11 Project justification and conclusion

This chapter presents a justification for the project and a conclusion to the environmental impact statement. The justification is based on the strategic need for the project and in particular, how it would fulfil the project objectives outlined in **Section 3.4**. **Table 11-1** sets out the Director-General's Requirements as they relate to the justification of the project and where these have been addressed in the environmental impact statement.

Table 11-1 Director-General's Requirements – project justification and conclusion

Director-General's Requirements	Where addressed
An analysis of feasible alternatives to the carrying out of the project and project justification, including: • an analysis of alternatives/options considered having regard to the project objectives (including an assessment of the environmental costs and benefits of the project relative to alternatives and the consequences of not carrying out the project), and the provision of a clear discussion of the route development and selection process, the suitability of the chosen alignment and whether or not the project is in the public interest, and • justification for the preferred project taking into consideration the objects of the *Environmental Planning and Assessment Act 1979*.	Analysis of alternatives and options considered for the project are described in **Chapter 4** with further details provided in **Section 11.1**. The project justification and consideration of relevant strategic planning policies is provided in **Chapter 3** and **Section 11.1**. The objects of the *Environmental Planning and Assessment Act 1979* are considered in **Section 11.3.2**.

11.1 Project justification

11.1.1 Summary of strategic need and justification

The project would provide the missing link in Sydney's motorway network between the M1 Pacific Motorway and the Sydney orbital road network.

The National Land Transport Network provides connections between all mainland states and territories of Australia. The primary objectives of the National Land Transport Network are to facilitate overseas and interstate trade, to support regional development and to allow safe and reliable access to major population centres. As such, the National Land Transport Network plays an important role in the economy of NSW and Australia as a whole.

The project would transform this section of the National Land Transport Network, providing efficiencies for heavy vehicles transporting freight to, from or through Sydney to major cities and regional centres such as the Central Coast, Newcastle, Brisbane and Melbourne.

By providing an alternative and more efficient route for travel for heavy vehicles and other through traffic between the M1 Pacific Motorway and the Hills M2 Motorway, The project would also reduce interaction between road freight and other road users, thereby reducing congestion and improving safety and amenity along Pennant Hills Road.

11.1.2 Achieving project objectives

As discussed in **Section 3.4**, nine key objectives have been developed for the project to respond to key issues that underlie the strategic need for the project. The project objectives are consistent with strategic objectives of State and national planning and policy documents. **Table 11-2** provides a summary of how the NorthConnex project would meet these objectives.

Table 11-2 Achieving the project objectives

Project objective	Comment
Provide a high standard access controlled motorway that integrates with the regional transport network.	The NorthConnex project would provide a motorway standard connection between the M1 Pacific Motorway and the Hills M2 Motorway. At the northern and southern ends of the project, direct motorway to motorway connections would be provided. On and off-ramps would also provide connections to Pennant Hills Road at the south and the north of the tunnels. The provision a motorway standard connection would provide an efficient connection with travel times of six minutes for the northbound journey and five minutes for the southbound journey.
Minimise adverse social and environmental impacts in the local area during construction and operation.	The design of the project has aimed to avoid or minimise potential environment and social impacts. For example, the design has: • Minimised permanent land acquisition by locating the on and off-ramps within existing road corridors and locating ancillary infrastructure on land already owned by Roads and Maritime, where feasible. • Minimised temporary land acquisition by locating temporary construction facilities within existing road reserves, or co-located within the footprint of the operational infrastructure. • Avoided direct impacts to the community facilities located at Brickpit Park. • Avoided high value ecological areas such as the Blue Gum High Forest at Brickpit Park and Kenley Park. Additionally, the project would reduce the number of heavy vehicles on Pennant Hills Road, providing improvements to safety, local traffic conditions, air quality and noise amenity. Where potential negative impacts were not able to be completely avoided through design, additional mitigation and management measures have been identified. 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. These measures would minimise adverse social and environmental impacts in the local area during construction and operation as far as feasible and reasonable.

Project objective	Comment
Provide opportunities for improved public transport in the area around Pennant Hills Road.	The reduction in heavy vehicle numbers on Pennant Hills Road would provide future opportunities to consider changes to improve the operation of bus services and local traffic movements. Roads and Maritime and Transport for NSW have carried out a preliminary assessment of the public transport improvements that could be delivered due a reduction in traffic congestion on Pennant Hills Road. Potential opportunities identified include: • Development of a rapid bus route along Pennant Hills Road between Hornsby and Baulkham Hills (via Castle Hill). • Bus priority treatment to address bus pinch points along Pennant Hills Road, including around Boundary Road. • Signal re-phasing, or changing the pattern of traffic signals at key intersections, to ease traffic flows across Pennant Hill Road by focusing on longer stopping time for through traffic and increased entry time for side traffic. • Bus stop relocations along the corridor to be closer to intersections, taking advantage of the additional stopping time created by signal re-phasing to reduce overall journey time. • Bus priority measures at key intersections to provide better bus reliability. • More frequent bus services on Pennant Hills Road. • Reconfiguring the bus route network to take advantage of easier crossing of the corridor at junctions, in alignment with Sydney's Bus Future strategy. • Linking the wider transport network better with railway stations in the area. • Improving walking and cycling infrastructure along and across the corridor. These options for improving public transport are at a preliminary stage and would require further consideration by Roads and Maritime and Transport for NSW. These additional improvements to public transport do not form part of this project and would be subject to separate planning processes and approvals as appropriate.
Assist in a reduction in traffic congestion, particularly along Pennant Hills Road, and provide shorter travel times for road users.	The project would reduce the number of heavy vehicles that currently travel on Pennant Hills Road, resulting in improvements to travel times for road users. For example, the project is forecast to result in a travel time saving of around 21 minutes for a northbound journey along Pennant Hills Road during the PM peak period in 2029, compared with the 'without project' scenario. Calculated travel times for motorists using NorthConnex show that, in both 2019 and 2029, the average travel time during the AM and PM peaks is anticipated to be six minutes in the northbound direction and five minutes in the southbound direction. This would offer a maximum travel time saving of around 40 minutes in 2029 (in the northbound direction in the PM peak) compared with the 'without project' scenario where vehicles would be travelling along Pennant Hills Road. Motorists would also be able to avoid 21 sets of traffic light compared to

Project objective	Comment
	the current situation on Pennant Hills Road.
Provide a motorway that is safe and reliable for road users.	NorthConnex project would be built to motorway standard including grade separated interchanges and physically separated carriageways. As a result, crash rates within the tunnels would be significantly lower than the existing situation on Pennant Hills Road. At 5.3 metres, the project would be the highest of any road tunnel in Sydney, minimising the likelihood of an incident involving overheight vehicles. Monitoring systems would be used to efficiently manage and respond to in-tunnel incidents. The anticipated transfer of traffic from Pennant Hills Road to the project would reduce the interaction of local traffic with through road freight movements along Pennant Hills Road, improving road safety along Pennant Hills Road.
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.	The project would provide the missing link in the National Land Transport Network between the M1 Pacific Motorway and the Sydney orbital road network. The project is anticipated to result in significant travel time savings of up to 40 minutes (northbound in the PM peak in 2029) compared to the anticipated future conditions on Pennant Hills Road without the project. The project would also allow road freight movements to bypass 21 sets of traffic lights. These benefits would improve the efficiencies of freight movements (both intrastate and interstate) and reduce freight operating costs associated with wages, fuel use and other vehicle operating costs.
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	The project would provide an efficient alternative for freight through movements between the M1 Pacific Motorway and the Sydney orbital road network, resulting in a reduction of heavy vehicle numbers on Pennant Hills Road. This would result in amenity improvements along this corridor including improvements to air quality, and a reduction in traffic noise. This improved local amenity could contribute to a reinvigoration of the Pennant Hills Road corridor through improving the desirability over the longer-term for land uses such as residential and commercial developments (in particular retail).
Demonstrate excellence in design and environmental sustainability	A competitive design and construct tender process was undertaken in order to identify an innovative, cost effective and environmentally-responsive design solution. Throughout this process tenderers were encouraged to show excellence and innovation as part of their tender submission. The design of the project has incorporated lessons learnt from previous Sydney road tunnels, and advances in technology and engineering to include energy efficient ventilation design. The anticipated travel time benefits brought about by the project would reduce overall vehicle operational costs and fuel use. Although there would be emissions during construction, the project

Project objective	Comment
	would result in long-term greenhouse gas savings. By the year 2029 the savings in greenhouse gas emissions with the project are predicted to be around 68,600 t CO_2-e when compared to the 'without project' scenario.
Be economically justified and affordable to the government	The project is an unsolicited proposal from Transurban and the Westlink M7 Shareholders to construct, operate and maintain the project. The project would be funded as part of an infrastructure delivery partnership between the State and the private sector, utilising innovative procurement and funding models. The upfront capital costs would be covered by private funding from Transurban and the Westlink M7 Shareholders with contributions of up to $405 million from both the NSW and Australian Governments. The cost of the project would be recouped through a toll on the project and changes to concession deeds on other Sydney motorways.

11.1.3 Objects of the Environmental Planning & Assessment Act

The objects of the *Environmental Planning and Assessment Act 1979* provide a framework within which the justification of the project has been considered. A summary of this assessment is provided in **Table 11-3**.

Table 11-3 Objects of the *Environmental Planning and Assessment Act 1979*

***Environmental Planning and Assessment Act 1979* objective**	**Comment**
To encourage the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, waters, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment.	Where possible the project has been designed to conserve natural and artificial resources. Where reasonable and feasible, the project has been designed to avoid impacts on the surrounding natural environment and to minimise the need for land acquisition, impacts on existing development and local communities. The improved efficiency of the road network and the predicted travel time savings would result in a reduction in fuel use in the future. Additionally, the project would result in a long term reduction in greenhouse gas emissions. The project would provide improved traffic conditions, safety and efficiency on Pennant Hills Road and would result in improvements to local amenity in terms of noise and vibration, air quality and traffic. Measures would be implemented to ensure that impacts of the project on the natural and built environment are minimised.

***Environmental Planning and Assessment Act 1979* objective**	**Comment**
To encourage the promotion and co-ordination of the orderly and economic use and development of land.	The project would provide efficiencies to the National Land Transport Network, providing travel time savings for intrastate and interstate freight movements. This would provide cost savings for freight movements associated with wages, fuels use and other operating costs. The expected amenity improvements along Pennant Hills Road could contribute to a reinvigoration of the project corridor, improving the desirability over the longer-term for residential and commercial land uses. The project has been designed to minimise impacts to the surrounding natural and built environments, and to minimise disruption to existing development patterns. Provision of a mostly underground motorway is an orderly and economic approach to delivery of the project in the context of existing development along the Pennant Hills Road corridor.
To encourage the protection, provision and co-ordination of communication and utility services.	The project has been designed to minimise impacts on communications and utility services, where possible. Utility services would be relocated, adjusted or protected where affected by the construction of the project. Communication and utility service providers would be consulted during design and implementation of relevant works to ensure coordination and delivery of new and / or modified communications and utility infrastructure.
To encourage the provision and co-ordination of community services and facilities.	The main alignment tunnels and the location of temporary construction compounds have been designed and located to avoid direct impacts to community facilities. The reduction in heavy vehicle use of Pennant Hills Road would provide for future opportunities for improvements to or establishment of new community facilities along the corridor. For example, the improvements to amenity created by the project may increase the desirability of the community to utilise existing recreational areas such as local parks. Improvements in amenity, traffic efficiency and safety may also encourage the establishment of new community services and facilities, such as schools, libraries and community halls in the longer term. The predicted improvements in travel times along Pennant Hills Road would improve the local access to community services and community facilities

***Environmental Planning and Assessment Act 1979* objective**	**Comment**
To encourage the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats.	The design of the project has avoided known high value ecological areas such the Blue Gum High Forest at Brickpit Park and Kenley Park. Potential impacts of the project on terrestrial and aquatic ecology have been assessed in **Section 7.6** of this environmental impact statement and measures to avoid, mitigate and offset potential impacts on native plants and animals, and their habitats, have been identified. Potential impacts on ecology of conservation significance have been minimised through the project design.
To encourage ecologically sustainable development.	The project is consistent with the four principles of ecologically sustainable development. Ecologically sustainable development is further considered in **Section 11.2**.
To encourage the provision and maintenance of affordable housing.	Not applicable.
To promote the sharing of the responsibility for environmental planning between different levels of government in the State.	Consultation has been undertaken with the relevant local councils and government agencies throughout the development of the project and the preparation of this environmental impact statement. All levels of government have been encouraged to be actively involved in and to contribute to the evolution of the project and this environmental impact statement through historical and continuing consultation activities.
To provide increased opportunity for public involvement and participation in environmental planning and assessment.	Community consultation has been carried out through all stages of the project development, commencing in 2002 with the alternatives and options development, through to the exhibition of the preferred tender design. Community feedback has been considered at each stage of the project development to inform the selection of the purple corridor alignment and subsequent design development and refinements. Community consultation would continue through the detailed design, construction and operational stages should the project be approved. Details of community involvement are provided in **Chapter 6**.

11.1.4 Ecologically sustainable development

Development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends is referred to as ecologically sustainable development. The principles of ecologically sustainable development have been considered throughout the development of the project.

The *Environmental Planning and Assessment Act 1979* recognises that ecologically sustainable development requires the effective integration of social, economic and environmental considerations in decision-making processes. The *Environmental Planning and Assessment Act 1979* identifies four principles to support the achievement of ecologically sustainable development:

- The precautionary principle.
- Inter-generational equity.
- Conservation of biological diversity and ecological integrity.
- Improved valuation and pricing and incentive mechanisms.

The four main principles of ecologically sustainable development are discussed below in the context of the project.

Precautionary principle

If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

The precautionary principle has been applied throughout the design and development of the project.

The alternatives and options analysis as part of the 2004 report considered environmental impacts, evident through the selection of the purple corridor option which minimised surface disturbance and potential impacts to National Parks and other ecologically sensitive areas.

The design has first aimed to avoid, to the greatest extent practicable, known areas or items of environmental value such as the Blue Gum High Forest at Brickpit Park and Kenley Park. Where avoidance was not possible, mitigation measures have been identified to avoid or manage the these risks

This environmental impact statement details the evaluation of environmental impacts associated with the project and has been undertaken using the best available technical information and adoption of best practice environmental standards, goals and measures to minimise environmental risks. The environmental assessment has been undertaken in collaboration with key stakeholders and relevant statutory and agency requirements.

The environmental impact statement adopts a conservative approach by assessing the worst case impacts and scenarios, such as assessing the theoretical maximum peak hour capacity of the project in relation to air quality and human health impacts.

Inter-generational equity

The present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.

One of the key objectives of the project is to assist in a reduction in traffic congestion along Pennant Hills Road and provide shorter travel times for road users. The project would provide an alternative travel route between the M1 Pacific Motorway and the Sydney orbital road network increasing the capacity of the road network. The project is also being future proofed with the ability to be retro-fitted to three lanes in each direction if required in the future.

The project would also provide the following benefits for today's generations and future generations:

- Provide a reduction in air quality emissions along the Pennant Hills Road corridor. Further information on local air quality improvements are provided in **Section 7.3** (Air quality).
- Improve noise amenity along the Pennant Hills Road corridor through the reduction in heavy vehicle use.
- Improve road safety through the provision of a motorway standard connection. Road safety improvements along Pennant Hills Road are also anticipated due to the reduction in heavy vehicles and the interaction of local traffic with through freight movements. Further information on road safety improvements are provided in **Section 7.1** (Traffic and transport).
- Result in improvements to local amenity, which would contribute to a reinvigoration of the Pennant Hills Road corridor, improving the desirability over the longer-term for residential and commercial land uses.
- Result in reduced operational greenhouse gas emissions when compared to the project not being built. For the year 2029 the savings in greenhouse gas emissions with the project are predicted to be around 68,600 t CO_2-e when compared to the 'without project' scenario. Further information on greenhouse gas emissions and savings are provided in **Section 8.4** (Greenhouse gas and climate change).

As a result the project would provide benefits for current and future generations and is considered to be in the public interest.

Conservation of biological diversity and ecological integrity

Conservation of biological diversity and ecological integrity is a fundamental consideration of the project.

The alternatives and options analysis as part of the 2004 report considered ecological integrity, evident through the selection of an option which minimised potential impacts to National Parks and other ecologically sensitive areas.

The current project design avoids impacts to areas of high ecological value as far as practical. For example, the design has avoided impacts to the Blue Gum High Forest at Kenley Park and Brickpit Park. This environmental impact assessment provides a detailed ecological assessment which identifies flora and fauna impacts and provides a range of mitigation measures which would be implemented in order to further avoid and minimise these potential impacts. Additionally, preliminary offset calculations have been provided in order to offset the identified impacts to endangered ecologically communities and threatened species.

Improved valuation and pricing of environmental resources

Environmental factors should be included in the valuation of assets and services. Such as:

- Polluter pays (ie those who generate pollution and waste should bear the cost of containment, avoidance, or abatement).
- The users of goods and services should pay prices based on the full life cycle of costs of providing the goods.
- Environmental goals, having been established, should be pursued in the most cost effective ways.

The value placed on the environment is evident in the development of design features and also in the extent of environmental investigations for the project. In addition the costs associated with the planning and design of measures to avoid / minimise adverse environmental impacts and the costs to implement them have been built into the overall project costs. For example, the increased capital cost of the longer tunnel has been preferred over the environmental and community impacts associated with land acquisition of a shorter tunnel option (refer to **Section 4.4.1**).

The provision of a toll on the project supports the concept of users of goods and services paying prices based on the full life cycle of costs of providing the goods. Whilst the upfront capital costs would be provided by a combination of private funding and a contribution from the NSW and Australian Governments, this funding would be recouped through a toll to cover the upfront construction, and ongoing operation and maintenance costs.

11.2 Conclusion

The project has been identified as a key transport infrastructure project and a priority action for addressing a missing link in the National Land Transport Network, in line with State and national planning strategies.

The project would provide the following benefits and is therefore in the public interest:

- Providing the missing link in Sydney's motorway network sand the National Land Transport Network between the M1 Pacific Motorway and the Sydney orbital road network.
- Future travel time savings of up to 40 minutes compared to without the project.
- 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 traveling along Pennant Hills Road.
- Providing opportunities for future public transport improvements and the reinvigoration of the Pennant Hills Road corridor.

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