

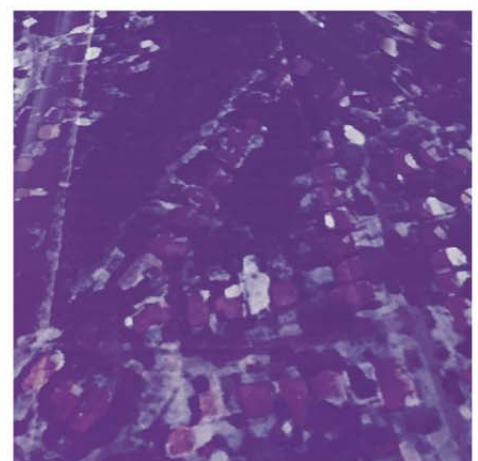
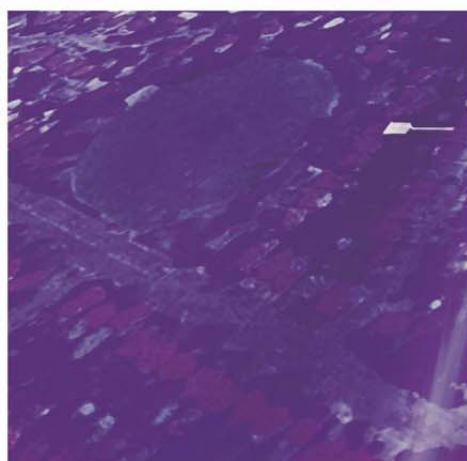
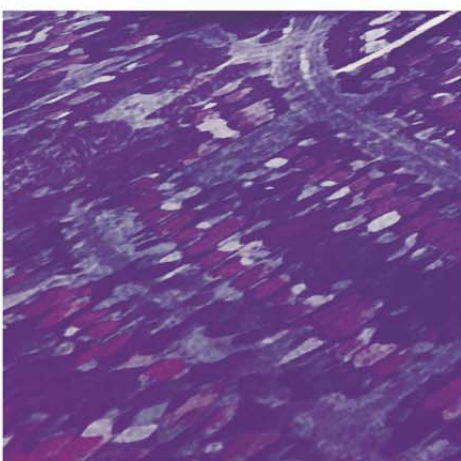
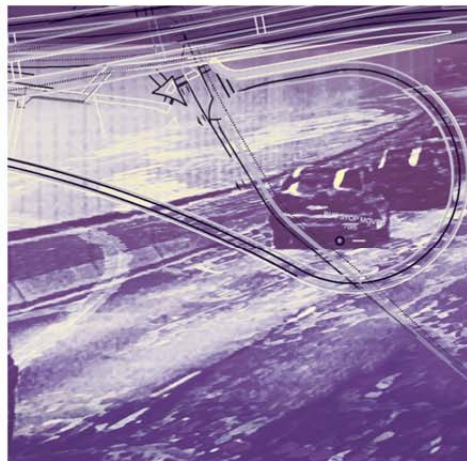
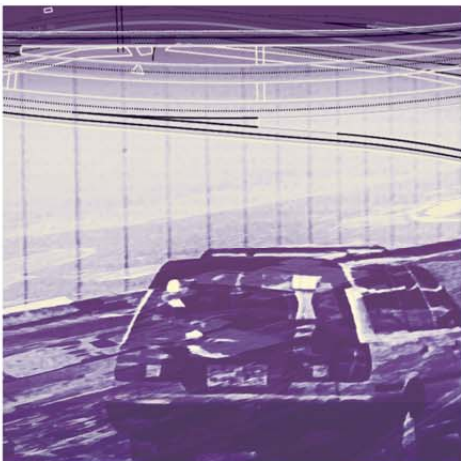


# Lane Cove Tunnel

Surface traffic modifications

ENVIRONMENTAL ASSESSMENT REPORT

December 2006



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## Abbreviations and Definitions

Approval	The Approval for the Project, which was granted by the Minister for Urban Affairs and Planning on 3 December 2002, as further modified from time to time
Approved Project	The Project as approved as at the date of this Report
Director-General's Report	The <i>Proposed Lane Cove Tunnel Director-General's Report</i> prepared by the Department of Planning and dated November 2002
EIA Documents	The EIS, Representations Report and Director-General's Report
EIS	The <i>Lane Cove Tunnel Environmental Impact Statement</i> prepared by Sinclair Knight Merz on behalf of the RTA, dated October 2001
EMR	Environmental Management Representative
EP&A Act	Environmental Planning and Assessment Act 1979
First LCTIG Report	The Report entitled <i>Lane Cove Tunnel Integration Group Report On Transitions of Surface Roadwork</i> , dated October 2006
LCTIG	Lane Cove Tunnel Integration Group
Modified Project	The Project incorporating the Proposed Modifications
MWT Options Report	The Report entitled <i>Lane Cove Tunnel – Surface Transition Options</i> prepared by Masson Wilson Twiney and dated 22 September 2005
MWT Proposed Modifications Memo	The Memo entitled <i>LCT Transition Option 6</i> prepared by Masson Wilson Twiney and dated 23 November 2006
Project	Lane Cove Tunnel and associated improvements project, which includes the Tunnel and associated infrastructure, and various surface traffic arrangements
Project Deed	The Deed between the RTA and Connector Motorways for the design and construction of the Project and the operation and maintenance of the Tunnel and the north facing Falcon Street ramps
Proposed Modifications	The proposed modifications to the Project, which are described in Section 3.6 of this Report
PTC	Public Transport Committee
Representations Report	The report and appendices entitled the <i>Lane Cove Tunnel and Associated Road Improvements Representations Report</i> , Volumes I-III, prepared by the RTA, dated July 2002
RTA	Roads and Traffic Authority of NSW
Second LCTIG Report	The report entitled <i>Lane Cove Tunnel Integration Group Second Report On Transitions of Surface Roadwork</i> , dated 29 November 2006
Stage 2 Works	<p>Surface works to be completed after Tunnel opening, including:</p> <ul style="list-style-type: none"> <li>◆ Reduction of Epping Road, Lane Cove to generally four lanes at midblock, including a dedicated bus lane and a general traffic lane in each direction. There would be two general traffic lanes westbound between Longueville Road and Centennial Avenue and between Sam Johnson Way and Mowbray Road West. The bus lane would contain gaps at the following three locations: <ul style="list-style-type: none"> <li>- Eastbound, Longueville Road, between the Longueville Road exit ramp and Pacific Highway;</li> <li>- Westbound, Longueville Road, between Pacific Highway and Epping Road; and</li> <li>- Westbound, Epping Road, between the approach to Centennial Avenue and the approach to Tantallon Road;</li> </ul> </li> <li>◆ Bus Priority at some intersections along Epping Road;</li> </ul>

	<ul style="list-style-type: none"> <li>◆ The introduction of right turning movements from Epping Road westbound to Centennial Avenue and Parklands Avenue;</li> <li>◆ Provision for a bus interchange on Longueville Road near the Parklands Avenue intersection;</li> <li>◆ A shared pedestrian/cycleway on the southern side of Epping Road, including the Longueville Road cycleway underpass;</li> <li>◆ A new pedestrian overbridge near the bus interchange. The existing pedestrian bridge at Kimberley Avenue would be removed on opening of the new pedestrian overbridge; and,</li> <li>◆ Pedestrian crossings at Longueville Road, Centennial Avenue, Tantallon Road and Mowbray Road to allow pedestrians to cross in a single uninterrupted movement.</li> </ul>
Transition Options	The Surface Traffic Changes Transition Options discussed in Section 3.4 and set out in Table I of this Report.
Tunnel	Lane Cove Tunnel

# I. Introduction

## I.1 Background

The Project comprises the connection of the Gore Hill Freeway and the M2 Motorway completing the Sydney Orbital, the connection of Falcon Street and Military Road to the Warringah Freeway, relief of congestion on Epping Road, improved public transport and a new cycleway between Naremburn and North Ryde.

Key works include:

- ◆ The Lane Cove Tunnel, a 3.6 km, dual two/three lane tunnel generally running below the existing Epping and Longueville Roads alignment connecting the Gore Hill Freeway at the Pacific Highway with the M2 Motorway and Epping Road at Mowbray Road west;
- ◆ Two new north-facing (tolled) ramps connecting the Warringah Freeway to Falcon Street and Military Road in North Sydney;
- ◆ A 24 hour T2 transit lane, in addition to the existing two lanes, in each direction on the Gore Hill Freeway between the Pacific Highway and Merrenburn Avenue;
- ◆ Reduction of Epping Road from the current five through-lane tidal flow arrangement to generally four lanes, including a dedicated 24-hour bus lane and general traffic lane in each direction;
- ◆ Implementation of an AM T3 transit lane on Epping Road eastbound between Pittwater Road and Mowbray Road;
- ◆ The introduction of two right turning movements on Epping Road;
- ◆ Provision of a bus interchange and pedestrian overpass; and,
- ◆ A shared pedestrian/cycleway on the southern side of Epping Road.

The Lane Cove Tunnel and Falcon Street ramp works, all of the associated works on the Gore Hill and Warringah Freeways and most of the other associated works on local roads, properties and services (described as Stage 1 works in the Project Deed between the RTA and Connector Motorways) must be completed at opening. Tunnel opening was originally scheduled by 9 May 2007 in the Project Deed. The remaining works, including changes to Epping Road (described as Stage 2 Works in the Project Deed) must be completed within six months of the completion of Stage 1. The changes on Longueville Road between the Pacific Highway and Epping Road and on Epping Road between Longueville Road and Mowbray Road West cannot be started before completion of Stage 1.

Under the Approved Project, the Falcon Street ramps, the widening of the Gore Hill Freeway and the installation of T2 Transit lanes, and the installation of the eastbound T3 Transit lane on Epping Road between Delhi Road and Mowbray Road are to be in place for the opening of the Tunnel, and bus lanes on Epping Road are to be installed within six months of Tunnel opening.

*State Environmental Planning Policy No 63 – Major Transport Projects* enabled the entire Project to be assessed and determined under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Environmental Impact Statement (EIS) was prepared in accordance with the provisions of the EP&A Act, the *Environmental Planning and Assessment Regulation 2000*, and the requirements of the Director-General of the then Department of Urban Affairs and Planning. The EIS was publicly exhibited between 8 November 2001 and 19 December 2001 and representations were received until 1 February 2002. A Representations

Report and Addendum were prepared by the RTA following public exhibition of the EIS, and these documents were submitted to the Director-General of the Department of Planning for assessment. Following consideration of the Director-General's Report, the Minister for Planning approved the Project on 3 December 2002, subject to 259 Conditions of Approval.

Following a comprehensive tendering process for the design, construction, operation and maintenance of the Tunnel, the then Lane Cove Tunnel Company (now Connector Motorways) was contracted to design and construct the Project, and to operate and maintain the Tunnel and the Falcon Street ramps. Construction work commenced in April 2004. Since then, a number of changes to the Project have been approved by the RTA, following consistency assessments, and (where required) by the Minister for Planning following modifications proposed by the RTA pursuant to the requirements of the EP&A Act. In total, two minor modifications to correct errors and misdescriptions in the Conditions of Approval and an application to modify Condition Nos. 128 and 165 have been approved by the Minister for Planning to date.

The Project Deed specifies that best endeavours must be used to complete Stage 1 by 9 May 2007. Connector Motorways has advised the RTA that the construction works are ahead of schedule and that the current estimated time of completion of Stage 1 of the Project is mid to late January 2007.

It is noted that surface traffic changes, particularly retaining the current lane arrangements on Epping Road, have been recommended in numerous submissions received by the RTA during the construction of the Project. The recent Joint Select Committee Inquiry, which examined the Lane Cove Tunnel Project (August 2006), recommended consideration of "a staged approach to the proposed Epping Road changes" that "might reduce the potential for traffic congestion".

Accordingly, the Lane Cove Tunnel Integration Group (LCTIG) was formed by the Minister for Roads in June 2006 to oversee the integration of the Tunnel and the expanded Gore Hill Freeway into the broader road network and report to the Minister for Roads for the purposes of reporting to Cabinet. The LCTIG comprises representatives from:

- ◆ Premier's Department Infrastructure Implementation Group;
- ◆ Roads and Traffic Authority;
- ◆ Connector Motorways (formerly Lane Cove Tunnel Company); and,
- ◆ As required, representatives from:
  - NSW Treasury
  - Ministry of Transport; and,
  - State Transit Authority.

The LCTIG considered six Transition Options for staging the implementation of Stage 2 Works and the Gore Hill Freeway transit lanes. The LCTIG recommended that the RTA proceed with Transition Option 6 which involves a two stage transition strategy to be implemented over an 11 month period from Tunnel opening. In the first five month phase construction of the bus interchange and pedestrian overbridge would commence, the widened Gore Hill Freeway would be opened to general traffic and the current lane configuration of Epping Road would be retained. The implementation of the T2 Transit lanes on the Gore Hill Freeway and the remaining Epping Road works would commence at the end of this five month period and be

completed 11 months after Tunnel opening. The bus lanes on Epping Road would be operational from 10 months after Tunnel opening.

A detailed description of the six Transition Options considered by the LCTIG and the reasons for selecting Transition Option 6 as the preferred option are provided in Section 3 of this Report. Diagrammatic representations of these Options are given at Appendix A.

It is also proposed to:

- ◆ Provide a two-stage at-grade pedestrian crossing of Epping Road at the intersection with Mowbray Road West to allow efficient operation of this signalised intersection;
- ◆ Allow for opening of the Tunnel, Falcon Street ramps and Gore Hill Freeway widening to traffic within a one-month period rather than concurrently;
- ◆ Install feasible bus priority facilities for westbound traffic on Epping Road at Mowbray Road West, Pittwater Road and Delhi Road intersections in consultation with the PTC; and,
- ◆ Further investigate the location and design of a bus bay in Military Road east of Merlin Street north to the satisfaction of the Public Transport Committee.

This Report addresses the potential environmental impacts of the proposal for full Project implementation 11 months after Tunnel opening and the proposed changes listed above (which comprise the Proposed Modifications). The Proposed Modifications would have the following key benefits:

- ◆ Provide a satisfactory level of service on the traffic network during the ramp-up period;
- ◆ Improved integration of the Project safely and efficiently into the surrounding broader road network; and,
- ◆ Provide a whole of government way forward for the Military Road bus bay.

With the exception of the proposed change to the pedestrian crossing of Epping Road at Mowbray Road, the further investigation of the Military Road bus bay and the implementation of feasible bus priority facilities for westbound traffic on Epping Road (discussed in Section 6.2 of this Report), the Proposed Modifications do not alter the Project to be ultimately implemented in accordance with the Project Approval, but do provide a staged approach to implementation of the approved surface traffic changes to Epping Road. The Proposed Modifications are minor in the context of the Approved Project.

## 1.2 Procedures to Modify the Approval

The Approval for the Project was granted by the Minister for Planning in accordance with the provisions of Division 4 of Part 5 of the EP&A Act. As a result of recent changes to the EP&A Act, and in accordance with Schedule 6, Clause 88 (3) of the EP&A Act, the Approval is now deemed to be an approval under Part 3A of the EP&A Act.

Section 75W of the EP&A Act regulates the modification of an approval for a project under Part 3A. Section 75W(2) provides that the proponent may request the Minister for Planning's approval to modify an existing project approval for a project where the proponent intends to modify the project so that it would be inconsistent with the project approval.

The request for the Minister for Planning's approval is to be lodged with the Director-General of the Department of Planning. The Director-General may notify the proponent of

environmental assessment requirements with respect to the proposed modification that the proponent must comply with before the proposed modifications will be considered by the Minister. While no environmental assessment requirements have been issued, the RTA has met with officers of the Department of Planning in relation to the Proposed Modifications and this Environmental Assessment takes into account the comments and suggestions made by those officers.

The specific objectives of this Environmental Assessment Report are to:

- ◆ Describe the Proposed Modifications to the Approved Project and how they are inconsistent with the Project Approval within the meaning of Section 75W(2) of the EP&A Act;
- ◆ Assess the relative change in environmental impacts of the Approved Project compared to the Project incorporating the Proposed Modifications (Modified Project);
- ◆ Assess the environmental impacts of the Proposed Modifications for the purpose of the Minister for Planning's consideration of the Proposed Modifications in accordance with Section 75W(3) of the EP&A Act; and,
- ◆ Ensure compliance with all statutory requirements.

### **1.3 Structure of this Report**

This Report is structured as follows:

- ◆ The need and justification for the Proposed Modifications is detailed in Section 2;
- ◆ Alternatives considered and the selection of the preferred option are documented in Section 3;
- ◆ Required modifications to the Minister for Planning's Approval are outlined in Section 4;
- ◆ Community consultation and notification is discussed in Section 5;
- ◆ The environmental assessment of the Proposed Modifications is detailed in Section 6;
- ◆ Other approvals and required management documentation are identified in Section 7;
- ◆ Consideration of the Environment Protection and Biodiversity Conservation Act is documented in Section 8;
- ◆ Environmental Management Commitments are detailed in Section 9; and,
- ◆ Conclusions and Recommendations are documented in Section 10.

## 2. Need and Justification

The need for the Approved Project is demonstrated by the current performance of Epping Road and the Gore Hill Freeway, which experience significant congestion during both the morning and evening peaks. The Approved Project provides transport efficiencies including free flowing traffic and more efficient fuel usage. The benefits of the Tunnel would also be realised in the greater opportunities for the provision of public transport, increased access for pedestrians and cyclists and improved amenity for residents and businesses on Epping and Longueville Roads. The Proposed Modifications would assist in achieving the efficiencies and benefits of the Approved Project.

The primary objectives of the Lane Cove Tunnel Project, as stated in the EIS, are to:

- ◆ Improve the efficiency of east-west travel along the corridor for road-based transport modes through a reduction in congestion and improved travel times;
- ◆ Improve air quality and reduce traffic noise, particularly along the arterial road network through a reduction in surface traffic volumes and congestion;
- ◆ Improve the amenity of the local community and businesses through:
  - Improving safety, connectivity and access for pedestrians and cyclists on Epping Road;
  - Improving air quality and reducing traffic noise along the arterial road network;
  - A reduction in traffic and congestion on Epping and other roads;
  - Improving local access by reducing restrictions on traffic turning movements on Epping Road; and,
  - Enhancing the urban fabric of the lower North Shore;
- ◆ Improve the operation of road-based public transport for people in north-western Sydney and along the corridor through an improvement in bus priority through the corridor;
- ◆ Minimise impacts on the natural environment during both the construction and operation phases of the Project;
- ◆ Provide for cyclists along the corridor; and,
- ◆ Provide the benefits of the Project to the community at least cost to the Government.

Staging of the implementation of surface roadworks would be consistent with these objectives, as this approach would not alter the physical Project to be ultimately implemented. In practice, staging the implementation of surface roadworks would assist in better achieving some of these objectives in the short term during the ramp-up period. 'Ramp-up' is a term used to describe the process of traffic demand on a new toll road and the time motorists take to make rational trade-offs between the cost of the toll and travel timesavings. It is a process that can extend, depending on the project, for about 18 months to 36 months after opening.

The Lane Cove Tunnel EIS predicted that over 100,000 vehicles per day would be transferred to the Tunnel from surface streets and that surface traffic on Epping and Longueville Roads would be reduced by up to 60%. Anticipated travel time savings of 6 to 14 minutes in the morning peak and 15 to 22 minutes in the evening peak were also predicted in the EIS.

The traffic modelling detailed in the EIS demonstrated that the surface road network would operate satisfactorily when traffic equilibrium is reached (i.e. when the majority of motorists have decided on their choice of route). However, a period of time is required for traffic equilibrium to be achieved. The EIS did not include traffic modelling for network operation during the ramp-up period.

While ramp-up is unique to each project, as more toll road projects have opened to traffic, data on the ramp-up of similar projects has been collected and the understanding of potential impacts of ramp-up has increased. This data and improvements in traffic modelling technologies since the EIS mean that the implications of ramp-up can be better assessed. Connector Motorways has forecast a relatively rapid ramp-up in the first six months, followed by a slower ramp-up over the next 12 to 18 months.

The need for consideration of ramp-up prior to project opening was demonstrated by the Cross City Tunnel Project. Changes to implemented surface traffic impacts associated with that project were required to alleviate surface traffic congestion following tunnel opening. Based on the lessons learnt from the Cross City Tunnel, the LCTIG has proactively considered the likely surface traffic impacts during the ramp-up period for the Lane Cove Tunnel.

The surface road changes associated with the Cross City Tunnel project, including the narrowing of William Street and the removal of direct access to the Harbour crossings, disrupted local access and traffic flow, led to considerable frustration and anger amongst motorists and the local community, and resulted in a call for all road changes to be reversed. The RTA's approach to the financing of the Cross City Tunnel was on the basis of "no net cost to government". This approach has fuelled the concern of motorists that this policy came at the cost of added inconvenience for the users of local roads through the implementation of the surface road changes to "funnel" traffic into the tunnels. As emphasised by the Cross City Tunnel experience, change to the network of the scale involved in the Cross City and Lane Cove Tunnels is inevitably difficult for motorists to understand and cope with.

The Review of Future Provision of Motorways in NSW (December 2005) recommended that "it should be Government policy to require that where there is an existing arterial road available as an alternative route to a toll road, with the introduction of the toll road the existing arterial road will have at least the same number of general traffic lanes as it had prior to the toll road opening." The Review of Future Provision of Motorways concluded that, for new motorway projects, a staged approach should be adopted for the introduction of major public domain improvements. This would include the staging of surface road modifications, preferably after motorway construction when actual usage patterns are established.

The Performance Report by the Audit Office relating to the Cross City Tunnel (May 2006) also recommended all road changes associated with that project be reviewed to determine whether the "road changes are consistent with current volumes of traffic" using the tunnel during the ramp-up period.

The Lane Cove Tunnel Report of the Joint Select Committee Inquiry into the Cross City Tunnel (August 2006) was concerned about "the possibility of congestion when the Lane Cove Tunnel opens and certain parts of Epping Road are narrowed to two lanes in each direction, with one 24-hour bus lane." The Committee noted that "a staged approach to the proposed Epping Road changes might reduce the potential for traffic congestion, and allow the RTA time to monitor the capacity of the narrowed Epping Road" and that "for future tunnel projects, the RTA should consider imposing a reasonable period between the completion of the tunnel and any disruptive changes to surface traffic arrangements, to allow time for the community to become accustomed to the impact of the project."

The RTA's traffic consultant, Masson Wilson Twiney (see Appendix B) has advised that recent traffic modelling of the Project in the ramp-up phase predicts that, if the surface changes are

implemented according to the EIS timetable, significant levels of congestion would occur at all major intersections along Epping Road, Lane Cove in the morning peak period as well as extensive queuing in Epping Road, North Ryde west of Mowbray Road. In the evening peak period, severe congestion is predicted at the intersections of Epping Road with Longueville Road and Centennial Avenue, as well as at Epping Road and Pittwater Road.

Masson Wilson Twiney also advised that not only would ramp-up affect travel times of the general motoring public but also bus patrons. High levels of congestion on the network may have two significant effects on buses. Firstly, it would trap buses in the general traffic stream and prevent access to bus lanes on Epping Road and, secondly, it may result in illegal usage of bus lanes by general traffic seeking to avoid extensive queuing.

The queuing resulting from the imbalance of demand and toll-free capacity would result in excessive congestion, with eastbound queues on Epping Road, North Ryde likely to extend beyond Wicks Road. This would limit the buses from entering the bus lane and therefore cause excessive delays for buses. Consequently, the travel time advantages of the bus lanes would not be realised for bus patrons during ramp-up.

The shortfall in capacity during the ramp-up period, resulting from the immediate implementation of the changes on Epping Road before sufficient volumes of traffic transfer to the Tunnel, leads to the need for a transition strategy for Epping Road that progressively reduces toll-free capacity as demand falls on Epping Road and increases on the tolled alternative.

Given the implications of the ramp-up period, the reduction in surface traffic and associated improvements in travel times stated in the EIS would be achieved over time. Following Tunnel opening, short term improvements in the efficiency of east-west travel along the corridor for road-based transport modes, above those of the Approved Project, would be achieved by staging the implementation of surface roadworks as a result of the short-term surface capacity increases they offer. This would need to be balanced in the longer-term against congestion downstream of the Project developing from increased demand, generated by the increased capacity in the corridor between Mowbray Road and the Pacific Highway.

Whilst recognising the need for a transition strategy, the LCTIG acknowledged that a thorough environmental assessment of the Project had been undertaken and that the basis of the Approval of the Project was that not only did the Project offer significant benefit to motorists but also to public transport users, cyclists and the local community through the surface street changes. The ultimate amenity benefits of the Approved Project would only be delayed in the short term with a staged approach to the implementation of surface roadworks. As discussed in Section 6 of this Report, road traffic noise impacts and local air quality are likely to improve above that currently experienced as traffic currently utilising surface roads begins to utilise the Tunnel. Similarly, while the total benefit to public transport would only be achieved on implementing the bus and transit lane elements of the Approved Project, it should be noted that the construction of the bus interchange, which would not be delayed, would provide immediate benefit to eastbound traffic, which is frequently delayed by the heavily utilised bus stop on Longueville Road near Parklands Avenue. The staged implementation of transit lanes would also assist in realising some benefits to public transport.

The Lane Cove Tunnel Report of the Joint Select Committee Inquiry into the Cross City Tunnel (August 2006) noted "the significant urban amenity benefits that will arise from the project should not be compromised by decisions intended to compensate for surface traffic congestion.

In particular, the shared cycleway and pedestrian path, which is a clear outcome of satisfactory community consultation, should be retained."

The LCTIG has identified that the implementation of staged transition measures to integrate the Lane Cove Tunnel and expanded Gore Hill Freeway into the road network is essential and that the early completion of the Tunnel, Gore Hill Freeway widening and Falcon Street ramps presents the opportunity to provide a period of transition from the existing surface road conditions to the approved surface road arrangements, while still delivering the overall Project benefits in the longer term.

As discussed in Section 5, some representations have called for the deletion of certain Project elements, however, the traffic modelling completed on the Transition Options (see Section 3.4 and Appendix B of this Report for details) indicates that the Project objectives can only be fully realised once the Approved Project is implemented. With the exception of the proposed change to the pedestrian crossing of Epping Road at Mowbray Road, the further investigation of the Military Road bus bay and the implementation of feasible bus priority facilities for westbound traffic on Epping Road (discussed in Section 6.2 of this Report), this traffic modelling indicates that the short-term staging of the implementation of some surface works would improve traffic flow and therefore travel times through the corridor in the short-term and concludes that longer implementation periods or alteration to Project elements may result in induced travel demand. Therefore, staging of the implementation of surface roadworks would provide a satisfactory level of service during the ramp-up period and allow for a more seamless integration of the Project into the surrounding road network.

## 3. Alternatives Considered and Selection of the Preferred Option

### 3.1 Overview

The surface traffic arrangements as they were prior to the commencement of construction of the Project are outlined below to provide a base line, followed by a description of the approved surface traffic arrangements. The six Transition Options for staging the implementation of surface traffic changes are then summarised, followed by reasons for selecting the preferred option, financial considerations and a description of the Proposed Modifications.

### 3.2 Surface Traffic Arrangements Prior to the Commencement of Construction

Prior to the commencement of construction, the subject road corridor comprised the following key surface arrangements:

- ◆ Dual carriageways along the Gore Hill Freeway, two lanes in each direction;
- ◆ A five through-lane tidal flow arrangement along Epping Road between Tantallon Road and the Pacific Highway allowing for three lanes in the morning and evening peaks and two lanes in the opposing direction;
- ◆ An eastbound AM T3 transit lane on Epping Road between Delhi Road and Pittwater Road;
- ◆ An eastbound AM T2 transit lane on Epping Road between Pittwater Road and the Pacific Highway;
- ◆ Narrow pedestrian paths on the northern and southern sides of Epping Road between Longueville Road and Moore Street; and,
- ◆ Pedestrian crossing opportunities were limited with pedestrian overbridges provided at Kimberley Avenue, Moore Street and Sam Johnson Way, a pedestrian underpass provided at Mowbray Road West and at-grade crossings provided at Longueville Road, Centennial Avenue and Tantallon Road.

### 3.3 Approved Surface Traffic Arrangements

The Approved Project includes the following key surface works:

- ◆ A T2 transit lane, in addition to the existing two lanes, in each direction on the Gore Hill Freeway between the Pacific Highway, Artarmon and Merrenburn Avenue, Naremburn;
- ◆ Reduction of Epping Road, Lane Cove to generally four lanes at midblock, including a dedicated bus lane and a general traffic lane in each direction. There would be two general traffic lanes westbound between Longueville Road and Centennial Avenue and between Sam Johnson Way and Mowbray Road West. The bus lane would contain gaps at the following three locations:
  - Eastbound, Longueville Road, between the Longueville Road exit ramp and Pacific Highway;
  - Westbound, Longueville Road, between Pacific Highway and Epping Road; and
  - Westbound, Epping Road, between the approach to Centennial Avenue and the approach to Tantallon Road;
- ◆ Bus Priority at some intersections;
- ◆ The introduction of right turning movements from Epping Road westbound to Centennial Avenue and Parklands Avenue;

- ◆ Implementation of an AM T3 transit lane on Epping Road eastbound between Pittwater Road and Mowbray Road West;
- ◆ Provision for a bus interchange on Longueville Road near the Parklands Avenue intersection;
- ◆ A new pedestrian overbridge near the bus interchange. The existing pedestrian bridge at Kimberley Avenue would be removed on opening of the new pedestrian overbridge;
- ◆ A shared pedestrian/cycleway on the southern side of Epping Road in addition to the existing pedestrian path on the northern side of Epping Road;
- ◆ The underpass at Mowbray Road replaced (to make way for the western Tunnel portal) by an at-grade signalised uninterrupted pedestrian crossing of Epping Road; and,
- ◆ Pedestrian crossings at Longueville Road, Centennial Avenue and Tantallon Road to allow pedestrians to cross in a single uninterrupted movement. In addition to the new pedestrian overbridge to be constructed as part of the bus interchange the existing pedestrian overbridges at Moore Street and Sam Johnson Way would be retained.

The widening of the Gore Hill Freeway is to be completed to coincide with the opening of the Tunnel. The remaining surface works, referred to as 'Stage 2' works, are to be completed within six months of Tunnel opening and are defined in the Abbreviations and Definitions at the front of this Report. Other relevant design features include links between northbound Pacific Highway to the Tunnel and an off ramp from the Tunnel to the Pacific Highway, including a link to the Gore Hill Freeway T2 transit lane.

It is important to note that some works which form part of Stage 1 as defined under the Project Deed may still be under construction following the opening of the Tunnel. In particular, it is noted that the Tunnel access works on Epping Road adjacent to Lane Cove River bridge and some drainage and pavement works at the junction of the Gore Hill Freeway with Longueville Road cannot be completed until after the Tunnel opening. These works will be completed shortly after Tunnel opening.

### 3.4 Options Considered and Selection of the Preferred Option

The six Transition Options considered by the LCTIG are detailed in Table 1 and illustrated diagrammatically in Appendix A. The footnote in Table 1 indicates that the implementation of the measures would commence at the start of each period. All of the Transition Options considered retain the full Project scope, but involve staging the implementation of the approved surface traffic arrangements.

Initially, the LCTIG considered five Transition Options for staging the implementation of surface works and identified Option 5 as the preferred Option in a report entitled "Lane Cove Tunnel Integration Group Report On Transitions of Surface Roadwork", dated October 2006 (the First LCTIG Report). Transition Option 6 was identified in a report entitled "Lane Cove Tunnel Integration Group Second Report On Transitions of Surface Roadwork", dated 29 November 2006 (the Second LCTIG Report) in response to updated information regarding the likely Tunnel opening date.

#### Initial Consideration of Transition Options

Transition Option 1 would be implemented over the shortest timeframe. In the first 6 months after opening, Stage 2 Works would be constructed with a minimum of two general traffic lanes being provided along Epping Road in each direction and with bus priority arrangements provided where possible at bus stops and intersections. The construction of the bus

interchange, pedestrian bridge and pedestrian/cycleway and removal of the Kimberley Avenue pedestrian overbridge would also occur during the first six months. During this period, the implementation of the bus lanes and right turns on Epping Road Lane Cove; AM T3 transit lane on Epping Road between Pittwater and Mowbray Road; the Gore Hill Freeway T2 transit lanes; the Pacific Highway link to the Longueville Road eastbound on-ramp and the Tunnel off-ramp eastbound link to the Gore Hill Freeway T2 lane would be deferred. These deferred works would be implemented at the end of the six-month period.

Under Transition Option 2, the surface arrangements would be the same as Transition Option 1 for the first 6 months. For the second six-month period (i.e. starting six months after Tunnel opening) the remainder of the Stage 2 Works would be implemented in the same manner as for Transition Option 1 except that T3 lanes (instead of bus lanes) would be implemented on Epping Road between Mowbray Road and the Gore Hill Freeway. The T3 lanes would then be converted to bus lanes 12 months after opening of the Tunnel. The deferred works would be expected to be completed within approximately one month.

Under Transition Option 3, the current traffic arrangements, including the Epping Road tidal flow with three lanes provided in the morning and evening peaks, would continue during the first 6 months and the only construction in this period would be the bus interchange and pedestrian bridge and removal of the Kimberley Avenue pedestrian overbridge. The existing eastbound AM T3 transit lane on Epping Road between Delhi Road and Pittwater Road and the T2 transit lane between Pittwater Road and the Pacific Highway would also remain in place. The T2 transit lanes on the Gore Hill Freeway would be deferred; the new lane in each direction on the Gore Hill Freeway would be a general traffic lane. The opening of the Pacific Highway eastbound link to the Longueville Road on-ramp and the Tunnel off-ramp eastbound link to the Gore Hill Freeway T2 transit lane would also be deferred. At six months, Stage 2 Works would commence with a minimum of two general traffic lanes in each direction being provided along Epping Road, with bus priority arrangements provided where possible at bus stops and intersections and construction of the pedestrian cycleway. The bus lanes, right turns, T3 transit lanes on Epping Road eastbound between Pittwater Road and Mowbray Road, and the Gore Hill Freeway T2 transit lanes would be deferred and the Pacific Highway eastbound link to Longueville Road on-ramp and the Tunnel off-ramp eastbound link to the Gore Hill Freeway T2 lane would be closed during this period. At 12 months the deferred works would be implemented, except that Epping Road bus lanes would be replaced with T3 transit lanes. The T3 transit lanes on Epping Road would then be converted to bus lanes 18 months after opening of the Lane Cove Tunnel. These deferred works would be implemented at the end of the 18 month period.

Transition Option 4, would involve exactly the same implementation strategy as Transition Option 3 up until 12 months, at which time all of the deferred Stage 2 Works would be implemented including the Epping Road bus lanes.

Transition Option 5 would involve the same implementation strategy as for Transition Option 4, except that the implementation timeframes would be linked to Project Deed milestones to take advantage of the early opening of the Project and avoid some contractual issues associated with the Project exceeding current contractual completion dates. The first period, during which no work would be undertaken except for the construction of the bus interchange and the pedestrian bridge would end on 9 May 2007. Stage 2 Works would then be implemented between 10 May 2007 and 7 November 2007, with the bus lanes implemented by October 2007.

It should be noted that with all Transition Options the Lane Cove bus interchange and the associated pedestrian bridge over Longueville Road would proceed independently of the other surface road changes. Under all Transition Options, the Approved Project would be ultimately implemented (as detailed under Section 3.3 of this Report), with the exception of the proposed change to the pedestrian crossing of Epping Road at Mowbray Road, the further investigation of the Military Road bus bay and the implementation of feasible bus priority facilities for westbound traffic on Epping Road (discussed in Section 6.2 of this Report). It should also be noted that it is also proposed to stage the opening of the Tunnel, the Gore Hill Freeway widening and the Falcon Street ramps over a one month period.

### The LCTIG's Initial Assessment of Transition Options

Option 1 would result in the shortest timeframe in implementing Project elements, whereas Option 3 would result in full Project implementation 19 months after Tunnel opening. Options 3, 4 and 5 provide better levels of service along Epping Road than Options 1 and 2. Options 3, 4 and 5 would delay construction of the shared pedestrian/cycleway on the southern side of Epping Road for around six months whereas construction of this Project element would commence on Tunnel opening under Options 1 and 2. Similarly, Option 3 delays the implementation of bus lanes for eighteen months following Tunnel opening, whereas implementation commences six months after Tunnel opening under Option 1.

The RTA commissioned Masson Wilson Twiney (MWT) to assess the operational traffic impacts of the five Transition Options. The MWT Options Report prepared by Masson Wilson Twiney in September 2006 is contained in Appendix B.

The key findings and conclusions of the MWT Options Report are as follows:

- ◆ Based on Eastern Distributor experience (the most comparable project) and detailed traffic modelling, significant ramp-up is expected to occur in the first six months with full ramp up tapering out over approximately two years;
- ◆ Traffic modelling predicts significant congestion levels at all major intersections along Epping Road, Lane Cove during the ramp-up period in the morning and evening peak periods if surface traffic arrangements are not transitioned;
- ◆ This congestion supports the need for the staging of the implementation of surface traffic changes. However, if the approved surface traffic arrangements are not implemented in the longer term, induced traffic may result;
- ◆ Any one of the five Transition Options would provide relief during ramp-up with Options 3, 4, and 5 achieving a more acceptable level of service along Epping Road;
- ◆ Implementation of a Transition Option is essential to minimise impacts on road based public transport during the ramp-up period; and,
- ◆ Traffic conditions would be satisfactory for both the Tunnel and Epping Road after ramp-up.

Based on the advice from Masson Wilson Twiney that Options 3, 4 and 5 achieved a more acceptable level of service along Epping Road, the LCTIG focussed its attention on these three Options.

The first LCTIG Report indicated that there was merit in linking transition option milestones to Project Deed milestones for Stages 1 and 2 in order to maintain the integrity of the Approval for the Project and contractual arrangements. This linkage is best provided by Option 5 which links the commencement of the Stage 2 traffic changes with the contractual Stage 1 completion

date of the Project (i.e. 9 May 2007, and the completion of Stage 2 with the contractual Stage 2 completion date of 7 November 2007). That is to say, under Transition Option 5 the Project would be completed within the same time as if Connector Motorways had opened the Tunnel when it was required to do so by 9 May 2007 under the Project Deed.

After consideration of the merits of the options, the LCTIG identified Transition Option 5 as the preferred option in the First LCTIG Report for the following reasons:

- ◆ This Option provides relief to congestion on Epping Road during ramp-up and provides an acceptable match between reduction in capacity and expected demand in the first 11 months after tunnel opening;
- ◆ In respect of impacts on pedestrians, cyclists and public transport, this Option provides an appropriate balance between the needs of motorists and other road users;
- ◆ This Option addresses the findings of the Review of Future Provision of Motorways (Dec 05), and the Joint Select Committee on the Cross City Tunnel (Feb 06 and Aug 06) in undertaking surface road modifications subsequently and progressively rather than at tunnel opening;
- ◆ This Option takes direct advantage of the early completion of the tunnel construction and delivers the Stage 2 Works program, commencing in May 2007, thus ensuring delivery of the primary Project objectives and benefits in line with the original project completion target of 7 November 2007; and,
- ◆ This Option provides an optimal balance between maintaining satisfactory traffic flows during ramp-up and the financial impacts on the Project.

This Option includes the introduction of all surface works including 24-hour bus lanes on Epping Road by the originally scheduled completion date of 7 November 2007.

### **Development of Transition Option 6**

On 8 September 2006, Connector Motorways provided the RTA with three months notice of its estimated completion date, indicating that a 10 December 2006 opening date (on which Option 5 focused) may be achieved. However, on 15 November 2007 Connector Motorways advised the RTA that, based on current estimates, completion may occur in mid to late January 2007. Connector Motorways committed to providing a more definite date closer to the time and to provide regular completion progress updates to the RTA. It is noted that Connector Motorways has no contractual obligation to achieve early Tunnel opening. The LCTIG therefore considered a sixth Transition Option in the Second LCTIG Report. The Second LCTIG Report considered updated construction progress data and recommended proceeding with Transition Option 6. A summary of the key discussion from this Report is provided below.

The duration of the transition period under Transition Option 5 is dependent on the date of Tunnel opening. At the time Transition Option 5 was recommended by the LCTIG, Connector Motorways had estimated that Tunnel opening would occur on 10 December 2006. As identified in the LCTIG's reasons for initially recommending Transition Option 5, this would have allowed an 11 month transition period for the Stage 2 Works.

The MWT Options Report (contained in Appendix B) noted that the changes to the arrangements on Epping Road proposed under Transition Option 5 were based on a timeframe of 11 months which provided an adequate period of transition. If the Tunnel is opened later than 10 December 2006, the first step of the transition will be shortened, increasing the

imbalance between capacity and demand and reducing the effectiveness of Transition Option 5 in assisting traffic flow during ramp up.

Prior to the First LCTIG Report, Connector Motorways provided informal advice that implementation of Transition Option 5 would avoid some contractual issues that would arise with its Design and Construction Contract if the Project completion occurred after the contractual completion dates. Following the receipt of advice that the Tunnel would not open on 10 December 2006 and having regard to the need to provide an adequate period of transition as identified in the First LCTIG Report, Connector Motorways sought to address the contractual issues to allow implementation of a 11 month fixed transition period rather than the originally envisaged transition period which commenced on Tunnel opening and ended on November 2007. Connector Motorways subsequently confirmed that the contractual issues could be overcome without an additional financial impact on the RTA.

Therefore, Transition Option 6 was developed and documented in the Second LCTIG Report. Transition Option 6 involves the adoption of the same transition strategy as Transition Option 5 but with a fixed 11 month period of transition rather than allowing the period to shorten with the Tunnel opening after 10 December. For completeness, Table 1 of this Report, which provides an outline of the initial five Transition Options considered by the LCTIG in its First LCTIG Report, has been updated to include Transition Option 6.

### **Selection of the Preferred Transition Option**

If Tunnel Opening does not occur until mid to late January 2007, the transition period for Transition Option 5 would be reduced to 10 or 9½ months. Masson Wilson and Twiney have prepared a Memo assessing Transition Option 6 which is included in Appendix C. Given that the traffic assessment documented in the MWT Options Report assumed a 10 December 2006 opening date in assessing Transition Option 5, Masson Wilson Twiney have advised that the conclusions regarding Transition Option 5 in the MWT Options Report (contained in Appendix C) would also apply to Transition Option 6.

Masson Wilson Twiney have advised that if Tunnel opening were to occur in February 2007, Transition Option 5 could no longer be supported. The Memo provided by Masson Wilson Twiney indicates that a delay beyond January may increase the imbalance between capacity and demand to the point that the benefits of Transition Option 5 may be lost. From a traffic management perspective, Masson Wilson Twiney have confirmed that Transition Option 6 is preferred over Transition Option 5, given the certainty in implementation and associated traffic benefits it would provide.

As detailed in the First LCTIG Report, Connector Motorways forecasts a relatively rapid ramp-up in the first six months after Tunnel opening. As Transition Option 6 preserves the timeframe considered by the LCTIG in recommending Option 5 as the preferred option, the key reasons for selecting Transition Option 5 as the preferred Transition Option remain valid for Transition Option 6.

Although the implementation of Transition Option 6 delays implementation of some parts of the Project until after the original Project Deed completion date for Stage 2 (including delays to bus lanes and transit lanes), the LCTIG concluded that the advantages of fixing an efficient duration for transition outweighed the disadvantages and recommended proceeding with Transition Option 6.

Table I – Surface Traffic Changes Transition Options

TRANSITION OPTIONS	PERIOD AFTER TUNNEL OPENING			
	0 to 6 Months	7 to 12 Months	13 to 18 Months	19 to 24 Months
TRANSITION OPTION 1	<p>Stage 2 implemented with:</p> <ul style="list-style-type: none"> <li>• Minimum of two general lanes in each direction on Epping Rd (no continuous bus or transit lanes);</li> <li>• Bus priority (where possible at intersections and bus stops);</li> <li>• Construction of the bus interchange, pedestrian bridge and shared pedestrian /cycleway;</li> <li>• Defer right turns;</li> <li>• Defer the opening of the Pacific Highway link to Longueville Road and Tunnel off ramp link to Gore Hill Freeway T2 lane;</li> <li>• Defer T2 lanes on Gore Hill Freeway; and,</li> <li>• Defer AM T3 on Epping Rd eastbound between Pittwater Rd to Mowbray Rd.</li> </ul>	Implement all approved surface road changes including bus and transit lanes		
TRANSITION OPTION 2	Stage 2 (As for Transition Option 1).	Implement all approved surface road changes except T3 lanes on Epping Rd between Mowbray Rd and Gore Hill Freeway instead of bus lanes.	Implement bus lanes on Epping Road between Mowbray Rd and Gore Hill Freeway.	
TRANSITION OPTION 3	<p>No work except pedestrian bridge and bus interchange.</p> <ul style="list-style-type: none"> <li>• Defer AM T3 on Epping Road eastbound between Pittwater Road and Mowbray Road West;</li> <li>• Defer opening of the Pacific Highway link to Longueville Road and the Tunnel off ramp link to the Gore Hill Freeway T2 transit lane; and,</li> <li>• Defer T2 lanes on the Gore Hill Freeway.</li> </ul>	Stage 2 (as for Transition Option 1 (0 to 6 Months)).	Implement all approved surface road changes except the T3 lanes on Epping Rd between Mowbray Rd and Gore Hill Freeway in place of bus lanes.	Implement bus lanes on Epping Road between Mowbray Rd and Gore Hill Freeway.

TRANSITION OPTIONS	PERIOD AFTER TUNNEL OPENING			
	0 to 6 Months	7 to 12 Months	13 to 18 Months	19 to 24 Months
TRANSITION OPTION 4	<p>No work except the pedestrian bridge and bus interchange.</p> <ul style="list-style-type: none"> <li>Defer AM T3 on Epping Road eastbound between Pittwater Road and Mowbray Road West;</li> <li>Defer opening of the Pacific Highway link to Longueville Road and the Tunnel off ramp link to the Gore Hill Freeway T2 transit lane; and,</li> <li>Defer T2 lanes on the Gore Hill Freeway.</li> </ul>	Stage 2 (as for Transition Option 1(0 to 6 Months)).	Implement all approved surface road changes including bus and transit lanes.	
	<b>0 to 9 May 2007</b>	<b>10 May to 7 November 2007</b>		
TRANSITION OPTION 5	<p>No work except the pedestrian bridge and bus interchange.</p> <ul style="list-style-type: none"> <li>Defer AM T3 on Epping Road eastbound between Pittwater Road and Mowbray Road West;</li> <li>Defer opening of the Pacific Highway link to Longueville Road and the Tunnel off ramp link to the Gore Hill Freeway T2 transit lane; and,</li> <li>Defer T2 lanes on the Gore Hill Freeway.</li> </ul>	Stage 2 (the bus lanes would be operational from October 2007)		
	<b>0 TO 5 MONTHS</b>	<b>6 MONTHS TO 11 MONTHS</b>		
TRANSITION OPTION 6	<p>No work except the pedestrian bridge and bus interchange.</p> <ul style="list-style-type: none"> <li>Defer AM T3 on Epping Road eastbound between Pittwater Road and Mowbray Road West;</li> <li>Defer opening of the Pacific Highway link to Longueville Road and the Tunnel off ramp link to the Gore Hill Freeway T2 transit lane; and,</li> <li>Defer T2 lanes on the Gore Hill Freeway.</li> </ul>	Stage 2 (bus lanes would be operational from 10 months after Tunnel Opening)		

Note: Measures implemented at the start of each period.

The remainder of this Report therefore addresses the potential environmental impacts of this proposal to complete the full Project implementation 11 months after Tunnel opening in accordance with Transition Option 6. Details of the Proposed Modifications are given in Section 3.6 of this Report.

### 3.5 Consideration of Financial Impacts

The Stage 2 Works are being delivered by Connector Motorways under the Project Deed with the RTA. As a result, the implementation of Transition Option 6 would require the agreement of Connector Motorways.

It has therefore been necessary for the RTA to negotiate with Connector Motorways with a view to reaching agreement on the appropriate financial compensation for the impact of the change to the implementation of the construction and operational stages of the Project not provided for under the Project Deed (Change Costs), in exchange for implementation of Transition Option 6.

The RTA asked Connector Motorways to provide an estimate of the Change Costs that it and its construction contractor would incur if Transition Option 6 was implemented and also the compensation required for the impacts on the construction and operational stages of the motorway.

Connector Motorways indicated that the implementation of Transition Option 6 would cause additional costs to its construction contractor and a reduction in traffic using the Tunnel, which together would have a financial impact on the Project.

Connector Motorways advised that the total cost of Transition Option 6 would be \$25 million.

The RTA determined that Transition Option No. 6 represented value for money, based on the community, public transport and traffic benefits that would accrue with the implementation of the Transition Option.

### 3.6 The Proposed Modifications

The following changes comprise the Proposed Modifications. Under the Proposed Modifications, Project elements would be implemented as follows:

#### First Five Months After Tunnel Opening

- ◆ Retention of the current traffic arrangements on Epping Road, including:
  - Tidal flow on Epping Road with three lanes provided in the AM and PM peaks;
  - The eastbound AM T3 transit lane on Epping Road between Delhi Road and Pittwater Road; and,
  - The T2 transit lane on Epping Road between Pittwater Road and the Pacific Highway.
- ◆ Opening of the widened Gore Hill Freeway to general traffic;
- ◆ Provision of pedestrian crossings at Longueville Road, Centennial Avenue and Tantallon Road to allow pedestrians to cross in a single uninterrupted movement;
- ◆ Provision of a staged pedestrian crossing of Epping Road at Mowbray Road West;

- ◆ Construction of the bus interchange and pedestrian bridge commencing on Tunnel opening, with subsequent removal of the Kimberley Avenue pedestrian overbridge, and
- ◆ Deferral of opening of the Pacific Highway eastbound link to Longueville Road and the Tunnel eastbound off-ramp link to the Gore Hill Freeway T2 transit lane.

#### Period from Five Months to Eleven Months After Tunnel Opening

- ◆ Construction of the remaining Stage 2 Works and some other works including:
  - The AM T3 transit lanes on Epping Road eastbound between Pittwater Road and Mowbray Road West;
  - The pedestrian/cycleway on the southern side of Epping Road including the Longueville Road ramp cycleway underpass;
  - Reduction of Epping Road to generally a minimum of four lanes (two in each direction); and,
  - The right turning movements from Epping Road westbound to Centennial Avenue and Parklands Avenue.
- ◆ Provision of Bus priority where possible at bus stops and intersections along Epping Road;
- ◆ The bus lanes along Epping Road between Mowbray Road and the Pacific Highway would be operational from 10 months after Tunnel opening;
- ◆ Implementation of the T2 transit lanes in each direction on Gore Hill Freeway between Pacific Highway and Merrenburn Avenue would occur by 11 months after Tunnel opening; and,
- ◆ The Pacific Highway eastbound link to Longueville Road eastbound and the Tunnel eastbound off-ramp link to the Gore Hill Freeway T2 transit lane would be opened 11 months after Tunnel opening.

The Tunnel, Falcon Street ramps and Gore Hill Freeway widening may be opened to traffic within a one-month period. Feasible bus priority facilities for westbound traffic on Epping Road at Mowbray Road West, Pittwater Road and Delhi Road intersections would be installed on Tunnel opening in consultation with the PTC. The location and design of a bus bay in Military Road east of Merlin Street north would be investigated to the satisfaction of the Public Transport Committee.

## 4. Required Modifications to Conditions of Approval

Section 75W of the EP&A Act permits the RTA, as the proponent of the Project, to modify the Project:

- ◆ Without the need for a modification of the Approval, if the Project as modified would be consistent with the Approval; and,
- ◆ With the approval of the Minister for Planning to a modification of the Approval, if the Project as modified would be inconsistent with the Approval.

The RTA has determined that the Proposed Modifications may make the Project as modified inconsistent with the Approval, and as a result, the RTA is seeking the Minister for Planning's approval for the modification of the Approval to permit the Proposed Modifications, pursuant to section 75W(2) of the EP&A Act.

The Approval is subject to a number of Conditions, which concern the design, construction, operation and maintenance of the Project. As part of the application for modification to which this Report relates, the RTA will request the Minister for Planning to modify some of those Conditions.

It is noted that the Conditions of Approval use the term "Project" interchangeably with the term "Tunnel" (i.e. Condition 212 requires that the Epping Road bus lanes be implemented within six months of "Project" opening, even though the bus lanes are an integral element of the Approved Project). While the term "Tunnel" is defined in the Glossary that forms part of the Conditions of Approval, the term "Project" is not. Therefore, to provide clarity and avoid confusion, the term "Tunnel" has been adopted in the proposed modifications to the Conditions of Approval where relevant.

The RTA's Proposed Modifications to the Conditions of Approval are set out in Appendix D and discussed below:

- ◆ Additions to the Glossary and Abbreviations list to recognise this Modification Report and define Stage 2 Works;
- ◆ Addition of a reference to this Report in Condition 1. The insertion of this reference would allow for the Proposed Modifications to be integrated into the Project and ensure that all the Environmental Management Commitments outlined in Section 9 of this Report become key requirements of the Approved Project;
- ◆ Amendment to Condition 3 to allow for the opening of the Tunnel to be staged over one month, unless otherwise agreed by the Director-General;
- ◆ Insertion of a new Condition 3A ensuring that the Project is fully implemented no later than 11 months after Tunnel opening;
- ◆ Amendment to the timeframe for the submission of the first Environmental Impact Audit Report in Condition 7 to 9 months after the completion of Stage 2 to allow sufficient time for the findings of the monitoring, to be conducted under Conditions 33, 35, 60 and 168, to be documented in this Audit Report;
- ◆ Amendment to the monitoring timeframes in Conditions 33, 35, 60 and 168 from one year after opening to six months after the completion of Stage 2 to ensure that monitoring is completed at an appropriate time after the completion of the Proposed Modifications in keeping with the intent of the Conditions of Approval;

- ◆ Amendment to the review times specified in Conditions 41, 50(i) and 53 to allow for the delay in implementation of the relevant Project elements;
- ◆ Amendment to Condition 212 to allow the implementation of the bus lanes on Epping Road to be delayed from six months after Tunnel opening until 10 months after Tunnel opening (a delay of approximately four months);
- ◆ Amendment to Condition 213 to allow the installation of feasible bus priority facilities;
- ◆ Amendment of Condition 214 to allow the implementation of the AM T3 transit lane on Epping Road between Delhi Road and Mowbray Road West to be delayed until 11 months after Tunnel opening;
- ◆ Amendment of Condition 215 to allow the implementation of bus lane enforcement systems at the time the bus lanes are installed (a delay of approximately four months);
- ◆ Amendment to Condition 216 to delete the requirement to provide a single unbroken pedestrian crossing of Epping Road at the intersection with Mowbray Road. As indicated in Section 3.6 of this Report a staged pedestrian crossing would be provided at this location;
- ◆ Amendment to Condition 227 to ensure that the dedicated T2 transit lanes on the Gore Hill Freeway are provided no later than 11 months after Tunnel opening;
- ◆ Amendment to Condition 231 to provide for implementation of transit lane enforcement on the Gore Hill Freeway at the time the transit lanes are to be implemented; and,
- ◆ Amendment to Condition 238 to allow the location and design of a Military Road bus bay to be investigated to the satisfaction of the Public Transport Committee.

## 5. Consultation and Notification

### 5.1 Community Consultation completed on the Project to Date

The reconfiguration of Epping Road was the subject of many representations received in response to the EIS exhibition. Key issues included:

- ◆ Support for the reduction in through traffic lanes on Epping Road;
- ◆ General support for the implementation of bus lanes along Epping Road;
- ◆ Support for the provision of two right turning movements and calls for all turning movements to be provided; and,
- ◆ Comments that changes to Epping Road were unnecessary and that current capacity needed to be maintained;

Following Project Approval, the RTA has continued to receive representations regarding the configuration of Epping Road. Key issues include:

- ◆ Need to retain the existing lane configuration to avoid congestion after Tunnel opening;
- ◆ Need to provide for all right turning movements;
- ◆ Need to provide an additional general traffic lane on Epping Road as well as the bus lanes;
- ◆ Need to convert the bus lanes to T2 or T3 transit lanes;
- ◆ Opposition to proposal to convert bus lanes to T2 or T3 transit lanes; and,
- ◆ Support for the Approved Project configuration of Epping Road.

Project works completed in accordance with the Conditions of Approval have already been the subject of extensive consultation. The urban design of Epping Road, including the shared pedestrian/cycleway, in particular, has been the subject of extensive consultation through the preparation of the Urban Design Sub Plan (c) and the Cycleway and Pedestrian Plan required by Conditions of Approval Nos. 42, 87, 221 and 222.

The recent Joint Select Committee Inquiry, which examined the Lane Cove Tunnel Project (August 2006), received numerous public submissions and recommended consideration of “a staged approach to the proposed Epping Road changes” that “might reduce the potential for traffic congestion”.

### 5.2 Consultation to be Undertaken on the Proposed Modifications

Following discussions with officers from the Department of Planning, it is proposed that this Report be placed on the RTA's and Department of Planning's websites at the time of submission to the Director-General of the Department of Planning for assessment, and that the Department of Planning advertise receipt of the RTA's request for approval of the Proposed Modifications and the Minister for Planning's determination in relevant newspapers.

The RTA will also brief the following agencies:

- ◆ Department of Environment and Conservation;
- ◆ Department of Health;
- ◆ State Transit Authority; and,
- ◆ The Project's Public Transport Committee.

### 5.3 Post Determination Notification and Consultation

Following determination by the Minister for Planning, the RTA would notify directly affected residents along Epping Road. Broader notification mechanisms would include the RTA and project websites ([www.rta.nsw.gov.au](http://www.rta.nsw.gov.au), [www.lanecoveproject.com.au](http://www.lanecoveproject.com.au), and [www.connectormotorways.com](http://www.connectormotorways.com)) and the Project Newsletter which is distributed to over 90,000 residences and businesses surrounding the Project.

A detailed Community Notification Strategy would be prepared and implemented to provide information to the road users including motorists, pedestrians and cyclists on the timing of the implementation of the staging of the surface traffic changes in accordance with the Proposed Modifications.

On commencement of construction of the Proposed Modifications, notification of surrounding residents and consultation with directly affected residents would occur as for the Approved Project in accordance with the Conditions of Approval.

These commitments are reflected in Section 9 of this Report.

## 6. Environmental Assessment

### 6.1 Overview

The potential key environmental impacts associated with the proposed surface traffic modifications are:

- ◆ Operational traffic including impacts on public transport, pedestrians and cyclists;
- ◆ Operational noise;
- ◆ Operational air quality; and,
- ◆ Social and business impacts.

The impacts of the Proposed Modifications with respect to these environmental aspects are discussed in Sections 6.2 to 6.5 of this Report. Other potential environment impacts are considered in Section 6.6 of this Report.

### 6.2 Operational Traffic

#### Impacts on Motorists and Public Transport

The deferral of the T2 transit lanes on the Gore Hill Freeway and the bus lanes along Epping Road increases corridor capacity in the interim. Deferring the opening of the Pacific Highway eastbound link to Longueville Road and the Tunnel eastbound link to the Gore Hill Freeway reduces the delays to traffic from Epping/Longueville Road that would result from the merging of traffic from the Tunnel and the Pacific Highway, downstream of the Pacific Highway.

The RTA commissioned Masson Wilson Twiney (MWT) to assess the operational traffic impacts of the Proposed Modifications. The MWT Proposed Modifications Memo, dated 23 November 2006, is contained in Appendix C.

The key findings and conclusions of the MWT Proposed Modifications Memo are as follows:

- ◆ The Proposed Modifications would alleviate the congestion along Epping Road that would be expected during the ramp-up period. While the periods immediately following the implementation of surface road changes under Transition Option 6 would be marked by peaks in congestion, it should be noted that this would settle markedly within 1 to 2 months;
- ◆ Compared to the Approved Project, the Proposed Modification would seek to balance capacity with demand;
- ◆ Relative to the other Options considered by the LCTIG, the Proposed Modifications are one of the better outcomes in terms of matching the expected reduction in demand along Epping Road during the ramp-up period;
- ◆ From a traffic management perspective, the Proposed Modifications are preferred over Option 5; and,
- ◆ With respect to bus services, the Proposed Modifications would seek to ensure effective implementation of priority measures whereby buses gain access to priority lanes without being caught up in general traffic congestion.

It should be noted that some congestion at the time of implementation of the Proposed Modification is unavoidable. In this Regard Masson Wilson Twiney noted in the Memo that:

*“Transition Option 6 seeks to match the reduction in capacity to the expected demands and this would assist in alleviating some of this congestion. The objective is to minimise traffic congestion to levels no worse than today thus allowing a seamless integration of the LCT.*

*Transition Option 6 would minimise congestion along Epping Road that would be expected during the Ramp-up period. Whilst the periods immediately after following the implementation of surface road changes associated with the transition stages would be marked by moderate peaks in congestion (probably worse than today), it should be noted that this will settle markedly within 1 to 2 months of tunnel opening.”*

The RTA has collected baseline traffic data in consultation with all four relevant Councils in accordance with Condition of Approval No. 33. In accordance with Conditions of Approval Nos. 33 and 35 (as proposed to be modified) the RTA would monitor traffic impacts after Tunnel opening and compare these monitoring results to the findings of the EIS. Due to ramp up and the delays in implementing Project elements under the Proposed Modifications, monitoring conducted one year after Tunnel opening (as currently required by the relevant Conditions) would not provide an accurate data set with which to verify the findings of the EIA Documents. Accordingly, it is proposed that this monitoring be delayed and undertaken six months after the completion of the entire Project. This extended timeframe is in keeping with the intent of these Conditions as under the Approved Project, the completion of the Stage 2 Works would have been completed within six months of Tunnel opening. During implementation of the Proposed Modifications, additional interim monitoring would be undertaken using SCATS data from signalised intersection performance along the subject section of Epping Road using new loops and it should also be noted that Connector Motorways will monitor the volume of traffic utilising the Tunnel.

### **Staged Opening of the Tunnel, Falcon Street Ramps and Gore Hill Freeway Widening**

The EIS and Representations Report indicated that the Tunnel, the Falcon Street ramps and the Gore Hill Freeway Widening (the Stage 1 works under the Project Deed) would be opened as one stage of the Project, with the remaining surface works to follow. The Minister for Planning imposed Condition of Approval No. 3 to ensure that the Tunnel, Falcon Street ramps and the Gore Hill Freeway widening were opened concurrently and not staged over an extended period. Detailed traffic modelling conducted by Connector Motorways' design and construction consultant in preparing the Traffic Management Plan for the opening of the Stage 1 works has identified that these Project elements may be better integrated into the road network, if opened progressively within a one month period. It is therefore proposed to reword Condition of Approval No. 3 to allow the Tunnel, Falcon Street ramps and the Gore Hill Freeway widening to be opened within a one-month period, unless otherwise agreed by the Director-General. It is noted that this modification is in keeping with the intent of the Condition.

### **Design of Military Road Bus Bay**

During the Department of Planning's assessment of the Project, the State Transit Authority (STA) wrote to the Department requesting that the bus priority measures to be provided as part of the Project in the vicinity of Falcon Street be clarified. Condition of Approval No. 238

therefore required that a bus indent bay be installed on Military Road to the east of Merlin Street north to the satisfaction of the STA. As a concept design was not included in the EIS or Representations Report, the RTA provided STA with various designs for a bus indent bay at the subject location. In a letter dated 23 October 2006, the STA has advised the RTA that, in its opinion major concerns including poor road geometry and conflicting vehicle movements, mean that it is not possible to design a bus stop at this location that would comply with STA's safety and operational requirements. To ensure that the feasibility of a bus bay is fully considered it is proposed to modify Condition No. 238 to require that further investigations be undertaken on the feasibility of a bus bay to the satisfaction of the Project's Public Transport Committee (PTC).

### **Additional Public Transport Enhancement Investigations**

The Representations Report included a number of commitments to further investigate the potential for implementing a suite of public transport enhancements in addition to those which were already to be implemented as part of the Project. These commitments were generally carried through into the Minister for Planning's Conditions of Approval, which further specified timeframes in which these investigations need to be completed. Relevant Conditions include Conditions No. 41, 50(i) and 53.

Condition No. 41 requires the development of measurable performance indicators for pedestrian walk times at key intersections, in consultation with the PTC, and the review of intersection performance against these indicators 1 and 2 years after Tunnel opening. To take into consideration the delay in full Project implementation under the Proposed Modifications and ensure that this review is completed consistent with the timeframes currently specified, it is proposed to reword this Condition so intersection performance is reviewed six months after the completion of the Stage 2 Works and one year after this initial review.

Condition No. 50(i) requires the review of the effectiveness of the T2 transit lanes on the Gore Hill Freeway, with a view to upgrading to T3 or bus lanes, at 6 months and then every two years after opening. To take into consideration the delay in full Project implementation under the Proposed Modifications, to ensure that the review is completed consistent with the timeframes currently specified, and to provide finality, it is proposed to reword this Condition so that the review of the T2 transit lanes would occur six months after implementation of the transit lanes and every two years thereafter for ten years.

Condition No. 53 requires monitoring and review of bus performance against indicators at six months and one and two years after Tunnel opening. To take into consideration the delay in implementing relevant Project elements under the Proposed Modifications, it is proposed to reword this Condition so that the required monitoring and review occurs six months after the completion of the Stage 2 Works and then one and two years after the implementation of the Epping Road bus lanes.

Also of note, Condition of Approval No. 213 requires the installation of bus priority facilities in a number of locations in consultation with the PTC. A bus priority proposal for westbound traffic on Epping Road approaching Delhi Road was discussed at the March 2005 PTC meeting. If bus priority were to be provided approaching this intersection, queues would develop along Epping Rd east of Mowbray Rd West adversely affecting public transport and travel times for westbound traffic. In addition, any bus priority at this location would be unenforceable due to physical constraints. For these reasons, the PTC members agreed that provision of bus priority

at this location was not warranted. Consequently, it is proposed to amend this Condition to ensure that feasible bus priority is provided.

### **Local Area Traffic Management**

The relevant Councils and the Department of Planning have been briefed on the Local Area Traffic Management (LATM) planning process. A Lead Consultant has been engaged to assist in the preparation of the LATM plans including a review of traffic information, development and evaluation of LATM schemes, consultation with stakeholders and environmental assessment of the LATM schemes.

A Strategy has been prepared and implemented to ensure consultation with the State Transit Authority, NSW Police, Emergency Services, and relevant Local Councils, through a Technical Advisory Committee (TAC) and bicycle groups, affected communities and businesses through four Community Advisory Groups (CAGs). An Independent Chairperson has been engaged to facilitate the TAC and CAG meetings.

The TAC met for the first time on 2 June 2005. At the meeting, Councils identified potential issues regarding changes in local traffic movements and agreed on areas for a letterbox drop seeking community representatives. Following letterbox drops and information sessions held in September 2005, four CAGs were established to cover the areas specified in Condition of Approval No. 37 and the EIS:

- ◆ Ryde;
- ◆ Lane Cove/Chatswood west;
- ◆ Artarmon; and,
- ◆ Neutral Bay/Cammeray/Crows Nest.

Each of the four groups met four times between October 2005 and February 2006 and assisted the RTA and its Lead Consultant in developing draft LATM schemes. As requested by the Councils and the CAGs and in accordance with Condition of Approval No. 33, additional "before" traffic counts were undertaken in November/December 2005 and March 2006 on some local roads that may experience changes in traffic volumes when the Project is open to traffic. These local roads are in addition to those nominated in the EIS.

Draft LATM schemes developed for each of the four areas were endorsed by the relevant Councils for public display and forwarded to the Department of Planning on 12 April 2006. Brochures and questionnaires were developed and comments were sought from the local community in a four-week exhibition period held from 18 October 2006 to 17 November 2006. The LATM Plans are currently being finalised in consultation with the relevant Councils and the Director-General of the Department of Planning. These Plans, which require the approval of the Director-General of the Department of Planning and the relevant Councils, detail a range of measures to be implemented by the relevant Councils if significant traffic volume changes are identified in the monitoring that is to be completed up to six months after Tunnel opening. Following review of interim traffic monitoring data collected during the implementation of the Stage 2 Works (including SCATS data and Tunnel traffic volumes), the operational monitoring timeframes of the LATM Plans would be reviewed by the RTA and revised, if considered necessary.

Similarly, in accordance with Condition of Approval No. 34, the RTA is currently investigating measures to improve vehicular access to Chatswood by arterial roads. Following review of the interim traffic monitoring data discussed above (including SCATS data and Tunnel traffic volumes), the findings of this investigation and, in particular, any timeframes for the implementation of any proposed works would be reviewed by the RTA and revised, if considered necessary.

## **Pedestrians and Cyclists**

As outlined in Section 3.3 of this Report, under the Approved Project, the following pedestrian and cyclist facilities would be provided:

- ◆ A shared pedestrian/cycleway on the southern side of Epping Road in addition to the existing pedestrian path on the northern side of Epping Road;
- ◆ A new pedestrian overbridge near the bus interchange. The existing pedestrian bridge at Kimberley Avenue would be removed on opening of the new pedestrian overbridge;
- ◆ The underpass at Mowbray Road replaced (to make way for the western Tunnel portal) by an at-grade signalised uninterrupted pedestrian crossing of Epping Road; and,
- ◆ Pedestrian crossings at Longueville Road, Centennial Avenue, Tantallon Road and Mowbray Road to allow pedestrians to cross in a single uninterrupted movement.

The urban design and landscaping of these works is addressed in Urban Design Sub Plan (c) (which has been approved by the Director-General) and the Cycleway and Pedestrian Plan (which has been submitted to the Director-General of the Department of Planning for approval).

With the exception of the continuous unbroken pedestrian crossing of Epping Road at Mowbray Road, all the pedestrian and cycleway elements of the Approved Project would be implemented under the Proposed Modifications. Consistent with the Approved Project, the pedestrian overbridge would commence construction immediately following Tunnel opening. However, the construction of the shared pedestrian/cycleway on the southern side of Epping Road would not commence until five months after Tunnel opening. The currently existing crossings would remain in place for the first five months after opening. The remaining elements would then be implemented. While it is noted that this delay in implementation associated with the Proposed Modifications would delay the full pedestrian and cyclist benefits of the Approved Project by five months, the MWT Options Report demonstrates the need to provide additional vehicular capacity during this short period. Impacts on pedestrians and cyclists during the delay in construction commencement and during construction would be managed through an Education Strategy for users and adjacent residents, which is a key commitment in the Cycleway and Pedestrian Plan required under Condition of Approval No. 42. The Education Strategy would promote the safe use of the completed sections of the shared use path and would advertise any alternative routes available during construction along Epping Road. Safe pedestrian and cyclist access during construction would also be a key focus of the Traffic Management Plan to be prepared for the Proposed Modifications (as discussed in Section 6.6 of this Report).

With respect to the crossing of Epping Road at Mowbray Road, Condition of Approval No. 216 requires that a single uninterrupted crossing be provided on opening of the Tunnel. The Representations Report concluded that the walk time at this intersection would be high and, therefore, indicated that separate walk phases for each carriageway of the Epping Road may be

required. Notwithstanding, the technical assessment included in the Representations Report, the Department concluded that, in terms of equity (given that an underpass was provided prior to construction), a single un-interrupted crossing should be provided. No technical assessment was conducted by the Department in coming to this conclusion.

The Approved configuration of Epping Road at the pedestrian crossing at the intersection with Mowbray Road would have two distinct carriageways separated by a wide median:

- ◆ Two westbound lanes, a bus lane and a right turn lane into Mowbray Road; and,
- ◆ Two eastbound lanes and a bus lane.

The distance to cross Epping Road at this point would be 45 metres including the median of over 12 metres between the east and west bound carriageways to accommodate the western portal.

On this basis the RTA requested a minor modification to Condition of Approval No. 216 noting that:

- ◆ The loss of the underpass is compensated through the provision of a connection under the eastern abutment of the Lane Cove River Bridge to the footpath on the southern side of the Lane Cove River Bridge;
- ◆ A preliminary analysis of the required signal phasing at this intersection indicates that the cycle length varies between 32 and 160 seconds with the movement from Mowbray Road West into Epping Road given between 15% and 24% of the respective cycle time; and,
- ◆ As a single pedestrian crossing of Epping Road will require at least a statutory 40 seconds, which is far greater than Mowbray Road traffic would receive, the inclusion of the bus priority in accordance with Condition of Approval No. 213 may be compromised as it may not be possible to provide an appropriate level of service to all users including buses and vehicles and a single uninterrupted pedestrian crossing.

The Minister for Planning therefore modified Condition of Approval No. 216 in June 2006 to allow the RTA to seek the Director-General's agreement to stage the crossing, if monitoring of the intersection conducted after Tunnel opening demonstrated unsatisfactory intersection performance.

The RTA has now commenced the detailed phasing design for this intersection and concluded that the situation could be worse than predicted under the preliminary phasing analysis reported above. The performance of the intersection of Epping Road and Mowbray Road West after the opening of the Tunnel would depend on the traffic demand, the available capacity and its green time configuration. The available capacity is somewhat fixed as determined by the final design configuration. Based on more detailed analysis, a single uninterrupted pedestrian crossing across Epping Road would set a minimum green time of 43 seconds for Mowbray Road West when the pedestrian crossing is demanded. A two stage pedestrian crossing across Epping Road will set a minimum green time of 25 seconds for Mowbray Road West when the pedestrian crossing is demanded and allow an acceptable level of service for motor vehicles travelling along Epping Road to be maintained. A single uninterrupted pedestrian crossing as currently required under Condition of Approval No. 216 would therefore significantly reduce the capacity available to Epping Road when compared to a two-staged pedestrian crossing arrangement.

It should be noted that this staged pedestrian crossing would be constructed with an automatic trigger for the full crossing of Epping Road. The pedestrian push buttons on the northern and southern kerbs of Epping Road would place a call for both stages of the pedestrian crossing (eastbound and westbound carriageways) across Epping Road. Pedestrian push buttons are also provided in the median to allow each stage to be called independently (i.e. from the median to the kerb).

Given these findings, and the conclusions of the MWT Options Report regarding the need for minimum levels of service to be maintained for vehicular traffic on Epping Road, the Proposed Modifications seek the deletion of the requirement to provide this uninterrupted crossing from Condition of Approval No. 216.

These commitments are reflected in Section 9 of this Report.

### 6.3 Operational Road Noise

The EIS and additional studies included in Appendix M of the Representations Report assessed the likely operational road traffic noise associated with the Approved Project. The EIA Documents noted that residences throughout the corridor are already subject to high road traffic noise and estimated that a number of properties adjacent to the Falcon Street ramps, along the Gore Hill Freeway, adjacent to the new bus interchange on Longueville Road, and along Epping Road west of Mowbray Road, may require noise mitigation to meet the relevant noise goals. A range of mitigation measures were identified in the EIA Documents including the use of open-grade (low noise) asphalt in some areas, the retention of some existing noise walls, the erection of new noise walls and/or architectural treatment of individual dwellings.

Accordingly, Minister for Planning's Condition of Approval No. 59 required the preparation of a detailed Operational Noise Management Sub Plan to the satisfaction of the Director-General, and Condition Nos. 225 and 241 ensured that the mitigation measures to be implemented would, as a minimum, be consistent with those identified in Appendix M of the Representations Report.

The Operational Noise Management Sub Plan was prepared and approved by the Director-General of the Department of Planning in December 2005 and the implementation of the required operational noise treatments is near completion.

Under the Proposed Modifications, as discussed in Section 3.6 of this Report, the implementation of all Project surface works would be deferred from six months to 11 months after Tunnel opening (a delay of 5 months). Notwithstanding, as traffic begins to utilise the Tunnel, the surface road traffic noise is expected to reduce during this period. Given that road traffic noise would improve, relative to the current situation, it is concluded that no additional noise mitigation is required during the short-term delay.

Section 12 of the approved Operational Noise Management Sub Plan outlines the required operational noise monitoring to verify the adequacy of the implemented noise mitigation treatments in accordance with Condition of Approval No. 60. Condition 60 currently requires that operational noise monitoring be undertaken one year after Tunnel opening. Given the delays in full Project implementation under the Proposed Modifications, it is proposed to conduct this monitoring six months after completion of the entire Project. This extended timeframe is in keeping with the intent of this Condition, as consistent with the Approved

Project, the proposed amendment would require monitoring 6 months after the completion of the Project. As the property owners who have received mitigation have been previously notified of the requirements of Condition 60, it would also be necessary to notify them of this change to the monitoring timeframe.

These commitments are reflected in Section 9 of this Report.

## 6.4 Operational Air Quality

The EIS and Representations Report predicted a net improvement in local ambient air quality following the opening of the Tunnel based on reduced surface congestion and improved travel times and resultant reductions in vehicle emissions. These assessments also noted that the dispersion of emissions from the two ventilation stacks would be far more effective than the current roadside dispersion. The Director-General's Report noted that the net improvement in air quality is dependent on achieving the forecast network efficiencies and road traffic volumes. As a consequence, Condition of Approval No. 168 requires that the ambient air quality assessment for the tunnel ventilation system included in the EIA Documents be validated utilising actual monitoring data recorded at the six ambient air quality monitoring stations installed as part of the Project, after 12 months of Tunnel operation.

The stack dispersion modelling completed to date in order to finalise the detailed ventilation design has indicated that the assessment included in the EIA Documents is conservative and that ambient air quality impacts are likely to be reduced to a greater extent than previously predicted. Notwithstanding, the Proposed Modifications would delay the completion of the Approved Project by 5 months. Given the short delay in full Project implementation under the Proposed Modifications, it is proposed to validate the air quality modelling referenced in Condition of Approval No. 168 six months after completion of the entire Project. This extended timeframe is in keeping with the intent of this Condition, as consistent with the Approved Project, the proposed amendment would require monitoring 6 months after the completion of the Project.

This commitment is reflected in Section 9 of this Report.

## 6.5 Social and Business Impacts

Social impacts include air quality changes, noise impacts, impacts on travel opportunities, impacts on social character, safety and security, views, pedestrian amenity, local open space and access. The EIA Documents assessed the social impacts for the Approved Project and divided the impacts into those that would occur during construction (mainly adverse) and those that would occur during operation (mainly positive).

The Proposed Modifications would provide a satisfactory level of service during the ramp-up period and allow for a more seamless integration of the Project into the surrounding road network. As discussed in Sections 6.3 and 6.4 above, the total improvements in road traffic noise and ambient air quality along Epping Road would only be realised on completion of the Approved Project. Notwithstanding, as traffic begins to utilise the Tunnel on opening, the amenity of Epping Road is expected to improve from this time.

With respect to impacts on businesses adjacent to construction works, a Business Management Strategy is currently being prepared to manage any impacts on businesses during the

construction of the Stage 2 Works in accordance with Condition of Approval No. 218. This Business Management Strategy would be reviewed by the RTA and, if considered necessary, updated to ensure the impacts of the Proposed Modifications are appropriately mitigated.

This commitment is reflected in Section 9 of this Report.

## 6.6 Other Potential Environmental Impacts

Other possible environmental impacts of the Proposed Modifications include:

- ◆ Urban design;
- ◆ Construction noise;
- ◆ Construction traffic;
- ◆ Waste management;
- ◆ Property impacts;
- ◆ Water quality, erosion, sedimentation and hydrology;
- ◆ Hazards and risk;
- ◆ Heritage and archaeology;
- ◆ Flora and fauna; and,
- ◆ Impacts on utilities.

The design of the Project is not altered by the Proposed Modifications (with the exception of the proposed change to the pedestrian crossing of Epping Road at Mowbray Road, the further investigation of the Military Road bus bay and the implementation of feasible bus priority facilities for westbound traffic on Epping Road). Accordingly, the operational design requirements, such as operational water management, are not altered by the Proposed Modifications and do not require any further consideration.

The urban design of the Project is not altered by the Proposed Modifications and has been the subject of detailed Urban Design and Landscaping Plans approved by the Director-General. Urban design therefore requires no further consideration in this Report. Similarly, the property acquisition requirements for the Approved Project have been determined already and would not alter under the Proposed Modifications.

Flora and fauna, heritage and archaeology impacts, construction noise and traffic, construction water management, waste management and hazards and risks associated with the Approved Project, including the Stage 2 Works, are considered in the Sub Plans which have been prepared in accordance with the following Conditions of Approval:

- ◆ Condition of Approval No. 29 which requires the preparation and implementation of a Framework Construction Traffic Management Plan;
- ◆ Condition of Approval No. 57 which requires the preparation and implementation of a Construction Noise and Vibration Management Sub Plan;
- ◆ Condition of Approval No. 95 which requires the preparation and implementation of a Flora and Fauna Management Sub Plan;
- ◆ Condition of Approval No. 100 which requires the preparation and implementation of a Heritage and Archaeology Management Sub Plan;
- ◆ Condition of Approval No. 105 which requires the preparation and implementation of a Construction Water Management Sub Plan;

- ◆ Condition of Approval No. 106 which requires the preparation and implementation of a Flooding and Drainage Management Sub Plan;
- ◆ Condition of Approval No. 125 which requires the preparation and implementation of a Waste Management and Reuse Sub Plan; and,
- ◆ Condition of Approval No. 131 which requires the preparation and implementation of an Emergency Response Plan.

These Sub Plans detail a range of mitigation measures to be implemented during construction, where relevant, across the Project. Given the nature of the Proposed Modification, the impacts of these environmental aspects would not significantly alter between the Approved Project and the Modified Project. In particular, flora and fauna, heritage and archaeology and hazards and risks would not alter between the Approved Project and the Modified Project. Similarly, impacts on utilities and waste management would not differ between the Approved Project and the Modified Project. The mitigation and management strategies in these Sub Plans would therefore be relevant to the Proposed Modifications.

While the impacts of construction noise may vary slightly due to the length of construction associated with the Proposed Modifications, the actual noise impacts would not alter (i.e. types of machinery and intensity of work remains the same) and would be managed in accordance with a specific Construction Noise Impact Statement which is currently being prepared in accordance with Condition of Approval No. 58. Similarly, likely construction traffic impacts could vary under the Proposed Modifications. These would be managed in accordance with a specific Traffic Management Plan prepared in accordance with Condition of Approval No. 30 and associated traffic control plans. Impacts on construction water quality, erosion, and sedimentation could also vary slightly due to the length of construction, but would be managed through the preparation of a specific Soil and Water Quality Management Plan in accordance with Condition of Approval No. 113.

As the Proposed Modifications delay the timeframes associated with the implementation of some project elements, but do not alter the physical Project to be ultimately constructed (with the exception of the proposed change to the pedestrian crossing of Epping Road at Mowbray Road, the further investigation of the Military Road bus bay and the implementation of feasible bus priority facilities for westbound traffic on Epping Road), all these impacts can be managed by the relevant controls and specific documentation set out in the Conditions of Approval (as proposed to be modified). A Construction Method Statement is currently being prepared for the Stage 2 Works. This Construction Method Statement and associated documentation would be reviewed in light of the Proposed Modifications to ensure that all required management measures are identified and the environmental auditing required under Condition of Approval No. 23 would ensure appropriate implementation of these measures.

## 7. Other Approvals and Management Documentation

### 7.1 Approvals

Road occupancy licences (ROLs) would be required from the RTA prior to any lane closures being implemented to construct the Proposed Modifications. As discussed in Section 6.6 of this Report, traffic control plans would be submitted to the RTA's Transport Management Centre with the Licence applications.

It is noted that the Proposed Modifications would not, in themselves, trigger any requirement for an Environment Protection Licence from the Department of Environment and Conservation. The Proposed Modifications merely change the implementation timeframes associated with some Project elements and (with the exception of the proposed change to the pedestrian crossing of Epping Road at Mowbray Road, the further investigation of the Military Road bus bay and the implementation of feasible bus priority facilities for westbound traffic on Epping Road) would not alter the Project to be ultimately implemented

No other licences or approvals are required.

### 7.2 Required Management Documentation

As stated in Section 6.6 of this Report, the Construction Method Statement and associated documentation, which are currently being prepared for the Stage 2 Works, would be reviewed and updated where necessary to address the Proposed Modifications. These specific management documents would reflect the requirements of the Sub Plans required under the Conditions of Approval, any relevant specific requirements of the Conditions of Approval and the management commitments from this assessment discussed in Sections 5 and 6 and reflected in Section 9 of this Report. The Construction Method Statement would be certified by the Project's Environmental Management Representative (EMR) as being in accordance with the Conditions of Approval, and would be submitted to the Director-General for approval prior to the commencement of substantial construction.

## 8. Matters of National Environmental Significance

The RTA has assessed the Proposed Modifications in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act), and provides the following comments in relation to the possible triggers for approval under Chapter 3 of the EPBC Act (as summarised in the words in italics).

*Would the proposal impact the World heritage values of any World Heritage Property or National Heritage Place?* No

*Would the proposal affect the National Heritage values of a National Heritage place (that is, a place which has been included on the National Heritage list)?* No

*Would the proposal affect the ecological character of any Ramsar wetland (that is, a wetland of international significance for migratory bird species listed under the Ramsar Convention)?* No

*Would the proposal affect any listed threatened species or community?* No

*Would the proposal affect any listed Migratory Species?* No

*Would the proposal involve any Nuclear Action?* No

*Would the proposal affect any Commonwealth Marine Area?* No

In addition, the Proposed Modifications would not be carried out on any Commonwealth land or affect the environment of any Commonwealth land.

In consideration of the above, the RTA considers that separate approval for the Proposed Modifications to the Approved Project is not required under the EPBC Act and referral to the Federal Minister for the Environment is not required.

## 9. Environmental Management Commitments

Based on the consultation and notification commitments outlined in Section 5 of this Report and the environmental assessment undertaken in Section 6 of this Report, the EIA Documents and the Minister for Planning's Conditions of Approval, the management measures outlined in the table below are proposed to minimise the environmental and social impacts of the Proposed Modifications.

No.	Commitment
<b>1. General</b>	
1.1	The Proponent shall implement the T2 transit lanes on the Gore Hill Freeway and the Stage 2 Works as detailed in Section 3.6 of this Report.
1.2	The Proponent shall comply with the Conditions of Approval (as proposed to be modified).
1.3	The Tunnel, the Falcon Street ramps and the Gore Hill Freeway widening shall open within a one-month period unless otherwise agreed by the Director-General in accordance with modified Condition of Approval No. 3.
1.4	Construction of the bus interchange and pedestrian bridge shall commence on Tunnel opening, with subsequent removal of the Kimberley Avenue pedestrian overbridge.
1.5	The T2 transit lanes on the Gore Hill Freeway and the Stage 2 Works shall be fully implemented no later than 11 months after Tunnel opening in accordance with New Condition 3A.
1.6	The pedestrian crossing of Epping Road to be provided at Mowbray Road shall be staged, with separate walk signals provided for the eastbound and westbound carriageways of Epping Road. The pedestrian push buttons on the northern and southern kerbs of Epping Road will place a call for both stages of the pedestrian crossing (eastbound and westbound carriageways).
<b>2. Notification</b>	
2.1	Following the Minister for Planning's Determination, the Proponent shall notify directly affected residents along Epping Road of the Proposed Modifications.
2.2	Following the Minister for Planning's Determination, an outline of the Proposed Modifications shall be posted to the RTA's website, the Connector Motorways' website and included in the next Project newsletter to be produced in accordance with Condition No. 12.
2.3	The Proponent shall notify all affected property owners who have received noise mitigation in accordance with the approved Operational Noise Management Sub Plan of the altered operational noise monitoring timeframe specified in modified Condition of Approval No. 60.
2.4	A detailed Community Notification Strategy shall be prepared and implemented to provide information to the road users, including, motorists and pedestrians and cyclists on the timing of the implementation of Project elements under the Proposed Modifications
2.5	In accordance with the commitment in the Cycleway and Pedestrian Plan, the Community Notification Strategy required under Commitment 2.4 shall include an Education Strategy for users of the shared pedestrian/cycleway and adjacent residents. This Education Strategy shall promote safe use of the completed sections of the shared use path and would advertise any alternative routes available during construction along Epping Road.

No.	Commitment
2.6	On commencement of construction of the Proposed Modifications, notification of surrounding residents and consultation with directly affected residents shall occur as for the Approved Project in accordance with the Conditions of Approval.
<b>3. Specific Documentation on the Proposed Modifications</b>	
3.1	In accordance with Condition 21, the Proponent shall prepare or update the relevant detailed Construction Method Statement to address the construction environmental impacts and management strategies for the Proposed Modifications. In accordance with the approved CMS Matrix, this CMS shall be submitted to the Director-General for approval following certification by the EMR.
3.2	In accordance with Condition 30, the Proponent shall prepare or update the relevant detailed Traffic Management Plan to address the construction traffic impacts and management strategies for the Proposed Modifications.
3.3	In accordance with Condition 58, the Proponent shall prepare or update the relevant Construction Noise Impact Statement to address the likely construction noise impacts and management strategies for the Proposed Modifications.
3.4	In accordance with Condition 91, the Proponent shall prepare or update the relevant Tree Protection Plan to manage construction impacts for the Proposed Modifications.
3.5	In accordance with Condition 133, the Proponent shall prepare or update the relevant detailed Soil and Water Quality Management Plan for the Proposed Modifications.
3.6	In accordance with Condition 218, the Proponent shall prepare or update the Business Management Strategy to address the relevant potential impacts of the Proposed Modifications.
<b>4. Review of other Documentation</b>	
4.1	Following review of interim traffic monitoring data collected during the implementation of the Stage 2 Works (including SCATS data and Tunnel traffic volumes), the operational monitoring timeframes of the Local Area Traffic Management Plans prepared under Condition 37 and 38 shall be reviewed by the RTA and revised, if considered necessary.
4.2	Following review of interim traffic monitoring data collected during the implementation of the Stage 2 Works (including SCATS data and Tunnel traffic volumes) the findings of the investigation required under Condition 34 and, in particular, any timeframes for the implementation of any proposed works shall be reviewed by the RTA and revised, if considered necessary.
<b>5. Changes to Operational Monitoring Timeframes</b>	
5.1	In accordance with modified Condition of Approval No. 7 the first Environmental Impact Audit Report shall be submitted to the Director-General nine months after the completion of Stage 2 Works.
5.2	The post Tunnel opening traffic monitoring required under Condition 33 shall be conducted six months after the completion of Stage 2 Works.
5.3	The initial post Tunnel opening traffic monitoring required under Condition 35 shall be conducted six months after the completion of the Stage 2 Works.
5.4	Review of pedestrian walk times in accordance with Condition 41 shall be undertaken six months after the completion of the Stage 2 Works and one year after this initial review.

No.	Commitment
5.5	Review of the effectiveness of the T2 transit lane on the Gore Hill Freeway in accordance with Condition No. 50(i) shall be undertaken six month after implementation of the transit lanes and every two years thereafter for ten years.
5.6	Monitoring and review of bus performance in accordance with Condition No. 53 shall be undertaken six months after the completion of the Stage 2 Works and than one and two years after the implementation of relevant public transport enhancements.
5.7	The operational noise monitoring required under Condition 60 shall be conducted six months after the completion of the Stage 2 Works.
5.8	The validation of the ambient air quality assessment required by Condition 168 shall be conducted six months after the completion of the Stage 2 Works.
<b>6. Public Transport</b>	
6.1	In accordance with modified Condition of Approval No. 213, the Proponent shall install feasible bus priority facilities for westbound traffic on Epping Road at Mowbray Road West, Pittwater Road and Delhi Road intersections in consultation with the PTC.
6.2	In accordance with modified Condition of Approval No. 238, the location and design of a Military Road bus bay shall be investigated to the satisfaction of the Public Transport Committee.

## 10. Conclusion and Recommendations

The Minister for Planning approved the Lane Cove Tunnel Project on 3 December 2002. This Approval was issued pursuant to Part 5, Division 4 of the EP&A Act. As a result of amendments to the EP&A Act on 1 August 2005, and associated savings and transitional provisions, the Approval is now governed by Part 3A (Major Infrastructure and Other Projects) of the EP&A Act. Section 75W(2) of the EP&A Act provides that a proponent may request the Minister for Planning to modify an approval for a project if the project as modified will be inconsistent with the existing approval.

In the longer term, the Project is predicted to reduce by more than 100,000 the number of vehicles per day using surface streets. This will lead to benefits to public transport users, cyclists and the local community. However, RTA's traffic consultant, Masson Wilson Twiney predicts that during the ramp-up phase, significant levels of congestion would occur at all major intersections along Epping Road in the morning peak period as well as extensive queuing in Epping Road, North Ryde, west of Mowbray Road for eastbound traffic. In the evening peak period, severe congestion is predicted at the intersections of Epping Road with Longueville Road, Centennial Avenue and Pittwater Road.

Ramp-up is predicted to impact on the travel times of both the general motoring public and also bus patrons. The experience of the Cross City Tunnel showed that implementation of surface road changes (designed to provide a public benefit) immediately after Tunnel opening can detrimentally affect the efficiency of the road network and be perceived negatively by the community.

The Review of Future Provision of Motorways in NSW (December 2005) concluded that, for new motorway projects, a staged approach should be adopted to the introduction of major public domain improvements. This would include staging surface road changes. This recommendation was reinforced during the Joint Select Committee Inquiry (August 2006).

The Lane Cove Tunnel Report of the Joint Select Committee Inquiry into the Cross City Tunnel (August 2006) expressed concern about "the possibility of congestion when the Lane Cove Tunnel opens and certain parts of Epping Road are narrowed to two lanes in each direction, with one 24 hour bus lane." The Committee noted that "a staged approach to the proposed Epping Road changes might reduce the potential for traffic congestion, and allow the RTA time to monitor the capacity of the narrowed Epping Road" and that "for future tunnel projects, the RTA should consider imposing a reasonable period between the completion of the tunnel and any disruptive changes to surface traffic arrangements, to allow time for the community to become accustomed to the impact of the project."

The Lane Cove Tunnel Integration Group identified that the implementation of transition measures to integrate the Lane Cove Tunnel into the broader road network is essential. The Proposed Modifications would provide a period of transition while ultimately delivering the road user, public transport user and community the intended benefits of the Project. The Proposed Modifications would improve the level of service for traffic on the network in the short term compared to the Approved Project, in keeping with one of the primary objectives of the Approved Project. In practice they would assist in better achieving some of these Project objectives in the short-term during the ramp-up period as a result of the short-term surface capacity increases they offer. The surface traffic changes of the Approved Project (with the exception of the proposed change to the pedestrian crossing of Epping Road at Mowbray Road,

the further investigation of the Military Road bus bay and the implementation of feasible bus priority facilities for westbound traffic on Epping Road) would need to be implemented in the longer term to minimise the potential for induced demand and associated congestion and ensure all Project objectives are satisfied. Therefore, the Proposed Modifications would provide a satisfactory level of service during the ramp-up period and allow for a more seamless integration of the Project into the surrounding road network.

The RTA has assessed the environmental impacts associated with the Proposed Modifications and concluded that, cumulatively and individually, the Proposed Modifications would have acceptable environmental impacts that would be managed in accordance with applicable Conditions of Approval (as proposed to be modified) and the Environmental Management Commitments included in Section 9 of this Report. In particular, it is noted that the Proposed Modifications merely change the implementation timeframes associated with some Project elements and (with the exception of the proposed change to the pedestrian crossing of Epping Road at Mowbray Road, the further investigation of the Military Road bus bay and the implementation of feasible bus priority facilities for westbound traffic on Epping Road), would not alter the Project to be ultimately implemented. All Project elements would be completed within 11 months after Tunnel opening (a delay of 5 months).

Accordingly, pursuant to Section 75W of the EP&A Act, the approval of the Minister for Planning is requested to modify the Approval for the Lane Cove Tunnel Project as outlined in this Report. Recommended wording for the modifications to the Conditions of Approval to reflect the Proposed Modifications is provided at Appendix D.