



New South Wales Government



Australian Government



# Coffs Harbour Highway Planning

Sapphire to Woolgoolga section

PROJECT APPLICATION REPORT

OCTOBER 2006



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**Project Application Report  
Sapphire to Woolgoolga Pacific Highway  
Upgrade  
Roads and Traffic Authority**

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# 1. Introduction

## 1.1 Background

In January 1996, the NSW and Australian governments announced their joint commitment to a 10-year program to upgrade the Pacific Highway between Hexham and the Queensland border. As of the end of July 2006, a total 233 kilometres are now double-lane divided road.

The Pacific Highway is an AusLink National Network road. For the 10 years to June 2006, the NSW and Australian governments committed to a \$2.2 billion upgrade, \$1.6 billion from the NSW Government and \$0.6 billion from the Australian Government.

In December 2005, the NSW and Australian governments announced a jointly funded program of \$960 million for the three years to 2009. In June 2006, both the NSW and Australian governments committed an additional \$160 million each. This brings to \$1.3 billion the level of funding the two Governments have committed to upgrading the Pacific Highway until the end of 2009 under the new agreements negotiated in the last 12 months.

The NSW and Australian governments are currently examining how the entire length of the highway can be upgraded to dual carriageway in the next 10 years.

The Coffs Harbour Highway Planning Strategy (CHHPS) is being developed to address the need to upgrade the Pacific Highway between Sapphire and Woolgoolga while planning for future traffic needs within the Coffs Harbour area.

Since planning for the Strategy began in September 2001, a wide range of potential road corridors and route options has been investigated. These have included options developed by the project team and options put forward by Coffs Harbour City Council (CHCC) and the community.

The options investigated for the Strategy fall within three broad strategic corridors:

- Far Western Bypass. A bypass of Coffs Harbour and Woolgoolga through the Orara Valley from Englands Road south of Coffs Harbour to Halfway Creek or Grafton.
- CHCC Preferred Corridor. Options within a corridor adopted by CHCC in late 2003 as its preferred option for a bypass of Coffs Harbour and Woolgoolga.
- Coastal Corridor. Options along the coastal plain between Englands Road south of Coffs Harbour and Arrawarra Creek north of Woolgoolga, with a future extension to Halfway Creek.

The assessment of the three broad strategic corridor options found that the Coastal Corridor was the most feasible corridor option. The Sapphire to Woolgoolga project comprises the northern section of the Coastal Corridor. The assessment and selection of the preferred route for the Strategy is detailed in the *Coffs Harbour Highway Planning Strategy. Preferred Option Report Connell Wagner (2004)*.

The preferred route for the Strategy, including the Sapphire to Woolgoolga section, which was announced in December 2004, is shown in Figure 1.1.

The CHHPS has been divided into two sections:

- The **southern section** from Sawtell to Sapphire (Coffs Harbour section).
- The **northern section** from Sapphire to Woolgoolga.

The two sections of the CHHPS are at different stages of planning and implementation. The main actions required for the southern (Coffs Harbour) section include planning to reserve land for the preferred route, refining the concept design, and managing the existing highway through Coffs Harbour until the preferred route is constructed.

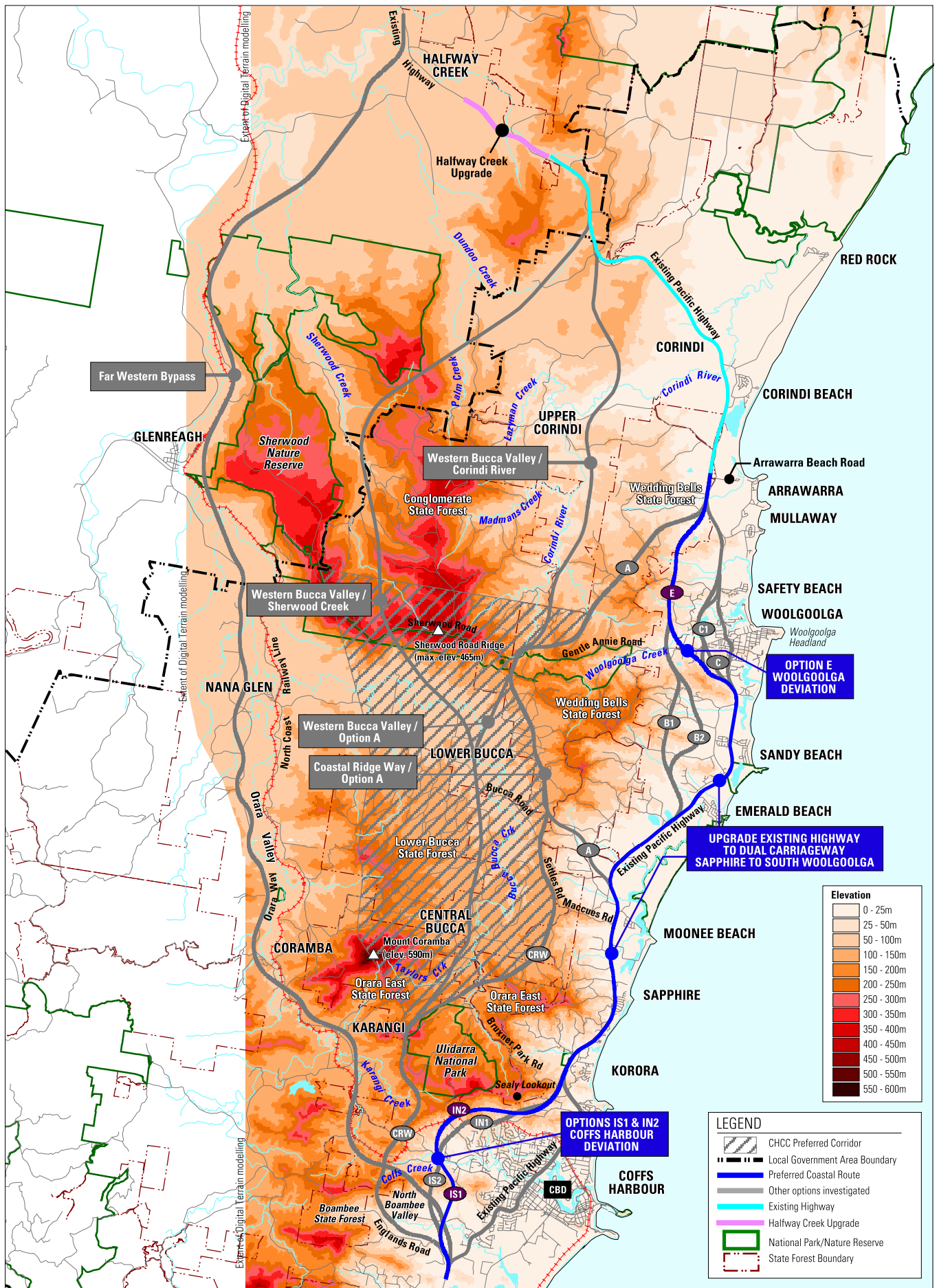


Figure 1.1

Coffs Harbour Highway Planning Strategy Preferred Route

0 2 4 8km  
SCALE

S2W PA\1093.22.GE\25.08.06\MAR\REV-1

Source: Terrain model derived from 2m/10m contour information (2000/2002) - Connell Wagner P/L National Parks/Nature Reserves - DEC (2003) State Forest - custodian DIPNR (2003)

The main actions for the northern (Sapphire to Woolgoolga) section are refining the concept design for the preferred option and preparing an environmental assessment prior to seeking planning approval to construct the project. It is the northern section from Sapphire to Woolgoolga that is the subject of this application report. The preferred route for this northern section is referred to as 'the Proposal' in this report.

The Proposal for the northern section includes a grade separated interchange to the north of Arrawarra Beach Road. The interchange forms the northern entry from the highway to Woolgoolga and provides access to Safety Beach, Mullaway and Arrawarra. The interchange has been located to provide a consistent design standard along the full route length of the proposal and to ensure a seamless connection with a future upgrade to the north.

## 1.2 Purpose of this report

This Project Application Report has been prepared for the Director General (DG) of the Department of Planning (DoP) under Section 75E of Part 3A of the *Environmental Planning and Assessment Act, 1979 (EP&A Act)*. The Report accompanies a Project Application and includes the following information:

- justification for assessment of the Proposal to be conducted under Part 3A of the EP&A Act
- need for and description of the Proposal
- a summary of the studies, investigations and stakeholder involvement that has been conducted to date as part of the project development and the rationale for the selection of the preferred route
- a preliminary assessment of key environmental issues associated with the Proposal
- a preliminary list of environmental management measures that are expected to form part of the Proposal
- the proposed scope of further design and investigations that the RTA would complete as part of the subsequent Environmental Assessment for the Proposal

In accordance with Section 75F(2) of the *EP&A Act*, it is anticipated that the information in this Project Application Report will be used by the DoP to prepare formal requirements for the environmental assessment of the Proposal.

As the RTA intends to proceed to implementation of the Sapphire to Woolgoolga project as soon as funding is committed, a Project Approval (as distinct from a Concept Approval) is being sought.

## 1.3 Planning and development process

### 1.3.1 Project development process to date

Planning for this section of the Pacific Highway commenced in September 2001. Ongoing community and stakeholder consultation has strongly influenced the area that was investigated as part of the project and resulted in the identification and assessment of additional corridor and route options and in more detailed environmental and engineering studies being undertaken. A summary of the key milestones in the project development process is presented in Table 1.1.

**Table 1-1 Project milestones**

Date	Milestone
Early 2000	RTA calls tenders for the development of the upgrading of the Pacific Highway between Sapphire and Woolgoolga.
Mid 2000	In response to requests from Council and DUAP the RTA expands study area to include investigations of future traffic needs for the Coffs Harbour urban area and develop a highway planning strategy for both Coffs Harbour and Woolgoolga. Steering Committee with representatives from Council, DUAP and RTA formed to manage the development of the Coffs Harbour Highway Planning Strategy.
September 2001	Summary brochure released : <ul style="list-style-type: none"> <li>• strategy announced</li> <li>• corridor options for a bypass of Coffs Harbour identified</li> <li>• study area for the Sapphire to Woolgoolga project identified</li> <li>• community comment invited</li> </ul>
March 2002	Information Sheet No.2 released : <ul style="list-style-type: none"> <li>• advice that in response to community requests a Far Western Corridor (through the Orara Valley) was also investigated</li> <li>• announcement that the Central, Outer and Far Western Corridors for a bypass of Coffs Harbour are not worthy of further consideration</li> <li>• announcement that options within the Inner Corridor would be identified and evaluated against the upgrading of the existing highway through Coffs Harbour</li> <li>• corridor options for the Sapphire to Woolgoolga project identified (Options A, B, C and D)</li> <li>• community comment invited</li> </ul>
May 2002	CHCC resolves to engage an independent consultant to undertake a peer review of the work done to date.
September 2002	Peer review findings released : <ul style="list-style-type: none"> <li>• concludes that ...<i>the Inner Corridor is the preferred of the options for a bypass of Coffs Harbour</i></li> <li>• methods of improving the community consultation process recommended</li> </ul> <p>CHCC resolves to :</p> <ul style="list-style-type: none"> <li>• acknowledge receipt of the peer review findings</li> <li>• request the Steering Committee to investigate the Coastal Ridge Way proposal</li> </ul>
October 2002	Steering Committee : <ul style="list-style-type: none"> <li>• reaffirms that outer and central corridor options for a bypass of Coffs Harbour are "ruled out"</li> <li>• agrees to investigate the Coastal Ridge Way proposal</li> </ul>
December 2002	Community Update No.3 released : <ul style="list-style-type: none"> <li>• provides details of refined route options for the Sapphire to Woolgoolga project (Options A, B1, B2, C and D)</li> <li>• community comment invited</li> </ul>
April 2003	Value management study for Sapphire to Woolgoolga options : <ul style="list-style-type: none"> <li>• Options C and D should go forward with further consideration of socio-economic and environmental issues</li> <li>• Options B and A identified as less favourable</li> </ul>
May 2003	CHCC requests Steering Committee to investigate other options for a bypass of Woolgoolga which would have less impact on the future development of the township.
May to August 2003	CHCC holds a series of Community Forums.
September and October 2003	CHCC adopts its Preferred Corridor for a bypass of Coffs Harbour and Woolgoolga : <p>...<i>that the western bypass diverge from the existing highway at or near Englands Road to Red Hill, and thereafter by the best available option to Grafton with the intention that south and western Boambee and the Orara Valley be excluded from further consideration.</i></p>
November 2003	CHCC advises the Minister for Roads of the adoption of its preferred corridor.

Date	Milestone
February 2004	Following the decision by CHCC to adopt its own preferred corridor for a bypass of Coffs Harbour and Woolgoolga, the steering committee agrees that it can no longer continue to manage the development of the strategy and dissolves. RTA and DIPNR agree to work together to finalise the development of the strategy.
February 2004	Minister for Roads agrees to investigate the feasibility of CHCC preferred corridor.
February 2004	<p>Community Update No.4 released :</p> <ul style="list-style-type: none"> <li>• provides details of route options within the Inner Corridor and the upgrading of the Existing Highway through Coffs Harbour</li> <li>• provides details of the investigations into the Coastal Ridge Way proposal</li> <li>• announces that the upgrade of the existing highway through Coffs Harbour does not merit further consideration</li> <li>• announces that a decision regarding the Inner Bypass options and the Coastal Ridge Way proposal will be made following the assessment of the feasibility of CHCC Preferred Corridor</li> <li>• provides details of new options for a bypass of Woolgoolga (Options C1 and E)</li> <li>• for the Sapphire to Woolgoolga project announces that: <ul style="list-style-type: none"> <li>○ Option A is not favoured due to its severe environmental (biophysical) and Aboriginal heritage impacts, poor functional performance, high cost and poor value for money</li> <li>○ Options B1 and B2 do not merit further consideration due to the need to protect valuable agricultural land</li> <li>○ Option D (upgrade of the existing highway through Woolgoolga) is not an acceptable option due to its social and economic impacts on the township of Woolgoolga</li> </ul> </li> <li>• community comment invited</li> </ul>
June 2004	<p>Community Update No.5 released :</p> <ul style="list-style-type: none"> <li>• provides details of assessment of feasibility of CHCC Preferred Corridor</li> <li>• <i>...while route options within Council's preferred corridor have the lowest socio-economic impacts, the feasibility assessment has shown that they also have major adverse impacts and are not considered to be viable options for the Highway Planning Strategy</i></li> <li>• community comment invited</li> </ul>
August 2004	<p>Value management workshops held:</p> <ul style="list-style-type: none"> <li>• workshop for the Inner Bypass Corridor options for Coffs Harbour recommended Options IS2 and IN2</li> <li>• majority of participants at the workshop for the bypass options of Woolgoolga recommended Option E</li> </ul>
December 2004	Preferred route for the strategy announced. The preferred route involves a coastal route comprising the IS1 and IN2 options for Coffs Harbour, an upgrade of the existing highway to dual carriageway between Korora and south Woolgoolga and the Option E bypass for Woolgoolga.
April 2005	<p>Progress Update for Sapphire to Woolgoolga project released:</p> <ul style="list-style-type: none"> <li>• field investigations commenced</li> <li>• CFG meetings held – input into concept design for preferred route provided</li> <li>• Concept design will be refined based on results from field investigations and ongoing community consultation.</li> </ul>
April 2005 to August 2006	<p>Field investigations, including surveys, geotechnical investigations, flora and fauna studies, heritage studies (Aboriginal and non-Aboriginal) undertaken. Environmental assessment of potential impacts and possible mitigation measures commenced – including assessment of flora and fauna, traffic and transport, agricultural, land use and property, urban design, traffic noise and cultural / socio-economic issues.</p> <p>Concept design refined to identify design features, likely footprint and possible road boundaries, access arrangements and mitigation measures.</p>
August 2006	<p>Update letter to residents released:</p> <ul style="list-style-type: none"> <li>• correct incorrect information contained in maps circulated in the community</li> <li>• confirmed that the Preferred Route for the Strategy remains the route announced in December 2004</li> </ul>

Date	Milestone
	<ul style="list-style-type: none"> <li>• discussed the concept of a motorway with an access road for local traffic developed partly in response to requests from CHCC and input from the Sapphire to Sandy Beach CFG.</li> <li>• advised the next steps for the project.</li> </ul>

### 1.3.2 Project approval process

The proposal is located within the Coffs Harbour local government area and is subject to the provisions of the *Coffs Harbour Local Environmental Plan (LEP) 2000* and the *Ulmarra Local Environmental Plan (LEP) 1992*.

#### Coffs Harbour LEP

The route traverses through or close to numerous land use zones including rural, State Forests, residential, business, special uses, open space, environmental protection and National Parks and Reserves (refer Figure 1.2). The northern section of the Woolgoolga bypass traverses part of Wedding Bells State Forest, while a section of the upgrade of the existing highway just south of Sandy Beach is adjacent to, but does not enter, the Moonee Beach Nature Reserve. The Arrawarra interchange section traverses another part of Wedding Bells State Forest as well as a strip of land zoned 7(b) (Environmental Protection Scenic Buffer) to the east of the existing highway.

Clause 7 of *Coffs Harbour LEP* identifies activities that are neither prohibited or require development consent. Activities referred to in Clause 7 (ie listed in Schedule 1) include:

*"The carrying out by a public authority of any development required in connection with the construction, reconstruction, improvement, maintenance or repair of any road."*

On this basis, the proposal would be permissible without consent in all zones within *the Coffs Harbour LEP*.

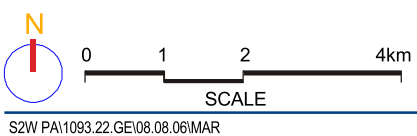
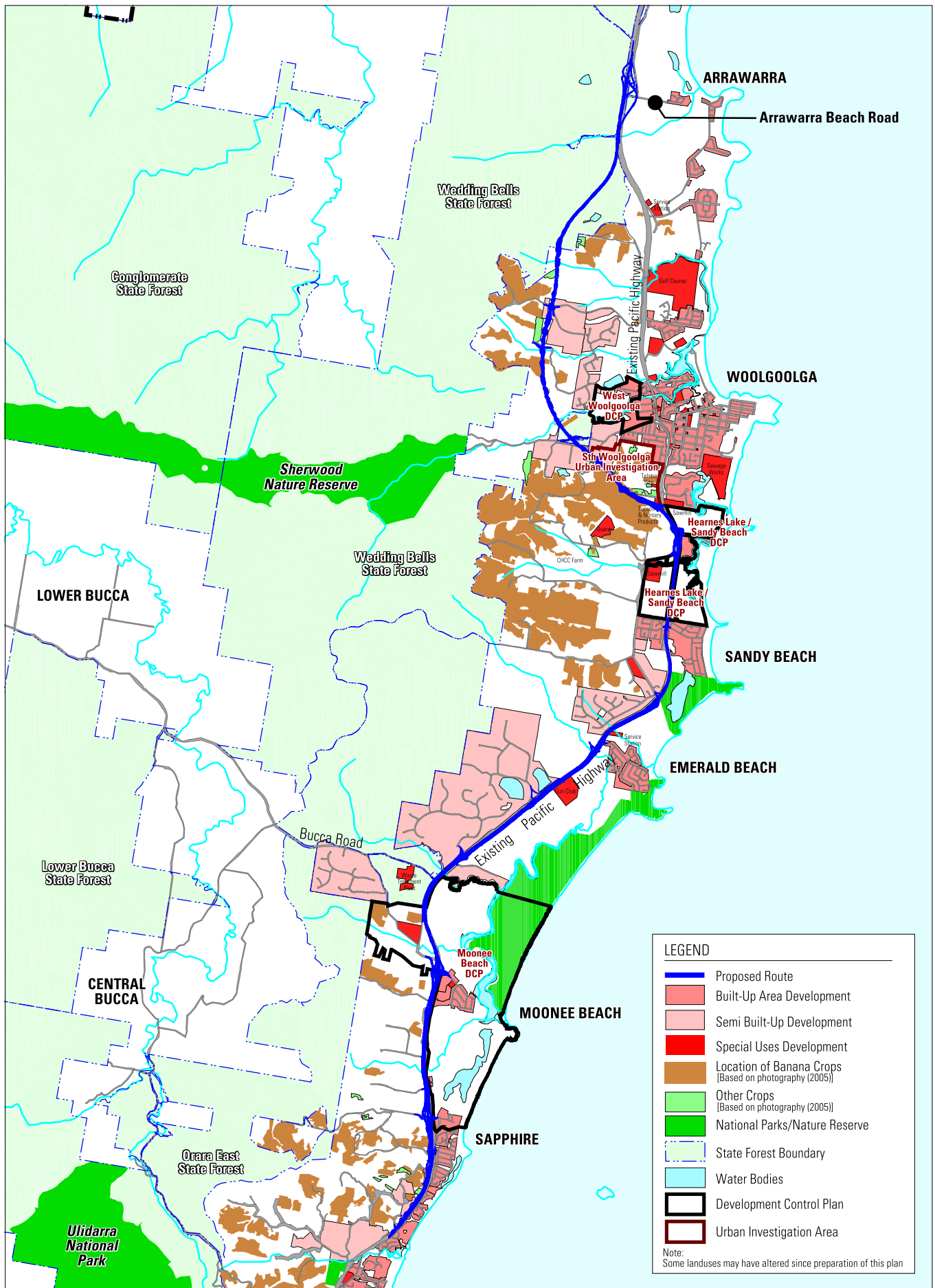
#### Ulmarra LEP

Up to 1 hectare of the proposal would be located in 1(f) Rural (Forests) zone (Wedding Bells State Forest) within the *Ulmarra LEP* area. In the 1(f) zone, all purposes other than forestry purposes are prohibited unless the Council is satisfied that the proposed development or activity is generally consistent with Objective (c) of the zone which is:

*"to enable the development of land for ..... purposes (other than forestry) where it can be demonstrated by the applicant for development consent that suitable land or buildings for the proposed purpose are not available elsewhere and that such a use will not detrimentally affect forestry operations on nearby lands."*

The RTA considers that the proposed interchange is in the most suitable available location as it:

- would only impact on up to 1Ha of 1(f) Rural (Forests) zone within the *Ulmarra LEP* area,
- provides good access from the highway to Woolgoolga, Mullaway, Arrawarra Beach and adjacent development while being far enough away from these residential areas to have minimal visual and noise impacts on residents,
- maximises the utilisation of the existing road infrastructure and topographical features to reduce the potential impacts of the facility,
- has minimal impact on forestry activities in the Wedding Bells State Forest and does not detrimentally affect forestry operations on nearby lands,
- provides safer access to the State Forest by consolidating the existing junctions between the internal forestry roads and the highway,
- has no direct impact on adjacent 1(a) (General Rural) and 7(a) (Environment Protection Habitat and Catchment) zoned lands and minimises the direct impact on the 7(b) (Environment Protection Scenic Buffer) zoned strip of land along the eastern side of the existing highway, and



Source: Land Use - adapted from Zoning Mapping 2000) and aerial photography (2005)  
 National Parks/Nature Reserves - DEC (2003)  
 State Forest - custodian DIPNR (2003)

**Figure 1.2**  
Land Use

- would not require the acquisition of any privately owned land in the area.

Coffs Harbour City Council has advised the RTA that it is satisfied that the extent of the proposal located in 1(f) Rural (Forests) (Wedding Bells State Forest) zone under the Ulmarra LEP area is consistent with Objective (c) of the LEP. (See Appendix A).

Notwithstanding, the Proposal constitutes development for the purposes of a classified road under Section 11C of *State Environment Planning Policy No 4 – Development Without Consent* (SEPP 4). Section 11C provides that:

*"If, in the absence of this clause, development for the purposes of a classified road or proposed classified road may be carried out only with development consent, that development may be carried out without that consent."*

As such, the proposal within the 1(f) Rural (Forests) zone under the Ulmarra LEP is permissible without development consent under the provisions of SEPP 4.

Consequently, the proposal can be undertaken without the need for development consent within both the Coffs Harbour and Ulmarra LEP areas. An activity that does not require consent is subject to the provisions of Part 5 of the EP&A Act and the RTA would be both a determining authority and the proponent for the proposal.

As a determining authority under Part 5 of the Act, the RTA has a duty to consider the environmental impact of an activity, and must not grant approval to an activity that is likely to significantly affect the environment unless it has considered an Environmental Impact Statement (EIS) in relation to the activity.

An assessment of the potential environmental impacts of the proposal and their likely significance was undertaken based on investigations undertaken to date as part of the route development and assessment stage of the proposal. The assessment was completed with reference to two relevant publications "*Is an EIS Required? Best Practice Guidelines for Part 5 of the Environmental Planning and Assessment Act 1979*", NSW Government, Department of Urban Affairs and Planning (DUAP, now Department of Planning) and the "*EIS Guideline Roads and Related Facilities*", DUAP (now Department of Planning) September 1996. The assessment concluded that there are several potential areas of impact associated with the preferred route that are likely to result in significant environmental impact, within the meaning of the *EP&A Act*. These include land use and property effects, noise and vibration, and traffic and transport impacts. Although best practice environmental planning and management measures would be applied so as to avoid, minimise and mitigate adverse effects, the residual risks or impacts after such action would still require the preparation of an Environmental Impact Statement (EIS) if assessed under the provisions of Part 5 of the *EP&A Act*.

By an order gazetted on 29 July 2005, the Minister for Infrastructure and Planning declared that Part 3A of the *EP&A Act* applies to:

*"major infrastructure or other development that is an activity for which the proponent is also the determining authority (within the meaning of Part 5) and that, in the opinion of the proponent, would (but for this Part) require an environmental impact statement to be obtained under that Part."*

As shown above, the RTA is both the proponent and the determining authority for the Sapphire to Woolgoolga Project within the meaning of Part 5 of the *EP&A Act*. In the opinion of the RTA, the project would (but for Part 3A of the Act) require an EIS to be obtained under Part 5. Consequently, the RTA proposes to submit the Sapphire to Woolgoolga Project to the Department of Planning for Project Approval under Part 3A of the Act.

## Other project approvals

### *NSW Legislation*

On the assumption that the proposal will be assessed under Part 3A, a range of other project approvals identified in Section 75 U of the *EP&A Act* are no longer required. For an approved project, the following authorisations are not required, and accordingly the provisions of any Act that prohibit an activity without such an authority do not apply:

- the concurrence under Part 3 of the *Coastal Protection Act 1979* of the Minister administering that Part of the Act,
- a permit under section 201, 205 or 219 of the *Fisheries Management Act 1994*
- an approval under Part 4, or an excavation permit under section 139, of the *Heritage Act 1977*
- a permit under section 87 or a consent under section 90 of the *National Parks and Wildlife Act 1974*
- an authorisation referred to in section 12 of the *Native Vegetation Act 2003* to clear native vegetation
- a permit under Part 3A of the *Rivers and Foreshores Improvement Act 1948*
- a bush fire safety authority under section 100B of the *Rural Fires Act 1997*
- a water use approval under section 89, a water management work approval under section 90 or an activity approval under section 91 of the *Water Management Act 2000*

Other approvals, including licences under Chapter 3 of the *Protection of the Environment Operations Act 1997* and the *Roads Act 1993* will continue to be required but these cannot be refused if they are necessary for the carrying out of an approved Part 3A project. These approvals must be substantially consistent with the Part 3A approval.

The proposal passes over Double-Crossing Creek, which forms part of the Solitary Islands Marine Park offshore. The boundary for the Marine Park is the mean high water mark. The highway will be bridged to clear span the creek and to avoid impacts on vegetation within the Marine Park.

Notwithstanding, if vegetation within the Marine Park is affected, concurrence of the relevant Ministers (the Ministers who administer the *National Parks and Wildlife Act 1974* and the *Fisheries Management Act 1994*) under the *Marine Parks Act 1997* would be required and need to take into consideration:

- the objects of this Act specified in section 3, and*
- if a zoning plan for the marine park is contained in the regulations as referred to in section 16, the objects of the zone within which the area concerned is situated as specified in the zoning plan, and*
- the permissible uses of the area concerned under the regulations.*

Should the Marine Park be affected, the statutory requirements would be further addressed in the Environmental Assessment.

### *Commonwealth Legislation*

Under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, a proposal that is likely to result in a significant impact on a matter of National Environmental Significance (NES) must be referred to the Department of Environment and Heritage (DEH). If the proposal is subsequently determined to be a 'Controlled Action', then approval from the Commonwealth Environment Minister is required. Matters of NES that are potentially relevant to the Sapphire to Woolgoolga proposal include:

- Nationally threatened species and ecological communities
- Migratory species protected under international agreements
- Ramsar wetlands

Based on investigations completed by the RTA to date, the most likely trigger for a referral to DEH would be a significant impact on nationally listed threatened species or migratory species. If it is determined that a significant impact is likely, the proposal will be referred to the DEH.

## 1.4 Consultation

### 1.4.1 Consultation with the community

An extensive consultation and stakeholder involvement program has been implemented for the project that has involved ongoing communication and consultation with the local community and other diverse stakeholders since the project began in September 2001. The program has included the following key activities:

- widespread distribution of six information brochures (community updates) at key project milestones between September 2001 and December 2004
- widespread distribution of a Progress Update in April 2005 and a Letter to Residents in August 2006
- advertised open information sessions and public displays (both static and staffed displays)
- meetings with and presentations to local interest groups
- formation of and regular meetings with the two Community Focus Groups (CFGs) for the development of the project
- interviews / meetings with relevant stakeholders including property owners and local businesses
- public notices and media coverage (print and electronic)
- two Value Management Workshops and a Value Engineering Workshop with diverse agency and community representation
- formation of a contact database on which members of the public were able to register to receive community updates
- provision of a freecall telephone enquiry line for direct enquiries to the project team
- establishment and frequent updating of a project website
- invitations for written submissions and completion of survey forms by individuals and interest groups

The community involvement program and the outcomes of the program are documented within a number of reports prepared over the course of the Coffs Harbour Highway Planning Strategy (CHHPS) development process (see Pramax Communications 2002a 2002b 2003 2004a 2004b, Connell Wagner November 2004).

Feedback Mechanisms had also been set up to enable the community to provide comments back to the Project Team, via email and a freecall 1800 number.

### 1.4.2 Consultation with the Woolgoolga area Sikh community

The Community Involvement Plan (CIP) for the upgrade identified the Sikh Community as a significant community group and identified communications activities targeted for the community.

Prior to the launch of the Strategy in September 2001, discussions were held the co-ordinator of the Woolgoolga Neighbourhood Centre as the representative of the local Sikh community. The CIP incorporated the advice received from these discussions.

Specific community involvement with the Sikh community has included:

- Letters written to both Sikh Temples in Woolgoolga on 13 September 2001 to advise them of the project and to seek approval to erect displays at the Temples.
- Information sessions / presentations provided at the 2 Sikh Temples in Woolgoolga in December 2001.
- Distribution of the six information brochures (community updates), Progress Update and Letter to Residents to the 72 Sikh property owners identified as registered on the contact database

- Community display posters produced at project milestones have been translated into Punjabi and placed on display at both Sikh temples in Woolgoolga and at the Woolgoolga Neighbourhood Centre. At the suggestion of a member of the Sikh community, the display poster for the preferred route was also displayed in the waiting room of a Sikh doctor's surgery in Woolgoolga.
- Letters were written to both Sikh Temples on 19 February 2004 advising of the release of Community Update No.4 which provided information on the new and revised options for Woolgoolga – Options C1 and E. The letter also advised that copies of the Community Update would be delivered to the Temples for distribution to community members.
- From the commencement of the community involvement process, there have been positions for two representatives of the Sikh community on the Woolgoolga community focus group (CFG). As with other members of the CFG, if attendance by the Sikh representatives at the CFG meetings became irregular, the Sikh representatives were contacted to ascertain if they wanted to continue to attend the meetings or identify replacement representatives. After the preferred route was selected, all representatives on the CFGs (including the Sikh representatives) were contacted to ascertain if they wished to continue their membership. A separate request for three additional Sikh representatives on the CFG was also approved.
- Throughout the development of the Strategy, there has been at least one representative of the Sikh community on the Woolgoolga CFG at any time. At least 1 representative of the Sikh community has attended 11 of the 19 meetings held by the CFG.
- At this time, four out of a total of 14 representatives on the Woolgoolga CFG are members of the Sikh community.
- The project team has held numerous meetings with individual property owners who are members of the Sikh community
- Two Value Management Workshops have been held for the project, to which representatives of the Sikh community were invited. A member of the Sikh Community attended the first workshop in April 2003 as a representative of the banana growing industry. An invitation was issued to a member of the Sikh community to represent the banana growing industry at the second workshop in August 2004 but the representative did not attend.
- There has been a standing offer for members of the project team to meet with the wider community and contact details are advertised in the community updates and on display material.
- Meetings have also been held with 13 individual Sikh property owners, in many instances, on more than 1 occasion.
- Following a meeting with the Community Relations Commission in September 2005, the RTA agreed to undertake an assessment of the potential impact of the preferred route on the cultural and heritage values of the local Sikh community as part of the Environmental Assessment for the project. The assessment will also investigate mitigation options to reduce the potential impact of the proposal on the community. The consultation program for the assessment consists of six key consultation activities which are described below.
  - **Activity 1:** Informal discussion with members of the Woolgoolga Sikh community at the first Sikh Temple on Sunday 30 April 2006. Flyers were provided to community representatives advising them of the activity prior to 30 April 2006.
  - **Activity 2:** Discussion with members of the Woolgoolga Sikh community from the Guru Nanak Sikh Temple on 7 May 2006. Flyers were provided to community representatives advising them of the activity prior to 7 May 2006.
  - **Activity 3:** Individual meetings with members of the Woolgoolga Sikh community scheduled for 8 May 2006.
  - **Activity 4:** A (small) discussion group meeting. While the event took place, with approximately 45 individuals attending, representatives from the community rejected the proposed format and did not participate. The community requested the opportunity to submit comments/feedback in writing.
  - **Revised Approach – Activity 5:** Community representatives were invited to provide comment on the potential impacts of the preferred route by 28 July 2006. Additional presentations have been made to the 2 Sikh temples to explain the revised approach.

- **Proposed Consultation after May 2006:** The assessment report will be included in the Environmental Assessment for the project which will be placed on display for community information and comment. Presentations will be offered to both Sikh Temples in conjunction with the display of the Environmental Assessment of the proposal.

### 1.4.3 Consultation with government agencies

Consultation with Local and State Government agencies has also been ongoing throughout the project development. At the commencement of the project a Planning Focus Meeting was held to provide information about the project to representatives of these agencies and to identify their issues and requirements. Three additional Planning Focus Meetings have been held with representatives of these agencies during the development of the project. In addition, a number of separate meetings have been held with representatives of State Government agencies to discuss specific issues relating to their areas of interest and responsibility.

The study team has also had the opportunity to address meetings of and provide briefings for Coffs Harbour City Council on many occasions during the course of the project development. Meetings have also been held with the executive and staff of Council to discuss specific issues and some Council staff have participated as members of the Community Liaison Groups.

### 1.4.4 Key issues

Much of the feedback throughout the development of the overall CHHPS and the Sapphire to Woolgoolga project has been from stakeholders potentially directly-affected or nearby the various corridors and routes. As corridor and route options have been ruled out, responses from stakeholders potentially directly-affected or nearby those corridors or routes have significantly declined. Relatively few responses have been received from environmental groups and stakeholders not potentially directly-affected or nearby the corridors and routes.

The issues consistently raised by respondents since the CHHPS announcement have been:

- property impacts, e.g. area of land required for the proposal and access arrangements
- socio-economic impacts, e.g. impact on agricultural activities and on future development of the Coffs Harbour / Woolgoolga area
- long term role of the proposed upgrade
- traffic noise and vibration impacts and concerns about the ability to mitigate them
- air quality impacts
- road safety impacts

With each key information milestone, respondents also have consistently seen the invitation for submissions and completion of survey forms as an opportunity to record a preference or a 'vote' for the various options. These included options previously ruled out or not considered to be viable as well as options which had impacts that had not been assessed and exhibited at that time. Generally, the 'voting' trend has been:

- those on the more densely settled coastal areas preferred options to the west of the coastal range
- those on the more sparsely settled rural areas of the Local Government Area preferred options closer to the settled coastal area

Another more recent trend has been an increase in support for an upgrade of the existing highway from Sapphire to South Woolgoolga, primarily to cater for local traffic.

Some over-arching issues related to the Pacific Highway or transport industry have also been consistently raised by respondents. These have included:

- an increase in heavy vehicle movements, particularly B-doubles, since the opening of the full length of the Pacific Highway to B-double vehicles in August 2002 and associated noise, air quality and road safety issues from the mix of local and through traffic
- the ability of the various options assessed to serve as a functional bypass for many years
- obtaining more Federal Government funding for the Pacific Highway, particularly through it gaining national highway status
- encouraging more freight to be transported by rail
- the ability of the various options to allow for urban expansion in a growing regional area

The above feedback is the result of responses to questions on the 'Have Your Say' survey forms as well as written submissions and, statistically, cannot be considered as a valid or statistically representative survey of the area or necessarily representative of the views of the overall Coffs Harbour community. In addition, the activities of lobby groups are likely to have influenced the submissions received and the extent of this influence is difficult to determine.

#### **1.4.5 How stakeholders have influenced the proposal**

Throughout the development of the CHHPS, a number of issues or options have been raised by the community or CHCC which have been responded to by the project team, either by investigation or implementation.

The community or CHCC-raised options investigated by the project team have been:

- Option A in the Sapphire to Woolgoolga section
- a far western bypass running through the Orara Valley to Halfway Creek or Grafton
- Option C1 in the Sapphire to Woolgoolga section
- Option E in the Sapphire to Woolgoolga section
- Options within CHCC's preferred corridor including Coastal Ridge Way / Option A, Western Bucca Valley / Option A, Western Bucca Valley / Corindi River, Western Bucca Valley / Sherwood Creek

The project team also has responded to community input regarding:

- additional open information sessions and displays
- review of community-taken traffic counts
- extension of submission periods

In June 2002, CHCC appointed Arup consultants to carry out an independent Peer Review on the adequacy of the decision-making process and the sufficiency of technical assessment undertaken as part of the Strategy to March 2002 for the southern (Coffs Harbour) section. While the Peer Review and a subsequent workshop with Arup and CFG members held in November 2002 recommended a number of key actions, principally concerning the southern (Coffs Harbour) section of the Strategy, a range of activities for the Sapphire to Woolgoolga Highway Upgrade were undertaken by the project team in response to the recommendations, including:

- inclusion of information regarding future steps in the process for the development and delivery of the Strategy at the two Sapphire to Woolgoolga CFG meetings
- review of the Charters of the two CFGs
- widespread advertising and distribution of information at key information releases, including staffed displays and the distribution of approximately 10,000 community update brochures

CHCC also held a number of public forums to further examine strategic options. Seven public forums were organised and conducted by CHCC between May and August, 2003.

Following the series of public forums, CHCC adopted a preferred corridor for a bypass of Coffs Harbour and Woolgoolga in October 2003. Council's preferred corridor was located within the Bucca

Valley and the coastal range to the west of Coffs Harbour and Woolgoolga. The RTA subsequently developed several options within the CHCC preferred corridor and completed detailed evaluations of all options. The announcement of the preferred route was thus delayed as a result of the investigation and evaluation of the options developed by CHCC.

## 2. Need for the proposal

The Sapphire to Arrawarra section is a key link in the overall framework of the Pacific Highway corridor. The proposed upgrade is required to address the existing and predicted road and traffic deficiencies of this section of highway through the northern part of the Coffs Harbour LGA.

In terms of road and traffic conditions, the Pacific Highway through the study area shows a number of deficiencies. It is currently a two-lane single carriageway, with overtaking opportunities approximately every 5km. There are a number of key intersections with various local roads servicing coastal communities such as Sapphire, Moonee, Emerald Beach, Sandy Beach, Woolgoolga and Arrawarra, several rural residential communities and numerous private accesses. Many of the intersections have poor site lines, inadequate merging lanes and a high accident rate. The highway is the only arterial road available to serve the existing residential settlements located at Sapphire, Moonee, Emerald Beach, Sandy Beach and Mullaway and to provide access to the town centres of Coffs Harbour and Woolgoolga.

Predicted population growth on the northern beaches and the LGA in general will result in increased traffic volumes on the road network. Through traffic is also expected to increase as the Pacific Highway Upgrading Program proceeds to the north and south. Dual carriageways, together with upgraded access arrangements, will improve transport efficiency by reducing travel time and costs, and will significantly reduce the number and severity of accidents.

### 2.1 Implications of doing nothing

The implications of no action or deferral of the Proposal would be ongoing and result in declining traffic and safety conditions and deteriorating community amenity along the existing highway between Sapphire and Arrawarra. Predicted traffic growth would further exacerbate the problems currently experienced with the existing road and traffic environment.

Without major upgrading of the Pacific Highway between Sapphire and Arrawarra, the predicted traffic growth would increasingly expose the deficiencies of the existing road environment over the forecast period. Specific consequences would include:

- the deterioration of traffic conditions to unacceptable levels particularly at holiday times
- a likely increase in vehicle accidents
- a gradual increase in travel times
- increased conflict between local and through traffic
- inconsistency in road standard between the section of highway within the study area and the remainder of the Pacific Highway
- worsening road and traffic conditions with consequent adverse environmental effects such as noise, vibration and community disruption
- increased limitations for pedestrian access and risk of pedestrian accidents due to traffic growth
- exacerbation of community severance as access across the highway deteriorates
- failure to achieve the objectives of planning and transport strategies, in particular the Pacific Highway Upgrading Program

The consequences of no action or deferral of the Proposal would clearly negate or delay fulfillment of the objectives of both the CHHPS and the Pacific Highway Upgrading Program described below and the opportunity to achieve numerous strategic planning, traffic safety and environmental benefits for Coffs Harbour.

## 2.2 Proposal objectives and design principles

### 2.2.1 Pacific Highway upgrade program and project objectives

In January 1996, the NSW and Australian governments announced their joint commitment to a 10-year program to upgrade the Pacific Highway between Hexham and the Queensland border. The Pacific Highway is now an AusLink National Network road. Its upgrading is funded by NSW and Australian governments. The NSW and Australian governments are currently examining how the entire length of the highway can be upgraded to dual carriageway in the next 10 years.

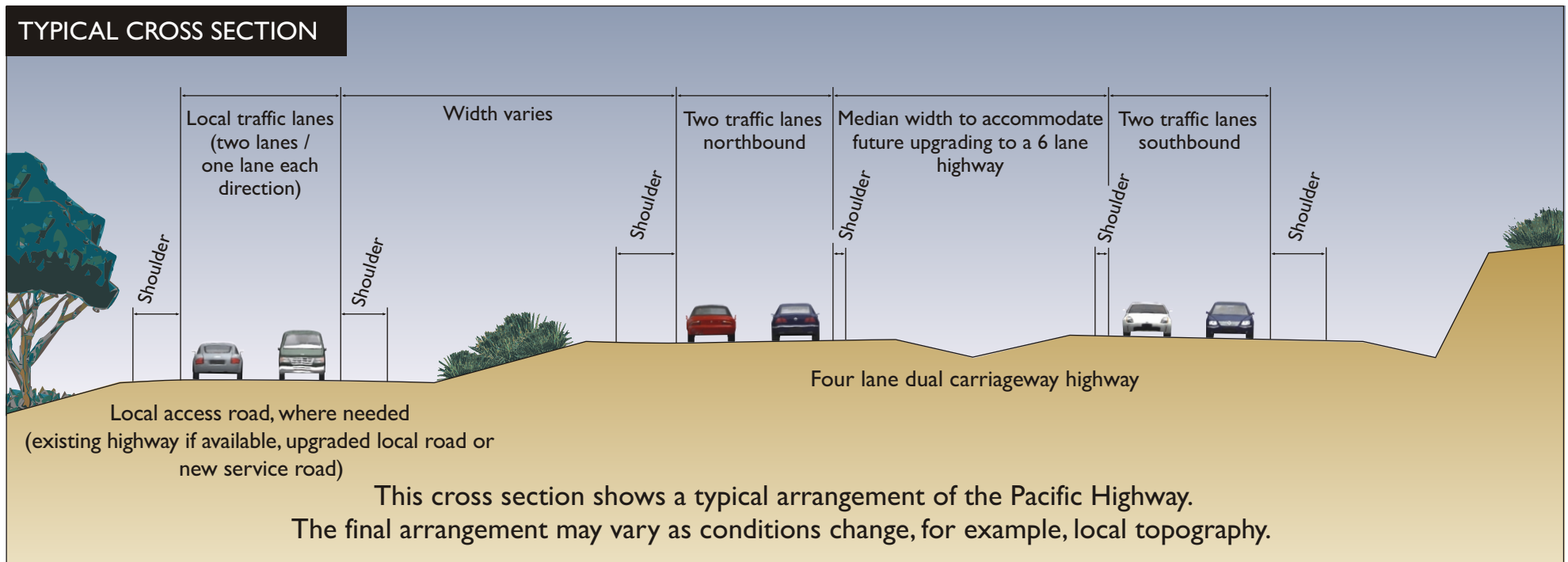
Objectives for the Sapphire to Woolgoolga project are listed in Table 2.1 as they relate to the objectives of the Pacific Highway Upgrade Program.

**Table 2.1 Project objectives**

Pacific Highway Program Objectives	Sapphire to Woolgoolga Preliminary Project Objectives
Significantly reduced road accidents and Injuries	<ul style="list-style-type: none"> <li>A dual carriageway road with potential to reduce crash rates to 15 crashes per 100MVKT over the project length.</li> </ul>
Reduced travel times	<ul style="list-style-type: none"> <li>A design which would enable an ultimate signposted speed limit of 110 km/h to be adopted.</li> <li>Provide flood immunity on at least one carriageway for a 1: 100 year flood event</li> </ul>
Reduced freight transport costs	<ul style="list-style-type: none"> <li>A design that minimises vehicle operating costs.</li> <li>A design that meets or exceeds heavy vehicle requirements, including at intersections where required.</li> </ul>
Develop a route that involves the community and considers their interests	<ul style="list-style-type: none"> <li>Integrate input from local communities into development of the Project through the implementation of a comprehensive program of community consultation and participation</li> <li>A solution at all potential conflict points with local traffic that meets community expectations and maintains local connectivity.</li> </ul>
Provide a route that supports economic development.	<ul style="list-style-type: none"> <li>Provide transport developments that are complementary with land use</li> <li>Consider delay management strategies to minimise disruption to local and through traffic and maintain access to affected properties and land during construction</li> </ul>
Manage the upgrading of the route in accordance with Ecologically Sustainable Development principles.	<ul style="list-style-type: none"> <li>Cumulative impacts assessed and addressed</li> <li>Best environmental practice incorporated.</li> <li>RTA Guidelines for managing environmental issues (biodiversity, noise impacts, water quality, acid sulphate soils, etc) are met.</li> </ul>
Provide the best value for money	<ul style="list-style-type: none"> <li>Maximise the use of the existing road asset where consistent with the Project</li> <li>Ensure the project outcomes achieve value for money</li> </ul>

### 2.2.2 Design principles

The design standard for the upgraded Highway is specified as dual carriageway separated by a 12m median. Each carriageway would comprise two 3.5m lanes, a 2.5m left-hand shoulder and 0.5m right-hand shoulder. A typical cross section of the upgraded highway is shown in Figure 2.1.



NOT TO SCALE

**Figure 2.1**

Typical Cross Section

## 3. Route options development and assessment

### 3.1 Key characteristics of the study area

A summary of the biophysical and socio-economic characteristics of the Proposal study area and the major constraints to highway planning and development is presented below. The broad study area identified for the Sapphire to Woolgoolga project extends from the end of the existing dual carriageways at Campbell Close, Sapphire to Upper Corindi Road, Arrawarra. The study area is illustrated in Figure 3.1.

#### Landform and Topography

The topography and relief of the study area is illustrated in Figure 3.2. The topography of the hillside areas (areas above the 50m contour) is characterised by an initial steep slope facing east, which rises up to approximately 150-200m AHD. The area to the west of the initial steep slope is characterised by ridges and steep sided valleys. Numerous drainage channels that typically flow east to the lowland area incise the hillside area. A few minor creeks on the far-western boundary of the area flow to the west to join Bucca Creek and the Orara River.

The topography of the lowland areas (areas below the 50m contour) is characterised by low undulating residual hills with gentle gradients and alluvial floodplains including back-swamps and dunes.

#### Geology and Soils

Regional geological maps indicate that the Coffs Harbour (Dorrigo area) is subdivided into three geological units. The two primary units comprise Coramba Beds, consisting of metamorphosed sedimentary rocks, Brooklana Formation comprising mudstone and siltstone and finally alluvial deposits.

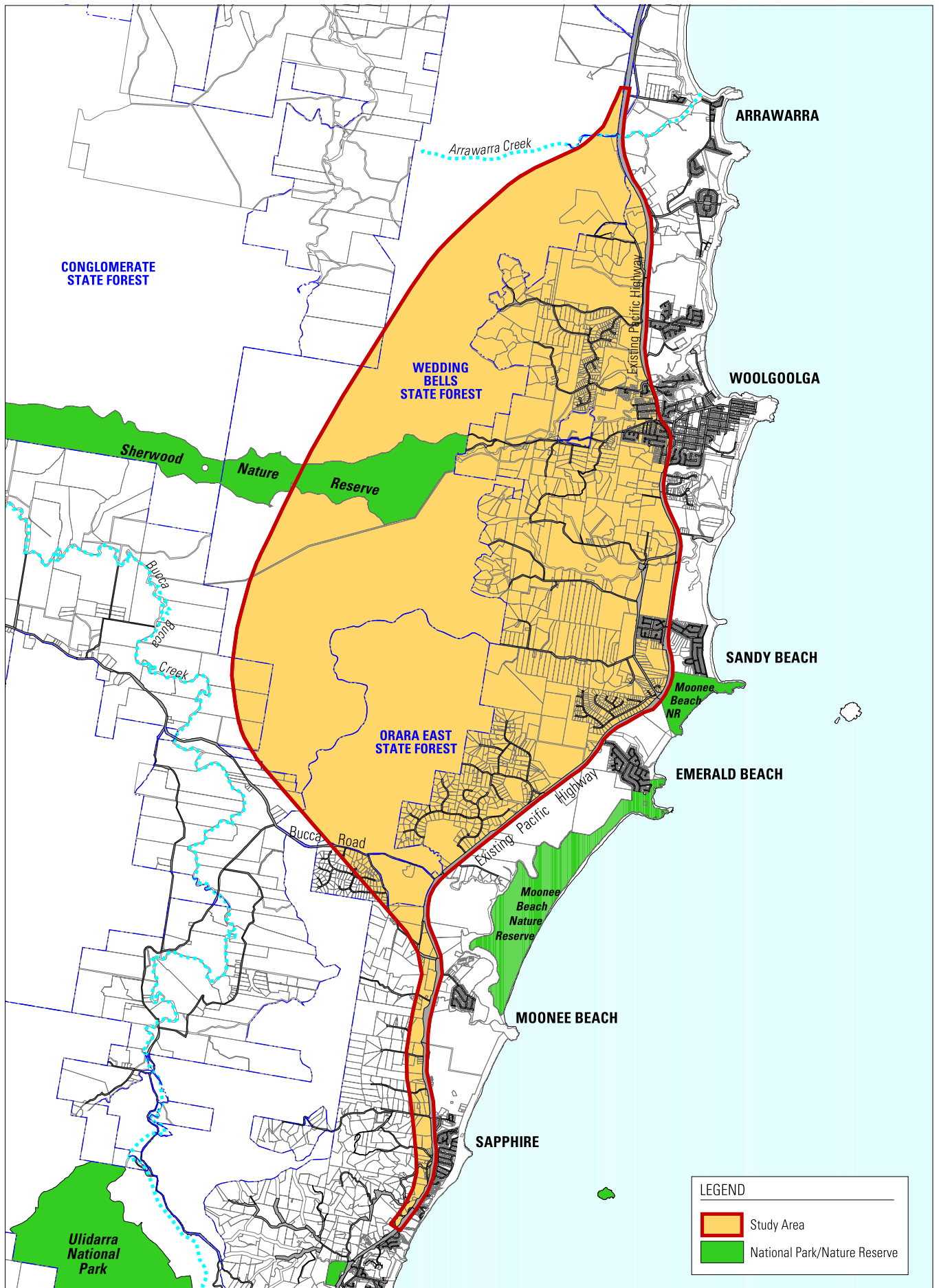
The geology and soils generally provide suitable building foundations, but are limited by the substantial erosive potential of the area and its steepness in many parts of the study area. The Acid Sulphate Soils (ASS) mapping shows there to be a low risk of ASS within the study area with the exception of areas on the floodplain between Moonee and Woolgoolga and surrounding the existing highway at Arrawarra.

#### Surface Water

From south to north, the main creeks crossing the study area from the upland area in the west to the sea are Skinners, Moonee, Double Crossing, Woolgoolga and Arrawarra Creeks. Numerous drainage channels incise the hillside area and typically flow east from the coastal range to the lowland area in the coastal plain.

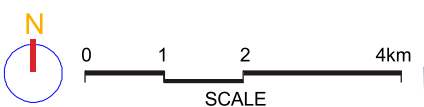
#### Biodiversity

The study area is in the NSW North Coast Bioregion on the north coast of New South Wales. This Bioregion is part of a zone known as the Macleay – McPherson overlap, which covers an area from Barrington Tops in New South Wales to Lamington National Park in South East Queensland. This zone is characterised by an overlap in distribution of tropical and temperate species from the south east of the eastern seaboard. The environmental characteristics allied with this overlap are associated with a highly diverse array of species (NPWS 1994).

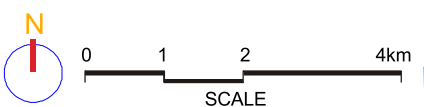
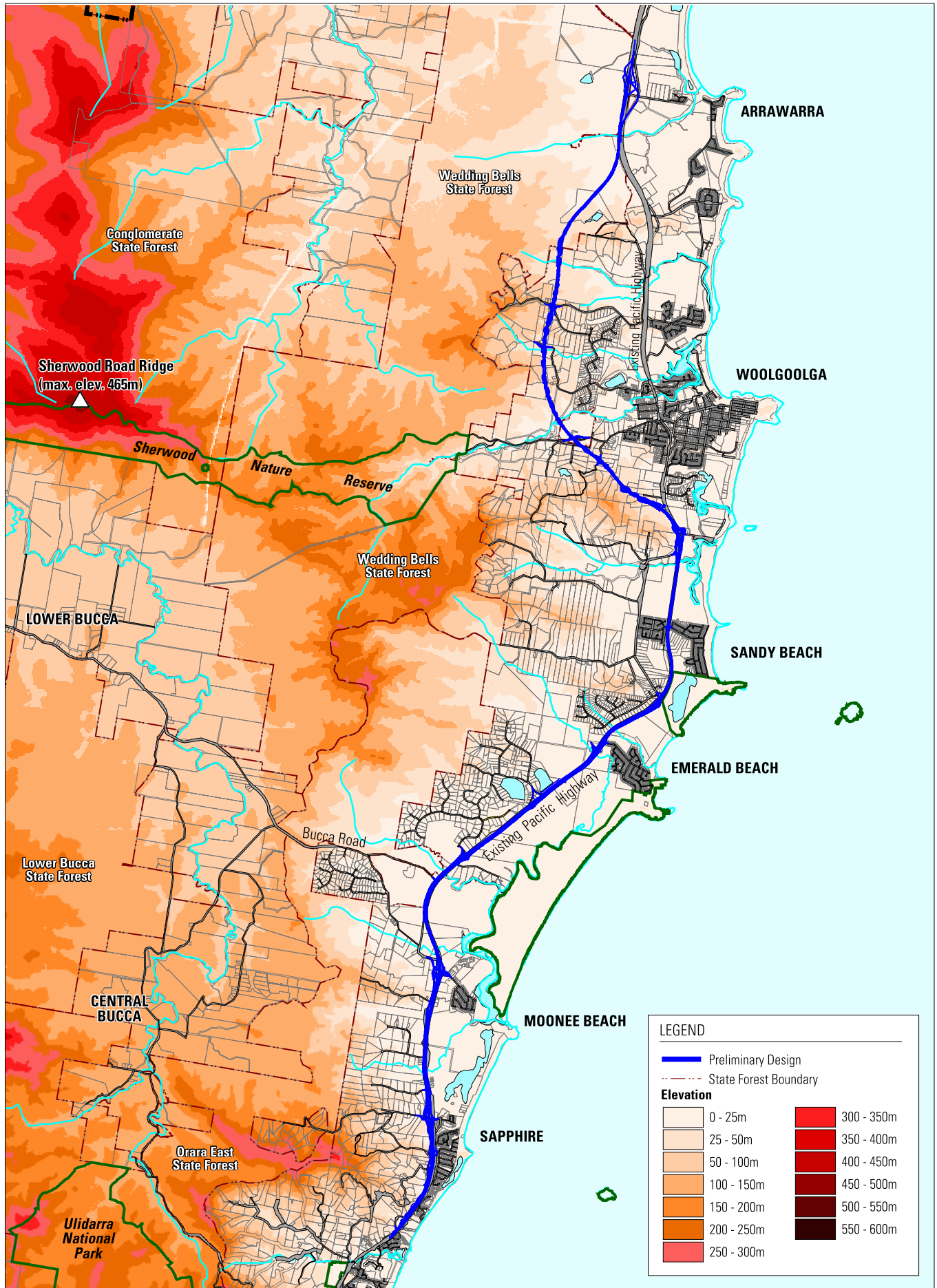


**LEGEND**

- Study Area
- National Park/Nature Reserve



**Figure 3.1**  
Study Area



Source: derived from 2m/10m contour information  
(2000/2002) - Connell Wagner P/L  
State Forest - custodian DIPNR (2003)

**Figure 3.2**  
Topography

Flora and fauna surveys completed to date for the project have confirmed an assortment of biodiversity values along and near the preferred route including:

- Threatened flora species listed under the *Threatened Species Conservation (TSC) Act* including Slender Marsdenia (*Marsdenia longiloba*), Rusty Plum (*Amorpha whitei*), Narrow-leaved Quassia (*Quassia sp. B*) and *Lindsaea incisa*
- Threatened fauna species listed under the *Threatened Species Conservation (TSC) Act* including Eastern Pygmy-possum, White-bellied Sea-Eagle, Powerful Owl, Glossy Black Cockatoo, Spectacled Monarch, Little Bent-wing Bat, Large Bent-wing Bat, Common Blossom Bat, Rufus Fantail, Squirrel Glider, Yellow bellied Glider, Greater broad-nosed Bat, Osprey, Yellow-bellied Glider, Barred Cuckoo-shrike, Southern Myotis, White-throated Noddletail, Grey-headed Flying-fox and the Green-Thighed Frog
- Endangered Ecological Communities (EEC) including Swamp Sclerophyll Forest, Swamp Oak Floodplain Forest, Lowland Rainforest on Floodplain, Littoral Rainforest and Coastal Saltmarsh
- Koala/fauna movement corridors

### Visual and acoustic amenity

The existing visual environment is a combination of natural and cultural attributes that make up the landscape setting. The main components that contribute to the generally high visual quality of the study area are landform types, vegetation types and land use.

The acoustic amenity of the study area is dominated by the Pacific Highway where existing traffic noise levels at the closest residential receivers already exceed DEC base criteria for Redeveloped Roads.

### Land use and development

Within the study area the land use pattern is quite variable with substantial residential, rural residential and agricultural development. The land use along the corridor changes from predominantly medium density tourist facilities and residential development in the southern area to lower density rural residential and rural uses interspersed by the urban settlements of the Northern Beaches (eg. Moonee, Emerald Beach, Sandy Beach and Woolgoolga). Agricultural development and rural residential estates dominate the Woolgoolga bypass section. The main agricultural activities are banana growing, other cultivation and grazing, or combinations of these. Banana growing is the major enterprise likely to be affected by the Proposal. Bananas in the area were generally healthy, being grown on the steeply sloping lands. The northernmost section of the route from north west of Woolgoolga and up to Arrawarra Creek is mainly State Forest.

Substantial urban development is planned in the study area over the next 25 years with a potential population of approximately 100,000 by the year 2030. All of the existing and potential urban lands identified by CHCC in the study area currently rely on the Pacific Highway as the sole north – south arterial road within the LGA.

### Aboriginal heritage

The study area lies in an area administered by the Coffs Harbour and District Local Aboriginal Land Council and it is also an area of cultural interest to the Yarrowarra Land Corporation and the Garby Elders.

The ridgelines on the western flank of the study area provide a culturally sensitive landscape which is well known and highly valued by the Aboriginal community. The ridgelines are known to have been used as travelling routes through the forests and for access between the ridge country and the coastal plain.

Archaeological surveys along/near the preferred route have not found large numbers of sites or high densities of artefacts but several sites of Aboriginal social interest have been identified near the preferred route. This includes stone artefact scatters in numerous locations adjacent the route and several sites especially near creek lines with potential for subsurface evidence of Aboriginal occupation. The spur occupied by the Coffs Harbour Gun Club on the eastern side of the highway reserve is of high cultural heritage significance as one of the last known traditional camping places of the Moonee people.

### **Non-Aboriginal heritage**

There are no formally protected sites or areas of non-Aboriginal heritage significance located in proximity to the proposed highway corridor. However, many 'relics' within the meaning of the *Heritage Act* (being features over 50 years old that are evidence of prior settlement and land use) could exist in the study area.

### **Road network**

The road network in the study area consists of a hierarchy of roads mainly serving the rural and residential precincts in this northern beaches part of the LGA. As previously noted, the highest function road is the Pacific Highway which is the major north-south spine, connecting Coffs Harbour to Arrawarra (and ultimately Grafton).

Between Sapphire and Arrawarra, the Highway is a two-way, two-lane road with a number of passing lanes. It is the only arterial road available to serve the existing residential and rural settlements located at Sapphire, Moonee, Emerald Beach, Sandy Beach, Woolgoolga, Mullaway and Arrawarra and hence to provide access to the town centres at Coffs Harbour and Woolgoolga. Key collector roads along this section of the highway servicing these communities include Headland Road, Split Solitary Road, Gaudrons Road, Moonee Beach Road, Killara Road, Smiths Road, Fiddaman Road, Graham Drive (north and south), Arrawarra Beach Road and Upper Corindi Road. Bucca Road is the only route joining the highway which provides an east west connection to the rural hinterland of the LGA.

Based on surveys undertaken in 2005, annual average daily traffic volumes within the study area range from about 19,700 vehicles per day south of Headlands Road at Sapphire, to about 10,100 vehicles per day north of Mullaway Drive. Considerable variation in traffic volumes occurs through the year due to the recreational nature of the route, with traffic volumes higher during school holidays and on long weekends. At the southern end of the proposed upgrade, through traffic between Sapphire and Arrawarra accounts for approximately 28% of the total traffic volume, while at the northern end it accounts for approximately 54% of the total traffic volume.

Heavy vehicle movement surveys indicate that while the percentage of heavy vehicles in the traffic stream gradually increases from Sapphire to Woolgoolga for both the daytime and night-time periods, the number of heavy vehicles actually decreases. The data also indicates that heavy vehicles make up a significantly higher proportion of the total night-time traffic when compared to the equivalent proportions for the daytime traffic.

Surveys undertaken in 2005 at both Opal Cove Resort and Mullaway Drive indicate that at each location, heavy vehicle hourly volumes are relatively constant over a 24 hour period, while the total traffic volume varies significantly with much greater vehicle movements per hour during the day, with peaks around 8am and 4pm.

### **Socio-economic characteristics**

On the mid-north coast of NSW, the Coffs Harbour region is one of the fastest growing areas in NSW. Important characteristics of the mid-north coast include its popularity as a tourist destination, its growing attraction for retirees and others migrating from large urban areas in NSW, Victoria and

Queensland, its historic reliance on agriculture as a mainstay of the regional economy and its sensitive biophysical environment.

The Coffs Harbour LGA is located 554 km north of Sydney and covers an area of 960 km<sup>2</sup>. The estimated resident population of the LGA in 2001 was 61,770 people, with the great majority of the population (approximately 90%) located east of the Great Dividing Range along the coast. Major urban centres include Coffs Harbour, Sawtell and Woolgoolga. Major industries in the LGA include tourism, primary production, manufacturing, government, commercial and retail services. A large proportion (approximately 44%) of the LGA is State Forest land and National Park (CHCC, 2004a).

The study area comprises a number of discrete urban settlements, rural residential development and rural/agricultural development. Key features of the community structure of the study area are as follows:

- The number of people employed in agriculture has steadily declined over the last decade, while the construction, retail and tourist related industries have played a significant role in employment within the Coffs Harbour LGA in recent years.
- As a tourist destination, the study area experiences a substantial increase in population during peak holiday periods. Maximum use of facilities and resources is reached during these periods.
- Sapphire and Moonee are two discrete, but proximate, coastal settlements located to the north of Coffs Harbour with the population located predominantly on the eastern side of the highway. In 2001, the combined population of these two areas comprised approximately 5.5% of the LGA population.
- Between Moonee and Woolgoolga, the coastal settlements of Sandy Beach and Emerald Beach comprised approximately 6% of the total population of the LGA in 2001.
- Woolgoolga is the third largest urban settlement after the Sawtell / Toormina / East Boambee area with approximately 7.5% of the population of the LGA in 2001. It is an important hub providing key services for the surrounding smaller beachside villages (CHCC, 2004b).
- Arrawarra, Mullaway and Safety Beach are three discrete, but proximate coastal settlements located north of Woolgoolga on the eastern side of the Pacific Highway. In 2001, the combined population represented approximately 4% of the LGA total.

## 3.2 Development of corridor options

This section provides an overview of the process and activities that led to the identification of four potential highway corridors for the highway upgrade from Sapphire to Woolgoolga. These corridors include three that deviate from the existing highway and one which encompasses the existing highway. For the purposes of highway planning, a corridor was interpreted to typically comprise a broad strip of land within which one or more specific highway route alignments could be subsequently identified. Section 4 presents a summary of the route options that were developed in each of the four corridors.

### 3.2.1 Constraints analysis

A constraints analysis was carried out at both the corridor and route identification stage of developing highway upgrade options. The preliminary analysis relied on a range of data sources mainly from government agencies and CHCC as well as local knowledge provided by the community. Using aerial photography and ground contour maps a range of constraints were identified. These included:

- current and proposed urban and rural residential development
- existing agricultural land use – including banana lands and forestry activities
- watercourses and wetland areas
- areas of ecological sensitivity
- items / locations of Aboriginal and non-Aboriginal heritage significance
- topographical / terrain aspects
- existing infrastructure such as schools, roads and railways.

Constraints mapping was developed to provide input to the ongoing engineering concept development of possible highway corridors and route options. The constraints were presented in the Route Options Development Report (Connell Wagner, 2002) and the Supplementary Options Report (Connell Wagner, 2004).

A composite constraints map that combines the key constraints is presented in Figure 3.3. This map shows that there are many, often severe, constraints to route planning (and ultimately to highway development) in the study area. There is no realistic route option that is not influenced by substantial constraints of one form or another.

### **3.2.2 Sapphire to Moonee section**

In the southern section of the study area from the existing dual carriageways (near Pelican Beach Resort, Sapphire) to Moonee, the existing highway corridor was identified as the only potentially feasible and suitable corridor option for upgrading the highway. From the preliminary constraints analysis in that area (especially the land use pattern and steep terrain immediately to the west of the highway), there were no realistic alternatives that warranted further consideration. This finding was examined and accepted by the CFG representing the Sapphire to Moonee area.

As a consequence of this initial assessment phase, it was concluded that a broad corridor along the present highway (nominally 150 metres wide) would be the subject of the subsequent route planning efforts. In effect, this meant that the overall highway upgrade from Sapphire to Woolgoolga would necessarily include upgrading / amplification along the 4 km of existing route from the southern limit of the study area to Moonee.

### **3.2.3 Moonee to Woolgoolga section**

#### **Corridor opportunities**

In the area north of Moonee, the preliminary constraints assessment showed there were still many substantial constraints that would influence corridor planning. However, in contrast to the southern section, the east-west extent of potentially suitable corridor options was increased due to the wider strip of coastal plain and the less intensive existing development.

#### **Engineering feasibility**

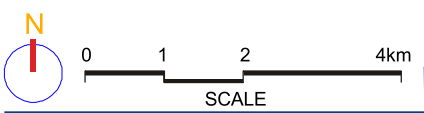
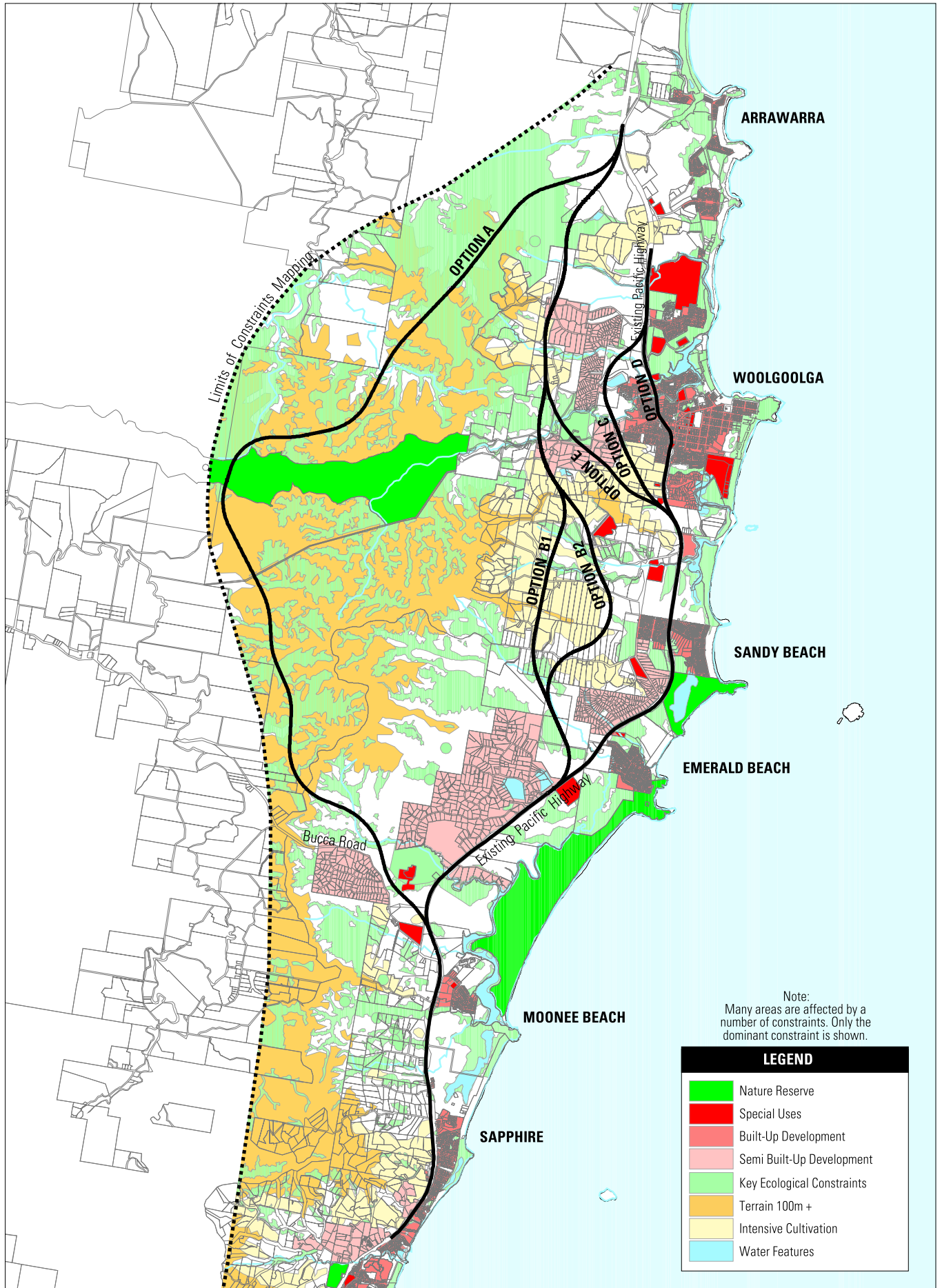
The existing highway in its present position has served the State road function for many years and was identified as a realistic corridor option for this assessment.

A large number of indicative alignments were produced from the Quantm route location and optimisation computer package and the design team then delineated the corridors where there was an obvious concentration of these alignments. The resultant corridors were as much as 1.0 to 1.5km wide in some places but also very narrow in locations where one or more severe constraints restricted the alignments generated by Quantm.

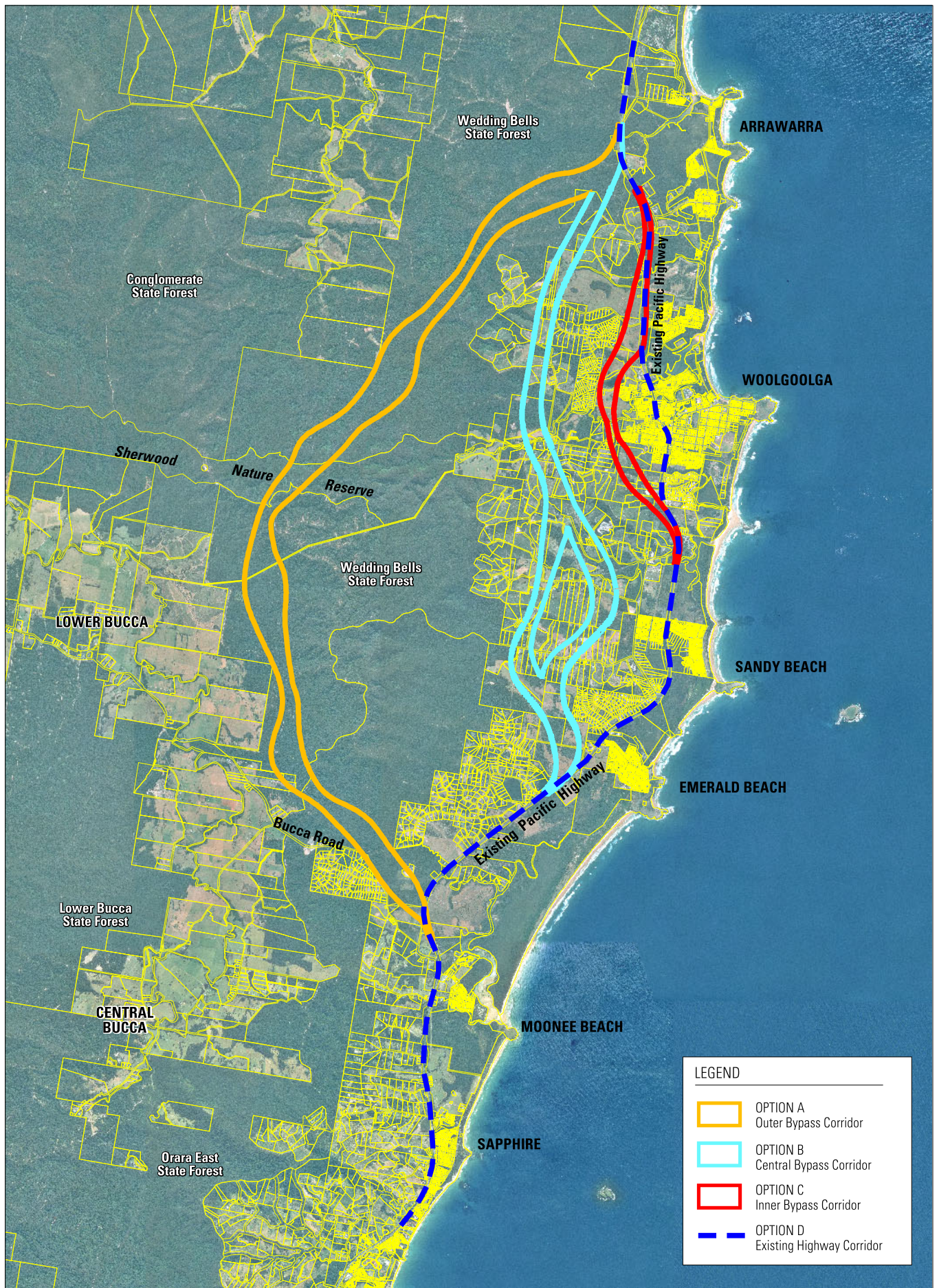
## **3.3 Description of corridor options**

The four preliminary corridor options presented in Information Sheet No 2 in March 2002 were developed during this stage (refer Figure 3.4). They include three deviation options north of Moonee (Options A, B and C) that variously bypass urban areas including Woolgoolga and major rural residential areas. The fourth corridor is one that would accommodate a major upgrading / amplification of the existing highway along its full length from Sapphire to north of Woolgoolga (Option D).

The four corridor options are shown in Figure 3.4.

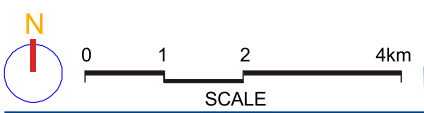


**Figure 3.3**  
Composite Constraints Map



**LEGEND**

- OPTION A  
Outer Bypass Corridor
- OPTION B  
Central Bypass Corridor
- OPTION C  
Inner Bypass Corridor
- OPTION D  
Existing Highway Corridor



**Figure 3.4**  
Corridor Options

### 3.4 Development of route options

For the southern section from Sapphire to Moonee where the existing highway corridor was the only realistic option, the option development task was essentially one based on the preparation of urban and engineering design concepts. This required a particular focus on examination of access arrangements and alternatives in what is a highly constrained corridor. The activity included development of a strategic access plan for the highway from Sapphire to Woolgoolga (see below) as well as various traffic analyses to determine the expected traffic volumes along this part of the Pacific Highway in the planning horizon for the project. Two main design options were based around major interchanges centred at either Headland Road or Gaudrons / Split Solitary Roads in the more intensively developed southern section of the route.

For the section north of Moonee, the process of option identification for each of the four corridors involved the integration of the concept designs with more detailed constraints analysis arising from the diverse site investigations into relevant socio-economic and biophysical factors as well as feedback received through the community consultation process. The findings from these investigations were presented in the Working Papers accompanying the Route Options Development Report released in December 2002.

For the section north of Arrawarra Creek where the bypass rejoins the Highway, the existing highway corridor was the only realistic option. This section includes a design that allows for a full grade separated interchange that services land use in the Arrawarra area as well as providing all access to and from Woolgoolga.

### 3.5 Highway access strategy plan

A vital input into the development of options for this section of the Pacific Highway was the development of a coordinated access strategy that ensures the provision of major junctions along the route to cater for both local and through trips while also meeting high standards of safety and travel efficiency on the highway. The strategy was developed to provide for the planned land use change in the study area over the next 20-30 years.

### 3.6 Description of route options

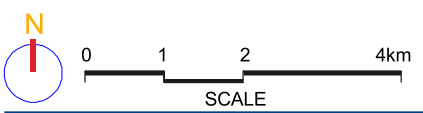
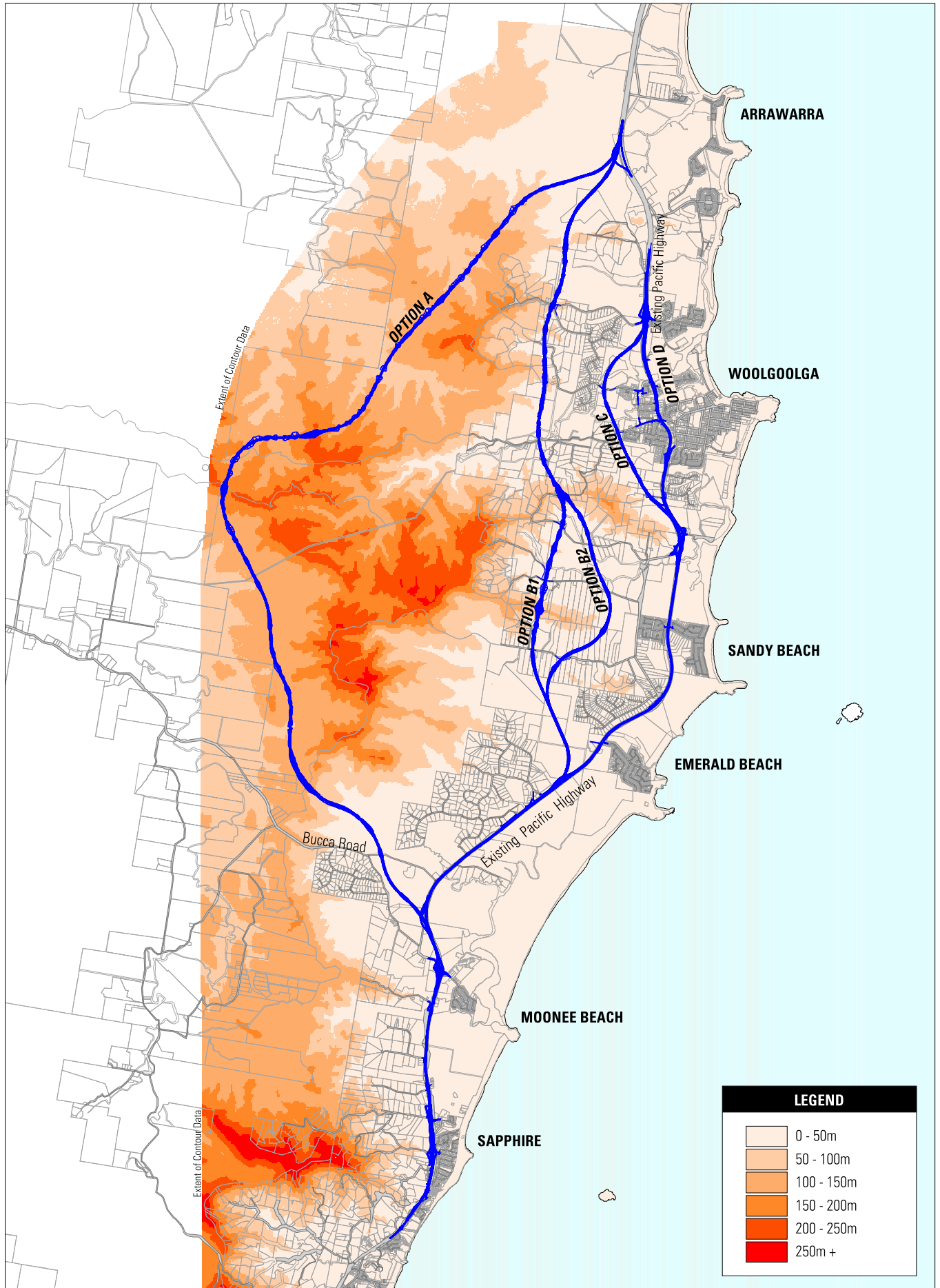
Five route alignments (A, B1, B2, C and D) were identified for the Sapphire to Woolgoolga highway upgrade and released as part of the route options development information in December 2002. The five alignments are shown in Figure 3.5.

### 3.7 Evaluation of route options

#### 3.7.1 1<sup>st</sup> value management workshop

A Value Management (VM) Workshop was held on the 31<sup>st</sup> March and 1<sup>st</sup> April 2003 to provide input into the process of assessing and selecting the preferred route for the project. The workshop was attended by a range of Government, council and community stakeholders (ACVM, 2003). The VM exercise required the stakeholders to identify and rank the functional, environmental and socio-economic performance of the five route options (A, B1, B2, C and D).

The workshop participants agreed that Options C and D performed better than the other options against the triple bottom line evaluation of functional, environmental and socio-economic criteria. Option A was assessed to have severe environmental (biophysical) and Aboriginal heritage impacts, poor functional performance, high cost and poor value for money and both Options B1 and B2 had an adverse impact on agricultural land. Overall, Option C was preferred over Option D as the option to be further progressed - subject to further investigations regarding biodiversity impacts, noise mitigation and review of Council's strategic plan.



**Figure 3.5**  
Route Alignments

Investigations subsequent to the April 2003 Value Management Workshop led to the conclusion that Option C was the only option that warranted further consideration if a Coastal Corridor was adopted for the overall CHHPS.

### 3.7.2 Revised corridor options

Following the VM Workshop, CHCC requested the RTA investigate the realignment of Option C to minimise the impact on the South Woolgoolga Urban Investigation Area and to facilitate the future expansion of the township.

Two new route options were subsequently developed in response to the request from CHCC. They were:

- Option C1 - a realignment of Option C at its northern and southern ends, and
- Option E - a new alignment that uses parts of the initial Options B and C. Initial alignments for this route were further refined based on the results of ecological investigations.

The new routes are shown in Figure 3.6 and described in the Supplementary Options Report (Connell Wagner, 2004).

## 3.8 Selection of preferred option

### 3.8.1 2<sup>nd</sup> Value management workshop

A second Value Management Workshop was held on 4 August 2004 to evaluate the remaining route option from the April 2003 Value management Workshop (Option C) and the two options developed in response to the request from CHCC (Options C1 and E).

The same assessment criteria and importance weightings developed at the April 2003 workshop were adopted by agreement for the evaluation of Options C, C1 and E in the 2<sup>nd</sup> workshop.

The majority of workshop participants recommended Option E as the preferred option as it was considered to:

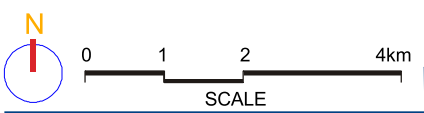
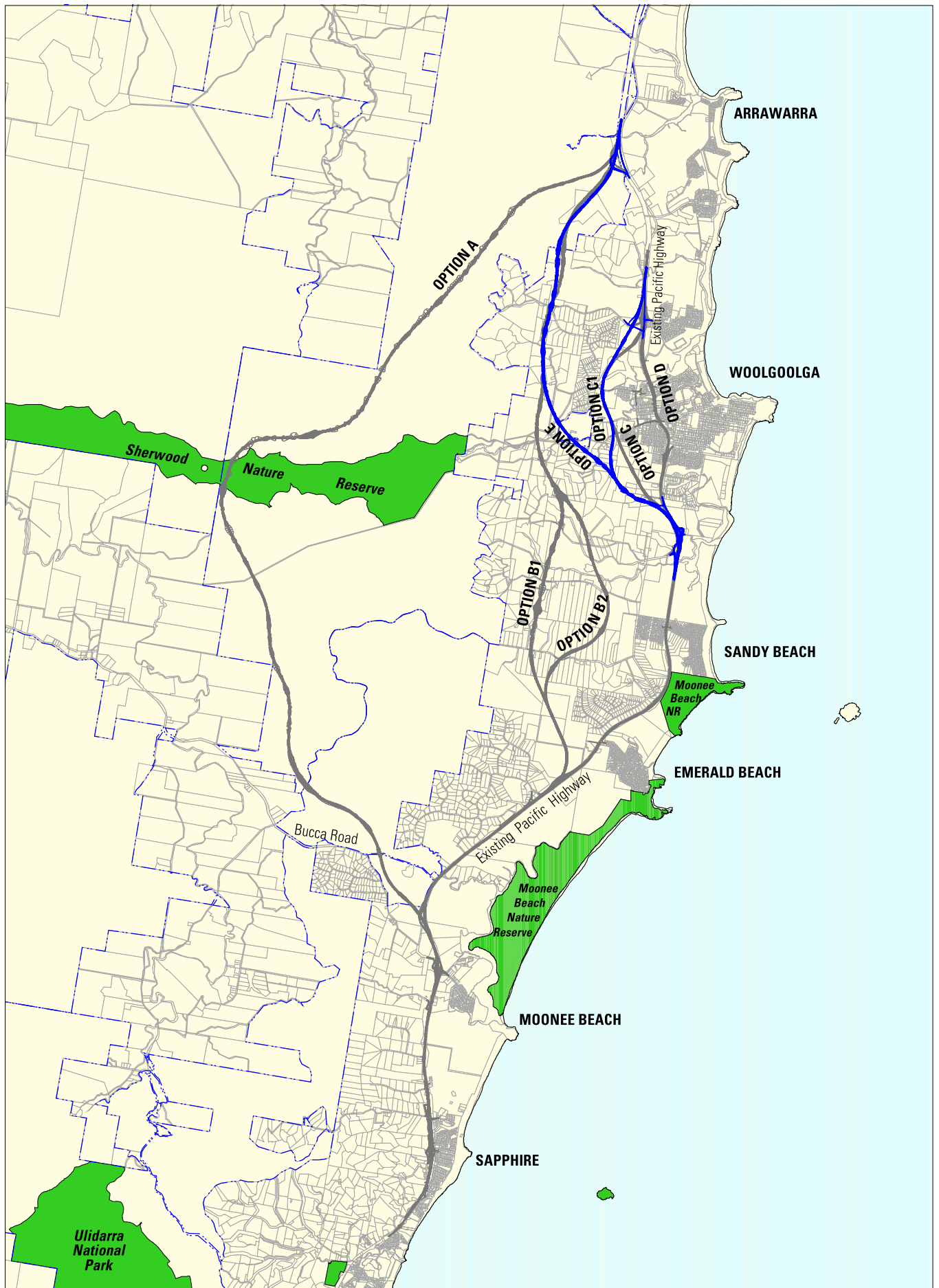
- deliver the best overall socio-economic outcome
- better provide for future urban growth and provide greater flexibility for future land use planning decisions
- result in less severance of existing and future communities
- provide safety and noise improvements for Mullaway and Safety Beach
- be likely to have a higher degree of community acceptance

### 3.8.2 Selection of preferred route

Following the 2<sup>nd</sup> Value Management Workshop, senior representatives of the RTA, regional representatives of DIPNR and the project team further reviewed the work undertaken to date and recommended a preferred option for the Strategy. The review was based on the technical investigations undertaken, the outcome of the value management workshops and the results of the community consultation activities.

Although it is \$15M more expensive, the review recommended Option E as it:

- provides the best overall socio-economic benefits
- better provides for future urban growth and with greater flexibility in planning decisions
- results in less severance of existing and future communities
- provides safety and amenity (including noise) benefits for Mullaway (including Mullaway Public School) and Safety Beach
- is likely to have a higher degree of community acceptance



**Figure 3.6**

Route Options C1 & E

The preferred route for the Sapphire to Woolgoolga upgrade was announced on 7 December 2004.  
The announced preferred route involves:

- an upgrade of the existing highway to dual carriageway between Korora and south Woolgoolga,  
and
- the Option E bypass of Woolgoolga.

## 4. Proposal description

### 4.1 Alignment and main features of route

The proposal comprises upgrading of the existing highway from Korora to South Woolgoolga to dual carriageway and the Option E bypass of Woolgoolga. The total length of the route from the end of the dual carriageways near Nautilus Resort at Sapphire to the northern limit near Upper Corindi Road is approximately 25.2km.

The upgrade has been developed as a motorway standard (or Class M) project with an access road for local traffic alongside or near the Korora to south Woolgoolga section of the proposal. The Class M concept was developed partly in response to Coffs Harbour City Council's resolution of 16 December 2004, and also followed input from the Sapphire to Sandy Beach Community Focus Group (CFG).

Council's resolution was for a commitment to the provision of a local access road parallel to the highway where possible in the Korora to Hearnese Lake (south Woolgoolga) section of the upgrade.

The local road proposal will facilitate access for the communities along the route, including school buses, and enable residents to take local trips without having to use the highway.

#### Highway design standards

The general standard for design of the proposal is based on the Pacific Highway Design Guidelines (RTA, 2005) to ensure that a consistent form and quality of road asset is delivered along the whole Pacific Highway corridor from the F3 to the Queensland border. A preliminary design of the whole length is included as Figure 4.1. Figures 4.2- 4.5 also show the preliminary design, and indicate features of the design and the surrounding area including urban areas, nature reserves and heritage sites.

The design development process for the Sapphire to Woolgoolga proposal was continuing at the time of preparation of this report. While the overall alignment is expected to remain essentially as shown and described below, it is likely that further localised refinements will be made in response to the findings that will become available from a range of investigations now under way (eg. geotechnical, urban design development, assorted environmental studies) as well as consideration of local development proposals and ongoing property owner consultations. The refined design will be assessed in the Environmental Assessment for the project.

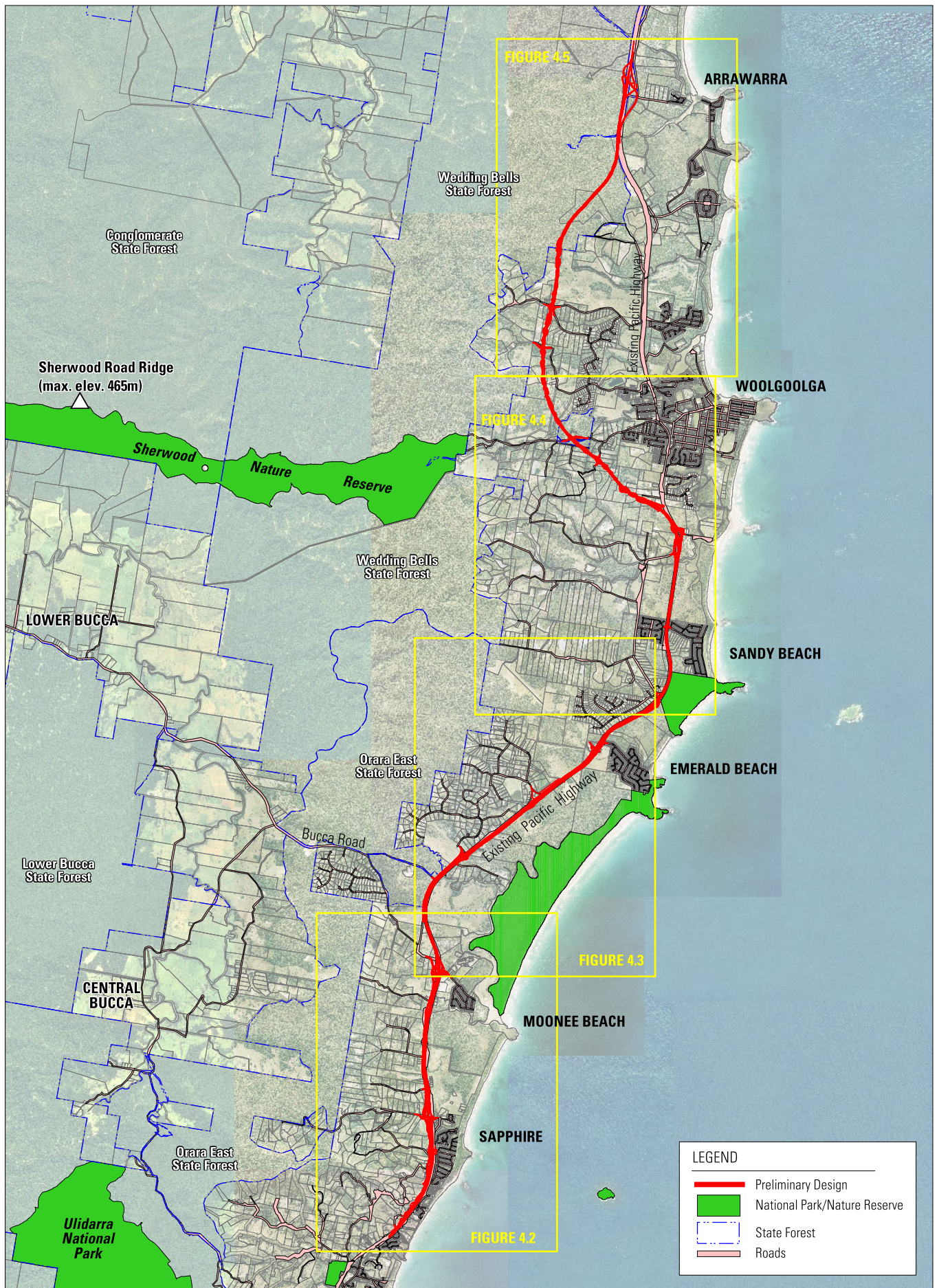
### 4.2 Southern section – upgrade along existing corridor

This section of the upgrade maximises the use of the existing highway asset and road corridor.

#### Sapphire to Moonee

The 4.5 km southernmost section of the highway from Sapphire to Moonee would involve an upgrade along the existing highway to a high standard dual carriageway. This section would include grade separated interchanges at Gaudrons / Split Solitary Roads and at Moonee Beach / Hoys Road to facilitate integration of the new highway with the local road network and land use in that area and to cater for the predicted traffic volumes associated with existing and planned urban development.

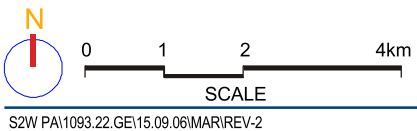
Through this section the existing road corridor varies between 55m and 145m wide approximately. The minimum width of the proposed road corridor would be approximately 80m with localised widening to accommodate cut and fill batters, interchanges and other facilities. The maximum width of the proposed road corridor through this section would be approximately 220m at the Gaudrons / Split Solitary Road and Moonee Beach / Hoys Road interchanges.



**Figure 4.1**

**Preliminary Design (Sapphire to Arrawarra)**

Source: Aerial photography 2005 (Roger Dwyer & Assoc.)



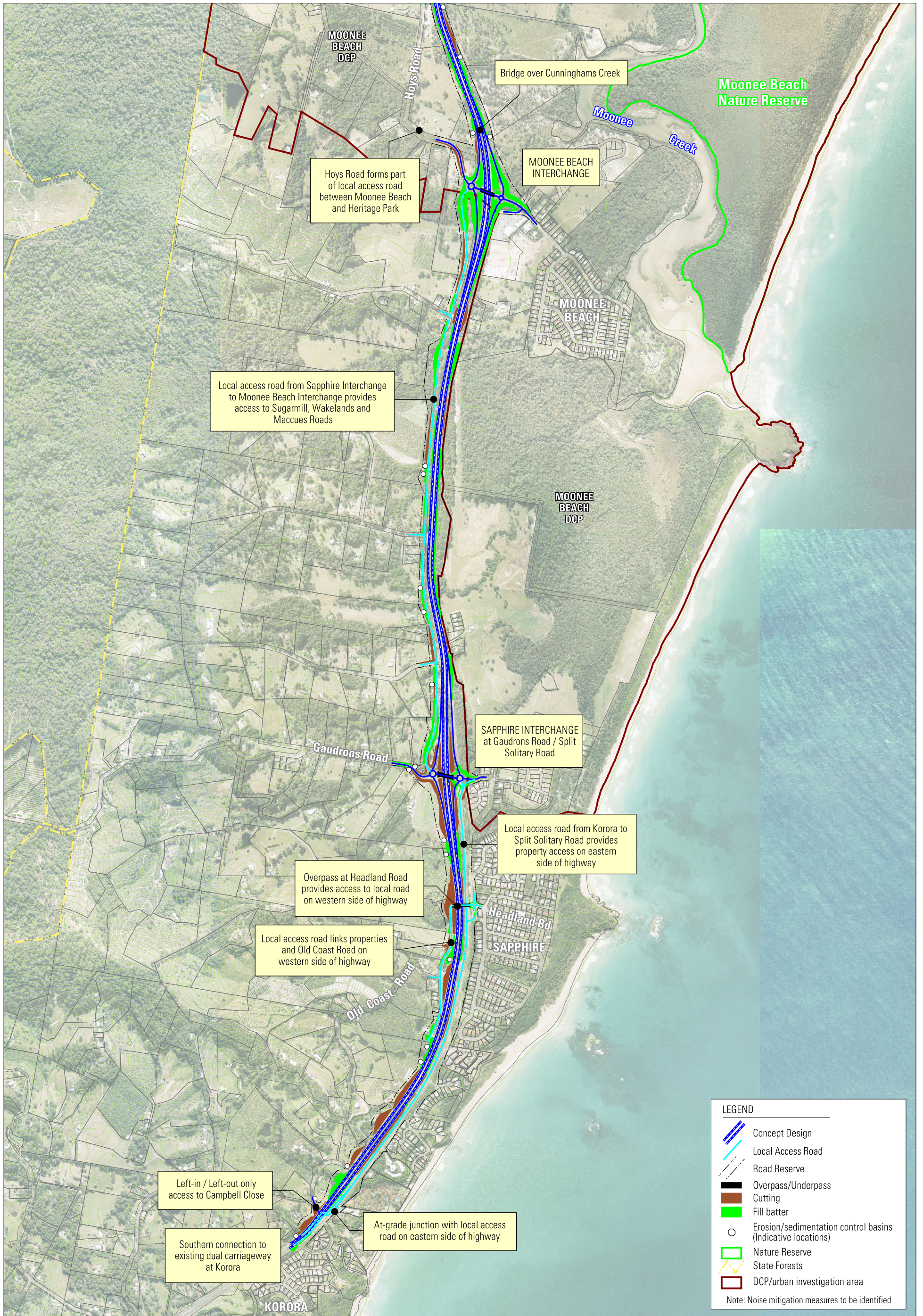
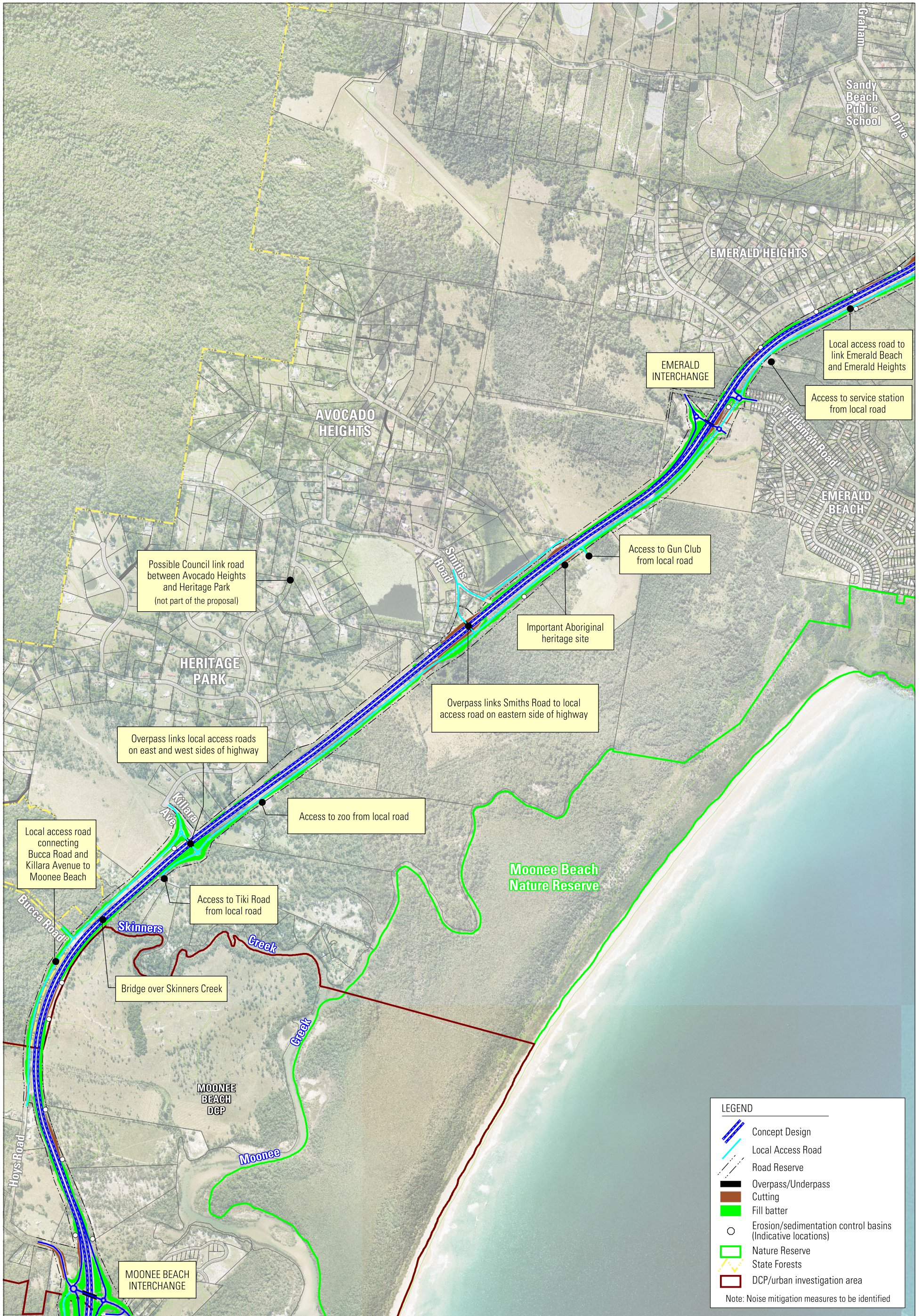


Figure 4.2

Current Concept Design  
(Sapphire to Moonee Beach)



Source: Aerial photography 2005 (Roger Dwyer & Assoc.)  
 Cadastre Feb' 2006 (Coffs Harbour City Council)

Figure 4.3  
 Current Concept Design  
 (Moonee Beach to Emerald Beach)

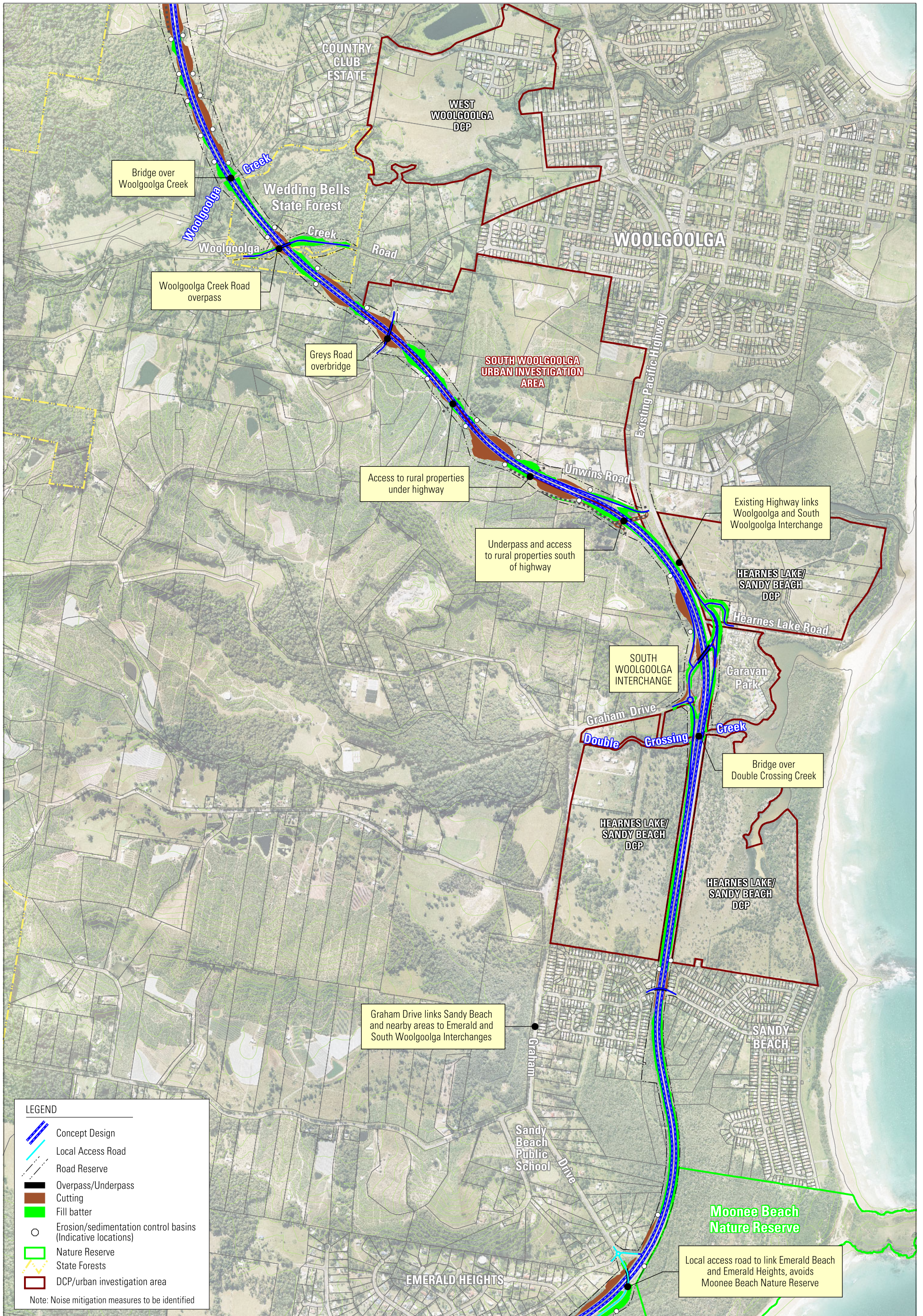
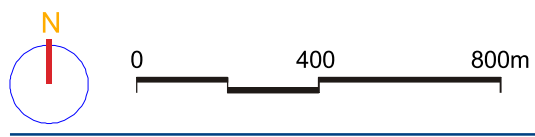
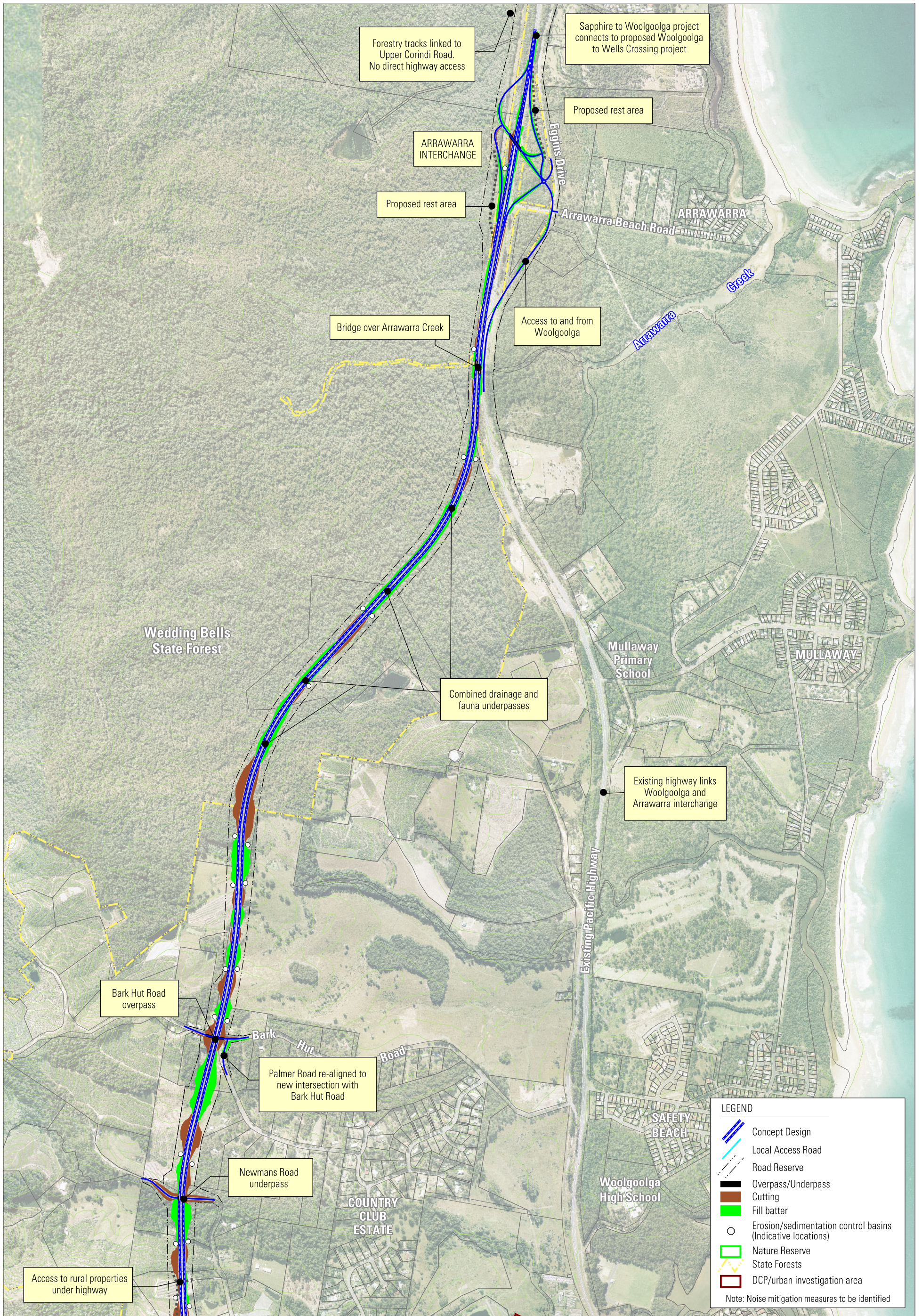


Figure 4.4

Current Concept Design  
(Emerald Beach to Woolgoolga)



Source: Aerial photography 2005 (Roger Dwyer & Assoc.)  
Cadastre Feb' 2006 (Coffs Harbour City Council)

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Figure 4.5

Current Concept Design  
(Woolgoolga to Arrawarra)

The proposal ties into the existing dual carriageway at Korora, with a left-in/left-out intersection at Campbell Close on the western side and a left-out/ right-in intersection with the eastern local access road (the existing highway) opposite Campbell Close. A motorway standard of construction (Class M) would begin north from Campbell Close with all access to and from the highway to be via grade-separated interchanges.

There are numerous local roads and private properties through this section which currently have direct access to the existing Pacific Highway. As part of the proposal, these access arrangements would be replaced by connection to new local roads including the following:

- on the western side of the highway to access various properties in the vicinity of Hunter Close and Mountain Way as well as Old Coast Road. This link would extend northwards to a new overbridge near Headland Road.
- on the eastern side of the highway from near the Nautilus Resort entry and extending northwards to the Gaudrons / Split Solitary Road interchange, with a connection to the Headland Road overbridge. This local road would largely use the existing highway alignment and it would service access all development in the Sapphire area on the eastern side of the highway
- on the western side of the highway from the Gaudrons / Split Solitary Road interchange to the Moonee Beach interchange and providing a connection for Sugarmill, Wakelands and Maccues Roads

Several individual properties on the eastern side of the existing highway opposite Sugarmill Road and Maccues Road currently have direct access onto the highway. Under the Council planned Moonee Beach DCP, access to these properties will be available via an internal collector road which will provide connections to the proposed interchanges at Moonee Beach and Sapphire.

### **Moonee to South Woolgoolga**

In the section northwards from the Moonee interchange to the interchange at the southern approach to Woolgoolga, the existing highway would be retained as one carriageway of the dual carriageway upgrade. The upgrade would include a new carriageway constructed parallel to and variously on the western and eastern sides of the existing highway.

An interchange would be established near Emerald Beach to facilitate access from the highway to Emerald Beach, Emerald Heights and Sandy Beach and provide an off highway connection between these communities.

At the northern end of this section there would be a full grade separated interchange in the vicinity of Graham Drive North and Hearn's Lake Road. It would provide for all turning movements to and from the highway at this location where the highway deviates to the west around Woolgoolga (see below).

Through this section the existing road corridor is generally 60m wide. The width of the proposed road corridor between Moonee and Graham Drive south would be generally 80m to 100m with localised widening to accommodate cut and fill batters, interchanges and other facilities. The maximum width of the proposed road corridor through this section would be approximately 200m at the Emerald interchange. Except for localised widening for the Diamond Head Road overbridge and the Graham Drive north interchange, the existing road corridor between Graham Drive south and Graham Drive north would accommodate the proposed upgrade.

As with the southern section, there are multiple local roads and private accesses onto the existing highway. Again, a series of local access roads would be developed as part of the proposal and they would supplement existing local roads to provide a continuous off-highway route for local movements along this section. The local road scheme would include the following:

- on the western side from the Moonee interchange northwards via Hoys Road through to Killara Avenue. This would include a connection for Bucca Road.
- an overbridge would be constructed near Killara Avenue, connecting Heritage Park to the access road on the eastern side of the Pacific Highway (see below)
- on the eastern side from the Killara Avenue overbridge northwards to the Emerald Beach interchange, including a connection to the Avocado Heights rural residential area via a proposed overbridge near Smiths Road. This access road would also provide a connection to existing local roads and development such as Tiki Road, Coffs Harbour Zoo and the Coffs Harbour Gun Club.
- on the eastern side from the Emerald Beach interchange northwards to Graham Drive South to provide an effective off-highway local connection between Emerald Beach, Emerald Heights and Sandy Beach – including the Sandy Beach Public School. This includes an overpass of the highway near the current intersection with Graham Drive South which will be especially beneficial for the local community including safe movement of school children.
- The existing Graham Drive would continue its function as a local road through to the proposed grade separated interchange at the southern approach to Woolgoolga. This will enable continuous off-highway access all the way through to Woolgoolga

Alternate access arrangements for several individual properties in this section which currently have direct access to the highway will be finalised during refinement of the concept design.

Independent of the proposal, the provision of a short local road link between the Avocado Heights and Heritage Park rural residential estates would provide improved local access for the community including for school buses and improve road safety for school children.

### 4.3 Northern section

#### Woolgoolga bypass

The bypass section of the route deviates away from the existing highway at the proposed south Woolgoolga interchange. The interchange forms the southern entry from the highway to Woolgoolga and provides for movements between Woolgoolga and Graham Drive North without the need for access onto the new highway.

North of the interchange, the bypass traverses in a north westerly direction through rural lands and the south west corner of the South Woolgoolga Urban Investigation Area. It then traverses through a variety of freehold rural and rural residential properties and a section of Wedding Bells State Forest before rejoining the existing highway near Arrawarra Creek.

The proposed bypass section is fully access controlled with no connections to the local road network or to any private properties. All local road crossing would be grade separated, including overpasses at Greys Road and Bark Hut Road and underpasses at Woolgoolga Creek Road and Newmans Road.

There are numerous individual properties as well as State Forest lands in this section where current access arrangements would be affected. The proposal would include provision of either a local road or other private access facility for number of agricultural properties that currently have access via Unwins Road, and another group of rural properties to the west of the new alignment that currently have access via Newmans Road. Discussions have been held with DPI (Forests NSW) in relation to the new access requirements for ongoing forestry operations in Wedding Bells Sate Forest.

#### Upgrading at Arrawarra

This northernmost section of the highway proposal extends from the northern bypass merge point near Arrawarra Creek to south of Upper Corindi Road. The upgrade would be focused on the existing highway corridor and include a full grade separated interchange to be located near Arrawarra Beach Road. The interchange would provide ramps for all access movements to and from the highway.

As the proposal would involve closure of several existing direct access points from the highway into Wedding Bells State Forest, a forestry operations track would be extended between the existing tracks near Arrawarra Creek through to the access road at Upper Corindi Road.

On the eastern side of the highway a new local access road would be developed to provide a connection between the interchange and the existing local road network including Arrawarra Beach Road. The access road would extend south from the interchange to join the existing highway south of Arrawarra Creek and it would serve as the connection to and from Woolgoolga.

As part of the RTA's Rest Area Strategy for the overall Pacific Highway, the proposal will also include rest areas for both heavy and light vehicles at the Arrawarra interchange. The current proposal is that the northbound rest area will be located on the western side of the highway immediately south of the interchange and that the southbound rest area will be located on the 'island' of land north of Arrawarra Beach Road between the existing highway and Eggins Drive. More specific plans for the rest areas will be developed as part of the ongoing concept design refinement, and this will be presented in detail as part of the Environmental Assessment.

While outside the scope of this application, opportunities to upgrade the rest areas to a highway service centre in the future will be considered during the development of the design of the rest areas.

#### 4.4 Urban design and landscape

In tandem with the engineering concept design for the preferred route there has been preliminary assessment of urban design objectives. Visual analysis of the corridor has identified numerous sections of the route where sensitive design responses would be particularly important. Most notably, this includes the more highly urbanised southern section up to the proposed Gaudrons / Split Solitary Road interchange where careful integration of the new road development will need a range of tailored design treatments. In this regard, the vertical alignment of the upgrade is proposed to be lower than the existing highway where possible to reduce its landscape prominence and to achieve better acoustic shielding for nearby residential properties.

Another important locality is the very flat area for the proposed Moonee Beach / Hoys Road interchange. With the substantial height of the new interchange formation and the associated clearing of mature vegetation in the immediate area, the detailing of access ramps and associated landscape enhancements will require close urban design attention.

The bypass section to the west of Woolgoolga will involve major cut and fill earthworks as the alignment traverses several ridges / spurs along the eastern flank of the main coastal range. Optimisation of the vertical alignment and careful attention to batter treatments will achieve a road that integrates as best possible with the more rural and natural landscape in that part of the corridor.

#### 4.5 Ongoing refinement of the concept design

The preparation of the concept design for the proposal was ongoing the time of preparing this Project Application. A detailed ground and boundary survey has been completed and geotechnical investigations have been finalised.

Data provided by these and other investigations will be used to further refine the concept design for the proposal during the preparation of the Environmental Assessment. Matters to be addressed during the refinement of the design include:

- Refinement of intersection and interchange layouts
- Further maximisation of the use of the existing highway asset and road corridor between Korora and south Woolgoolga
- Development of the proposed rest area facilities at the Arrawarra Interchange
- Refinement of property access arrangements

- Refinement of property boundaries for the proposed upgrade and hence, definition of land acquisition
- Completion of hydrological and hydraulic studies to enable sizing and preliminary design of bridges and culverts over watercourses and floodways along the route and also to influence the siting, layout and sizing of both temporary and permanent drainage, water retention and water quality control basins / ponds.
- Refinement of the road design to integrate a variety of environmental mitigation and improvement features. This will include acoustic attenuation measures, revegetation and landscaping arrangements and features that respond to local ecological conditions such as protection of key habitat and specific provisions for fauna movement across the corridor.

## 4.6 Staged construction

While the RTA is seeking approval for the whole highway upgrade proposal as summarised above (viz. for Class M motorway standard), there is clearly potential for the Sapphire to Woolgoolga project to be delivered in discrete stages or packages. At this stage, there are no specific staging proposals and the possible arrangements will be addressed in more detail in the Environmental Assessment. The assessment will address the related benefits of any staging plans and establish mechanisms to effectively manage the potential environmental impacts.

Staging opportunities available for the implementation of the project include:

- Early provision of interchanges to access the existing residential settlements located at Sapphire, Moonee, Emerald Beach, Sandy Beach and Mullaway and to access the future residential areas of Sapphire / Moonee (Moonee DCP) and Hearnes Lake (Hearnes Lake DCP).
- Implementation of Class A/M upgrade;
- Implementation of full Class M upgrade.

The project could also be implemented in discrete sections (eg. Sapphire to Moonee Beach, Moonee Beach to South Woolgoolga, Woolgoolga Bypass, Arrawarra section). A decision on any staging proposal would be influenced by factors such as funding availability and the expected benefits arising from the staged work.

In general terms it is noted that the Sapphire to Woolgoolga project is particularly conducive to staged implementation when compared to many other highway projects. Aside from the Woolgoolga Bypass section which would need to be constructed in its entirety, the proposal is based on upgrading along the existing highway corridor. As such, the typical construction approach would involve building of a new carriageway (possibly including some local access roads) parallel and adjacent to the existing carriageway. As a consequence, there would be no significant traffic changes on the local road network. In this way, it is anticipated that staging proposals could be implemented in a manner that delivers substantial early benefits for the travelling public.

## 5. Preliminary environmental assessment, management measures & further investigations

### 5.1 Preliminary assessment

A preliminary assessment of the potential environmental impacts of the preferred Sapphire to Woolgoolga highway upgrade and likely significance of these impacts is summarised in Table 5.1. This assessment is based on the comprehensive investigations undertaken through the route planning stage and, where relevant, the findings from more recent studies focused on the preferred route. The issues that have been identified as requiring further assessment during the Environmental Assessment stage are shown in Table 5.2 and the suggested scope of those further assessments has been summarised.

This assessment has been completed with reference to two relevant publications; “Is an EIS Required? Best Practice Guidelines for Part 5 of the Environmental Planning and Assessment Act 1979”, NSW Government, Department of Urban Affairs and Planning (DUAP, now DoP) and the “EIS Guideline Roads and Related Facilities”, DUAP (now DoP) September 1996. In this regard, simple descriptors of the likely level of impact significance have been included.

The table also identifies possible environmental management and mitigation measures that the RTA currently proposes to incorporate in finalising the concept development of the Sapphire to Woolgoolga proposal. The measures represent a combination of best practice designs, techniques, systems and methods that the RTA has implemented on many recent and current highway projects. It is possible that some of these measures will be supplemented and refined as the technical design is advanced and the concurrent planned environmental impact assessments are completed over the coming months.

In considering each environmental planning issue, a level of ‘Proposed Assessment and Management’ was assigned. This indicates whether additional environmental assessment is required or whether standard management measures are sufficient to address the issue. These Proposed Assessment and Management levels are defined as follows:

- **Issues Manageable- no further assessment proposed**

No further assessment proposed on this issue as the RTA considers that the issue can be adequately managed using standard or previously approved procedures that are accepted within the industry. The proposed procedures will be identified in the relevant Environmental Management Plan (EMP) for the project and the measures will be summarised in the Environmental Assessment.

- **Define Management Measures- Design/ EMP**

The issue is not routine and may have some site specific or project peculiarities but the RTA has assessed that the standard or proven management measures can be readily adapted or tailored to address the specific circumstances to achieve an effective outcome. The proposed measures will be detailed as necessary in the refined design and/or the relevant Environmental Management Plan for the project. As well as being subject to a preliminary environmental assessment (as identified in Table 5.1), proposed future actions for these issues are identified in Table 5.3.

- **Further Environmental Assessment proposed**

The RTA considers that this issue requires further assessment during the ongoing design refinement and environmental assessment phase. Proposed measures to manage this issue will be detailed in the concept design and the Environmental Assessment. As well as being subject to a preliminary environmental assessment (as identified in Table 5.1), proposed future actions for these issues are identified in Table 5.2.

A draft Statement of Commitments has also been developed for the proposal and it is presented in Appendix A (and referred to in Table 5.1). This statement will be developed further during the

subsequent environmental impact assessment process and will be presented in the published Environmental Assessment.

**Table 5.1 Environmental Investigations, Assessment, and Commitments/Management Measures**

This table provides a summary of the environmental assessment issues of interest for the construction and operation of the Sapphire to Woolgoolga proposal. Further details are provided in the main body of this report and in a series of Reports and Working Papers developed during the route option identification stage. The purpose of this table is to identify those issues which are expected to be most important in the final decision process, as well as those more routine issues which can be readily managed through standard environmental management measures (ie. not key issues). In the case of the latter, this has been based in on the findings of extensive previous studies and / or design changes to the project in order to eliminate or significantly reduce environmental risks associated with the issue. Furthermore, to ensure the level of residual impacts remain acceptable and that there is a consistent approach to managing issues, the RTA includes a commitment to adopt standard conditions of approval (as developed by the Department of Planning). It is expected that this commitment would be carried through to the Environmental Assessment and ultimately to the final conditions of approval as issued by the Minister for Planning. It is noted that the judgement as to whether an issue is not a key issue will be confirmed during the detailed EA process, and that the evaluation at this time is not binding.

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
<b>CONSTRUCTION PHASE</b>				
<b>Noise and Vibration</b>	Noise monitoring and modelling undertaken as part of route options assessment Working Paper.	<p>Potential for construction noise levels to exceed the criteria specified in the RTA's Environmental Noise Management Manual. However, residual impacts would be managed to acceptable levels with the application of standard noise control management measures.</p> <p><b>Expected level of Impact: Low – Negative</b></p> <p>Community consultation has consistently raised construction noise as an issue of concern, hence issue to be addressed in EA to demonstrate it can be effectively managed.</p>	<b>Define Management Measures-Design/EMP</b>	<b>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 5 in the Draft Statement of Commitments (Appendix B).</b>
<b>Air Quality</b>	Air quality monitoring undertaken by specialists from CW-ATC at Korora site adjacent to existing dual carriageway section of highway.	Potential for dust generation during earthworks and other construction activities and from construction vehicle movements. Local air quality impacts due to construction vehicle emissions.	<b>Issues Manageable-no further assessment proposed</b>	<b>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in</b>

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
	<p>The baseline studies indicate generally low background pollution levels.</p>	<p><b>Expected level of Impact: Low - Negative</b></p>		<p><b>Section 11 in the Draft Statement of Commitments (Appendix B).</b></p>
<p><b>Terrestrial Flora and Fauna</b></p>			<p><b>Further Environmental Assessment proposed</b></p>	
<p><u>Threatened Species/Habitats</u></p>	<p>Comprehensive Working Paper prepared as part of route option evaluation process.</p> <p>Comparative assessment of options in terms of ecological impacts conducted by flora / fauna specialists from CW, Ecovision, Ecotone and A Benwell as part of route selection process. Included review of substantial databases from CHCC, DEC, Forests NSW, conduct of substantial assorted field surveys, vegetation / habitat mapping, liaison with DEC and CHCC. Detailed ecological surveys completed to identify presence / extent / condition of potential species / EECs along parts of route not previously accessible. Supplementary surveys to address warm season issues (eg. migratory birds, targeted frog species) and other key information from previous work (eg. extent / density of stags).</p>	<p>Loss of or disturbance to threatened flora and fauna species.</p> <p>Potential impact on endangered ecological communities (EECs) including:</p> <p>Lowland rainforest on floodplain; Subtropical coastal floodplain forest; Swamp oak floodplain forest; Swamp sclerophyll forest</p> <p><b>Expected level of Impact: Moderate - Negative</b></p>		<p>The scope of the environmental assessment is outlined in <i>Table 5.2</i>.</p> <p>Where feasible and practical, concept design to be refined to avoid and/or minimise potential impacts on threatened / endangered flora and fauna species and endangered ecological communities. Where not feasible and practical to avoid and/or minimise potential impacts, concept design to be refined to include flora and fauna protection measures.</p> <p>Commitment to implement compensatory habitat proposals based on findings of supplementary investigations if not feasible or practical to refine concept design to avoid and/or minimise potential impacts or to include flora and fauna protection measures.</p> <p>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 7 in the Draft Statement of Commitments (<i>Appendix B</i>).</p> <p>Although the proposal is not perceived to have a significant impact on threatened and migratory species, a referral under the EPBC Act would be made to DEH to confirm that the proposal is not a</p>

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
<u>Vegetation</u>	As above	Vegetation clearance and loss of habitat <b>Expected level of Impact: Moderate - Negative</b>		<p>“controlled action”</p> <p>The scope of the environmental assessment is outlined in <i>Table 5.2</i>.</p> <p>Footprint of road and vegetation clearance to be kept to a minimum to avoid and/or minimise potential impacts on vegetation clearance and loss of habitat. Native species of local providence to be used in landscape planting. Commitment to implement compensatory habitat proposals based on findings of supplementary investigations if not feasible or practical to avoid and/or minimise potential impacts on vegetation clearance and loss of habitat.</p> <p>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 7 in the Draft Statement of Commitments (<i>Appendix B</i>).</p>
<b>Aquatic Ecology</b>	Aquatic habitat assessment completed as part of the route option study Working Paper.	Potential for Impacts on aquatic habitat <b>Expected level of Impact: Low - Negative</b>	<b>Issues Manageable- no further assessment proposed</b>	<p>Major creeks are to be bridged and loss of riparian vegetation to be minimised. Design to be undertaken in accordance with DPI Fisheries Guidelines.</p> <p><b>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 7 in the Draft Statement of Commitments (<i>Appendix B</i>).</b></p>
<b>Geotechnical / Soils / Contamination</b>	Geotechnical investigation incorporating subsurface assessment, preliminary soil and	Movement of sediment down slopes, possibility of entering waterways, transportation ways and properties. Small scale stability concerns. Small scale soil contamination concerns.	<b>Issues Manageable- no further assessment proposed</b>	Adequate protection of both cut batters and fill embankments to be provided. Measures would include grassing and the provision of cut-off drains

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
	<p>groundwater contamination assessment and acid sulfate soil assessment undertaken as part of Route Option stage.</p> <p>Acid Sulphate Soils (ASS) mapping shows there to be a low risk of ASS within the study area, with the exception of areas on the floodplain between Moonee and Woolgoolga and surrounding the existing highway at Arrawarra.</p> <p>DEC and Department of Agriculture have confirmed that no sites comprising a significant risk of harm under the Contaminated Land Management Act 1997 are potentially directly affected by the proposal. Soil investigations on banana plantations included identified high-risk areas (eg packing sheds). The investigations indicated that contaminant concentrations in the soil were below the adopted site assessment criteria. No cattle tick dip sites are affected</p>	<p><b>Expected level of Impact: Low - Negative</b></p>		<p>and landscaping to divert water away from the cut and fill batters. Sediment traps to be implemented. Removal of vegetation during construction only where absolutely necessary.</p> <p><b>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 10 in the Draft Statement of Commitments (Appendix B).</b></p>

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
<b>Groundwater</b>	<p>Geotechnical investigation incorporating preliminary soil and groundwater contamination assessment as well as groundwater bore information received from DLWC.</p> <p>DEC and Department of Agriculture have confirmed that no contaminated soil or groundwater sites are affected by the proposal.</p>	<p>It is possible that deep cuts will locally lower the water table and may have adverse affects on water levels and yields in existing water bores. Low/minimal risk of groundwater contamination.</p> <p><b>Expected level of Impact: Low - Negative</b></p>	<p><b>Issues Manageable- no further assessment proposed</b></p>	<p>Continual monitoring of bores during and post-construction phase.</p> <p><b>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 10 in the Draft Statement of Commitments (Appendix B).</b></p>
<b>Water Quality</b>	<p>Considerable background data held by Coffs Harbour Council. No particular unusual/high sensitive areas anticipated or where impacts are unmanageable</p>	<p>Impact upon the turbidity, pH, DO, concentration of ions and TDS of local waterways</p> <p><b>Expected level of Impact: Low - Negative</b></p>	<p><b>Issues Manageable- no further assessment proposed</b></p>	<p>Monitoring of affected waterways during and post-construction phase.</p> <p>Risk analysis of all aspects of the activity that has the potential to pollute water to be undertaken, eg stormwater.</p> <p>Measures to minimise the identified risk to the environment would then be implemented. Special emphasis would be placed on gully and watercourse crossings, vehicle set down and repair areas, fuel storage and waste disposal.</p> <p>Compliance with Water Quality guidelines.</p> <p><b>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 10 in the Draft Statement of Commitments (Appendix B).</b></p>
<b>Traffic and</b>	<p>Concept design developed with</p>	<p>Implementation of the upgrade may be staged. Staging</p>	<p><b>Further Environmental</b></p>	<p>The scope of the environmental assessment is</p>

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
<b>Transport</b>	regard to construction in high traffic area at southern end of project.	<p>opportunities include:</p> <ul style="list-style-type: none"> <li>• Early provision of interchanges to access the existing and future residential areas along the route, and/or</li> <li>• Implementation of Class A/M upgrade to improve the safety and efficiency of the existing highway.</li> </ul> <p>Potential traffic disruptions on highway and local roads during construction, especially along southern upgrade highway sections.</p> <p><b>Expected level of Impact: Moderate – Negative</b></p>	<b>Assessment proposed</b>	<p>outlined in <i>Table 5.2</i>.</p> <p>Construction traffic impacts to be assessed in Traffic Delay Assessment.</p> <p>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 4 in the Draft Statement of Commitments (<i>Appendix B</i>).</p>
<b>Agriculture</b>	Preliminary agricultural assessment Working Paper prepared as part of route selection process by specialists Wilkie Fleming.	<p>35 agricultural properties would be affected by the bypass alignment. Preliminary agricultural assessment identified that 17 properties would be severely disrupted.</p> <p>Potential implications for aerial spraying of bananas.</p> <p><b>Expected level of Impact: High - Negative</b></p>	<b>Further Environmental Assessment proposed</b>	<p>The scope of the environmental assessment is outlined in <i>Table 5.2</i>.</p> <p>Where feasible and practical, road alignment and concept design to be refined to minimise potential impacts on agricultural properties.</p> <p>Where feasible and practical, new access provided to severed parcels and / or possible land consolidation of severed parcels to be pursued.</p> <p>Acquisition to be undertaken in accordance with the <i>Land Acquisition (Just Terms Compensation) Act 1991</i></p>
<b>Land use, Property and Access</b>	Comparative assessment of impacts on land use / development / property Working Paper prepared as part of route selection process.	<p>Potential direct impact on approximately 130 residential, agricultural and rural residential properties along whole length of the upgrade.</p> <p><b>Expected level of Impact: High – Negative.</b></p>	<b>Further Environmental Assessment proposed</b>	<p>The scope of the environmental assessment is outlined in <i>Table 5.2</i>.</p> <p>Where feasible and practical, road alignment and concept design to be refined to minimise potential impacts on properties.</p> <p>Where feasible and practical, new access provided to severed parcels and / or possible land consolidation of severed parcels to be pursued.</p>

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
				Acquisition to be undertaken in accordance with the <i>Land Acquisition (Just Terms Compensation) Act 1991</i>
<b>Hazards and Risks</b>		Potential impacts include storage of hazardous materials. <b>Expected level of Impact: Low - Negative</b>	<b>Issues Manageable- no further assessment proposed</b>	<b>Residual impacts expected to be manageable through the application of controls, mitigation measures and safeguards as identified in Section 14 in the Draft Statement of Commitments (Appendix B).</b>
<b>Aboriginal heritage</b>	Working Paper prepared by heritage specialist J Collins as part of route selection process. Ongoing consultation with LALCs, other Aboriginal representative groups and DEC.  Aboriginal heritage study (incorporating a heritage assessment and field survey) for preferred route completed by heritage specialist J Collins in October 2005.	Impact from clearing of forested lands, which are valued by the Aboriginal community.  Direct impact on western flank of important Aboriginal heritage site near Coffs Harbour Gun Club.  7 PADs potentially directly affected by proposal.  <b>Expected level of Impact: Moderate – Negative</b>	<b>Define Management Measures- Design/EMP</b>	Further consultation with DEC and the Aboriginal community using the DEC Interim Guidelines during the further refinement of the concept design for the proposal and during the development of the Aboriginal Cultural Heritage Management Plan.  <b>Residual impacts expected to be manageable through the application of controls, mitigation measures and safeguards as identified in Section 8 in the Draft Statement of Commitments (Appendix B).</b>
<b>Non-Aboriginal heritage</b>	Working Paper prepared including desktop reviews and database research as part of Route Option studies. Consultation with key government stakeholders including Australian Heritage Commission, NSW Heritage Office, National Trust, Coffs Harbour Council and Coffs Harbour Historical Society.	There is the potential that the proposal could have a very minor impact on the Solitary Islands Marine Park (SIMP) during construction where it extends to the tidal limits of Double Crossing Creek. SIMP is an item listed on the Register of the National Estate (but is not on the National Heritage List or the Commonwealth Heritage List).  Other heritage items along the corridor which are affected but not formally listed on any heritage register include the Woolgoolga Nursery, the Nursery Cottage, Wedding Bells	<b>Issues Manageable- no further assessment proposed</b>	Relevant statutory controls would be complied with by the RTA  <b>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 9 in the Draft Statement of Commitments (Appendix B).</b>

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
		<p>State Forest and the original route of two former timber logging tramways.</p> <p><b>Expected level of Impact: Low – Negative</b></p>		<p><b>Potential impacts on the Solitary Islands Marine Park to be included in the referral to DEH.</b></p>
<b>Resources</b>		<p>Energy and resource use during the construction period.</p> <p><b>Expected level of Impact: Low - Negative</b></p>	<p><b>Issues Manageable- no further assessment proposed</b></p>	<p>Measures to be implemented to minimise energy use to be incorporated into the CEMP. Consideration of mass haul efficiency in design development to reduce fuel burn.</p> <p><b>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 12 in the Draft Statement of Commitments (Appendix B).</b></p>
<b>Landscape, visual and urban design</b>	<p>Comparative assessment of options conducted by specialist urban designers / landscape architects Hassell as part of route selection process</p>	<p>Visual impacts and loss of visual amenity along the existing highway upgrade and bypass sections in project area renowned for its scenic qualities.</p> <p>Adverse visual impacts anticipated - particularly between Sapphire and Moonee and through the southern and central sections of the Woolgoolga bypass.</p> <p><b>Expected level of Impact: Moderate to High Negative.</b></p>	<p><b>Further Environmental Assessment proposed</b></p>	<p>The scope of the environmental assessment is outlined in <i>Table 5.2</i>.</p> <p>Suitable urban design and landscape management strategies/ plans to be developed and incorporated into the project design.</p> <p>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 13 in the Draft Statement of Commitments (<i>Appendix B</i>).</p>

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
<b>OPERATIONAL PHASE</b>				
<b>Traffic Noise</b>	Working Paper prepared as part of route option study. Comparative noise assessment undertaken.	<p>Positive and negative impacts depending upon specifics of location (eg noise source moved from bypassed areas, noise source introduced to new alignment). RTA would endeavour to meet appropriate DEC criteria.</p> <p><b>Expected level of Impact: Moderate Positive to Moderate / High Negative.</b></p>	<b>Further Environmental Assessment proposed</b>	<p>The scope of the environmental assessment is outlined in <i>Table 5.2</i>.</p> <p>RTA would endeavour to meet appropriate DEC criteria.</p> <p>Detailed noise assessment to be undertaken. Assessment will identify potential noise impacts of upgrade and proposed mitigation measures.</p> <p>Proposed mitigation measures to be incorporated into refined concept design for proposal.</p> <p>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 6 in the Draft Statement of Commitments (<i>Appendix B</i>).</p>
<b>Cultural/Socio-economic/Community</b>			<b>Further Environmental Assessment proposed</b>	
<b>General</b>	<p>Comparative assessment of impacts on land use / development / property as part of route selection process. Key community issues consistently identified included:</p> <ul style="list-style-type: none"> <li>Property impacts</li> </ul>	<p>Community cohesion in Woolgoolga urban area enhanced due to substantial traffic diversion to bypass, including improved amenity and local community access across existing highway corridor.</p> <p>Community cohesion in west Woolgoolga rural area affected by new route.</p>		<p>The scope of the environmental assessment is outlined in <i>Table 5.2</i>.</p> <p>Design to ensure bypass remains attractive for through traffic. Where feasible and practical, maintain road access to rural properties during and after construction. New crossings to be provided for</p>

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
	<ul style="list-style-type: none"> <li>• Socio-economic</li> <li>• Noise and Vibration</li> <li>• Air Quality</li> <li>• Road Safety.</li> </ul>	<p>Issues with school bus access routes and potential conflicts with Highway traffic – see also “Local Traffic”.</p> <p><b>Expected level of Impact: Moderate – Negative</b></p>		<p>safer cross highway access for locals including at Headland Road bridge and interchanges.</p> <p>Property acquisition to be undertaken in accordance with the <i>Land Acquisition (Just Terms Compensation) Act 1991</i></p>
<b>Local Sikh Community</b>	Sikh Cultural Impact Assessment in Progress	<p>Community concern that impact on and or acquisition of Sikh owned / operated rural properties in bypass section could result in broader cultural effect of consequence for the community</p> <p><b>Expected level of Impact: Low- Negative</b></p>	<b>Further Environmental Assessment Proposed</b>	<p>The scope of the environmental assessment is outlined in <i>Table 5.2</i>.</p> <p>Proposed Management Measures to be developed through assessment</p>
<b>Traffic and transport</b>			<b>Further Environmental Assessment proposed</b>	
<u>Strategic / Regional</u>	<p>Working Paper prepared as part of Route Option Study.</p> <p>Detailed traffic surveys and studies including quantification of existing traffic patterns, forecasts of traffic growth along corridor, analysis of intersection performance, identification of traffic / road safety risk issues, assessment of historic and recent crash data for highway, estimate of safety improvement with upgrade.</p>	<p>Expected overall road safety improvements due to increased road capacity and high standard dual carriageway design. Improvements also expected with rationalised highway access points and through – local traffic separation with reduced highway connections and local access roads etc. Substantial improvements in Woolgoolga area due to reduced traffic volumes.</p> <p><b>Expected level of Impact: High - Positive</b></p>		<p>The scope of the environmental assessment is outlined in <i>Table 5.2</i>.</p> <p>Adopt standards in Pacific Highway design guideline and refine concept design to further enhance safety over project life.</p>
<u>Local</u>	Design and traffic assessments have identified and where possible quantified all changed local traffic patterns.	<p>Impacts on school bus routes and conflicts with Highway traffic</p> <p>Changed travel patterns on numerous local roads</p>		<p>The scope of the environmental assessment is outlined in <i>Table 5.2</i>.</p> <p>Design to provide for eventual off-highway local road along full length of corridor with controlled access to</p>

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
	<p>Traffic assessments have estimated bypassable traffic and hence likely future volumes remaining through Woolgoolga</p>	<p>especially along southern upgrade section from Sapphire to Moonee including increased trip length and duration due to road closures, turn restrictions and deviations (but with attendant travel safety improvements)</p> <p>Reduction of traffic volumes through Woolgoolga with local traffic and accessibility benefits in the area.</p> <p><b>Expected level of Impact: Low – Negative</b></p>		<p>the highway</p> <p>Design to include features for efficient new local access.</p> <p>Design to ensure bypass section is attractive for through traffic.</p>
<p><b>Urban Development</b></p>	<p>Comparative assessment of impacts on land use / development / property as part of route selection process</p>	<p>Preferred route developed following request from CHCC for the RTA to investigate route options to minimise the potential impact on the South Woolgoolga Urban Investigation Area and to facilitate the future expansion of the township.</p> <p>Bypass section passes across the south west corner of South Woolgoolga Urban Investigation Area (currently agricultural use). No detailed development plans for area prepared to date by CHCC. Most of potential development could proceed with Bypass in place.</p> <p>Issues for residential expansion near Moonee Beach and consequences for Highway interchange design/timing</p> <p>Expected level of Impact: Low – Negative</p>	<p><b>Further Environmental Assessment proposed</b></p>	<p>The scope of the environmental assessment is outlined in <i>Table 5.2</i>.</p> <p>Amenity considerations to be considered in concept design including buffer areas, noise mitigation and landscaping</p>

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
<b>Forestry Issues</b>	Liaison with Forests NSW to obtain data on existing forestry operations and expected long term use of Forest including access requirements	<p>Bypass section passes through substantial productive State forest lands.</p> <p>Route passes close to two parcels of land designated as Forestry Management Zone (FMZ) 3A. Depending on the final design it is possible that these could be impacted on during construction. The route also passes through one parcel of land designated as FMZ3B at its northern end</p> <p><b>Expected level of Impact: Moderate – Negative</b></p>	<b>Further Environmental Assessment proposed</b>	<p>The scope of the environmental assessment is outlined in <i>Table 5.2</i>.</p> <p>Review alignment and if possible, avoid or minimise impact on FMZ 3B land.</p> <p>Access to Wedding Bells State Forest from existing highway to be rationalised. Compensatory measures to be examined as part of EA.</p>
<b>Flooding and Hydrology</b>	A preliminary catchment analysis has been undertaken, which has identified major waterways and catchments in the northern section of the study area. Also examined location and condition of all existing road crossings. In accordance with Australian Rainfall and Runoff Volume 1, preliminary and peak discharges calculated.	<p>Concept design would be developed to ensure project does not cause any significant adverse flooding impacts, including afflux, flood levels, velocities, duration and inundation times.</p> <p><b>Expected level of Impact: Low – Negative</b></p>	<b>Issues Manageable- no further assessment proposed</b>	<p>All water-way crossings would be located and sized so as to not cause any significant adverse flooding impacts.</p> <p><b>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 10 in the Draft Statement of Commitments (<i>Appendix B</i>).</b></p>
<b>Water Quality</b>	Considerable background data held by Coffs Harbour Council. No particular unusual/high sensitive areas anticipated or where impacts are unmanageable	<p>Potential Impact upon the turbidity, pH, DO, concentration of ions, TDS and general aquatic environment of local waterways</p> <p><b>Expected level of Impact: Low – Negative</b></p>	<b>Issues Manageable- no further assessment proposed</b>	<p>Potential issue of accidental spills during the operational phase of the highway would be addressed. General pollution reduction measures would be in the form of detention structures or contingency plans or a combination of both and would be effective in minimising harm from accidental spills in particular.</p> <p>Areas that are deemed to have particularly high conservation and sensitivity values would be identified, and additional management methods</p>

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
				<p>instigated.</p> <p><b>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 10 in the Draft Statement of Commitments (Appendix B).</b></p>
<b>Flora/Fauna</b>	Refer to 'Flora / Fauna' in Construction section above	<p>Biodiversity – the Woolgoolga bypass section has the potential to impact on biodiversity in the Wedding Bells State Forest.</p> <p>Expected level of Impact: Low – Negative</p>	<b>Further Environmental Assessment proposed</b>	<p>The scope of the environmental assessment is outlined in <i>Table 5.2</i>.</p> <p>Opportunities to avoid, minimise and/or mitigate biodiversity impacts (see above) including possible compensatory habitat.</p>
<b>Economic</b>	Comparative assessment of direct / indirect impacts on land use / development / property as part of route selection process. Concept design progressed with regard to local business impact in terms of property affectation. Consultation with assorted business stakeholders and CH / Woolgoolga Chambers of Commerce	<p>Positive overall impact on local economy (including tourism) due to enhanced road transport conditions and travel time / safety improvements through the study area.</p> <p>Potential impact on amenity of adjacent tourist facilities along the route.</p> <p>Although the local economy of Woolgoolga does not have a heavy reliance on highway related trade, there would be some loss in patronage to businesses along the existing Highway when a bypass is operational.</p> <p>Agricultural business implications considered under 'Agriculture'</p> <p><b>Expected level of Impact: Moderate - Positive to Moderate – Negative</b></p>	<b>Define Management Measures- Design/EMP</b>	<p>Implement high standard design and implement the project as soon as possible.</p> <p>Acoustic controls and urban design treatments to be incorporated into new highway design. Property access arrangements improved in terms of safety.</p> <p>Provide effective alternative access consistent with highway access control objectives</p> <p>Provide effective signposting and high standard access at northern and southern approaches to Woolgoolga.</p>
<b>Air quality</b>	Liaison with DEC during route selection indicated no substantial	Reduced vehicle emissions through Woolgoolga due to bypass and along existing highway between Sapphire and	<b>Issues Manageable- no further assessment</b>	Adopt relevant road design standard with minimal gradients and curves to facilitate free flow

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
	<p>air quality issues / concerns in study area. Air quality monitoring undertaken by specialists from CW-ATC at Korora site adjacent to existing dual carriageway section of highway.</p>	<p>south Woolgoolga due to free traffic flow along new high standard dual carriageway highway.</p> <p>Additional vehicle emissions with progressive traffic growth along corridor including introduction of near-field emissions to new rural areas along bypass section.</p> <p><b>Expected level of Impact: Low - Negative</b></p>	<p><b>proposed</b></p>	<p>conditions.</p> <p>Reduction in exhaust emissions through Woolgoolga township</p> <p><b>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 11 in the Draft Statement of Commitments (Appendix B).</b></p>
<p><b>Hazards and wastes</b></p>	<p>No specific investigations into this matter, but draws on previous experience of traffic specialists including review of spill incident statistics</p>	<p>Reduced potential for hazardous material spillage or incident with higher standard road</p> <p><b>Expected level of Impact: Low - Positive</b></p>	<p><b>Issues Manageable- no further assessment proposed</b></p>	<p>Spill containment measures / facilities for incidents near sensitive environments to be incorporated into design.</p> <p><b>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Sections 14 and 15 in the Draft Statement of Commitments (Appendix B).</b></p>
<p><b>Cumulative Impacts</b></p>	<p>Cumulative impact assessment undertaken by RTA</p>	<p>The overall Pacific Highway program is expected to generate cumulative impacts (both beneficial and adverse) with issues relating to traffic growth (especially in heavy vehicles) being of particular community concern due to potential traffic noise and road safety concerns.</p> <p><b>Expected level of Impact: Low to Moderate – Positive</b></p>	<p><b>Define Management Measures- Design/EMP</b></p>	<p>Adopt design standard and capacity of proposal that provides acceptable safety outcome and level of service for life of project</p>
<p><b>Ecologically Sustainable Development</b></p>	<p>No specific investigations into this matter</p>	<p>Inter-generational Equity – proposal is new transport infrastructure that would benefit current and future generations by enabling safe and efficient travel through and within the area for multiple social and economic</p>	<p><b>Issues Manageable- no further assessment proposed</b></p>	<p>Commitment to ongoing maintenance and planned later stage upgrades so the proposal continues to provide functional benefits to the road user and local community.</p>

Issue	Existing Investigations	Potential Impact (incorporating mitigation)	Proposed Assessment and Management Level	Proposed Management Measures
		<p>purposes.</p> <p>Precautionary Approach – development of major new infrastructure into new rural / natural environment (especially bypass section) has the potential to introduce assorted environmental impacts, the nature and extent of which are generally well understood.</p> <p>Issues regarding ecology integrity and economic values are addressed in other sections above.</p> <p>Expected level of Impact: Low – Positive</p>		<p>From its significant experience, the RTA has developed many proven systems, methods and techniques to effectively understand and manage environmental risks. Many of these management opportunities and proposals are identified above.</p> <p><b>Residual impacts expected to be manageable through the application of appropriate management plans, controls, mitigation measures and safeguards as identified in Section 12 in the Draft Statement of Commitments (Appendix B).</b></p>

## 5.2 Proposed scope of environmental assessment

As identified in Table 5.1, there would be a number of relatively minor impacts associated with the construction and operation of the proposal that could be effectively managed and/or adequately mitigated through the application of standard or tailored mitigation measures (including standard conditions of approval developed by the DoP). There are also a number of more significant environmental impacts which require further investigation and assessment.

Reforms to the EP&A Act in 2005 (with the introduction of an Environmental Assessment under Part 3A) now encourage proponents to prepare more focused environmental assessments to ensure that appropriate weight is given to addressing the more significant environmental issues in detail. Management and mitigation measures to address the relatively minor impacts would be addressed through a Statement of Commitments. A Draft Statement of Commitments for the Sapphire to Woolgoolga Project is shown in Appendix B.

The more focused approach to the EA also recognises the substantial amount of assessment undertaken in the route selection process. Similarly the preliminary design for the highway upgrade has also considered environmental issues and has incorporated refinements to the alignment and design of the highway to avoid or minimise impacts.

In accordance with the preliminary environmental assessment undertaken for the project, two separate tables have been compiled and are presented below. Table 5.2 describes the proposed scope for the environmental assessment (ie. issues identified in Table 5.1 as having a proposed assessment level of “further environmental assessment proposed”). Table 5.3 identifies the issues that require mitigation measures / management issues to be developed and adapted for the proposal.

**Table 5.2 Proposed Scope of Environmental Assessment**

Issue	Scope of Environmental Assessment
<b>CONSTRUCTION PHASE</b>	
Terrestrial Flora and Fauna	<ul style="list-style-type: none"> <li>• Describe and quantify threatened species and areas of habitat likely to be impacted</li> <li>• Describe type and location of mitigation measures to be implemented during construction</li> <li>• Outline any compensatory habitat proposals, if required.</li> </ul>
Traffic and transport	<ul style="list-style-type: none"> <li>• Identify and describe local road network changes during construction</li> <li>• Outline traffic management measures to be included in the Construction Traffic Management Plan</li> </ul>
Agriculture	<ul style="list-style-type: none"> <li>• Assess local agricultural industry / economy effects to farm level. NB temporary construction stage impacts and interface with longer term operation stage issues to be addressed concurrently</li> <li>• Outline limitations on aerial spraying and viability of alternative management methods</li> <li>• Assess opportunities for consolidation of severed parcels with adjacent properties</li> </ul>
Land use, property and access	<ul style="list-style-type: none"> <li>• Identify properties requiring full or partial acquisition</li> <li>• Identify, for each affected property, the approximate</li> </ul>

	<p>number of hectares required, the total number of hectares of the operational area, and the percentage required</p> <ul style="list-style-type: none"> <li>• Determine the impact of the proposal on the current land use of the property</li> <li>• Describe changes to the internal access arrangements where properties are severed by the proposal.</li> <li>• Identify and evaluate measures included in the design to mitigate adverse changes to access during construction.</li> </ul>
Landscape, visual, urban design	<ul style="list-style-type: none"> <li>• Undertake Visual Impact Assessment, including detailed account of management objectives / plan with assorted graphic to explain urban design and landscape measures that will form part of proposal</li> <li>• Describe how urban design and landscape management strategies / plans have been developed and incorporated into the project design</li> </ul>
<b>OPERATIONAL PHASE</b>	
Traffic noise	<ul style="list-style-type: none"> <li>• Describe the design features included to reduce road traffic noise to below road traffic noise criteria.</li> <li>• Describe the impact at sensitive receiver locations where operational noise is predicted to exceed road noise criteria.</li> <li>• Describe the management measures proposed to mitigate impacts at identified sensitive receiver locations.</li> </ul>
Cultural/Socio-economic/community	<ul style="list-style-type: none"> <li>• Provide details of the issues identified through community consultation and how these issues have been addressed</li> <li>• Address key community issues consistently identified: property impacts, Socio-economic, noise and vibration, air quality, road safety</li> <li>• Undertake specific assessment of cultural impacts on Sikh community</li> </ul>
Traffic and transport	<ul style="list-style-type: none"> <li>• Describe benefits of design and estimate crash reduction potential</li> <li>• Describe and quantify local road network changes including benefits and disbenefits; Prepare local traffic access strategy</li> <li>• Describe existing and possible future school bus routes and assess the potential benefits and disbenefits of the proposal</li> </ul>
Urban Development	<ul style="list-style-type: none"> <li>• Assess the impact of urban development program/proposals on design requirements/timing.</li> </ul>

Forestry issues	<ul style="list-style-type: none"> <li>Assess short and long term impacts on planned forestry operations. Liaison with Forests NSW to agree on land acquisition and specific access provisions for forestry operations during operation;</li> </ul>
Terrestrial Flora and Fauna	<ul style="list-style-type: none"> <li>Outline monitoring program of mitigation measures during operation</li> </ul>

**Table 5.3 Issues requiring definition of Management Measures**

<b>Issue</b>	<b>Proposed Actions</b>
<b>CONSTRUCTION PHASE</b>	
Noise and vibration	<ul style="list-style-type: none"> <li>Describe construction noise and vibration impacts</li> <li>Identify appropriate noise and vibration criteria</li> <li>Describe proposed management and mitigation measures</li> </ul>
Aboriginal Heritage	<ul style="list-style-type: none"> <li>Identify modifications to road design to minimise impact on significant heritage site near Coffs Harbour Gun Club</li> <li>Further consultation with DEC and the Aboriginal community using the DEC Interim Guidelines during the further refinement of the concept design for the proposal and during the development of the Aboriginal Cultural Heritage Management Plan.</li> </ul>
<b>OPERATIONAL PHASE</b>	
Economic Impacts	<ul style="list-style-type: none"> <li>Qualitatively assess business effects, in particular for agricultural operations and impacts of bypass on passing trade</li> <li>Identify measures to mitigate any adverse impacts</li> </ul>
Cumulative Impacts	<ul style="list-style-type: none"> <li>Identify management measures / control of main issues of community concern</li> </ul>

## 6. References

Australian Centre for Value Management (2003). Pacific Highway Upgrade, Sapphire to Woolgoolga Project, Moonee to Woolgoolga Section. Value Management Workshop Report. April 2003

Coffs Harbour City Council (1996a) *Coffs Harbour Urban Development Strategy*.

Coffs Harbour City Council (1996b) *Woolgoolga Town Centre Study*.

Coffs Harbour City Council (1999a) *Coffs Harbour Community Profile 1999*.

Coffs Harbour City Council (2004a) *Coffs Harbour State of the Environment Report 2004*

Coffs Harbour City Council (2004b) *Coffs Harbour City Population Profile 2004*

Connell Wagner (2002) *Coffs Harbour Highway Planning Strategy Sapphire to Woolgoolga Route Options. Route Options Development Report*

Connell Wagner (2004) *Coffs Harbour Highway Planning Strategy. Preferred Option Report*

Connell Wagner (2002b) *Coffs Harbour Highway Planning Strategy. Sapphire to Woolgoolga Route Options Working Paper No 1. Statutory and Strategic Planning Issues*.

Pramax Communications (2002a) *Community Involvement Summary Report (Discussion Paper Stage)*.

Pramax Communications (2002b) *Community Involvement Summary Report (Community Options Stage)*.

Pramax Communications (2003) *Community Involvement Summary Report (Sapphire to Woolgoolga Route Options Stage)*.

Pramax Communications (2004a) *Community Involvement Summary Report (Short-Listed Options Stage)*.

Pramax Communications (2004b) *Community Involvement Summary Report (Coffs Harbour City Council Preferred Corridor)*.

# Appendix A

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Letter from Coffs Harbour City Council

# COFFS HARBOUR CITY COUNCIL



Your ref: 10/110.1660 CC:SLT  
Our ref: 1443045

11 August 2006

Mr R Higgins  
General Manager, Pacific Highway  
PO Box 546  
GRAFTON NSW 2460

PACIFIC HIGHWAY OFFICE

18 AUG 2006

ACTION BY:	
FILED BY:	
REG BY:	

Dear Mr Higgins

## SH10 – Pacific Highway. Sapphire to Woolgoolga Upgrade

With reference to your recent 4 August 2006 letter and discussions held between the RTA's Mr Chris Clark and Council's Mr Clyde Treadwell; the following response is now provided.

After due consideration to the information provided by the RTA, Council concur with the data provided. Council is satisfied that the proposed development of the interchange in the vicinity of the existing Highway and Arrawarra Beach Road; on land zoned 1(f) (Rural (Forest) Zone) under Ulmarra Local Environmental Plan (LEP) 1992; is generally consistent with Objective (C) of that zone.

Council are currently progressing an amendment to the Ulmarra LEP 1992 to integrate it and align it with Coffs Harbour City LEP 2000. Council is likely to complete the Local Environmental Study (LES) component in late 2006, and then the LEP Amendment would be exhibited and forwarded to State Government for gazettal. Once gazetted Part 5 Schedule 1 of the LEP would also provide the RTA with an appropriate mechanism to consider, assess and determine the upgrade and interchange proposal.

Council is satisfied that in order to facilitate the proposed interchange and highway upgrade, the RTA will need to acquire about one hectare of the Wedding Bells State Forest, zoned 1(f) (Rural (Forests)) under Ulmarra LEP 1992. This action is deemed consistent with Objective (c) of the 1(f) zone.

Yours faithfully

Stephen Sawtell  
General Manager

- Communications to: The General Manager, Locked Bag 155, Coffs Harbour 2450 • Administration Building, 2 Castle Street, Coffs Harbour • Tel: (02) 6648 4000
- Fax: (02) 6648 4199 • DX: 7559 • ABN 79 126 214 487
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- Website: [www.coffsharbour.nsw.gov.au](http://www.coffsharbour.nsw.gov.au)

DORRIGO SHIRE 1906 - 1956  
COFFS HARBOUR SHIRE 1956 - 1988  
COFFS HARBOUR CITY COUNCIL 1988 - 2006



# **Appendix B**

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**Draft statement of commitments**

# Draft Statement of Commitments

The Draft Statement of Commitments has been presented with the Project Application and provides a base for the development of a Statement of Commitments during the environmental assessment process. The Statement of Commitments will be refined during the Environmental Assessment phase. In some cases, commitments stated here provide a management response to environmental issues identified in *Table 5.1*.

These commitments would be carried forward into the Environmental Assessment, which is yet to be completed. The activity, the Upgrade of the Pacific Highway from Sapphire to north of Woolgoolga, will be considered under Part 3A of the *Environmental Planning and Assessment Act 1979*.

**Table A.1: Draft Statement of Commitments**

Implementation plan and deliverables		Phase
<b>1</b>	<b>Desired Environmental Outcome – Compliance and auditing</b> — To implement a system of audit and inspection that ensures the successful performance of Environmental Management Plans and this Statement of Commitments.	
<b>1.1</b>	The RTA will:	
	a) carry out the Upgrade of the Pacific Highway, Sapphire to Woolgoolga, consistent with:	All
	i. the procedures, safeguards and mitigation measures identified in the Environmental Assessment;	
	ii. additional measures identified in the Submissions Report; and	
	iii. this Statement of Commitments.	
	b) notify in writing the Director-General of the Department of Planning (D-G), relevant Government Departments and relevant Councils, four weeks prior, unless otherwise agreed, of the start of the Activity's Construction.	All
<b>1.2</b>	The RTA will prepare and submit a <b>Pre-Construction Compliance Report</b> at least four weeks before Construction commences (or within any other time agreed to by the D-G). The Pre-Construction Compliance Report will include:	Pre-construction
	i. details of how the Commitments required to be addressed before Construction were complied with;	
	ii. the time when each relevant Commitment was complied with, including dates of submission of any required reports and/or approval dates; and	
	iii. details of any approvals or licences required to be issued by relevant Government Departments before Construction commences.	
<b>1.3</b>	The RTA will prepare and implement an audit and inspection plan. The audit and inspection plan may be incorporated in the CEMP.	All

1.4	The RTA will:	Construction
	<p>a) prepare the first <b>Construction Compliance Report</b> to report on the first six months of Construction and submit it a maximum six weeks after expiry of that period (or at any other time interval agreed to by the D-G). The second, and subsequent, Construction Compliance Reports will be submitted at maximum intervals of six months from the date of submission of the first Construction Compliance Report (or at any other time interval agreed to by the D-G) for the duration of Construction. The Construction Compliance Reports include information on;</p> <ul style="list-style-type: none"> <li>i. compliance with the CEMP and the Statement of Commitments;</li> <li>ii. compliance with any approvals or licences issued by relevant Government Departments for Construction;</li> <li>iii. the implementation and effectiveness of environmental controls. The assessment of effectiveness should be based on a comparison of actual impacts against performance criteria identified in the CEMP;</li> <li>iv. environmental monitoring results, presented as a results summary and analysis;</li> <li>v. the number and details of any complaints, including a summary of main areas of complaint, action taken, response given and intended strategies to reduce recurring complaints;</li> <li>vi. details of any review and amendments to the CEMP resulting from Construction during the reporting period; and</li> <li>vii. any other matter relating to compliance with the Statement of Commitments or as requested by the D-G.</li> </ul>	
	b) provide the D-G, relevant Councils and any other Government department nominated by the D-G with a copy of the Construction Compliance Reports.	Construction
	c) make the Construction Compliance Reports publicly available.	Construction
1.5	The RTA will notify in writing the D-G, Planning, relevant Government Departments and relevant Councils, four weeks prior, unless other wise agreed, of the start of the Activity's Operation.	Construction
1.6	The RTA will:	
	a) undertake at least six monthly audits to ensure compliance with the requirements of the CEMP and all sub-plans.	Construction
	<p>b) ensure the <b>Environmental Impact Audit Report – Construction</b> will:</p> <ul style="list-style-type: none"> <li>i. identify the major environmental controls used during Construction and assess their effectiveness;</li> <li>ii. summarise the main environmental management plans and processes implemented during Construction and assess their effectiveness;</li> <li>iii. identify any innovations in Construction methodology used to improve environmental management; and</li> <li>iv. discuss the lessons learnt during Construction, including recommendations for future Activities.</li> </ul>	Construction

1.7	The RTA will:	
a)	submit a <b>Pre-Operation Compliance Report</b> to the D-G at least four weeks before Operation commences (or within any other time agreed to by the D-G).	Operation
b)	ensure the Pre-Operation Compliance Report includes: <ul style="list-style-type: none"> <li data-bbox="416 408 1402 432">i. details of how the Commitments required to be addressed before Operation were complied with;</li> <li data-bbox="416 456 1850 480">ii. the time when each relevant Commitment was complied with, including dates of submission of any required reports and/or approval dates; and</li> <li data-bbox="416 504 1525 528">iii. details of any approvals or licences issued by Relevant Government Departments for the Activity's Operation.</li> </ul>	Operation
1.8	The RTA will:	Operation
a)	submit an Environmental Impact Audit Report to the D-G a maximum 24 months after the Activity begins Operation. The <b>Environmental Impact Audit Report - Operation</b> will be submitted to other relevant Government Departments upon the request of the D-G.	Operation
b)	ensure the Environmental Impact Audit Report - Operation will: <ul style="list-style-type: none"> <li data-bbox="416 722 1861 778">i. compare the Operation impact predictions made in the Environmental Assessment Submissions Report and any supplementary studies with the actual impacts;</li> <li data-bbox="416 802 1234 826">ii. assess the effectiveness of implemented mitigation measures and safeguards;</li> <li data-bbox="416 850 1245 874">iii. assess compliance with the systems for operation maintenance and monitoring;</li> <li data-bbox="416 898 1473 922">iv. discuss the results of consultation with the local community particularly any feedback or complaints; and</li> <li data-bbox="416 946 734 970">v. be made publicly available.</li> </ul>	Operation
2	<b>Desired Environmental Outcome - Environmental Management:</b> — To manage the potential environmental impacts of the Project in order to meet the requirements identified in the EA.	
2.1	The RTA will:	
a)	prepare a <b>Construction Environmental Management Plan (CEMP)</b> with reference to the DIPNR Guideline for the Preparation of Environmental Management Plans and to address the requirements of Section 4.1.1 of RTA QA Specification G36.	Preconstruction
b)	ensure that the mitigation measures identified in the Project Application Report, Environmental Assessment and Submissions Report are incorporated into the CEMP.	Preconstruction
c)	obtain the D-G's Approval for the CEMP before Construction commences or within any other time agreed to by the D-G.	Preconstruction
2.2	The RTA will:	

a)	implement the CEMP in accordance with this Statement of Commitments and all relevant Acts and Regulations.	Construction
b)	periodically review the CEMP with the aim of continuous improvement.	Construction
<b>2.3</b> The RTA will:		
a)	submit to the D-G an <b>Operational Environmental Management Plan (OEMP)</b> or provide details of any existing system to meet the environmental management requirements for the operation of the activity.	Operation
b)	seek the approval of the D-G for the OEMP or alternative management system before operation commences or within any other time agreed to by the D-G.	Operation
<b>3 Desired Environmental Outcome – Communication and Consultation</b> — To maintain clear and open communication with the local community and road users throughout all phases of the Activity.		
<b>3.1</b> The RTA will:		
a)	prepare a <b>Community Involvement Plan</b> . The Plan will	Preconstruction
	i. include the requirements of the Project Application Report, Environmental Assessment and Submissions Report; and	
	ii. where relevant, be consistent with the principles of the document Community Engagement in the NSW Planning System (PlanningNSW 2003).	
b)	provide a copy of the Community Involvement Plan to the D-G before Construction commences.	All

3.2	The RTA will:	Preconstruction
	<ul style="list-style-type: none"> <li>a) advertise in relevant newspapers before Construction commences, and then at maximum three monthly intervals: <ul style="list-style-type: none"> <li>i. the nature of the works proposed for the next three months;</li> <li>ii. areas in which these works are proposed;</li> <li>iii. construction hours; and</li> <li>iv. a contact telephone number.</li> </ul> </li> </ul>	
	<ul style="list-style-type: none"> <li>b) establish an <b>Activity internet site</b> before Construction commences and maintain the internet site until Construction ends. This internet site will contain: <ul style="list-style-type: none"> <li>i. periodic updates of work progress, consultation activities and planned work schedules;</li> <li>ii. a description of relevant approval authorities and their areas of responsibility;</li> <li>iii. a list of reports and plans that are Publicly Available under this Approval and details of how these can be accessed;</li> <li>iv. contact names and phone numbers of relevant communications staff; and</li> <li>v. the 24 hour toll-free complaints contact telephone number.</li> </ul> </li> </ul>	Preconstruction
	<ul style="list-style-type: none"> <li>c) prepare a <b>Construction Complaints Management System</b> as part of the Communications Plan, before Construction commences and maintain the System for the duration of Construction. The Construction Complaints Management System will be consistent with <i>AS 4269 Complaints Handling</i> and include: <ul style="list-style-type: none"> <li>i. a 24 hour, toll free telephone number listed with a telephone company and advertised;</li> <li>ii. a system to receive, record, track and respond to complaints within a specified timeframe;</li> <li>iii. a process for the provision of a written response to the complainant within 10 days, if the complaint cannot be resolved by the initial or follow-up verbal response; and</li> <li>iv. a mediation system for complaints unable to be resolved.</li> </ul> </li> </ul>	Preconstruction
	<ul style="list-style-type: none"> <li>d) include information on all complaints received, including the means by which they were addressed and whether resolution was reached with or without mediation, in the Construction Compliance Reports. This Report will be made available to the D-G on request.</li> </ul>	Construction
3.3	The RTA will consult property owners about implementing mitigation measures that affect their property. Mitigation measures will be implemented according to a program derived from that consultation if consistent with these Statement of Commitments	All
3.4	The RTA will implement the Complaints Management System and Community Involvement Plan.	Construction

<b>4</b>	<b>Desired Environmental Outcome –Traffic and Access</b> — To maintain access to property and maintain traffic movements on the road network through all phases of the Activity.	
<b>4.1</b>	The RTA will:	
a)	prepare <b>pre-construction road dilapidation reports</b> for all roads likely to be used by Construction traffic. These reports will be prepared before Construction commences.	Pre-construction
b)	prepare <b>post –construction road dilapidation reports</b> for the roads assessed prior to Construction following the completion of construction. Any damage resulting from Construction, except that resulting from normal wear and tear, will be repaired at the RTA's cost. Alternatively the RTA may negotiate an alternative arrangement for road damage with the relevant roads authority.	Operation
c)	provide copies of the dilapidation reports to the relevant roads authority.	All
<b>4.2</b>	The RTA will prepare a <b>Construction Traffic Management Sub Plan</b> , consistent with the RTA Publication <i>Traffic Control at Work Sites</i> , as part of the CEMP. The Sub Plan will include:	Pre-construction
i.	the requirements included in the Environmental Assessment and Submission Report;	
ii.	identification of all public roads to be used by Construction traffic;	
iii.	management methods to ensure Construction traffic uses identified roads;	
iv.	identification of all public roads that may be partially or completely closed during Construction and the expected timing and duration of these closures;	
v.	impacts on existing traffic (including pedestrians, vehicles, cyclists and disabled persons);	
vi.	temporary traffic arrangements including property access;	
vii.	access to Construction sites including entry and exit locations and measures to prevent Construction vehicles queuing on public roads;	
viii.	a response plan for any Construction traffic incident; and	
ix.	monitoring, review and amendment mechanisms.	
<b>4.3</b>	The RTA will implement the Construction Traffic Management Sub Plan.	Construction

4.4	The RTA will:	Construction
	<ul style="list-style-type: none"> <li>a) ensure that access to properties is maintained during construction and, where necessary and feasible, provide temporary alternative access.</li> <li>b) ensure that where any legal property access is permanently affected by the Activity, that alternative access to an equivalent standard to and from a public road is provided where a property has no other legal means of access and where such alternative access is feasible and practical. Alternatively, where alternative access arrangements are not feasible or practical and a property is left with no access to a public road, ensure that negotiations are undertaken with the relevant property owner for the acquisition of the property in accordance with the provisions of the <i>Land Acquisition (Just Terms Compensation) Act 1991</i>.</li> </ul>	

<b>5</b>	<b>Desired Environmental Outcome –Construction Noise and Vibration</b> — To manage noise and vibration generated during construction and minimise the affects of construction noise and vibration on the community.
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5.1	The RTA will:	
	a) prepare a <b>Construction Noise and Vibration Management (NVM) Sub-Plan</b> consistent with the requirements of Practice Note VI of the RTA's <i>Environmental Noise Management Manual</i> .	Pre-construction
	b) ensure the NVM Sub Plan is prepared in consultation with the relevant Authorities, Councils and the community and will include Noise and Vibration Management measures identified in the Project Application Report.	Pre-construction
	c) ensure the vibration and construction noise goals contained in the NVM Sub-Plan will be obtained from the following guidelines:	Pre-construction
	<ul style="list-style-type: none"> <li>i. <i>Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration</i> prepared by the Australian and New Zealand Environment and Conservation Council (ANZECC);</li> <li>ii. German Standard <i>DIN 4150 Part 3 Structural Vibration in Buildings (Effects on Structures)</i>;</li> <li>iii. the evaluation criteria presented in British Standard BS 6472 - <i>Guide to Evaluate Human Exposure to Vibration in Buildings</i> (1Hz to 80 Hz) for low probability of adverse comment; and</li> <li>iv. Chapter 171, Construction Site Noise of the NSW EPA's <i>Environmental Noise Control Manual</i>.</li> </ul>	
	d) undertake pre–construction noise monitoring as specified in the NVM Sub-Plan.	Pre-construction

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5.2 The RTA will:

- |    |   |              |
|----|---|--------------|
| a) | implement measures as identified in the NVM Sub Plan to reduce noise impact of construction activities, including blasting, to nearby residences.   | Construction |
| b) | ensure that public address systems used at any Construction site are not used outside the normal construction hours unless otherwise approved through the NVM Sub Plan. Public address systems will be designed to minimise noise spillage off-site.                                    | Construction |
| c) | schedule rock breaking, rock hammering, sheet piling, pile driving and any similar activity that could potentially impact on noise sensitive receivers only between the following hours unless otherwise approved in the NVM Sub Plan:  | Construction |
|    | i. 9 am to 12 pm and 2 pm to 5 pm, Monday to Friday; and  |              |
|    | ii. 9 am to 12 pm, Saturday.  |              |
| d) | ensure that wherever practical, and where sensitive receivers may be affected, driven piles are not used. If driven piles are required they will only be installed where approved in the NVM Sub Plan.  | Construction |
| e) | undertake blasting trials if blasting is to be used (Results from the trials will be used to determine site-specific blast designs that will enable the performance criteria specified in the Construction Noise and Vibration Sub Plan to be satisfied.).                              | Construction |
| f) | make all reasonable attempts to contact sensitive receivers located within 500 metres of a blast location. The contact will be made at least 48 hours before a blast and advice given to the receiver will include a schedule of blast time(s) and a telephone number and contact name. | Construction |
| g) | undertake noise monitoring during construction as specified in the NVM Sub-Plan.  | Construction |
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**6 Desired Environmental Outcome –Operational Noise** — To design and construct operational noise treatments to achieve the goals established in the NSW Government’s *Environmental Criteria for Road Traffic Noise* and in accordance with the requirements of the RTA’s *Environmental Noise Management Manual*.

<b>6.1</b>	The RTA will:	
a)	prepare an <b>Operation Noise Management Report</b> detailing its investigation of “Reasonable and Feasible” Operation noise mitigation methods. The RTA will seek the approval of the D-G for the Operation Noise Management Report. The Operation Noise Management Report will: <ul style="list-style-type: none"> <li>i. consider the NSW Government’s <i>Environmental Criteria for Road Traffic Noise</i> and the RTA’s <i>Environmental Noise Management Manual</i>;</li> <li>ii. identify the Operation noise criteria;</li> <li>iii. identify Sensitive Receivers;</li> <li>iv. predict noise levels at all Sensitive Receivers;</li> <li>v. detail Reasonable and Feasible noise mitigation measures, physical and managerial. An analysis for the entire Activity will be undertaken in accordance with Practice Note IV of the RTA’s <i>Environmental Noise Management Manual</i>;</li> <li>vi. consider urban design issues relating to noise control measures;</li> <li>vii. identify which noise mitigation measures will be implemented, including their location, type and when they would be implemented; and</li> <li>viii. detail noise monitoring, reporting and complaint response procedures.</li> </ul>	Pre-construction
b)	submit the Operational Noise Management Report to the D-G.	Pre-construction
<b>6.2</b>	The RTA will implement the relevant requirements of the Operational Noise Management Report.	Construction
<b>6.3</b>	The RTA will:	
a)	assess the adequacy of the implemented traffic noise mitigation measures between six months and one year after opening the Activity. Should the assessment indicate traffic noise levels exceeding those predicted in the Operation Noise Management Report, the RTA will: <ul style="list-style-type: none"> <li>i. advise the D-G; and</li> <li>ii. investigate and implement further reasonable and feasible mitigation measures in accordance with the NSW Government’s <i>Environmental Criteria for Road Traffic Noise</i> and RTA’s <i>Environmental Noise Management Manual</i> .The selection of these measures will be undertaken in consultation with affected property owners and be consistent with the Operation Noise Management Report.</li> </ul>	Operation
b)	Undertake monitoring of Operation noise in accordance with Practice Note VIII of the RTA’s <i>Environmental Noise Management Manual</i> .	Operation

**7 Desired Environmental Outcome – Flora and Fauna** — To minimise adverse impacts on native vegetation, fauna and their habitats, and threatened flora and fauna in accordance with the strategies contained in the EA.

<b>7.1</b>	The RTA will:	
a)	prepare a <b>Flora and Fauna Management Sub Plan</b> . The Sub Plan will be prepared in consultation with relevant Government Departments and relevant Councils and include:	Pre-construction
i.	appropriate mitigation measures identified in the Environmental Assessment and Submissions Report;	Pre-construction
ii.	plans showing terrestrial and aquatic vegetation communities;	
iii.	methods to manage impacts on flora and fauna species (terrestrial and aquatic) and their habitat which may be directly or indirectly affected by the Activity;	
iv.	rehabilitation details;	
v.	a Weed Management Plan; and	
vi.	a program for reporting on the effectiveness of terrestrial and aquatic flora and fauna management measures against the identified performance criteria.	
b)	undertake the design and construction of bridges and culverts in consultation with the DEC and DPI Fisheries. The RTA will ensure the design and construction of bridges and culverts are consistent with DPI Fisheries Guidelines.	Pre-construction
c)	submit the Flora and Fauna Management Sub Plan to the D-G.	Pre-construction
<b>7.2</b>	The RTA will:	
a)	implement all requirements of the Flora and Fauna Management Sub Plan.	Construction
b)	establish contractual systems for the Construction Contractor to conduct inspections and monitor compliance with plan requirements.	Construction
<b>7.3</b>	The RTA will implement all post construction requirements of the Flora and Fauna sub plan.	Operation

<b>8</b>	<b>Desired Environmental Outcome – Aboriginal Heritage</b> — To manage adverse impacts on Aboriginal heritage in accordance with the strategies contained in the EA.	
<b>8.1</b>	The RTA will prepare an <b>Aboriginal Heritage Management Sub Plan</b> as part of the CEMP. The RTA will consult with all relevant Aboriginal groups and the DEC when preparing the Sub Plan. The Sub Plan will include: <ul style="list-style-type: none"> <li>i. Aboriginal heritage measures identified in the Project Application Report;</li> <li>ii. details of the archaeological investigations to be undertaken and any associated licences or approvals required;</li> <li>iii. procedures to be implemented if previously unidentified Aboriginal objects are discovered during Construction; and</li> <li>iv. an education program for Construction personnel on their obligations for Aboriginal cultural materials.</li> </ul>	Pre-construction
<b>8.2</b>	The RTA will: <ul style="list-style-type: none"> <li>a) implement the Aboriginal Heritage Management Sub Plan.</li> <li>b) ensure that if during the course of Construction the RTA becomes aware of any unexpected Aboriginal Heritage object(s), all work likely to affect the object(s) will cease immediately and the DEC informed in accordance with the <i>National Parks and Wildlife Act 1974</i>.</li> </ul>	Construction Construction
<b>9</b>	<b>Desired Environmental Outcome – Non-Aboriginal Heritage</b> — To manage adverse impacts on heritage items and structures in accordance with the strategies contained in the EA.	
<b>9.1</b>	The RTA will prepare a <b>Non-Aboriginal Heritage Management Sub Plan</b> as part of the CEMP. The Sub Plan will be prepared in consultation with the Heritage Office and relevant Councils and include: <ul style="list-style-type: none"> <li>i. details of any investigations to be undertaken and any approvals required;</li> <li>ii. procedures to be implemented if previously unidentified historical relics are discovered during Construction. If such relics are discovered all work likely to affect the relic(s) will cease immediately and the Heritage Council notified in accordance with the Heritage Act 1977; and</li> <li>iii. an education program for Construction personnel on their obligations for historic relics.</li> </ul>	Pre-construction
<b>9.2</b>	The RTA will implement the Non-Aboriginal Heritage Management Sub Plan.	Construction

**10 Desired Environmental Outcome – Soil and Water Management** — To manage soil and water impacts to achieve the objective of Landcom’s guideline *Managing Urban Stormwater - Soils and Construction* (2004), the *Acid Sulfate Soils Manual* (1998) and the RTA’s *Code of Practice for Water Management*.

**10.1** The RTA will prepare a **Soil and Water Management Sub Plan** in consultation with relevant Government Departments and relevant Councils as part of the CEMP. Pre-construction  
The Sub Plan will:

- i. include the hydrology, water quality and soil management measures identified in the Project Application Report;
- ii. where relevant, be consistent with:
  - the Landcom guideline *Managing Urban Stormwater – Soils and Construction*;
  - the RTA’s *Guidelines for the Control of Erosion and Sedimentation in Roadworks*; and
  - the DIPNR *Constructed Wetlands Manual*.
- iii. identify the Construction activities that could cause soil erosion or discharge sediment or water pollutants from the site;
- iv. describe management methods to minimise soil erosion or discharge of sediment or water pollutants from the site including a strategy to minimise the area of bare surfaces during construction; and
- v. include contingency plans to be implemented for events such as fuel spills.

**10.2** The RTA will prepare an **Acid Sulfate Soil Management Sub Plan** in consultation with relevant Government Departments as part of the CEMP. The Sub Plan will: Pre-construction

- i. be consistent with the *Acid Sulfate Soils Manual* (Acid Sulfate Soil Management Advisory Committee, 1998) or update;
- ii. include a contingency plan to deal with the unexpected discovery of actual or potential acid sulphate soils; and
- iii. include a water quality monitoring program.

**10.3** The RTA will prepare a **Spoil and Fill Management Sub Plan** as part of the CEMP. The Sub Plan will include: Pre-Construction

- i. the locations of major (defined as a volume greater than 500 cubic metres) spoil stockpiles;
- ii. the estimated volume and source of imported fill material and where imported fill material will be stockpiled and used; and
- iii. methods to re-use or dispose excess or unsuitable spoil material including estimated volumes and disposal sites.

<b>10.4</b>	The RTA will investigate the potential for changes in the groundwater table before any major earthworks (defined as a cut or fill area with depth or height exceeding five metres). Where a potential for change is identified the RTA will: <ul style="list-style-type: none"> <li>i. assess the significance of the change and any resultant effects within and outside the road reserve; and</li> <li>ii. where necessary, design and implement measures to manage the changes. Management measures will be determined in consultation with the regional office of DNR.</li> </ul>	Pre-construction
<b>10.5</b>	The RTA will ensure that all Operation stage controls for stormwater drainage and water pollution will be located, designed, constructed, operated and maintained to meet the requirements of the RTA's <i>Code of Practice for Water Management – Road Development and Management</i> . These controls will be designed in consultation with relevant Government Departments and relevant Councils.	Pre-construction
<b>10.6</b>	The RTA will implement a pre construction water monitoring program in accordance with the Soil and Water Management Sub Plan, the Acid Sulfate Soil Management Sub Plan and the Spoil and Fill Management Sub Plan.	Pre-construction
<b>10.7</b>	The RTA will:	
	a) implement the Soil and Water Management Sub Plan, the Acid Sulfate Soil Management Sub Plan and the Spoil and Fill Management Sub Plan.	Construction
	b) consult an appropriately qualified soil conservationist according to a schedule identified in the Soil and Water Management Sub Plan to:	Construction
	i. undertake inspections of temporary and permanent erosion and sedimentation control devices;	
	ii. ensure that the most appropriate controls are being implemented;	
	iii. check that controls are being maintained in an efficient condition; and	
	iv. check that controls meet the requirements of any relevant approval and/or licence condition.	
<b>10.8</b>	The RTA will:	
	a) implement operational water management controls as identified in the Soil and Water Management Sub Plan, the Acid Sulfate Soil Management Sub Plan and the Spoil and Fill Management Sub Plan.	Operation
	b) implement a maintenance and inspection program for operational controls as identified in the Soil and Water Management Sub Plan, the Acid Sulfate Soil Management Sub Plan and the Spoil and Fill Management Sub Plan.	Operation

**11 Desired Environmental Outcome – Air Quality** — To manage adverse air quality impacts on the community to meet air quality targets identified in the EA.

- 11.1** The RTA will prepare an **Air Quality Management Sub Plan** as part of the CEMP. The Sub Plan will identify: Pre-construction
- i. potential sources of dust;
  - ii. dust management objectives consistent with DEC guidelines;
  - iii. a monitoring program to assess compliance with the identified objectives. Monitoring for dust deposition and particulate concentration will be undertaken according to the DEC Guideline *Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales*;
  - iv. mitigation measures to be implemented, including measures during weather conditions where high level dust episodes are probable (such as strong winds in dry weather); and
  - v. a progressive rehabilitation strategy for exposed surfaces with the aim of minimising exposed surfaces.
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- 11.2** The RTA will:
- a) implement the Air Quality Management Sub Plan. Construction
  - b) ensure that construction vehicles using public roads are maintained to prevent any loss of load, whether dust, liquid or soils. Facilities will be provided at exit points of all Construction sites/compounds to minimise tracking mud, dirt or other material onto a public road or footpath. In the event of any spillage, the RTA will remove the spilled material as soon as practicable within the working day of the spillage. Construction
  - c) ensure that all plant and equipment used in connection with the Activity are: Construction
    - i. maintained in a proper and efficient condition; and
    - ii. operated in a proper and efficient manner.
  - d) implement a dust monitoring program. Construction

**12 Desired Environmental Outcome — Greenhouse gases and energy.** - To manage energy consumption and greenhouse gas generation during construction in accordance with the strategies contained in the EA

**12.1** The RTA will:

- a) promote the reduction of greenhouse gasses by adopting energy efficient work practices including:
  - i. Developing and implementing procedures to minimise energy use; and
  - ii. Conducting awareness programs for all site personnel regarding energy conservation methods.
- b) conduct energy audits during the activity to identify and address energy waste.

Construction

Construction

**13 Desired Environmental Outcome — Urban Design and Landscaping** - To minimise the visual impact of the Activity.

**13.1** The RTA will:

- a) prepare an **Urban Design and Landscape Plan** before Construction commences. The Plan will present an integrated urban design for the Activity, applying design principles established in the Environmental Assessment. The Plan will include design treatments for:
  - I. location and identification of existing vegetation and proposed landscaped areas;
  - II. built elements including retaining walls, bridges and noise walls;
  - III. pedestrian and cyclist elements including footpath location, paving types and pedestrian crossings; and
  - IV. fixtures such as seating, lighting, fencing and signs.
- b) also include the following information in the Plan :
  - i. graphics for key elements such as sections, sketches, perspective views etc;
  - ii. a schedule of species to be used in landscaping. The derivation of the schedule will be explained including its relationship with the Activity's ecological studies;
  - iii. details of the timing and progressive implementation of landscape works considering related environmental controls such as erosion and sedimentation controls and drainage; and
  - iv. procedures and methods to monitor and maintain landscaped or rehabilitated areas both inside and outside the Activity.
- c) obtain the approval of the D-G for the Urban Design and Landscape Report before Construction commences or within any other time agreed to by the D-G.

Pre-construction

Pre-construction

Pre-construction

**13.2** The RTA will implement the Urban Design and Landscape Plan.

Construction

13.3	The RTA will implement any required remedial measures to maintain landscaping works to the design standard established in the Urban Design and Landscape Report.	Operation
13.4	The RTA will monitor and maintain landscape or rehabilitation works which, following Construction, are not the responsibility of the RTA for a period of three years following completion of any landscaping stage or as otherwise identified in the Urban Design and Landscape Report.	Operation
14	<b>Desired Environmental Outcome — Hazard and Risk</b> - To manage potential for hazards and reduce the risks associated with the Activity.	
14.1	The RTA will prepare <b>Hazards and Risk Management Sub Plan</b> as part of the Construction and Operation EMPs. These Sub Plans will include: <ul style="list-style-type: none"> <li>i. details of the hazards and risks associated with the Activity; and</li> <li>ii. mitigation measures including contingency plans.</li> </ul>	Pre-construction
14.2	The RTA will implement the Hazard and Risk Management Sub Plan –Construction.	Construction
14.3	The RTA will implement the Hazard and Risk Management Sub Plan –Operation.	Operation
15	<b>Desired Environmental Outcome – Waste</b> — Manage Waste in accordance with the principles of the Waste Management hierarchy referred to in the <i>Waste Avoidance and Resource Recovery Act 2001</i> and the NSW Government’s Waste Reduction and Purchasing Policy.	
15.1	The RTA will prepare a <b>Waste Management and Re-use Sub Plan(s)</b> . The Sub Plan(s) will address the management of wastes during the Construction and Operation stages respectively in accordance with the NSW Government’s Waste Reduction and Purchasing Policy. The Sub Plan(s) will identify requirements for: <ul style="list-style-type: none"> <li>i. the application of the waste minimisation hierarchy principles of avoid / reduce / re-use / recycle / dispose;</li> <li>ii. waste handling and storage;</li> <li>iii. disposal of wastes. Specific details will be provided for cleared vegetation, contaminated materials, glass, metals and plastics, hydrocarbons (lubricants and fuels) and sanitary wastes; and</li> <li>iv. any waste material that is unable to be re-used, re-processed or recycled will be disposed at a facility approved to receive that type of waste.</li> </ul>	Pre-construction
15.2	The RTA will: <ul style="list-style-type: none"> <li>a) implement the Waste Management and Re-use Sub Plan –construction.</li> <li>b) ensure that the re-use of material generated from Construction is maximised in preference to importing fill. .All material excavated from Construction will be re-used or recycled unless otherwise approved in the Spoil and Fill Management Sub Plan.</li> </ul>	Construction Construction
15.3	The RTA will implement the Waste Management and Re-use Sub Plan –operation.	Operation

<b>16</b>	<b>Miscellaneous Issues</b>	
<b>16.1</b>	<b>Utilities and Services</b>	All
	The RTA will identify the utilities and services (hereafter “services”) potentially affected by Construction to determine requirements for diversion, protection and / or support. Alterations to services will be determined by negotiation between the RTA and the service providers. The RTA in consultation with service providers will ensure that disruption to services resulting from the Activity are minimised and advised to customers.	
<b>16.2</b>	<b>Ancillary Facilities</b>	All
	The RTA will ensure the sites for Ancillary Facilities satisfy the criteria provided in the Environmental Assessment unless otherwise approved through the CEMP.	
<b>16.3</b>	<b>Property Impacts</b>	
	The RTA will:	
a)	undertake a risk assessment before Construction commences to determine which structures or properties may be affected by construction activities and therefore need to be inspected. The risk assessment will be undertaken by geotechnical and construction engineering experts with appropriate registration on the National Professional Engineers Register.	Preconstruction
b)	conduct property inspections, subject to landowner agreement, on all structures within: <ul style="list-style-type: none"> <li>i. 200 metres of blasting;</li> <li>ii. 50 metres of Construction activities that generate vibration impacts; and</li> <li>iii. any other locations identified by the Proponent in the risk assessment.</li> </ul>	Preconstruction
c)	undertake the property inspections consistent with AS 4349.1 Inspection of Buildings.	Preconstruction
d)	advise the owners of all properties on which property inspections are conducted at least two weeks before the inspection of its scope and methodology and of the process for making a property damage claim.	Preconstruction
e)	give a copy of the property inspection report to the owner of each property inspected at least three weeks before Construction that could affect the property commences.	Preconstruction
f)	maintain a register of all properties inspected, indicating whether the owner accepted or refused the property inspection offer. A copy of the register will be provided to the D-G upon request.	All
g)	where liable, rectify any property damage caused directly or indirectly (for example from vibration or from groundwater change) by the Activity’s Construction or Operation. At no cost to the property owner(s). Alternatively the RTA may negotiate compensation for the property damage with the property owner.	Construction / Operation

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h)	reinstatement of a water supply of equivalent quality and quantity where a licensed bore, dam or other property water supply is adversely affected by the Activity. Alternatively the RTA may negotiate compensation for the loss with the landowner.	Construction / Operation
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# Appendix C

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Study team

# ***Study Team***

## **Roads and Traffic Authority of NSW**

Chris Clark, Adam Cameron, Neil Heinze, Scott Lawrence, David Corry

## **Project Management, Community Consultation, Environmental Planning & Assessment, Traffic & Transportation, Engineering Design, Cost Estimation and Hydrology & Hydraulics**

Connell Wagner

## **Ground Survey**

Connell Wagner

## **Geotechnical Investigations**

Connell Wagner

Robert Carr and Associates

## **Community Consultation**

JMS Consulting (formerly Pramax Communications)

ID Planning

## **Sikh Cultural Assessment**

Manidis Roberts

## **Agricultural Assessment**

Wilkie Fleming

Hartley Associates International

## **Ecology**

Connell Wagner

Lewis Ecological Services

Ecos Environmental

## **Indigenous Heritage**

Jacqueline Collins

## **Noise and Vibration**

Wilkinson Murray

## **Urban Design**

Hassell

## **Air Quality**

Holmes Air Sciences

Connell Wagner (Advanced Technology Centre)