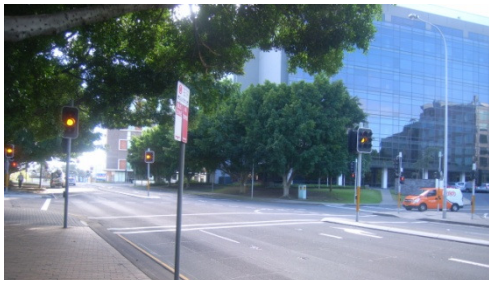


# Mascot Town Centre Precinct Transport Management and Accessibility Plan Final Report



# MASCOT TOWN CENTRE PRECINCT TRANSPORT MANAGEMENT AND ACCESSIBILITY PLAN

## Final Report

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## EXECUTIVE SUMMARY

### Overview

SMEC Australia Pty Ltd (SMEC), in association with Neustein Urban Planning Design, was commissioned by City of Botany Bay Council (Council) in 2011 to prepare a Transport Management and Accessibility Plan (TMAP) for the Mascot Town Centre Precinct, herein referred to as the TMAP Study Area.

The TMAP Study Area is bounded by Gardeners Road to the north, Alexandra Canal to the west, Sydenham-Botany Goods Line to the south and the residential area between Botany Road and O'Riordan Street/Botany Road to the east as shown in Figure 1.1 (Section 1).

The TMAP Study Area contains the Mascot Station Precinct, an area bounded by Gardeners Road, O'Riordan Street, Coward Street and Kent Road.

The TMAP Study Area is identified as a growth and activity centre in the *State Metropolitan Strategy* and the associated draft *East Sub-regional Strategy*.

The draft *East Sub-regional Strategy* has set an employment target of 16,700 new jobs, between 2001 and 2031 and a housing target of 6,500 new dwellings between 2004 and 2031, for the Botany Bay Local Government Area (LGA).

To identify options to achieve the employment and housing targets, Council commissioned two land use studies: *Botany Bay Planning Strategy (BBPS) 2031*, *Local Liveability, Global Connections* (SGS Economics and Planning, 2009) and *LEP Standards and Urban Design Controls Study for the City of Botany Bay Local Environment Plan (LEP) 2011* (Neustein Urban with David Locke Associates and Taylor Brammer Architects).

Both studies established that it was possible to meet the targets by concentrating development in the TMAP Study Area. The Neustein Urban with David Locke Associates and Taylor Brammer Architects (Neustein/DLA) Study found that these housing and employment targets could be satisfied by a recommended increase in Floor Space Ratio (FSR) of 3:1 in both employment and new residential areas. The Neustein/DLA Study indicated that an increase in the residential and employment capacity of the TMAP Study Area would only be possible if traffic and transport issues are resolved. NSW Roads

and Maritime Services (RMS) had already indicated to Council that a TMAP was required. The Neustein/DLA Study supported the next step in the LEP and Development Control Plan (DCP) making process to be the preparation of the required TMAP.

This TMAP was therefore prepared as part of an integrated land use and transport assessment, to assess the cumulative traffic and transport impacts of development options to achieve the employment and housing targets for the LGA up to 2031.

The TMAP study was project managed by Council's Strategic Planning Manager, in association with a Project Steering Committee made up of representatives of Council, Transport for NSW (TfNSW), Department of Planning and Infrastructure (DoPI) and RMS.

### Existing and Planned Transport System

The existing and planned public transport system in the TMAP Study Area has the following features:

- + The TMAP Study Area is serviced by a frequent rail service between Town Hall and Macarthur, via Sydney Airport, along the Airport East Hills Line (AEHL). With the recent removal of the station surcharge, Mascot Station has experienced a significant increase in rail patronage.
- + The TMAP Study Area is also serviced by a number of bus routes and a developing pedestrian and cyclist network. The current bus service directly servicing Mascot Station during the weekday peak periods is bus route 357. A second bus route along Coward Street and Bourke Road provides a service close to the station.
- + Early implementation of sections of the Strategic Bus Corridors (SBC) 21 and 29 are likely to benefit the TMAP Study Area. However, the implementation of these corridors is not planned for the short term.

The local road network within the TMAP Study Area is well established and dominated by an arterial road network made up of Botany Road, Gardeners Road, O'Riordan Street, Bourke Road (south of Coward Street), Coward Street (west of Bourke Street), General Holmes Drive/Joyce Drive/Qantas Drive, Ricketty Street, Robey Street and Kent Road.

The road network carries high through-traffic volumes to/from the Sydney Airport and Port

Botany. The Gardeners Road/Ricketty Street corridor is currently operating close to capacity during the evening peak period.

The existing narrow road reservations along the arterial road network do not support a cost effective road widening strategy. This constraint underlines the need to encourage higher public transport patronage as part of the redevelopment of the TMAP Study Area.

RMS and TfNSW representatives on the Project Steering Committee have advised that the State Government is planning for the future construction of the M5 East Extension and can be used as an assumption for the purpose of transport scenario modelling for this TMAP. The corridor was therefore taken into consideration in the traffic modelling for redevelopment of the TMAP Study Area beyond 2021. The State Government has not made a commitment to the timing of the construction of this road infrastructure at this stage.

The existing pedestrian facilities within the TMAP Study Area are generally narrow, with a number of locations obstructed by trees, signage posts and power poles with sections that are poorly connected.

The proposed redevelopment provides opportunities for improving the pedestrian network, pedestrian amenity and facilitating connectivity by providing links through the existing large industrial blocks.

A number of subregional cyclist routes are located in close proximity to the TMAP Study Area. This presents opportunities to provide cyclist connections with the subregional network and implement the missing link between the Bourke Road Cycleway in City of Sydney LGA with Sydney Airport, as redevelopment proceeds.

## Land Use Development Options

The Neustein/DLA Study recommended the following employment and housing growth, within the TMAP Study Area by 2031, based on redevelopment to an FSR of 3:1 for proposed residential, business and mixed use developments:

- + Employment: 14,030 to 18,590 jobs; and
- + Residential: 4,950 dwellings

The Neustein/DLA Study recommended possible land use zones and allocated forecast population and employment developments within the TMAP Study Area.

To maintain residential amenity, the recommended zones included:

- + Business development in zones B3 (commercial core), B4 (mixed use), B6 (enterprise corridor), B7 (business park) and B5 (business development) for the southern portion of the TMAP Study Area, south of Coward Street, with Aircraft Noise Exposure Forecast (ANEF) 25 noise affectation;
- + Industrial development zone IN1 (general industrial) to the west of Kent Road; and
- + Residential/mixed use zone north of Coward Street with the commercial core to the south between Coward Street and Sydney Airport.

As part of the TMAP preparation, the Neustein/DLA Study recommendations have been reviewed and reconfirmed, with the following observations:

- + The TMAP Study Area's large development sites, limited land ownership and proximity to the Mascot Station all combine to provide extensive redevelopment potential in preference to sporadic development elsewhere;
- + Relaxation of the ANEF contours, adopted by Council in 2010, has made possible the extension of mixed use residential /commercial zone further west within the TMAP Study Area;
- + All developments are to be limited to approximately 12 storeys by the Obstacle Limitation Surface (OLS) for the approaches to Sydney Airport. This is a very significant constraint on residential development which is not able to fill sites to the extent possible for commercial buildings; and
- + In the last three years, Council has approved redevelopments with an average FSR of about 3.3:1 and redevelopments with FSR of 3:1 to 3.5:1 will be achievable.

Based on the above employment and housing growth figures, two development scenarios, Scenario 1 (S1) low development and Scenario 2 (S2) high development, were developed for cumulative traffic and transport impact assessment.

The forecast employment and population growth for the two scenarios, between 2011 and 2031, compared to the base (2011) figures, assessed in the TMAP, are summarised in Tables 1 and 2.

**Table 1: Population Growth Forecast, TMAP Study Area**

Scenario	Population		
	2011	2021	2031
Botany Bay LGA	41,900	44,800	48,200
TMAP Study Area (Base)	2,700	2,300	2,300
Mascot S1	2,700	6,800	9,800
Mascot S2	2,700	7,600	11,000

Source: SMEC, 2011

**Table 2: Employment Growth Forecast, TMAP Study Area**

Scenario	Employment		
	2011	2021	2031
Botany Bay LGA	55,400	61,500	65,200
TMAP Study Area (Base)*	19,000	20,500	21,500
Mascot S1	19,000	26,500	30,000
Mascot S2	19,000	29,900	34,600

Source: SMEC, 2011

The forecast development scenarios are based on following development features:

- + S1 involves redevelopments to FSR 3:1 and S2 involves redevelopments to FSR 3.5:1.
- + Employment capacity of one person per 80 m<sup>2</sup> for industrial land uses and one person per 25 m<sup>2</sup> for office developments; and
- + Residential density of one dwelling per 100 m<sup>2</sup> of gross floor area, which allows a two-bedroom dwelling of 85 m<sup>2</sup> plus common circulation and services space at 15 m<sup>2</sup>/dwelling.

Based on these development scenarios, the population and employment under S1 could grow by approximately 262% and 58%, respectively with the corresponding figures of 307% and 82% under S2.

## Trip Generation

Tables 3 and 4 summarise the expected total daily trip generation rates and vehicular trip generation from the employment and residential land uses adopted for the TMAP Study Area.

**Table 3: TMAP Study Area Employment Trip Generation Rates (AM Peak Car Driver Trips)**

	Employment (Jobs)	Origin Car Trips	Destination Car Trips
2021 S1	26,500	765	4,155
2021 S2	29,900	890	4,700
2031 S1	30,000	1,170	4,680
2031 S2	34,600	1,360	5,560

Source: SMEC, 2011

**Table 4: Mascot TMAP Residential Mode Trip Generation by Development Scenario 2**

Mode	Average Annual Daily Trips	AM Peak (2hrs)	Constrained AM Peak <sup>1</sup> (2hrs)
Bicycle	350	70	70
Vehicle driver	33,500	5,250	4,050
Vehicle passenger	9,750	1,500	1,150
Walk	9,300	1,300	1,300
Public Transport	4,500	1,500	3,000
Others	750	150	200
Total Trips	58,150	9,770	9,770
<i>Total Trips per Dwelling</i>	<i>9.5</i>	<i>1.59</i>	<i>1.59</i>
<i>Car Trips per Dwelling</i>	<i>5.4</i>	<i>0.85</i>	<i>0.66</i>

Source: SMEC, 2011

<sup>1</sup> Constrained two hour peak road trip generation potential with mode reassignment

## Mode Share Targets

Due to its location, traffic flow through the TMAP Study Area is affected by:

- + External through-traffic; and
- + Inbound, outbound and internal traffic with origin and/or destination within the TMAP Study Area.

The Bureau of Transport Statistics (BTS) data for 2006 indicates that 4% travel within Botany Bay LGA is by train, 19% by bus and 66% car driver and passenger, 1% by bicycle and 6% walking.

Analysis of BTS' travel characteristics for the TMAP Study Area including the Mascot Town Centre, for the weekday AM peak (two hours) indicates that the TMAP Study Area has an existing mode split of 14% by rail, 5% by bus and 80% car driver.

BTS is forecasting a moderate shift to public transport over the next 20 years, as shown in Table 5.

Table 5: BTS Forecast Mode Share for the TMAP Study Area

Forecast Year	Rail	Bus	Car Driver
2011	14%	5%	80%
2021	16%	5%	78%
2031	18%	5%	77%

Strategic and micro-simulation modelling carried out as part of the TMAP, indicates that a significant mode share towards higher public transport use is required to accommodate the cumulative traffic impacts of the TMAP Study Area's development scenarios (S1 and S2) described above.

Rather than nominating arbitrary public transport mode share targets up-front in the TMAP process, the study team identified the optimum car mode share that could be accommodated by the road network; given the limited available road upgrade opportunities. The road network capacity was determined through the micro-simulation modelling process. Once the maximum car mode share target was identified, the remaining trips were assigned to alternate transport modes.

The modelling indicates that the car mode share has to be reduced to approximately 65% by 2021 and 57% by 2031. The calculated bus, rail and car mode splits for the AM peak (two hours) for development scenarios S1 and S2 are presented in Table 6.

Table 6: AM Peak (two hour) Mode Share Splits Based on BTS Forecasts, TMAP Study Area

Scenario	Rail	Bus	Car Driver
2011 Base	14%	5%	80%
2021 S1	26%	9%	65%
2021 S2	26%	9%	65%
2031 S1	34%	9%	57%
2031 S2	34%	9%	57%

These mode shares are recommended to minimise the traffic impact of the proposed redevelopment of the TMAP Study Area.

Strategies for achieving the recommended mode splits include:

- + Planned capacity enhancement on the Airport East Hills Line (AEHL);
- + Implementation of three new high frequency bus services through the TMAP Study Area by 2021, as shown in Figure 3.3, along with implementation of the bus priority measures along Bourke Street and Gardeners Road, as shown in the recommended road network upgrades (Appendix F); and
- + Implementation of travel demand measures including reduced car parking provision, the need for Work Travel Plans to be submitted and implemented and the provision of bicycle and pedestrian facilities as described in the recommended package of measures.

The combination of all of these strategies needs to be applied to achieve the mode shift targets established by this TMAP and hence the land use targets.

In addition, implementation of the critical regional transport improvements assumed in the TMAP will need to be supported by additional bus

patronage modelling to assess the operation of future bus network changes.

Council, in consultation with TfNSW, will also need to monitor mode split and the road network performance to ensure the traffic and transport impacts of the redevelopment within the TMAP Study Area over time are appropriately managed.

### Travel Demand Management Principles

The principles used for the development of the package of measures for the TMAP Study Area are:

- + Facilitating the existing high proportion of internal walking trips for the Botany Bay LGA to encourage the same or a higher proportion of walking trips for the TMAP Study Area;
- + Supporting the state and local transport initiatives relevant to the TMAP Study Area;
- + Reducing private vehicle travel to contribute to viability of the recommended mode share targets for the TMAP Study Area; and
- + Promoting sustainable transport choices.

### TMAP Package of Measures

A detailed package of transport measures has been developed to support the redevelopment of the TMAP Study Area and to ensure that the recommended mode share targets can be achieved.

The package of measures has been determined to reflect a sustainable development approach for the TMAP Study Area, taking into consideration its close proximity to the Sydney CBD and Sydney Airport. A key consideration for the package of measures is that Mascot Station is central to the TMAP Study Area, providing frequent rail services to the Sydney CBD.

The recommended package of measures took into consideration the following assumptions concerning public transport and major road network upgrades:

- + Implementation of the following three new high frequency bus routes, as shown in Figure 3.3, as redevelopment proceeds within the TMAP Study Area:
  - Enhanced Bondi Junction to Marrickville;
  - City to Miranda; and

- City to Marrickville via the Eastern Transit Corridor through Green Square.
- + Construction of the M5 East Extension by 2021. No commitment has been made by State Government at this stage regarding the timing of this link.

A summary of the package of measures are provided in Table 7.

Table 7: Recommended Package of Measures

Category of Package of Measures	Description
Public transport initiatives	<ul style="list-style-type: none"> <li>+ Provision of a bus terminal along Bourke Street, close to the Mascot Station (as shown in Figure 6 of Appendix F)</li> <li>+ Implementation of a sections of SBCs 21 and 29, through the TMAP Study Area, to improve bus operations on the City to Miranda bus route;</li> <li>+ Construction of bus lanes along Bourke Street, bus priority lanes at the Gardeners Road/Bourke Street intersection and long term bus priority measures along Coward Street (as shown on Figures 5, 6, 7 and 8 of Appendix F)</li> <li>+ Implementation of bus lanes along the section of Bourke Street between Church Street and John Street in the medium/long term</li> </ul>
Pedestrian and cyclist access	<ul style="list-style-type: none"> <li>+ Implementation 40 km/h speed zones, along Bourke Street and Coward Street to facilitate pedestrian amenity. The section of Coward Street between Bourke Street and Kent Road is a State road and would require consultation with and approval from RMS</li> <li>+ Extension of the Bourke Road/Street cycleway to complete the missing link in the regional cycleway network between Sydney</li> </ul>



Category of Package of Measures	Description
	<p>CBD and Sydney Airport</p> <ul style="list-style-type: none"> <li>+ Improvement of existing pedestrian and cyclist provisions and implementation of additional footpath and shared path connections within the TMAP Study Area, including provision of improved crossing facilities at key locations to ensure connectivity of the network</li> </ul>
Road network improvements	<p>Intersection improvements, to increase capacity and provide opportunities for implementation of bus priority measures and provide improved pedestrian/cyclist crossings at the following intersections:</p> <ul style="list-style-type: none"> <li>+ Gardeners Road /Bourke Street including realignment of Bourke Street</li> <li>+ Gardeners Road /O’Riordan Street</li> <li>+ Gardeners Road/Botany Road</li> <li>+ Coward Street/Kent Road</li> <li>+ Bourke Street/Coward Street</li> <li>+ Reconfiguration of Church Avenue at its intersection with Kent Road</li> </ul> <p>Appropriate road reservations are to be preserved for these recommended road network improvements as well as future options that are likely to be implemented by RMS/TfNSW. Where land acquisition in the City of Sydney LGA is necessary, assistance of RMS and City of Sydney Council will be required.</p>
Management of on-street car parking	<p>Removal of on-street parking at selected locations close to major intersections during peak periods to reduce capacity issues on the road network. Short-stay restricted parking could be introduced outside the peak periods to facilitate future retail and commercial land uses in the TMAP Study Area.</p>

Category of Package of Measures	Description
Travel Demand Measures	<p>Requirement for new developments to submit and implement Workplace Travel Plans to encourage sustainable travel mode choice to/from the TMAP Study Area</p>
Car parking provision for new developments	<p>Reduction in parking provision rates for residential and commercial developments in the TMAP Study Area to the following:</p> <ul style="list-style-type: none"> <li>+ Office Development of 1/80m<sup>2</sup> GFA (maximum)</li> <li>+ Commercial Development of 1/80m<sup>2</sup> GFA (maximum)</li> <li>+ Retail Development of 1/80m<sup>2</sup> GFA (maximum)</li> <li>+ Residential Development                             <ul style="list-style-type: none"> <li>- 3 bedroom – 1.5 spaces</li> <li>- 2 bedroom – 1 space</li> <li>- 1 bedroom – 1 space</li> <li>- Visitors – 1 space per 7 dwellings</li> </ul> </li> </ul>
Monitoring and Review.	<p>A review of the package of measures is recommended every five years, to assess the transport impacts of occupied developments, changes to the public transport mode split, and whether changes are required in the recommended implementation timeframe.</p>

### Regional Transport Improvements

In addition to the transport initiatives recommended above for the TMAP Study Area, there are a number of transport improvements required for the regional transport network, surrounding the TMAP Study Area to accommodate future travel demand in the region.

These improvements will need to be considered and their benefit to the TMAP Study Area assessed and implemented as part of Sydney’s required transport improvements. These improvements include:

- + The proposed M5 East Extension, to improve east-west traffic movements in the local area in the medium term. The improvement will also improve the road network within the TMAP Study Area and minimise the traffic impact of the proposed additional development; and
- + Consideration of the removal of the station access fee at International and Domestic Terminal Stations, which could benefit TMAP Study Area by encouraging more passengers and employees to travel to the airport by rail and reduce vehicular traffic on the road network.

### Staging and Implementation

The timeframes for implementation of the recommended transport measures and recommended funding responsibilities are summarised in Table 8.

**Table 8: Summary of Staged implementation of the Package of Measures**

Item	Description	Funding Agency/Group
<b>Ongoing</b>		
MR1, MR2 and MR3	Monitoring and review of the land use and implementation of the recommended package of measures	Council, TfNSW and DoPI
<b>Short Term (2012 to 2021)</b>		
PC4	Increase footpath widths	Council
PC5	Implementation of shared paths	Council
PC6	Pedestrian amenity	Council (and Developers)
PC7	Introduce pedestrian corridor on Laycock Street	Council (and Developers)
PC10	Adequate pedestrian accessibility provision	Council
R3	On-street parking removal Bourke Street	Council
R4	Widen intersection of Coward Street/Kent Street	Council (and RMS)
R7	On-street parking removal, intersections of Coward Street	Council (in consultation with the RMS)
R9	Church Avenue	Council (and

Item	Description	Funding Agency/Group
	reconfiguration	Developers]
TD1	Workplace Travel Plans	Developers (Shuttle bus service could be coordinated by Council).
TD2	Parking provision	Developers (Council may wish to coordinate the car parking provision for visitor through a Section 94 Contribution Scheme).
TD3	Reduce the need to travel	Council (and Developers)
<b>Medium Term (2021 to 2026)</b>		
PT1	Implementation of three additional bus services though the TMAP Study Area	TfNSW
PT2	Implementation of section of SBCs 21 and 29	TfNSW
PT3	Upgrade Existing Bus Stops	Council (and Developers)
PT4	Implement Kiss and Ride facility at the Mascot Station	Council
IRT2	Removal Station Access Fee at International and Domestic Terminal Stations	TfNSW
PC1	Implement 40km/h speed zones along Bourke Street and Coward Street	Council
PC2	Bourke Road/Street cycleway extension	Council (and Developers)
PC3	Signalised pedestrian and cyclist crossings	Council (and Developers)
PC8	Introduce pedestrian corridor along the SWSOOS corridor	Council (and Developers)
R1	Gardeners Road intersection improvements	TfNSW (and Developers)
R2	Realignment of Bourke Street and its intersection with Gardeners Road	TfNSW
R5	Intersection improvement, Bourke Street/Coward Street	Council (and Developers)

Item	Description	Funding Agency/Group
R6	Intersection improvement, Botany Road/ Gardeners Road	TfNSW
R8	On-street parking removal, Coward Street (all)	Council (in consultation with RMS)
Long Term (2026 to 2031)		
PC9	Grade Separated Pedestrian Crossings	Council (and Developers)

transport impacts of the TMAP Study Area’s redevelopment to a FSR of 3.5:1, to be accommodated and minimised to acceptable levels of service and amenity.

## Findings and Conclusions

Traffic and transport impact assessment carried out during the TMAP process, has identified that:

- + The TMAP Study Area has capacity to accommodate redevelopment to FSRs of 1.2:1, 2.5:1 and 3.5:1;
- + The areas north and south of Coward Street could be redeveloped to mixed use residential and commercial developments respectively;
- + Due to its location, the TMAP Study Area is affected by heavy traffic movements to Sydney Airport and Port Botany;
- + The TMAP Study Area is likely to be affected by recommendations from the Port Botany and Sydney Airport Transport Improvement Plan;
- + The redevelopment would have a significant impact on the existing transport network;
- + The existing road network has narrow road reservations, which does not support cost effective road widening scheme;
- + To accommodate the traffic impact of redevelopment to a FSR of 3.5 :1, a mode share target of 57% car and 43% public transport is required for the TMAP Study Area;
- + This mode share target can be achieved with a combination of three new high frequency bus services (as shown in Figure 3.3) and implementation of the recommended TMAP package of measures; and
- + Implementation of recommended TMAP package of measures, taking into consideration the need for the M5 East Extension to be constructed in the medium term, would enable the cumulative