



New South Wales Government



Review of environmental factors
for Waterfall Way realignment at

Marx Hill

DECEMBER 2008

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EXECUTIVE SUMMARY

The proposal

The NSW Roads and Traffic Authority (RTA) proposes to realign Waterfall Way (Main Road 76) at Marx Hill. The realignment would be approximately 1,070 metres in length and take place 8.27 kilometres to 9.34 kilometres west of the Waterfall Way / Pacific Highway intersection.

This review of environmental factors (REF) has been prepared by Eco Logical Australia Pty Ltd (ELA) on behalf of RTA Northern Region.

Statutory and planning framework

Clause 94 of State Environmental Planning Policy - Infrastructure operates to remove the consent obligations from the consent authority and therefore the proposed road upgrade does not require consent from Council.

For the purposes of these works, the RTA is the proponent and the determining authority under Part 5 of the *Environmental Planning and Assessment (EP&A) Act 1979*.

Community and stakeholder consultation

Relevant State government agencies and stakeholders were contacted and provided with the opportunity to comment on the Proposal for the road re-alignment at Marx Hill. Comments received relevant to the Proposal related to:

- Flooding;
- Heritage;
- Road design; and
- Biodiversity.

Community consultation for the Proposal has been undertaken by the NSW RTA in accordance with the IAP2 spectrum. The RTA has implemented the following additional consultative actions; invitation for public comment, attendance at information sessions and public exhibition of the REF.

The majority of community feedback received by the RTA to date does not object to the Marx Hill project proceeding.

Need for the proposal

The Proposal would improve road safety within the area of the proposed works in line with the NSW *State Plan* objectives by improving the vertical and horizontal alignment of Waterfall Way, thereby increasing the design speed of the road and flood immunity within the study area.

The Proposal would also remove an at-grade cattle crossing located in an area of the road with poor sight lines. In addition, widening of the road shoulders where realignment would not be undertaken would upgrade the existing pavement in accordance with road design guidelines.

Options considered

Three options, including the “Do nothing” option were considered:

1. Option 1 – Do Nothing
2. Option 2 – Realignment to provide design speed of 80km/h
3. Option 3 – Realignment to provide design speed of 70km/h

The preferred Option 2 ‘Realignment to provide design speed of 80km/h is expected to achieve all Proposal objectives and has accordingly been selected.

Environmental impacts

A comprehensive environmental impact assessment was conducted and the key matters for consideration are provided.

Water quality and hydrology - The existing road level provides for a Bellinger River flood level of approximately 1 in 2 years and is one of the first sections of Waterfall Way to be cut during flood events. Following assessment of overall flooding impacts on the Waterfall Way between Bellingen to Pacific Highway, the RTA decided to adopt the vertical alignment allowing 1 in 5 year flood immunity which would reduce impacts and improve access.

Biodiversity - Ten (10) threatened flora and 41 threatened fauna, as listed on the *Threatened Species Conservation Act 1995* (TSC Act) and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), have been recorded within 10 kilometres of the study area. No threatened flora or fauna or endangered ecological communities, as listed on the TSC and EPBC Acts, were recorded during the field survey. Seven part assessments of significance (Seven part tests) were undertaken on each listed species with the potential to occur within the study area. The seven part tests concluded that the Proposal was unlikely to have a significant impact on any threatened species or communities.

Aboriginal heritage - The Aboriginal community consultation undertaken for the Aboriginal heritage assessment indicates that land to be affected by the Proposal is not known to contain any sites places or resources of significance to the local Aboriginal community.

Non-Aboriginal heritage - There are three items of non-Aboriginal heritage significance located in proximity to the Proposal; the Cyril Siddons Rotary Reserve, two historic graves and the Marx Hill commemorative plaque. A small amount of the Reserve would be used as part of the road alignment and the plaque and stonework would be returned to its pre construction state following construction of the Proposal. The Marx Hill Graves are thought to be located on the edge of the project footprint and therefore will be managed accordingly to ensure they are not impacted upon during construction.

Noise and vibration - There are a low number of noise and vibration receivers within the study area. The receivers are limited to one residence to the north and five residences to the south of the proposed road upgrade. The Proposal would result in minimal changes to distances between the residences and the road for three residences and a slight increase in distance for two residences to the south. The findings of this assessment have shown that during the road construction there could be localised noise and vibration impacts at near residential properties. The predicted ground vibration and air-blast levels demonstrate that the Department of Environment and Climate Change goals would be achieved.

Air quality - During and immediately after the construction phase, there is potential for a localised deterioration in air quality due to dust generation and from short term and localised. plant and construction equipment emissions. The Proposal is expected to have a minor long-term positive impact on air quality and is not expected to increased traffic levels. An increase in vehicle emissions would therefore not result.

Justification and conclusion

The Proposal to upgrade the Waterfall Way at Bellingen would improve the movement of tourist, freight, commercial and residential traffic between regional population centres. It would also improve road safety, flood immunity and reduce vehicle operating costs and travel time. The proposal is consistent with the objectives of the RTA Blueprint and NSW *State Plan* by upgrading a regional road.

In addition, implementation of the Proposal would have the following beneficial effects;

- Provision of an improved speed environment improving sight distance;
- Provision of a new, wider road to improve safety;
- Anticipated reduction of the incidence of vehicle accidents;
- Improvement of travel conditions and travel times; and
- Provision of a road network that will promote economic development.

It is considered the Proposal would have an overall positive effect on the social, economic and environmental characteristics of the region.

Display of the review of environmental factors

This REF is on display for comment between **17 December 2008 and 9 February 2009**. You can access the documents in the following ways:

Internet

The documents will be available as PDF files on the RTA website at www.rta.nsw.gov.au

Display

The review documents can be viewed at the following locations:

- Bellingen Shire Council – Monday to Friday 8.30am to 4.30pm.
- Urunga Library – Tuesday to Friday 10.30am to 5pm (closed 1pm – 2pm). Saturday 10am to 12noon.
- Dorrigo Library – Tuesday 1pm to 5pm, Wednesday to Friday 10am to 5pm (closed 12pm-1pm). Saturday 9.30am to 12 noon.

How can I make a submission?

To make a submission on the proposal, please send your written comments to:

RTA Project Manager
Mr Paul Leonard
31 Victoria Street Grafton NSW 2460
Fax: 02 6640 1006
Submissions must be received by Monday, 9 February 2009.

Privacy information

All information included in submissions is collected for the sole purpose of assisting in the assessment of this proposal. The information may be used during the environmental impact assessment process by relevant RTA staff and its contractors.

Where the respondent indicates at the time of supply of information that their submission should be kept confidential, the RTA will attempt to keep it confidential. However there may be legislative or legal justification for the release of the information, for example under the *Freedom of Information Act 1989* or under subpoena or statutory instrument.

The supply of this information is voluntary. Each respondent has free access at all times to the information provided by that respondent but not to any identifying information provided by other respondents if a respondent has indicated that the representation should be kept confidential.

Any respondent may make a correction to the information that they have provided by writing to the same address the submission was sent.

The information will be held by the Roads and Traffic Authority, 31 Victoria Street Grafton NSW 2460.

What happens next?

Following the submissions period, the RTA will collate submissions. Acknowledgement letters will be sent to each respondent. The details of submission authors will be retained and authors will be subsequently advised when project information is released.

After consideration of community comments the RTA will determine whether the proposal should proceed as proposed, or whether any alterations to the proposal are necessary. The community will be kept informed regarding this RTA determination.

If the proposal is approved, the RTA proceeds with final design and tenders are called for construction of the project.

If you have any queries, please contact the RTA project manager on (02) 6640 1300.

1. INTRODUCTION

Waterfall Way is an important arterial route connecting the Coffs Harbour district with the coastal hinterland of the Bellingen area and the tablelands of Dorrigo, Armidale and beyond. The section of road from Raleigh to Bellingen receives a high percentage of commuter and service traffic between Coffs Harbour and Bellingen.

The section of road under investigation commences at the intersection with Old Brierfield Road. The subject road is currently of poor horizontal and vertical alignment, with a design speed of 50 kilometres per hour.

The proposed works are required to improve road safety for motorists by improving the vertical and horizontal alignment and widening the road shoulders.

This review of environmental factors (REF) has been prepared by Eco Logical Australia Pty Ltd (ELA) on behalf of RTA Northern Region.

For the purposes of these works, the RTA is the proponent and the determining authority under Part 5 of the *Environmental Planning and Assessment (EP&A) Act 1979*.

The purpose of the REF is to describe the Proposal, to document the likely impacts of the Proposal on the environment, and to detail protective measures to be implemented.

The description of the proposed works and the associated environmental impacts have been undertaken in the context of Clause 228 of the *Environment Planning and Assessment (EP&A) Regulation 2000*, the *Threatened Species Conservation (TSC) Act 1995*, the *Fisheries Management (FM) Act 1994*, and the (Commonwealth) *Environment Protection and Biodiversity Conservation (EPBC) Act 1999*. In doing so, the REF helps fulfil the requirements of Section 111 of the EP&A Act, that the RTA examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The findings of the REF would be considered when assessing:

- Whether the Proposal is likely to have a significant impact on the environment and the necessity for approval to be sought under Part 3A of the EP&A Act;
- The significance of any impact on threatened species as defined by the TSC Act and/or FM Act, in Section 5A of the EP&A Act and the requirement for a Species Impact Statement (SIS); and
- The potential for the proposal to significantly impact a matter of national environmental significance or Commonwealth land and the need to make a referral to the Australian Government Department of the Environment, Water, Heritage and the Arts (DEWHA) (formerly the Department of the Environment and Water Resources) for a decision by the Commonwealth Minister for the Environment, Heritage and the Arts on whether assessment and approval is required under the EPBC Act.

The Proposal would cost approximately \$4.5M.

1.1 Proposal identification

Realignment of Waterfall Way at Marx Hill, east of Bellingen, northern NSW.

The NSW Roads and Traffic Authority (RTA) proposes to realign Waterfall Way (Main Road 76) at Marx Hill. The realignment would be approximately 1.07 kilometres in length and take place 8.27 kilometres to 9.34 kilometres west of the Waterfall Way/Pacific Highway intersection (the Proposal). **Figure 1** shows the location of the Proposal.

This section of Waterfall Way is located between the Bellinger River and the summit of Marx Hill. The surrounding area is rural in nature with three residences and a dairy located in the vicinity of the proposed works. An at-grade cattle crossing is located approximately 100 metres west of Old Brierfield Road, which forms the eastern extent of the Proposal. A rest area (Cyril Siddons Rest Area) is located on the southern side

of the road and forms the western extent of the works. Access to 'Mount Lookout' is located on the northern side of the road opposite the rest area.

The 'Proposal footprint' is defined as the area encompassing the existing road and related infrastructure, and the area of the proposed realigned road, including all areas between the two alignments and all areas impacted by the construction of shoulders, batters and drainage structures, as well as the proposed site of the compound and site office. The 'study area' includes the Proposal footprint as well as the area surrounding the Proposal footprint that may be impacted upon as a result of the Proposal (refer **Figure 2**).

The site is within the Local Government Area (LGA) of Bellingen governed by the Bellingen Shire Council.

The site is within the New South Wales (NSW) Roads and Traffic Authority (RTA) Northern Region.

Funding has been made available by the New South Wales State Government Road Maintenance Funds, Infrastructure Maintenance Program.

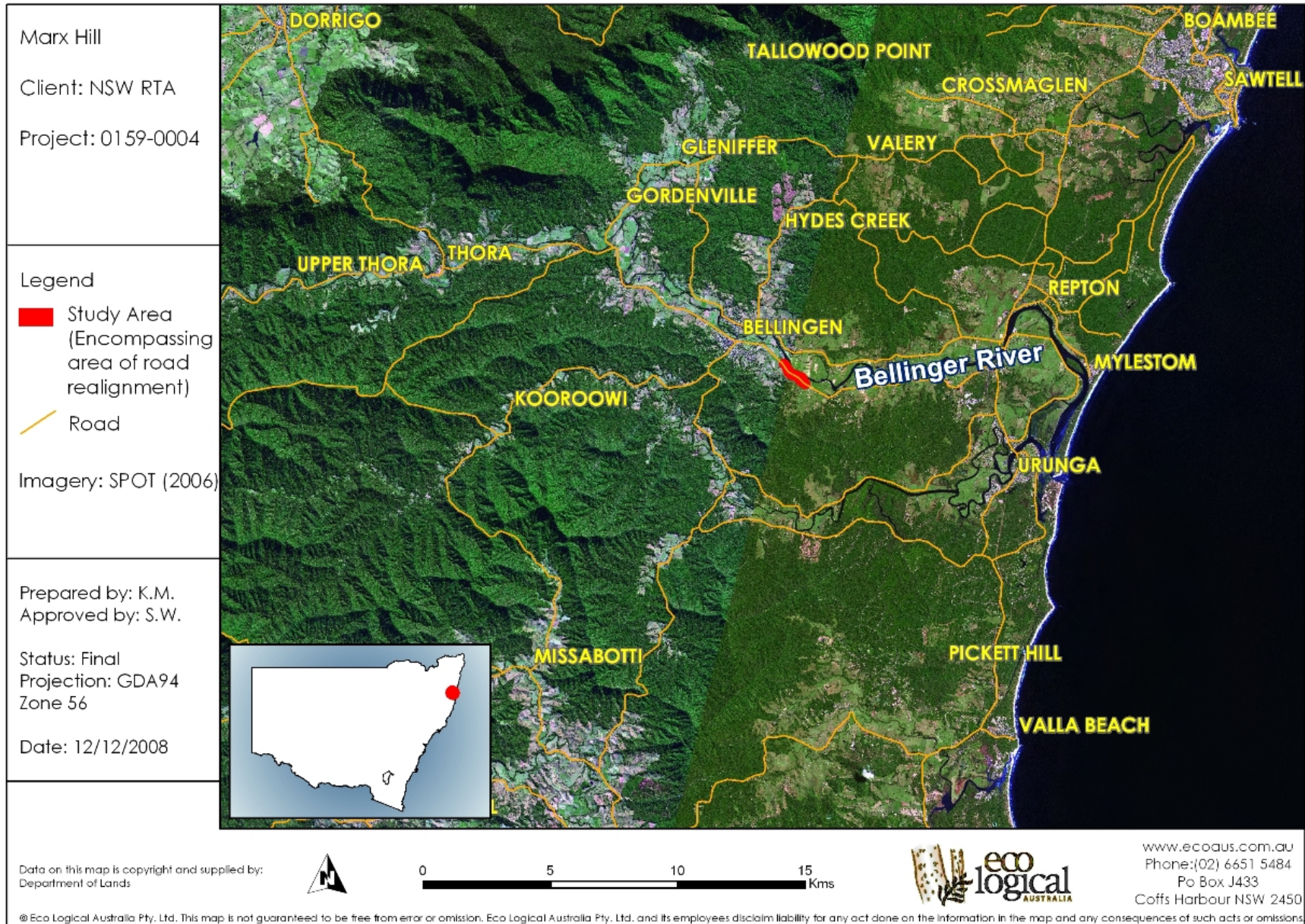


Figure 1: Site Location

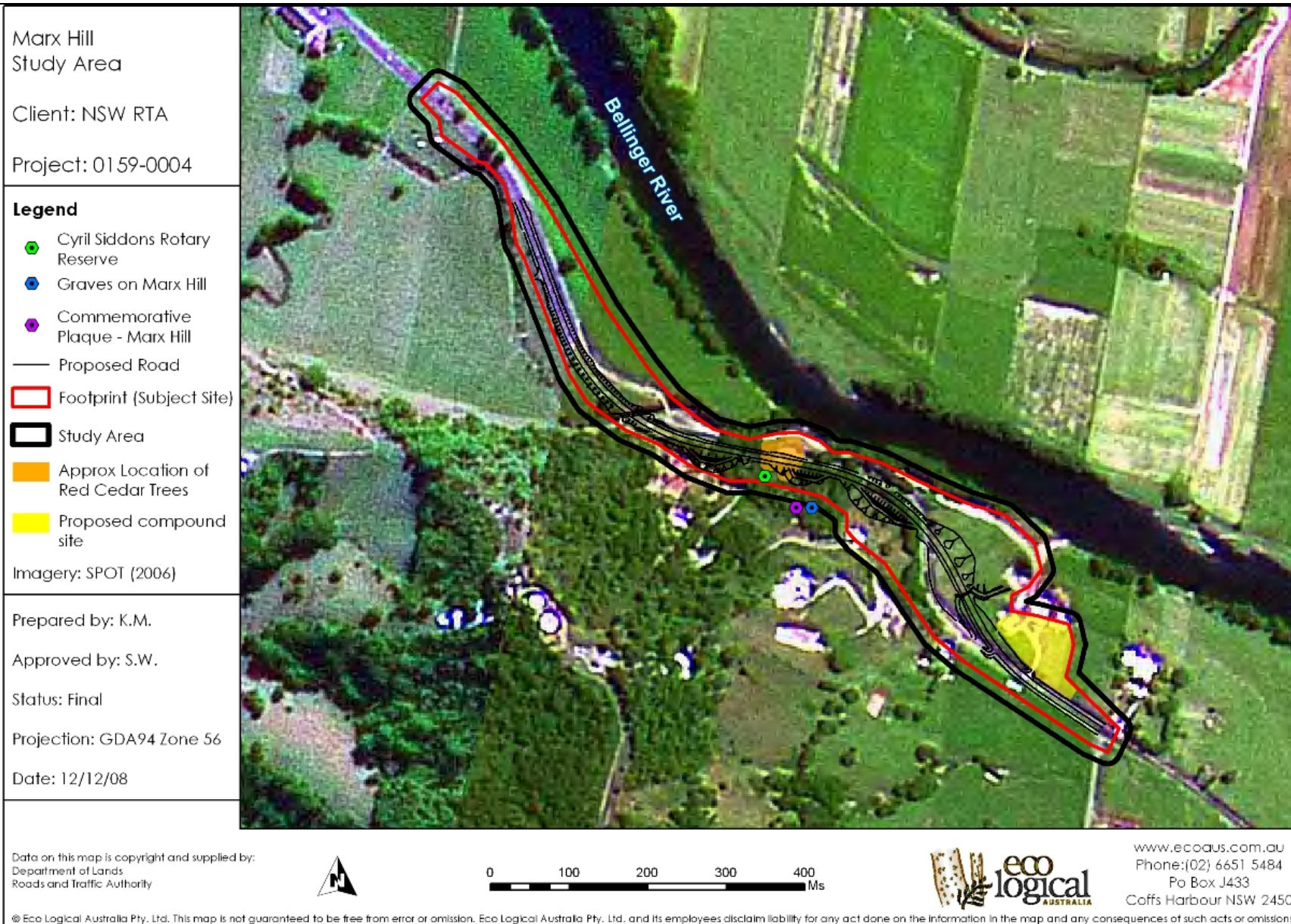


Figure 2: Study area showing concept plans

2. PROPOSAL DESCRIPTION

2.1 Description of the Proposal

The Marx Hill section of Waterfall Way commences on the western side of the intersection of MR76 and Old Brierfield Road and heads towards Bellingen, winding its way between the base of Marx Hill and the banks of the Bellingen River. An existing rest area is located within the proposal which provides access to a lookout.

The Proposal includes the following key features:

- Realignment of 1.1 kilometres of road to a safe 80km/hr standard,
- Incorporation of 3.5 metre lanes and two metre shoulders
- A cattle underpass consisting of a single cell box culvert to be constructed under the new road alignment
- Improved flood immunity to 1 in 5 year average recurrence interval.

The realignment of Waterfall Way at Marx Hill would be most pronounced in the vicinity of chainage 8.50 kilometres. At this location the road would be moved to a point approximately 35 metres to the north of the current alignment with the road in cut from 8.40 kilometres to 8.50 kilometres, and on fill embankment from 8.50 kilometres to 8.60 kilometres, in order to maintain a suitable vertical alignment. Realignment of the curve located at chainage 8.65 kilometres, and widening of the formation, would also require extension of the cut batter towards the south for the remaining length of the Proposal footprint.

2.2 Existing road, traffic and infrastructure

Within the Proposal footprint, the existing road rises gently as it climbs the north eastern side of Marx Hill. The road is sinuous in character as it traverses the northern slope of Marx Hill on a fill embankment around a gully before curving back to the south around a rocky outcrop. The road then declines gently on a relatively straight horizontal alignment to the rest area and lookout. The road is largely located either in a cutting or on a fill embankment throughout the Proposal footprint, and is signposted as a 100 kilometres per hour speed zone. However, there are several bends which have speed advisory signs as low as 55 kilometres per hour. Within the Proposal footprint, the road itself consists of a dual lane carriageway with three metre paved travel lanes and unformed shoulders of up to one metre.

The Average Annual Daily Traffic (AADT) volume for 2007 was 6,700 vehicles per day in the vicinity of the Proposal site. The heavy vehicle AADT volume for 2007 was approximately 6% of AADT in the vicinity of the Proposal site.

The forecast traffic for the Waterfall Way within the Proposal site is 8,900 (AADT) for the year 2018 (10 years after project opening) based on a growth rate of 3.1% per annum.

In the ten years from 1 April 1998 to 31 March 2008, 37 accidents were recorded within the Proposal site resulting in injuries to a total of 20 people.

2.3 Design and hydraulics

The Proposal includes altering the height and orientation of the road which would improve its capacity to manage flooding as the curve at chainage 9020 is currently subject to flooding from the Bellingen River. The existing road level provides for a Bellingen River flood level of approximately 1 in 2 years (Bruce Fidge and Associates).

The *Lower Bellingen River flood study* undertaken by the NSW Public Works in 1991 was based on the presumption of a uniform rainfall across the entire Bellingen catchment, upstream of Bellingen. An analysis of historical storms indicates that the majority of events in the lower Bellingen River have been generated by partial area or local area storms in the relatively large catchment. The most appropriate way to consider the flooding for this analysis was the consideration of historical flow sequences and the generation of information

from those. It was not considered appropriate to use a design storm approach for this analysis when considering the flows within the Bellinger River Valley. Information provided by the RTA was used to determine the Bellinger River flood levels adopted for design of the road.

Design flows were therefore used for analysis of flows from the local catchments where the water discharges from local catchments across the Waterfall Way through piped culverts. The analysis offers a more realistic design with consideration of the smaller and more frequent rainfall and runoff events.

During concept development phase the proposed new road levels were assessed to allow the road to be trafficable for the 3, 5 and 10 year average recurrence interval (ARI) floods. For the road to remain safely trafficable for a given flood frequency, the centreline of the road has therefore been set to the design flood level, leaving one lane and the shoulder above the flood level.

The road levels were set as follows:

10 years ARI	RL6.6
5 year ARI	RL5.7
3 Year ARI	RL5.0

For the road set at the 10 year ARI level, there is no delay caused by the 10 year ARI level Bellinger River Flood. For the road set at the 5 years ARI level, the 10 year ARI Bellinger River flood would block the road for 4 hours. For the road set at the 3 year ARI level, the 10 years ARI Bellinger River flood would block the road for 7 hours and the 5 year ARI Bellinger River flood would block the road for 5.5 hours.

An incremental cost benefit analysis undertaken during concept design indicated 3 year ARI as the highest ranking option. However, after further assessment and consideration of overall flooding impacts of the Waterfall Way, between Bellingen to Pacific Highway, the RTA decided to adopt the vertical alignment allowing 1 in 5 year flood immunity.

2.4 Construction activities

2.4.1 Construction processes and work methodology

The works would be undertaken in stages using the following methodology:

- Land acquisition;
- Fencing of new property boundaries;
- Installation of temporary erosion and sedimentation controls;
- Clearing and grubbing of vegetation;
- Stripping topsoil for respreading on batters;
- Construction of cattle underpass;
- Demolition and replacement of existing culvert;
- Excavation of cuttings and placing of fill;
- Respreading topsoil on batters and hydromulching;
- Placing sub base and base of road;
- Ripping and removal of redundant seal and topsoil;
- Seal application;
- Installation of signs and line marking; and
- Revegetation.

2.4.2 Construction Equipment

Plant and equipment required for the road construction works would include, but not be limited to, the following:

- Front end loaders;
- Rollers/vibrating compactors;
- Excavation plant;
- Concrete supply agitator trucks;
- Back hoes;
- Asphaltic paving machines;
- Jack hammers;
- Concrete vibrators;
- Drilling equipment;
- Cranes;
- Dump trucks;
- Road sweepers;
- Bulldozers;
- Trucks delivering construction materials;
- Trucks transporting cut and fill material;
- Water tankers;
- Low loader transporters;
- Graders;
- Light commercial and passenger vehicles;
- Trenching machines;
- Chain saws;
- Hydraulic hammer;
- Concrete saw;
- Stump grinder;
- Line marking vehicles; and
- Traffic Control Devices (e.g. variable message signs and traffic lights).

2.4.3 Traffic management and access

During operation, the Proposal would retain access for all land uses surrounding the Proposal site. Access to residences adjacent to the Proposal site would be maintained.

During construction, traffic on the existing Waterfall Way would be restricted to one lane with traffic control. The Proposal would result in approximately 20 additional truck movements per day, for the importation of pavement materials.

All other truck movements for the excavation and fill placement would take place within the Proposal footprint.

Construction vehicles would enter and exit the Proposal site via Waterfall Way.

2.4.4 Sources of material

General earthworks have been designed to minimise the need to import fill material, although some sourcing of general fill material would be required. Earthworks would consist of the following:

- Approximately 30,000 cubic metres of fill would be required, which would be obtained from the excavation of the cuttings within the Proposal footprint.
- Pavement materials would be obtained from an approved local quarry. Likely sources include the Shire quarry at Dorrigo, or quarries located at Coffs Harbour. Approximately 5,000 cubic metres of pavement material would also be required for the proposed works.
- A cut/fill volume of 500 cubic metres for drainage culvert installation.
- A total of 6,000 cubic metres of pavement material (including select material) would be required by the Proposal.

2.4.5 Stockpile and compound sites

A site compound with an approximate area of 1,500 square metres would be established between chainage 8.30 kilometres and 8.4 kilometres, and would be located in part of an existing area of cleared land and pasture (refer to **Figure 2**). The compound would require the temporary removal of approximately 200 square metres of pasture. This area is located over 100 metres from the nearest waterway (Bellinger River), and silt traps and a sedimentation pond would intercept all water draining from the compound site.

The compound site would be security fenced and would include a site office, water supply, amenities sheds, portable toilets, machinery storage areas, bunded areas for the storage of petroleum, distillate and other chemicals, vehicle washdown bays and staff parking areas.

It is likely that stockpile sites would be set up by the contractor, most likely on adjacent farmland area within the study area.

Environmental criteria that would be considered when choosing a site are provided below.

The site would be located:

- More than 50 metres from any waterway;
- In an area of low conservation significance for flora, fauna and indigenous or non-indigenous heritage;
- Would be within an already disturbed area which would not require clearing of native vegetation;
- In areas previously disturbed, if possible;
- More than 100 metres from residential uses or other activities that may be affected by operational noise or other impacts of construction plant;
- All stockpiles would be established, managed and decommissioned in accordance with the RTA's Stockpile Management Procedures (2001);
- All fuels and chemicals would be stored in accordance with Section 6.12 (Chemicals, Dangerous Goods and other Potential Contaminants) of the RTA's QA Specification G36;
- Stockpiled material would not be placed or stored within 5 metres of trees; and

- All stockpiles would be designed, established and managed in accordance with the RTA's *Stockpile Management Procedures 2001*.

2.4.6 Working hours

Construction activities would be undertaken in accordance with the Department of Environment and Climate Change (DECC) standard working hours of:

- Monday-Friday: 7am to 6pm
- Saturday: 8am to 1pm
- Sunday and Public Holidays: No Work

Should work be required outside standard working hours, the consultation procedure for Practice Note vii (Roadworks outside normal working hours) of the RTA's *Noise Management Guidelines* would be followed. Refer to section 8.7 and **Appendix C** of this REF for detailed information regarding noise and vibration.

2.5 Property Acquisition

Property acquisition has been undertaken for the properties required to implement the Marx Hill Realignment proposal.

All property acquisitions were negotiated in accordance with the RTA's Land Acquisition Policy, and compensation in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. Property acquisitions and/or leasing arrangements were resolved between the RTA and property owners.

2.6 Utilities

The utilities affected by the Proposal are;

- one power line;
- one Telstra optical fibre; and
- one Telstra local cable.

The affect on powerlines is minimal with the relocation of one stay pole at Ch 9220 into the road reserve. Telstra local cables on the northern side at Ch 8920, would need to be relocated. The Telstra Optic fibre between Ch 8900 would also require relocation.

3. STATUTORY POSITION

3.1 Local Environmental Plan

The study area is located within the local government area of the Bellingen Shire Council. The study area is currently zoned I(a1) Agricultural Protection and I(c2) Rural Small Holdings pursuant to the *Bellingen Local Environmental Plan 2003* (Bellingen LEP).

Clause 94 of the Infrastructure SEPP operates to remove the consent obligations from the consent authority and therefore the proposed road upgrade does not require consent from Council.

3.2 Regional Environmental Plans and Strategies

3.2.1 North Coast Regional Environmental Plan

The *North Coast Regional Environmental Plan* (REP) applies to the Bellingen LGA. The provisions of this plan do not apply specifically to the proposed works, however the aims of this plan include:

- To develop regional policies that protect the natural environment, encourage an efficient and attractive built environment and guide development into a productive yet environmentally sound future; and
- To provide a basis for the co-ordination of activities related to growth in the region and encourage optimum economic and social benefit to the local community and visitors to the region.

The Proposal would improve the economic and social benefits of Waterfall Way in an environmentally sound manner, by improving the safety of the route and improving travel times. This would also make travel more efficient, reducing fuel usage.

3.2.2 Draft Mid North Coast Regional Strategy

The draft *Mid North Coast Regional Strategy* is a 25-year land use strategy aiming to:

- Protect high value environments and habitat corridors, cultural and Aboriginal heritage and scenic landscapes;
- Provide up to 58,400 new homes by 2031 to cater for a forecast population increase of 91,000. With smaller households and an ageing population, a more suitable mix of housing will be encouraged, including more multi-unit style dwellings;
- Ensure an adequate supply of land is available to support economic growth and an additional 47,000 jobs;
- Encourage the growth and redevelopment of the Region's four major regional centres (Grafton, Coffs Harbour, Port Macquarie and Taree) and six major towns (Maclean, Woolgoolga, Bellingen, Macksville, Kempsey and Forster-Tuncurry) through urban design and renewal strategies; and
- Protect the coast by focusing new settlement in areas identified on local strategy maps. Development in places constrained by coastal processes, flooding, wetlands, important farmland and landscapes of high scenic and conservation value will be limited.

The Proposal would provide a safer road network for local motorists and tourists whilst maintaining high value environment areas which are consistent with the objectives of the plan.

3.3 State Environmental Planning Policies (SEPPs)

3.3.1 State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) aims to facilitate the effective delivery of infrastructure across the State.

Clause 94 of ISEPP permits development on any land for the purpose of a road or road infrastructure facilities to be carried out by or on behalf of a public authority without consent.

As the proposal is for the purposes of a road and road infrastructure facilities and is to be carried out on behalf of the RTA, it can be assessed under Part 5 of the *Environmental Planning and Assessment Act 1979*. Development consent from council is not required.

The proposal is not located on land reserved under the *National Parks and Wildlife Act 1974* and does not affect land or development regulated by *State Environmental Planning Policy No. 14 - Coastal Wetlands*, *State Environmental Planning Policy No. 26 - Littoral Rainforests* or *State Environmental Planning Policy (Major Projects) 2005*.

Part 2 of the ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. Consultation, including consultation as required by ISEPP (where applicable), is discussed in **Section 7** of this REF.

3.3.2 SEPP 14 Coastal wetlands

State Environmental Planning Policy 14 Coastal Wetlands (SEPP14) is aimed at ensuring coastal wetlands are preserved and protected in the environmental and economic interests of the state. Mapping exists which shows the locations of all Coastal Wetlands protected under SEPP14.

The nearest SEPP 14 wetland is located approximately six kilometres to the east, consequently no SEPP 14 wetlands will be impacted upon by the proposed road realignment.

3.3.3 SEPP 26 Littoral rainforests

Littoral rainforests are a distinct type of rainforest well suited to harsh salt-laden and drying coastal winds. *SEPP 26 Littoral Rainforests* requires that the likely effects of proposed development be thoroughly considered in when assessing the impact of development. The policy applies to 'core' areas of littoral rainforest as well as a 100 metre wide 'buffer' area surrounding these core areas, except for residential land and areas to which SEPP No. 14 - Coastal Wetlands applies.

The nearest SEPP 26 littoral rainforest is located approximately 13 kilometres to the north east, consequently no SEPP 26 littoral rainforest will be impacted upon by the proposed road realignment.

3.3.4 SEPP 44 – Koala habitat protection

The Bellingen LGA is identified within the Schedules of *SEPP 44 Koala Habitat Protection* as a Local Government Area in which koalas are known to occur. While the requirements of the SEPP do not apply to this Proposal, as it is not subject to Council consent, it is the RTA's practice to consider SEPP 44 criteria in the EIA process. These criteria relate to the percentages of feed tree cover, particularly trees listed under Schedule 2 - Known Feed Trees. The assessment criteria consider the percentage cover of known feed trees, and whether these are greater or less than 15% of the total tree canopy.

Known feed trees in the study area comprise less than 15% of the total number of trees in the area, therefore the study area is not considered potential koala habitat. A search of the NPWS Atlas of NSW Wildlife shows that no koalas have been recorded within the study area, despite 525 records for the species within 10 km of

the study area. The nearest occurrence of this species is approximately 800 metres north of the study area, on the opposite side of the Bellinger River.

3.3.5 SEPP 62 Sustainable Aquaculture

SEPP 62 Sustainable Aquaculture encourages the sustainable expansion of the aquaculture industry in NSW. The policy implements the regional strategies already developed by creating a simple approach to identify and categorise aquaculture development on the basis of its potential environmental impact. The SEPP also identifies aquaculture development as a designated development only where there are potential environmental risks. Part 3A addresses the need to assess impacts on priority oyster aquaculture areas.

The Proposal is approximately 12 kilometers (via the Bellinger River) from a priority aquaculture area (Mylestom) and includes comprehensive mitigation measures to ensure no offsite impacts occur. The Proposal is therefore unlikely to have an adverse effect the Mylestom priority oyster aquaculture area.

3.4 Legislation, Licenses and Approvals

3.4.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) administered by the Department of Environment, Water, Heritage and the Arts (DEWHA) is the Australian Government's central piece of environmental legislation. The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places (defined in the Act as Matters of National Environmental Significance [NES]) and Commonwealth land.

Consideration of EPBC matters is provided in **Sections 7.1, 10.2** and **Appendices F and I** and it has been concluded that referral pursuant to the EPBC Act to the DEWHA is not required.

3.4.2 Threatened Species Conservation Act 1995

The *Threatened Species Conservation Act 1995* (TSC Act) aims to protect and encourage the recovery of threatened species, populations and communities listed under the Act. Obligations placed on the RTA under the TSC Act in relation to the proposed road realignment include consideration of threatened species, populations, ecological communities, key threatening processes and recovery plans in fulfilling its statutory responsibilities.

The TSC Act inserts provisions to the approvals process if it is determined under Section 5A of the EP&A Act that there is likely to be a significant effect on a threatened species, population or ecological community requiring a Species Impact Statement (SIS) be prepared. The consent or determining authority must seek the concurrence of the Director-General of National Parks and Wildlife where there is likely to be a significant effect on threatened species, populations or endangered ecological communities, or their habitats or where the Proposal impacts on identified critical habitat or contributes to the operation of a key threatening process.

In relation to the road realignment at Marx Hill, an assessment of the likely impacts on threatened species, populations or endangered ecological communities, their habitats or where the Proposal impacts on identified critical habitat or contributes to the operation of a key threatening process, has been undertaken (refer **Appendix D and E**). The ecological assessment has concluded that there is unlikely to be a significant impact provided mitigation measures identified in Section 8.4 and 9 are adopted.

3.4.3 Water Management Act 2000

The *Water Management Act 2000* and *Water Act 1912* control the extraction of water, the use of water, the construction of works such as dams and weirs and the carrying out of activities in or near water sources in New South Wales. 'Water sources' are defined very broadly and include any river, lake, estuary, place where water occurs naturally on or below the surface of the ground and New South Wales coastal waters.

If a 'controlled activity' is proposed on 'waterfront land', an approval is required under the Water Management Act. (s91)

'Controlled activities' include:

- The construction of buildings or carrying out of works;
- The removal of material or vegetation from land by excavation or any other means;
- The deposition of material on land by landfill or otherwise; or
- Any activity that affects the quantity or flow of water in a water source.

'Waterfront land' is defined as the bed of any river or lake, and any land lying between the river or lake and a line drawn parallel to and forty metres inland from either the highest bank or shore (in relation to non-tidal waters) or the mean high water mark (in relation to tidal waters). The distance of forty metres can be reduced by the regulations. Depending upon the regulations, land adjoining coastal waters may also be waterfront land.

However, Pursuant to Clause 39A(1), the RTA is exempt from the need to obtain a Controlled Activity Approval.

However, if it is proposed to extract water from the Bellinger River as part of the works for the Proposal, a permit under s56 of the *Water Management Act* will be required.

3.4.4 *Heritage Act 1977*

The *Heritage Act 1977* provides for the conservation of items of environmental heritage in NSW. The Act defines heritage as items or places that are of state and/or local heritage significance and include: places, buildings, works, relics, moveable objects and precincts. As part of NSW heritage protection and management the Act establishes a register including an inventory and list to protect the listed items.

3.4.5 *National Parks and Wildlife Act 1974*

The *National Parks and Wildlife Act 1974* (NPW Act) provides the basis for the legal protection and management of Aboriginal sites within NSW. Sections 84 and 90 of the NPW Act provide statutory protection for any physical/material evidence of Aboriginal occupation of NSW and places of cultural significance to the Aboriginal community. The key principles of the Act in relation to Aboriginal heritage are the prevention of unnecessary or unwarranted destruction of Aboriginal objects, and the active protection and conservation of objects which are of high cultural significance. It is an offence to knowingly disturb an Aboriginal object, irrespective of its nature or significance, without the prior consent of the Director-General of the NSW DECC.

An archaeological assessment of the study area was undertaken by Adise Pty Ltd in October 2008, in consultation with members of the Coffs Harbour and District Local Aboriginal Land Council (CHDLALC). The assessment found there were no known Aboriginal objects or places within the study area.

The proposed development therefore does not trigger any further assessment pursuant to the NPW Act. Notwithstanding this, safeguards would be in place in the event of the discovery of any Aboriginal objects during construction (refer **Section 8.6**).

3.4.6 *Fisheries Management Act 1994*

The Minister for Fisheries would be notified of any proposed dredging or reclamation works associated with the Proposal (i.e. new culvert installation) in accordance with s200 of the *Fisheries Management Act 1994*.

A permit would be required from NSW Fisheries to temporarily or permanently block fish passage under s218-220 of the Act. Such blockages may include placement of erosion and sediment controls across waterways, inappropriately designed drainage structures that block fish passage, and bunding and dewatering works during the construction of crossings. However, it is not proposed to block any waterways likely to be used for fish passage.

The *Fisheries Management Act 1994* through the Fish Habitat Protection Plan No. 1, requires public authorities, including local government and state authorities to notify the Minister for Fisheries of any Proposal to remove or relocate woody debris.

3.4.7 *Protection of the Environment Operations Act 1997*

The *Protection of the Environment Operations Act 1997* (POEO Act) includes provisions relating to the protection of the environment. One of the objectives of the Act is to protect, restore and enhance the quality of the environment in New South Wales, having regard to the need to maintain ecologically sustainable development. There are serious offences under this Act for causing pollution of air, noise, water or land. The RTA and contractor are required to meet the waste licensing obligations of cl.39-42 of Schedule 1 of the POEO Act in relation to the proposed works.

The Contractor and the RTA are obliged to notify DECC when a “pollution incident” occurs that causes or threatens “material harm” to the environment.

3.5 Confirmation of Part 5 Position

All relevant statutory planning instruments have been examined for the Proposal. Pursuant to clause 94(1) of the Infrastructure SEPP, it is confirmed that this Proposal is subject to environmental impact assessment under Part 5 of the EP&A Act 1979.

4. STRATEGIC STAGE

The proposed upgrade would help to improve the movement of tourist, freight and commercial traffic between regional population centres. The provision of a wider carriageway, improved alignment and improved road surface would provide a safe and reliable access along this section of Waterfall Way. This would subsequently result in a substantial reduction in travel time, freight and maintenance costs.

The project aims to provide:

- Safe and consistent driving conditions by addressing current deficiencies in trafficable width against desirable standards; and
- A pavement with structural capacity to current standards.

4.1 Strategic planning

4.1.1 RTA Blueprint

The Blueprint sets out the vision and values for the RTA and outlines the key priorities and milestones the organisation will deliver over the next four years and beyond. The Blueprint drives the organisational planning and performance management processes.

Aligned with the NSW State Plan and other NSW Government priorities and strategies, the Blueprint agenda, while not covering all aspects of the RTA's operations, sets the priorities and focus areas for the organisation in the shorter term.

The RTA understands its responsibility is to put in place the right structure operating within sound policy settings to contribute to a strong NSW economy, a secure road/rail balance for freight movements, stable and improved travel times, better public transport, reduced vehicle emissions and enhanced road safety. One of the key items on the Agenda is putting in place world leading maintenance practices across the network through setting standards, setting up processes and the use of technology.

The upgrade of the Waterfall Way is in line with the principles of the RTA Blueprint and works to achieve the goals set.

4.1.2 State Plan

The NSW State Plan is the key driver for the RTA's activities. The State Plan was launched in November 2006 after extensive community consultation. The State Plan provides the vision for NSW for the next ten years. The plan sets goals and provides direction for delivery of priorities and targets.

The State Plan is performance based and divided into 34 priorities for building accountability and achieving results. Priorities have been allocated across NSW agencies and each lead agency will work with key partners to achieve priorities. All lead agencies will be required to deliver, measure and report on their success.

Under the direction of the State Plan, the RTA is the lead agency for:

- S7 Safer roads.
- and a partner agency for:
- E3 Cleaner air and progress on greenhouse gas reductions.
- E7 Improving the efficiency of the road network.
- S6 Increasing share of peak hour journeys on a safe and reliable public transport system.
- P2 Maintaining and investing in infrastructure.
- S8 Increased customer satisfaction with government services.

In addition, the RTA has a key role in contributing to the implementation of other State Government plans, priorities and strategies, including the State Infrastructure Strategy, the Premier's Urban Transport Statement, the Metropolitan Strategy, Action for Air, and other announced government commitments.

The RTA Corporate Plan directs the RTA in achieving these priorities.

4.2 Need for the proposal

The Proposal would improve road safety within the area of the proposed works in line with the NSW State Plan objectives by improving the vertical and horizontal alignment of Waterfall Way, thereby increasing the design speed of the road within the Study area. The Proposal would also remove an at-grade cattle crossing located in an area of the road with poor sight lines. In addition, widening of the road shoulders where realignment would not be undertaken would upgrade the existing pavement in accordance with road design guidelines.

5. CONCEPT STAGE

5.1 Proposal objectives

The primary objectives of the Proposal are to:

- Improve road safety by reducing the severity and the incidence of vehicle accidents;
- Improve transport efficiency by reducing travel times;
- Provide a road network that would promote economic development; and
- Upgrade the section of road to provide a safe 80km/h design speed and provide a consistency of travel speed along Waterfall Way.

In conjunction with the primary objectives, the Proposal also aims to achieve the following secondary objectives:

- Provide a project in harmony with the natural and social environment;
- Upgrade the vertical and horizontal alignment of Waterfall Way west of Old Brierfield Road for a distance of approximately one kilometres;
- Provide a cattle underpass at chainage 8.53 kilometres to remove an existing at-grade cattle crossing;
- Incorporate 3.5 metre travel lanes and 2 metre shoulders;
- Improve flood immunity of the route;
- Introduce a suitable road surface for heavy vehicles; and
- Achieve an acceptable return on project investment.

5.2 Options considered

Three options, including the “Do nothing” option were considered. These options are presented below.

Option 1 – Do Nothing

The Do Nothing option would not achieve any of the Proposal objectives although there would be low immediate and short term costs.

Option 2 – Realignment to provide design speed of 80km/h

This option meets the Proposal objectives however it requires the removal of vegetation, requires land acquisition and would create traffic impacts during the construction stage.

Option 3 – Realignment to provide design speed of 70km/h

Realigning the road to provide a design speed of 70km/h would improve the current traffic speed of this section of road. However, it would require the removal of vegetation, create traffic impacts during the construction stage and would require similar acquisition as Option 2 without meeting the objective of providing an 80km/h design speed alignment.

Preferred Option

The proposed upgrade would help improve the movement of tourists, freight and commercial traffic between regional population centres. It is needed to improve road safety and reduce vehicle operating costs and travel time. In addition, implementation of the Proposal would have the following beneficial effects:

- Provision of an improved speed environment with improved sight distance.
- Provision of a new, wider road to improve safety.
- Anticipated reduction of the incidence of vehicle accidents.
- Improvement of travel conditions and travel times.

- Provision of a road network that will promote economic development.
- Achievement of an acceptable return on project investment.

The preferred Option 2 'Realignment to provide design speed of 80km/h is expected to achieve all Proposal objectives and has accordingly been selected.

6. BACKGROUND INVESTIGATION AND CONSULTATION

6.1 Background investigations and database searches

The following results were obtained from desktop database searches conducted for the study area. The information below provides a summary of the search results. A copy of the database searches is provided in **Appendix H**.

LEP Heritage Listings

The nearest heritage item registered on the *Bellingen LEP* heritage listing is an Osprey Nest Site located to the south-east of Marx Hill, approximately three kilometres from the study area. It is unlikely that this Osprey Nesting Site will be affected by the current Proposal.

The three identified heritage items previously mentioned in **Section 2.9** are not currently listed on the *Bellingen LEP*.

Australian Heritage Database

A search of the Australian Heritage Database was undertaken in October 2008 for sites listed within the Bellingen LGA. The search resulted in 30 items being identified.

Bellingen River (North Arm) Valley is classed as an Indicative Place on the Register. As an Indicative Place, information of the heritage value of the area has been provided to or obtained by, the Australian Heritage Commission, has been entered into the database and the place is at some stage in the assessment process. The Commission has therefore not made a decision on whether the place should be entered in the Register, and no legislative restrictions related to the Proposal apply as a result of the area being classed as an Indicative Place.

This area encompasses the Proposal footprint and is approximately 58,000 hectares, comprising generally the main valley and escarpments of the river from Point Lookout to Raleigh. The main heritage value of this area relates to the aesthetics of the river valley and the diversity of flora associated with the great range in altitude, various and rich soil types and a high annual rainfall. Due to the nature and relatively minor extent of the Proposal, it is not considered that the Proposal would substantially alter the characteristics of this area.

It is anticipated that the Proposal would not impact on any item on the Australian Heritage Database.

NSW Heritage Office State Heritage Register and Inventory

A search of the State Heritage Register and Inventory was undertaken in October 2008 for sites listed within the Bellingen LGA. A total of nine records were listed in the LGA. However, the nearest registered item is located at south Bellingen, approximately 5km from the study area.

The Proposal would not impact upon any items listed on the State Heritage Register and/or Inventory.

RTA Heritage and Conservation Register

A search of the RTA s.170 Heritage Register and Conservation Register was undertaken in October 2008. There were no items identified within the study area.

National Native Title Tribunal

The Tribunal is an independent Australian Commonwealth Government agency set up under the *Native Title Act 1993 (Cth)*. Under the *Native Title Act (Cth)*, the Registrar has specific functions that may also be carried out by appointed delegates. These functions include, inter alia, the maintenance of the Register of Native Title Claims, the National Native Title Register and the Register of Indigenous Land Use Agreements and provision of public access to these registers.

These registers were searched in October 2008 as part of this investigation to determine the presence of claims over the subject land. Five claims are recorded on the Register of Native Title Claims within Bellingen

LGA, neither of which include the study area. However, claim NN05/5 was a non-claimant application that was finalised in 2005 and discontinued. This claim was in the south Bellingen locality.

NSW DECC Aboriginal Heritage Information Management System

Searches of the DECC Aboriginal Heritage Information Management System (AHIMS) were undertaken by Jacqueline Collins, revealed no listed Aboriginal sites or places in or near the study area. The closest registered site is 3.5 kilometres to the northwest of the study area.

NSW DECC Atlas of NSW Wildlife – Threatened Flora and Fauna Records

A search of the DECC Wildlife Atlas for records of threatened flora and fauna within a 10 kilometre radius of the study area was undertaken in September 2008. The search identified ten (10) threatened flora and 41 threatened fauna, as listed on the TSC Act and/or EPBC Act, have been recorded within 10 kilometres of the study area. These are provided in **Appendix D and E**.

Commonwealth DEWHA - Protected Matters Database

A search of the *Environment Protection and Biodiversity Conservation Act 1999* Act Database was conducted in October 2008 for records of listed matters of National Environmental Significance (NES) known from within 10 kilometres of the study area. A summary of the results is included below in Table 1.

Table 1 Summary of EPBC Act Protected Matters for the Proposal

EPBC Act Protected Matters	From within 10 kilometres of the Study Area
World Heritage Properties	None
National Heritage Places	None
Wetland of International Significance	None
Commonwealth Marine Areas	None
Commonwealth Heritage Areas	None
Threatened Ecological Communities	None
Threatened Species	21
Migratory Species	15
Listed Marine Species	13
Commonwealth Land	1
Places on the Register of the National Estate	6
Critical Habitats	None
State and Territory Reserves	2
Regional Forest Agreements	2

Further consideration of EPBC matters is provided in **Section 10.2** and **Appendix G**.

NSW DPI Noxious Weeds List

A search of the NSW Department of Primary Industries Noxious Weeds declarations for the Bellingen Shire Council (as declared under the *Noxious Weeds Act 1993*) was undertaken in October 2008. Over 30 noxious weed species are listed to be controlled within the Bellingen Shire Council area.

NSW Department of Primary Industries Bionet

A search of the Department of Primary Industries (DPI) Bionet database was undertaken in October 2008 for records of any threatened species (as listed under the FM Act) known from within the Bellingen Shire Council area. The search revealed one threatened fish species, Black Cod *Epinephelus daemeli*, and no threatened species of amphibians within Bellingen LGA.

NSW Department of Environment and Climate Change Contaminated Lands Records

The DECC Contaminated Land register search was undertaken in October 2008 for known records of contaminated land within the Bellingen LGA. Only one record was identified within the DECC Contaminated Land register for the LGA and this site is located at Urunga. It is anticipated that the Proposal would not impact upon any contaminated sites listed on the DECC Contaminated Land register.

Commonwealth Department of Energy, Water, Heritage and the Arts National Pollutant Inventory

A search of the National Pollutant Inventory (NPI) was undertaken using an area search (by postcode) in October 2008 for substance emissions from all sources within the area. No results were identified from this search.

6.2 Government and community consultation and involvement

Relevant State government agencies and stakeholders were contacted by ELA in August 2008 and provided with the opportunity to comment on the Proposal for the road re-alignment at Marx Hill.

Table 2 lists the government agencies and stakeholders that replied to consultation letters on the Proposal. Responses received relevant to the Proposal are summarised in column 1, while column 2 identifies the section in the REF where the issue has been addressed.

Table 2: Summary of Issues raised by Government agencies and stakeholders

Summary of Issues	Section of REF addressing comments
NSW Department of Environment and Climate Change	
<p>A response to the consultation letter dated 4 August 2008 was received on 21 August 2008. DECC had the following comments to make with regard to the proposed works.</p> <ul style="list-style-type: none"> • Ensure the following environmental issues be addressed in the REF: <ul style="list-style-type: none"> - Local Air Quality - Noise and Vibration - Soil and Water Management • The operator will need to implement all practical measures to minimise air, noise and water pollution during the construction works. <p>Other issues were raised and outlined in the Attachments.</p>	<p>8.10 8.9 8.2 & 8.4 9.1</p>
NSW Department of Primary Industries	
<p>The NSW DPI was sent information on the 4 August 2008 and a response was received on 17 August 2008. The DPI had the following comments to make with regard to the proposed works.</p> <ul style="list-style-type: none"> • There is a need to obtain a s200 permit and s218-220 permit • In addition, the site is within 10 kilometres of SEPP 62 Priority Oyster Aquaculture Areas which requires strict water quality parameters. • DPI will need to assess both the impact of the realignment, ancillary works and associated construction but also impacts of construction activities such as placement of compound, dewatering, temporary waterway crossings and other wetland encroachments associated with the construction footprint should be detailed. • Included DPI Aquatic Habitat Protection's standard minimum information requirements for environmental assessment, requirements for bridges and a permit application form. 	<p>4.4.7 4.3.5 & 8.4 9.1 Noted</p>
Rotary Club of Bellingen	
<p>A response to the consultation letter dated 4 August 2008 was received on 16 September 2008. The Rotary Club had the following comments to make with regard to the proposed works.</p> <ul style="list-style-type: none"> • No objection in principle to the realignment, but are concerned that there is minimal impact on the reserves. • RTA original agreement to amend plans such that the railings follow the curvature of the fence line. Worried that RTA will not honour original commitment by placing a new fence through the middle of the lookout due to the new road alignment. 	<p>Noted. 9.1</p>

Summary of Issues	Section of REF addressing comments
<ul style="list-style-type: none"> Impact on the reserve on the southern side of the road should be minimised. No more land to be taken from this reserve than is absolutely necessary. 	<p>Noted</p> <p>Noted</p>
NSW Department of Water and Energy	
<p>A response to the consultation letter dated 4 August 2008 was received on 19 August 2008. DWE had the following comments to make with regard to the proposed works:</p> <ul style="list-style-type: none"> Water Management Amendment Act (Controlled Activities) Regulation 2008 provides that public authorities are exempt from the need to obtain a CAA in relation to all controlled activities that they carry out in, on or under waterfront land. In order to assist in ensuring minimal harm will be done to any waterfront land your attention is invited to DWE Guidelines for controlled activities available at www.dwe.nsw.gov.au 	<p>Noted</p> <p>Noted</p>
Bellingen Shire Council	
<p>A response to the consultation letter dated 4 August 2008 was received on 30 September 2008. The Bellingen Shire Council had the following comments to make with regard to the proposed works.</p> <ul style="list-style-type: none"> There are 3 items of heritage significance in this locality that were identified in the Bellingen Shire Heritage Study 1992. Council would be concerned at any erosion of the identified heritage value of these sites via the upgrading works. The work should be planned and executed in such a way as will ensure: <ul style="list-style-type: none"> Minimal disruption to traffic during construction. Property accesses are suitably catered for. Access to viewing area and rest area are reinstated. Viewing area facilities are maintained. Contact should be made with Bellingen Rotary Club who have been involved with improvements to the area. Existing sections of road not forming part of the new alignment are restored with natural low maintenance type vegetation or closed and disposed of. Consideration is given to improving the flood immunity of the creek crossing near the western side of the proposed works. The progressive upgrade of Waterfall Way to achieve a minimum level of flood immunity of 5% AEP (20 year ARI) has been identified in Council's Floodplain Risk Management Study (refer to correspondence for further information regarding this). It is essential that any works undertaken on various sections of Waterfall Way are progressively upgraded to achieve the long term objective of providing an appropriate level of flood immunity along Waterfall Way from Bellingen to Raleigh/Urunga. Council has produced a Flood Study of the Lower Bellinger River in 1991 and has undertaken surveys to investigate the level of flood immunity of Waterfall Way at various locations (refer to correspondence for further information regarding this). Any works on flood affected sections of Waterfall Way have the potential to have an adverse effect on flood behaviours and local drainage. This requires further investigation and modelling to assess appropriate bridge and culvert openings. <p>The above matters require further detailed consideration in the preparation of any Environmental Assessment of works for the proposed upgrade.</p>	<p>8.7</p> <p>8.7 & 8.4</p> <p>3.3</p> <p>3.3</p> <p>Noted.</p> <p>Noted.</p> <p>8.5</p> <p>3.2</p> <p>3.2</p> <p>3.2</p> <p>Noted</p> <p>3.2</p>
Northern Rivers Catchment Management Authority	
A response to the consultation letter dated 4 August 2008 was received on 7 November	

Summary of Issues	Section of REF addressing comments
<p>2008. The NRCMA had the following comments to make with regard to the proposed works.</p> <ul style="list-style-type: none"> This site appears to involve a significant amount of cut and fill close to the Bellingier River. Sediment management, erosion control and revegetation will be critical in this location to maintain water quality of the River. The south eastern section of this site is adjacent to a wetland that is utilised by a range of migratory bird and amphibian species. The NRCMA trusts that the NSW DECC has been consulted regarding possible impacts on threatened flora and fauna in the area. 	<p>8.2, 8.4, 8.5</p> <p>8.2, 8.4, 8.5</p>

6.2.1 Community consultation and involvement

Community consultation for the Proposal has been undertaken by the NSW RTA. The level of community consultation has been determined under the International Association for Public Participation (IAP2) spectrum. Community involvement on this project, under the IAP2 spectrum, is to Inform/Consult. The objectives are to keep the community informed, listen to and acknowledge concerns and aspirations and provide feedback on how public input influenced the final decision. The level of community involvement undertaken for this project is greater than what is usually adopted or minor road improvement works of this scale. The RTA has undertaken the following additional consultative actions; invitation for public comment, attendance at information sessions and public exhibition of REF.

The RTA placed advertisements in the Coffs Harbour Advocate and Bellingen Courier inviting community to view and comment on the proposal. The displays and information session gave an overview of the proposed upgrade, allowing the public to gain an appreciation of the background, progress, benefits, stages, design issues and key features of the project. The displays also advised the community how to gain further information about the project and provide input (via post, email, the RTA website or telephone) on any issues associated with the proposal.

A total of three written submissions and several verbal comments have been received by the RTA to date relating specifically to Marx Hill project. The received issues of concern were to consider traffic calming devices, reduce speed and alter the camber on the road to improve safety. A number of comments supporting the project were also received at the information session.

6.2.2 Consultation with the Aboriginal community

The study area is located within the territory administered by the Coffs Harbour and District Local Aboriginal Land Council (CHLALC), close to its boundary with the Bowraville Local Aboriginal Land Council (BLALC). On advice from Chris Spencer, CEO of the CHLALC, the BLALC was invited to participate in the field survey. However, the BLALC sites officer did not attend.

As previously advised by the DECC, Urunga Elder Tom Kelly is a recognised Aboriginal stakeholder for the lower Bellingier district. Tom Kelly works in conjunction with and advises the CHLALC within the southern section of its territory, which includes Marx Hill. Field survey of the study area was undertaken with the assistance of CHLALC senior sites officer Mark Flanders and Tom Kelly. Cultural heritage issues/values and impact mitigation alternatives were discussed during the course of the survey, and the management recommendations presented in the archaeological assessment and this REF were endorsed as the most appropriate means of conserving the study area's Aboriginal heritage values.

Tom Kelly advised that no known sites/places/resources of traditional, historic or contemporary sociocultural significance, attachment or concern would be adversely affected by the Proposal and that he has no objections to the works proceeding as planned. Mark Flanders supported this advice. The nearest sites/places of known past Aboriginal occupation are located at Fernmount.

7. ENVIRONMENTAL ASSESSMENT

This section provides a detailed description of the potential environmental impacts associated with the construction and operation of the Proposal. All aspects of the environment with the potential to be impacted upon by the Proposal are considered. Site specific safeguards are provided to ameliorate these identified potential impacts.

7.1 Landform, geology, and soils

Existing environment

The landforms of the area comprise rolling hills on Permian metasediments, and level to undulating alluvial terraces and floodplains associated with the Bellinger River. The surrounding hills have local relief up to 130 metres, slopes to 33% and elevation between 10-140 metres. The alluvial landscape is characterised by local relief to 10 metres, with typical slopes of 0-5% and elevation <100 metres (Milford, 1996).

The Proposal footprint is located largely on the northern slope of Marx Hill which declines steeply to the banks of the Bellinger River immediately to the north of the Proposal footprint. The sinuous character of the existing road is a result of the local topography, with two gullies crossing the Proposal footprint adjacent to the alignment of the road.

The study area is underlain by erosional and alluvial landscape soils. The erosional landscapes are deep (>1.5 metres), moderately well-drained structured Brown Earths and Yellow Earths on crests and slopes, with deep moderately well-drained Brown Podzolic soils and Yellow Podzolic soils on steeper slopes and terraces, grading to deep (>1.5 metres), highly variable alluvial soils on recent floodplains.

The limitations of these soils include strong acidity, high erodibility, high aluminium toxicity, potential low subsoil permeability and low subsoil water capacity (Milford, 1996).

The alluvial landscape soils are deep, structured Brown Earths on terraces grading to deep, highly variable alluvial soils on recent floodplains. The limitations of these soils include low to very low wet bearing strength, low permeability and low subsoil fertility, high water erosion hazard, high run-on, high foundation hazard, flood hazard (localised) and seasonal waterlogging.

The 1:250 000 Dorrigo-Coffs Harbour Geological Series Sheet (SH56 10&11) shows the study area to be underlain by Lower Permian aged slate, phyllite, schistose sandstone and schistose conglomerate, and Quaternary alluvial sediments.

Potential impacts

Soils within the Proposal footprint have a high erosion hazard. There is potential for soils to be eroded during rain events occurring during the construction phase and be carried in runoff flowing into the Bellinger River.

Geotechnical investigations undertaken by the RTA (RTA, 2001) at the site identified low pH levels in soil and weathered phyllite material in the realignment cutting. The geotechnical report indicated treatment of excavated material to reduce the acidity may be required.

The study area slopes steeply to the Bellinger River, north of the Proposal footprint. This topography would increase the velocity of runoff originating within the Proposal footprint and upstream catchments, possibly leading to soil loss and scouring of areas due to the concentration of runoff at drainage structures.

Safeguards and management measures

The following safeguards and management measures would be implemented to ameliorate the potential impacts of the Proposal:

- As per RTA specification G36, a soil and water management plan would be prepared and implemented
- All stockpiles would be designed, established, operated and decommissioned in accordance with the RTA's *Stockpile Site Management Procedures 2001*.

- To prevent erosion, any stockpile that is not worked for a period longer than two weeks would be covered or seeded using self sterile grass covers.
- Hard stand material or grids would be installed at all site entry and exit points to minimise the tracking of soil and particulates onto pavement.
- Imported construction materials would be sourced from licensed/registered suppliers.
- Scour protection would be provided at the inlet and outlets of culverts.
- Table drains would be suitably lined to minimise erosion and scouring.
- To minimise erosion and sedimentation, drainage works would be completed in the early phases of construction.
- Site rehabilitation of disturbed areas would be undertaken progressively.
- If unidentified sites of contaminated land are found within the Proposal site, works would cease at that location, any contaminants would be immediately contained and the RTA's Environmental Officer, Northern Region would be notified immediately.
- Disturbed areas would be restored to a natural shape at the completion of works where possible.
- Due to excavation works having the potential to expose acidic material, potential impacts would be minimised through the preparation of an acid sulphate soil management plan for the proposed works. This would detail the specific measures to be incorporated in the detailed design and to be followed during construction.
- An acid sulphate soil management plan would be prepared as part of the contractor's environmental management plan (CEMP) for the site and would be approved by the Environmental Officer, RTA Northern Region, before works commence and be in accordance with Acid Sulphate Soil Management Committee (ASSMAC) Guidelines, 1998.
- An appropriate spill containment kit would be kept on site at all times.

7.2 Climate

Existing environment

Climate records were obtained from the nearest relevant meteorological station at Coffs Harbour, located approximately 25 kilometres north-northeast of the study area.

The climate of the area is warm in summer and cool in winter. The coldest month is typically July with average maximum and minimum temperatures of approximately 20°C and 8°C, respectively. The warmest month is January with average maximum and minimum temperatures of approximately 27°C and 19°C, respectively. Average annual rainfall is between 1500 millimetres to 1700 millimetres. The highest average monthly rainfall occurs in March, with approximately 240 millimetres and the lowest average monthly rainfall occurs in September with approximately 65 millimetres.

Potential impacts

Construction or operation of the Proposal is not expected to impact upon the local and/or regional climate. The Proposal site can be expected to experience the majority of rainfall from January to April. There would be the potential that during these times, heavy rainfall may impede earthworks required for the Proposal and could cause soil erosion and sedimentation. There is a low potential for fog to occur within the Proposal site which could temporarily disrupt construction works. Flooding of the Marx Hill locality by flood events has the potential to inhibit access to the Proposal site and cause disruption to construction works and increase risk of sediment entering the waterways.

Safeguards and management measures

The following safeguards and management measures would be implemented to ameliorate the potential impacts of the Proposal:

- A traffic management plan (TMP) would consider periods of inclement weather including fog.

- Daily weather forecasts would be obtained to allow sufficient time to stabilise the site and to prevent erosion and sedimentation prior to heavy rainfall events. Such actions would be recorded and dated to verify and demonstrate that activities and controls were implemented prior to rainfall events.
- Construction works would cease during heavy rainfall events.

7.3 Water quality and hydrology

Existing environment

Existing drainage within the study area consists of a table drain lining the southern side of the road. Cross drainage is provided by a culvert at approximate chainage 8.55 kilometres. An additional pipe culvert is located near the western extent of the works. Anecdotal evidence suggests that during storm events, water backs up and bypasses this culvert and continues to flow in the table drain to an unnamed creek at approximately chainage 9.00 kilometres and into a two cell 2.74 metre x 2.74 metre reinforced concrete box culvert (RCBC) which flows to the Bellinger River.

The existing road from chainage 9.00 kilometres to 9.15 kilometres is subject to flooding and is one of the first sections of Waterfall Way to be cut during flood events.

Potential impacts

The Proposal has the potential to impact upon the water quality of the unnamed creek and the Bellinger River. Increases in turbidity and sedimentation of these waterways could occur should sediment laden runoff be permitted to enter the waterway. There is also the potential for chemical pollutants such as oil and fuel to be spilled or to leak into the adjacent waterways.

Safeguards and management measures

The following safeguard and management measures would be implemented to ameliorate the potential impacts of the Proposal:

- Temporary sedimentation basins or traps would be designed, positioned, constructed and managed in accordance with the Landcom's *Managing Urban Stormwater: Soils and Construction* ("Blue Book") and would be implemented in the initial stages of works to effectively collect sediment and dirty water from the site.
- The Proposal would be undertaken in accordance with RTA's *Water Policy and Code of Practice for Water Management* (RTA 1999) and the Blue Book.
- Should any contaminated spillage occur during construction the RTA's Environmental Officer, Northern Region, would be contacted immediately, and contaminants would be immediately contained, removed, treated (if necessary) and disposed of in accordance with DECC requirements.
- An incident emergency spill plan would be developed and incorporated in the CEMP. This would include measures to avoid spillages of fuels, chemicals, and fluids near and/or into any waterways. All personnel would be made aware of these measures. An emergency spill kit would be kept onsite at all times.
- All fuels, chemicals, and liquids would be stored at least 40 m away (the standard is 40 m) from any waterways or drainage lines and would be stored within an impervious bunded area within the compound site.
- Any wastewater generated from construction processes would be contained onsite and/or treated using DECC requirements prior to its disposal. The release of dirty water into waterways would be prohibited.
- All clean water would be diverted around or through the site with adequate and effective erosion and sedimentation controls to prevent the mixing of clean and dirty water.
- All concrete works would be undertaken in accordance with the DEC *Environmental Best Management Practice Guideline for Concreting Contractors* (2002).

- The refuelling of plant and maintenance of machinery would be undertaken within impervious bunded areas within the compound sites and not within 40 m of any waterways.
- Vehicle wash downs and/or cement washouts would be undertaken within designated bunded areas with impervious surfaces and not within 40 m of any waterways.
- The natural hydrology and alignment of ephemeral drainage lines would be retained where possible.
- In the event that groundwater is intersected, works that would affect the groundwater would cease and the Environmental Officer, RTA Northern Region would be informed and would advise how to proceed.
- Wherever possible, operational road runoff would be treated through vegetated table drains.

7.4 Biodiversity

Existing environment

The road verges and adjacent land within the study area comprises a variety of vegetation types. At the eastern end of the study area, the vegetation can be described as cleared pastoral lands. A dense narrow strip of numerous mature Camphor Laurel *Cinnamomum camphora* exists within the road corridor (Camphor Laurel Weed Forest in Figure 2), while beyond chainage 8.60 kilometres other species such as Red Cedar *Toona ciliata*, Rosewood *Synoum sp.*, Rose Myrtle *Archirhodomirtus beckleri*, Sandpaper Fig *Ficus coronata*, and Moreton Bay Fig *Ficus macrophylla* occur interspersed with Camphor Laurel. The understorey is comprised of tree ferns and woody vines, as well as exotic species such as Lantana *Lantana camara* and Privett *Ligustrum spp.*

Habitat for native fauna species is relatively limited within the Proposal footprint due to the dominance of weed species over much of the site, and the existence of heavily grazed areas of improved pasture. The mature Camphor Laurels are considered to offer limited habitat value to native species and no hollow bearing trees were found to be present during the site visit.

Threatened biota

Ten (10) threatened flora and 41 threatened fauna, as listed on the TSC Act and/or EPBC Act, have been recorded within 10 kilometres of the study area.

No threatened flora or fauna or endangered ecological communities, as listed on the TSC and/or EPBC Acts, were recorded during the field survey. However, potential habitat exists for one threatened plant species (*Parsonsia dorrigoensis*) and one threatened fauna species (Rose-crowned Fruit-dove) within the study area (Appendices F and G). This potential habitat was considered to be in the Camphor Laurel Weed Forest as mapped in **Figure 2**, of which 1.6 hectares will be directly impacted upon by the Proposal.

Parsonsia dorrigoensis is listed as vulnerable on the TSC Act and endangered on the EPBC Act and, therefore, a Seven Part Assessment of Significance (**Appendix F**) and Significant Impact Criteria (**Appendix G**) have been conducted for this species. Both assessments concluded that the Proposal was unlikely to have a significant impact on *Parsonsia dorrigoensis*.

The Rose-crowned Fruit-dove is listed as vulnerable on the TSC Act and is not listed on the EPBC Act. Therefore, a Seven Part Test (**Appendix F**) has been conducted for this species. This Seven Part Test concluded that the Proposal was unlikely to have a significant impact on the Rose-crowned Fruit-dove.

There are no threatened species or communities listed under Schedule 4, 5 and 6 of the *Fisheries Management Act* that would be impacted upon by the Proposal and damage to habitat would be negligible.

Potential impacts

The Proposal would involve the removal of vegetation from an area of approximately 11,000 square metres. Approximately 6,000 square metres of this area is comprised of grazing pasture, a further 3,000 square metres consists of steep grassed areas. The remaining area (approximately 2,000 square metres) is comprised of exotic species dominated by the noxious weed Camphor Laurel *Cinnamomum camphora* with a small number of individuals of native species such as Rosewood *Synoum sp.*, Rose Myrtle *Archirhodomirtus beckleri*, Sandpaper Fig

Ficus coronata, and Moreton Bay Fig *Ficus macrophylla* growing amongst the Camphor Laurel. In total, approximately 25-30 trees would require removal.

The *Cinnamomum camphora* provides limited habitat value for native fauna species, and given the existence of substantial areas of native vegetation to the south of the Proposal footprint that are more likely to meet the requirements of native fauna, the removal of this vegetation is considered unlikely to impact upon any endangered or protected species of plant or animal.

As detailed in section 7.1, a search of the NSW Department of Primary Industries Noxious Weeds declarations revealed over 30 noxious weed species are listed to be controlled within the Bellingen Shire Council area.

Safeguards and management measures

The following safeguards and management measures would be implemented to ameliorate the identified impacts of the Proposal:

- The limits of clearing would be marked by temporary fencing and verified onsite by the RTA's Environmental Officer, Northern Region and the Contractor.
- Any areas that require clearing beyond the specified limits (as per specification G40) would be subject to prior approval from the Environmental Officer, RTA Northern Region.
- The limits of clearing would be clearly marked on relevant site plans and on site by fencing. All areas outside of the limits of clearing would be no go areas/exclusion zones.
- Environmentally sensitive sections of the road corridor would be fenced to prevent unauthorised access. The sections requiring fencing would be determined in consultation with the Environmental Officer, RTA Northern Region.
- Prior to working on site, all site personnel and subcontractors would be trained in the limits of works and the no go areas/exclusion zones.
- Native vegetation material that has been cleared would be chipped/mulched on-site and used in revegetation and erosion control works within the Proposal site where necessary.
- Where possible, revegetation would occur using a mix of native species endemic to the local area, and may include native laurels to replace the exotic weed species Camphor laurel, identified as a feed tree species for the Rose-crowned fruit dove.
- Weed infested or contaminated topsoil would not be reused for revegetation works and would not be stockpiled adjacent to any areas of native vegetation.
- Should additional clearing be required beyond the designated limits of clearing, the works would be referred to the Environmental Officer, RTA Northern Region to determine if any further environmental impact assessment is required.
- Existing dead wood from the Proposal site would be reused, where possible, in adjoining areas to provide habitat.
- To prevent the spread of weeds and pathogens, machinery to be used on the Proposal site would be disinfected prior to its initial entry to the site.
- If any hollow bearing trees are located and are proposed to be removed, dusk and dawn surveys would be conducted by a qualified and experienced ecologist at least five days prior to felling. Any fauna found in the hollows would be reported to the Environmental Officer, RTA Northern Region.
- A licensed and registered wildlife carer (eg from WIRES) or ecologist would be invited to inspect felled trees and vegetation for any displaced fauna when the site is safe to enter. All fauna found during clearing would be identified and recorded. Any injured fauna would be taken to a local veterinary clinic by the wildlife carer. Non injured displaced fauna would be relocated to an area of suitable habitat by the wildlife carer.

It is noted this assessment was, by design, a habitat-based assessment and was conducted in accordance with the appropriate methodologies that would be employed for an assessment in accordance with Section 5A of the EP&A Act. As such, no trapping, spotlighting, call playback or vegetation quadrat sampling techniques were used.

7.5 Aboriginal heritage

An Aboriginal heritage assessment was undertaken by Adise Pty Ltd.

The Aboriginal community consultation undertaken for the Aboriginal heritage assessment indicates that land to be affected by the Proposal is not known to contain any sites/places or resources of spiritual, ceremonial, archaeological or otherwise traditional, historic or contemporary cultural/social significance. Based on the survey results and available background information, undetected archaeological evidence (if any) within the proposed impact area is unlikely to be substantial and is expected to be of low scientific/ archaeological significance.

Field Survey

Given the study area's small size, it was decided to undertake as thorough a survey as possible in the face of access and visibility constraints imposed by the existing road pavement and surface vegetation. The survey was conducted on foot and involved inspection of all available ground surface exposures, including erosion scours, road verges and cuttings, unpaved road surfaces, stock tracks, and areas supporting light and patchy vegetation cover.

For reporting purposes, the study area was divided into six survey units, delineated on the basis of landform and exposure/visibility conditions. Despite survey of all units off the existing road pavement, complete surface inspection was impossible due to limitations imposed by pasture grasses and dense weed undergrowth within the treeline along the southern margin of the existing Marx Hill cutting. Once these constraints are taken into account, it is estimated that approximately 14.5 percent of the study area was effectively searched for surface evidence. This effective survey sample (in conjunction with Aboriginal advice and past survey results) is considered to have been adequate for assessing the study area's archaeological potential.

Survey results and conclusions

No evidence of Aboriginal occupation or use was detected during the survey, nor were any areas of potential archaeological deposit (PADs) identified, either in the field or as a result of Aboriginal consultation. The nil survey result is consistent with the results of past surveys in the Marx Hill locality, which have failed to detect any archaeological evidence off the level crests of prominent ridges/spurs. While the level and densely grassed spur crest traversed towards the eastern end of the study area was recognised as the most potentially sensitive landform, this crest has been substantially disturbed by land clearing, pasture maintenance (including possible ploughing) and long-term cattle trampling. The immediately adjacent location of a dairy suggests that cattle trampling is likely to have been intensive enough to negate the possible survival of vertically intact subsurface deposits, and the extent of land clearing/pasture maintenance similarly rules out the potential for any real horizontal spatial integrity. Considering these disturbance factors in conjunction with the fact that the spur crest is only one of a number of similar spurs that could have provided traditional camping opportunities close to the Bellinger River floodplain, the subject spur crest is not considered to offer a level of archaeological potential sufficient to warrant recording as a PAD, or further archaeological investigation/Aboriginal construction monitoring.

The remainder of the study area comprises a combination of hillslopes, descending bedrock spurs separated by dry narrow valleys, and the alluvial floodplain. Effective survey coverage and past survey results are reliable enough to indicate the low archaeological sensitivity of these landforms, such that is highly unlikely that any sites/materials of Aboriginal cultural heritage significance would be intercepted during the course of the proposed works.

The study area's assessed low level of Aboriginal cultural heritage sensitivity was confirmed by Urunga Elder Tom Kelly. Tom Kelly advised that no sites/places or resources of traditional, historic or contemporary socio-cultural significance are known to occur in the study locality. This assessment was supported by CHLALC

senior sites officer Mark Flanders, who agreed that no further archaeological investigation or construction monitoring would be necessary. The CHLALC has endorsed this conclusion.

Safeguards and management measures

As no archaeological sites or PADs (or areas of otherwise Aboriginal socio-cultural significance, attachment or concern) were identified during the course of Aboriginal consultation, background research or field survey, no site-specific management recommendations are necessary. Owing to its assessed low level of further archaeological potential, no planning revisions, subsurface archaeological investigation or construction monitoring is considered warranted within the corridor assessed in this report (i.e. between the proposed new road reserve boundary fence lines).

The following safeguards and management measures would be implemented for the Proposal:

- In the event that any planned construction compound/site office/stockpile locations lie outside the area assessed in the REF, additional consultation with CHDLALC would be required.
- Prior to the commencement project works, all contractors engaged in vegetation clearing, topsoil stripping and fencing should be advised of their legal obligations with respect to 'Aboriginal objects'.
- Should Aboriginal heritage items be uncovered during works, all works in the vicinity of the find would cease and the RTA's Aboriginal Cultural and Heritage Advisor, RTA's Environmental Officer Northern Region, the Archaeologist, DECC North-East Branch and Aboriginal stakeholders for the project would be contacted. Works would not re-commence in the vicinity of the find until appropriate clearance had been received.
- Should human skeletal material be located during works, all works in the vicinity of the find would cease and the RTA's Aboriginal Cultural and Heritage Advisor, RTA's Environmental Officer Northern Region, Aboriginal stakeholders, NSW Police and the DECC would be notified.

7.6 Non-Aboriginal heritage

Existing environment

Two gravesites are thought to be located 20 metres south of the Proposal footprint. This was indicated in 2003 through personal communications with Simon Waterworth, a former Bellingen Shire Council employee.

Recent correspondence with Bellingen Shire Council has indicated that there are three items of heritage significance in this locality identified in the *Bellingen Shire Heritage Study 1992*. Council is aiming to implement the recommendations of the Study via new listings of heritage items in the draft *Bellingen Local Environmental Plan 2009*. These include the aforementioned gravesites on Marx Hill, Cyrill Siddons Rotary Reserve and the Marx Hill commemorative plaque (refer **Section 8.7**).

Potential impacts

There are currently no heritage items that will be impacted upon by the development as listed on relevant databases (refer **Section 7.1**). However Bellingen Shire Council have identified three sites of heritage significance within and adjacent to the study area (refer **Section 2.9** and **7.2**). Cyril Siddons Rotary Reserve, Marx Hill graves and the Marx Hill commemorative plaque were identified in the *Bellingen Shire Heritage Study 1992*. The Council proposes to include these items in the draft *Bellingen Local Environmental Plan 2009*.

The Proposal has been designed to minimise impact on the Cyrill Siddons Rotary Reserve and Marx Hill commemorative plaque. A small amount of the Reserve would be used as part of the road alignment and the plaque and stonework would be returned to its pre construction state following construction of the Proposal.

The Proposal is unlikely to have a significant direct long term impact on the on the Cyrill Siddons Rotary Reserve and Marx Hill commemorative plaque.

Safeguards and management measures

To ensure minimal impact on these heritage items, the following safeguards and management measures will be applied where necessary by the NSW RTA and relevant contractors.

- If any archaeological remains are uncovered during the works, all works would cease within the vicinity of the material/find and the Environmental Officer, RTA Northern Region contacted. Further advice would be sought from a heritage consultant if required.
- Prior to construction commencing, barrier mesh/fencing should be placed around the grave sites in not less than a five (5) metre radius and all working plans of the work site should be marked with the site and notated with the warning that there is to be no unauthorised access.

7.7 Noise and vibration

A Noise and Vibration Assessment was undertaken by Atkins Acoustics. The relevant parts of the assessment are provided in this section and a full copy of the report is provided in **Appendix C**.

Existing environment

The noise and vibration environment of the study area is predominantly created by low level agricultural noise sources and road traffic from the Waterfall Way.

There are a low number of noise and vibration receivers within the study area. The receivers are limited to one residence to the north and five residences to the south of the proposed road upgrade. The residence to the north will be slightly nearer to the western part of the road as a result of the upgrade. However, the perpendicular distance between the road and this residence remains virtually unchanged. The Proposal would result in minimal changes to distances between the residences and the road for three (3) residences and a slight increase in distance for two residences to the south.

Construction noise and vibration

For the assessment of noise and vibration from construction activities, guidelines in the DECC: *Environmental noise control manual* (DECC:ENCM) and *Environmental Noise Management – Assessing Vibration: a technical guide* have been adopted. Additionally, the German Standard DIN4150 has been considered for the assessment of possible structural damage to buildings from vibration during construction.

The findings of this assessment have shown that during the road construction there could be localised noise and vibration impacts at near residential properties. It is recommended that all residential dwellings within 30 metres from construction activities be inspected and dilapidation reports for sensitive structures prepared prior to construction commencing.

Blast vibration and air-blast overpressure emissions were predicted from procedures documented in Australia Standard AS2187-1993 and by the United States Bureau of Mines (USBM). The predicted ground vibration and air-blast levels demonstrated that the DECC goals of 5mm/sec and 115dB(Lin) could be achieved. Compliance with the DECC comfort goals would ensure that the recommended structural damage criteria are satisfied. To minimise potential impacts, blasting should be confined to an agreed time and restricted between Monday and Friday only.

To ensure that construction noise and vibration impacts are minimised, it is recommended that as part of the construction contractor's undertakings, a construction noise and vibration management plan be prepared to address and minimise construction noise and vibration.

Operational noise

The DECC ECRTN recommends baseline and allowance goals for assessing of road traffic noise. The baseline goals for the redevelopment of an arterial road are 60dB(A) LAeq,15hr (daytime) and 55dB(A) LAeq,9hr (night time) for residential properties. The allowance goals recommend that as a result of the proposed works the existing road traffic noise levels should not increase by more than 2dB(A), 10 years after the road opening.

Where feasible and reasonable, the ECRTN recommends that noise control measures should be considered to reduce road traffic noise to satisfy the baseline objectives where a noise increase of greater than 2 dB(A) is

predicted. Additionally, the RTA:ENMM recommends greater consideration be given to reduce the external noise levels where feasible and reasonable when the predicted future noise levels (10 years after road opening) exceed the 'acute' noise exposure levels of 65dB(A) LAeq,15hr (daytime) and 60dB(A) LAeq,9hr (night-time). The assessment has shown that road traffic noise levels from the Waterfall Road upgrade would satisfy the allowance noise assessment goals of existing levels plus 2dB(A).

However, the predicted noise levels exceed the baseline noise assessment goals of 60dB(A) LAeq,15hr and 55dB(A) LAeq,9hr and the ENMM "acute" noise exposure level of 65dB(A) LAeq,15hr at receiver location 2.

With reference to the ECRTN's and ENMM's recommendations, noise control options would be considered to reduce road traffic noise levels to within the baseline noise assessment objectives for the exposed dwelling.

Site investigations and noise measurements have been conducted to quantify the existing traffic noise levels and establish goals for the assessment of future traffic and construction noise impacts. The results are outlined below.

Potential impacts

The proposed road realignment has the potential to impact upon the nearest residences through the generation of construction noise and vibration and changes in operational noise.

Safeguards and management measures

The following safeguards and management measures would be implemented to ameliorate the potential impacts of the Proposal:

- A construction noise and vibration management plan (CNVMP) would be prepared prior to the commencement of works and would form the noise and vibration management section of the CEMP. The Plan would be prepared in accordance with Practice Note vi of RTA's *Environmental Noise Management Manual*, and would apply best management practice. Specifically the Plan would include:
 - Adherence to the procedures contained in the RTA's *Environmental Noise Management Manual* 2001c, "Practise Notes vii – Road Works Outside of Normal Working Hours" should works be required outside standard working hours.
 - Consultation with potentially affected stakeholders including local landholders prior to commencement of works and in accordance with the RTA's *Community Involvement Practise Notes and Resource Manual*, 1988. Consultation would include discussion of land management options that may be required particularly in relation to minimising disturbance to stock.
 - Provision of a contact name and phone number to all potentially affected stakeholders to allow complaints or questions to be raised regarding noise and vibration issues. Affected stakeholders would be informed at least 7 days prior to the commencement of any blasting and of the likely vibration or noise impact they may experience.
- Selection of plant and equipment based acoustic performance, where practical.
- Implementation of a monitoring program to ensure that construction noise and vibration is controlled and that best possible practices are implemented.
- Preparation of dilapidation reports on sensitive structures within 30 metres of any ground compaction.
- Implementation of an information program to inform local residents of the construction program and time periods when noise and vibration levels could exceed the recommended assessment guidelines.
- To minimise rock blasting annoyance, the blasting contractor would be required to monitor initial trial blast to determine the overpressure impacts and attenuation characteristics of the ground around the blast zone and would accordingly develop a blast program for the site that complies with relevant criteria. Initial trial blasts would be undertaken using a precautionary approach.

- Depending on the final road alignment details, property boundary an acoustic barrier of approximately 2 metres to 2.5 metres high would be considered at receiver location 2 (refer to Acoustic Report in **Appendix C**).

7.8 Air quality

Existing environment

Air quality in the study area is influenced by vehicle emissions and farming practices. In the study area there are unlikely to be any regional air quality problems associated with vehicle emissions. Other factors, such as bushfires, may contribute more significantly to air pollution in rural areas than motor vehicle emissions. Rural residences along the Waterfall Way could experience occasional localised decreases in air quality from motor vehicles using the Waterfall Way, particularly from heavy vehicles.

Potential impacts

During, and immediately after the construction phase, there is potential for a localised deterioration in air quality due to dust generated from exposed surfaces. Moderate dust would be generated during earthworks and construction of the road base and roadside batters, and removal of redundant sections of the existing roadway. The emissions from plant and construction equipment have the potential to impact negatively upon air quality by increasing the amount of vehicle emissions. However, these impacts would be localised and short-term. The nearest residences may be affected by exhaust fumes and/or dust. Impacts would be influenced by climatic conditions, and safeguards described below would minimise impact on the residences in the vicinity of the Proposal site.

The Proposal is expected to have a minor long-term positive impact on air quality following the establishment of the proposed rehabilitation activities. Long-term operational greenhouse gas emissions for this section of the road can be expected to be less than current emissions due to improved traffic flow within the Proposal site. Additionally, the Proposal is not expected to encourage increased traffic levels. An increase in vehicle emissions would therefore not result.

Safeguards and management measures

The following safeguards and management measures would be implemented to ameliorate the potential impacts of the Proposal:

- All stockpiles would be managed to prevent and control dust generation and in accordance with the RTA's *Stockpile Management Procedures, 1999*.
- Dust would be visually monitored and suppressed with water where available or alternative suppression methods would be employed eg altering work activities.
- Dust generating activities would be suspended during periods of windy conditions.
- Truck loads to and from the site would be covered and tailgates would be secured.
- There would be no burning of any materials or wastes.
- Machinery would be turned off, rather than left idling for long periods

7.9 Visual amenity and landscape

Existing Environment

The study area is considered to be of medium to high visual amenity, with areas of dense vegetation adjacent to, and overhanging, the road. The elevation of Waterfall Way at Marx Hill provides excellent views from several locations north to the nearby Bellinger River and the low-lying floodplains and river valley. Access to Mount Lookout is located within the Proposal footprint, which provides a formal viewing area of the landscape described above.

Potential impacts

The Proposal would result in the removal of approximately 25-30 mature trees on the southern side of Waterfall Way within the Proposal footprint, and realigned sections of the road would duplicate the road surface to some extent. However, rehabilitation (including revegetation) of disturbed areas within the construction site would be undertaken. In addition, areas of the existing road pavement would be removed and rehabilitation of these areas undertaken. Therefore, although the Proposal would have a short-term impact on the visual amenity of the area, ameliorative measures outlined below would ensure that the Proposal would not have a substantial impact on the visual amenity of the area.

By moving the road closer to the Bellinger River at the eastern end of the study area, there would be an improvement in visual amenity for road users as they would be afforded more direct and extensive views north to the Bellinger River valley and the Bellinger River itself.

Safeguards and management measures

The following safeguards and management measures would be implemented to ameliorate the potential impacts of the Proposal:

- A revegetation plan would be prepared and would be reviewed by the Environmental Officer, RTA Northern Region prior to commencement of revegetation works.
- All working areas would be maintained, kept free of rubbish and cleaned up at the end of each working day.

7.10 Socio-economic considerations including land use

Existing Environment

The surrounding land is predominantly used for agricultural purposes including dairy and grazing land. Residences are generally rural in nature and interspaced with hobby farms and rural small acre lots.

Potential impacts

Improvement in the horizontal and vertical alignment of Waterfall Way at the Proposal site would improve road safety at this location. The proposed works are not expected to cause increases in traffic volumes.

During construction, the Proposal has the potential to delay through-traffic during lane closures and construction speed limits being in place, although appropriate traffic control measures would minimise the delays experienced along the road. Water may be sourced from local water sources such as rivers, creeks, or dams located within 10 kilometres of the Proposal site. If water is sourced from the creeks or dams, this would reduce the amount of water available for other land uses from these water sources (particularly for local rivers, creeks or dams).

During operation, the Proposal would retain access for all land uses surrounding the Proposal site.

Safeguards and mitigation measures

- A traffic control plan would be prepared and implemented in accordance with the RTA's *Traffic Control at Work Sites Manual* and RTA's QA Specification G10 Control of Traffic.
- Access to private property would be maintained during construction.
- Temporary access would be provided as necessary, in order to minimise any potential disruption to traffic and designed to ensure that the safety of motorists using Waterfall Way is paramount.
- All local residents would be notified of any potential delays regarding access and traffic flows during construction.
- In accordance with the RTA's *Draft community involvement and communications resource manual* (RTA 2008), members of the affected community (including local residents, businesses, school bus services, emergency services) would be notified of the proposed works at least two weeks prior to commencement. The notification would identify the nature of the works, give an estimated duration,

advise of anticipated delays and identify any changes to traffic, wide load restrictions, or access during the works.

- Government and stakeholder consultation would be undertaken as required.

7.11 Waste minimisation and management

Potential Impacts

The Proposal would generate the following waste streams:

- Timber and vegetation;
- Excavated material (soil and rock);
- Old Road Pavement/Concrete;
- Excess construction materials; and
- Domestic type waste generated by workers.

The principles of waste management are to minimise the amount of waste generated, recycle waste wherever possible and dispose of the remainder in a responsible manner in accordance with appropriate RTA policy. The RTA adopts the Resource Management Hierarchy principles embodied in the *Waste Avoidance & Resource Recovery Act 2001* (WARR Act).

Safeguards and management measures

The following safeguards and management measures would be implemented to ameliorate the identified impacts of the Proposal:

- The Resource Management Hierarchy principles of the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act) would be adopted. They are as follows:
 1. Avoid unnecessary resource consumption as a priority;
 2. Avoidance is followed by resource recovery (including reuse of materials, reprocessing recycling, and energy recovery); and
 3. Disposal is undertaken as a last resort.
- The minimisation of surplus material would be a feature of the works. Any waste material unable to be re-instated as part of the Proposal would be taken to an appropriately licensed landfill.
- Domestic type refuse would be collected and disposed of in a licensed landfill.
- Tree sections produced during vegetation clearing (except for weed species such as Camphor Laurel, which would be managed as part of the weed management strategy) would be stockpiled and placed within rehabilitated areas on completion of construction to provide fauna habitat.
- An appropriate spill containment kit would be kept on site at all times and all staff onsite would be trained in its use.
- The Contractor shall determine whether any licenses are required under the POEO Act for the stockpiling, application to land or processing of waste.
- Prior to export of waste from the site, waste would be classified in accordance with the NSW DECC Guidelines for the Assessment, classification and Management of Liquid and Non-Liquid Wastes and may be transported off site upon receipt of a signed Section 143 Notice under the Protection of the Environment and Operations Act, 1997 from the landholder who would receive the waste.
- A waste management plan would be prepared in accordance with RTA's QA Specifications and in accordance with RTA's *Waste Minimisation and Management Guidelines*, 1998c and the principles of the WARR Act.

- Blasting would be undertaken at close spaces where reasonable and feasible to assist with production of smaller sized blocks that may reduce the need for processing/crushing and make the materials more usable.
- Trees to be removed would be assessed for their timber value or would be reused for the Proposal eg, reuse of hollows, habitat logs, mulch.
- Leaf material and small branches of native vegetation would be chipped and used as mulch in revegetation works.
- All noxious weeds and exotic plant species removed would be bagged and disposed of at a licensed waste facility.
- Waste material generated (ie. Asphalt, road base steel and cement, cleared vegetation, excess cut material, waste oils and liquids, water, garbage and sewerage) would be reused or recycled where possible or as a final options disposed at a licensed waste facility.

7.12 Contaminated lands

Existing Environment

The study and surrounding is predominantly used for agricultural purposes. Other than the potential for agricultural spills contaminating the soils, the site is unlikely to suffer from any known sources of land contamination.

Potential impacts

Although no indication of contaminated land was identified during the desktop and site assessment, the works have the potential to reveal areas that have been contaminated as a result of previous landuse or illegal dumping.

The Proposal has the potential to cause contaminated land through accidental spills or leakage from plant.

Proposed safeguards and management measures

Should areas be found to be affected by contaminated waste, all works would cease and the following safeguards and management measures would be adopted:

- Contaminated waste would be identified and classified by a suitably qualified consultant.
- Contaminated waste identified or generated during the Proposal would be disposed in accordance with DECC guidelines.
- Should any spillage occur during construction, the Environmental Officer, RTA Northern Region, would be contacted immediately, and contaminants would be immediately contained, removed, treated (if necessary) and disposed of to the satisfaction of the DECC.

7.13 Ancillary works

Potential impacts

A site compound with an approximate area of 350 square metres is proposed at chainage 8.50 kilometres between the existing road and the new road alignment. Disturbance of vegetation can increase soil erosion and sedimentation of waterways. There would also be the potential for impacts to soil and water from spillage or leakage of chemicals from Plant or during the refuelling process. Stockpiled material may also provide a source of pollution.

Safeguards and management measures

The following safeguards and management measures would be implemented to ameliorate the identified impacts of the Proposal:

- The “dial before you dig” hotline would be contacted prior to commencement of works.
- Consultation with the affected utility owners would be undertaken prior to commencement of works to identify any requirements.

- Protection/relocation of utilities would be undertaken with consent from the affected utility owner and would aim to minimise impacts on the environment.
- Any stockpile site or compound site that is outside the scope of this REF including any change to the boundaries of the assessed stockpile and compound sites would be referred to the Environmental Officer, RTA Northern Region for advice on whether further assessment is required.
- All compound sites and stockpiles sites would be subject to the site location criteria detailed in the RTA's *Stockpile Site Management Procedures* (RTA 2001b).
- Should any chemical spillage occur during the construction activity the Environmental Officer, RTA Northern Region, would be contacted immediately, and contaminants would be immediately contained, removed, treated (if necessary) and disposed of to the satisfaction of the DECC.
- An appropriate spill containment kit would be kept on site at all times and staff would be trained in its use.

7.14 Demand on Resources

Existing Environment

Approximately 19,000 m² of fill would be required and would be obtained from the excavation of the cuttings within the Proposal footprint.

Pavement materials would be obtained from an approved local quarry. Likely sources include the Bellingen Shire quarry at Dorrigo, or quarries located at Coffs Harbour. Approximately 3,500 square metres of pavement material is required for the proposed works.

The Proposal would source all materials required from approved sources and locally known suppliers. There would be no increased demand on resources, natural or otherwise, which are, or are likely to become, in short supply as a result of the Proposal.

Safeguards and management measures

The following safeguards and management measures would be implemented to ameliorate the identified impacts of the Proposal:

- Water would be obtained from local licensed sources.
- Where practicable, water would be recycled and reused on-site.
- Rainwater tanks would be installed at the site compound where possible.
- Use of recycled water from off-site sources would be investigated and any use of recycled water would be in accordance with the RTA Environmental Direction No. 19, Use of Reclaimed Water.
- Where practicable, alternative fuels would be used. Alternative fuel sources for heavy vehicles include low sulphur diesel, ultra low sulphur diesel, compressed natural gas, liquefied natural gas, ethanol and diesohol and aquadiesel. Standard diesel would be used as a last resort where use of alternative fuels is not practicable.
- Energy efficiency would be achieved by sourcing green power where possible and by ensuring that electrical lights and devices are switched off when not in use.

7.15 Cumulative impacts

The proposed works are part of ongoing safety improvements for the Waterfall Way. It is not anticipated that there will be any cumulative impact from the Proposal as the area to be disturbed are relatively small.

The main potential impacts to occur from the Proposal in the vicinity of the proposal site would include:

- Short-term disruption to traffic flows during construction;

- Loss of native vegetation;
- Loss of native fauna habitat;
- Impacts on waterways; and
- Short term socio-economic impacts (visual, noise and dust).

7.16 Summary of beneficial effects

- Upgrade of the vertical and horizontal alignment of Waterfall Way west of Old Brierfield Road for a distance of approximately 600 metres.
- Provision of a cattle underpass at chainage 8.53 kilometres to replace a dangerous existing at-grade cattle crossing.
- Upgrade the section of road to provide a safe 80km/h design speed and provide a consistency of travel speed along Waterfall Way.
- Incorporation of 3.5 metre travel lanes and 2 metre shoulders.
- Removal of a noxious weed *Cinnamomum camphora* and revegetation of disturbed areas with locally indigenous native species.
- Improved flood immunity

7.17 Summary of adverse effects

- Removal of vegetation.
- Increased risk of soil erosion during construction.
- Disruption of traffic flow during construction.
- Minor increase in noise levels at sensitive noise receptors.

8. ENVIRONMENTAL MANAGEMENT

8.1 Environmental management plan

A contractor's environmental management plan (CEMP) would be developed in accordance with the specifications set out in the RTA's Environmental Protection (Management Plan) – QA Specifications G36, G38, G40 and R178. The CEMP would incorporate additional site-specific requirements, outlined below, which are not covered by the specified. The CEMP would be reviewed and certified by the RTA Environmental Officer Northern Region, prior to the commencement of any site works.

8.2 Summary of safeguards and management measures

Table 4: Safeguards and management measures

Impact	Mitigation Measures
Design	<ul style="list-style-type: none"> • RTA to ensure railings follow the curvature of the fence line to avoid placing a new fence through the middle of the lookout.
Landform, geology and soils	<ul style="list-style-type: none"> • As per RTA specification G36, a soil and water management plan would be prepared and implemented • All stockpiles would be designed, established, operated and decommissioned in accordance with the RTA's <i>Stockpile Site Management Procedures 2001</i>. • To prevent erosion, any stockpile that is not worked for a period longer than two weeks would be covered or seeded using self sterile grass covers. • Hard stand material or grids would be installed at all site entry and exit points to minimise the tracking of soil and particulates onto pavement. • Imported construction materials would be sourced from licensed/registered suppliers. • Scour protection would be provided at the inlet and outlets of culverts. • Table drains would be suitably lined to minimise erosion and scouring. • To minimise erosion and sedimentation, drainage works would be completed in the early phases of construction. • Site rehabilitation of disturbed areas would be undertaken progressively. • If unidentified sites of contaminated land are found within the Proposal site, works would cease at that location, any contaminants would be immediately contained and the RTA's Environmental Officer, Northern Region would be notified immediately. • Disturbed areas would be restored to a natural shape at the completion of works where possible. • Due to excavation works having the potential to expose acidic material, potential impacts would be minimised through the preparation of an acid sulphate soil management plan for the proposed works. This would detail the specific measures to be incorporated in the detailed design and to be followed during construction.

Impact	Mitigation Measures
	<ul style="list-style-type: none"> • An acid sulphate soil management plan would be prepared as part of the contractor's environmental management plan (CEMP) for the site and would be approved by the Environmental Officer, RTA Northern Region, before works commence and be in accordance with Acid Sulphate Soil Management Committee (ASSMAC) Guidelines, 1998. • An appropriate spill containment kit would be kept on site at all times.
Climate	<ul style="list-style-type: none"> • A traffic management plan (TMP) would consider periods of inclement weather including fog. • Daily weather forecasts would be obtained to allow sufficient time to stabilise the site and to prevent erosion and sedimentation prior to heavy rainfall events. Such actions would be recorded and dated to verify and demonstrate that activities and controls were implemented prior to rainfall events. • Construction works would cease during heavy rainfall events.
Water quality and hydrology	<ul style="list-style-type: none"> • Temporary sedimentation basins or traps would be designed, positioned, constructed and managed in accordance with the Landcom's <i>Managing Urban Stormwater: Soils and Construction</i> ("Blue Book") and would be implemented in the initial stages of works to effectively collect sediment and dirty water from the site. • The Proposal would be undertaken in accordance with RTA's <i>Water Policy and Code of Practice for Water Management</i> (RTA 1999) and the Blue Book. • Should any contaminated spillage occur during construction the RTA's Environmental Officer, Northern Region, would be contacted immediately, and contaminants would be immediately contained, removed, treated (if necessary) and disposed of in accordance with DECC requirements. • An incident emergency spill plan would be developed and incorporated in the CEMP. This would include measures to avoid spillages of fuels, chemicals, and fluids near and/or into any waterways. All personnel would be made aware of these measures. An emergency spill kit would be kept onsite at all times. • All fuels, chemicals, and liquids would be stored at least 40 m away (the standard is 40 m) from any waterways or drainage lines and would be stored within an impervious bunded area within the compound site. • Any wastewater generated from construction processes would be contained onsite and/or treated using DECC requirements prior to its disposal. The release of dirty water into waterways would be prohibited. • All clean water would be diverted around or through the site with adequate and effective erosion and sedimentation controls to prevent the mixing of clean and dirty water. • All concrete works would be undertaken in accordance with the DEC <i>Environmental Best Management Practice Guideline for Concreting Contractors</i> (2002). • The refuelling of plant and maintenance of machinery would be undertaken within impervious bunded areas within the compound sites and not within 40 m of any waterways. • Vehicle wash downs and/or cement washouts would be undertaken within designated bunded areas with impervious surfaces and not within 40 m of any waterways. • The natural hydrology and alignment of ephemeral drainage lines would be

Impact	Mitigation Measures
	<p>retained where possible.</p> <ul style="list-style-type: none"> • In the event that groundwater is intersected, works that would affect the groundwater would cease and the Environmental Officer, RTA Northern Region would be informed and would advise how to proceed. • Wherever possible, operational road runoff would be treated through vegetated table drains.
Biodiversity	<ul style="list-style-type: none"> • The limits of clearing would be marked by temporary fencing and verified onsite by the RTA's Environmental Officer, Northern Region and the Contractor. • Any areas that require clearing beyond the specified limits (as per specification G40) would be subject to prior approval from the Environmental Officer, RTA Northern Region. • The limits of clearing would be clearly marked on relevant site plans and on site by fencing. All areas outside of the limits of clearing would be no go areas/exclusion zones. • Environmentally sensitive sections of the road corridor would be fenced to prevent unauthorised access. The sections requiring fencing would be determined in consultation with the Environmental Officer, RTA Northern Region. • Prior to working on site, all site personnel and subcontractors would be trained in the limits of works and the no go areas/exclusion zones. • Native vegetation material that has been cleared would be chipped/mulched on-site and used in revegetation and erosion control works within the Proposal site where necessary. • Where possible, revegetation would occur using a mix of native species endemic to the local area, and may include native laurels to replace the exotic weed species Camphor laurel, identified as a feed tree species for the Rose-crowned fruit dove. • Weed infested or contaminated topsoil would not be reused for revegetation works and would not be stockpiled adjacent to any areas of native vegetation. • Should additional clearing be required beyond the designated limits of clearing, the works would be referred to the Environmental Officer, RTA Northern Region to determine if any further environmental impact assessment is required. • Existing dead wood from the Proposal site would be reused, where possible, in adjoining areas to provide habitat. • To prevent the spread of weeds and pathogens, machinery to be used on the Proposal site would be disinfected prior to its initial entry to the site. • If any hollow bearing trees are located and are proposed to be removed, dusk and dawn surveys would be conducted by a qualified and experienced ecologist at least five days prior to felling. Any fauna found in the hollows would be reported to the Environmental Officer, RTA Northern Region. • A licensed and registered wildlife carer (eg from WIRES) or ecologist would be invited to inspect felled trees and vegetation for any displaced fauna when the site is safe to enter. All fauna found during clearing would be identified and recorded. Any injured fauna would be taken to a local veterinary clinic by the wildlife carer. Non injured displaced fauna would be relocated to an area of suitable habitat by the wildlife carer.

Impact	Mitigation Measures
Aboriginal heritage	<ul style="list-style-type: none"> • In the event that any planned construction compound/site office/stockpile locations lie outside the area assessed in the REF, additional consultation with CHDLALC would be required. • Prior to the commencement project works, all contractors engaged in vegetation clearing, topsoil stripping and fencing should be advised of their legal obligations with respect to 'Aboriginal objects'. • Should Aboriginal heritage items be uncovered during works, all works in the vicinity of the find would cease and the RTA's Aboriginal Cultural and Heritage Advisor, RTA's Environmental Officer Northern Region, the Archaeologist, DECC North-East Branch and Aboriginal stakeholders for the project would be contacted. Works would not re-commence in the vicinity of the find until appropriate clearance had been received. <p>Should human skeletal material be located during works, all works in the vicinity of the find would cease and the RTA's Aboriginal Cultural and Heritage Advisor, RTA's Environmental Officer Northern Region, Aboriginal stakeholders, NSW Police and the DECC would be notified.</p>
Non-Aboriginal heritage	<ul style="list-style-type: none"> • If any archaeological remains are uncovered during the works, all works would cease within the vicinity of the material/find and the Environmental Officer, RTA Northern Region contacted. Further advice would be sought from a heritage consultant if required. • Prior to construction commencing, barrier mesh/fencing should be placed around the grave sites in not less than a five (5) metre radius and all working plans of the work site should be marked with the site and notated with the warning that there is to be no unauthorised access.
Noise and vibration	<ul style="list-style-type: none"> • A construction noise and vibration management plan (CNVMP) would be prepared prior to the commencement of works and would form the noise and vibration management section of the CEMP. The Plan would be prepared in accordance with Practice Note vi of RTA's <i>Environmental Noise Management Manual</i>, and would apply best management practice. Specifically the Plan would include: <ul style="list-style-type: none"> ○ Adherence to the procedures contained in the RTA's <i>Environmental Noise Management Manual 2001c</i>, "Practise Notes vii – Road Works Outside of Normal Working Hours" should works be required outside standard working hours. ○ Consultation with potentially affected stakeholders including local landholders prior to commencement of works and in accordance with the RTA's <i>Community Involvement Practise Notes and Resource Manual, 1988</i>. Consultation would include discussion of land management options that may be required particularly in relation to minimising disturbance to stock. ○ Provision of a contact name and phone number to all potentially affected stakeholders to allow complaints or questions to be raised regarding noise and vibration issues. Affected stakeholders would be informed at least 7 days prior to the commencement of any blasting and of the likely vibration or noise impact they may experience. • Selection of plant and equipment based acoustic performance, where practical. • Implementation of a monitoring program to ensure that construction noise and vibration is controlled and that best possible practices are implemented.

Impact	Mitigation Measures
	<ul style="list-style-type: none"> • Preparation of dilapidation reports on sensitive structures within 30 metres of any ground compaction. • Implementation of an information program to inform local residents of the construction program and time periods when noise and vibration levels could exceed the recommended assessment guidelines. • To minimise rock blasting annoyance, the blasting contractor would be required to monitor initial trial blast to determine the overpressure impacts and attenuation characteristics of the ground around the blast zone and would accordingly develop a blast program for the site that complies with relevant criteria. Initial trial blasts would be undertaken using a precautionary approach. <p>Depending on the final road alignment details, property boundary an acoustic barrier of approximately 2 metres to 2.5 metres high would be considered at receiver location 2.</p>
Air quality	<ul style="list-style-type: none"> • All stockpiles would be managed to prevent and control dust generation and in accordance with the RTA's <i>Stockpile Management Procedures, 1999</i>. • Dust would be visually monitored and suppressed with water where available or alternative suppression methods would be employed eg altering work activities. • Dust generating activities would be suspended during periods of windy conditions. • Truck loads to and from the site would be covered and tailgates would be secured. • There would be no burning of any materials or wastes. <p>Machinery would be turned off, rather than left idling for long periods</p>
Visual amenity and landscape	<ul style="list-style-type: none"> • A revegetation plan would be prepared and would be reviewed by the Environmental Officer, RTA Northern Region prior to commencement of revegetation works. • All working areas would be maintained, kept free of rubbish and cleaned up at the end of each working day.
Socio-economic considerations	<ul style="list-style-type: none"> • A traffic control plan would be prepared and implemented in accordance with the RTA's <i>Traffic Control at Work Sites Manual</i> and RTA's QA Specification G10 Control of Traffic. • Access to private property would be maintained during construction. • Temporary access would be provided as necessary, in order to minimise any potential disruption to traffic and designed to ensure that the safety of motorists using Waterfall Way is paramount. • All local residents would be notified of any potential delays regarding access and traffic flows during construction. • In accordance with the RTA's <i>Draft community involvement and communications resource manual (RTA 2008)</i>, members of the affected community (including local residents, businesses, school bus services, emergency services) would be notified of the proposed works at least two weeks prior to commencement. The notification would identify the nature of the works, give an estimated duration, advise of anticipated delays and identify any changes to traffic, wide load restrictions, or access during the works. <p>Government and stakeholder consultation would be undertaken as required.</p>

Impact	Mitigation Measures
Waste minimisation and management	<ul style="list-style-type: none"> • The Resource Management Hierarchy principles of the <i>Waste Avoidance and Resource Recovery Act 2001</i> (WARR Act) would be adopted. They are as follows: <ol style="list-style-type: none"> 4. Avoid unnecessary resource consumption as a priority; 5. Avoidance is followed by resource recovery (including reuse of materials, reprocessing recycling, and energy recovery); and 6. Disposal is undertaken as a last resort. • The minimisation of surplus material would be a feature of the works. Any waste material unable to be re-instated as part of the Proposal would be taken to an appropriately licensed landfill. • Domestic type refuse would be collected and disposed of in a licensed landfill. • Tree sections produced during vegetation clearing (except for weed species such as Camphor Laurel, which would be managed as part of the weed management strategy) would be stockpiled and placed within rehabilitated areas on completion of construction to provide fauna habitat. • An appropriate spill containment kit would be kept on site at all times and all staff onsite would be trained in its use. • The Contractor shall determine whether any licenses are required under the POEO Act for the stockpiling, application to land or processing of waste. • Prior to export of waste from the site, waste would be classified in accordance with the NSW DECC Guidelines for the Assessment, classification and Management of Liquid and Non-Liquid Wastes and may be transported off site upon receipt of a signed Section 143 Notice under the Protection of the Environment and Operations Act, 1997 from the landholder who would receive the waste. • A waste management plan would be prepared in accordance with RTA's QA Specifications and in accordance with RTA's <i>Waste Minimisation and Management Guidelines</i>, 1998c and the principles of the WARR Act. • Blasting would be undertaken at close spaces where reasonable and feasible to assist with production of smaller sized blocks that may reduce the need for processing/crushing and make the materials more usable. • Trees to be removed would be assessed for their timber value or would be reused for the Proposal eg, reuse of hollows, habitat logs, mulch. • Leaf material and small branches of native vegetation would be chipped and used as mulch in revegetation works. • All noxious weeds and exotic plant species removed would be bagged and disposed of at a licensed waste facility. • Waste material generated (ie. Asphalt, road base steel and cement, cleared vegetation, excess cut material, waste oils and liquids, water, garbage and sewerage) would be reused or recycled where possible or as a final options disposed at a licensed waste facility.
Contaminated lands	<ul style="list-style-type: none"> • Contaminated waste would be identified and classified by a suitably qualified consultant. • Contaminated waste identified or generated during the Proposal would be disposed in accordance with DECC guidelines. • Should any spillage occur during construction, the Environmental Officer, RTA

Impact	Mitigation Measures
	<p>Northern Region, would be contacted immediately, and contaminants would be immediately contained, removed, treated (if necessary) and disposed of to the satisfaction of the DECC.</p>
Ancillary works	<ul style="list-style-type: none"> • The “dial before you dig” hotline would be contacted prior to commencement of works. • Consultation with the affected utility owners would be undertaken prior to commencement of works to identify any requirements. • Protection/relocation of utilities would be undertaken with consent from the affected utility owner and would aim to minimise impacts on the environment. • Any stockpile site or compound site that is outside the scope of this REF including any change to the boundaries of the assessed stockpile and compound sites would be referred to the Environmental Officer, RTA Northern Region for advice on whether further assessment is required. • All compound sites and stockpiles sites would be subject to the site location criteria detailed in the RTA’s <i>Stockpile Site Management Procedures</i> (RTA 2001b). • Should any chemical spillage occur during the construction activity the Environmental Officer, RTA Northern Region, would be contacted immediately, and contaminants would be immediately contained, removed, treated (if necessary) and disposed of to the satisfaction of the DECC. • An appropriate spill containment kit would be kept on site at all times and staff would be trained in its use.

9. CONCLUSION

9.1 Justification

The Proposal to upgrade the Waterfall Way at Bellingen would improve the movement of tourists, freight, commercial and residential traffic between regional population centres. It would also improve road safety and reduce vehicle operating costs and travel time. The proposal is consistent with the objectives of the RTA Blueprint and State Plan by upgrading a regional road.

In addition, implementation of the Proposal would have the following beneficial effects;

- Provision of an improved speed environment improving sight distance;
- Provision of a new, wider road to improve safety;
- Anticipated reduction of the incidence of vehicle accidents;
- Improvement of travel conditions and travel times;
- Provide a road network that will promote economic development; and
- Achieve an acceptable return on project investment.

It is considered the Proposal would have an overall positive effect on the social, economic and environmental characteristics of the region.

9.2 Ecologically sustainable development

The National Strategy for Ecologically Sustainable Development (NSESD) has been formulated to ensure ESD is accounted for in all Proposals. There are three core objectives:

- To enhance individuals' and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;
- To provide for equity within and between generations; and
- To protect biological diversity and maintain essential ecological processes and life-support systems.

These principles are considered below in **Table 3** in terms of the Proposal.

Table 3: Principles of ESD Applied to the Proposal

Precautionary principle	Design aspects of the Proposal have considered potential hazards and risks resulting from both construction and operation of the Proposal. Specialist studies have also been undertaken to gain a detailed understanding of the existing environment. No issues have been identified that would cause any serious or irreversible environmental damage as a result of the Proposal at this location. The introduction of site specific safeguards as outlined in Section 9 of this REF would ameliorate potential environmental impacts.
Intergenerational equity	The Proposal would improve the level of supporting infrastructure required for Waterfall Way, and make provision for a more accessible and safer transport corridor for use by future generations. Concurrently, the Proposal considers and minimises impacts to the local environment through the introduction of site specific safeguards to ensure the integrity of natural and social values of the environment are maintained for future generations.

Conservation of biological diversity and ecological integrity	Thorough assessment of the local environment has been undertaken to identify and manage any potential environmental hazards or risks associated with the Proposal. Site specific safeguards outlined in Section 9 of this REF would ensure that the Proposal does not compromise biological diversity or ecological integrity.
Improved valuation and pricing of environmental resources	It is often difficult to place a monetary value on environmental resources. An indirect indication of the value of such resources is the cost of the proposed site specific safeguards. The costs of the proposed site specific safeguards would be calculated once design of the road is finalised.

10. CONSIDERATION OF ENVIRONMENTAL FACTORS

10.1 Clause 228 Checklist (NSW Legislation)

Factor	Comment	Impact
a) Any environmental impact on a community?	<p>The Proposal is expected to have a positive impact on the community in the long-term through the provision of improved road safety and traffic flow on the Waterfall Way.</p> <p>Short-term disruption to traffic flows can be expected to occur during construction of the Proposal. Impacts on a community from construction works (noise and exhaust fumes and/or dust) are likely, as the closest residence is located 27 metres from closest point of the Proposal site.</p>	<p>Long-term positive</p> <p>Short-term negative</p>
b) Any transformation of a locality?	During construction, the study area would have a negative transformation as it would become a construction site. In the long term only minor transformation of the locality would be experienced as a result of the Proposal. Whilst the Proposal would alter the appearance of a section of Waterfall Way due to earthworks and the removal of vegetation, the safety of the locality would be improved and construction impacts would be minimised by carrying out revegetation of the area. The Proposal would result in a positive transformation of the site and benefit road users by providing safer road conditions in the long term.	Potential Long-term minor negative
c) Any environmental impact on the ecosystems of the locality?	The Proposal would involve the clearing of vegetation across the Proposal footprint. Approximately 11,000m ² of vegetation would be removed during the works, largely comprised of grassland and vegetation dominated by an environmental weed. Although this may remove some habitat for some species, adjacent areas offer higher quality habitat and the potential ecological impacts on the locality are negligible. It is considered that there would be a long term positive impact on the ecosystems of the locality due to the removal of environmental weeds and rehabilitation and revegetation of the site post construction with locally indigenous native species.	Short-term negative
d) Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality?	The visual amenity of the study area would decrease during construction as the area would become a construction site. Revegetation of disturbed areas with locally indigenous native species after the construction period would improve the aesthetic and environmental quality of the area in the long term. The change in alignment that would give the road user a better visual of the river / valley. The Proposal would not substantially reduce any other aesthetic, recreational, scientific or other environmental quality of the locality.	<p>Short-term negative</p> <p>Long –term neutral</p>

e) Any effect on a locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations?	It is not anticipated that there would be any impact on any locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social or other special value for present or future generations as a result of the Proposal.	Nil
f) Any impact on the habitat of any protected or endangered fauna (within the meaning of the National Parks and Wildlife Act 1974)?	The Proposal would involve the clearing of vegetation throughout the study area. This vegetation is dominated by introduced grass species and environmental weeds and the removal of this vegetation is unlikely to impact on the habitat of any protected or endangered fauna as a result of the Proposal. No protected or endangered fauna are known to occur within the study area.	Long-term positive Short-term negative
g) Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air?	It is not anticipated that the Proposal would endanger any species of animal, plant or other form of life, whether living on land, in water or in the air.	Nil
h) Any long-term effects on the environment?	The Proposal would have a beneficial long term socio-economic effect on the environment by improving road safety along Waterfall Way. The Proposal would also remove vegetation dominated by an environmental weed and revegetation of appropriate areas would be carried out using local indigenous species.	Long-term positive
i) Any degradation of the quality of the environment?	The Proposal would not result in any degradation of the quality of the environment, provided that the mitigation measures detailed in Section 9 of this REF are properly implemented.	Nil
j) Any risk to the safety of the environment?	During construction, the Proposal presents a very minor potential short term risk to the safety of the environment through spillage of construction materials, or waste contaminating the surrounding environment. Mitigation measures outlined in Section 9 of this REF would minimise any potential risk to the safety of the environment. In the long term, improvements to the horizontal and vertical alignment of the road as a result of the Proposal would increase the safety of road users and reduce the risk of spillage of material as a result of accidents.	Long-term positive
k) Any reduction in the range of beneficial uses of the environment?	The Proposal would not result in any reduction in the range of beneficial uses of the environment. However there would be a relatively minor loss of farmland. This would be offset by areas of road reserve being returned to native vegetation.	Nil
l) Any pollution of the environment?	Pollution of the environment has the potential to occur during construction of the new road alignment. Potential pollution sources include litter, sediment and spillage of chemicals. Specific mitigation measures, outlined in Section 6 of this REF, would be implemented to minimise the likelihood of this occurring.	Short-term negative
m) Any environmental problems associated with the disposal of waste?	All waste generated by the Proposal would be reused and recycled where possible and disposed of in an appropriate manner where recycling is not possible. With the implementation of the mitigation measures outlined in Section 9 of this REF there would be no environmental problems associated with the disposal of waste.	Short-term negative
n) Any increased demands on resources, natural or	There would be no increased demand on resources, natural or otherwise, which are, or are likely to become in short supply as a result	Short-term negative

otherwise, which are, or are likely to become, in short supply?	of the Proposal.	
o) Any cumulative environmental effect with other existing or likely future activities?	The Proposal would not contribute to any cumulative effects on the environment.	Nil

10.2 EPBC Act 1999 (Commonwealth Legislation)

The EPBC Act requires that the following matters of National Environmental Significance (NES) be considered:

Factor	Comment	Impact
a) Any environmental impact on a World Heritage property?	There are no World Heritage properties in the vicinity of the Proposal, and therefore no impact on a World Heritage property would occur as a result of the Proposal.	Nil
b) Any environmental impact on wetlands of international importance?	There are no wetlands of international importance in the vicinity of the Proposal, and therefore no impact on wetland of international importance would occur as a result of the Proposal.	Nil
c) Any environmental impact on Commonwealth listed threatened species or ecological communities?	There is one Commonwealth listed threatened species, <i>Parsonia dorrigoensis</i> , and no ecological communities are considered to occur in the study area. The Proposal is considered unlikely to have a significant impact on <i>Parsonia dorrigoensis</i> (refer Appendix G).	Nil
d) Any environmental impact on Commonwealth listed migratory species?	Although 15 listed Commonwealth migratory species based on habitat/distribution criteria have potential to occur within 10km of the Proposal, it is considered unlikely that the Proposal would impact on any of the identified species.	Nil
e) Does any part of the Proposal involve a nuclear action?	The Proposal would not involve a nuclear action.	Nil
f) Any environmental impact on a Commonwealth marine area?	The Proposal would not impact on a Commonwealth marine area.	Nil
g) Any environmental impact on Commonwealth land?	Commonwealth land would not be affected, directly or indirectly, as part of this Proposal.	Nil
In addition: Any Impact on Commonwealth land?	Commonwealth land would not be affected, indirectly or directly by this Proposal.	Nil

11. CERTIFICATION

This Review of Environmental Factors provides a true and fair review of the Proposal in relation to its potential effects on the environment. It addresses to the fullest extent all possible matters affecting or likely to affect the environment as a result of the Proposal.



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Simon Williams
BEnvP, M Env Law, MPIA, CPP
Senior Consultant
Eco Logical Australia Pty Ltd
Date: 17 December 2008

I have examined this Review of Environmental Factors and the certification by Simon Williams and accept the Review of Environmental Factors on behalf of the RTA.



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Paul Leonard
Project Manager
RTA Northern Region
Date: 17 December 2008

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