



**Coordinator-General's  
Change Report**  
on the  
**Environmental Impact Statement**  
for the  
**Airport Link Project**

July 2008



# Table of Contents

<b>1. Introduction.....</b>	<b>5</b>
1.1 Purpose.....	5
1.2 The Proponent .....	5
1.3 Background .....	6
1.4 Request for Project Change.....	7
<b>2. Description of the Proposed Changes .....</b>	<b>10</b>
2.1 Design Changes.....	10
2.2 Construction (Project Delivery) Changes.....	11
2.3 Traffic Network Changes.....	12
<b>3. Public Notification and Consultation .....</b>	<b>13</b>
3.1 Public Notification.....	13
3.2 Analysis of Submissions Received .....	14
<b>4. Evaluation of Environmental Effects.....</b>	<b>17</b>
4.1 Traffic and Transport.....	17
4.2 Topography, Geology, Geomorphology and Soil.....	26
4.3 Hydrology and Water Quality .....	26
4.4 Air Quality.....	28
4.5 Noise and Vibration.....	30
4.6 Flora and Fauna.....	33
4.7 Land Use and Planning.....	35
4.8 Cultural Heritage .....	36
4.9 Social Environment, Urban Design and Regeneration .....	38
4.10 Hazard and Risk.....	42
4.11 Cumulative Impacts.....	44
4.12 Miscellaneous Matters .....	45
4.13 Amendments to Clarify Conditions.....	46
4.14 Conclusion .....	46

## Appendix 1: New and Amended Conditions

# Coordinator-General's Change Report - Synopsis

This Report has been prepared pursuant to s.35I of the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act) and provides an evaluation of the environmental effects of various proposed changes to the Airport Link Project - Reference Project), which was the subject of an evaluation in the Coordinator-General's Report of May 2007. The revised Airport Link Project, incorporating the proposed changes, is referred to in this report as the Changed Project.

I have evaluated the environmental effects of the proposed changes, and associated effects on the project according to Part 4 of the SDPWO Act. I have considered the matters outlined in section 35H of the SDPWO Act, particularly the environmental effects of the project changes as detailed in section 4 of this Report (Evaluation of Environmental Effects).

I consider the Changed Project provides commendable innovative approaches towards mitigating the risk of potential visual, noise, air quality and private property impacts of proposed construction activities and associated worksites, including on Kedron State High School and Woolloowin State School. Innovation has been demonstrated in the Changed Project's further mitigation of potential visual and private property impacts of ventilation stations and outlets, particularly at Clayfield.

I also consider the Changed Project presents positive outcomes for the community with improved connectivity to the existing road system, superior landscaping and open space provision, and improved pedestrian and cycle accessibility.

Given the nature of the Project, traffic and transport related matters associated with the Changed Project have obviously represented a key set of issues to consider within my evaluation. Overall, I am satisfied that the measures, including ongoing consultation processes, required by approval conditions associated with the project, will suitably address the intersection performance, pavement condition, tunnel interface and other traffic and transport issues raised within submissions and arising from my review of the Changed Project details provided by the proponent.

My evaluation of various environmental effects of the Changed Project, consistent with the information contained within the Request for Project Change Document of May 2008 prepared by the proponent, indicates that the other impacts of the Changed Project will vary from the Reference Project as summarised below.

**Air Quality:** The EIS conclusions for health impacts remain valid for the Changed Project. The changes in the project would not alter the forecast with regards to human health outcomes presented in the Environmental Impact Statement (EIS). Overall, the results indicate that the change in design and reduction in the height of the Clayfield ventilation outlet would not substantially affect air quality outcomes (which will remain within required performance standard limits).

**Noise and Vibration:** Construction noise goals can reasonably and feasibly be achieved for the Changed Project, with the implementation of appropriate mitigation measures.

As with the Reference Project, no significant noise or vibration operational impacts are predicted for traffic flows within the tunnel sections of the Changed Project. The expected operational noise changes on the wider road network due to the Changed Project would be negligible and would likely be unnoticed by most persons. The Changed Project can achieve the planning noise levels for residences adjacent to the Project.

**Flora and Fauna:** The new alignment over Enoggera Creek reduces the infrastructure footprint resulting in the retention of 300m<sup>2</sup> of mature mangroves downstream. The loss of mangroves associated with the additional crossing of Enoggera Creek for the Bowen Bridge Road on-ramp (north-bound) and associated overhead pedestrian bridge crossing of Enoggera Creek, is more than compensated by avoiding the extensive area of mangroves within and adjacent to the Queensland Rail (QR) land.

Potential impacts on aquatic flora and fauna may occur at the area of cut and cover across Kedron Brook, and construction may have minor local impacts on aquatic flora and fauna through disturbance to small pools and riffles, although no significant ecological impacts are expected and the area would recolonise rapidly after the project works are completed.

Removal of vegetation for construction would have little impact on aquatic flora at Kedron Brook, as remnant riparian vegetation has already been largely removed, and watercourse banks are dominated by exotic grasses.

**Land Use and Planning:** The overall net increase in properties to be partially or fully acquired is approximately 30. The acquisition of land required for necessary transport and other infrastructure tends to create some hardship for the affected individuals. However, in this case, the net increase in acquisition requirements is justified on the basis of the various project improvements described elsewhere in this report.

**Cultural Heritage:** The Changed Project would result in the removal of buildings in Federation Street, Windsor, which are identified on the Brisbane City Council, *City Plan Heritage Register*. Archival recording of cultural heritage significance buildings impacted by the Project must be undertaken prior to construction works affecting identified heritage buildings.

As with the Reference Project, there would be project works in the State Heritage listed, Kalinga Park. While the temporary construction phase impact footprint is larger, the area of the park impacted by construction will be returned to public use earlier, relative to the Reference Project. The Changed Project does not significantly impact the Diggers Drive precinct.

**Social and Urban Environment:** Overall, the Changed Project provides for reduced visual and amenity impacts and improved urban design impacts over the Reference Project. Examples of these include the partially buried and/or screened ventilation stations, the reduced number and complexity of elevated structures at Kedron, and new pick up and set down arrangements at Woolloowin State School.

**Hazard and Risk:** Flood investigations for the Changed Project have adopted a comprehensive approach to hydraulic modelling which shows that with proposed mitigation methods described in the Request for Project Change, there will be no increase in flooding risk in relevant streams adjacent to project works.

The Changed Project removes additional infrastructure through Kedron Brook as proposed in the Reference Project to support the additional three lanes and therefore would achieve a lesser impact to upstream properties compared to the Reference Project following the completion of construction.

**Spoil Haulage:** A key improvement of the Changed Project is the proposed extension of the Tunnel Boring Machine (TBM) construction works further towards Lutwyche, with resulting reduced overall cut and cover tunnelling impacts at Kedron and the reduction to the surface construction along the eastern side of Lutwyche Road. These changes are particularly focused on reducing the noise and safety-related effects of construction on Kedron State High School and Woolloowin State School as per the Coordinator-General's Report recommendations of May 2007. However, these improvements create an increase in the overall quantity of construction spoil. Subject to Australian Government approvals, the Changed Project would involve reduced traffic related impacts associated with spoil transport by developing a spoil conveyor from the Clayfield worksite to Brisbane Airport. This conveyor system would handle all spoil from the mainline tunnels constructed by TBM's between Chalk Street Lutwyche and Clayfield.

**Conclusion:** In general, the nature of impacts that may result from the Changed Project are broadly consistent with the range of impacts as assessed in the Coordinator-General's Report of May 2007. I conclude that some amendments to existing approval conditions (as set out in the Coordinator-General's Report of May 2007) and some new conditions for the Project are warranted given various specific changes to the project and resulting environmental effects. These new and amended existing conditions are detailed in Appendix 1 to this Report.

I recommend that the project as described in the EIS and the EIS Supplementary Report, as modified by the Request for Project Change and Response to Submissions documents, proceed subject to compliance with the recommendations contained in the Coordinator-General's Report of May 2007 and the conditions in Appendix 1 of this Report. To the extent that there are any inconsistencies between the Coordinator-General's Report of May 2007, the EIS and the EIS Supplementary Report, the Request for Project Change, and Response to Submissions, the conditions in Appendix 1 of this Report prevail.

The various impacts, identified in both the EIS and the Request for Change, are recognised, and justified on the basis of the various benefits generated by the Project, particularly in relation to transport efficiency gains to the greater road network. In addition, the Changed Project has provided improved amenity in areas where the project connects to the existing road network.

In accordance with section 35J of the SDPWO Act, a copy of this Report will be provided to the proponent. This Report will also be made publicly available on the Department of Infrastructure and Planning website.

*Signed by*

.....

Colin Jensen

Coordinator-General

Date: 29 July 2008

# 1. Introduction

## 1.1 Purpose

This Coordinator-General Change Report for the Airport Link Project (the project) has been prepared in accordance with section 35I of the *State Development and Public Works Organisation Act 1971* (SDPWO Act). The purpose of this Report is to provide the Coordinator-General's evaluation of the environmental effects of the proposed changes to the 'Reference Project' which was the subject of the evaluation in the Coordinator-General's Report of May 2007.

## 1.2 The Proponent

The Proponent for the Project is the State of Queensland. The State issued a Request for Proposals (RFP) in June 2007, to finance, construct, own and operate the Project for a 45-year concession period and to construct and deliver the Windsor to Kedron section of the Northern Busway Project. Proposals were received in December 2007.

The State established City North Infrastructure Pty Ltd (CNI) as a 100% Queensland Government-owned special purpose vehicle for the purpose of managing the procurement of both the Airport Link and the Northern Busway projects. The Board of CNI comprises representatives of the Departments of Infrastructure and Planning (DIP) and Main Roads (DMR), Queensland Treasury, Queensland Transport (QT) and the Brisbane City Council (BCC).

In May 2008, following a process of evaluation, the State identified a proposal offered by BrisConnections Pty Ltd for the Airport Link and Northern Busway projects as the preferred proposal. In that same process, the State also accepted a proposal by BrisConnections to design and construct the Airport Roundabout Upgrade Project in parallel with the Airport Link and Northern Busway projects, and each are currently scheduled for completion about mid 2012. The impact assessment and approvals processes for these two projects are being conducted outside of the SDPWO Act.

BrisConnections is a consortium of the Macquarie Capital Group, Thiess and John Holland (the latter two entities being independent subsidiaries of Leighton Holdings Group). Thiess and John Holland are jointly responsible for the provision of project design and construction services to BrisConnections.

BrisConnections has responded to the request for innovation, which has led to improvements in design and changed impacts both in terms of location and scale relative to the Reference Project. This proposal, incorporating the changes to the Reference Project, is referred to in this document as the "Changed Project".

## 1.3 Background

The Airport Link Project is a system of road tunnels connecting the Inner City Bypass (ICB) and North South Bypass Tunnel (now called the Clem Jones Tunnel) at Bowen Hills in the south, with Gympie Road and Stafford Road at Lutwyche and Kedron in the north-west, and with Sandgate Road and the East West Arterial at Clayfield in the north-east. The Project will include:

- two separate parallel north-south tunnels each carrying three lanes of traffic in each direction between Bowen Hills and Kedron;
- two separate east-west tunnels each carrying two lanes of traffic in each direction between Kedron and Clayfield;
- tunnel portals at Bowen Hills, Kedron and Clayfield, with cut and cover and transition sections at each to connect with the surface road network;
- elevated structures across Enoggera Creek linking the mainline tunnels in Windsor with the ICB and the surface road network in Bowen Hills;
- elevated structures across Kedron Brook linking Lutwyche Road, Kedron Park Road and the mainline tunnels from the south with Gympie Road and Stafford Road to the north;
- safety systems including safety exits, fire protection and monitoring systems;
- a ventilation system to manage air quality in the tunnels and near portals, including an elevated ventilation outlet near each of the connections in Bowen Hills, Kedron and Clayfield;
- surface road improvements at local intersections and around the connections to the tunnel; and
- allowances in the design for concurrent or subsequent implementation of the Northern Busway Project.

On 31 October 2005, the project was declared a 'significant project' for which an Environmental Impact Statement (EIS) is required in accordance with Part 4 of the SDPWO Act.

The EIS for the Reference Project was developed over the following 18 months, which involved planning activities, modelling and other investigations and community consultation by the proponent.

The EIS was advertised for public comment from 11 October to 8 December 2007.

A supplementary EIS report was prepared by the proponent in response to approximately 300 written submissions on the EIS on the Reference Project, raising more than 2000 individual matters including concerns over construction-related disruptions to various community activities and in relation to increased traffic on connecting roads.

Both the EIS and the Supplementary EIS reports for the Reference Project were assessed by the Coordinator-General, who completed his evaluation in May 2007 (Coordinator-General Report May 2007), recommending that the Airport Link project proceed, subject to a number of conditions.

The Coordinator-General's May 2007 Report recommended that the request for tender for the Airport Link Project seek innovation aimed at further mitigation of the risk of impact of the Project in a manner that also complies with the safety, reasonable cost, traffic accessibility and flood impact objectives of the Project.

Specifically, the Coordinator-General's May 2007 Report recommended innovation aimed at further mitigating the risk of potential:

- visual, noise, air quality and private property impacts of the construction worksite(s) at Kedron on the Kedron State High School and Wooloowin State School; and
- visual, and private property impacts of the ventilation stations and outlets.

The Coordinator-General's Report of May 2007 further recommended applying particular criteria in developing the design for connections to the road network at the tunnel portals. Improvements were also sought in regard to integration with other projects as well as the regional and local planning processes.

## 1.4 Request for Project Change

### 1.4.1 Statutory Process

Division 3A of Part 4 of the SDPWO Act describes the statutory process for the consideration of changes to a significant project or Coordinator-General's conditions for that project for which a Coordinator-General's Report has been issued under section 35(5) of that Act.

On 28 May 2008, the proponent requested that the Coordinator-General consider the changes to the Reference Design for the project proposed by BrisConnections as described in its Request for Project Change document, in accordance with sections 35D and 35E of the SDPWO Act.

The proposed changes and effects on the project are described in section 2 of this Report. Section 4 details the evaluation of the environmental effects of various project changes.

## 1.4.2 Assessment Requirements under Commonwealth Legislation

The Delegate of the Commonwealth Minister for the Environment and Heritage, originally determined on 19 January 2006 that the Reference Project constituted a 'controlled action' pursuant to section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) due to a potential impact of activities associated with the spoil placement on Moreton Bay Ramsar wetlands<sup>1</sup>.

This decision was subsequently reconsidered after substantial new information was provided to the Commonwealth Minister. Based on this new information, which included a commitment by the proponent not to use the Export Park West precinct for spoil placement, a decision was made on 20 March 2006 by the then Minister for the Environment and Heritage that the proposed action is not a 'controlled action' and that assessment and approval of the proposal under the EPBC Act is not required.

Since the time of the original 'controlled action' decision, Brisbane Airport Corporation (BAC) has successfully managed, under approved environmental management plans, the placement of large quantities of spoil similar to material that will be drawn from the Airport Link tunnels. The most notable of these operations is the current use of spoil from the Clem Jones Tunnel construction onto Brisbane Airport for the construction of the Gateway Motorway Upgrade.

The Changed Project proposes the placement of 520,000 bank cubic metres of spoil drawn from the Clayfield worksite at the Export Park West precinct of the Brisbane Airport over a ten-month period commencing in 2010. This spoil would be delivered by a temporary conveyor.

I am advised that BAC, supported by information provided by BrisConnections, will seek approvals from the Commonwealth Department of Transport and Regional Services (DOTARS), in accordance with the *Airports Act 1996*, for part of the conveyor system to be built on Brisbane Airport land and for tunnel spoil to be placed at the Export Park West precinct. Under this approvals process, DOTARS must seek the advice of the Commonwealth Minister for Environment under section 160 of the EPBC Act prior to giving authorisation for that action.

The Commonwealth Minister would have the opportunity to advise that the proposed placement of spoil at Export Park West constituted a 'controlled action' under the EPBC Act. In that case, the information from both the EIS process for the Reference Project and the SDPWO Act Part 4 Division 3A process for the Changed Project, including this Report, would be relevant. As per usual practice and administrative arrangements, there would be open sharing of necessary information, between State officials and the Commonwealth Department

---

<sup>1</sup> The Convention on Wetlands, signed in Ramsar, Iran, in 1971, is an intergovernmental treaty which provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources. There are presently 158 Contracting Parties to the Convention, with 1757 wetland sites, totalling 161 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance.

of Environment Water Heritage and Arts (DEWHA) in relation to consideration of any EPBC Act matters.

I am advised that BAC will contend that the spoil placement proposal is either not a controlled action under the EPBC Act, or can be satisfactorily considered on the basis of existing information and proposed environmental management plans.

Further discussion of the spoil conveyor proposal is contained in section 4.1.5 of this Report. New imposed conditions to cover spoil conveyor options are provided in Appendix 1 (Schedule 3, Condition 6) of this Report. In light of the information provided to me, and with the implementation of new Condition 6, I consider that it is likely that significant impact of the Changed Project on sensitive environmental matters (e.g. Ramsar listed wetlands) can be avoided, minimised and/or satisfactorily mitigated.

If Australian Government approvals for the placement of spoil on Brisbane Airport land are withheld, then the Changed Project proposes that the spoil conveyor system terminate at Nudgee Road, Toombul (as shown in Figure 4-3B of the Request for Project Change). In that case, tunnel spoil would be transported by road from that location to alternative spoil placement options that have already been considered under the scope of the Reference Project.

## 2. Description of the Proposed Changes

The proponent advises that the Changed Project incorporates improvements in design which would result in changed impacts both in terms of location, timing and scale. The proponent also advises that the Changed Project will achieve the objectives of the Reference Project while delivering enhancements in network performance and urban amenity at Lutwyche and Kedron, and addressing specific impacts identified at Bowen Hills in the Coordinator-General's Report May 2007.

While the broad overall outcomes and elements of the project remain generally unaltered, there are numerous important specific changes to the project described in the Request for Project Change.

### 2.1 Design Changes

#### 2.1.1 Tunnel Alignment

The proponent identifies that changes have been incorporated into the alignment of the mainline tunnels to accommodate more efficient traffic connections in the north-west at Kedron. These changes will allow more efficient and more certain construction conditions in more suitable ground through Lutwyche and Woolloowin. The changes would result in the mainline tunnel alignments moving east and south in a sweeping arc between Lowerson Street, Lutwyche and Park Avenue, Woolloowin. The total length of tunnel for the Changed Project will be approximately 5.25km.

#### 2.1.2 Surface Connections

Changes are proposed for the connections with the surface road network at Windsor / Bowen Hills, Kedron and at Clayfield to achieve more efficient traffic flows from the surface road network to and through the Tunnel as well as reducing the impacts of the infrastructure on the surface at Kedron. These changes would result in some of the ramps to the surface road network being constructed underground beneath Kedron Brook in the vicinity of the Woolloowin State School and St Andrew's Anglican Church.

#### 2.1.3 Ventilation Stations and Outlets

Minor changes are proposed to the location of the ventilation stations at Kedron and Windsor, aimed at reducing the visual impact of the facilities and the partial burial of the ventilation station at Windsor and complete burial of the ventilation station at Clayfield to reduce the visual impact of each of these buildings is proposed. A reduction in the height of the ventilation outlet at Clayfield from 30 metres to 25 metres is also proposed in response to visual amenity concerns.

### **2.1.4 Tunnel Control Centre**

The relocation of the tunnel control centre to a site at the corner of Stafford Road and Clarence Street, Stafford would allow improved access to the Changed Project tunnel system.

## **2.2 Construction (Project Delivery) Changes**

The construction method for the Changed Project would use the same general construction techniques as the Reference Project. However, the locations in which these various construction techniques would be used have been altered in some cases in order to provide changes in the infrastructure and to achieve better construction efficiencies and environmental outcomes.

### **2.2.1 Tunnel Boring Machines**

The mainline tunnels between Chalk Street, Lutwyche and Kalinga Park, Clayfield would be constructed with two Tunnel Boring Machines (TBMs) launching from Kalinga Park and being extracted via a shaft at Chalk Street. The Reference Project proposed one TBM launched from Kedron for one tunnel and then turned around and tunnelling back to Kedron. The spoil from TBM construction would be transported from the Clayfield worksite by conveyor to a receiving facility at Brisbane Airport.

### **2.2.2 Chalk Street Worksite**

A worksite at Chalk Street, to be shared with the Northern Busway Project would be required for the removal of each of the TBMs in components.

### **2.2.3 Connecting Ramps**

The construction of the connecting ramps from Lutwyche and Kedron would be by a combination of cut and cover and roadheader methods, including a cut and cover construction through and beneath Kedron Brook and beneath Lutwyche.

### **2.2.4 Tunnel Depths**

The construction of the mainline tunnels between Clayfield and Lutwyche would generally be at increased depths for TBM construction. Between Lutwyche and Windsor construction will be at generally reduced depths to facilitate accelerated construction at multiple faces by roadheader equipment.

### **2.2.5 Spoil Haulage**

Alternative routes have been proposed for spoil haulage. These are along arterial roads including Gympie Road, Rode Road, Sandgate Road and Toombul Road to form a northern haulage route, in addition to spoil transport by the proposed conveyor system and the use of the southern haulage route identified in the EIS (i.e. south along Lutwyche Road and then across to Kingsford Smith Drive via the local road network or via the Inner City Bypass).

## 2.2.6 Shared Worksites

The Changed Project would share worksites with the Northern Busway Project at Chalk Street and Truro Street to capture potential construction efficiencies and design improvements.

## 2.3 Traffic Network Changes

The Changed Project would maintain local accessibility generally, but would also cause a number of positive, neutral and negative impacts to local access arrangements in various localities, including for example:

- reduced impacts in the O'Connell Terrace area;
- suitable alternatives for the Arnott Street catchment affected by a new road closure and 'left-in' only access from Gympie Road to Leckie Road;
- in response to requirements from BCC and DMR, closed access from Homebush Road and Broughton Road to Gympie Road would result for through traffic, and with each of those roads being terminated in a cul-de-sac arrangement. Alternative access would be available from Brookfield Road or Somerset Road via Clarence Road or Mitchell Street;
- changed local accessibility in Windsor East through the proposed closure of Federation Street and the extension of Gallway Street through to connect with Lutwyche Road, resulting in a viable albeit less convenient route from the south to the Windsor East catchment; and
- the provision of similar infrastructure support for public transport as envisaged in the EIS, in conjunction with the Northern Busway Project.

## 3. Public Notification and Consultation

### 3.1 Public Notification

In accordance with Section 35G of the SDPWO Act, the Coordinator-General requested public comment on the Request for Project Change in the *Courier Mail* newspaper on Saturday, 31 May 2008 and invited public submissions on the proposed changes to be received by Monday, 30 June 2008. An additional notice was also placed in local *Quest* Newspapers for the week commencing 2 June 2008.

Material supporting public notification included:

- notification of the Request for Project Change;
- request for Project Change report and supporting documentation;
- technical reports supporting the Request for Project Change;
- a CD-Rom containing copies of the Request for Project Change, supporting information and technical reports;
- Airport Link EIS October 2006 and Supplementary EIS Report April 2007;
- display material describing the Changed Project, assessment process, and submission requirements; and
- display material for the Reference Project to enable comparison with the Changed Project.

The Request for Project Change and the above supporting information was also on display and available for review from 31 May until 30 June 2008 at the following locations:

- Brisbane Square Library, Ground Floor, 266 George St, Brisbane;
- Chermside Library, 375 Hamilton Road, Chermside;
- Nundah Library, 1 Bage Street, Nundah;
- Grange Library, 79 Evelyn Street, Grange;
- Hamilton Library, Cnr Racecourse Road and Rossiter Parade, Hamilton; and
- Queensland Transport Customer Service Centre, 477 Boundary Street, Spring Hill.

Copies of the Request for Project Change and the above supporting information was also available:

- on the Airport Link website at [www.airportlink.com.au](http://www.airportlink.com.au);
- on the EIS website at [www.airportlinkeis.com](http://www.airportlinkeis.com);
- the Coordinator-General's website at [www.dip.qld.gov.au](http://www.dip.qld.gov.au);

- at the community information sessions; and
- at the visitor's centre, 109 Gympie Road, Kedron.

## 3.2 Analysis of Submissions Received

A total of 52 submissions were received. For the purposes of this Report, these submissions have been organised into four source categories: residents, advisory agencies, community groups and businesses.

### 3.2.1 Submissions from Residents

Submissions were received from 30 residents. Four major sets of issues are apparent in the residents' submissions relating to air quality, noise, traffic modifications, and diminished land values.

Almost half of the resident submissions expressed concern over potential air quality impacts. Eight submissions included concerns over motor vehicle exhaust emissions, emitted from the tunnel ventilation outlets. A second group were concerned with the potential impacts of construction dust (six submissions).

In general, the submitters were concerned that electrostatic filtration is not proposed to be installed and/or objected to the proposed ventilation outlets being located close to their residential areas. Furthermore, a number of residents questioned findings of the EIS relating to air quality standards that formed the basis for not installing the filtration systems.

A number of submissions requested mitigation, through home renovations or supply of appliances (e.g. closing-in a balcony or installing air conditioning etc). Some residents requested a house or car washing services, or a targeted relaxation of water restrictions to allow for regular washing down of property.

Approximately one third of residential submissions indicated anxiety over construction noise and vibration impacts. For example, one resident indicated that the noise and constant disruption due to the proximity of construction and vehicle movement is of great concern.

In some cases, residents were seeking the implementation of a dilapidation survey for their houses prior to works, as they fear damage resulting from the proposed works. Some residents requested that noise barriers be erected to shield their properties. A few residents requested the installation of double glazed windows in their homes. One resident requested ongoing reporting of construction noise monitoring to be provided to residents, as well as the relocation of residents free of charge if at any stage noise, or air quality, goals exceed the set standards.

Traffic changes were the subject of more than a dozen submissions on matters such as the:

- closure of Federation St Windsor (two submissions) and the need for traffic lights at nearby Gallway St (one submission);

- opening of Swan Street Gordon Park to through access (two submissions); and
- turning restriction to enter/exit Glenfern Avenue Kedron and their request for installation of traffic lights (two submissions with one listing twenty five signatures).

A similar number of submissions stated fears that the project will diminish land values and/or included requests for compensation for possible land value losses.

Other resident issues included:

- reduction in the size of Kedron dog off-leash area (3 submissions, including one petition with 71 signatures);
- inadequate (or request for more) Airport Link Consultation (3 submissions);
- traffic congestion during construction (3 submissions);
- need for security for properties close to vacated/resumed land (3 submissions); and
- restricted access to local facilities (parks, bus stops, medical centre) (3 submissions).

Resident's submissions were often sceptical of the findings of the environmental impact assessment process and/or mistrusted the proponent's commitments to adequately mitigate impacts. The submissions did not always restrict themselves to new issues arising from the Changed Airport Link Project. Some of the issues raised have already been assessed and evaluated as part of the EIS for the Reference Project.

### 3.2.2 Advisory Agency Submissions

Submissions were received from 15 government agencies which also produced the largest volume of separate points of commentary and/or issues identification. Agencies generally focussed their comments on their area of expertise/jurisdiction and were largely supportive of the Changed Project.

Common or major themes included; student welfare, pedestrian/cycle access, traffic capacity, protection of cultural heritage, urban design features, intersection design, and spoil haulage routes. A large portion of the remaining content in the submissions provided advice relating to statutory approval processes and appropriate standards to be applied.

### 3.2.3 Community Organisations

The five community organisation submissions addressed objectives relating to matters such as:

- the learning environment at local schools;
- a local church;
- Kedron Brook (particularly water quality);
- Kalinga Park; and
- the heritage of Inner North Brisbane.

Generally, the responses were accepting of the Airport Link Tunnel proposal. The submissions identified possible construction mitigation measures, and/or requests for additional works, consistent with the group's interests, to compensate the area for the project's impacts.

### 3.2.4 Private Businesses

Three submissions were from private organisations. Two of the submissions, were from property development firms. Both expressed concern that the project design and approval process was not consistent with existing land use plans, particularly – *Lutwyche Road Corridor Draft Neighbourhood Plan* and *Brisbane City Plan 2000*. One of the submissions expressed concern that the potential for urban regeneration of Lutwyche will be lost because the Airport Link Tunnel (along with the Northern Busway) is not being designed to permit urban development on or near the tunnel route. The submission argued the Airport Link project would have a “sterilising” effect for urban development in Lutwyche.

The third submission discussed the need for the design and management of Airport Link to integrate with the Clem Jones Tunnel. The submission stressed that during construction the Airport Link Tunnel must not significantly impede flow in and out of the Clem Jones Tunnel.

# 4. Evaluation of Environmental Effects

## 4.1 Traffic and Transport

### 4.1.1 Traffic Modelling and General Matters

The updated traffic model associated with the Changed Project indicates that there will be increased overall traffic flows, relative to the EIS modelling results for the Reference Project. The revisions reflect updates to demographic projections and other factors underpinning traffic estimates. The extent of the resulting traffic increases is similar across the Reference Project, the Changed Project and the 'Without Project' scenarios.

While the design of the Changed Project is expected to facilitate slightly greater traffic flows than the other two cases, the overall transport network benefits are similar for both the Reference and Changed Projects. That is, Airport Link will facilitate improved inter-connectivity among arterial roads and improved travel times through inner northern Brisbane. The increased traffic congestion that would be associated with the revised Without Project scenario adds weight to the underlying need for the Project.

Table 3-5 of the Request for Change Report shows that the effects on local area traffic will be generally similar to the effects of the Reference Project, with several exceptions. For example, a further reduction of 2,000 to 3,000 vehicles per day using Lutwyche Road and a 5% increase in traffic on Richmond Road.

Approximately 50 separate comments, concerns or recommendations were raised in relation to specific traffic and transport matters. These arose from approximately one third of the submissions received. The desire to be provided with more information was a key theme of many of the comments, concerns or recommendations. Other submitters were keen to see design refinements to enhance accessibility to particular locations, such as bus stops, or to particular streets. Many of the issues raised were similar to those raised and addressed during the EIS process for the Reference Project. While I note that many of the issues raised were adequately addressed in the Coordinator-General Report of May 2007, I encourage the proponent to thoroughly and comprehensively communicate the detailed designs to affected members of the community.

I consider that the traffic and transport issues raised in submissions have been adequately identified and addressed in the proponent's Response to Submissions document, particularly in sections 4.2 and 4.15. I also consider that, in most instances, the numerous requests for more detailed design information can be satisfied by adherence to Schedule 3, Condition 1 of this Report and the consultation processes already established for the project as that detail becomes available to BrisConnections and CNI.

Further relevant traffic and transport issues are detailed in the following sub-sections of this Change Report.

### 4.1.2 Intersection Performance

Analysis presented by the proponent suggests that intersection performance at most locations will be similar to, or better than, forecast in the EIS for the Reference Project. The key exception will be in relation to the proposed new Lutwyche Road / Gallway Street intersection. Right-hand turn queues have the potential to cause safety and network efficiency problems for north bound traffic on Lutwyche Road at this intersection. Table 3-6 within the Request for Change Document suggests that the level of service provided at this intersection will remain at the second highest level on a 6 point rating scale.

In relation to intersection performance generally, submissions provided by BCC and DMR indicate that these two authorities do not agree that sufficient information has been provided to demonstrate that all intersections will have sufficient capacity to cater for future traffic demand at an acceptable level of service.

I am advised that the contract provisions relating to the construction of the project require the intersection arrangements to address standards to the satisfaction of BCC and DMR. Further, these authorities are represented on the board of CNI and therefore have direct input to decisions on any project design refinements. Design enhancements over and above the measures necessary to meet acceptable safety levels would logically need to be assessed against other priorities for similar intersection enhancements across South East Queensland and the State generally.

In relation to the specific Gallway Street – Lutwyche Road intersection, the proposed intersection arrangements provide for all movements involving entry and exit relating to Gallway Street. Relevant supplementary information provided to me by the proponent in response to a request for information about this issue notes that the right turn pocket on Lutwyche Road for turning movements from the south is of limited length (approximately 20 metres) due to geometric constraints and would only be able to cater for three stored vehicles. In addition, further details that have been provided by the proponent in relation to the forecast movement performance at this intersection are summarised in Table 1 below.

An assessment of the data within Table 1 indicates that:

- For traffic demands associated with current local land use patterns, the turn slot would be adequate to accommodate the average queue length per cycle (20 metres in both peaks). However, at a small percentage of times there may be overflow into the adjacent through lane.
- The right turn entry movement is forecast to experience the highest delays of any movement at the intersection. Average delays to right turn vehicles into Gallway Street are forecast as 75 seconds in the AM peak and 67 seconds in the PM peak, which are not regarded by the proponent as excessive in an urban environment for the 10 year planning horizon.

- The overall level of service at the intersection (LOS B) is considered to be satisfactory and the average delay to vehicles using the intersection would be low (11 seconds in the AM peak and 17 seconds in the PM peak).

**Table 1: Intersection model results for Gallway Street/Lutwyche Road intersection.**

Approach	Movement	Demand (vehicles / hour)	Degree of Saturation <sup>1</sup>	Average Delay (Level of Service) <sup>2</sup>	Average Queue Length (m)
<b>2022 AM Peak</b>					
Lutwyche Road South	Through	1 931	0.36	7 (A)	56
	Right Turn	65	0.93	75 (E)	20
Gallway Street	All	35	0.12	64 (E)	10
Lutwyche Road North	Left (Gallway / NSBT)	1 668	0.74	17 (B)	113
	Through	1 916	0.60	7 (A)	58
Overall		5 615	0.93	11 (B)	N/A
<b>2022 PM Peak</b>					
Lutwyche Road South	Through	4 011	0.71	3 (A)	50
	Right Turn	75	0.87	67 (E)	20
Gallway Street	All	40	0.15	68 (E)	12
Lutwyche Road North	Left (Gallway / NSBT)	1 624	0.88	48 (D)	247
	Through	756	0.34	20 (C)	64
Overall		6 506	0.88	17 (B)	N/A

1 – Degree of Saturation is the ratio of traffic demand and capacity flow rates. Intersections operating at above 0.95 are regarded as over saturated.

2 – Level of Service is rated by the time of average delay at an intersection. The categories (A-F) are defined in Table 5.10 in section 5.3.5 Intersection Performance of the Airport Link EIS, October 2006.

I am satisfied that BCC and DMR have been, and will continue to be, closely involved with the development of the detailed design of the project as is appropriate given their responsibilities for the development and maintenance of Local and State-Controlled roads, respectively, in accordance with suitable service standards.

In relation to necessary project-related interchanges with Local and State Controlled Roads, I consider that the requirements of conditions within the Coordinator-General's Report May 2007 are sufficient to accommodate any further consultation with BCC and DMR that may be necessary to enable design refinements (within the specified footprint of the Changed Project). That is, design refinements that may be demonstrated as likely to generate further net gains in overall traffic flow efficiency.

To be clear, approval must be obtained from the Chief Executive of the DMR under the *Transport Infrastructure Act 1994* (TIA) for carrying out works for connections to any State Controlled Road. I note that the objectives of the TIA include providing for adequate levels of safety and community access to the road network and that these objectives are likely to be addressed when the Chief Executive is requested by the proponent to approve the relevant road connections following any necessary further consultation with the DMR. The contractual provisions and consultation requirements mentioned above mean that BCC has similar capacities to enable traffic network efficiencies for connections to local roads as DMR has in relation to state-controlled roads.

In addition to the abovementioned road authority concerns, various resident submitters have indicated that various proposed intersection arrangements with existing roads may not be optimal and that further consultation is warranted.

Ongoing development of design details (e.g. turning pocket specification, signalling sequences etc) will obviously generate further information of interest to residents who are dependent on the efficient functioning of the relevant intersections.

I note that the proponent is obliged, under the requirements of the existing imposed conditions, to suitably address the intersection concerns raised by the various submitters in accordance with the comprehensive Community Engagement requirements set out in Schedule 3, Condition 1 and Condition 4(d)(iii) of the Coordinator-General's Report of May 2007. That is, direct discussions and document exchanges are required as requested by the relevant affected parties. Given these conditions, it will be a requirement for the proponent (in conjunction with road authorities) to consult with the directly affected landholders and residents.

In relation to intersections such as the Gallway Street–Lutwyche Road intersection, I conclude that the proponent has provided sufficient information to establish that the right turning pocket from Lutwyche Road is adequate for the current land-use requirements, given the safeguards provided by the ongoing role of road authorities in relation to standard design refinement processes that typically occur as detailed designs for major roadways are finalised.

I concur with the proponent's view that, should planning processes likely to result in intensification of land-use at the Gallway Street locality emerge, then new transport works to provide additional capacity for access to the area are likely to be warranted. It is not unusual

to expect that, as part of the approval process for land use intensification proposals that any necessary requirements for enhanced infrastructure would need to be taken into account. It is beyond the scope of this project to consider yet-to-emerge proposals for land use intensification.

### 4.1.3 Interface with Clem Jones Tunnel

A submitter has indicated that there is insufficient information in the Request for Project Change document to enable interconnection and interface arrangements with the Clem Jones Tunnel (formerly known as the North-South Bypass Tunnel) to be assessed in sufficient detail. Clearly, it is essential that the Airport Link Project and the Clem Jones Tunnel interconnect as seamlessly as possible during both the construction and operational phases of this Project.

The two projects will share both common infrastructure and land at Bowen Hills. The construction periods of both projects will overlap between late 2008 and early 2010. The Clem Jones Tunnel will commence operation while the construction of Airport Link continues (until about mid 2012). When both projects become operational, traffic will need to flow efficiently between the two tunnels and with the connecting road network, especially the ICB and Lutwyche Road at Bowen Hills. Amongst many other matters, emergency services and tolling systems will need to be adequately integrated.

The relevant owner, operator and construction responsibilities for the Airport Link and Clem Jones Tunnel Projects are summarised in Table 2.

The BCC is the proponent for the Clem Jones Tunnel. BCC has an agreement with RiverCity Motorway to design, build and own the Clem Jones Tunnel for a 45-year concession period. BCC's agreement with RiverCity Motorway is administered by its Major Infrastructure Projects Office (MIPO). RiverCity Motorway has a consortium agreement with the Leighton Contractors, Baulderstone Hornibrook, Bilfinger-Berger Joint Venture (LBB-JV) for the design and construction of the Clem Jones Tunnel.

**Table 2.** Responsible entities for the Clem Jones and Airport Link Tunnel Projects.

Entity	Tunnel Project	
	Clem Jones	Airport Link
<b>Proponent</b>	BCC (responsibilities administered by MIPO <sup>1</sup> )	State of Queensland (represented by CNI <sup>2</sup> )
<b>Concessionaire / Operator</b>	RiverCity Motorway	BrisConnections
<b>Designer / Constructor</b>	LBB-JV <sup>3</sup>	Thiess /John Holland <sup>4</sup>

1 - MIPO is the Major Infrastructure Projects Office of the BCC.

2 - CNI is City North Infrastructure P/L

3 - LBB-JV is the Leighton Contractors, Baulderstone Hornibrook, Bilfinger-Berger Joint Venture.

4 - In consortium partnership with the Macquarie Capital Group.

The proponent, owner, constructor and operator relationships for the Airport Link Project are described in section 1.2 above.

Outside of these formal project arrangements, BCC and DMR have regulatory responsibilities for the local and State-controlled road networks respectively as described in section 4.1.2 above.

From the information provided to me by the proponent in the Request for Project Change and Response to Submissions documents, I am satisfied that the relevant construction activities of both projects can be suitably progressed simultaneously as currently proposed and that a high level of interoperability can be achieved when both projects become operational. However, as further design, construction and operational details emerge, effective communication arrangements will need to be maintained to avoid interface problems.

Existing contractual arrangements, coupled with informal proactive communication between the parties, should be sufficient for delivering both tunnel projects in overlapping timeframes. It is in the strong interests of all of the above parties to seek mutually beneficial outcomes. There also appears to be broad support amongst all of these parties for the development and implementation of an appropriate 'Interface Agreement' between the two projects to formally outline communication protocols in the event of disputation.

An interface agreement will need to define the relationships and interactions among all the parties, in particular the interaction between BrisConnections and RiverCity Motorway.

Matters that may be covered by an interface agreement may include:

- communication arrangements for senior staff on both projects;
- land access arrangements;
- warranty arrangements on physically connecting or shared infrastructure;
- consideration of urban design relationships;
- operational traffic flows between the two projects; and
- dispute resolution procedures.

I encourage the relevant parties defined in Table 2 to finalise and document suitable interface arrangements for the Airport Link and Clem Jones Tunnel projects as soon as practicable.

Consistent with Recommendation 5 of the Coordinator-General's Report of May 2007, I am satisfied that the proponent of the Airport Link Project is committed to use its best endeavours to resolve these interface matters as soon as possible. I consider that the benefits that would be likely to accrue to all relevant parties from a suitable agreement on interface arrangements should provide sufficient incentive for all of the relevant parties to finalise such an agreement. As a result, I do not consider that a specific new condition on the interface agreement is required at this time.

#### 4.1.4 Spoil Transport, Rode Road and the Airport Roundabout

The Request for Project Change estimates that proposed new approaches to construction associated with the Changed Project are expected to increase the quantity of construction spoil to be transported by up to 50%. The proposed spoil conveyor from Clayfield to the Export Park West precinct of the Brisbane Airport would involve significantly less traffic disruption during construction than the surface road spoil transport options. Consideration of Australian Government approvals required for use of the Brisbane Airport land are discussed in section 1.4.2 of this Report.

The increase in spoil haulage, relative to the Reference Project, would be reduced from 50% to less than 20% if the conveyor option is implemented. The 50% increase in spoil haulage under the non-conveyor approach would involve 381,000 truck movements over two and a quarter years versus 301,000 if the conveyor system can be utilised. The conveyor itself will only need to be operational for approximately ten months.

Section 4.2.1 of the Request for Project Change details several additional spoil disposal locations, relative to the Reference Project. The Changed Project would also involve greater use of a freight route along Gympie Road, Rode Road, Sandgate Road and Toombul Road to access the Gateway Motorway for spoil disposal at sites such as the Brisbane Airport or the Port of Brisbane. Although the greatest proportional increase in truck movements will occur on Rode Road, this would be less than 1.5% of daily traffic volumes and less than 1% of peak flows.

In relation to the overlapping timeframes involved with construction of the project and some other major road projects such as a proposed upgrade to the airport roundabout, the Change Request indicates that that cumulative impacts on traffic flow along relevant routes and at relevant intersections will be manageable. For example, peak hour capacity at the Airport roundabout is not expected to be substantially affected.

BCC has raised concern over the durability of the Rode Road pavement, advising that some sections are unlikely to withstand the loads imposed by the proposed spoil cartage operations. BCC has requested that the Northern Haul Route should not be used unless strengthening of the pavement is undertaken before the spoil haulage operation commences.

The proponent has indicated within section 4.14.7 of its Response to Submissions of July 2008 that Rode Road is designated by BCC as an arterial road under the *City Plan 2000*. The proponent considers that the use of Rode Road as an arterial road, including for the haulage of spoil, is therefore within its intended function. Despite this, I note that the proponent and BCC concur that the pavement of Rode Road may be adversely affected by the additional heavy vehicle traffic associated with the Changed Project. As a result, a thorough pavement condition review may be warranted and I consider that BCC is likely to be the most appropriate body to lead any such review and to implement any necessary strengthening works that are identified by the assessment.

In its submission, DMR has recommended that access of project related spoil haulage trucks to the Airport Roundabout on the East-West Arterial, be restricted to non-peak times until the

Northern Access Road from the Gateway Motorway Upgrade is completed (around mid 2009).

As identified in Figure 4-4 of the Request for Project Change, spoil haulage may commence in December 2008 and therefore the potential need for spoil haulage traffic to access the Airport Roundabout remains for the period between then and mid 2009. That is, there is likely to be a three month ramp up period in early 2009, followed by a likely three month period of spoil haulage through the roundabout prior to traffic congestion relief being provided by the new Gateway Upgrade Project connection to Airport Drive.

The proponent is concerned about the proposed restrictions and notes that there are no restrictions on use of the road infrastructure in Brisbane placed on other major projects. The proponent considers that the Request for Project Change confirmed that the additional traffic passing through the Airport Roundabout would be less than 0.5% and would have little if any impact on Airport Roundabout operations. In addition, the Request for Project Change also confirms that the proponent proposes alternative routes to avoid congested parts of the road network, particularly during peak periods.

I note that, in accordance with existing imposed Schedule 3, Condition 5, the proponent is obliged to prepare a construction vehicle traffic Environmental Management Plan (EMP) Sub-Plan that will ensure, among other things, the implementation of haulage vehicle management methods that avoid, or minimise and mitigate, disruption to local traffic movements generally and particularly during peak traffic periods. Disruptions that may arise include the failure of any relevant road to withstand additional loads that may be applied over and above the existing capacity of the road, or for unacceptable traffic congestion impacts at the Airport Roundabout.

I further note that the construction traffic EMP Sub-Plan and the construction vehicle EMP Sub-Plan must be subject to periodic review and be updated to address construction program requirements and construction sequencing. The construction traffic EMP Sub-Plan must be provided to QT, DMR and BCC prior to its implementation. Any review of the condition of Rode Road should be able to be readily accommodated within this EMP Sub-Plan review and update process.

In relation to the Airport Roundabout and the Rode Road pavement concerns that have been raised, I require that the abovementioned construction traffic EMP obligations should include the proponent:

- affording BCC with the opportunity to review the estimated effect of project-related heavy vehicle traffic upon the Rode Road pavement;
- affording BCC and DMR with the opportunity to specify measures that may be necessary to strengthen the Rode Road pavement and/or minimise congestion at the Airport Roundabout; and
- jointly with BCC and DMR (as appropriate) providing the Queensland Government with the opportunity to consider necessary mitigation measures that may be demonstrated as being necessary by the BCC review.

On this basis, I consider that existing conditions applying to the project in relation to use of arterial roads and intersections are appropriate and additional conditions in this regard are not warranted at this time.

### 4.1.5 Spoil Conveyor

A number of submissions have expressed understandable support for the proposed spoil conveyor to reduce the traffic and amenity impacts associated with the need to otherwise transport greater amounts of spoil on roads. I commend the proponent's commitment to actively pursue this preferred option in relation to minimising the impacts associated with spoil transport.

Various submissions have also provided a series of recommendations for the proponent to consider and address as the design of the proposed conveyor is advanced. The proponent has committed to extend the application of measures required by existing conditions arising out of the Coordinator-General's Report of May 2007 to ensure that noise, vibration, water quality and other potential impacts are mitigated in accordance with the specified requirements for other aspects of the project. As set out in Appendix 1 (Schedule 3, Condition 6, (d)-(k)), I have amended the Coordinator-General's Report May 2007 conditions of approval to extend the requirements applying to other aspects of the project to apply as necessary. These extensions to the applicability of conditions are consistent with the recommendations provided by the proponent in section 5 of the Request for Project Change.

In cooperation with BAC, the proponent is required and committed to seek necessary Australian Government approvals for development of the proposed spoil conveyor, particularly on Commonwealth land associated with the Brisbane Airport. My consideration of those approvals matters (including EPBC Act implications) is presented in section 1.4.2 of this Report.

Additional design and survey work associated with the conveyor proposal and the Australian Government's assessment has some potential to result in the identification of matters warranting further State approval consideration. Given that further matters of interest may arise as a consequence of that more detailed field survey and impact assessment work, I consider the proponent is obliged to submit further information for consideration to me or other responsible agencies as appropriate. Accordingly, I have imposed new conditions in Appendix 1 (Schedule 3, Condition 4(a)(i)-(iii) and 6(d)-(k)) to deal with the provision of more detailed information for the spoil conveyor and spoil placement proposals at the Brisbane Airport in a conveyor construction sub-plan of the Construction EMP.

The Request for Project Change (Figure 4-3B) indicates that, should the proponent not proceed with spoil placement at the Airport, it may instead operate a shortened conveyor system that would terminate at an enclosed spoil handling facility on currently vacant land immediately south of the Airtrain on the western side of Nudgee Road, Toombul. In that case, an analysis of traffic conditions along that section of Nudgee Road and the suitability of exit and entrance and turning arrangements for spoil trucks using the transfer station site would need to be provided to the Coordinator-General following consultation with BCC (in relation to the use of Nudgee Road) and QT (in relation to potential impacts on Airtrain structures or

operations). The obligation to provide that information is clarified in new imposed Condition 4(a)(iii) of Schedule 3.

#### **4.1.6 Public Transport, Pedestrians and Cycling**

The additional impacts of the new design for the Changed Project on public transport operations, pedestrians and cyclists arising from the Changed Project are expected to be minimal. During construction, the Changed Project may require the temporary relocation of up to four bus stops in addition to those required for the Reference Project.

Two submitters raised concerns about there being insufficient design detail in relation to matters such as appropriate widths for paths and lanes to enable safe cycling and walking in various areas. In its Response to Submissions document, the proponent responds by highlighting the applicability of the existing condition imposed by the Coordinator-General in May 2007. That is, Condition 5(b) of Schedule 3 of the Coordinator-General's Report of May 2007 relating to the requirements for the construction traffic EMP Sub-Plan to provide suitable measures to provide for safe use of public transport and pedestrian and cyclist pathways.

#### **4.1.7 Conclusion**

Potential traffic impacts are amongst the most complex, challenging and important aspects of the assessment of the proposed changes of the project. I am satisfied that, subject to the adoption of the new and amended conditions in Appendix 1 of this Report, suitable consultation, design refinement and traffic management mechanisms and measures are proposed to ensure that satisfactory outcomes will occur in relation to the implementation of the Changed Project.

## **4.2 Topography, Geology, Geomorphology and Soil**

The Request for Change indicates that no additional or substantially changed effects are expected to occur in relation to topographical, geological, geomorphologic or soil matters.

A submitter has raised safety issues relating to the possible extraction of coal during construction. These issues are addressed in the Hazard and Risk section of this Report.

## **4.3 Hydrology and Water Quality**

### **4.3.1 EIS Findings and /or Key Points**

The Request for Project Change suggests that the newly proposed design arrangements in Kedron, particularly cut and cover works within Kedron Brook, have the potential to cause increased hydrological and groundwater drawdown impacts and /or risk of upstream flooding.

In relation to groundwater, the deeper alignment of the tunnels in this vicinity is expected to reduce the risk of settlement from groundwater drawdown.

The cut and cover works within Kedron Brook are to be undertaken in two parts. That is, separately within the southern and northern halves at different times so that the channel is not completely blocked at any one time.

The effect of halving the conveyance of Kedron Brook during construction would be to increase the risk of flooding upstream. Flood modelling indicates that two residential properties would have a minor increased inundation level during a 1 in 100 year flood event. The proponent indicates that this risk of increase inundation can be readily offset by mitigation measures, such as a temporary levee bank on a short section of Kedron Brook during construction.

The area that will be required to be excavated for the proposed spoil conveyor includes “swampy” land below 5m Australian Height Datum (AHD), which is likely to contain Acid Sulfate Soils.

In its submission, BCC highlights the number of structures built over and within current creeks and floodways and that a number of these structures are built in particularly sensitive areas. BCC requires that all works to be designed and implemented to ensure no net increase in afflux.

Another submitter recommended that the EMP should be modified to take into account the changes in the crossing of Kedron Brook and the additional area of disturbance on the southern side. Maintenance of flows and protection of water quality (particularly turbidity) are of primary importance.

The submission by the Department of Natural Resources and Water (NRW) confirms that it considers that the flooding mitigation requirements of the State have been suitably addressed.

The proponent is required (e.g. under Condition 4(c) of Schedule 3 of the Coordinator-General’s Report May 2007) to meet relevant and suitable performance criteria for the management of potential impacts relating to water quality and the various waterways intersected by the project.

### **4.3.2 Conclusion**

I am satisfied that the proponent has made appropriate provision for the mitigation of possible water quality and hydrology impacts as explained in sections 4.14.1 and 4.10.1 of the Response to Submissions.

## 4.4 Air Quality

### 4.4.1 EIS Findings/Key Points

The expected worst case air quality impacts, associated with the Reference Project, were in relation to locations adjacent to Bowen Bridge Road and Newmarket Road. Modelling of 2012 and 2026 traffic flows for the Changed Project indicates that reduced demand and hence reduced impacts to air quality will occur at these locations.

Revised traffic forecasts for both the Reference and Changed Projects have resulted in significantly higher volumes predicted for the intersection of Gympie Road and Lutwyche Road, in both the with and without Airport Link scenarios. The Changed Project is associated with predictions of an increase in traffic volume of 4%, relative to the Reference Project. This increase results in higher emissions of NO<sub>2</sub> compared with the Reference Project, but still well within air quality goals set for the Reference Project (Schedule 3, Condition 19 Table 8).

Similarly for Stafford Road, projected traffic flows for the Changed Project lead to expected traffic increases of 2% to 7% east of Webster Road. The expected average annual concentrations of NO<sub>2</sub> that are likely to arise as a consequence of this increase will still be well within the ambient air quality goals.

Revised traffic forecasts show notable reductions in traffic flow forecasts for 2012 at Sandgate Road (7-20%) and on the Gateway Motorway (17%). However, the reduction at the Gateway Motorway is less than the forecast reduction under the Reference Project (28%).

In response to the Coordinator-General's recommendation that the Changed Project attempt to reduce the visual impact of the Clayfield ventilation outlet, a variable aperture has been incorporated in the design. The addition of the variable aperture allows the reduction in outlet height to 25m. Under average operating conditions, the Clayfield ventilation outlet's predicted ground level concentrations of NO<sub>x</sub> and PM<sub>10</sub> would be lower than the Reference Project. Under congested conditions, emissions of NO<sub>x</sub> and PM<sub>10</sub> would be higher than for the Reference Project but still within the required range for air quality outcomes.

The Windsor ventilation outlet in the Changed Project is repositioned approximately 50m south-east of the location identified in the Reference Project.

Emission rates at the Windsor outlet are generally higher under congested conditions for the Changed Project, relative to the Reference Project. However, even allowing for increases in forecast traffic and measurement in close proximity to the NSBT ventilation outlet at Sneyd Street, Bowen Hills, air quality targets are expected to be readily achieved at this site.

At Kedron, there would be sustained periods when the emissions rate of PM<sub>10</sub> under congested conditions would be higher for the Changed Project, relative to the maximum emissions expected for the Reference Project at the time of the EIS. Generally, emissions of NO<sub>x</sub> and PM<sub>10</sub> would be below the maximum emissions assumed in the EIS. The predicted impacts of the emissions of both the Reference Project and Changed Projects are well below the maximum air quality goals in the vicinity of Kedron.

A greenhouse gas inventory was prepared for the construction and operation of the Change Project. While construction impacts are very similar, I acknowledge there will be higher energy usage requirements for tunnel operations due to the longer driven tunnel sections and higher predicted traffic volumes.

I note the proponent's conclusion that in operation, the Changed Project will result in overall improvements in the energy efficiency of Brisbane's vehicle fleet, compared with the no project case and a slight improvement relative to the Reference Project in this regard.

Submissions received in relation to air quality impacts raised the issues of:

- requirements for ongoing air quality monitoring;
- impacts on air quality of nearby residents; and
- the adoption of filtration devices into the outlet design.

Each of the above issues were extensively investigated in the EIS for the Reference Project and adequately addressed in the Coordinator-General's Report of May 2007. Ongoing air quality monitoring is an imposed condition on the Reference Project. The air quality goals (Condition 19(k)) set for surrounding areas were designed in consultation with relevant agencies and remain sufficient to mitigate impacts of the Changed Project.

In considering the EPA submission to the Changed Project; I note its conclusion that the EPA has no concern with the methodology used to predict air quality impacts and that it agrees with the conclusions of the air quality assessment.

Queensland Health advised in its Changed Project submission that its concerns are adequately addressed via the proposed mitigations and existing conditions.

#### **4.4.2 Conclusions**

I consider that the incorporation of variable apertures in the ventilation shaft design allows air quality goals to be met at all outlets while improving the visual amenity by lowering the ventilation outlet by five metres at the Clayfield site.

In addition, the updated traffic modelling for the Changed Project reinforces the need for the Airport Link project as the "without Airport Link" scenario results in additional congestion of the road network to that reported in the EIS.

I concur that the changed traffic flows on major roads should not lead to significant differences in air quality relative to the Reference Project.

The approval conditions, relating to air quality outcomes for the Project, are specified in the Coordinator-General's Report May 2007 (Schedule 3, Condition 19). These conditions also require the development of an operational air quality management plan. There is no evidence to suggest there will be significant changes to air quality outcomes as modelled for the Changed Project. Changes to ventilation outlets and traffic volume forecasts are not expected to lead to any significant changes to air quality outcomes. As a result, I do not

consider that any further conditions are required to address the likely impacts resulting from predicted changes.

Accordingly, the conditions set out in the Coordinator-General's Report of May 2007 remain appropriate and relevant.

## 4.5 Noise and Vibration

### 4.5.1 EIS Findings/Key Points

Changes to the tunnel alignment and construction methods will result in instances of tunnels at deeper depths (for example the Lowerson St to Park Avenue section). In those instances, the regenerative noise and vibration of the deeper TBMs and roadheader equipment are expected to remain within goals established for the Reference Project.

Nevertheless, in areas where the construction methodology has resulted in lower depths (for example tunnel sections in Windsor to Lutwyche) the proponent has committed to careful management, early engagement and on-going consultation with affected community members as required.

The alignment changes to the Southern Connection mean that the need for a double-stacked bridge adjacent to The Mews apartments proposed for the Reference Project is now avoided, substantially improving amenity for concerned residents in that vicinity.

Many submitters raised concern with regard to construction noise, including spoil haulage from construction worksites. The Windsor worksite is of concern, particularly in relation to the amenity impacts to residents of Morris, Gallway and Federation Streets during site establishment and project construction.

I consider that the existing conditions from the Coordinator General's Report of May 2007 remain appropriate and relevant, and provide for community engagement during construction, including early and ongoing engagement with owners and occupants of premises adjacent to the proposed works. That is, I am confident that the proposed mitigation measures, required by the conditions in that Report, will suitably address the concerns that have been raised by individual residents for the Changed Project.

The proponent is required to continue to directly consult with affected residents to understand their individual circumstances and the range of options available to minimise impacts, including noise monitoring, architectural treatments to manage noise (such as upgrading acoustic seals or double glazing), periodic respites, or in extreme cases, temporary or permanent relocation.

In addition, the conditions also provide for procedures to respond to complaints, issues or incidents, such as face to face meetings and ongoing communications with affected parties and a documented process for issues resolution. This process must be established before the start of construction works.

In some cases, construction impacts may not be readily mitigated through the use of conventional noise barriers as these may unacceptably impede access to or the visual amenity of residential properties. In those cases, alternative mitigation measures will need to be agreed with affected property owners and occupiers.

Submissions were received in relation to the effects of noise and vibration including at sensitive places such as a hospital and the St Andrews Church.

Goals for noise and vibration to guide construction planning and delivery were set in the Coordinator-General's Report of May 2007. The existing conditions (Schedule 3, Condition 9) provide that where the goals are to be exceeded, the proponent is required to implement mitigation measures and consultation to manage the impact on potentially-affected residents. These conditions remain appropriate for the Changed Project.

The concerns regarding the effect of vibration on heritage listed places is adequately addressed in the existing conditions in Schedule 3, Condition 9(l).

The submission from DMR recommended that the proponent should implement a noise attenuation strategy to achieve the 63/68 dB(A) L10 (18h) criterion levels, not just to achieve the "status quo" at existing high noise locations. Conditions for operational noise for the Reference Project were outlined in Schedule 3, Condition 3, Table 10. I have left the footnote reference allowing the proponent to rely on the "status quo" provisions, if necessary, so as not to create an expectation that the proponent is responsible for the mitigation of general traffic noise some distance from the project along busy arterial roads. Nonetheless, I urge the proponent to proactively engage with residents and business owners in the immediate vicinity of project surface infrastructure to develop reasonable and practicable property-based mitigation measures where the Table 10 operational noise goals would be exceeded.

Submitters have also raised concern with regard to the ability of the Changed Project portals to meet noise goals. The Request for Project Change has identified that there are instances where additional acoustic treatments will be required (e.g. Sandgate Road to mainline tunnel west-bound between Clayfield and Lutwyche) for the project to comply with the Coordinator General's conditions. These conditions will still apply and suitable structures will have to be designed to resolve noise impact satisfactorily.

In contrast, there are also locations, such as Gympie Road Kedron, where road barriers for the Changed Project could be lowered significantly in comparison to the Reference Project (2-6.5m to 1.5-3m).

I note that the Request for Project Change provides limited information on the potential impacts of the proposed spoil conveyor system. As discussed in the Transport and Traffic section of this Report, the proponent is required to provide more detailed information for the spoil conveyor and spoil placement proposals at the Brisbane Airport in a conveyor construction sub-plan of the Construction EMP (refer also to Appendix 1 (Schedule 3, Condition 4(a)(i)-(iii) and 6(d)-(k)).

The construction noise goals and conditions for the Changed Project generally also apply to the proposed spoil conveyor system as per Appendix 1 (Schedule 3, Condition 9).

Section 4.1.2 of the Request for Project Change notes that there is potential for night works in accordance with the Coordinator-General's conditions for the cut and cover construction of the Gympie Road connection in Kedron Brook. These works are subject to the noise goals applying to night works in Condition 9(d).

## 4.5.2 Blasting

Overpressure measures the force of the air wave emanating from a blast. I am advised that:

- on the Clem Jones Tunnel project, blasting activities being conducted at the minimum effective level at Shafston Avenue, Kangaroo Point are sometimes causing the maximum overpressure level of 120dB(lin) limit required by the existing Coordinator-General's imposed condition to be marginally exceeded when conducted adjacent to residential buildings;
- the overpressure levels experienced on some occasions at Shafston Avenue may be perceptible to some people;
- while blasting in the Shafston Avenue area occurs, on average, 3 times per week and the blasting program in this area is about 50 percent complete, only one enquiry in relation to the impacts of blasting has been received by the contractors since blasting activities commenced in this area in mid January 2008; and
- blast guidelines related to the more important parameter of ground vibration are not being exceeded and I remain satisfied with the guidelines set in the Coordinator-General's Report of May 2007.

The changes I propose to Condition 9(n) in Schedule 3 clarify an inconsistency in the original Coordinator-General's condition and provide a more clearly defined maximum overpressure limit for blasting based on relevant experience and expert advice on the Clem Jones Tunnel project. It does not arise from the Changed Project design or submissions received on the Request for Project Change.

The overpressure limit in the original Coordinator-General's condition was erroneously based on a designation in the *Environmental Protection Regulation 1998* which provides that noise from blasting that is below a stated measure is not 'unlawful environmental nuisance', as defined by the *Environmental Protection Act 1994*. The new Condition 9(n) requires that all reasonable and practicable mitigation measures are taken to minimise the impacts of blasting and that a maximum limit for airblast overpressure from blasting be set at 130dB(lin) at sensitive receivers.

The new condition is supported by technical information received from the Clem Jones Tunnel blasting engineer. That information also indicates that, in order to comply with the current condition, the amount of explosive used would need to be reduced to a quantity that is ineffective in breaking the rock. An independent consultant concurs with the findings and recommendations provided by the blast engineer, which have been incorporated into the revised condition aimed at achieving an appropriate level of mitigation of any potential impacts of airblast overpressure.

I am currently considering an identical change to the overpressure conditions that apply to the Clem Jones Tunnel project.

### 4.5.3 Conclusions

I consider that noise impacts will be suitably addressed given that the proponent must adhere to its committed noise impact mitigation measures and the amended condition of approval, as explained above.

## 4.6 Flora and Fauna

### 4.6.1 EIS Findings and /or Key Points

The key flora and fauna related issues for the Changed Project relate to:

- works within the Kedron Brook;
- the spoil conveyor route; and
- changes to mangrove impacts in Enoggera Creek resulting in a net increase in mangrove retention relative to the Reference Project.

In the vicinity of the proposed project works at Kedron, Kedron Brook has been straightened and contained within a channel that has been modified for flood mitigation purposes.

While in-stream water quality seems to comply with relevant water quality guidelines, the proposed works site on Kedron Brook has poor habitat value, largely due to the almost complete removal of vegetation and the subsequent dominance of exotic grasses. Additionally, there is also limited riparian corridor for wildlife.

No threatened aquatic or terrestrial species are assessed as being likely to be present at this section of Kedron Brook. The present fish species are dominated by hardy, common native and pest species, which should be able to readily adapt to the minor expected impacts (e.g. disturbance to pool and riffle habitats) during construction.

Along with the identification of the types of fish species within the Kedron Brook, some common amphibian and turtle species, which are thought to be present, are also identified in section 4.1.2 of the Request for Project Change.

I note that the Southern Barred Frog is listed as Endangered under the EPBC Act database as being present in the general area. I further note that the proponent has assessed the species as being unlikely to be present.

I also note that the proponent has committed to undertake rehabilitation works to restore habitat to a more natural state following construction. The focus during construction will be to minimise ecological impacts from excavations, vegetation removal, and erosion and sedimentation associated with construction. A number of erosion and sediment control

measures will be considered for implementation in relation to the Kedron Brook works as necessary to ensure compliance with specific water quality objectives. Monitoring is required in accordance with the Coordinator-General's Report May 2007, particularly Schedule 3, Condition 10.

The proposed conveyor would also be located on a modified landscape, with the primary communities being unmanaged grasslands and saltmarsh areas, sparse mangroves along drainage lines and monoculture plantations of Swamp She-oak.

The grasslands are dominated by exotic grass species and are of low habitat value, and unlikely to sustain populations of rare or threatened species. Birds recorded within the grassland habitat are all common species which occur widely in the region. However, one small area of probable habitat for Lewins Rail (listed as rare under the *Nature Conservation Act 1992*) is adjacent to the proposed conveyor alignment.

The mangrove and saltmarsh areas within BAC land are regarded as important roosting and foraging habitat for various shorebirds.

The construction activities relating to the conveyor, and the associated temporary use of the corridor for operation of the conveyor is assessed by the proponent as having low environmental risks, subject to the implementation of a number of management measures. A key measure will be the completion of a detailed survey of the ecological values of the alignment with the results to be used to assist the finalisation of design and minimise vegetation clearing. New requirements relating to the provision of this information for the spoil conveyor and spoil placement proposals at the Brisbane Airport in a conveyor construction sub-plan of the Construction EMP are in Schedule 3 Condition 4(a)(i)-(iii) and 6(d)-(k).

The Changed Project's alignment over Enoggera Creek reduces the overall infrastructure footprint in this location. As a result, some mature mangroves, which would have been lost due to the Reference Project, will now be retained. These mangroves cover an area of about 300 square metres adjacent to Queensland Rail (QR) land.

However, the expected loss of mangroves associated with the additional crossing of Enoggera Creek for the Bowen Bridge Road on-ramp would partially offset the improved environmental outcome relating to the mangroves adjacent to QR land.

Only one submitter raised flora and fauna issues.

I note that the existing conditions (Schedule 3, Condition 4) require that a comprehensive Construction EMP must be prepared and implemented and developed generally in accordance with the Draft Outline EMP in Chapter 19 of the EIS. This condition requires that the environmental objectives and performance criteria in Chapter 19 of the EIS be adopted and incorporated. The Construction EMP will include procedures for clearing of any habitat areas.

The environmental objectives and performance criteria in the flora and fauna draft outline EMP include:

- maintaining ecological and habitat values; and

- minimising and rehabilitating construction impacts on native flora and fauna.

Additional design and survey work associated with the conveyor proposal and the Australian Government's assessment has some potential to result in the identification of matters warranting further State approval consideration. Should matters of interest arise during the conduct of that work, I consider the proponent is obliged to submit further information for consideration to me or other State authorities as appropriate. Accordingly, I have imposed new conditions at Appendix 1 (Condition 4(a)(i)-(iii) and 6(d)).

## 4.6.2 Conclusion

I consider that there will be no significant ecological impacts given that the proponent must adhere to its committed impact mitigation measures and the conditions of approval that have been placed on the Airport Link project.

# 4.7 Land Use and Planning

## 4.7.1 EIS Findings and /or Key Points

A key improvement associated with the Changed Project from a land use perspective is the large net reduction in potential negative impacts on schools in Kedron area.

The Changed Project will require 28 additional partial or full property acquisitions in the Windsor-Bowen Hills vicinity. This includes 5 additional residential properties. The changes in the configuration of the Windsor worksite require the acquisition of extra properties between Federation Street, Gallway Street and Morris Street relative to the Reference Project.

In Kedron, eleven additional properties will be affected, with eight acquisitions of whole residential properties. The toll road control centre would share its rear boundary with residential properties fronting Brookfield Street.

In the Clayfield vicinity, 21 additional properties are required to be affected to enable the changed infrastructure arrangements and facilitate new construction methods. These properties include nine residential properties. The extended area required in Kalinga Park would result in a reduced area for community use, although specific uses would be provided for elsewhere in the park boundaries.

The intrusion of Airport Link works into the area within the new Bowen Hills Urban Development Area (BHUDA) under the control of the Urban Land Development Authority (ULDA) is to be rearranged as part of the Changed Project. The most significant previous impacts of the Reference Project in relation to the BHUDA were on O'Connell terrace, but the Changed Project will ensure that O'Connell Terrace will retain its existing functionality for local businesses and the RNA Showgrounds.

The ULDA did not raise any specific land use planning issues in its submission. Items raised by the ULDA were largely in relation to traffic impacts that are addressed elsewhere in this Report.

Two submitters have suggested that the development potential of valuable commercial and high density land, as implied in existing land use plans, particularly – *Lutwyche Road Corridor Draft Neighbourhood Plan* and *Brisbane City Plan 2000*, have been adversely affected by the Airport Link Project.

BCC indicated within its submission that it will be required to undertake further targeted consultation in relation to the draft Neighbourhood Plan due to Airport Link and Northern Busway and make consequential changes to the draft Plan. Due to their temporal nature, BCC is not of the view that the proposed works, particularly work sites, present a challenge to the long term achievement of urban development outcomes of the draft Neighbourhood Plan.

In its Response to Submissions document, the proponent confirmed that BCC was consulted on future land use of the Airport Link project during preparation of the EIS with regards to potential impacts of the relevant plan and the proponent indicates that members of the BCC's planning team attended community information sessions about Airport Link.

The proponent points out that the Changed Project does not impact differently to the Reference Project on the achievement of land use intentions for Windsor. The Changed Project would create a potential development site on the corner of Gallway Street (extended) and Lutwyche Road. Any future development of this site would need to be coordinated with and cognisant of the height of the ventilation outlet to avoid the potential to impact on the behaviour of the plume from that facility.

The BCC submission has raised matters associated with proposed open space areas to be provided as part of the Changed Project. These matters are addressed in the Parks and Open Space Section (4.9.4) of this Report to reflect the approach taken by the proponent in its Response to Submissions.

### **4.7.2 Conclusion**

The proponent has suitably identified and addressed relevant land use and planning impacts and no additional conditions of approval are warranted.

## **4.8 Cultural Heritage**

### **4.8.1 EIS findings / Key Points**

Changed project surface works at the Kalinga Park worksite will be over a greater area than the Reference Project to allow for:

- assembly and launching of two TBMs;

- to service tunnel construction activities; and
- to construct the realignment of the drainage channel (Eagle Junction Creek) from the end of Jackson Street to join with Schultz Canal.

The drainage realignment would remain a permanent feature of the final landscape.

The enlarged worksite within Kalinga Park would extend to the property boundaries along all of Kalinga Street. The extended worksite avoids Diggers Drive as per the Reference Project.

The Reference Project's use of a section of the Kalinga Park as a worksite received the Coordinator-General's approval prior to being listed on the Queensland Heritage Register (22 October 2007). The Queensland Heritage Council (QHC) recommended in January 2008 that the proposed works in Kalinga Park could proceed, subject to associated conditions recommended by the QHC to protect the heritage value of Kalinga Park.

The Changed Project does not impact on the Park East Precinct or the Diggers Drive East Precinct any further than identified in the EIS for the Reference Project. A Heritage Landscape Master Plan is yet to be undertaken for the Changed Project but will have to be developed in accordance with the Preliminary Conservation Management Plan (PCMP) for Kalinga Park, Clayfield developed in late 2007. The PCMP policy objectives recognise the heritage potential of the Diggers Drive East precinct.

I am advised that the QHC considered the Changed Project on 17 July 2008 and decided that it could proceed subject to the conditions previously provided for the Reference Project.

In the Windsor area, the Changed Project requires the removal of buildings at 12 Federation Street. This building is the former Marooma Nursing Home known as "Nyamber". "Nyamber" is identified in the schedule of local significance in the *Brisbane City Plan 2000* but is not listed on either the Queensland Heritage Register or Register of the National Estate.

In order to partially address the loss of Nyamber and the Windsor School of Arts, the proponent has committed to completing archival recording of these significant places.

Aboriginal Cultural Heritage Management Plans (CHMP) have been negotiated with two affected Aboriginal parties. Each CHMP includes a mechanism to include additional areas where surface disturbance may occur arising out of the Change Project, which will include the proposed conveyor route.

## 4.8.2 Conclusions

As a result of alignment and construction changes in the Changed Project, additional sites of heritage significance are impacted.

The Changed Project requires a more extensive area of Kalinga Park for the assembly and launch of two TBMs instead of one. However, the return of most of the Kalinga Park worksite for community use, two years earlier than the Reference Project is a significant benefit of the Changed Project.

The proponent is required to undertake rehabilitation of the historic Kalinga Park, including sections of Diggers Drive in accordance with a landscape and master plan consistent with the PCMP for Kalinga Park, Clayfield (*prepared by Archaeo Cultural Heritage Services Pty Ltd and dated October 2007*).

Construction phase Cultural Heritage conditions are specified in the Coordinator General's Report of May 2007 Schedule 3, Condition 15 and have been amended in Appendix 1 of this Report to reflect the impacts of the Changed Project. These amendments extend the requirement for archival recording to include Nyamber and the Windsor School of Arts.

## 4.9 Social Environment, Urban Design and Regeneration

### 4.9.1 Social Impacts

The social impacts of the Changed Project are broadly consistent with those identified for the Reference Project, with effects on residents, schools, parks and businesses adjacent to refined road alignments, changed worksites arrangements and revised ventilation outlets.

The Request for Project Change indicates that urban regeneration-related impacts of the Changed Project are almost identical to the Reference Project.

The Changed Project has specifically addressed recommendations contained in the Coordinator General's Report of May 2007 in relation to reducing the visual impact of the Kedron and Clayfield ventilation outlets. This has involved lowering the height of some of the structures and refining the landscaping around the ventilation outlets. No substantive unfavourable comments have been provided within any submission in relation to these adjusted proposals and their visual amenity impacts. Air quality matters associated with these outlets are addressed in the air quality section (4.4) of this Report.

Three submitters, including one with 71 signatures, have expressed concern about the impacts of the Changed Project on an existing dog off-leash area associated with the proposed bikeway relocation adjacent to Kedron Brook. In its Response to Submissions, the proponent commits to provide an alternative dog-leash area in consultation with BCC. I encourage the proponent to further consult with the interested members of the community in accordance with the Community Engagement conditions set out in Schedule 3, Condition 1 and that the views of the relevant Community Consultative Committee be sought regarding the final design of the dog off-leash area that is developed in consultation with BCC.

A submitter also raised concern regarding the impacts of construction on the historic St Andrew's Church. Goals for noise and vibration were established to manage impacts of construction on buildings such as St Andrew's Church in the Reference Project. The Changed Project alignment reduces construction impacts to the St Andrew's Church, hence no additional mitigation is considered necessary for this significant site.

## 4.9.2 School Impacts

In response to various submissions about possible impacts on schools, the proponent reiterates its analysis with section 4.12 of the Request for Project Change indicating that the risk of disturbance to both Kedron State High School and Woolloowin State School would be below the range of a "low probability of reaction" recommended in Australian Standards.

I am satisfied with the proponent's position that night lighting for the Lutwyche worksite would be unlikely to substantially impact on activities at either the Woolloowin State School or Kedron State High schools, particularly considering that most school activities occur during daylight hours.

Construction traffic management will be managed in accordance with the existing Coordinator-General's conditions, in particular Schedule 3, Condition 5, for which it is noted that the Department of Emergency Services and Education Queensland are consultative bodies.

The Coordinator-General's conditions provide that the construction vehicle EMP Sub-Plan should include, as a minimum, management of the spoil haulage fleet to:

- avoid or minimise and mitigate disruption to local traffic movements generally and particularly during peak traffic periods including school drop-off and pick-up times;
- avoid haulage vehicles queuing in proximity to schools;
- minimise and mitigate potential impacts from vehicle emissions upon adjoining premises and sensitive places; and
- avoid excessive noise from haulage vehicle operations within and at the immediate entries and exits of the worksites.

Proposed spoil haulage routes are identified in the Request for Project Change, and do not use Park Road and local streets around schools. I draw attention to the Recommendations and Conclusions in the Request for Project Change which provide that spoil haulage be permitted only on motorways and arterial roads and suburban routes as defined in City Plan, with spoil haulage permitted on other roads only where necessary for the most direct access to worksites and spoil placement sites to and from motorways and arterial roads.

I note that a process for future consultation is already established by Schedule 3, Condition 1 of the Coordinator-General's conditions.

As per the Recommendations in the Coordinator-General's Report of May 2007 and conditions for the Reference Project, ongoing consultation with stakeholders including Education Queensland and the Kedron State High School and Woolloowin State School communities is necessary to ensure impacts are mitigated appropriately and stakeholder needs are met.

A submitter has indicated that additional assurances are required in relation to the implementation of the proposed "student set-down area" at Woolloowin State School. BCC has indicated in its submission that further information and/or design refinements may be

required to ensure that set down and pick up arrangements have sufficient capacity and do not lead to safety issues relating to queuing onto Lutwyche Road.

I note that section 3.3.1 of the Request for Project Change commits the proponent to provide “a dedicated and separated drop-off lane on Lutwyche Road for safe student access to Wooloowin State School”. This responds to the recommendations contained in the Coordinator-General’s Report of May 2007 (particularly Recommendation 7 within section 6) and is consistent with obligations under Coordinator-General’s imposed Condition 5(c)(iii) of Schedule 3.

The proponent commits, within section 4.16.6 of its Response to Submissions, that “the design of the proposed student set down area off Lutwyche Road will be developed in consultation with BCC and Wooloowin State School representatives”. That response also recognises that BCC, “as the relevant authority, will make its assessment in accordance with the applicable design guidelines”. The proponent’s response also acknowledges that “the viability of the proposed set down facility will need to be considered against the potential for impacts that may result from queuing onto Lutwyche Road and resulting safety issues”.

Consequently, I am satisfied that the submitters concerns on this matter will be fulfilled by the adherence to the proponent’s obligations to conditions and its own commitments. One point of clarification is that, as owner of the school asset, the Department of Education Training and Arts (DETA) will also need to be included in consultation on the detailed design of any set down area that directly impacts school property.

I am advised that, given the section of Lutwyche Road near the school will be close to a project worksite for most of the project construction period, practical and safety considerations relating to construction activity may dictate that the new drop-off zone does not become operational until near the end of the construction period. Therefore, I note the recommended new condition in section 5.7 of the Request for Project Change, which commits the proponent to: “during construction, provide an alternative drop off zone for Wooloowin State School that is safe and adjacent to the School and east of Lutwyche Road.” I have therefore amended Schedule 3 Condition 5(c) (iii) to include this commitment.

### **4.9.3 Urban Design / Visual Environment**

In accordance with a recommendation in the Coordinator-General’s Report of May 2007 requiring the proponent to maintain opportunities for high-quality urban design outcomes for both the proposed infrastructure and adjacent development sites. The Changed Project provides several urban design improvements over the Reference Project.

My expectation of the proponent is that it is committed to seek improved urban design and visual environment outcomes through the development of the Urban Design Master Plan and during the detailed design phase. These improvements are to be consistent with the principles outlined in section 15.2, Chapter 15 of the EIS relating to the Reference Project.

The proponent has made progress in reducing the visual impact of the ventilation systems. The Changed Project includes minor relocations of the Windsor and Kedron ventilation

systems to locations where they are less obtrusive. Where possible, the towers have also been reduced in height (Bowen Hills 36.5m high, Kedron 35m high, and Clayfield 25m high).

Additionally, efforts have been made to improve the proposed appearance of the ventilation systems, with changes involving a commitment to a slimline shape and visually attractive cladding material. As with the other elevated structures, the towers will also be illuminated at night.

At Kedron, the Changed Project now utilise the Department of Emergency Services building to partially shield the ventilation station and tower. This tower will rise above the building by 11 metres. At Kalinga Park and Windsor, the stations will now be buried and landscaped to reduce their visual impact.

I note that, in general, the Changed Project road connections are less intrusive. Some connecting structures are now underground or consolidated into the existing infrastructure footprint. There has also been rework of the portal designs and landscaping to improve their visual impact.

Without setting new conditions, I generally encourage the proponent as it develops its more detailed designs, to consider recommendations of submitters to consider:

- Crime Prevention through Environmental Design (CPTED), especially in areas around and under elevated structures at Kedron Brook, Enoggera Creek and the Bowen Hills Precinct; and
- the potential of the ventilation buildings to incorporate public art in line with BCC's Lutwyche Road Corridor Public Art Master Plan.

#### **4.9.4 Parks and Open Space**

In its submission, the BCC has recommended that parks returned to it should conform to BCC design standards, including the Park Planning and Design Code and that any overall net loss in park land associated with the project works be offset by the proponent.

I understand that BCC has been consulted on the proposed park locations and designs, and to the extent possible at this stage, these designs have been verified as broadly consistent with BCC standards. The proponent, in section 4.9.3 of the Response to Submissions, contends that there will be no net loss of park and that it will return parks to BCC in an equivalent or better state than existed prior to the project.

The BCC submission also indicates that an area identified at Gympie Road north of Stafford Road does not meet BCC's location requirements for parks and is not supported for use as a park, but that it does provide an opportunity for a landscaped buffer. Regardless of whether the area is eventually designated as a park or a landscaped buffer, it is my view that the open space nature and physical appearance of the area should be maximised. This means that the area should be landscaped in a manner consistent with other open space areas in the surrounding suburbs. Given the association of the area with the project, and its proximity to permanent operational buildings, I am confident there is sufficient incentive for the proponent to maximise the visual appeal of the area.

The relevant existing conditions of the Coordinator-General's Report of May 2007 (particularly Schedule 3, Condition 3) will ensure that BCC's interests, set out in its submission and as summarised above, are suitably addressed. That is, the proponent is obliged, under the requirements of the existing imposed conditions to consult with the BCC on design standards for all parks. Open space design standards must be incorporated within a program of urban mitigations that form part of the Project and the program must be submitted to the Coordinator-General prior to the commencement of construction of the urban mitigations.

In the absence of a final agreement between the proponent and the BCC, I interpret that the Coordinator-General has the jurisdiction under Schedule 3, Condition 3 to approve the final open space proposals incorporated in the program of urban mitigations.

### **4.9.5 Conclusions**

While the visual impact of the Changed Project is clearly lessened relative to the Reference Project, I encourage the proponent to continue to work with the BCC to explore public art opportunities on project structures and to address CPTED principles within the Urban Design Master Plan.

I am of the view that the proponent's commitments, along with the ongoing consultative processes required by the Coordinator-General's Report of May 2007 already applying to the project and the amended condition set out in Appendix 1 (Schedule 3, Condition 5(c)(iii)), suitably address the park, school and other impacts discussed above in this social environment section of this Report.

I consider that any net changes in land areas dedicated to remain as open space are likely to be relatively minor. The proponent's urban design commitments provide confidence that the quality of the open space areas, relative to the existing situation, will be substantially improved. As a result, I do not require the implementation of any further conditions over and above the measures required by the Coordinator-General's Report of May 2007, in relation to urban design and visual environment matters.

## **4.10 Hazard and Risk**

### **4.10.1 EIS Findings / Key Points**

The Reference Project undertook a comprehensive Hazard and Risk assessment as part of the EIS. The hazards related to in-tunnel traffic and the proposed mitigations remain unchanged.

A submitter raised the issue of structures being built within creeks and floodways and potentially increasing the risk of flooding. I have dealt with this matter in section 4.3 of this Report (Water Quality and Hydrology).

At the Bowen Hills portal the Changed Project will require additional flood mitigation works to protect the portal and tunnel infrastructure. Increasing the hydraulic capacity of Enoggera Creek via earthworks and excavations as well as additional flood barrier works (levee, flood walls, use of structures) will protect this portal and ensure there is no increase in the flooding upstream for events up to 10,000 year Average Recurrence Interval (ARI).

The detailed design for the Changed Project allows Stafford Road tunnel portal to intercept overland flows in infrequent, high intensity rainfall events (more than 1 in 100 year) to avoid impacts on adjoining properties. Flows entering the tunnel would be managed within the tunnel drainage system.

By employing cut and cover tunnelling at Kedron Brooke the Changed Project removes the additional bridge infrastructure proposed in the Reference Project and therefore achieves a lesser flooding impact to upstream properties.

I note that the NRW submission concludes that the flood mitigation aspects have been adequately addressed.

A submitter raised the issue of risk associated with tunnelling equipment intercepting with coal seams. This issue and the required mitigations were addressed in the Reference Project and remain consistent for the Changed Project.

A submitter raised the issue of risk associated with the extraction of carbonaceous shale material and the need to appropriately manage the spoil to avoid human health and environmental harm.

As per the EIS for the Reference Project the Swanbank Waste Management Facility near Ipswich will be used for the disposal of carbonaceous shales that make placement at the preferred spoil sites infeasible. This includes the spoil material transferred by the external conveyor to the Brisbane Airport soil placement site facility for sorting.

The Changed Project placement of spoil at the Brisbane Airport will be assessed in accordance with the *Airports Act 1996* and referrals if necessary made under the EPBC Act, for determination as to whether it is a controlled action. Further discussion of this matter is provided in section 1.4.2 of this Report.

I note the Proponent's view that the presence of coal material in the tunnel spoil does not alter the risks to the Ramsar-listed Wetland. I am confident that the Australian Government will suitably assess risks to Ramsar-listed Wetland on the basis of detailed information on the material to be deposited at the airport site.

Some submissions received included queries in relation to incident management in the event of an emergency, dangerous goods accident or a terrorist incident. These matters were adequately addressed in the Reference Project and are consistent with the Changed Project.

## **4.10.2 Conclusions**

The conditions imposed to manage Hazard and Risk for the Reference Project remain sufficient for the Changed Project.

## 4.11 Cumulative Impacts

### 4.11.1 EIS findings / Key Points

The Airport Link project and its parallel delivery with the Northern Busway (Windsor to Kedron) and the Airport Roundabout Upgrade would result in substantial cumulative impacts. The project is proposed in a location and at a time of considerable infrastructure construction. During its 2009-2012 construction time period, large projects that will be delivered on sites near to this project include the Clem Jones Tunnel, the Gateway Motorway Upgrade (including the Brisbane Airport Northern Access Road and the Brisbane Airport New Runway).

I have dealt with the important interface issues with the Clem Jones Tunnel in section 4.1.3 of this Report.

The EIS, and Coordinator-General's Report of May 2007 both, accepted that there would be cumulative impacts. These could include flooding, groundwater, noise and vibration, fauna and flora, and traffic congestion. In most cases it was concluded that these cumulative impacts, could be adequately managed with appropriate mitigation measures.

With the exception of increased traffic congestion during the construction phase, the Changed Project does not accentuate the cumulative impacts associated with the project. In the medium term, the parallel delivery of the Airport Roundabout Upgrade appears likely to deliver substantial cumulative traffic flow benefits when all currently committed transport infrastructure projects in this part of Brisbane are completed.

Some components of the Changed Project are likely to reduce cumulative impacts. For example, the coordinated construction and integration of the Northern Busway and Airport Link Tunnel projects will reduce the extent of the construction footprint and the length of time that areas within Windsor and Kedron are exposed to construction.

The Airport Link construction's contribution to traffic congestion was identified and assessed in the Reference Project. However the Changed Project involves up to 50% increase in spoil (without the conveyor proposal this would equate to a 50% increase in haulage truck movements). I have dealt with discussion associated with cumulative construction traffic impacts in section 4.1.4 of this Report.

Mitigation measures proposed as part of the Changed Project to reduce cumulative construction traffic impacts include:

- the proposed conveyor belt, which would reduce approximately 80 000 truck trips compared to the 'no conveyor' option;
- the spread of traffic through Rode Road (northern Route) and Toombul Road / Sugarmill Roads to reduce potential for further congestion on the Airport Roundabout and providing

options to avoid the already busy Lutwyche Road, Bowen Bridge Road and Kingsford Smith Drive;

- creation of additional lanes outside of the existing East West Arterial corridor before interfering with this existing arterial for the construction of the Airport Roundabout Upgrade project; and
- scheduling the majority of construction around the Clayfield portal after completion of the Northern Access Road from the Gateway Motorway.

In any case, the proponent's acceptance of the Coordinator-General's recommendation to work with the Gateway Upgrade Project and the Clem Jones Tunnel Project to produce a construction traffic EMP Sub-Plan will need to take into account the staging and traffic implications of other major projects using the same haulage for spoil and material.

### **4.11.2 Conclusions**

With the exception of construction traffic, the similarities in design and mitigation strategies for both the Reference and Changed Project, mean that there is little difference in terms of negative cumulative impacts.

Significant cumulative improvements will result from the superior coordination of the construction of the Northern Busway with the Airport Link projects.

The Changed Project's generation of construction traffic is larger than the Reference Project. As a cumulative impact this traffic will impact upon already congested roadways. The problem around the Airport Roundabout in particular is likely to peak around the middle of 2009. While the proponent has made substantial attempts to mitigate the cumulative construction impact at this location, it will not be until the opening of the Northern Access Road during the second half of 2009 that significant reduction in traffic congestion will be noticeable.

## **4.12 Miscellaneous Matters**

### **4.12.1 Economic and Financial Environment**

No additional Economic and Financial impacts were identified for the Changed Project.

### **4.12.2 Waste Management**

No additional Waste Management impacts were identified for the Changed Project, the conditions imposed on the Reference Project remain sufficient.

## 4.13 Amendments to Clarify Conditions

Appendix 1 contains several minor amendments to the conditions compared to the Coordinator-General's Report of May 2007. These are largely caused by the obligation to clarify mitigation requirements or measures that have been agreed by the proponent outside of the Change Report process. An example of this is that compliance reviews of the Construction EMP and preparation of Compliance Reports mentioned in Schedule 3 Table 1 will now be undertaken by an independent and appropriately qualified person.

Other minor amendments to conditions relate to administrative or machinery of government changes since the Coordinator-General's Report of May 2007, such as the absorption of the Office of Urban Management into the Department of Infrastructure and Planning, and the creation of the ULDA.

In accordance with section 36K(2) of the SDPWO Act, to the extent that there are any inconsistencies between the conditions detailed in this Change Report and the Coordinator-General's Report of May 2007, this Change Report prevails.

## 4.14 Conclusion

The Airport Link project would be a key part of the Queensland Government's strategy to improve the efficiency of Brisbane's road network. The Changed Project would address critical emerging congestion problems within northern Brisbane. In particular, the project will help relieve congestion on Lutwyche Road, Sandgate Road and Kingsford Smith Drive. The project would also complement the BCC's Clem Jones Tunnel, which is under construction.

Having regard to the documentation and information provided during the EIS process and the EIS change process, including submissions, I am satisfied that the requirements of Part 4 and Division 3A of the SDPWO Act have been satisfactorily fulfilled. Sufficient information has been provided to enable me to finalise the required evaluation of the potential impacts, attributable to the Changed Project.

The various impacts, identified in both the EIS and the Request for Change, are recognised, and justified on the basis of the various benefits generated by the Project, particularly in relation to transport efficiency gains to the greater road network. In addition, the Changed Project has provided improved amenity in areas where the project connects to the existing road network.

As a result of my consideration of the Changed Project, I have amended the conditions originally established for the Reference Project in the Coordinator-General's Report of May 2007. This has been necessary to ensure suitable mitigation of potential environmental effects arising from new aspects of the project, including those new aspects relating to the:

- spoil haulage routes;
- spoil conveyor system;
- relocated construction sites; and

- works impacting on local heritage sites.

On the basis of the information provided, including advice from the advisory agencies, I am satisfied that the adverse environmental and social impacts associated with the proposed change are able to be suitably addressed through the:

- implementation of the commitments in the EIS, the Request for Project Change and the Response to Submission documents; and
- implementation of the amended conditions in Appendix 1.

The proponent must implement the conditions contained in this Change Report.

A copy of this Report will be issued to the proponent, pursuant to S.35(J)(a) of the SDPWO Act.

A copy of this Report will be provided to the key advisory agencies and will be made available on the DIP web site, at:

<http://www.dip.qld.gov.au/projects/transport/roads-bridges-and-tunnels/airport-link-tunnel-project.html>