

Chapter 2

Strategic context and project need

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2 Strategic context and project need

2.1 Overview

This chapter outlines the need for the upgrade of the Great Western Highway between Blackheath and Little Hartley (the project). It explains how the project would address the existing constraints of this section of the Great Western Highway, which are discussed in Section 2.2. These constraints have informed the project objectives outlined in Section 2.3. By addressing these objectives, the project would result in the benefits outlined in Section 2.4.

The need for the project as outlined in Commonwealth, NSW and regional infrastructure planning strategies is detailed in Section 2.2.6.

Key strategic context issues that are relevant to the assessment of the project include:

- the local and regional community – Chapter 19 (Social impacts)
- land use and ownership – Chapter 20 (Business, land use and property)
- important natural features such as the Greater Blue Mountains World Heritage Area, Blue Mountains National Park, scenic landscapes, conservation areas and culturally important landscapes – Chapter 12 (Biodiversity), Chapter 16 (Aboriginal cultural heritage), Chapter 17 (Non-Aboriginal heritage), Chapter 18 (Landscape and visual) and Chapter 20 (Business, land use and property)
- key risks or hazards such as flooding, bushfires, landslips and climate change – Chapter 14 (Surface water and flooding), Chapter 22 (Hazards and risk) and Chapter 23 (Sustainability, climate change and greenhouse gas).

2.2 Project need

The Great Western Highway provides the main road transport connection through the Blue Mountains for access between the Central West of NSW (Bathurst, Orange, Parkes and Dubbo region) and the Sydney motorway network for freight, tourist and general traffic. It also plays a vital role in local traffic movements between the townships of the Blue Mountains.

Supporting the current needs and future growth of Sydney and Central West NSW through an efficient transport network is fundamental to the liveability, productivity and sustainability of Greater Sydney and NSW. The need to address these issues is recognised in strategic plans for improving transport, placemaking, and freight efficiency across Greater Sydney and regional NSW, as discussed in Section 2.2.6.

The existing Great Western Highway between Blackheath and Little Hartley is mostly a two-way undivided carriageway with one lane in each direction. Traffic volumes are expected to grow by two per cent per annum between Blackheath and Forty Bends, and visitors to regional NSW have grown by 23 per cent between 2010 to 2017 (Transport for NSW, 2021d). The critical function of the Great Western Highway is being the key east-west road freight and transport route between Sydney and Central West NSW. Heavy vehicle movements along the Great Western Highway are predicted to increase by around 30 per cent by 2036 (Transport for NSW, 2021d). Growth in demand for this east-west transport route has led to the need for the upgrade of the Great Western Highway between Katoomba and Lithgow to a four lane carriageway (the Upgrade Program) and the project is a key component of this program.

The current constraints of the Great Western Highway are shown graphically in Figure 2-1 and described in further detail in the following sections.

2.2.1 Growing freight inefficiency

There is a relatively high proportion of heavy vehicles (up to around 24 per cent) travelling on the Great Western Highway through the Blue Mountains, reflective of the 18,800 tonnes of freight transported daily between the Central West region and Sydney (10,300 tonnes towards Sydney and 8,500 tonnes towards the Central West region) (Transport for NSW, 2021d). Limited overtaking opportunities, steep grades and lengthy travel times on the Great Western Highway, including between Blackheath and Little Hartley, affect the efficiency of these freight movements. Left unaddressed, this will constrain access between Sydney and proposed future freight infrastructure (and associated land use changes) in the Central West region, including the Parkes National Logistics Hub and the Inland Rail Program. Without action to provide additional transport capacity, freight efficiency would further deteriorate to unacceptable levels.

As outlined in Chapter 3 (Project alternatives and options), the Great Western Highway remains the most viable freight route to and from the Central West region, however, freight vehicles currently using the Great Western Highway are limited to a maximum of 20 metres in length. Freight vehicles that exceed 20 metres in length and need to travel between Sydney and the Central West region are currently required to travel an additional 100 kilometres via Goulburn or Newcastle (Transport for NSW, 2019).







| | Constraints | Project objectives | Project benefits |
|---|------------------------------|---|--|
|  | Growing freight inefficiency | Improve economic development, productivity and freight accessibility in and through the Blue Mountains, Central West and Orana regions | Improved economic development, productivity and recovery |
|  | Vulnerability to closure | Improve the resilience of the corridor between Blackheath and Little Hartley to ensure continuity and safety of transport and essential services | Improved resilience and future-proofing |
|  | Sub-optimal travel times | Improve transport network performance and efficiency along the corridor between Blackheath and Little Hartley to meet the needs of customers | Improved network performance |
|  | Safety Issues | Improve the overall safety of the corridor for all transport users between Blackheath and Little Hartley | Safety improvements |
|  | Amenity issues | Enhance the liveability and be sensitive to the unique environmental and cultural assets along the corridor between Blackheath and Little Hartley | Movement, place and amenity improvements |
|  | Project delivery | A value for money, sustainable and deliverable solution | Socio-economic opportunities (see Section 2.4) |

Figure 2-1 Constraints, project objectives and project benefits

2.2.2 Vulnerability to closure

The Great Western Highway is vulnerable to closure through the Blue Mountains because it is only one lane in each direction in some sections that have yet to be upgraded, and there is a lack of alternative routes. When lanes are closed because of an incident, traffic cannot be easily diverted around or through the incident, due to there being only one lane in each direction. This often results in major delays, particularly on weekends and peak holiday periods. For example, at Mount Victoria, the steep grades of Victoria Pass often cause vehicle breakdowns or require traffic to merge at differing speeds, which can lead to queues of up to eight kilometres in length and delays of up to 80 minutes (Transport for NSW, 2021d).

The Great Western Highway is also susceptible to closure during natural disasters and extreme weather events. For example, in March 2022, consistent heavy rainfall caused road instability and a subsequent landslide on a section of the Great Western Highway at Mount Victoria. Again, in July 2022 a landslide near the rail corridor at Blackheath also resulted in heavy delays on the existing Great Western Highway. The eastbound lane of the Great Western Highway was closed, and traffic was able to pass in both directions via the single remaining lane under contra-flow traffic control arrangements. However, the closure of the eastbound lane, reductions of speed to 40 kilometres per hour, and the alternative route on Bells Line of Road being closed due to flooding, meant that significant delays were experienced on the Great Western Highway and surrounding road network between Katoomba and Lithgow. These events are expected to become increasingly prevalent with climate change.

2.2.3 Sub-optimal travel times

Road transport plays a vital role in supporting the Central West region and the Blue Mountains. Average daily traffic volumes along the Great Western Highway vary from around 15,000 to 20,000 vehicles per day near Blackheath to around 8,500 vehicles per day near Little Hartley (Transport for NSW, 2021d). The Central West and Orana regions are anticipated to experience population growth of up to around 23,450 more people by 2036 (Department of Planning and Environment (DPE), 2017), which will further increase traffic volumes.

The current performance of the Blackheath to Little Hartley section of the Great Western Highway affects travel times for road users and will constrain access between Sydney and areas of future economic development, more generally in the Central West region. While the eight intersections along this section of the Great Western Highway currently operate at an acceptable level of service, lengthy delays and vehicle queuing are often experienced on minor roads. This includes at the signalised intersections of Bundarra Street and Govetts Leap Road in Blackheath and Station Street at Mount Victoria, as the traffic signal phasing prioritises the Great Western Highway movements. Without additional transport capacity, travel times and intersection levels of service would further deteriorate during peak periods. Further discussion of current and future road performance is provided in Chapter 8 (Transport and traffic).

The Great Western Highway also sees spikes in demand during weekends and peak holiday periods. This can cause major delays along the corridor. For example, during the 2021 Easter long weekend, delays of more than two hours were experienced on the Great Western Highway through the Blue Mountains (Transport for NSW, 2021b).

As the region's population grows, strain on the road network is likely to increase.

2.2.4 Safety issues

Safety issues which currently affect the performance of the Great Western Highway between Blackheath and Little Hartley include:

- tight curves and narrow verges which pose safety risks to road users, with the average crash severity index of 1.36, compared to the NSW average of 1.27 indicating the Great Western Highway has a higher than average proportion of fatal and injury crashes (further discussed in Appendix D (Technical report – Transport and traffic))
- the up gradient on Victoria Pass is more than double the recommended maximum for roads of this type. This results in a large average speed difference between light and heavy vehicles travelling eastbound up Victoria Pass, and coupled with a merge from two lanes to one, often results in traffic delays which can result in safety issues for road users
- the steep down grades at Victoria Pass can require vehicles unable to slow down, stop safely or maintain speed, to use the safety ramps travelling westbound and vehicle breakdown zone travelling eastbound
- limited overtaking opportunities and intersection capacity, which can encourage risk-taking behaviour from road users.

2.2.5 Amenity issues

Several townships are located along the Great Western Highway adjacent to and within the project corridor, including Blackheath, Mount Victoria and Little Hartley. In addition to its inter-regional transport function, the Great Western Highway supports local traffic movements and is the main road providing access between these towns. However, congestion on weekends and peak holiday periods caused by increased numbers of light vehicles can make local trips on the Great Western Highway difficult. This issue is exacerbated by high proportions of heavy vehicles (up to 24 per cent of vehicles) using the Great Western Highway at any given time. This increased congestion limits access to the local road network by making crossing or entering the Great Western Highway away from the limited number of signalised crossings difficult, including for cyclists and pedestrians.

Limited access to the road network may result in local residents electing not to travel locally across the Blue Mountains particularly during peak periods.

Freight vehicles, which use the Great Western Highway 24 hours a day, seven days a week, also contribute to amenity issues through increased noise and vehicle emissions. For example, in 2018, the highest proportion of heavy vehicles on a weekday occurred between 10pm and 4am averaging 60 per cent of all traffic per hour and reaching a peak of 75 per cent of all traffic at 2am.

2.2.6 Commonwealth and NSW strategic planning framework

The project is consistent with Commonwealth and NSW strategic plans relating to the improvement of transport and freight efficiency as outlined in Table 2-1.

The key design strategies, policies, and plans that have informed and influenced the project objectives and design development process are discussed in Chapter 4 (Project description).

Table 2-1 Strategic planning policies relevant to the project

| Planning policy | Project relevance |
|--|--|
| State Infrastructure Strategy 2018-2038 (Infrastructure NSW, 2018) | The project would: <ul style="list-style-type: none">• address the constraints that limit freight movement along this section of the Great Western Highway, identified in the State Infrastructure Strategy 2018-2038.• support regional economic development, productivity and recovery by improving network performance, travel times and safety along this section of the Great Western Highway• support recommendations 41, 42, 50 and 51 by increasing the freight capacity and efficiency of the road network while enhancing accessibility and improving road safety. |
| State Infrastructure Strategy 2022-2042 (Infrastructure NSW, 2022) | The NSW Government has committed \$2.5 billion to the Upgrade Program, \$2 billion of which is available for the project. The importance of the Upgrade Program has been recognised by Infrastructure Australia which has included the Upgrade Program in the National Infrastructure Priority List (Infrastructure Australia, 2020). Additional Australian Government funding is being sought to enable delivery of the project, given the national contribution to gross product that the Upgrade Program has the capacity to deliver. Transport for NSW, in consultation with other relevant agencies, is continuing to investigate appropriate delivery models for the project. Consultation with the construction industry has confirmed that there is sufficient capacity to deliver the project at this time. |

| Planning policy | Project relevance |
|--|---|
| <p>Future Transport Strategy: Our vision for transport in NSW (Transport for NSW, 2022g)</p> | <p>The project aligns with the following transport outcomes and strategic directions:</p> <ul style="list-style-type: none"> • connecting our customer's whole lives: <ul style="list-style-type: none"> - C1: connectivity is improved across NSW – by providing new, high quality, efficient transport infrastructure that connects Sydney through the Blue Mountains to the Central West region - C2: multimodal mobility supports end-to-end journeys – by facilitating freight connectivity and access and improving freight transportation capacity and efficiency across the Blue Mountains - C4: our transport networks are safe – by contributing to delivering strategies to achieve ambitious safety targets, forming a part of an integrated Safe Systems approach, improving safety for active transport users and providing opportunities for future active transport infrastructure by removing traffic from the Great Western Highway • successful places for communities: <ul style="list-style-type: none"> - P2: transport infrastructure makes a tangible improvement to places – improving amenity of places along State Roads by removing traffic from the Great Western Highway, as well as delivering high quality urban design that would contribute to making places more liveable and successful - P4: transport minimises environmental impacts – by following an environment-led design process that has sought to avoid and minimise environmental impacts through construction and operation, including a commitment to deliver a net increase in urban trees and no net loss in biodiversity, improvements in air quality, a reduction in noise and minimisation of the construction footprint as far as possible - P5: transport is resilient and adaptable to shocks and stresses – delivering a more resilient transport network by providing additional transport capacity across the Blue Mountains and an alternative route in the event of natural or other incidents and emergencies, as well as consideration of future climate changes impacts in the design • enabling economic activity: <ul style="list-style-type: none"> - E1: freight networks and supply chains are efficient and reliable – by providing an additional, high quality network capacity in the road network to support freight movements across the Blue Mountains and between the Sydney and Central West regions - E3: transport supports the visitor economy – the additional capacity provided by the project and the reduction in surface traffic would improve access and experiences and would support visitor access - E5: leverage our procurement power for better outcomes – the project has been and would continue to be procured to promote sustainable and ethical practices. |
| <p>A Map for Action: Towards a More Sustainable Blue Mountains 2000-2025 (Blue Mountains City Council, 2000)</p> | <p>The project help would address the following objectives by improving traffic network performance and efficiency between Blackheath and Little Hartley and considering the unique Blue Mountains identity in the landscaping and urban design elements of the project:</p> <ul style="list-style-type: none"> • reducing increased traffic congestion on the Great Western Highway and in towns and villages • retaining a distinct Blue Mountains identity and avoiding incorporation into Greater Sydney • reducing the social and environmental impacts of large numbers of people commuting to work in Sydney. |

| Planning policy | Project relevance |
|---|--|
| Regional NSW Services and Infrastructure Plan 2018 (Transport for NSW, 2018b) | The project would support the objective to improve freight connectivity from inland NSW to Sydney, including along the Great Western Highway, by providing a connection for high productivity vehicles longer than 20 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. |
| Tourism and Transport Plan 2018 (Transport for NSW, 2018a) | By improving transport infrastructure on the main road used to access Central West NSW, the project aligns with customer outcome 2 (greater access to more of NSW). The project also aligns with customer outcomes 1 (enhancing the visitor experience) and 3 (making transport the attraction) by applying improved urban design and placemaking principles that benefit both road users and local areas between Blackheath and Little Hartley. |
| Road Safety Plan 2021 (Transport for NSW, 2018c) | Within the Road Safety Plan 2021, the project would align with the Saving Lives on Country Roads program to address challenges to road safety including high risk curves on NSW roads by providing an alternative to the tight curves and steep grades on the Great Western Highway, particularly at Mount Victoria. |
| Central West and Orana Regional Plan 2036 (DPE, 2017) | The project is consistent with the following directions under Goal 3: Quality freight, transport and infrastructure networks: <ul style="list-style-type: none"> • direction 18 – improve freight connections to markets and global gateways • direction 19 – enhance road and rail freight links. |
| NSW Freight and Ports Plan 2018-2023 (NSW Government, 2018) | The project would support the objective to ensure safe, efficient and sustainable freight access to places by providing a connection for high productivity vehicles longer than 20 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 (Transport for NSW, 2019). |
| 2021 Australian Infrastructure Plan (Infrastructure Australia, 2021) | Infrastructure Australia's Infrastructure Priority List identifies the need for improvements to the Great Western Highway between Katoomba and Lithgow. The project would address this need specifically between Blackheath and Little Hartley. The project aligns with the following key focus areas: <ul style="list-style-type: none"> • place-based outcomes for communities – by improving local access movements around Blackheath and Mount Victoria by separating through traffic into the project tunnels and local traffic onto the surface roads, particularly during weekends and peak holiday periods. This would improve amenity for residents of Blackheath and Mount Victoria due to less traffic on the Great Western Highway including through reductions in traffic noise and vehicle emissions • sustainability and resilience – by providing an alternative route to the Great Western Highway improving access for emergency vehicles in the event of an incident • transport – by reducing travel times and improving road safety on this section of the Great Western Highway • waste – by using recycled materials, reusing or repurposing generated waste (including spoil) where feasible, and otherwise disposing of waste in an environmentally sustainable manner. |

2.3 Project objectives

The project objectives are consistent with the objectives for the Upgrade Program. These objectives are outlined in Figure 2-1 and include:

- improve economic development, productivity and freight accessibility in and through the Blue Mountains, Central West and Orana regions
- improve the resilience of the corridor between Blackheath and Little Hartley to ensure continuity and safety of transport and essential services
- improve transport network performance and efficiency along the corridor between Blackheath and Little Hartley to meet the needs of all our customers
- improve the safety of the corridor for all transport users between Blackheath and Little Hartley
- enhance the liveability and be sensitive to the unique environmental and cultural assets along the corridor between Blackheath and Little Hartley
- provide value for money, sustainable and deliverable infrastructure.

These objectives have informed the alternative and options evaluation process for the project, described in Chapter 3 (Project alternatives and options), and have guided the design development to date. These objectives will also be used to guide future decisions during ongoing design development for the project.

2.4 Project benefits

The key benefits of the project are outlined in Figure 2-1 and would include:

- 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 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 Upgrade Program) would 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.