



The Coordinator-General



The Legacy Way project (formerly known as Northern Link Road Tunnel)

## **Coordinator-General's report on a project change, number 4**

August 2011

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## Synopsis

The Legacy Way project, formerly known as the Northern Link Road Tunnel project, will involve construction of two tunnels, both under five kilometres in length, linking the Centenary Motorway at Toowong with the Inner City Bypass at Kelvin Grove. The project also includes associated works such as two ventilation stations and outlets and a tollroad control centre. The project proponent is Brisbane City Council (BCC).

Legacy Way was declared to be a significant project under section 26(1)(a) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act) on 2 November 2007.

Following consideration of the project's environmental impact statement (EIS) and comments made on the EIS by members of the public, stakeholders and government agencies, the Coordinator-General's report evaluating the EIS was completed on 23 April 2010. The report found that the project could proceed, subject to compliance with conditions and recommendations made by the Coordinator-General, in order to mitigate project impacts.

On 25 October 2010, the proponent provided the Coordinator-General with an application for project changes (APC), as per section 35C of the SDPWO Act. The application requested the Coordinator-General assess a range of proposed design and delivery changes to the project. One of the changes was the parking required to service the project's western worksite, located on a section of the Brisbane Botanic Gardens, adjacent to the Centenary Motorway.

In *The Legacy Way Project (formerly known as Northern Link Road Tunnel) Coordinator-General's report on project changes*, finalised on 17 December 2010, the Coordinator-General found the changed project could proceed, with the exception of the proposal to locate temporary construction workforce parking in a section of Anzac Park, Toowong.

It was recommended the proponent review the project's workforce parking strategy and consider alternative options for its parking requirements; then assess the options against a range of criteria and present them to the community for consideration (Appendix 2, Schedule 4, Recommendation 35).

On 20 May 2011, BCC provided a second APC to the Coordinator-General. The application, made as per section 35C of the SDPWO Act, requested the Coordinator-General's consideration of the project's use of a section of the existing Park and Ride car park located on Mount Coot-tha Road, adjacent to the Toowong bus depot, for temporary construction workforce parking (daytime only).

On 3 June 2011, BCC provided an amendment to the APC, which proposed a reduction in the amount of parking in the car park sought.



On 17 June 2011, the Coordinator-General, with *The Legacy Way project (formerly known as Northern Link Road Tunnel) Coordinator-General's report on a project change (June 2011)* endorsed the use of no more than 40 of the 105 parking spaces of the Park and Ride for the duration of the project.

On 24 June 2011, BCC provided the third APC for the Coordinator-General's consideration. This application proposes developing an area located on Scenic Drive, Mount Coot-tha, for temporary construction workforce parking for both day and night-time shifts.

On 18 August 2011 the Coordinator-General approved the change proceeding, with issue of the *Legacy Way project (formerly known as Northern Link Road Tunnel) Coordinator-General's report on a project change, number 3 (August 2011)*.

On 22 July 2011, Transcity provided the project's fourth APC for the Coordinator-General's consideration. The APC proposes construction of a tunnel, around 850 metres in length, travelling under the Brisbane Botanic Gardens. The tunnel would link the project's western worksite located at the north-east corner of the gardens with the Mount Coot-tha quarry and allow disposal of the majority of the spoil from construction of the two road tunnels directly into the quarry.

Given the proposal is a change to the project as evaluated, this report provides the Coordinator-General's assessment of the change.



# 1 Description of the proposed change

## 1.1 The proponent

The project proponent is BCC. On 20 September 2010, BCC selected Transcity Joint Venture (Transcity) as the preferred contractor for the design, construction, operation and maintenance of the project.

Transcity has been contracted to deliver and operate the project as BCC's agent for a 10-year period.

## 1.2 Background

In *The Legacy Way Project (formerly known as Northern Link Road Tunnel) Coordinator-General's report on project changes*, finalised on 17 December 2010, the Coordinator-General found the changed project could proceed.

One aspect of the changed project was the inclusion of an over-land conveyor system that would travel approximately 1.75 kilometres across the non-public section of the botanic gardens to the Mount Coot-tha quarry.

The conveyor would transport the majority of the spoil (produced from excavating the two tunnels using tunnel boring machines (TBMs)) directly to the quarry, providing for the future restoration of the quarry post-operation.

The Coordinator-General's change report of December 2010 noted that the proponent's proposal to use a conveyor system would effect a strong outcome for the environment, due to a reduction of around 83 400 truck movements that would otherwise have been required to transport the spoil.

The absence of around 450 trucks per day (peak) due to this change was also a great outcome for the local community.

Since finalisation of the change report, Transcity has determined an underground conveyor tunnel system for spoil disposal would result in a better outcome than the over-land proposal.

## 1.3 Proposed change

Sections 5 and 6 of the APC provide details of the proposed design and construction method of the spoil conveyor tunnel. The tunnel would be around 850 metres in length, extending in a direct line from the worksite to the quarry.



The depth of the conveyor tunnel from the ground's surface varies from 11.5 metres at the entry portal in the western worksite, to a maximum depth of 52 metres as the tunnel exits at the quarry wall.

Drill and blast methods would be used to construct the tunnel, with blasting proposed to occur from October 2011 to mid-February 2012. The tunnel would be 3.5 metres wide and 4.4 metres high, which would be wide enough to drive a service vehicle alongside the conveyor system. Shotcrete will be applied to seal the crown of the tunnel and rock bolts and steel sets installed for support.

Transcity estimates the construction of the conveyor tunnel would take around eight months to complete. TBM operation is scheduled to commence in May 2012.

Around two thirds of the spoil produced due to excavation of the conveyor tunnel would be deposited in the Mount Coot-tha quarry, with the remainder being transported on road to the project's existing disposal locations.

Figures 1.1 and 1.2 depict the over-land and conveyor tunnel methods.

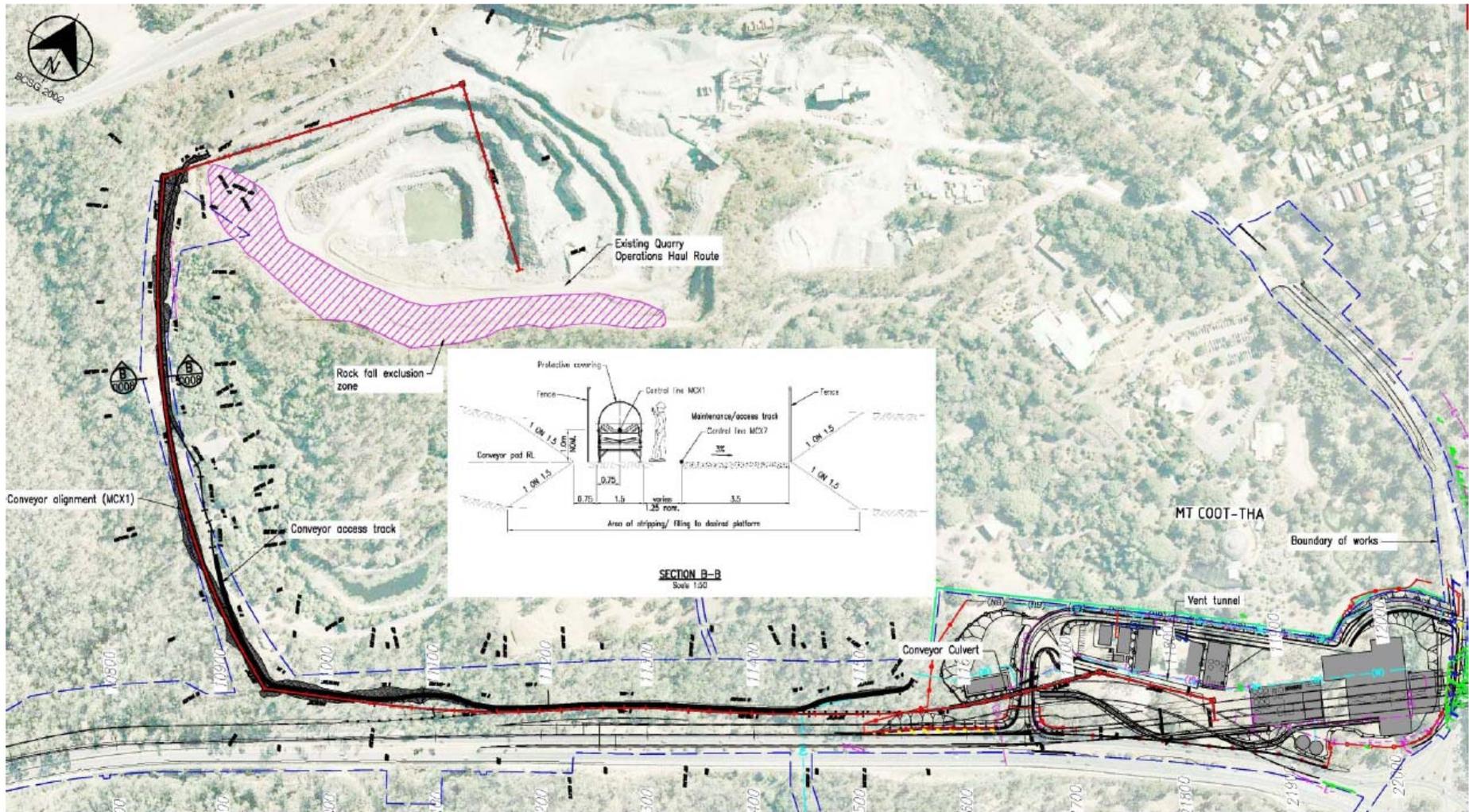


Figure 1.1 Current over-land soil conveyor system

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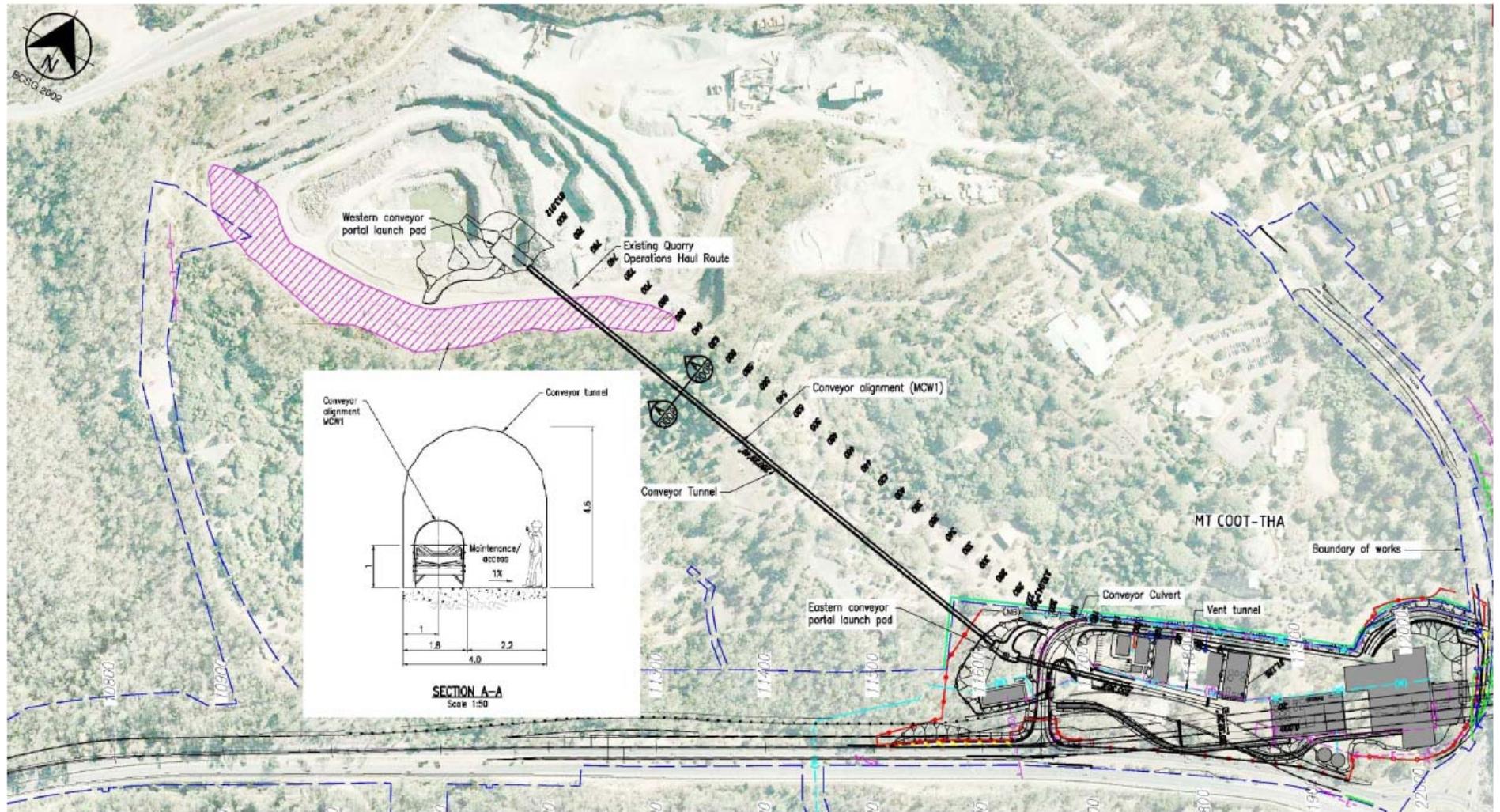


Figure 1.2 Proposed changed design—spoil conveyor tunnel

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## **1.4 Consultation on the change application**

### **1.4.1 Community consultation—BCC**

Section 8 of the APC details consultation undertaken to date on the proposal and confirms discussion on the matter has been raised recently at the project's monthly Community Liaison Group (Western) meetings. In addition, consultation with the Botanic Gardens Café, the Botanic Gardens and Mount Coot-tha Quarry has been undertaken by the proponent.

The APC provides community engagement will be undertaken should the proposal be approved to proceed. This engagement would need to satisfy existing conditions made on the project regarding the project's community communications strategy.

In addition, the project's existing conditions include the requirement to provide advance notice to sensitive receptors prior to blasting events. BCC has confirmed this would include businesses in the area.

### **1.4.2 Consultation on the APC**

Section 35G of the SDWPO Act provides that the Coordinator-General may decide if a proposed project change requires public notification. In the case of the spoil conveyor tunnel proposal, the Coordinator-General decided that this was not required.

This decision was made taking into account matters such as the technical nature of the proposed change; that no new landholders were affected by the proposal; and in consideration of existing conditions already made on the project to manage environmental and community effects.

Section 35F of the SDPWO Act provides that the Coordinator-General may consult with any parties about a proposed change. In the case of this application, comment was sought from the Department of Environment and Resource Management (DERM), and the Department of Transport and Main Roads (TMR) as advisory agencies.

As discussed, Transcity is consulting with the Mount Coot-tha Quarry and the Brisbane Botanic Gardens on the proposal. Given these entities are both managed by BCC, the proponent has a vested interest in ensuring the change could be effected in such a way that impacts to businesses are minimised.

Neither of the advisory agencies consulted raised concerns with the proposal proceeding. Specific advice provided by DERM is discussed in Section 2, Evaluation of environmental effects.



## 2 Evaluation of environmental effects

The APC discusses potential effects of the proposal. The following section considers these matters.

### 2.1 Truck movements

The APC states that in the currently approved design, approximately 964 000 bank cubic metres (bcm) of spoil would be delivered to the quarry, with around 303 000 bcm to be transported off site by truck from the western worksite.

Of the 303 000 bcm to be transported off site by haulage, approximately half of this amount (151 700 bcm) could not be accommodated within the quarry without compromising quarry activities. Removing this spoil would require approximately 11 700 truck movements. The remaining spoil would be transported off site, treated for re-use in construction of the tunnel and returned to site.

As a result of more detailed design and consultation with the quarry manager, Transcity found that revising the spoil placement zone within the existing quarry boundary, coupled with the conveyor tunnel allowing enhanced quarry spoil placement, the total volume of spoil from the TBM excavations not used in construction (1 115 700 bcm) could be placed into the quarry. This reduces proposed truck movements by around 11 700.

### 2.2 Emissions

It is noted the conveyor tunnel would require less electricity for its operation due to the shorter route and inclination. This would avoid around 1500 tonnes of carbon emissions; and fewer truck movements would also contribute to avoiding emissions.

### 2.3 Vegetation

While the over-land conveyor route largely followed cleared areas, the APC states around two hectares of vegetation within the botanic gardens would have required clearing to enable construction of the over-land conveyor.

The conveyor tunnel removes the requirement to clear this vegetation, and has the associated benefit of avoiding soil disturbance and possible erosion effects.

### 2.4 Groundwater

The APC states the project's investigations indicate that, in consideration of the hydrogeology of the area, low tunnel inflows are anticipated. Where any groundwater



inflows are encountered, grouting will be undertaken to ensure drawdown effects are negligible.

Condition 21 of the *Coordinator-General's report: Northern Link Road Tunnel* (April 2010) (Coordinator-General's report on the EIS) provides requirements for groundwater management which apply to the change.

## 2.5 Noise

The APC states the underground conveyor would operate under a protected cover while within the section that will become the ventilation station tunnel. The tunnel conveyor driver and transfer station at the entry portal would be housed in an acoustically attenuated enclosure and sunk into the ground to minimise noise emissions. The tunnel conveyor would emit no noise to the surface.

At the tunnel exit, the positioning of the discharge point to the spoil stacker in the quarry, being lower than the original proposal, would work to reduce noise impacts in the quarry.

As previously noted in conditions made on the project, works within the quarry are the responsibility of the quarry manager and are to be controlled in accordance with the existing quarry development permit, managed by DERM.

While spoil can be deposited into the quarry from the conveyor at all times when the TBMs are operating, the distribution of the spoil in the quarry, and use of associated machinery, is still limited to occur between 7 am and 5 pm, Monday to Friday.

While below-ground works are conditioned to occur at all hours, surface works could only occur during 6:30 am and 6:30 pm, Monday to Saturday.

## 2.6 Vibration

Existing conditions detail vibration levels, monitoring and reporting requirements. Condition 22 of the *Coordinator-General's report on the EIS* (Schedule 3) details that consultation with people in the vicinity of blasting works is to occur.

The condition also states blasting is only to occur during 7:30 am to 4:30 pm, Monday to Saturday.

The proponent will be required to obtain an Environmentally Relevant Activity permit for blasting from DERM, prior to the works occurring.



## 2.7 Dust

The APC states the only source of dust along the conveyor alignment would be at the entry portal transfer point. The proposed noise cover at this section would also reduce the dust generated. Existing conditions as made in the Coordinator-General's report on the EIS would apply to the conveyor works.

## 2.8 Reliability

The conveyor tunnel will have a maximum inclination of 6 per cent, compared with the over-land conveyor system's maximum of 17 per cent. With a shorter, straighter route than the over-land method, the conveyor tunnel's transfer points will be reduced from seven to four.

The APC states the design change should work to minimise the risk of breakdown of the conveyor system and associated downtime required for repairs.

## 2.9 Land use and rehabilitation

The Brisbane Botanic Gardens is owned as freehold land by BCC. As the site is listed on the Queensland Heritage Register, the proposal's impacts on cultural heritage values pursuant to the *Queensland Heritage Act 1992* will need to be assessed. DERM has confirmed BCC will need to apply to change the existing approval for development on a registered place, which was granted by the department in March 2011.

DERM has further confirmed existing conditions as made on the project, with regard to management of any contaminated land encountered during excavation of the spoil conveyor tunnel, would apply to the change.

The APC confirms the project will construct and rehabilitate the spoil conveyor tunnel area in such a way that manages the risk of degradation over time. The project will discuss with the botanic gardens options for re-using the tunnel—for example, to accommodate rainwater run-off from the quarry.



### 3 Conclusion

The change of design of the TBM spoil disposal system from above-ground to below-ground will further enhance the strong environmental benefits to be afforded by disposing of over one million bcm of spoil using a method other than road haulage.

The conveyor tunnel system will reduce potential noise impacts through removing the over-land system, and also by allowing a lower drop of spoil into the quarry. The change in how spoil will be deposited, coupled with the development of a better spoil placement strategy in the quarry void, will reduce potential truck movements by approximately 11 700 over the duration of the project—a positive outcome for the community.

The conveyor system's reduced incline and shorter route will save energy and, along with reducing truck traffic, will avoid carbon emissions.

Around two hectares of vegetation in the botanic gardens will not need to be removed, which is a clear benefit. Removing the need to construct in steep areas in the gardens will also avoid soil disturbance and the risk of erosion. The absence of the conveyor will also improve amenity for gardens visitors and people travelling on the Centenary Motorway.

While blasting over a five-month period will be required, this must be undertaken in accordance with existing conditions, with advance notification of sensitive receptors to be undertaken, and works to occur during limited hours. The proponent will be required to obtain a permit for blasting prior to the works occurring.

As previously noted in conditions made on the project, activities within the quarry are the responsibility of the quarry manager and are to be controlled in accordance with the existing quarry development permit, managed by DERM.

While underground construction of the conveyor tunnel and its use can occur at all hours, the mechanical distribution of spoil within the quarry remains limited to between 7 am and 5 pm, Monday to Friday.

As previously conditioned in the Coordinator-General's report, as a part of the project's consultation strategy the proponent is to consult with the community about the change prior to commencing the construction.

The spoil conveyor tunnel must be constructed and operated in accordance with existing conditions as made in the Coordinator-General's report, and subsequent change reports. These conditions control matters including, but not limited to, air, noise, vibration, water, safety, risk and hazard management. The Coordinator-General has determined that existing conditions are sufficient to manage impacts of the conveyor tunnel, and therefore no additional conditions are made in this report.



As per section 35K of the SDPWO Act, the Coordinator-General's report for the EIS for the project, and the Coordinator-General's change reports, have effect for the project.

As per section 35J of the SDPWO Act, a copy of this report will be given to the proponent and be made publicly available on the Department of Employment, Economic Development and Innovation's website at:

**[www.deedi.qld.gov.au/cg/legacy-way-project.html](http://www.deedi.qld.gov.au/cg/legacy-way-project.html)**

Signed personally

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Keith Davies  
Coordinator-General

Date: 18 August 2011

