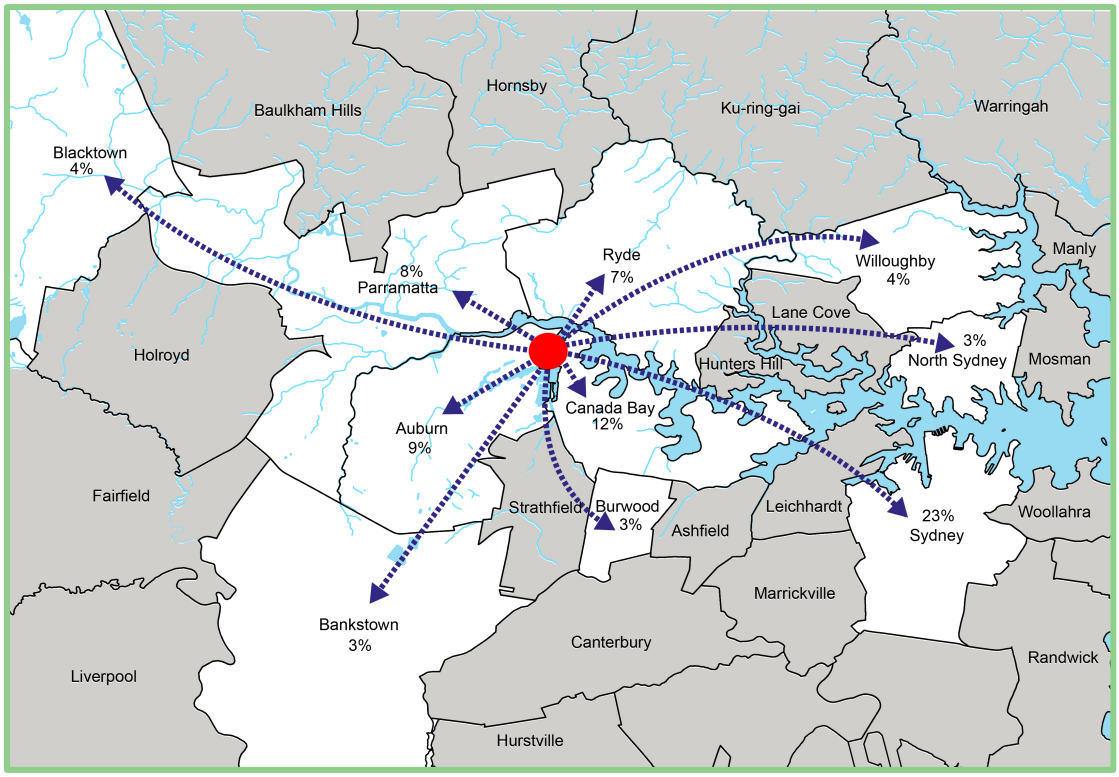
Note: Travel Zones used were Wentworth Point (1613), Newington (1617 and 1621) and Rhodes (149 and 1500). Table excludes 'not stated' and 'no fixed workplace'. 'Other; includes all LGAs outside the top 10.

Origin/destination data shows that Wentworth Point commuter journeys are spread across 35 local government areas (LGAs), but approximately half of all trips (51 per cent) are to just 5 LGAs. The greatest proportion of JTW trips is to Sydney LGA with 19 per cent, followed by local trips within the Auburn LGA (14 per cent), Parramatta (10 per cent) and Ryde (8 per cent).

Newington shows very similar distribution patterns. Rhodes also has Sydney LGA as the main destination with a higher percentage of 26 per cent and local trips within Canada Bay second.

The geographic distribution of trips from Wentworth Point and Rhodes combined to the ten most common destination LGAs is shown in Figure 4.1

Figure 4.1 Distribution of journey to work trips from Wentworth Point and Rhodes combined to the top 10 LGA destinations



Note: The remaining 24% of residents from Wentworth Point and Rhodes combined travel to other LGAs
Source: Scott Carver, using BTS, 2011, 2006 Journey to work table 07_ExpGMA

4.1.3 Mode share of trip generation to key centres

Whilst the trip numbers are low, Wentworth Point is more reliant on the private car for commuter journeys to key employment destinations of Parramatta and Sydney city than neighbouring areas. This is particularly the case for the Parramatta destination, where all JTW trips are by car. Commuting journeys to Sydney city centre from Wentworth Point are primarily by public transport (58 per cent) but are still high for car mode share (39 per cent).

By building the proposed Homebush Bay Bridge, public transport services in Rhodes will become more accessible to Wentworth Point residents, and it would be expected that the mode-share may become more similar to Rhodes in having an increased use of train and bus services.

The mode share of trip generation to key centres is shown in Table 4.4.

Table 4.4 - Mode share for 2006 journey to work trips to Parramatta and Sydney LGAs from selected travel zones[11]

Origin Travel Zone	Mode	Destination - Parramatta LGA		Destination - Sydney LGA	
		Number	Percentage	Number	Percentage
Wentworth Point	Car driver	63	*91%*	44	*39%*
	Car passenger	6	*9%*	0	*0%*
	Public transport	0	*0%*	66	*58%*
	Walked only	0	*0%*	3	*3%*
	Bicycle	0	*0%*	0	*0%*
	Other	0	*0%*	0	*0%*
	Total trips to LGA	**69**	***100%***	**113**	***100%***
Rhodes	Car driver	31	*67%*	42	*24%*
	Car passenger	3	*7%*	6	*3%*
	Public transport	12	*26%*	126	*72%*
	Walked only	0	*0%*	0	*0%*
	Bicycle	0	*0%*	0	*0%*
	Other	0	*0%*	0	*0%*
	Total trips to LGA	**46**	***100%***	**174**	***100%***
Newington	Car driver	129	*78%*	144	*32%*
	Car passenger	15	*9%*	23	*5%*
	Public transport	13	*8%*	273	*60%*
	Walked only	0	*0%*	3	*1%*
	Bicycle	6	*4%*	0	*0%*
	Other	3	*2%*	13	*3%*
	Total trips to LGA	**166**	***100%***	**456**	***100%***

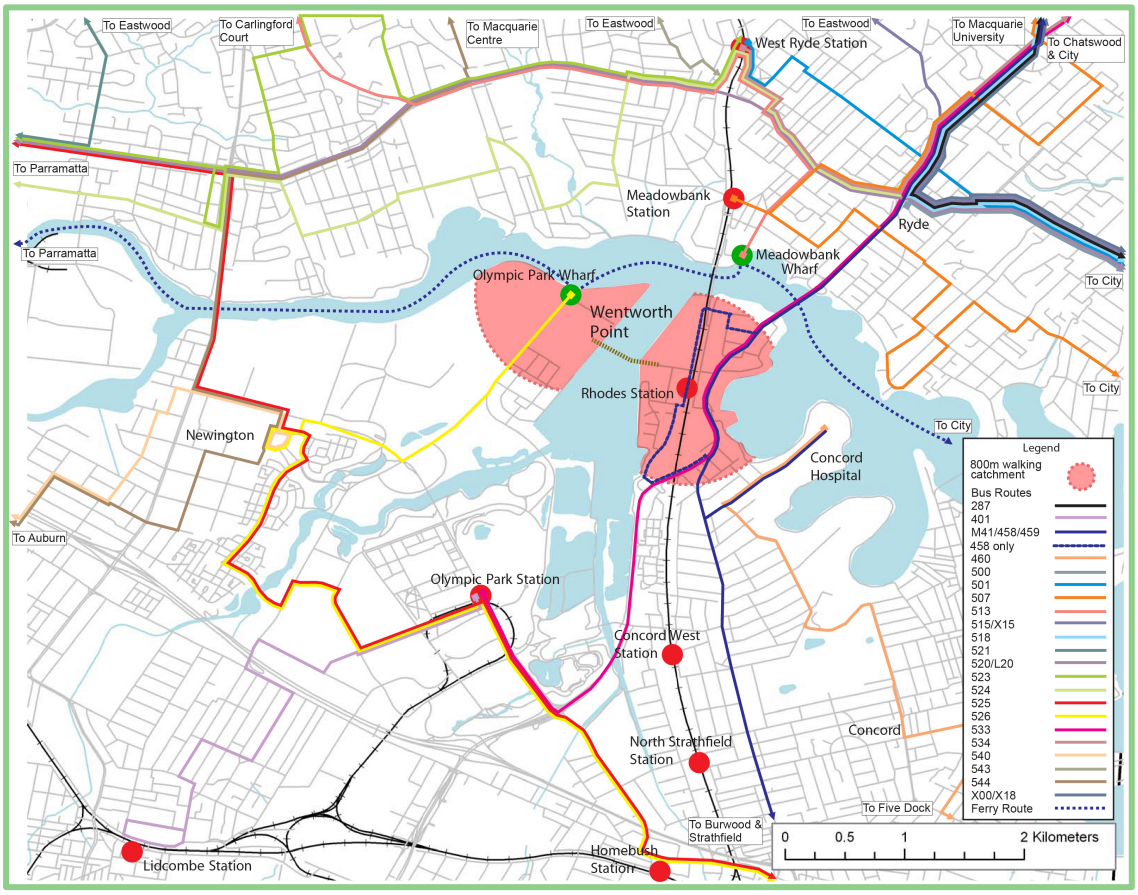
[11] Comparable 2011 Census data not yet available. Breakfast Point data not available.

4.2 Current and projected public transport supply

4.2.1 Public transport network and services

The current public transport networks in the area around Wentworth Point are shown in Figure 4.2.

Figure 4.2 - Public transport network



Source: Scott Carver

In summary, it is considered that the local public transport network is reasonably satisfactory for an area in this part of Sydney and with the current level of development density, although it tends to focus on peak hour travel, and journeys to work. In terms of access to bus and rail services, and given its peninsular situation, Wentworth Point is unable, at this stage, to justify a more intensive level of public transport service, meaning that for many journeys car travel is the only realistic option.

4.2.2 Rail services

Rail options for Wentworth Point

Intending rail passengers from Wentworth Point would currently have the choice of joining rail services at Olympic Park, North Strathfield, Strathfield, Concord West, or Rhodes.

Olympic Park, the closest accessible station, is served primarily by trains operating infrequent and indirect services on a loop, and passengers are required to change at Lidcombe to join mainline services to the city or to the west.

Strathfield is a major station on the network, and has a high frequency service to mainline destinations, but is about an 8km drive or 15-20 minutes from Wentworth Point. North Strathfield, Concord West, and Rhodes are on the Northern Line, with North Strathfield being the closest to Wentworth Point by the road network.

Despite its physical proximity, Rhodes is currently likely to be the least favoured option for passengers from Wentworth Point, being further to travel than either North Strathfield or Concord West. However, with construction of the Homebush Bay Bridge, Rhodes becomes not simply the closest physically but also the most accessible.

Olympic Park

Currently, the nearest train station to the development site is Olympic Park, which is located about 3.4 kms (via the road network) south from the Hill Road/Burroway Road intersection. There are about 180 services between Lidcombe and Olympic Park each weekday, comprising 90 UP services (i.e. to Sydney) and 90 DOWN services (i.e. to the west). Olympic Park-Central via Lidcombe services operate from Olympic Park between 5:55 am and 11:35 pm, at an average frequency of about 12 minutes.

In off-peak times and outside of events to travel to Olympic Park passengers need to change at Lidcombe station to transfer to the Olympic Park sprint (shuttle) trains. During major events, direct trains to Olympic Park also run from Central, Redfern and Strathfield stations, and sometimes also from other locations.

Travel times between Olympic Park station and other stations are as follows:

- Central: 32 minutes (1 interchange)
- Parramatta: 20 minutes (1 interchange)
- Strathfield: 18 minutes (1 interchange)
- Macquarie Park: 47 minutes (3 interchanges)
- Epping: 39 minutes (2 interchanges)

North Strathfield/Concord West

North Strathfield and Concord West stations are similar in scale and character, and are on the same CityRail line. North Strathfield, however, is closer to Wentworth Point by the current road network, and is likely to offer the preferred opportunity for access to main line rail services. North Strathfield station is 5.7kms (via the road network) south from the Hill Road/Burroway Road intersection, which is about a 7-minute drive off-peak (more during peak periods). Concord West is a further 1km north, has no direct road access from the west, and offers no preferential parking or service characteristics which would encourage passengers to drive beyond North Strathfield.

North Strathfield station is on the Northern Line, two stops south of Rhodes. Approximately 132 services operate from North Strathfield each weekday: 66 UP services (to Central and the city, via Strathfield); and 66 DOWN services to Epping, with connections to Macquarie Park and Chatswood, and Hornsby.

There is no formal commuter car parking at North Strathfield station. There is some limited informal on-street parking available around the station. The station is not wheelchair accessible.

Travel times between North Strathfield and other rail destinations are as follows:

- Central: 21 minutes (direct)
- Parramatta: 25 minutes (1 interchange)
- Strathfield: 7 minutes (direct)
- Macquarie Park: 34 minutes (1 interchange)
- Epping: 16 minutes (direct)

Table 4.5 shows the 2009 weekday station entries and exits at Olympic Park, Rhodes and North Strathfield stations. By way of comparison, the number 1 ranked station in the network was Central

station with AM (6:00-9:30am) entries and exits of 8,260 and 37,720, respectively. Twenty-four hour entries and exits were 85,260 passengers/day. This compares with the 1,940 entries and exits at Olympic Park, 4,250 at Rhodes, and 2,580 at North Strathfield on the average weekday in 2009.

Table 4.5 – 2011 Weekday station entries/exits

Station	2:00 - 6:00		6:00-9:30		9:30-15:00		15:00-18:30		18:30-2:00		24 hrs
	IN	OUT	IN	OUT	IN	OUT	IN	OUT	IN	OUT	
Olympic Park	0	0	60	1,280	300	720	1,630	70	240	140	4,460
Rhodes	50	50	1,630	2,080	1,010	840	1,900	1,260	660	1,020	10,500
North Strathfield	20	20	1,220	580	340	260	740	1180	130	410	4,900

Source: RailCorp, 2012, A Compendium of CityRail Travel Statistics (8th Edition)

Between 2009 and 2011 total station entries and exits at Rhodes Station increased by 2,000 or 24 per cent. This is consistent with the increase in public transport use by the Rhodes community between 2006 and 2011.

Rhodes

Rhodes station is located east across Homebush Bay on the Rhodes Peninsula, at Walker Street and Blaxland Road. The station is approximately 7kms or a 10-minute drive from Wentworth Point, via the current road network.

The station is on the CityRail Northern Line. Approximately 132 train services operate from Rhodes Station each weekday, 66 UP services (to Central and the city, via Strathfield) and 66 DOWN services to Epping, with connections to Macquarie Park and Chatswood, and to Hornsby. To reach Parramatta passengers must change on to a Western Line or Blue Mountains Line service at Strathfield.

Travel times between Rhodes and other rail destinations are as follows:

- Central: 26 minutes (direct)
- Parramatta: 30 minutes (1 interchange)
- Strathfield: 11 minutes (direct
- Macquarie Park: 29 minutes (1 interchange)
- Epping: 11 minutes (direct)

The proposed Homebush Bay Bridge will make Rhodes station the closest and most accessible station to Wentworth Point. The distance between the Burroway Road/Hill Road intersection and Rhodes station via the bridge would be just over 1km.

RailCorp data confirms that in 2011 there was excess passenger capacity on the Northern Line, which currently has an average morning peak period load factor of 90 per cent (13 trains; 11,880 seats; 10,465 passengers). This has increased from 80 per cent in 2009 (9,315 passengers on the same number of trains/seats)[12]. Conversely, the main Western Line is operating with average load factors above 100 per cent. The Northern Line and Rhodes station are accessible to the development site and the line has the capacity to absorb existing and forecast transport demands from the locality in the immediate future, especially with additional measures to spread peak period travel.

The full train service frequencies for Olympic Park and Rhodes are shown in Appendix C.

4.2.3 Bus services

Sydney Buses operates route service 526 between the Sydney Olympic Park ferry wharf and Burwood along Hill Road, adjacent to the development site. Bus stops are located on both sides of Hill Road

[12] Compendium of Sydney Rail Travel Statistics, 2010 and 2012 Editions.

about 20ms south of its intersection with Burroway Road. Route service 525 operates between Parramatta station and Burwood via Sydney Olympic Park station and Newington. Service 525 buses travel via Underwood Road and Holker Street 2.7 kms from the development site. Appendix C details the existing bus service frequencies.

The current number of local bus services in areas surrounding the development site is about 264 scheduled inbound and outbound services. There are an additional 258 services that travel along Concord Road in Rhodes that would become accessible with the proposed Homebush Bay Bridge.

Metro bus service M41 (Hurstville to Macquarie University) operates via Concord Road and Rhodes about 1km to the east of the development site. Metro buses depart every 10 minutes during the morning and afternoon peaks, every 15 minutes during the day and every 20 minutes at nights and on weekends. About 148 Metro buses pass north and south via Concord Road each weekday.

4.2.4 Ferry services

Sydney Olympic Park ferry wharf is located adjacent to the development site near the intersection of Hill and Burroway Roads. The wharf has a high level of amenity with seating, shelter, car parking, '131 500 Information Help Point' and it is wheelchair and pram accessible.

On weekdays there are 24 UP services (i.e. to Circular Quay) and 24 DOWN services (i.e. to the west) operating via Parramatta River. The first UP ferry leaves Sydney Olympic Park Wharf at 6:05 am and the last departs the wharf at 10:35pm. Ferries depart the wharf every 40 minutes on the average weekday. On weekends, ferries operate on a similar service frequency between 7:45 am and 11:30 pm.

There are three afternoon express services between 5pm and 6pm from Sydney Olympic Park wharf to Circular Quay on weekdays, but none in the morning for Wentworth Point residents that may work in the City.

The trip times from Sydney Olympic Park wharf to other wharfs are as follows:

- Circular Quay: 55 minutes
- Parramatta: 30 minutes

Due to natural low tides in the shallow waters of the Upper Parramatta River, some services between Parramatta and Rydalmere are replaced by bus services. The replacement buses operate direct from the corner of Charles Street and Phillip Street in Parramatta, and Rydalmere wharf. Travel time between these wharves is about 12 minutes by bus.

Sydney Buses 526 service is the connecting bus service to the ferry and runs from Lidcombe station to Olympic Park station via Sydney Olympic Park ferry wharf and Newington. However, not all ferry services have a connecting bus service and there is no taxi rank nearby.

Ferry frequencies are detailed in Appendix C.

4.2.5 Road network

Surrounding road network

The site has frontage to Hill Road and Burroway Roads, Homebush Bay. Hill Road is a collector road linking Parramatta Road and the M4 Motorway with the Wentworth Point. Burroway Road is a local road under the care and control of Auburn Council. In the vicinity of the site Hill Road comprises one traffic lane in each direction in addition to kerbside parking lanes along both sides of the carriageway. Burroway Road also has one lane in each direction in addition to kerbside parking. Both roads have carriageway widths of 13m.

Functional classification

In 1978, the Traffic Authority of NSW (now Roads and Maritime Services) published guidelines for the classification of roads using a functional system. The objectives of these guidelines are set out in the document entitled *The Functional Classification of Roads*. They can be summarised as:

- In planning terms the classification of streets and development of an operational hierarchy is seen as *'an essential component of structural planning at the neighbourhood level'*.
- In operational terms the concept of functional classification is seen as *'an endeavour to match the class of road to its use and to the environmental needs of the community'*[13].

The functional classification system is based on an assessment of traffic volumes, composition and management. Four road types are defined: arterial, sub-arterial, collector and local roads.

The following guidelines are used in the functional classification of roads:

- Arterial road - typically a main road carrying over 15,000 vehicles per day and fulfilling a role as a major inter-regional link (over 1,500 vehicles per hour).
- Sub-arterial road - defined as secondary inter-regional links, typically carrying volumes between 5,000 and 20,000 vehicles per day (500 to 2,000 vehicles per hour).
- Collector road – provides a link between local roads and regional roads, typically carrying between 2,000 and 10,000 vehicles per day (250 to 1,000 vehicles per hour). At volumes greater than 5,000 vehicles per day, residential amenity may begin to decline depending on the circumstances of the case.
- Local road – provides access to individual properties, carrying low volumes, typically less than 2,000 vehicles per day (250 vehicles per hour).

These road volumes quoted represent those typically found in urban areas. Rural areas may be marginally lower than these figures. This classification is summarised in Table 4.6.

Table 4.6 - Functional classification of roads

Road type	Traffic volume	Through-traffic	Inter-connections	Speed limit (km/hr)
Arterial/Freeway	No limit	Yes	Sub-arterial	70-110
Sub-arterial	< 20,000	Some	Arterial/Collector	60-80
Collector	< 5,000	Little	Sub-arterial/Local	40-60
Local	< 2,000	No	Collector	40

Source: Updated Guidelines for Functional Classification of Roads in Urban Areas, RTA, 2002

Measuring intersection and road capacity performance

The impact of traffic growth or traffic changes on the operation of the road network is most commonly assessed at key intersections. Various modelling suites are available to assist with intersection impact assessment. For the purpose of this analysis, modelling of intersections is not warranted.

The main performance indicators in the assessment of road network impacts are:

- Degree of saturation – a measure of the ratio between traffic volumes and the capacity of the intersection;
- Average delay – how long in seconds the average vehicle is delayed;
- Level of service – a measure of the overall performance of the intersection (summarised in Table 4.7).

[13] RTA, 2002, Guide to Traffic Generating Developments

Table 4.7 - Levels of service

Level of service	Average delay / vehicle (secs/vehicle)	Traffic signals, roundabouts	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 may be required
D	43 to 56	Operating near capacity	Near capacity, and accident study may be required
E	57 to 70	Operating at capacity	At capacity, requires other control mode
F	Greater than 70	Operating over capacity	Over capacity, requires other control mode

Source: Guide to Traffic Generating Developments, RTA 2002

In the Sydney Olympic Park Master Plan 2030, SOPA recognised the need to improve a number of intersections to manage vehicle access on site.

4.2.6 Parking

On-street parking

Sections of Hill and Burroway Roads have unrestricted on street parking along both sides of the carriageway. A four-hour restricted parking area is located on the western side of Hill Road between Bennelong Parkway and Stromboli Straight about 1km south of the development site. Closer to the development site no kerbside restrictions apply along both sides of Hill Road, although Special Event Clearways become operational during special events along most of Hill Road south of the site.

Auburn Council has recently reported that on-street parking issues are now emerging at Wentworth Point within existing developments (not the proposed development which is the subject of this TMAP) with residents making direct complaints to Council. The extent and actual nature of the issues cannot be verified but it appears that there are increasing levels of on-street parking with the potential to obstruct footpaths and driveways. It is also likely that residents perceive on-street parking to be problematic as they and/or their visitors find it difficult to park easily and within a reasonable distance of their home.

Anecdotal evidence within some developments links the causes of excessive on-street parking to one or more of the following:

- Residents' preference to park on-street rather than in secure underground parking garages due to difficult access arrangements.
- The use of secure underground garages for storage rather than parking, with vehicles then parked on-street.
- A mismatch between parking provision (off-street and on-street) and vehicle ownership.
- A resistance to parking restrictions or excessive implementation of time-restricted parking, leaving restricted bays unused and unrestricted bays heavily used.
- A lack of enforcement of on-street parking restrictions.

This list is not exhaustive and each locality is different. Clearly the solutions to excessive on-street parking in an area must address the causes of the problem. Ways to accurately define and understand the problem include surveys of both on-street and underground parking areas and/or

residents. Census data on car ownership at a local level and matched to development type can be accessed through the Australian Bureau of Statistics and analysed.

Measures that can be implemented following a detailed understanding of the problem include:

- Identify the appropriate enforcement authority.
- Enforcement of on-street parking, including mandatory no parking zones.
- Implementation of correct signage and education amongst local residents.
- Introduction of appropriate controls.
- Liaison with development management organisations to address problems with accessing underground (on-site) parking.

From a development control point of view, the challenge is to design all proposed development so as to encourage sustainable travel modes and reduce the need for discretionary car travel. The design should also provide adequate off-street car parking appropriate for the scale and mix of development to minimise the impacts of on-street car parking impact on local amenity. The proposed development will be designed to facilitate access to underground parking areas.

Off-street parking

Off street parking facilities service the existing residential building in Hill Road and other commercial operations in Hill and Burroway Roads. An off-street car park is located in the SOP ferry wharf. There are about 10,000 car spaces available in the Sydney Olympic Park zone about 3kms south of the development site. All proposed developments must include adequate off-street car parking to the satisfaction of the approval authorities.

Auburn Council controls the supply of parking in the area via the Auburn Car Parking and Loading DCP, 2000. The purpose of the DCP is to ensure that sufficient well-designed parking is provided for all new development and to manage existing parking across the LGA. Relevant DCP provisions are as follows:

Car parking required for:

1-bedroom dwellings:	1 car space
2-bedroom dwellings:	1.2 car spaces
3-bedroom dwellings:	1.5 car spaces
4-bedroom dwellings:	2 car spaces
Visitor parking per dwelling:	0.2 car spaces

Development standard D3.2 requires that bicycle racks should be provided in safe and convenient locations throughout all developments with a total gross floor area exceeding 1,000m^2.

However, parking rates for Wentworth Point are set out in the *HBW DCP* which adopts **maximum** parking rates as follows:

Car parking required for:

Studios:	no parking
1-bedroom dwellings:	1 car space
2-bedroom dwellings:	1.5 car spaces
3-bedroom dwellings:	2 car spaces
4-bedroom dwellings:	not given
Visitor parking per dwelling:	0.2 car spaces

In addition 2 and 3 bedroom apartments require 0.5 bicycle parking spaces with 1 visitor cycle parking space per 15 dwellings.

In comparison the Rhodes West DCP sets out the following car parking rates.

Car parking required for:

Dwellings:	Maximum of 1 car space per dwelling
Visitor parking:	I car space per 10 (maximum) – 20 (minimum) dwellings

As the *HBW DCP* parking rates are identified as maximum rates, developers can choose to reduce provision of parking, below the maximum rate. The ground conditions at Wentworth Point make basement parking provision impossible so all parking must be provided above ground and integrated with the buildings. This is both challenging and costly, providing an incentive for developers to minimise parking provision.

The relationship between vehicle ownership (and the need for parking) and use is not well understood. While there is a relationship, it is not linear in nature and a higher level of car ownership does not equate to a higher level of car use. This is demonstrated in the data on vehicle ownership (and considering Census JTW data, of the four comparison suburbs. All the suburbs have shown a reduction in car driver mode share for the journey to work since 2006. Rhodes has the lowest level of car driver mode share and also the lowest car ownership. In line with car driver mode share, car ownership amongst those living in Rhodes has also fallen sharply since 2006.

Wentworth Point has lower car ownership than Newington and Breakfast Point but exhibits a higher car driver mode share than these suburbs. The reducing vehicle ownership amongst Wentworth Point residents supports a behaviour shift.

Table 4.8 – Vehicle ownership

State Suburb	Census Year	
	2006	2011
Wentworth Point	1.50	1.47
Rhodes	1.38	1.15
Newington	1.61	1.61
Breakfast Point	1.81	1.64

Note: Data based on households per dwelling. Dwellings with four or more vehicles were assumed to have four vehicles. Households where number of vehicles not stated were excluded.

Recognising that car ownership and availability do impact on car use it is recommended that the revised DCP explore lowering parking rates for units and in particular reducing the maximum rate for visitor parking provision, noting that the current provision allows for a generous level of visitor parking in comparison to Rhodes in particular.

The following is suggested:

Dwellings (excluding studios):	Minimum of 1 car space per dwelling
Studios:	no parking
1-bedroom dwellings:	Maximum 1 car space
2-bedroom dwellings:	Maximum 1.2 car spaces
3-bedroom dwellings:	Maximum1.5 car spaces
Visitor parking:	I car space per 8 (maximum) – 12 (minimum) dwellings

Further measures could also be investigated, including the unbundling of parking making spaces available for sale separately to apartments. While this can be effective and has occurred at some older developments, it is recognised as particularly difficult in modern unit developments with secure parking provision. There is also some difficulty with respect to funding arrangements.

4.2.7 Taxi

There are currently no taxi ranks within Wentworth Point. The closest taxi rank is currently located near the Novotel Hotel on Olympic Boulevard in Sydney Olympic Park. There are taxi ranks across Homebush Bay in Rhodes, including one outside Rhodes station on Walker Street, and another outside the Rhodes Shopping Centre.

4.2.8 Pedestrian and cycle network

Internal layout

The existing cycling and pedestrian network within the study area is limited due to the nature of former industrial and warehousing uses on the site. The area is characterised by large block sizes, vehicle access roads with no or limited footpaths, and barriers to pedestrian access along the foreshore.

The internal network will be transformed as part of the implementation of the *HBW DCP*. It is envisaged that the new layout will cater for pedestrian and cyclist desire lines to provide a permeable environment. The topography of the precinct is flat making the whole area potentially easily accessible by foot, bicycle, and with wheelchairs or strollers.

Network connections

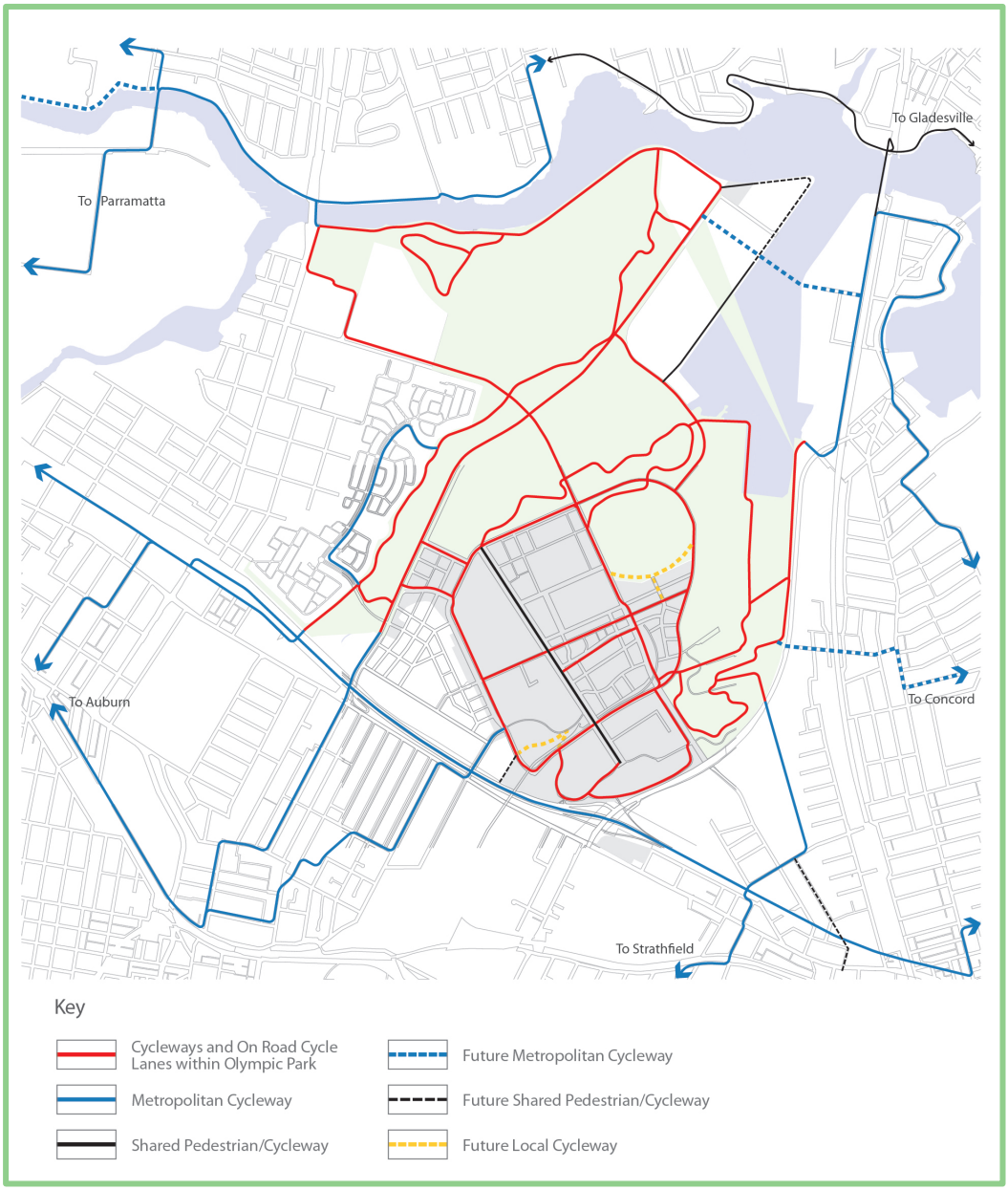
Wentworth Point is well connected with cycling and pedestrian routes particularly for leisure trips with many on and off-road recreational circuits within SOP. One trail extends from SOP north along Hill Road, adjacent to the site, to SOP wharf and then along the Parramatta River foreshore and into the Millennium Parklands.

In addition to good local off-road leisure routes, there are several cycle routes that converge on SOP which provide good commuter routes, including:

- The Cooks River Cycleway from Botany Bay.
- The Parramatta Valley Cycleway, which is linked by a cycle bridge over the Parramatta River linking Rhodes and Meadowbank (and through Bicentennial Park).

Commuter cycling would be further promoted with increased on-road separated paths within SOP and Wentworth Point. The proposed pedestrian and cycle network for SOP is shown in Figure 4.7.

Figure 4.7 – Proposed pedestrian and cycle network



Source: SOP Master Plan, 2010, Figure 3.12, page 55

The proposed bridge would significantly improve the accessibility of Wentworth Point to public transport and further walking and cycling facilities. It would allow for the creation of various recreational loop trails similar in idea to the Bay Run, which uses the Iron Cove Bridge. Possible loops are discussed and mapped in the *Homebush Bay West Bridge - Transport Assessment* prepared by PBAI Australia in 1995.

There are no secure bicycle facilities currently at the Sydney Olympic Park ferry wharf or the train stations at Rhodes or SOP[14]. Cycle racks are available at SOP wharf, Rhodes station (Walker Street western side of Rhodes), and SOP Station.

[14] Transport NSW, 2011, Transport NSW Website https://appln.transport.nsw.gov.au/bikelockers/faces/jsp/public/findALocker.xhtml

4.2.9 Community bus

Community transport provides door-to-door transport for the frail aged, isolated families, and younger people with disabilities where conventional public transport systems are not generally viable or appropriate. It allows these transport disadvantaged groups access to shopping, social activities, medical appointments and outings. The Baptist Community Services of NSW and ACT provide a minibus service for aged and disabled people in Auburn.

4.3 Transport demand assessment

4.3.1 Projected development

Development at Wentworth Point is governed by the *HBW DCP*, which determines the amount of floor space of landuse. The residential development allowed by the *HBW DCP* equates to approximately 7,000 dwellings, assuming a mix of dwelling types.

The landowners have identified a desire to improve overall levels of accessibility at Wentworth Point, recognising that accessibility and travel choice are important factors for residents. To meet these needs it is proposed to build a bridge spanning Homebush Bay and connecting Wentworth Point to Rhodes. The bridge would be available for pedestrians, cyclists and buses. Importantly all other vehicles (except emergency services) would be prohibited.

In order to finance the bridge development and construction it is proposed to increase the level of development at Wentworth Point by approximately 20 per cent. It is recognised as fundamental that the increase in dwelling numbers does not result in an increase in car trips beyond that already permitted under the *HBW DCP*.

Forecasts from Graf International, summarised in Table 4.9, show that the increase in floor space (105,000 m^2) will result in an additional 1,353 dwellings, with a total of 8,349 dwellings forecasted post-2023. It has been assumed that 85 per cent of the dwellings will be 2-bed or smaller and 15 per cent will be 3-bed or larger.

Table 4.9 - Progressive dwelling forecast, with and without uplift*, at Wentworth Point

Development			Forecast New Dwellings			
			2011	2016	2023	Total Dwellings Post 2023
Other Development	Part 1	Mariners, TNT, Part Waterfront	1,231	1,311	1,911	
	Part 2	Palermo and Part Waterfront	1,007	1,657	1,657	
Wentworth Point	No Uplift	lots 8, 9, 10, 18 and 21 HBW DCP-permissible	0	1,200	2,250	
	Uplift	lots 8, 9, 10, 18 and 21 Proposal	0	1,500	3,600	
Totals (HBW DCP-permissible)			**2,238**	**4,168**	**5,818**	**6,996**
Totals (Proposal)			**2,238**	**4,468**	**7,168**	**8,349**

Source: Summary of Graf International, 2011, Discussion Draft (10/05/2011)

*Uplift is the difference between the development yield of the permissible development under *HBW DCP* and the current Proposal

This section of the TMAP details the mode shares required to ensure that travel to and from Wentworth Point occurs sustainably. The analysis also demonstrates that the bridge can facilitate non-motorised travel sufficiently to ensure that total car trip generation remains at levels provided for in the *HBW DCP*. That is, total car trips will not exceed those generated under the 'No uplift' scenario.

The methodology applied was summarised in section 3.2.

4.3.2 Assumptions of technical assessment

Table D.3 in Appendix D shows the forecast trip destinations and associated public transport mode shares based on the estimated traffic and trip generation estimates. The estimated train and bus trip volumes were distributed to key destinations on the basis of proximity, ease of access and likely travel times. As discussed, the introduction of the bridge will ensure that Rhodes station becomes a key destination for trips originating at or near the development site.

Of the estimated 1,600-1,700 non car trips generated at full development, 2006 Census data and the enhanced level of accessibility provided by the Bridge suggests that the bulk of these trips (about 86 per cent) will be made to and from the development by train. The remainder will be bus-based trips destined to the east and west of the development site. It should be borne in mind that many of these trips will be linked trips involving walking and or cycling for some length of the journey. Destinations comprising the Sydney CBD, Canada Bay, Parramatta and Auburn are estimated to make up more than 50 per cent of total non-car trips from the development site.

4.3.3 Road-based travel demand and traffic generation

The RTA Guide to Traffic Generating Developments (2002) identifies the vehicle trip generation rate for medium density housing is as follows:

- Studio, one and two bed dwellings:
  - 4.0 – 5.0 daily vehicle trips per dwelling.
  - 0.4 - 0.5 peak hourly vehicle trips per dwelling.
- Three plus bed dwellings:
  - 5.0 – 6.5 daily vehicle trips per dwelling.
  - 0.5 - 0.65 peak hourly vehicle trips per dwelling.

For the purpose of this analysis, the base estimates of traffic generation (before adjustment to take account of the impact of mode shift initiatives) have been assessed on the basis of the following rates:

- 4.5 daily vehicle trips per dwelling (2-bed dwellings)
- 0.45 peak hourly vehicle trips per dwelling (2-bed dwellings)
- 5.75 daily vehicle trips per dwelling (3-bed dwellings)
- 0.57 peak hourly vehicle trips per dwelling (3-bed dwellings)

At full development in 2023 the development proposal is estimated to generate the traffic volumes listed in Table 4.10.

Table 4.10 - The key outputs of the analysis

Total dwellings approved in *HBW DCP* (no bridge/no uplift)	6,996
Car trips (no bridge/no uplift)	3,297 vehicles/hour
Total dwellings (with bridge and with uplift)	8,349
Additional dwellings under the current proposal	1,353
Total trips (DCP-permissible development)	4,204 trips/hour
Total trips (proposed development)	5,017 trips/hour
JTW (2006) mode share	78% (car driver) 22% (other modes)
Target JTW mode share	65% (car driver) 35% (other modes)

The DCP-permissible development (7,000 dwellings) would generate approximately 3,279 peak hour vehicle trips and about 32,800 daily vehicle trips, according to the RTA's *Guide to Traffic Generating Developments*. The proposed development provides for an additional 1,353 dwellings (8,349 dwellings in total).

Based on the existing travel behaviour of Wentworth Point residents, vehicle driver trips account for 78 per cent of JTW trips. Given this, it is assumed that the DCP-permissible development will generate 4,204 peak hour trips, 78 per cent car driver trips and 22 per cent non-car driver trips.

Using this methodology a total peak hour trip generation for the proposed development has been calculated. The proposed bridge will support a mode shift that will ensure the vehicle trip generation will not exceed that expected under the DCP-permissible development scenario.

The proposed Homebush Bay Bridge will assist in delivering such a shift for the following reasons:

- The bridge will offer reduced travel times by placing the development within 1km of the rail and bus services focussed at Rhodes station.
- The bridge will accommodate safe shared travel by public transport, walking and cycling, thus facilitating the use of non-car modes for JTW and other trip purposes.
- The bridge will also facilitate non-car travel during off-peak times for a range of trip purposes (recreation, shopping and education).
- Pedestrians and cyclists will not share the bridge with general traffic, thereby increasing its attractiveness for a range of trip purposes.
- The bridge will facilitate direct access into Gauthorpe Street for bus pick-up and set down southbound in Walker Street at Rhodes station.
- For cyclists, the bridge will link well into the existing Hill Road cycleway and the Rhodes foreshore cycleway running along the western side of the Rhodes peninsula. This integration will contribute towards a favourable mode share for both locally based JTW trips and for local and regional recreation trips.
- Whilst a high proportion of bulky goods oriented shopping trips will continue to occur by car, the bridge will be successful in accommodating car based shopping trips between the site and the Rhodes Shopping Centre that would have otherwise had to be undertaken by car.

The proposed development will generate 5,017 peak hour trips compared with 4,204 peak hour trips generated by the DCP-permissible development, an additional 813 trips or 19 per cent.

Of the trips generated by the now proposed development it is assumed that the JTW car driver mode share will be a maximum of 65 per cent, generating no more than 3,261 peak hour vehicle trips. Through a series of demand management measures, over and above the proposed bridge, it is

intended that this target mode share can be improved on, delivering a more sustainable outcome than could be achieved under the DCP-permissible development.

4.3.4 Rail travel demand

The projected public transport distribution for the Proposal suggests that at full development (ie post-2023), there will be an additional 1,440 rail trips originating from Wentworth Point. Of these, 1,364 would be via Rhodes station, with 1,191 accessing southbound (UP) services and 173 using northbound (DOWN) services.

There will be greater demand for morning peak hour boarding on UP trains, with some minor impacts in terms of in terms of crowding and loading. However, the timing of the incremental growth of rail travel will depend on approval and delivery timeframes, and its precise impact on the rail services will depend on a wide range of network, as well as local, factors. These issues are discussed further in section 4.5.3.

4.3.5 Car parking

The high water table makes the provision of car parking in structure difficult, expensive and an important urban design consideration.

Developers are encouraged to consider the potential to reduce parking provided with the development and explore innovative options for parking provision. In particular the 'unbundling' of parking whereby parking can be purchased separately from the unit may satisfy the market requirement for parking and reduce overall provision. It is recognised that this is, however, difficult to effect.

A flexible approach to parking should have regard to the following:

- The need to support sustainable travel to and from the development.
- The physical constraints that make the provision of underground car parking both costly and impractical.

The availability of car parking is a key determinant in the decision whether to use a private vehicle for JTW and other trips. Constraining total on-site supply will assist in encouraging greater use of public transport and other non-car modes for travel to and from the subject site. In this regard, the approach to car parking is to apply travel demand management (TDM) tools to support the use of the bridge-based public and active transport options, and other non-car initiatives. It is recommended that the DCP explore opportunities to reduce parking rates as discussed above.

4.3.6 Taxi provision

Taxi services are by their nature mobile, flexible and essentially demand responsive. It is not anticipated that development at Wentworth Point, nor the extra development proposed under the current proposal, will generate demand for taxi services that is incapable of being met. Specific design or management initiatives that can be adopted in the development or associated facilities to assist residents to gain access to taxi services are discussed in sections 5.2 and 5.7.

4.4 Analysis and discussion

4.4.1 General approach

The incremental increase in development proposed under the current scheme is based on the availability of the Homebush Bay Bridge. The proposed bridge has the key purposes of encouraging and facilitating active transport uses (walking and cycling) and of improving access to public transport (Rhodes station).

Hence, the TMAP focuses on the transport outcomes likely to arise form the nature and scale of the now-proposed development, (predicated on the provision of the bridge), compared to that of the previously permissible development (without the bridge).

In general, it can be assumed that the development design will provide a positive incentive for residents of Wentworth Point to walk, cycle or travel by bus to Rhodes, either as a destination itself, or as a means of accessing the rail network. The extent to which this results in a substantial mode share to public or active transport will be a function of a number of factors:

- The effective geographic distance (and travel time) to Rhodes achieved by the bridge, and services operating on it.
- The design of the bridge, insofar as it delivers a safe, secure, weatherproof, and efficient means of travel.
- The level of service delivered by bus operators, in terms of frequency, comfort and cost.
- The extent to which peak and off-peak services offer an effective option to meet the range of trip types and destinations.
- The effectiveness of mode integration at Rhodes station, in terms of timetabling and waiting times, ticketing and fares, physical interchange, passenger information, and safety.
- The extent to which residents are made aware of their travel choices and are encouraged to choose active transport and public transport, over the private car.

4.4.2 Comparative travel distances and times

To understand the level of competitive advantage offered by the proposed Homebush Bay Bridge to pedestrians and cyclists over alternative routes and modes, general travel times to key transport interchanges were calculated by PBAI Australia in 2005 as part of the *Homebush Bay West Bridge Transport Assessment*, amended to include bridge-based public transport.

Calculations are based on desktop research rather than on-site travel time surveys. The analysis has considered starting points at the Lot 10 site (central within the proposed development) and the Waterfront development, the most southerly development on the Homebush Bay West peninsula and a destination of the rail network at the closest station given the mode used. The bridge offers the shortest and quickest route to access train services (at Rhodes station) by foot and cycle and travel times are significantly less than to alternative stations accessed via car and bus.

The analysis does not include the time taken to find a parking space, the walk time to the station from that parking space, cost of parking, bus wait times or bus fare. The assumed speed for cars (average 30km/h) and bus (average 20km/h) are reasonably generous given the congested road network. The average bus speed across the proposed bridge is assumed to be 20km/h.

The alternative routes identified for pedestrians, cyclists and vehicles are shown in Figure 4.11. Analysis shows that, with the bridge, Rhodes station can be accessed in just 11 minutes by foot and 2.1 minutes by bicycle from Lot 10. The car trip alone from Lot 10 to North Strathfield station would take 11 minutes at an average speed of 30 km/h. The estimated travel times are shown in Table 4.11.

Table 4.11 – Estimated travel times

From	To	via	Mode	Distance (m)	Speed (m/min)	Time (min)	Notes
Lot 10	Rhodes	Bridge	Walk	440	80	5.5	Bridge landing to bridge landing
			Cycle	440	417	1.1	Bridge landing to bridge landing
			Bus	440	333	1.3	
Lot 10	Rhodes station	Bridge	Walk	880	80	11	
			Cycle	880	417	2.1	
			Bus	880	333	2.6	
Lot 10	Concord West station	Bicentennial Park	Walk	3,621	80	45.3	Nearest station if no bridge
			Cycle	3,621	417	8.7	Nearest station if no bridge
Lot 10	North Strathfield station	Road network	Car	5,482	500	11.0	Nearest station via road network
Lot 10	Strathfield station	Road network	Car	6,927	500	13.9	Parking very limited for commuters
Lot 10[15]	Lidcombe station	Road network	Bus	6,160	333	18.5	Only bus route at this time
Waterfront development [16]	Rhodes station	Bridge	Walk	1,798	80	22.5	
			Cycle	1,798	417	4.3	
			Bus	1,798	333	5.4	
Waterfront development	Concord West station	Bicentennial Park	Walk	2,880	80	36.0	Nearest station if no bridge
			Cycle	2,880	417	6.9	Nearest station if no bridge
		Bridge	Bus	2,880	333	8.6	Nearest station if no bridge

Source: PBAI, 2005, amended

The propensity of Wentworth Point residents to reduce car use following construction of the bridge can be demonstrated through a structured comparison of generalised time costs for the major trip destinations. Analysis of the 2006 Census JTW origin – destination data indicated that 23 per cent of work based trips originating from Wentworth Point / Rhodes have a destination in the City of Sydney LGA, most likely the Sydney CBD. The bridge would convey a significant cost advantage to rail travel in comparison with car, assuming an 11 minute walk from Wentworth Point to Rhodes Station and also assuming free parking is available in the Sydney CBD.

In addition the potential for the bridge to bring about a mode shift for specific trips was considered. Analysis was undertaken on the top three journey to work destinations (as shown in Figure 4.1):

- City of Sydney – 23%
- Canada Bay – 12%
- Parramatta – 8%

[15] Lot 10 as shown on Figure 1.1
[16] Waterfront development refers to area south of Fairmead Business holdings already completed.

Table 4.12 – Comparison travel times

To Sydney CBD (Town Hall)	
Car	Wentworth Point to Parramatta Road (Concord) – 15 minutes (estimated) Concord – Sydney CBD – 53 minutes (RMS) Total: 68 minutes (excluding parking costs and time)
Public transport	Walk to Rhodes Station – 11 minutes (estimated based of distance from Lot 10) Rhodes Station – Town Hall Station – 30 minutes Wait time at Rhodes – 7.5 minutes (Frequency 15 minutes) Total 48.5 minutes
To Parramatta CBD	
Car	Wentworth Point to Parramatta Road (Concord) – 15 minutes (estimated) Concord – Harris Park – 30 minutes (RMS) Harris Park – Parramatta CBD – 5 minutes (estimated) Total: 50 minutes (excluding parking costs and time)
Public Transport	Walk to Rhodes Station – 11 minutes (estimated based of distance from Lot 10) Rhodes Station – Parramatta Station – 35 minutes (change at Strathfield) Wait time at Rhodes – 7.5 minutes (Frequency 15 minutes) Total 53.5 minutes
To Canada Bay Employment in Canada Bay: 30,408 jobs Employment in Rhodes Peninsular: 8,719 (29% of jobs in the Canada Bay LGA) Of the 12% JTW trips with a destination in Canada Bay, 29% are assumed to have a destination in the Rhodes Peninsular.	
Car	Wentworth Point to Homebush Bay Drive – 10 minutes (estimated) Homebush Bay Drive – 10 minutes (RMS) Total 20 minutes
Walk	Walk to Rhodes Station – 11 minutes (estimated based of distance from Lot 10)
Cycle	Cycle to Rhodes Station – 2.1 minutes (estimated based of distance from Lot 10)

Notes:

RMS data refers Key Roads Performance Report, December 2012.

Train frequencies and travel time from www.131500.com and based on an arrival time at destination station before 8.30am on a Tuesday.

Estimation of employment in Rhodes from BTS Employment Forecasts 2012 Release (for 2011).

4.4.3 Rail capacity

The increase in demand for rail travel at Rhodes arising from the Proposal is likely to be very gradual, commencing with the construction of the Homebush Bay Bridge, and peaking only when the full level of development is achieved after 2023. As such, it is expected that the increases will be managed through the normal processes of supply and demand on the rail network.

The most likely impact is on the capacity of the actual trains and train paths operating the services on the Northern Line, rather than on the access and interchange infrastructure. Rhodes station has been designed to accommodate growth, and the facilities have been assessed by the TMAP as adequate to cater for projected increases in bus movements and interchange.

Sydney's Rail Future, a plan to transform and modernise Sydney's rail network, was released in June 2012. It commits to service improvements on the Northern Line, resulting from the delivery of the North West Rail Link[17]. The main increases are likely to occur on city-bound (UP) services in the morning peak. The North West Rail Link will operate from Rouse Hill to Chatswood via the Epping – Chatswood Rail Link. As a result trains currently operating between Hornsby and the City via the Epping – Chatswood and North Shore Rail Lines will operate via Strathfield, increasing services at Rhodes. This additional capacity will be delivered in line with the North West Rail Link and will be in place prior to full development at Wentworth Point.

4.4.4 Travel behaviour change

Travel demand management (TDM) is about influencing people to use available transport infrastructure more efficiently and works by giving individuals information on more sustainable travel modes to meet their access needs. Travel behaviour change programs can be cost effective travel demand management tools. Programs such as TravelSmart have led to reduced car use, and increased public transport use, walking and cycling, without changes to the transport infrastructure and services[18].

A TDM approach can:

- Reduce car based trip making.
- Reduce road traffic congestion.
- Allow total on site car parking provision to be minimised and for land to be put to other uses.
- Encourage the use of less environmentally damaging modes such as walking, cycling and public transport.
- Deliver health and fitness benefits through increased walking and cycling.
- Reduce the costs associated with car ownership and maintenance.

New developments such as Wentworth Point provide an excellent opportunity to promote sustainable travel patterns as the community is being created. This can allow sustainable travel behaviours to be set from an early stage. In promoting sustainable travel (walking, cycling, public transport, car sharing and trip linking) car use within a community can be reduced and the amenity of the community can be improved.

Residential welcome pack

To inform new residents at Wentworth Point of the sustainable transport options available for recreational and commute journeys it is recommended that a transport information pack is provided. It is valuable to provide these *residential welcome packs* when residents first move into their accommodation so that sustainable travel patterns can be established before car dependent behaviours are set. This includes providing packages for renters and buyers alike.

[17] NSW Government: Sydney's Rail Future, June 2012, p19
[18] Australian Greenhouse Office, 2005, Evaluation of Australian TravelSmart Projects in the ACT, South Australia, Queensland, Victoria and Western Australia: 2001–2005

Table 4.13 – Information sources for the Residential Welcome Pack

Information sources	
Maps	• SOPA cycling maps – 'Get to SOP by Bike' and 'Bike Safaris'
Timetables	• Bus services 526, 533, 458/459 and M41 • Northern Line and Olympic Park Line train timetables • Parramatta River Ferry timetable
Onsite facilities information	• Location and capacity of cycle parking for residents and visitors
Transport Access Guide	• Local area map displaying the following: ○ Existing public transport services (bus, train, ferry) and relevant proposed services. ○ Existing pedestrian and cycling networks. ○ Provide the bus stop codes for the main bus stops and provide information on the Sydney Buses SMS texting service for real time departure information. ○ Cycle parking locations ○ Car clubs in area ○ Dog friendly parks ○ Local services – community centre ○ Taxi ranks ○ Distances to key destinations including transport ○ Location of Travel Zone ticket outlets
Useful information	• Transport Infoline (131 500) • MyZone tickets and retailer outlets • Taxi contact details • Closest bike stores • Bicycle NSW • Bicycle Information for NSW • Local bicycle user groups

People often overestimate how long public transport journeys take and underestimate car trips[19]. It is therefore important that accurate and up-to-date information is provided on the travel times in an easy to understand and concise manner.

The *residential welcome packs* can be sourced primarily from existing materials, reducing costs and helping establish relationships with transport providers. Table 4.12 provides a list of some of the relevant transport information that can be supplied.

Transport access guides

A key element of a *residential welcome pack* is the Transport Access Guide (TAG), which is developed specifically for each development. Transport access guides (TAGs) are concise presentations of how to reach a site or venue by sustainable modes including public transport, walking and cycling. Their objective is to make the choice to travel by these modes easier[20]. They also serve to promote the local services in the area such as community services, shops, or restaurants.

It is recommended the Wentworth Point TAG be incorporated into the community website (wentworthpointcommunity.org). This website is already established and while supported by Wentworth Point developers it is community run. The inclusion of travel information, maps and links

[19] RTA and SEDA, 'Producing and Using Transport Access Guides'
[20] RTA and SEDA, 'Producing and Using Transport Access Guides'

would complement much of the information already available. In addition a website will be relatively easy to update and could include temporary changes such as information on road works or rail service disruption.

The preparation of the TAG should be an inclusive process involving Auburn and Canada Bay councils, local landowners (including SOPA and NSW Maritime), transport operators, local businesses, and the existing local community. Further details are available in the *Producing and Using Transport Access Guides (*RTA and SEDA).

Whilst it is important to support and hopefully set in place good travel behaviours when residents first arrive it is also very important to ensure that information and engagement strategies are used as changes occur in transport infrastructure and services. This will be facilitated through the website.

Workplace travel plans

The proposed Wentworth Point development would include a small business centre. To make getting to and from the proposed development easier for employees of businesses there, and to reduce dependence on private vehicles, a workplace travel plan is recommended. A travel plan typically includes support for walking, cycling, public transport and car-sharing, reinforced with promotion and incentives and the management of workplace parking. The type of travel plan measures which are appropriate for the Wentworth Point businesses are different to larger commercial developments. Measures that can be included in the travel plan include:

- A TAG – and relevant elements of Wentworth Point Welcome Pack.
- Flexible work times, depending on business type.
- Access to a car club.
- Encouragement of car sharing with colleagues.
- Provision of end of trip facilities: lockers, showers, cycle parking.

Transport events

Community events can be a key feature of behaviour change programs. Examples of events that can help promote sustainable transport include:

- Opening of the Homebush Bay Bridge walk and bike ride
- Cycle proficiency courses for adults
- Bicycle repair workshops
- Promotion of local and national sustainable transport days like walk to work day.

Events such as these can be used to help build walking and cycling groups within the community. This could develop into recreational walking groups that are focused on health outcomes. It could also be used to help form bike buses, where cyclists ride to work together to bring confidence to new riders and to assist cyclists when they are starting a new commuting route.

4.5 TMAP findings summary

The incremental increase in development proposed under the current scheme is based on the availability of the Homebush Bay Bridge. The proposed bridge aims to encourage and facilitate active transport uses (walking and cycling) and improve access to public transport (Rhodes station).

The key findings of the TMAP are that:

- It is feasible to achieve the TMAP's targets for mode share and travel management, assuming that the bridge connecting Wentworth Point to Rhodes and, in particular, Rhodes station is delivered in the right way and at the right time.
- While it is now proposed to increase the development size beyond that proposed and permissible under the *HBW DCP*, the resultant increased trip generation will be more than contained by increased use of non-car modes.
- Overall, the bridge provides the opportunity to improve mode-share outcomes, reduce car trips, and improve accessibility for Wentworth Point residents.
- The design of the Wentworth Point Proposal, including the Homebush Bay Bridge, will:
    - Reduce levels of vehicle kilometres travelled (VKT) during the peak periods and across other times of the day and week.
    - Reduce reliance on private vehicles.
    - Maximise the use of public transport, walking and cycling.
- The destination-based analysis supports the target mode share of 65 per cent car travel as driver. In fact, there is an opportunity to reduce the mode share for car drivers further, through the promotion of walking and cycling.
- With assumed public transport mode shares, 33 per cent of peak hour trips will be made using public transport. Of these trips, 86 per cent will be made by rail and 14 per cent by bus. Table 4.14 summarises these findings.

Table 4.14 - Summary of public transport distribution, based on post-2023 trip generation

Public transport	Trips	% Trips
Train trips	**1,440**	**86%**
Train trips via Rhodes	1,364	82%
Train trips via Rhodes northbound	173	10%
Train trips via Rhodes southbound	1,191	72%
Train trips via SOP	76	5%
Bus trips	**226**	**14%**
Bus trips east	93	6%
Bus trips west	133	8%

In summary, the incremental impacts of the Proposal over those arising from the level of development permissible under the *HBW DCP* are unlikely to generate additional car trips, or to place unacceptable demands on public transport services in the area.

On the contrary, the provision of the Homebush Bay Bridge offers the opportunity to improve the mode share for public transport and active transport over the previously permissible development. The improved public transport mode share supports the achievement of State Plan targets for public transport use to Parramatta, Sydney CBD and across the Sydney Metropolitan Area.

Clearly, this assessment is based on the timely availability of the bridge in relation to the development occurring, and the bridge being designed and operated as recommended in order to optimise the advantages accruing to pedestrians, cyclists, and public transport users over private car drivers and passengers.

5 Design, infrastructure and service recommendations

5.1 Bridge design and management

The Homebush Bay Bridge has been designed by Arup for the proponent. There has been liaison between the designers of the bridge during preparation of this TMAP to ensure that there has been adequate advice and guidance about the role and function of the bridge in relation to local transport needs.

The bridge will carry pedestrians, cyclists, and public transport vehicles (ie buses). In addition, emergency vehicles will be permitted to use the bridge when attending emergency call-outs.

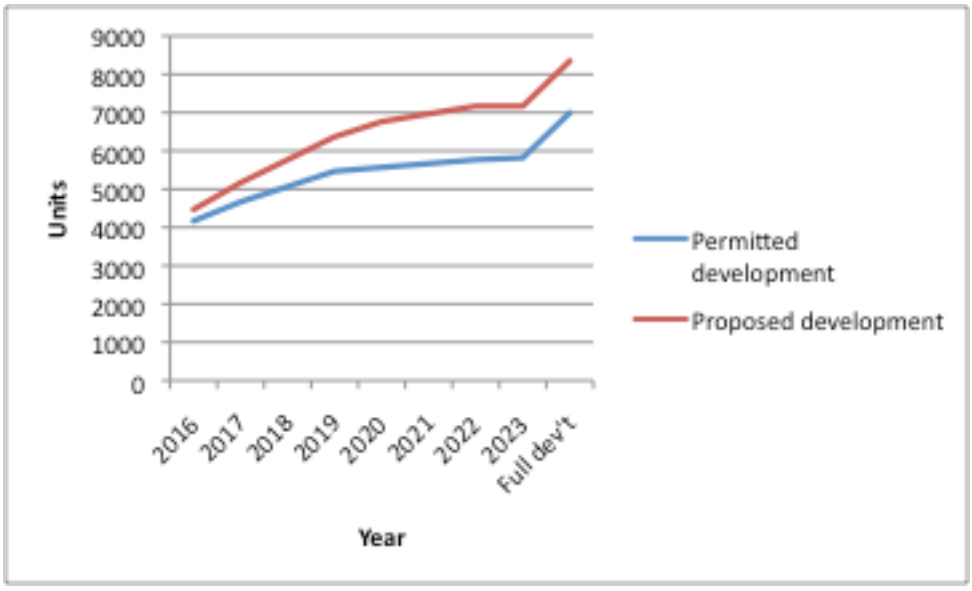
It is strongly recommended that the bridge be designed such that pedestrians have a secure and safe segregated right of way over the bridge, with adequate provision for shelter and refuge at intervals along the bridge.

Cyclists should be directed and encouraged to use the carriageway, rather than to share the pedestrian space, and the bridge should be designed accordingly.

The construction of the roadway to carry buses to the bridge from the surrounding road network will not take place until later in the overall construction period, since it will be built on the pediment created by the proposed car parking structure.

As shown in Table 4.8 the number of units within the proposed developed will only exceed the number in the permitted development post 2020. Assuming a steady completion rate of the development between 2016 and 2023, the proposed development will reach 7,000 units in 2019/20, when it will be 76% complete. This is the equivalent size of the currently permissible development.

Figure 4.8 – Development completion by year



It is imperative the bridge is delivered to precede or coincide with this milestone, recognising that the bridge will drive down car use across the whole development, and ensuring that traffic generation does not exceed that identified as being generated by the currently permissible development.

5.2 Infrastructure-based travel initiatives

The TMAP has found that only relatively minor infrastructure improvements are required at Rhodes station in order to facilitate the level of increased use arising from Wentworth Point residents, mainly relating to improved provision for bus stopping and taxi drop-off. In this regard, Wentworth Point residents will be in a fortunate position to enjoy the timely investment in upgrading Rhodes station relatively recently, and to maximise the public transport and travel behaviour benefits of that investment.

No additional infrastructure is considered necessary to cater for additional bus interchange at Rhodes station, since there is adequate on-road space to accommodate the likely number of buses arriving or laying over at any one time.

A number of infrastructure-based measures could help achieve the required mode share targets, including:

- The provision of accessible footpaths and a low speed traffic environment through the site and to/from the main access points serving the site. Ensuring that the use of personal non-motorised transport is encouraged through appropriate layout and road network design.
- The review of bus stop locations in the vicinity of the site, and at Rhodes, and upgrade of stop infrastructure, including passenger information to enhance accessibility.
- The provision of secure bike storage facilities at Rhodes station.
- Walking and cycling facilities linking to bus stops.

5.3 Non-infrastructure based initiatives

A number of non-infrastructure-based measures could help achieve the required mode share targets, including:

- The introduction of a travel behaviour change program for the development and potentially for other developments in the locality, including TAGs, welcome packs, and Workplace Travel Plans.
- Provision of walkways and cycleways through Wentworth Point linking with the bridge, rail and Metro 41 bus services at Rhodes rail station.
- Initiation of a marketing and awareness campaign for all new residents on the site and in the locality to promote the TDM initiatives including:
- Considering the merits of a proponent designed and funded car-sharing scheme.

5.4 Pedestrian and cycle networks

A key consideration for the internal design of the pedestrian and street network of Wentworth Point is the provision of direct, legible links between the key places of activity.

The proposed Homebush Bay Bridge will provide a vital transport link for pedestrians and cyclists and will be the key travel demand management tool for encouraging active transport. The bridge provides a direct connection to Rhodes rail and bus services for commuters and also creates a recreational circuit around Homebush Bay.

The design of the bridge will need to ensure integration into the existing and proposed networks. Conflict on the bridge needs to be taken into consideration when designing the infrastructure. It is important that it is legible with way-finding signs to key destinations. It will also need to be promoted through measures such as the TAG.

5.5 Taxi services

It was recommended by the earlier TMAP *(Cattell Cooper, September 2012)* that taxis should not be allowed to use the proposed bridge. This assessment was been made after careful consideration of the relative merits of allowing taxi access, and has been accepted by the Department of Planning in its Determination Report for the Homebush Bay Bridge proposal.

Wentworth Point residents wishing to access rail services by taxi would be likely to travel to or from Strathfield, North Strathfield or SOP stations, as their nearest options. It is not considered necessary at this stage to provide dedicated taxi stopping areas near the Wentworth Point development, since there is adequate road space for taxis to stop briefly for passengers to board or, more likely, alight. Building management may wish to provide telephone link to taxi services within the development, at their discretion, but it is not considered necessary within this TMAP.

5.6 Bus/rail interchange

TfNSW is responsible for monitoring passenger demand and for ensuring the adequacy of interchange and station facilities. Additional rail capacity on the Northern Line will result from the delivery of the North West Rail Link (see section 4.4.3. If the Proposal was likely to challenge the capacity of the current interchange and station at Rhodes, it may have been appropriate to recommend that the Proponent should contribute to the upgrade of facilities there. In fact, Rhodes station was rebuilt within the last ten years, and has a good standard of easy access, compliant with Disability Discrimination Act (DDA) requirements. It is considered that the additional demand generated by the proposal will be well within the capacity of the enhanced Rhodes station to accommodate. Further, the station upgrade was delivered precisely to facilitate the scale and nature of development being proposed at Wentworth Point, so the Proposal is optimising the investment made previously in the station.

Kerbside bus parking exists along the eastern kerb of Walker Street (western side of Rhodes Station) such that there will be no need to expand the bus bays at the station to accommodate forecast demand. Even if 50 per cent of the forecast development generated non-car trips were to occur on bus, the existing facilities would be more than capable of handling the 15 peak hour bus arrivals.

5.7 Bus services

The provision of peak period express buses would encourage residents of Wentworth Point to use feeder bus services to Rhodes station.

Minor alterations to existing local bus routes to use the proposed Homebush Bay Bridge could cater for the public transport demand of the residents at Wentworth Point. The recommended initial bus route alterations are:

- Enhancing bus route 533 with additional peak services in both directions.
- Extending Route 526 to Rhodes station.

The extended 526 could operate to/from the development and Rhodes station via Gauthorpe and Walker Streets (pick up and set down southbound in Walker Street at Rhodes station) with the service turning via Marry and Marquet Streets. The use of Marquet Street would offer easier bus manoeuvrability and avoid any grade issues.

At Rhodes station there are approximately 44m of kerb space available on the western side of Walker Street, presently allocated to a bus zone and a small 15-minute ‘kiss and ride’ (passenger drop-off) zone. The 44m zone is sufficient to accommodate two simultaneous bus arrivals, plus some level of kiss and ride activity. Having regard to the possible future estimate of bus arrivals at full development (around 20 per hour or one bus every 3 or 4 minutes) there will be a need to monitor operation at this location as demand grows.

Responsibility for planning and funding bus services rests with Transport for NSW, and this department should have in place monitoring and needs assessment processes to determine when and how bus services should be introduced.

Consideration was given during preparation of the TMAP to the potential for interim bus services to serve the development, probably offering a shuttle service. Should Transport for NSW consider it useful to operate shuttle services as part of an integrated strategy to foster public transport use through the early phases of development, the proponent would seek to work closely with Transport for NSW to establish an appropriate level of service. It is anticipated that any interim shuttle service

would be equivalent in terms of vehicle type and delivery to services which would be offered in the longer term, ensuring the development of user behaviour that would support the use of regular route services.

Due to the timing of the bridge completion and expected demand at that time, such services are not recommended. There would be no travel time benefit to intending rail commuters of an interim bus until such time as the bridge was complete, and demand rising from Wentworth Point is reaching the levels required to justify provision of scheduled bus services, potentially linked to wider strategic bus networks as well as the railway station.

At full development (end case) the bus service frequency will increase as more buses are required to accommodate the growth in non-car demand. It is unlikely that this will exceed 20 buses per hour (enough to accommodate about 1,000 persons per hour). In reality, a reasonable percentage of residents will choose to walk or cycle across the bridge to their destination, and, hence, not all will generate the need for outbound buses.

In summary, a base of 8-10 buses per hour in the early years peaking at about 20 at full development should more than adequately cater for bus demand while at the same time discouraging car use through the provision of a viable and time efficient alternative.

Parramatta City Council is currently investigating the feasibility of a light rail network focused on Parramatta. A light rail service operating via Wentworth Point and the Homebush Bay Bridge to Rhodes has been identified as part of the mooted network. The light rail network is a long-term proposal that remains subject to feasibility, design and funding. There have been no decisions on the nature of a future system, including choice of vehicle type. The development of Wentworth Point and the provision of the bridge supports the increased use of public transport which will, in the long term, support the business case for improved transit services. It is, however, premature to plan around light rail delivery.

6 Findings and recommendations

The key findings of the TMAP are that:

- It is quite feasible to achieve the TMAP's targets for mode share and travel management, assuming that the bridge connecting Wentworth Point to Rhodes and, in particular, Rhodes station is delivered in the right way and at the right time.
- The TMAP's targets are supported by the demonstrated change in travel behaviour between 2006 and 2011 in Wentworth Point and Rhodes.
- While it is now proposed to increase the development size beyond that proposed and permissible under the *HBW DCP*, the resultant increased trip generation will be more than contained by increased use of non-car modes.
- Overall, the bridge provides the opportunity to ensure an improved mode-share outcome, reduced number of car trips, and greater levels of accessibility amongst those living at Wentworth Point.
- The design of the Wentworth Point Proposal, including the Homebush Bay Bridge, will:
    - Reduce levels of vehicle kilometres travelled (VKT) during the peak periods and across other times of the day and week.
    - Reduce reliance on private vehicles.
    - Maximise the use of public transport, walking and cycling.
- The destination-based analysis supports the target mode share of **65 per cent car travel as driver**. In fact, there is an opportunity to reduce the mode share for car drivers further, through the promotion of walking and cycling.
- With assumed public transport mode shares, 33 per cent of peak hour trips will be made using public transport. Of these trips, 86 per cent will be made by rail and 14 per cent by bus. Table 6.1 summarises these findings.

Table 6.1 - Summary of public transport distribution, based on post-2023 trip generation

Public transport	Trips	% Trips
Train trips	**1,440**	**86%**
Train trips via Rhodes	1,364	82%
Train trips via Rhodes northbound	173	10%
Train trips via Rhodes southbound	1,191	72%
Train trips via SOP	76	5%
Bus trips	**226**	**14%**
Bus trips east	93	6%
Bus trips west	133	8%

In summary, the incremental impacts of the Proposal over those arising from the level of development permissible under the *HBW DCP* are not likely to generate additional car trips, nor to place unacceptable demands on public transport services in the area.

On the contrary, the provision of the Homebush Bay Bridge offers the opportunity to improve the mode share for public transport and active transport over the previously permissible development. The improved public transport mode share supports the achievement of State Plan targets for public transport use to Parramatta, Sydney CBD and across the Sydney Metropolitan Area.

6.1 Recommendations

The recommendations of the TMAP are summarised in Table 6.2.

Table 6.2 - Summary of TMAP recommendations

Summary of TMAP recommendations
Homebush Bay Bridge design
B1: Ensure pedestrians a secure and safe segregated right of way, with adequate provision for shelter and refuge at intervals along the bridge.
B2: Integrate bridge design and operation into the existing and proposed transport and road networks effectively and appropriately.
B3: Design should reduce the potential for conflict between users on the bridge and along shared paths in the precinct, by, for example, ensuring that cyclists and pedestrians can each travel safely and appropriate speeds.
B4: Cyclists should be directed and encouraged to use the carriageway, rather than to share the pedestrian space, and the bridge should be designed accordingly.
B5: Taxis should not be allowed to use the proposed bridge.
Infrastructure-based initiatives
IB1: Provide accessible footpaths and cycle paths through the site and to/from the main access points serving the site
IB2: The use of personal non-motorised transport should be encouraged through appropriate layout and road intersection design.
IB3: Bus stop locations and stop infrastructure, including passenger information and signage, in the vicinity of the site and at Rhodes, should be reviewed at regular intervals during the development process to ensure their appropriateness and effectiveness for evolving transport services.
IB4: The Proponent should discuss with TfNSW the potential to provide secure bike storage facilities at Rhodes station.
IB5: Include walking and cycling facilities linking to bus stops in the design of the development, including walkways and cycleways through the development site linking with the bridge, rail and Metro 41 bus services at Rhodes railway station.
IB6: No infrastructure improvements are considered necessary at Rhodes station.
IB7: The internal design of the pedestrian and cycling environment of the site **should provide direct legible links between the key places of activity.**
Non-infrastructure based initiatives (local transport network)
LT1: The Proponent should liaise regularly with the Transport for NSW (TfNSW), which has the responsibility for planning and funding bus services, to assist with TfNSW's monitoring of demand and its transport needs assessments in the area so as to determine when and how bus services should be introduced or amended.
LT2: TfNSW should consider **minor alterations to local bus routes to use the Homebush Bay Bridge. The recommended initial bus route alterations are:** • **Diverting bus route 533 to travel through Wentworth Point**, with **additional peak services in both directions.**

• **Extending Route 526 to Rhodes station.**
LT3: Investigate the provision of peak period express buses to/from the site and Rhodes station via Gauthorpe and Walker Streets (pick up and set down southbound in Walker Street at Rhodes station, to encourage residents of Wentworth Point to use feeder bus services to Rhodes station.
LT4: The area's transport networks should be legible, with way-finding signs to key destinations.
LT5: Local transport options and networks should be promoted through measures such as the TAG (See recommendation DM 1).
Non-infrastructure based initiatives (demand management)
DM1: Introduce a travel behaviour change program for the development (and potentially for other developments in the locality) including transport access guides (TAGs), welcome packs, and workplace travel plans.
DM2: Initiate a marketing and awareness campaign for all new residents on the site and in the locality to promote the demand management initiatives.
DM 3: Consider the introduction of a proponent-designed and -funded car-sharing scheme.

6.2 Conclusion

The updated TMAP has re-assessed the potential incremental impacts of the Proposal over the level of development that was permissible under the current planning controls contained in the *HBW DCP*, based on the implementation of the Homebush Bay Bridge.

The updated TMAP still concludes that the current Proposal, in conjunction with the Homebush Bay Bridge, will not adversely impact upon local road and public transport networks over and above the impacts envisaged for permissible development under the previous controls. The provision of the bridge, and, in particular, its preferential use by bus services linking to Rhodes station, will favour the use of public transport significantly, especially for journeys to work.

In terms of mode share to public transport, the Proposal has the potential to deliver better outcomes than most of its neighbouring suburbs. This will contribute to the achievement of State Plan targets for public transport use for trips to Sydney and Parramatta CBDs. It will also deliver a local environment that is conducive to active transport use – cycling and walking – and to making public transport the preferred and most convenient option for journeys to work and a range of other travel. The TMAP makes a series of recommendations to ameliorate any identified impacts, and to optimise the potential for active transport for local residents.

The TMAP also concludes, importantly, that the timely and appropriately-designed provision of the bridge will be critical to achieving the proposed targets for travel demand and mode share. It recommends bridge design and operating principles that will further contribute to the success of the development in relation to its travel impacts.

Appendices

Appendix A - Matters for inclusion for TMAP issued by Transport NSW

NSW GOVERNMENT | Transport & Infrastructure

MATTERS FOR INCLUSION IN THE RECOMMENDED WENTWORTH POINT TMAP

Transport NSW requests that, should the matter proceed, a TMAP be developed that addresses:

1. Key State policies and guidelines, including the :
   - *Metropolitan Plan for Sydney 2036*, Department of Planning, 2010;
   - *NSW State Plan* 2010;
   - *Metropolitan Transport Plan – Connecting the City of Cities*, TNSW, 2010;
   - *NSW Bike Plan*, NSW Government, 2010;
   - *Healthy Urban Development Checklist*, NSW Health, 2010;
   - *Service Planning Guidelines*, TNSW, 2006;
   - *Planning Guidelines for Walking and Cycling*; DoP and RTA, 2004; and
   - *Integrating Land Use and Transport* policy package, Department of Planning, 2001.
2. Measures by which development of the site can reduce car dependency to achieve consistency with the objectives and targets of the *NSW State Plan 2010*, including:
   - To and from Sydney CBD during peak hours to 80% by 2016
   - To and from Parramatta CBD during peak hours to 50% by 2016
   - Increase the proportion of total journeys to work by public transport in the Sydney Metropolitan Region to 28% by 2016
   - Increase the mode share of bicycle trips made in the Greater Sydney region, at a local and district level, to 5% by 2016.
3. Detail of existing and planned public transport and road network capacity, developed in consultation with TNSW, for the AM and PM peak periods at different stages of potential site development. The analysis should be compared with mode split assumptions contained in the Strategic Transport Review for the Gateway Planning Proposal, and address the following:
   - The expected uplift in public transport demand considered in the context of additional demand that may be generated by potential development at Rhodes West, and the compound effect of both proposals on rail system capacity;
   - Mode shares for travel to individual Centres identified by the *Metropolitan Plan* and to Local Government Areas separately identified and estimated. Mode share projections should consider relative travel times and costs (including interchange) and the available capacity of each transport mode;
   - Rail network capacity assessment of existing and planned service frequencies and individual peak hour train loads at Rhodes, Concord West, North Strathfield, Strathfield and Lidcombe stations;

- Bus network capacity requirements based credible options for interchange, taking into account connecting rail and ferry service capacity during AM and PM peaks. Opportunities to provide physical bus priority measures at congested locations should also be identified; and
- Road network capacity assessed on the basis of car traffic that could arise after viable short term alternative public transport options have been exhausted. Specific assessment of likely intersection performance should be undertaken for various intersections, including but not limited to:
    - Holker Street and Silverwater Road,
    - Parramatta Road and Hill Road,
    - Parramatta Road and Uhrig Road,
    - Underwood Road and Homebush Bay Drive
    - Homebush Bay Drive and Concord Road.

4. Options for any potential additional upgrades to services and infrastructure (including for walking and cycling) that may be required to support the development, noting that any proposed changes would need to be negotiated through TNSW;
5. Appropriate development controls including minimal (not minimum) car parking rates to maximise walking, cycling and use of public transport; and
6. Consideration of how demand for travel to and from the subject development will be managed for employees and residents.

TNSW recommends that conditions of consent for any development application arising from rezoning as proposed, includes requirements for:

- Work place travel plans (WTP) in accordance with the standard guidance available at http://www.pcal.nsw.gov.au/workplace travel plan); and
- Transport access guides (TAG) for future residents, employees and visitors of the future developments.

Appendix B - Travel zone boundaries

Table B.1 - Auburn travel zone boundary map highlighting Wentworth Point (1613) and Newington (1617, 1621)

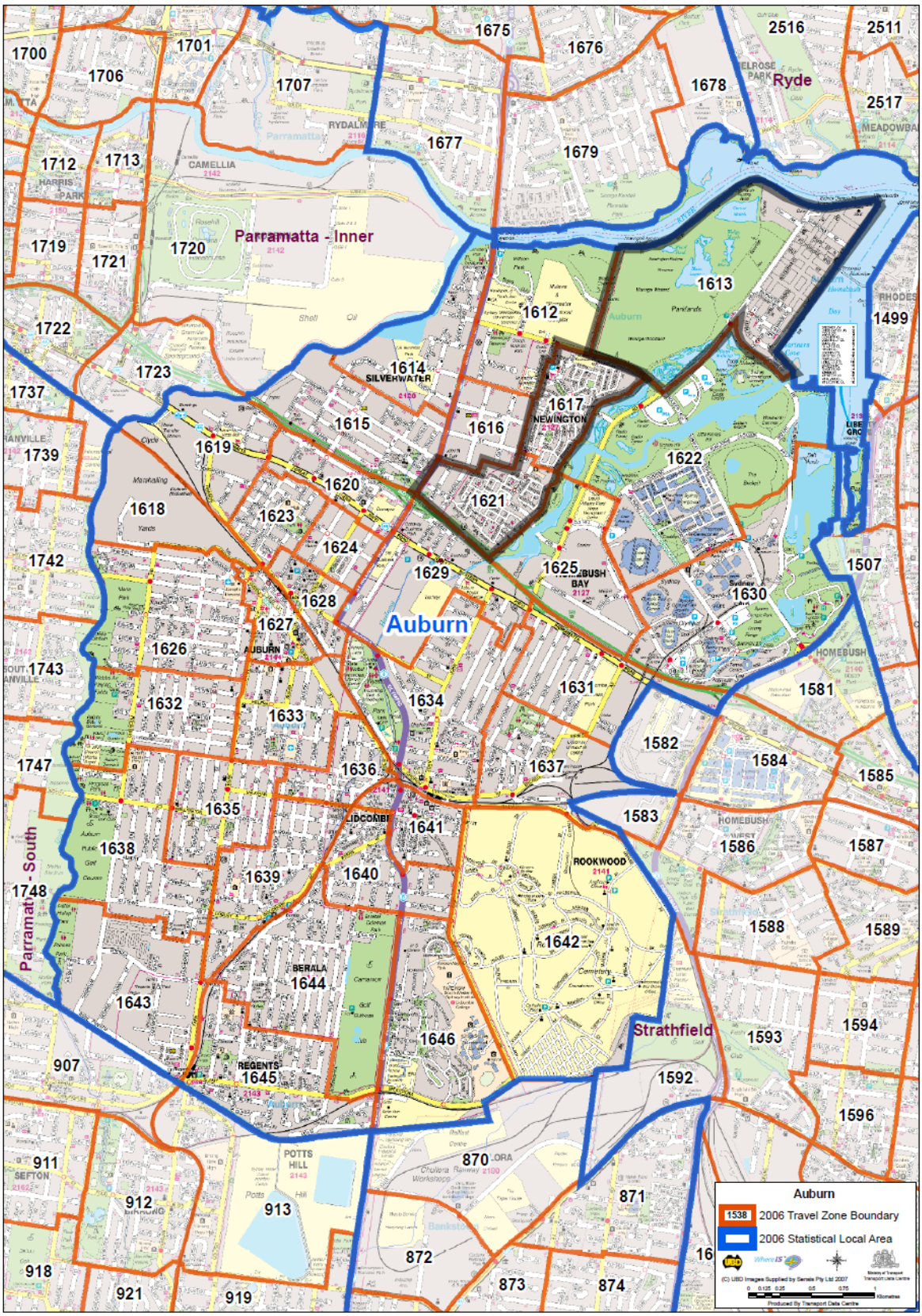
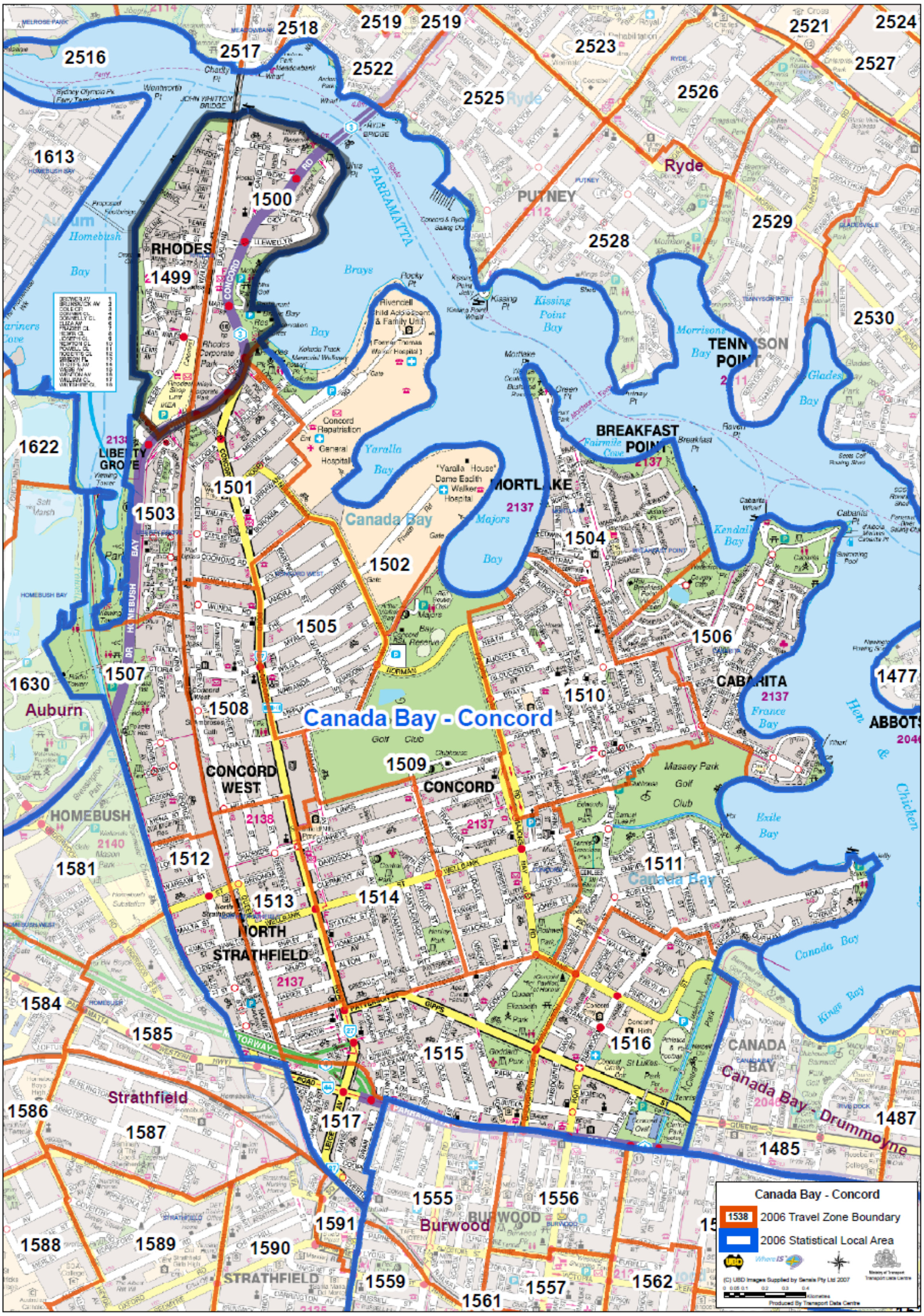


Table B.2 - Canada Bay travel zone boundary map highlighting Rhodes (1499 and 1500)



Appendix C - Public transport services

Table C.1 – Train service frequencies

Station	Line	Weekday Services							Weekend Services	
		No. of Services a Day	First Service to City	Last Service to City	AM Peak (7-9)		PM Peak (4-6)		No. of Saturday Services**	No. of Sunday Services**
					Direction 1	Direction 2	Direction 1	Direction 2		
Olympic Park	Olympic Park Services*	87	5:58am	12:04am	12 (to City)	12 (to SOP)	13 (to City)	13 (to SOP)	95	95
Rhodes	Northern Line	66	5:04am	12:16pm	8 (to City)	9 (to Epping)	9 (to City)	8 (to Epping)	39	39

Notes:
* Not all services run between Central and Olympic Park and these direct services are weekdays only. Olympic Park Sprint operates between Lidcombe and Olympic Park Station at 20 minute intervals.

** Service numbers based on inbound services to the City.

Table C2 – Lines serving local stations

Station	Line
Lidcombe	Inner West Line, Bankstown Line, South Line, Western Line, Blue Mountains Line, Olympic Park Service
Strathfield	Inner West Line, Western Line, South Line, Northern Line, Newcastle & Central Coast Line, Blue Mountains Line, Olympic Park, Southern Highlands
Auburn	Western Line & South Line
Concord West	Northern Line
Homebush	Inner West & South Lines

Table C.3 – Bus service frequencies

Service No.	Route	Service Frequency	Weekday Services							Weekend Services	
			No. of Services a Day	First Service	Last Service	AM Peak (7-9)		PM Peak (4-6)		No. of Saturday Services	No. of Sunday Services
						Direction 1	Direction 2	Direction 1	Direction 2		
Wentworth Point Services											
526	Sydney Olympic Park Wharf to Burwood via Newington, Sydney Olympic Park & Strathfield	Daily full time service	29 (to Burwood)	6:05am (to Burwood)	7:28pm (to Burwood)	5 (to Burwood)	3 (to Parramatta)	5 (to Burwood)	4 (to Parramatta)	15 (to Burwood)	15 (to Burwood)
Newington and SOP Services											
401	Olympic Park (Olympic Park Station) to Lidcombe via Mons Street	Monday to Saturday daytime service	29 (to Lidcombe)	6:20am (to Lidcombe)	7:00pm (to Lidcombe)	6 (to Lidcombe)	7 (to Sydney Olympic Park)	6 (to Lidcombe)	6 (to Sydney Olympic Park)	14 (to Lidcombe)	0
525	Parramatta to Burwood via University of Western Sydney, Rydalmere, Ermington, Silverwater, Newington, Sydney Olympic Park & Strathfield	Daily full time service	34 (to Burwood)	6:02am (to Burwood)	9:40pm (to Burwood)	6 (to Burwood)	10 (to Parramatta)	5 (to Burwood)	6 (to Parramatta)	26 (to Burwood)	12 (to Burwood)
533	Chatswood to Sydney Olympic Park via Mowbray Rd, North Ryde, Ryde & Rhodes	Monday to Friday peak hour service	8 (to Chatswood)	4:39pm (to Chatswood)	6:24pm (to Chatswood)	0 (to Chatswood)	7 (to SOP)	6 (to Chatswood)	0 (to SOP)	0	0
540	Auburn to Newington via Vore St, Silverwater	Weekday peak hour service	9	6:00am (to Silverwater)	5:52pm (to Silverwater)	3 (to Silverwater)	4 (to Auburn)	4 (to Silverwater)	4 (to Auburn)	0	0
544	Auburn to Macquarie University via Silverwater, Ermington, Denistone West, Eastwood & Denistone East	Monday to Saturday daytime service	23	6:15am (to Macquarie Centre)	7:25pm (to Macquarie Centre)	5 (to Macquarie Centre)	5 (to Auburn)	4 (to Macquarie Centre)	4 (to Auburn)	10 (to Macquarie Centre)	0
Rhodes services											
M41	Hurstville to Macquarie Centre via Bexley North, Campsie, Burwood, Concord, Rhodes, Ryde, Top Ryde, North Ryde & Macquarie Park	10 mins during weekday peak, 15 mins during day, 20 mins at night/weekends	76 (to Macquarie Park)	6:10am	6:53pm	11 (to Burwood)	12 (to Macquarie Park)	11 (to Burwood)	12 (to Macquarie Park)	38 (to Macquarie Park)	38 (to Macquarie Park)
458	Burwood to Ryde via Strathfield Station, North Strathfield, Concord West & Rhodes	Daily full time service	38	5:15am (to Burwood)	20:55 (to Burwood)	5 (to Burwood)	4 (to Ryde)	4 (to Burwood)	4 (to Ryde)	32 (to Burwood)	16 (to Burwood)
459	Strathfield Station to North Strathfield, Concord West, Ryde & Macquarie University	Weekdays daytime service	17 (to Burwood)	7:17am (to Burwood)	6:44pm (to Burwood)	3 (to Burwood)	4 (to Macquarie University)	4 (to Burwood)	3 (to Macquarie University)	0	0

Table C.4 - Ferry service frequencies from Sydney Olympic Park wharf

Weekday Services									Weekend Services	
No. of Services a Day	First Service to City	Last Service to City	First Service to Parramatta	Last Service to Parramatta	AM Peak (7-9)		PM Peak (4-6)		No. of Saturday Services	No. of Sunday Services
					Direction 1	Direction 2	Direction 1	Direction 2		
24*	6:05am	10:35pm	6:25am	7:23pm	2 (to Parramatta - terminating at Rydalmere)	6 (to Circular Quay - 1 terminates at Darling Harbour)	3 (to Parramatta - 2 services terminate at Rydalmere)	4 (to Circular Quay)	21	18

Notes: * Service from SOP to Circular Quay with some services terminating before Circular Quay. Calculated from April 2011 t

Appendix D – Transport demand assessment

Table D.1 – Assumptions

Development assumptions	Development mix	85% - 2 bed 15% - 3 bed	
Assumed vehicle generation (from RTA Guide)	2 bed 3+ bed	Peak 0.45 Peak 0.575	Daily 4.5 Daily 5.75
Mode Share		Existing	Future
	Vehicle trips	78%	65%
	Other	22%	35%
Trips (permissible development)	Vehicle trips	3,279	
	Other	925	
Trips (proposed development)	Vehicle trips	3,261	
	Other	1,756	

Table D.2 – Estimated trip generation, with and without uplift, based on total dwelling forecasts (post 2023)

Development			Forecast new dwellings				Peak hour trips				Daily trips			
			2011 (existing)	2016	2023	Total Dwellings Post 2023	2011	2016	2023	Post 2023	2011	2016	2023	Post 2023
Other development	Part 1	Mariners, TNT, Part Waterfront	1,231	1,311	1,911		577	615	896		5,770	6,145	8,958	
	Part 2	Palermo and Part Waterfront	1,007	1,657	1,657		472	777	777		4,720	7,767	7,767	
Wentworth Point	No uplift*	lots 8, 9, 10, 18 and 21 NO UPLIFT	0	1,200	2,250		0	563	1,055		0	5,625	10,547	
	Uplift**	lots 8, 9, 10, 18 and 21 WITH UPLIFT	0	1,500	3,600		0	703	1,688		0	7,031	16,875	
Totals (permissible development)			2,238	4,168	5,818	6,996								
Totals (proposed development)			2,238	4,468	7,168	8,349								
Total vehicle trips (permissible development)							1,049	1,954	2,727	3,279	1,0491	19,538	27,272	32,793
Total vehicle trips (proposed development)							1,049	2,094	3,360	3,913	1,0491	20,944	33,600	39,135
Total trips (permissible development)							1,345	2,505	3,496	4,204				42,042
Total trips (proposed development)							1,345	2,685	4,308	5,017				50,173

***** **No uplift:** **Permissible development under HBW DCP**
****** **With uplift:** **Now-proposed development**

Table D.3 - Post-2023 total trips

Destination LGA	Count ABS	Percentage	PT mode share	Future WP trips	PT trips	PT mode	Train %	Station	Direction	Train trips	Bus %	Direction	Bus trips
Sydney	337	23%	80%	1,140	912	rail	100%	via Rhodes	south	912			
Canada Bay	185	12%	20%	626	125	bus/rail	50%	via Rhodes	south	63	50%	East	63
Auburn	132	9%	20%	447	89	bus	0%			0	100%	West	89
Parramatta	119	8%	50%	403	201	rail	100%	via Rhodes	south	201			
Ryde	105	7%	20%	355	71	rail	100%	via Rhodes	north	71			
Blacktown	59	4%	15%	200	30	rail	100%	via SOP		30			
Willoughby	55	4%	20%	186	37	rail	100%	via Rhodes	north	37			
North Sydney	49	3%	30%	166	50	rail	100%	via Rhodes	north	50			
Bankstown	46	3%	10%	156	16	rail	100%	via SOP		16			
Burwood	41	3%	10%	139	14	bus	0%			0	100%	West	14
Other	355	24%	10%	1,201	120	bus/rail	25% 25%	via Rhodes via SOP	both	30 30	50%	Both	60
Total	**1,483**	**100%**		**5,017**	**1,665**					**1,440**			**226**

State Plan Target (note: average 28% across GMR exceeded)
33% required public transport mode share

Table D. 4 - Summary of public transport distribution, based on post-2023 trip generation

Public transport	Trips	% Trips
Train trips	**1,440**	**86%**
Train trips via Rhodes	1,364	82%
Train trips via Rhodes northbound	173	10%
Train trips via Rhodes southbound	1,191	72%
Train trips via SOP	76	5%
Bus trips	**226**	**14%**
Bus trips east	93	6%
Bus trips west	133	8%

An analysis of Census data for Wentworth Point and Rhodes combined has provided a JTW trip distribution which was then applied to the trips generated by the now proposed development. Assumed public transport mode share is based on the trip destination, the ease of public transport use and the existing network, with additional bus services operating over the proposed bridge. The future use of public transport has also been informed by the State Plan targets for Parramatta and Sydney CBDs.

When the assumed public transport mode shares are applied to the generated trips, the analysis suggests that 33 per cent of peak hour trips will be made using public transport. Of these trips, 86 per cent will be made by rail and 14 per cent by bus. Table D.4 summarises these findings.

The destination based analysis supports the target mode share of 65 per cent car driver and in fact suggests that the opportunity exists to reduce the car driver mode share further through the promotion of walking and cycling.

Table D.5 – Progressive trip generation based on development completion

Destination LGA	2011		2016		2023		Post 2023	
	Total trips	Public Transport Trips	Total trips	Public Transport Trips	Total trips	Public Transport Trips	Total trips	Public Transport Trips
Sydney	306	245	610	488	979	783	1140	912
Canada Bay	168	34	335	67	537	107	626	125
Auburn	120	24	239	48	383	77	447	89
Parramatta	108	54	215	108	346	173	403	201
Ryde	95	19	190	38	305	61	355	71
Blacktown	54	8	107	16	171	26	200	30
Willoughby	50	10	100	20	160	32	186	37
North Sydney	44	13	89	27	142	43	166	50
Bankstown	42	4	83	8	134	13	156	16
Burwood	37	4	74	7	119	12	139	14
Other	322	32	643	64	1031	103	1201	120
Total	**1,345**	**446**	**2,685**	**891**	**4,308**	**1,430**	**5,017**	**1,665**

Table D.6 – Distribution of progressive trip generation on the public transport network

	2011	2016	2023	Post 2023
Train trips	386	770	1,236	1,440
Train trips via Rhodes	366	730	1,171	1,364
Train trips via Rhodes northbound	46	93	149	173
Train trips via Rhodes southbound	319	637	1,023	1,191
Train trips via SOP	20	40	65	76
Bus trips	61	121	194	226
Bus trips east	25	50	80	93
Bus trips west	36	71	114	133

Appendix E – Comparison of Demographic Characteristics