



Australian Government

BUILDING OUR FUTURE



Hornsby Quarry Road Construction Spoil Management

Project overview



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Project overview

NorthConnex is a nine kilometre tunnel that will link the M1 Pacific Motorway at Wahroonga to the Hills M2 Motorway at West Pennant Hills.

Construction of NorthConnex will produce around 2.6 million cubic metres of spoil. Hornsby Quarry was one of six sites identified in the NorthConnex EIS as having the necessary capacity to receive spoil material generated by the project.

Roads and Maritime Services is proposing to handle, manage and beneficially reuse up to 1.5 million cubic metres of spoil from NorthConnex at Hornsby Quarry - an environmentally sustainable use for the spoil.

The project would cost around \$22 million and would be equally funded by the NSW and Federal governments and the Hornsby Shire Council. Work would be carried out by the Lend Lease Bouygues Joint Venture (LLBJV).

Project benefits

Partially filling the quarry with spoil from NorthConnex would:

- support Hornsby Shire Council's plan to rehabilitate the Hornsby Quarry site into a recreational facility for the local and regional community
- minimise the overall distances required for transporting the NorthConnex project spoil by around 3.7 million kilometres
- reduce the community's and Hornsby Shire Council's ongoing maintenance cost associated with quarry stabilisation.

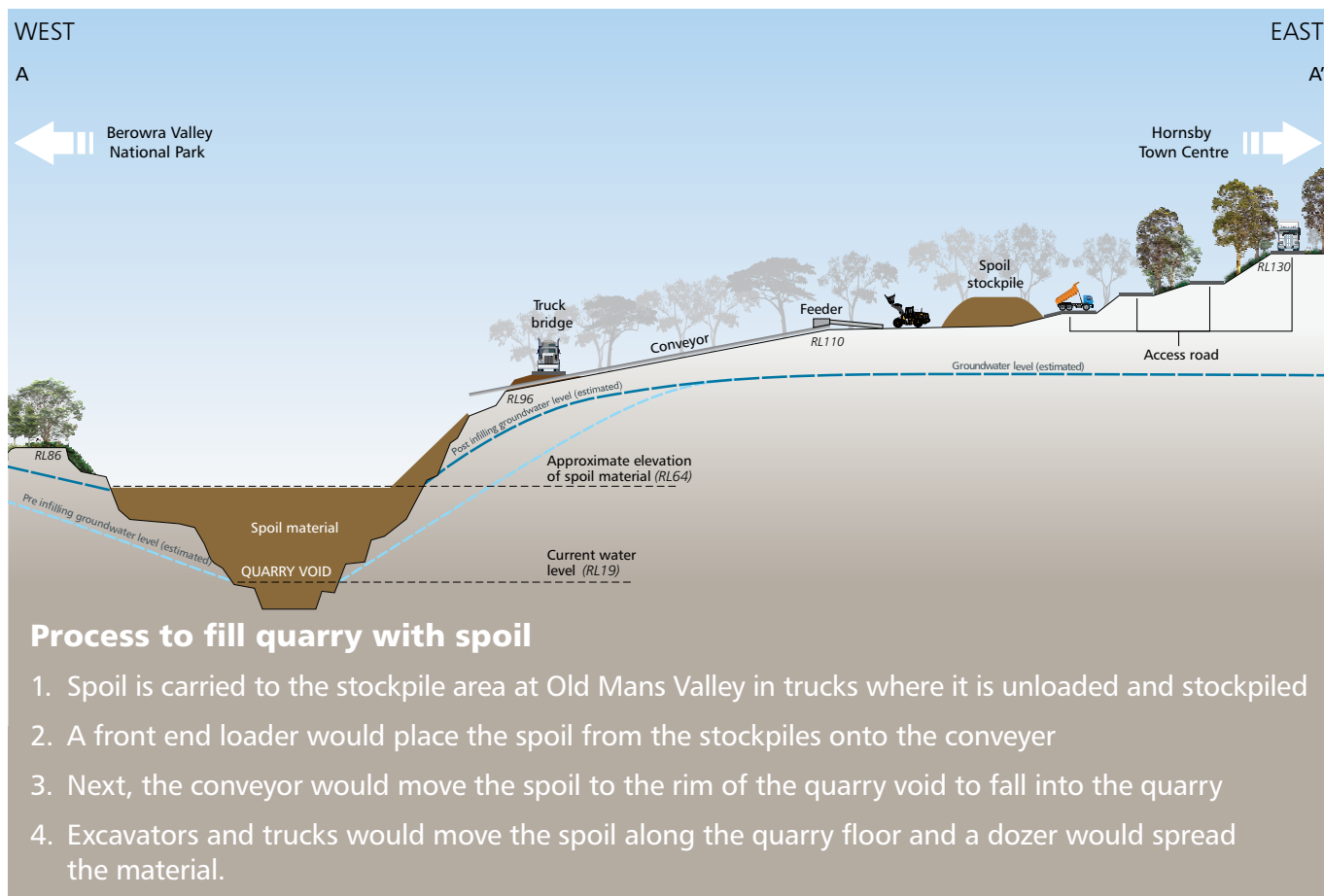
Construction activity

- Site establishment including:
 - Assessing and monitoring quarry wall stability
 - Dewatering the quarry
 - Reconfiguring some of the existing Hornsby Mountain Bike Trail and walking tracks
 - Clearing vegetation and establishing erosion and sediment controls
 - Security fencing and signage around the construction area
 - Establishing noise mounds about five metres high around key sections of the stockpiling areas
 - Widening of Bridge Road between the Hornsby TAFE and Roper Lane
 - Sealing the existing access track from Bridge Road to Old Mans Valley
 - Constructing a conveyor to transport spoil from the stockpile area at Old Mans Valley to the quarry floor.
- Hauling spoil by truck from the NorthConnex spoil locations to the quarry
- Stockpiling the spoil by dozer
- Filling the quarry with spoil
- Site demobilisation and rehabilitation including:
 - Rehabilitating disturbed areas
 - Removing security fencing and signage from the construction area and reinstating security fencing around the quarry
 - Reinstating public access to areas outside the quarry exclusion zone.

About Hornsby Quarry

The Hornsby Quarry site covers about 35 hectares and was a breccia hard rock quarry from the early 1900s until the late 1990s. In 2002, Hornsby Shire Council acquired the site from CSR Limited. The site is made up of the quarry void (the area where rock has been removed from the quarry in the past), internal access roads and a cleared area to the east which was a processing area when the quarry was operational. There are also disused quarry operational facilities including concrete office block buildings, a crushing and screening plant, a pipeline, security fencing and gates.

The site is zoned public recreation (RE1) under the *Hornsby Local Environmental Plan 2013* (Hornsby LEP). Council has opened the areas outside of the void safety exclusion zone for recreational activities including bushwalking and mountain biking. The void itself is steep, potentially unstable and flooded with groundwater. As a result, there is exclusion fencing around the void to prevent public access and ensure public safety.



Construction hours

All work and haulage associated with spoil management on site would be carried out during standard work hours:

- 7am to 6pm Mondays to Fridays
- 8am to 1pm Saturdays

- No work on Sundays or public holidays

Activities such as delivery of materials or oversized plant to the site, emergency work or equipment maintenance work may occur outside of the above hours.

Activity	Indicative timeframe			
	2015	2016	2017	2018
Site establishment work				
Establishment of conveyor				
Spoil haulage from tunnel project				
Operation of conveyor (pit filling)				
Site clean-up and demobilisation				

Project schedule

The project is expected to take about 33 months to complete, starting from late 2015, subject to project approval. Spoil haulage is expected to take a maximum of 28 months from early 2016 to mid-2018. This time frame is dependent on weather conditions and the progress of NorthConnex.

Haulage routes

A number of potential haulage routes were identified and considered based on the:

- Location of road construction compounds in relation to Hornsby Quarry
- Residential areas, sensitive receivers and Hornsby town centre
- Traffic network capacity and potential road upgrade requirements.

In consultation with Hornsby Shire Council, Roads and Maritime and Lendlease Bouygues accessing the site via Bridge Road was determined to be the preferred access option as it would minimise impact to the community and the local road network.

Analysis of haulage route options determined that vehicles departing Hornsby Quarry site and using George Street and Bridge Road to return to the NorthConnex construction sites during peak hours may add to existing traffic congestion. The use of George Street has been proposed for construction vehicles departing the quarry during non-peak hour periods of the day only. During peak hour periods, it is proposed that construction vehicles exiting the site would use Bridge Road, Jersey Street North, Yirra Road and Belmont Parade to the M1 Pacific Motorway.

Maintaining two haulage routes would allow for improved traffic management and scheduling and provide an alternative in the event of a traffic incident.

Routes are subject to further investigation as part of detailed design and community consultation during the EIS public exhibition.

Entering the quarry site

The heavy vehicles would use different haulage routes to enter the quarry site depending on whether they collect spoil from north or south of the M1 Pacific Motorway – Pennant Hills Road interchange.

Exiting the quarry site

Once the heavy vehicles have exited the site onto Bridge Road, the vehicles would use different haulage

routes during peak (7am to 10am and 3pm to 6pm Monday to Friday) and non-peak hours (10am to 3pm Monday to Friday; 8am to 1pm Saturday).

Only light vehicles (for construction personnel) and delivery trucks would access the site (in and out) via Quarry Road. However, heavy vehicles may be required to access the site from Quarry Road during:

- an emergency where entry and/or exit via Bridge Road is impeded due to vehicle breakdown.
- site establishment and demobilisation to transport plant and equipment.

No site activities or haulage to the site would occur during extreme weather events.

What is spoil?

Spoil is the term used for material removed from the ground during excavation. NorthConnex will generate significant quantities of clean spoil during excavation of the twin motorway tunnels. Only naturally occurring rock and soil (including materials such as sandstone, shale and clay) excavated from NorthConnex would be used to partially fill Hornsby Quarry.

Roads and Maritime is proposing to only use spoil classified as virgin excavated natural material (VENM) and excavated natural material (ENM) to partially fill Hornsby Quarry.

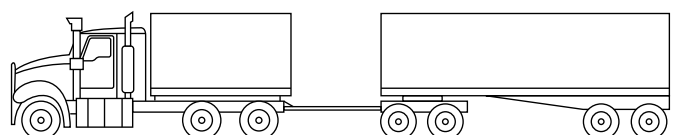
What trucks would be used to carry spoil?

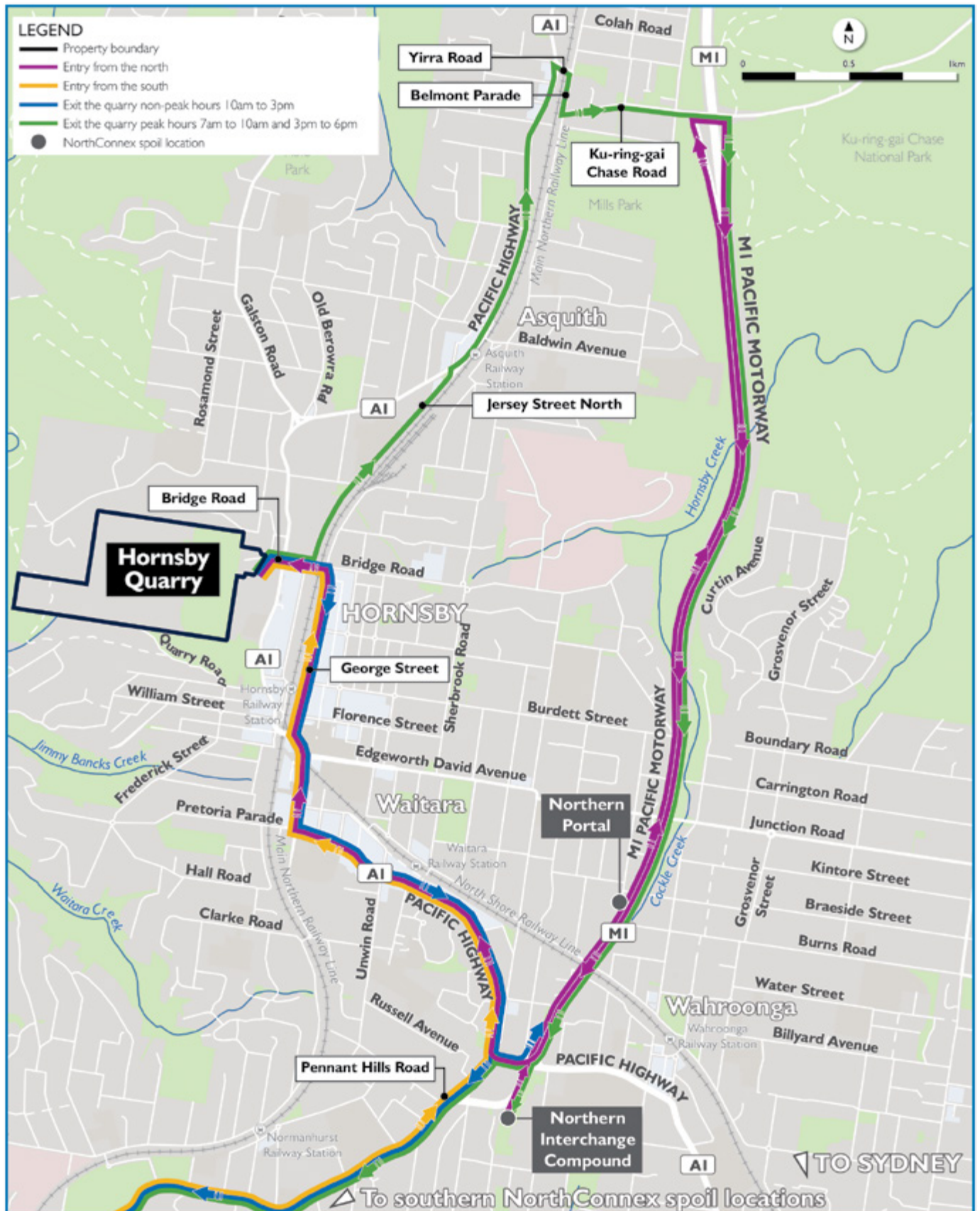
The trucks used to haul spoil are called “Custom Truck & Dogs”.

They consist of two “vehicles” – a prime mover drawbar vehicle with three axles, and a quad dog trailer with four axles. The overall length of prime mover and trailer is around 9.5 metres and 5.3 metres, respectively. The entire length is around 17.5 metres.

It will carry around 33 tonnes of spoil material with a total gross mass of 50.5 tonnes.

Prime mover drawbar vehicle with quad dog trailer





Proposed haulage routes

Traffic impact

Truck volumes during peak hours were initially anticipated to be around 50 trucks per hour. However, during design development and further analysis, truck volumes were optimised to balance the requirements of the project with the need to minimise impact on the community.

The **maximum** potential number of spoil haulage trucks accessing the quarry site per day during construction peak would be 385 (770 vehicle movements). On a per hour basis this equates to a maximum of 35 vehicles (70 movements).

A traffic impact assessment was completed to identify and assess potential impacts and management measures associated with the project.

The number of vehicles associated with the project is low compared to existing traffic volumes on the road network. The traffic assessment showed most locations in the road network would operate within capacity with the addition of project traffic. There are two exceptions:

1. the intersection of the M1 Pacific Motorway and the Pacific Highway (in the PM peak), which would be operating near capacity
2. the intersection of Pennant Hills Road and the Pacific Highway (in the AM peak), which would be at capacity and require traffic management and additional controls.

Background growth alone (i.e. without the project) accounts for part of this increased travel time.

The traffic assessment shows there may be a decrease in level of service at the intersections of the Pacific Highway and Bridge Road (in the AM and PM peaks)

and the Pacific Highway and Yirra Road (in the PM peak), resulting in an increased traffic delay of around 28 and 17 seconds respectively.



The project would contribute:

- One per cent of forecast 2016 total daily traffic on the Pacific Highway (south of Yirra Road).
- Three per cent of forecast 2016 total daily traffic on the Pacific Highway (east of College Crescent)

Bridge Road work would include:

- Widening of the road between the Hornsby TAFE and Roper Lane to about 14 metres, which would be graded and sealed
- Widening and sealing an existing access track between Old Mans Valley and Bridge Road to construction standard
- Sealing of internal access tracks within the stockpile area
- All other existing access tracks would remain in their current state.

Phase	Daily heavy vehicles (and movements)	Daily light vehicles (and movements)
Preparatory work	10 (20)	10 (20)
Site establishment work	20 (40)	25 (50)
Establishment of conveyor	20 (40)	25 (50)
Spoil haulage and transfer activities	385 (770)	20 (40)
Site clean-up, demobilisation and rehabilitation	20 (40)	20 (40)

Table 6-11 Traffic volumes in each phase of the project

Closure of Roper Lane connection to Bridge Road is proposed for safety reasons. Roper Lane residents and connecting streets would need to use alternative routes via Summers Avenue and Watsons Avenue which provides for all movements to access the Pacific Highway/Peats Ferry Road. Signalised access is available via Galston Road.

Roads and Maritime is working closely with Hornsby Shire Council to provide appropriate signalised intersections to ensure the impact of Roper Lane is minimised.

Mitigation measures

A detailed Traffic Management Plan would be developed as part of the Construction Environmental Management Plan to minimise the impact of construction vehicles on existing traffic. Management strategies include:

- driver protocols to ensure appropriate driver behaviour that adheres to all road rules and speed limits (e.g. school zones) along haulage routes
- safe access for pedestrians and other users (e.g. Hornsby TAFE car park users, users of the Hornsby Mountain Bike Trails)
- The consideration of a vehicle control point to minimise the potential conflict between TAFE and construction traffic along Bridge Road. The project team is consulting with TAFE to consider their requirements and management protocols currently in place. On the steep section of Bridge Road, controls would be put in place to separate TAFE vehicles from construction vehicles during spoil haulage times.



All roads would be inspected and maintained to an acceptable condition. At the completion of the project, road surfaces would be rehabilitated to their existing standard or better.

Further information can be found in Section 6.1 and Appendix C of the EIS.

Pedestrian, cyclist and on-street parking access

For public safety, pedestrian and cyclist access on Bridge Road between Roper Lane and the quarry would be restricted. Access to the TAFE would be maintained from Peats Ferry Road.

There would also be parking restrictions for around 12 car parks during construction.

There may be further car park restrictions on Bridge Road between Pacific Highway and Roper Lane for safe two way traffic, however this would be confirmed during detailed design.

The project team will consult with residents and NSW TAFE regarding these restrictions.

Noise and vibration

A detailed noise and vibration assessment has been completed to assess the impact of the proposed work associated with site establishment, spoil haulage and placement and site demobilisation. This assessment was based on the worst case scenario (assuming all machinery and plant would be operating simultaneously and at the closest point to sensitive receivers).

The handling and management of spoil at the Hornsby Quarry site may result in the following noise and vibration issues:

- Airborne noise from the quarry site during each phase of the project
- Traffic noise from heavy vehicles for spoil haulage and other construction vehicles
- Cumulative noise impacts when concurrent construction activities are being carried out (spoil haulage and stockpiling with conveyer construction; spoil haulage and stockpiling with spoil placement)
- Vibration impact from the quarry site during each phase of the project.

Traffic noise from spoil haulage on Pacific Highway would remain compliant with the applicable noise criteria.

Traffic noise from spoil haulage on Bridge Road is likely to increase noise levels by up to 10 dB(A). In consultation with impacted residents on Bridge Road, the project team will consider feasible and reasonable measures to minimise noise impact.

The noise impact of the project activities would be consistent with other construction projects including NorthConnex.



Example of a noise logger

Mitigation measures include:

The Construction Noise and Vibration Management Plan will detail measures to manage and mitigate predicted noise levels which include:

- Establishing noise mounds about five metres high surrounding key sections of the stockpiling area
- Adherence to all noise conditions specified in the Minister for Planning's Conditions of Approval for the project
- Use of a modern fleet for the haulage of spoil and no compression braking permitted by drivers
- Respite periods for high noise impact activities on the quarry site
- Noise monitoring program to confirm level of impact especially at sensitive locations.

Further information can be found in Section 6.2 and Appendix D of the EIS.

Air quality

The proposed work would generate dust during spoil stockpiling and transfer activities. Dust-generating activities include handling of material from spoil haulage trucks, transfer of spoil from temporary stockpiles to the conveyor and the distribution of spoil within the quarry void. Measures for managing dust would include:

- Sealing haul roads and internal site roads
- Regularly watering down roads with water carts
- Spraying water on spoil stockpiles and conveyor transfer points
- Stabilising exposed surfaces
- Installing wind barriers, such as shade cloth on site perimeter fencing
- Managing speed limits on internal site roads
- Implementing a formal dust observation program including daily reviews of weather forecasts, observations of meteorological conditions and on site dust generation.

An air quality assessment was carried out in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants (Approved methods) (DEC, 2005) and the National Environment Protection Measure for Ambient Air Quality (Air NEPM) (NEPC, 2003). Air quality modelling included:

- Predicted pollutant (vehicles emissions) and particulate matter (dust) levels resulting from the project
- Predicted project contribution to pollutant levels and the cumulative concentration (background plus project contribution) for each pollutant.

The air quality assessment carried out for the project concluded that emissions generated by vehicles and construction machinery would have a negligible impact on the surrounding air quality.

The assessment of combustion emissions from haulage trucks travelling from the NorthConnex Project to the Hornsby Quarry site found the impact on receptors adjacent to haulage routes would be negligible.

Project contributions to local air quality would be below the established criteria for all key pollutants.

However, background air quality monitoring data indicates there are some occasions when background concentrations of particulate matter (PM_{10} and $PM_{2.5}$) are already high. On these occasions, there is potential for a cumulative exceedance (project contribution plus background) of the applicable criteria and advisory reporting standards. This could occur up to two times per year based on the unlikely worst case scenario used in the air quality modelling.

The project only contributes small quantities of PM_{10} and $PM_{2.5}$ to the predicted exceedances.

In the case of the annual average $PM_{2.5}$ concentration, which is the most important factor for health risks, the project would contribute a maximum of $1.4 \mu g/m^3$. This is well below the applicable advisory reporting standard of $8 \mu g/m^3$.

Modelling was based on worst case scenario which takes into account stockpiling and quarry void filling activities occurring at the same time. It does not take into account the additional mitigation measures outlined in the comprehensive dust management plan which will be implemented and include:

- A reactive management strategy with site procedures for targeting the visual observation of dust leaving the site or temporary limiting of high dust generating activities on site
- Contingency measures such as additional watering, covering stockpiles, temporary modifications to dust generating activities and temporary reductions in materials handling intensity.

The project includes best practice mitigation measures ensuring that there will not be significant health impacts in the local community.

Further information can be found in Section 7.1 and Appendix E of the EIS.

Health impacts

The health risk assessment for the project assessed the potential risk to human health associated with air quality, noise and vibration impacts. The primary sources of potential impacts relate to dust emissions, vehicle emissions and noise.

All predicted concentrations of carbon monoxide, nitrogen dioxide, key individual volatile organic compounds and polycyclic aromatic hydrocarbons in the local community are below health based guidelines.

The fine particulate component of dust (PM_{10} and $PM_{2.5}$) has been linked to health impacts. The health assessment was based on the worst case scenario and the maximum risks associated with exposure to $PM_{2.5}$ are generally considered to be tolerable.

Where standard mitigation measures are applied, risks from activities at the quarry site are considered acceptable. Impacts are proposed to be further minimised through dust management and mitigation measures outlined in a comprehensive dust management plan described above.

The project includes best practice mitigation measures ensuring that there will not be significant health impacts in the local community.

The air quality assessment identifies management measures to ensure silica dust particles do not exceed the national exposure standard of $0.1 mg/m^3$. No adverse health impacts are expected as a result of exposure to silica emissions from the project.

Further information can be found in Section 7.2 and Appendix F of the EIS.

Mountain bike trails

During the proposed work, some of the mountain bike trails would need to be reconfigured or closed for the public safety. The easy and intermediate mountain bike trails would need to be closed and the expert trail reconfigured to maintain appropriate access. A map of proposed access to the mountain bike trails for the duration of the project is included in the EIS.

The project team have been working closely with Sydney North Off Road Cyclists and Hornsby Shire Council.

The project would use appropriate signage before and during work to advise the community of the changes and alternative access to mountain bike trails.

Other environmental impacts

Social and economic impact

Residential and commercial properties, places of worship, educational facilities, health care facilities, aged care facilities and recreational and open space areas along the haulage routes would experience some impact. A social and economic impact assessment for the project was completed to assess potential impacts on local businesses and amenity.

During the project there is the potential for temporary negative impact on businesses including amenity impact and changes in accessibility to businesses due to traffic congestion. This impact is expected to be short term.

The project has the potential to positively impact the local and regional economy by reducing the ongoing costs for the maintenance of the Hornsby Quarry site currently incurred by the Hornsby Shire Council and the community. There are also potential long term benefits for local businesses from increased recreational tourism at the redeveloped quarry site

Further information can be found in Section 7.4 and Appendix H of the EIS.

Water quality

Previous studies have shown the quality of water in the void is very good. Water quality testing would be carried out to monitor the quality of water pumped from the quarry. Water pumped from the quarry void would be used for dust suppression where possible. Any water to be discharged from the site would be treated, if required, discharged to Old Mans Creek in accordance with Council's existing groundwater licence.

Further information can be found in Section 6.4 and Appendix N of the EIS.

Flora and fauna

The project is designed to avoid and/or minimise impact to areas of ecological value. Infrastructure is being located in already disturbed/cleared areas where possible. Some vegetation would need to be removed to allow for truck movements in and out of the quarry, installation of the conveyor and stockpiling.

A Flora and Fauna Management Plan would be developed to identify potential impact and management measures. The project would minimise ecological impact by:

- Avoiding disturbance and clearance of native vegetation as far as possible
- Installing nest boxes to replace potential loss of hollow bearing trees
- Conducting pre-clearance surveys for threatened flora and fauna
- Establishing exclusion zones to prevent additional disturbance during work
- Where possible, storing and reusing topsoil and habitat elements, such as woody debris and bushrock, onsite or in adjacent bushland.

A biodiversity offset strategy would be prepared to compensate for residual impacts that cannot be mitigated such as loss of Blue Gum High Forest (critically endangered), Sandstone Blackbutt Woodland (endangered) and habitat for Gang-gang Cockatoos.



Sandstone Blackbutt Woodland

Further information can be found in Section 7.3 and Appendix G of the EIS.

Aquatic and riparian species

A fauna protection protocol would be prepared to mitigate impact to aquatic fauna during the void dewatering. This protocol is intended to provide protection for any aquatic fauna that may be stranded as a result of dewatering of the void. No threatened species are expected.

Further information can be found in Section 7.3 and Appendix G of the EIS.

Hornsby Diatreme

The sight lines to the diatreme in Hornsby Quarry and surrounding vegetation would be altered due to spoil placement in the quarry void. It is unlikely spoil placement would damage the heritage item. The final spoil fill level is expected to still provide partial views of the diatreme, and the portion of the diatreme obscured from view would be protected by the spoil material.

Further information can be found in Section 7.6 and Appendix I of the EIS.



The planning and environmental assessment process

An EIS has been prepared in accordance with Part 5.1 of the NSW Environmental Planning and Assessment Act 1979.

It outlines the key features of Hornsby Quarry project and potential environmental and social impacts during construction and operation. Importantly, it also outlines measures to minimise and manage potential impacts.

This EIS will be on exhibition for a period of 30 days for public comment. The exhibition process plays a vital role for the project's development by providing an opportunity for the community to have their say. Community comment is welcomed during the exhibition period through a formal submission process.

All interested parties are encouraged to make a submission to the NSW Department of Planning and Environment (DPE) on the project during

the public exhibition. The EIS is available to view electronically at

www.rms.nsw.gov.au/hornsbyquarry
or in hard copy at locations detailed on the project website.

To make a submission on the EIS, please send your comments in writing to the DPE by **4 September 2015**.

Lodge your submission online:

www.majorprojectsplanning.nsw.gov.au

Post your submission to:

**Director – Infrastructure Projects
Department of Planning and Environment
Application number – SSI 15_7066
Major Projects Assessment
GPO Box 39 Sydney NSW 2001**



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Hindi

यदि इस जानकारी को समझने में आपको मदद की जरूरत है, तो कृपया अनुवाद एवं बुझाविका सेवा को 131 450 पर संपर्क करें और उन्हें हमें 1800 093 090 पर फोन करने के लिए कहें।

Korean

이 정보를 이해하는 데 도움이 필요하시면 131 450 번으로 통번역 서비스에 연락하시거나 1800 093 090 번으로 전화해달라고 요청하십시오.

Persian

اگر برای درک این اطلاعات نیاز به کمک دارید، لطفاً با خدمات ترجمه کتبی و شفاهی به شماره 131450 تماس بگیرید و از آنها بخواهید با ما به شماره 1800 093 090 تماس بگیرند.

Simplified Chinese

如果你理解这些信息需要帮助，请致电 131 450 联系笔译和口译服务处，让他们拨打 1800 093 090 联系我们。

Traditional Chinese

如果您需要幫助來了解此信息，請聯繫筆譯及口譯服務 131 450，並要求他們撥打 1800 093 090 來聯系我們。

Contact us

For more information, please contact the project team on:



1800 093 090 (free call)



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August 2015
RMS 15.292



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