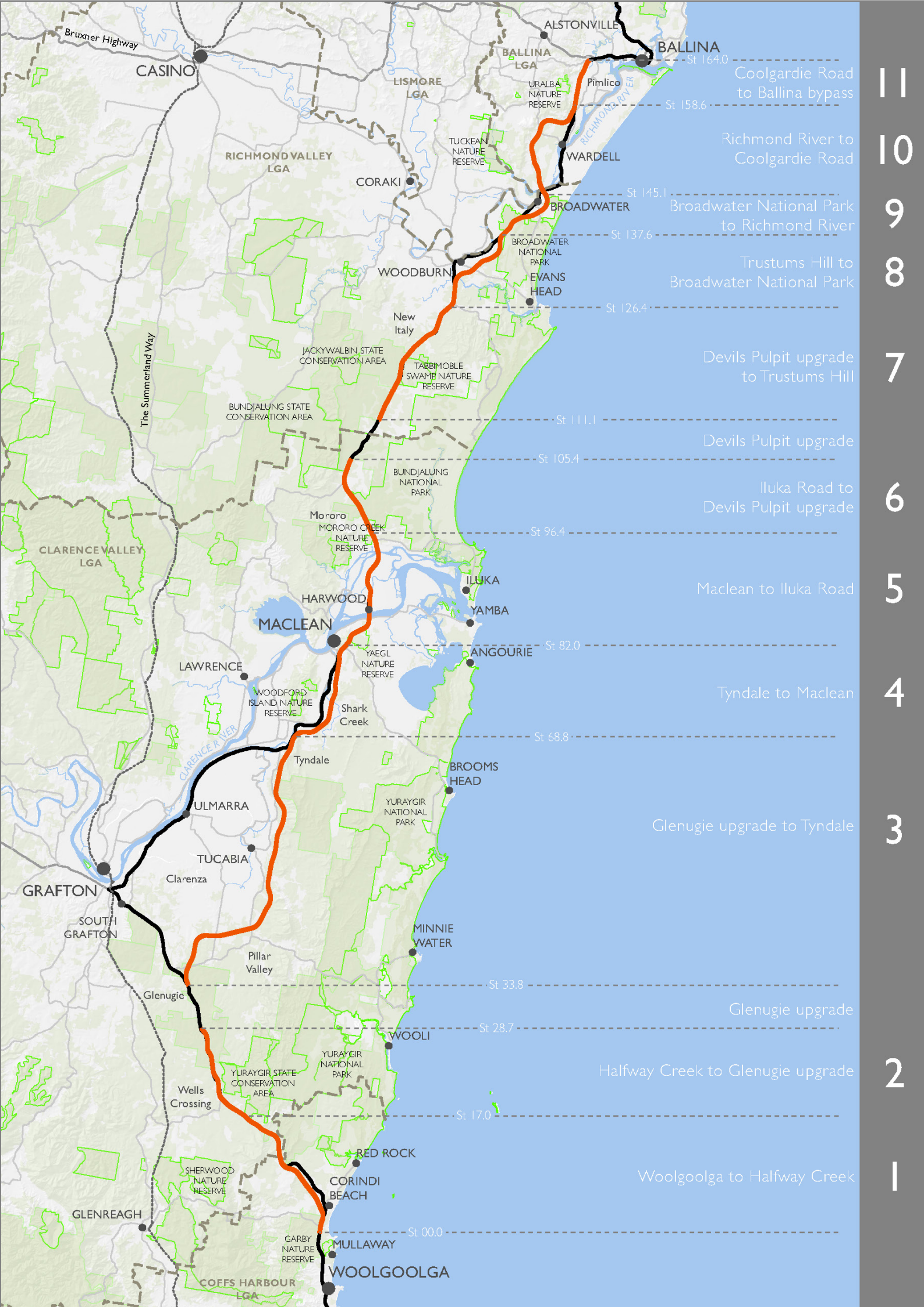


## **NSW Roads and Maritime Services**

# **WOOLGOOLGA TO BALLINA | PACIFIC HIGHWAY UPGRADE SUBMISSIONS / PREFERRED INFRASTRUCTURE REPORT**

Executive summary

November 2013



11  
10  
9  
8  
7  
6  
5  
4  
3  
2  
1

# Executive summary

## Overview of the Woolgoolga to Ballina upgrade

NSW Roads and Maritime Services (Roads and Maritime) is seeking approval for the Woolgoolga to Ballina Pacific Highway upgrade project (the project), on the NSW North Coast.

The project is a major part of the Pacific Highway Upgrade Program, which seeks to upgrade the 696-kilometres of the highway between Hexham and the NSW/Queensland border to a four-lane divided road. The Australian and NSW governments are jointly funding the upgrade program.

The project involves upgrading around 155 kilometres of highway between Woolgoolga to Ballina. This is one of the few remaining sections of highway under the upgrade program that has not been addressed.

## Purpose of this report

Roads and Maritime submitted an environmental impact statement (EIS) (Pacific Highway upgrade: Woolgoolga to Ballina Environmental Impact Statement (RMS, 2012)) to the Department of Planning and Infrastructure on 12 December 2012 seeking approval for the project under Part 5.1 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The EIS was then placed on public exhibition for 69 days, to 18 February 2013.

During and following the exhibition of the EIS, 145 submissions were received from the community, councils and government agencies. The Director-General of the Department of Planning and Infrastructure provided copies of the submissions to Roads and Maritime and, in accordance with section 115Z(6) of the EP&A Act, Roads and Maritime provided a response to the issues raised in these submissions.

The Director-General also advised that a Preferred Infrastructure Report may be required if there were any proposed changes to the project to minimise its environmental impact. Following the public exhibition, Roads and Maritime refined the concept design of the project, in part to minimise its environmental impact, leading to the preparation of this report.

This report documents the following aspects that have occurred since the exhibition of the EIS:

- Issues raised in submissions, and responses to these submissions (Chapter 2).
- Additional assessments undertaken by Roads and Maritime (Chapter 3).
- Design refinements made to the project by Roads and Maritime, and an environmental assessment of impacts resulting from them (Chapter 4).
- Assessments of the proposed ancillary facilities sites. These sites would contain workplace offices and amenities, machinery, fuels, stockpiles, car parking and other facilities to enable the project to be built (Chapter 3 and 4).
- The revised environmental management measures to be implemented to mitigate the impacts of the project (Chapter 5).

The additional assessments and design refinements are supported by a number of technical reports and additional information. These documents are provided as appendices to this report:

- Supplementary hydrology assessment (Appendix C). This addresses further work undertaken in response to consultation with the community, including the sugarcane industry.
- Aboriginal cultural heritage assessment (Appendix D). This report assesses the impacts of proposed ancillary facilities sites and design refinements on Aboriginal heritage.
- Supplementary biodiversity assessment report (Appendix E). This report provides a new or revised assessment of the project impact on threatened species and threatened ecological communities.
- Historic heritage site descriptions and Statement of Heritage Impacts (Appendix F). This identifies any new sites detected and changed statements of heritage impacts as a result of design refinements and the assessment of ancillary facilities sites.

- Threatened species management plans (Appendix J). These plans provide species-specific and site-specific mitigation measures and document a monitoring and adaptive management approach for species considered at greatest risk from the project.

## Key issues raised in submissions on the EIS

A total of 145 submissions were received in response to the exhibition of the EIS. There were eight from government agencies, four from local councils, and 133 from members of the community and interest groups. The submissions raised a broad range of issues, and provided comment on the main aspects of the EIS and the project.

The main issues raised by community and interest groups related to:

- The preferred route. There was a request that the 'orange route' be adopted as the preferred route for the highway upgrade, and that Roads and Maritime reconsider the preferred route from Glenugie to Maclean.
- Impacts on flora and fauna, including threatened species and the endangered population of coastal emu.
- The need to maintain access to individual properties and businesses, including access to and from interchanges.
- Impacts on land use and property, and the acquisition process.
- Impacts on hydrology and flooding, particularly at Corindi River and in light of the 2013 Australia Day floods.
- Construction and operational noise impacts, particularly working hours, noise levels during construction, and the adequacy of proposed noise mitigation measures in areas not currently exposed to road traffic noise.

The main issues raised by government agencies and local councils related to:

- Impacts on flora and fauna, including threatened species.
- Impacts on hydrology and flooding.
- The need to maintain local and regional access.
- Social and economic impacts, particularly on bypassed towns.
- Impacts on public assets and operations.

The key issues raised by the Commonwealth Department of the Environment were the need to:

- Avoid direct impacts on critically listed species or vegetation.
- Avoid direct impacts on important waterways for threatened fish and wetland habitats.
- Consider where ancillary facilities and rest areas could further avoid impacting on biodiversity.
- Provide detailed measures to manage the impacts on threatened species.

Roads and Maritime further investigated many of these issues in the additional assessments that were undertaken after the exhibition of the EIS.

## Ancillary facilities sites assessment

Investigations identified 85 potential locations for ancillary facilities sites, which are necessary for constructing the project. Many of these sites would be located on land already owned by Roads and Maritime for the purposes of constructing the upgrade, whereas others would be leased from private landowners. The report contains an assessment to determine those sites that are suitable for use. Those sites considered suitable are included in the Preferred Infrastructure Report. Minimising impacts on biodiversity and heritage were key objectives for the location of these sites.

A comparative assessment of sites against the Department of Planning and Infrastructure draft conditions for linear infrastructure (March 2012) was made for all sites. Where criteria cannot be met, the report includes an assessment demonstrating that there would be no significant adverse impact from the site's construction or operation and provides additional or revised management measures to minimise and manage impacts.

The key findings of the assessment are that:

- 53 sites would require site-specific measures to avoid or minimise impacts on environmental values at those sites. Examples of such measure include exclusion areas, provision of cross drainage, and the restriction of use or protection of sensitive features.
- 20 sites would require no site-specific treatment or mitigation measure, subject to the correct implementation of the general environmental management measures that apply across the project.
- 12 sites would need to be avoided entirely and not used for construction as they have heritage or biodiversity values that may be impacted, or because Roads and Maritime was not able to reach agreement with the landowner for use of the site.

## Design refinements

Roads and Maritime refined a number of aspects of the project as documented in the EIS. As required by section 115Z(6) of the EP&A Act, Roads and Maritime prepared a Preferred Infrastructure Report to document these design refinements, assess their impacts and, where required, provide additional measures to manage and mitigate impact. The Preferred Infrastructure Report is contained in this document.

These design refinements have arisen through the ongoing review of the concept design and consultation with the community and government agencies. Many refinements are in response to issues raised during the EIS exhibition.

There are 19 main design refinements proposed to the EIS project design as part of this report. A number of minor design refinements are also proposed and are considered in this report.

The environmental assessment of these design refinements is summarised overleaf.

**Table 1: Main design refinements**

Design refinement description	Reason for refinement
<b>Interchange at Range Road, Corindi</b> Interchange layout changed from dual roundabouts to a diamond, and interchange shifted further north.	To improve safety and access and reduce impact on a threatened plant
<b>Access at Lemon Tree Road, Halfway Creek</b> Turning movement from the northbound carriageway reduced in length and safer connection provided to access the southbound carriageway.	To improve access
<b>Access at Luthers Road, Halfway Creek</b> Access changed at Luthers Road under a class M upgrade from an underpass to an overpass.	To improve constructability
<b>Realignment at Firth Heinz Road, Tucabia</b> Highway alignment shifted to the west, and reduced realignment of Firth Heinz Road.	To avoid a landfill site
<b>Relocation of rest area at Pine Brush</b> Rest area at Pine Brush relocated 7.5 kilometres to the south.	To minimise impacts on a threatened tree species
<b>Realignment at Crowleys Road, Tucabia</b> Highway alignment shifted to the east, and reduced realignment of Crowleys Road.	To avoid a landfill site
<b>Overpass at McIntyres Lane, Gulmarrad</b> An overpass connecting McIntyres Lane across the highway.	To improve access

Design refinement description	Reason for refinement
<p><b>Interchange at Maclean</b></p> <p>Interchange layout changed to improve safety and access into Townsend and minimise impacts on areas of soft soils.</p>	<p>To improve safety, constructability and access</p>
<p><b>Formalisation of Koala Drive, Townsend</b></p> <p>Inclusion of a formal four-metre-wide access track under highway twin bridges at Koala Drive.</p>	<p>To improve access</p>
<p><b>Cycle access at the interchange at Yamba Road, Yamba</b></p> <p>Clarification of cycle access on the highway and the service road (including the existing Harwood bridge).</p>	<p>Cycleway connection</p>
<p><b>Access to Carrols Lane, Chatsworth Island</b></p> <p>Changes to local access on Chatsworth Island, with an overpass at Carrols Lane moved north to Fischers Lane.</p>	<p>To improve constructability and access</p>
<p><b>Cutting at Mororo Road, Mororo</b></p> <p>Increased cutting and reduction in highway grade to obtain additional earthworks material.</p>	<p>To increase available earthworks material</p>
<p><b>Access to Swan Bay New Italy Road, New Italy</b></p> <p>Access from the northbound carriageway maintained under the class M upgrade to Swan Bay New Italy Road.</p>	<p>To improve access for the community</p>
<p><b>Borrow site at Lang Hill, north of Woodburn</b></p> <p>Reduced extent of the borrow site.</p>	<p>To minimise impacts on Aboriginal heritage sites</p>
<p><b>Relocation of rest area north of the Richmond River</b></p> <p>Rest area shifted to the north.</p>	<p>To minimise impacts on important Koala population</p>
<p><b>Borrow sites, north of the Richmond River</b></p> <p>Inclusion of two quarry sites as part of the project.</p>	<p>To increase available earthworks material</p>
<p><b>Borrow site west of Wardell Road, Wardell</b></p> <p>Increased extent of the borrow site.</p>	<p>To increase available earthworks material</p>
<p><b>Interchange at Wardell</b></p> <p>Highway alignment shifted south and east for a distance of four kilometres. Interchange layout changed from a triple roundabout to a dual roundabout layout.</p>	<p>To minimise impacts on a threatened moth species and rainforest vegetation</p>
<p><b>Ancillary facilities sites for construction</b></p> <p>Inclusion of those ancillary facilities sites deemed to be suitable from additional assessments.</p>	<p>To confirm location and extents of final sites</p>

## Environmental assessment of design refinements

All design refinements have been assessed against the key environmental issues identified in the Director-General's Requirements. The assessment identifies where additional or different impacts are expected from those identified in the EIS. Where the impacts would not differ, a statement is made on the consistency with impacts in the EIS.

For the majority of design refinements, the assessment concludes that environmental impacts would be consistent with those described in the EIS. Many of the refinements would minimise impacts, particularly on biodiversity, but some would result in small increases to impacts.

The key design refinements and the findings of the assessment compared with the EIS design are listed below.

### Interchange at Range Road, Corindi

- Minimises impacts on the plant species *Moonee Quassia* at the eastern end of Dirty Creek Range.
- Provides more direct access to the Berry Exchange, improving road safety and travel time benefits.
- Requires an additional 3.9 hectares of total vegetation clearing.
- Provides an additional dedicated fauna underpass.
- Requires the acquisition of an additional 8.35 hectares of land.

### Realignment at Firth Heinz Road, Tucabia

- Avoids directly impacting a former landfill site, previously used for disposal of waste materials.
- Avoids impacting on the flora species *Maundia triglochinosides*.
- Require three additional culverts north of Chaffin Creek to meet the flood impact criterion of 50 millimetres.
- Increase the loss of vegetation and fauna habitat by 3.5 hectares, including a greater impact on primary Koala habitat.
- Increases impact on listed *Angophora robur*.
- Decreases the distance between the project and two Aboriginal scar trees located at Chaffin Creek.

### Relocation of rest area at Pine Brush

- Reduces vegetation clearing by 5.4 hectares.
- Reduces the direct loss of *Angophora robur* by an estimated 408 trees.
- Reduces noise impacts for residents near the previously proposed rest area location.

### Interchange at Maclean

- Improves local access for properties on the existing highway and to Maclean.
- Provides amenity benefits for residents on Jubilee Street.
- Reduces the amount of soft soil treatment required.
- Changes the overall visual impact from moderate–high to moderate for residents on Schwonberg Street.
- Requires an additional 5.8 hectares of property to be acquired.
- Increases property impacts for some landowners.

### Cutting at Mororo Road, Mororo

- Reduces the haul movements from Section 3 by around 28 kilometres, so reducing construction traffic and improving haulage efficiencies across the project.
- Increases construction noise at the nearest residential receiver, 200 metres west of the main excavation area.
- Increases impact on land used for grazing and cropping on one property by around 2.5 hectares.

### **Access to Swan Bay New Italy Road, New Italy**

- Provides improved intersection access to the New Italy Museum under an arterial upgrade.
- Avoids direct heritage impacts on the memorial located near the entrance to the Museum.
- Improves access for visitors to the New Italy Museum from both northbound and southbound directions in the upgrade to arterial standard.
- Improves visitor amenity by providing better access and formalised car parking and a turnaround facility for trailers and larger vehicles.
- Provides the opportunity to consider direct highway access to the New Italy Museum in a motorway upgrade.

### **Relocation of rest area north of the Richmond River**

- Provides the opportunity to improve fauna connectivity across this landscape with additional dedicated land bridge and culvert underpass structures.
- Reduces the amount of vegetation and habitat impacted by 6.2 hectares, including habitat critical to the survival of koalas.
- Reduces land acquisition by around 6.7 hectares.

### **Interchange at Wardell**

- Avoids direct impacts and minimises indirect impacts on the Lowland Rainforest vegetation community from 9.1 to 2.5 hectares.
- Eliminates any need to directly clear areas of known habitat for the threatened Pink Underwing Moth
- Reduces loss to 2.5 hectares of potential habitat for the threatened Pink Underwing Moth and Atlas Beetle.
- Reduces impacts on a range of threatened rainforest plants (eg *Macadamia tetraphylla*).
- Increases impact on *Acronychia littoralis*, a threatened plant species.
- Increases loss of native vegetation by around 2.7 hectares.
- Increases loss of Koala habitat by 1.5 hectares in areas that are mostly currently edge-affected habitats close to the existing highway.
- Increases impacts on Aboriginal heritage sites.

## **Additional investigations and assessments**

Additional investigations and assessments were undertaken during, and following, the EIS exhibition. The main additional investigations and assessments carried out and the key findings of these are summarised below.

### **Supplementary biodiversity assessment**

The report contains a supplementary biodiversity assessment, which includes the findings of further survey work as well as an assessment of impacts of the proposed ancillary facilities sites and design refinements. (The further assessment was undertaken to address a critical review of the EIS biodiversity impact assessment contained in the Working paper – Biodiversity) The key findings of the supplementary biodiversity assessment are summarised below.

### **Assessment of ancillary facilities sites**

Six proposed ancillary facilities sites contain extensive cover of remnant vegetation and/or are suitable for threatened species. Therefore, these sites are unsuitable to be used for construction.

The majority of other sites are in low condition or have minimal biodiversity values.

Where biodiversity resources are present they would not be directly impacted and will be protected during the construction period. The report includes site-specific mitigation measures for some sites.



## Assessment of design refinements

Design refinements to the EIS concept design would lead to a net reduction of 4.6 hectares in the clearing of threatened ecological communities but an increase of five hectares in the loss of non-listed vegetation communities. Some notable design changes from the EIS design, and their effects on biodiversity are:

- Movement of the proposed rest area south of Pine Brush State Forest: This would reduce loss of habitat and the clearing of around 408 Sandstone Rough-barked Apple trees (*Angophora robur*).
- Realignment of the highway upgrade at Firth Heinz Road: This would increase loss of threatened vegetation including around 181 Sandstone Rough-barked Apple (*Angophora robur*) trees.
- Movement of the proposed rest area north of the Richmond River: This would significantly reduce the clearing of potential habitat for Koala and Long-nosed Potoroo and significantly improve fauna connectivity.
- Changes to the proposed interchange at Wardell: This would significantly reduce the clearing of listed rainforest communities and habitat for rainforest fauna (from around 9.1 to 2.5 hectares).

## Changes from the impacts reported in the EIS

There would be some notable changes from the impacts reported in the EIS, including considerable reductions in the clearing of:

- Commonwealth listed Lowland Rainforest, which is also critical habitat for the Pink Underwing Moth. Habitat loss would be reduced by around 60 per cent.
- Four State listed threatened ecological communities. There would be a combined reduction of around 75 hectares.
- Threatened plant populations, particularly rainforest plants.
- Koala habitat. A more precise assessment found that the project would lead to the loss of 375 hectares of habitat, rather than 557 hectare as reported in the EIS.

While there would be a reduced impact on most vegetation communities, there would be a small increased loss of two communities (Littoral Rainforest and Swamp Sclerophyll Forest on Coastal Floodplains) and there is greater acknowledgment of the potential indirect impacts that the project would have.

## Assessments of significance

The assessments of significance for threatened flora and fauna were re-appraised following further investigations. The results from the revised assessment of significance in the supplementary report are consistent with the conclusions in the EIS, with the exception of impacts on the following species:

- *Archidendron hendersonii*: This is now assessed as not significantly impacted.
- *Macadamia tetraphylla*: This is now assessed as not significantly impacted.
- *Endiandra muelleri subsp bracteata*: This is now assessed as not significantly impacted.
- *Eleocharis tetraquetra*: This is now assessed as significantly impacted.
- *Quassia sp. Moonee Creek*: This is now assessed as significantly impacted.
- *Acronychia littoralis*: This is now assessed as significantly impacted.
- Common Planigale: This is now assessed as significantly impacted.
- Eastern Pygmy Possum: This is now assessed as significantly impacted.

## Review of connectivity structures

A review of connectivity structures identified gaps for some target species in Section 10 of the project and these have been addressed in the revised mitigation and management proposals for the project. Changes to the design have been made that include an additional fauna land bridge and improvements to the size and location of some fauna underpasses.

## Supplementary hydrology assessment

The report contains a supplementary hydrology assessment, which looks at localised hydrology issues on the project alignment. It was prepared to address issues raised by the community or as a result of issues arising out of the January 2013 flood event in the region.

The assessment involved further consideration of impacts in the Corindi River floodplain, particularly in regards to the Blackadder Creek safety works; and further flood and drainage modelling, including calibration of the Clarence River model against the January 2013 flood event and modelling of drainage networks in the Shark Creek and James Creek areas. The assessment also used the January 2013 flood event to confirm the suitability of debris blockage used in modelling.

The key findings of the supplementary hydrology assessment are that:

- The assessment of cumulative assessments undertaken for the EIS are accurate and can be relied upon as a guide to future flooding impacts.
- The design of bridge structures on the project are anticipated to perform well in the event of debris in the waterways, based on the blockage sensitivity analysis provided in the EIS.
- The assessment of the January 2013 flood event in the Clarence Valley verified the Clarence River flood model used in the EIS. It also showed the model provided adequate representation of large flood events and highway closure times, and that the highway upgrade – as assessed in the EIS – would not be cut in any location for any period of time for this flood.
- There are opportunities to improve the land drainage networks around Shark Creek and James Creek to provide better passage of floodwaters and better maintain the flooding patterns and further meet the project flood management objectives. Options assessed would be the basis for further discussions with landowners and the cane industry during the detailed design phase.

The assessment has also concluded that the overall cumulative impact around Corindi Park Drive from the upgrade and the current drainage works at Blackadder Creek, there would be a reduction of peak flood levels from the base-case (ie pre-2011) flood levels. In addition to the assessment included in this report, Roads and Maritime is conducting ongoing work with the community focus group for the Corindi, Blackadder and Arrawarra areas to further review various project issues, particularly the Corindi River cumulative assessment. This includes calibrating the flood models to the 2013 flood events, using information provided by residents on their flood experiences and knowledge in the area.

All impacts would need to be further considered at the detailed design phase. The results of the additional modelling and impact assessment outputs will be overseen by an independent reviewer and used to inform detailed design of the project.

## Review of groundwater data and assessment of cutting sites

The report contains a review of the likely impacts of proposed cuttings on groundwater. This review considered impacts on wetlands, groundwater dependent ecosystems and threatened species. As a result of the review:

- 28 cutting sites were reclassified to a higher risk cutting type in terms of their likely impacts on groundwater.
- Three cutting sites were reclassified to a lower risk cutting type.
- It was found that no further management measures are required other than those in the EIS.

## Cane farm strategy and a fencing strategy

The report contains a cane farm and fencing strategy to address concerns and identify principles to be considered (where feasible) during the further development of the project in consultation with government agencies, the sugarcane industry and individual landowners. The objective of the strategy is to minimise impacts on the sugarcane industry and native vegetation and fauna. The strategy also helps to integrate the related issues to inform design and assist building of the project.

## Detailed summary of water quality monitoring protocols

The report contains a detailed summary of water quality monitoring protocols. This is a management measure identified in the EIS. Roads and Maritime is currently implementing these protocols.

## Construction hours

The report contains a discussion of proposed extended construction hours (that is, work to be undertaken outside normal work hours).

If approved, Roads and Maritime would extend normal working hours by two hours on weekdays and by four hours on Saturdays. The proposed 'extended' working hours for the project are:

- Monday to Friday between 6am to 7pm.
- Saturday between 8am to 5pm.
- Sunday and public holidays, no work.

Extended working hours would shorten the length of time to build the project. Early completion of the construction would provide considerable benefits to the road users and community, in particular, enabling the earlier realisation of the benefits of the highway upgrade.

Preliminary community consultation as detailed in this report has showed that, overall, 90 per cent of respondents were in favour of extended construction hours. Roads and Maritime is still seeking approval for these extended construction hours.

## Management of surplus material

The report contains an evaluation of the proposed strategy for managing surplus material from the project. The evaluation investigated locations to store and/or use surplus material within the project boundary and used key environmental criteria in the assessment of options. It was found that:

- 1,410,000 cubic metres of surplus material would be generated by the project during construction that would require permanent stockpiling or use.
- There would be opportunities to use surplus material from the project within the project boundary by flattening batters, backfilling borrow sites, and landscaping the road corridor.
- There is a shortage of space in sections 4,5 and 6, but there would be no need to dispose of surplus material off site.

## Rest areas

The report contains a review of the rest area strategy for the Pacific Highway and the proposed locations of rest areas for the project. It was found that the proposed rest area locations are consistent with the rest area strategy for the Pacific Highway, while also trying to minimise additional environmental and social impacts.

In addition, the design refinements (see above) include the relocation of proposed rest areas at Pine Brush and north of the Richmond River. These are included in the Preferred Infrastructure Report. The relocation of these sites would considerably reduce impacts on threatened species and provide an opportunity for improved fauna connectivity.

## Revised environmental management measures

The EIS identified a range of measures to avoid or reduce the environmental impacts of the project. After considering issues raised in the public submissions and the additional assessments undertaken following the EIS, the environmental management measures for the project have been revised.

The adjustments to the measures were made to:

- Make additional commitments based on the response to submissions or findings of the studies.
- Modify the wording so that the outcome of the commitment is clearer to implement.
- Delete a measure as the commitment has been achieved.
- Delete a measure as it is sufficiently covered by a preceding measure.

The revised measures establish the appropriate environmental framework for the project to be undertaken, together with any conditions of approval that are imposed on the project.

Additionally, Roads and Maritime is preparing an offset strategy for impacts on biodiversity, in consultation with the environmental agencies. The strategy will identify the required type and number of biodiversity offsets and the land to be secured.

## **Next steps**

The project, as amended by this report, will be submitted for determination by the NSW Minister of Planning and Infrastructure and the Commonwealth Minister for the Environment.

The Department of Planning and Infrastructure and the Commonwealth Department of the Environment will assess the project and decide whether to approve it. Should the project be approved, Roads and Maritime will continue to consult with community members, government agencies and other stakeholders during the detailed design and construction phases of the project.