11 Justification and conclusion

Director General's requirements	Where addressed
Strategic Justification and Project - The Environmental Assessment must outline the strategic outcomes for the Pacific Highway Upgrade Program (PHUP), including with respect to ...	
– strategic need and justification	Chapter 2
– the aims and objectives of relevant State planning policies	Chapter 2
– the principles of Ecologically Sustainable Development, and	Chapter 2 and Chapter 11
– cumulative and synergistic impacts associated with the Program as a whole.	Chapter 2 and Chapter 11
The Environmental Assessment must identify how the project fits within these strategic outcomes and how impacts associated with the project will be considered and managed to achieve acceptable environmental planning outcomes across the PHUP.	Chapter 2 and Chapter 11
Project Justification – the Environmental Assessment must describe	
the need for and objectives of the project;	Chapter 2
alternatives considered (including an assessment of the environmental costs and benefits of the project relative to alternatives), and	Chapter 3
provide justification for the preferred project taking into consideration the objects of the *Environmental Planning and Assessment Act 1979*.	Chapter 2 and Chapter 11
The Environmental Assessment must also indicate how the project fits in the context of separate future works to be undertaken for the Wells Crossing to Iluka Road Pacific Highway Upgrade project.	Chapter 2, Chapter 3 and Chapter 11.

11.1 Summary of strategic and project need

The objectives of the project are consistent with the strategic planning and policy framework, including the goals and targets of key State and Australian government initiatives outlined in Section 2.1. The Pacific Highway Upgrade Program is a joint commitment by the NSW and Australian Governments.

The project forms an essential part of the overall upgrade of the Pacific Highway between Hexham and the Queensland border. The projects that make up the Pacific Highway Upgrade Program are intended to achieve the core program objectives of improved road safety and reduced travel times. The Glenugie project is part of the larger Wells Crossing to Iluka Road upgrade (one of 13 Pacific Highway projects) declared as a critical infrastructure project under Section 75C of the *Environmental Planning and Assessment Act* 1979 (EP&A Act). Critical infrastructure projects are essential to the state for economic and social reasons.

Implementation of the project will provide a higher standard road to better

serve existing and future road users. The project would improve road safety by upgrading a two lane highway with poor horizontal and vertical geometry, narrow shoulders and numerous traffic hazards close to the highway. The project would also add to the safety and travel efficiency benefits already provided by other recent Pacific Highway upgrade projects. It would also generate employment, with benefits to the local and regional economy.

11.2 Justification

11.2.1 Cumulative and synergistic impacts

The upgrade of the Pacific Highway is integral to meeting the needs of local, regional and state transportation demands as growth pressures along the NSW coastal strip increase. Important transport, economic, social and environmental outcomes would be achieved through the overall Pacific Highway Upgrade Program and the project as described below.

Desired transport outcome: Improved safety and travel times
The Pacific Highway Upgrade Program, including the project, is expected to have significant benefits for transport and public safety, including a significant reduction in the number of total vehicle accidents. The target for the project is to reduce the accident rate from the existing 27 accidents per 100 million vehicle kilometres travelled (MVKT) to a rate of 15 accidents per 100 MVKT.

The project would improve travel times for cars, freight and public transport generally through the study area, with more significant benefits during peak holiday travel periods.

Desired economic outcome: Improved opportunities for regional economic development
The Pacific Highway Upgrade Program, including the project, would generate substantial regional economic development benefits in terms of the additional economic activity and employment induced by construction expenditure and the anticipated reduction in road transport costs. As described in Section 8.2, it is estimated that the project would create about 230 jobs during construction. Additional monetary benefits for road users would be associated with increases in travel efficiency and reduced travel times (which would reduce vehicle operating costs, including freight transport costs) and a decrease in the road accident rate.

The project would allow the transport and economic benefits of the other projects in the Pacific Highway Upgrade Program to be extended to the residents and businesses within Grafton and Coffs Harbour areas. Additionally, the Pacific Highway Upgrade Program is likely to contribute to the growth in the tourism industry as a result of improved accessibility to the region.

Desired social outcome: Improved accessibility and safety
The project would provide benefits to road users, in particular increased transport efficiency, improved road safety and reduced accident rates. The project, as part of the Pacific Highway Upgrade Program, would also benefit the local community by diverting highway traffic away from local roads and

improving the efficiency of inter-regional travel. The project would also benefit employment directly during the construction period, with additional flow-on employment benefits as a result of improvements in access to regional markets for local businesses and business savings and opportunities resulting from reduced transport costs.

Desired environmental outcome: Environmental protection and benefit
Environmental impacts have been minimised through route selection and project design, and would be further minimised where possible during detailed design and through measures implemented during construction and operation. The potential environmental impacts of the construction and operation of the project have been detailed in this environmental assessment, and management measures are proposed to minimise these impacts. Residual (unavoidable) impacts on ecology, particularly *Eucalyptus tetrapleura*, would be offset. There would be minimal impacts on residents and communities as the project is largely contained within Glenugie State Forest. Visual impacts would be largely limited to views from the existing highway, and the noise levels at all residents would be below the applicable noise criterion. The existing highway would also be retained as a service/local access road under a motorway style upgrade, providing local community benefits in relation to road safety and amenity.

Once operational, the project is predicted to slightly reduce carbon dioxide emissions compared with the existing Pacific Highway as a result of decreased travel times and congestion, and improved curvature and gradient.

While the program and project both seek to achieve the greatest benefits with the least negative effects, a range of negative impacts, some of which may be cumulative, would also result. This is described in **Table 11-1.** The impact mitigation and management measures proposed for all Pacific Highway upgrade projects aim to minimise cumulative impacts.

Table 11-1 Potential cumulative and synergistic impacts of the project

Desired outcome	Pacific Highway Upgrade Program impacts	Project impacts
Transport: improved safety and travel times	Improved travel times would result in a potentially significant transfer of freight from rail to road due to reduced road transport costs, leading to an increase in heavy vehicles on the road (and associated safety and amenity implications).	Minor travel time improvement expected. Minimal rail to road transfer expected as a result of the project itself, relative to the overall program. Significantly improved safety in project area will contribute to overall reductions in traffic accidents and associated injury and loss of life with the flow-on social, emotional and economic effects.

Desired outcome	Pacific Highway Upgrade Program impacts	Project impacts
	Congestion and slower travel times during roadworks for the various upgrade projects.	Minor disruption with the majority of the project being constructed offline to allow existing road network to remain operational. Relatively minor impact in context of overall program due to small scale of project.
Economic: improved opportunities for regional economic development	Some economic activities may be affected in towns that are bypassed. These could be positive or negative effects, depending on the nature of the activities within the context of the town.	No towns would be bypassed. No business would be affected by changes in access. Minor impact on forestry lands.
	Lack of availability of road materials for other projects	Relatively small quantities of road material required for the project in the context of the overall program due to the small length of the project. Potential for impact on availability of the same resources for other construction projects in the study area. The extent of impacts on resource availability and price will be dependent on the construction program and timing,
	Net economic benefit from the program.	A range of immediate local economic benefits through the general improvement to the road infrastructure which would have flow-on benefits of providing better access for goods and services to markets and strengthening access to inter-regional markets.
Social: improved access to employment and community services	The primary beneficiaries would be road users. Others in the community, including disadvantaged groups, would benefit to the extent that cost reductions and other flow-on effects are passed onto public transport users and consumers.	The project would benefit the community by improving the safety and efficiency of the road.

Desired outcome	Pacific Highway Upgrade Program impacts	Project impacts
	Increased severance and amenity impacts on farms or towns not bypassed or areas not upgraded.	No towns would be bypassed. No acquisition or severance of farms. The route of the project was aligned to largely follow property boundaries to minimise impacts on residents, farm operations and severance.
	Changes in the character and lifestyle of communities from induced development.	The project is located within the Glenugie State Forest and therefore the level of development is restricted in the study area.
	Impacts on Aboriginal culture due to interference or disturbance to cultural sites or heritage	No Aboriginal sites, places, objects or potential archaeological deposits have been identified along the length of the project. Therefore, there is a low potential of the project to impact Aboriginal cultural sites or heritage.
Environmental: protection and enhancement of the natural and built environment	Loss of habitat and severing of wildlife corridors where new route alignments are constructed. Compensatory programs would off-set impacts to some extent.	Vegetation clearing would be restricted to the minimum area possible. Canopy rope overpasses, fauna underpass structures and fauna exclusion fencing have been proposed at locations coinciding with fauna corridors to reduce impacts on fauna movements and habitat connectivity. Unavoidable impacts would be offset.
	Increases in fuel use and greenhouse emissions from growth in vehicle use and population levels in the region associated with increased accessibility arising from the program.	No noticeable impact expected (benefits for fuel use and greenhouse gas emissions expected to be positive compared to the existing situation).
	Impacts on landscape by the construction of new roads.	Substantial element in a scenic landscape through the Glenugie State Forest. Due to the surrounding Glenugie State Forest, the main view from the project would be from the existing highway and the project will not be directly viewed from any properties.

Desired outcome	Pacific Highway Upgrade Program impacts	Project impacts
	Some loss of agricultural land to the highway and to new development.	No loss of agricultural land. No land lost to new development.
	Potential reduction in water quality and impacts on flooding managed through best practice methods.	Minor impact relative to overall program. Water quality impacts would be managed by appropriate erosion and sediment control measures and stormwater management.
	General improvement in townscapes and heritage values (with the exception of isolated locations) due primarily to highway bypasses.	No impact on townscapes. One heritage item, a 250 m section of the 1915 branch line/tramway from the North Coast Railway would be impacted by the project. An archival record of the heritage item would be undertaken in accordance with the Heritage Branch guidelines.

The issues identified above that give rise to cumulative impacts will be primarily addressed at the project level through the application of the management and impact mitigation measures identified in this environmental assessment and in the draft Statement of Commitments (refer Chapter 10). This is consistent with the general principle of wherever possible managing and mitigating impacts to the greatest extent possible in the project area or in the immediate vicinity of the project. The environmental assessment and draft commitments also take a precautionary approach and identify measures and associated decision making processes, such as consultation with stakeholders, that provide sufficient mitigation to offset both immediately identified impacts and potential additional or cumulative impacts that may arise.

11.2.2 Objects of the EP&A Act

The objects of the EP&A Act provide a framework within which the justification of the project can be considered. A summary of this assessment is provided in **Table 11-2**.

Table 11-2 Objects of the EP&A Act and relevance to the project

Objectives of the EP&A Act	Comment
(a) (i) To encourage the proper management, development and conservation of natural and artificial resources, including agricultural land, natural areas, forests, minerals, waters, cities, towns and villages for the purpose of promoting the social and economic welfare of the community and a better environment.	The project design and the impact mitigation and management measures detailed in this environmental assessment allow for the proper management, development and conservation of natural and artificial resources. The main objectives of the project are to improve the safety and transport efficiency of the existing Pacific Highway by providing a dual carriageway and making improvements to the existing highway. An area of state forest would be lost, but a compensatory arrangement with Forests NSW will make other land available for this loss.
(a) (ii) To encourage the promotion and co-ordination of the orderly and economic use and development of land.	The development of the project is anticipated to have economic benefits for the region by reducing freight transport costs, improving inter-regional connections and accessibility and creating job opportunities during construction. It is not expected that any businesses would be adversely affected by the project.
(a) (iii) To encourage the protection, provision and co-ordination of communication and utility services.	Utilities affected by the project would be relocated and/or protected as described in Chapter 4.
(a) (iv) To encourage the provision of land for public purposes.	The project itself is proposed for a public purpose.
(a) (v) To encourage the provision and co-ordination of community services and facilities.	The project would not adversely affect any community services or facilities.
(a) (vi) To encourage the protection of the environment, including the protection and conservation of native animals and plants, including threatened species, populations and ecological communities, and their habitats.	The project has been designed to minimise impacts on the environment, including threatened species, populations and ecological communities and their habitats. Additional measures to manage and offset impacts during and after construction are proposed.
(a) (vii) To encourage ecologically sustainable development.	Ecologically sustainable development has been considered in Section 11.2.3.
(a) (viii) To encourage the provision and maintenance of affordable housing.	Not relevant to the project.
(b) To promote the sharing of the responsibility for environmental planning between different levels of government in the State.	Not relevant to the project.

Objectives of the EP&A Act	Comment
(c) To provide increased opportunity for public involvement and participation in environmental planning and assessment.	The project development process has involved extensive consultation with relevant parties and this will continue in the detailed design, construction and operation phases. Community involvement in the planning and assessment of the project is described in Chapter 6.

11.2.3 Ecologically sustainable development

Ecologically sustainable development (ESD) is development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. The principles of ESD have been an integral consideration for the Pacific Highway Upgrade Program and throughout development of the project. This includes the effective integration of economic and environmental considerations in all decision-making processes.

The four principles of ESD are discussed below in the context of the project. **Table 11-3** summarises how the Pacific Highway Upgrade Program and the project are consistent with the principles of ESD.

Precautionary principle

The precautionary principle deals with uncertainty in decision-making. It provides that if there is a threat of serious or irreversible environmental damage, a lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.

Minimising environmental impacts has been a key consideration in the route development and many serious environmental impacts have been avoided by selection of the project route as detailed in this environmental assessment. The environmental risk analysis documented in Chapter 9 addresses the potential impacts of the project the proposed impact management and mitigation measures and the potential environmental impacts remaining after application of the proposed measures. The risk analysis and the environmental assessment as a whole identify no threat of serious or irreversible damage as a result of the project.

The threat of serious or irreversible damage is an essential precondition to the operation of the precautionary principle. As the environmental assessment did not identify a threat of serious or irreversible environmental damage, the precautionary principle does not operate.

Nevertheless, a precautionary approach has been adopted in the proposed implementation of a range of impact mitigation and management measures and the draft statement of commitments (see Chapter 10).

Inter-generational equity

Inter-generational equity is concerned with ensuring that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations. The project has been designed to benefit both

existing and future generations through the provision of a higher standard, safer road with improved traffic flow efficiency. This will have direct and flow-on economic, social and wider environmental benefits, including but not limited to improved interregional access, reduced freight and transport costs for industry and businesses, job creation during construction, and reductions in per vehicle greenhouse gas emissions along the upgraded section of roadway. While the project would have some adverse impacts, they are not considered to be of a nature or extent that would disadvantage any sector of the community or future generations.

Conservation of biological diversity and ecological integrity

The conservation of biological diversity and ecological integrity has been a fundamental consideration during the design and environmental assessment of the project.

The conservation of biological diversity and ecological integrity has been given specific consideration in the Ecology Working Paper (Appendix D) and Section 7.1.

Impacts have been avoided and mitigated through the concept design process where possible and will be further mitigated and/or offset with the implementation of measures identified in Section 7.1.

Improved valuation and pricing of environmental resources

The principle of improved valuation and pricing of environmental resources requires consideration of all environmental resources which may be affected by a project, including air, water, land and living things. While it is often difficult to place a reliable monetary value on the residual, environmental and social effects of the project, the value placed on environmental resources within and around the project is evident in the extent of environmental investigations, planning and design of impact mitigation measures to prevent adverse environmental impacts.

Table 11-3 Application of the principles of ESD to the project

ESD principle	Pacific Highway Upgrade Program	Project
Precautionary principle	Early strategic assessment. Use of best available technical information and adoption of best practice environmental standards, goals and measures to minimise environmental risks.	Environmental risk analysis prepared at project application phase and updated in this environmental assessment. Conservative, "worst case" scenarios addressed in impact assessment. Best practice measures are included in the management measures proposed throughout this environmental assessment and incorporated into Chapter 10 - Draft statement of commitments.

ESD principle	Pacific Highway Upgrade Program	Project
Inter-generational equity	The decision to upgrade the Pacific Highway has integrated long and short-term economic, environmental, land use and social (including social equity) considerations, to seek to provide benefits for future generations and to ensure that any foreseeable impacts are not left to be addressed by further generations.	Issues that have potential long-term implications, such as consumption of non-renewable resources, waste disposal, greenhouse emissions, removal of vegetation and impacts on visual amenity and water quality, have been avoided and minimised as far as possible through route selection, concept design and application of management measures as described in Chapter 10 - Draft statement of commitments. The project is required to provide a safer journey for future generations.
Conservation of biological diversity	Recognition in the program of the rich biological environment of the north coast of NSW and the need to avoid and control potential impacts throughout the length of the upgrade (e.g. through selection of which sections to upgrade).	The route selection and the development of the concept design have sought to avoid and minimise biodiversity impacts as much as possible. Measures have been implemented in the concept design to provide for fauna movement through the provision of canopy rope overpasses and fauna underpass structures.
Improved valuation, pricing and incentive mechanisms	Environmental and social costs/ benefits considered alongside economic and financial costs/benefits in the decision to upgrade the Pacific Highway and in the selection of the highway sections to upgrade.	Environmental and social issues were considered in the strategic planning and establishment of the need for the project, and in the consideration of options. The value placed on environmental resources is evident in the extent of the planning, environmental investigations and design of management measures.

11.3 Conclusion

This environmental assessment has addressed the key issues identified in the Director-General's Requirements (DGRs) issued under Part 3A of the EP&A Act. A checklist showing where the DGRs are addressed in this environmental assessment is provided in Appendix A.

The project fulfils the strategic objectives of the Pacific Highway Upgrade Program while identifying impacts and avoiding or minimising these impacts through design, where possible, or through the incorporation of impact mitigation and management measures into project construction and operation. The project is consistent with Australian and NSW government planning strategies and policies, particularly in terms of identifying transport deficiencies along the corridor, including safety and congestion issues, while also providing infrastructure in response to significant future economic and population growth expectations for the mid north coast of NSW. In meeting

the objectives of Australian and NSW government planning strategies and policies, the project is expected to have significant functional, environmental, social and economic benefits on a local and regional scale. The most notable benefits would be:

- Improvements in road safety as a result of separation of local and through traffic and improvements in road grade and alignment.
- Increased traffic capacity and level of service along the route, which will improve traffic flows and reduce travel times, especially during peak holiday periods.
- Improvements in local amenity as a result of the separation of local and trough traffic.
- Local and regional flow-on economic benefits within the Clarence Valley Shire, particularly within the important tourism sector.

However, as with any highway project there are inevitably adverse impacts that would occur in conjunction with the project, particularly during construction. The major adverse impacts are related to:

- Loss of about 100 hectares of state forest land, which would be offset by the proposed land exchange.
- Impacts on flora and fauna, including clearing of 85 hectares of native vegetation, including an area containing the threatened species *Eucalyptus tetrapleura*. Impact mitigation measures, including an offset package, would be implemented.

Substantial effort has focused on the development of comprehensive environmental management and impact mitigation measures. These measures aim to minimise, as far as practical, the identified impacts and represent best practice environmental management for large infrastructure development.

Other impacts relating to matters such as operational noise and traffic issues, potential impacts on channel structure and receiving environments, construction noise and vibration, construction traffic, air quality and greenhouse gases, soil and water management issues during construction, have been assessed as key issues in the environmental assessment, which identifies measures for their management. Land use and socio-economic impacts, visual amenity and landscape impacts, air quality impacts, hazards and risks, and waste management are minimal or of a low risk due to the small scale of the actual or potential impact, the capacity for the risk to be readily managed, and/or the avoidance of impact through design. Nevertheless, the draft statement of commitments includes measures to be applied during the construction and or operation of the project to ensure these factors are also effectively managed.