3 Strategic justification and project need

This chapter outlines the relationship of the project to the State and national strategic planning and policy framework and relevant specific planning and policy documents. It also identifies the need for the project within the context of existing transport networks, and presents the project objectives. The project objectives have been developed to align with the strategic objectives of relevant planning and policy documents, and relate directly to the key issues that demonstrate the need for the project. A statement of strategic need concludes this chapter.

Table 3-1 sets out the Director-General's Requirements as they relate to the strategic justification and project need, and where in the environmental impact statement these have been addressed.

Table 3-1 Director-General's Requirements – strategic justification and project need

Director-General's Requirement	Where addressed
A statement of the objectives of the project, including a description of the strategic need, justification, objectives and outcomes for the project, taking into account existing and proposed transport infrastructure and services within the adjoining subregions, and as relevant the outcomes and objectives of relevant strategic planning and transport policies, including, but not limited to, NSW 2021, NSW Government State Infrastructure Strategy, NSW Long Term Transport Master Plan (December 2012), draft Metropolitan Plan for Sydney (March 2013) and any other relevant plans;	Objectives of the project are identified in **Section 3.4**. The project need is provided in **Section 3.3** and a statement of strategic need is provided in **Section 3.5**. Consideration of the project against the outcome and objectives of strategic planning and transport policies is provided in **Section 3.1** and **Section 3.2**.
Justification for the preferred project taking into consideration the objects of the *Environmental Planning and Assessment Act 1979.*	The project justification is provided in **Section 3.3** and **Section 3.5**. Further justification is provided in **Chapter 11**.

3.1 NSW strategic planning and policy framework

In 2011, the NSW Government presented a broad strategic plan for development of the State in the form of NSW 2021 – A Plan to Make NSW Number One (NSW 2021) (NSW Department of Premier and Cabinet, 2011). In order to achieve key objectives of NSW 2021 relating to the provision of infrastructure the NSW Government formed Infrastructure NSW, an independent statutory agency. The primary task of Infrastructure NSW was to prepare the 20 year State Infrastructure Strategy 2012-2032 (Infrastructure NSW, 2012), which was used to inform the NSW Government's State Infrastructure Strategy (SIS) (NSW Department of Premier and Cabinet, 2012). The SIS is implemented through annual five year State Infrastructure Plans (refer to **Section 3.1.2**).

Infrastructure NSW's recommendations are intended to enable NSW Government decision making, and are considered in conjunction with the advice from other State agencies including:

- NSW Department of Planning and Environment, which is responsible for Sydney's Metropolitan Strategy and associated Subregional Strategies (refer to **Sections 3.1.3, 3.1.4** and **3.1.5**). These strategies present an integrated planning approach to meeting the housing, employment, transport, land and recreational needs of Greater Sydney over the next 20 years.
- Transport for NSW, which is responsible for the NSW Long Term Transport Master Plan (Master Plan) (Transport for NSW, 2012a). The Master Plan sets out an approach for delivering world class transport networks and services to the State's population.

The following sections describe the compatibility of the project with these key State strategic planning and policy documents.

3.1.1 NSW 2021 – A Plan to Make NSW Number One

NSW 2021 was released in September 2011 and is the NSW Government's strategic plan for the future. NSW 2021 is a 10 year plan for change in NSW, and it aims to rebuild the economy, provide quality services, renovate infrastructure, restore government accountability and strengthen local environment and communities.

Provided within NSW 2021 are 32 goals, including goals to increase expenditure on critical NSW infrastructure, improve the efficiency of the State road network, reduce travel times and improve safety. Priority actions are specified in NSW 2021 to achieve these goals. **Table 3-2** summarises relevant NSW 2021 goals and their application to the project.

Table 3-2 Relevant NSW 2021 goals

Goals	Description	Relevance to project
Goal 19	Recognises that investment in critical infrastructure is needed across the State, stating that the role of Infrastructure NSW over the next 10 years will be to prioritise and deliver infrastructure in true partnership with the private sector.	The project is consistent with the priority actions outlined under this goal, as it would demonstrate an infrastructure delivery partnership between the State and the private sector, utilising best practice procurement and funding models.
Goal 7	Focuses on the need to reduce travel times around Sydney and across NSW by delivering an efficient and effective transport system.	The delivery of road infrastructure that relieves congestion, improves safety, and enhances and expands capacity on road corridors is identified as a priority action for improving the State road network. In achieving project objectives relating to improvements in safety and efficiency along Pennant Hills Road, the project would be consistent with priority actions for achieving goals 7 and 10.
Goal 10	Outlines the need to improve the safety of NSW roads through road development, upgrading, and reducing congestion.	

3.1.2 NSW State Infrastructure Strategy

The State Infrastructure Strategy (NSW Department of Premier and Cabinet, 2012) outlines the State Government's short, medium and long term initiatives concerning infrastructure delivery and reform over the next 20 years. The State Infrastructure Strategy was developed following careful consideration of Infrastructure NSW's State Infrastructure Strategy 2012-2032 (Infrastructure NSW, 2012), which included 70 recommendations for reform or project priorities.

In addition to the 20 year strategy, Infrastructure NSW is also required under the *Infrastructure NSW Act 2011* to prepare and submit Infrastructure Plans to the Premier, to identify specific major infrastructure projects to be undertaken as a priority over the coming five years. The first of these plans, the State Infrastructure Plan, was made publically available through the NSW Budget 2013-14 in the form of Budget Paper No. 4 Infrastructure Statement 2013-14 (NSW Government, 2013). The SIP represents the NSW Government's funded infrastructure priorities for a five year period, being 2013-2014 to 2017-2018.

The State Infrastructure Strategy recognises that 80 per cent of passenger and freight movements in Sydney are made by road, and that traffic and congestion on key corridors is growing. As travel speeds along major road corridors decrease, road freight productivity and commuter efficiency is being impacted, presenting an economic cost to the State. In order to boost productivity, grow the economy and create new jobs, the State Infrastructure Strategy and State Infrastructure Plan have identified strategic priorities that would deliver incremental improvements to the State's urban road network. One of these strategic priorities involves completing the 'missing links' on Sydney's motorway network, including a link between the M1 Pacific Motorway and the Hills M2 Motorway.

Additionally, the State Infrastructure Strategy commits to undertaking a review of the unsolicited private sector proposal for the delivery of the link between the M1 Pacific Motorway and the Hills M2 Motorway.

3.1.3 Metropolitan Plan for Sydney to 2036

The Metropolitan Plan for Sydney to 2036 (Metropolitan Plan) (Department of Planning, 2010) was released in December 2010. The purpose of the Metropolitan Plan is to guide Sydney's growth until 2036 and to coordinate efforts by the NSW Government and local councils to deliver a networked, liveable, affordable, and sustainable city. Integrating transport infrastructure and land use planning, the Metropolitan Plan emphasises the importance of creating a more connected, efficient city structure.

The Metropolitan Plan recognises that Sydney's road network is critical to its economy and to the lives of Sydneysiders, with 92 per cent of Sydney's 16.3 million average weekday trips undertaken by road (Department of Planning, 2010). It is acknowledged that in order to meet the aims of the Metropolitan Plan, there is a need to address road infrastructure challenges such as lack of capacity and increasing demand. The Metropolitan Plan commits to addressing these challenges, the strategy for which includes investment in strategic road upgrades and protection of key transport corridors. The project is identified as a key medium to long-term corridor under the Metropolitan Plan.

Objective C3 of the Metropolitan Plan emphasises the need to deliver a transport system that supports productivity through efficient movement of freight. The Metropolitan Plan also recognises that road freight movements in densely populated urban centres have the potential to create amenity issues for surrounding dwellings, and to compete for capacity with other traffic particularly during peak hours. In planning for centres, a balance must be struck between the needs of local residents and broader regional considerations. In achieving the objectives of improving freight efficiency, reducing congestion, and improving local amenity along Pennant Hills Road, the project would be consistent with the objectives of the Metropolitan Plan.

3.1.4 Draft Metropolitan Strategy for Sydney to 2031

The Draft Metropolitan Strategy for Sydney to 2031 (Draft Metropolitan Strategy) (Department of Planning and Infrastructure, 2013) was released for public comment in March 2013 and sets the strategic planning framework for Sydney's growth to 2031. Once the draft strategy is finalised in 2014, it would replace the current Metropolitan Plan for Sydney to 2036.

The Draft Metropolitan Strategy recognises that good transport infrastructure, high levels of accessibility and cross regional connectivity are crucial in supporting the growth of Sydney and enhancing liveability. In coordination with the State's infrastructure plans, the NSW Long Term Transport Master Plan and the State Infrastructure Strategy, the Draft Metropolitan Strategy outlines a series of transport objectives directed at achieving this vision.

Under Objective 28, the Draft Metropolitan Strategy identifies corridors for protection and sites for Sydney's long term transport needs. As with the Metropolitan Plan for Sydney to 2036 and State infrastructure plans, the corridor between the M1 Pacific Motorway and the Hills M2 Motorway is identified as a key corridor for protection. Investigation into the potential role, alignment and opportunities for this link is listed as an action under this objective.

Objective 27 of the Draft Metropolitan Strategy commits to incorporation of efficient freight infrastructure into Sydney's transport network. This includes actions to protect corridors and support investment in new infrastructure. Although the Draft Metropolitan Strategy focuses on strengthening the role of freight transport by rail, it also recognises the need to address competition for space on Sydney's road network and to balance the needs of freight with residents and other road users. Objectives for the project include reducing travel times for local users of Pennant Hills Road, improving freight efficiency and improving amenity for residents and businesses within the existing road corridor (refer to **Section 7.7** Social and economic). In addressing the needs of the freight industry and delivering benefits to other users of the corridor, the objectives of the project are consistent with those of the Draft Metropolitan Strategy.

3.1.5 Draft North Subregional Strategy

Due to the size and complexity of the metropolitan region, a series of draft Subregional Strategies were prepared to interpret the actions and objectives of the 2005 Metropolitan Strategy, City of Cities: A Plan for Sydney's Future (Department of Planning, 2005). These Subregional Strategies form an important intermediate step in guiding government investment at a local level and linking local and state planning issues. In 2014, new Subregional Delivery Plans will be drawn up in partnership with the community and local councils.

The project is located within the North Subregion, which stretches from Wisemans Ferry in the north to Roseville in the south, and from St Ives in the east to Carlingford in the west. Growth of the North Subregion is guided by the Draft North Subregional Strategy (Draft Subregional Strategy) (Department of Planning, 2007) which is structured around seven subject areas consisting of issue-specific objectives and actions. The 'Transport' strategy aims to address key issues facing the North Subregion including congestion, capacity constraints, and demand management.

Under a broad objective to improve existing transport systems in the North Subregion, the Draft Subregional Strategy includes an action to provide additional capacity at places across the network that experience high levels of congestion. As discussed in **Section 7.1** (Traffic and transport), the project is anticipated to reduce congestion along Pennant Hills Road through provision of an alternative route for through traffic, thereby contributing to achievement of this objective. The Draft Subregional Strategy also refers specifically to the provision of a link between the M1 Pacific Motorway and the Hills M2 Motorway as a key action under its objective to connect regions and economic gateways within the greater metropolitan region.

Actions D6 and D8 of the Subregional Strategy deal specifically with freight objectives, namely improving efficiencies for, and lowering adverse impacts from, all types of freight movement across the North Subregion. Under Action D6, Pennant Hills Road is identified as a corridor currently under pressure as a result of growing volumes and peak hour road freight movements. Provision of an alternative route between the M1 Pacific Motorway and the Hills M2 Motorway is anticipated to lead to improvements in the efficiency of freight movement and to improved traffic and amenity conditions along Pennant Hills Road. As such, the project would be consistent with the key transport objectives of the Draft Subregional Strategy.

3.1.6 NSW Long Term Transport Master Plan

The NSW Long Term Transport Master Plan (Master Plan) (Transport for NSW, 2012a), which was released in December 2012, presents the NSW Government's direction for transport planning and investment for the next 20 years. It identifies the key challenges that the NSW transport system must address to support the State's economic and social performance, and identifies a planned and coordinated set of actions to address those challenges.

The Master Plan emphasises the need for an integrated approach to land use and transport planning. It aims to strengthen State transport planning processes by taking into account future land use planning, particularly in areas where significant growth is anticipated to occur. It is recognised that in order to improve the performance of Sydney's motorway network over the next 20 years, road investments need to integrate with land use planning as well as with Sydney's wider public transport network.

In conjunction with the Draft Metropolitan Strategy for Sydney to 2031 (Department of Planning and Infrastructure, 2013), the Master Plan intends to shape Sydney's transport network to support patterns of settlement, employment and economic activity. Key challenges identified in the Master Plan include sustaining growth in the Sydney metropolitan region and providing better connections and services to Sydney's growth areas. In addressing this challenge, the Master Plan recognises the need for a network that supports growing centres such as North Sydney through provision of efficient links to labour, freight networks and emerging business hubs. In separating longer distance trips and freight transport from arterial and local roads, the project would increase available capacity for local road users.

This would improve the accessibility and efficiency of cross-city travel, and support the flow of goods and services within and between growing urban centres. Provision of an alternative route for freight transport between the M1 Pacific Motorway and the Hills M2 Motorway would also lead to improvements in the efficiency and reliability of Sydney's freight network, facilitating more efficient movement of goods through the supply chain and ultimately enhancing productivity.

Chapter 4 of the Master Plan addresses the need to alleviate congestion on Sydney's motorway network using an integrated package of solutions that tackle issues relating to both supply and demand. One of the key supply-related reasons for congestion on Sydney's motorways relates to the missing links between key components of the network. Investment in the construction of these missing links, with the aim of providing a fully connected, smoothly flowing motorway network, is included within the integrated package of solutions presented in Chapter 4 of the Master Plan. The completion of the motorway network is identified as a high priority in the Master Plan, including linking the M1 Pacific Motorway and the Hills M2 Motorway.

The Master Plan recognises that a missing orbital motorway connection exists between the M1 Pacific Motorway and the Hills M2 Motorway. In Chapter 7 of the Master Plan, this particular missing link is also identified as an important long term road freight corridor.

Chapter 9 of the Master Plan provides a list of measures and a timetable for action. This section identifies that planning would be progressed for future motorway links including the M1 Pacific Motorway to the Hills M2 Motorway link would occur as a medium to long term priority.

Sydney's motorway network is part of the primary freight network in Sydney and its efficient operation is critical to ongoing productivity. In providing an efficient link between the M1 Pacific Motorway and the Hills M2 Motorway, the project would improve freight access, connectivity and reliability across the greater Sydney area.

3.1.7 NSW Freight and Ports Strategy

The aim of the NSW Freight and Ports Strategy (Transport for NSW, 2013b) (the Freight Strategy) is to provide a transport network in NSW that allows the efficient flow of goods to the market.

The Freight Strategy identifies that the NSW road network carried 63 per cent of the total freight volume in 2011, with 33 percent of freight carried by rail in the same year. The role of heavy vehicles in moving freight across NSW is substantial and will continue to be for the foreseeable future. The Freight Strategy identifies the challenge of increasing the capacity of NSW roads to support the growth in freight task.

The Freight Strategy has two main objectives, being to deliver a freight network that efficiently supports the projected growth of the NSW economy and to balance freight needs with those of the broader community and the environment. The project is consistent with the three strategic action programs identified in the Freight Strategy, as follows:

- Network efficiency – the project would improve network efficiency, delivering travel time savings. This would provide more efficient movement of freight, thereby reducing operational freight costs.

- Network capacity – the project would provide increased road capacity between the M1 Pacific Motorway and the Hills M2 Motorway, a key section of road for freight movement which is currently heavily congested.
- Network sustainability – the removal of a large number of freight vehicles from the Pennant Hills Road corridor could contribute to a range of amenity related benefits for the local community. The provision of an alternative route and the resultant travel time savings and reduced vehicle hours travelled would also lead to long-term savings in greenhouse gas emissions.

The Freight Strategy identifies improvements to network capacity as strategic action program 2. Task 2A-1 under this program is to establish corridors to meet long term freight needs of NSW. The link between the M1 Pacific Motorway and the Hills M2 Motorway is specifically identified as a key link to be investigated and addressed as part of this task. Additionally, task 2B-1 (to connect and complete Sydney's motorway network) identifies key motorway connections with benefits for freight. This includes the construction of the connection between the Hills M2 Motorway and M1 Pacific Motorway which would provide the opportunity to streamline interstate movements around Sydney.

The Freight Strategy also identifies the project in its infrastructure program. In this section, the Freight Strategy identifies that the project would improve travel times and reduce operating costs for national freight carriers and long-distance transport operators.

3.1.8 Action for Air

Action for Air (DECCW, 2009a) aims to improve the air quality in the greater metropolitan region. Action for air identifies ozone and particles as the biggest air quality challenges for the region, and nominates actions and objectives specifically targeted towards reducing emissions from motor vehicles. The project would assist meeting this goal by reducing vehicle emissions through anticipated reduction in travel times. Further details regarding the calculated improvements to air quality are provided in **Section 7.3** (Air quality).

3.2 National strategic planning and policy framework

Several national planning strategies identify a need for a motorway standard link between the M1 Pacific Motorway and the Hills M2 Motorway, within the context of the National Land Transport Network. Most of these strategies refer to the role of this link in achieving improvements in national freight efficiency. This section outlines the relationship of the project to specific national strategies, including:

- The White Paper, AusLink: Building Our National Transport Future (Australian Department of Transport and Regional Services, 2004).
- The Nation Building Program (Commonwealth Department of Infrastructure and Transport, 2013).
- The 2011 National Land Freight Strategy discussion paper (Infrastructure Australia, 2011).
- The National Road Safety Strategy for Australia 2011 – 2020 (Road Safety Strategy) (Australian Transport Council, 2011).

3.2.1 The AusLink White Paper

The White Paper, AusLink: Building Our National Transport Future (Commonwealth Department of Transport and Regional Services, 2004), was released in 2004 as the Australian Government's formal policy statement on land transport. AusLink is a major Australian Government initiative designed to improve planning, decision-making and funding for national land transport infrastructure. A National Land Transport Plan is presented under AusLink which outlines the Australian Government's long term approach to tackling Australia's transport challenges.

In addition to the National Land Transport Plan, another core component of the AusLink initiative is the development of the AusLink National Network (National Land Transport Network). The AusLink National Network is comprised of a number of important road and rail infrastructure links, and is designed to improve national and interregional connectivity. Pennant Hills Road between the M1 Pacific Motorway and the Hills M2 Motorway forms part of the National Land Transport Network and, as discussed further in **Section 3.3.1**, is one of the two remaining sections within Sydney that is not of a motorway standard.

AusLink presents eight strategic directions intended to guide investment by the Australian Government in land transport priorities. These include improving the capacity and reliability of interstate and interregional corridors, addressing congestion on key urban links, improving safety and security, and supporting regional and local economic growth. The project would assist in reducing congestion along Pennant Hills Road and the surrounding network, provide a safe and reliable motorway that integrates with the regional network, and improve the efficient movement of state and national freight. As such, the project would be consistent with the strategic direction of the AusLink initiative.

3.2.2 Nation Building Program

The Australian Government's Nation Building Program (Commonwealth Department of Infrastructure and Transport, 2013) assists national, regional economic and social development through provision of funding aimed at improving the performance of land transport infrastructure. Under the Nation Building Program the Australian Government has committed $23.3 billion for a range of key transport infrastructure projects in NSW.

The focus of the Nation Building Program is sound investment in nationally significant, productivity enhancing transport projects that deliver best value for funding. Linking the M1 Pacific Motorway with the Hills M2 Motorway is recognised as a priority project under the Nation Building Program. It is recognised that once completed, this link would greatly reduce traffic congestion through the northern suburbs and cut journey times for motorists travelling between Sydney and the Central Coast.

It is noted within the 2013-14 Commonwealth Budget that growing demands on transport infrastructure and increasing budget pressures mean that innovative approaches are required to fund and finance large scale transport projects under the Nation Building Program (Commonwealth Department of Infrastructure and Transport, 2013). Partnership of the State government and the private sector on the project would be consistent with the Australian Government's strategy of attracting infrastructure financing options and encouraging greater private sector investment.

3.2.3 National Land Freight Strategy Discussion Paper

Infrastructure Australia takes the view that there is considerable scope for improving Australia's productivity and international competitiveness through national thematic approaches to the provision and use of infrastructure. One of the national themes identified by Infrastructure Australia is a national land freight network strategy. The 2011 National Land Freight Strategy Discussion Paper (Infrastructure Australia, 2011) provides a case and priorities for a national land freight network strategy, and an indicative list of projects and programs that Infrastructure Australia has flagged for inclusion in a long term national land freight network plan.

One of the cases put forward for a national land freight network relates to the movement of freight onto already congested multi-use infrastructure. Currently, most of the transport infrastructure used by freight is also used for personal transport. Attempting to accommodate freight on such infrastructure, particularly in urban areas, often leads to congestion. Freight transport is a contributor to this congestion, but is also affected by it, as delays have a direct impact on productivity. Within the 2011 discussion paper, this interaction between freight and urban land uses is referred to as 'freight encroachment'.

The 2011 discussion paper notes that general freight is likely to grow near population centres. In addition, population growth and urban consolidation will place added pressure on routes used by freight vehicles. Given expected growth in both population and freight, especially in urban areas, the need to resolve issues around freight encroachment and interaction will become increasingly pressing.

The project would assist in addressing freight encroachment on Pennant Hills Road by providing an alternative motorway standard route for state and regional freight travelling between the M1 Pacific Motorway and the Hills M2 Motorway. In doing so, the project would assist in improving efficiency of freight movement, improving amenity along Pennant Hills Road, and reducing the interaction between freight and other road users. The project demonstrates effective integration of transport and land use planning, which is important in achieving optimal outcomes for productivity and amenity.

3.2.4 National Road Safety Strategy 2011-2020

The National Road Safety Strategy for Australia 2011 – 2020 (Road Safety Strategy) (Australian Transport Council, 2011) is based on the Safe Systems approach to improving road safety. This is an inclusive approach that caters for all road users, including drivers, motorcyclists, passengers, pedestrians, cyclists, and commercial and heavy vehicle drivers. The Safe Systems approach recognises that humans, as road users, are fallible and will make mistakes which will result in crashes. It requires that road infrastructure be designed to take account of these errors and vulnerabilities to reduce the risk of death or serious injury.

The Road Safety Strategy is framed by the guiding vision that no person should be killed or seriously injured on Australia's roads. As a step towards this long-term vision, the strategy presents a ten year plan to reduce the number of serious injuries and fatalities on Australian roads by 30 per cent. To achieve this target, four key road safety actions or interventions have been identified, supported by immediate and future steps. Of the four actions, 'safe roads' and 'safe speeds' are relevant to the project.

The ‘safe roads’ action aims to adopt improved standards for road design, construction and operation to reflect the Safe Systems approach, and to improve the manner in which road safety benefits are identified and implemented in road investment programs. The ‘safe speeds’ action aims to achieve a better balance between safety and mobility objectives, and to improve compliance with speed limits.

The project has been designed in accordance with current Roads and Maritime road design guidelines, safety and traffic efficiency requirements to address existing road safety concerns along Pennant Hills Road (refer to **Section 3.3.3**), and aims to deliver immediate benefits associated with the reduction in heavy vehicles using Pennant Hills Road.

The project would be consistent with the guiding vision of the Safe Systems approach, and would contribute towards achieving the aims of the Road Safety Strategy. Road safety requirements would continue to be considered during the detailed design, construction, and operation stages of the project.

3.3 Project need

3.3.1 Existing road network conditions

Sydney’s strategic road network, which includes Sydney’s motorway network, supports economic growth across the Sydney metropolitan area by connecting people to jobs, and facilitating trade between businesses (Infrastructure NSW, 2012). It also supports freight movements to, from and through Sydney. The majority of commercial transport demand in NSW and south-eastern Australia is serviced by road freight, with Sydney being the most common point of either origin or destination (SKM, 2004).

As Sydney’s population and economy continue to grow, efficient transport systems will become increasingly important in servicing future growth. The Draft Metropolitan Strategy recognises the importance of strengthening these connections within Sydney and beyond, including the need to improve these connections to the north for freight and passengers.

Following the completion of the Westlink M7 Motorway, the connection between the M1 Pacific Motorway and the Hills M2 Motorway represents an important ‘missing link’ in Sydney’s motorway network. This has required traffic travelling to, from or through Sydney to share the section of Pennant Hills Road between the M1 Pacific Motorway and Hills M2 Motorway. This includes traffic travelling to or from major cities and centres intrastate and interstate, such as the Central Coast and Newcastle, Brisbane and Melbourne.

Pennant Hills Road between the M1 Pacific Motorway and the Hills M2 Motorway is part of the AusLink National Network (National Land Transport Network). This is a network of roads that 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, support regional development and allow safe and reliable access to major population centres. Projects to improve road safety and freight efficiency have been completed or are being implemented along the network between Brisbane, Sydney, Canberra and Melbourne. This section of Pennant Hills Road is one of the two remaining sections of the National Land Transport Network within Sydney that is not of a motorway standard. The other is King Georges Road, located in southern Sydney.

Pennant Hills Road provides local access for residents and businesses along the route, and services bus connections for commuters accessing local destinations or train stations at Pennant Hills, Thornleigh and Hornsby. Cyclists and pedestrians also travel along Pennant Hills Road. As a result, Pennant Hills Road not only services a mix of trip purposes and functions, but also carries high volumes of traffic. Due to the combination of the topography, land use constraints, traffic volume and mix, and frequent traffic lights along Pennant Hills Road between the M1 Pacific Motorway and the Hills M2 Motorway, the current Pennant Hills Road alignment is geometrically undesirable, compromising both safety and efficiency.

Sydney currently has a comprehensive rail network that could be enhanced to cater for some of the additional transport demand generated by its growing population. Significant investments in rail-based freight and passenger transport are required and have been proposed, such as the Epping to Thornleigh Third Track project and the North West Rail Link. Although these improvements will play an important role in servicing the corridor, public transport alone and in particular rail transport, is unlikely to satisfy future growth in transport demand (SKM, 2004). As traffic volumes 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 and district freight transport demands and in doing so, support the State's economy.

3.3.2 Existing traffic conditions

Between the M1 Pacific Motorway at Wahroonga and the Hills M2 Motorway at West Pennant Hills, Pennant Hills Road operates as an arterial road and currently has 21 signalised intersections, many of which are capacity constrained. Cars and cyclists share the road with heavy vehicles transporting freight to, from or through Sydney to major cities and regional centres such as the Central Coast, Newcastle, Brisbane and Melbourne.

Pennant Hills Road carries large volumes of traffic with two way average annual daily traffic (AADT) in 2011 of about 80,000 vehicles per day (Infrastructure NSW, 2012). A large proportion of these vehicles are heavy vehicles, given the corridor's importance as a national freight corridor. Based on data from the Road Performance Report (Roads and Maritime, 2013c) travel speeds along Pennant Hills Road are:

- Between 23 kilometres per hour and 43 kilometres per hour with an average of 31 kilometres per hour during the morning peak. This compares to an average for Sydney arterial roads of 41 kilometres per hour.
- Between 30 kilometres per hour and 40 kilometres per hour with an average of 35 kilometres per hour during the evening peak. This compares to an average for Sydney arterial roads of 42 kilometres per hour.

This data indicates that congestion on Pennant Hills Road is leading to relatively low travel speeds when compared to other arterial roads.

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

One of the desired outcomes of the project is to improve travelling conditions on Pennant Hills Road and the surrounding network. The project would provide an alternative route for travel between the M1 Pacific Motorway and the Hills M2 Motorway, especially for inter-regional freight traffic. As such, a number of traffic related benefits are anticipated along Pennant Hills Road between the M1 Pacific Motorway and the Hills M2 Motorway including:

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

Section 7.1 (Traffic and transport) and **Appendix E** (Technical working paper: traffic and transport) provide further description regarding the existing traffic conditions and potential traffic related improvement associated with the project.

3.3.3 Road safety

Traffic congestion is often associated with poor road safety performance.

Between 1 July 2008 and 30 June 2013, the section of Pennant Hills Road between the Pacific Highway and the Hills M2 Motorway had a total of 980 crashes, with one fatal and 342 injury crashes. The rate of crashes per kilometre of road was significantly higher on this stretch of road when compared to Sydney's motorways. Impacts associated with road accidents include economic costs, for example medical costs, property damage and vehicle costs; and social costs such as decreased quality of life and family pain and suffering.

One of the desired outcomes of the project is to improve travelling conditions on Pennant Hills Road and the surrounding network. Improvements in road safety would be delivered through the provision of a safe, reliable motorway that acts to reduce interaction between heavy vehicles and other road users.

Further information relating to existing road safety is provided in **Section 7.1** (Traffic and transport).

3.3.4 Public transport, pedestrian and cyclist facilities

A number of bus services currently operate along Pennant Hills Road between the M1 Pacific Motorway and the Hills M2 Motorway, with bus stops at regular intervals in both directions. Efficiency of these services is currently limited by high levels of congestion along this section of Pennant Hills Road, particularly during peak commuter periods. In alleviating congestion along Pennant Hills Road, the project would result in improvements to the reliability and accessibility of public transport.

Pedestrian footpaths are provided along the length of Pennant Hills Road, with regular crossings via signalised intersections as well as four pedestrian overpasses. With the exception of a short section around the Pennant Hills Road / Castle Hill Road intersection and the Pennant Hills Road / Hills M2 Motorway interchange, there are no dedicated cyclist facilities along this section of Pennant Hills Road. Peak congestion, heavy traffic flows and the presence of large numbers of heavy vehicles reduces amenity and in turn reduces use of Pennant Hills Road by cyclists and pedestrians. The project would contribute towards a reduction in the number of heavy vehicles using Pennant Hills Road, resulting in improvements in local amenity. It is anticipated that these improvements in amenity would encourage greater use of existing infrastructure by pedestrians and cyclists.

3.4 Project objectives

A set of project objectives has been developed from the objectives established during the options analysis (refer to **Chapter 4** Project development and alternatives). These objectives respond to key issues that underlie the strategic need for the project, and are consistent with strategic objectives of State and national planning and policy documents discussed within this chapter. The project 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.

3.5 Statement of strategic need

Pennant Hills Road between the M1 Pacific Motorway and the 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 a motorway standard. Vehicles using Pennant Hills Road between the M1 Pacific Motorway and the Hills M2 Motorway share the road with heavy vehicles transporting freight to, from or through Sydney to major cities and regional centres such as the Central Coast, Newcastle, Brisbane and Melbourne. 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 and district freight transport demands.

Heavy traffic flows and congestion along Pennant Hills Road during commuter peak periods and business hours results in low average peak 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. 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.

Further justification for the project is provided in **Chapter 11** (Project justification and conclusion). **Chapter 11** also includes consideration of the objectives of the *Environmental Planning and Assessment Act 1979*, the environmental, social and economic impacts of the project, the suitability of the site and whether or not the project is in the public interest.