

NSW Roads and Maritime Services

WOOLGOOLGA TO BALLINA | PACIFIC HIGHWAY UPGRADE ENVIRONMENTAL IMPACT STATEMENT

MAIN VOLUME 1A

Executive summary

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Executive summary of the EIS

NSW Roads and Maritime Services (RMS) is seeking approval to upgrade the Woolgoolga to Ballina section of the Pacific Highway under Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). Before major construction can begin, the project must be assessed and considered for approval under these acts.

An environmental impact statement (EIS) has been prepared for the project, which describes the project and presents a detailed description of the construction work needed to build it, and how the highway would function once it is built.

The EIS also provides an assessment of all potential environmental impacts of the upgrade that could occur as a result of its construction and operation. These issues have been determined by the Director-General of the Department of Planning and Infrastructure.

This EIS is divided into seventeen volumes: a main volume and the 11 working papers supporting the main volume.

What is proposed

Overview of the Woolgoolga to Ballina upgrade

The Woolgoolga to Ballina upgrade involves upgrading one of the few remaining sections of highway under the Pacific Highway Upgrade Program. When constructed, it would largely complete the program and help to realise the substantial economic and community benefits of the overall upgrade program.

For the purposes of the EIS assessment, the end of 2016 has been nominated as the desired opening date for a four-lane divided road for the project. However, the actual timing of construction, opening to traffic and completion is dependent on funding negotiations between the Australian and NSW governments. It is estimated that the project would cost \$4.2 billion to build based on an opening by the end of 2016.

In 2010, the preferred routes of the previous four route development projects were combined to form the concept design for the Woolgoolga to Ballina upgrade for the purpose of seeking planning approval.

Since that time, further investigations have been undertaken and refinements made to the concept design. The EIS presents the details and undertakes an assessment of the environmental impacts of the concept design for the project.

The Pacific Highway Upgrade Program

The Pacific Highway is the main north–south route on the NSW North Coast. Connecting Sydney to Brisbane along the NSW coastline, and places in between, it is a major interstate and regional route.

Since 1996, both the Australian and NSW governments have contributed funds to the upgrade of the 664-kilometre section of the Pacific Highway between Hexham and the Queensland border, as part of the Pacific Highway Upgrade Program.

Both governments have a shared commitment to upgrade the highway to a four-lane divided road as soon as possible. Currently, 346 kilometres of the highway has been upgraded to a double-lane divided road. A further 59 kilometres are being constructed, and environment assessments (including this EIS) have been prepared for the remaining sections of single-lane highway.

The objectives of the Pacific Highway Upgrade Program are to:

- Significantly reduce road crashes and injuries
- Reduce travel times
- Reduce freight transport costs
- Develop a route involving the community and considering its interests
- Provide a route supporting economic development
- Manage the upgrade in accordance with ecological sustainable development
- Provide the best value for money.
- The project represents the last priority (known as 'Priority 3' in the program) in achieving a four-lane divided road between Hexham and the NSW/Queensland Border.

Description of the project

Project sections

The Woolgoolga to Ballina upgrade would involve upgrading about 155 kilometres of highway. Starting from the southern end, the project would 'tie in' to the northern extent of the Sapphire to Woolgoolga upgrade (about five kilometres north of Woolgoolga), which is currently being constructed. At its northern end, the project would tie in to the southern extent of the recently opened Ballina bypass. This is about six kilometres south-west of Ballina.

(The project does not include the Glenugie section (which is already built) and the Devils Pulpit section (where construction has commenced).

For planning and consultation purposes, in addition to consideration of construction staging, the alignment has been divided into 11 sections. These sections are described in the following pages, from south to north. The 11 sections are listed in Table 1.

Table 1 Project sections

Section	Location	Length (km)
1	Woolgoolga to Halfway Creek	17.0
2	Halfway Creek to Glenugie upgrade	11.7
3	Glenugie upgrade to Tyndale	35.0
4	Tyndale to Maclean	13.2
5	Maclean to Iluka Road	14.4
6	Iluka Road to Devils Pulpit upgrade	9.2
7	Devils Pulpit upgrade to Trustums Hill	15.3
8	Trustums Hill to Broadwater National Park	11.2
9	Broadwater National Park to Richmond River	7.5
10	Richmond River to Coolgardie Road	13.5
11	Coolgardie Road to Ballina bypass	5.4

Staging

Roads and Maritime Services is considering a range of different packaging and procurement options for the 155 km of highway upgrade, ranging from one single 155 km project to up to 11 individual projects. The adopted packaging and procurement strategy would depend on the available funding for the main construction, the priority for upgrading construction and achieving project efficiencies and economies of scale such as how to best manage construction and material resources.

Staging options could also include some sections being constructed and opened as four-lane arterial standard road. Priority would be given to sections that deliver the best outcomes in terms of safety, traffic improvements and value for money.

For the purposes of this EIS an assumed opening to traffic by end of 2016 is made and the following packaging arrangement is considered:

- Enabling works on time critical soft soil treatment sections
- Five packages comprising:
 - Arrawarra to Glenugie (Sections 1 and 2)
 - Glenugie to Tyndale (Section 3)
 - Tyndale to Devils Pulpit (Sections 4, 5 and 6)
 - Devils Pulpit upgrade to Woodburn (Section 7)
 - Woodburn to Ballina (Sections 8, 9, 10 and 11).

The above packages are made up from the 11 sections described in this EIS as provided in brackets above.

The actual timing of construction, opening to traffic and completion is dependent on funding negotiations between the Australian and NSW governments.

Two upgrade standards: ‘arterial’ and ‘motorway’

Roads and Maritime Services is seeking project approval for a motorway standard of upgrade, however the project would be built initially to a combination of motorway (called class M) and arterial standard (called class A).

About eighty-seven kilometres of the highway that would deviate from the existing highway alignment (eg between Glenugie and Tyndale) would be built straight to motorway standard. The remaining sixty-eight kilometres initially upgraded to arterial standard initially. The design allows for the highway to be upgraded to a full motorway style highway in the future when warranted by increased traffic volumes.

The main difference between these two standards of road is that motorway sections would only be accessible from an interchange and service roads would provide local access. The speed limits on the motorway section would be posted at 110km/h. In contrast, arterial standard sections would continue to provide some local access to the highway from upgraded intersections onto the highway. The speed limit on arterial sections would be posted at 100km/h or 110 km/h depending on final access arrangements.

The EIS assesses the environmental impacts of the full motorway and the initial combination of motorway and arterial standards of upgrade.

Service and access roads

As well as upgrading the Pacific Highway, the overall project would also include:

- A continuous ‘service road’ for local and regional traffic as an alternative to driving on the new highway. Service roads are suitable for all classes of vehicles except oversized vehicles and the larger B-double trucks
- Access roads to maintain access to local roads and properties that currently have direct access to the existing Pacific Highway. These access roads would connect to a service road or local road, not to the upgraded highway.

Key features of the project

The key features of the project include:

- Upgrading around 155 kilometres of the Pacific Highway to a four-lane divided road, with two lanes in each direction; this could be upgraded to a six-lane divided road in the future, if required
- Interchanges for drivers to safely enter and exit the highway at the posted highway speed. These would be at Corindi, Glenugie, Tyndale, Maclean, Harwood, Woombah, Woodburn, Broadwater and Wardell
- Bypasses of Grafton, South Grafton, Ulmarra, Woodburn, Broadwater and Wardell
- Forty bridges over rivers, creeks and floodplains, including major bridges over the Clarence and Richmond rivers
- Fifty-five bridges and underpasses to maintain the continuity of local roads crossed by the upgraded highway
- Service roads and access roads to maintain connections to existing local roads and properties
- Structures to provide passage for wildlife over and under the upgraded highway
- Rest areas located at around 50-kilometre intervals at Pine Brush (Tyndale), north of Mororo Road, and north of Richmond River; to compliment rest areas at Ballina and Arrawarra being undertaken as part of other projects
- Checking stations for heavy vehicles near Halfway Creek and within Richmond River rest area.

The location of these project features are shown in Figure 1.



Figure 1 An overview of the project alignment and features

Construction

The area required for construction of the ultimate motorway standard of upgrade includes access for the construction of road embankments and cuttings, temporary and permanent fencing, temporary and permanent water quality control basins, ancillary facilities, access roads and construction side roads.

Working hours

RMS is seeking approval from the Department of Planning and Infrastructure to extend the standard construction hours by an additional two hours on weekdays and four hours on Saturday. Extended working hours would enable the project to be completed by an earlier date and reduce the longer-term impacts on highway use.

Working hours would generally be:

- Monday to Friday: 6am to 7pm
- Saturday: 8am to 5pm
- Sunday and public holidays: No work.

The majority of construction work would be during these hours, which are an extension to the standard working hours in NSW.

Work sites

Construction would mostly take place within the area proposed to be the future road reserve.

However, some areas outside the project boundary would also be temporarily required. These sites (ancillary facilities) would be used for storing building materials, processing materials, site compounds and/or temporary workshops, as well as other construction activities.

The EIS identifies 81 potential ancillary sites of which 129 hectares is within the project boundary, and 233 hectares is located outside of the project boundary. Any areas temporarily required for constructing the project would generally be leased from the landowner (by negotiation) for the period required. Roads and Maritime Services would ensure that land being leased is managed as per agreement with landowner. The EIS lists management practices for these sites, with which contractors would be bound to comply. Before these sites are confirmed, Roads and Maritime Services would undertake any further environmental investigations on the site if required (following the consent of the landowner).

Once the site is no longer required for construction purposes, Roads and Maritime Services would ensure that it is rehabilitated by the contractor before being returned to the landowner.

All relevant environmental matters would be assessed and the findings considered prior the confirmation of the sites which form part of the project approval. Should any ancillary site be determined to have an unacceptable impact on the use of the site would be avoided.

Construction materials and earthworks

Construction would require substantial quantities of materials such as earth fill material, aggregates, cement, sand, concrete and steel.

Depending on project staging, earthworks management would require materials and equipment to be stored and / or stockpiled at ancillary sites close to construction activities.

The project has been designed with the aim of achieving an overall balance of earthworks. This would minimise the excess spoil that would need to be exported from the site, and the fill that would need to be imported. Fill material would be sourced from road cuttings and material sources contained wholly within the project boundary.

Why is the project needed?

The Woolgoolga to Ballina upgrade is a major part of the Pacific Highway Upgrade Program, which is upgrading the Pacific Highway between Hexham and the Queensland border.

The section of highway between Woolgoolga and Ballina is the last of the upgrade works to complete the Pacific Highway Upgrade Program, and the benefits of the program would not be fully realised until the entire program is completed.

Although the project would have environmental, social and economic impacts, particularly where the highway is upgraded on a new alignment, it is the preferred alternative because none of the other alternative transport modes address the key transport needs for the Sydney–Brisbane corridor.

The Pacific Highway is being upgraded to benefit local communities, the North Coast region, and the State as a whole. The objectives of the project are consistent with the strategic planning and policy framework of State and local levels of government.

The project is needed to:

- Address road safety issues, and provide a safer journey, with a reduced crash rate
- Accommodate interstate freight and passenger efficiency
- Support population growth
- Address inconsistent driving conditions
- Contribute to realisation of the substantial economic and community benefits of the Pacific Highway Upgrade Program.

These issues are expanded upon, below.

Road safety

From 2006–2010, the Pacific Highway between Woolgoolga and Ballina had an average crash rate of 20.7 crashes per 100 million vehicle kilometres travelled. This is well above the Pacific Highway Upgrade Program target of 15 crashes per 100 million vehicle kilometres travelled and is a key reason why the highway needs to be upgraded.

In addition, the data between this period showed that the proportion of crashes involving heavy vehicles within the overall crash rate fluctuated between 33 per cent and 41 per cent. As heavy vehicles comprise about 25 per cent of total traffic using the Pacific Highway, crashes involving heavy vehicles are over-represented.

These findings are supported by analysis of casualty crashes that occurred between 2005 and 2009 on rural sections of Australia's National Land Transport Network, undertaken as part of the Australian Road Assessment Program (AusRAP, 2011). The study found that sections of the Pacific Highway between Maclean and Ballina could be classified in the worst crash rate category, and rated a medium–high or high risk.

Freight and passenger vehicle efficiency

A key need for the project is to accommodate increasing traffic demand, reduce road congestion, and provide a faster journey for people and freight, both within the region and interstate.

The Pacific Highway is a major freight route and interstate link between Sydney and Brisbane and supports major growing population, industrial and export centres and gateways. As such, the Pacific Highway corridor is a major contributor to Australia's economic activity.

Freight comprises a significant component of the predicted traffic growth on the Pacific Highway. Of all the interstate routes, heavy vehicle traffic is projected to be strongest on the Sydney–Brisbane corridor (via the Pacific Highway). Freight movements on this corridor are forecast to triple over the next 20 years compared to an expected doubling of freight on most other national freight corridor.

Between Woolgoolga and Ballina, the Pacific Highway is prone to flooding, which causes delays to highway users. This is a significant issue for local communities, as well as the freight industry as the delays impact on the scheduling of deliveries.

Population and traffic growth

The North Coast is one of the fastest-growing regions in Australia. It is estimated that by 2024 the Pacific Highway coastal corridor alone will serve a coastal population of almost one million.

The Pacific Highway caters for through traffic between Coffs Harbour, Grafton and Ballina, which are some of the largest settlements on the Mid North Coast and Far North Coast. The Pacific Highway is also important for inter-regional traffic: it links with other major roads and provides access to many small towns, villages and properties.

The Pacific Highway coastal corridor has been one of the fastest growing regions in Australia. It includes major regional centres such as Grafton and Lismore, emerging major centres such as Ballina, and towns such as Maclean, Yamba, Woolgoolga, Casino and Kyogle, which are all experiencing rapid population growth. These centres also offer most of the region's employment opportunities and services.

This expanding population, as well as growing tourism and economic activity, will generate high levels of traffic growth. Traffic growth in recent years between Woolgoolga and Ballina, show that traffic on the Pacific Highway increased by between 2.3 and 2.9 per cent per annum from 1982 to 2007. Looking ahead, it is forecast that traffic in the project area will continue to grow at about two per cent per annum. Traffic growth is leading to congestion, which is slowing down traffic along the route.

Inconsistent driving conditions

Between Woolgoolga and Ballina, the highway has inconsistent speed limits and road conditions.

The speed limits vary widely, from a maximum of 100 kilometres per hour to sections with fixed limits of 80, 60 and 50 kilometres per hour. There are also school zones, where the speed limit drops to 40 kilometres per hour during pick-up and drop-off times. These varying speed limits reduce travel efficiency, and contribute to frustrating driving conditions along the highway.

In addition, the Pacific Highway has narrow shoulders, various traffic hazards near the carriageway, varying pavement conditions, long sections of narrow two-lane road, numerous intersections and property accesses to the highway, and the alignment runs through urban areas. These inconsistent driving conditions affect both driver safety and transport efficiency.

Economic and community needs

One of the objectives of the Pacific Highway Upgrade Program is to support State and regional economic development. Numerous government and independent reports highlight the importance of modern, efficient transport links in supporting economic development.

The Pacific Highway is the key north–south corridor on Australia's eastern seaboard. It supports a number of key industries, including the freight industry, agriculture industry, and tourism. Upgrading the highway would help to underpin regional, State and national economic growth. Ensuring that the highway is able to function effectively is a key plank in the State's economic development strategy.

The highway passes through a number of towns, including South Grafton, Ulmarra, Woodburn, Broadwater and Wardell. The constant flow of through traffic creates a number of adverse impacts for local communities, such as noise and air pollution. These impacts combine to reduce the quality of life and amenity of these towns.

How the project would satisfy these needs is presented in the following section.

How would the project satisfy this need?

The Pacific Highway Upgrade Program has brought major improvements to road conditions, road safety, travel times and transport efficiency along the highway. It is also improving connections between areas forecast to experience significant population growth and are major tourist destinations.

The section of highway between Woolgoolga and Ballina is an important part of the Pacific Highway Upgrade Program. The benefits of the program would not be fully realised until the entire program – including the section between Woolgoolga and Ballina – is completed.

A safer journey

The project would improve road safety by:

- Replacing sections of two-lane undivided road with a four-lane dual carriageway
- Improving the road alignment
- Providing overtaking opportunities
- Controlling access to and from the highway via grade-separated (split-level) interchanges in the full motorway upgrade
- Providing a continuous alternative route to the 'motorway' for local traffic, which would help to separate local traffic from through traffic.
- These improvements are expected to achieve at least the target level of crash improvement, representing a 27 per cent reduction in overall crashes between Woolgoolga and Ballina.

PricewaterhouseCoopers (PwC) has calculated that, if the entire Pacific Highway were upgraded 8039 crashes, 565 road deaths, 4218 road injuries and 3255 non-injury crashes would be avoided over the next 30 years (PwC, 2011).

If the project were not built, road safety would continue to decline, and there would be a likely increase in vehicle crash rates and fatalities.

A faster journey for people and freight

The project would reduce travel times by increasing road capacity (through doubling the lanes from two to four), bypassing slow-moving traffic within towns, providing a shorter route, providing consistent travelling speeds, reducing risk of incidents delaying traffic and improving access during flooding. These improvements would benefit all users of the highway.

For example, the upgrades completed to June 2006 were estimated to have saved about 80 minutes of travel time for heavy vehicles and 70 minutes for light vehicles, between Newcastle and the Queensland border. Upgrading the remaining sections of the Pacific Highway is expected to produce a further 90 minutes in travel time savings.

For suppliers and manufacturers transporting raw materials and end products to markets, the project would result in decreased costs and more reliable scheduling of trips. The NSW Government estimates that the upgrade as a whole would save the freight industry over \$1.7 billion over 30 years in 2011 dollars (due to reduced travel time). This would benefit both interstate and inter-regional freight companies.

Local residents and tourists to the area would also benefit from having faster, safer trips along the highway, and better access to many small towns, villages and properties.

The project would reduce flooding risk so that the Pacific Highway would only flood during flood events greater than the one in 100-year flood for much of the route and only flood during flood events greater than the one in 20-year flood within major floodplain areas. This would improve reliability of travel and result in fewer planned and unplanned incidents affecting travel on the Pacific Highway.

Consistent driving conditions

The project would provide a consistent posted speed limit of 110 kilometres per hour on sections upgraded to motorway standard, and 100 kilometres per hour on sections upgraded to arterial standard. The proposed road design would also meet or exceed B-double truck requirements.

It would also provide consistent, uninterrupted driving conditions between Woolgoolga and Ballina, and help to facilitate these consistent conditions between Hexham and the Queensland border.

Economic and community benefits

An economic analysis of the whole of the Pacific Highway Upgrade Program including those projects opened to traffic since 1996 and those yet to be completed after June 2009 found that completing the Pacific Highway Upgrade Program has a benefit-cost ratio of 2.7, which demonstrates a strong case for its completion. The analysis also found the net economic benefits of completing the upgrade, assuming a base case of no further upgrade works beyond 2009, returned a benefit-cost ratio of 1.5.

The analysis indicated that staged delivery of infrastructure projects is not uncommon. However, the incremental analysis of links may show individual projects would have different levels of economic performance on a stand-alone basis, although when assessed as part of a program would contribute to an economically viable outcome.

Therefore, completing the project would achieve substantial benefits for areas between Woolgoolga and Ballina and enable the benefits of the Pacific Highway Upgrade Program to be fully realised.

Although the long-term economic benefits would not be substantial for local areas between Woolgoolga and Ballina, the economic benefits of the overall upgrade program would be realised at the national and State levels due to improvements in transport times. In particular, the project would maintain or improve access to regional and interstate markets, and maintain or improve access to existing towns, tourist centres, businesses and industries.

The project would bypass South Grafton, Grafton, Ulmarra, Woodburn, Broadwater and Wardell. These bypasses would remove the bulk of through traffic from these town centres. People in these towns would benefit from this reduction in through traffic. In particular, there would be a reduction in traffic noise, and reduced air quality, and conditions for some residents and businesses and other road users would improve.

What alternatives were considered?

Between 2004 and 2011, the Woolgoolga to Ballina upgrade of the Pacific Highway was initially developed as four separate projects:

- Woolgoolga to Wells Crossing
- Wells Crossing to Iluka Road
- Iluka Road to Woodburn
- Woodburn to Ballina.

Investigations for these four projects identified and evaluated route options and a preferred route. The evaluation process took into account a wide range of factors, namely, engineering feasibility; environmental and social impacts. The evaluation process included consideration of community and stakeholder views expressed.

The route development process for the project is shown in Table 2.

Table 2 Route development process

Stage	Activities
Identification of route options	An investigation corridor was identified, and preliminary information on engineering, environmental, social and economic constraints was analysed. From this information, potential route options were identified. Feasible route options were then shortlisted for further investigation.
Evaluation of route options	The shortlisted route options were compared in terms of functional, environmental, social and economic criteria, with input from the community and stakeholders.
Preferred route	Based on the route evaluation the preferred route was identified and put on public display.
Concept design	Once the preferred route was selected, the concept design was developed with ongoing refinements made to improve function or reduce impact.

Out of this process a number of route options were considered for the section of the Pacific Highway between Woolgoolga and Ballina. Each of these alternative options was assessed in detail with regard to the objectives of the project.

The project combines the preferred routes identified by each of these previous development projects to form the concept design for the project. The preferred route for the project was selected on the strength of the advantages it offered. The preferred route would provide the best overall balance between functional, ecological, heritage, social and economic considerations, and provide options for staged construction.

The investigations found that upgrading the Pacific Highway between Woolgoolga and Ballina as part of the Pacific Highway Upgrade Program would best meet the project objectives.

It was also found that it would be essential to construct the project so that the benefits of the Pacific Highway Upgrade Program could be fully realised.

Community involvement in the project

Roads and Maritime Services developed a community and stakeholder engagement plan to identify the key objectives and outcomes of consultation with the community, stakeholders and government agencies.

Consultation began in 2004, when there were four separate upgrade projects, and continued when these projects were combined to form the Woolgoolga to Ballina upgrade.

During the development of the EIS, a number of channels and communication tools were used to inform and engage stakeholders. These included:

- 'Community update' newsletters
- Displays of the concept design
- Focus groups on flooding
- Focus groups with Aboriginal representatives
- Community information sessions
- Letters to, and phone calls and meetings with, affected property owners
- Meetings with business and industry representatives
- Meetings with individual community members
- Letters to, and workshops and meetings with, government agencies and local councils
- Free call phone number and project email
- Collaborative online mapping tool
- Advertisements in local news media.

All issues and comments raised during the consultation process by the community, government agencies and interest groups were recorded into a stakeholder database and have informed key investigations and the ongoing design of the project.

The most frequent issue raised by the community related to maintaining access to individual properties and businesses. Comments about access to and from interchanges were also regularly received.

Other issues raised by stakeholders related to flora and fauna, noise, impacts on land use, socio-economic impacts, visual quality, water quality, flooding, heritage and air quality.

Should the project receive planning approval, consultation would continue throughout detailed design and, subsequently, construction of the project.

What are the main beneficial outcomes expected?

As discussed in Section 3 of this summary, the project would result in the following local, regional and State benefits:

- **Improved road safety:** The project would improve road safety by providing a four-lane dual carriageway, improving the road alignment, providing overtaking opportunities, controlling access to and from the Pacific Highway via grade-separated interchanges, and providing a continuous alternative route for local traffic, which would help to separate local traffic from through traffic. There would be fewer crashes - the project is expected to reduce the crash rate to 15 crashes or less per 100 million vehicles per kilometres travelled. This equates to a 27 per cent reduction in overall crashes at opening when compared with the existing crash rate
- **A faster journey for people and freight:** The project would reduce travel times by increasing road capacity (through doubling the lanes from two to four), providing consistent travelling speeds, and improving access during flooding. Provision of a high level bridge over the Clarence River would also allow traffic to move unheeded while maritime traffic sails beneath the bridge. These improvements would benefit all users of the highway. The route length would reduce from 180 km to 167 km, a saving of about 13 km in travel distance. With the shorter length and a higher posted speed of 100/110 km/hr, travel time would reduce from 130 minutes to 105 minutes, a saving of 25 minutes for vehicles.
- **Consistent driving conditions:** The project would provide a consistent posted speed limit of 110 kilometres per hour on sections upgraded to motorway standard, and at least 100 kilometres per hour on sections upgraded to arterial standard. It would also provide consistent, uninterrupted driving conditions between Woolgoolga and Ballina
- **Economic development:** Completing the upgrade would achieve substantial benefits for areas between Woolgoolga and Ballina and enable the benefits of the Pacific Highway Upgrade Program to be fully realised. Creating a faster, more direct route and safer would also be beneficial for the regional and local economies. Reduced congestion would also reduce travel costs
- **Improved amenity:** The project would bypass South Grafton, Ulmarra, Woodburn, Broadwater and Wardell. These bypasses would remove the bulk of through traffic from these town centres, which would reduce traffic noise, improve air quality and improve pedestrian and cyclist safety and amenity. Other benefits include improved access for local residents, businesses and tourists, from reduced travel time for freight and some local road users
- **Flooding:** The project would result in a substantial improvement in the flood immunity of the Pacific Highway, which is currently flood-prone in several places. This would improve the ability of people to evacuate when flooding occurs. It would also reduce the frequency and duration of highway closures due to flooding and the need to divert traffic via Summerland Way. This would reduce the risk of flooding-related delays on the highway, improve access for local communities and travellers during flood events and improve the reliability of highway journeys
- **Biodiversity:** The project includes a biodiversity offsets strategy that would deliver a package of offsets to achieve a neutral or net beneficial biodiversity outcomes for the region.

What are the main adverse outcomes expected?

The project has been designed to minimise impacts wherever possible.

However, there would be a range of unavoidable potential impacts, which would be expected on a major and complex project such as the one proposed. Some of these impacts would only occur during construction, so would be short-term. Other impacts would be long-term. Some impacts would be relatively minor, while others would be significant.

These impacts would be managed or substantially minimised through the design and construction process. These potential adverse outcomes are presented in more detail in the following sections.

Hydrology and flooding

The project incorporates numerous waterway openings and crossing structures (such as bridges and culverts) to convey flows safely under the road embankment without unacceptable flooding impacts on the surrounding environment. The locations and dimensions of these structures have been designed with the aim of meeting flood impact objectives to the greatest extent practicable.

The project would achieve its flood impact objectives however there would be low to moderate localised increases in the peak 100 year ARI flood level upstream of the project boundary in all catchments, only two areas would have increases that exceed flood management objectives.

There would be slight localised increases in inundation duration at 11 catchments. Moderate to high impact at only one area in the Clarence River catchment which would exceed the flood management objectives.

Other impacts would include:

- Low to moderate increase in damage costs for the larger Clarence and Richmond river catchments.
- Low to moderate localised impacts from increased velocity at two catchments.
- Low to moderate localised impacts in five catchments to access or warning time available for an impending flood event (ie for flood evacuation or stock movements).

The increases in flood levels and inundation periods in some areas would result in a small reduction in the amount of land available for future development.

The impacts on flood levels, flood inundation periods, and the timing of floodwater rise and fall, as well as some minor localised impacts are considered to be minor.

The project would not, however, have any significant adverse impacts on property access or the use or productivity of agricultural land.

Soils, sediments and water

The project has the potential to adversely affect water resources, as well as the aquatic habitats. Impacts could occur during construction and once the upgraded highway is operational. Key impacts would include:

- Mobilisation of surface and subsurface contaminants (impacting groundwater, surface water and soils)
- Exposure of soils during earthworks (including stripping of topsoil, excavation and stockpiling, and materials transport), which may result in soil erosion and off-site transport of eroded sediments by wind and/or stormwater to receiving waterways, resulting in increased nutrients, metals and other pollutants
- Accidental leaks or spills of chemicals, fuels, oils and/or greases from construction plant and machinery, which may result in pollution of receiving waterways and groundwater sources
- Exposure of acid sulfate soils (as a result of earthworks or dewatering), which may result in generation of sulfuric acid and subsequent acidification of waterways and groundwater sources and mobilisation of heavy metals in the environment
- Removal of riparian vegetation, which may result in soil and streambank erosion and increased sediment loads in nearby creeks
- Direct disturbance of waterway beds and banks during culvert and bridge construction and temporary or permanent creek diversions, which may lead to high volumes of sediment entering and polluting the waterways
- Changes to flow regimes, which can change the volumes and flow rates of water, leading to stagnation of a waterway and changes in turbidity, nitrogen and phosphorus levels
- Impacts on groundwater-dependent ecosystems within freshwater wetlands located in low-lying floodplain areas intersected by or near the highway with a low to moderate risk of localised drawdown of groundwater resources
- Infiltration of surface water to groundwater sources including drinking water supplies at Woodburn, including sediments and particles and soluble pollutants (such as acids, salts, nitrates and soluble hydrocarbons) during construction or operation
- Leaching of tannins from stockpiles of cleared vegetation, which may have a number of adverse effects on receiving waters.

Biodiversity

The project would involve clearing 948 hectares of native vegetation. This includes 337.7 hectares of threatened ecological communities. A further 25 hectares of remnant native vegetation could also potentially be removed as a result of additional ancillary facilities located outside the project footprint, should these sites be required.

Vegetation clearing would occur in Broadwater National Park (17 hectares) and Yaegl Nature Reserve (1.7 hectares). About 204 hectares would also be cleared in seven State forests. These include Glenugie State Forest (98 hectares), Newfoundland State Forest (38.7 hectares), Doubleduke State Forest (19.9 hectares), Pine Brush State Forest (16.4 hectares), and Wedding Bells State Forest (8.2 hectares). It would also be necessary to clear native vegetation on land outside these areas.

As a result, the project would have a number of impacts on biodiversity, including:

- Loss of native vegetation (including threatened flora and threatened ecological communities and their habitats).
- Direct impacts on a range of threatened flora species including *Angophora robur*, *Arthraxon hispidus*, *Eucalyptus tetrapleura*, *Melaleuca irbyana*, *Maundia triglochinos*, *Cyperus aquatilis*, and *Lindsaea incisa*
- Removal of terrestrial, riparian and aquatic habitat for protected and threatened fauna. In particular, the project would result in the loss of hollow-bearing trees that provide breeding and/or sheltering habitat for a number of threatened species.
- Loss of connectivity for protected and threatened flora and fauna species and populations with the degradation of wildlife and habitat corridors (including links to national parks and State forests)
- Significant impact to five endangered ecological communities including one critically endangered ecological community- Lowland Rainforest of Subtropical Australia listed under the EPBC Act
- Significant impact to 12 threatened flora species (six listed under both the TSC Act and the EPBC Act)
- Significant impact to 24 threatened fauna species (two listed under both the TSC Act and the EPBC Act)
- Potential for significant impact to one endangered population listing under the TSC Act - emu population in the NSW North Coast Bioregion and Port Stephens LGA area
- High to moderate loss and fragmentation of terrestrial fauna habitat and creation of barriers to fauna movement.
- Edge effects from road noise and light over an area of around 789 hectares
- Loss of foraging resources for fauna, particularly forest-dependent species .
- Direct mortality of fauna from construction and vehicle strike.
- Potential impacts from construction to water quality and alterations to natural hydrological flows resulting in impacts to several freshwater fish species, such as the Oxleyan Pygmy Perch
- Potential impacts on groundwater-dependant ecosystems and wetlands (including SEPP 14 and nationally important wetlands).

Visual amenity, urban design and landscaping

The project and its elements – interchanges, bridges, cuttings and viaducts – would introduce major new highway structures into this largely rural landscape.

Overall, the project would have a low to moderate impact on landscape character. However, a small number of moderate to high landscape character impact locations are located throughout the project.

The impact assessment found that the project would have moderate to high visual impacts on 28 viewpoints, including residences, local roads and other public vantage points from where the project would be seen. High to moderate visual impacts would occur where the project follows a new alignment, requires forest removal, is located in scenic landscape such as near Wardell, and at specific viewpoints. The following elements of the upgrade would cause some of the highest visual impacts:

- A large cutting through Dirty Creek range
- Large bridge structures crossing the Coldstream River and floodplain, and Pillar Valley
- Large cuttings at the Tyndale interchange
- A major new bridge over the Clarence River
- The proximity of the highway near New Italy Museum complex
- A major new bridge over the Richmond River
- The alignment north of the Richmond River, through the vegetation west of Wardell.

Aboriginal heritage

The majority of impacts on Aboriginal cultural places and archaeological sites are likely to occur during the construction period. Impacts would be caused by activities such as land clearing and excavations that would destroy or partially impact Aboriginal sites.

In summary, the project would disturb and / or destroy Aboriginal sites, artefacts and cultural places and may impact on unknown Aboriginal sites or artefacts that may be present within the project boundary. These sites contain artefacts such as flaked stone artefacts, middens and scarred trees.

There would also be indirect impacts during operation, such as visual impacts on culturally sensitive places.

Specifically, the project is likely to have impacts on:

- Thirty-eight archaeological sites, including artefacts and artefact scatters, scarred trees, and shell middens
- Eleven Aboriginal cultural places. These are places with spiritual, historical or cultural significance for the local Aboriginal people eg recorded ceremonial areas.

Non-Aboriginal historical heritage

The project would have impacts on the 26 sites within the project boundary, mostly from construction. The greatest impact would be on agricultural and pastoral heritage items and places. Five agricultural and pastoral heritage places would be directly impacted; the impact would range from minor and peripheral changes, to large-scale removal and destruction. These places include representative examples of the important regional industries of sugarcane growing and dairying. In addition, there would be impacts on:

- The convent at Harwood, where the upgrade would involve the complete demolition of the convent building for construction of the bridge across the Clarence River
- The New Italy Settlement sites, where the upgrade would involve the destruction of a stone-lined well and mango trees
- Two properties in Broadwater. At one property, the project would be constructed over the majority of the site and directly impact on a number of features including the stone quarry, one of the clay pits and domestic artefacts. At the other property, the upgrade would require the complete demolition of the dairy and buttery/creamery.

Traffic and transport

The project would result in some residents and businesses being affected at a local and / or property level by local or access road changes and changes to access to the highway. This could result in longer travel times in some cases.

During construction there would be construction impacts to highway and in some areas local traffic. There would be increased traffic on some haulage routes that are likely to be used by construction vehicles. The majority of these roads service very small communities or unpopulated areas and experience very low volumes of traffic movements each day. However, the townships of Harwood, Woodburn, Broadwater and Wardell are located along the existing Pacific Highway and would experience a noticeable increase in construction traffic.

During construction, there would be the usual delays and disruptions near construction work sites that most people would have experienced in recent years with the other upgrades of the Pacific Highway. For example, traffic would be slowed near construction areas.

On the whole, construction would generally be undertaken clear of traffic. This would result in minor impacts on the existing Pacific Highway and local traffic. The existing Pacific Highway would continue to operate within capacity, but temporary disruptions and delays would occur.

About 204 hectares of State Forest land would be affected by the project, and this would result in some changes to the State forest road network, but would not affect the overall use of state forest land.

Maritime users of the Clarence and Richmond rivers may experience some limited disruption during the construction of bridges across these rivers, but arrangements would be put in place to minimise any impacts. During operation, a high level bridge across the Clarence River would enable high mast boats to continue using the river as they do currently.

Bus stops would not be provided on the motorway carriageway for safety reasons. However, the project includes pull-in bays that could be used as bus stops (these would need to be agreed with bus operators).

There would be some disruption to existing passenger and school bus routes during construction. The existing highway would be retained for local access and would be available throughout the construction period allowing buses to continue to operate.

Once the project is operational, residents and businesses would notice a change in the way they can access the highway and connect to other places in the area.

Where the Pacific Highway is upgraded to a motorway standard, the only access to and from the Pacific Highway would be from interchanges accessed by local service roads. Most interchanges would be about 10–15 kilometres apart. This would mean that some people would need to change

their current routes; for some people, the length of their trip would increase. Many people who are only travelling locally are likely to choose to use the parallel service road network rather than the highway.

In addition, residents and businesses would no longer be able to directly access the Pacific Highway from their properties. Instead, access would be provided to a service road. From there, they would be able to access the highway from the interchanges. This would be less convenient for some residents and businesses, but it would increase road safety.

Noise and vibration

During construction there would be high to moderate temporary construction noise impact at residential properties. These include properties located near ancillary facilities. Noise affected properties include those near major bridge sites, major cuts and fills, and during periods of concrete cutting, blasting, rock hammering and piling. The level of impacts would depend on the agreed working hours and would be more apparent during extended / out of hours work.

Overall, it has been found that construction traffic from the project would cause minor noise and vibration impacts. This is because an increase in traffic numbers of at least 25 per cent would be required to change noise levels by 1 dB(A), and this increase in traffic numbers is not predicted. In addition, the number of haul trucks moving between external sites and the project would not be sufficient to create a significant noise increase.

Overall, the assessment finds that the upgraded highway would not cause significant noise and vibration impacts at most locations due to increased traffic noise. There would be moderate permanent increases of noise at external residential areas at several properties currently not exposed to road traffic noise.

With the application of low-noise pavements, levels of operational traffic noise are predicted to exceed relevant criteria at about 219 residential properties across the 11 project sections. This would necessitate the application of additional noise management measures at these properties.

Vibration impacts are predicted to be minor with low to negligible potential impacts from vibration during construction and operation.

Land use and property

The project would have impacts on a large number of properties. The project would acquire 564 properties and changes land uses such as agriculture, conservation, and extractive industries to transport infrastructure. This would affect around 381 landowners (with 64 per cent of land acquisitions commenced as of September 2012.)

An assessment of each directly affected property was undertaken to determine the likely level of impact of the project on current use, future use, functionality or viability of the property. The assessment found that of 564 properties:

- There would be 311 properties 'partially affected': That is, part of the property would be required for the project. However, the project is not expected to have a significant effect on the functionality or viability of the property
- There would be 142 properties 'materially impacted': That is, part of the property would be required for the project
- There would be 111 properties 'totally impacted': That is, the whole property would be required for construction of the project.

Of these 564 properties, 368 properties are privately owned (three of which are owned by Aboriginal Land Councils), 142 are owned by Roads and Maritime Services, 43 are owned by government (eg. Crown Land, State forests and national parks), 11 are owned by local councils.

The long-term impacts on these directly affected properties would include:

- The demolition of buildings or structures: About 60 structures (residences, machinery and storage sheds) would be demolished
- Property severance: The project would create a physical barrier and divide some larger properties into smaller parcels of land. In many cases, the property would still have direct access to local roads or service roads. However, in some cases, the severed portion of the property would not be accessible via local roads or from the main portion of the affected property. In these cases, alternative access would be provided between separated portions of land, where possible
- Changes to property access: The motorway standard upgrade would remove direct access to the highway for properties adjacent to the highway with access to the upgraded highway would be via a proposed service road or local road network to the nearest interchange.
- The project would have varying impacts on the different types of land use. In particular:
- Agricultural land: The total or partial acquisition of agricultural land would directly impact about 953 hectares of land in about 293 agricultural properties (including about 386 hectares of regionally significant farmland). The fragmentation and severance of some properties would also impact on their operation, productivity or viability
- National Parks: About 17 hectares of land in Broadwater National Park would be acquired and cleared, as well as about 1.7 hectares in Yaegl Nature Reserve, and a small area of Wells Crossing Flora Reserve (part of Newfoundland State Forest)
- State Forests: About 204 hectares would be acquired and cleared in seven State Forests
- Crown Land: About 30 hectares of Crown land would be acquired as part of the project. The overall functionality of Crown Land would be maintained.

In addition to these permanent impacts, there would also be short-term impacts during the construction period. For example, some land would need to be temporarily leased to establish ancillary work sites for batch plants, stockpile areas, and site offices; and to construct temporary sedimentation basins to capture sediment from water runoff.

Social and economic

Upgrading the highway would directly impact, either wholly or partially, property of 381 private landowners. The acquisition of these properties would have impacts on the landowners and their families. It could be expected that this could cause stress and anxiety for some landowners.

The project may also affect property values where the highway is realigned to pass closer or further away from properties.

The impacts on people and communities would include direct and indirect impact on property, including highway based businesses through acquisition, potential impacts on the movement of cattle and farm machinery within farming properties and uncertainty about the timing of property acquisition.

In terms of economic impacts, the overall effects on local agriculture would be minor. About 953 hectares of agricultural land would be lost to the project, and there would be potential impacts on the movement of cattle and farm machinery between paddocks due to the realignment of sections of the highway. Affected land uses are mainly cropping (including sugarcane), grazing and horticulture. Whilst important to individual farmers and the local community, less than 0.2 per cent of agricultural land in the region is required so sector impacts are minor when considered as a percentage.

Similarly, the overall effects on local businesses would not be significant, although the impacts on some individual business owners would be significant. At least 16 highway businesses would be directly impacted through property acquisition, the need to relocate, severance of properties, changes to access, and demolition of buildings.

Other key impacts would occur on amenity of community facilities from traffic, noise and changes in local access, including Halfway Creek rural fire brigade, Halfway Creek community hall, Clarence Coast visitor information centre at Maclean, Harwood Island Public School and New Italy Museum

There may also be potential impacts on community values relating to rural character and heritage and local amenity, from moving the existing highway nearer communities around Pillar Valley, Tucabia, Coldstream and Gulmarrad.

In addition to these permanent impacts, there would also be short-term impacts during the construction period. For example, potential impacts from construction traffic, noise and dust and increased hazards and travel times for local and long distance road users near road works.

How would the likely impacts be managed?

The project has been designed to minimise impacts wherever possible.

In the first instance, this has involved carefully selecting a route and designing an alignment that would avoid or minimise impacts wherever possible.

It has also involved the integration of environmental safeguards into the concept design. For example, urban design principles have been incorporated into the design of the project from the start, so that the upgrade would have the least possible impact on visual amenity. Water quality basins are also included in the concept design to protect water quality in local waterways.

Potential impacts have also been addressed through the proposed construction process, which comprises a range of environmental safeguards that are documented in environmental management plans. These plans pertain to potential impacts, such as construction noise, soil erosion, construction traffic, biodiversity, Aboriginal heritage sites, and waste. Safeguards include the creation of buffer zones around sensitive sites, and the inclusion of sedimentation basins to protect local waterways from runoff from construction sites.

This EIS contains measures to mitigate and/or manage the impacts. These are discussed in each of the respective assessment chapters from Chapter 8 to Chapter 18. A summary of all the mitigation and management measures proposed is provided in Chapter 19. Some of these mitigation and management measures are outlined below.

Some impacts that could not be avoided or are not likely to be mitigated would require offsetting during construction and operation so that the impact is minimised.

Hydrology and flooding

The project includes a number of measures to address potential impacts on flooding and hydrology.

The project has been designed with a flood-immunity of 1 in 20-year flood event on the Clarence and Richmond River floodplains and the 1 in 100-year flood event elsewhere. Any further refinements during detailed design to proposed culvert or bridge structures would be made to at least meet this level of flood immunity.

Other measures include the provision of appropriate scour protection, upstream and downstream of proposed structures and where required to stabilise bed and bank stability in impacted waterways (including where creek diversions are required). Two creek diversions would be required by the project and would be designed and managed during construction and revegetation to minimise impacts on the waterways.

Emergency access and evacuation for both people and stock would be further considered during detailed design to ensure no further measures are required to maintain evacuation and access routes.

In addition, farm dams located outside the project corridor that would have a reduction in their catchment area due to the project would have mitigation measures applied, if possible. Potential mitigation options would include (but not be limited to) the diversion of rainfall runoff back into the farm dam through drainage routes.

Also, cane drain diversions would be designed and constructed in consultation with the relevant drainage unions and impacted landowners and in consideration of the potential diversions.

Soils, sediments and water

To safeguard the area's important water resources, the project includes a number of design features and management and mitigation measures to minimise the risk of adverse impacts.

During construction, these measures would include:

- Managing erosion with a combination of at-source controls and management procedures (such as covering exposed areas), and by designing runoff discharge points with erosion controls that slow the velocity of the flow
- The installation of sedimentation basins to intercept sediment-laden runoff. The sedimentation basins would retain the runoff and treat it, before releasing it to nearby waterways
- Where excavation is to be carried out in areas anticipated to contain acid sulfate soils, work would proceed according to an acid sulfate soils management plan, which would include specific controls to safeguard the environment. This would be in accordance with RMS' Contaminated Land Management Guideline. These would include capping exposed surfaces with clean fill to prevent oxidation; placing excavated acid sulfate soils in a lined, bunded and covered area; and neutralising acid sulfate soils by using additives such as lime.

Soil contamination would be addressed through further studies prior to construction and appropriate mitigation and management measures identified. A site specific management plan for the Rous Water borefield would also be prepared.

When the project is operational, there would be permanent measures in place to protect the water quality of sensitive waterways located downstream of the highway. The most important measure would be to install water quality ponds to contain and treat runoff from the highway in accordance with an environmental protection licence for the project.

In addition, water quality in nearby waterways would be monitored before and during construction, and once the highway is operational to assess the effectiveness of the water quality protection measures, and whether extra measures are needed.

Together, these measures should ensure that the project does not adversely affect the quality of nearby waterways.

Biodiversity

Roads and Maritime Services has adopted a policy with regard to road development and associated impacts on biodiversity that requires that the planning and construction of roads should, in order of consideration, endeavour to:

- Avoid impacts on habitat, through the planning process
- Minimise impacts on habitat, through the planning process
- Mitigate impacts on habitat, through a range of mitigation measures
- Offset any residual impacts.

To lessen the severity of the impact on biodiversity, the project incorporates a biodiversity management framework that includes a monitoring strategy, a connectivity strategy, and a strategy to offset residual impacts on biodiversity.

The connectivity strategy includes provision for dedicated and combined fauna underpass and overpass structures, outlining design principles for these structures, as well as fauna fencing. Structures are proposed to help wildlife cross above or below the project. In particular, these include four dedicated land bridges, three median crossings for arboreal mammals and number of dedicated culverts. Scientific research has found that these structures are used for a wide range of fauna groups.

A monitoring strategy would be implemented to monitor specific crossing structures to determine their effectiveness and whether additional measures are required to maintain fauna connectivity.

In addition, the offset strategy would aim to deliver a package of offsets to achieve a neutral or net beneficial biodiversity outcome for the region. These offsets are yet to be determined in full; however, they are guided by the principle of like-for-like habitat offsets and a ratio of 4:1 offsets for the majority of threatened ecological communities affected.

The project would potentially involve protecting 3421 hectares of native vegetation as part of the offset strategy targets.

The offset strategy would be further developed in consultation with the NSW Office of Environment and Heritage and Department of Sustainability, Environment, Water, Population and Communities.

Visual amenity, urban design and landscaping

An urban design and landscape strategy has been prepared. This aims to retain the Pacific Highway experience of open and closed views, acknowledging coastal towns along the route and protecting the natural and cultural landscapes located across the project including river and waterway crossings.

The strategy includes design principles for features such as bridges, noise barriers, retaining walls and rest areas. These principles would be adopted in the detailed design to ensure the project is visually attractive to travellers and those with views to the upgrade.

For example, screen planting would be incorporated into the design to reduce visual impacts. Also, distinct cultural tree planting to highlight the route or entry into towns would be further considered during detailed design.

During construction, there would be a number of temporary visual impacts. To minimise these, disturbed areas would be progressively revegetated throughout the construction period.

Aboriginal heritage

During construction, all heritage items to be retained would be protected by barrier fencing and appropriate signage.

For those Aboriginal heritage sites where direct impacts would be unavoidable, mitigation measures to lessen the severity of the impact would involve:

- Further investigating potential archaeological deposits
- Excavating larger sites and salvaging archaeological material prior to construction work (for all salvaged material, suitable storage would be agreed upon with the registered Aboriginal parties prior to commencing salvage in those areas)
- Collecting artefacts
- Analysing, dating, and reporting cultural material.

In particular, the extent of excavation at Gittoes Jali (also known as Lang Hill) would be further reviewed by Roads and Maritime Services in conjunction with Aboriginal stakeholders to minimise impacts where possible.

Aboriginal stakeholders have been involved throughout the development and assessment of the project. Their involvement has included attendance at Aboriginal focus group meetings, undertaking fieldwork activities including archaeological investigations and survey. They have shared their knowledge of these places and their importance to their cultural heritage.

Non-Aboriginal historical heritage

Management and mitigation measures for impacts to non-Aboriginal heritage items include photographing the condition of affected items pre-construction, protecting the items during construction (through fencing or structural support), archival recording or relocating structures (eg the memorial at New Italy museum).

Traffic and transport

Construction traffic management plans would be prepared and implemented for work sites across the project. They would include:

- Identification of all public roads to be used by construction traffic
- Management methods to direct construction traffic to use identified roads
- Identification of all public roads that may be partially or completely closed during construction, and the expected timing and duration of closures
- Details on likely impacts on existing traffic (including pedestrians, vehicles, cyclists)
- Temporary traffic arrangement measures, including property access
- Details on access to construction sites, including entry and exit locations, and measures to prevent construction vehicles queuing on public roads
- A response plan for any incident involving construction traffic
- Mechanisms for monitoring, reviewing and amending the success of the plans

The traffic management plans would be prepared in consultation with councils. In particular, these plans would inform construction traffic arrangements near Maclean, Harwood, Woodburn, Broadwater and Wardell.

Specifically, a strategy would be prepared for bulk earthworks haulage across the project. This would include construction vehicle travel between the crossing of the Richmond River and the interchange at Wardell. The strategy would seek to maximise the extent of haulage within the project boundary and limit the need to haul material through the town of Wardell.

Noise and vibration

During construction, consultation would take place with potentially affected residents located on or near proposed construction sites, and residents affected by extended or out of hours work. A noise and vibration management plan would be prepared to mitigate construction noise. The plan would describe the timing and duration of construction activities, in particular high noise generating activities, construction traffic management, blasting, noise monitoring and complaints handling procedure.

Prior to opening of the project to road traffic, management measures would include:

- Applying low noise wearing surfaces to sections of the project passing near to populated areas, identified as most likely to benefit from noise mitigation
- Noise barriers including mounds and / or noise walls to screen properties from the upgrade. Noise mounds and walls provide a physical barrier between a noise source and a noise receiver and would be considered during detailed design
- Acoustic treatment of individual dwellings, which could include a range of noise controls. These are generally considered to be the most appropriate solution for isolated dwellings where noise barriers and/or low noise wearing surfaces are not feasible. Noise controls can include sealing off wall vents, upgrading windows, double-glazing, replacing hollow-core doors with solid-core doors, and installing air-conditioning or ventilation systems. These measures would be discussed and agreed with any affected land owners.

Land use and property

Ongoing consultation with directly affected property owners would be particularly important during the detailed design phase of the project to mitigate potential impacts on the use and viability of land. This would relate to matters including property acquisition, property access, access to agricultural, forestry and natural resources areas, adjustments to fencing, drainage, utilities, farm infrastructure including cane drainage and the relocation of affected ancillary structures, as required.

Consultation with users of the Clarence and Richmond rivers would be undertaken to provide users with information about construction activities within the Clarence and Richmond rivers.

Freehold land required for the project would be subject to negotiation between the landholder and RMS. RMS would also consider acquiring severed or isolated sections of land where access cannot be reasonably reinstated. Freehold land required for the project would be acquired in accordance with the provisions of the *Land Acquisition (Just Terms Compensation) Act 1991*.

To manage impacts, a remnant land strategy would be prepared by Roads and Maritime Services to minimise land use severance and sterilisation. In particular, a mitigation strategy for final land uses would be developed in consultation with the Cane industry, Forests NSW, Coffs Harbour City, Clarence Valley, Richmond Valley and Ballina Councils.

Social and economic

Implementing management measures during construction and operation would help to avoid or mitigate potential socio-economic impacts, and maximise project benefits.

For this reason, the project includes early and ongoing consultation with affected property owners, businesses and communities, as well as community participation in the on-going planning, construction, environmental management and monitoring of the project.

During construction and operation, property access would be subject to on-going consultation with landowners.

Key mitigation and management actions would include:

- Consultation with local business, community facilities and residents
- Working with local Councils to support strategies for by-passed towns, including implementing signage for by-passed towns and tourist destinations as stop off destinations for fuel, supplies, short-term accommodation and places to visit
- Reduction in impact on amenity during construction by working with contractors
- Working with local communities and business to maintain access and connectivity
- Ensuring that all affected non-vehicle road users and maritime traffic are considered in the management of issues
- Maintain access for commercial and recreational users of the rivers across the project, in particular the Clarence and Richmond rivers.

How can I comment?

The NSW Department of Planning and Infrastructure will make the EIS publicly available for a minimum period of 30 days to receive submission on the project. During this period, the EIS will be available for inspection at the Department of Planning and Infrastructure website:

<http://majorprojects.planning.nsw.gov.au/>. The Department of Planning and Infrastructure will be displaying the EIS at the following locations:

- Department of Planning & Infrastructure Information Centre, 22-33 Bridge Street, Sydney
- Department of Sustainability, Environment, Water, Population and Communities, John Gorton Building, King Edward Terrace, Parkes, Canberra
- Ballina Shire Council, Corner Cherry and Tamar Streets, Ballina
- Ballina Public Library, 8 River Street, Ballina
- Richmond Valley Council, Casino Administration Office, Corner Walker Street and Graham Place, Casino
- Richmond Valley Council, Evans Head Administration Office, Woodburn Street (corner School Lane), Evans Head
- Evans Head Library, Woodburn Street, Evans Head
- Clarence Valley Council, 2 Prince Street, Grafton
- Clarence Valley Council, 50 River Street, Maclean
- Grafton Library, Civic Centre, 2 Prince Street, Grafton
- Maclean Library, Stanley Street, Maclean
- Coffs Harbour City Council, Corner Coff and Castle Streets, Coffs Harbour
- Woolgoolga Library, Ganderton Street, Woolgoolga
- Nature Conservation Council of NSW, Level 2, 5 Wilson Street, Newtown, Sydney

Submissions on the project must reach the Department by close of business on **4 February 2013**.

Your submission should include:

- Your name and address
- The name of the application and the application number
- A statement on whether you support or object to the project
- The reasons why you support or object to the project.

Your submission should be marked 'Attention: Director Infrastructure Projects' and be:

- Submitted online at <http://majorprojects.planning.nsw.gov.au>
- Emailed to plan_comment@planning.nsw.gov.au or via the entry for the project on the Department's website (majorprojects.planning.nsw.gov.au)
- Posted to Major Projects Assessment, Department of Planning & Infrastructure, GPO Box 39, SYDNEY NSW 2001
- Faxed to (02) 9228 6455.

Persons lodging submissions are required to declare reportable political donations (including donations of \$1000 or more) made in the previous two years. For more details, including a disclosure form, go to www.planning.nsw.gov.au/donations.

Under section 75H of the *Environmental Planning and Assessment Act 1979*, the Director-General is required to provide copies of submissions received during the exhibition period, or a report of the issues raised in those submissions, to the Proponent and other interested public authorities. It is Departmental policy to also place a copy of your submission on the Department's website. If you do not want your name to be made available to the Proponent, these authorities, or on the Department's website, please clearly state this in your submission.

Roads and Maritime Services will also be displaying the EIS. In addition to those locations noted above, the EIS may also be viewed at the following locations:

- Roads and Maritime Services, 2 Prince Street, Grafton
- Roads and Maritime Services, Level 9, 101 Miller Street, North Sydney.

Roads and Maritime Services will also be conducting community information sessions in the region as noted in Table 3. Please check press and local media for dates and times.

Table 3 Location and time of proposed staffed displays

Suburb	Location
Wardell	Wardell Memorial Hall
Harwood	Harwood Community Hall
Corindi	Corindi Community Hall
Woodburn	Woodburn Memorial Hall
Maclean	Maclean Civic Hall
Grafton	Grafton Community Centre
Tyndale	Plantation Motel
Gulmarrad	Gulmarrad Public School
New Italy	New Italy Museum

A project information line will be available throughout the exhibition period – 1800 778 900 (toll free). If you have any questions about the EIS, please contact the Roads and Maritime Services project manager as follows:

Garry McPherson

Roads and Maritime Services

21 Prince Street Grafton NSW 2460

Email: Garry.Mcpherson@rms.nsw.gov.au

Phone: 1800 778 900 (toll free).

Following the display period, the Director General of the Department of Planning and Infrastructure will provide Roads and Maritime Services with a copy of all submissions or a summary of the issues raised by the community, government agencies and others.