

Executive Summary

What is proposed?

Roads and Maritime Services (Roads and Maritime) is proposing to construct and operate a tolled motorway linking the M1 Pacific Motorway at Wahroonga to the Hills M2 Motorway at West Pennant Hills. The project would deliver a high standard motorway that integrates with the regional transport network.

The project would comprise the following key features:

- Twin motorway tunnels around nine kilometres in length with two lanes in each direction and provision for a third lane in each direction if required in the future.
- A northern interchange with the M1 Pacific Motorway and Pennant Hills Road, including sections of tunnel for on-ramps and off-ramps, which also facilitate access to and from the Pacific Highway.
- A southern interchange with the Hills M2 Motorway and Pennant Hills Road including sections of on-ramps and off-ramps.
- Integration works with the Hills M2 Motorway including alterations to the eastbound carriageway to accommodate traffic leaving the Hills M2 Motorway to connect the project travelling northbound and the provision of a new westbound lane on the Hills M2 Motorway extending through to the Windsor Road off-ramp.
- Tie-in works with the M1 Pacific Motorway extending to the north of Edgeworth David Avenue.
- A motorway control centre located near the southern interchange on the corner of Eaton Road and Pennant Hills Road that includes operation and maintenance facilities.
- Two tunnel support facilities incorporating emergency smoke extraction outlets and substations.
- Ancillary facilities for motorway operation, such as electronic tolling facilities, signage, ventilation systems and fire and life safety systems including emergency evacuation infrastructure.
- Modifications to service utilities and associated works at surface roads near the two interchanges and operational ancillary facilities.
- Modifications to local roads, including widening of Eaton Road near the southern interchange and repositioning of the Hewitt Avenue cul-de-sac near the northern interchange.
- Ancillary temporary construction facilities and temporary works to facilitate the construction of the project.

What are the project objectives?

The project objectives have been developed based on the objectives established during the options analysis. These objectives, which incorporate environmental, social and economic considerations, are as follows:

- Provide a high standard access controlled motorway that integrates with the regional transport network.
- Minimise adverse social and environmental impacts in the local area during construction and operation.
- Provide opportunities for improved public transport in the area around Pennant Hills Road.
- Assist in a reduction in traffic congestion, particularly along Pennant Hills Road, and provide shorter travel times for road users.
- Provide a motorway that is safe and reliable for road users.
- Contribute towards the achievement of the national objective of connecting Melbourne to Brisbane via a duplicated highway in order to improve the efficient movement of state and national freight, and in doing so, reduce costs for freight operators and carriers.
- Contribute towards a reduction in the number of heavy vehicles using Pennant Hills Road and as a result improve local air quality and noise amenity along that corridor.
- Demonstrate excellence in design and environmental sustainability.
- Be economically justified and affordable to government.

Why is it needed?

Pennant Hills Road between the M1 Pacific Motorway and Hills M2 Motorway forms part of the National Land Transport Network and is one of the two remaining sections of the network within Sydney that is not of motorway standard. Vehicles using Pennant Hills Road between the M1 Pacific Motorway and Hills M2 Motorway share the road with heavy vehicles utilising the corridor to transport freight to, from or through Sydney to major cities and regional centres. As Sydney's population and economy continue to grow, there will be greater pressure to improve the efficiency of the National Land Transport Network to service expanding commercial centres and cater for local district freight transport demands.

Heavy traffic flows and congestion along Pennant Hills Road during commuter peak periods and business hours results in low average travel speeds, unreliable travel times and disruptions to inter-regional traffic movements. These conditions result in social and environmental impacts, including community severance, traffic noise and exhaust emissions. Pennant Hills Road, which is already operating at or beyond capacity during peak periods, is expected to experience continued traffic growth in the future.

The project is needed to provide a safer and more efficient link between the M1 Pacific Motorway and the Hills M2 Motorway that would better service current and future road users.

How would the project satisfy this need?

The operation of the project would provide an alternative and more efficient route for travel between the M1 Pacific Motorway and the Hills M2 Motorway, improving access, connectivity and reliability of inter-regional freight across the greater Sydney area. In providing an alternative route the project would also reduce interaction between freight and other road users, thereby reducing congestion and improving safety and amenity along Pennant Hills Road.

The project would:

- Reduce heavy vehicle travel on Pennant Hills Road.
- Improve traffic flow and intersection performance.
- Reduce crash rates.
- Improve road safety for pedestrians, cyclists and motorists.
- Improve travel times for bus services and motorists.

Why is it a Part 5.1 project?

Clause 94 of *State Environmental Planning Policy (Infrastructure) 2007* permits development for the purpose of a road or road infrastructure facilities to be carried out on any land by or on behalf of a public authority without consent. The project is therefore permissible without development consent.

On the 25 October 2013 the project was declared by Ministerial Order to be State significant infrastructure and critical State significant infrastructure under sections 115U (4) and 115V of the *Environmental Planning and Assessment Act 1979*. As such, Roads and Maritime is seeking approval for the project under Part 5.1 of that Act.

What alternatives were considered?

The project has a long history of identification and evaluation of alternatives and options commencing with the F3 to Sydney Orbital Link Study (SKM, 2004) (the 2004 report) through to the recent design and construct tender process for the project.

Alternatives

Strategic alternatives assessed as part of the project have included:

- Base case or 'do nothing / do minimum'.
- Road link between the M1 Pacific Motorway and the Sydney Orbital Network.
- Rail and public transportation upgrades.

A road link between the M1 Pacific Motorway and Sydney Orbital Network was identified in the 2004 report as the preferred option that would best meet the project objectives as it would:

- Provide a high standard access controlled motorway that would integrate with the regional transport network.
- Improve the travel conditions, road safety and efficiency of Pennant Hills Road for motorists, road based public transport and cyclists.
- Support local and regional economic development.
- Provide opportunities for improved public transport in the area around Pennant Hills Road.
- Provide a motorway that is safe and reliable for road users.

Corridor options

Three broad corridor types were identified in the 2004 report that provided feasible connections between the M1 Pacific Motorway and the Sydney Orbital Network. These broad corridor types were:

- Type A corridors were more easterly alignment options which generally formed an extension of the M1 Pacific Motorway to connect to the Hills M2 Motorway.
- Type B corridors connected the Sydney Orbital between Pennant Hills Road and Dean Park to the M1 Pacific Motorway between Wahroonga and the Hawkesbury River.
- Type C corridors included more westerly options which connected the Sydney Orbital between Windsor Road and Dean Park with the M1 Pacific Motorway north of the Hawkesbury River.

Analysis conducted as part of the 2004 report determined that broad corridor type A best satisfied the planning and project objectives.

Further detailed investigations subsequently developed four more detailed options within the broad corridor type A, being:

- The red corridor alignment option, which extended from the M1 Pacific Motorway at Wahroonga to the Hills M2 Motorway at Macquarie Park.
- The yellow corridor alignment option, which extended from the M1 Pacific Motorway at Wahroonga to the Hills M2 Motorway near North Epping.
- The blue corridor alignment option, which extended from the M1 Pacific Motorway at Wahroonga to the Hills M2 Motorway at the Pennant Hills Road interchange.
- The purple corridor alignment option, which extended from the M1 Pacific Motorway at Wahroonga to the Hills M2 Motorway at the Pennant Hills Road interchange and generally followed the alignment of Pennant Hills Road.

An evaluation of all four type A corridor alignment options concluded that the purple corridor was preferred based on social, environmental and economic grounds.

Options review

A review of the options analysis presented in the 2004 report was undertaken in 2007 by the Honourable Mahla Pearlman AO (former Chief Judge of the NSW Land and Environment Court) at the request of the Australian Government.

The 2007 review concluded that the purple corridor alignment option should be the preferred route and should progress to the next stage of design and development.

Tender process

A competitive design and construct tender process was undertaken in order to identify an innovative, cost effective and environmentally-responsive design within the purple corridor option as identified and endorsed by the 2004 report and the 2007 Pearlman Review respectively.

The preferred tenderer was chosen after a thorough evaluation of the three tender submissions. The tender evaluation process provided a balanced consideration of engineering design requirements, project cost (including upfront capital expenditure and ongoing operational expenditure), and environmental and social impacts.

How did the community participate in development of the preferred project?

Community participation has been an important part of the development of the project since 2002.

Identification and analysis of project alternatives and corridor alignment options as part of the 2004 report was informed by extensive community consultation and engagement activities, including:

- During 2002 and 2003, publication of a series of community newsletters, media releases and a project website to provide information on the identification and analysis of alternatives and corridor alignment options.
- The establishment of three Community Focus Groups that met during 2002 to provide comments and feedback on alternative and options.
- Public information days held at five locations during May 2002 to provide information to interested stakeholders and community members, and to solicit comment on alternative and options. It was estimated that some 2,000 people visited the displays.
- Route options displays held at four locations during August 2003 to provide information on identified route options, and to receive comments on those options from the community and stakeholders. It was estimate that more than 2,500 people attended these events.

Feedback received from the community and stakeholders was summarised and addressed in the 2004 report. The outcomes and recommendations of the 2004 report were informed by community and stakeholder views on alternatives and corridor alignment options.

Further opportunity was provided for interested parties to provide input into the assessment of corridor alignment options through the Pearlman Review in 2007. As part of the review, the public was invited to make submissions on the 2004 report. A total of 53 submissions were received in early 2007, and each submitter was invited to present its submission at one of three public meetings before the Hon Mahla Pearlman AO in June 2007. Issues raised in submissions and through the public meeting were considered in formulating the recommendations of the 2007 Pearlman Review.

In October and November 2013, four community information sessions were held to provide up to date information about the status of the project and the design and construct tender process. The sessions were used to gather submissions and comments on the community's key issues and concerns, which were summarised and provided to the three design and construct tenderers to be taken into account as part of their respective project designs.

Following announcement of the preferred project tender design in March 2014, a further series of four community information sessions were held to provide more detailed information about the project. At these sessions, more detailed project design information was provided with community comment on key issues of interest and concern. Through feedback obtained during those sessions, and in subsequent public submissions, key community issues have been identified and responded to in this environmental impact statement and as part of the ongoing design development for the project.

What benefits would the project provide?

The project would provide the following benefits:

- Providing the missing link in Sydney's motorway network and the National Land Transport Network between the Sydney orbital road network and the M1 Pacific Motorway.
- Travel time savings at opening of up to 15 minutes during peak hour periods (when compared to without the project) with larger time savings in the future.
- Bypassing of 21 sets of traffic lights.
- Improving the efficiencies of intrastate and interstate freight movements through travel time saving and reduced operating costs.
- Improving safety of motorists, cyclists and pedestrians on Pennant Hills Road through the reduction in heavy vehicles.
- Improving local amenity and connectivity for people living, working and travelling along Pennant Hills Road.
- Providing opportunities for future public transport improvements and the reinvigoration of the Pennant Hills Road corridor.

What are the key issues associated with the project?

Traffic

During construction, local road works and the movement of heavy and light construction vehicles may affect the performance of the local road network. Construction methods and staging would be designed to ensure that disruptions to existing traffic are managed to minimise potential impacts on local amenity.

In the long term, the following beneficial traffic outcomes are expected:

- The provision of an efficient and effective National Land Transport Network connection through Sydney delivering improved efficiency for national freight carriers and long-distance transport operators.
- Improvements to travel conditions, road safety, and reliability of Pennant Hills Road for motorists, road-based public transport and cyclists.
- Improvements to local connectivity for people living, working and traveling along Pennant Hills Road due to decreases in traffic volumes.
- Serving the current and future growth needs of long-distance travel, particularly freight.

Noise and vibration

During construction there may be elevated noise impacts around construction sites, with construction noise management levels exceeded for some receivers during and outside standard construction hours. These construction noise impacts would be minimised and managed through the application of feasible and reasonable noise mitigation measures. Although vibration levels from tunnelling may exceed the 'preferred' criteria for human comfort at a limited number of receivers, the structural damage criteria would not be exceeded. Protocols for managing these construction impacts would be identified within the Construction Noise and Vibration Management Plan(s).

During operation, several properties around the northern and southern interchanges, and along Hills M2 Motorway integration works and the M1 Pacific Motorway tie-in works, would be affected by elevated traffic noise. Some of these properties are already affected by traffic noise. In some cases, the need for noise walls to be installed or upgraded has been identified. Several properties have also been identified as eligible for consideration of additional at-property acoustic treatments to mitigate operational road traffic noise.

Air quality

Construction of the project may generate dust and vehicle exhaust emissions. Most of these impacts would be effectively mitigated and managed through handling of spoil in acoustic sheds installed at tunnel support sites. This, and the implementation of standard construction dust mitigation measures, would ensure that potential air quality impacts during construction are minimised. The underground tunnels would be ventilated during construction in order to provide safe working environment for the construction workforce.

The project tunnels would capture vehicle emissions, which would then be released in a controlled and efficient manner via the tunnel ventilation outlets, facilitating effective pollutant dispersion. The results of the air quality assessment indicate that during operation, the project is expected to contribute very low concentrations of air pollutants to the local airshed. Contributions of pollutants from the project's ventilation outlets are calculated to be well below air quality criteria set by the Environment Protection Authority and well below background pollution levels.

In-tunnel air quality based on the expected traffic numbers has been calculated to be well below the design criteria which have been set based on a review of guidelines available from the World Health Organisation and the Permanent International Association of Road Congress.

The project would improve air quality along the Pennant Hills Road corridor as a result of heavy vehicles being diverted into the project tunnels. For PM_{2.5} receivers along the Pennant Hills Road corridor are expected to benefit from improvements of between five to 20 per cent of the 24-hour average concentrations and between five to 35 per cent of the annual average concentrations.

Taking into account the significant improvements along the Pennant Hills Road corridor and the less extensive, very low levels of impacts around the northern and southern ventilation outlets, the project is expected to result in an overall net improvement in air quality.

Health

Based on a comparison of calculated levels of nitrogen dioxide, carbon monoxide volatile organic compounds and polycyclic aromatic hydrocarbons against relevant criteria, no adverse health outcomes around the ventilation outlets are expected in relation to these pollutants. Concentrations of these pollutants are likely to be well below the levels at which significant adverse health effects could be expected.

The assessment of fine particulate matter (PM_{2.5}) identified that the increased annual risk of the assessed health outcomes are within an acceptable range. The calculated increases in annual incidence of assessed health outcomes would be negligible.

The air quality improvements along Pennant Hills Road would result in benefits to human health. This results in an improvement to human health from the project when considering the net changes along the corridor.

Urban design, landscape character and visual amenity

The introduction of construction ancillary facilities and activities would result in visual impacts, particularly where night works would require night lighting. Facilities would be designed to ensure that visual impacts are managed to minimise amenity impacts for surrounding receivers.

Long term visual changes would be expected with the introduction of operational project elements and ancillary infrastructure. Project elements have been located adjacent to or within major transport corridors as much as possible. Operational facilities and buildings have been designed and landscaped to compliment and blend with their surroundings. The urban design and landscape approach for the project would be further developed during detailed design, with the aim of integrating the project into the surrounding landscape and visual setting.

Biodiversity

Construction of the project would involve clearance of around six hectares of native vegetation including around three hectares Blue Gum High Forest (an Endangered Ecological Community). Relocation of the threatened species *Epacris purpurascens* var *purpurascens* would also be required.

Impacts to endangered ecological communities and threatened species would be offset, and *Epacris purpurascens* var *purpurascens* identified within disturbance footprints would be relocated to areas where future disturbance is unlikely.

The project would involve operational wastewater discharge to Blue Gum Creek of up to 40 litres per second. A management plan would be developed and implemented to identify and mitigate associated potential ongoing impacts of this discharge.

Social and economic

Construction of the project would create 1,250 jobs at its peak, with an expenditure of around \$2.9 billion and flow-on effects of around \$1 billion. The project would also involve the full acquisition of 44 properties and the partial acquisition of ten properties to make way for road infrastructure and ancillary facilities.

Due to changes to passing trade, the project may result in a loss of economic output of around \$5.6 million annually and loss in employment of 18 full-time equivalent positions. However, operation of the project would generate around 93 full-time equivalent jobs per year, and would generate around \$32 million directly with flow-on effects of \$17 million per year.

The project would involve permanent acquisition of five businesses, resulting in the potential loss of around 25 full-time equivalent employees.

Hydrogeology and soils

During construction, tunnelling works would intercept groundwater aquifers resulting in groundwater inflow into the tunnels of around 0.09 mega litres per day per kilometre of excavated tunnel. Settlement would generally be less than five millimetres, and ground movement is unlikely to result in any more than cosmetic damage (fine cracking up to five millimetres) at a limited number of structures.

During operation, there would be groundwater inflow into the tunnels of up to 700 mega litres per year. There may be localised groundwater drawdown, although it is unlikely that the project would impact on the viability of nearby bores.

Surface water

Temporary changes to surface water flow regimes and water quality may occur during construction, as a result of tunnel inflow water discharge, erosion and sedimentation, disturbance of contamination, and direct disturbance of water courses. Monitoring programs and control plans would be prepared and implemented to ensure surface water impacts are within acceptable limits.

During operation, tunnel water would be treated and discharged from the water treatment plant at the motorway operations complex. Discharge into surrounding waterways may result in increased potential for erosion and localised flooding. The need for additional mitigation measures to avoid erosion in these waterways would be investigated during the detailed design phase.

Heritage

The project would involve the demolition of parts of the heritage listed former maltworks site in Thornleigh, although the original germination building would be retained. An archival recording of this site would be undertaken.

Two locally listed Canary Island Palm Trees around the northern interchange would also be removed. Options for relocating the Canary Island Palms would be investigated.

Two areas of Aboriginal heritage sensitivity are located near the Hills M2 Motorway integration works. There would be no direct impacts to these areas. Monitoring would be conducted to ensure that indirect impacts, such as vibration, would not have adverse impacts on these areas.

Chapter 7 (Assessment of key issues) of this environmental impact statement provides further description of the potential impacts.

What are the other issues associated with the project?

Other issues associated with the project including impacts to land use and property, hazard and risk, resources and waste, and greenhouse gas and climate change were assessed as part of this environmental assessment.

Chapter 8 (Assessment of other issues) of this environmental impact statement provides further description of the potential impacts.

How will the likely impacts be managed?

This environmental assessment examines the likely consequences of the project. As part of this assessment measures to mitigate and manage each likely impact have been proposed. The mitigation measures developed for the project aim to remove or minimise potential impacts through design in the first instance. Where a potential impact is unable to be mitigated through design, additional mitigation and management measures are outlined.

The environmental, social and economic impacts and measures identified to minimise those impacts are described in **Chapter 7** (Assessment of key issues) and **Chapter 8** (assessment of other issues) of this environmental impact statement.

How can I comment on the proposal and/or the environmental impact statement?

The Department of Planning and Environment (DP&E) will make the environmental impact statement publicly available for a minimum period of 30 days. During this period, it will be available for inspection at:

- The Department of Planning and Environment website: <http://majorprojects.planning.nsw.gov.au/>.
- The NorthConnex project website: <http://www.northconnex.com.au>.
- Selected Roads and Maritime offices.
- Various staffed displays in the region.

Details of the location and opening hours of staffed displays would be provided through a community update, letters to interest groups who have registered for the project, emails notification to registered stakeholders, information on the project website and advertisements in the local and metropolitan media.

A community Information Centre for NorthConnex will be open three days per week during the exhibition period of the environmental impact statement. The community will be able to view the environmental impact statement and speak to members of the project team at the Community Information Centre. The Community Information Centre is located at 354-356 Pennant Hills Road, Pennant Hills. It will be open on Mondays and Thursdays 9am to 4pm and from 10am to 4pm on Saturdays.

Roads and Maritime will also be conducting community drop in sessions during the public exhibition period. A project information line will also be available throughout the exhibition period to answer questions from the community relating to the project – 1800 997 057 (toll free).

To provide feedback on the project, a person may make written submissions to the Department of Planning and Environment during the exhibition period. All submissions received will be placed on the Department of Planning and Environment website. Submissions can be made electronically through the Department of Planning and Environment website (<http://majorprojects.planning.nsw.gov.au>). Written submissions may also be directed to:

Director of Infrastructure Projects
Department of Planning and Environment
GPO Box 39
Sydney NSW 2001

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