

**Coordinator-General's Report**

**on the**

**Environmental Impact Statement**

**for the proposed**

**Airport Link Project**

**May 2007**



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## **APPENDIX 1**

Conditions of Development set by the Coordinator-General for the Airport Link Project.

# 1. INTRODUCTION

The Queensland Government and the Brisbane City Council, as joint Project Proponent propose the construction of a predominantly underground toll road to connect Brisbane's Northern arterials of Gympie Road at Kedron and Sandgate Road and the East-West Arterial at Toombul, to the Inner City Bypass and North-South Bypass Tunnel and the City at Bowen Hills.

The Airport Link Project is identified as one of a number of strategic major transport elements of the motorway-standard road network of Brisbane and is part of an overall strategy to improve the efficiency of Brisbane's road network, consistent with transport planning objectives of the Queensland Government under the *South East Queensland Infrastructure Plan and Program 2006* (SEQIPP 2006) and the Brisbane City Council.

It is intended that the process of delivering the Project in a partnership with the private sector will encourage project solutions that are innovative and lead to design improvements over the 'Reference Project' as described in the EIS.

The construction period will be in the order of four years with construction and delivery of the operational phase of the Project being undertaken by the private sector for a substantial concession period.

## 1.1 *Environmental Impact Assessment Requirements under Queensland Legislation*

The Coordinator-General declared the Airport Link Project (the Project) to be a significant Project for which an Environmental Impact Statement (EIS) is required under section 26 of the *State Development and Public Works Organisation Act 1971* (the SDPWO Act) on 31 October 2005. The Terms of Reference for the EIS were finalised in March 2006 by the Coordinator-General following receipt of public and advisory agency comments.

## 1.2 *Assessment Requirements under Commonwealth Legislation*

The Commonwealth Department of Environment and Heritage was formally consulted through a referral of the Project under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) to determine whether the project was a 'controlled action' under that Act. The Delegate of the Commonwealth, Minister for the Environment and Heritage, originally determined on 19 January 2006 that the Project constituted a 'controlled action' pursuant to section 75 of the EPBC Act due to the potential placement of spoil from the tunnels at a site adjacent to the eastern end of Schulz Canal (Export West Precinct).

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 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.

### **1.3 Environmental Impact Assessment Documentation**

This Report is prepared in accordance with section 35 of the SDPWO Act to evaluate the environmental effects of the Project and any other related matters. In making my evaluation I have drawn on information contained in the EIS and Supplementary Report prepared by the Proponent in response to the requirements of the Terms of Reference. In addition, I have considered all properly made and other submissions about the EIS and the Supplementary Report, and other advice from agencies, including the Department of Main Roads, Queensland Transport, Department of Health and the Environmental Protection Agency.

## 2. THE PROPOSAL

### 2.1 *The Project*

The Airport Link Project comprises two parallel road tunnels and associated surface connections. The Project has a southern connection with the Inner City Bypass, North South Bypass Tunnel (under construction) and the City via O'Connell Terrace and Campbell Street between Bowen Hills and Windsor. The Project has a north-western connection at Kedron, allowing access to and from Gympie Road and Stafford Road in the north. The Project also has a north-eastern connection at Clayfield where access would be provided to and from Sandgate Road and the East-West Arterial.

The alignment has a total length of approximately 6.7km, of which approximately 5.7km would be constructed in-tunnel. Between the southern and north-western connections, each tunnel would accommodate three traffic lanes. Between the north-western and north-eastern connections, each tunnel would accommodate two traffic lanes. Dedicated break-down bays would not be provided within the tunnels, as there would be sufficient room to pass a stationary vehicle safely, at an appropriate speed, with the configuration proposed.

Surface road changes will be required to effect transport access in the areas connecting to the tunnel. At the southern portal these connection works will be significant (including elevated structures) to allow for connection to the Inner City Bypass, the North South Bypass Tunnel, Campbell Street and O'Connell Terrace. Surface connection modification and upgrades will also be required at both the north-eastern and north-western connections, principally involving major works to Stafford Road, Gympie Road and Lutwyche Road at Kedron and Sandgate Road and the East-West Arterial at Clayfield.

Supporting infrastructure for tunnel operations will include in-tunnel safety systems (fire protection and monitoring systems and pressurised cross passage safety exits provided at 120 metre intervals which link the main tunnels), a ventilation system that will manage in-tunnel air quality and include elevated ventilation outlets in Bowen Hills, Kedron and Clayfield. This ventilation system seeks to negate release of emissions from the mainline tunnels at the exit portals. Integral components include ventilation stations for the extraction fans and elevated ventilation outlets for high level dispersion of vitiated air from the tunnels. A tunnel control centre is proposed to be located adjacent to the tunnel alignment in Windsor which will collect and process all data from in-tunnel monitoring systems and control all services connected with safe tunnel operations.

## 2.2 Construction

Construction of the Project is expected to commence in 2008 and continue for approximately four years with the tunnel open to traffic in 2012. The three key phases will be design and site establishment, construction, and commissioning. Five worksites will be established for the Project, located in three main areas. One worksite would be established at the southern connection at Windsor, three worksites at the north-west connection at Kedron/Lutwyche (including one at Gympie Road) and one worksite at the north-eastern connection at Clayfield. Building structures to control dust and noise emissions from the tunnel works will cover the worksites. All five construction sites will be rehabilitated following completion of construction.

Construction would occur predominantly as either driven or cut and cover tunnels. Driven tunnels would be constructed using road headers, drill and blast techniques, or tunnel boring equipment such as an Earth Pressure Balance (EPB) machine. The mainline tunnels are proposed to be constructed as driven tunnels, with cut and cover techniques adopted for sections where the tunnels are close to the surface. The majority of north to south tunnel alignment is likely to be undertaken by road header, and the construction of the North-western connection tunnels are proposed as 'cut and cover' construction. The construction of the tunnels aligned East to West will most probably be by an EPB machine, due to the low-strength ground conditions in the area. An EPB machine is able to line the tunnel, using a single pass concrete lining that provides immediate ground support and helps control ground water levels.

Approximately 2.4 million cubic metres (m<sup>3</sup>) of loose spoil will be excavated from the tunnels and transported to a number of possible sites, including areas on or near the old Brisbane Airport, (including the Gateway Motorway Upgrade alignment) and at the Port of Brisbane (Clunies Flat and Fisherman Islands).

The construction spoil would be transported to the spoil placement sites using trucks. The haul route from the north-western and southern worksites would follow Lutwyche Road onto Kingsford Smith Drive via Campbell Street or O'Connell Terrace, Montpellier Road and Breakfast Creek Road. The haul route from the north-eastern site would be along the East-West Arterial after first being conveyed under Sandgate Road from the construction face.

While the volume and rate of spoil production and location for removal will vary depending on the method of tunnelling and construction programming, it is estimated that removal of spoil will require approximately 131,000 one way truck movements (with 14m<sup>3</sup> truck capacity).

Significant quantities of material will be used in both the surface works and tunnel construction. Indicative estimates include insitu concrete (380,000m<sup>3</sup>), precast concrete (238,000 tonnes), reinforcement (steel) (80,000 tonnes), bored piling (190,000m<sup>3</sup>), and controlled fill (130,000 tonnes).

Workforce requirements are estimated to total 615 full time equivalent persons comprising 200 for tunnelling works, 230 for surface works and bridges, 120 for

mechanical and electrical fit-out, and 65 for Project management, including site management, head office etc).

Surface construction work that may generate excessive levels of noise, vibration, or dust would be restricted to the hours of 6:30am to 6:30pm Monday to Saturday, with no work on Sundays or public holidays. Special circumstances where above ground surface works may be conducted outside these hours might include works on arterial roads, works in rail corridors, and works involving large prefabricated components. Tunnel works would be undertaken 24 hours per day, 7 days per week. Spoil haulage would occur at any time from 6:30am Monday to 6:30pm Saturday with no haulage on Sundays or public holidays.

Commissioning will mainly be associated with mechanical and electrical systems in the tunnels but will also involve traffic-testing using the new roadways and interacting with the tunnel control systems including an electronic tolling system.

## **2.3 The Proponent**

I note that the State of Queensland (the State) and the Brisbane City Council are both significant organisations possessing considerable in-house traffic, transport and environmental expertise. The State of Queensland, through Queensland Transport and the Department of Main Roads, and the Brisbane City Council have responsibility for developing, leading and managing transport within Brisbane City.

The Proponent's responsibilities for transport policy, planning and delivery are exercised within the regional planning framework established by the *South East Queensland Regional Plan 2005-2006* (SEQ Regional Plan) and the associated SEQIPP 2006, as well as strategic regional transport planning undertaken by Queensland Transport. The Brisbane City Council has developed a *Transport Plan for Brisbane 2002-2016* that has indicated the priority for development of the Project. Further investigative work is being undertaken to establish the feasibility of other Projects included in the *TransApex* initiative which aims to establish efficient connections between existing motorways and major arterial roads through a series of tolled, predominantly underground road links.

I note that both the State and Brisbane City Council jointly developed a business case through the development of the Feasibility Study and the EIS process for the Project.

The State has set up a corporation, City North Infrastructure Pty Ltd (CNI), that has responsibility for managing the procurement of the Airport Link Project. CNI is wholly owned by the State. The Board of CNI includes representatives of the key State agencies and a representative from Brisbane City Council. CNI will be responsible for ensuring that the contract documents to be entered into by the State with the successful tenderer for the Project require the Coordinator-General's recommendations and conditions to be implemented.

## 2.4 Project Delivery Mode

While contractual arrangements for the construction and operation of the Project are yet to be finalised, they are expected generally to follow the public private partnership *Value for Money Framework* guidelines established by the Queensland Government. One advantage in this Project delivery mechanism is that the private sector is encouraged to propose innovative project solutions that lead to design improvements over the 'Reference Project' described in the EIS. Design improvements may include revised connections, changed locations of key Project elements such as ventilation outlets, surface connections or changes to the alignment of the tunnels.

As an example of the successful implementation of this delivery mode, the final design for the North-South Bypass Tunnel led to improvements in road network connectivity through enhanced connections to the Inner City Bypass, and improvements in spoil haulage management, leading to reductions in spoil traffic impacts by construction of the main-line tunnels entirely by TBM.

To the extent that a revised design is selected as the preferred configuration through the bidding process, the Proponent will need to provide the Coordinator-General with a request for Project change under Part 4, Division 3a of the SDPWO Act. In accordance with that Division, I will determine whether public notice of the proposed change and its effect on the Project is required, and will prepare a 'Change Report' that evaluates the effect of that change.



### 3. THE ENVIRONMENTAL IMPACT STATEMENT (EIS) PROCESS

The EIS has been prepared consistent with the Project proposal contained in the Initial Advice Statement submitted by the Proponent in October 2005. The Airport Link Project is identified as one of a number of strategic elements of major transport infrastructure to address deficiencies in the orbital and arterial road network of Brisbane. The option of a tunnel results from strategic transport investigations commenced by the Brisbane City Council in 2001 and published in the *Transport Plan for Brisbane 2002-2016* and supported by the Queensland Government as identified in the SEQIPP 2006. In this context, I consider that the Terms of Reference for the EIS require the assessment of Reference Project options and not other strategic investment options such as a bridge or additional investment in public transport infrastructure. Consequently, I am also satisfied that the assessment approach undertaken for the Airport Link Project was appropriate.

#### 3.1 Public Consultation

The Proponent has conducted an extensive public information and consultation program throughout the EIS process. This is comprehensively documented in Appendix B of the EIS Report and has included activities such as:

- public and concept design displays;
- distribution of Project newsletters;
- conduct of community information sessions and briefings;
- formation and meetings of two community liaison groups and one local business liaison group;
- individual property owner consultations;
- major stakeholder and Government agency briefings; and
- establishment of a free-call Project information line and Project website.

Many of these activities were jointly undertaken and/or coordinated with public consultation on the Northern Busway proposal due to considerable stakeholder overlap with the Airport Link Project.

I am satisfied that the consultation process for this Project has adequately engaged with stakeholders, has sufficiently communicated the Reference Project concept design, and has explained design modifications aimed at mitigating potential Project impacts. I note that the Proponent intends to maintain a high level of community engagement should the Project proceed to construction.

The EIS was made publicly available for a period of approximately eight weeks ending on Friday 8 December 2006.

I received a total of 297 submissions about the EIS. These were provided to the Proponent who was requested to prepare a Supplementary Report to address the

issues raised in the submissions. Considerable volumes of additional correspondence were also received through various channels which were determined not to be 'properly made' submissions on the EIS, but which I nevertheless considered as input to my evaluation of the Project.

### 3.2 Submissions Received on the Environmental Impact Statement

Submissions were received in the following categories:

<b>Submission From:</b>	<b>No. Received:</b>
Government Advisory Agencies	16
Community Organisations	9
Private individuals or companies	141
Pro-forma letters	131
<b>Total</b>	<b>297</b>

Two types of pro-forma submissions were received, both related to Project impacts on and around the Kedron State High School. The first type of pro-forma submission (104 responses) was received from members of the school community and raised three key issues, namely:

- the safety of students and the wider school community during both construction and operation of the Project;
- the negative construction impacts arising from dust, noise, loss of grounds and reduced access; and
- ongoing operational impacts from traffic noise, air pollution and loss of access and amenity.

This pro-forma submission proposed that the “minimum (measures) required to address these issues” were:

- preparation of a Safety Management Plan;
- road and busway design with access and safety measures appropriate to the school community;
- an indoor sports complex to compensate for the loss of school sporting facilities;
- school air conditioning, including acoustic and air sealing treatment; and
- safe vehicular access and improved parking arrangements.

The second type of pro-forma submission (27 responses) was a letter of objection raising four main issues, namely:

- air quality and impacts on health;
- tunnel emission filtration;
- dust and noise pollution during construction; and
- negative operational impact on traffic congestion.

The principal issues raised in submissions in relation to the construction phase, were:

- air quality, due to potential dust nuisance;
- noise and vibration from tunnelling and surface works;
- disruption to local and regional traffic flows due to construction traffic and spoil haulage traffic in particular;
- increased traffic hazards and safety concerns adjacent to worksites and some community facilities (e.g. Woolloowin State School, Kedron State High School);
- reduced connectivity due to worksite impacts on pedestrian and cycle routes and open space networks;
- loss of locally important places and vegetation (Kalinga Park); and
- duration of construction program, particularly in terms of impact on nearby community facilities and residential communities.

The principal issues raised in submissions in relation to the operational phase, were:

- increased traffic on some surface routes (i.e. Stafford Road and East West Arterial);
- increased road traffic noise in some locations (e.g. Gympie Road and Stafford Road);
- diminished air quality in proximity to the ventilation outlets, and potential health risk associations;
- visual impact of the infrastructure on urban amenity;
- impact on future land uses and regeneration potential around the surface connections; and
- reductions in pedestrian connectivity across major roads adjacent to the Project connections (e.g. Lutwyche Road, Sandgate Road and Campbell Street).

Importantly, a number of key local issues emerged focussing at each of the three surface connections of the tunnel. Submissions referring to the north-east connection at Clayfield strongly highlighted potential impacts of the ventilation station and outlet on residential properties in and around Alma Road, Clayfield, due to:

- its close proximity to residential properties;
- diminished air quality and associated health concerns;
- the large size and visual dominance of the structures;
- reduced property values; and
- direct loss of habitat and landscape values of Kalinga Park.

Submissions referring to the north-west connection at Kedron identified potential construction impacts on residential areas and community facilities such as the Woolloowin State School and the Kedron State High School, including:

- increased noise, dust, vibration and traffic;
- constrained access; and
- reduced pedestrian and cycleway linkages between the Kedron Brook open space corridor and community facilities and residential areas in Kedron and Lutwyche.

Submissions relating to the southern connection at Windsor mainly related to construction impacts (noise, dust, vibration and construction traffic) on nearby sensitive receptors, including the Mews Apartments and the Royal Brisbane Hospital.

In response, the Proponent prepared a Supplementary Report to address the issues raised in submissions by category. The issues listed above are discussed individually in Section 4 of this Report.



## 4. EVALUATION OF THE ENVIRONMENTAL IMPACT STATEMENT

Pursuant to section 35 of the SDPWO Act, I have evaluated the environmental effects of the Project and state recommendations and impose conditions, as set out in Section 6 and Appendix 1 to this Report, which must be implemented to ensure the mitigation and management of environmental impacts associated with Project construction and operations.

In forming my decision, I had regard to the following material:

- a) Queensland Government and Brisbane City Council – SKM Connell Wagner JV “Airport Link Environmental Impact Statement Volumes 1, 2 and 3” October 2006;
- b) Queensland Government and Brisbane City Council – SKM Connell Wagner JV “Airport Link Environmental Impact Statement Supplementary Report” April 2007;
- c) Office of Urban Management – “South East Queensland Regional Plan 2005-2026”, June 2005;
- d) Office of Urban Management – “South East Queensland Infrastructure Plan and Program 2006”;
- e) Properly made submissions and other submissions made on the EIS and Supplementary Report received from persons and advisory agencies; and
- f) Relevant Queensland legislation.

In framing the recommended conditions to be imposed on the Project (in Section 6 and Appendix 1), I have had ongoing discussions with the Proponent, its consultants, and officers of the Department of Main Roads, Queensland Transport, Environmental Protection Agency (EPA) and Queensland Health, to consolidate the requirements for effective environmental impact management.

### 4.1 PROJECT CONSTRUCTION IMPACTS

#### **4.1.1 Noise, Dust and Vibration in the Vicinity of Worksites**

Noise, dust and vibration resulting from construction are key issues for the community residents in the study corridor for the Project. Community concerns have focussed primarily on human health, construction duration and property value impacts.

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

The existing noise environment in the study corridor is typical of inner urban areas. Monitoring as part of the EIS has shown that it is largely dominated by existing road traffic noise at all times of the day, as well as rail noise and/or mechanical plant noise. The construction program proposed involves the

restriction of some noise sources to 6:30am to 6:30pm Monday to Saturday, spoil haulage at any time from 6:30am Monday to 6:30 pm Saturday, and some other exceptional operations, including tunnelling 24 hours per day, 7 days per week.

The most significant sources of noise generation are the preparation and operation of the worksites at Windsor, Kedron and Clayfield, owing to a range of potentially sensitive residential, medical and educational receptors located nearby. Measures to mitigate noise impacts for each of these sites have been proposed and include:

- the use of temporary noise screens during site preparation;
- advance notification of the time and duration of earthworks (including piling);
- construction of acoustic enclosures to a defined performance standard over the portal and stockpile areas;
- the design of ventilation and mechanical plant in accordance with the existing acoustic environment and 'reasonable' night time noise objectives; and
- active monitoring of noise level and scheduling of activities to ensure 'reasonable' night time noise objectives are met.

I note that the Draft Outline Construction Environmental Management Plan (EMP) specifies that reasonable and practicable measures to achieve the construction noise goals may include, with the consent of owners and occupants of potentially-affected premises, the undertaking of off-site mitigation actions such as modifications to nearby buildings or other measures to achieve reasonable environmental conditions.

A number of residential properties are located within close proximity to the Windsor and Clayfield construction worksites and a range of mitigation measures will be required to ensure compliance with the relevant noise goals. Of particular note, the EIS found that without mitigation measures being implemented, daytime construction of elevated structures adjacent to the Mews Apartments is predicted to result in significant exceedances of the design goal by 12 decibels (dBA) to 17dBA, and is likely to be intrusive to building occupants. Special mitigation measures would be required to manage construction impacts on the Mews Apartments, including:

- selection of appropriate construction techniques and low-noise plant and equipment;
- location of plant to maximise distance to residences; and
- the use of temporary noise barriers.

Similarly, it is recognised that at the Kedron worksite, site preparation works may exceed noise goals and detailed construction planning will be required to take into account the needs and activities of the nearby Kedron State High School, St Andrew's Anglican Church and Woolloowin State School for acoustic screening from construction activities. Prior to and during construction activities, consultation with stakeholders, including Education Queensland, Woolloowin and Kedron State High School communities and representatives of St Andrew's Church is recommended to ensure impacts are mitigated appropriately and that the operational needs of the stakeholders are met.

I note that the school communities (relevant Parents and Citizens Associations, students, parents and Education Queensland) have identified a number of physical improvements to the existing schools to mitigate perceived impacts, especially at the Kedron State High School. Suggested measures proposed by submitters include air conditioning, double glazing, improved set down areas, and improved sports facilities, including construction of a purpose built in-door sports facility.

While I do not doubt the motivation of the submitters in proposing such measures, I am satisfied that it would not be appropriate at this stage of the assessment process to require set commitments by the Proponent to construct or provide such measures to mitigate perceived impacts.

Nonetheless, I encourage the proponent and the construction contractor to actively engage in a consultative process with the relevant stakeholders, consistent with Section 5 of this Report. I will not specify whether this negotiation and subsequent agreement is formalised as part of the finalisation of the Outline EMP (Construction) as outlined at Section 19.6 in the EIS or as a separate legally binding process, but rather recommend that appropriate consultation occur prior to construction commencing. As a minimum, if the Construction EMP cannot clearly demonstrate that construction site noise mitigation measures will be adequate to meet the performance criteria at the Kedron State High School, then further mitigation measures would be required.

Furthermore, I recommend to the Proponent that the request for tender for this Project seek 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 Woolloowin State School, in a manner which complies with the safety, reasonable cost, traffic accessibility and flood impact objectives of the Project.

Underground tunnelling between portals is a source of vibration and regenerated noise. When a road-header is used, vibration levels are likely to be low and imperceptible in buildings above the tunnel, though there will be vibration associated with blasting and rock breaking activities. While this will only occur during the day and be for short periods, it is an important issue for sensitive receptors such as Rosemount Hospital and Amarina Nursing Home. It is proposed to minimise impact through a blast planning process (as part of general construction planning) which involves consultation on time of day, advance notification and blast design to minimise vibration levels where predictive modelling indicates that the goals will be exceeded.

Due to the type of EPB tunnel bore machine likely to be used and the soil conditions likely to be encountered for construction of the east – west tunnels, it is anticipated that tunnelling vibration and regenerated noise will generally not be noticeable in buildings along this tunnel path. Nonetheless, monitoring will be undertaken to ensure that source data utilised for the EIS assessment are applicable.

Impact mitigation measures for tunnelling vibration and regenerated noise include:

- advance notice in localities where activities are planned;

- noise and vibration monitoring at the commencement of tunnelling to confirm source data;
- consideration of a lower 'reasonable' blast vibration limit of 4mm/sec for Rosemount Hospital and Amarina Nursing Home;
- conducting building-specific vibration sensitivity investigations at Rosemount Hospital to establish sensitivity of building and content in greater detail, informing the preparation of a management plan for construction vibration; and
- conduct of pre- and post-blasting Building Condition Surveys where potential exists for cosmetic (superficial) building damage from drill and blast methods.

Following consultation with the EPA, the Proponent has established target goals for noise and vibration levels to guide construction planning and management. These are set out in the conditions at Appendix 1, Schedule 3. Advice from the EPA is that the goals are reasonable and achievable. In instances where the goals are likely to be exceeded unavoidably for a period of time, the Proponent has indicated that it will implement mitigation measures to manage the impact on affected residents and businesses.

Open excavations and areas where spoil is handled (stockpiled, loaded into trucks and the off-site transport and placement of spoil) are recognised as key risks in relation to potential nuisance dust on nearby sensitive places. To control dust emissions from the tunneling, stockpiling and truck loading works, Tunnel Portal Cover Sheds would be constructed at each of the portals as part of the initial site establishment works. These sheds would be equipped with dust ventilation and filtration equipment.

The extent of likely impacts is expected to be acceptable, provided appropriate pro-active management measures are implemented throughout the excavation period. Construction dust management will be the subject of a Dust and Odour Management Plan and be a sub-plan of the Construction EMP, the framework for which is defined in Section 19.6 of the EIS.

#### **4.1.2 Spoil Transport and Disposal**

Spoil transport has the potential to impact on noise and dust generation as well as traffic congestion in the vicinity of worksites, and to cause similar impacts along the haulage routes to the disposal locations. Approaches to and methods of undertaking spoil removal are an output of detailed construction planning and can not be finalised until a construction contractor has been appointed.

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

The concept design for the tunnel requires the removal and disposal of approximately 2.4 million m<sup>3</sup> of loose spoil from tunnel excavations. The EIS considered a range of possible spoil placement sites, including the old Brisbane Airport site (the Gateway Upgrade alignment) and Port of Brisbane (Fisherman Islands and Clunies Flat). Permits for Operational Works under the Brisbane City Council *Cityplan* may be required for spoil placement on the old Brisbane Airport



site. A range of transport options were considered in moving construction spoil to the potential placement sites, including:

- road - via the network of arterial roads servicing each of the worksites;
- rail - via the urban rail network; and
- barge - from the southern worksite, via Enoggera Creek and the Brisbane River.

Slurry pipeline and conveyor options were also considered in investigations for the preparation of the EIS (principally at the southern worksite), though were not investigated in detail due to the extent of dewatering and double handling, requirements for additional land and the need for establishment of a remote handling site.

Various tunnel construction options were considered and estimates made of the spoil disposal task from the Bowen Hills, Kedron and Clayfield worksites. The Proponent anticipates a construction option which maximises the disposal task from the Kedron worksite (approximately 1.4 million m<sup>3</sup> of loose spoil - 81,000 one-way movements of a 14 m<sup>3</sup> truck) using primarily the arterial road network (Lutwyche Road onto Kingsford Smith Road via Bowen Hills). While road transport of construction spoil is the preferred method for transporting spoil from all worksites, the haul route from the Clayfield site would be along the East–West Arterial, after first being conveyed under Sandgate Road from the construction face. Haulage of spoil is intended to occur between 6:30am Monday to 6:30pm Saturday, with no spoil haulage on Sundays or public holidays.

Truck movement management will be subject to a Traffic Management Plan as a sub-plan of the Construction EMP, the framework for which is defined in Section 19.6 of the EIS. Dust management measures for spoil transport are also defined in Section 19.6. The Construction EMP will be prepared prior to relevant construction commencing and will include consultation with relevant agencies prior to finalisation. Accordingly, Appendix 1 Schedule 3 outlines imposed conditions relating to construction traffic management (Condition 5) and spoil haulage, handling and placement (Condition 6) which outlines relevant measures for Project implementation.

#### **4.1.3 Cumulative Construction Impacts**

Owing to the significant nature of planned construction (including spoil removal and materials) and the long duration of construction, there exists a high potential for a range of cumulative Project-related impacts. Cumulative impacts relate especially to transport planning and traffic congestion management resulting from construction, spoil haulage and materials delivery vehicles. However, the Project may have additional cumulative impacts with respect to flooding, groundwater, air quality, noise and vibration, and urban design.

While these issues have been adequately addressed in the EIS, the Queensland Government and the Brisbane City Council has an on-going responsibility to monitor and manage the cumulative impacts of this Project in relation to the numerous other major projects that are planned over the 2008-2012 period in the

broad Airport Link Project area. Currently anticipated major projects that might overlap temporally or geographically with the Airport Link Project include:

- completion of the North South Bypass Tunnel (NSBT);
- Northern Busway (between Herston and Kedron);
- the Gateway Motorway Upgrade (including the Brisbane Airport northern access);
- the Brisbane Airport New Runway;
- extension of the Hamilton Wharf precinct;
- redevelopment of the Doomben Racecourse;
- expansion of the BP Refinery at Pinkenba;
- water treatment plant upgrade and Stage 2 of the Western Corridor Water Recycling Project;
- Port Motorway upgrade;
- Pinkenba Ethanol Refinery;
- upgrade of the East-West Arterial – Airport Drive intersection;
- Bowen Hills Transit Oriented Development (TOD);
- Fortitude Valley redevelopment;
- Northbank redevelopment; and
- potentially, the recently proposed Brisbane Airport World Trade Centre.

This list does not include any major projects north of the Airport Link Project area, or south of the Australia Trade Coast.

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

The EIS (Chapter 21) identifies only four major transportation projects either currently being constructed or proposed for construction over the period 2008 – 2012 that have direct relevance to the Airport Link Project. These include the Northern Busway, the NSBT, the Gateway Upgrade Project and the Brisbane Airport Northern Access.

The most significant Project interaction and potential for associated cumulative impacts both for construction and operation is the proposed Northern Busway, which is a dedicated busway proposed to connect the Inner Northern Busway at Herston to Bracken Ridge. Parts of the Northern Busway between Herston and Kedron will include busway stations, sections of driven tunnel, cut and cover tunnel and associated surface works. This section of the Busway may be constructed at the same time and in the same corridor as the Airport Link Project to maximise benefits and minimise local impacts and costs. However, these remain two separate projects. The potential for integration physically and functionally with the Airport Link Project yields many benefits, including delivery and construction efficiencies, as well as promotion and optimisation of public transport usage by freeing congested surface road space.

Construction of the NSBT commenced in late 2006 and it is anticipated that it will be open for traffic use by 2010. Therefore, intense but localised construction overlap between Airport Link and the NSBT will exist for about two years between 2008 and 2010. This could effectively mean that the Bowen Hills / Windsor area will be subject to extensive construction works for six years between 2006 and 2012. The significance of this impact is difficult to measure and will need to be carefully managed. Any additional TOD development of Bowen Hills during that period will increase both the challenge of management and the need for careful coordination.

A comprehensive approach to construction traffic management is therefore required given the wide range and significance of major road and public transport projects within and surrounding the Airport Link Project corridor. A construction management strategy is recommended to include establishment of a 'Co-ordination Committee' chaired by the Department of Infrastructure and comprising the Department of Main Roads, Queensland Transport, the Department of Emergency Services and the Brisbane City Council. The function of such a Coordination Committee would be to address the coordination and management of construction traffic and transport network performance in inner north-eastern Brisbane during the Airport Link construction phase.

#### **4.1.4 Location of Worksites, Ventilation Outlets and Portals**

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

The EIS has presented a summary of the tunnel alignment engineering concept development, outlining selection criteria for options for connection at the Bowen Hills, Kedron and Clayfield connections, as well as selection criteria for ventilation outlet locations.

For the Bowen Hills connection, nine options were investigated in the concept design stage, with two options proceeding to detailed consideration. For the Kedron connection, twenty-five options were developed and two considered in detail. At the Clayfield connection, seven options were considered with two proceeding to a detailed analysis.

In relation to ventilation outlet sites, three were considered near the Bowen Hills portal, two were considered for the Kedron portal, and four sites were considered for the Clayfield portal. Selection criteria included land use and planning considerations, visibility issues, cost, and the effects on air quality determined by dispersion modelling.

I note that a number of responses to the EIS from members of the community raised the issue of whether ventilation outlet location "Option A" in the Clayfield area had been accurately communicated during the EIS process. I note that the preferred location for the Clayfield ventilation outlet for the Reference Project (adjacent to Alma Road) differs from any of the locations discussed with the community prior to the release of the EIS (although only by a short distance from one of the options canvassed). In reviewing the EIS (sections 3.5 to 3.5.2) and the Proponent's response relating to the re-location of "Option A" contained in the Supplementary Report (section 3.3.3), I am satisfied that an adequate range of

options has been assessed. The preferred portal and ventilation site options for the Reference Project are satisfactory.

Nonetheless, I recommend to the proponent that the request for tender for this Project seek innovation aimed at further mitigating the risk of potential visual and private property impacts of ventilation stations and outlets, in a manner which complies with the air quality, noise, safety, reasonable cost, traffic accessibility and flood impact objectives of the Project.

Five worksites will be established in three main areas:

- one at Windsor (south of Federation Street);
- three at Lutwyche/Kedron (Lutwyche Road – south of the intersection with Kedron Park Road and east of Kedron Brook, on land occupied by the Department of Emergency Services); and
- one at Clayfield (east and west of Sandgate Road in Kalinga Park and adjacent to Schultz Canal).

Tunnel Portal Cover Sheds, acoustically lined sheds to mitigate noise and dust generation, will be established over the driven tunnel portals. The establishment of the sites will require the Proponent to acquire a number of residential, commercial and industrial properties. Following construction, sites at Windsor will be further investigated for re-use and redevelopment, including for parks and open space, as part of a wider planning and land-use strategy planned for the Lutwyche Road and Bowen Hill precincts.

#### **4.1.5 Cultural Heritage Management**

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

The tunnel alignments traverse beneath areas which form part of the earliest development of Brisbane. The investigation identified numerous examples of non-Indigenous cultural heritage (i.e. buildings etc). The Indigenous cultural heritage surveys and reports, indicated that although the archaeological record may have been removed by more recent land use, the remaining areas have high levels of cultural significance for registered Native Title groups.

The EIS has included a non-Indigenous as well as an Indigenous cultural heritage study to identify, locate and record cultural heritage places. Within or closely associated with the study corridor, there are 34 places of cultural heritage significance identified on heritage registers (National Estate, Queensland Heritage Register, National Trust of Queensland and Brisbane City Council Heritage Register). The EIS documents impacts on places of local heritage significance as well as impacts on character precincts.

Mitigation measures are proposed to be established through development of Cultural Heritage Management Plans (CHMP) for the construction phase of the Project, providing instructions to contractors and Project owners on obligations for the protection, or where unavoidable, the removal of cultural heritage values in the study corridor. The CHMPs will cover both Indigenous and non-Indigenous

components and will be prepared for each place of State significance likely to be affected.

Monitoring programs and structural inspections of all heritage listed buildings are also proposed to determine the need for structural issues to be addressed prior to construction. Further studies as required will also be undertaken, including archival recording of houses within the Swan Hill Residential Estate, and the former Lutwyche Police Station. A management plan for Kalinga Park to recognise and protect remaining parkland and guide rehabilitation will also be prepared, including assessments where significant landscape features can be protected and retained (e.g. mature eucalypts).

Indigenous cultural heritage issues have been investigated by both the Turrbal and Jagera people, who are registered Native Title claimants for the area. Eleven risk categories were identified through these studies, the management of which will be addressed through development of a Cultural Heritage Management Plan in accordance with the *Aboriginal Cultural Heritage Act 2003*.

#### **4.1.6 Local Area Traffic Management**

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

The management of construction traffic in the vicinity of worksites will require careful consideration to mitigate potential impacts. Spoil transport has potential to impose significant impacts and has been addressed in Section 4.1.2 of this report. Other transport tasks include worker transportation, deliveries of construction materials and equipment, access for repair and service purposes, as well as site visitors. Impacts may occur on parking, pedestrians, traffic operations, and roads where trucks may queue while waiting to be loaded. It is also acknowledged that construction activities could impinge on pedestrian access to the Kedron State High School and Woolloowin Primary School.

The detail of temporary traffic arrangements will become the responsibility of the contractor to develop during construction planning, in consultation with relevant agencies, including Brisbane City Council, Department of Main Roads, Department of Emergency Services and Queensland Transport. It is proposed to develop and document this detail in a Construction Traffic Management Sub-Plan for each site as part of the Construction EMP.

Performance analysis for lane closures and other disruptions, will need to be included in these Traffic Management Sub-Plans, as well as recognition of the safety and convenience of all roads users. Content of these Sub-Plans, as described in section 5.7.8 of the EIS, would include:

- modelling prevailing traffic conditions to predict effects of disruption;
- traffic flow management measures including traffic signage, variable message signs etc;
- monitoring of traffic flows and review of plan if appropriate;
- promotion of alternative routes if capacity permits; and
- maintenance of access to adjoining properties at all times.

These Sub-Plans derive from the EMP specified in section 19.6 of the EIS. The development and distribution of the construction traffic management plans will involve significant consultation and communication with affected stakeholders. I consider it particularly important that the Proponent consult with Education Queensland, the Department of Emergency Services, and the Kedron State High School and Woolloowin State Primary School on the Construction Traffic Management Sub-Plan for the Kedron area.

#### **4.1.7 Construction Conclusions**

It is acknowledged that the Project will result in negative impacts from construction over approximately four years. However, it is clear that the type, intensity and scale of the impacts are reasonably typical of inner city construction sites, and are of a nature that the construction industry is adept at managing. The conditions in Appendix 1 require a comprehensive Construction EMP with quantified criteria for dustfall, noise and vibration. This EMP should be adequately supported by consultation, community information, and complaints management systems to actively manage the construction impact interface with the community. Section 5 of this report addresses further impact mitigation measures to be applied by the Project.

## **4.2 PROJECT OPERATIONS IMPACTS**

### **4.2.1 Traffic Management, Including Congestion on Approach Roads**

The Project will be operated as a component of a broader network which is actively managed with the aim of achieving optimal network-wide traffic flow performance. A principal objective of the Project is to provide relief to congested roads in Brisbane's northern suburbs. It is therefore imperative that significant negative impacts are not imposed on other areas of Brisbane's road network, particularly on approach and departure roads to the tunnels.

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

The primary objective of Airport Link is to provide relief to congested roads in Brisbane's northern suburbs, connect activity centres and provide a sound basis for future traffic management by linking to strategic road connections allowing cross-city travel movements to bypass the Central Business District and inner suburbs. Traffic modelling has been used extensively to simulate the existing traffic environment, to forecast future base traffic conditions, and to assess the transport network with and without the Project to determine the effects. At the city-wide level, the model used in the EIS to predict traffic and transport demands was based on the Brisbane Strategic Transport Model (BSTM). At the local area level, modelling was undertaken using the intersection analysis model *aaSIDRA*, with data extracted from the city-wide model.

A number of submitters to the EIS questioned whether Airport Link achieves the objective of providing relief to congested roads in Brisbane's northern suburbs,

when increased Project traffic is expected at key intersections surrounding the tunnel portals (especially East-West Arterial / Sandgate Road, Airport Roundabout and Nudgee Road intersections and Stafford Road / Gympie Road intersection). The Proponent's response to these claims is found on pages 72 – 81 of the Supplementary Report and asserts that the Project would reduce traffic volumes on a wide range of roads within Brisbane's inner north and would reduce congestion along the arterial corridors such as Lutwyche Road and Sandgate Road.

Gympie Road, Stafford Road and East-West Arterial are all high order roads within Brisbane's road hierarchy and are long term growth corridors, with or without Airport Link. Outside of the scope of the Project, the Queensland Government is progressing planning for additional measures aimed at improving traffic flow. Longer term traffic management in the vicinity of tunnel portals also requires the careful development of Local Area Traffic Management (LATM) plans incorporating such matters as parking management measures, formalisation of right turn pockets and improved signalling. This is of particular significance to the Gympie Road / Lutwyche Road portal where there is a mix of educational, residential and business interests.

I note that the draft Outline EMP (Construction) at section 19.6 in the EIS includes implementation of measures aimed at maintaining public transport services (both routes and timing) during construction. Element 1 also includes provision for the management of construction traffic, in particular spoil removal, to minimise impacts on traffic flow. Furthermore, the draft Outline EMP (Operation) at section 19.7 in the EIS also requires LATM plans to be implemented.

In consideration of the range of options outlined in the EIS, and the role of the Department of Main Roads in consultation with Brisbane City Council to manage increased traffic demand on higher order roads as part of their normal course of network management and planning, the Proponent is of the view that traffic demand can be appropriately managed. I am satisfied that the range of measures proposed, combined with separate initiatives currently being pursued by the Queensland Government, will appropriately manage traffic impacts on higher order roads based on the traffic modelling undertaken in the EIS.

#### **4.2.2 Air Quality Including Health Risks**

As indicated in a number of EIS submissions, air quality, particularly surrounding ventilation outlets, is a matter of significant concern to stakeholders in the operation of the tunnel. In order to assess impacts in this area, the EIS has undertaken dispersion modelling centred on the ventilation outlets, together with a health risk assessment based on the ambient concentration levels predicted by the modelling.

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

Critical inputs to the dispersion modelling include traffic numbers (derived from the traffic modelling) and the assumed characteristics of the vehicle fleet. These characteristics were based on the more conservative Permanent International

Association of Road Congresses (PIARC) estimates, rather than the South East Queensland Region Air Emissions Inventory.

Tunnel operations (including the ventilation system) will be managed to achieve in-tunnel air quality that conforms to PIARC guidelines. I have sought the advice of the EPA in considering the results of the air quality dispersion modelling. The EPA advises that the "Airport Link Project is unlikely to lead to significant changes in ambient air quality in future years is a reasonable conclusion to draw from the modelling output, and appears to be a realistic assessment of the situation".

I am satisfied that the EIS has used reasonable criteria to evaluate impacts (both the Environmental Protection (Air) Policy 1997 or the National Environment Protection Measures (NEPM) goals, whichever is the more conservative); that the numerical models are industry standard and the approach to using them was sound; and that vehicle emission inputs have been conservative and led to reliable results.

The results of the modelling indicate that for worst-case emission scenarios, air quality in the vicinity of ventilation outlets will be within the relevant goals and standards. The EIS has undertaken Health Risk Assessments for potential impacts on respiratory systems from changes in ambient concentrations of NO<sub>2</sub> and PM<sub>10</sub>, and for the impacts of air toxics such as benzene. Both of these studies confirm that the risks are extremely low and not likely to cause adverse impacts. I have sought advice from Queensland Health in considering this issue. Queensland Health has advised that is satisfied with the information contained in the EIS and considers that the construction and ongoing use of the roads of the Project will not result in an unacceptable increase in health risk to the community from the expected small increase in air pollution levels.

A number of submitters on the EIS raised concerns regarding possible health effects due to ultrafine particles in vehicle emissions. Queensland Health advises that "few studies of the health effects of air pollution have assessed the health effects of ultrafine particles as instrumentation to measure ultrafine particles is not widely available and no air quality standards for comparing the results are available. Since ultrafine particles are a component of PM<sub>10</sub> and PM<sub>2.5</sub>, the health effects of PM<sub>10</sub> and PM<sub>2.5</sub> also include health effects due to ultrafine particles, and no additional health effects are expected from the ultrafine particles present in vehicle emissions."

I note separately that Queensland Transport, in cooperation with the Queensland University of Technology and international collaborators, is currently investigating methodology for a comprehensive study into the potential health impacts of ultrafine particles in the Brisbane air shed.

The EIS has also reviewed the benefits of air filtration on ventilation outlets, and modelled ground-level pollutant concentrations both with and without filtration. Results indicate differences in concentration are difficult to detect and that pollutant concentrations are dominated by vehicles on surface roads. I am satisfied that there is no demonstrated need to filter ventilation stack emissions at this stage. Nonetheless, the Proponent intends to design the ventilation outlets to enable electro-static precipitators and denitrification equipment to be installed if



current technology improves, or future studies can demonstrate any significant efficacy.

### **4.2.3 Tunnel Operational Management**

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

Tunnel operations encompass a range of issues that have been commented upon in submissions on the EIS. Key among these issues have been:

- traffic management within the tunnel and at the tunnel approaches;
- the maintenance and management of air quality within the tunnel; and
- the management of emergency incidents, including those which may require evacuation from the tunnels.

Chapter 17 of the EIS and section 3.16 of the Supplementary Report provide a description of the risk assessment undertaken and responses to safety issues raised in submissions. A combination of communication, fire detection and suppression and smoke extraction systems, combined with cross passages between the tunnels at 120m centres are proposed to enable tunnel managers and emergency response agencies to manage emergency incidents flexibly. An Incident Management Response Sub-Plan of the Operations EMP is to be prepared and critically appraised with emergency response agencies by means of simulation exercises prior to the commencement of operation of the tunnel.

For the Reference Project, the EIS proposes that overall traffic management will be conducted from a tunnel control centre located adjacent to the southern portal at Windsor, which will collect and process all data from in-tunnel monitoring systems and control all services connected with safe tunnel operations. The EIS proposes that the tunnel tolling system will be electronic, and the phasing of lights on intersections at either end of the tunnel will be managed to control traffic flow into and out of the tunnel, having regard to conditions in tunnel and on the surface road network.

While it is intended to exclude dangerous goods vehicles from the tunnel by Regulation, this cannot guarantee the total exclusion of these types of vehicles from the tunnels. Monitoring and reporting procedures will need to be established, and the procedures and capacity for dealing with incidents involving these vehicles will need to be adequate.

The tunnel ventilation system is to be designed so that the system is capable of meeting PIARC limits for in-tunnel air quality through the operation of a ventilation system linked to an automatic control system receiving information from visibility, air speed and gas monitors (for CO and NO/NO<sub>2</sub>).

### **4.2.4 Urban Regeneration Following Construction**

Opportunities for urban regeneration are likely to arise as a result of implementation of the Project. These may be due to changes in traffic management and transport conditions, changes in landuse and access to

community facilities, and changes to the environment adjacent to the tunnel corridor.

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

Chapter 20 of the EIS provides a framework of urban regeneration initiatives identified during the EIS investigations and through consultation with local community members and key stakeholders. These initiatives include both program initiatives and redevelopment initiatives. Program initiatives relate to the delivery of tangible program outcomes and would be delivered through existing policy-based programs of Commonwealth, State and local governments. Redevelopment initiatives are more likely to be achieved in the medium to longer term, based on the rate of future development in the study corridor. With future redevelopment and rejuvenation of these inner suburbs, there is an opportunity for development to deliver a range of community facilities and amenities relevant to their needs, but concurrently relevant to the framework for urban regeneration.

In parallel with the implementation of an integrated program of urban regeneration measures, the EIS also recommends a range of 'urban mitigation' measures that are required to address the Project impacts during both the construction and operation phase. The urban mitigations are recommended as works to be undertaken as part of the Project and are to be generally consistent with the Chapter 20, section 20.6 of the EIS. Condition 3 of Appendix 1, Schedule 3 directs the contractor to prepare a definitive program of urban mitigations which are to be developed in consultation with relevant affected agencies, including the Brisbane City Council and the Office of Urban Management.

### **4.2.5 Operations Conclusions**

I am satisfied that the key issues of traffic management and air quality during operations are capable of being managed effectively. The framework for operational EMPs has been established, including a comprehensive monitoring and reporting system both for in-tunnel air quality and ambient air quality in the vicinity of ventilation outlets. Modelled scenarios indicate that Project air quality will not cause exceedances of the goals established in the NEPM and EP(Air) Policy.

An Operation EMP will need to be finalised by the Tunnel Operator and tested with other road network managers and emergency service agencies prior to the commencement of tunnel operations. Tunnel security should be coordinated and considered as part of the process of development of the Operations EMP, in accordance with standard Queensland Government policy on securing critical infrastructure.

Following construction there will be urban regeneration opportunities based on the rehabilitation of worksites in areas surrounding portals and subject to Local Area Traffic Management Plans.

### **4.3 MANAGEMENT REGIME FOR THE PROJECT**

I have considered the management regime proposed to be implemented by the Proponent for the construction and operation of the Project, in particular the arrangements proposed to monitor impacts and manage complaints during the construction period as detailed in Appendix 1.

I am confident that the management regime outlined in the EIS is capable of addressing any potential adverse impacts. Further, because the proposed construction techniques are both well known and utilise established technologies, I consider that the prospect of any unacceptable negative impacts occurring is low following the adoption of the proposed mitigation measures. This view is further reinforced by the incorporation, where appropriate, of lessons learnt and experience gained from the design, construction and future operation of the NSBT Project.

I am aware that there is a high level of community interest and concern about this Project, which would be expected given its location and cost. A related consideration is the lengthy duration of the construction period and the need to ensure that adequate and transparent measures are in place during this time to monitor any adverse impacts on affected communities and be able to respond in a transparent and coordinated way to any issues which may arise during this period.

## 5. APPROVALS REQUIRED AND ENVIRONMENTAL IMPACT MANAGEMENT

Appendix 1 describes the conditions of the development imposed upon the Proponent to ensure that the Project mitigates and manages construction and operational impacts to the greatest extent possible. These conditions have been derived from consideration of the type, scale and duration of likely impacts determined through the EIS process.

The key management tool will be the development of Construction and Operation EMPs.

The purpose of the EMPs is to ensure that action in relation to the management of environmental impact is taken in a timely and effective manner during the construction and operation of the tunnel. The draft framework EMPs developed for the EIS reflect the:

- regulatory requirements;
- recommendations made in the EIS (Chapter 19) to minimise, mitigate and manage identified environmental/social impacts;
- good practice environmental management, and
- the general content requirements of ISO 14001.

The EMP Sub-Plans will be expanded and refined for each stage of the Project and implementation responsibility is to be devolved to principal contractors if appropriate to do so. The EMP's cover the following elements:

- Traffic and Transport
- Geology and Soils
- Hydrogeology and Groundwater Quality
- Surface Water Quality
- Air Quality
- Noise and Vibration
- Flora and Fauna
- Land Use and Planning
- Cultural Heritage
- Social Environment
- Hazard and Risk
- Waste Management

The EMPs are to include extensive monitoring and reporting requirements as well as the requirement for a complaints process that is managed by the contractor and overseen by the Proponent. The Proponent is also to seek the input and advice of the agencies listed in Schedule 4 of Appendix 1 in the preparation of the EMPs.

The effectiveness of the EMPs will be able to be gauged through the monitoring and reporting protocols incorporated within the structure of the plans.

Accordingly, I have imposed a condition relating to the preparation and implementation of EMP's at Schedule 3 Appendix 1 (Condition 4), providing for the avoidance, or effective management of potential environmental impacts.

## 6. SUMMARY OF EVALUATION

During the EIS process the key effects have been identified and impact management frameworks that include quantitative measures for air, noise and vibration have been developed. The EIS has provided sufficient information to the State and local government, and to the community, to allow an informed evaluation of potential environmental effects which could be attributed to the proposed Airport Link Project.

Therefore, having regard to the documentation and information provided, it is considered that the EIS process has satisfied the requirements for impact assessment in accordance with Part 4 of the *State Development and Public Works Organisation Act 1971*.

I consider that the impacts as described in the EIS are able to be mitigated and managed effectively through implementation of the conditions set out in Appendix 1 to this report. Therefore in conclusion, I recommend that the Reference Project, as described in detail in the EIS and Supplementary Report proceed subject to the recommendations noted below and the conditions contained in Appendix 1 – Conditions of Development set by the Coordinator-General for the Airport Link Project. In the event of any inconsistencies, the conditions and recommendations in this Report prevail.

The Proponent and its agents, lessees, successors and assigns, as the case may be, must implement the conditions in this Report and seek to implement the Recommendations in this Report and all commitments presented in the EIS.

### Recommendations

1. Where required by the Proponent, the whole or parts of the land for the Project be designated for Community Infrastructure in accordance with the process detailed in Chapter 2, Part 6 of the *Integrated Planning Act 1997*.
2. Prior to commencement of operations, tunnel security should be coordinated and considered in accordance with standard Queensland Government policy on securing critical infrastructure.
3. I recommend to the Proponent that the request for tender for this Project seek 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 Woolloowin State School, in a manner which complies with the safety, reasonable cost, traffic accessibility and flood impact objectives of the Project.
4. I recommend to the Proponent that the request for tender for this Project seek innovation aimed at further mitigating the risk of potential visual and private property impacts of ventilation stations and outlets, in a manner which complies with the air quality, noise, safety, reasonable cost, traffic accessibility and flood impact objectives of the Project.

## **5. Interface with Other Major Projects**

- (a) A coordinated approach should be taken to delivery of major transport Projects in the inner northern suburbs of Brisbane, including the Airport Link, Northern Busway and NSBT Projects. It is recommended that the Proponent establish a Construction Liaison Committee comprising representatives from the Queensland Government (including Queensland Transport, Department of Main Roads, Office of Urban Management, Department of Emergency Services and Department of Infrastructure) and the Brisbane City Council to:
- (i) share information about the concurrent major transport projects;
  - (ii) allow the cumulative construction impacts from all projects to be managed and mitigated; and
  - (iii) communicate with existing traffic management and emergency response planning and operational coordination entities involving, Department of Main Roads, Queensland Transport, Department of Emergency Services and Brisbane City Council.
- (b) Recommended means for achieving this coordinated approach include exploring opportunities for the shared use of construction worksites in Bowen Hills, Windsor and Kedron. Such opportunities should aim to establish measures for:
- (i) managing and monitoring construction traffic to avoid congestion, especially during periods of peak traffic flows;
  - (ii) managing and monitoring construction car parking in localities surrounding construction worksites;
  - (iii) managing the impacts of overlapping work programs for surface works in close proximity to sensitive receptors such as residential properties, schools and community facilities, where such surface works have the potential to cause nuisance or disturbance due to excessive noise or diminished air quality.
- (c) Where the Northern Busway Project is proposed to be constructed at the same time and in the same corridor as the Airport Link Project, the Proponent should investigate opportunities to reduce the predicted cumulative impacts, including the measures described in recommendation 5(b) above.

## **6. Integration with Regional and Local Planning Processes**

Given the potential for changes to the regional and local planning frameworks brought about by the Airport Link Project, it is recommended that the Proponent liaise with the Office of Urban Management and the Brisbane City Council to assist in identifying urban regeneration opportunities which arise because of Airport Link. Opportunities for integrated land use and transport should be identified through this planning process.

## **7. Road Network Connections**

In developing the concept design for connections to the road network at the tunnel portals (Bowen Hills, Kedron/Lutwyche and Clayfield, the following criteria must be considered:

- (a) Efficient connection to the local road network to provide enhanced access between the city centre and the motorway network, including Airport Link.

- (b) Minimise, where reasonable and practicable, direct impacts (i.e. land resumption) on properties in the vicinity of the connections with the local road network.
- (c) Minimise, or mitigate and manage, potential for construction impacts on sensitive receptors (eg Royal Brisbane Hospital, The Mews apartments, Tufton Street apartments, Kedron State High School, Woolloowin State School and residences in Clayfield) such that:
  - (i) air quality, noise and vibration, and night lighting achieve the environmental objectives and performance criteria recommended in the draft Outline EMP (Construction) in Chapter 19 of the EIS;
  - (ii) construction traffic to use major roads, except for Rose Street and Park Road Woolloowin, and Junction Road Clayfield; and
  - (iii) construction car parking to be managed to avoid congestion or constraints upon local access or circulation.
- (d) Minimise, or mitigate and manage potential for construction and design-related impacts on the Enoggera Creek, Kedron Brook and Schultz Canal riparian corridors including their ecological, visual and landscape values.
- (e) Minimise, or mitigate and manage potential for impacts such as road traffic noise, headlight glare, visual impacts and loss of privacy and aspect on existing sensitive land uses (eg The Mews apartments, Tufton Street apartments, Kedron State High School, Woolloowin State School and residences in Clayfield), such that:
  - (i) road traffic noise achieves the environmental objectives and performance criteria, established in the draft Outline EMP (Operations) in Chapter 19 of the EIS;
  - (ii) night lighting and headlight glare from the Project is less than 8 lux at the boundary of a sensitive receptor (i.e. The Mews apartments, Tufton Street apartments); and
  - (iii) landscaping and urban design of the Project mitigates the potential for loss of privacy to adjacent residential dwellings and school buildings.
- (f) Maintain the potential for urban renewal and regeneration in Windsor, Bowen Hills and Kedron, and generally for a number of key sites (i.e. Queensland Newspapers, Queensland Rail land at Bowen Hills and Mayne, RNA Showgrounds and Emergency Services Complex at Kedron) with regard to:
  - (i) reasonable and practicable circulation and connectivity within areas of Windsor and Bowen Hills near to the Project;
  - (ii) safe and practicable pedestrian and cycle access between key centres (e.g. Bowen Hills station and Royal Brisbane Hospital campus and RNA Showgrounds, and to Kedron State High School);
  - (iii) practicable and functional access to key sites (eg Queensland Rail at Mayne, Queensland Newspapers, RNA Showgrounds); and
  - (iv) potential for links with public transport.
- (g) Maintain opportunities for high-quality urban design outcomes for both the proposed infrastructure and adjacent development sites.

**8.** I am satisfied that potential adverse environmental impacts of the Project are to be sufficiently reduced through:



- (a) The attachment of conditions in the case of a development approval under the *Integrated Planning Act 1997* (Qld) as listed in Appendix 1, Schedule 1;
- (b) The attachment of conditions to any Project approvals under other legislation as recommended in Appendix 1, Schedule 2;
- (c) If a Community Infrastructure Designation is sought by the Proponent, the attachment of conditions to such Designation for implementation of the Project as described in Appendix 1, Schedule 3;
- (d) Otherwise, by the implementation of the Project in the manner described in Appendix 1, Schedule 3; and
- (e) The preparation and implementation of appropriate EMPs for the Project.

As the assessment of the effects of the Project has been undertaken prior to final detailed design and finalisation of key agreements, further improvements to the Project may occur as a result of detailed design work. As highlighted in section 2.4 of this Report, tenderers for the Project will be encouraged to propose Project solutions that are innovative and lead to design improvements over the 'Reference Project' as described in the EIS. Such design improvements may include revised connections, changed locations of key Project elements such as ventilation outlets, or changes to the alignment of the tunnels.

To the extent that a revised design is selected as the preferred configuration through the bidding process, the Proponent will need to provide the Coordinator-General with a request for Project change under Part 4, Division 3A of the SDPWO Act. In accordance with that Division, I will determine whether public consultation of the proposed change and its effect on the Project is required, and will prepare a 'Change Report' that evaluates the effect of that change.

A copy of this report will be provided to the Proponent, pursuant to section 35(5)(a) of the SDPWO Act. This Report will be made publicly available on the Department of Infrastructure web site.

  
**Ken Smith**  
**Coordinator-General**  
Date: 23 May 2007