

Chapter 25

Justification and conclusion

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25 Justification and conclusion

25.1 Project justification

25.1.1 Biophysical, economic and social considerations

This environmental impact statement (EIS) has considered the potential environmental impacts associated with the upgrade of the Great Western Highway between Blackheath and Little Hartley (the project), including biophysical, economic and social considerations.

Design response

The project design has been developed to avoid and/or minimise impacts to the community and the environment. Community and stakeholder consultation carried out to date has informed selection of the preferred option as well as design refinements in response to key issues raised by the community (including the Blackheath portal location in consultation with the Blackheath Co-Design Committee). Key design refinements adopted to help avoid and/or minimise environmental impacts include:

- selecting a long tunnel option to minimise surface impacts between Blackheath and Little Hartley, resulting in a substantial reduction in surface construction footprint (around 300,000 square metres) which may have directly or indirectly affected the Blue Mountains National Park, the Greater Blue Mountains World Heritage Area and Browntown Oval had the short tunnel option been selected
- continued use of construction footprints required for the Great Western Highway East – Katoomba to Blackheath Upgrade (Katoomba to Blackheath Upgrade) and Great Western Highway Upgrade Program – Little Hartley to Lithgow (West Section) (Little Hartley to Lithgow Upgrade) for the project. These areas will have already been cleared of vegetation and used to support construction for those projects, which helps to minimise additional surface impacts including vegetation clearance for this project
- adopting a construction methodology with tunnel excavation via two tunnel boring machines (TBMs) (rather than roadheaders) which would limit groundwater drawdown and related groundwater impacts through the progressive and almost immediate installation of concrete tunnel segments with waterproof lining
- advancing the TBMs from the Little Hartley construction site towards the east, which would:
 - minimise spoil haulage and segment deliveries through the townships of Blackheath and Mount Victoria and associated traffic, safety and amenity impacts, including minimising use of Victoria Pass by heavy vehicles
 - minimise the construction footprint at Blackheath, reducing native vegetation clearance as the site would not need to accommodate a TBM launch area
- optimising the construction strategy to consolidate construction site requirements, including avoiding the need for construction sites at:
 - Browntown Oval which would allow for ongoing community use of this social infrastructure
 - the old Blackheath tip site which would limit potential exposure of contamination at this site and avoid potential biodiversity, amenity and traffic related impacts associated with access requirements to this site
- optimising the surface connectivity at Blackheath which has reduced the operational footprint, minimising visual impacts for road users, tourists and residents near the Blackheath portal, and simplifying the Blackheath interchange and associated improved driver-safety outcomes

- ongoing consideration of two potential tunnel ventilation options. The use of portal emissions instead of ventilation outlets (if identified as the preferred option) would require less construction materials, minimise visual impacts and improve sustainability outcomes given the lower resource use and operational energy consumption of this option.

Further information regarding design refinements aimed at minimising biophysical, economic and social impacts is provided in Table 3-13 of Chapter 3 (Project alternatives and options). Strategic alternatives and project options were also informed by the outcomes of community and stakeholder engagement. The project would continue to be refined as part of ongoing design development and where relevant, in response to feedback from the community and other stakeholders. A summary of the key issues raised during community consultation and where these issues are addressed in the EIS is provided in Appendix C (Community engagement).

Project benefits

While the project would have some unavoidable impacts (see Section 25.3), the project would deliver substantial benefits and opportunities including:

- improved economic development, productivity, and recovery – during the first ten years of operation, the project would contribute up to around \$10 million per year in net output for the regional area (refer to Chapter 20 (Business, land use and property)) and would create a faster, safer, and more efficient freight connection between Blackheath and Little Hartley. During construction, the project would create up to 1,100 jobs and is expected to contribute around \$130 million per year to the regional economy
- improved resilience and future-proofing – the project would provide an alternative route to the current Great Western Highway between Blackheath and Little Hartley and would improve access for emergency vehicles in the event of an incident. It would also assist in minimising broader traffic delays and disruptions that may be caused by an incident. The project has been designed to improve the level of service for predicted traffic volumes in future years with scope to accommodate future growth
- improved network performance – the project would reduce light vehicle travel times between Blackheath and Little Hartley by around nine minutes, and heavy vehicle travel times by around nine minutes during the weekday AM peak hour period. The project would also provide a connection for high productivity vehicles longer than 20 metres (with an upper limit of 36 metres) between Blackheath and Little Hartley, contributing to a total reduction in the current route for these vehicles by up to 100 kilometres between Sydney and Central West NSW. The project would substantially reduce traffic on the existing Great Western Highway between Blackheath and Little Hartley improving travel time, speeds and safety on this part of the route
- safety improvements – the project would provide a safer alternative to the current steep grades, limited overtaking opportunities and at-grade intersections along sections of the Great Western Highway between Blackheath and Little Hartley. The project would provide a bypass route for heavy vehicles, avoiding local townships and two school zones and allowing separation of through and freight traffic from local and tourist traffic
- movement, place, and amenity improvements – the project would result in improved amenity for residents of Blackheath and Mount Victoria due to a substantial reduction in traffic and associated reductions in traffic noise and vehicle emissions for around 2,000 residents along the existing Great Western Highway. The project would also incorporate urban design principles as described in Chapter 4 (Project description) and create potential opportunities for placemaking initiatives by reducing through traffic, including freight vehicles, at key locations along the Great Western Highway, particularly at Blackheath and Mount Victoria. These placemaking opportunities are consistent with the Movement and Place Framework (NSW Government, 2020a) adopted by Transport for the Upgrade Program.

In addition, the project (as part of the Great Western Highway Upgrade Program – Katoomba to Lithgow (the Upgrade Program)) would also present socio-economic opportunities, including:

- improving connections between the national high productivity vehicle network and Sydney
- strengthening supply chains due to better access to regions
- improving access to employment opportunities and services.

A summary of how the project meets the project objectives using a traffic light rating system to demonstrate strong alignment (green), some or neutral alignment (yellow) or limited or no alignment (red) is provided in Table 25-1. Further information is provided in Chapter 3 (Project alternatives and options).

Table 25-1 Performance of the project against the project objectives

Objective	How the project option performed against the objective	Rating
Economic development	<ul style="list-style-type: none"> • would provide additional transport capacity across the Blue Mountains and enhances the connection of the regions • would improve freight accessibility by providing access for B-doubles and Performance Based Standards level 2 vehicles up to 36 metres long • would help to address the predicted 30 per cent rise in truck volumes on the Great Western Highway by 2036 (Transport for NSW, 2021d). 	●
Resilience	<ul style="list-style-type: none"> • would enable improved resilience through additional lanes which would enable increased road capacity and safety opportunities, allowing essential services better access to the area during vehicle incidents or extreme weather events • would provide an alternative route for transport and essential services between Blackheath and Little Hartley, in the event of road closure along the Great Western Highway. 	●
Transport network performance	<ul style="list-style-type: none"> • would provide additional transport capacity by reducing current traffic queues for both private and commercial vehicles on the Great Western Highway which can be up to eight kilometres in length and incur delays of up to 80 minutes in peak periods (Transport for NSW, 2021d). This option would reduce congestion due to freight movement and weekend and peak holiday traffic to a greater extent than the Blackheath and Mount Victoria tunnel bypasses option • would not provide the same level of local connectivity as the Blackheath and Mount Victoria tunnel bypasses option • would allow opportunities for overtaking, currently not available in certain areas where there is a single lane arrangement in each direction, such as through Victoria Pass • would positively impact the local surface road network performance between Blackheath and Little Hartley, given through traffic would likely utilise the tunnel infrastructure. 	●

Objective	How the project option performed against the objective	Rating
Safety	<ul style="list-style-type: none"> would improve safety of the corridor for road transport users by providing additional traffic lanes, reducing congestion would separate through (freight) traffic travelling at higher speeds, more likely to use the tunnel, and local traffic likely to use the existing Great Western Highway would improve the safety of the road corridor at Victoria Pass by bypassing steep grades and tight curves on the current highway alignment would have improved in-tunnel gradient which would allow for a more consistent travel speed and lower speed differentials between the surface road and in-tunnel road networks as compared with the Blackheath and Mount Victoria tunnel bypasses option. 	●
Environment	<ul style="list-style-type: none"> would require the least surface property acquisition of all options except the do minimum option, given the majority of the duplicated road network would be located underground would require less native vegetation removal than the Blackheath and Mount Victoria tunnel bypasses, given vegetation removal would be required at two portal locations and a reduced number of associated construction sites would reduce amenity impacts for local residents and businesses, such as noise, vibration, visual impacts, given the predominantly underground nature of the option would minimise impacts to groundwater dependent ecosystems as compared to the Blackheath and Mount Victoria tunnel bypasses option due to deeper excavation/tunnelling leading to less interaction with the perched aquifers the ecosystems rely on would result in greater fuel efficiency for tunnel users and less greenhouse gas emissions given the lower in-tunnel gradient would be generally consistent with stakeholder feedback received indicating preference for tunnel options, further described in Chapter 7 (Community and stakeholder engagement). 	●
Value for money	<ul style="list-style-type: none"> would result in a slight reduction in vehicle travel times as compared to the Blackheath and Mount Victoria tunnel bypasses option due to reduced tunnel grades would be slightly more expensive than the Blackheath and Mount Victoria tunnel bypasses option, however this would be value for money given this option would perform better on the above project objectives than all other options including a shorter construction duration, and less construction staging and associated accessibility impacts. 	●

25.1.2 Ecologically sustainable development

The project is consistent with the four principles of ecologically sustainable development outlined in the Environmental Planning and Assessment Regulation 2021 (NSW) (EP&A Regulation) as follows:

The precautionary principle

This EIS was prepared adopting an appropriate level of conservatism and includes an assessment of the realistic worst case scenario impacts for a variety of environmental aspects including groundwater and geology, transport and traffic, noise and vibration, air quality, human health and biodiversity technical assessments. A precautionary approach to tunnel emissions

alternatives has been adopted in the EIS, with both the ventilation outlet and portal emissions design options assessed for potential air quality and human health impacts. A summary of the key differences in potential impacts for both ventilation options is provided in Table 3-12.

The project has been developed through an environment-led design process whereby preliminary environmental investigations and assessment informed the project alternatives and options analysis to identify opportunities to minimise potential impacts to the sensitive environment of the Blue Mountains (see Section 25.1.1). The precautionary principle would be applied to construction of the project through the implementation of unexpected finds protocols to address unexpected biodiversity, contamination or hazardous materials or heritage finds. The findings of the EIS indicate that there would be no threat of serious or irreversible damage to the environment.

Intergenerational equity

Once operational, the project would be designed to meet needs of both current and future generations and would contribute to an increase in resilience and capacity of the Greater Sydney and Central West transport network. The project would provide long term benefits by improving economic development, productivity, freight accessibility, resilience, and the overall liveability and safety of those in the Blue Mountains, Central West and Orana regions.

Construction of the project has the potential for some degree of environmental and social disturbance largely related to amenity impacts and changes to traffic movements and access. However, the potential for environmental and social disturbance as a result of construction has to be balanced against the long-term benefits of the project overall.

Conservation of biological diversity and ecological integrity

The project has been developed to minimise impacts to areas of high ecological value, including to the Blue Mountains National Park and to groundwater dependent ecosystems by minimising groundwater drawdown through the project tunnelling methodology. Potential indirect and direct impacts may arise during construction, including potential impacts associated with groundwater drawdown and surface water discharges. A Biodiversity Development Assessment Report has been completed to identify potential impacts on biodiversity and a range of mitigation measures for implementation (refer to Appendix H (Technical report – Biodiversity)).

An assessment of the project's potential impact on threatened species, ecological communities and migratory species (as discussed in Chapter 12 (Biodiversity), as well as the Greater Blue Mountains World Heritage Area (as discussed in Chapter 17 (Non-Aboriginal heritage) found that the project's level of impact on Matters of National Environmental Significance (MNES) is not significant. Transport has lodged a referral with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). DCCEEW is currently considering the referral and has not yet advised on whether the project constitutes a controlled action under the EPBC Act.

Improved valuation, pricing and incentive mechanisms

The value placed on the environment was inherent in the development of the design. In addition, the costs associated with the planning and design of measures to avoid and minimise adverse environmental impacts and the costs to implement these have been considered in the overall project costs.

25.2 Objects of the Environmental Planning and Assessment Act 1979

Consideration of the project against the objects of the *Environmental Planning and Assessment Act 1979* (EP&A Act) is provided in Table 25-2.

Table 25-2 Objects of the *Environmental Planning and Assessment Act 1979*

EP&A Act objects	Project attributes
To promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources	The project has been designed to minimise impacts on the environment where possible including the need for land acquisition. The project has also minimised impacts on existing development and local communities by locating the majority of the project underground and minimising surface disturbance. The project has been designed to conserve the State's natural and other resources, such as the Blue Mountains National Park and Greater Blue Mountains World Heritage Area. During construction and operation of the project, opportunities would be taken to reduce material use and maximise the use of materials with low embodied environmental impact, where practical.
To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment	The project is consistent with the principles of ecologically sustainable development as outlined in Section 25.1.2.
To promote the orderly and economic use and development of land	<p>The project has been designed to:</p> <ul style="list-style-type: none"> • provide improved efficiency of the road network, including for freight and commercial users, resulting in economic benefits for NSW • provide a safer alternative to the existing steep grades along sections of the Great Western Highway between Blackheath and Little Hartley, particularly at Victoria Pass • minimise impacts to the surrounding natural and built environments where possible, for example by adopting a tunnel design that minimises surface impacts, and integrating design features such as tunnel portals and ventilation facilities, into the existing road corridors as far as practical • integrate with, and thereby minimise disruption to, existing development and other projects, such as other components of the Upgrade Program.
To promote the delivery and maintenance of affordable housing	Not applicable to this project.

EP&A Act objects	Project attributes
<p>To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats</p>	<p>Direct impacts to terrestrial biodiversity would be minimised by adopting a long tunnel design and minimising surface impacts, including minimising surface construction site requirements, adopting a TBM construction method that limits groundwater ingress and related groundwater drawdown impacts, including to groundwater dependent ecosystems (refer to Chapter 3 (Project alternatives and options)).</p> <p>The project's impacts on terrestrial and aquatic ecology have been assessed in detail and measures to avoid, mitigate, and offset potential impacts on native animals, plants and ecological communities have been developed (refer to Chapter 12 (Biodiversity)).</p>
<p>To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage)</p>	<p>Design development has included a focus on avoiding or minimising potential Aboriginal and non-Aboriginal heritage impacts.</p> <p>This has included selection of a long tunnel option and where possible selecting construction sites that minimise potential direct impacts to heritage items and potential archaeological sites (refer to Chapter 3 (Project alternatives and options)). The project has avoided direct impacts to Greater Blue Mountains World Heritage Area and has minimised indirect impacts including potential visual impacts, noise and vibration and air quality impacts.</p> <p>The project would respond to the Designing with Country (Government Architect NSW, 2020a) and Connecting with Country (Government Architect NSW, 2020b) frameworks (refer to Chapter 4 (Project description)). Consultation has been carried out with Aboriginal knowledge holders whose lands traverse the project to appropriately respect and integrate Aboriginal culture and heritage into the design including themes such as nature and people.</p>

EP&A Act objects	Project attributes
<p>To promote good design and amenity of the built environment</p>	<p>The project would provide improved access and connectivity through improved travel times and improved travel time reliability for local and regional motorists. The project would also improve the amenity of the local area by separating local and tourist traffic from through traffic for the townships of Blackheath and Mount Victoria.</p> <p>The forecast substantial reduction of surface traffic from the Great Western Highway is expected to result in an overall improvement in noise levels and general amenity within the communities of Blackheath and Mount Victoria, when compared with the existing situation.</p> <p>There would be ongoing investigations in consultation with relevant stakeholders and councils regarding opportunities for placemaking initiatives that may be realised due to a reduction in surface traffic volumes as a result of the project in accordance with the Movement and Place Framework (NSW Government, 2020a), particularly at Blackheath and Mount Victoria.</p> <p>Two options for tunnel ventilation are currently being investigated (ventilation outlets and portal emissions), with the design of the project able to accommodate both options. The urban design objectives developed for the project drive the ongoing design development outcomes in accordance with key urban design guidelines and policies including Better Placed (Government Architect NSW, 2017), Beyond the Pavement (Transport for NSW, 2020b) and Tunnel Urban Design Guidelines (Roads and Maritime Services, 2017).</p>
<p>To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants</p>	<p>The construction of the project, including associated buildings for operational ancillary infrastructure, would be completed in line with the applicable Australian and international safety standards and guidelines.</p>
<p>To promote the sharing of the responsibility for environmental planning between the different levels of government in the State</p>	<p>The responsibility for environmental planning and approval in relation to the project rests primarily with the NSW Government. No formal approval role is required by local government however, consultation has been carried out with the relevant local councils and government agencies throughout the development of the project and the preparation of this EIS and consultation would continue as part of the project development process.</p> <p>As outlined in Section 25.1.2, the project would not have a significant impact on MNES. Transport has lodged a referral with DCCEEW under the EPBC Act. DCCEEW is currently considering the referral and has not yet advised on whether the project constitutes a controlled action under the EPBC Act.</p>

EP&A Act objects	Project attributes
To provide increased opportunity for community participation in environmental planning and assessment	<p>Consultation has been carried out through all stages of project development, with targeted community consultation undertaken in 2019 when the preferred strategic corridor for the Upgrade Program was placed on public display. The Blackheath Co-design Committee was established in early 2020 to enable close collaboration with local stakeholders and community representatives. The Blackheath Co-design Committee's feedback was a key input into the decision-making process for a preferred route option and design through Blackheath.</p> <p>Further community consultation was undertaken in early 2022 for the preferred option. This included targeted surveys carried out at businesses and residences at Blackheath, Mount Victoria and Little Hartley to support the social impact assessment and business assessment for the EIS. Community feedback has been considered at each stage of the project development process to inform the selection of the preferred corridor and subsequent design options and refinements (refer to Chapter 7 (Community and stakeholder engagement)). Community consultation would continue through public exhibition of this EIS and during further design development and construction, subject to approval.</p>

25.3 Conclusion

This EIS addresses the key issues identified in the Secretary's environmental assessment requirements issued under Division 5.2 of the EP&A Act and the relevant provisions of Part 8 of the EP&A Regulation.

As a component of the Upgrade Program, the project would support regional and economic development by providing a more efficient link between Central West NSW and the Sydney motorway network, as well as delivering improved safety conditions and travel times for freight, tourist and general traffic. In particular, the project would result in amenity improvements to residents of Blackheath and Mount Victoria, safety and network improvements. The project would promote network resilience and future proofing by providing an alternative route to the current Great Western Highway alignment between Blackheath and Little Hartley and improving access for emergency vehicles in the event of an incident. The project has also been designed to improve the level of service for predicted traffic volumes in future years with scope to accommodate future growth, and would promote economic development, productivity and recovery.

As discussed in Chapter 3 (Project alternatives and options), the merits of the project were considered in the context of a range of other alternatives and options, including a do nothing option, based on the extent to which they could meet the project objectives and how well they performed with reference to other transport, environmental, engineering, social and economic factors. The do nothing alternative would not address the limited overtaking opportunities, steep grades and lengthy travel times on the Great Western Highway, resulting in the road safety issues, considerable delays and congestion, freight inefficiencies and vulnerability to closure that the existing Great Western Highway experiences. Other alternatives considered would not satisfy the needs and objectives as effectively as the project.

Key environmental issues have been examined throughout the design development process. Consultation has been carried out with the community and relevant stakeholders during the assessment process with key potential environmental impacts identified at an early stage, and where possible, avoided or minimised through appropriate design refinement and mitigation. This has resulted in an iterative design development process to manage potential impacts.

As for any major infrastructure project of this scale, there are likely to be residual impacts. Designing the project to be mainly underground has substantially reduced potential impacts and largely confined impacts to the construction stage. The project would be subject to ongoing investigations and design development in consultation with relevant stakeholders and the community and seek to further minimise potential impacts.

Key impacts during construction of the project would include:

- temporary road network performance impacts during construction including relatively minor and manageable increases in traffic volumes and weekday peak hour travel times
- temporary air quality and noise and vibration impacts where sensitive receivers are located within proximity to construction activities at Blackheath and Little Hartley
- removal of native vegetation, hollow-bearing trees and habitat for threatened fauna species
- potential reduction in baseflow to Greaves Creek as a result of groundwater drawdown potentially impacting plant community types associated with groundwater dependent ecosystems
- potential impacts to one unlisted but nominated heritage site (Greater Blue Mountains Area – Additional Values), two potential archaeological sites during construction (Mount Victoria Stockade and Plough Inn) and one heritage item during operation (Rosedale)
- temporary visual impacts from construction elements and activities.

Potential impacts during operation of the project would include:

- a negligible increase in air pollutant concentrations around the tunnel portals for both ventilation design options
- a reduction in road traffic noise at around 2,000 receivers along the existing Great Western Highway between Little Hartley and Blackheath and increased road traffic and facilities noise at some receivers
- potential reduction in baseflow to Greaves Creek as a result of groundwater drawdown potentially impacting plant community types associated with groundwater dependent ecosystems
- visual impacts and change in landscape character with the introduction of tunnel portals, ventilation outlets (if identified as the preferred option) and other operational infrastructure.

With the effective implementation of identified environmental mitigation measures, the potential residual environmental impacts of the project are considered manageable, and the project would be in the public interest.