



MAJOR PROJECT ASSESSMENT
Pacific Highway Upgrade
Sapphire to Woolgoolga
NSW Roads and Traffic Authority



Director-General's
Environmental Assessment Report
Section 75I of the *Environmental Planning and*
Assessment Act 1979

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EXECUTIVE SUMMARY

The Pacific Highway Upgrade Program was established to eliminate accident blackspots, improve road safety conditions and reduce overall travel times along the highway between Hexham and the Queensland border. The program is being implemented in stages along the length of the highway with almost all sections to Port Macquarie being completed and open to traffic, under construction or having obtained planning approval. Preferred routes have been displayed for all remaining projects between the Oxley Highway intersection with the Pacific Highway and the Queensland border, a Response to Submissions report is being prepared for the Tintenbar to Ewingsdale project and the RTA is preparing Environmental Assessments for the sections Oxley Highway to Kempsey and Warrell Creek to Urunga. No timeframe has been announced for the remaining projects to proceed to assessment and approval.

The sections of the Pacific Highway for which project approval had not been sought or received were declared by the Minister to be Critical Infrastructure on 5 December 2006 as it:

- address key safety concerns for all road users along the remaining single carriageway sections of the Pacific Highway;
- improve the performance, efficiency and freight competitiveness of the principal road freight and passenger corridor between Sydney, Newcastle and Brisbane;
- would make a significant contribution to delivering the State Government's commitment to the AusLink National Network initiative, generating broader benefits to the State by enhancing capacity, performance and interstate connectivity for the road freight industry and other users;
- would enable the State Government to achieve a key transport priority of the *State Infrastructure Strategy – New South Wales 2006/7 to 2015/16*; and
- is essential that the Upgrade be assessed, constructed and delivered within a timely manner in order to complete the Upgrade by 2016, as agreed between State and Commonwealth governments. In particular, it is essential that a supportive planning framework is provided to deliver greater certainty to the State and Federal governments in being able to achieve the future timing, funding and construction arrangements for these major works within the 2016 timeframe.

Population on the Mid North Coast is expected to increase from 333,400 in 2006 to 424,400 in 2031, an increase of 91,000¹. The resulting development will place increased pressure on existing infrastructure, including the local and regional road network which must be addressed so as to not compromise the social and physical environment for current and future communities. The RTA has identified a need to upgrade the highway between Sapphire and Woolgoolga to address current and future local and regional traffic growth. Current mixing of local and through traffic is considered to be an issue with safety and travel time implications requiring resolution.

A rigorous strategic planning process was undertaken to identify the preferred route for the Sapphire to Woolgoolga section while recognising the need for future upgrade of the highway around the Coffs Harbour area as a whole. The Coffs Harbour Highway Planning Strategy was prepared by the RTA in association with the Department which identified that an inland bypass route around Coffs Harbour was not feasible and that the Coastal Corridor best addressed the objectives of the Pacific Highway Upgrade Program and the project. The route selection process was undertaken over approximately four years and was accompanied by a substantial community consultation and notification process where the community was consulted at key decision making points and comments used to inform future investigations.

The proposed Sapphire to Woolgoolga Pacific Highway Upgrade is a 25 kilometre project consisting of two parts:

- a new dual carriageway between Sapphire and South Woolgoolga largely within the existing highway corridor. The existing highway will be upgraded to provide a local traffic access route without the need to mix with high speed through traffic; and
- a bypass from South Woolgoolga to the west of Woolgoolga which rejoins the existing highway alignment in the vicinity of Arrawarra Beach Road.

¹ Department of Planning (2006). *Draft Mid North Coast Regional Strategy*.

Following a detailed assessment of the Environmental Assessment, public and Government agency submissions and the RTA's Response to Submissions Report, the Department is satisfied that the likely impacts of the project have been addressed and can be managed or mitigated to acceptable levels. It is recommended that the project be approved subject to a number of recommended conditions.

Despite this, it is acknowledged that there is a proportion of the community which opposes the proposal on the grounds that a far western bypass of Coffs Harbour, away from the coastal corridor is preferred. The Department has reviewed the decision making process undertaken by the RTA in developing the preferred route and concurs that a far western bypass is not justified at this time. It is noted that the further west a route is located, the less likely that traffic would be attracted to it. This is largely because the majority of trips on the Pacific Highway between Sapphire and Woolgoolga are local with through trips a relatively small proportion.

There are a number of constraints to the project which will need to be carefully managed. These include construction noise impacts, the development and implementation of mitigation measures for operational noise, property impacts and land acquisition and biodiversity impacts and offsets (particularly fauna movement and alternative habitat provision). These issues were reflected in submissions from the local community, were considered by the Department and recommended conditions of approval drafted where appropriate to support and enhance the RTA's Statement of Commitments.

The Department is satisfied that if the recommended conditions of approval and Statements of Commitment are appropriately implemented then the project could proceed in a sustainable manner with overall benefits to the local and regional community, and minimal long term residual impacts to the wider community and environment. Therefore it is recommended that the Minister for Planning approve the Sapphire to Woolgoolga Pacific Highway Upgrade.

1. BACKGROUND

1.1 Pacific Highway Upgrade Program

The NSW Roads and Traffic Authority (RTA) proposes to construct the Sapphire to Woolgoolga Pacific Highway Upgrade as part of the Pacific Highway Upgrade Program (Figure 1). The Pacific Highway Upgrade Program is jointly funded by the New South Wales and Australian Governments. The Program's primary aims are to eliminate blackspots, improve road safety conditions and reduce overall travel times on the Pacific Highway between Hexham and the Queensland border.

The overall objectives of the Pacific Highway Upgrade Program are to:

- significantly reduce road accidents and injuries;
- improve transport efficiency by reducing travel times and freight costs;
- develop a route that involves the community and considers their interests;
- provide a route that supports economic development;
- manage the upgrading of the route in accordance with Ecologically Sustainable Development (ESD) principles; and
- provide the best value for money.

The Coffs Harbour Highway Planning Strategy was developed as part of the Program by the RTA in association with the Department of Planning and with significant opportunity for community input through a range of consultation activities. This is discussed in detail in section 1.2.

The Strategy was developed to address the need to upgrade the highway between Sapphire to Woolgoolga while planning for future traffic needs within the Coffs Harbour area. It extends from Sawtell, south of Coffs Harbour, to Arrawarra in the north, a distance of approximately 40 kilometres. The Strategy also enabled the Sapphire to Woolgoolga upgrade to be developed in a manner that would be consistent with the preferred route for the southern Coffs Harbour section.

In December 2004, the Coastal Corridor was announced as the preferred corridor for the Coffs Harbour Highway Planning Strategy. This corridor formed the study area for the development of route options. The study area for the Sapphire to Woolgoolga project is shown in Figure 2.



Figure 1: Overview of the Pacific Highway Upgrade Program



Source: Environmental Assessment (Connell Wagner, 2007).

Figure 2: Project Study Area

1.2 Coffs Harbour Highway Planning Strategy

The Coffs Harbour Highway Planning Strategy commenced in 2001 to identify route options for possible future upgrading of the Pacific Highway through the Coffs Harbour local government area. It was developed as a whole of government partnership to address the need to upgrade the Pacific Highway between Sapphire and Woolgoolga while planning for the future traffic needs of the Coffs Harbour area. The (then) Department of Urban Affairs and Planning, Coffs Harbour City Council (CHCC) and the Roads and Traffic Authority formed a steering committee to oversee the preparation of the strategy².

Preparation of the strategy included consideration of a wide range of corridors and route options, between Sawtell to the south of Coffs Harbour to the north of Woolgoolga. These included options identified by the project team, Coffs Harbour City Council and the community, and fell within three (3) broad corridors:

- far western bypass;
- Coffs Harbour City Council preferred corridor; and
- coastal corridor.

Key issues addressed in considering the various options included those related to planning, land use and road network.

A route options development report was released in December 2002 for the section between Sapphire and Woolgoolga and the preferred option for the Coffs Harbour Highway Planning Strategy released in November 2004. The preferred route identified the coastal route combining the following sections:

² It should be noted that following CHCC's adoption of a preferred corridor in late 2003, the steering committee agreed that it could no longer manage the development of the strategy and disbanded. The RTA undertook to finalise the Strategy in association with the (then) Department of Infrastructure, Planning and Natural Resources.

- an inner bypass deviation around Coffs Harbour;
- upgrading of the existing highway Korora to South Woolgoolga to dual carriageway; and
- deviation around Woolgoolga to Arrawarra Creek.

The Coastal Corridor (and route options within it) was found to be the most feasible due to:

- good functional performance (providing road safety improvements and travel time savings) while still enabling separation of through and local traffic;
- providing the best balance between functional, environmental, social and economic factors;
- moderate and manageable biodiversity impacts and relatively minor and manageable heritage impacts;
- lower cost; greater value for money and fair economic performance (benefit to cost ratio); and
- opportunities for staging within funding program limitations.

Community input and consultation occurred throughout the development of the strategy commencing in September 2001 with release of a discussion paper and summary brochure. Additional consultation activities included public information displays, open information sessions and establishment and meeting of community focus groups. A number of information sheets were distributed at key milestones through the strategy development which outlined the consultation activities and opportunities for input. These information sheets included description of how community submissions and input from previous stages had been incorporated into the study.

1.3 Location and Land Use

The study area commences approximately eight kilometres north of Coffs Harbour at Sapphire and extends northward for approximately 25 kilometres to the vicinity of Arrawarra Beach Road north of Woolgoolga (Figure 2). It is a popular tourist destination with the major attractions being the beaches, headland, lake, flora reserve and surrounding countryside.

The existing Pacific Highway forms the main north-south access connecting Coffs Harbour to Arrawarra and northwards to Grafton. The section of the highway between Sapphire and Upper Corindi Road is a two-lane, two way rural road with a number of passing opportunities. This section of highway caters for large volumes of local and through traffic due largely to a significant increase in residential development along the coastal strip.

The project would occupy an area of approximately 308 hectares of which almost half (142.9 hectares) is within the current highway road reserve and 21.8 per cent (67.1 hectares) is either State Forest or land owned by Coffs Harbour City Council or other government departments. The project would require the partial or total acquisition of 127 property lots (both private and public).

Land use varies and is characterised by medium density tourist facilities and residential development in the south with low density rural residential and rural land uses interspersed with urban settlements further northwards. Coffs Harbour City Council estimated that the population within the LGA would increase to approximately 100,000 by 2031 (Coffs Harbour City Council 2004 Population Profile). A number of coastal villages are located along the existing highway including Sapphire, Moonee Beach, Emerald Beach, Sandy Beach and Woolgoolga (both of which extend to the western side of the highway), Safety Beach, Mullaway and Arrawarra. To the west of the existing highway are a number of rural-residential estates including Heritage Park, Avocado Heights, Emerald Heights and the Country Club Estate.

Other land uses include forestry and recreation in the Wedding Bells State Forest, Orara State Forest and Sherwood Nature Reserve. Banana plantations in particular have increasingly had to compete with the demand for residential development due to the shared desire for ocean facing land. Over 16 per cent of the Woolgoolga workforce is currently employed in agriculture or agriculture-related jobs.

2. PROPOSED DEVELOPMENT

2.1 Project Description

The proposed upgrade alignment between Sapphire and Woolgoolga is shown in Figure 3. The total length of the proposal is approximately 25 kilometres, extending from Sapphire northward to rejoin the existing Pacific Highway in the vicinity of Arrawarra Beach Road, north of Woolgoolga. The project comprises a 15 kilometre upgrade within the existing highway corridor between Sapphire and South Woolgoolga and a 10 kilometre bypass from South Woolgoolga reconnecting with the existing highway near Arrawarra Beach Road. The estimated capital cost of the project is \$464 million (\$2006).



Source: Environmental Assessment (Connell Wagner, 2007).

Figure 3: The Project

Key components of the project described in the Environmental Assessment include:

- duplication of the existing highway to dual carriageway between Sapphire and South Woolgoolga;
- a dual carriageway bypass of Woolgoolga deviating from the existing highway alignment north of Graham Drive North and rejoining the highway near Arrawarra Beach Road;
- five grade separated interchanges located at:
 - Gaudrons Road/Split Solitary Road, Sapphire;
 - Moonee Beach Road/Hoys Road, Moonee Beach;
 - Fiddaman Road/Graham Drive South, Emerald Heights;
 - Graham Drive North/Hearn's Lake Road, south Woolgoolga; and
 - Arrawarra Beach Road, Arrawarra. This interchange would provide the connection point for the adjoining Woolgoolga to Wells Crossing upgrade project to the north.

- a rest area on the eastern side of the Arrawarra Beach Road interchange for heavy and light vehicles;
- 30 bridges or bridge sized structures, including new or replacement bridges over existing creeks, underpasses/overpasses associated with grade separations at interchanges and local road crossings;
- the potential for the project to be delivered in discrete stages or packages.

Relocation of a number of public utilities and services will be required including high and low voltage overhead and underground power lines, telecommunications, network water mains, reuse water mains, and sewer mains.

Construction duration will depend on the staging approach and delivery method selected however it is anticipated to take two to three years. The project would employ an on-site workforce of up to 300 people.

2.2 Project Need and Justification

The Environmental Assessment states that the Pacific Highway Upgrade Program is being undertaken to eliminate blackspots, improve road safety conditions and reduce overall travel times along its length.

The Draft Mid North Coast Regional Strategy (NSW Department of Planning, 2006) identified the Mid North Coast³ as one of the fastest growing regions in NSW with the population expected to grow from 333,400 in 2006 to 424,400 in 2031, an increase of 91,000. In its *Coffs Harbour City 2004 Population Profile*, Coffs Harbour City Council predicted that the population in the LGA was expected to increase to just below 100,000 by 2030. Population increase generally leads to increased residential and commercial development and results in increased traffic demand.

The existing highway through the study area comprises a two lane single carriageway road with overtaking opportunities approximately every five kilometres. The Proponent has calculated that current annual average traffic at the southern approaches of the project is approximately 20,500 vehicles while at the northern end it is just under 11,000 vehicles per day. The proportion of through traffic is substantially less than half of the total traffic closer to Sapphire, reflecting the impact of local traffic movements on total traffic flow. Through traffic is between 28 and 54 per cent of the total annual average daily traffic depending on location and heavy vehicle volumes. Between 60 and 80 per cent of heavy vehicles are through traffic. This is discussed in more detail in Sections 5.1 and 5.4.

The Environmental Assessment indicates that without any improvements, increasing traffic through the study area due to further development and natural growth, would result in declining traffic and safety conditions for both vehicular and pedestrian/cyclist traffic and lead to increases in delays (particularly during school holiday periods) and associated increases in vehicle emissions. Through traffic is also expected to increase as the Pacific Highway Upgrade Program proceeds to the south and north. The Proponent states that a dual carriageway highway, together with upgraded access arrangements, would improve transport efficiency by reducing travel time and costs and would significantly reduce the number and severity of accidents.

The Proponent has indicated that without upgrading the highway between Sapphire and Arrawarra, the predicted traffic growth in the region would increasingly expose the deficiencies of the existing road environment and lead to specific consequences including:

- deterioration of traffic conditions to unacceptable levels particularly at holiday times;
- a likely increase in vehicle accidents;
- increased travel times for both local and through traffic;
- increased conflict between local and through traffic;
- inconsistency in road standard between this section and upgraded sections of the Pacific Highway;

³ The draft Mid North Coast Regional Strategy applies to the eight local government areas of Clarence Valley, Coffs Harbour, Bellingen, Nambucca, Kempsey, Port Macquarie–Hastings, Greater Taree and Great Lakes.

- 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 the standard of access to and from the highway deteriorates;
- failure to achieve the objectives of planning and transport strategies, in particular the Pacific Highway Upgrade Program and the Coffs Harbour Highway Planning Strategy.

The proposal is consistent and required to meet a range of commitments made in NSW State Government policy and strategies. These include:

- the NSW State Plan 2006, which includes the key priorities of safer roads and maintaining and investing in infrastructure, with travel times between Hexham and the Queensland border as a key measure of the latter;
- the NSW State Infrastructure Strategy 2006, which includes the Pacific Highway Upgrade Program; and
- the draft Mid North Coast Strategy 2006, which cites the Pacific Highway Upgrade Program as a key factor in improving regional accessibility.

The Department is satisfied that the proposal is justified and that it is consistent with relevant planning strategies and instruments. This is discussed further in Chapters 1 and 1.

3. STATUTORY CONTEXT

3.1 Major Project and Critical Declaration

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.*”

Despite the above, the Minister for Planning subsequently declared on 5 December 2006, by way of an order published in the NSW Government Gazette pursuant to Section 75B(1), that the Pacific Highway Upgrade Program (including the Sapphire to Woolgoolga segment) is a project to which Part 3A of the Act applies. On the same day, the Minister for Planning declared the Pacific Highway as Critical Infrastructure under section 75C of the *Environmental Planning and Assessment Act 1979* (the Act).

It was considered that the Pacific Highway Upgrade Program is a major project and critical infrastructure for the following reasons:

Major Project

- it would deliver infrastructure fundamental to fulfilment of the State Government’s commitments to AusLink’s integrated National Network initiative which focuses on achieving sustainable national and regional economic growth, development and connectivity;
- it would improve the service and efficiency of the key road transport and freight corridor between Sydney, Newcastle and Brisbane;
- it would deliver infrastructure that would significantly improve safety for all corridor users; and
- it would deliver infrastructure to support the rapidly developing coastal communities located along the NSW North Coast.

Critical Infrastructure

- it would deliver significant social benefits to the State and regions by addressing key safety concerns for all road users along the remaining single carriageway sections of the Pacific Highway. Up to 85 per cent of fatalities occur along sections not upgraded of which 50 per cent are head on collisions. Upgrading of remaining single carriageway sections would substantially improve road safety and significantly reduce the risk of head on collisions;
- it would deliver clear economic benefits to the State and region by significantly improving the performance, efficiency and freight competitiveness of the principal road freight and passenger corridor between Sydney, Newcastle and Brisbane;
- it would make a significant contribution to delivering the State Government’s commitment to the AusLink National Network initiative, generating broader benefits to the State by providing enhanced capacity, performance and interstate connectivity for the road freight industry and other users;
- it would enable the State Government to achieve a key transport priority of the *State Infrastructure Strategy – New South Wales 2006/7 to 2015/16*; and
- it is essential that the Upgrade be assessed, constructed and delivered within a timely manner in order to complete the Upgrade by 2016, as agreed between State and Commonwealth governments. In particular, it is essential that a supportive planning framework is provided to deliver greater certainty to the State and Federal governments in being able to achieve the future timing, funding and construction arrangements for these major works within the 2016 timeframe.

Despite the Order and Critical Infrastructure declaration, the general assessment and exhibition process, and consideration of the aims and objectives of environmental planning instruments remain.

3.2 Permissibility

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. The proposal is permissible in all relevant zones in the Coffs Harbour LEP.

Approximately one hectare of the proposal is located within the 1(f) Rural (Forests) (Wedding Bells State Forest) zone of the Ulmarra LEP. All land uses other than forestry are prohibited in this zone 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."

Coffs Harbour City Council advised the RTA that it was satisfied that the extent of the proposal located in 1(f) Rural (Forests) (Wedding Bells State Forest) zone of the Ulmarra LEP area is consistent with Objective (c) of the LEP. The Department concurs with this position

3.3 Minister's Approval Power

Director-General's requirements for the preparation of an Environmental Assessment for the Sapphire to Woolgoolga Pacific Highway Upgrade were issued on 15 December 2006. The RTA was notified on 29 November 2007, in accordance with section 75I(2)(g) of the Act, that the Environmental Assessment adequately addressed the Director-General's requirements for the purpose of public exhibition.

The environmental assessment was placed on public exhibition from Wednesday 5 December 2007 to Friday 15 February 2008, a period of 73 days, and submissions invited in accordance with section 75H of the Act. The statutory period for the exhibition of the Environmental Assessment was extended to allow for the Christmas holiday period and to provide the local community and visitors to the area over the holiday period to view and have input into the project. Taking into account the public school holiday period, the exhibition of the Environmental Assessment outside this time still exceeded the statutory period of 30 days.

The Department has met all of its legal obligations so that the Minister can make a determination of the project.

4. CONSULTATION AND ISSUES RAISED

4.1 Introduction

The Department received 93 submission during the exhibition period of which six (6) were from Government agencies and one (1) from Coffs Harbour City Council. No submissions were received from any Members of Parliament.

Of the total submissions received, 46 submissions objected to the project, 14 submissions indicated support and the remaining 33 submissions did not state a clear position although provided specific information on issues of concern or comments in relation to the proposal.

4.2 Summary of Issues Raised

A breakdown of the issues raised in the submissions is presented in Figure 4. The graph indicates the frequency that an issue was raised relative to the total number of issues raised, rather than as a percentage of submissions raising that issue.

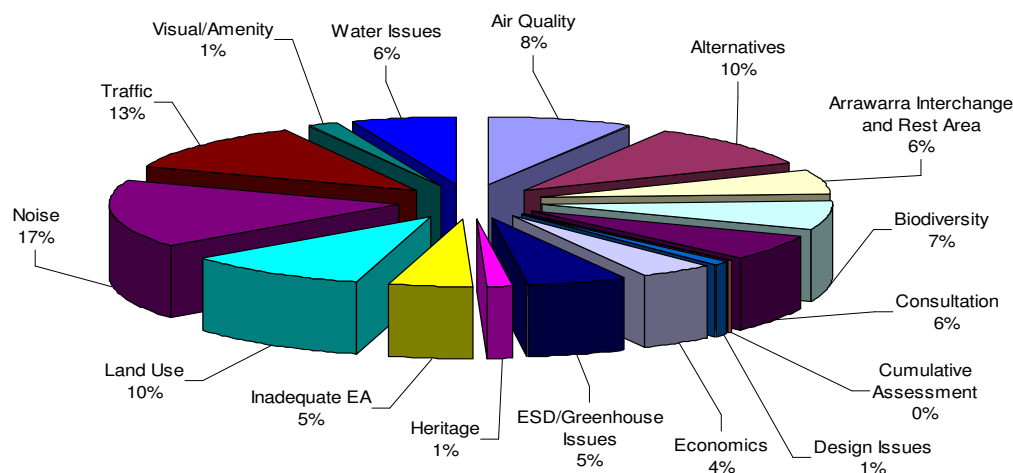


Figure 4: Summary of Issues Raised in Submissions

Figure 4 shows that noise, traffic, land use and alternatives were the issues raised most frequently. The key concerns for each issue are summarised below.

1. Noise and vibration including:
 - a. existing traffic noise was already high and that night time noise was a particular problem in the area and is expected to worsen with time as the number of heavy vehicles using the highway increases;
 - b. noise impacts of the proposed Arrawarra Interchange and rest area;
 - c. the need in the past to install air conditioning systems to enable windows to be kept closed and other noise abatement measures to be implemented at residential dwellings to reduce existing noise to acceptable levels is not consistent with the outdoor lifestyle;
 - d. mitigation measures proposed would not be adequate to ameliorate the noise impacts; and
 - e. the number of residences affected by noise was significantly underestimated.
2. Local and Regional Traffic, including:
 - a. expected tripling of heavy vehicle freight traffic on the highway;
 - b. safety and the circuitous nature of the local service road route;
 - c. perception that the traffic impact assessment was based on out of date data;
 - d. some acknowledge the traffic benefits and improvements to safety with the project.
3. Alternatives, including:
 - a. a far western bypass was preferred to a coastal route; and

- b. Government should be investing funds in upgrading the freight rail system to encourage a mode shift from road to rail.
4. Land use, including:
 - a. impacts to private property including impacts to existing farms and loss of income;
 - b. loss of agricultural land;
 - c. impacts to farm infrastructure such as water storage facilities, irrigation pumps, farm sheds and access arrangements;
 - d. impacts from deep cuttings on micro-climatic conditions for particular crops such as bananas and mangos.
5. Arrawarra interchange and rest area
 - a. the location of the interchange within an area of high biodiversity;
 - b. the need for an additional rest area in this location when a similar facility together with food outlet services is located a short distance to the north at Halfway Creek;
 - c. increased noise impacts on residents of Arrawarra Beach Road.
6. Air quality, including:
 - a. increased traffic emissions, particularly fine particle emissions from heavy vehicles;
 - b. impacts of dust and diesel fuel emissions on private rainwater tanks and resultant health impacts from increased air pollution;
 - c. false statement that air quality would improve from high posted travel speeds when the specialist air quality assessment report (Working Paper 8) indicated otherwise.

Issues such as cumulative impacts, impacts to indigenous and non-indigenous heritage, design issues associated with the proposal, and visual and aesthetic impacts were raised infrequently.

4.3 Public Submissions

The public submissions consisted of two (2) from non-government organisations, seven (7) from special interest groups, four (4) from business (including two from the same business) and 74 from local residents.

4.4 Submissions from Government Agencies

The Department received submissions from the Department of Environment and Climate Change, Department of Primary Industries (including a separate submission from Forests NSW), TransGrid, Marine Parks Authority, Ministry of Transport and the NSW Rural Fire Service. The Department of Environment and Climate Change stated that it could support the project subject to a number of recommendations being incorporated as part of the proposal or being imposed as conditions of approval. No other agencies stated a clear position but identified a number of issues for further consideration or for which further information was requested. Agencies submissions are summarised below.

- The **Department of Environment and Climate Change (DECC)** – **could support the project subject to a number of recommendations** being incorporated as part of the proposal or imposed as conditions. DECC provided a number of recommended changes to the Proponents Statement of Commitments in relation to environmental management, traffic and access, noise and vibration, flora and fauna and the issue of soil and water management; provided comments regarding fauna movement measures; impacts of flora, fauna and habitat removal, vegetation clearing and habitat fragmentation, biodiversity monitoring and the need to negotiate a biodiversity offset package. Specific comments were made regarding the impacts of the Arrawarra interchange on biodiversity issues and indicated that the rest area is inappropriately located and requires further justification in relation to the significance of habitat in the locality. Other concerns included construction noise levels water quality, flood risk management and general coastal management issues.
- The **Department of Primary Industries** – **did not state a clear position** but provided comments relating to agricultural issues and fisheries/aquatic habitat protection including support for mitigation measures proposed; recommendation that the spray drift buffer be incorporated into the road reserve adjacent to both blueberry and banana plantations; replacement of or compensation for farmers where farm infrastructure such as farm sheds, water supply and access roads are affected by the proposal; acquisition; water quality, particularly in relation to aquatic habitats in the Solitary Islands Marine Park catchment; waterway crossings should be designed to facilitate fish

passage where appropriate. Forests NSW provided comments relating to the impacts on Orara East and Wedding Bells State Forests including that any impact on timber production resulting from the acquisition of forest land would be mitigated in part by the Proponent's commitment to allow for the removal of harvestable timber from the footprint prior to the commencement of construction. Forests NSW requests that the location of fauna crossings should not only consider fauna movement corridors but also forest management zoning and the management intent of the adjacent State forest.

- **Marine Parks Authority – did not state a clear position** but indicated that its major concern was the need to keep maintain a high standard of water quality throughout construction and operation. The Authority also suggested timing particular construction activities to occur in drier parts of the year in the Hearn Lake/Double Crossing Creek, Arrawarra, Cunninghams and Skinners creeks catchments.
- **Ministry of Transport – did not state a clear position** but requested that potential disruptions to existing school bus services be identified and mitigated liaising with local bus service providers in preparing the Construction Environmental Management Plan.
- **TransGrid – did not provide any comments or objections.**
- **NSW Rural Fire Service – did not raise any concerns or issues.**

4.5 Submissions from Local Government

Coffs Harbour City Council did not state a clear position in relation to the project but provided specific comments in relation to staging, urban design and landscaping treatments, traffic impacts on the local road system including the Graham Drive/Hearn Lake Road interchange, the proposed cycleway and proposed bus bays, noise mitigation between Sapphire and Emerald Beach, the need for a service centre and the impacts of the bypass on Woolgoolga.

A submission was also received from the then Deputy Mayor, Councillor Rod McKelvey. This submission has been treated as a public submission and not the views of Council.

4.6 Submissions from Businesses and Non-Government Organisations

Seven (7) submissions were received from businesses and/or non-government organisations. The issues raised are summarised below.

- The Pines Caravan Park (prepared by Coastplan Consulting) – **did not state a clear position** but indicated that noise mitigation is required for the dwellings within the Park.
- Hill of Fire Sanctuary – **objected to the proposal** based on the alleged damage and degradation that would be caused to the communities and the environment including the Solitary Islands Marine Park. This submission favoured a route to the west of Coffs Harbour.
- Sol e Mar (two submissions received) – **did not state a clear position** but raised concerns regarding stream flow and potential sedimentation problems at Sapphire. The submission requested that appropriate safeguards be incorporated into the creek flowing into Paperbark Lagoon, Crystal Waters, Sapphire, such that pollutants from construction and operation of the highway are not permitted to flow into the lagoons. The second submission received objected to the proposal providing similar comments and concerns to those raised by The Angry Grannies (refer to Section 4.7).
- Bagawa Birra Murri Aboriginal Women's Council – **outlined concerns** regarding the indigenous heritage assessment.
- Nature Conservation Council – **objected to the proposal** due to its impact on biodiversity, the lack of alternatives pursued and the additional greenhouse gas emissions that will result over the project's lifetime.
- Woolgoolga Chamber of Commerce – **objected to the proposal** based on impacts to agriculture, human culture, scenic value of the area, tourism, employment and quality of life of residents. The submission indicated preference for a Class A dual carriageway as well as a bypass outside the coastal corridor. Other issues of concern are similar to those raised by The Angry Grannies submission discussed in Section 4.7.
- NSW Wildlife Information and Rescue Services Inc (WIRES) – **did not state a clear position** but commented on spacing of fauna crossing structures and that fencing is required to direct fauna to crossing locations and minimise potential for road kill.

4.7 Submissions from Local Community Groups

Submissions were received from the following local community groups:

- The Angry Grannies (one submission with multiple attachments and articles provided later via email);
- Northern Beaches Action Group;
- Sandy Hearn's Action Group (two submissions were received); and
- United Residents' Group of Emerald Inc. (URGE).

A summary of the main issues raised by each of the local community groups is outlined below.

- The Angry Grannies and the Northern Beaches Action Group submissions raised similar issues. These submissions **objected to the proposal**, considering that the environmental assessment was inadequate, containing false and misleading information. Issues raised included heavy vehicle traffic volumes; community consultation undertaken; noise; safety of the local road system in particular around Graham Drive; lack of alternatives considered, including the use of rail for the movement of freight; dust during construction, the need to control spray drift for adjacent blueberry plantations and the lack of a health and social impact assessment undertaken. The submission indicated that the time available for the preparation of submissions was limited due to the exhibition occurring over the Christmas holiday period.
- The Sandy Hearn's Action Group submission raised many issues including concerns associated with community consultation; the lack of environmental sustainability and consideration of global peak oil prices and climate change; health risks from motorway pollution; the impact of the project on biodiversity and areas of high ecological significance such as Hearn's Lake which forms part of the Solitary Islands Marine Park; and the lack of alternative transport options considered. The Action Group also noted that the Aboriginal significance of Hearn's Lake was not seriously considered and consultation with local indigenous groups was lacking. While not explicitly stating its objection to the project, the tone of the submission and the issues raised imply that the Action Group is opposed to the proposal.
- The United Residents' Group of Emerald Inc. (URGE) **objected to the proposal** on the grounds of poor planning for the future and favours a far western bypass. Issues raised included the inadequate description of social and economic impacts; inaccurate assessment traffic separation; current and future noise concerns, particularly at night, expected to worsen with time; the lack of mitigation measures proposed near Emerald Beach. Other issues raised included visual impacts, impacts on significant flora, impacts on local businesses during construction, impacts to air and water pollution, the potential generation of dust, traffic and safety impacts. The submission indicates that residents were not aware that the "massive truck stop" was to be included as part of the proposal.

4.8 Submissions Report

Following review of the submissions, the Department required the RTA to prepare a response to submissions report to address the issue raised. The RTA proposed a number of refinements to the proposal as a result of considering issues raised in submissions. These were:

- refinement of the road reserve boundary at locations in Hunter Close, Newmans Road and Bark Hut Road; and
- refinement of property access arrangements in two locations;

The proposed refinements were considered acceptable and as they did not significantly change the project for which approval was sought, a Preferred Project Report was not required.

The Department provided government agencies that had previously commented on the proposal with the opportunity to comment on the submissions report. The Department of Environment and Climate Change, Department of Primary Industries and the Department of Lands provided further comment to the Department. The report could also be accessed on the Department and RTA's websites.

The Department of Environment and Climate Change provided a number of specific recommendations for conditions of approval in relation to biodiversity including microbat relocation, nest boxes, fauna passage design and movement, connectivity, glider crossings, landscaping, biodiversity offsets and monitoring of mitigation, standard construction hours, blasting, operational noise and auditing, potential changes to groundwater and preparation of management plans.

The Department of Primary Industries provided a number of recommendations regarding spray drift buffers between the highway and agricultural land; requested reference to the NSW DPI Panama Disease Management protocol; fish passage in multiple cell culverts; and bridge design and consultation regarding rehabilitation and compensation requirements.

The Department of Lands made suggestions regarding fauna movement structures and the acquisition of affected Crown Land below the Mean High Water Mark.

4.9 Project Changes After the Submissions Report

The Department, the DECC, Coffs Harbour City Council and the Arrawarra Beach community highlighted significant concerns regarding the justification for and impacts of the proposed rest area adjacent to the Arrawarra Interchange. Details of issues raised in this regard are provided in Section 5.5. In addition, the RTA advised that it was considering the need for rest areas within the northern Coffs Harbour area on a more strategic basis. To this end, following significant concerns from the Department, the RTA advised the Department in correspondence dated 29 October 2008 that it wished to withdraw the rest area at Arrawarra from the proposal.

5. ASSESSMENT OF ENVIRONMENTAL IMPACTS

Key issues raised in the submissions in response to the public exhibition of the project and/or identified during the Department's assessment included, in no particular order of importance:

- route selection and alternatives
- biodiversity;
- noise and vibration;
- property impacts (including agricultural impacts);
- traffic and transport impacts; and
- impacts specific to the Arrawarra interchange and rest area.

A range of other issues, including aquatic ecology, soil and water quality, air quality, heritage and management of agricultural land are briefly considered at the end of this chapter. All other issues are considered to have been adequately addressed as part of the RTA's Environmental Assessment, Response to Submissions Report and/or revised Statement of Commitments and therefore do not require further consideration.

5.1 Route Selection and Alternatives

Issue

Corridor Selection

The Coffs Harbour Planning Strategy was developed to address the need to upgrade the Pacific Highway between Sapphire and Woolgoolga while planning for future traffic needs in the Coffs Harbour area generally. The strategy included investigation of three (3) broad strategic corridors being:

- a far western bypass;
- a coastal corridor; and
- the Coffs Harbour City Council preferred corridor.

The Coastal Corridor was selected by the RTA as the most feasible as it:

- provided substantial road safety and travel time improvements while still enabling separation of local and through traffic;
- provided the best balance between functional, environmental, social and economic impacts;
- has manageable biophysical and heritage impacts;
- gave the best value for money and fair economic performance; and
- provided favourable staging opportunities.

Notwithstanding, it was recognised that this corridor would have potentially greater social and community impacts due to its proximity to existing developed urban areas.

A number of route options were investigated in the Coastal and Coffs Harbour City Council preferred corridors. A do nothing option was also considered.

The Coffs Harbour Highway Planning Strategy, including consultation activities and input, is discussed in more detail in Section 1.2.

Preferred Route

The project includes a section of upgrade of the existing highway through highly urbanised areas between Sapphire and South Woolgoolga and a bypass section through largely agricultural land between South Woolgoolga and Arrawarra Beach Road. In addition, a new local road route will be created between Sapphire and South Woolgoolga to cater for the significant proportion of local traffic that travels between these areas and Coffs Harbour. The existing highway through Woolgoolga to Arrawarra Beach Road will perform this function for the area bypassed. This will result in increasing the width of the highway corridor through this section with associated property acquisition (refer to Figure 7.2 of the Environmental Assessment).

The project is not intended to specifically increase traffic volumes through the corridor in itself but has been designed to maximise travel efficiency and cater for natural growth and ongoing development

along the Coffs Harbour north coast. As a result there will be increased traffic over time as well as other associated environmental impacts such as noise.

Alternatives

Alternative to the preferred project can cover a range of options including alternative corridors, alternative routes within a corridor, alternative infrastructure or modes of transport as well as the do-nothing option. The RTA has considered each of these to varying degrees.

Submissions

Route selection and consideration of alternatives made up ten (10) per cent of issues raised on the proposal. Key concerns were:

- a far western bypass of Coffs Harbour or upgrading the existing highway through Woolgoolga would be better;
- the preferred option was chosen without open and transparent community consultation;
- a dual carriageway upgrade to Class A standard along the current highway alignment would have less significant adverse impact on the community and environment and therefore the proposal should have been assessed against this;
- there was no consideration of alternatives to motor vehicle use; and
- reduction of freight transport times could be achieved by an efficient rail system with only local movement by road.

Consideration

Western/Inland Corridors vs Coastal Corridor (Preferred Route)

Investigations for a corridor for the Pacific Highway Upgrade in the Coffs Harbour area (the Coffs Harbour Highway Planning Strategy) commenced in 2001. It considered the area between Sawtell in the south to north of Woolgoolga, both as a whole and as individual sections.

The Department acknowledges that large sections of the community advocate western or inland bypass routes of Coffs Harbour on the basis of removing all through traffic from the coast to enable the existing highway to function solely as a local route. Notwithstanding this desire, the Department recognises that a number of considerations, outlined below, have indicated that such an option is not feasible, nor would it address impacts which are currently experienced on the highway.

Each of the western or inland corridors were characterised by:

- steep and rugged terrain with substantial ridgelines which would require tunnelling or viaducts;
- low traffic usage (due to most traffic close to Coffs Harbour being local and not through traffic) and high cost resulting in poor economic viability;
- significant cost implications with estimated costs between \$1.025 billion and \$1.652 billion;
- significant impacts on rural residential and agricultural properties compared with the coastal route;
- significant impacts on native vegetation of high ecological importance, including Sherwood Nature Reserve, the impacts of which would be difficult to mitigate;
- significant impacts on landscapes of high Aboriginal cultural significance;
- potential severance and introduction of a new source of disturbance (noise, visual intrusion, air quality); and
- reduced impacts on residential communities compared with a coastal corridor.

As indicated above, traffic studies suggest that the further west from Coffs Harbour and its surrounds a bypass corridor is located, the less traffic it would attract. This is further exacerbated by the need to construct through and traverse steep terrain, which would be a deterrent to heavy vehicle traffic which may continue to use the existing highway. This is discussed in more detail in section 5.4.

The Department acknowledges that parts of the community perceive that the RTA has selected the corridor as it is the cheapest option. It is recognised that whilst the community may perceive there to be significant benefit of moving the current through traffic further west, the traffic data indicates that Coffs Harbour and its surrounds are either the origin or destination for the majority of traffic using the existing highway. Daily traffic volumes (total and heavy vehicle) on the existing highway without a bypass in 2021 were estimated and are shown in Table 1.

Table 1 - Estimated Daily Traffic Volumes (2021) without a Bypass

Location	Total Daily Traffic	Heavy Vehicle Traffic
North of Bray Street Coffs Harbour	45,074	4,462
North of Headland Road, Sapphire	31,745	3,365
North of Clarence Street Woolgoolga	24,291	2,301

This data suggests that a significant proportion of traffic on the highway is generated locally with vehicle numbers decreasing with increasing distance north of Coffs Harbour. This is true for both total traffic volumes (all vehicles) and heavy vehicles. This is also consistent with the findings that the further west the corridor is located, the less traffic it would attract as much of the traffic has Coffs Harbour as its origin or destination. Therefore a western inland bypass would provide insufficient relief to the traffic problems currently experienced on the existing highway. This is discussed in more detail in Section 5.4.

It is further recognised that a western bypass could be perceived to provide benefits to coastal residential communities, it can be shown that it would have little effect in resolving current traffic issues at significant expense to the taxpayer. The significant additional cost in conjunction with the expected low attractiveness of such a route would not be in the interest of the wider community, nor would it be a responsible use of public funds. Based on the above, the Department supports the RTA's decision to discount all western corridor options from further consideration at this time and to pursue a preferred alignment within the coastal corridor.

Preferred Route

An upgrade of the existing highway between Sapphire and Moonee/South Woolgoolga was selected by the RTA as the only feasible option for this section given the steep terrain immediately to the west. The Department accepts that to pursue a bypass between Sapphire and South Woolgoolga would provide engineering difficulties for construction and add significantly to the project cost for minimal, if any, advantage.

North of Moonee/South Woolgoolga, the coastal plain broadens to provide two options for a route between South Woolgoolga and Arrawarra Beach Road. Ultimately, a close deviation of Woolgoolga was considered the most suitable option for this section of the upgrade as it:

- would result in less severance of existing and future communities;
- would deliver the best overall socio-economic outcome;
- would be likely to have greater community acceptance (further from residential areas);
- better provides for future urban growth and greater flexibility for future land use planning decisions; and
- provides noise and safety improvements for Mullaway and Safety Beach.

In addition to the environmental impacts of a public infrastructure project, the Department must also be cognisant of the objectives set for a project (*i.e.* what is(are) the problem(s) that the project aims to resolve), social and economic aspects and on balance whether the project provides good “value for money” to the taxpayer.

It is noted that extensive opportunities for community involvement and input were provided throughout the development of the Coffs Harbour Highway Planning Strategy. This included distribution of discussion papers, summary brochures and information sheets, information displays and open information sessions, and establishment of community focus groups. At each stage of the strategy preparation, community input was sought. The issues raised and how these were incorporated into and amended the scope of subsequent stages of the strategy development were clearly stated in milestone documents. The Department is satisfied that the consultation activities undertaken throughout the strategy development provided ample opportunity for the community to provide comments on the investigations. Whilst this may be the case, it is understood that not all community members agree with the preferred option selected and therefore are unlikely to be satisfied that their concerns have been addressed. Notwithstanding, the Department is of the opinion that an open and transparent decision-making process was followed.

The Department is satisfied that the approach to determining the preferred route was appropriate and the decision-making process sound. The preferred route provides a sustainable solution to the issue of traffic volumes, mix and safety on the existing highway by:

- making as much use of the existing highway asset and alignment through the southern section where the greater proportion of traffic is local whilst achieving the project objectives; and
- providing a bypass through the northern section where there is reduced influence of local traffic and greater volumes of through traffic.

Alternatives

The Department acknowledges that there is a range of alternatives that could be considered in developing a new transport route. These range from the strategic (whether the appropriate solution is a road or another mode), to the corridor and preferred route, the detailed design of a preferred route and the 'do-nothing' option. These are discussed below.

❖ 'Do Nothing'

A 'do-nothing' option was considered but ruled out as the expected population and traffic growth along this section of highway would further deteriorate conditions on the existing highway, including increased risk of vehicle accidents, unacceptable traffic levels, especially during holidays, and increased travel time. These impacts would not be consistent with the objectives established for the Pacific Highway Upgrade Program. The Department accepts that to do nothing is not in the interests of the local community or the travelling public in this instance. The existing highway environment and planned future growth of the Coffs Harbour northern beaches area is such that it is necessary and prudent that an appropriate upgrade solution be investigated and implemented as soon as is feasible.

❖ Strategic Considerations

A number of submissions noted that no consideration of alternatives to motor vehicle use were considered. Whilst the RTA has noted current proposal for upgrades to rail infrastructure in the region as part of the cumulative impact assessment, no assessment of this or further upgrades to rail or other transport modes as alternatives to the highway upgrade were undertaken.

The Department recognises that strategic planning should consider all modes of transport and determine which is best placed to address the problem being experienced. The Government's draft Mid North Coast Regional Strategy recognises:

- the upgrading of the Pacific Highway as a major initiative of the State and Commonwealth governments to provide greater transport efficiency and safety for residents, for both intra and inter-regional movements. It is also recognised that the Pacific Highway will be the primary inter/intra region road corridor; and
- upgrading of the track and signalling on the North Coast Line, the main Sydney-Brisbane Rail Link, between Maitland and the Queensland border to assist in reducing travel times for intermodal freight trains by 3.5 hours and thereby encouraging an increase in the amount of freight transported by rail on the North Coast Line from the present 19 per cent to 30 per cent.

It can be shown that government, generally, is committed to improving freight movement generally as well as increasing mode shift from road to rail through the Federal government commitment of \$15 million for a study of options for a proposed inland freight railway line between Melbourne and Brisbane which bypasses Sydney. Any such proposal would aim to remove freight from roads by reducing rail freight travel time from 36 hours to 21 hours making it competitive with road freight time.

The State government has also submitted the Northern Sydney freight rail line as a priority project to Infrastructure Australia. This project has been shortlisted as one for which further analysis will be undertaken in considering whether Federal funding through the Building Australia Fund. If implemented, the project would separate freight and passenger services, easing congestion in Sydney's north and ultimately making freight by rail more competitive with road transport in terms of both cost and time.

Despite this, the Department is of the opinion that it is not the role of the RTA or individual projects to address the strategic issue of road versus other transport infrastructure requirements which requires a strategic approach involving the whole of Government and a number of different Ministerial portfolios. Further, any upgrade to rail infrastructure for freight will not, in itself, negate the need to upgrade road infrastructure for other users.

The State Government has recognised the Pacific Highway Upgrade as critical infrastructure in its own right, being essential to the State as it would, amongst other aspects:

- deliver significant social benefits by addressing key safety concerns for all road users along the remaining single carriageway sections of the Pacific Highway;
- deliver clear economic benefits by significantly improving the performance, efficiency and freight competitiveness of the principal road freight and passenger corridor between Sydney, Newcastle and Brisbane; and
- deliver greater certainty to the State and Federal governments in being able to achieve the future timing, existing funding and construction arrangements for these major works.

The Department is satisfied that the strategic need for the project has been appropriately established, appropriate consideration of project alternatives undertaken, and that the project would be required despite any rail or other projects to address the freight task.

❖ Class A vs Class M Upgrade

Two types of upgrade were considered:

- Class A upgrade of the existing highway – a dual carriageway, with at-grade intersections with local roads and generally used where there are fewer vehicles turning onto the upgraded highway;
- Class M motorways which are used for long term planning where there are high traffic volumes accessing the upgrade requiring a higher level of safety built into the design. These are characterised by separated dual carriageway with higher signposted speeds (usually 110 km/hr) than Class A and are access controlled through the use of grade separated interchanges.

It is recognised that for large sections of the Pacific Highway generally, that Class M upgrades are required now and the RTA is moving towards providing Class M motorway standard upgrades, especially in areas where sections of new highway deviate from the existing alignment.

The Department accepts that a Class A upgrade of the highway would not be appropriate for this project as it would preclude inclusion of grade separated interchanges or the full length local access road to separate local and through traffic. The Department recognises that a Class A upgrade would be unlikely to increase safety on the Pacific Highway in this area to the same standard as would be expected with a Class M motorway as local and through traffic would not be separated and intersection and highway performance would continue to deteriorate as traffic volumes increase (as these would remain at grade). The Department accepts that a highway upgrade to Class M is required in this section in the short term and will provide an alternative route for local traffic travelling to and between the northern beaches and Coffs Harbour without having to access the highway and mix with high speed through traffic.

5.2 Noise and Vibration

Issue

Construction Noise

Two distinct background or ambient noise environments were identified along the project. Ambient background noise in the Upgrade section (*i.e.* between Sapphire and South Woolgoolga) is generally 45 dB(A) during the daytime (7am to 10 pm) and 35 dB(A) at night (10 pm to 7 am). Background noise levels on the Bypass section (*i.e.* between South Woolgoolga and Arrawarra Creek Road) were generally 10 dB(A) lower during daytime and 3 dB(A) lower at night, largely due to distance from the existing highway.

Road construction typically involves clearing, excavation, earthworks, piling, blasting, bridge and pavement construction. Some of these activities generate significant noise emissions for extended periods of time. Noise generating ancillary facilities may include concrete batching plants, construction compounds, stockpile areas and on-site materials processing areas.

Construction noise experienced at any residence will depend on numerous factors including distance from construction, intermittent shielding and the type of activity occurring. Considering these factors, a worst case scenario could exceed construction noise criteria at the most affected receiver by up to 38 dB(A) during the daytime if no mitigation is adopted.

In addition to general construction noise, blasting may be required at various locations. Where blasting is likely to occur within 150 metres of the nearest residence, the RTA has committed to considering alternative rock removal techniques to minimise the noise and vibration effects.

Operational Noise

Road noise criteria are outlined in the *Environmental Criteria for Road Traffic Noise* (EPA, 1999). The following criteria have been adopted:

- “redevelopment of an existing road” for the section between Sapphire and South Woolgoolga; and
- “new freeway or arterial road” between South Woolgoolga and Arrawarra Beach Road.

The RTA has committed to providing a low noise pavement surface from Sapphire to approximately 700 metres north of Bark Hut Road. This will result in fewer than 140 residences requiring noise mitigation. In addition, approximately 3890 metres of noise barrier are proposed at various locations shown in Figure 7.2 of the RTA's Environmental Assessment. Forty nine (49) residences have been identified as likely to require architectural treatment. Barrier or mound locations and other mitigation measures would be refined during detailed design and in consultation with affected receivers.

Traffic noise impacts with the abovementioned mitigation in place can be categorised as follows:

- 363 receivers would experience noise **at or below the relevant criterion** in 2021 with the project **and reduced** from that which they would have received in 2011 **without the project**;
- 188 receivers would be **above the criterion** in 2021 but **reduced** from that which they would have experienced in 2011 without the project;
- 64 receivers would experience noise **at or below the relevant criterion** in 2021 but above that which they would have received in 2011 without the project;
- 42 receivers would experience noise **above the relevant criterion** in 2011 and **increased** from that which would have been received in 2011 without the project;
- 13 receivers currently exposed to noise above the relevant criterion would continue to be exposed to the same noise levels (*i.e.* no change); and
- seven (7) receivers would remain at or below the criterion with no change.

A further 63 residences not currently exposed to road traffic noise **will become exposed**, 55 of which will be **below** the relevant criterion.

With the above mitigation in place, residences on the section of highway that will be bypassed would experience reductions in noise levels of between 1.5 dB(A) and 10 dB(A) in 2021 with the project compared with expected noise exposure in 2011 without the project.

Submissions

Noise was the most commonly raised issue in submissions representing 17 per cent of all issues raised. Both operational noise and specifically that resulting from increased heavy vehicle use of the upgrade were raised including:

- data used in noise assessment was not appropriate (extrapolated data and traffic counts);
- local traffic noise impacts and noise reduction benefits in Woolgoolga questioned;
- residents already experience traffic noise impacts and the increased heavy vehicle traffic is expected to worsen current impacts, particularly at night which will affect sleep, lifestyle and health;
- a motorway adjacent to the existing highway is not an “upgrade” and should use the “new freeway or arterial road” criterion;
- number of residences affected is grossly understated and more noise barriers should be included;
- noise impacts will affect property values;
- architectural treatments will not enable outdoor space to be used or activities to be enjoyed; and
- a large change in noise when compared to existing noise will result, despite meeting criteria.

Consideration

Construction Noise

❖ Construction Noise Objectives and Standard Construction Hours

Construction noise objectives are generally determined by the duration of construction period with a longer period having a lower the noise objective. These objectives are set out in Chapter 171 of the (then) State Pollution Control Commission's *Environmental Noise Control Manual* (ENCM) and are summarised as:

- for construction periods less than or equal to four (4) weeks, the $L_{10(15 \text{ minutes})}$ shall not exceed the background level by more than 20dB(A); and
- for construction periods between four (4) and 26 weeks, the $L_{10(15 \text{ minutes})}$ shall not exceed the background level by more than 10dB(A).

Whilst not explicit within the ENCM, best practice has been that for construction periods greater than 26 weeks, the $L_{10(15 \text{ minutes})}$ shall not exceed the background level by more than 5dB(A).

The construction noise assessment considered the various construction phases and plant/equipment that would be used in each phase. It considered that because construction would be transient across the project and that each phase would therefore only last between four and 26 weeks, that the appropriate construction noise goal would be $L_{10(15 \text{ minutes})}$ plus 10 dB(A).

The RTA has indicated that the project is likely to have a two to three year construction program overall. Whilst the Department recognises that there are numerous phases to construction each lasting a number of weeks or months and that these move along the road corridor as construction progresses, it is also cognisant that there are few periods where there is no construction occurring once it has commenced. Even where there may not be intensive construction occurring at a particular time, there is usually construction related noise such as spoil/fill material haulage, other equipment/materials haulage and general construction traffic moving along the corridor throughout construction. Due to this, the Department believes that the “best practice” criterion should be adopted (*i.e.* background + 5 dB(A)).

It is generally recognised by Government that these objectives are difficult to achieve during construction, particularly for large scale infrastructure projects therefore the construction noise objectives are used as goals which project construction and programming should aim to achieve by implementing all feasible and reasonable mitigation and management measures. On this basis, construction noise could exceed the noise objective by up to 38 dB(A) without mitigation at the most affected receiver, and that a maximum 10 dB(A) decrease in construction noise levels could be achieved with all feasible and reasonable mitigation and management measures, resulting in an exceedance of up to 28 dB(A). Notwithstanding, daytime construction noise is recognised as being transient and of limited duration, and manageable with good communication between contractors and affected receivers.

To ensure that all reasonable and feasible mitigation measures are utilised, the Department recommends a condition requiring the RTA to prepare a Construction Noise and Vibration Management Plan which would identify mitigation and management measures to be adopted during construction of the project and how noise and the efficiency and efficacy of measures employed will be monitored. This plan must be approved by the Director-General prior to construction commencing.

The RTA based the construction noise impact assessment on using standard construction hours. Standard hours are established in Chapter 171 of the ENCM and are: Monday to Friday 7 am to 6 pm; Saturday 8 am to 1 pm; and, at no time on Sundays or public holidays. It is noted, however, that ‘out of hours’ works may be required from time to time. Out of hours works are discussed in the following section.

The Department’s experience has been that residents are generally tolerant of construction noise during daytime and in many instances are amenable to longer work days if this means that construction is completed more quickly and the road opened to traffic sooner than would otherwise be the case. Notwithstanding, whilst the RTA has flagged opportunities to work longer than the standard hours on this project, there has been no community consultation nor assessment of the implications of this for the receiving community.

In general, the Department is not opposed to changes to construction hours where this is justified, has been assessed and particularly where there is broad community support. In addition, it is recognised that there are circumstances where, for technical reasons, work outside standard construction hours is essential (refer to section on Out of Hours Works). Based on the standard construction hours stated in determining noise impacts in the Environmental Assessment, the Department recommends a condition which reinforces these hours for standard construction. This is consistent with previous Ministerial approvals for Pacific Highway and other projects and which are consistent with Chapter 171 Construction Site Noise of the *Environmental Noise Control Manual*.

Despite this, the Department is mindful of community desires and changes occurring in the construction industry and would be willing to consider changes to these hours. Any proposal to change standard construction hours for the duration of construction (not including out of hours works) would need to be considered separately and be based on a robust and transparent process including clear justification which takes into account benefits to the local and broader community and the State, as well as including local community and other stakeholder input. Arguments based purely on scheduling and benefits to the proponent's contractors are not considered appropriate justification.

❖ Out of Hours Works

Previous Ministerial approvals have generally identified a range of circumstances whereby construction works can be undertaken outside of the standard hours. These have generally included where they are inaudible to the most affected receivers, where they have been approved by either the Department or DECC through a Construction Environmental Management Plan or Noise and Vibration Management Plan and for emergency works.

The Department is aware that there are instances where particular construction works cannot be undertaken during standard hours for technical reasons or other unforeseen circumstances. The intent in including a recommended condition for out of hours works is to provide flexibility where certain activities, such as asphaltting, pavement laying or saw cutting, or general construction over short periods (days to weeks) require works to be completed at night or other non standard hours provided the appropriate approvals have been obtained. These must be justifiable on technical grounds, appropriately mitigated and communicated to the affected community.

To clarify this intent the Department recommends including a condition which outlines broadly the circumstances where works outside the standard construction hours can be undertaken, as well as identifying a general process for other short term works that may need to be undertaken at night due to timing requirements (e.g. cannot be done 'under traffic' at any time). The Department, in deciding whether to approve out of hours works would consider the process identified in the condition and the relevant management plan. Provided that this process is acceptable to the Department and the management plan is approved, its implementation would not necessarily require further Departmental involvement.

It would be expected that on each occasion that out of hours works are required this process would be implemented including the relevant impact assessment, mitigation and management measures and consultation with the affected community. In these circumstances and depending on scheduling, 'each occasion' could be defined as a period of time (e.g. saw cutting over a number of nights or weeks) or geographically. The Department would expect that the RTA would consult with it in relation to how 'each occasion' would be interpreted.

Operational Noise

Operational noise impacts and the adequacy of mitigation is almost always the most frequently raised issue for transport projects. This indicates the significant level of concern within the general community in this regard and is largely attributable to real or perceived changes to lifestyle, amenity and property value. The Department considers that mitigation measures and ongoing management measures to be employed on any project must appropriately respond to the impacts attributable to that project. It should be noted that it is not the role of any project to address existing or other impacts which cannot be directly attributed to the construction or operation of that project. To this end, the assessment must consider the existing noise environment, the noise environment that would eventuate if the project were not to proceed (sometimes referred to as "future existing"), and the noise environment that would eventuate with the project (both at time of opening and ten years from opening).

❖ Application of Road Traffic Noise Assessment Criteria

The then Environment Protection Authority's *Environmental Criteria for Road Traffic Noise (1999)* identifies a number of factors that should be considered in identifying the relevant criteria including whether:

- there is an existing road corridor and, if so, whether the project is intended to increase traffic substantially or the traffic mix would be substantially changed; and
- substantial changes are proposed to the alignment or whether it is a 'new' corridor.

The Department understands that the section between Sapphire and South Woolgoolga is located within the existing road corridor. No substantial changes are proposed to the alignment for this

section and all residents would continue to receive noise from the same façade as is currently exposed to road traffic noise. Application of the redeveloped road criterion is considered appropriate in this instance.

Notwithstanding, the Department consulted the Department of Environment and Climate Change regarding this matter. No objections were made to the application of the redeveloped road criterion to the southern section of the project on the basis that the proposed upgrade is largely located within the existing road corridor and that the direction of noise exposure will remain unchanged. The Department concurs that the approach is consistent with that adopted by the RTA on other Pacific Highway projects and is not inconsistent with relevant guiding policies.

The bypass section is clearly a new road alignment within a new road corridor. This will result in receivers becoming exposed to road traffic noise who are not currently and there may be some receivers that will experience road traffic noise from facades which they do not at this time. On this basis, the Department concurs with the application of the new road criterion for this section of the project.

❖ Operational Noise Assessment and Impacts

The noise assessment was undertaken in accordance with the *Environmental Criteria for Road Traffic Noise* (ECRTN) and the RTA's *Environmental Noise Management Manual* (ENMM). As noted above, in regards to the application of noise assessment criteria, the project was treated in two parts, the Upgrade section and the Bypass section. These can generally be considered in terms of those currently experiencing low background noise and not affected by road traffic noise (Bypass); and those currently experiencing higher background noise (Upgrade) which is affected by road traffic noise from the existing highway.

The Department concurs with the RTA commitment to use approximately 28 kilometres of low noise pavement between Sapphire to approximately 700 metres north of Bark Hut Road on the bypass. Low noise pavement is not proposed for the remaining 12 kilometre section of the project due to the low number and density of affected receivers. It is considered more effective to provide noise barriers/mounds or architectural treatments in these instances.

Noise was assessed along the project across 23 noise catchment areas. These catchments were defined by similar characteristics including topography, development and existing noise environment provides a summary of the number of receivers in each catchment and the overall impacts anticipated. A total of 741 residences are located within the 23 catchments. A summary of impacts for each catchment is provided in Table 2.

Table 2 - Summary of Receivers Affected By Catchment

Catchment	In 2021					
	Below/at criterion & reduced from 2011	Above criterion but reduced from 2011	Below/at criterion but increased from 2011	Above criterion & increased from 2011	Above criterion no change	Below/at criterion no change
1	4	1	20	17	-	1
2	23	12	-	-	-	-
3	8	3	1	1	1	-
4	34	16	-	-	-	-
5	41	19	8	10	2	1
6	27	25	-	1	3	1
7	11	-	-	-	-	-
8	-	-	-	-	-	-
9	-	-	-	-	-	-
10	-	-	7	3	-	-
11	-	-	-	-	-	-
12	4	-	13	-	-	1
13	1	-	4	-	-	1
14	19	5	-	-	-	-
15	28	10	-	3	-	-
16	9	7	-	2	2	-
17	1	3	-	-	-	-
18	10	3	-	-	-	-
19	9	-	-	-	-	-
20	8	20	4	1	2	2
21	69	35	6	4	3	-
22	18	3	-	-	-	-
23	39	26	-	-	-	-

The assessment identified that noise mitigation was not required in seven (7) catchments (NCAs 2, 7, 10, 14, 17, 19 and 22). Receptors in these catchments would generally experience noise:

- at or below the relevant criterion in 2021 (i.e. 10 years after opening) and less than that which would have been experienced in 2011 if the project were not to proceed; or
- above the relevant criterion in 2021 but less than would have been experienced in 2011 without the project.

In both instances, this indicates that the project would provide overall benefits to these receivers, however in the case of NCA 10, receivers would be exposed to noise:

- at or below the criterion in 2021 but increased from what they would have experienced in 2011 without the project; or
- above the criterion in 2021 and above the predicted 2011 noise without the project however the increase would be 2 dB(A) or less. In this instance it is not considered feasible or reasonable to provide mitigation.

Physical noise mitigation measures are proposed for sections of the remaining 16 catchments. These include the use of noise barriers or mounds up to four (4) metres high and, in some instances, architectural treatment of residences. Table 3 summarises data relating to the most affected receiver in each catchment. Overall, use of at source (mounds /barriers/low noise pavement) and at receiver (architectural treatment) will result in fewer than 140 residences requiring mitigation as a result of exceedances of the relevant criteria.

Despite these improvements and proposed mitigation measures, it is recognised that some properties will experience noise increases in the longer term. The bypass section will introduce a new noise source for 64 residences and six (6) near the bypassed section would continue to experience road traffic noise at acute levels (>65 dB(A)). In addition, some residences will experience an increase in noise despite the overall noise remaining below the relevant criteria. It is also noted that the RTA has stated that three (3) residences that received architectural treatment as part of the Northern Pacific Highway Noise Taskforce would not be eligible for additional treatment as a result of this project as all feasible and reasonable measures have been installed and it is unlikely that any further improvements could be achieved.

The Department acknowledges these increases and that there is a perception in some parts of the community that any increase in noise is unacceptable, however the criteria established in the adopted Government policy controlling road traffic noise, the ECRTN, have been selected based on what is considered to be an acceptable noise environment. This is discussed in more detail in the following section.

The range of measures which the RTA has committed to is consistent with those that have been adopted for other Pacific Highway upgrade projects and are considered appropriate to reduce noise impacts to the greatest extent practicable for those residences that will experience noise levels above the relevant criteria. Notwithstanding, the Department acknowledges the limitations of modelling and that the outputs are an estimate based on both the design put forward at the Environmental Assessment phase and predicted traffic volumes. To address possible changes to the project through detailed design and the noise actually experienced during operation, the Department recommends a two staged approach. The first stage requires that the RTA prepare and submit to the Director-General for approval prior to construction, a review of the proposed operational noise mitigation measures based on the detailed design, rather than that put forward in the Environmental Assessment. This would include a review of predicted noise levels and feasible and reasonable noise mitigation based on refinements. Notwithstanding, the Department does not expect that there would be significant departures from the impacts outlined in the EA.

The RTA has committed to consulting with the affected community in relation to 'at source' noise mitigation (including mounds and barriers) and with directly affected residents regarding architectural treatment. The Department recommends a condition to ensure that this commitment is upheld.

Table 3 - Most Affected Receiver Impacts for Catchments Where Mitigation is Proposed⁴

Catchment	Relevant Criterion	2011 no project	2021 without mitigation	2021 with mitigation	Noise criterion achieved	Architectural treatment (no. of residences) ⁵
1	55	56	60	61.5	N	Y (6)
3	55	56.5	62	62	N	Y (1)
4	55	63.5	60	60	N	Y (3)
5	55	57.5	60	60	N	Y (3)
6	55	55.5	58	56	N	Y (4)
8	50	-	56	55.5	N	Y (7)
9	50 ⁶	-	55.5	55.5	N	Y (4)
11	50 ³	-	55.5	55.5	N	Y (3)
12	50 ³	46	53.5	54.5	N	Y (3)
13	50 ³	48.5	52.5	53	N	Y (3)
15	55	63	65	65.5	N	Y (5)
16	55	60	60.5	60.5	N	Y (1)
18	55	63.5	61	61	N	Y (1)
20	55	55.5	56.5	56.5	N	Y (5)
21	55	57	60	56.558.5	N	Y (4 + 1 already treated)
23	55	65	63.5	63.5	N	TBD ⁷ (6)

⁴ it should be noted that these data represent the most affected receiver in each catchment and are not necessarily indicative of the expected noise environment in any catchment as a whole. In most instances, noise criteria will be met without mitigation.

⁵ mounds or barriers are proposed in all catchments as well as consideration of some residences for architectural treatment.

⁶ these catchments are within the bypass section of the project

⁷ TBD – to be determined within six months of opening to traffic

Further commitment is made to monitoring actual noise levels 12 months after opening of the project to traffic to confirm whether noise mitigation applied to the project is effective and that predicted noise levels as stated in Working Paper 2 or as re-assessed in the first stage review can be achieved. This is the second stage of the two-staged process referred to above. Where substantial discrepancies (increases) are recorded, mitigation measures must be reviewed and further feasible and reasonable measures implemented where available and appropriate. The RTA's *Environmental Noise Management Manual (2001)* provides a process for determining feasible and reasonable noise mitigation.

The recommended condition of approval is consistent with the approach that the Department has recommended and the Minister approved for other road projects, including but not limited to the Pacific Highway. It is also recommended that the RTA be required to report back to the Department and the DECC on this monitoring, detailing any additional feasible and reasonable measures that may be required to ensure that the commitments are achieved.

❖ Magnitude of Change

A number of submissions raised concerns that the magnitude of change in noise predicted is unacceptable. Approximately 114 residences will experience an increase in road traffic noise levels. Despite this, the majority will remain below the relevant criteria for at least ten years after the project is opened to traffic. Should the project not proceed, it is likely that most of these residences would experience noise levels that exceed the criteria much sooner. Generally these increases are in the range of 1-3 dB(A), however three properties near the bypass will be subject to increases of approximately 9 dB(A).

Current road traffic noise policy does not identify a magnitude of change which is considered acceptable or unacceptable or at which point some form of intervention is proposed. The criteria for residential areas are set on the basis of the road types and period of day (or night). Different criteria have been established for sensitive receivers, including hospitals, educational facilities, places of worship, nursing homes and the like. A reasonable amount of rigour was incorporated in developing these criteria which is outlined in the appendices to the ECRTN. However, the criterion for a new road of 55 dB(A) is the level at which ten per cent of the population would be annoyed and is comparable to, and in many cases more stringent than, the equivalent criteria used in Europe, the US and Japan.

On this basis, whilst recognising that in a minority of cases there is likely to be a relatively substantial increase in noise exposure, the criteria set by Government as an appropriate level of noise for new and existing development near new arterial roads will continue to be achieved at the majority of receivers even with the project and the types of mitigation proposed are appropriate and consistent with those used on other section of the Pacific Highway and adjacent to road projects generally.

❖ Sleep Disturbance

Sleep disturbance was raised in a number of submissions, particularly in relation to heavy vehicle traffic. There are no criteria or goals established against which to assess sleep disturbance, however it is measured generally assessed using maximum noise events and sleep disturbance is expected to eventuate where the $L_{A_{max}}$ exceeds background noise by 15 dB(A) or more. It is estimated that, while the frequency of maximum noise events is expected to increase, the internal maximum noise level at any receiver is likely to decrease by up to 5 dB(A) as a result of using low noise pavement. This does not take into account other events associated with heavy vehicles such as compression braking, however the overall development is intended to and has been designed to reduce the need for such braking and the Department supports this approach.

Engine or compression braking is difficult to manage and enforce at the project level, except with design considerations to minimise their use. Notwithstanding, the RTA has worked closely with the National Transport Commission to develop a method to regulate noise from engine compression brakes and in principle supports the proposed approach in instances where safe braking is not an issue. Further research is being undertaken into the use of noise cameras for enforcement purposes which, if successful may be used more broadly across the State in the future.

The Department is satisfied that this issue has been considered to the greatest extent practicable and that measures such as road design and low noise pavement have been incorporated into the project design which should minimise the effects of events that could cause sleep disturbance as well as the need for engine braking, if not eliminating them entirely.

5.3 Biodiversity Impacts

Issue

Biodiversity surveys for the project found:

- twelve (12) vegetation communities, including five (5) endangered ecological communities listed in the schedules of the *Threatened Species Conservation Act 1995* (TSC Act);
- four flora species listed in the schedules of the TSC Act, two of which are also listed in the schedules of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act); and
- 184 fauna species, including 16 threatened species (TSC Act), one of which is also threatened under the EPBC Act and five migratory birds listed in the schedules of the EPBC Act.

Potential habitat exists in the study area for a further 36 threatened species.

Impacts on native vegetation will occur predominantly on the bypass section which traverses private forested land and Wedding Bells State Forest. Approximately 83.1 hectares of native vegetation will be cleared, including 18.2 hectares of four endangered ecological communities. Indirect impacts or edge effects would be expected to affect an additional 18 hectares in Wedding Bells State Forest.

Populations of the threatened species *Marsdenia longiloba* (TSC and EPBC listed) and *Lindsaea incise* (TSC) would not be directly affected. Eight of 13 *Amorphospermum whitei* (TSC) individuals and four of 70 *Quassia* sp. Moonee Creek (TSC & EPBC) individuals would be affected both by direct clearing and indirect effects, such as changes to surrounding environment, as a result of construction. The RTA has committed to educating construction workers and providing exclusion fencing around threatened species to be retained close to the construction area.

In general, the RTA proposes a range of mitigation measures is proposed. As well as those identified above, the RTA has also committed to:

- feasibility investigation into relocating affected individuals of *Amorphospermum whitei* and *Typhonium* sp. (if further investigations confirm individuals present are the threatened and not common species.);
- further surveys for *Phaius australis* in vicinity of Arrawarra interchange;
- designated fauna crossings, including bridges, and culverts identified as having fauna movement function to be designed to facilitate this movement;
- designing waterway crossings to facilitate fish passage;
- use of nest boxes to replace lost tree hollows;
- use of native and indigenous species in landscaping;
- weeding for a minimum of two years after construction;
- monitoring 12 months after construction to assess the effectiveness of mitigation measures; and
- development of a compensatory habitat offset in agreement with the Department of Environment and Climate Change.

Submissions

Biodiversity was amongst the most commonly raised issues. Specific concerns included:

- the width of fauna passage beneath bridges at Double Crossing Creek, Woolgoolga Creek, Cunninghams Creek and Arrawarra Creek was insufficient to provide adequate connection between the significant riparian corridors;
- fauna underpasses proposed near Wedding Bells State Forest should reflect established fauna movement corridors and be designed to encourage fauna usage;
- a fauna crossing should be provided between chainage 19.6 to 20.3 km as there is vegetation connectivity and the area adjoins the Moonee Beach Nature Reserve;
- the long term viability of Lowland Rainforest on Floodplain Endangered Ecological Community will be threatened in the vicinity of Poundyard Creek and Newmans Road;
- the effectiveness of glider crossing structures has yet to be demonstrated;
- a biodiversity offset package is required to be provided in order to achieve a neutral or net beneficial biodiversity outcome;
- cumulative impacts on biodiversity have not been adequately addressed or analysed;
- an additional 18 hectares of forest in Wedding Bells State Forest will be indirectly affected by edge effects; and
- impacts on potential Koala populations has not been adequately addressed.

Consideration

Terrestrial Ecology

Overall, the Department is satisfied that the ecological surveys undertaken were appropriate to identify the ecological communities (both flora and fauna) and the extent of impacts on flora and fauna as a result of the project. These identified all vegetation communities and likely fauna presence, both species and communities listed in the Schedules of the *Threatened Species Conservation Act 1995* and those which are not.

❖ Vegetation Impacts

The RTA has stated that potential impacts on ecology have been minimised and avoided during development of the concept design through consideration during the route selection phase. The Department recognises that this does not necessarily mean that the preferred route has the least impact on local ecology but that this issue has been considered in the context of all other relevant issues (e.g. noise, traffic, safety, engineering constraints and social impacts) and the concept design refined to minimise direct impacts as much as possible.

The total area of vegetation to be affected by the proposal is shown in Table 4. A number of the communities listed in Table 4 are consistent with Endangered Ecological Communities listed in the schedules of the *Threatened Species Conservation Act 1995* (refer to footnotes). The RTA provided additional information to show the availability of land within 30 kilometres of the project alignment supporting the communities affected by the project, not including that land that is within the conservation reserve system. This land, currently under private tenure is theoretically available to be considered as part of any offset package. In the absence of the RTA providing details of an offset package at this time, this information enables the Department and DECC to consider the ability of the RTA to provide such a package. This issue is discussed in more detail below.

Table 4 - Maximum Vegetation to be Cleared During Construction

Vegetation Community	Area Occupied within Study Area (ha)	Total Clearing (ha)⁸	% Removed From Study Area	Total area available within 30 km of alignment (ha)
Brush Box – Guioa – Native Olive ⁹	4.1	1.1	26.8	
Native Olive – Strangler Fig – Brush Cherry ¹⁰	5.0	1.0	20.0	
Blackbutt	148.4	40.9	27.6	21,576
Flooded Gum	28.1	5.3	18.9	3,246
Grey Gum – Ironbark	32.4	8.7	26.9	9,118
Spotted Gum	23.7	5.1	21.5	5,171
Narrow-leaved White Mahogany	25.8	4.9	19.0	1,834
Red Mahogany ¹¹	4	1.3	32.5	16
Smooth-barked Apple ³	1.0	0	0	3
Broad-leaved Paperbark – Swamp Mahogany ³	78.4	9.5	12.1	1,336
Swamp Oak ¹²	9.6	5.3	55.2	30
Swamp Oak – Saltwater Couch ¹³	0.4	0	0	632
Total	360.9	83.1		42,962

This additional information shows that there are substantial tracts of land available outside conservation reserves supporting the affected communities and therefore the project is not likely to significantly affect their long term viability. It is noted, however, that there is limited availability of Red

⁸ Note that this does not include any clearing which may be required for ancillary facilities

⁹ Community correlates with Littoral Rainforest

¹⁰ Community correlates with Lowland Rainforest on Floodplain

¹¹ Community correlates with Swamp Sclerophyll Forest

¹² Community correlates with Swamp Oak Floodplain Forest

¹³ Community correlates with Coastal Saltmarsh

Mahogany, Smooth-barked Apple and Swamp Oak communities within the 30 kilometre radius. Given the unclear correlation with communities at the regional level, the availability of Brush Box-Guioa and Native Olive and Native Olive-Strangler Fig-Brush Cherry communities at this scale is also unknown. To this end, it is recommended that all effort should be taken in refining the road alignment and construction footprint to avoid these communities as much as possible. Notwithstanding these limitations, it is noted that the areas of these communities to be affected are small and fragmented, and unlikely to survive in the short to medium term.

The Department is of the opinion that the RTA must work closely with the DECC in identifying suitable offsets for the project and in particular for those communities that will be affected and for which the resource within the 30 kilometre radius is limited. The need for an offset strategy is discussed in more detail below.

❖ Threatened Species Translocation

The RTA has committed to investigating the feasibility of relocating affected individuals of *Amorphospermum whitei* and *Typhonium* sp. (if further investigations confirm individuals are the threatened species) where these cannot be avoided during construction. Whilst the Department prefers avoidance in preference to translocation or other mitigation measures, it is recognised that this is not always possible. Notwithstanding the RTA's commitment to translocation of these species where feasible, the Department is of the opinion that such consideration should not be limited to the species identified above but should be extended to include other threatened species that will be directly affected during clearing. A multi-faceted condition of approval is recommended that requires:

- feasibility of translocation of affected individuals of *Amorphospermum whitei*, *Marsdenia longiloba*, *Lindsaea incisa*, *Quassia* sp. B, and *Typhonium* sp aff. *brownii*; and
- preparation and implementation of (a) translocation plan(s) where feasibility is established; or
- inclusion of impacts in development of the Biodiversity Offset and Mitigation Strategy where translocation or avoidance is not feasible.

Requirements to investigate translocation were required for the Bulahdelah Bypass project where three endangered orchid species were identified within the direct alignment of the project, some of which are not known from other locations, and alternatives were limited both in terms of road realignment or other mitigation measures. The Minister's approval required further investigation of translocation and other measures such as bridging the known populations and that this information be submitted to the Department prior to construction. The RTA has adopted and is continuing with a comprehensive and stringent research program to collate as much information regarding these species prior to construction commencing within the section of the bypass where these species are located. Notwithstanding that this process is incomplete, a substantial amount of information regarding the species' life cycles and reproductive requirements, other populations and positive indicators for translocation have been obtained. The Department remains cautiously confident that there will be numerous benefits arise from these investigations to ensure their long term survival.

Whilst the impacts on the endangered species are not considered as significant for this project as those identified for the Bulahdelah Bypass, the Department is of the opinion that further investigation of translocation opportunities should be undertaken prior to construction to support this. A condition of approval is recommended to this effect.

❖ Fauna Crossings

A number of submissions raised concerns with the mitigation measures proposed for fauna. The Department of Environment and Climate Change in particular raised concerns regarding the likely effectiveness of location and design of glider crossings and fauna crossings more generally.

On more recent Pacific Highway projects, the RTA has used a combination of glider poles and rope bridges to facilitate glider crossing. A commitment was made in the Environmental Assessment that purpose-designed structures would be provided to facilitate glider crossing through Wedding Bells State Forest. The DECC noted in its submission that the effectiveness of these structures has not been proven and that the retention of a vegetated median between the highway carriageways to provide staged glider crossing is the only feasible means of achieving this objective. Without a recognised, effective means of traversing the highway, known glider populations to the east of the highway would become vulnerable to extinction. Following further discussion between the Department, RTA, DECC and the Department of Primary Industries (Forestry), a condition of approval is recommended that specifies retention of a vegetated median in the area of a known glider

population and requires consultation with the DECC and approval of the Director-General in regards to specific location and clearing limits. Despite this, the Department also recognises that the condition should be sufficiently flexible to not rule out alternative crossing options and locations where effectiveness can be established in a scientifically rigorous way. This flexibility is also included in the recommended condition.

Some concern was also raised about the effectiveness of proposed fauna crossings more generally. The DECC has questioned the proposed locations of some crossings and that proposed design may not be optimal, in particular the width of passage and light penetration in underpasses where these are incorporated with culverts. These concerns have also emanated from previous projects where, during detailed design, fauna crossing widths have been curtailed or relocated so as to be sub-optimal.

The Department acknowledges that there is a range of issues that need to be considered in identifying fauna crossing locations and designs. These include determining the primary function of the crossing, the species for which it is catering and the habitats or communities for which connectivity is to be maintained. To this end, the Department recommends a number of conditions to guide location and design of fauna crossings which include:

- in principle support of the structure locations identified in Table 7.5 of the Environmental Assessment and specifies that at least one crossing in a nominated area be located outside of riparian habitat;
- factors that must be considered in finalising structure location and design, including but not limited to connectivity of conservation areas, areas of known species abundance, linking threatened species habitat, population hotspots, topographic variation and regional corridors; and
- bridge designs that are consistent with those specified in Table 7.5 of the Environmental Assessment or where replacing/replicating an existing crossing are not less than that provided for beneath the existing bridge.

❖ Other Fauna Mitigation

A range of other fauna mitigation measures is proposed. This includes the installation of exclusion fencing for 'no go' areas prior to construction commencing and checking for fauna (and removal where found) in hollow-bearing trees prior to clearing. The Department supports the use of these standard pre-clearing techniques.

In addition, the installation of nest and bat boxes is proposed to provide alternative nesting and roosting sites for displaced fauna. The Department of Environment and Climate Change had identified that new bridges should be designed to incorporate 'toe holds' to enable colonisation by microbats. The RTA indicated concern with this approach in specifically designing the undercarriage of bridges for this function and the potential liability issues that may result, though did not object to natural colonisation.

The Department acknowledges that it would be unreasonable to expect that bridges be specifically designed with this function in mind as it would add a layer of complexity and risk to the process, however further investigation of current bridge use by microbats and consultation with (and approval of) regulatory agencies regarding bat box installation is recommended. Similarly, the Department recommends a condition that requires the RTA to prepare a nest box plan based on the number and type of hollows removed, the density of hollows in the area to be cleared and adjacent forest, and the availability of adjacent food resources.

Biodiversity Offset and Mitigation Strategy

As has been the case with more recent Pacific Highway projects, a commitment has been made to providing an offset for residual biodiversity impacts, however no formal strategy has been proposed as part of either the Environmental Assessment or the Response to Submissions report. This commitment has also included development of an agreement with the DECC and been timed to be completed prior to completion (opening to traffic) of the project.

Notwithstanding, there is no clear commitment to the area of vegetation/habitat impacts of this project that would be offset. Previous projects, such as the Kempsey to Eungai Pacific Highway Upgrade, whilst not specifying an offset package, have specified both the area of direct and estimated indirect impacts (edge effects) that would be offset as a minimum. The RTA has stated that 83.1 hectares of native vegetation would be cleared for construction of the project (refer to Table 4) however this does

not include any clearing that might be required for ancillary facilities nor does it account for edge effects.

Based on an upgrade alignment length through vegetated areas of approximately 5,250 metres and an estimated 50 metre incursion along this length for edge effects (refer to Kempsey to Eungai Environmental Assessment, RTA 2007), an additional area of 26.2 hectares would be affected. Using the same compensation ratio as was used for the Kempsey to Eungai project (0.6:1 – the ‘Bali method’), the Department considers that the biodiversity offset should include an additional 15.7 hectares to account for potential edge effects. Therefore the total **minimum** offset (not including any additional direct and indirect impacts related to clearing for ancillary facilities) should be 98.8 hectares. The recommended condition for the Biodiversity Offset and Mitigation Strategy specifies this requirement. It should be noted that this amount would preferably be provided as land purchase to directly offset the effects however an agreed equivalent in non-land purchase offsets would be considered by the DECC and the Department.

The RTA has previously adopted a process to address biodiversity offsets on a regional basis in agreement with the DECC (or its predecessor agencies). This has involved a number of projects within a given section of the highway whereby the total impact for that section is estimated and an offset area agreed. The RTA is then obliged to provide an offset package for the agreed amount by purchasing land of ecological interest to the DECC and transferring this land to the conservation reserve system for management in perpetuity. This approach is preferred by the RTA and the DECC as it is considered to provide:

- greater certainty in ensuring a high quality outcome by providing larger areas of land;
- land of greater interest to the relevant land management agencies; and
- better links to land already within the conservation system resulting in an overall benefit to biodiversity conservation.

This approach has been delivered for a number of projects including Karuah Bypass, Karuah to Bulahdelah, Bundacree Creek to Possum Brush and Coopernook bypass where approximately 460 hectares have been offset with approximately 854 hectares of vegetation. Table 5 indicates the current status of offsets provided by the RTA for Pacific Highway projects and those for which agreements are currently being negotiated with the Department and DECC.

Table 5 - Pacific Highway Upgrade Compensatory Habitat Offsets

Project		Area planned to be cleared (ha)	Area of offset	Comment
Karuah Bypass		36.1	87.9	Private property plus Crown land. Transferred to DECC (NPWS)
Karuah	to	159	553	RTA purchased Mt Karuah. Transferred to DECC.
Bulahdelah				
Bundacree Creek to Possum Brush		143	173.7	Vegetated land transferred to State Forests (now DPI)
Coopernook Bypass		1.0	39	Compensatory wetland
Bonville Deviation		51.8	56.6	
Brunswick Heads Bypass Duplication		0.5	12.6	Incorporated into Brunswick Heads Nature Reserve
Brunswick	to	6.7	89.9	Most will be transferred to Marshalls Creek Nature Reserve. An additional monetary contribution was provided to prepare a plan of management.
Yelgun				
Yelgun	to	73.5	267.3	Most has or will be transferred to Billinudgel or Cudgera Nature Reserves.
Chinderah				
Total		471.60	1,280.00	

Whilst a detailed offset is not in place for this project (or the sections between Port Macquarie and Ballina), in principle agreement has been reached between the RTA and DECC to pursue this approach. The Department concurs with the potentially greater regional benefits that could be achieved by adopting this approach in preference to a piecemeal “project by project” strategy.

Notwithstanding, it is considered that the Department, as the key regulatory agency in relation to any Ministerial approval and in regards to this matter, should have greater involvement in the development of future agreements and a requirement that the Director-General approve any such agreement is included in the recommended condition for the biodiversity offset and mitigation strategy.

The Department also recognises that it is not necessary that an offset be comprised solely of direct land purchase. Land availability will be dependent on numerous factors including, but not limited to, the availability of target communities (both flora and fauna), its size and proximity to conservation reserves, the vegetation/habitat quality and the willingness of the landholder to sell. To this end, the Department accepts that the offset strategy may involve a combination of measures which in total provide a beneficial outcome to the region. These could include, amongst other options, additional management measures, translocation and funding of management or research. Justification to proceed with any such combination of measures must be documented to clearly demonstrate how the proposed package would provide an equivalent or better regional outcome for biodiversity.

Overall, the Department is satisfied that the potential impacts of the proposal are acceptable and can be offset with a compensatory offset and mitigation package, prepared in consultation with the key regulatory agencies to complement other specific measures for flora and fauna management during construction and operation.

To ensure that any offset is commensurate with the potential impacts of the proposal, the Department recommends a two-staged approach to finalising the offset package. The first stage requires the RTA to develop a strategy framework to be finalised and approved by the Director-General before construction commences in areas that would affect threatened species or endangered ecological communities. The recommended condition does not preclude the use of sectional agreements between the RTA, Department and the DECC as discussed above and is consistent with that included in the Hume Highway Duplication and Kempsey to Eungai Upgrade Ministerial approvals.

The second stage requires implementation of the approved strategy to determine the final offset package. The composition of the final package, including any monitoring or other ameliorative or management measures, must be submitted for Director-General's approval within 12 months of construction commencing, however it is not expected that implementation would be complete at that time.

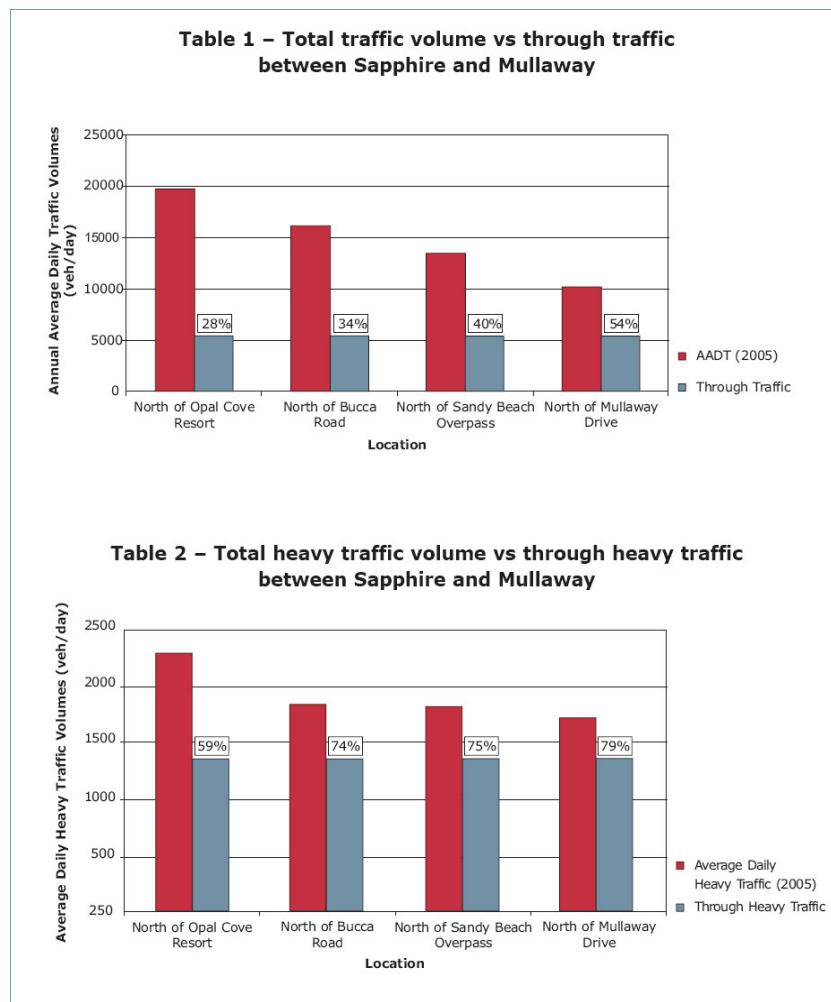
5.4 Local Traffic and Transport

Issue

The Pacific Highway currently has a dual role of serving local and through traffic, both tourist and freight. It is the only road which connects the coastal villages with each other and to the larger centres of Woolgoolga and Coffs Harbour. A range of speed limits apply along the existing highway, ranging from 40 kilometres per hour to 100 kilometres per hour depending on adjacent land use and road characteristics.

Traffic volumes on the existing highway are variable through the year and heavily influenced by local traffic. Traffic counts (refer to Figure 5) show that traffic volumes are highest at the southern approach to the project and lowest at the northern approach. This suggests that much of the traffic between Sapphire and Arrawarra Beach Road is local, travelling between the various coastal villages and Coffs Harbour or Woolgoolga. Heavy vehicles comprise between 28 and 54 per cent of Annual Average Daily Traffic (AADT) and between 20 and 40 per cent of heavy vehicle movement is local traffic. Whilst heavy vehicles as a percentage of the traffic mix increases moving south to north, the actual number of heavy vehicles decreases.

One of the key objectives of the project is to separate local and through traffic by maintaining the existing highway as the local access road between the various villages between Sapphire and Woolgoolga where a dual carriageway, controlled access road will assume the function for moving through traffic. All access to the new highway will be controlled via grade-separated interchanges, with the exception of a left in/left out arrangement at Campbell Close near the southern end. This arrangement will be reviewed as part of the Coffs Harbour Bypass Project when the Korora to Sapphire section is upgraded.



Source: Figure 10.2 of Environmental Assessment (Connell Wagner, 2007)

Figure 5: Existing (2005) Traffic Volumes

Submissions

Approximately 40 submissions raised issues associated with traffic and safety impacts of the project. These included:

- the RTA has used old traffic data and not taken a proper traffic count;
- changed access, safety and increased vehicles due to changes to highway access and local roads such as:
 - safety concerns regarding entry to and exit from Campbell Close with fast moving highway traffic;
 - direct access to highway from Bucca Road and diverting traffic to Hoys Road;
 - Graham Drive will be more dangerous than the existing highway as it is narrow, winding and often floods during rain and will not be upgraded to carry extra traffic travelling south to Sandy Beach and Emerald Heights;
- the project is likely to induce heavy traffic from inland routes;
- the local road network provides an ideal opportunity to construct a planned cycleway/walkway which was supposed to be provided as part of the Highway Planning Strategy; and
- impacts on property access.

Consideration

Applicability of Traffic Data Set

A local resident action group (The Angry Grannies) commissioned its own traffic counts for the highway. The data obtained and conclusions drawn from this exercise suggested that the data used by the RTA in assessing traffic and noise impacts of the proposal significantly underestimated the traffic using the highway north of Coffs Harbour.

The Department acknowledges that there are limitations in both the data set used by the RTA and that prepared by the Angry Grannies which are identified in the RTA's Response to Submissions Report, in particular that:

- adjustments were made to RTA data to take into account historical traffic growth and growth from increased development along the highway;
- RTA counts conformed to nationally accepted standards for undertaking traffic counts;
- the RTA and The Angry Grannies counts were taken at different times of the year so might not be directly comparable;
- counts taken by the Angry Grannies were conducted during a school holiday season when traffic levels are higher than non-holiday periods; and
- the location of The Angry Grannies' counts would capture additional local traffic that would not travel on to the upgrade.

In considering these issues, the Department recognises that traffic volumes fluctuate from day to day, that there are seasonal variations, location of traffic counts or survey design will have a significant bearing on the results achieved and that a straight number on any particular day at any given time can give a different outcome. All of these matters must be taken into account. Whilst the RTA's counts may have been based on data published in 2001, it is understood that these factors were taken into consideration in preparing the traffic data set, both current and future, on which the assessment was based. Overall, the Department is of the opinion that the traffic counts used by the RTA in assessing the impacts of the project, both in terms of traffic and noise impacts, were appropriate and provide the decision makers with an appropriate level of information on which to make a determination on the project.

Heavy Vehicles and Induced Traffic

A number of submissions raised the issue of induced traffic, particularly in relation to heavy vehicles. Most cited the increased number of heavy vehicles using the Pacific Highway subsequent to the opening of the upgraded section between Yelgun and Chinderah. It is noted that a proportion of this traffic is thought to have switched from the inland route having previously used the New England Highway.

The RTA acknowledges that one of the objectives of the Pacific Highway Upgrade Program generally is to reduce the costs of road freight transport and that in doing so, this is likely to indirectly encourage additional freight movements. As well, implementation of the project will provide a safer road environment which is specifically designed to cater for the anticipated traffic mix. Separation of local and through traffic would, in itself, address safety concerns of heavy vehicles mixing with local passenger movements.

Whilst there are a number of submissions which suggest that upgrading of the rail line between Sydney and Brisbane should be undertaken to increase the freight mode-share, it is acknowledged in the Auslink document Sydney-Brisbane Corridor Strategy that this would not be sufficient to meet the future freight task and therefore an upgrade of the highway would be required in any event.

The Department accepts that it is not the role of the RTA to address the issue of upgrading the rail network to improve modal shift of the freight task, either for this project specifically or the overall Pacific Highway Upgrade Program. Management of the freight task and encouraging increased share for alternative modes requires a strategic approach involving a range of government agencies, both State and Commonwealth.

Local Road Network Safety

Access to and from the highway to Bucca Road will be closed as part of the project. Vehicles wanting to access Bucca Road will need to do so via the Moonee Beach Road interchange and Hoys Road. This will mean an additional three (3) kilometre round trip for vehicles to and from the north. Submissions on the proposal have suggested that the additional traffic on Hoys Road will increase the risk of accidents and that Bucca Road should remain open for this reason.

The RTA considers that the proposal, while noting the inconvenience for some motorists, will improve local traffic safety by minimising intersections between local roads and the Pacific Highway and the conflicts with slower moving local traffic mixing with fast moving highway through traffic.

Notwithstanding, it is noted that the RTA has committed to upgrading Hoys Road to a standard that is capable of managing the increased traffic volumes anticipated to use it. Traffic data suggests that these roads will attract a relatively low level of traffic during the morning and evening peaks and whilst there will be increased traffic volumes on Hoys Road, this area is not highly developed and not a significant traffic generating area. The Department concurs that the improvements to be gained by minimising the at-grade interactions between local and highway traffic are likely to outweigh any potential increase in risk of accident as a result of the proposal.

The RTA has stated that Graham Drive will not be upgraded as its function as a local road will not change, however the local road network would generally be signposted with lower speeds than the existing highway. The Department understands that the RTA believes that Graham Drive in its current state is fit for its intended purpose.

Notwithstanding the above, the Department is of the opinion that where the proposal results in increased traffic volumes on any existing local road forming the alternate local road route, the RTA must assess the need for road upgrades to cater for the expected traffic volumes. Any works deemed necessary must be completed prior to the opening of the highway to traffic and before ownership or maintenance is transferred to a third party (*i.e.* Council). The Department recommends a condition of approval to this effect.

Property Access

A number of submissions raised concern regarding impacts to property access. The Department notes that the RTA has committed to reinstating appropriate access where it is affected by construction and/or operation of the project. Access would be maintained at all times, albeit possibly at a different location to that currently used. It should be noted that the RTA is not obligated to reinstate or provide alternative access to a property where the access is not approved. The Department recommends a condition be included which requires the RTA to provide alternative access of a standard at least equivalent to that currently available and which meets relevant safety standards. The details must be determined in consultation with the landholder.

5.5 Arrawarra Interchange and Rest Area

Issue

In May 2006, the study area was extended to incorporate an interchange adjacent to Arrawarra Beach Road. This decision was largely influenced by the opportunity to rationalise interchange arrangements to serve access to and from Woolgoolga as well as the requirements of the communities in the vicinity of Arrawarra/Corindi/Red Rock. As the functional requirements for both projects could be readily integrated with a single interchange, and because the Sapphire to Woolgoolga section has a higher priority for construction, the RTA concluded that this was a prudent change to the project.

The RTA proposes a northern interchange at Arrawarra to provide for all traffic movements to and from the bypass and serve as the northern entry point for Woolgoolga. It would include a local access road connection from Woolgoolga to Darlington Park via Eggins Drive. It is clearly stated that the scale of the interchange would be considerable and it would have a strong visual presence.

The *Pacific Highway Safety Review* (RTA, 2004) identified the need for rest areas to be developed in the Coffs Harbour/Woolgoolga area. The project described in the Environmental Assessment included a rest area for both light and heavy vehicles on the eastern side of the proposed Arrawarra Interchange near Arrawarra Beach Road. A truck rest area is located at Halfway Creek, approximately 30 kilometres south of Grafton. The nearest light vehicle rest areas are located 16 kilometres south of Coffs Harbour at Sid Bourke Forest Park and 70 kilometres north of Coffs Harbour at Glenugie.

The surrounding land is currently heavily vegetated in this location. The RTA has stated that the rest area would have a strong visual presence which could be mitigated with appropriate landscaping.

Submissions

Twenty (20) submissions were received highlighting concerns with the proposed interchange and in particular the ecological and noise impacts of the vehicle rest area. In summary, key issues included:

- relocation of the interchange to areas where future development is planned and away from Arrawarra Beach Road where no growth is anticipated;
- why a rest area is needed given the existing Halfway Creek truck stop;

- the area is culturally and environmentally sensitive and supports a range of endangered species;
- the area forms a wildlife corridor between Wedding Bells State Forest and Garby Nature Reserve and the interchange will fragment existing glider habitat;
- the rest area should be relocated to an area not requiring clearing;
- noise impacts will affect lifestyle.

Consideration

Interchange Location

The Department also raised concerns regarding:

- the location of the interchange given small community and lack of future growth in Arrawarra Beach compared with the larger villages of Corindi and Red Rock further north
- vegetation clearing required in an area of high ecological value;
- the potential social and noise impacts; and
- the construction footprint of the interchange, in particular, the location of the eastern roundabout within vegetation of high ecological value and the scale of the north bound on and off ramps.

The RTA provided further information regarding the selection of the location for the interchange. It is understood that the site was selected to optimise access to the various coastal communities between Red Rock in the north and Safety Beach further south. Location of the interchange any further southward would necessitate the construction of an additional interchange to access Red Rock and Corindi in the future. An interchange was also considered further south which, apart from being further from Red Rock/Corindi, it is understood that there would be greater impacts on flora and fauna within Wedding Bells State Forest, the forestry resource and greater impact on cultural heritage. This was not considered a feasible approach to local access. The Department accepts that anticipated growth in this area by 2021 is not significant and therefore more than one interchange is not reasonable or a sustainable approach to resource allocation. Notwithstanding, it is not clear that the environmental and social impacts would outweigh those expected at the proposed location.

Whilst the Department acknowledges the need to optimise the functionality and efficiency of a single interchange and therefore accepts the proposed location of the Arrawarra Interchange, the proposed design, particularly on the western side of the highway is of significant bulk and scale which is not clearly justified. The RTA has suggested that this design is necessary to provide maximum functionality and safety and to enable 'at speed' merging into highway traffic from the northbound on-ramp. By including a roundabout on the western side as is proposed on the eastern side, mixing of on and off ramp traffic would be unavoidable. On the basis of the information provided to date, the Department is not satisfied that these are valid arguments as:

- it would be expected that the downslope to the northbound on-ramp would sufficiently cater for the need to accelerate prior to merging with highway traffic without the need for a large sweeping curve requiring significant landtake;
- the northbound off-ramp is only expected to cater for approximately 550 vehicles per day in 2021. This equates to less than one vehicle per minute if it is assumed that all 550 vehicles use the ramp over a 12 hour period. Therefore the implications of mixing on and off ramp traffic would be expected to be minimal and not of sufficient significance as to require the stated separation; and
- it is not clear whether functional and safety requirements are mandatory or simply desirable and what the implications are if these are not met.

It is also noted that the proposed design would have significant impacts on the clearing requirements and fragmentation of vegetated areas. The southbound on and off ramps merge at a roundabout south of Arrawarra Beach Road at the southern point of the proposed rest area in an area of high ecological value (refer to Figure 6) whereas this does not appear to be the case if the roundabout were to be moved slightly northward. Whilst it is acknowledged that this area of high ecological value is isolated from other significant areas, it is the Department's opinion that if impacts can be avoided then this is preferable. The RTA has argued that it would be difficult to move the roundabout without compromising the safety and/or efficiency of the facility, however this is not demonstrated or articulated.

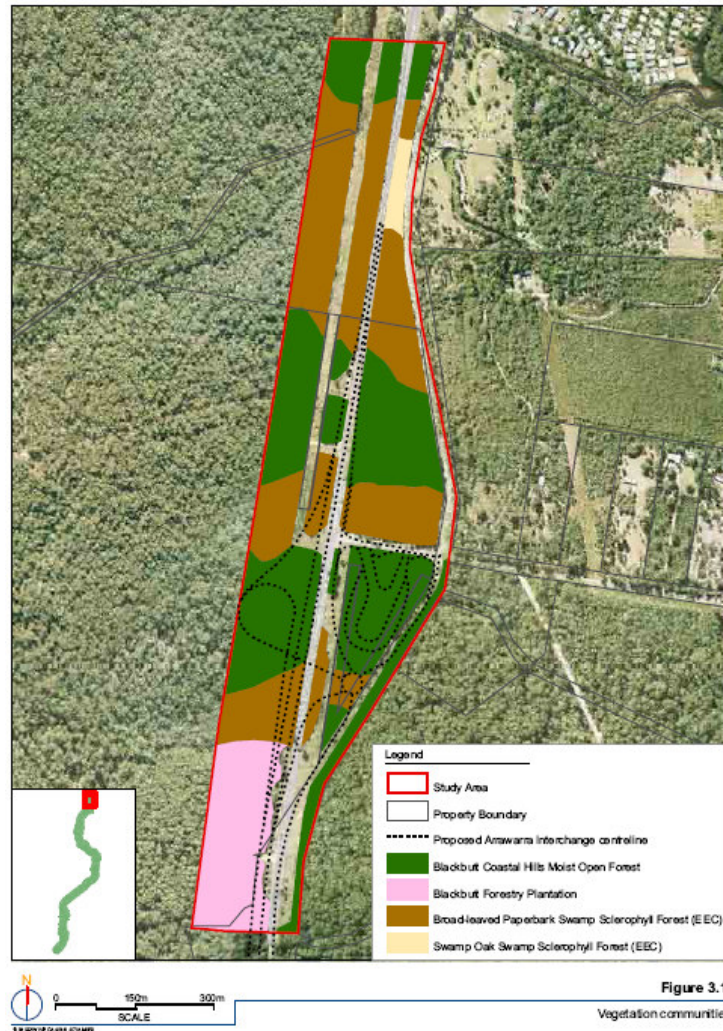
On the basis of the above, the Department recommends that a condition be imposed which requires the RTA to review the interchange design at this location with the view to reducing the its scale and footprint and to avoiding areas of high ecological value as much as possible. In doing this, the RTA

must consider and clearly articulate all relevant factors including safety, functionality, geometry, ecological and amenity (both visual and noise).

Rest Area

On the basis of the range of concerns raised in relation to the proposed rest area, including ecological, amenity and need, the Department advised the RTA that it could not support the inclusion of the rest area in this location at this time. These issues included:

- the cultural and environmental sensitivity of the area including the surrounding Yarrawarra and Arrawarra Estuary systems;
- its habitat value for endangered frogs, gliders, and microbats;
- its location within a wildlife corridor between the vegetation on the western side of the proposal and Garby Nature Reserve on the east;
- fragmentation of existing glider habitat which could lead to long term decline in glider populations east of the Pacific Highway; and
- potential noise, lighting and visual impacts on the Arrawarra Beach community.



Source: *Flora and Fauna Report Arrawarra Interchange Pacific Highway Upgrade - Sapphire to Woolgoolga* (Connell Wagner, 2007)

Figure 6 Arrawarra Interchange and Rest Area Vegetation Communities

In response, the RTA informed the Department in correspondence received on 31 October 2008, that it intended to withdraw the rest area at the Arrawarra Interchange from the proposal. This does not imply that this location has been completely ruled out for a rest area in the future, however it will not be included as part of the Sapphire to Woolgoolga upgrade at this time. The Department has advised that any future proposal to reinstate a rest area at this location would need to consider and address the issues raised in submissions.

5.6 Property Impacts (including agricultural impacts)

Issue

Up to 127 properties, totalling 165 hectares would be affected by partial or total acquisition. Eighty three (83) properties would be affected by acquisition along the upgrade section (Sapphire to Woolgoolga) and 44 on the bypass. Up to 40 agricultural properties would be affected. Of these, 19 would be seriously (15-25 per cent of property) or critically affected (>25 per cent of property) and no longer viable for their current agricultural purpose, which are:

- three (3) banana plantations;
- five (5) fallow/grass;
- four (4) blueberry plantations;
- five (5) banana and blueberry farms (combination);
- a nursery; and
- a hydroponics operation.

Submissions

Impacts to agricultural land in terms of land acquisition, impacts on operation and potential spread of disease were raised as issues of concern. In particular, these included:

- opposed to compulsory acquisition;
- loss of agricultural land, both generally and of cultural significance to the Sikh community;
- impacts to farm infrastructure and access arrangements;
- the need to provide a vegetated spray drift buffer as part of the road reserve for both blueberry and banana plantations;
- impacts of dust and vehicle emissions on blueberry plantations; and
- indirect impacts on timber production.

Consideration

Property Acquisition

Land acquisition by the RTA is undertaken in accordance with the *Land Acquisition (Just Terms Compensation) Act*. An objective of the legislation which is included in the RTA's policy is to encourage negotiated land purchase in preference to compulsory acquisition. Other options exist where the RTA will consider purchase on the grounds of hardship. The RTA's implementation of the land acquisition process is outlined in its Land Acquisition Policy and is applied consistent to all road projects. The DoP supports this approach.

Acquisition requirements range from minor partial acquisition in residential areas to widen the existing road reserve (such as nature strips and small sections of front/rear yards), to property severance where existing agricultural practices can continue with some amendment to management or farming techniques and finally severe impacts whereby the property can no longer support the existing activities as a viable enterprise. It should be noted that the RTA is not obligated to acquire any more land than is required for roadworks. Given that land purchase is a significant proportion of the cost of road construction, it is not in the RTA's interest to purchase more than is required.

The Department supports a route selection process that aims to minimise the impacts on property and the subsequent social impacts on a community to the greatest extent practicable. It is recognised that these impacts have been taken into account in determining the preferred route. The RTA has committed to consulting with agricultural property owners in refining the road alignment to minimise impacts on farm management practices. Notwithstanding, there are numerous agricultural properties where severe or critical impacts will be such that existing farm management practices could not continue due to either reduction in the usable area of the property or severance which effectively reduces the area of land into two or more separate parcels which are too small to manage independently. The Department has recommended a condition be imposed which requires the RTA to engage a specialist consultant for those severely or critically affected properties to assist in negotiating mitigation measures, identifying alternative farming opportunities, purchase of residual land, negotiate appropriate compensation or purchase of the property.

It may be that the RTA purchases land which is surplus to construction requirements either due to purchase of a whole property where residual land, if not purchased, would not enable viable and sustainable agricultural production in its own right or where land is required for the purpose of road construction but is surplus to requirements once the highway is opened to traffic. Amalgamation of residual land or addition of such land with retained farmland subject to partial acquisition may provide

opportunity to maintain or re-establish viable agricultural operations. These options should be considered during negotiations with landholders.

Forestry Operations

The bypass section of the project will have direct impacts requiring revocation of land from Wedding Bells State Forest as well as indirect impacts on forestry operations. The Department of Primary Industries has estimated approximately 18 hectares of forests will be affected indirectly, including changes to harvesting and access. The DPI has requested that where land will be revoked, that it be permitted to remove harvestable timber prior to clearing for construction. The RTA has agreed to this request and included it as a statement of commitment. Notwithstanding, the Department recognises that the ultimate project design through Wedding Bells State Forest, including fauna mitigation measures will need to be resolved in consultation with the DPI in such a way as to minimise the impacts on the forestry estate and operations as much as possible. Therefore the Department recommends a condition which requires that this section be designed in consultation with the DPI; consider harvestable timber and also maintains access to enable continued, sustainable operations including fire management and recreation.

5.7 Other Issues

Aquatic Ecology

The Department of Primary Industries identified that the Oxleyan Pygmy Perch had been recorded in Corindi Creek north of the study area and that the habitat was similar to that present at Arrawarra Creek. The RTA provided further information in the submissions report regarding the known habitat of this species and advised that the creeks and watercourses crossed by the highway upgrade do not support this habitat type and therefore it is not expected to be affected. Notwithstanding, if the species is present, the RTA has committed to developing water crossings to facilitate fish passage where appropriate as well as implementing sedimentation and erosion controls to minimise construction and operational impacts on watercourses.

The Department is satisfied that these commitments would manage the potential impacts of the project on the Oxleyan Pygmy Perch and to further strengthen this commitment has recommended conditions of approval regarding design of watercourse crossings and culverts to facilitate fish passage and to manage soil erosion and runoff including a Construction Soil and Erosion Control Plan.

Soils, Air Quality and Water Quality

A number of submissions raised construction soil and erosion impacts, particularly the downstream impacts on Hearn's Lake and Solitary Islands Marine Park. The RTA has committed to providing appropriate soil and erosion control measures to minimise the impacts on all waterways. It is also likely that this issue will be addressed in any licence requirements from the DECC. The RTA has consulted with the Marine Parks Authority in regards to this matter and has committed to continued consultation throughout the development of management measures and project construction. This has also been included as a recommended condition of approval.

The Department is of the opinion that these commitments are appropriate to ensure that relevant stakeholders are included in the development of mitigation measures and that implementation of the recommended conditions of approval, including implementation of measures consistent with Landcom's *Managing Urban Stormwater – Soils and Construction* and preparation of a Soil and Erosion Control Plan, will adequately address this issue.

Various community submissions also raised the impacts to water quality in domestic drinking water tanks as an issue during both construction (from dust and other airborne particles) and operation (from vehicle emissions). The Department is satisfied that this issue was adequately addressed in the Environmental Assessment where it was noted that water quality in tanks close to the highway and near an industrial area was found to meet the relevant standards. The Department has also recommended inclusion of a condition of approval for the RTA to design, construct, commission, operate and maintain the project in a manner that minimises dust emissions.

Climate Change

Climate change was raised in a number of community submissions as well as by the Department of Environment and Climate Change. Issues raised included whether or not climate change had been considered in the flooding analysis undertaken or more generally. The DECC recommended that any analysis consider a range of climate change scenarios consistent with its guideline "*Practical Consideration in Climate Change*".

In responding to these issues in the submissions report, the RTA advised that flood modelling of the project found that the highway had insufficient flood immunity and that existing culvert arrangements would need to be augmented to achieve this. In addition, the RTA undertook additional flood modelling and consideration of the effects of sea level rise which was included in the submissions report. The need to provide flood immunity on at least one of the carriageways is included as a project objective. The RTA proposes to retain existing flooding characteristics (*i.e.* not worsen flooding) along the upgrade section. All culverts on the bypass section have been designed with a 0.7 metre freeboard to the highway in the 100 year Average Recurrence Interval (ARI) flood event.

Flood behaviour at bridge crossings on the upgrade section may be influenced by future changes in ocean levels as a result of climate change however this is not anticipated for creek crossings along the bypass section. Any future changes to the 100 year ARI flood event due to either changes in ocean levels or rainfall intensity and duration resulting from climate change would not affect the flood immunity as the bridge structures would be designed to be above the 2000 year ARI event.

Following consideration of the additional information provided by the RTA in response to this issue, the Department is satisfied that the effects of climate change on the project and of flooding impacts on the surrounding area have been appropriately addressed.

Heritage

Issues regarding heritage included incorrect use of information, lack of identification of the Bagawa Birra Murri Aboriginal Corporation in the heritage assessment report, failure to seriously investigate the heritage significance of Hearn's Lake and the applicability of the *Aboriginal and Torres Strait Islander Heritage Protection Act*.

In its response to submissions, the RTA noted that some issues raised would require a comprehensive anthropological assessment which is outside the scope of the project. Notwithstanding, it is understood that the RTA has contacted the Corporation to resolve matters of concern. It is understood that the Bagawa Birra Murri Aboriginal Corporation was not formed until September 2007 after the assessment was finalised and therefore it is not referred to. The RTA states that many of the members of the Corporation are also members of other groups including the Local Aboriginal Land Council and/or the Gumbula Julipi Elders Group which were consulted and acknowledges that the Corporation has registered as a stakeholder for the proposed subsurface investigations. It is also recognised that the Hearn's Lake and Flat Top Rock sites would not be affected by the project and therefore were not considered further.

The Department is satisfied that the RTA has undertaken the assessment and consultation consistent with DECC guidelines. It is noted that the DECC did not raise any concerns in this regard. The Department is also of the opinion that the RTA has addressed the issues raised by Aboriginal groups in relation to the heritage impacts and notes that it has committed to, and is obliged to continue to consult with the Aboriginal community and registered stakeholders in accordance with the relevant state legislation and guidelines.

Agricultural Diseases and Spray Buffers

The Department of Primary Industries raised the need to include vegetated spray buffers for banana and blueberry plantations. The DPI also identified that where land is acquired from existing or past banana plantations that all care should be taken to minimise the risk of spread of Banana Bunchy Top Virus and Panama Disease.

Initially the DPI had requested that vegetated spray buffers be incorporated into the road reserve rather than to constrain productive agricultural land further than is already required for the highway construction and operation. The RTA advised that there is no provision in the highway corridor for inclusion of a vegetated spray buffer. Further this would result in issues requiring the RTA to maintain the road reserve in certain locations for the activities of a third party and would have accompanying liability for activities which are outside of its control.

The Department accepts that it is unreasonable for the RTA to accept liability for the actions of third parties but is also cognisant that this has additional impacts on the use of the land and therefore the productive and income producing capability of that land. However, the *Land Acquisition (Just Terms) Compensation Act 1991* would apply in this instance and the landholder would be compensated for 'injurious affectation'. This is the reduction in value of residual property resulting from the road proposal. This would include any necessary reduction in blueberry or banana growing areas because of buffer requirements, provided this was the highest and best use. It could not be claimed where the market value was based on a higher use. Any need for the farmer to maintain the buffer and any associated cost would be allowed in the reduced value.

Despite the above, the Department has recommended a condition of approval which strengthens the RTA's commitment regarding this issue. The recommended condition requires that the RTA shall provide for a vegetated spray buffer on private land where this will be beneficial and practical in mitigating the effects of the highway on adjoining operations and where agreed by the landholder. These must be developed in consultation with the DPI and take into account landform and land use. The RTA would be responsible for fencing and planting out the buffer with appropriate species. Where practical, these species would also be used in landscaping of the road reserve in these locations.

The risk of spread of bunchy top virus and Panama disease were identified as issues of concern where there would be construction on land which had previously been used for banana production. The DPI recommended that a condition be included which requires the RTA to manage activities on land previously used for banana production in accordance with relevant publications of the DPI and DECC. This recommendation was adopted by the Department.

6. CONCLUSIONS AND RECOMMENDATIONS

The Department is satisfied that the project is justified as part of the Pacific Highway Upgrade Program which has been declared critical infrastructure by the Government for various benefits to the State and region. This is further supported by the Commonwealth Government's commitment to partial funding of the required upgrade works. The Pacific Highway Upgrade, and Sapphire to Woolgoolga project specifically, are also identified in a range of government policy documents as infrastructure required to improve services in and to the Mid North Coast and to which the Government is committed to providing.

Following a detailed assessment of the Environmental Assessment, public and Government agency submissions and the RTA's Response to Submissions Report, the Department is satisfied that the likely impacts of the project have been addressed and are acceptable subject to implementation of recommended conditions.

The Department acknowledges that there are a number of constraints which will need to be carefully managed. These include the construction noise impacts, the development and implementation of mitigation measures for operational noise, property impacts and land acquisition, biodiversity impacts (particularly fauna movement and alternative habitat provision) and development of a comprehensive biodiversity offset package. These issues were reflected in submissions from the local community during the exhibition of the Environmental Assessment and recommended conditions of approval drafted where appropriate to support and enhance the RTA's Statement of Commitments.

It is acknowledged that there is a proportion of the community which opposes the proposal on the grounds that a far western bypass of Coffs Harbour, away from the coastal corridor is preferred. The Department has reviewed the decision making process undertaken by the RTA in developing the preferred route and concurs that a far western bypass is not justified. It is accepted that the further west a route is located, the less likely that traffic would be attracted to it, thereby undermining one of the key objectives of the project. This is largely because the majority of trips on the Pacific Highway between Sapphire and Woolgoolga are local with through trips a relatively small proportion.

Based on its assessment, the Department is satisfied that the project is necessary to alleviate the current traffic congestion and safety issues associated with the existing highway. The Department believes that the project will provide a local traffic route to separate local vehicle trips from higher speed through traffic, as well as meeting the objective of providing a high standard and efficient motorway to aid in the efficient movement of traffic between Sydney, the North Coast region and Brisbane.

The Department recognises that there will be both construction and, to a less degree, operational noise impacts for the community even with mitigation in place. The largely urban nature of the section between Sapphire and South Woolgoolga will present challenges for the RTA in managing construction noise similar to those which are faced in road construction in Sydney. It is important that the RTA manages this in a sympathetic way and that the community is kept well informed of construction staging and has the opportunity to provide input into the management of noise, particularly where out of hours works may be required. Notwithstanding, construction noise is expected to be transient and anecdotal evidence from other projects suggests it is generally tolerated by the community in order for construction to be completed in a timely fashion.

Operational noise impacts were a key issue raised by the community in submissions. The Department is aware that there is a perception within the community that any increase in road traffic noise is unacceptable. It must be recognised that even without the project there will be natural growth in traffic and deterioration of the noise environment as a result. Government adopted noise criteria have been set based on what is considered an acceptable level and have been benchmarked against international criteria. Whilst there are a number of receivers that will experience an increase in noise levels, a proportion of these will remain below the relevant criteria and therefore mitigation is not proposed. However, most receivers will experience an immediate improvement in noise amenity once the upgrade is operational as noise levels that would have been prevalent in 2011 **without** the project will not occur until at least 2031 due to a number of factors including the project design, use of low noise pavements, noise barriers and other mitigation measures.

Due to the potential direct and indirect impacts of the project on biodiversity issues, the main component of which is the removal of approximately 83 hectares of native vegetation including 18.2 hectares of various endangered ecological communities, the Department has recommended that the RTA prepare an appropriate biodiversity offset strategy and package, in consultation with the Department of Environment and Climate Change. The components of the strategy and implementation of the offset package must be approved by the Director-General. This approach has been successfully adopted on a range of other Pacific Highway Upgrade projects and significant benefits have been achieved in terms of biodiversity conservation. In particular this has included transfer of substantial areas of conservation interest to conservation reserves including National Parks, Nature Reserves and also to State Forests. To date, 471.6 hectares of affected vegetation for eight (8) Pacific Highway projects have been offset with 1,280 hectares of compensatory habitat.

The recommended conditions of approval also provide for the mitigation and management of other impact associated with the project including property, heritage, hydrology and general requirements for overall environmental management of the project. The Department believes that implementation of the mitigation measures proposed in the Environmental Assessment and in the Statement of Commitments will ensure that sustainable best management practices are considered throughout the construction and operation of the project to ensure that any potential impacts are minimised to an acceptable level and the project does not unduly impact on the amenity surrounding of local residents and the community.

On balance, the Department considers that the project can be undertaken in an ecologically sustainable manner while also providing a much improved route for local and through traffic movement and therefore recommends that the Minister for Planning approve the Sapphire to Woolgoolga Pacific Highway Upgrade subject to the recommended conditions of approval.

APPENDIX B – STATEMENT OF COMMITMENTS
