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What is NorthConnex?
NorthConnex is a nine kilometre tunnel that will link the M1 Pacific Motorway at Wahroonga to the Hills M2 Motorway at West Pennant Hills, removing around 5,000 trucks daily off Pennant Hills Road.

The nine kilometre tunnel motorway includes interchanges to the north and south to accommodate connections at either end of the project. When complete in 2019, it will link Sydney’s north to the Orbital road network and enable travel from Newcastle (M1) to Melbourne without a single set of traffic lights.

NorthConnex will also boost the state and national economies by providing more reliable journeys and shorter travel times for the movement of freight.

Construction Progress
The NorthConnex project team is making good progress, with site establishment underway at all major compounds. Piling in preparation for excavating tunnel shafts is complete at the Southern Interchange, Wilson Road and Northern Interchange compounds, with piling work at the Trelawney Street compound expected to start in early 2016.

Excavating Tunnel Shafts
In 2016, the project team will be excavating shafts to reach the required tunnel depth using rock breaking and controlled blasting methods:

• A combination of rock breaking and controlled blasting will be used to excavate the tunnel shafts at the Northern Interchange, Wilson Road and Trelawney Street compounds.

• At the Southern Interchange compound, rock breaking will be used to excavate the tunnel shafts due to the softer composition of rock on the site and shallower depths of the tunnel.

Controlled blasting is the most efficient method of excavating deep tunnel shafts as it will significantly reduce overall noise and vibration impacts on the local community and the time required to excavate the tunnel shaft.

While some rock breaking will still be required, 85 per cent of the excavation will be done by controlled blasting. Seismic tests at the Northern Interchange and Wilson Road compounds took place in late 2015 to confirm the effectiveness of this method.

A shaft on NorthConnex can be up to 90 metres deep before roadheaders start to excavate the main road alignment.

The tunnel depth of the shaft at each location is:

<table>
<thead>
<tr>
<th>Compound</th>
<th>Shaft depth (around)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Interchange</td>
<td></td>
</tr>
<tr>
<td>• Tunnel shaft</td>
<td>30 metres</td>
</tr>
<tr>
<td>• On ramp entry to tunnel</td>
<td>12 metres</td>
</tr>
<tr>
<td>*The Southern Interchange has a double shaft that stops at two levels</td>
<td></td>
</tr>
<tr>
<td>Wilson Road</td>
<td>90 metres</td>
</tr>
<tr>
<td>Trelawney Street</td>
<td>57 metres</td>
</tr>
<tr>
<td>Northern Interchange</td>
<td>44 metres</td>
</tr>
</tbody>
</table>

When the required depth is reached, excavation machines called road headers will be lowered into the shaft. The excavated rock is then transported from the tunnel to the surface by a conveyor belt and removed off site by trucks.

Eighteen road headers will be launched across the four tunnelling sites to construct the tunnels starting in 2016.
**Rock breaking**
Rock breaking is done by excavators with a hammer attachment. This method is used to remove softer rock that is suited to this type of excavation rather than blasting.

Rock breaking can be noisy for residents living near construction compounds. A one hour break after every three hours of consecutive rock breaking will be provided to give residents some respite from the noise impacts. Residents will be given advance notice in the unlikely event that rock breaking is required outside of standard construction hours.

**Controlled blasting**
Controlled blasting is scheduled to start in the first quarter of 2016. Residents who live within a 120 metre radius of the site compounds may feel some slight and momentary vibration during the controlled blasts. The impact would be similar to the vibration of a tennis ball bouncing on a table.


**Acoustic sheds**
Temporary acoustic sheds will be erected on site to enclose all out of hours tunnelling and spoil handling. The walls of the sheds are made of steel cladding and include acoustic insulation. They are custom built for each site.

**Managing noise and vibration impacts**

NorthConnex has developed a *Construction Noise and Vibration Management Plan* to assist the project to meet these guidelines including:

- Where possible rock breaking will take place during standard construction hours
- Any construction proposed to take place outside standard construction hours will be subject to an approval process on a case by case basis
- Building acoustic sheds and noise hoardings to reduce noise and dust
- Layers of buffer material cover controlled blasting sites, which will significantly reduce dust as well as decrease noise and vibration
- Guidance on safe working distances for vibratory equipment
- Availability of respite for residents most affected by noise and vibration impacts associated with rock breaking.

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**What’s happening across the project**

<table>
<thead>
<tr>
<th>Compound Site</th>
<th>Construction Activities</th>
<th>What’s Coming Up</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Southern Interchange</strong></td>
<td>Site establishment started in July 2015. Work includes:</td>
<td>Construction of acoustic shed</td>
</tr>
<tr>
<td></td>
<td>• Delivery of machinery and materials to the site</td>
<td>Creation of a new signalised entrance to the site from Pennant Hills Road</td>
</tr>
<tr>
<td></td>
<td>• Site clearing</td>
<td>Excavation of tunnel shafts:</td>
</tr>
<tr>
<td></td>
<td>• Fencing</td>
<td>• Rock breaking will be carried out at a rate of around 600m$^3$ of spoil per week</td>
</tr>
<tr>
<td></td>
<td>• Installation of noise hoardings</td>
<td>• The excavation of the shaft and ramp entry to the tunnel is expected to</td>
</tr>
<tr>
<td></td>
<td>• Establishment of site facilities</td>
<td>generate around 9,000m$^3$ of spoil</td>
</tr>
<tr>
<td></td>
<td>• Piling to support excavation of tunnel shafts and foundations of acoustic shed.</td>
<td>• Spoil removal will occur during the day only and be transported off site three</td>
</tr>
<tr>
<td></td>
<td></td>
<td>days a week</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Truck movements will be around eight trucks in and out per hour during spoil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>removal.</td>
</tr>
<tr>
<td><strong>Northern Interchange</strong></td>
<td>Site establishment started in July 2015. Work includes:</td>
<td>Construction of acoustic shed</td>
</tr>
<tr>
<td></td>
<td>• Delivery of machinery and materials to the site</td>
<td>Excavation of tunnel shafts using rock breaking and controlled blasting:</td>
</tr>
<tr>
<td></td>
<td>• Site clearing</td>
<td>• Rock breaking will be carried out at a rate of around 600m$^3$ of spoil per week</td>
</tr>
<tr>
<td></td>
<td>• Fencing</td>
<td>• Controlled blasting will allow for the excavation of 800m$^3$ of spoil per week</td>
</tr>
<tr>
<td></td>
<td>• Installation of three metre noise walls</td>
<td>• The excavation of the tunnel shaft is expected to generate around 9,000m$^3$ of</td>
</tr>
<tr>
<td></td>
<td>• Establishment of site facilities</td>
<td>spoil</td>
</tr>
<tr>
<td></td>
<td>• Piling to support excavation of tunnel shafts and foundations of acoustic shed</td>
<td>• Spoil removal will occur during the day only and spoil transported off site two</td>
</tr>
<tr>
<td></td>
<td>• Excavation of shaft to enable tunnelling.</td>
<td>out of five days</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Truck movements will be around ten trucks in and out per hour during spoil</td>
</tr>
<tr>
<td></td>
<td></td>
<td>removal.</td>
</tr>
<tr>
<td>Compound Site</td>
<td>Construction Activities</td>
<td>What’s Coming Up</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------------------</td>
<td>-----------------</td>
</tr>
</tbody>
</table>
| Wilson Road   | Site establishment started in July 2015. Work includes:  
• Piling to support excavation of tunnel shafts and foundations of acoustic shed  
• Construction of acoustic shed. | Construction of access off Pennant Hills Road into the compound  
Excavation of tunnel shafts using rock breaking and controlled blasting:  
• Rock breaking will be carried out at a rate of around 600m³ of spoil per week  
• Controlled blasting will allow for the excavation of 800m³ of spoil per week  
• The excavation of the tunnel shaft is expected to generate around 16,000m³ of spoil  
• Spoil removal will occur during the day only and spoil transported off site two out of five days  
• Truck movements will be around ten trucks in and out per hour during spoil removal. |
| Pioneer Avenue| Clearing trees and vegetation from the site at 1 Pioneer Avenue  
Removing buildings and structures such as shed and internal fences from 1 Pioneer Avenue. | Establishment of carpark facilities  
Installation of temporary buildings on site. |
| Trelawney Street | Site establishment started in August 2015.  
Work includes:  
• Removal of buildings and structures  
• Vegetation clearing  
• Utility investigations (night work). | Night work to construct deceleration and acceleration lanes on Pennant Hills Road  
Piling to support excavation of tunnel shafts and foundations of acoustic shed  
Construction of acoustic shed  
Excavation of tunnel shafts using rock breaking and controlled blasting:  
• Rock breaking will be carried out at a rate of around 600m³ of spoil per week  
• Controlled blasting will allow for the excavation of 800m³ of spoil per week  
• The excavation of the tunnel shaft is expected to generate around 11,000m³ of spoil  
• Spoil removal will occur during the day only and spoil transported off site two out of five days  
• Truck movements will be around ten trucks in and out per hour during spoil removal. |
| M2 integration work | Potholing for utility investigations on the Hills M2 Motorway on and off-ramps and median  
Trenching work along median and the Hills M2 Motorway on-ramp to connect communications and power  
Modification to traffic island and reconstruction of the Hills M2 Motorway on-ramp  
Removal of barriers, line marking and installation of new barriers on the Hills M2 Motorway on and off-ramps  
Modifications to existing tolling gantries, including cabling and commissioning of gantries. | Establishment of safety barriers on the westbound shoulder and protection of utilities on the motorway, including removal of existing retaining walls  
Establishment of site compounds at Darling Mills Creek, Yale Close Bridge and Barclay Road  
Modifications to cycle detour in preparation for the closure of the M2 cycle path in early 2016 between Pennant Hills Road and Windsor Road westbound  
Closure of the bus lane between Pennant Hills Road and Windsor Road. |
Community Involvement Groups (CIGs)

Two CIGs (Northern and Southern/Hills M2) have been established to enable members of the community to discuss the project and provide feedback to the project team on the management of the impacts from construction activities. Each CIG is made up of around 10-15 members and chaired by an independent chairperson. The CIGs have met three times since August 2015 and will meet again in the new year.

CIG members include representatives from the community, nearby businesses, the NorthConnex Project Company, Roads and Maritime Services and Lendlease Bouygues Joint Venture.

New Display Centre

The NorthConnex display centre has moved from its previous location into a bigger and brighter space.

We are at 118 Yarrara Road, Pennant Hills and open on Monday to Friday from 9am to 5pm and the last Saturday of the month from 10am to 1pm.

Information about the project is available for you to view and members of the project team are available to answer questions.

More questions?

Contact Us

The NorthConnex project team is committed to working closely with you to inform you of upcoming work over the course of the project and to minimise impact from our construction activities.

For further information on NorthConnex please don’t hesitate to contact members of the project team by:

Phone: 1800 997 057
Email: enquiries@northconnex.com.au
Website: www.northconnex.com.au
Mail: Locked Bag 1001, West Pennant Hills NSW 2125

Visit: NorthConnex community information centre, 118 Yarrara Road, Pennant Hills. Monday to Friday from 9am to 5pm and the last Saturday of the month from 10am to 1pm.

Privacy Statement

By providing your personal information to us you consent to your personal information being collected, held, used and disclosed by us in accordance with our NorthConnex Community Engagement Database Privacy Policy available at http://www.northconnex.com.au/privacy.php

If you require the services of an interpreter, please contact the Translating and Interpreting Service (TIS International) on 131 450 and ask them to call the NorthConnex Project Team on 1800 997 057 - the interpreter will then assist you with the translation.

TIS International business hours are 9am to 5pm Monday to Friday.