

***PROPOSED MODIFICATION TO THE  
BRUNSWICK HEADS TO YELGUN  
PACIFIC HIGHWAY UPGRADE***

Director-General's Report  
Section 115C of the  
Environmental Planning and Assessment Act 1979

September 2003



Department of  
**Infrastructure, Planning and Natural Resources**

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## **FOREWORD**

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In 1999, the Roads and Traffic Authority (RTA) proposed an upgrade to the Pacific Highway from Brunswick Heads to Yelgun. Following exhibition of an Environmental Impact Statement and a Species Impact Statement the RTA sought the approval of the then Minister for Urban Affairs and Planning. The Minister approved the Brunswick Heads to Yelgun Upgrade on 19 August 1999, subject to 71 conditions.

The RTA has now sought a modification of the Minister's approval. The proposed modifications aim to reduce the environmental impact of the approved project at the Brunswick River, Billinudgel and Yelgun by simplifying the complexity and scale of interchange arrangements and reducing the project's footprint.

The RTA determined that the proposed works were unlikely to significantly affect the environment and that an environmental impact statement was not required. To examine the environmental effects of the modification the RTA prepared a Review of Environmental Factors for the proposed modifications. The Director-General is required to assess and report to the Minister on the modified proposal.

The Department prepared this report, which concludes that the proposed modifications are unlikely to result in significant new environmental impacts. Any residual impacts can be mitigated by adopting the measures and safeguards referred to in this report, in the existing Conditions of Approval and in the recommended changes to the Conditions of Approval. It is recommended that the modification should proceed, subject to the recommended changes to the Conditions of Approval.

Jennifer Westacott  
**Director-General**  
**Department of Infrastructure, Planning and Natural Resources**



## EXECUTIVE SUMMARY

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### Background

On 19 August 1999, the then Minister for Urban Affairs and Planning approved the Brunswick Heads to Yelgun Pacific Highway Upgrade (the 'approved project'). This approval was based on an environmental impact assessment that included an Environmental Impact Statement (EIS), Species Impact Statement (SIS) and associated working papers. The approved project was assessed under the provisions of both Parts 4 and 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Part 4 component was necessary because of potential impacts on wetlands designated under State Environmental Planning Policy (SEPP) No. 14.

The RTA undertook a review of the design for the Brunswick Heads to Yelgun Upgrade to address concerns raised by the community about the approved project's social and ecological impacts. Subsequently the RTA developed a proposal to modify the approved project to reduce its environmental impact at the Brunswick River, Billinudgel and Yelgun (the modified proposal). The proposed modifications are the subject of this report.

The Brunswick Heads to Yelgun Upgrade is being constructed as part of the RTA's strategy to upgrade the Pacific Highway. The 8.7km Upgrade remains largely along the existing alignment and provides a dual carriageway Freeway between the completed Tandys Lane project in the south and the recently opened Yelgun to Chinderah project in the north. It includes construction of a new bridge over the Brunswick River. The Upgrade has been developed to address road safety and traffic performance concerns.

Construction of the project is expected to take two and a half years. The construction schedule would be developed in detail by the contractor selected to undertake the works. It is anticipated that approximately 180-200 persons would be employed during the construction period. The cost of the modified proposal is stated to be approximately \$140 million.

### Proposed Modifications

The proposed modifications aim to reduce the environmental impact of the approved project at the Brunswick River (Section 2), Billinudgel (Section 4) and Yelgun (Section 5). The proposed modifications:

- simplify the complexity and scale of the Brunswick Heads North and Yelgun interchanges;
- provide an improved bridge crossing at the Brunswick River;
- provide direct northbound highway access to and from Billinudgel;
- reduce social, visual and environmental impacts of the approved project; and
- provide cost efficiencies.

Modifications to the design in Section 2 were developed to simplify the complexity and scale of the Brunswick Heads North interchange and reduce associated social and environmental impacts, including impacts on a saltmarsh area. The modified Brunswick River bridge design and proposed construction methods would reduce impacts on seagrass and mangrove vegetation as well as the hydrological regime of the channel.

Modifications to the design in Section 4 were developed to simplify the complexity of local access in this area and rationalise the total bridge length over the Marshalls Creek floodplain. The proposed modifications would reduce visual impacts, increase local access and provide a new footbridge over the highway.

Modifications to the design in Section 5 were developed to reduce the complexity of the interchange arrangement. Traffic using the modified interchange would be able to travel in a more logical way to and from various locations, avoiding potential confusion and enhancing traffic flow and safety. The proposed modifications also substantially reduce the footprint of the interchange, including the avoidance of a sub-population of threatened plants (Davidson's Plum).

## **REF Exhibition and Approval Process**

The RTA determined that the proposed modified activities would be unlikely to significantly affect the environment and that a further EIS would not be required. Subsequently, and in accordance with section 115BA(5)(b) of the EP&A Act, the RTA prepared and publicly exhibited a Review of Environmental Factors (REF) for the Part 5 modified proposal. The REF for the Part 5 components was combined with an EIS for the Part 4 components of the proposal (i.e. where the proposal affected SEPP 14 wetland areas) into a single Environmental Impact Assessment (EIA) document. The EIA was publicly exhibited between 6 November and 23 December 2002 and 57 representations were received in response to the Part 5 REF. The RTA sought the approval of the Minister for the modified proposal in a letter received by the Department on 24 June 2003.

This Director-General's Report has been prepared in accordance with Section 115C of the EP&A Act which requires the Director-General to assess and report to the Minister on the modified proposal. It documents the outcome of an independent environmental impact assessment by the Department. The Report only examines the proposal to the extent that it is proposed to be modified. It does not assess issues or areas relating to the original Brunswick Heads to Yelgun Upgrade project that were not modified as these are covered by the original approval.

## **Environmental Impact Assessment**

The proposed modifications do not substantially alter the approved project and their purpose is largely to reduce environmental impacts. There are a number of environmental impacts that are specific to the modified proposal. These are potential noise impacts, flora and fauna, access and traffic, visual impacts and open space, indigenous heritage and business and community impacts.

### Noise

The noise assessment of the REF included a revised operational noise assessment based on updated traffic volumes and predicted volumes at opening (2006) and 10 years after opening (2016). The noise assessment also considered the impacts of the modifications to the design of the project and consideration of a 110km/hr posted speed, compared to the 100km/hr posted speed of the approved project.

The review of traffic noise impacts for the modified proposal found that some areas will benefit from reduced noise and some will receive elevated noise levels. In areas where elevated noise levels are predicted and noise criteria levels are predicted to be exceeded the RTA investigated reasonable and feasible mitigation including the potential installation of noise barriers, the use of quieter pavement types and at-residence treatments.

The Department recognises that predicted traffic noise levels at several areas close to the modified proposal would be high without appropriate mitigation. To provide certainty of actual noise mitigation to the affected community, the Department proposes the addition of a new condition requiring an Operational Noise Management Report. This report must also address potential mitigation for residences that are acutely affected by traffic noise.

### Flora and Fauna

The modifications result in small changes to the approved footprint and these tend to be beneficial and reduce identified flora and fauna impacts. The Department agrees that the impacts on flora and fauna (including threatened species) would not be substantially different from the approved project.

NPWS noted the net reduction in the footprint of the modified proposal compared to the approved project and supported the mitigation measures required as part of the approved project and proposed as part of the modified proposal. NPWS and NSW Fisheries drew attention to their consultation roles during construction. The Construction Environmental Management Plan would include a comprehensive process to facilitate close consultation with NPWS, NSW Fisheries and other relevant stakeholders before and during construction.

The Department considers that the existing Conditions of Approval for the approved project, including NPWS concurrence conditions and the provision of an adequate compensatory habitat package, would ensure that ecological impacts are minimised.

### Access and Traffic

Traffic volumes on this section of the Pacific Highway have increased significantly since project approval was given in 1999. The opening of connecting upgraded sections at Tandys Lane to the south, and Yelgun to Chinderah to the north, has also led to increased traffic volumes.

The modified proposal makes changes to accessibility, with improvements to and from Billinudgel and reduced access to and from the intersection immediately south of the Brunswick River. The changes overall will lead to slight increases in traffic levels on the service road and old highway through Brunswick Heads.

The existing Conditions of Approval for construction traffic management are appropriate to the construction stage of the modified proposal and no changes are recommended. Similarly, no additional conditions or modifications to conditions are recommended for operational traffic and access.

### Visual Impacts and Open Space

The approved project had some significant visual impacts on the landscape and urban environments, such as the new bridge over the Brunswick River. Mitigation measures were required as part of the approved project, including an Urban Design and Landscaping Plan.

The modified proposal incorporates design elements that would have a beneficial visual impact compared to the impacts associated with the approved project. Overall, the modified proposal's negative visual and landscaping impacts are offset by its positive visual components. These positive components include its reduced footprint and an increased commitment for landscaping works.

The Department recognises the RTA's ongoing commitment to improvements on the southern foreshore of the Brunswick River and the willingness to assist in the provision of a significant community resource.

### Indigenous Heritage

The proximity of the approved project to indigenous heritage sites results in potential adverse impacts. Additional sites near the northern foreshore of the Brunswick River have been identified since the approval of the project although the modified proposal is not predicted to affect these sites. No sites would be destroyed as a result of the approved project or the proposed modifications.

The existing, and additional, mitigation measures identified would adequately protect known indigenous heritage sites. To ensure that any previously undetected sites and any sites that may be discovered during construction are adequately protected the Department recommends an additional Conditional of Approval. The condition requires that a qualified archaeologist be present prior to and during initial site disturbance for works in the vicinity of the Brunswick River and that an invitation be extended to the Local Aboriginal Land Council to be present at the same time.

### Business and Community Impacts

The Department supports the proposed design features of the modified proposal that are intended to address business and community impacts associated with the approved project. In particular, the modified proposal's streetscape improvements in the Billinudgel commercial and industrial area and construction of pedestrian and cyclist facilities, would result in important community and business improvements.

The existing Conditions of Approval are adequate in ensuring that the proposed benefits to community and businesses are undertaken.

### Other Issues

The proximity of the approved project to sensitive receiving water bodies results in a potential for adverse water quality impacts with associated impacts on aquatic flora and fauna and commercial and recreational use of waterways. The proposed modifications do not substantially alter the potential water quality and hydrology impacts of the approved project. Existing Conditions of Approval will adequately manage these impacts.

Operational and construction air quality impacts would not be greater than that of the approved project.

The existing mitigation measures and the Conditions of Approval would be adequate to manage and mitigate potential impacts on known non-indigenous heritage items.

The management of geology and soil impacts, including any disturbance to acid sulphate soils or contaminated land, would be appropriately managed through the existing mitigation measures and Conditions of Approval.

## **Conclusions and Recommendations**

The need and justification for the project as a whole was established when the then Minister for Urban Affairs and Planning approved the project in August 1999, subject to 71 conditions. The Department recognises the importance of the proposal as part of the Pacific Highway Upgrade Program.

The Department's assessment of the modified proposal indicates that the proposed modifications would not substantially alter the overall nature of the project and therefore concludes that the modified proposal would not substantially alter the ability of the project to meet the key strategic objectives assessed for the approved project.

The Department's assessment of the modified proposal concludes that, individually and cumulatively, the modifications would reduce the overall environmental impact of the proposal. Accordingly, it is recommended that the Minister for Infrastructure and Planning approve the modified proposal as detailed in the REF, subject to recommended changes to the Conditions of Approval. The Department envisages a close relationship between the RTA and other Government agencies during design, construction and operation of the project. This whole-of-government approach would facilitate the achievement of the environmental and community-focused outcomes of the project.



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## GLOSSARY AND ABBREVIATIONS

AADT	Annual Average Daily Traffic
Acid Sulfate Soils (ASS)	Naturally acid clays, mud and other sediments usually found in swamps and estuaries. These may become extremely acidic when drained and exposed to oxygen, and may produce acidic leachate and runoff which can pollute receiving waters and liberate toxins
Ambient Noise	The background noise at a point being a composite of sounds from near and far
ANZECC	Australian and New Zealand Environment and Conservation Council
Department, the	Department of Infrastructure, Planning and Natural Resources
Director-General	Director-General of the Department of Infrastructure, Planning and Natural Resources
DLWC	Former Department of Land and Water Conservation, now Department of Infrastructure, Planning and Natural Resources
DUAP	Former Department of Urban Affairs & Planning, now Department of Infrastructure, Planning and Natural Resources
ENCM	Environmental Noise Control Manual
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMR	Environmental Management Representative
EPA	Environment Protection Authority (NSW)
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
Floodplain	Flat large area of alluvium adjacent to a watercourse, characterised by frequent active erosion and aggregation by channelled and overbank stream flow
Grade separation	The separation of a road, rail or other traffic so that crossing of movements, which would otherwise conflict, are at different elevations
Interchange	A grade separation of two or more roads with one or more interconnecting carriageways
L <sub>Aeq</sub> 15 hour	Equivalent continuous (constant) sound level over 15 hour period from 7am to 10pm
L <sub>Aeq</sub> 9hour	Equivalent continuous (constant) sound level over 9 hour period from 10pm to 7am
LALC	Local Aboriginal Land Council
Level of Services (LOS)	An indicator of performance of the road network
Median	A strip of road not normally intended for use by traffic, which separates carriageways for traffic in opposite directions
Minister, the	Minister for Infrastructure and Planning
NPWS	National Parks and Wildlife Service (NSW)
Proponent, the	Roads and Traffic Authority (RTA)
REF	Review of Environmental Factors
RTA	Roads and Traffic Authority
SEPP 14	State Environmental Planning Policy No. 14 - Coastal Wetlands
TSC Act	<i>Threatened Species Conservation Act 1995</i>
Wetland	Land either permanently or temporarily covered by water, usually characterised by vegetation of moist-soil or aquatic type

# 1. INTRODUCTION

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## 1.1 Background

On 19 August 1999, the then Minister for Urban Affairs & Planning (now Minister for Infrastructure and Planning and both referred to as the Minister hereafter) approved the Brunswick Heads to Yelgun Pacific Highway Upgrade (the 'approved project'). This approval was based on an environmental impact assessment that included an Environmental Impact Statement (EIS), Species Impact Statement (SIS) and associated working papers.

The approved project was assessed under the provisions of both Parts 4 and 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The Part 4 component was necessary because of the potential impacts on wetlands designated under State Environmental Planning Policy (SEPP) No. 14. Development consent for the Part 4 matters (SEPP 14 wetlands) was granted by Byron Shire Council on 27 September 1999. That consent lapsed on 27 September 2001.

The Brunswick Heads to Yelgun Upgrade is being constructed as part of the RTA's strategy to upgrade the Pacific Highway. The 8.7km Upgrade remains largely along the existing alignment and provides a dual carriageway Freeway between the completed Tandys Lane project in the south and the recently opened Yelgun to Chinderah project in the north. It includes construction of a new bridge over the Brunswick River. The Upgrade was developed to address road safety and traffic performance concerns.

Construction of the approved project is expected to take two and a half years. The construction schedule would be developed in detail by the contractor selected to undertake the works. It is anticipated that approximately 180-200 persons would be employed during the construction period. The cost of the approved project was stated to be approximately \$73 million. The capital cost of the modified proposal has been revised to \$140 million as a result of better estimates.

## 1.2 Nature of the Proposed Modifications

To address concerns regarding the social and ecological impact of the approved project, the RTA undertook a review of the concept design for the whole Brunswick Heads to Yelgun Upgrade project. On 28 November 2001, the RTA released a Concept Design Review Brochure seeking community feedback on options to reduce the complexity and environmental impacts of the approved project.

Based on the Concept Design Review and submissions made by the community, the RTA now proposes to modify the approved project to reduce the environmental impact of the approved project at the Brunswick River, Billinudgel and Yelgun (the modified proposal). More detail on the modified proposal is provided in Section 3.1.

## 1.3 Statutory Provisions and Assessment Process

### 1.3.1 Approved Project

The RTA requested the requirements of the Director-General for the preparation of an EIS on 14 November 1996. The Director-General's requirements for the original proposed Brunswick Heads to Yelgun Upgrade were issued on 16 December 1996.

The RTA subsequently prepared an EIS and SIS for the proposed Brunswick Heads to Yelgun Upgrade, which were exhibited between 6 August and 11 September 1998. Forty-six representations were received in response to the EIS and SIS.

In accordance with Section 115B of the EP&A Act, the RTA sought the approval of the Minister by way of letter dated 1 June 1999. The request for approval was accompanied by a Representations Report which presented the RTA's response to the issues raised in response to the public exhibition.

In accordance with Section 112C of the EP&A Act, the RTA obtained the concurrence of the Director-General of the NPWS in relation to the SIS prior to seeking approval from the Minister.

In accordance with section 115B of the EP&A Act, the Minister approved the Brunswick Heads to Yelgun Upgrade on 19 August 1999. The Minister's approval was subject to 71 conditions. These conditions are reproduced at Appendix A.

### **1.3.2 Modification of Minister's Approval**

Section 115BA(2) of the EP&A Act provides that a proponent may request that the Minister modify an approval granted under section 115B of that Act. A modification is required where any change in an approved activity would be inconsistent with the approval.

In requesting a modification, the proponent is required under section 115BA(4) of the Act to determine whether the proposed modified activity would be likely to significantly affect the environment. The RTA determined that the proposed modified activities would be unlikely to significantly affect the environment and that a further EIS would not be required.

Subsequently, and in accordance with section 115BA(5)(b) of the EP&A Act, the RTA prepared and publicly exhibited a Review of Environmental Factors (REF) for the Part 5 modified proposal. The REF for the Part 5 components was combined with an EIS for the Part 4 components of the proposal (ie. where the proposal affected SEPP 14 wetland areas) into the one Environmental Impact Assessment (EIA) document. The RTA exhibited the REF between 6 November and 23 December 2002. Fifty seven representations were received in response to the Part 5 REF components during the EIA exhibition.

The RTA sought the approval of the Minister for the modified proposal in a letter received by the Department on 24 June 2003. The request was accompanied by a 'Submissions Report' addressing the issues raised in representations from the public exhibition of the REF and a 'Decision Report' stating the RTA's conclusions on the proposed modification.

### **1.3.3 Council Consent**

The RTA submitted a development application and accompanying EIS for the Part 4 component of the Project to Byron Shire Council in November 2002. The DA and EIS were exhibited at the same time as the RTA exhibited the REF. Council considered the project at an Approvals Committee Meeting on 27 May 2003. The Council Director's report to the Committee recommended approval, however the resolution of the Committee was to not make a decision on the project but:

“that the Minister for Infrastructure Planning and Natural Resources and the Minister for Roads be invited to visit the Shire and confer with all interested parties before a decision is made on [the] development application.”

Concurrent to the proposed modifications under Part 5 of the EP&A Act, the RTA also requested that the Minister for Infrastructure and Planning initiate a negotiated determination on the Part 4 component of the project under section 116D of the EP&A Act. The resultant process (under Section 116E of the Act) would include negotiations between the RTA and Council facilitated by the Department.

The effect of the process is that, where no agreement is reached, the Minister determines the application under section 116E(4) of the Act. If the Minister intends not to agree with any or some of Council's recommended conditions, the Minister must: (1) notify Council of his decision not to approve the conditions that he does not agree with; (2) notify Council of the conditions he approves to be attached to the development consent; and (3) specify the date by which Council must approve the application.

The Minister does not usurp Council's role as consent authority as consent is still issued by Council. The Minister in this instance has the power to direct Council as to what form the consent shall take and when the consent shall be issued.

### **1.3.4 Other Statutory Provisions**

The REF examined the effects of the proposed modifications on threatened species in accordance with the *Threatened Species Conservation Act 1995*. The assessment concluded that a SIS was not required as the modifications would not significantly affect a threatened species, population or ecological community.

The modified proposal would not require clearing of native vegetation outside the road reserve. Consent from the Minister for Natural Resources is therefore not required under the *Native Vegetation Conservation Act 1997*.

Under the Commonwealth *Environment Protection & Biodiversity Conservation Act 1999*, the REF also considered the potential impacts of the modifications on matters of national environmental significance. The RTA concluded that the modifications would not have a significant impact on matters of national environmental significance.

## **1.4 Purpose of this Report**

The purpose of this Report is to review the REF for the modified proposal, the issues raised in representations made in response to the exhibition of the REF, and the RTA's consideration of those representations in their Submissions Report. In accordance with the EP&A Act the Director-General's Report only examines the proposal to the extent that it is proposed to be modified. It does not assess issues or areas relating to the original Brunswick Heads to Yelgun Upgrade project that were not modified as these are covered by the original approval.

This Report has been prepared in accordance with Section 115C of the EP&A Act which requires the Director-General to assess and report to the Minister on the modified proposal. This Report documents the outcome of an independent environmental impact assessment by the Department.

## 2. THE APPROVED PROJECT

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This section of the Report outlines the project approved by the Minister on 19 August 1999 (the approved project). For more details of the approved project see the original EIS, the original Representations Report and the Director-General's Report on the Proposed Brunswick Heads to Yelgun Pacific Highway Upgrade.

### 2.1 Description of the Approved Project

The Brunswick Heads to Yelgun Upgrade is being undertaken to improve safety and travelling conditions on the Pacific Highway. The intended benefits of the approved proposal are to:

- improve the social amenity and safety conditions for local traffic and pedestrians between the Brunswick River and Yelgun;
- separate through traffic from local traffic, reduce congestion and travel times and improve travel efficiency and road safety; and
- provide a high standard dual carriageway for local and regional movement of freight and people.

The alignment of the approved project is shown in Figure 1. The approved project would commence just south of Saddle Road and involves construction of a second carriageway parallel to the Brunswick Heads Bypass. An interchange would be constructed approximately 700m south of the Brunswick River to cater for movements to and from Brunswick Heads.

The existing bridge over the Brunswick River would be demolished and a new six-lane bridge would be constructed with provision for through traffic as well as local traffic and cyclists and pedestrians.

North of the Brunswick River, the approved project would travel through the Brunswick Heads Nature Reserve. The approved project would be constructed as a split level, dual carriageway to minimise the overall footprint.

Further north, the approved project would be located generally parallel to and west of the existing highway. The approved project would then continue to a proposed interchange near Yelgun, to the east of Billinudgel.

The approved project is approximately 8.7km in length and would vary in width between 70-100m.

The approved project would generally comprise four 3.5m traffic lanes with inner sealed shoulders of 0.5m, a sealed outer shoulder/breakdown lane of 2.5m, which would also be available to cyclists, and a 1.0m verge adjacent to the breakdown lane. The approved project would comply with relevant RTA design criteria. The key design features of the approved project are summarised in Table 1 below.

**Table 1: Road Design Criteria**

CRITERIA	
Design speed	110kph
Stopping sight distance	210m
Minimum radius of horizontal curves	600m
Maximum gradient	4-6%

As far as possible, the approved project was designed to achieve a balance of cut and fill material which was calculated taking into account 60,000m<sup>3</sup> of fill required by the RTA for the Ewingsdale interchange project. A significant shortage of fill occurs south of the Brunswick River which means that substantial haulage of fill material would be required across the River.

Drainage controls have been incorporated into the concept design for the approved project. The approved project drainage design aims to minimise the impact on existing flood levels. Erosion and sediment controls would be implemented during the construction and operation phases of the works to protect water quality.

## 2.2 Access Arrangements and Road Modifications

The following access arrangements and road modifications would be carried out as part of the approved project:

- access to the Ferry Reserve Caravan Park is maintained via the existing highway south of the Brunswick River;
- construction of a roundabout at Rajah Road and existing highway;
- provision of an underpass for the access road to Brunswick Heads STP;
- realignment of Coolamon Scenic Drive to cross the new highway via an underpass;
- realignment of Banana Road;
- connection of Wilfrid Street to the local road network by way of an overpass; and
- connection of Stock Road Route to the existing highway by linking this road to the Yelgun interchange.

The existing highway would become a local road. Its future management and responsibility would be the subject of negotiations between the RTA and Byron Shire Council.

The approved project would necessitate the total or partial acquisition of a number of properties. All properties would be acquired in accordance with the *Land Acquisition (Just Terms) Act 1991*.

## 2.3 Construction Issues

The RTA identified the main construction tasks as follows:

- site establishment;
- clearing and demolition;
- temporary erosion, sediment and water quality control measures;
- topsoil stripping and management;
- foundation treatments;
- drainage construction;
- bulk earthworks;
- installation of noise attenuation measures;
- bridge construction;
- pavement construction;
- topsoiling and revegetation of batters and berms;
- landscaping;
- line marking and signposting;
- interchange lighting; and

- finishing works.

The proposed construction period is two and a half years. The construction schedule would be developed in detail by the contractor selected to undertake the works. It is anticipated that approximately 180-200 persons would be employed during the construction period.

The RTA has proposed construction hours of 7am to 6pm Monday to Friday and 7am to 1pm Saturday with no work on Sundays or public holidays.

The cost of the approved project is stated to be approximately \$73 million.

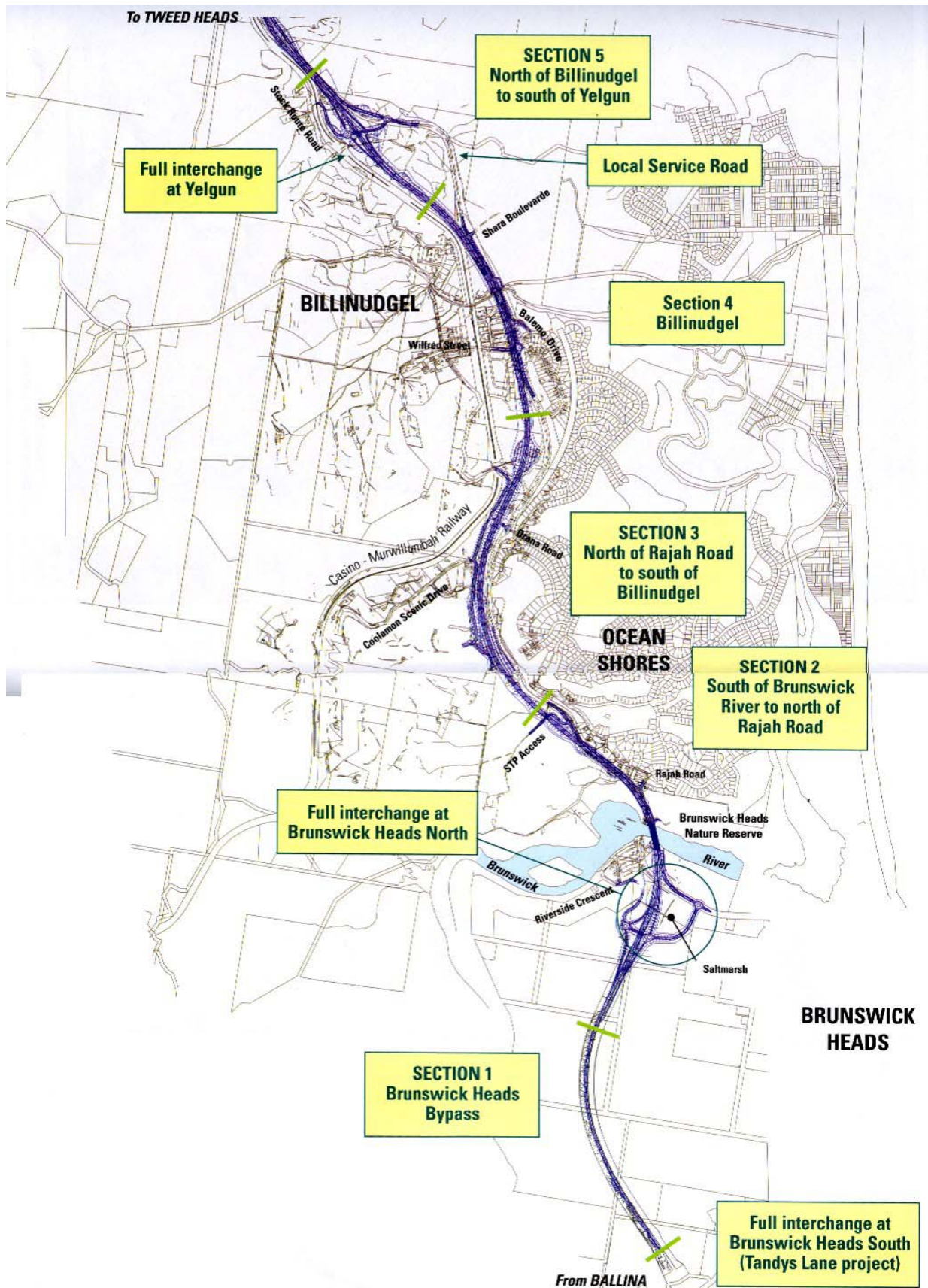
## **2.4 Conditions of Approval**

The Department recognised the importance of the approved project as part of the Pacific Highway Upgrade program. The Department's detailed assessment of the impacts of the approved project concluded that, while there was the potential for impacts to occur, particularly flora and fauna impacts and construction and operation noise, adequate mitigation measures had been identified to reduce these impacts. It is also noted that the Concurrence Conditions developed by NPWS would be fundamental to ensuring an acceptable flora and fauna outcome.

The Department recommended that the proponent prepare comprehensive Environmental Management Plans for the construction and operation stages of the proposal to ensure the identified mitigation measures are implemented throughout the life of the project. The key mitigation measures embodied in the Conditions of Approval are:

- implementation of noise mitigation measures prior to construction and ongoing monitoring of noise levels;
- implementation of a number of conditions relating to flora and fauna, including development of a comprehensive Compensatory Habitat Package;
- preparation of detailed Environmental Management Plans for construction and operation stages of the works; and
- establishment of a Community Liaison Committee to discuss measures to minimise impacts arising from the construction of the works.

Figure 1: Location and alignment of the approved project (Source: Environmental Impact Assessment 'Brunswick Heads to Yelgun Upgrade, Modifications to Approved Project' 2002)



### **3. DESCRIPTION OF THE PROPOSED MODIFICATIONS**

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*This section describes the modified proposal as described in the EIA documentation. It provides an overview of the information presented in the EIA documentation and does not necessarily represent the views of the Department. The Department's consideration of the proposed modification is provided in Sections 5 and 6.*

#### **3.1 Modification Development**

Following approval of the Brunswick Heads to Yelgun Pacific Highway Upgrade in August 1999, the RTA undertook a number of additional investigations regarding the Upgrade project.

A local community action group proposed an alternative route option to the west of the existing highway (referred to as the "VA2" option). This option was investigated by the RTA including its relative environmental and cost implications against the approved route. The RTA concluded that the VA2 option would be more costly and more damaging to the environment than the approved route. Consequently this alternative was not pursued.

To address community concern regarding the social and environmental impacts of the approved project, the RTA conducted a comprehensive review of the concept design of the approved project. The design review identified a number of options for the improvement and refinement of the approved project. These were subject to community consultation in November and December 2001.

The design review identified a number of options for improvement and refinement of the approved project. Specifically, the review focused on Sections 2, 4 and 5 of the approved route, which are generally in the vicinity of the Brunswick River, Billinudgel and the Yelgun interchange respectively.

The design review developed and evaluated an alternative interchange arrangement and alternative river crossing at the Brunswick River (Section 2). The design review identified a number of alternative bridge design options that could reduce the number of piers in the river.

At Billinudgel and Yelgun (Sections 4 and 5), the design review focused on alternative highway and service road configurations to provide more appropriate access arrangements, to avoid potential driver confusion when travelling through complex interchanges, and to reduce identified construction risks.

Following the community consultation process, the RTA adopted the modified proposal design. This modified proposal design differs sufficiently from the approved project to require a modification to the original approval, and hence has been the subject of additional environmental investigation.

#### **3.2 Description of the Modified Proposal**

The proposed modification involves revised designs for three sections of the approved project. Based on a concept design review and submissions made by the community, the RTA proposes modifications to reduce the environmental impact of the approved project at the Brunswick River (Section 2), Billinudgel (Section 4) and Yelgun (Section 5).

The modified design for each Section (the modified proposal) is show in

Figure 2, Figure 3 and Figure 4.

### **3.2.1 Section 2 – South of Brunswick River to North of Rajah Road**

Modifications to the road design in this section were developed to simplify the complexity and scale of the Brunswick Heads North interchange and to reduce the associated social and environmental impacts.

The modified proposal includes a half interchange (as opposed to a full interchange) providing northbound highway access to Brunswick Heads and direct southbound access to the highway via a re-located on-ramp arrangement. Southbound highway access to Brunswick Heads and northbound highway access from Brunswick Heads would be possible only from the Yelgun Interchange or the Brunswick Heads South Interchange.

Cross highway access between Brunswick Heads/Ocean Shores and the Ferry Reserve Caravan Park/Riverside Crescent would be provided via two roundabouts (including the existing one) and an underpass. The modified interchange would reduce the number of roundabouts from four to two and would have fewer off-ramps. This would significantly reduce the road footprint, particularly in an area of saltmarsh.

Proposed modifications to the new Brunswick River crossing provide a six lane bridge (four lanes for the highway, plus a two-lane local service road) 180 metres in length with two pier sets in the river. The bridge has a balanced cantilever design which increases its overall height by approximately 3 metres, with consequential height increases on the highway adjacent to the bridge.

The existing bridge would be demolished and the piers cut off at the riverbed to reduce any potential hazards to boats. The new bridge design would provide adequate clearance, lighting and signage to allow for the safe navigation of vessels.

The pedestrian/cycleway across the bridge on the local service road would be narrowed by 0.5 metres, while the gap between the highway and the local service road over the bridge would be widened from 1.5 to 3.5 metres. This would reduce the footprint north of the river, allow more light to reach the river, and provide space for landscaping in the median.

The modified proposal would substantially simplify the construction staging requirements for this section in comparison with the approved project, although the earthworks construction period may be slightly increased.

### **3.2.2 Section 4 – Billinudgel**

Modifications to the road design in this section were developed to simplify the complexity of local access in this area and rationalise the total bridge length over the Marshalls Creek floodplain.

The modified proposal involves removing the Wilfred Street overpass, roundabout and extensive retaining walls. There would also be an eight metre eastward shift in the highway alignment to provide space for the deceleration and acceleration lanes for the left-in, left-out northbound highway junction with Wilfred Street. Removal of the Wilfred Street overpass would substantially reduce visual impacts and increases local access to and from the highway at Wilfred Street. Southbound highway access to Billinudgel would be provided along the local service road from the Yelgun interchange.

The modified proposal would provide local access between Billinudgel and the service road via an underpass 300 metres south of Wilfred Street. This new access would require acquisition of one additional property.

Streetscaping is proposed in the Billinudgel industrial area and the local community would be closely involved in the development of a streetscaping plan.

The modified proposal includes a new footbridge over the highway between Wilfred Street and Calemo Drive to maintain pedestrian and cycle links between Ocean Shores and Billinudgel.

The modified proposal would reduce the total bridge length over the Marshalls Creek floodplain. A total of seven new bridges, plus the existing two bridges, would have been required for the approved project. However, concerns about long-term serviceability and potential settlement problems due to soft soils, led to the existing bridges being replaced in the modified proposal.

Following additional hydraulic and design investigations, the modifications proposed involve a total bridge length of 125 metres for each carriageway instead of 150 metres proposed for the approved project. This would allow a reduction in the number of bridges from nine with the approved project to six with the modified proposal. The two existing bridges would be demolished. NSW Fisheries would be consulted during the design and construction of all bridge structures.

The modified proposal would reduce construction stage impacts as the extent of major structures to be constructed would be reduced.

### **3.2.3 Section 5 – North of Billinudgel to Yelgun**

Modifications to the road design in this section were developed to reduce the complexity of the interchange arrangement. In particular, traffic using the interchange would travel in a more logical direction to and from various locations, avoiding potential confusion and enhancing traffic flow and safety. The proposed modifications would also substantially reduce the footprint of the interchange.

The modified interchange arrangement provides two single-lane overpass bridges for the northbound on and off ramps connecting to a single roundabout east of the new highway. All traffic movements would be possible from the new roundabout.

The modified proposal would provide access for Stock Route Road residents via an underpass which would connect directly to the local service road to the north of the interchange.

## **3.3 Findings of the Decision Report**

To accompany the Submissions Report sent to the Department the RTA completed a Decision Report on the 6 May 2003. The Report notes that the proposed modifications to the approved project are required to:

- simplify the complexity and scale of the Brunswick Heads North and Yelgun interchanges;
- provide a more acceptable bridge crossing at the Brunswick River;
- provide direct northbound highway access to and from Billinudgel;
- reduce social, visual and environmental impacts of the approved project; and
- provide cost efficiencies.

Based on a consideration of the REF and community consultation, the Decision Report recommends that the modified proposal proceed subject to the project being carried out in accordance with:

- obligations of the approved project, including the Conditions of Approval (August 1999), the original EIS, SIS and associated working papers, the original Representations Report, and the original NPWS Concurrence Report;
- all environmental mitigation measures, controls and commitments identified in the REF and Submissions Report for the modified proposal;
- all environmental mitigation measures, controls and commitments identified in the Decisions Report for the modified proposal; and
- obtaining the approval of the Minister for Infrastructure and Planning, as required under 115BA(2) of the EP&A Act.

The additional environmental mitigation measures, controls and commitments identified in the Decisions Report include:

- an electronic compliance system to monitor compliance with all project obligations during detailed design, construction and operation;
- inclusion of environmentally sensitive areas in design plans to aid in the management of environmental issues during design and construction;
- additional protection and mitigation measures for Aboriginal middens to the west of the proposal, including the provision of temporary protective fencing;
- consultation on the draft Saltmarsh Rehabilitation Plan and commencement of rehabilitation as soon as practicable;
- appropriate noise mitigation measures; and
- undertaking an operational noise impact assessment.

Figure 2: The modified design for Section 2 of the project (Source: Environmental Impact Assessment 'Brunswick Heads to Yelgun Upgrade, Modifications to Approved Project' 2002)

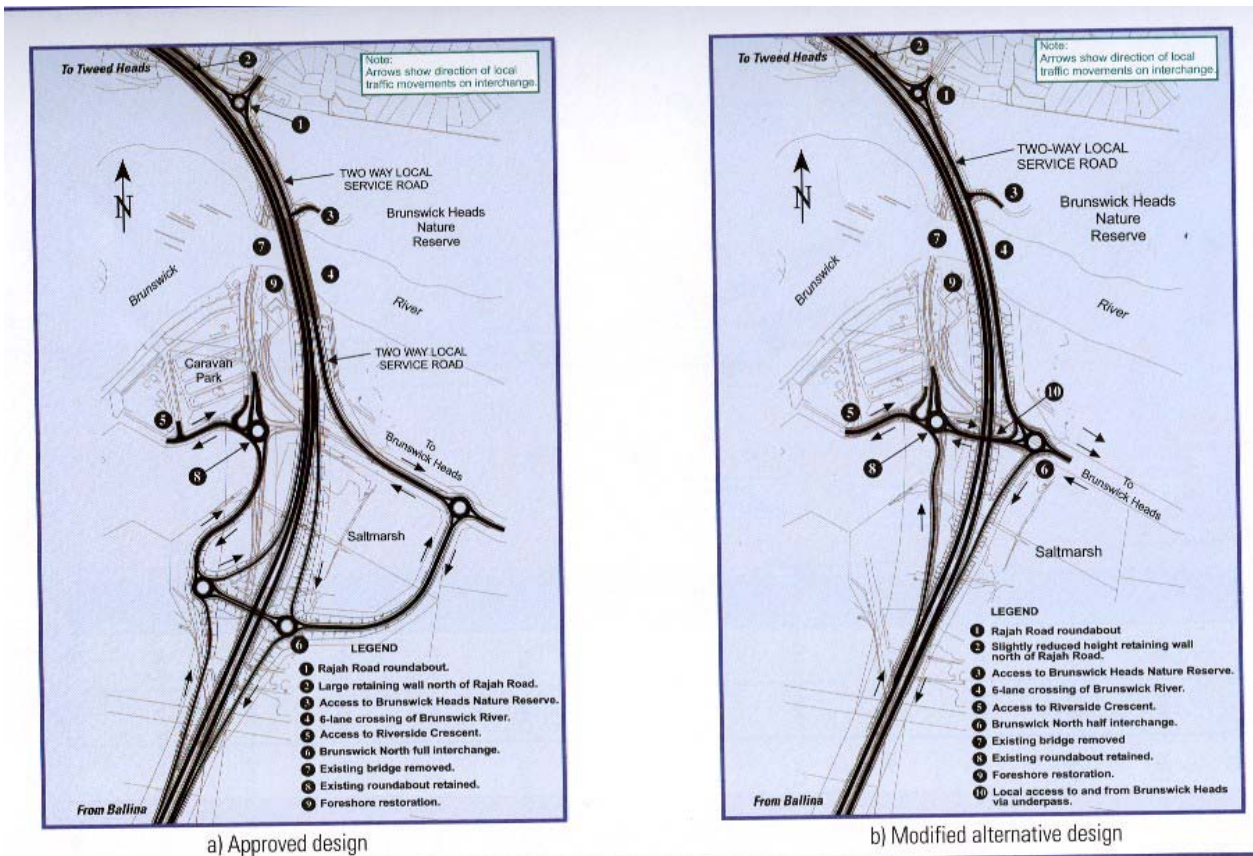


Figure 3: The modified design for Section 4 of the project (Source: Environmental Impact Assessment 'Brunswick Heads to Yelgun Upgrade, Modifications to Approved Project' 2002)

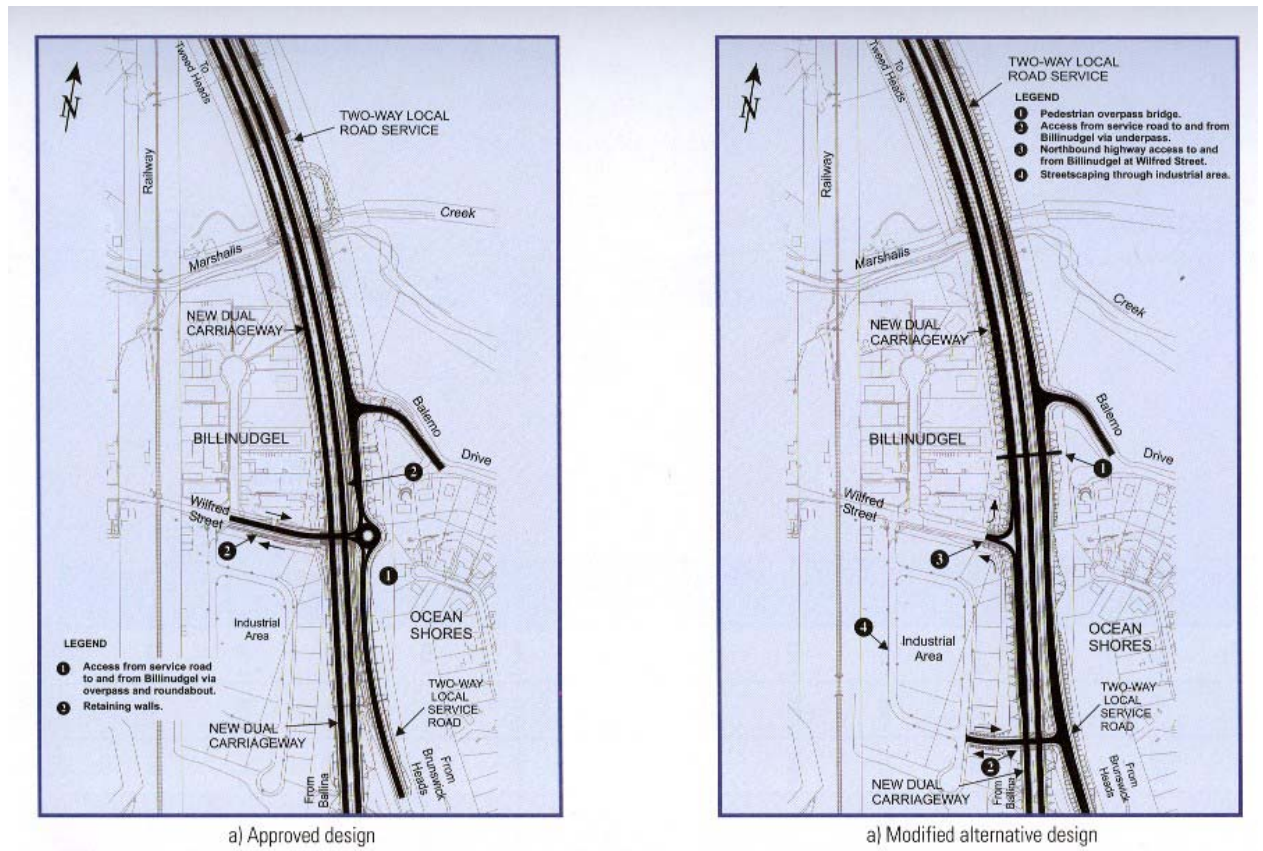
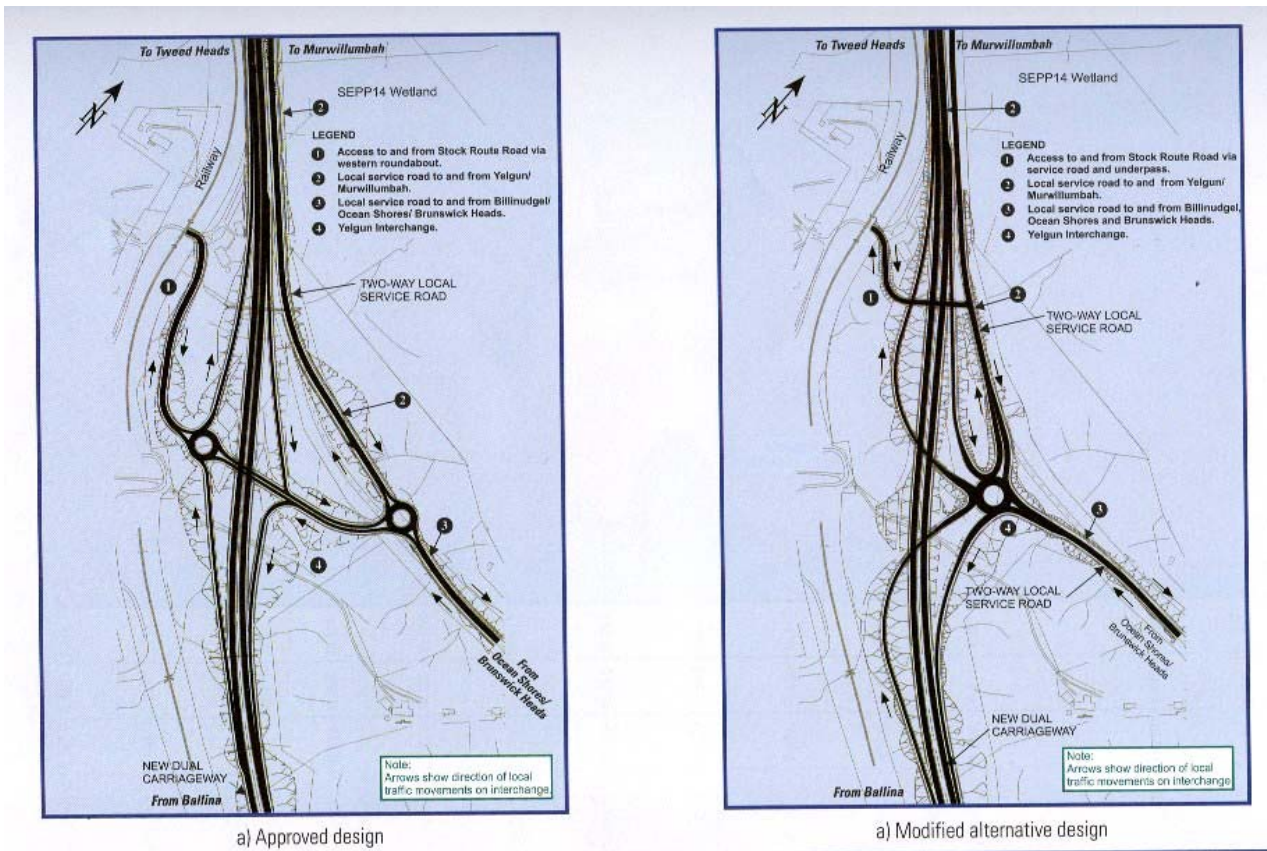


Figure 4: The modified design for Section 5 of the project (Source: Environmental Impact Assessment 'Brunswick Heads to Yelgun Upgrade, Modifications to Approved Project' 2002)



## 4. SUMMARY OF REPRESENTATIONS

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*This section provides a brief review by the Department of the representations received to the REF. It does not necessarily represent the views of the Department. The Department's consideration of the proposed modification is provided in Sections 5 and 6. It is important that this Section be read in conjunction with the Submissions Report to understand how all issues raised in representations were addressed.*

The RTA received 57 representations to the REF that related specifically to the proposed modifications under Part 5 of the EP&A Act. The Department notes that some 324 submissions were received in response to the EIA document, however the RTA determined that the majority of these submissions related only to the development application under Part 4 of the EP&A Act. Submissions received that relate entirely to Part 4 matters are considered under the development consent procedures for that Part of the Act.

Representations were received from ten government agencies, including Byron Shire Council. Sixteen local community or environmental groups made representations and thirty one representations were made by individuals. Table 2 notes the broad position of representations.

**Table 2: The broad position of representations received to the REF that relate specifically to the proposed modifications under Part 5 of the EP&A Act.**

<b>General position</b>	<b>Number of Representations</b>	<b>Percentage</b>
Support the modified proposal	18	32%
Oppose the modified proposal	7	12%
Oppose the approved project	24	42%
Support an alternative route	17	30%
Neither support or oppose	14	25%

Most representations, regardless of their position overall, raised specific concerns regarding the proposed modifications. The most common concern related to noise impacts on the local community as a result of increased traffic volumes. The impacts of the approved project on flora and fauna and indigenous heritage were also frequently raised. Other key issues raised included potential visual impacts; design of the bridge over Brunswick River; loss of local access; and loss of pedestrian/cycle facilities.

Further detail on representations is provided in the RTA's Submissions Report, including a response to how all issues raised in representations were addressed.

## 5. ASSESSMENT OF KEY ISSUES

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*This Section of the Report provides an assessment of the key environmental impacts of the modified proposal based on an examination of the EIA documentation, issues raised in representations made during the exhibition period and the Proponent's response to these issues presented in its Submissions Report and during further consultation with the Department. In accordance with Section 115BA(7) of the EP&A Act, the environmental impacts of the revised modified proposal is assessed only to the extent that the approved project is to be modified. It is important that this Section be read in conjunction with the Submissions Report to understand how all issues raised in representations were addressed.*

### 5.1 Noise and Vibration

#### 5.1.1 Background

The noise assessment in the REF included a revised operational noise assessment based on updated traffic volumes and predicted volumes at opening (2006) and 10 years after opening (2016). The noise assessment also considered the impacts of the modifications to the design of the project and consideration of a 110km/hr posted speed, compared to the 100km/hr posted speed of the preferred project.

The noise assessment included the use of previous background noise monitoring and additional monitoring to establish indicative Noise Catchment Areas (NCAs) surrounding the modified proposal. Criteria levels were established for the NCAs based on the NSW Government's *Environmental Criteria for Road Traffic Noise* (ECRTN) and also the RTA's *Environmental Noise Management Manual* (ENMM).

The relevant road traffic noise criteria used in the assessment for residences were  $L_{Aeq,15hr}$  (7.00am-10.00pm) of 55dBA and  $L_{Aeq,9hr}$  (10.00pm-7.00am) of 50dBA for a new freeway and  $L_{Aeq,15hr}$  (7.00am-10.00pm) of 60dBA and  $L_{Aeq,9hr}$  (10.00pm-7.00am) of 55dBA for the redevelopment of an existing freeway. The majority of the project would be subject to the 'redevelopment of a freeway' criteria apart from a section at the northern end near Billinudgel Road. The 'night-time' noise criteria was used as the control in the assessment.

The noise assessment indicated that a number of the monitoring locations were already experiencing road traffic noise above ECRTN criteria levels. The ECRTN suggests that in these cases all reasonable and feasible measures are reviewed to achieve the criteria. It was argued in the assessment that where the modified proposal was predicted to reduce predicted traffic noise levels, even though the criteria levels were exceeded, no noise mitigation was necessary. This is consistent with the methodology in the ENMM.

The assessment found that the modifications themselves would cause some increases and some decreases in traffic noise at nearby residences due mainly to vertical and horizontal alignment changes. The predicted noise levels 10 years after opening at the worst affected residences within each NCA is summarised in Table 33.

**Table 3: Modelled Night Time  $L_{Aeq,9hr}$  Noise Levels without mitigation at each NCA**

NCA	Location	2002 Modelled Background (dBA)	Adopted Criteria (dBA)	Predicted 2016 (dBA)
1	Lot 264 Bayside Way	48.5	55.0	52.0
2	Bashforths-Bashforth Ln	51.0	55.0	54.5
3	Ferry Reserve CP	63.0	65.0	58.0
<b>4</b>	<b>2 Rajah Rd (Top Floor)</b>	<b>58.5</b>	<b>60.5</b>	<b>61.0</b>
5	Oba Place	62.5	64.5	61.5
6	5 Weeronga Way (east)	44.0	55.0	48.0
7	Tongarra Drive	65.0	67.0	63.0
8	Binya Place	47.5	50.0	39.5
<b>9</b>	<b>Mountain View Rd</b>	<b>52.5</b>	<b>55.0</b>	<b>57.0</b>
10	Yamble Drive (south)	68.5	70.5	63.0
11	Balemo Drive (south)	58.5	60.5	56.5
<b>12</b>	<b>Villa Ruidosa Cottage</b>	<b>38.0</b>	<b>50.0</b>	<b>53.5</b>
13	1 Kulgun Ct	59.0	61.0	54.0
14	Ulipira/Nargoon	58.5	60.5	48.5
15	Matong Drive	62.5	64.5	58.0
<b>16</b>	<b>Christian Life Centre</b>	<b>67.5</b>	<b>69.5</b>	<b>69.0*</b>
<b>17</b>	<b>21 Gliba Avenue</b>	<b>57.0</b>	<b>59.0</b>	<b>59.5</b>
<b>18</b>	<b>123 Balemo Drive</b>	<b>58.5</b>	<b>60.5</b>	<b>61.0</b>
<b>19</b>	<b>175 Billinudgel Rd</b>	<b>56.5</b>	<b>58.5</b>	<b>59.0</b>
20	Holm farm Billinudgel Rd	39.5	50.0	46.0
21	'Jagwen', Billinudgel Rd	50.5	51.0	50.5

Note: \* Although predicted noise levels in 2016 would be below the 'adopted criteria' they would be above the 55dBA 'base criteria' as specified in the ECRTN.

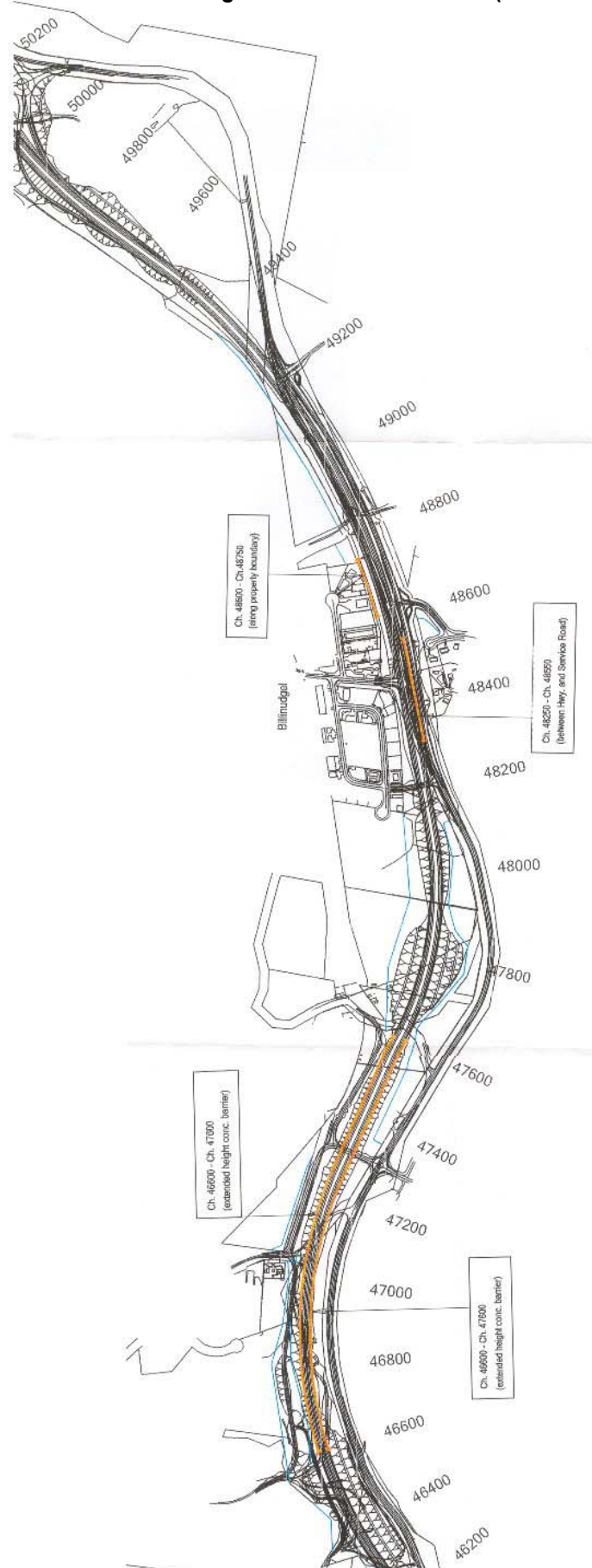
Table 3 indicates that the majority of NCAs would exceed the relevant criteria for night-time noise (55dBA for redeveloped freeways and 50dBA for new freeways). Highlighted in the table are those NCAs where predicted noise levels in 2016 increase as a result of the modified proposal and are above the base criteria levels in the ECRTN.

The assessment reviewed potential noise mitigation options particularly focussing on the NCAs highlighted in the table above. The assessment found that potential options included:

- the use of an alternative quieter road surface such as open graded asphalt (estimated to reduce noise by 2-3dBA on average over pavement life);
- a series of extended existing and new noise barriers (refer to Figure 5 for locations); and
- specific works at individual residences where noise barriers would not be effective.



Figure 5: Location of extended existing and new noise barriers (Source: RTA)





The potential noise barriers were assessed on the basis of cost effectiveness, which found that barrier heights between 2 and 6.5m were reasonable and feasible. In some cases individual mitigation was also suggested for residences where, despite the implementation of noise barriers, elevated noise levels are predicted, particularly in a house's second storeys. In the vicinity of the Ferry Reserve Caravan Park and Orana Road, proposed safety barriers could also function as noise barriers by raising them above the height required for safety alone (to between 1.5 and 2 m high).

The noise assessment stated that the final selection of noise mitigation would be subject to detailed design and a review of visual impacts and community preferences.

The noise assessment also considered the impacts on sleep disturbance from the modified proposal by comparing the averaged  $L_{Amax}$  levels with the night-time  $L_{Aeq,9hr}$  levels. This assessment indicated that the averaged  $L_{Amax}$  levels are not greater than 15dBA above the  $L_{Aeq,9hr}$  levels indicating low potential for sleep disturbance.

The REF stated that construction noise and vibration impacts would be consistent with the approved project.

### 5.1.2 Key Issues

A number of representations, particularly from the community in Ocean Shores, raised issues about the REF's noise assessment, including:

- that appropriate traffic speeds and volumes were not used in the noise assessment;
- that the use of 'allowance' criteria for determining appropriate mitigation was not appropriate;
- concerns over maximum noise levels and sleep disturbance from trucks;
- existing traffic noise levels are unacceptable and should not be used as the basis for determining future impacts; and
- impacts on the caravan park have not been sufficiently taken into account.

### 5.1.3 Consideration of Key Issues

#### Appropriate Traffic Speeds and Volumes

Concerns were raised in a number of representations that the noise assessment was based on inappropriate traffic figures that did not include peak holiday periods or the increases in traffic as a result of the opening of Yelgun to Chinderah and the recent designation of the route for B-Doubles. It was expressed that by using the lower traffic volumes proposed noise mitigation would not be sufficient for actual traffic noise impacts in the future. Refer to Section 5.3 for further discussion of traffic volumes.

In response the RTA recognised that the traffic volumes used for the baseline noise assessment were based on traffic counts undertaken in the winter of 2002 prior to the opening of the Yelgun to Chinderah project. The RTA stated that by using the lower traffic noise levels lower baseline noise criteria levels were established. The RTA further stated that the forecast noise levels in 2006 and 2016 were based on traffic levels which include additional truck volumes as a result of the Yelgun to Chinderah project.

The RTA clarified in the Representations Report that the noise assessment was based on a 110km/hr posted speed limit rather than 100km/hr.

The Department is generally satisfied with the methodology for assessing future traffic noise levels. It is noted that the existing Condition of Approval No. 34 requires that the proponent monitor traffic noise

levels after opening and where traffic noise levels are higher than predicted additional noise mitigation is to be considered.

### Criteria used for Mitigation

The EPA raised the concern in their representation that the adoption of an 'allowance criteria' (ie. 2dBA above background) was inappropriate for mitigation and that the ECRTN base criteria should have been used. They stated that the allowance criteria should only be used where all feasible and reasonable mitigation measures have been tested to meet the base criteria.

In response, the RTA clarified that the objectives of noise mitigation considered as part of the proposal were aimed at meeting the base criteria levels, apart from where noise levels were predicted to decrease as a result of the modified proposal. It was stated that in accordance with Practice Note iv of the ENMM all reasonable and feasible mitigation measures would be considered to meet the base criteria.

The Department is satisfied with this response.

### Sleep Disturbance

Some representations received from local residents suggested that sleep levels were already being disturbed as a result of additional truck movements induced as a result of the Yelgun to Chinderah project. It was suggested that these impacts on sleep patterns would increase.

The RTA stated in the Representations Report that sleep disturbance should be reduced by the proposed modifications. Lower gradients on the modified road would reduce the need for trucks to use air brakes or change gears, actions which cause noise often associated with sleep disturbance.

The Department is satisfied that sleep disturbance should be reduced with the modified design. Further, the potential noise barriers suggested for the worst affected residences should also reduce sleep disturbance.

### Existing Traffic Noise Levels

A number of representations suggested that existing noise levels were already too high and should not be used as the criteria to determine future noise limits. In response the RTA stated that they had followed the appropriate methodology as outlined in the ECRTN and ENMM.

The Department is cognisant that existing and future traffic noise impacts are high at the nearest sensitive receptors to this section of the highway. The significance of the noise impacts was well understood at the time of the project approval and a number of conditions of approval were included to manage these impacts. Conditions included the requirement to produce a Noise and Vibration Management Sub Plan as part of the Construction stage and Operational stage EMPs (Condition of Approval No. 26) and the preparation of Noise Impact Statement(s) where required by the EPA to specifically address construction and operational noise impacts (Condition of Approval No. 27).

The Department has recently developed a condition requiring the preparation of an Operational Noise Management Report detailing the specifics of operational noise mitigation prior to substantial construction. The condition also requires that the Proponent obtain the approval of the Director-General for the report. The condition references applicable policy, such as ENMM, and better meets community

expectations for finalisation of mitigation during the detailed design stage. It is recommended that this new condition replace the existing Condition of Approval No. 27. The new Condition also replaces the requirement for an operation Noise and Vibration Management Sub Plan in Condition 26.

In some NCAs there are residences experiencing acute noise levels but where mitigation is not proposed as the modified proposal is predicted to reduce the existing traffic noise levels. Acute noise criteria are 65 dB(A)  $L_{eq(15hr)}$  (day) and 60 dB(A)  $L_{eq(9hr)}$  (night). The Department is aware that the RTA has a general noise abatement plan that aims, over the long-term, to reduce existing traffic noise levels in areas that experience noise levels above acute criteria. The implementation of noise mitigation for the modified proposal presents an opportunity to investigate noise abatement measures for acutely affected properties. The Department therefore recommends the inclusion within the new recommended Condition of Approval No. 27 of a requirement to consider noise mitigation for all properties where traffic noise is predicted to exceed acute criteria in the year 2016.

### Impacts on the Caravan Park

A representation was received from the Ocean Shores Community Association after receipt of the Representations Report from the RTA which raised issues in regard to the noise impact on the Ferry Reserve Caravan Park. The representation suggests that the impacts on the Caravan Park have been underestimated. It was suggested that noise from traffic on the new bridge and the road on the northern side of the river would be reflected off the Brunswick River and from noise barriers. Further, it was suggested that this reflection was not considered in noise estimates made for the Caravan Park.

The Department investigated this suggestion. Expert advice concludes that, although the modelling may not have specifically taken these factors into account, they were unlikely to lead to significant increases in noise levels and any difference was likely to be within the level of model accuracy (ie. 2-3dBA maximum).

The Caravan Park is a beneficiary of the modified proposal. With the modification, existing night-time noise levels at the Park are predicted to reduce from 63.0 to 58.0dBA due to the eastwards movement of the road alignment. The modified proposal includes the removal the existing concrete noise barrier allowing the Caravan Park to be better connected to the foreshore area of the Brunswick River. To further mitigate noise impacts on the Caravan Park the RTA indicated that it may be possible to modify the safety barrier on the western edge of the road in this vicinity into a 2m high noise barrier. That possibility would need to be examined and reported in the Operation Noise Management Report.

### **5.1.4 Conclusions**

The traffic noise impact assessment of the modified proposal found that some areas will benefit and some will received elevated noise levels. In areas where elevated noise levels are predicted and noise criteria levels are exceeded, the RTA has investigated reasonable and feasible mitigation including the potential installation of noise barriers, the use of quieter pavement types and at-residence treatments.

The Department proposes the addition of a new condition requiring that an Operational Noise Management Report be prepared prior to construction. This report is also required to address residences that are acutely affected by noise. This is to both ensure that reasonable and feasible noise mitigation measures are incorporated into the detailed design and also to provide certainty of actual noise mitigation to the affected community.

The Department is generally satisfied that the RTA utilised best practice in the assessment of noise impacts from the modified proposal.

## 5.2 Flora and Fauna

### 5.2.1 Background

The REF states that the focus of the assessment for the modified proposal is on the changed footprint areas. The assessment does not consider flora and fauna issues of the approved project within the unchanged footprint area. The REF does note that appropriate mitigation measures would still be undertaken in these areas.

The REF notes that, although several threatened species have been listed under the TSC Act since the project gained approval in August 1999, the threatened species legislation is not retrospective. Consequently, the REF does not consider individual plants of threatened species listed since project approval that are located within the unchanged footprint area; only individuals of such species within the changed footprint areas are considered. The REF does note that appropriate mitigation measures would still be undertaken for all individual threatened species wherever practical.

The REF provided estimates of the total area of vegetation communities that would be disturbed in the road reserve between Sections 2 and 5 of the approved project. These are shown in Table 5.2. The approved project would result in the loss of approximately 15.5 ha of vegetation.

**Table 5.2: Approximate type and area of vegetation communities to be cleared as part of the approved project.**

<b>Vegetation Community</b>	<b>Approximate area (ha)</b>
Rainforest	4.2
Wet Sclerophyll Forest	6.5
Swamp Sclerophyll Forest	3.9
Sedgeland	0.7
Mangroves	0.2
Saltmarsh	0
<b>Sub-total (vegetation)</b>	<b>15.5</b>
Cleared / Disturbed Land	33.9

The REF notes that the modified proposal alters the footprint of the route slightly, and results in a net overall decrease in footprint area of 3.5 ha. The REF concludes that the change in impact to vegetation communities would be very minor when compared against the impacts associated with the approved project.

The REF considers that the modified proposal would not have substantial impacts on any of the flora and fauna species listed under the TSC Act. Notwithstanding, the REF does consider the change in the potential impacts on threatened species associated with the modified proposal when compared with the impacts associated with the approved project. The conclusions of the REF for threatened flora species are shown in Table 5.3.

**Table 5.3: Conclusions of the REF regarding potential impacts on threatened flora species and vegetation as a result of the modified proposal.**

Threatened Species	Conclusion in REF
<i>Acacia bakeri</i> (Marblewood)	Beneficially affected by footprint changes associated with Section 2 of the modified proposal due to reduced construction buffer (to 1m) through the lowland rainforest habitat.
<i>Acronychia littoralis</i> (Scented Acronychia)	Beneficially affected by footprint changes associated with Section 2 of the modified proposal (avoiding one individual).
<i>Archidendron hendersonii</i> (White Laceflower)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Archidendron mellerianum</i> (Veiny Laceflower)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Ceratopetalum apetalum</i> (Coachwood)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Cryptocarya foetida</i> (Stinking Cryptocarya)	Beneficially affected by footprint changes associated with Section 2 of the modified proposal due to reduced construction buffer (to 1m) through the lowland rainforest habitat.
<i>Cupaniopsis newmanii</i> (Long-leaved Tuckeroo)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Davidsonia jerseyana</i> (Davidson's Plum)	Adversely affected by footprint changes associated with Section 2 of the modified proposal (one additional individual). Translocation recommended. However, substantial benefits by footprint changes associated with Section 5 of the modified proposal (12 individuals avoided).
<i>Eleaeocarpus williamsianus</i> (Hairy Quandong)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Endiandra floydii</i> (Crystal Creek Walnut)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Endiandra globosa</i> (Black Walnut)	Adversely affected by footprint changes associated with Section 2 of the modified proposal (two additional plants).
<i>Endiandra haysii</i> (Rusty Rose Walnut)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Endiandra mulleri</i> sbsp <i>bracteata</i> (Green-leaved Rose Walnut)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Grevillia hilliana</i> (White Yiel Yiel)	Beneficially affected by footprint changes associated with Section 2 of the modified proposal due to reduced construction buffer (to 1m) through the lowland rainforest habitat.
<i>Macadamia tetraphylla</i> (Queensland Nut)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Mediscoma cunninghamii</i> (Pink Heart)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Planchonella chartacea</i> (Thin-leaved Coondoo)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Randia moorei</i> (Spiny Gardenia)	Beneficially affected by footprint changes associated with Section 2 of the modified proposal due to reduced construction buffer (to 1m) through the lowland rainforest habitat.
<i>Syzygium hodgkinsoniae</i> (Red Lilly Pilly)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Syzygium moorei</i> (Coolamon Tree)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Tinosora tinosporoides</i> (Arrow-head Vine)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Xanthorrhoea malacophylla</i> (Grass Tree)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
<i>Xylosma terrae-reginae</i> (Xylosma)	Footprint changes associated with the modified proposal would exert no greater direct impact than the approved project.
Lowland Rainforest on Floodplain	The modified proposal would not increase the footprint in the vicinity of this ecological community. In addition, the construction buffer through this area would be constrained to 1 m, further minimising impacts to this community and threatened plants that occur within it.
Seagrass ( <i>Zostera capricorni</i> )	The location of the southern piers of the balanced cantilever bridge would directly impact a small patch of seagrass that offers moderate quality habitat. The REF recommends translocation in consultation with NSW Fisheries.
Swamp Oak Community	The modified proposal would result in a slight net reduction in impact. The REF notes the proposed rehabilitation included as part of the approved project.

The REF assessment of threatened fauna species considers that the modified proposal incorporates only small changes to the amount of habitat disturbed and notes that the majority of species are highly mobile (with the exception of Mitchell's Rainforest Snail). This leads to the REF finding that the conclusions of the original EIS/SIS are valid for the modified proposal. Therefore, the modified proposal would not have a significant impact on the seventeen fauna species assessed in the original EIS/SIS and the REF.

The REF notes that the modified proposal has the potential to impact on two recently-listed species, the Grey-headed Flying Fox and the Mitchell's Rainforest Snail. The REF assessed impacts of the modified proposal on these species and concluded that any impacts would not be significant.

The REF notes that the location of the access into the Brunswick Heads Nature Reserve, including small scale drainage works, has been designed to avoid or minimise impacts on known *Acacia bakeri* (Marblewood) plants. The final design would be subject to NPWS consultation and approval.

The REF concludes that the modified proposal would exert no additional impacts on threatened species or ecological systems. The REF considers that the mitigation measures associated with the approved project are generally adequate to address the generally benign or neutral impacts associated with the modified proposal.

### 5.2.2 Key Issues

The adequacy of the flora and fauna assessment in the REF was raised in six representations. Additional reports were prepared on the ecology of the area and impacts related to both the approved project and also the modified proposal. The reports referred to in the REF and representations received during the exhibition of the REF were reviewed by the Department to assist with its consideration of flora and fauna issues related to the modified proposal.

The NPWS noted the net reduction in the footprint of the modified proposal compared to the approved project. The NPWS supported the mitigation measures required as part of the approved project and proposed as part of the modified proposal. In particular, the imposition of a construction buffer was highly supported. The NPWS drew attention to its role during construction of the modified proposal, including ongoing consultation and formal "sign-off" of concurrence conditions. Specific issues that NPWS insisted on consultation included:

- fauna mitigation structures;
- works (including ancillary works) occurring within 50m of the Brunswick Nature Reserve;
- activities that may affect SEPP 14 wetlands;
- development of the Saltmarsh Rehabilitation Plan;
- design of the proposed bridge structures;
- translocation planning and actions;
- transfers in relation to compensatory habitat;
- the proposal for the southern foreshore area of Brunswick River;
- water treatment and discharge, particularly to ensure no impact on NPWS reserves;
- stormwater control structures within NPWS reserves;
- indigenous and non-indigenous heritage sites and issues;
- procedures for all threatened flora in the Construction Environmental Management Plan, including the Translocation Plan; and
- compliance with the concurrence conditions issued by NPWS for the approved project.

NSW Fisheries also noted that consultation on various ecological issues would be important during construction of the modified proposal. Specific concerns related to:

- bridge crossings at Brunswick River and the Marshalls Creek floodplain;
- removal of the existing bridge over Brunswick River and subsequent rehabilitation plans;
- construction methods for the proposed cycleway under the southern embankment of the Brunswick River;
- design and construction of culverts to ensure the best outcomes for maintaining fish passage;
- development of the Saltmarsh Rehabilitation Plan;
- implementation of the Habitat Compensation Package and the Compensatory Habitat Contingency Plan;
- location and alignment of ancillary works to assist in avoiding potential impacts on waterways and wetlands; and
- planning and construction of artificial wetlands.

A number of local environmental groups submitted representations noting general or conditional support for the modified proposal, including Byron Environment Centre (BEC), Brunswick Catchment Forest & Landcare Group, Conservation of North Ocean Shores (CONOS), Northern Rivers Wildlife Carers (NRWC), and Byron Environmental and Conservation Organisation (BEACON).

Three local community groups, Ocean Shores Community Association (OSCA), Highway Action Coalition (HAC), and Brunswick Heads Progress Association, opposed the approved project, citing that the ecological impacts, among other issues, would be too great for the approved project to proceed.

### 5.2.3 Consideration of Key Issues

The Department notes that six representations received to the REF questioned the adequacy of the ecological assessment. The Department considers the ecological assessment in the REF to be disjointed and often difficult to interpret. Notwithstanding, the Department considers that the ecological assessment of the modified proposal has been comprehensive. The information available is adequate to enable the Department to reach conclusions on the potential ecological impacts of the modified proposal, including all threatened species that may be affected by the modified proposal.

*Acacia bakeri* was listed as vulnerable under the TSC Act on 22 December 2000. Forty five individuals occur within the footprint of the approved project. The REF indicates that the approved project would impact 45 plants and the modified proposal would impact 43 plants. Because more of the plants are all located in the unchanged footprint, the REF records a net decrease in impact. Notwithstanding this decreased net impact, efforts to avoid this species or mitigate the impact should be undertaken during construction. Any recommendations by the NPWS in relation to this species should be complied with prior to construction. The Department notes that the design of the access track to Brunswick Heads Nature Reserve attempts to reduce the impact on this species as much as possible and that the final design would be undertaken in close consultation with NPWS as described in the Submissions Report.

*Grevillea hilliana* was listed as vulnerable under the TSC Act on 13 July 2001. Five individuals would be directly affected by the approved project. The REF suggests that the approved project will impact five plants and the modified proposal will impact two plants, thus the REF actually records a net decrease in impact. Notwithstanding the technically correct decrease in net impact on this species, efforts to avoid this species or mitigate the impact should be undertaken during construction. Any recommendations by the NPWS in relation to this species should be complied with prior to construction.

In Section 2 of the modified proposal, the two species *Davidsonia jerseyana* and *Endiandra globosa* are identified in the REF as having a net increase in impact of one and two plants respectively. This increase is not substantially different to the approved project. Once again, efforts to avoid this species or mitigate the impact should be undertaken during construction.

The Department considers that the impacts on other threatened and rare flora would not be substantially different from the approved project.

The ecological community "Lowland Rainforest on Floodplain in the NSW North Coast Bioregion" (Lowland Rainforest) was listed as endangered under the TSC Act on 13 August 1999. A total area of 0.1 ha of this community would be cleared as a result of the proposed modifications. The Department notes that the modified proposal would not increase the footprint in the vicinity of this ecological community. The Department commends the RTA's commitment to a small construction buffer through this area of one metre, further minimising impacts to this community and threatened plants that occur within it.

The Department considers that the impacts on the Swamp Oak community are not substantially different than the approved project. The Department notes that progress on research and planning for the Saltmarsh area is underway and expects the outcomes to be positive.

The alternative bridge design over Brunswick River and proposed construction methods would reduce the impact on seagrass and mangroves as well as the hydrological regime of the channel. The balanced cantilever bridge design has less piers and a reduced shading impact. The Department supports the modified bridge design as described in the REF. The Department notes that the design of bridge attempts to reduce the overall ecological impacts as much as possible and that the final design would involve consultation with NSW Fisheries and NPWS.

Given the modification only slightly changes the approved footprint, the Department agrees that the impacts on fauna (including threatened species) would not be substantially different from the approved project. The potential impact of the approved project on the Mitchell Rainforest Snail was examined. This assessment found that this species would not be affected by the approved project or the modified proposal. The Department concurs with this report and other ecological assessments that conclude that the modified proposal would not have a significant impact on this species.

#### **5.2.4 Conclusions**

The Department notes that, overall, the proposed modifications would reduce the flora and fauna impacts compared to the approved project, including impacts on the threatened plant *Davidsonia jerseyana*.

Simplification of the interchange arrangements and the reduced footprint in Section 2 would reduce the overall impacts on flora and fauna when compared to the approved project. The Department considers that the proposed modifications would not affect the environment to a greater extent than the approved project provided that a high priority is given to avoidance, where practical, and the implementation of mitigation measures.

NPWS and NSW Fisheries drew attention to their consultation roles during construction. The Department notes that the Construction Environmental Management Plan required by existing Condition of Approval No. 13 requires consultation with NPWS and NSW Fisheries. The Flora and Fauna

Management Sub-Plan required by existing Condition of Approval No. 36 requires consultation with NPWS.

The Department expects that the Construction Environmental Management Plan would include a comprehensive process to facilitate close consultation with NPWS, NSW Fisheries and other relevant stakeholders before and during construction. Importantly, any recommendations by the NPWS in relation to threatened species should be complied with prior to vegetation disturbance in the vicinity of the relevant individuals. Similarly, recommendations by NSW Fisheries in relation to river crossings should be complied with prior to relevant construction activities.

In conclusion, the Department considers that the existing Conditions of Approval for the approved project, including NPWS concurrence conditions and the provision of an adequate compensatory habitat package, would ensure that ecological impacts were minimised. The Department's assessment of the likely impacts of the modified proposal on flora and fauna concluded that, provided all identified mitigation measures are implemented, the potential impacts would be reduced to an acceptable level.

## **5.3 Access and Traffic**

### **5.3.1 Background**

The REF included a revised traffic assessment based on revised traffic volume counts undertaken in June 2002. The revised traffic figures indicated that considerable growth in traffic in this section of the Pacific Highway (between 4.6 and 5.2% increase per annum compound) has been experienced since 1996. Despite this, the proportion of heavy vehicles in total traffic has reduced although total heavy vehicle numbers have increased. At night (10.00pm-7.00am), heavy vehicles represent up to 30-40% of the total northbound traffic flow. The increase in overall traffic was attributed to increased development in the local area, increased regional trips and some diversion of traffic from the New England Highway to the Pacific Highway.

The modified proposal includes the deletion of north facing ramps at the Brunswick Heads North Interchange. The traffic assessment stated that these movements would be catered for either at the Yelgun or Brunswick Heads South Interchange. The modification was predicted to lead to slightly increased traffic flows through the township of Brunswick Heads and along the service road between Yelgun and the Brunswick River. There would be no loss of access through the modification as the local service road would provide connectivity.

The modified proposal includes the addition of a left in – left out opportunity from the new northbound carriageway of the highway to Wilfred Street, Billinudgel. Associated with this modification is the relocation of the access to and from Billinudgel to the service road to an underpass south of the village and the addition of a pedestrian overpass link north of Wilfred Street. The traffic assessment estimated that the direct access from Billinudgel would benefit up to 300 light and heavy vehicles per day (vpd) that would otherwise have had to use the local access road to access the highway.

The modifications to the design of the Yelgun interchange, by connecting the local service road and all on and off ramps to one roundabout, would not affect access or traffic volumes. All traffic movements would still be provided for in the modified design.

The revised traffic assessment predicted that the estimated volume of traffic on the project would be 15,610 vpd in 2006 and 19,190 in 2016 (including approximately 11% heavy vehicles). The service road was predicted to have volumes of 930-2,730 vpd at sections north of Rajah Road increasing to

8,330 vpd south of Rajah Road in the year 2006. The service road volumes are expected to increase by the year 2016 to between 1,510 and 2,840 north of Rajah Road and 10,680 south of Rajah Road.

The REF stated that the modified design would not alter construction traffic arrangements.

### 5.3.2 Key Issues

The key traffic and access issues raised in representations included:

- concerns that B-Double trucks were using the highway after the opening of the Yelgun to Chinderah project adding to traffic volumes and road safety risks; and
- concerns about the increased traffic volumes through Brunswick Heads.

### 5.3.3 Consideration of Key Issues

#### B-Doubles and Traffic Volumes

A number of representations raised concerns that allowing B-Double trucks to use the route since the opening of the Yelgun to Chinderah project had increased noise levels and jeopardised road safety. It was further suggested that the traffic levels using the Brunswick to Yelgun section of the highway were far in excess of the traffic levels measured in June 2002 leading to an underestimation of impacts in the future.

In response, the RTA stated that the issue of allowing B-Doubles to use this section of the Pacific Highway was beyond the scope of the assessment of the modified proposal. The RTA stated that the traffic forecasts were based on additional traffic as a result of the Yelgun to Chinderah project and stated that the modified proposal would provide a significant improvement in road safety. A discussion of the implications of higher traffic volumes on noise levels is discussed in Section 5.1.

To clarify the actual change in traffic volumes as a result of the opening of Yelgun to Chinderah the Department requested that the RTA provide some more recent traffic volume figures. The figures supplied by the RTA, taken from various traffic counts close to the project in September and October 2002 and May 2003, indicate that there has been an increase in traffic as a result of the opening of Yelgun to Chinderah project.

The recent traffic counts have resulted in the RTA increasing traffic forecasts on the Brunswick to Yelgun modified proposal, from those estimated in the REF, by approximately 10%. Predicted daily traffic levels on the proposal have been revised from 15,610 vehicles in the REF to 16,870 in 2006 and from 19,190 vehicles in the REF to 20,740 in 2016. The higher traffic estimates reduce the life of the modified proposal by one year for post 2016 growth scenarios.

The predicted increases in traffic volumes would have a negligible impact on noise levels and be within the level of variability in the noise modelling.

#### Brunswick Heads

Concerns were raised that the modified design of the interchange at Brunswick Heads North would significantly increase traffic volumes on the old highway alignment through Brunswick Heads. It was suggested that the impacts of these increases had not been evaluated in the EIA.

The RTA clarified that an increase of up to 930 vpd through Brunswick Heads would result from the modified design of the Brunswick Heads North Interchange. The RTA stated that the total traffic levels would be similar to existing traffic volumes through Brunswick Heads and that no further impact assessment was required.

The Department is satisfied that Brunswick Heads would not suffer a significant increase in traffic volumes as a result of the modified proposal. The majority of traffic around and through Brunswick Heads would appear to be local traffic movements between Brunswick Heads and Ocean Shores.

#### **5.3.4 Conclusions**

Traffic volumes on this section of the Pacific Highway have increased significantly since the original approval was given. The opening of connecting upgraded sections at Tandys Lane and Yelgun to Chinderah has also led to increased traffic volumes and increased the need for the proposal.

The modified proposal design will make changes to accessibility with improvements to and from Billinudgel and loss of direct connectivity in accessing Brunswick Heads from the modified proposal. The changes overall will lead to slight increases in traffic levels on the service road and old highway through Brunswick Heads.

The existing Conditions of Approval 56 to 58 related to construction traffic management are appropriate to the construction stage of the modified proposal and no changes are recommended. No additional conditions are recommended in relation to operational traffic and access.

### **5.4 Visual Impacts and Open Space**

#### **5.4.1 Background**

The approved project is likely to have some significant visual impacts on the landscape and urban environments. Mitigation measures were required as part of the original approval, including an Urban Design and Landscaping Plan.

The modified proposal incorporates design elements that would have a beneficial visual impact compared to the impacts associated with the approved project. The REF notes that the smaller footprint of the modified proposal would reduce the physical size, and hence visual impacts, of the approved project, particularly the simplified Brunswick Heads North interchange and the simplified structure of the Brunswick River bridge. The Department notes that the proposed cantilever bridge design was selected following community consultation on a range of options and is supported by NSW Fisheries.

Potential negative visual impacts are acknowledged in the REF, including an increase in the height of the Brunswick River bridge that would slightly increase the visual impact on adjoining lands. A visual disadvantage of the modified proposal is the increased northbound carriage width at the access to Wilfred Street. However, overall, both these impacts are considered minor in comparison to the benefits offered by the modified proposal.

Mitigation of visual and landscape impacts was addressed for the approved project in the requirement for a landscape concept plan. The REF proposes a number of additional mitigation measures as part of the modified proposal, including:

- additional planting of embankments to reduce the visual prominence of the increased height of the southern approach roads to the Brunswick River bridge;
- at the bridge abutments, additional screen planting set-back from the Brunswick River foreshore edge plus careful design and selection of abutment materials and finishes;
- major streetscape improvements including avenue street tree planting and pedestrian-scaled lighting at the Billinudgel industrial area southern approach and the Wilfred Street streetscape;
- landscape screening between the Billinudgel industrial area and the highway which would be designed to not screen views of sensitive business from the highway;
- an effective signage regime combined with a legible landscape / streetscape would assist route-finding for southbound traffic travelling to Billinudgel; and
- gateway planting at the Yelgun Interchange roundabout.

#### **5.4.2 Key Issues**

Approximately 20% of representations were concerned that landscaping would not be adequate in mitigating potential visual impacts of the approved project and the proposed modifications. About 10% of representations were concerned with potential loss of pedestrian and cyclist facilities.

NSW Fisheries, NPWS, Byron Shire Council and the Department all requested additional information on the proposed open space on the southern embankment of the Brunswick River.

#### **5.4.3 Consideration of Key Issues**

The Department supports the proposed modifications that would improve the visual impacts of the approved project. The existing Conditions of Approval require the RTA to prepare a detailed Urban Design and Landscape Plan prior to the commencement of construction activities. The Plan would address a range of matters, including landscaping strategies and urban design treatments. The Department is confident that Condition of Approval No. 44 is adequate to ensure the additional commitments described in the REF are undertaken.

The Department notes that the RTA has previously recognised the potential for redevelopment of the Brunswick River foreshore area (north and south of the River). The RTA proposal to facilitate a meeting of key stakeholders to discuss future options for the redevelopment and management of this area is supported. The Brunswick Estuary Management Committee should also be included in such discussions as should Byron Shire Council, NSW Fisheries and NPWS. The Department considers that whilst ongoing management of the area should not necessarily be the responsibility of the RTA, it is recommended that it contributes financially to the redevelopment of this area. This requirement is specified in existing Condition of Approval No. 67.

The Department supports the inclusion of pedestrian and cyclist facilities as part of the modified proposal. Specific conditions of approval are not considered necessary for these facilities as they form part of the modified proposal.

#### **5.4.4 Conclusions**

Overall, the negative visual and landscaping impacts of the modified proposal are offset by the positive visual components of the modified proposal. These positive components include the reduced footprint of the modified proposal and increased commitment and planning of landscaping works in Sections 2, 4 and 5.

The Department recognises the RTA's ongoing commitment to the southern foreshore area of the Brunswick River and the willingness to take the opportunity to provide a significant community resource. Planning and development of this area is specifically mentioned in Condition of Approval No. 67. Urban design and landscaping for other parts of the project would be undertaken following completion of an Urban Design and Landscaping Plan, as required by Condition of Approval No. 44.

## 6. ASSESSMENT OF OTHER ISSUES

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*This Section of the Report provides an assessment of other environmental impacts of the modified proposal based on an examination of the EIA documentation, issues raised in representations made during the exhibition period and the Proponent's response to these issues presented in its Submissions Report and during further consultation with the Department. In accordance with Section 115BA(7) of the EP&A Act, the environmental impact of the revised modified proposal is assessed only to the extent that the approved project is to be modified. It is important that this Section be read in conjunction with the Submissions Report to understand how all issues raised in representations were addressed.*

### 6.1 Indigenous Heritage

#### 6.1.1 Background

The REF notes that the approved project would potentially impact two isolated artefacts and seven Potential Archaeological Deposit (PAD) areas. The two isolated artefacts are located south of Billinudgel and were assessed in the original EIS as having low scientific and Aboriginal heritage significance.

PAD areas 1, 2, and 3 are located outside Sections 2, 4 and 5 (i.e. the modified proposal) and therefore, the impacts on these PAD areas would not be changed from that of the approved project. PAD areas 4, 5, 6 and 7 are located in Section 5 of the route (Billinudgel).

Following approval, additional investigations identified a previously undetected Aboriginal shell midden site located on the northern shore of the Brunswick River, west of the Pacific Highway and opposite Rajah Road. The REF notes that these middens are no closer than approximately 14 to 15 metres from the western boundary of the road reserve and would be protected within the Brunswick Heads Nature Reserve. The presence of additional middens to the east of the alignment was also confirmed by community initiated investigations. The REF notes that these middens are at least 40 to 50 metres outside the road reserve boundary and would consequently not be affected by the modified proposal.

The REF concludes that the existing mitigation measures would be adequate to manage and mitigate potential impacts on extant heritage items. Additional mitigation measures are recommended to avoid direct and indirect impacts on the previously undetected Aboriginal shell middens to the west of the alignment. These would include temporary fencing, sedimentation controls, communication and awareness training for contractors, and consultation with the Tweed-Byron LALC and NPWS.

#### 6.1.2 Key Issues

Approximately 30% of representations received noted that the approved project would have the potential to impact indigenous heritage sites.

One local Aboriginal organisation, the Jarjum Gangelehla Aboriginal Corporation, considered that the REF did not adequately assess indigenous heritage. One member of the Tweed-Byron LALC concurred with this view.

NPWS confirmed that clear consultation would be required with NPWS and Tweed-Byron LALC to ensure that there are no unforeseen impacts in cultural heritage.

### 6.1.3 Consideration of Key Issues

The Department recognises that the proximity of the approved project to indigenous heritage sites results in the potential adverse impacts. The proposed modifications would not substantially alter potential impacts on sites nearby the route. No sites are predicted to be destroyed as a result of the approved project or the proposed modifications.

The Department considers that the existing and additional mitigation measures would be adequate in protecting identified indigenous heritage sites. To ensure that any previously undetected sites and any sites that may be discovered during construction are adequately protected the Department recommends the inclusion of an additional Conditional of Approval No. 49a. The Condition requires that a qualified archaeologist be present prior to and during initial site disturbance for works in the vicinity of the Brunswick River and that an invitation be extended to the Local Aboriginal Land Council to be present at the same time

The Department endorses the additional mitigation measures included as part of the modified proposal and recommends that these are included in the Indigenous Heritage Management Sub-plan required as part of the Construction EMP. This requirement is reflected in Condition of Approval No. 46. Conditions of Approval Nos 47 to 49 provide additional on-ground protection and consultation requirements for indigenous heritage sites.

## 6.2 Business and Community Impacts

### 6.2.1 Background

The original EIS determined that the approved project would have broad positive impacts on the local community and business activities, however there would also be specific potential negative impacts. The REF reiterates the benefits of the approved project that would include:

- attraction of through traffic away from the existing highway, reducing traffic on local roads;
- reductions in the noise environment for the majority of Ocean Shores residents through relocation of the highway further away and at a lower level, providing some noise shielding, and road design (surface material, improved grade) changes;
- opportunity for an improvement of the Brunswick River foreshore area arising from the demolition of the existing bridge, including the allowance for pedestrian and cycle access across and under the bridge; and
- a beneficial impact for the Ferry Reserve Caravan Park derived from the approved project being located further away than the existing highway.

Negative effects of the approved project would include:

- complete or partial acquisition of 21 private properties;
- increased noise levels to some residential properties;
- high initial visual impacts (until landscaping became established);
- some changes to local access arrangements; and
- major disruption and other impacts associated with the construction phase.

The modified proposal would not substantially alter the benefits or negative effects of the approved project. There would be some new negative impacts including:

- changes to local traffic access at the Brunswick North interchange representing an inconvenience to local business and community users who would have to access the northbound carriageway or exit the southbound carriageway either at the Brunswick South interchange or the Yelgun interchange;
- use of the existing roundabout near the Ferry Reserve Caravan Park would result in the Brunswick North interchange being closer to the Ferry Reserve Caravan Park than it would have been under the approved project; and
- deletion of the Wilfred Street overpass and eastwards movement of the road would result in increased noise levels at the residences on the eastern side of the alignment in this area. Noise mitigation measures would address this impact.

The modified proposal offers some significant local traffic access benefits associated with the Billinudgel Section. Additionally, the proposed relocation of the local service road access to Billinudgel through the industrial subdivision to the south of Wilfred Street would increase the number of vehicles passing through and therefore potentially increase business opportunities. The lateral relocation of the highway near these businesses would also reduce noise impacts.

The inclusion of a dedicated pedestrian overpass across the highway linking Billinudgel and Ocean Shores would maintain the level of pedestrian connectivity associated with the approved project.

The REF notes that the modified proposal would not exert any additional impacts on present and future land use beyond those already assessed for the approved project, including impacts on commercial oyster growing activities.

Overall, the REF concludes that the modified proposal would not increase the level of impacts on community severance, social amenity, community disruption or safety or loss of lifestyle issues beyond those associated with the approved project.

### **6.2.2 Consideration of Key Issues**

The Department supports the proposed design features of the modified proposal that are intended to address business and community impacts associated with the approved project. In particular, the streetscape improvements that would be undertaken in the Billinudgel industrial area and construction of pedestrian and cyclist facilities, which would result in important community and business improvements as part of the modified proposal.

The Department considers that the existing Conditions of Approval are adequate in ensuring that the proposed benefits to community and businesses are undertaken. Specifically, Condition of Approval No. 44 would ensure that detailed urban design and landscaping is undertaken. During construction, air quality monitoring (and mitigation measures if necessary) would be undertaken on Wilfred Street, as required by Condition of Approval No. 53.

The Department notes that the avoidance, mitigation and management of environmental impacts generally would ensure that community and business impacts associated with air and noise emissions, visual impacts or with other biological and physical impacts are minimised.

Noise impacts and local traffic access are considered in Sections 5.1 and 5.3 respectively.

## 6.3 Water Quality and Hydrology

### 6.3.1 Background

The original EIS determined that the approved project would not exert any major adverse impacts on water quality or the hydraulic behaviour of the Brunswick River and Marshalls Creek. The REF notes that potential impacts on water quality associated with construction of the approved project would be addressed via a Soil and Water Quality Management Plan, as required by Condition of Approval No. 17. During operation, the management of water quality and hydraulic impacts would be addressed variously through mitigation measures identified in the original EIS and related Working Papers. These mitigation measures are considered adequate for the modified proposal.

The modified proposal includes minor alterations to the drainage system of the approved project and alterations to the design of the Brunswick River bridge and the bridges across the Marshalls Creek floodplain.

The REF notes that minor changes to operational drainage systems would occur under the modified proposal, however the overarching design philosophy of collecting and treating run-off from the road would still be relevant. Such measures would be comprehensively detailed in an Operation Stage Soil and Water Quality Management Plan, as required by Condition of Approval No. 17.

The approved design of the bridge over the Brunswick River consisted of four pier sets in the channel. In comparison, the modified proposal includes a balanced cantilever bridge design that would have only two pier sets in the channel. The balanced cantilever bridge design does, however, raise water quality issues during construction. Protection of water quality would be ensured via the Soil and Water Quality Management Plan, as required by Condition of Approval No. 17.

Following additional hydraulic and design investigations, the modified proposal would reduce the total bridge length over the Marshalls Creek floodplain. This would allow a reduction in the number of bridges from nine with the approved project to six with the modified proposal. The two existing bridges would be demolished. NSW Fisheries would be consulted during design and construction of all bridge structures.

The REF concludes that issues related to bridge construction could be adequately managed during implementation of a detailed Soil and Water Management Plan, as required by Condition of Approval No. 17.

### 6.3.2 Consideration of Key Issues

The Department recognises that the proximity of the approved project to sensitive receiving water bodies results in a potential for adverse water quality impacts with potential associated impacts on aquatic flora and fauna and commercial and recreational use of waterways. The approved project would also have the potential to affect drainage as it represents the introduction of a major new piece of infrastructure across the floodplains of the Brunswick River and Marshalls Creek. However, the proposed modifications are predicted to not substantially alter the potential water quality and hydraulic impacts of the approved project.

The Department supports the minor alterations to the drainage system proposed and the alterations to the design of the Brunswick River bridge and the bridges across the Marshalls Creek floodplain.

As part of the approved project, the Department required that a detailed Water Quality Management Sub-Plan be prepared as part of the Construction EMP in consultation with relevant authorities. NPWS and NSW Fisheries would be consulted in relation to specific water quality control measures required to protect wetland and other sensitive areas. These requirements are reflected in the existing Condition of Approval No. 17.

## **6.4 Other Issues**

### **6.4.1 Background**

#### Air Quality

The REF indicates that the modified proposal would be unlikely to result in any substantial change in impact, either adverse or beneficial, with regards to air quality during operation or construction. Air quality impacts of the approved project with respect to operational air quality would not exceed relevant EPA criteria. Dust emissions associated with earthworks would be generated during construction.

#### Non-Indigenous Heritage

The REF confirms the findings of the original EIS that no items on the Australian Heritage Commission Register of the National Estate database, or the NSW Heritage Council database, nor on the National Trust Register would be affected by the approved project. One heritage item and one area of historical interest were identified in the original EIS that would be directly affected by the approved project. However, this item and area were assessed as having low heritage significance.

The REF concludes that the existing mitigation measures would be adequate to manage and mitigate potential impacts on known heritage items.

#### Geology and Soils

The REF notes that, as the overall route of the modified proposal is similar to the approved project, the construction of the modified proposal would not result in any additional impacts related to geology and soils beyond those already assessed and determined for the approved project.

However, changes associated with the proposed cantilever bridge over the Brunswick River and the alteration of the bridges crossing Marshalls Creek floodplain, may increase the extent of potential disturbance to Acid Sulphate Soils (ASS) or Potential Acid Sulphate Soils (PASS).

### **6.4.2 Consideration of Key Issues**

#### Air Quality

Operational air quality impacts would not be greater than that of the approved project. The Department concurs with the REF that the management of air quality impacts would be addressed through mitigation measures identified in the original EIS and Representations Report. Conditions of Approval No. 52 thru 55 would ensure air quality management during construction.

#### Non-Indigenous Heritage

The Department concurs with the REF that the existing mitigation measures identified in the original EIS, the original Representations Report and the Conditions of Approval would be adequate to manage and mitigate potential impacts on known heritage items. Condition of Approval No. 50 would ensure that heritage issues are addressed through a Non-Indigenous Heritage Management Sub-plan.

### Geology and Soils

The management of geology and soil impacts, including disturbance to contaminated land, would be appropriately managed through the existing mitigation measures identified in the original EIS, the original Representations Report and the Conditions of Approval.

The Department notes that ASS and PASS are likely to occur along the route. Management of the potential impacts of ASS and PASS disturbance, particularly during construction of the proposed bridges, is achievable through the implementation of appropriate mitigation measures, which are specifically required by Condition of Approval No. 24.

## **6.5 Administrative Change**

An administrative addition is proposed to the Conditions of Approval to provide a definition of construction. The definition is provided in a proposed glossary to the Conditions of Approval that defines "construction" and "substantial construction" confirming that minor works do not fall within the meaning of construction or "substantial construction" intended in the Conditions of Approval.

The aim of including this definition is to allow minor activities with low environmental risk to proceed before construction. In the existing conditions, the term "construction", was not defined, but many conditions are required to be fulfilled before "construction". Such conditions generally relate to the preparation of environmental management plans or installation of measures to manage impacts, and would not be required until construction commences when there would be a potential for impacts.

The change reflects the purpose of the various conditions that need to be complied with prior to construction, when impacts are anticipated to occur. The Department concludes that the addition reflects the purpose and intent of the Conditions of Approval. Including the definition would also allow for more certainty regarding the design and implementation of environmental mitigation measures during construction, as more detailed information about the Project's design and construction program would be available when the measures were designed.

## 7. CONCLUSIONS AND RECOMMENDATIONS

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The need and justification for the project as a whole was established when the then Minister for Urban Affairs and Planning approved the project in August 1999, subject to 71 conditions. The Department recognises the importance of the proposal as part of the Pacific Highway Upgrade Program. The Department's earlier detailed assessment of the impacts of the approved project concluded that while there was the potential for impacts to occur, particularly flora and fauna impacts and construction and operation noise, adequate mitigation measures have been identified to reduce these impacts. It is also noted that the Concurrence Conditions developed by NPWS are fundamental to ensuring an acceptable outcome is achieved for flora and fauna.

The Department's assessment of the modified proposal indicates that the proposed modifications would not substantially alter the overall nature of the project and therefore concludes that the modified proposal would not substantially alter the ability of the project to meet the key strategic objectives assessed for the approved project.

The Department's assessment of the modified proposal concludes that, individually and cumulatively, the modifications would reduce the overall environmental impact of the approved project, subject to the recommended changes to the Conditions of Approval detailed in this Report. These changes would:

- update the Brunswick Heads to Yelgun Pacific Highway Upgrade Project to include the modifications proposed in the RTA's Review of Environmental Factors (November 2002);
- replace the requirement under Condition of Approval No. 27 for the preparation of Noise Impact Statements with the preparation of an Operational Noise Management Report detailing traffic noise mitigation measures prior to substantial construction;
- insert an additional Indigenous heritage Condition of Approval No. 49a requiring that a qualified archaeologist and member of the LALC is present prior to and during site disturbance in sensitive areas north of the Brunswick River; and
- provide a definition of construction that allows the intent of the conditions to be met.

On balance, it is considered that the modified proposal is justified given the social, environmental and economic benefits. Accordingly, it is recommended that the Minister for Infrastructure and Planning approve the modified proposal as detailed in the REF, subject to recommended changes to the Conditions of Approval. The Department envisages a close relationship between the RTA and other Government agencies during design, construction and operation of the project. This whole-of-government approach would facilitate the achievement of the environmental and community-focused outcomes of the project.

## 8. RECOMMENDED CONDITIONS OF MODIFICATION

This section provides the Department's recommended conditions of the Minister's modification of approval, under Section 115BA(6) of the EP&A Act. These recommended conditions are based on the Department's assessment of the REF for the modified proposal, the issues raised in representations made in response to the exhibition of the REF, the RTA's consideration of these representations in the Submissions Report and Decision Report, and supplementary information and advice provided. These conditions would be incorporated into the existing conditions of approval either as new conditions or through the modification of existing conditions.

It is noted that the REF contains information on procedures and mitigation strategies to be implemented to ameliorate impacts of the proposal. The recommended conditions should therefore be implemented in conjunction with those mitigation strategies specified in the REF. Where there is an inconsistency with the recommendations in the REF, the recommendations in this report would prevail.

The Department recommends the following variations to the Conditions of Approval. Insertions to conditions are presented in "italics" (eg. *italics*) and deletions are "struck through" (eg. ~~struck through~~).

**a. Add the following Glossary to the Conditions of Approval:**

**GLOSSARY:**

<i>Construction</i>	<i>All work but does <b>NOT</b> include survey, acquisitions, fencing, test drilling/test excavations, building/road dilapidation surveys, minor surveys, minor clearing (except where endangered ecological communities or threatened flora or fauna species would be impacted), establishment of site compounds in generally cleared, highly disturbed or non-environmentally sensitive areas, or other activities certified by the EMR to have minimal environmental/community impact activities (e.g. minor access roads, minor adjustments to services/utilities and noise mitigation measures).</i>
<i>Substantial Construction</i>	<i>Has the same meaning as construction.</i>

**b. Modify Condition of Approval No. 1:**

1. The proposal shall be carried out ~~in accordance with~~ *consistent with*:
  - (i) the proposal contained in the environmental impact statement 'Proposed Duplication of the Brunswick Heads Bypass and Upgrade of the Pacific Highway Brunswick River to Yelgun' dated 14 July 1998, (the EIS), prepared for the Roads and Traffic Authority (RTA) by Sinclair Knight Merz Pty Ltd, subject to modifications to the proposal as described in the 'Representations Report Duplication of Brunswick Heads Bypass and Pacific Highway Upgrade Brunswick River to Yelgun' (the Representations Report) prepared for the RTA by RTA Technology, dated 24 February 1999;
  - (ii) *the proposal as modified in the Environmental Impact Assessment 'Brunswick Heads to Yelgun Upgrade, Modifications to Approved Project' dated 1 November 2002, prepared for the RTA by Connell Wagner, the 'Submissions Report' prepared for the RTA by RTA*

*Environmental Technology Branch, dated 1 April 2003, and the RTA's 'Decision Report', approved on 6 May 2003;*

- ~~(ii) all identified procedures, safeguards and mitigation measures identified in the EIS and Section 8 of the Representations Report;~~
- (iii) the conditions of concurrence granted by the Director-General of the NPWS; and
- (iv) the conditions of approval granted by the Minister.

Despite the above, in the event of any inconsistency, the conditions of approval by the Minister shall prevail.

These conditions do not relieve the Proponent of the obligation to obtain all other approvals and licences from all relevant authorities required under any other Act. Without affecting the generality of the foregoing, the Proponent shall comply with the terms and conditions of such approvals and licences.

It shall be the ultimate responsibility of the RTA to ensure compliance with all conditions of approval granted by the Minister.

**c. Modify Noise Conditions 26 and 27**

26. A detailed **Noise and Vibration Management Sub-plan** shall be prepared as part of the EMP (Construction Stage) ~~and EMP (Operation Stage) respectively~~, to the satisfaction of the EPA. The Sub-plan shall provide details of noise and vibration control measures to be undertaken during the construction ~~and operation~~ stages, sufficient to address the technical requirements for any EPA approvals/licences. The Sub-plan shall include, but not be limited to:

- (i) tests for ascertaining acoustic parameters;
- (ii) identification of noise and vibration catchments and predicted noise and vibration levels;
- (iii) impacts from site compounds/construction depots;
- (iv) location, type and timing of erection of temporary and permanent noise barriers and/or other noise mitigation measures;
- (v) specific physical and managerial measures for controlling noise and vibration;
- (vi) noise and vibration monitoring, reporting and response procedures; and
- (vii) the urban design issues relating to noise and vibration control measures.

With respect to sub-clause (iv), the Proponent shall consider the use of a range of structural and non-structural noise mitigation measures including barriers, acoustic treatment of residences, scheduling of construction activities and temporary relocation of affected residents.

27. ~~Where considered relevant or appropriate by the EPA, a Noise Impact Statement(s) shall be prepared consistent with the Noise Management Sub-plan and shall include:~~

- ~~(a) description of proposed processes and activities;~~
- ~~(b) valid background levels;~~
- ~~(c) examination of alternative methods that would potentially reduce noise impact;~~
- ~~(d) assessment of potential noise from proposed construction methods;~~
- ~~(e) description of and commitment to work practices which limit noise;~~
- ~~(f) description of specific noise mitigation treatments and time restrictions, and consideration of their effectiveness;~~

- ~~— (g) — justification for any activities outside the normal hours;~~
- ~~— (h) — consideration of construction vehicle movements;~~
- ~~— (i) — compliance with EPA criteria;~~
- ~~— (j) — monitoring of construction activities; and~~
- ~~— (k) — community consultation and notification.~~

*The Proponent must prepare an Operation Noise Management Report detailing its investigation of reasonable and feasible operation noise mitigation methods. The Proponent must obtain the approval of the Director-General for the Report prior to construction commencing or within any other time agreed to by the Director-General. The report and investigation must be conducted in accordance with the NSW Government's Environmental Criteria for Road Traffic Noise and the RTA's Environmental Noise Management Manual. The report and investigation must include:*

- (a) identification of operation noise criteria;*
- (b) predictions of noise levels at noise sensitive locations;*
- (c) the location, type and timing of erection of permanent noise barriers and/or other noise mitigation measures (including road surface) demonstrating best practice;*
- (d) details of specific physical and managerial measures for controlling noise;*
- (e) details of reasonable and feasible noise mitigation measures. To assist in selecting noise mitigation options for road traffic noise an analysis for the entire Project must be undertaken in accordance with Practice Note IV of the RTA Environmental Noise Management Manual. The importance applied to aesthetic impacts (visual, shadowing etc.) and noise mitigation along the Project must be determined in consultation with the CLG and owners of noise affected, noise sensitive land uses. Among other options consideration should be given to the inclusion of clear panels within noise barriers to reduce visual and overshadowing impacts;*
- (f) the urban design issues relating to noise control measures;*
- (g) details of noise monitoring, reporting and complaint response procedures; and*
- (h) consideration of noise mitigation for sensitive receptors predicted to have "future existing" noise levels in the year 2016 at an acute level or above. Acute noise levels are 65 dB(A)  $L_{eq(15hr)}$  (day) and 60 dB(A)  $L_{eq(9hr)}$  (night).*

*The Proponent must install all reasonable and feasible noise mitigation measures identified in the Operation Noise Management Report to the satisfaction of the Director-General.*

#### **d. Insert new Indigenous Heritage Condition 49a**

- 49a) The Proponent must ensure that a qualified archaeologist is present prior to and during initial site clearance for construction of the project in the vicinity of SEPP 14 Wetlands No. 62 and 65 and the Brunswick Heads Nature Reserve (i.e. between chainages 44600 and 45400 shown on Figure 4.5 of the REF). The Proponent must also ensure that a representative of the Tweed-Byron Local Aboriginal Land Council is invited to be present during the same works.*



## APPENDIX A: EXISTING CONDITIONS OF APPROVAL

In accordance with section 115B of the EP&A Act, the then Minister for Urban Affairs and Planning approved the Brunswick Heads to Yelgun Pacific Highway Upgrade Project on 19 August 1999. The Minister's approval was subject to 71 conditions.

The following acronyms and abbreviations are used in this Section:

Acid Sulfate Soils (ASS)	Naturally acid clays, mud and other sediments usually found in swamps and estuaries. These may become extremely acidic when drained and exposed to oxygen, and may produce acidic leachate and runoff which can pollute receiving waters and liberate toxins
ANZECC	Australian and New Zealand Environment and Conservation Council
Department, the	Department of Infrastructure, Planning and Natural Resources
Director-General	Director-General of the Department of Infrastructure, Planning and Natural Resources
DLWC	Former Department of Land and Water Conservation, now Department of Infrastructure, Planning and Natural Resources
DUAP	Former Department of Urban Affairs & Planning, now Department of Infrastructure, Planning and Natural Resources
ENCM	Environmental Noise Control Manual
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMR	Environmental Management Representative
EPA	Environment Protection Authority (NSW)
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
LA <sub>eq</sub> 15 hour	Equivalent continuous (constant) sound level over 15 hour period from 7am to 10pm
LA <sub>eq</sub> 9hour	Equivalent continuous (constant) sound level over 9 hour period from 10pm to 7am
LALC	Local Aboriginal Land Council
Minister, the	Minister for Infrastructure and Planning
NPWS	National Parks and Wildlife Service (NSW)
Proponent, the	Roads and Traffic Authority (RTA)
REF	Review of Environmental Factors
RTA	Roads and Traffic Authority
SEPP 14	State Environmental Planning Policy No. 14 - Coastal Wetlands
TSC Act	<i>Threatened Species Conservation Act 1995</i>

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## SCHEDULE 1

### PACIFIC HIGHWAY UPGRADE - PROPOSED DUPLICATION OF THE BRUNSWICK HEADS BYPASS AND UPGRADE OF THE PACIFIC HIGHWAY BRUNSWICK RIVER TO YELGUN

#### CONDITIONS OF APPROVAL

##### General

1. The proposal shall be carried out in accordance with:
  - (i) the proposal contained in the environmental impact statement '*Proposed Duplication of the Brunswick Heads Bypass and Upgrade of the Pacific Highway Brunswick River to Yelgun*' dated 14 July 1998, (the EIS), prepared for the Roads and Traffic Authority (RTA) by Sinclair Knight Merz Pty Ltd, subject to modifications to the proposal as described in the '*Representations Report Duplication of Brunswick Heads Bypass and Pacific Highway Upgrade Brunswick River to Yelgun*' (the Representations Report) prepared for the RTA by RTA Technology, dated 24 February 1999;
  - (ii) all identified procedures, safeguards and mitigation measures identified in the EIS and Section 8 of the Representations Report;
  - (iii) the conditions of concurrence granted by the Director-General of the NPWS; and
  - (iv) the conditions of approval granted by the Minister,

Despite the above, in the event of any inconsistency, the conditions of approval by the Minister shall prevail.

These conditions do not relieve the Proponent of the obligation to obtain all other approvals and licences from all relevant authorities required under any other Act. Without affecting the generality of the foregoing, the Proponent shall comply with the terms and conditions of such approvals and licences.

It shall be the ultimate responsibility of the RTA to ensure compliance with all conditions of approval granted by the Minister.

##### Compliance

###### General

2. The Proponent shall comply with, or ensure compliance with all requirements of the Director-General in respect of the implementation of any measures arising from the conditions of this approval. The Proponent shall bring to the attention of the Director-General any matter that may require further investigation and the issuing of instructions from the Director-General. The Proponent shall ensure that these instructions are implemented to the satisfaction of the Director-General within such time that the Director-General may specify.

### Pre-Construction Compliance Report

3. At least one month prior to commencement of substantial construction (or within such period as otherwise agreed by the Director-General), the Proponent shall submit for approval of the Director-General a compliance report detailing compliance with all relevant conditions that apply prior to commencement of substantial construction and shall address:
  - (i) the dates of submissions of the various studies and/or requirements of various relevant conditions, and their approval and terms of approval; and
  - (ii) action taken or proposed to implement the recommendations made in terms of approvals and/or studies.

### Pre-Operation Compliance Report

4. At least one month prior to commissioning of the proposal, or within such period as otherwise agreed by the Director-General, the Proponent shall submit for approval of the Director-General a compliance report detailing compliance with all relevant conditions that apply prior to commencement of operation and shall address:
  - (i) the dates of submissions of the various studies and/or requirements of various relevant conditions, and their approval and terms of approval; and
  - (ii) action taken or proposed to implement the recommendations made in terms of approvals and/or studies

### Dispute Resolution

5. The Proponent shall endeavour, as far as possible, to resolve any dispute with relevant public authorities arising out of the implementation of the conditions of this approval. Should this not be possible, the matter shall be referred to the Minister for resolution. The Minister's determination of the disagreement shall be final and binding on all parties.

### Contact Telephone Number

6. Prior to the commencement of construction, the Proponent shall institute, publicise and list with a telephone company a 24 hour complaints contact telephone number, which would enable any member of the general public to reach a person who can arrange appropriate response action to the complaint.

### Complaints Register

7. The Proponent shall record details of all complaints received during construction and ensure that an initial response to the complaint is provided within one working day and a detailed response within 10 days. Information on all complaints received shall be made available on request to the Director-General and all relevant government agencies. The Proponent shall nominate an appropriate person(s) to receive, log, track and respond to complaints within the specified timeframe. The name and contact details of this person(s) shall be provided to the relevant Council(s) and the Director-General upon appointment or upon any changes to that appointment.

## Project Commencement

8. The Proponent shall notify the Director-General and all relevant authorities in writing of the project commencement both in terms of construction and operation (ie commissioning).

## Advertisement of Activities

9. Prior to the commencement of construction and then at three-monthly intervals, the Proponent shall advertise in relevant local newspapers the nature of the works proposed for the forthcoming three months, the areas in which these works are proposed to occur, the hours of operation and a contact telephone number.

The Proponent shall ensure that the local community is kept informed (by way of local newsletters, leaflets, newspaper advertisements, and community noticeboards, etc.) of the progress of the project, including any traffic disruptions and controls, construction of temporary detours and work required outside the nominated working hours, prior to such works being undertaken.

## Community Liaison Group

10. A Community Liaison Group shall be formed prior to the commencement of construction to discuss detailed design issues and methods for minimising the impact on the local community and businesses during the construction stage. The Group shall include the Environmental Management Representative, representatives from the RTA, the contractor, relevant local community and business groups, and Byron Shire Council.

Issues for discussion shall include, but not be limited to local vehicle, pedestrian and cyclist requirements; construction stage traffic diversions; noise control measures; air and water quality; landscaping requirements; and any other issues considered relevant by the Group.

Appropriate facilities and information shall be provided by the Proponent to assist the Group in carrying out its functions. The Group may make comments and recommendations about the design and implementation of the proposal, which shall be considered by the Proponent.

## Environmental Management Representative

11. A suitably qualified Environmental Management Representative (EMR) shall be available during construction activity at the site and be present on-site during any critical construction activities as defined in the Environmental Management Plan (EMP). The EMR shall have responsibility for considering and advising on matters specified in the conditions of approval and compliance with such and facilitation of an induction and training program for all persons involved with the construction activities. The following information shall be provided to the Director-General:

- (i) appropriateness of the qualifications of the EMR including demonstration of general compliance with the principles of AS/NZS ISO 14012:1996 *Guidelines for Environmental Auditing : Qualification criteria for environmental auditors*;
- (ii) role and responsibility of the EMR; and,
- (iii) authority of the EMR including details of the Proponent's internal reporting structure. This shall include the authority to stop work immediately if in the view of the EMR an

unacceptable impact is likely to occur or to require other reasonable steps to be taken to avoid or minimise any adverse impacts

The appointment of the person nominated to serve as the EMR shall be approved by the Director-General prior to the commencement of construction.

## **Environmental Management System**

12. The Proponent shall ensure the appointment of contractors that have a demonstrated capability and experience in the implementation of an Environmental Management System prepared in accordance with the AS/NZS ISO 14000 series or BS7750-1994 certified by an accredited certifier and/or have a proven environmental management performance record of a level relevant to the scale of the works being undertaken.

## **Environmental Management Plan (Construction Stage)**

13. Prior to the commencement of construction, an Environmental Management Plan (EMP) (Construction Stage) shall be prepared, following consultation with the EPA, DLWC, NSW Fisheries, NPWS, other relevant government authorities, and Byron Shire Council. Where construction activities may be undertaken in discrete stages, the Proponent may prepare individual EMPs relating to specific stages of construction. An outline of any proposed staging of EMPs shall require the approval of the Director-General.

The EMP (Construction Stage) shall be prepared in accordance with the conditions of this approval, all relevant Acts and Regulations and accepted best practice management procedures. The EMP (Construction Stage) shall require approval by the Director-General prior to substantial construction works or within such time as otherwise agreed to by the Director-General. The EMP shall be certified as being in accordance with the conditions of approval by the EMR prior to seeking approval of the Director-General.

The EMP (Construction Stage) shall:

- (i) address construction activities associated with all key construction sites, including staging and timing of the proposed works;
- (ii) cover specific environmental management objectives and strategies for the main environmental system elements and include, but not be limited to: noise and vibration; air quality; water; erosion and sedimentation; access and traffic; property adjustments; heritage and archaeology; groundwater; contaminated spoil and acid sulfate soils, spoil stockpiling and disposal; waste/resource management; flora and fauna; wetlands; flooding and stormwater control; geotechnical issues (including land slip and settlement); visual screening, landscaping and rehabilitation; hazards and risks; energy use, resource use and recycling; vermin; and utilities; and
- (iii) address, but not be limited to:
  - (a) identification of the statutory and other obligations which the Proponent is required to fulfil during project construction, including all approvals and consultations/agreements required from other authorities and stakeholders, and key legislation and policies which control the Proponent's construction of the project;
  - (b) definition of the role, responsibility, authority, accountability and reporting of personnel relevant to compliance with the EMP;
  - (c) measures to avoid and/or control the occurrence of environmental impacts;

- (d) measures (where possible and cost effective) to provide positive environmental offsets to unavoidable environmental impacts;
- (e) the role of the EMR;
- (f) environmental management procedures for all construction processes which are important for the quality of the environment in respect of permanent and/or temporary works;
- (g) monitoring, inspection and test plans for all activities and environmental qualities which are important to the environmental management of the project, including performance criteria, specific tests, protocols (eg. frequency and location) and procedures to follow;
- (h) environmental management instructions for all complex environmental control processes which do not follow common practice or where the absence of such instructions could be potentially detrimental to the environment;
- (i) steps the Proponent intends to take to ensure that all plans and procedures are being complied with;
- (j) identification of cumulative impacts and mitigation measures for staged EMPs;
- (k) consultation requirements with relevant government agencies; and
- (l) community consultation and notification strategy (including local community, relevant government agencies, and Byron Shire Council), and complaint handling procedures.

Specific requirements for some of the main environmental system elements referred to in (b) shall be as required under the conditions of this approval and/or as required under any licence or approval.

The EMP(s) (Construction Stage) shall be made publicly available.

## **Environmental Monitoring - Construction**

14. The Proponent shall submit to the Director-General, a report(s) in respect of the environmental performance of the construction works and compliance with the EMP (Construction Stage) and any other relevant conditions of this approval. The reports shall be prepared six months after the start of substantial construction and thereafter at six monthly intervals or at other such periods as requested by the Director-General to ensure adequate environmental performance over the duration of the construction works. The report(s) shall include, but not be limited to, information on:
- (i) applications for consents, licences and approvals, and responses from relevant authorities;
  - (ii) implementation and effectiveness of environmental controls and conditions relating to the work undertaken;
  - (iii) identification of construction impact predictions made in the EIS and any supplementary studies and details of the extent to which actual impacts reflected the predictions;
  - (iv) details and analysis of results of environmental monitoring;
  - (v) number and details of any complaints, including summary of main areas of complaint, action taken, response given and intended strategies to reduce complaints of a similar nature; and
  - (vi) any other matter relating to the compliance by the Proponent with the conditions of this approval or as requested by the Director-General.

The report(s) shall be provided to the EPA, NPWS, DLWC, NSW Fisheries and Byron Shire Council, and any other relevant government agency nominated by the Director-General. The report(s) shall also be made publicly available.

### **Environmental Management Plan (Operation Stage)**

15. An Environmental Management Plan (EMP) (Operation Stage) shall be prepared prior to the commencement of operation. The Plan shall be prepared in consultation with the EPA, DLWC, NSW Fisheries, NPWS and Byron Shire Council and any other relevant government agency nominated by the Director-General. The Plan shall be prepared in accordance with the conditions of this approval, all relevant Acts and Regulations and accepted best practice management procedures. The EMP (Operation Stage) shall require approval by the Director-General prior to commissioning or within such time as otherwise agreed to by the Director-General. The EMP shall be certified as being in accordance with the conditions of approval by the EMR prior to seeking approval of the Director-General.

The EMP (Operation Stage) shall address at least the following issues:

- (i) identification of the statutory and other obligations which the Proponent is required to fulfil, including all licences/approvals and consultations/agreements required from authorities and other stakeholders, and key legislation and policies which control the Proponent's operation of the project;
- (ii) sampling strategies and protocols to ensure the quality of the monitoring programme, including specific requirements of the EPA and DLWC;
- (iii) monitoring, inspection and test plans for all activities and environmental qualities which are important to the environmental performance of the project during its operation, including description of potential site impacts, performance criteria, specific tests and monitoring requirements, protocols (eg. frequency and location) and procedures to follow;
- (iv) steps the Proponent intends to take to ensure compliance with all plans and procedures;
- (v) consultation requirements, including relevant government agencies, the local community and Council, and complaints handling procedures; and
- (vi) strategies for the main environmental system elements and including but not limited to: noise and vibration; water; land slip/settlement; air quality; erosion and sedimentation; access and traffic; property acquisition and/or adjustments; heritage and archaeology; groundwater; contaminated spoil; waste/resource management/removal/disposal; flora and fauna; hydrology and flooding; visual screening, landscaping and rehabilitation; hazards and risks; energy use, resource use and recycling; and utilities.

Specific requirements for some of the main environmental system elements referred to in (iv) shall be as detailed under the conditions of this approval and/or as required under any licence or approval.

The EMP (Operation Stage) shall be made publicly available.

All sampling strategies and protocols undertaken as part of the EMP (Operation Stage) shall include a quality assurance/quality control plan and shall be approved by the relevant regulatory agencies to ensure the effectiveness and quality of the monitoring programme. Only accredited laboratories can be used for laboratory analysis.

## Environmental Impact Audit Report

16. An Environmental Impact Audit Report shall be submitted to the Director-General, and the EPA, and upon request by the Director-General, to any other relevant government authority 12 months after commissioning of the project, or unless otherwise agreed by the Director-General, and at any additional periods thereafter as the Director-General may require. The technical studies required as part of the report shall be prepared by appropriately qualified, independent specialists. The Report shall assess the key impact predictions made in the EIS and any supplementary studies and detail the extent to which actual impacts reflect the predictions. In particular, the Report shall provide details on actual versus predicted noise and vibration impacts on local residences and nearby buildings, flora and fauna mitigation measures, geotechnical issues (including land slip) and all other key impact issues identified in the EIS. The suitability of implemented mitigation measures and safeguards shall also be assessed. The Report shall also assess compliance with the EMP (Operation Stage).

The Report shall discuss results of consultation with the local community in terms of feedback/complaints on the construction and operation phases of the project and any issues of concern raised. The Proponent shall comply with all reasonable requirements of the Director-General with respect to any reasonable measure arising from, or recommendations in, the report.

The Report shall be made publicly available.

## Soil and Water Management

### Soil and Water Quality Management Sub-plan

17. As part of the EMP(s) (Construction Stage) and (Operation Stage), a detailed Soil and Water Quality Management Sub-Plan shall be prepared to the satisfaction of the EPA and DLWC and in consultation with NSW Fisheries and Byron Shire Council. NPWS shall be consulted in relation to specific water quality control measures to be implemented in the vicinity of wetland areas.

The Sub-plan shall be prepared in accordance with the Department of Housing's guideline *Managing Urban Stormwater - Soils and Construction* and where appropriate DLWC's *Constructed Wetlands Manual*. The Sub-plan(s) shall be prepared prior to construction or operation as appropriate and provide details of pollution control measures, including measures to treat and dispose of water from the site, and water quality monitoring to be undertaken during the construction and operation stages respectively.

### Erosion and Sediment Control Works

18. The Soil and Water Management Sub-Plan shall incorporate detailed **erosion and sedimentation controls** and **site rehabilitation requirements** which shall be prepared and submitted to the satisfaction of DLWC and EPA and sufficient to address the technical requirements for obtaining relevant EPA approvals/licences.

The DLWC, or an appropriately qualified soil conservationist shall be consulted on a regular basis to undertake inspections of temporary and permanent erosion and sedimentation control

devices to ensure that the most appropriate controls are being implemented, that they are being maintained in an efficient condition at all times and meet the requirements of any relevant approval/licence condition(s).

19. The Proponent shall develop, to the satisfaction of the EPA, procedures to control discharges of water at sites likely to be affected by flooding during the construction stage and to implement and review those procedures to the satisfaction of the EPA.

#### Use of Treated Effluent

20. Prior to the commencement of construction, the Proponent shall investigate, in consultation with the NSW Department of Health and the EPA, the feasibility of using treated effluent from the Ocean Shores Sewage Treatment Plant for dust suppression and/or landscaping works. The investigation shall include assessment of the likely effects on surface water quality and groundwater quality from the use of any treated effluent. The results of the investigation shall be included in the Construction EMP referred to in Condition 13.

#### Operation Stage Control Measures

21. All stormwater drainage, erosion, sedimentation and water pollution control systems and facilities of the proposal shall be located, designed, constructed operated and maintained to meet the reasonable requirements of the relevant authorities including the EPA and DLWC and in consultation with NSW Fisheries. All facilities including wetland filters, grass filter strips, gross pollutant traps and sedimentation basins shall be inspected regularly and maintained in a functional condition for the life of the project by the Proponent unless the responsibilities are transferred to other parties with the approval of the EPA.
22. The Proponent shall provide appropriate detention systems for containment of spills and materials arising from accidents and install appropriate detention systems to the satisfaction of the EPA. Lockable shut-off valves shall be provided at all points that discharge directly to natural watercourses.

#### Flood/Drainage Management Sub-plan

23. As part of the EMP (Construction Stage) a detailed **Flood/Drainage Management Sub-plan** shall be prepared in consultation with EPA, DLWC and Byron Shire Council. The Sub-plan shall provide details on catchment analysis (including localised flooding as recognised by the Council), existing drainage systems and capacity, drainage changes resulting from the proposal and implications for the system, detention requirements and their environmental impacts.

#### Acid Sulphate Soils

24. The proponent shall ensure that tests are carried out in advance of excavation to test for the presence of acid sulphate soils in all areas to be disturbed by the proposal where acid sulphate soils have the potential to be present. These tests shall be undertaken in accordance with a strategy prepared to the satisfaction of EPA and DLWC.

Should acid sulphate soils be found, a detailed Acid Sulphate Soil Management Sub-plan shall be prepared to the satisfaction of the EPA and DLWC prior to any additional construction activity taking place in the area affected. The Sub-plan shall include reference to the water quality monitoring program contained in the Soil and Water Quality Management Sub-plan. The

Sub-plan shall be prepared in accordance with the Acid Sulphate Soils Manual (ASSMC, 1998). As part of the Sub-plan, a Contingency Plan to deal with the unexpected discovery of actual or potential acid sulphate soils shall be prepared to the satisfaction of the EPA and DLWC.

## Contaminated Soils - Cattle Tick Dip Sites

25. As part of the EMP (Construction Stage), the Proponent shall identify the location of any cattle tick dip sites likely to be affected by the proposed works (including the Hainsville Dip) and details of appropriate management measures. These are to be developed in consultation with the EPA and NSW Agriculture.

## Noise and Vibration

### Management Sub-plan

26. A detailed **Noise and Vibration Management Sub-plan** shall be prepared as part of the EMP (Construction Stage) and EMP (Operation Stage) respectively, to the satisfaction of the EPA. The Sub-plan shall provide details of noise and vibration control measures to be undertaken during the construction and operation stages, sufficient to address the technical requirements for any EPA approvals/licences. The Sub-plan shall include, but not be limited to:

- (i) tests for ascertaining acoustic parameters;
- (ii) identification of noise and vibration catchments and predicted noise and vibration levels;
- (iii) impacts from site compounds/construction depots;
- (iv) location, type and timing of erection of temporary and permanent noise barriers and/or other noise mitigation measures;
- (v) specific physical and managerial measures for controlling noise and vibration;
- (vi) noise and vibration monitoring, reporting and response procedures; and
- (vii) the urban design issues relating to noise and vibration control measures.

With respect to sub-clause (iv), the Proponent shall consider the use of a range of structural and non-structural noise mitigation measures including barriers, acoustic treatment of residences, scheduling of construction activities and temporary relocation of affected residents.

27. Where considered relevant or appropriate by the EPA, a **Noise Impact Statement(s)** shall be prepared consistent with the Noise Management Sub-plan and shall include:

- (a) description of proposed processes and activities;
- (b) valid background levels;
- (c) examination of alternative methods that would potentially reduce noise impact;
- (d) assessment of potential noise from proposed construction methods;
- (e) description of and commitment to work practices which limit noise;
- (f) description of specific noise mitigation treatments and time restrictions, and consideration of their effectiveness;
- (g) justification for any activities outside the normal hours;
- (h) consideration of construction vehicle movements;
- (i) compliance with EPA criteria;
- (j) monitoring of construction activities; and

- (k) community consultation and notification.

#### Construction Hours

28. All construction activities, including entry and departure of heavy vehicles are restricted to the hours of 7.00am to 6.00pm (Monday to Friday); 8.00am to 1.00pm (Saturday) and at no time on Sundays and public holidays. Works outside these hours that may be permitted include:
- (i) any works which do not cause noise emissions to be audible at any nearby residential property;
  - (ii) the delivery of materials which is required outside these hours as requested by police or other authorities for safety reasons;
  - (iii) emergency work to avoid the loss of lives, property and/or to prevent environmental harm; and
  - (iv) any other work as approved by the EPA. Any work outside the hours specified shall be subject to approval from the EPA. Public notification shall be in a manner to the satisfaction of the EPA.

#### Construction Noise Impact Assessment

29. The Proponent shall ensure that construction noise is within the following criteria unless otherwise agreed by the EPA:
- (i) for a construction period of four weeks or less, the  $L_{10}$  level measured over a period of not less than 15 minutes when the construction site is in operation shall not exceed the background level by more than 20dB(A);
  - (ii) for a construction period of greater than four weeks but less than 26 weeks, the  $L_{10}$  level measured over a period of not less than 15 minutes when the construction site is in operation shall not exceed the background level by more than 10dB(A); and
  - (iii) for a construction period greater than 26 weeks, the  $L_{10}$  level measured over a period of not less than 15 minutes when the construction site is in operation shall not exceed the background level by more than 5dB(A).

Construction noise levels shall be monitored to verify compliance with the requirements specified in the Noise and Vibration Management sub-plan and where relevant the Noise Impact Statements. Should monitoring indicate exceedance the Proponent shall ensure consultation with the EPA and implement any additional mitigation measures as required.

30. As far as practicable, vibratory compactors shall not be used closer than 15 m from residential buildings and the use of rock breakers no closer than 25 m from residential buildings. Should it be necessary to use vibratory compactors closer than these limits, building condition surveys of all buildings and structures likely to be affected shall be undertaken before and after use of this type of equipment.
31. The Proponent shall ensure that the noise mitigation measures described in Appendix E of the Director-General's Report are implemented prior to the commencement of substantial construction unless otherwise agreed by the EPA. All other noise mitigation measures, including those referred to in Condition 33, shall be implemented prior to the commencement of construction where practical.

## Blasting

32. Blasting shall only be undertaken between 9am and 3pm, Monday to Friday and not on Saturdays, Sundays or public holidays unless otherwise agreed by the EPA.

## Operation Noise

33. The Proponent shall consult with those landowner(s) on Bashforth Lane on the western side of the Brunswick Heads Bypass for whom noise mitigation measures are proposed to be implemented (as identified in the EIS) to determine the most appropriate form of mitigation. Consideration shall be given to the relative benefits and costs of individual treatment of dwellings and provision of roadside barriers.
34. Monitoring of the noise when operational shall be undertaken as part of the Noise and Vibration Management Sub-plan. The Proponent shall, in consultation with the EPA, assess the adequacy of the traffic noise mitigation measures. Should the assessment indicate a clear trend in traffic noise levels which are higher than the predictions made and exceed EPA noise goals, the Proponent shall ensure the implementation of further noise mitigation measures such as consideration of open grade asphalt road pavement, inclusion and/or heightening of noise barriers, insulation of buildings, partial or total acquisition of properties or any other measure as agreed to by the EPA.

Notwithstanding the above, the Proponent shall ensure compliance with the noise assessment criteria as described in the EIS unless otherwise approved by the EPA.

## Flora and Fauna

### NPWS Concurrence Report

35. The Proponent shall implement the conditions contained in Section 10 of 'Concurrence Report for the Proposed Upgrading of the Pacific Highway from Brunswick to Yelgun and the Duplication of the Brunswick Heads Bypass' (NPWS, 1999) unless otherwise agreed by the NPWS.

### Construction

36. As part of the EMP the Proponent shall prepare in consultation with NPWS a detailed Flora and Fauna Management Sub-plan. The Sub-plan shall be prepared prior to construction and shall identify requirements for seed collection, strategies for minimising vegetation clearance and protection of vegetated areas outside the direct impact zone, controlling impacts due to spillages, spread of debris and refuse, movement and storage of materials and equipment, clearance of vegetation and soil for construction, revegetation of cleared areas, weed control including aquatic species, handling of any fauna and measures to manage drainage from the project in the vicinity of SEPP 14 wetlands.
37. The proponent shall identify the position of all threatened flora species within or close to the road footprint to sub-metre accuracy and demonstrate in the Pre-Construction Compliance Report how the detailed design of the proposal has been developed to minimise impacts on these species.

38. The Flora and Fauna Management Sub-Plan shall contain mitigation measures to protect trees during construction. Consideration shall be given to the recommendations contained in Section 11.0 of 'Review of Ecological Aspects - Proposed Brunswick to Yelgun Pacific Highway Upgrade Routes A2 and J1' (Payne, 1999).
39. A qualified ecologist shall be consulted on the location of individual rare or threatened plants or communities, to ensure minimal disturbance to native vegetation, to provide direction on methods for relocation and/or replacement plantings, and to ensure implementation of rehabilitation works as soon as practicable.
40. If, during the course of construction, the Proponent becomes aware of the presence of any threatened species which are likely to be significantly affected and are not recognised in an existing concurrence from NPWS for the proposal under the Threatened Species Conservation Act 1995, the Proponent shall immediately advise the Director-General of the NPWS. No activity which places any of these species at risk shall be undertaken until advice has been received from the NPWS. All recommendations by the NPWS shall be complied with prior to any works likely to affect any threatened species.
41. Seed of locally endemic species shall be collected prior to the commencement of construction to provide seed stock for revegetation purposes to the satisfaction of a appropriately qualified specialist. Topsoil and leaf mulch shall be stripped and stored for placement back in the vegetation zone from where it was removed.
42. Weed infested topsoil as identified by a qualified ecologist shall not be used in the rehabilitation works unless it is to be sterilised or treated as specified by the ecologist. Measures to control invasion of weeds during operation of the proposal, including aquatic weed species, shall also be addressed.
43. Unless otherwise approved by the EPA, cleared vegetation shall not be burnt. Rather, as much as possible shall be mulched and stored for use in rehabilitation. All reasonable measures to use any surplus vegetation shall be undertaken including donation to community groups, distribution to the local community, etc.

### **Urban Design and Landscaping**

44. Prior to the commencement of construction, a detailed **Urban Design and Landscape Sub-plan** shall be prepared in consultation with Byron Shire Council and the Community Liaison Group. The Sub-plan shall include sections and perspective sketches. The Sub-plan shall include the location and names of existing and proposed tree and shrub species, mounds, bunds, structures or any other proposed treatments, finish of exposed surfaces (including paved areas), use of public art, measures to preserve biodiversity along the roadside, colours and specifications, staging of works, methodology of landscaping works, monitoring and maintenance. The Sub-plan shall also include landscape strategies incorporating other environmental controls such as erosion and sedimentation controls, drainage, noise mitigation, lighting etc.
45. All landscaping works undertaken outside the road reserve shall be monitored and maintained by a suitably qualified landscape specialist for a period of not less than three years from commissioning of the road unless otherwise agreed with relevant landowners. All costs of such

monitoring and maintenance shall be borne by the Proponent. Landscaped areas within the road reserve shall be maintained at all times.

## Indigenous and Non-Indigenous Heritage

### Indigenous Heritage Management Sub-plan

46. As part of the EMP(s) (Construction Stage) and (Operation Stage), the Proponent shall prepare an Indigenous Heritage Management Sub-plan. The Sub-plan shall identify archaeological items and present management options. In the preparation of the Sub-plan, the Proponent shall consult with Byron Shire Council, NPWS and the Tweed-Byron Local Aboriginal Land Council.
47. Prior to disturbance of any identified Aboriginal site(s), the Proponent shall, at its own expense, comply with the requirements of the NPWS and where appropriate the relevant Local Aboriginal Land Council(s).
48. The Proponent shall protect the scarred tree identified as site BH-ST-1 (as defined in the EIS) during construction of the works and shall ensure there is no direct disturbance of this site. Mitigation measures shall be developed in consultation with NPWS and included in the Indigenous Heritage Management Sub-plan to minimise any indirect impacts on this site.
49. Temporary protective fences shall be placed around all sites considered to be archaeologically sensitive.

### Non-Indigenous Heritage Management Sub-plan

50. As part of the EMP(s) (Construction Stage) and (Operation Stage) (as applicable), the Proponent shall prepare a Non-Indigenous Heritage Management Sub-plan. The Sub-plan shall identify heritage items and present management options. In the preparation of the Sub-plan, the Proponent shall consult with any local historical societies, relevant Heritage authorities and Byron Shire Council. This Sub-plan shall include consideration of the potential for the development of interpretative facilities in the Brunswick River southern foreshore area (refer Condition 67) and in the vicinity of Salad Bowl Caravan Park in consultation with Council and the Community Liaison Group.

### Unexpected items

51. If during the course of construction the Proponent becomes aware of any heritage items or archaeological material, all work likely to affect the site(s) shall cease immediately and the relevant authority(s) shall be consulted to determine an appropriate course of action prior to the recommencement of work at that site. Appropriate supporting documentation would need to accompany any application for required permit/consent(s).

## Air Quality

### Construction Air Quality Sub-plan

52. As part of the EMP(s) (Construction Stage), a specific **Construction Stage Air Quality Sub-plan** shall be prepared to the satisfaction of the EPA. The Sub-plan shall provide details of dust monitoring locations and all dust control measures to be implemented during the construction

stage, sufficient to address the technical requirements for any EPA approvals/licences. The Sub-plan shall include measures to reduce dust from stockpiles and cleared areas or other exposed surfaces.

53. The proponent shall ensure dust monitoring is undertaken at the food manufacturing and retail premises located on the corner of Wilfrid Street and the Pacific Highway, Billinudgel during construction and shall implement any reasonable additional mitigation measures at this location to reduce dust impacts.
54. All construction vehicles using public roads shall be maintained and covered as required to prevent any loss of load, whether in the form of dust, liquid, solids.
55. No open burning or incineration shall be permitted on site unless otherwise approved by the EPA.

### **Traffic and Roadworks**

56. Agreement on the management of construction traffic on local roads shall be reached with the relevant Council prior to commencement of construction. The Proponent shall monitor the use of local roads by heavy vehicle traffic to the satisfaction of the local Council and shall consult with the local Council to develop measures to minimise and/or restrict use of local roads by heavy vehicle traffic involved in project construction if so required. Truck access points from local roads to the site and truck routes on local roads shall be designated prior to commencement of bulk earthworks in consultation with the relevant Council.
57. A road dilapidation report shall be prepared for all non-arterial roads likely to be used by construction traffic prior to commencement of construction and after construction is complete. Copies of the report shall be provided to all relevant councils. Any damage aside from that resulting from normal wear and tear shall be repaired at the cost of the Proponent.
58. All local service roads shall be constructed to standards as negotiated with the relevant local Council. The Proponent shall negotiate with the relevant local Council regarding contributions to costs for maintenance and enhancement.

### **Spoil Disposal and Waste Management**

#### **Spoil Management Plan**

59. As part of the EMP(s) (Construction Stage), the Proponent shall prepare a **Spoil Management Plan**. This Plan shall identify how excavated material would be handled, stockpiled, reused and disposed. The Plan shall be prepared in consultation with the EPA and Council before the commencement of construction at relevant sites.
60. All clean and/or treated excavated material shall be reused or recycled where possible and cost effective to do so. The Proponent shall ensure that the use of excavated material generated from construction activities is maximised in preference to any import of fill.

#### **Waste Management and Recycling Sub-plan**

61. As part of the EMP(s) (Construction Stage) and (Operation Stage) as relevant, a detailed **Waste Management and Reuse Sub-plan** shall be prepared to the satisfaction of the EPA.

The Sub-plan shall address the management of wastes during the construction and operation stages respectively. It shall be prepared prior to construction, and shall identify requirements for:

- (i) waste avoidance;
- (ii) reduction;
- (iii) reuse; and
- (iv) recycling,

and details of requirements for:

- (i) handling;
- (ii) stockpiling;
- (iii) disposal of wastes: specifically contaminated soil or water, concrete, demolition material, cleared vegetation, oils, grease, lubricants, sanitary wastes, timber, glass, metal, etc.; and
- (iv) identifying any site for final disposal of any material and any remedial works required at the disposal site before accepting the material.

Any waste material that is unable to be reused, reprocessed or recycled shall be disposed at a landfill licensed by the EPA to receive that type of waste.

62. As part of the Sub-plan, an **Action Plan** shall be prepared to promote the use of recycled materials, including construction and landscape materials. The Plan shall detail how the proposal gives consideration and support to the Government's *Waste Reduction and Purchasing Policy*. The Plan shall also include details on measures to implement energy conservation best practice.

### Property and Land Use

63. The Proponent shall ensure that any access way affected by the proposal is reinstated to an equivalent standard or that adequate compensation is negotiated with the relevant landowner.
64. If so requested by any affected landowner, the Proponent shall consider the consolidation of severed parcels of land as part of any compensation package if practical and cost effective.

### Oyster Moorings and Leases

65. Prior to any closure of existing access to oyster moorings on the Brunswick River as a result of project construction, the proponent shall agree to the satisfaction of affected lease holders and any other relevant stakeholders including NSW Fisheries, DLWC and the Brunswick Heads Fishing Cooperative (if applicable) regarding alternative arrangements for mooring or storage of vessels. Should agreement on this issue not be reached, the matter shall be referred to the Director-General for resolution.
66. Prior to the commencement of substantial construction in the vicinity of the Brunswick River, the Proponent shall relocate all affected oyster lease(s) to an appropriate location(s) to be determined in consultation with relevant stakeholders including DLWC, NSW Fisheries and affected lease holders. Relocation of oyster lease(s) shall be

undertaken between the months of August and January unless otherwise agreed by the affected lease holder(s).

### **Brunswick River Southern Foreshore Area**

67. The Proponent shall facilitate discussions with Byron Shire Council, DLWC, the Brunswick Estuary Management Committee and community representatives regarding the redevelopment and future management of the southern foreshore area of the Brunswick River in the vicinity of the existing Pacific Highway Bridge. The discussions shall aim to define the level of initial and ongoing responsibility (both financial and otherwise) by the Proponent and other stakeholders for the area. Other issues for consideration shall include noise impacts on the Ferry Reserve Caravan Park (including any further noise investigations required) and the potential for development of an interpretative facility relating to the non-indigenous heritage significance of the area.

### **Utilities and Services**

68. The Proponent shall identify the services potentially affected by construction activities to determine requirements for diversion, protection and/or support. This shall be undertaken in consultation with the relevant service provider(s). Any alterations to utilities and services shall be carried out to the satisfaction of the relevant service provider(s), and unless otherwise agreed to, at no cost to the service/utility provider(s) except for services located on the Brunswick River Bridge.
69. The Proponent shall ensure that disruption to services resulting from the proposal is minimised and shall be responsible for advising local residents and businesses affected prior to any disruption of service.

### **Concrete Batching Plants**

70. The Proponent shall only construct concrete batching plants and construction compounds under this approval in those locations identified in Appendix 13, Section 2.2 of the Representations Report or in other locations that satisfy the following, unless otherwise agreed to by the Director-General:
- sites to be located within the road reserve;
  - sites to be located with ready access to the local road network;
  - sites to be separated from nearest residences by at least 200m unless it can be demonstrated to the satisfaction of the Director-General that there will be minimal adverse effects in terms of noise, visual and air quality impacts;
  - sites are not to be permitted within 100m of, or drain directly to, SEPP 14 wetlands or the Brunswick Heads or Billinudgel Nature Reserves;
  - sites are not to be located within 100m of waterways unless adequate erosion and sediment controls are implemented to protect water quality;
  - sites are to have low conservation significance for flora and fauna and indigenous and non-indigenous heritage and are not to require clearing of any native vegetation beyond that which must be cleared for the proposal in any case; and
  - sites are to be selected so that operation of the plants does not impact on the land use of adjacent properties.

The location of all concrete batching plants shall be detailed in the EMP (Construction Stage) which shall include demonstration that the above criteria have been met.

### **Cumulative Impact Assessment**

71. As part of the EMP (Construction Stage), the Proponent shall identify parameters to be monitored during construction and operation of the proposal which have the potential for cumulative effects to occur. The Proponent shall also define the time period for which the identified parameters will be monitored. The results of such monitoring shall then be used as an input to the RTA's Cumulative Impact Assessment Study.