Main Road 92 Upgrade

Nowra to Nerriga

REPRESENTATIONS REPORT



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Representations Report

Main Road 92 Upgrade
Hames Road to Nerriga

Prepared by:
Environmental Technology Branch
RTA Operations
Level 5, Pod D
Octagon Building
99 Phillip Street
Parramatta 2150
Ph (02) 8837 0593
Fax (02) 8837 0053
E-mail: Erwin_Budde @rta.nsw.gov.au

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Erwin Budde	Erwin Budde

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FOR DIPNR COMMENT
PENDING SEPP #58 AMENDMENT

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Glossary of Terms and Abbreviations

Acronym/ Technical Term	Definition
AADT	Annualised Average Daily Traffic
Alignment	A detailed geometric layout, in plan and profile, following a general route
Amenity	The degree of pleasantness of an area of place.
B-Double	Also known as Medium Combination Vehicle or MCV, a B-Double is an articulated vehicle hauling a second semi-trailer connected by fifth wheel assemblies. The total length of the vehicle is less than 25m. Currently, B-Doubles are allowed to be used in more populous parts of Australia including urban areas and under special permit for a specific task and route.
BCR	Benefit Cost Ratio
Carriageway	The portion of a road or bridge used by vehicles (inclusive of shoulders and auxiliary lanes
Catchment	The land area draining through the main stream, as well as tributary streams, to a particular site. It always relates to an area above a specific location.
CEMP	Contractors Environmental Management Plan
Ch3000	Chainage 3000 (metres)
Clear Zone	The area, that begins at the outer edge of the lane next to the shoulder and extends for a set distance, which is available for emergency use by errant vehicles.
Concept Design	Initial functional layout of concept, such as a road or road system
dBA	Decibels using the 'A' weighted scale, measured according to the frequency response of the human ear
DEC	Department of Environment and Conservation
DECPS	Department of Environment and Conservation – Parks Service Division (formerly NSW National Parks and Wildlife Service).
DECEPR	Department of Environment and Conservation – Environment Protection and Regulation Division (formerly NSW Environment Protection Authority)
Detailed design stage	The stage at which details are prepared on the basis of the approved concept design
Design speed	A nominal speed for the design of geometric features of the road, such as curves
DIPNR	Department of Infrastructure, Planning & Natural Resources (previously PlanningNSW)
Discharge	The rate of flow of water measured in terms of volume per unit time, for example, cubic metres per second (m3/s). Discharge is different from the speed or velocity of flow, which is a measure of how fast the water is moving, for example metres per second
DLWC	Department of Land and Water Conservation
DoTaRS	Commonwealth Department of Transport and Regional Services
Dual Carriageway	A highway or road with separated carriageways for traffic travelling in opposite directions
EA	Environment Australia
ECRTN	Environmental Criteria for Road Traffic Noise
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EIS Proposal	The MR92 Upgrade as described in the EIS dated December 2002
EMP	Environmental Management Plan, also see PEMP and CEMP
EMR	Environmental Management Representative
EMS	Environmental Management System under ISO 14000
EPA	New South Wales Environment Protection Authority (now Department of Environment and Conservation – Environment Protection and Regulation Division).
EP&A Act	*Environmental Planning and Assessment Act, 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act, 1999*

Acronym/ Technical Term	Definition
Escarpment	A cliff or steep slope of some extent, generally separating two level or generally sloping areas
ESD	Ecologically Sustainable Development
Gradient	Slope or rate of fall of land/pipe/stream
Ha	Hectare (=10,000 m2)
Hazard	A source of potential harm or a situation with a potential to cause loss.
Heavy Metals	Arsenic, Cadmium, Chromium, Copper, Lead, Nickel, Mercury, Zinc
Hydraulics	Term given to the study of water flow in waterways; in particular, the elevation of flow parameters such as water level and velocity
Hydrology	Term given to the study of the rainfall and runoff process; in particular, the elevation of peak flows, flow volumes and the derivation of hydrographs for a range of floods
ISO 14000	International Environmental Standard
km	Kilometre
km/h	Kilometres per hour
LALC	Local Aboriginal Land Council
LEP	Local Environmental Plan
LGA	Local Government Area
m	Metre
mm	Millimetres, 0.001 metres
MR92	Main Road 92
NPE Act	*National Park Estate (Southern Regions Reservation) Act, 2000*
NES	National Environmental Significance
NPWS	NSW National Parks and Wildlife Service (now Department of Environment and Conservation – Parks Service Division).
NPV	Net Present Value
Nutrients	Derived from fertilisers and detergents, including phosphorus and nitrogen. In high concentrations, can cause excessive growth of aquatic plants and can lead to eutrophication of ponds, streams and the poorly flushed estuaries
OEMP	Operational Environmental Management Plan. This Environmental Management Plan would be used during the operational phase of the project and would include maintenance works
PAD	Potential Archaeological Deposit
PAH	Polycyclic Aromatic Hydrocarbons
PEMP	Project Environmental Management Plan. PEMPs are EMPs which translate the requirements of the EIS together with the Representations Report, the Conditions of Consent and the Concept Design Plan into a Plan which contains all environmental measures to be implemented
pH	The hydrogen ion concentration in water, a measure of acidity or alkalinity. pH is expressed on a scale of 1 to 14 with low numbers indicating acidic conditions and high numbers basic or alkaline conditions. pH 7 is neutral
POEO	*Protection of the Environment Operations Act, 1997*
Preferred Activity	The modified EIS Proposal, incorporating the proposed modifications, which the RTA has decided to carry out
REP	Regional Environmental Plan
Riparian	Area directly adjoining or directly influencing the waterway
Risk	Chance of something happening that would have an impact. It is measured in terms of consequences and likelihood. In the context of this Study it is the likelihood of consequences arising from the interaction of floods, communities and the environment
Road corridor / reservation	The strip of land within which a road is to be constructed
RoTAP	Rare or Threatened Australian Plants (Briggs & Leigh 1996) – Nationally significant plants listed in a register.
RTA	New South Wales Roads and Traffic Authority
RUBCR	Road Users Benefit Cost Ratio
RUCBA	Road User Cost Benefit Analysis

Acronym/ Technical Term	Definition
Runoff	The amount of rainfall which actually ends up as streamflow, also known as rainfall excess
SCC	Shoalhaven City Council
SEPP	State Environmental Planning Policy
Shoulder	The portion of the carriageway beyond the traffic lanes adjacent to, and flush with the surface pavement
SIS	Species Impact Statement
SKM	Sinclair Knight Mertz
The Proposal	The Main Road 92 Upgrade as presented in the EIS
TSC	Tallaganda Shire Council
TSC Act	*Threatened Species Conservation Act, 1995*
VMS	Value Management Study
vpd	Vehicles per day
WARR Act	*Waste Avoidance and Resource Recovery Act, 2001*
Wetland	Ecological community dependent on the presence of shallow, still water or on the water logging of the soil, either permanently, frequently or for occasional prolonged periods
WMP	Waste Management Plan

1 Introduction

1.1 General

The RTA, in partnership with the Commonwealth Department of Transport and Regional Services (DoTaRS) and Shoalhaven City Council (SCC), is proposing to upgrade MR92 between Hames Road and Nerriga, a distance of approximately 54 kilometres (km). Generally the upgraded road would include sealing and widening to provide two 3.25m travel lanes and 1m wide shoulders. A slightly wider cross section is proposed at Bulee Mountain. Some realignment of the existing road would be required to achieve a design speed of between 60 and 100 km/h.

The NSW Roads and Traffic Authority (RTA) Southern Region has commissioned RTA Operations Directorate, Environmental Technology Branch, to prepare a Representations Report for the proposed upgrade of Main Road 92 (MR92) between Hames Road and Nerriga (the Proposal). The RTA is the proponent and nominated determining authority for the Proposal. The approval of the Minister for Infrastructure and Planning is required before the Proposal can proceed. This Representations Report has been written in accordance with the requirements of the *Environmental Planning and Assessment (EP&A) Act, 1979.* (Additionally, approval from the Commonwealth Environment Minister is required in relation to a controlled action under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* – see Chapter 1.4.1 below).

An Environmental Impact Statement (EIS) for the Proposal (December 2002) was prepared on behalf of the RTA by Sinclair Knight Merz (SKM). In addition, a Species Impact Statement (SIS) was prepared by Kevin Mills & Associates and SKM on behalf of the RTA on the basis that the Proposal was likely to have a significant impact on threatened species listed on the *NSW Threatened Species Conservation (TSC) Act 1995.* A Supplementary Species Impact Statement (SSIS) was prepared in September 2003 to address issues which could not be addressed in the SIS. The EIS and SIS were exhibited from 12 December 2002 to 28 February 2003 and received 646 representations from a range of stakeholders including individuals, councils, businesses, interest groups, institutions and State and Commonwealth Government authorities (of which approximately 400 were form letters). The SSIS was exhibited from 30 September to 30 October 2003 and received three submissions.

These studies concluded that a significant impact on threatened species listed pursuant to the TSC Act was not likely as a result of the Proposal. The RTA would therefore not seek concurrence from the Director-General of the NSW National Parks and Wildlife Service (NPWS) (now known as Department of Environment and Conservation – Parks Service Division) for the Proposal. This is further discussed in Sections 2.8 and 2.9.

The EIS determined that the upgrade of MR92 would provide an improved and more direct link between the Shoalhaven and southern Illawarra and inland NSW and the ACT. The upgrade would provide for an escarpment crossing suitable for B-Double freight vehicles, which existing crossings currently do not provide. The upgrade would significantly improve safety for road users and provide access to employment and services for residents in the region. Issues raised in regard to options assessment, environmental impacts, justification, road design, utilities, land use, EIS documentation, land use and environmental management were identified in representations received to the exhibited EIS and are further discussed in this report.

1.2 Modifications to the Proposal

In accordance with Section 112 (4)(b)(i) of the EP&A Act, a determining authority which is satisfied that the proposed activity would detrimentally affect the environment may, where it is the proponent, modify the activity described in the EIS to eliminate or reduce the detrimental effect of the activity on the environment without preparing a new EIS.

Having considered the representations received in response to the exhibition of the EIS, the RTA has developed one modification to the EIS Proposal. The modification involves the construction of additional overtaking lanes at Bulee Mountain. The RTA has undertaken additional design in developing this modification. The major features of the Proposal, however, remain substantially the

same and the proposed modification does not involve any radical transformation of the original activity.

The impacts of the proposed modification to the EIS Proposal have been assessed and considered, and the RTA is satisfied that no significant environmental impacts additional to those discussed in the EIS would occur as a result of the modification. It is considered that, on balance, the benefits of the improved safety of the road through Bulee Mountain outweigh any additional minor detrimental impacts of the modification.

As the EIS Proposal has been changed to include the modification, it is known as the 'Preferred Activity'. The Preferred Activity is described in Chapter 8 of this report. If the RTA decides to seek approval from the Minister for Infrastructure and Planning, it would do so in relation to the Preferred Activity. Further detail on the modification is provided in Chapter 8 of this Representations Report.

Consideration of the proposed modification, together with several additional studies undertaken for this report, has resulted in additional mitigating measures or other commitments being proposed, as detailed in Chapter 8 of this report.

1.3 Purpose of a Representations Report

The primary purpose of the Representations Report is to assist the Chief Executive of the RTA to decide whether to seek the approval of the Minister for Infrastructure and Planning following the EIS exhibition period. If the Chief Executive decides to seek the approval of the Minister for Infrastructure and Planning, the Representations Report is provided to the Department of Infrastructure Planning and Natural Resources (DIPNR) to assist in the preparation of the DIPNR Director-General's report to the Minister for Infrastructure and Planning. The Minister for Infrastructure and Planning then decides whether or not to grant approval to the Proposal. This Representations Report is structured as follows:

Chapter 1 – Introduction
An introduction to the Proposal, the proposed modifications, the consultation program and environmental impact assessment process.

Chapter 2 – Consideration of the EIS and SIS
A consideration of the Proposal as described in the EIS, including development of the Proposal, concept design, consideration of the environmental impacts of the Proposal and statutory compliance. A consideration of the Species Impact Statement (SIS) is also provided, including consideration of the impacts of the Proposal on threatened species and statutory compliance.

Chapter 3 – Consideration of the Representations to the EIS and SIS
A consideration of representations made in response to the EIS and SIS, and the RTA's response to issues raised in the representations.

Chapter 4 – Consideration of the Representations to the SSIS
A consideration of representations made in response to the SSIS, and the RTA's response to issues raised in the representations.

Chapter 5 – Correspondence
A review of correspondence received from Government agencies during and after exhibition of the EIS and SIS.

Chapter 6 – Additional Investigations
A summary of additional investigations and studies undertaken since the exhibition of the EIS and SIS.

Chapter 7 – Modifications to the Proposal
An introduction to and summary of the modifications to the Proposal.

Chapter 8 – Preferred Activity Report
Details of the 'Preferred Activity' (the Proposal incorporating the proposed modifications) compared to the Proposal as described in the EIS. Includes details of the modification, environmental impact assessment of the proposed modification, justifications for the modification and revised environmental impacts. A consideration of Clause 228 Factors (State) and Commonwealth matters is included for the Preferred Activity. Details of the commitments and measures that would be undertaken to ensure that impacts of the environment are minimised, concludes this Chapter.

Chapter 9 – Conclusion

Chapter 10 – References

1.4 Statutory Framework

1.4.1 Environment Protection and Biodiversity Conservation (EPBC) Act, 1999

The MR92 EIS addressed Commonwealth requirements in accordance with the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act). Refer to Section 2.1of the EIS for details.

The EPBC Act requires the assessment and approval of actions that will have, or are likely to have, a significant impact on matters of National Environmental Significance (NES). In addition, the EPBC Act provides that certain actions that will have, or are likely to have a significant impact on the environment of Commonwealth land also require approval.

The Proposal as described in the EIS was considered to potentially impose a significant impact on a matter of national environmental significance, being a threatened species listed by the EPBC Act. Accordingly, a referral was made to the Commonwealth Environment Minister, who issued a Notice of Controlled Action in relation to the likely impact of the Proposal on threatened species listed under the EPBC Act. As a result approval from the Commonwealth Environment Minister, is required in relation to that controlled action. The Commonwealth Environment Minister also accredited the NSW assessment process for the Proposal and therefore a single EIS was prepared under Part 5 of the EP&A Act which also addresses all EPBC Act requirements.

If approval for the carrying out of the proposed activity is granted by the NSW Minister for Infrastructure and Planning in accordance with the NSW EP&A Act, the approval of the Commonwealth Environment Minister will be sought subsequently in relation to the controlled action, in accordance with the EPBC Act.

The Preferred Activity described in Chapter 8 of this Representations Report was assessed under the EPBC Act with reference to NES matters. That assessment is provided in Chapter 8 of this Representations Report.

1.4.2 Environmental Planning and Assessment (EP&A) Act, 1979

Main Road 92 traverses land which is variously zoned under the provisions of the Shoalhaven Local Environmental Plan (LEP) 1985 and the Tallaganda LEP 1991. The Proposal requires the preparation of an environmental impact assessment in accordance with Part 5 of the EP&A Act.

The Proposal has been assessed under Part 5 of the EP&A Act. The RTA is required, amongst other statutory and legislative obligations, to comply with Divisions 2 and 3 of Part 5 of the EP&A Act, in particular, sections 111 – 113 which in general terms require:

- the RTA to examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity [Section 111];
- the preparation and consideration of an EIS (where the activity is likely to significantly affect the environment) in the prescribed form and manner [Section 112(a)];

- the notification and exhibition of the EIS in accordance with Section 113 of the Act and receipt and consideration of representations made to the RTA or any other determining authority in accordance with section 113(2) [Section 112(1)(b)];
- compliance with Section 113(3) of the Act by providing all representations made during exhibition to DIPNR; and
- the RTA to examine all representations made during the statutory exhibition period and decide if it wishes to proceed with the Proposal, either with or without proposed modifications [Section 112(4)(b)].

The provisions of Division 4 of Part 5 of the EP&A Act also apply to the Proposal and require the approval of the Minister for Infrastructure and Planning to be obtained prior to the RTA carrying out the activity. The RTA may seek the Minister for Infrastructure and Planning's approval once the RTA has complied with Section 112(1)(a)-(c), and (1B) [Section 115B(1)] of the EP&A Act.

Details of zoning and permissibility are outlined in Chapter 8 and Technical Paper 4 of the EIS. The majority of the route is within land zoned for rural, National Parks or environmental protection purposes. Prima facie, the Proposal is permissible with Council consent along the entire route. *State Environmental Planning Policy 4 (SEPP 4) – Development Without Consent* is therefore relevant to the Proposal. Clause 11C(2) of SEPP 4 allows works for the purposes of a classified road to be undertaken without development consent, where that development would otherwise only be permitted with the consent of Council. Clause 11C(2) of SEPP 4 would apply to all areas of the Proposal except:

- where the Proposal is located within zone 8 - National Parks under Shoalhaven LEP 1985, and is similarly prohibited; and
- land to which SEPP58 applies.

The Proposal passes through sections of Morton National Park, which is zoned 8 – National Parks and where roads are prohibited. An Act of Parliament would be required to adjust the boundaries of the National Park in these areas. The EIS incorrectly stated that as 'roads' are prohibited within this National Parks Zone, a rezoning would be required to remove the prohibition imposed by the LEP. The City of Shoalhaven LEP 1985 however, adopts the Environmental Planning and Assessment Model Provisions in particular Clause 35(a). This clause lists a number of developments (Schedule 1) which can be undertaken without the need to obtain development consent or the need to obtain a rezoning by virtue of that development being prohibited under a LEP.

Item 6 to the Schedule would allow the RTA in this case, to proceed with the Proposal under Part 5 of the EP&A Act without the need to seek a rezoning.

SEPP 58 requires that development consent be obtained from Tallaganda and Shoalhaven Councils for some sections of the Proposal between Sassafras and Nerriga. However, on the basis that the Proposal would improve water quality in the surrounding areas, the RTA sought an amendment to SEPP 58 which would remove the consent requirements specified by Clause 8 of that Policy, enabling environmental impact assessment under Part 5 of the EP&A Act.

Based on a misprint in SCC's LEP, the EIS stated incorrectly that roads are prohibited on land zoned Rural 1(f) Forestry. However, the gazetted LEP indicates roads are permissible with consent. Clause 11C(2) of SEPP 4 allows works for the purposes of a classified road to be undertaken without development consent, as described above, in this zone. The RTA is still seeking an adjustment of the boundaries of both Jerrawangala National Park and Parma Creek Nature Reserve (see below).

1.4.3 Other Legislation

The area of land near the Turpentine Road/MR 92 intersection has been declared under the *National Park Estate (Southern Regions Reservation) Act 2000* (NPE Act). The existing alignment of MR92 abuts the current boundaries of Estate land near Turpentine Road and adjustment of the boundaries of Jerrawangala National Park and Parma Creek Nature Reserve would be required for the Proposal. The NPE Act permits and establishes a procedure for adjustment of estate boundaries adjoining a public road provided that adjustment occurs before 31 December 2005.

1.5 Preparation of the EIS, SIS and SSIS

In accordance with the requirement of Part 5 of the EP&A Act, an EIS was prepared for the proposed upgrade of MR92 between Hames Road and Nerriga by Sinclair Knight Merz in conjunction with a number of specialist sub-consultants. The requirements of the Director-General of PlanningNSW for the preparation of the EIS were issued on 5 July 2002, in accordance with Clause 231 of the EP&A Regulation 2000. Each of the Director-General's requirements was addressed in preparing the EIS. The compliance with these requirements is outlined in Table 1 of Appendix A of the EIS.

Additionally, preliminary flora and fauna investigations determined that a significant effect on threatened species listed under the TSC Act was likely as a result of the Proposal. An SIS and Supplementary SIS were subsequently prepared for the Proposal by Sinclair Knight Mertz and a specialist sub-consultant in accordance with the requirements of the Director-General of the National Parks and Wildlife Service and Sections 109 and 110 of the TSC Act. A copy of the Director-General's requirements are included in Appendix 2 of the SIS.

1.6 The Determination Process

The determination process for this Proposal following the exhibition of the EIS is as follows:

1. **Representations Report is prepared**: This report is prepared in recognition of Clause 243 of the EP&A Regulation 2000 and sets out certain matters relevant to the decision in (2) below, including addressing all issues raised in the representations received following the EIS, SIS and SSIS exhibition.

2. **RTA decides whether to seek approval of the Minister for Infrastructure and Planning:** The Chief Executive of the RTA considers the EIS, SIS and SSIS, the representations received during exhibition, the mitigation of the environmental impacts of the Proposal, the possible modification of the Proposal, and a range of other matters set out in the EP&A Act and EP&A Regulation 2000, and makes a decision under section 112 of the EP&A Act whether to seek the approval of the Minister for Infrastructure and Planning to the carrying out of the activity.

3. **Minister for Infrastructure and Planning's approval sought**: A copy of the Representations Report is then sent to the Director-General of DIPNR and the approval of the Minister for Infrastructure and Planning is sought in accordance with Section 115A of the EP&A Act. Copies of all Representations were previously sent to DIPNR, on 22 May 2003 and 12 November 2003.

4. **Preferred Activity Report (PAR) made public**: The PAR describing the Preferred Activity is made available for public information after the Representations Report is forwarded to DIPNR.

5. **DIPNR prepares report to Minister**: The Director-General of DIPNR considers the Representations Report, the request of the RTA and all other relevant material, assesses the Proposal and prepares an Assessment Report for the Minister for Infrastructure and Planning to assist in his decision as to whether to grant approval and if so, on what terms and conditions.

6. **Minister grants approval**: After considering the Assessment Report and all other matters, and following consultation with the Minister for Roads, the Minister for Infrastructure and Planning decides whether to grant approval and, if approval is granted, determines the conditions or modifications to impose on the carrying out of the Proposal.

7. **Determination**: The Chief Executive of the RTA considers the terms of the approval of the Minister for Infrastructure and Planning and determines whether to proceed with the Proposal.

8. **Release of documents**: The Minister's approval, the report from the Director-General of DIPNR to the Minister for Infrastructure and Planning, the Chief Executive's determination and the Representations Report are all made public.

9. **Approval Sought from Commonwealth**: If the Proposal is approved by the Minister for Infrastructure and Planning, approval to the controlled action is sought from the Commonwealth Environment Minister and the RTA is advised of the outcome of that request.

1.7 The Consultation Program

A program of stakeholder and community consultation was undertaken as part of the route selection process and during the preparation of the EIS. Consultation was undertaken within all local governments along the MR92 route. The consultation program was undertaken in three distinct phases:

- feasibility stage;
- options assessment phase; and
- EIS phase.

The consultation mechanisms that were implemented are presented in detail in Section 3 of the EIS and are summarised here. Key target audiences identified for the consultation process included government bodies, community groups, affected property owners and potential users of the upgraded route.

Consultation for the feasibility stage commenced in February 1998 and involved:

- a public meeting in Nerriga to advise of the commencement of planning for the project;
- exhibition of the design study and preliminary environmental assessment at Tallaganda and Shoalhaven Councils in February 2000; and
- receipt and consideration of 44 submissions from the exhibition.

Consultation during the preparation of the EIS included:

- sending letters to all key stakeholders;
- establishing a freecall 1800 number;
- development of a project website;
- preparation of newsletters and an information sheet with a feedback survey;
- advertising;
- staffed information days;
- unstaffed displays; and
- briefings.

A Planning Focus Meeting was held at Shoalhaven City Council offices, Nowra, on 4 September 2001 and was attended by a range of representatives from government departments and other organisations. The purpose of the meeting was to provide information on the proposed upgrade of MR92 to representatives from government departments, stakeholders and other organisations and stakeholders, to obtain feedback on issues of concern and issues that should be considered during the preparation of the EIS.

Key issues arising from consultations are presented in Section 3 of the EIS. The consultation program influenced the design of the Proposal and the preparation of the EIS.

1.8 EIS Exhibition

The EIS was advertised and placed on public on exhibition between 12 December 2002 and 28 February 2003. The EIS and accompanying Technical Papers and CD were available for viewing at various locations (see Chapter 2.1) and purchase. Information on the EIS was also made available on the Internet at www.rta.nsw.gov.au and http://commcons.skm.com.au/mr92. During the exhibition period all members of the community, interest groups and government authorities were invited to

view the EIS and to make a written submission on any aspect of the Proposal. Representations in response to the EIS were officially received up until 28 February 2003.

EIS summary brochures and fact sheets were posted out to local residents and residents included on the EIS project database. These included details about the exhibition of the EIS, instructions on how to make a submission and addressed key issues associated with the Proposal. Staffed displays were held to enable community representatives and stakeholders to ask questions about the details of the EIS and provide further information for consideration in the assessment process. A staffed display was set up at Nerriga Trading Post, Braidwood Road, Nerriga and at Shoalhaven City Council Library on two (2) occasions (Saturday, 14 December 2002 and Saturday, 8 February 2003). Representatives of SKM and the RTA were present at each of the displays. Advertisements for the displays in December 2002 and in February 2003 were placed in the following newspapers in conjunction with the advertisement for the EIS exhibition:

Sydney Morning Herald	7 December and 14 December 2002
Illawarra Mercury	7 December and 14 December 2002
Canberra Times	7 December and 14 December 2002
Shoalhaven and Nowra News	11 and 18 December 2002
South Coast Register	11 and 16 December 2002

Advertisements for the display in February 2003 were also repeated in the following newspapers:

Canberra Times	25 January, 1 and 8 February 2003
Shoalhaven and Nowra News	29 January and 5 February 2003
South Coast Register	29 January and 5 February 2003

1.9 SSIS Exhibition

The SSIS was advertised and placed on public exhibition between 30 September and 30 October 2003. The viewing locations, information regarding the exhibition and advertisement locations for the SSIS were the same as described above for the EIS.

A letter was sent on 23 September 2003 to all respondents who raised issues relating to the SIS during the exhibition of the EIS and SIS, advising of the preparation and exhibition of the SSIS.

2 Consideration of the EIS, SIS and SSIS

This chapter presents the consideration of the EIS, SIS and SSIS, both in terms of compliance with statutory requirements and in terms of environmental assessment and mitigation measures.

2.1 Statutory Compliance of the EIS

The EIS was prepared on behalf of the RTA by Sinclair Knight Mertz (SKM) and a number of subconsultants. The EIS was prepared to comply with Sections 111 and 112(1)(a) of the EP&A Act and the *Environmental Planning and Assessment Regulation 2000* (EP&A Regulation).

The EIS addresses all relevant statutory requirements under the EP&A Act, and takes into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the proposed activity, as per Section 111 of the EP&A Act. The EIS was prepared in accordance with the prescribed form and manner required by Section 112(1)(a) of the EP&A Act. The EIS complies with clause 228 of the EP&A Regulation. The EIS also complies with the requirements of the Commonwealth Environment Minister in relation to the EPBC Act.

Table 2.1 sets out the compliance of the EIS with Statutory requirements.

Table 2.1: Compliance Checklist

Reference	Requirement	Addressed in which Chapter of this Report.
Section 111 of the EP&A Act, 1979	Requires the RTA to examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the Activity.	2.1
Section 112(1)(a) of the EP&A Act, 1979	Relates to the preparation and consideration of an EIS in accordance with the prescribed form and manner.	2.1
Clause 228 of the EP&A Regulation 2000	Compliance with Section 111 and 112 of the EP&A Act 1979.	2.1
Clause 230 and Schedule 2 of the EP&A Regulation 2000	Content of the EIS.	2.5
Clause 231 of the EP&A Regulation 2000	Content of the EIS – Requirements of the Director-General of PlanningNSW.	2.5
Clause 234 of the EP&A Regulation 2000; Section 113 of the EP&A Act 1979.	The notification and exhibition of the EIS.	2.1
Section 113(3), 112(1)(c) of the EP&A Act, 1979	Providing the Director-General of Department of Planning with all representations made during the EIS exhibition.	2.1
Section 113(2) and 112 of the EP&A Act, 1979	Receipt and consideration of representations made to the RTA or any other determining authority during the statutory exhibition period	3 and 4
Part 3 Div 1, Sections 12, 16, 18, 20, 21, 23, 25 and 26 of the EPBC Act	Assessment of the potential impact of the Proposal on items of national environmental significance and on Commonwealth land.	2.1

Clause 230, EP&A Regulation 2000

The EIS was prepared to comply with Clause 230 of the EP&A Regulation. This Clause requires that (where no other guidelines are in force) an EIS must comply with Schedule 2 of the Regulation.

Clause 231, EP&A Regulation 2000

The EIS was prepared to comply with Clause 231 of the EP&A Regulation. This Clause requires that the Director-General must be consulted concerning the form and content of any EIS. The Director-General was consulted before the commencement of the EIS and provided a number of requirements (5 July 2002). The correspondence from the Director-General can be found in Appendix A of the EIS.

Appendix A of the EIS sets out the compliance with the Director-General's requirements. Each of the Director-General's requirements was addressed in the EIS.

Clause 234, EP&A Regulation 2000

The EIS was exhibited from 12 December 2002 to 28 February 2003. This complies with the statutory requirement to exhibit the EIS for 30 days from the last date of the first round of advertisements.

First and second round of statutory advertisements for the exhibition were published as follows:

Sydney Morning Herald	7 and 14 December 2002
Illawarra Mercury	7 and 14 December 2002
Canberra Times	7 and 14 December 2002
Shoalhaven and Nowra News	11 and 18 December 2002
South Coast Register	11 and 16 December 2002

The advertisements identified the display locations and times, where to purchase copies of the EIS, and the date until which representations would be received.

The EIS was exhibited at the following locations:

- RTA, Southern Regional Office, Wollongong
- RTA, Centennial Plaza, Surry Hills
- RTA Motor Registries: Queanbeyan, Nowra, and Goulburn
- NSW Govt Information Centre, Goodsell Building, Sydney
- PlanningNSW, Planning Centre, Lee Street, Sydney
- Shoalhaven City Council, Bridge Street, Nowra
- Tallaganda Shire Council, 144 Wallace Street, Braidwood
- NSW Environment Centre, Kent Street, Sydney
- Environment Australia, John Gorton Building, King Edward Terrace Parkes ACT

Commonwealth Legislation

The Proposal was deemed a Controlled Action pursuant to the EPBC Act, given the potential for a significant effect on nationally listed threatened biota. The NSW assessment process was accredited by Environment Australia specifically for this Proposal. The Minister for Environment and Heritage required the consideration of a number of terrestrial and aquatic species in the EIS. All matters of national environmental significance identified by Environment Australia have been addressed in either the EIS (Section 12), SIS or SSIS. One matter of national environmental significance would be directly impacted by the Proposal. Specific mitigation measures are incorporated into the Proposal to minimise these impacts. No other matters of national environmental significance would be significantly impacted upon, and no part of the EIS Proposal is being carried out on Commonwealth land.

Provision of Representations

646 representations were received in response to the exhibition of the EIS and SIS. In addition, three representations were received in response to the SSIS exhibition. In compliance with the requirements of Sections 112(1)(c) and 113(3) of the EP&A Act, these representations were provided to DIPNR on 22 May 2003 and 12 November 2003. Copies of the representations were also forwarded to NPWS at that time.

2.2 Development of the Proposal in the EIS

The EIS established the need for the Proposal (in Part B of the EIS), which is summarised below. This section does not include additional reports or further proposed alterations to the EIS Proposal, which are discussed in Chapters 6, 7 and 8 of this Representations Report.

The overall aim of the Proposal is to upgrade MR92 between Hames Road and Nerriga, to a sealed 80 - 100 km/h design speed road, which can be used by B-Double vehicles. The objectives for the Proposal are to provide an upgraded route between Hames Road and Nerriga that:

- achieves safe driving conditions generally for travel speeds of 80-100 km/h;
- provides an efficient, all-weather freight route;
- maximises benefits to the community, road users and the environment;
- supports economic development by allowing efficient transport of freight between Nowra and destinations west of Nerriga and north and south of Nowra;
- maximises the use of the existing road corridor, where possible;
- reduces travel times;
- reduces road accidents and injuries;
- minimises construction and ongoing maintenance costs;
- incorporates community input;
- minimises environmental impacts, including clearance of native vegetation;
- satisfies the technical and procedural requirements of the RTA, DoTaRS, SCC and TSC with respect to design and construction of the Proposal;
- is well integrated into the existing landscape of the surrounding region; and
- achieves value for money for an expenditure not exceeding $75 million.

Need for the Proposal

The Proposal is needed to provide an efficient transport route between the south coast of NSW and the inland regions of central and southern NSW. The Proposal was identified in the EIS as delivering benefits to the local and broader communities by:

- opening up new viable freight routes between the Shoalhaven, southern Illawarra and inland regions of Canberra, Queanbeyan, Tallaganda, Mulwaree and areas beyond, boosting the regional economy;
- improving access to Port Kembla from south-east NSW and the Gippsland district of Victoria;
- reducing freight transport costs on the existing MR92 and on less direct alternative routes such as the Kings Highway and the Moss Vale – Nowra Road, through reduced fuel usage, reduced wear and tear on vehicles, reduced travel times and reduced accident costs;
- increasing opportunities for tourism between the Shoalhaven and southern Illawarra and inland areas from Canberra and Sydney; and
- significantly improving road safety.

Strategies and Initiatives

Action for Transport 2010 (Department of Transport, 1998) is a State Government planning initiative that aims to provide transport infrastructure to link areas of population growth, employment and regional development with improved transport infrastructure for all modes.

The Proposal supports strategies in *Action for Transport 2010* and the *Illawarra Action for Transport* (refer to Technical Paper 15 of the EIS) in that it would:

- improve the efficiency of freight journeys and reduce adverse environmental impacts:
  - develop new infrastructure to enhance the transport of freight; and

  - reduce environmental and social costs of freight transport and improve economic benefits.
- enable fast and efficient 'through' journeys:
  - remove existing bottlenecks limiting access to and through the Illawarra; and
  - need for improved access across the Illawarra Escarpment.
- facilitate a diversity of access to recreation and tourist destinations:
  - identify and target transport needs of major recreation and tourist destinations.

In 1998 the State Government also released *Action for Air* (Environmental Protection Authority, 1998), a 25 Year Air Quality Management Plan. Reducing car use by making the city more compact and by distributing land uses is recognised as a key component in improving air quality. The plan aims to halt the growth in per capita vehicle kilometres travelled by 2011 and total vehicle kilometres travelled by 2021.

Action for Air focuses on the Greater Sydney Metropolitan Area, however, the Director-General's requirements specifically requested that this EIS provide a consideration of this strategy. The EIS established that the Proposal would provide an additional all weather and safe link across the escarpment and be available to B-Double vehicles thereby minimising unnecessary travel to access existing escarpment crossings.

Existing Road Network

The existing road network in the region, which comprises two major highways and a series of main and local roads, and its performance was reviewed in Section 4 of the EIS and in Technical Paper 3. In addition, other transport services including rail and air were discussed in the EIS, with specific constraints identified.

The existing road network was found to provide inadequately for an efficient escarpment crossing in the region, particularly with regard to freight movements. MR92 was identified as the route that potentially could provide the most effective escarpment crossing in the region.

The existing condition of MR92 was discussed in Part B Section 4.3 of the EIS. The existing road was found to have a limited use as an escarpment crossing due to:

- high accident rates in several sections;
- narrow sections where vehicles cannot safely travel at 60 km/h;
- unsealed and unreliable nature of the road surface; and
- steep narrow grades in the vicinity of Bulee Mountain, representing a major physical constraint;

2.3 Concept Design Development

The overall philosophy of the Proposal is to upgrade the existing road to provide a safer environment for all users, increase travel efficiency and reduce travel costs for users (particularly freight), address community issues and minimise impacts to the surrounding environment. Options for the upgrade were developed with these objectives in mind, recognising that a reduced speed may be acceptable in some locations to achieve a safe, all-weather upgrade within the Proposal budget of $75 million. It was also recognised that sufficient road corridor would be acquired to meet future needs.

The choice of a preferred design represents a balance between practical engineering considerations and minimising environmental impacts. Overall, the aim has been to meet the Proposal objectives, which include ensuring minimal impacts on the environment. The development of the concept design is described in Section 5 and Technical Papers 1 and 2 of the EIS.

The general approach to the development of the concept design included:

- identification of potential options;
- obtaining input from the community on potential options; and
- assessment of the benefits and impacts of each of the options.

Strategic options were considered in the EIS, including rail and port options as well as alternative road transport routes. Following an analysis of the environmental, engineering and social constraints and opportunities, a number of alignment options for an upgrade of MR92 were considered including six major deviations from the existing centreline at:

- Turpentine Road;
- Georges Yard;
- Sassafras;
- Billy's Hill;
- Bulee Mountain; and
- Nerriga.

Extensive consultation with the community throughout the development of the concept design was undertaken through feedback surveys and a public display of the options from 14 to 30 November 2001. A Value Management process assisted in the assessment of options, with all design assumptions, pavement thickness, environmental constraints and community comments presented to participants at a Value Management Workshop held on 20 and 21 November 2001. Options were assessed against the evaluation criteria developed from the project objectives, which included:

- capital cost limited to $75 million;
- engineering/technical considerations;
- environmental issues;
- social issues.

Further investigations for the Bulee Mountain and Sassafras options were undertaken and both options were refined. In particular, two options for Bulee Mountain (BM4 and BM5) were considered with a comparison of engineering and environmental impacts and constraints presented (Section 5.7 of the EIS). In order to avoid the environmental impacts associated with the creation of a new road corridor, the BM4 option was selected as the preferred route through Bulee Mountain. The improved BM4 generally follows the existing alignment of MR92 and avoids the potential impacts associated with the BM5 route, which would require a new road corridor through Morton National Park and an undisturbed area west of the Morton National Park which has been identified as wilderness area.

Subsequent to the selection of the preferred option at Bulee Mountain, the concept was further developed and improved to minimise and mitigate other identified impacts. Further modification of the preferred option was undertaken as part of this Representations Report as described in Chapter 8.

2.4 General Description of Works

The Proposal has been described in Section 6 and Technical Paper 2 of the EIS, and a summary of that description is given below. Some modifications to that Proposal are now proposed. These are discussed further in Chapters 7 and 8 of this report.

The Proposal described in the EIS consists of:

- widening to provide two 3.25m travel lanes with 1m shoulders on both sides of the road along most of the alignment;
- improvements to curves and crests to improve road safety;
- sealing of 54km of MR92, from Hames Road to Nerriga;
- provision of clear zones along both sides of the road. 10m clear zones would be provided in 100 km/h zones, and 6.5m clear zones within 80 km/h zones;
- a concrete kerb would be provided through the Sassafras area, with a safety barrier erected to protect the avenue of trees. Regular breaks in the barrier would be provided for accesses and drainage;
- an alignment that meets current design standards and avoids the need for future widening at Bulee Mountain;
- construction of two new bridges at Bulee Mountain; and
- provision of three overtaking opportunities in the Bulee Mountain area for eastbound traffic.

The design and profile of the EIS Proposal are shown in Figure 2.1.

2.5 Environmental Impacts

In accordance with the statutory requirements, the EIS addressed the environmental impacts of the Proposal and outlined mitigation measures to reduce the impacts. A summary of each of these aspects is presented below.

This summary does not include the additional studies undertaken since the EIS, discussed in Chapter 6, or modifications to the Proposal, discussed in Chapters 7 and 8.

2.5.1 Economic Impact Assessment

An economic impact assessment was undertaken for the Proposal and is described in Section 6.11 and Technical Paper 15 of the EIS. The assessment is based on a comparison between the base case (or "do nothing") and the four upgrade scenarios. At present there are approximately 100 vehicles per day using this section of MR92. The four scenarios are based on different traffic and regional road network upgrade assumptions.

The main conclusions of this study are that the viability of the project is largely dependent on the traffic volume projections:

- based on the traffic forecasts of 370 vehicles per day (in 2021), the project (Hames Road to Nerriga only) is estimated to result in quantified results of a Net Present Value, NPV, at 7% discount rate) of negative $55 million and a Road User Benefit Cost Ratio (BCR) of 0.1;
- if additional benefits attributable to the Proposal from the upgrade of the Nerriga to Braidwood section are included, and a traffic forecast of 1140, it would result in quantified results of a NPV of negative $8M and a Road User BCR of 0.9;
- on the basis that the 'missing links' between Nerriga and Sandy point are upgraded together with the remainder of MR92 to Braidwood (the most likely scenario given that Mulwaree Council is progressively sealing the link to Sandy Point and the link to Braidwood is included in Tallaganda Council's forward programs), and a traffic forecast of 1440, a NPV of $56.6M and Road User BCR of 1.7 is estimated to be achieved; and
- an alternative traffic forecast (including redistributed traffic from other escarpment crossings), increasing traffic on the MR92 to 2,000 vehicles a day, would result in the project having a NPV of $91 million and a Road User BCR of 2.4.

On balance unquantified impacts of the upgrade of the Hames Road to Nerriga project are assessed to be slightly positive and as summarised above the quantified benefits increase substantially if significant additional traffic is generated.

2.5.2 Traffic and Transport

Traffic and transport considerations were presented in Section 7 and Technical Paper 3 of the EIS. Table 7.1 in Section 7.1 of the EIS describes the existing traffic volumes on MR92 and other roads in the region. Table 6.2 of Technical Paper 3 describes the future predicted traffic flows on MR92 and other roads in the region under four traffic scenarios based on upgrading of the remaining sections of MR92 and the Kings Highway, and the Nerriga to Sandy Point route.

Overall, the Proposal is not expected to have any significant impact on traffic conditions on roads other than MR92 itself due to the generally low traffic volumes involved. However, the Proposal is expected to relieve traffic for other escarpment crossings including the route through Kangaroo Valley via Moss Vale to Nowra, in particular an improvement in travel conditions along this road from the diversion of heavy vehicles to MR92.

The EIS notes that the upgrading of MR92 would create the following travel time savings compared to the existing travel time of around 69 minutes between Nowra and Nerriga:

- 23 minutes saving between Nowra and Canberra on MR92 via Braidwood with the upgrade from Nowra to Nerriga only;
- 33 minutes saving between Nowra and Canberra on MR92 via Braidwood with upgrading of the complete route from Nowra to Braidwood; and
- 39 minutes saving between Nowra and Canberra (via Tarago) with upgrading of the complete route from Nowra to Nerriga and completion of progressive sealing between Nerriga to Sandy Point (resulting in sealed connection to Tarago, Bungendore, Collector and Goulburn).

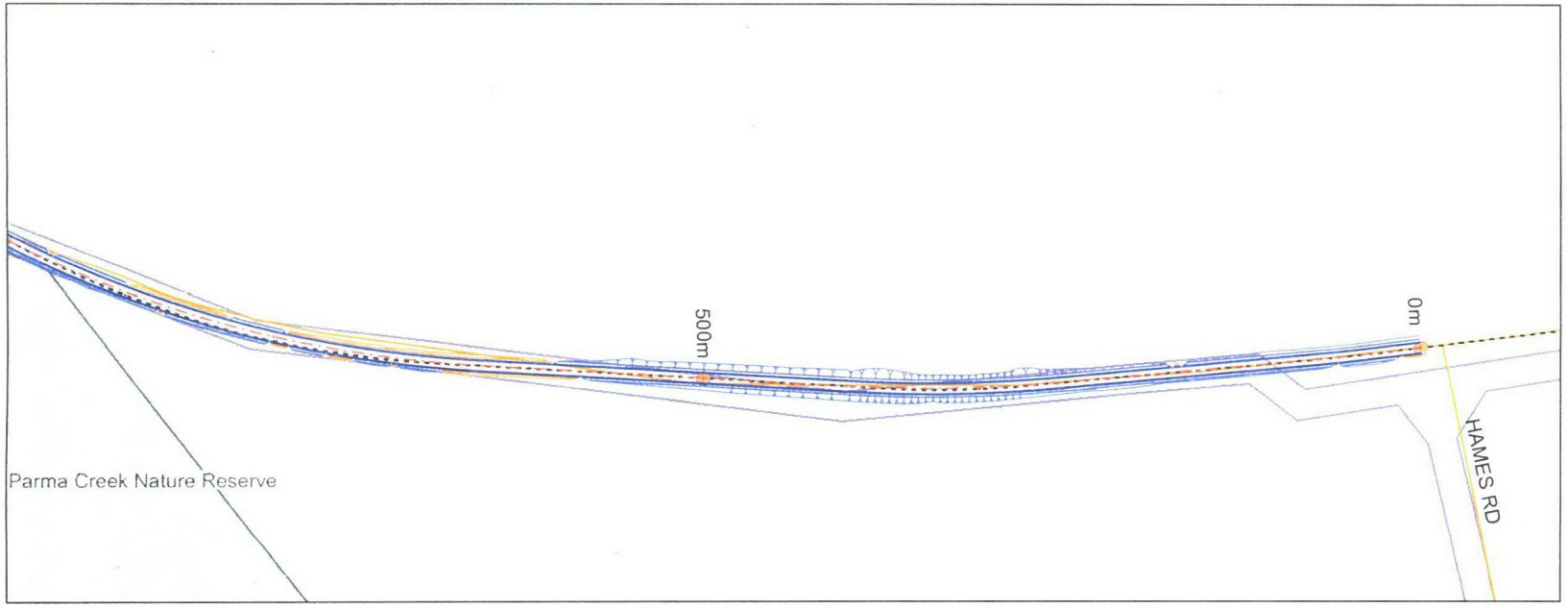
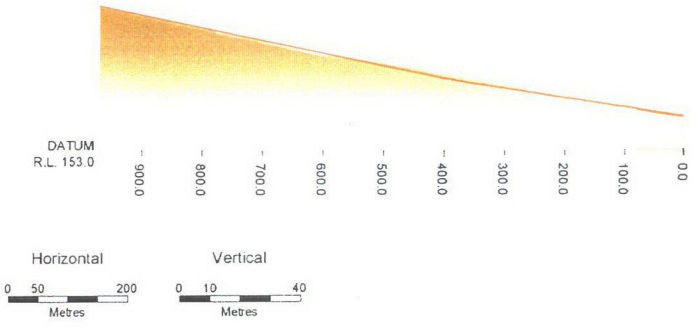


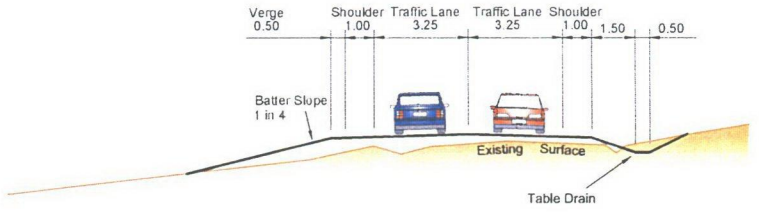
Figure 2.1a
Design and Profile (Chainage 0 - 1000)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge







Typical section for general upgrade on the existing alignment



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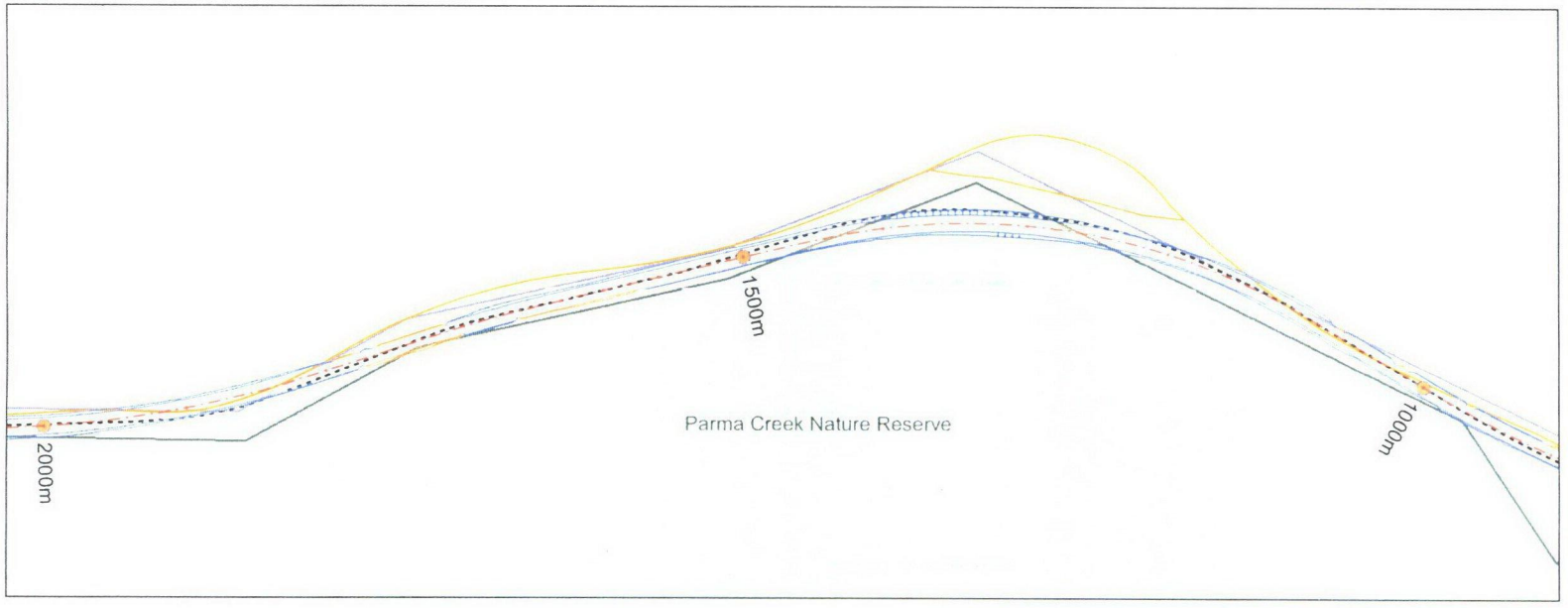
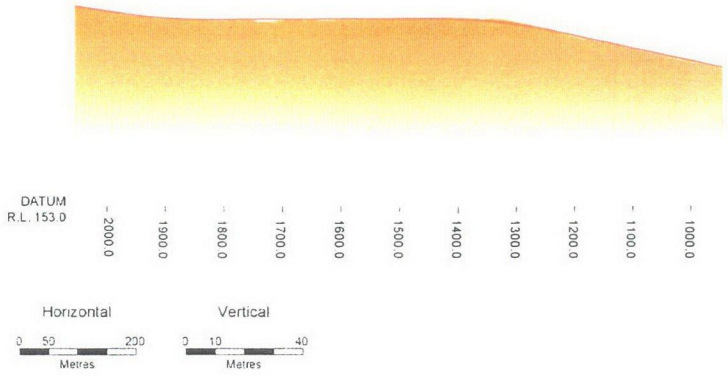
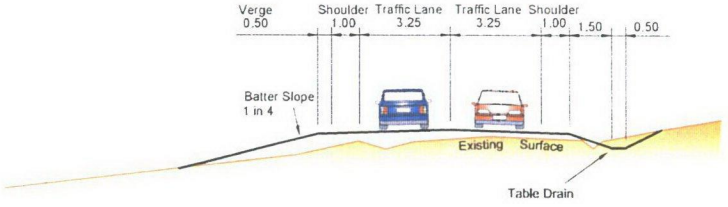
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1b

Design and Profile (Chainage 950 - 2010)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



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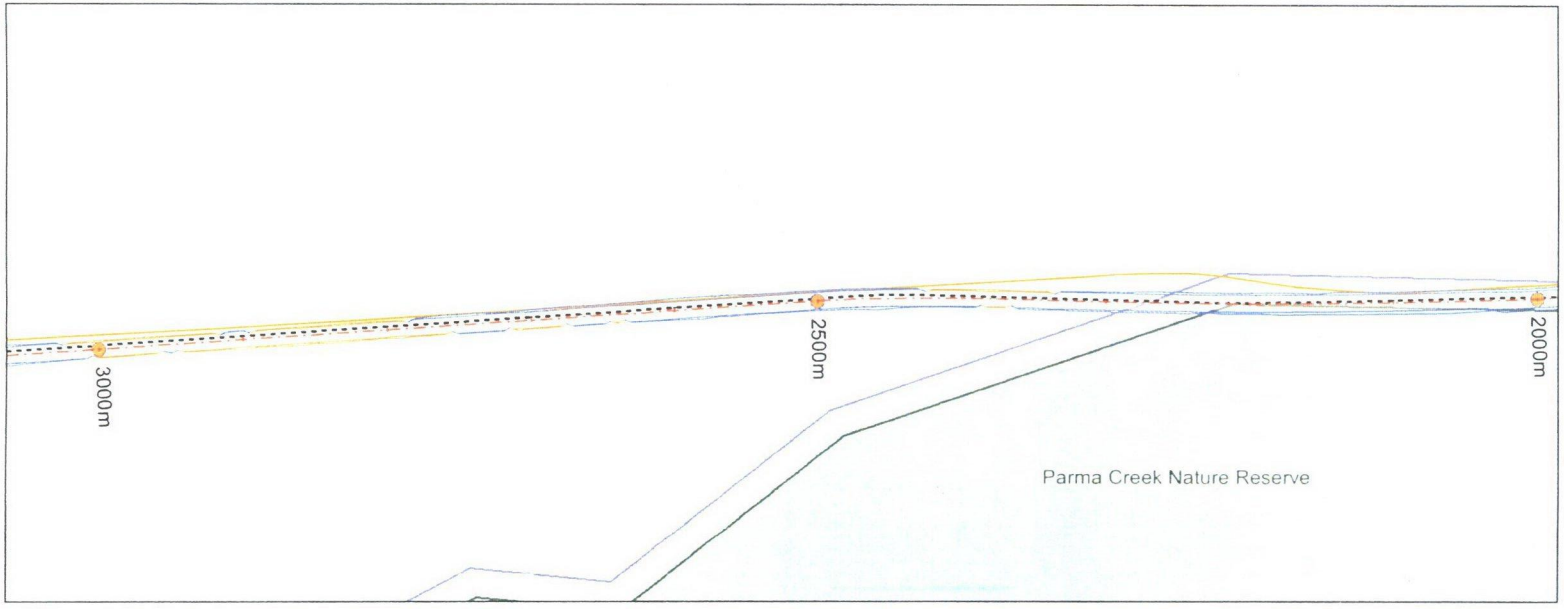
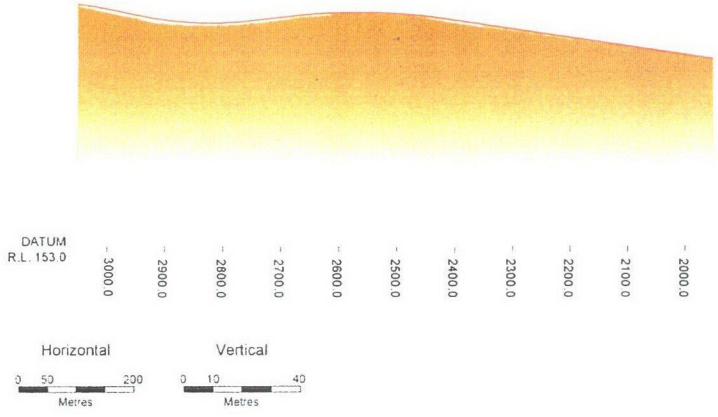
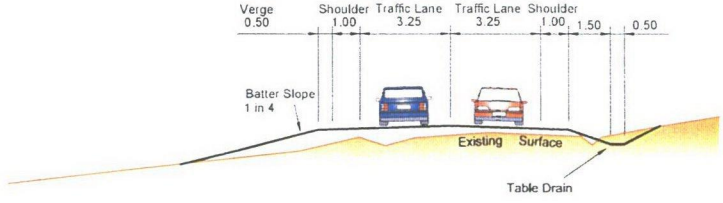
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1c

Design and Profile (Chainage 1990 - 3050)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



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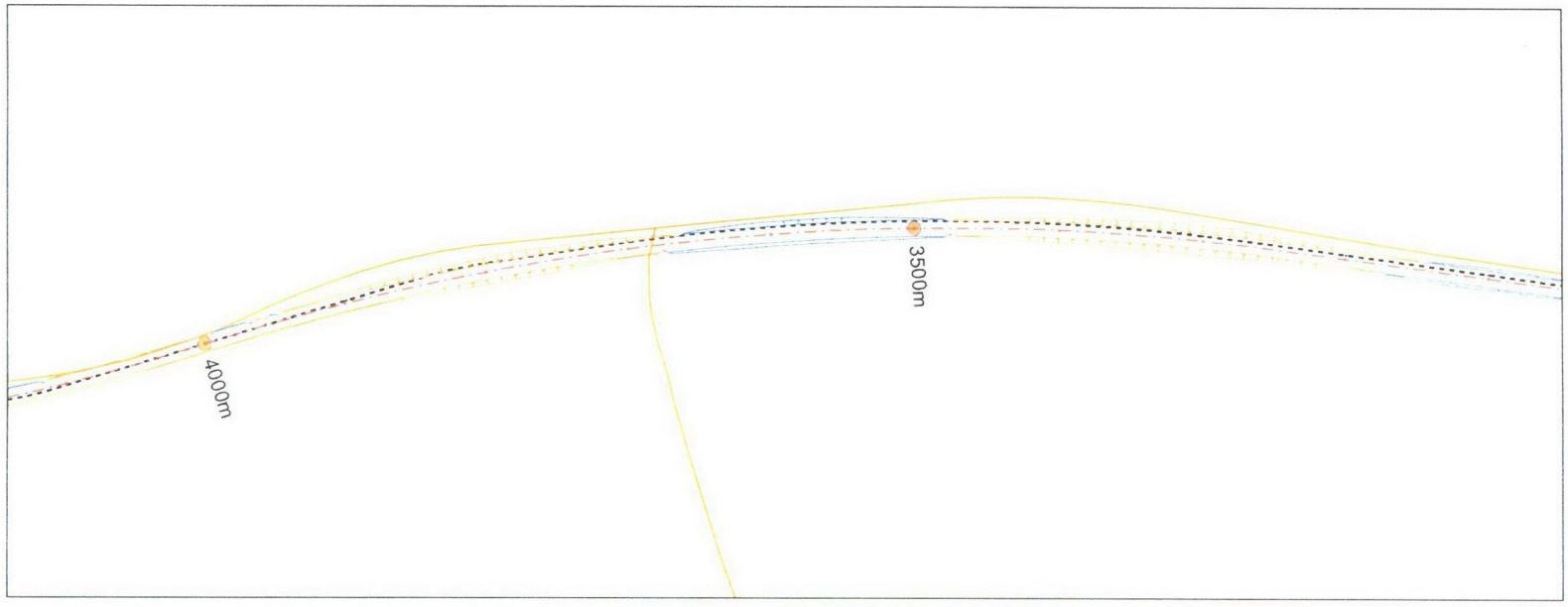
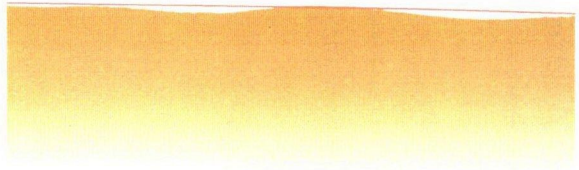
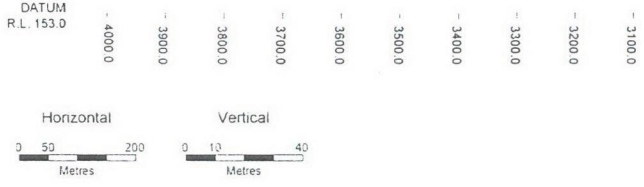
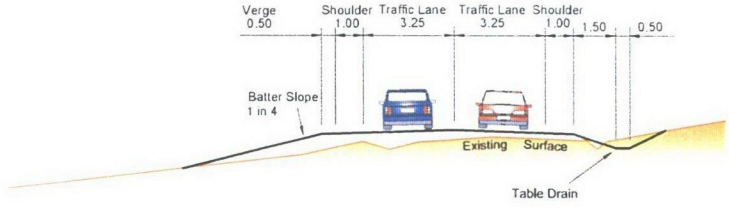
0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ









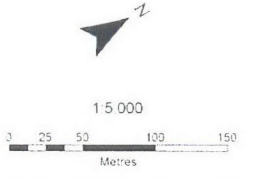
Typical section for general upgrade on the existing alignment

Figure 2.1d
Design and Profile (Chainage 3050 - 4150)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge





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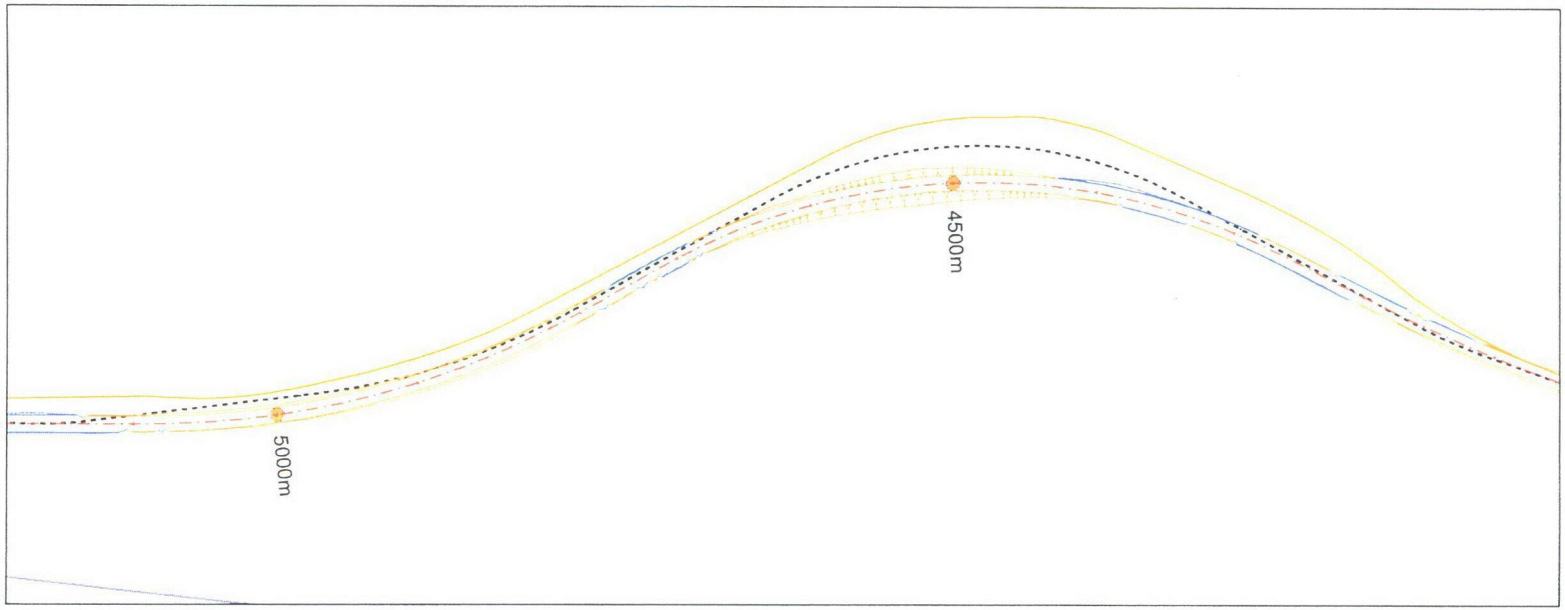

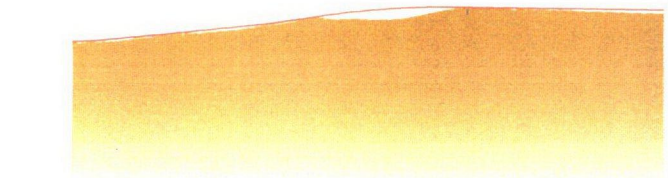

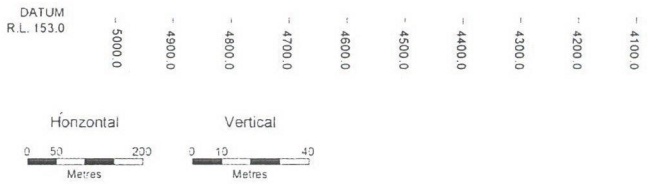

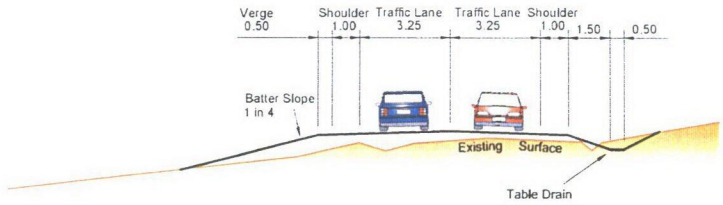

Typical section for general upgrade on the existing alignment

Figure 2.1e

Design and Profile (Chainage 4050 - 5170)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



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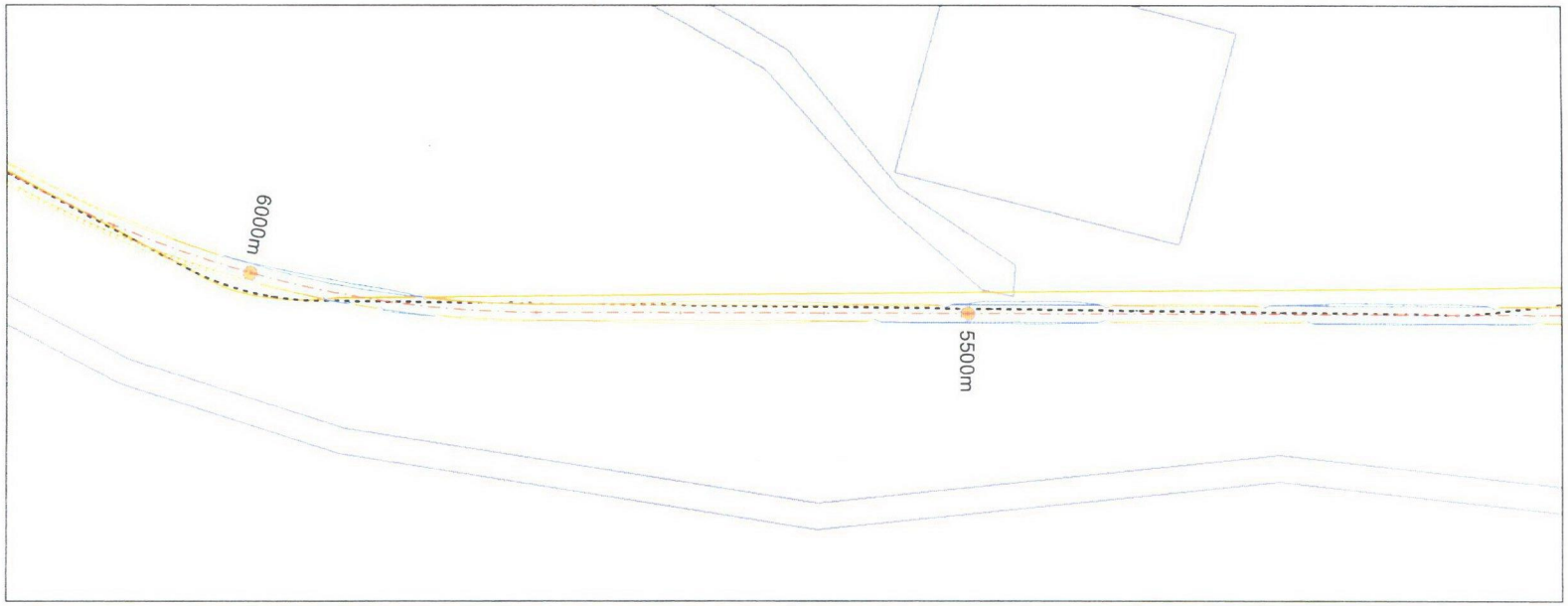
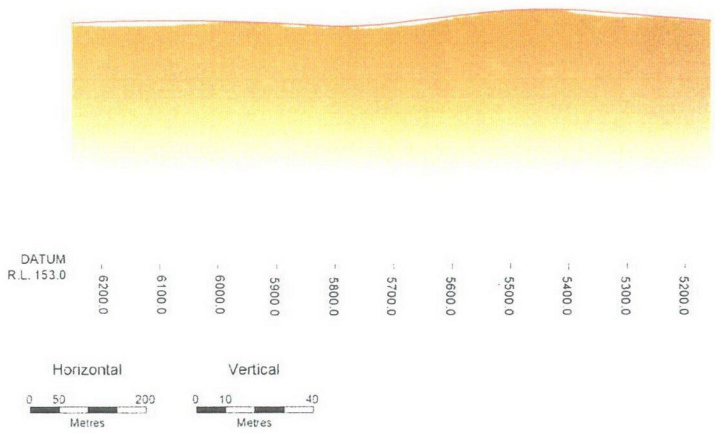
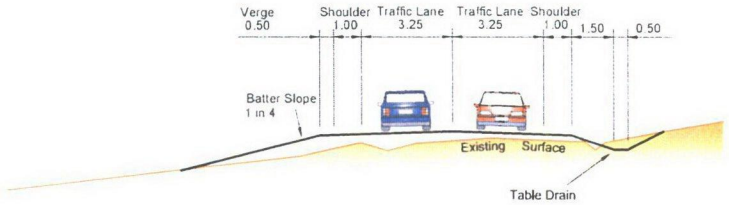
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1f

Design and Profile (Chainage 5180 - 6200)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



N

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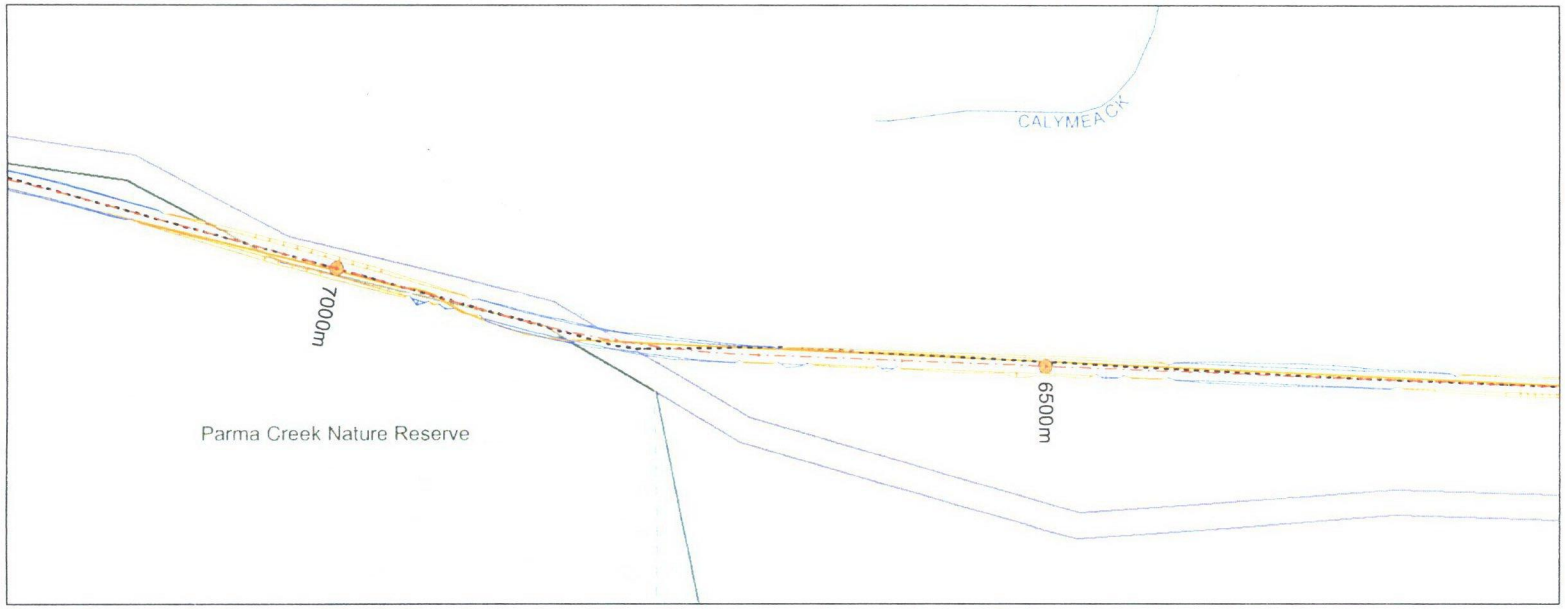
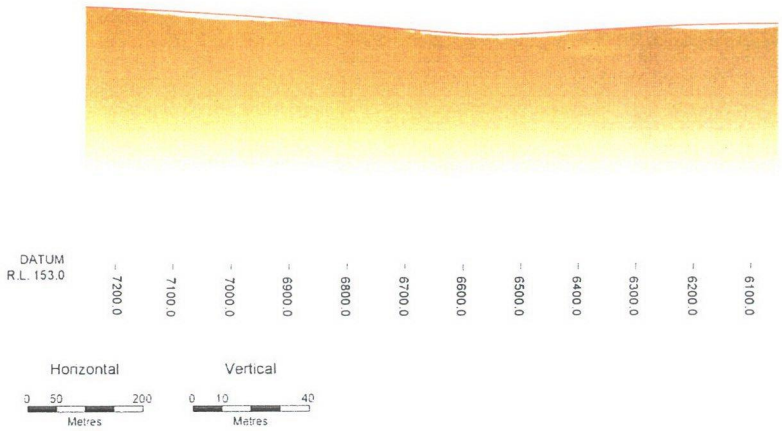
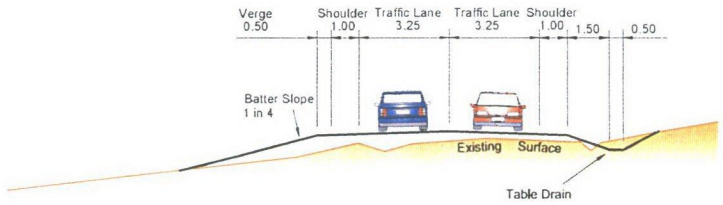
0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1g

Design and Profile (Chainage 5920 - 7220)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



N

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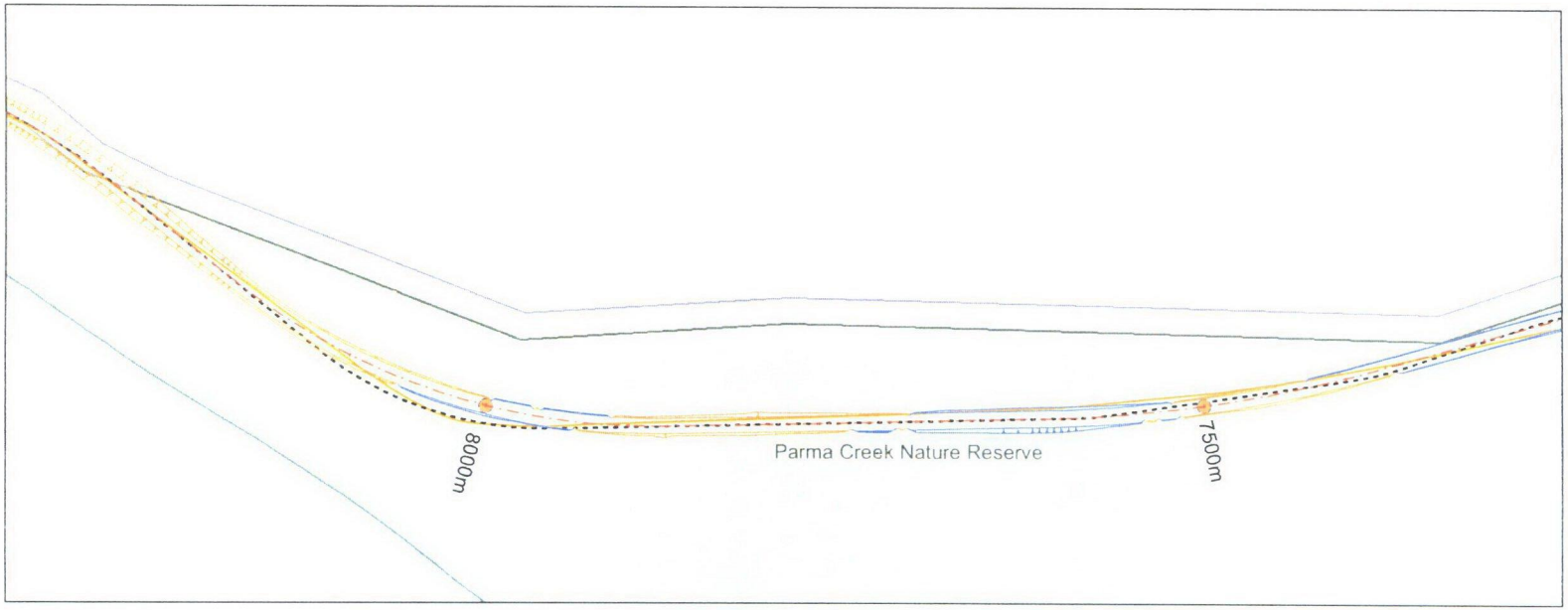
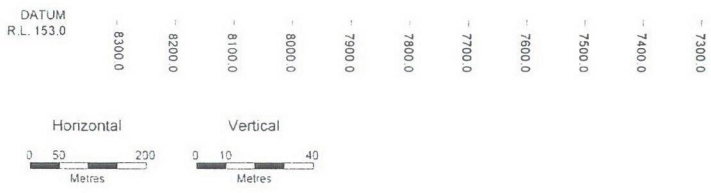
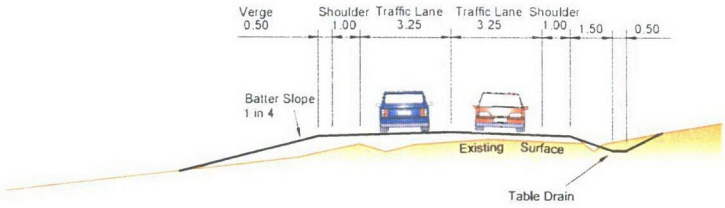
0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ









Typical section for general upgrade on the existing alignment

Figure 2.1h

Design and Profile (Chainage 7240 - 8360)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge





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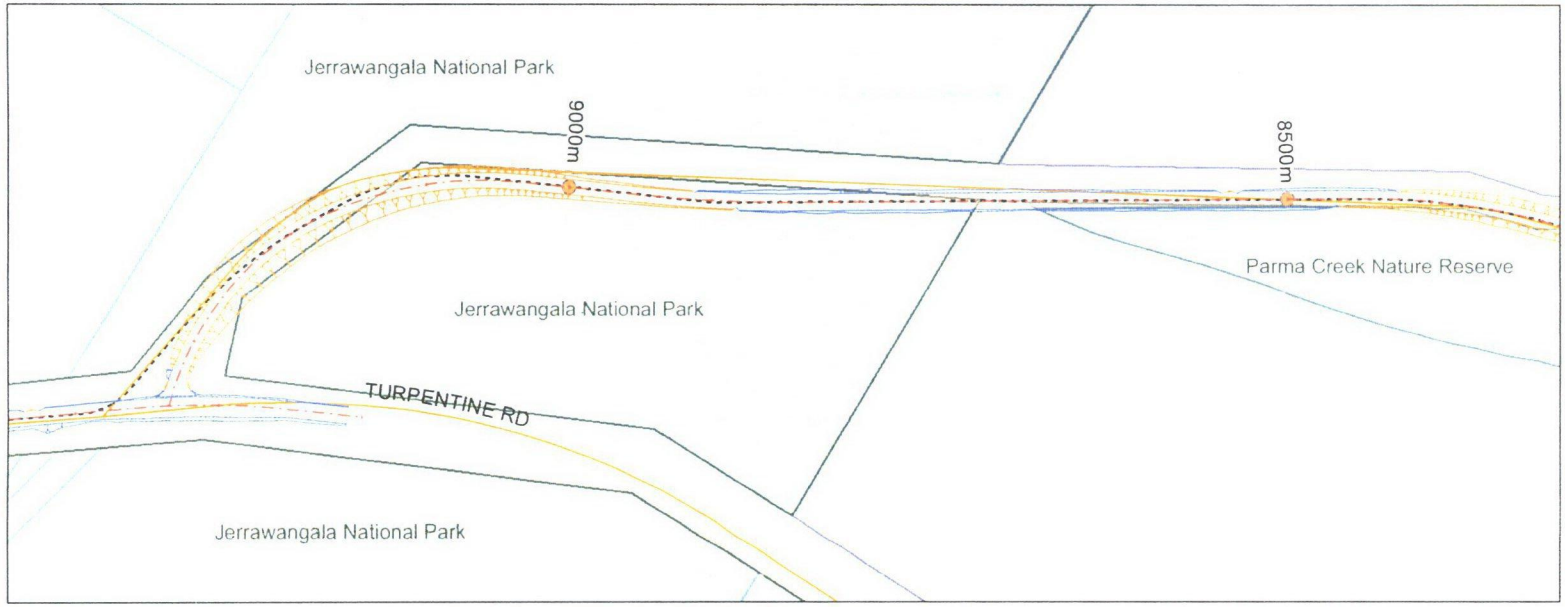
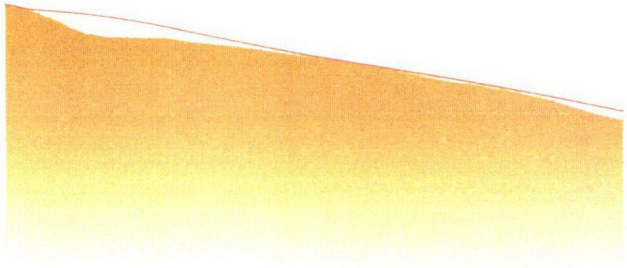
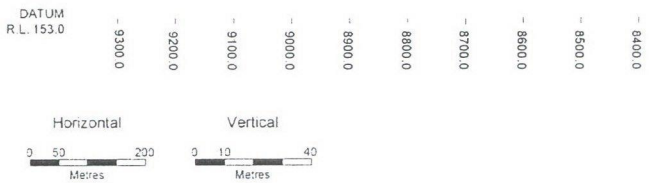
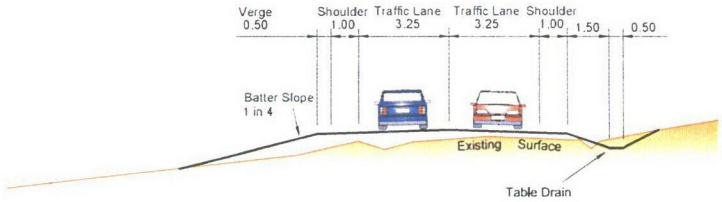
SINCLAIR KNIGHT MERZ









Typical section for general upgrade on the existing alignment

Figure 2.1i

Design and Profile (Chainage 8320 - 9380)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



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0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ

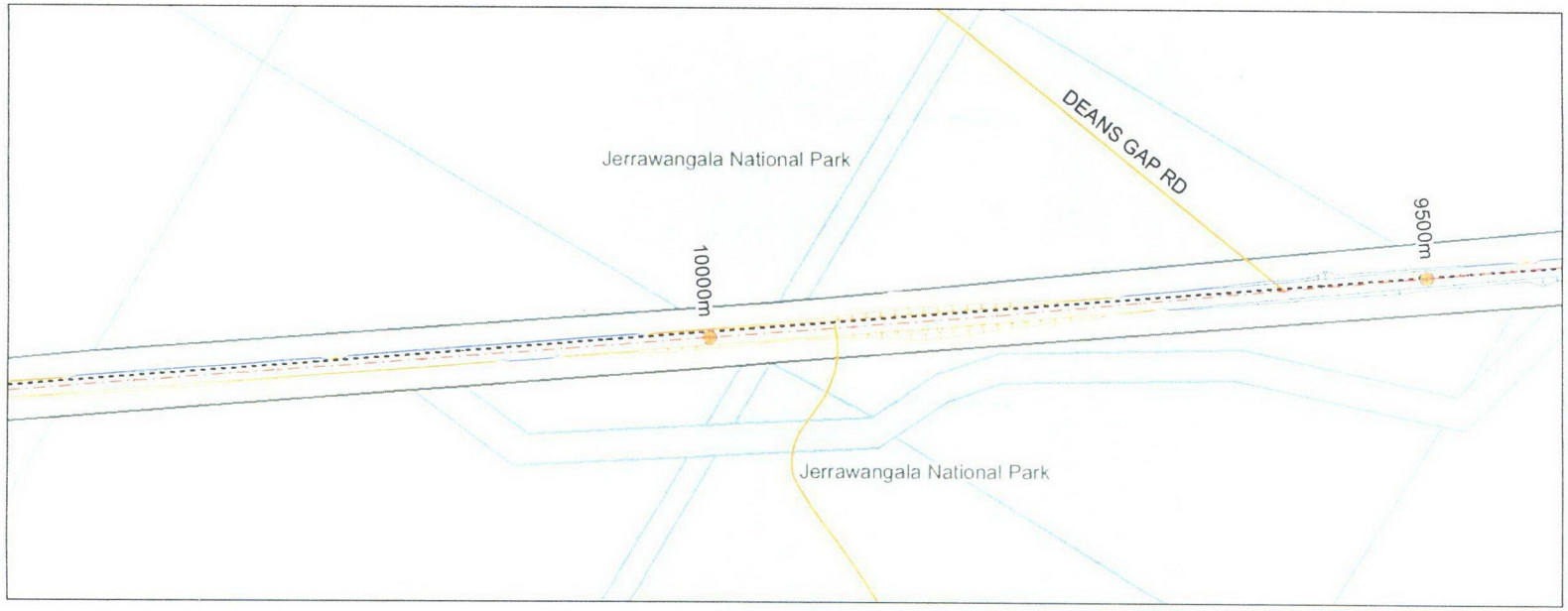
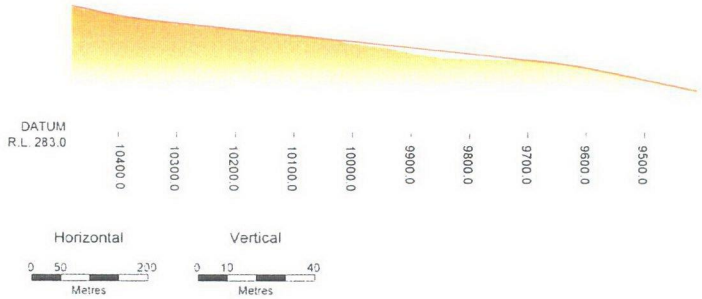


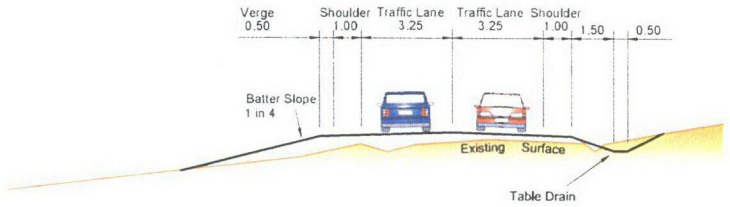
Figure 2.1j
Design and Profile (Chainage 9420 - 10480)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge







Typical section for general upgrade on the existing alignment



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0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ

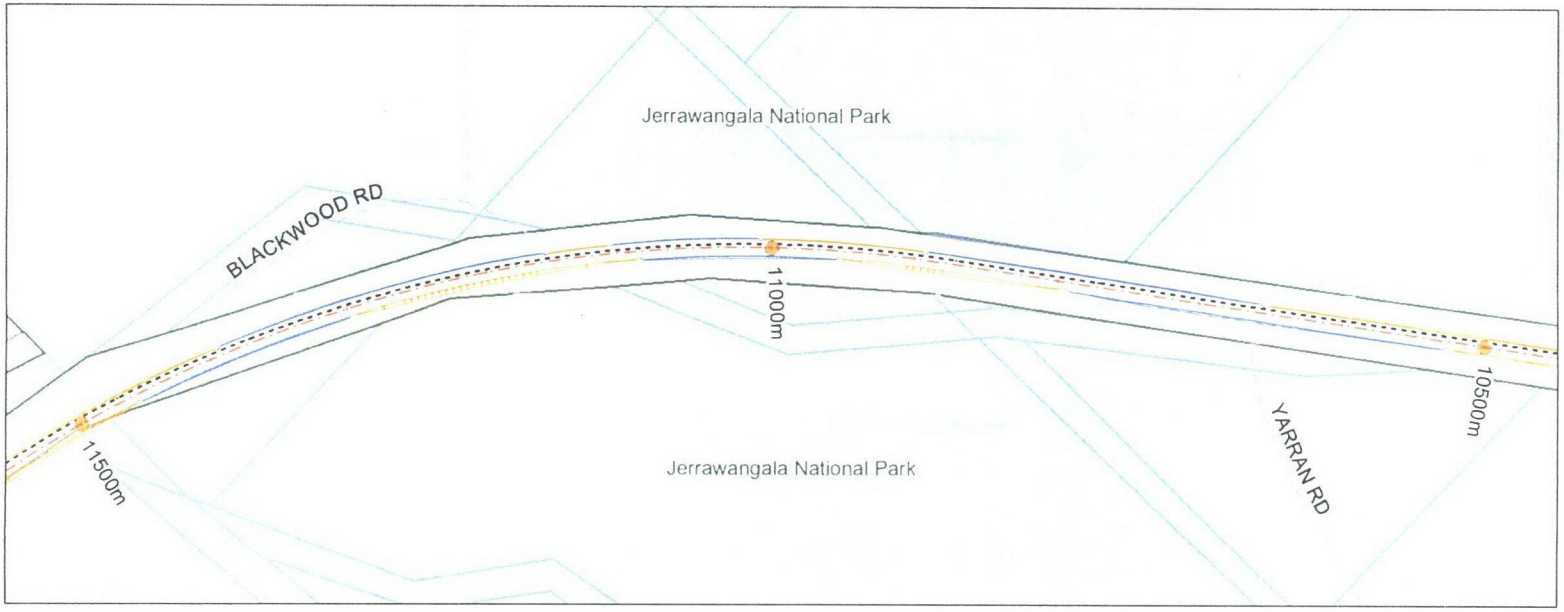
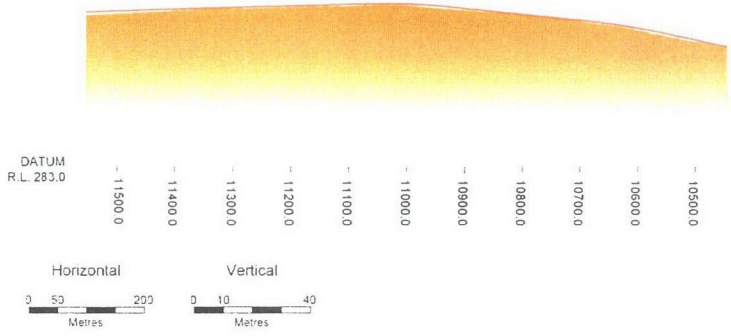


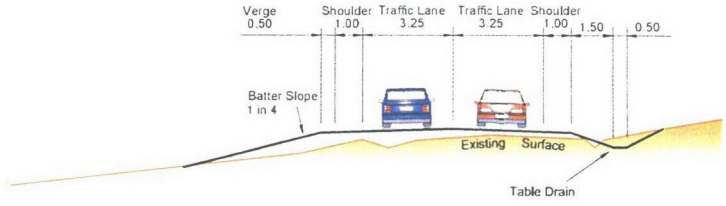
Figure 2.1k
Design and Profile (Chainage 10450 - 11550)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge







Typical section for general upgrade on the existing alignment

N

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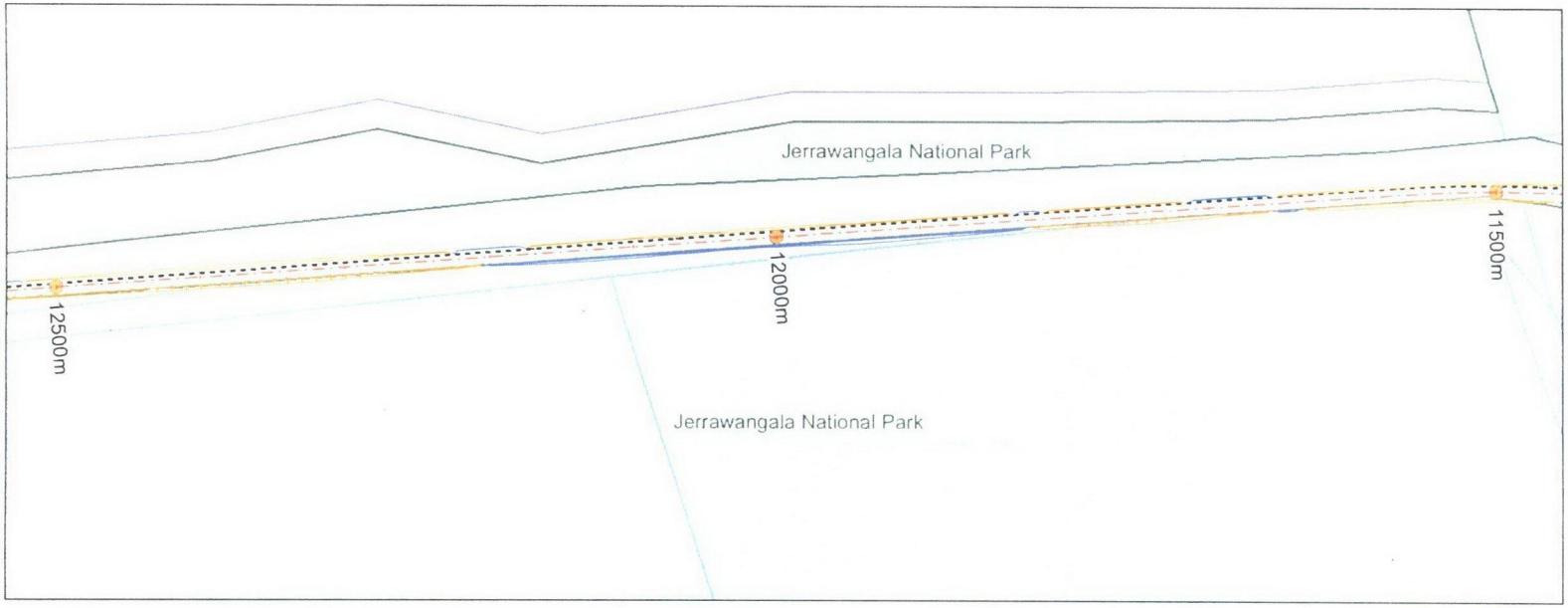
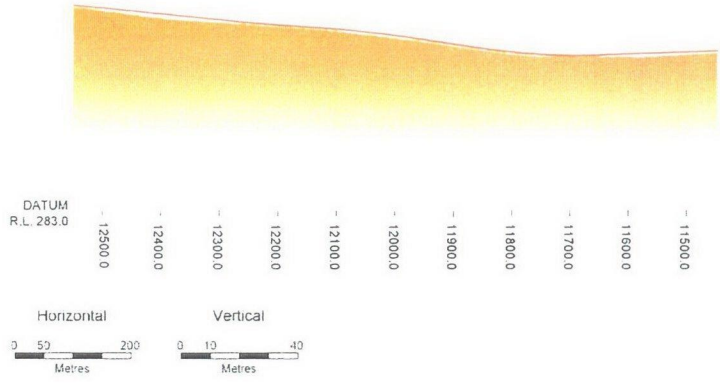
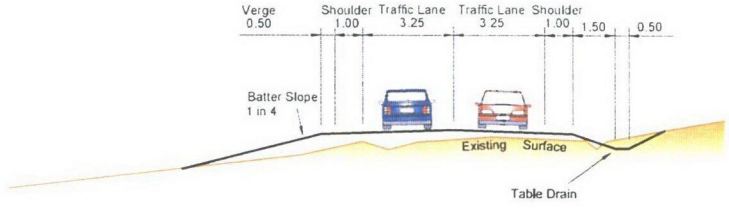
0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1l
Design and Profile (Chainage 11470 - 12520)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



N

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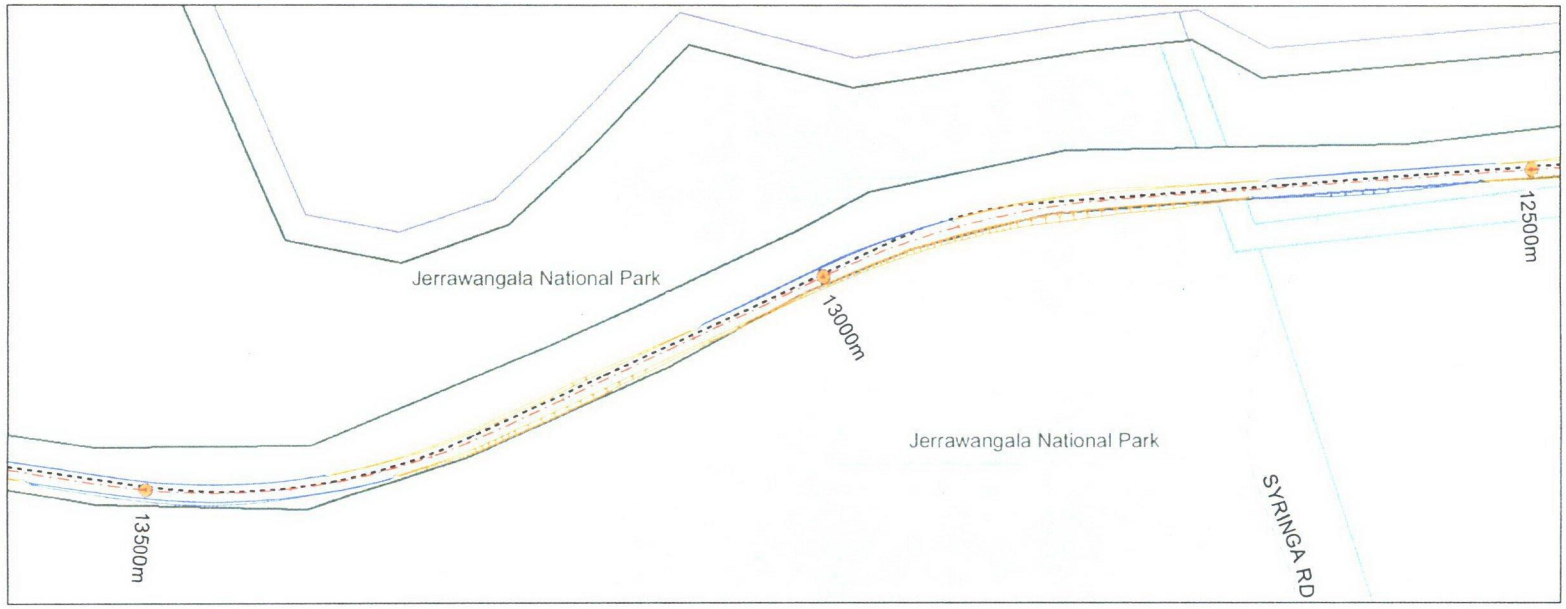
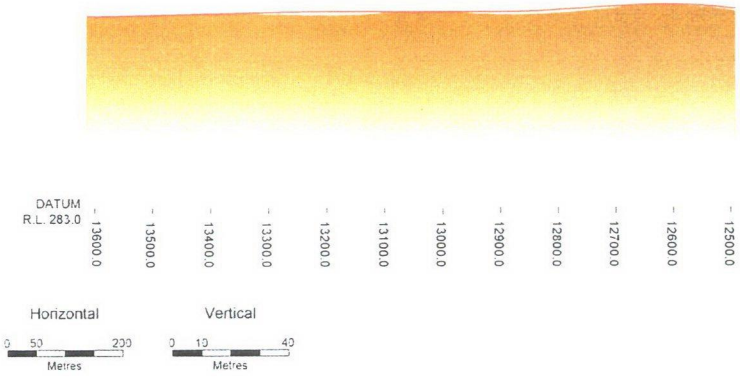
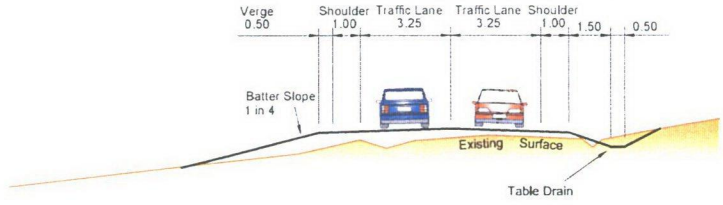
0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1m

Design and Profile (Chainage 12500 - 13605)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



N

1:5,000

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ

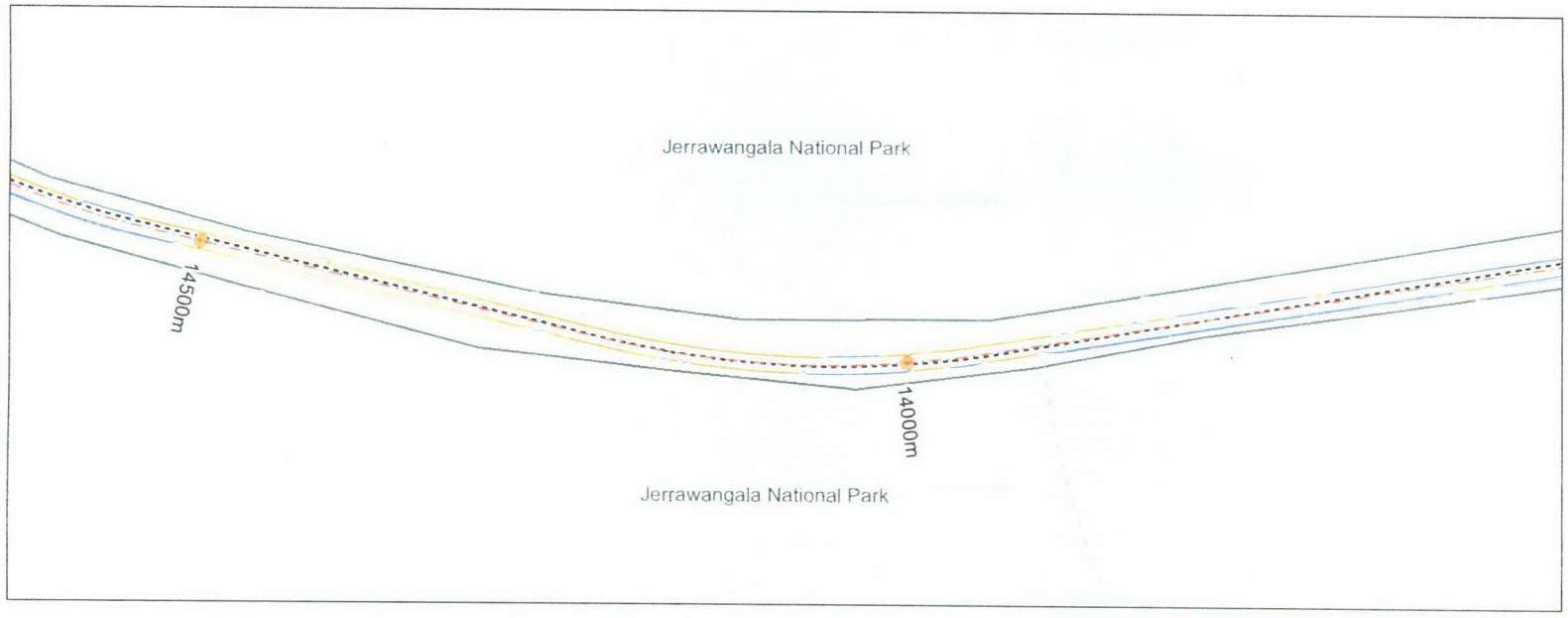
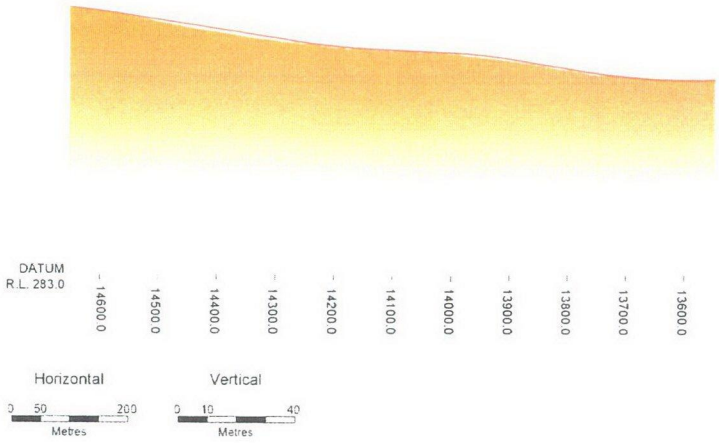


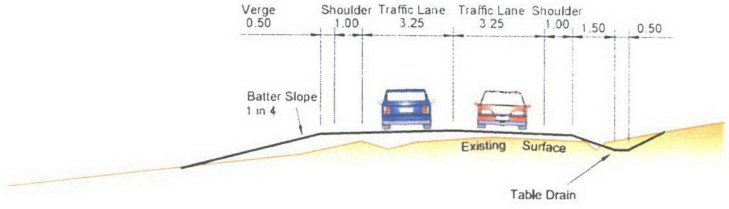
Figure 2.1n
Design and Profile (Chainage 13550 - 14650)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge







Typical section for general upgrade on the existing alignment

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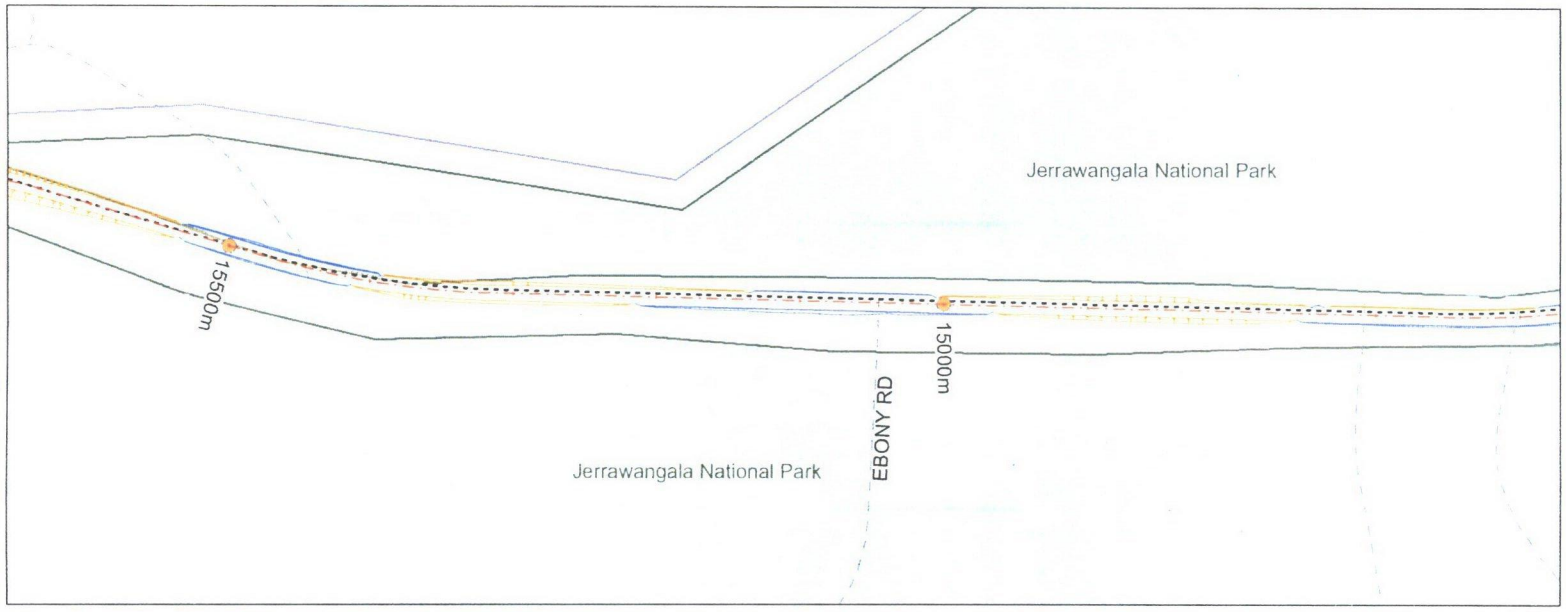
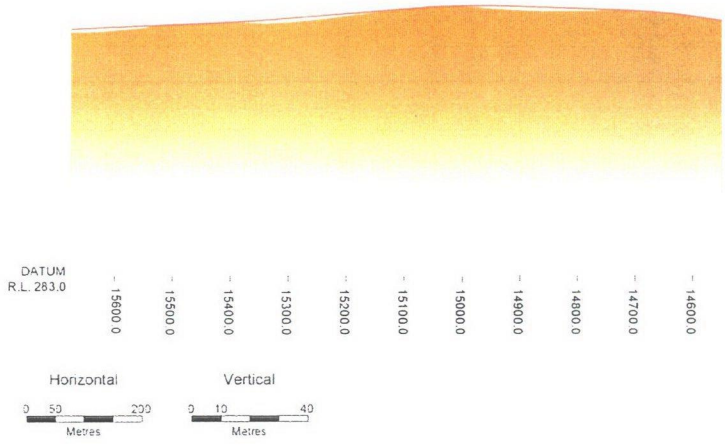
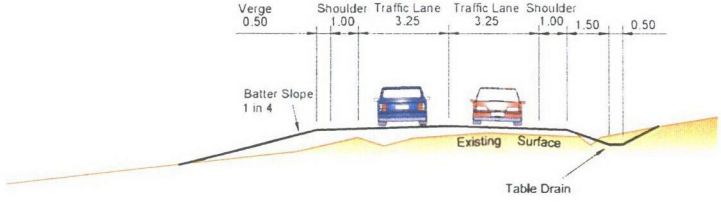
0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1o
Design and Profile (Chainage 14580 - 15660)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

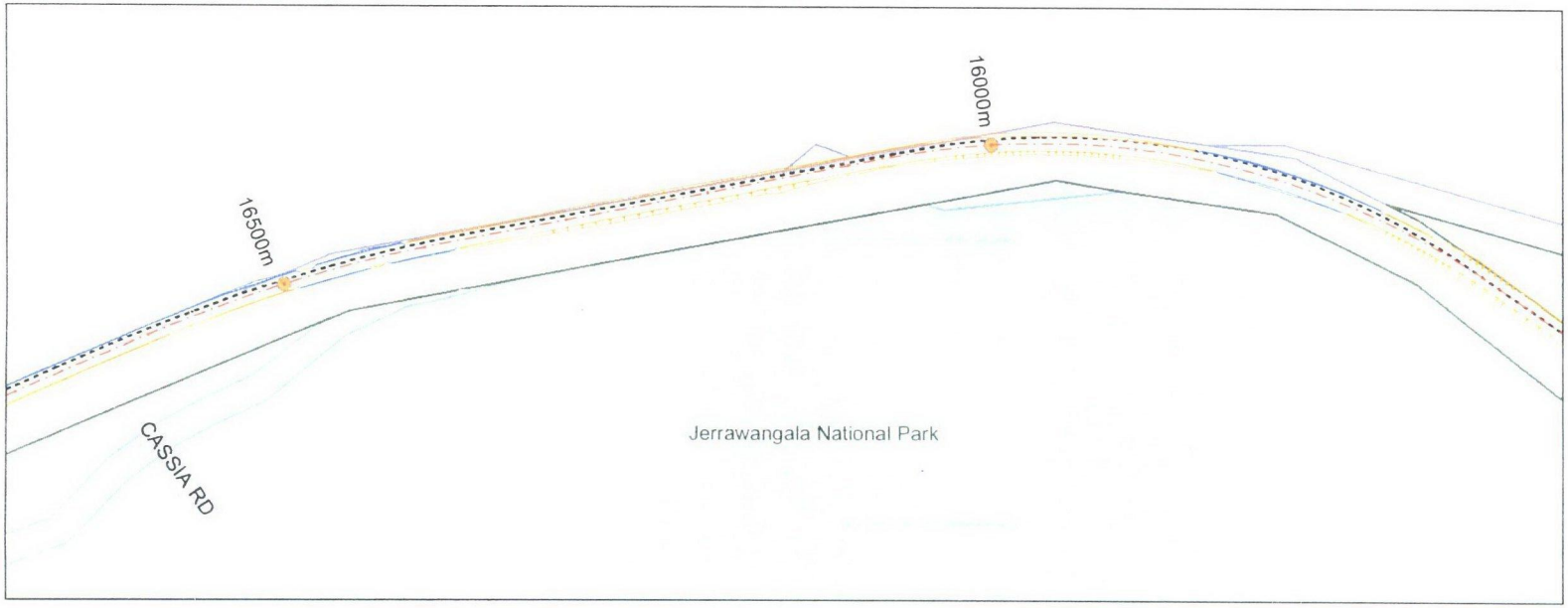


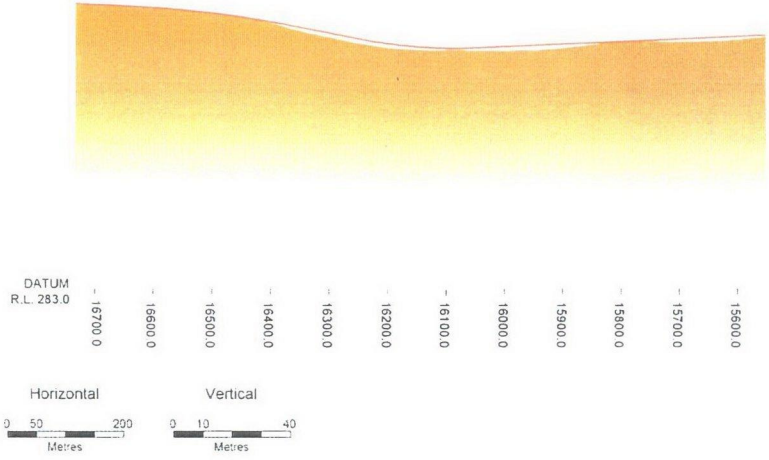
N

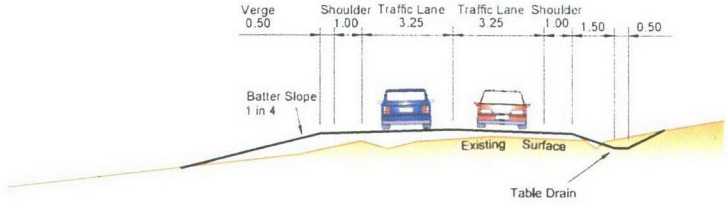
1:5,000

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1p

Design and Profile (Chainage 15570 - 16720)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

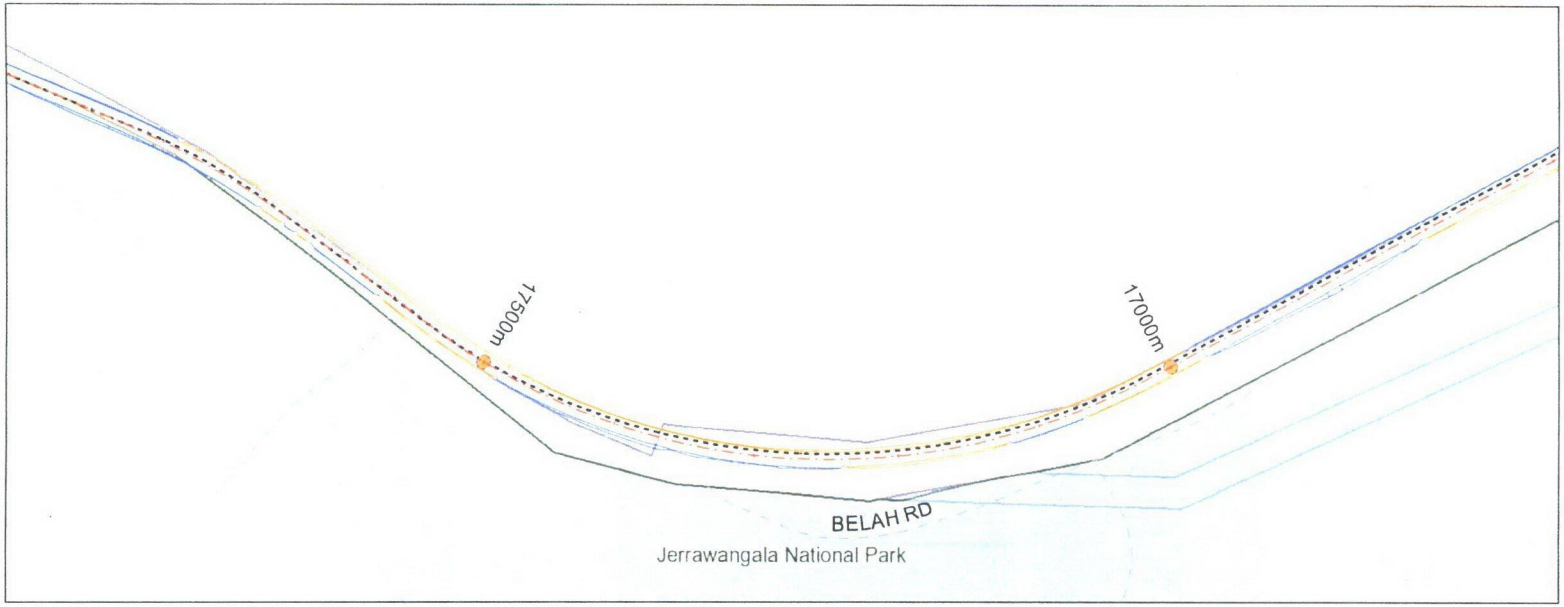


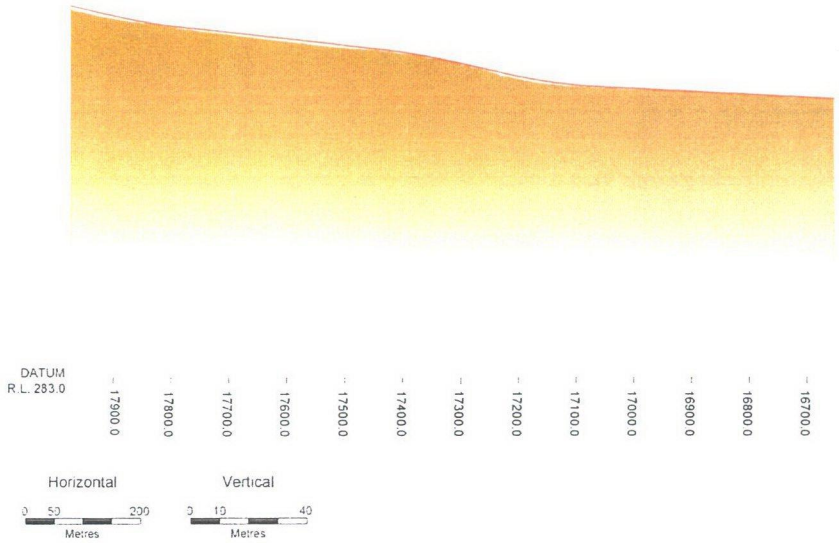


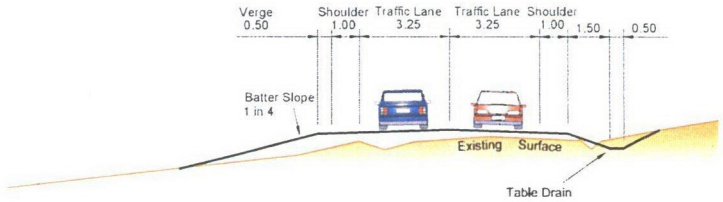
1:5,000

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ







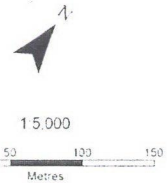
Typical section for general upgrade on the existing alignment

Figure 2.1q
Design and Profile (Chainage 16700 - 17890)

Legend

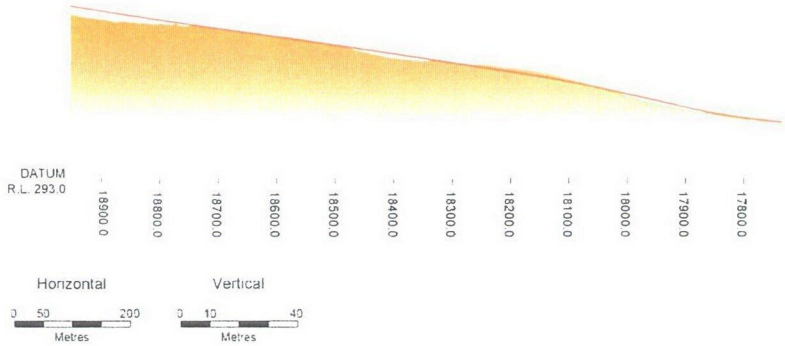
- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

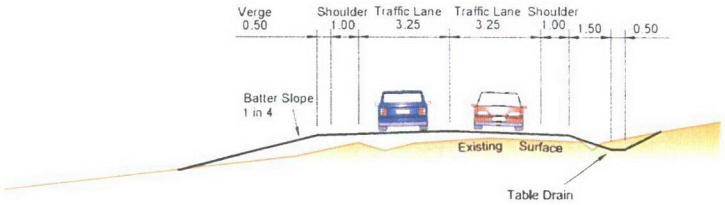




SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1r

Design and Profile (Chainage 17800 - 18900)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



N

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0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ

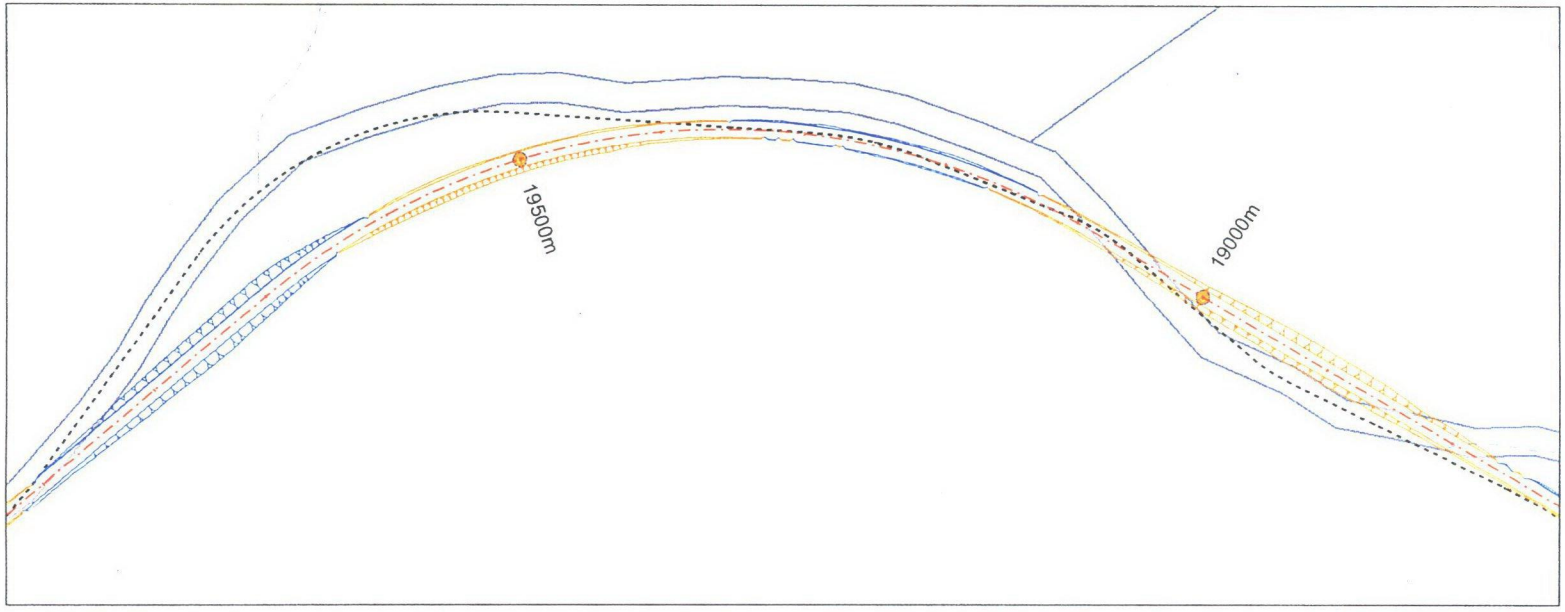
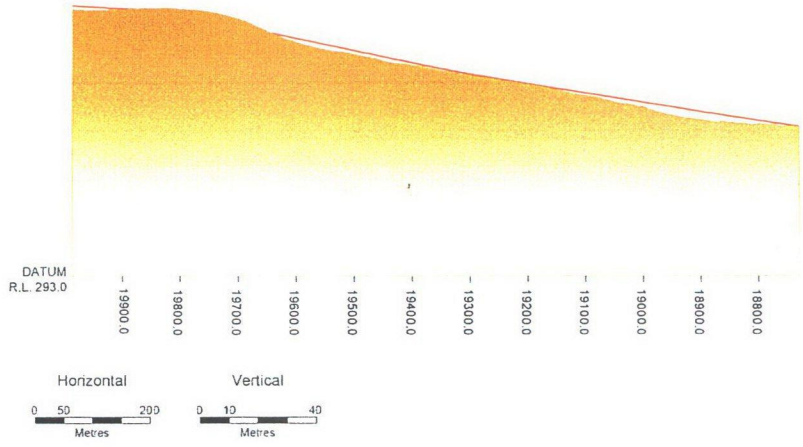


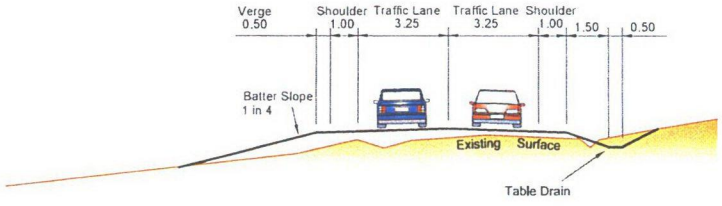
Figure 2.1s
Design and Profile (Chainage 18740 - 19980)

Legend

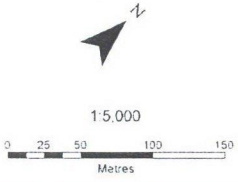
- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



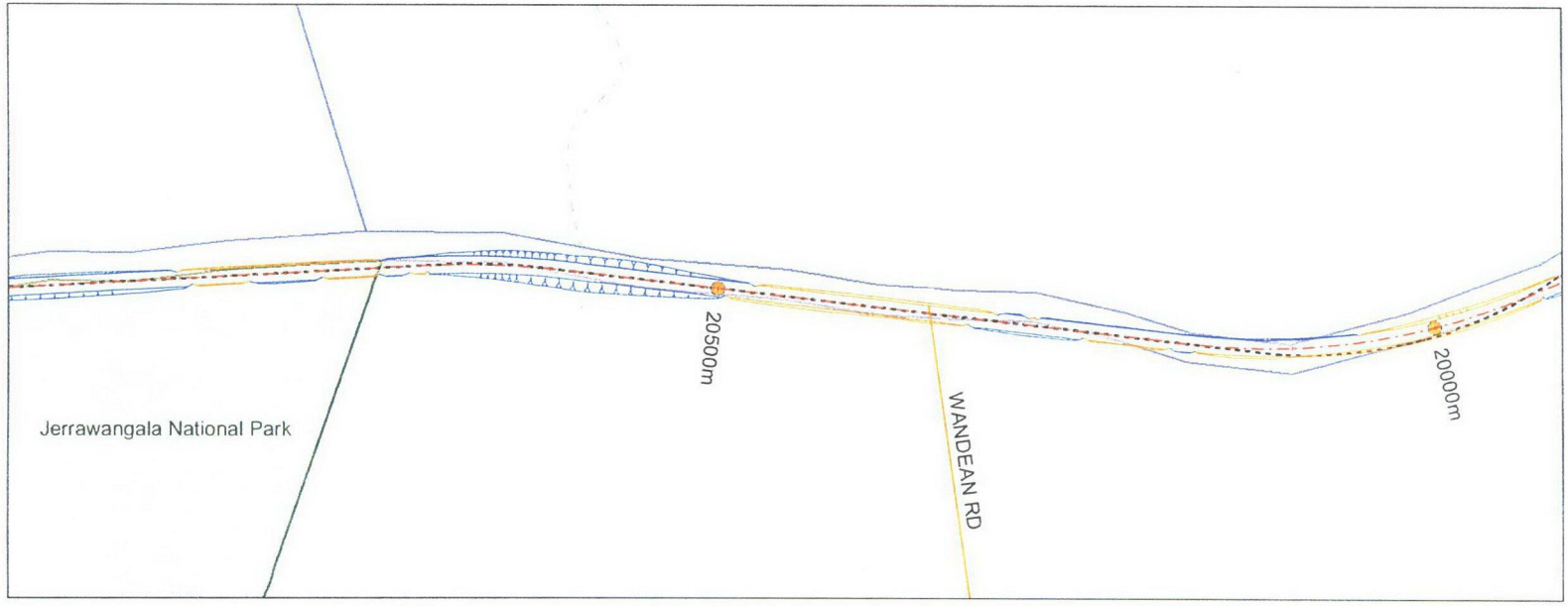


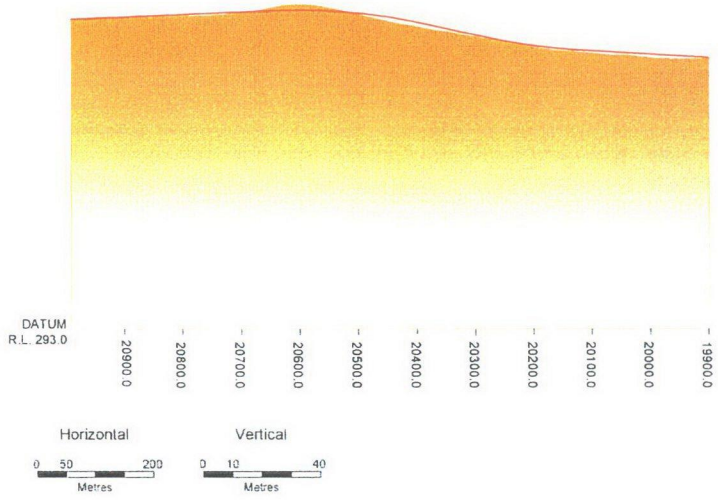


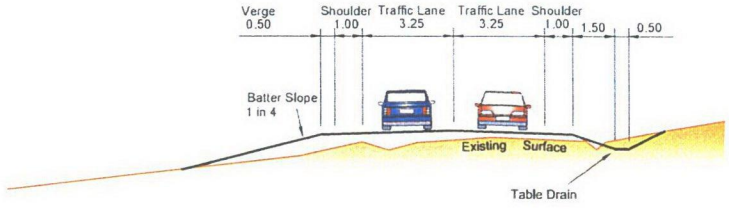
Typical section for general upgrade on the existing alignment



SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1t

Design and Profile (Chainage 19900 - 20990)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

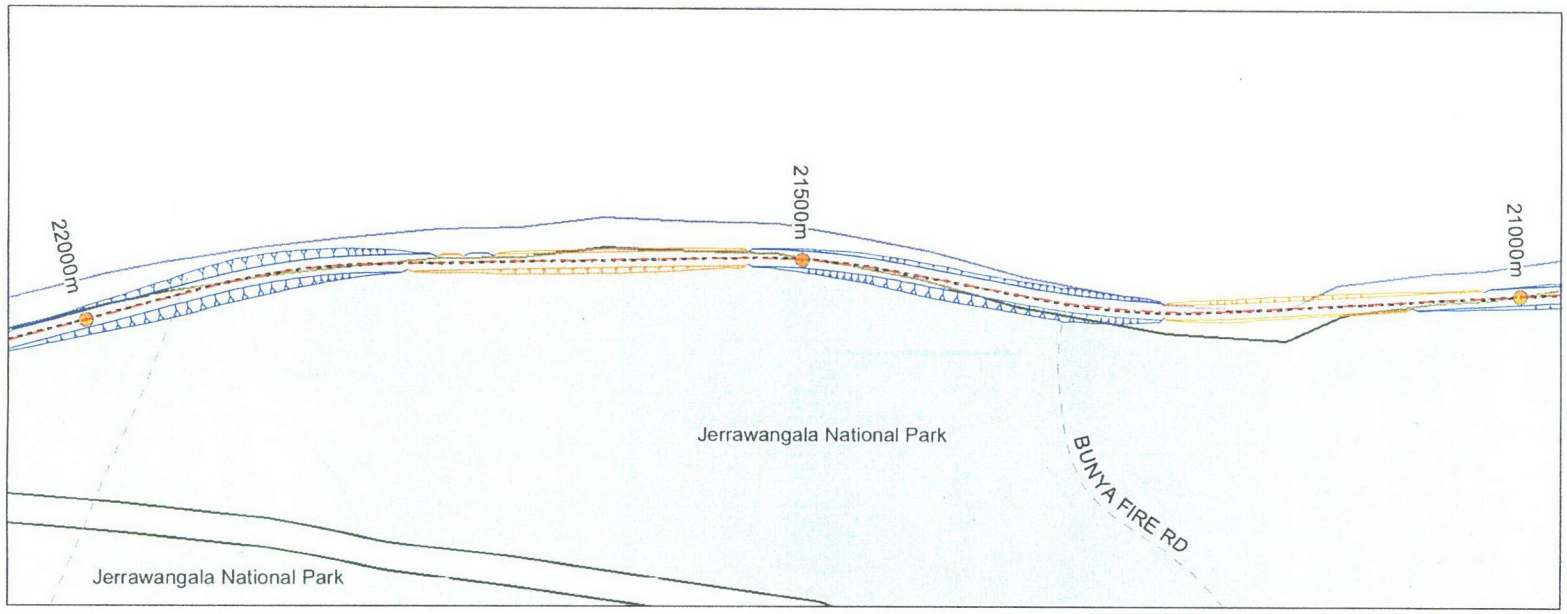


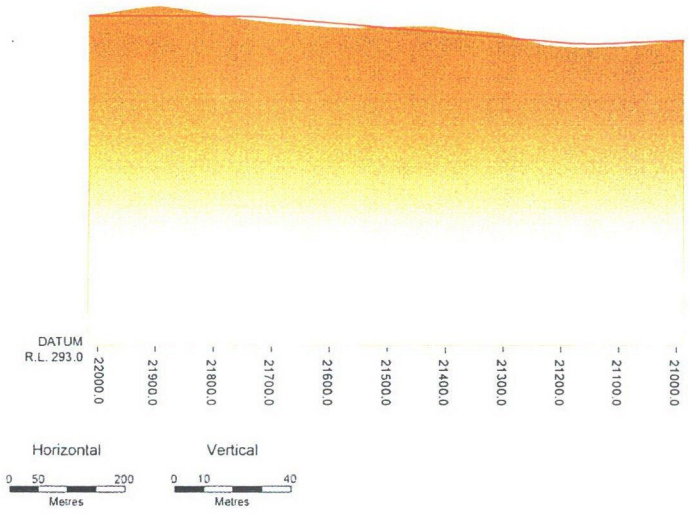
N

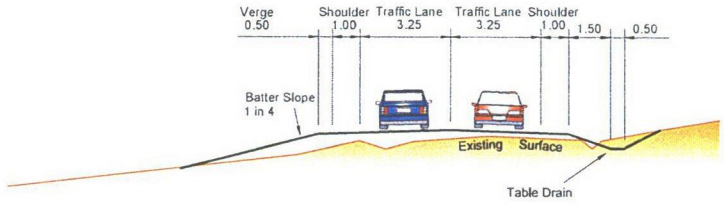
1:5,000

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1u

Design and Profile (Chainage 21095 - 22020)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

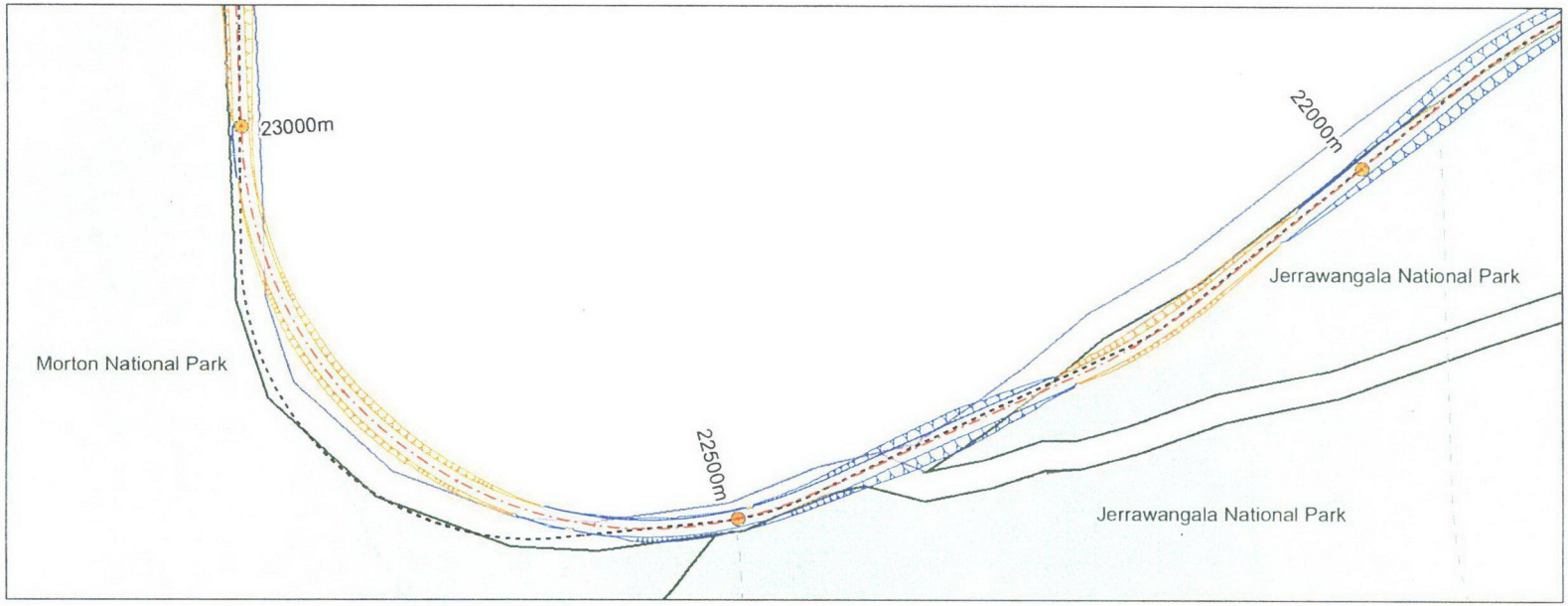


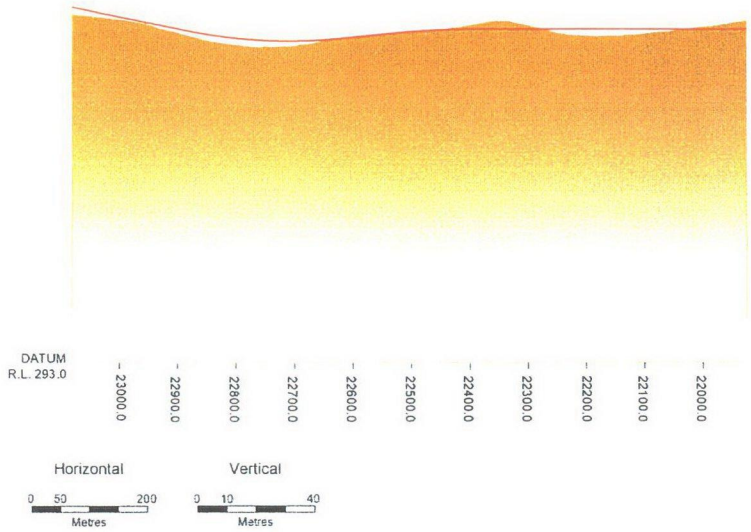
N

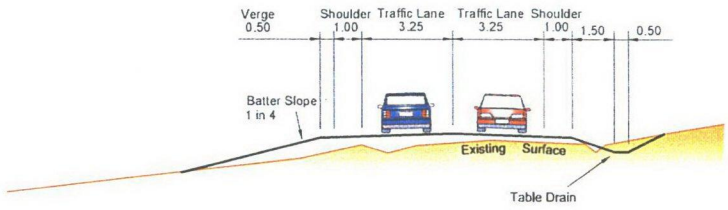
1:5,000

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1v

Design and Profile (Chainage 21820 - 23080)

Legend

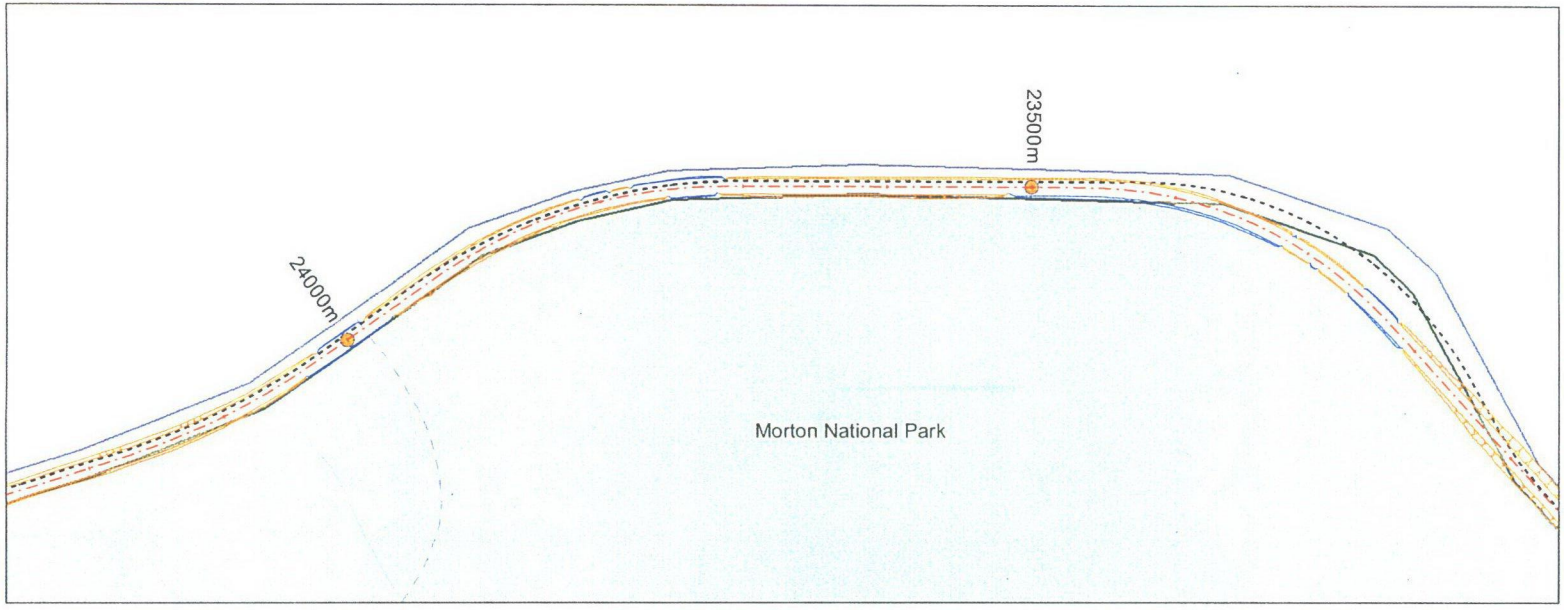
- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

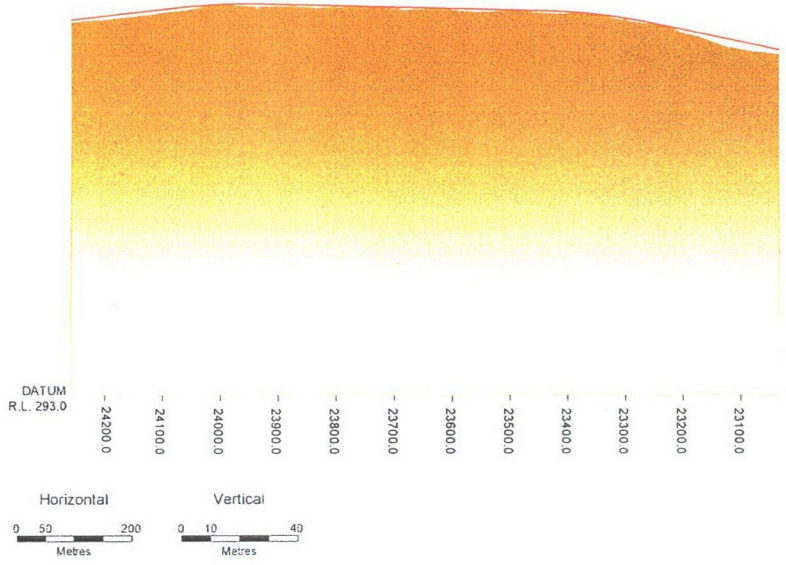


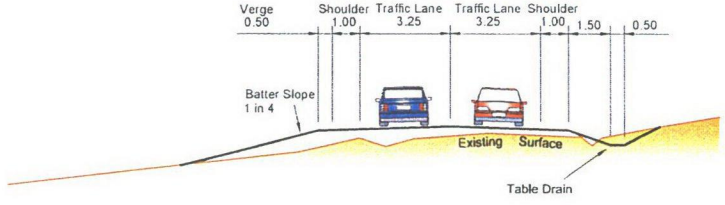
1:5,000

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1w

Design and Profile (Chainage 23040 - 24250)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

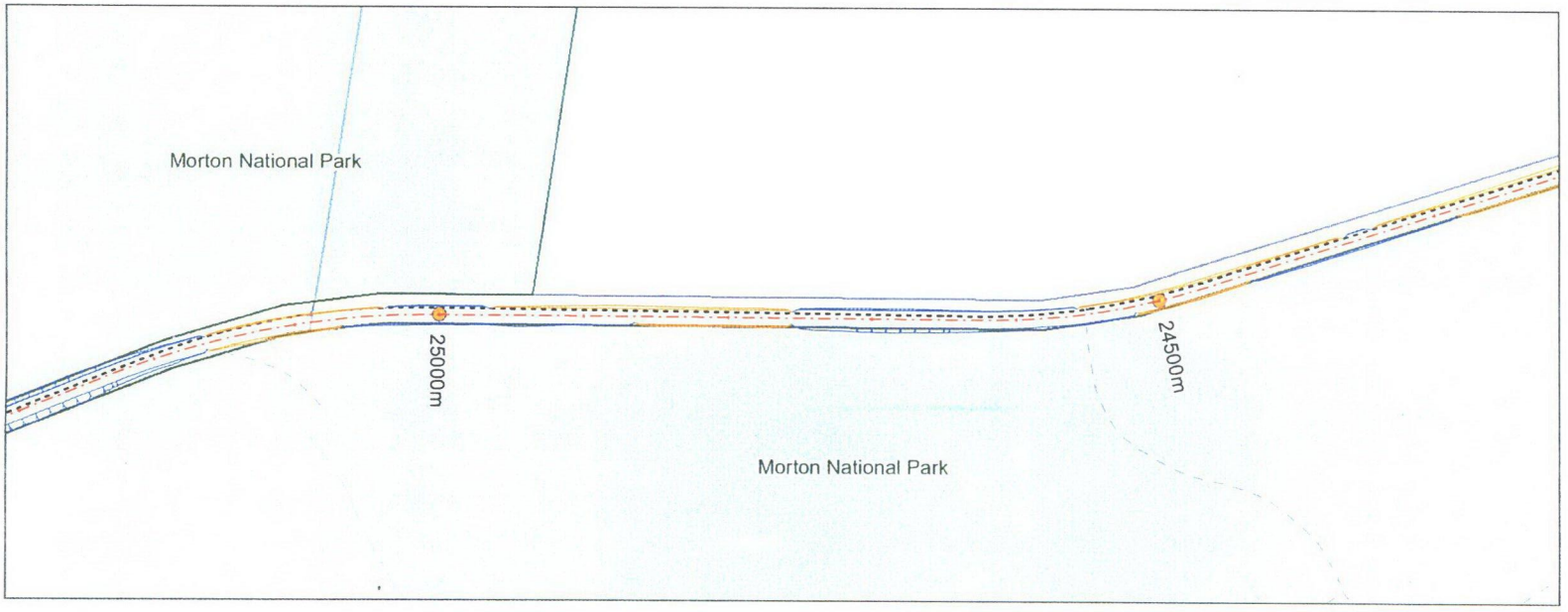


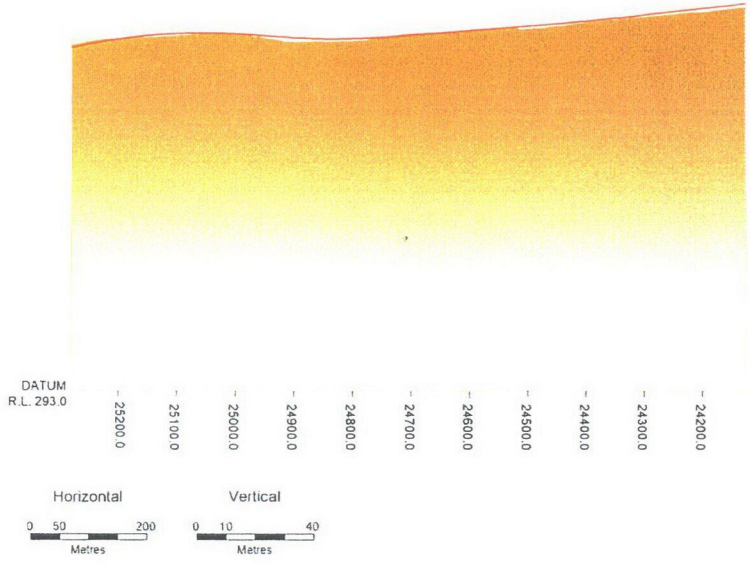
N

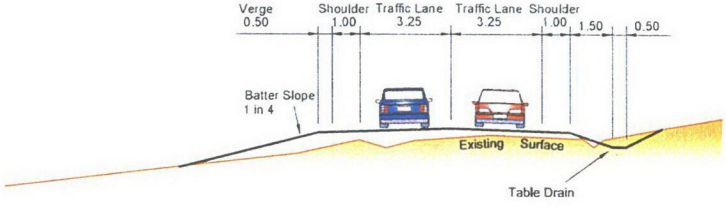
1:5,000

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1x

Design and Profile (Chainage 24210 - 25310)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



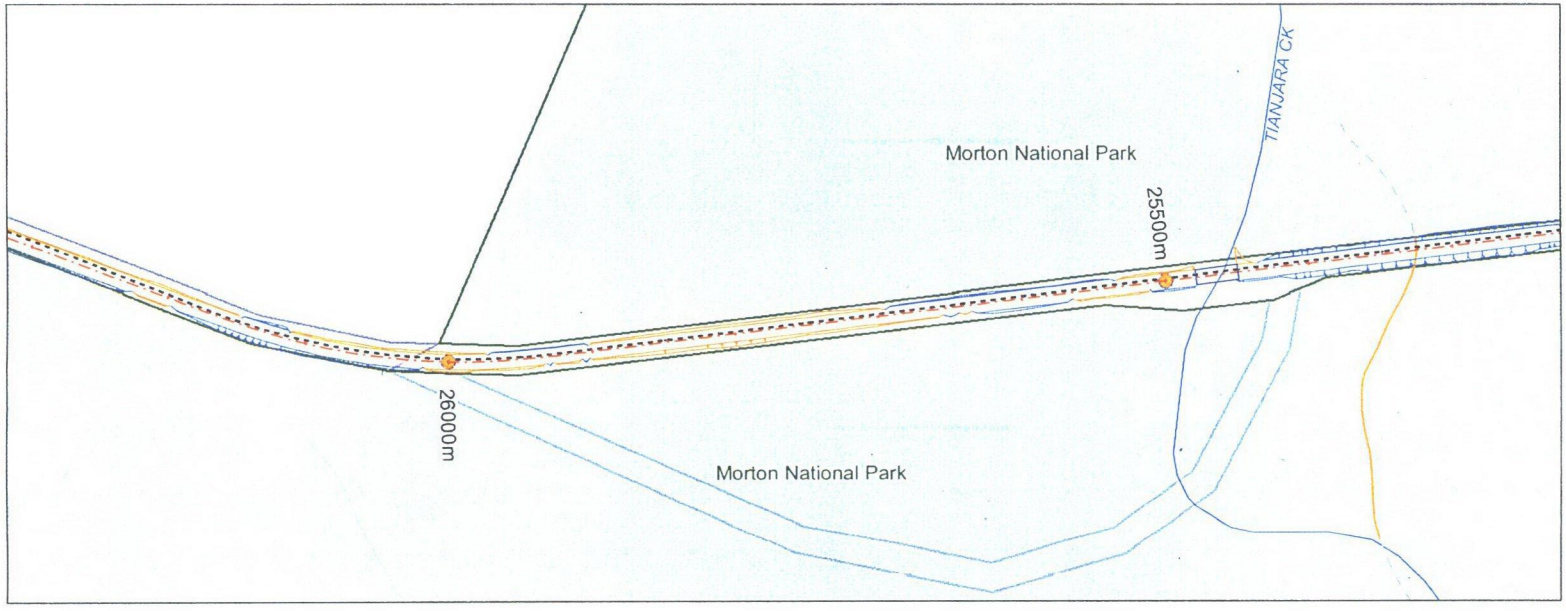
N

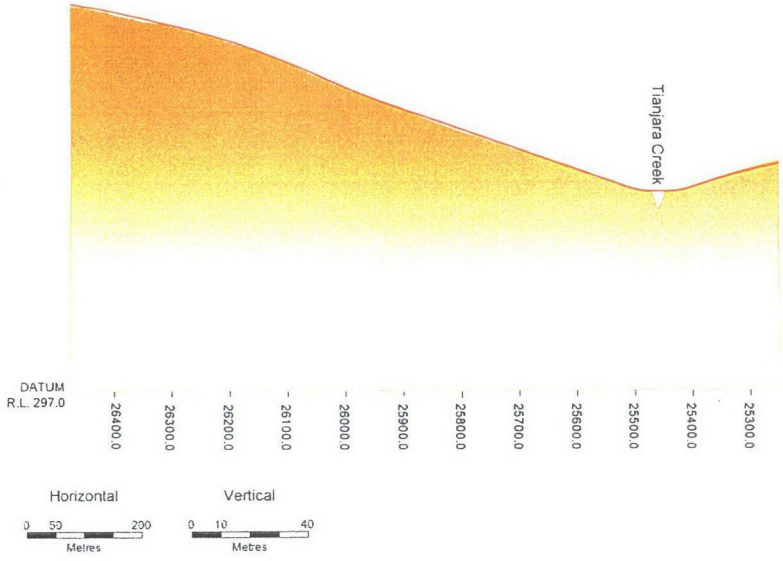
1:5,000

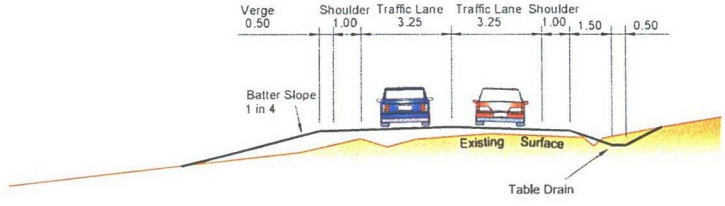
0 25 50 100 150

Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1y
Design and Profile (Chainage 25250 - 26470)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

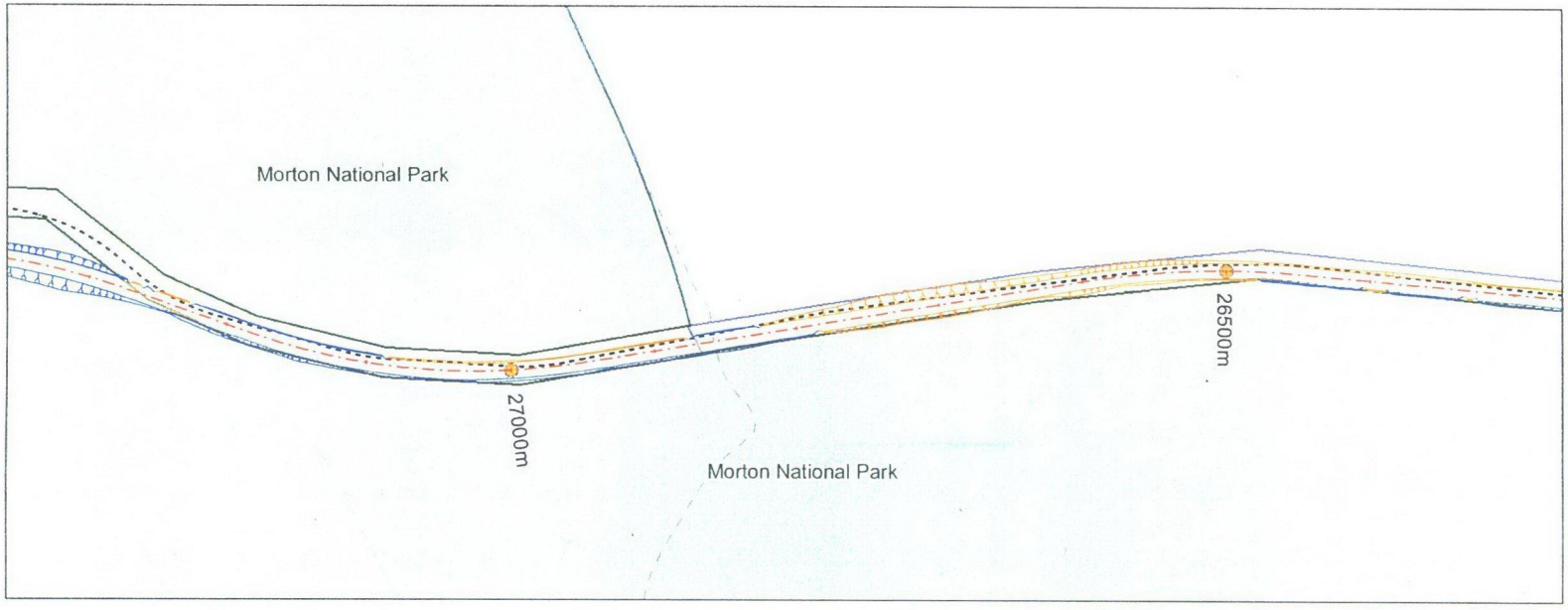


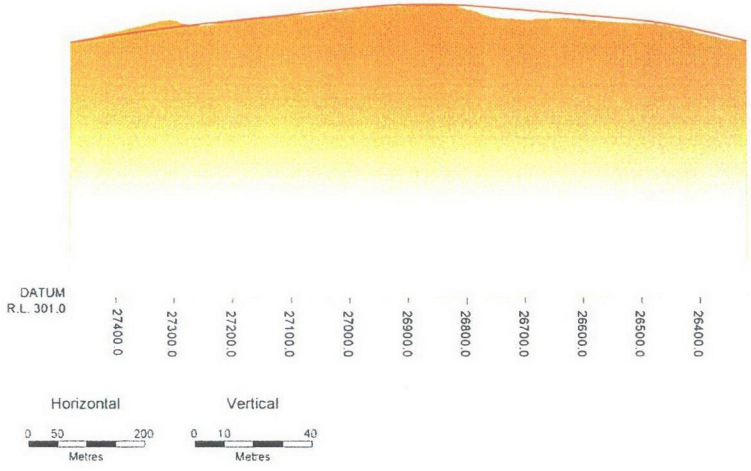
N

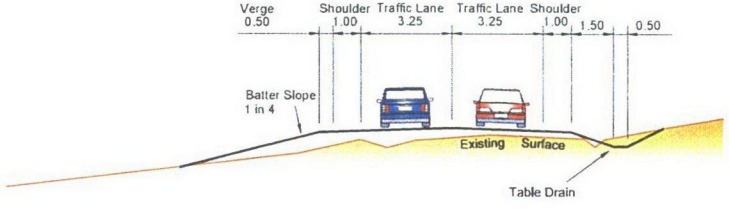
1:5,000

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1z

Design and Profile (Chainage 26270 - 27350)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



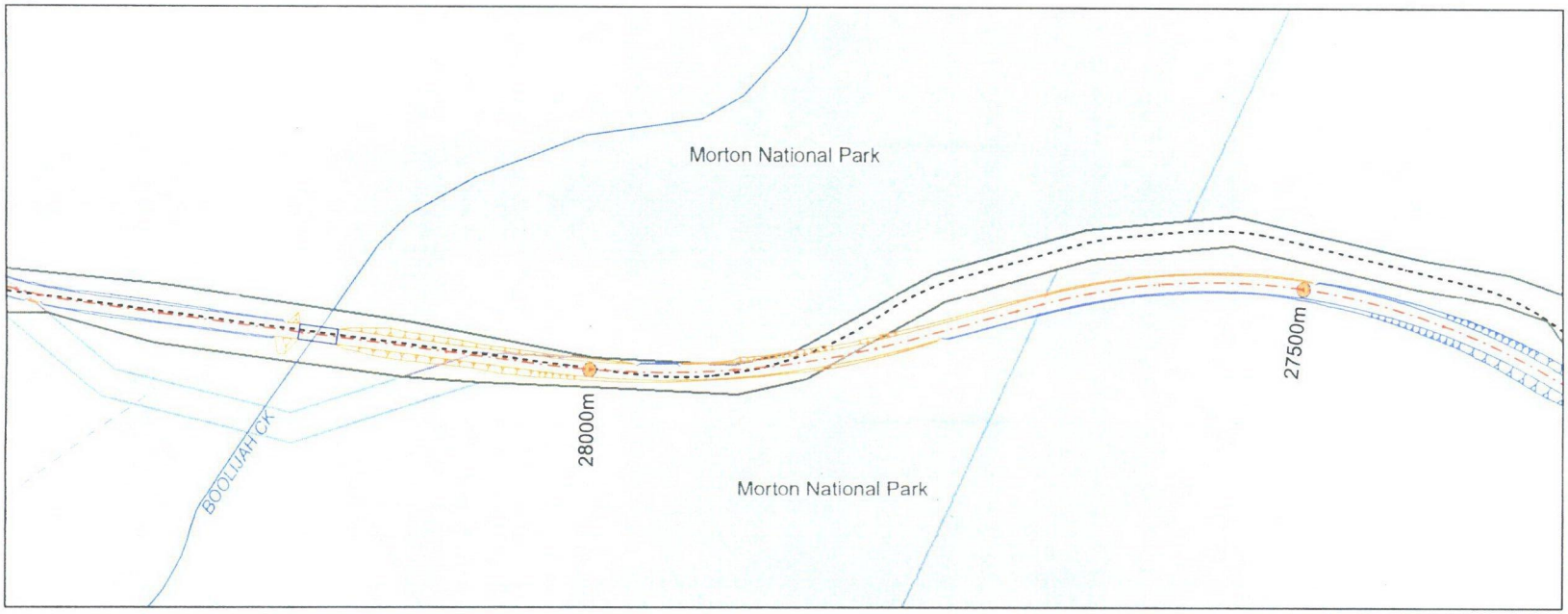
N

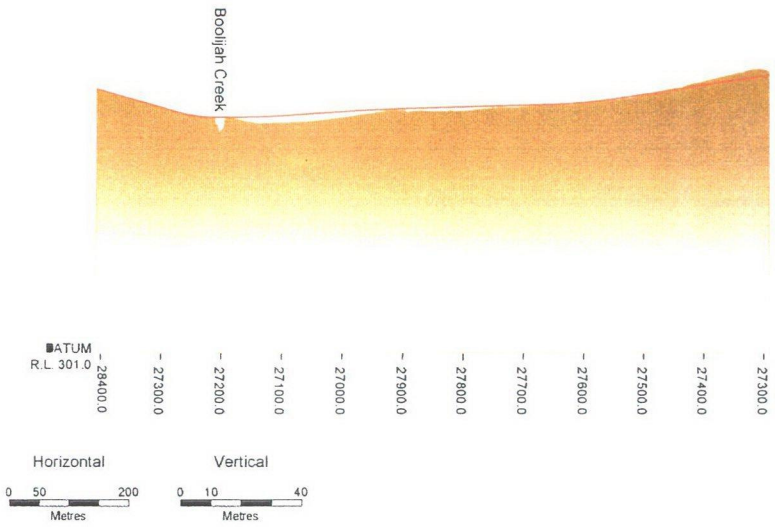
1:5,000

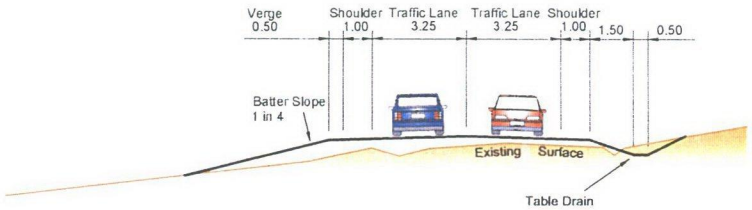
0 25 50 100 150

Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1aa

Design and Profile (Chainage 27300 - 28400)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

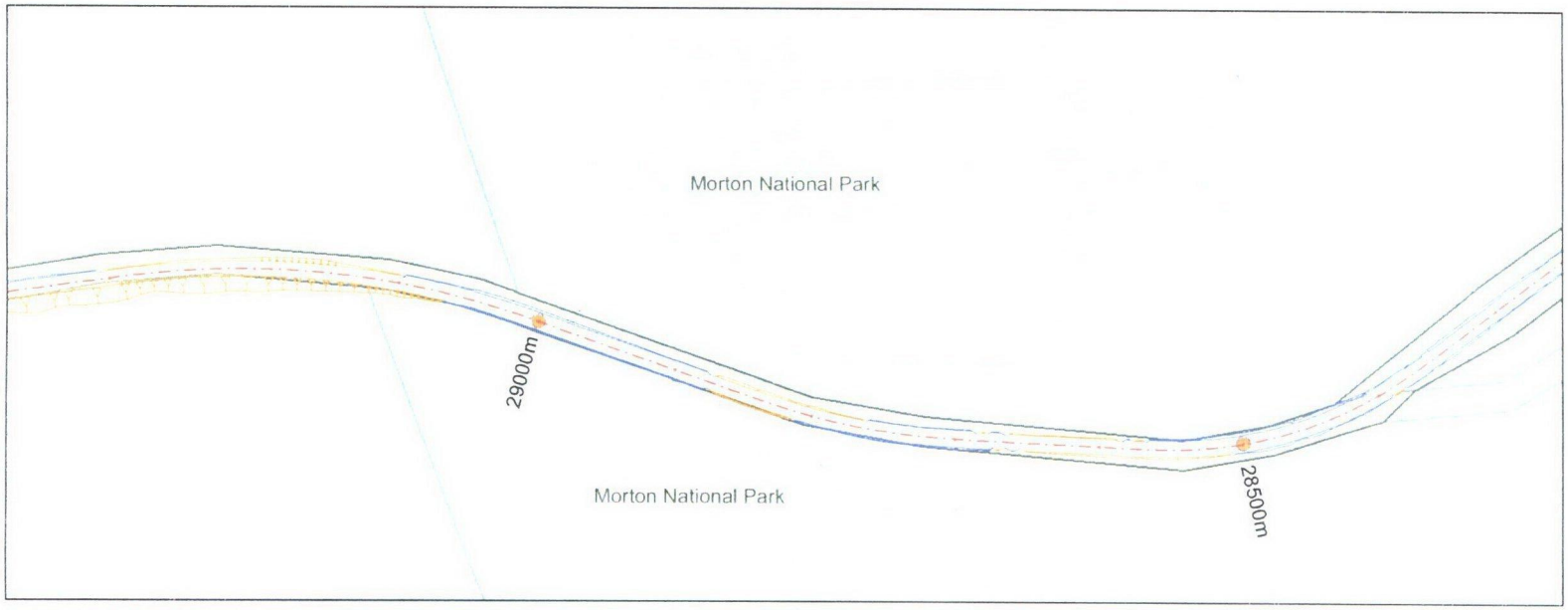


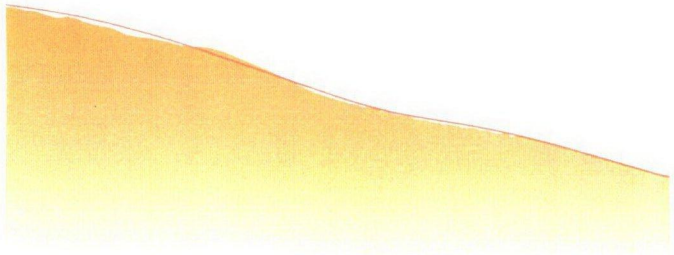
N

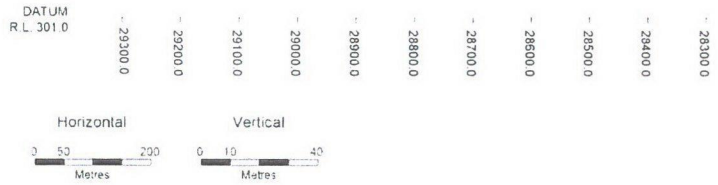
1:5,000

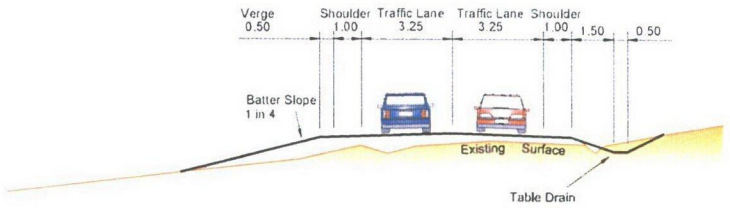
0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ









Typical section for general upgrade on the existing alignment

Figure 2.1ab

Design and Profile (Chainage 28250 - 29380)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

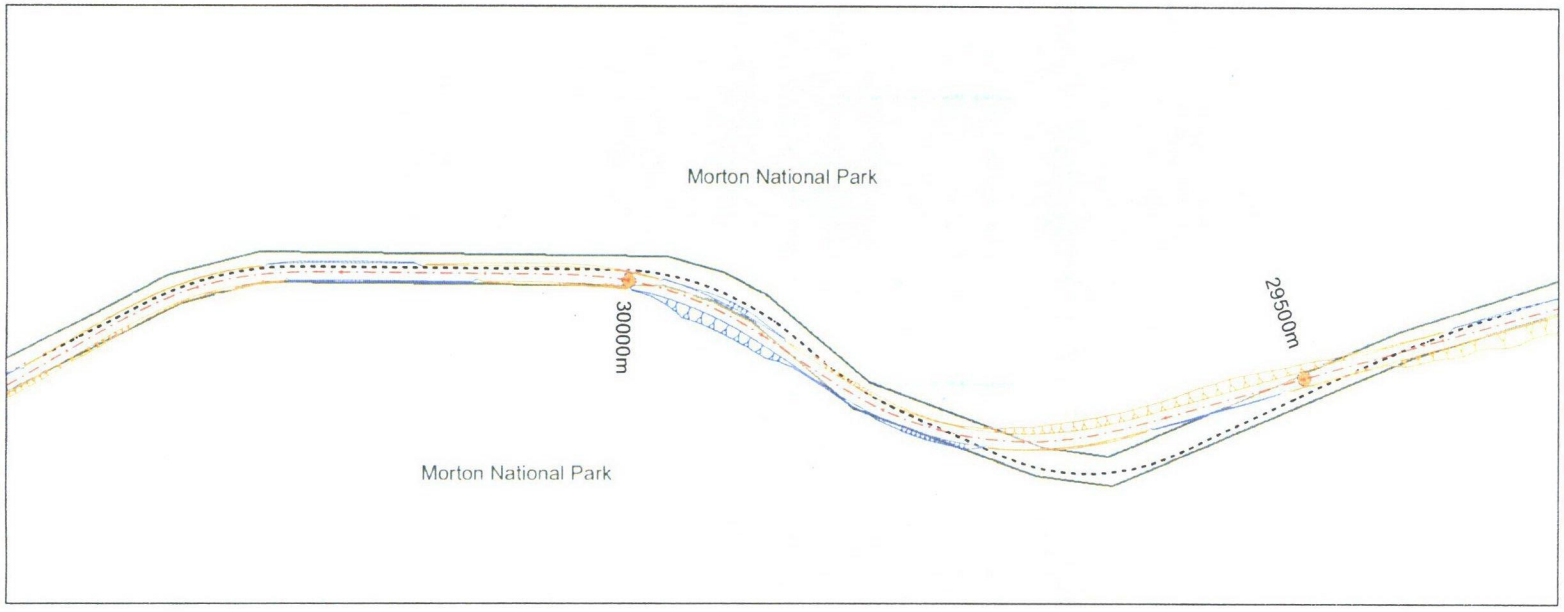




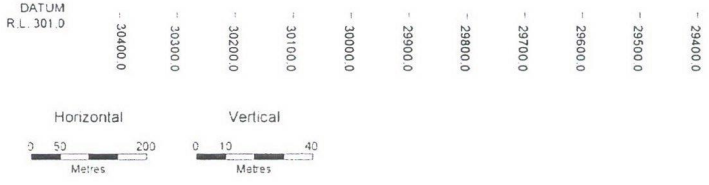
1:5,000

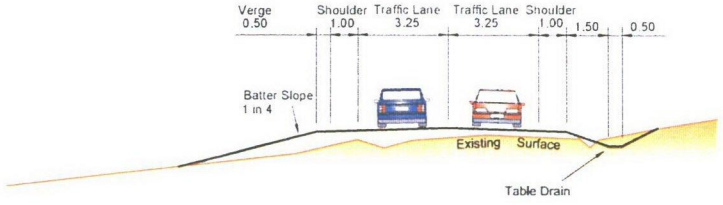


SINCLAIR KNIGHT MERZ









Typical section for general upgrade on the existing alignment

Figure 2.1ac

Design and Profile (Chainage 29320 - 30450)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

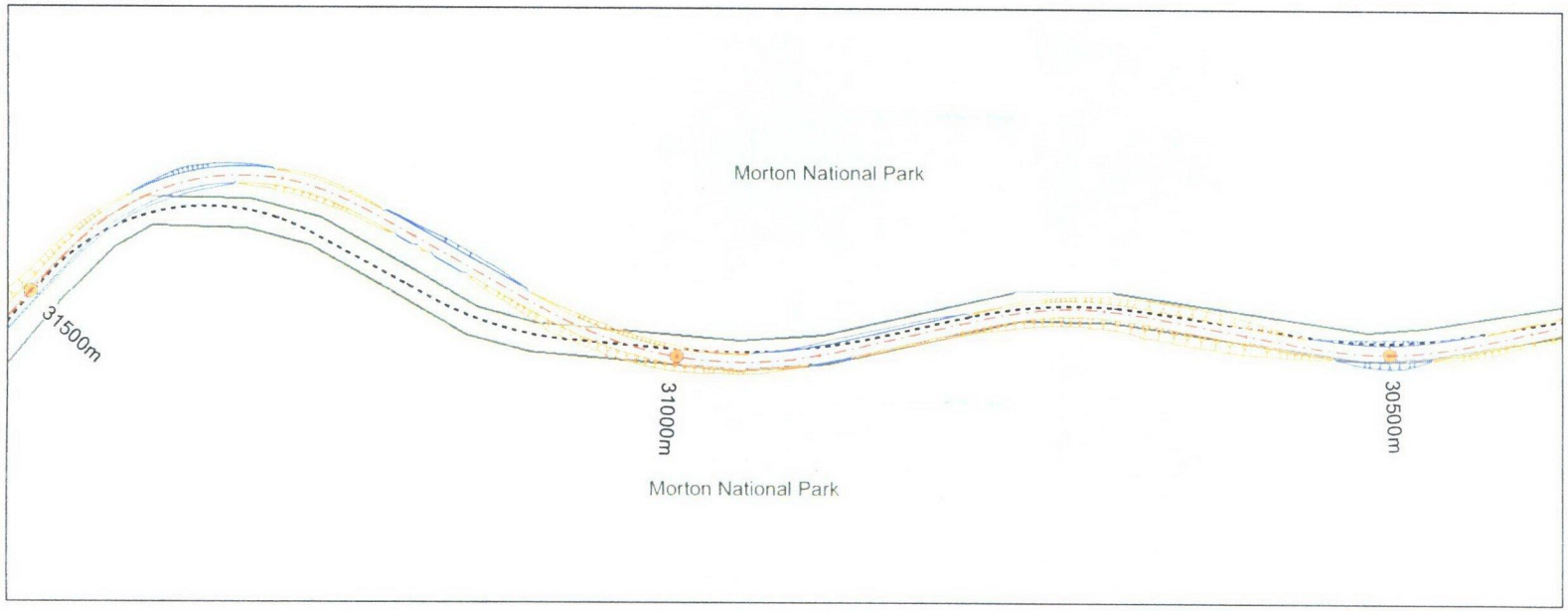




1:5,000



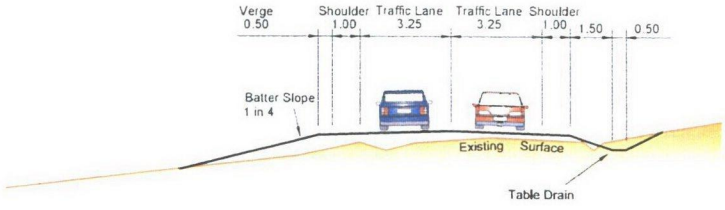
SINCLAIR KNIGHT MERZ











Typical section for general upgrade on the existing alignment

Figure 2.1ad
Design and Profile
(Chainage 30380 - 31510)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

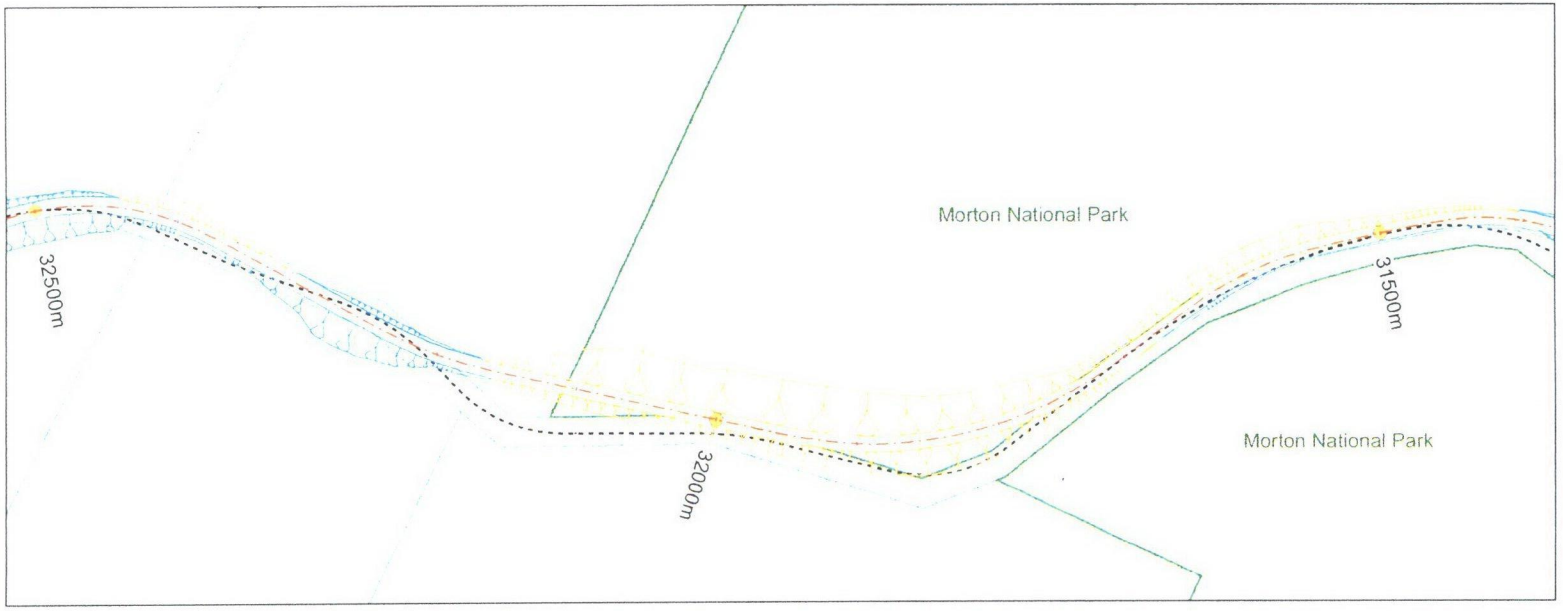


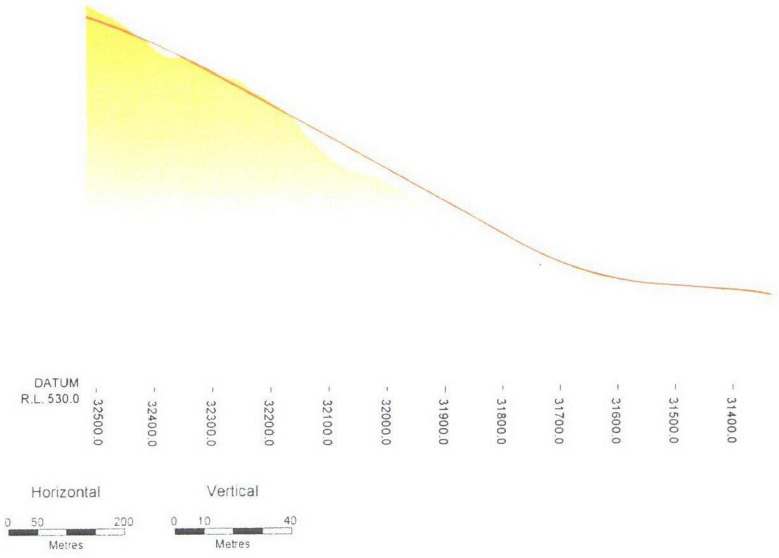


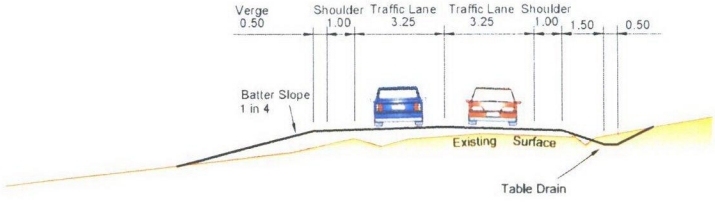
1:5,000



SINCLAIR KNIGHT MERZ







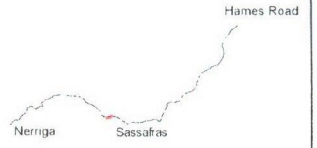
Typical section for general upgrade on the existing alignment

Figure 2.1ae

Design and Profile (Chainage 31380 - 32510)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

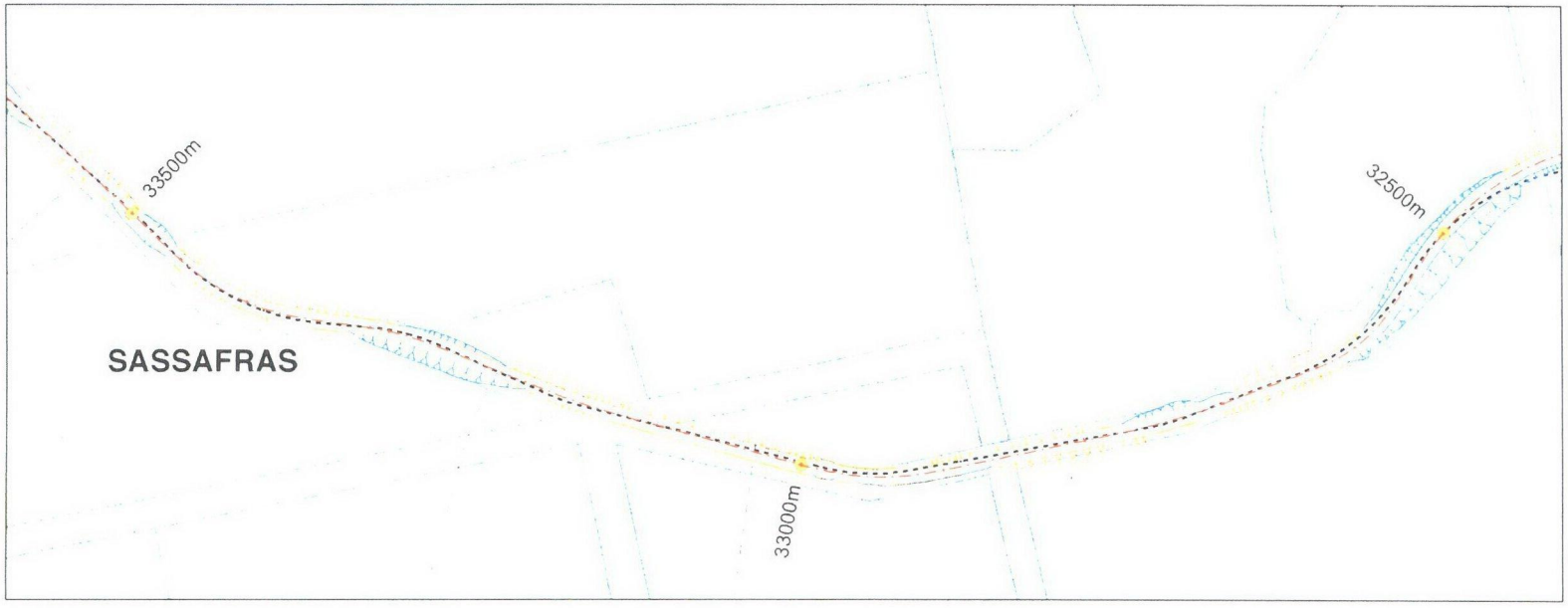


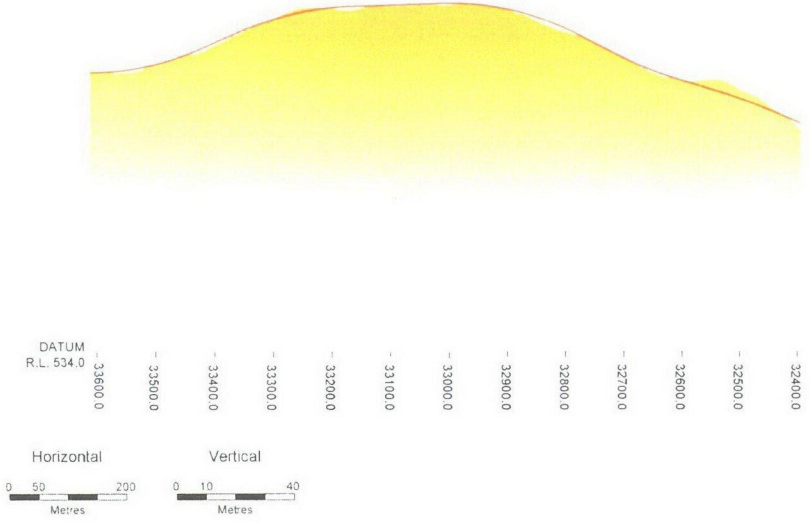
N

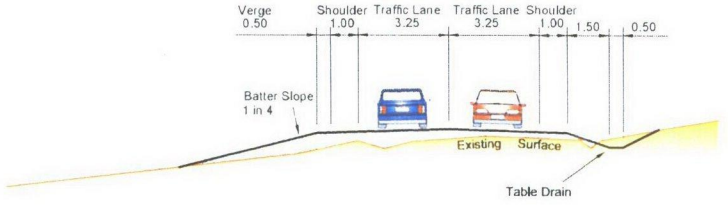
1:5,000

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

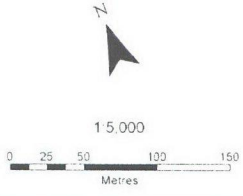
Figure 2.1af

Design and Profile (Chainage 32410 - 33610)

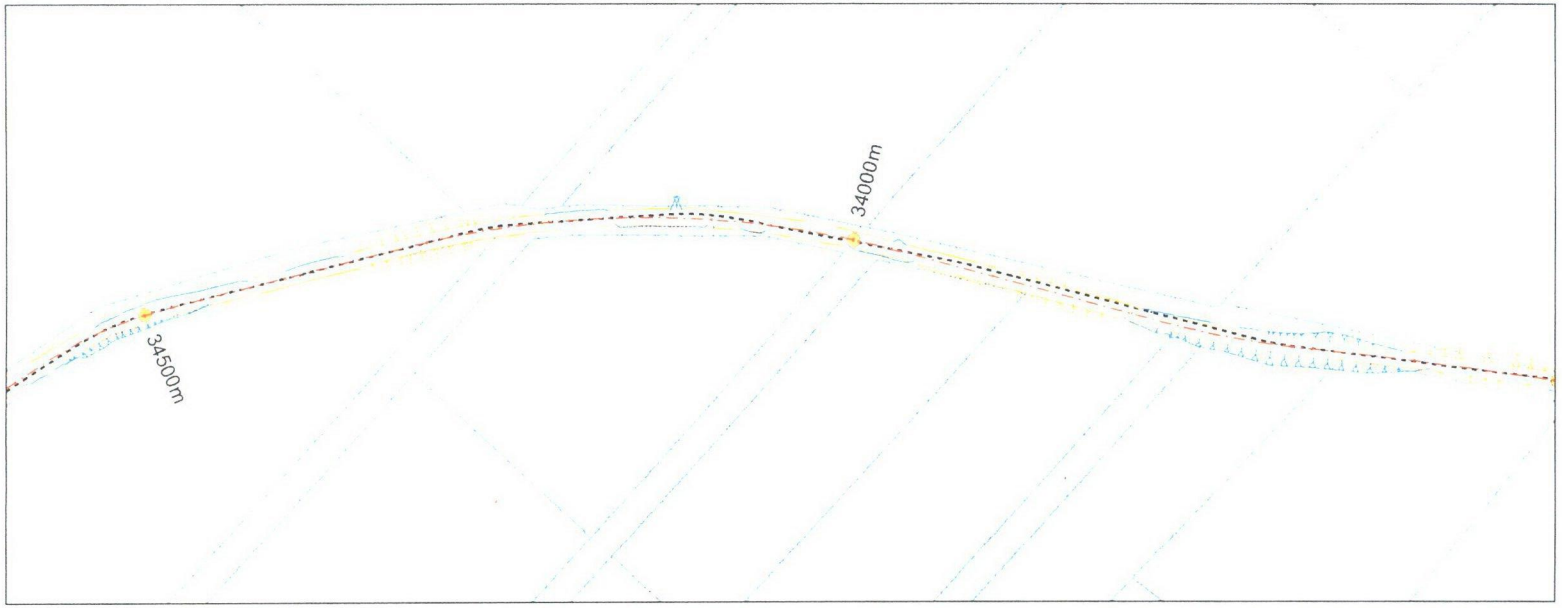
Legend

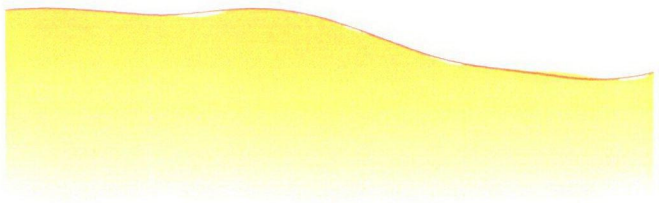
- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

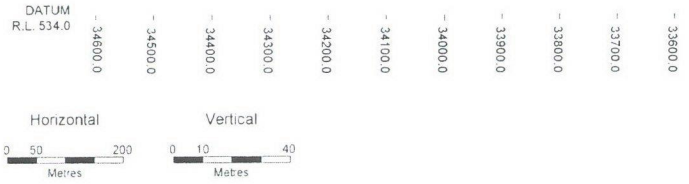


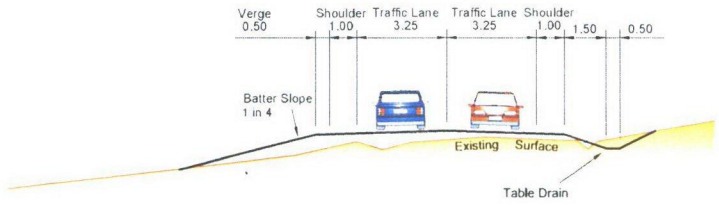


SINCLAIR KNIGHT MERZ









Typical section for general upgrade on the existing alignment

Figure 2.1ag
Design and Profile (Chainage 33500 - 34610)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

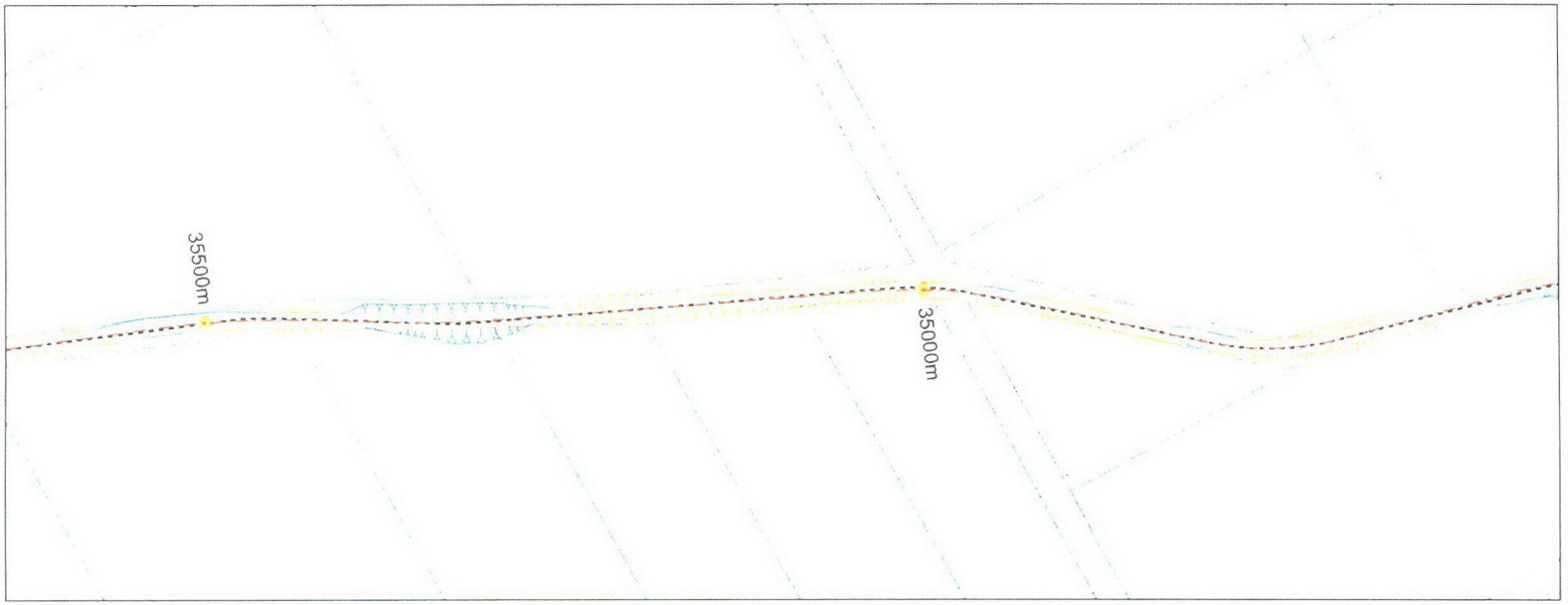


N

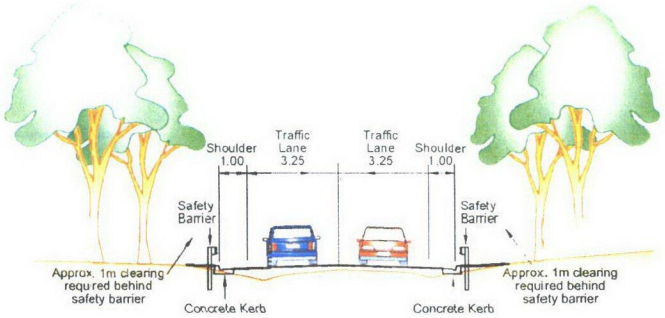
1:5,000

0 25 50 100 150
Metres

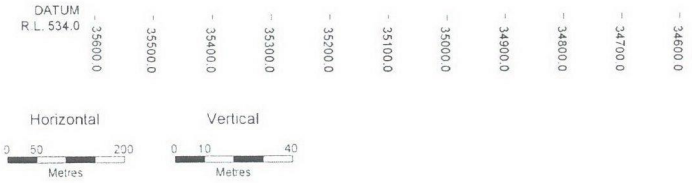
SINCLAIR KNIGHT MERZ

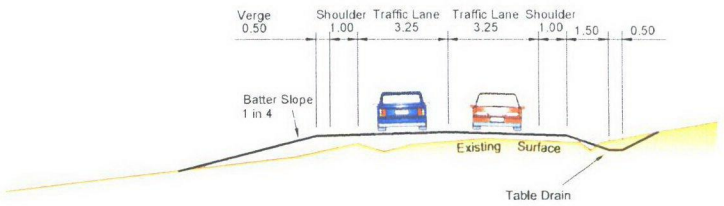






Typical section through Sassafras with kerb





Typical section for general upgrade on the existing alignment

Figure 2.1ah

Design and Profile (Chainage 34550 - 35630)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



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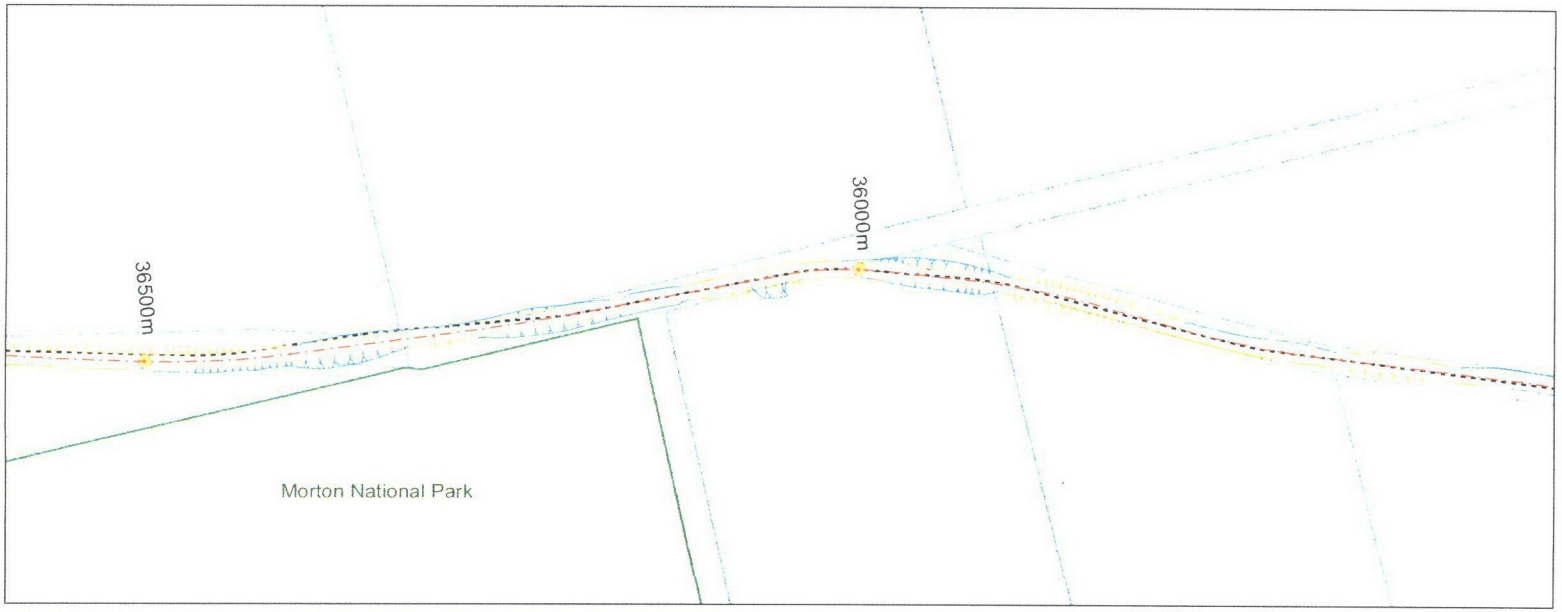
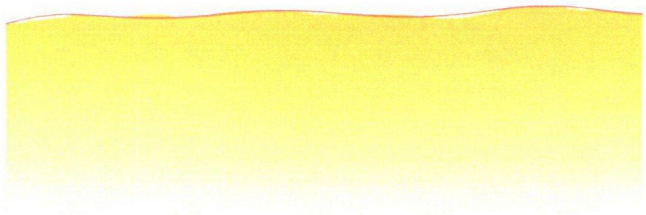
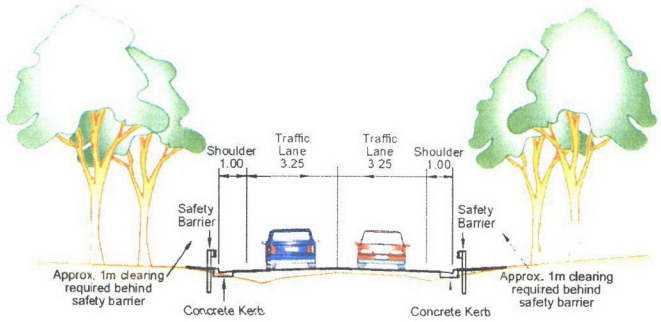
0 25 50 100 150
Metres

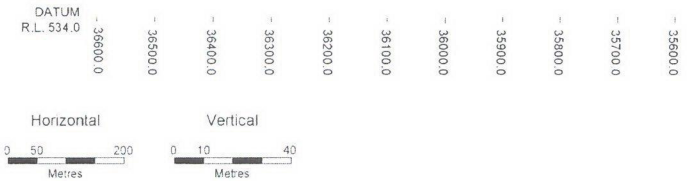
SINCLAIR KNIGHT MERZ

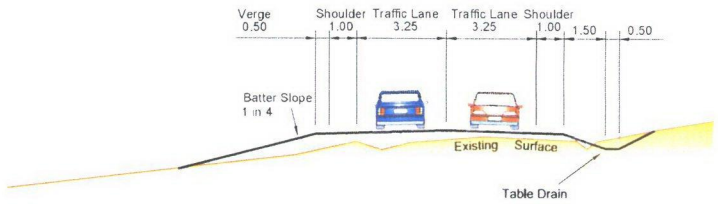






Typical section through Sassafras with kerb





Typical section for general upgrade on the existing alignment

Figure 2.1ai

Design and Profile (Chainage 35510 - 36590)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

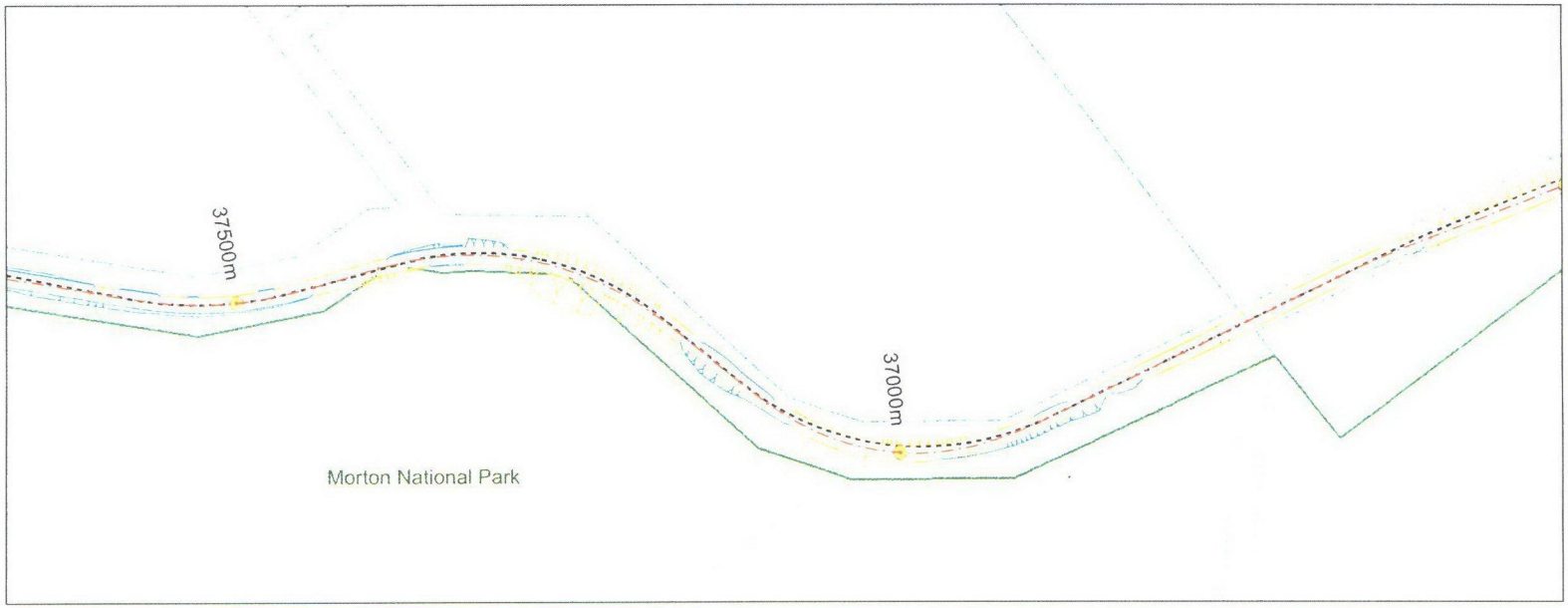


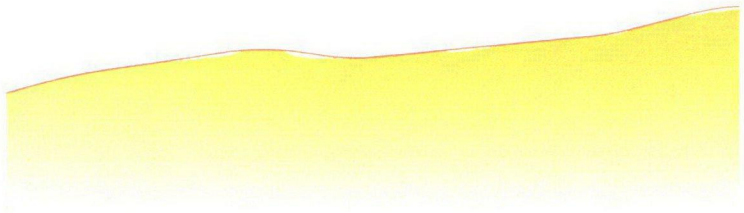
N

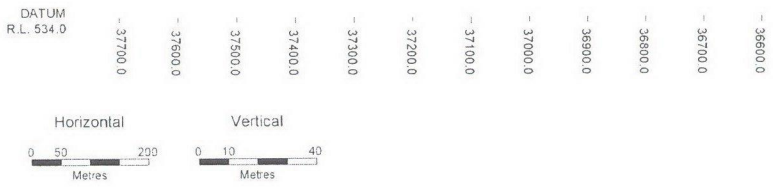
1:5,000

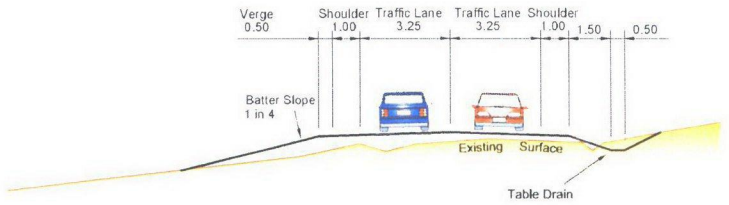
0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ









Typical section for general upgrade on the existing alignment

Figure 2.1aj

Design and Profile (Chainage 36500 - 37690)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



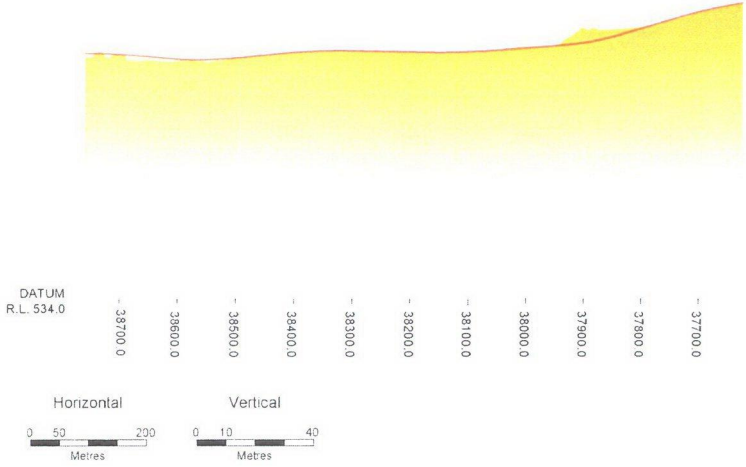
1:5,000

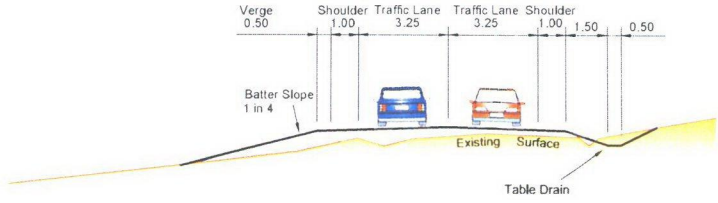
0 25 50 100 150

Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1ak

Design and Profile (Chainage 37590 - 38720)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



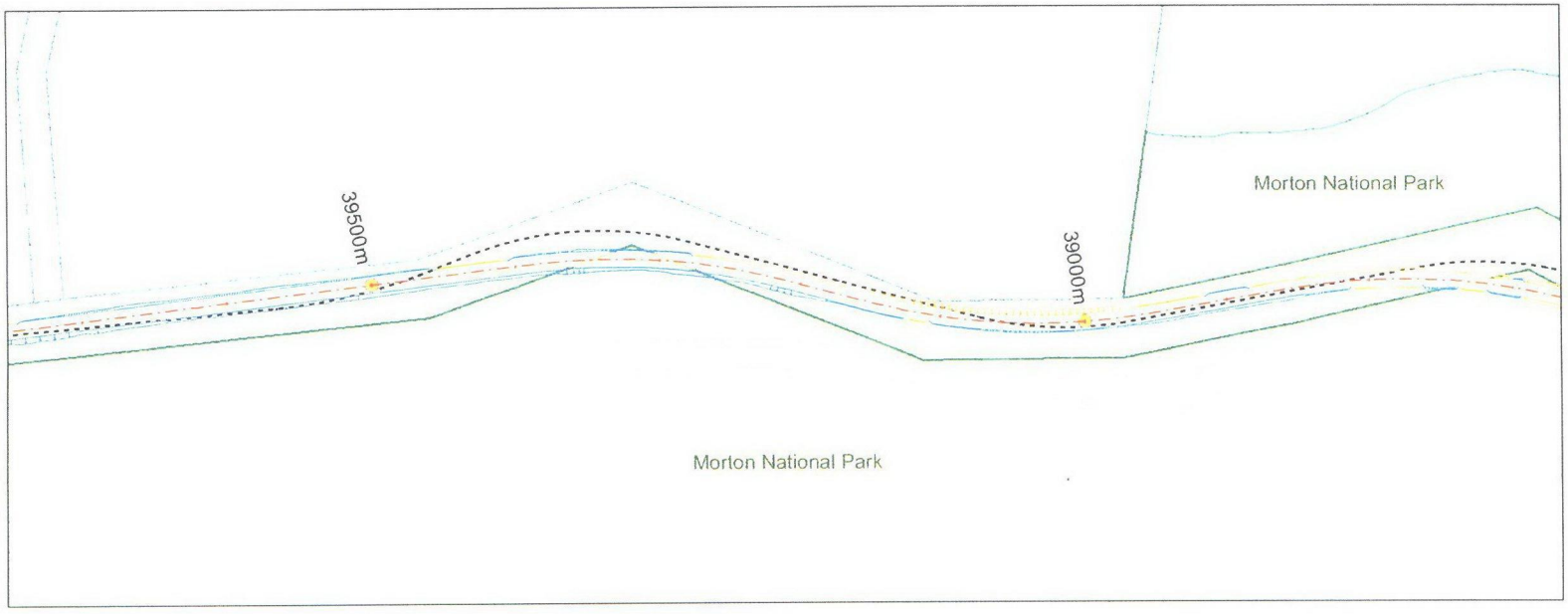


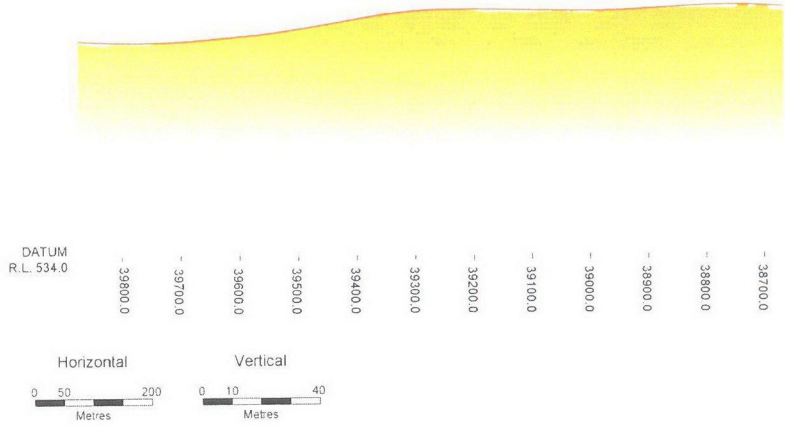
1:5,000

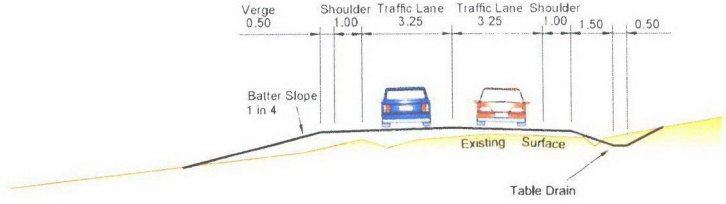
0 25 50 100 150

Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1al

Design and Profile (Chainage 38670 - 39750)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

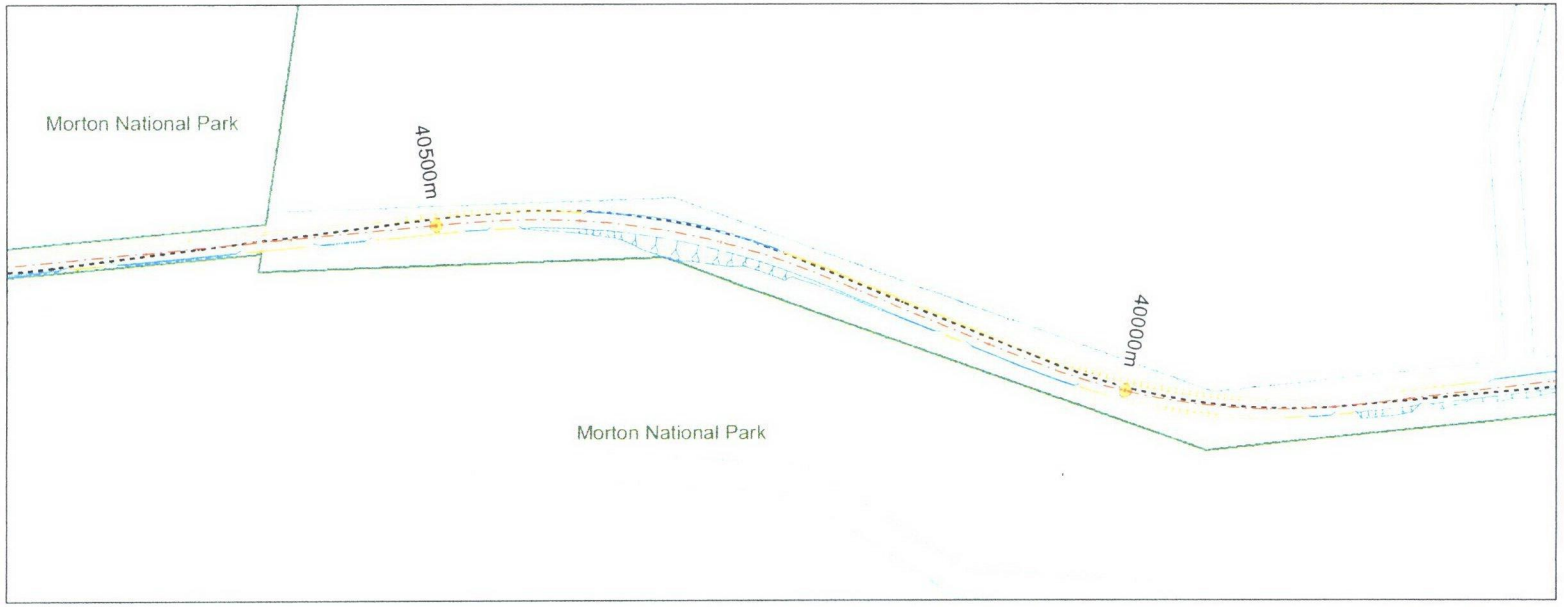


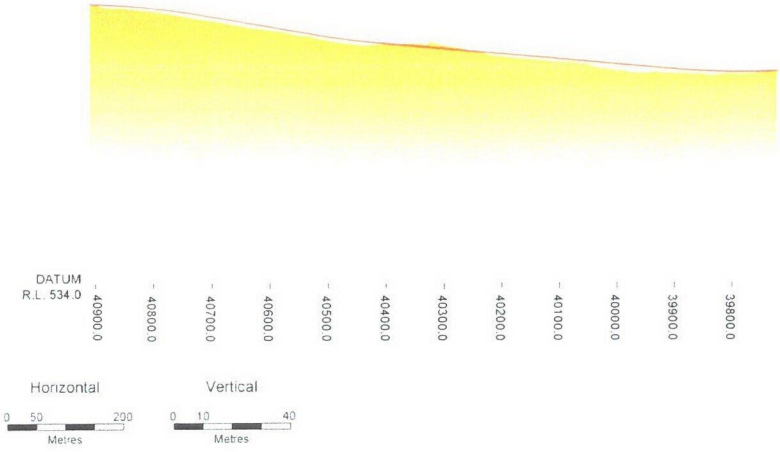
N

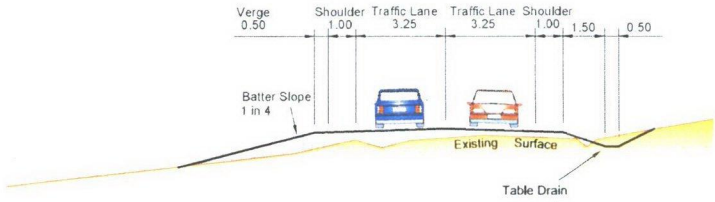
1:5,000

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

Figure 2.1am

Design and Profile (Chainage 39700 - 40890)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

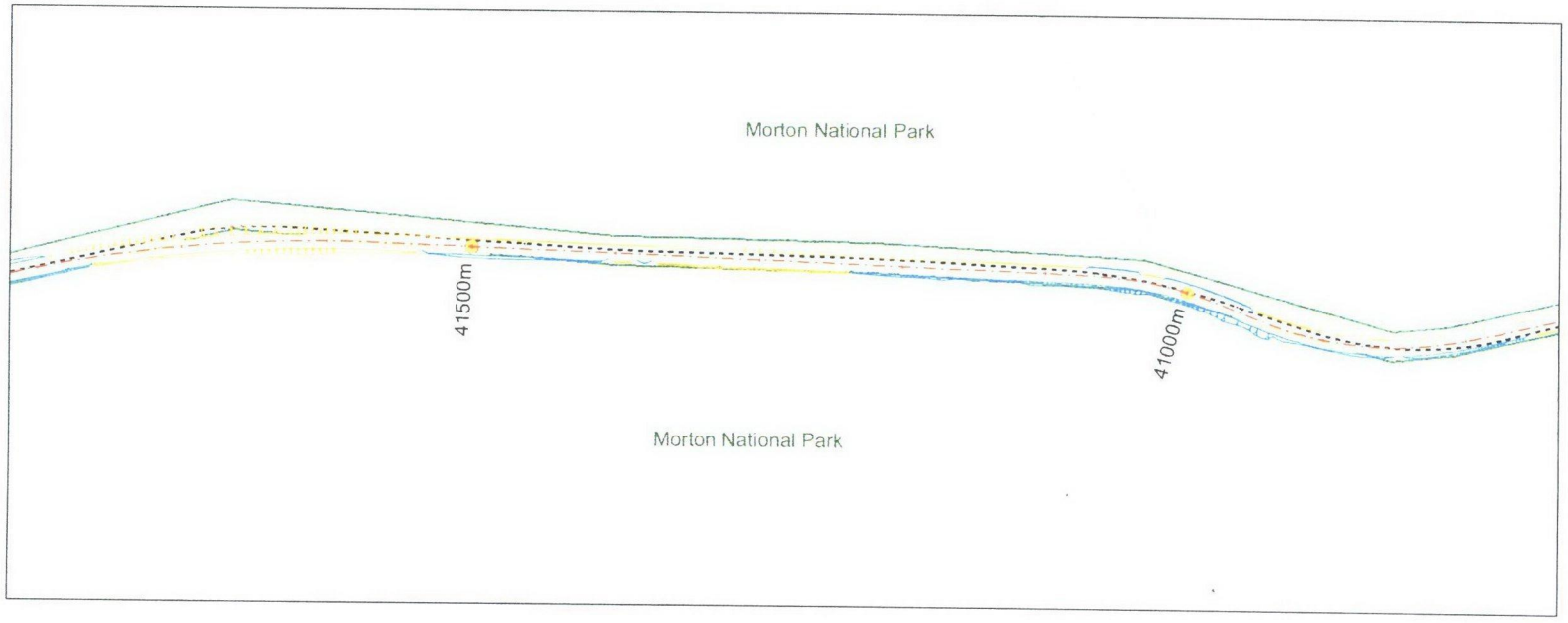


N

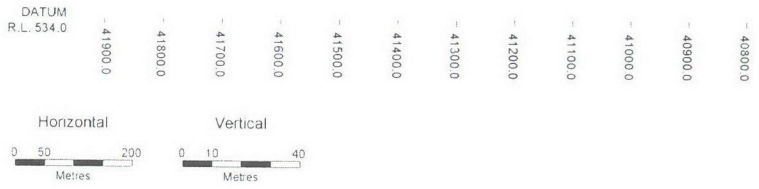
1:5,000

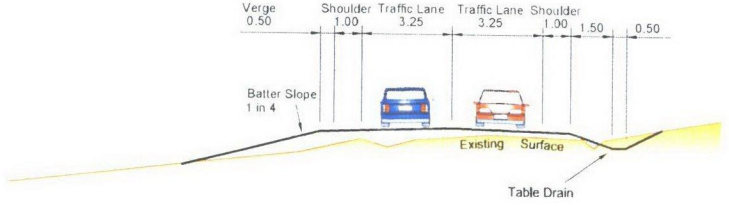
0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ









Typical section for general upgrade on the existing alignment

Figure 2.1an

Design and Profile (Chainage 40720 - 41820)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



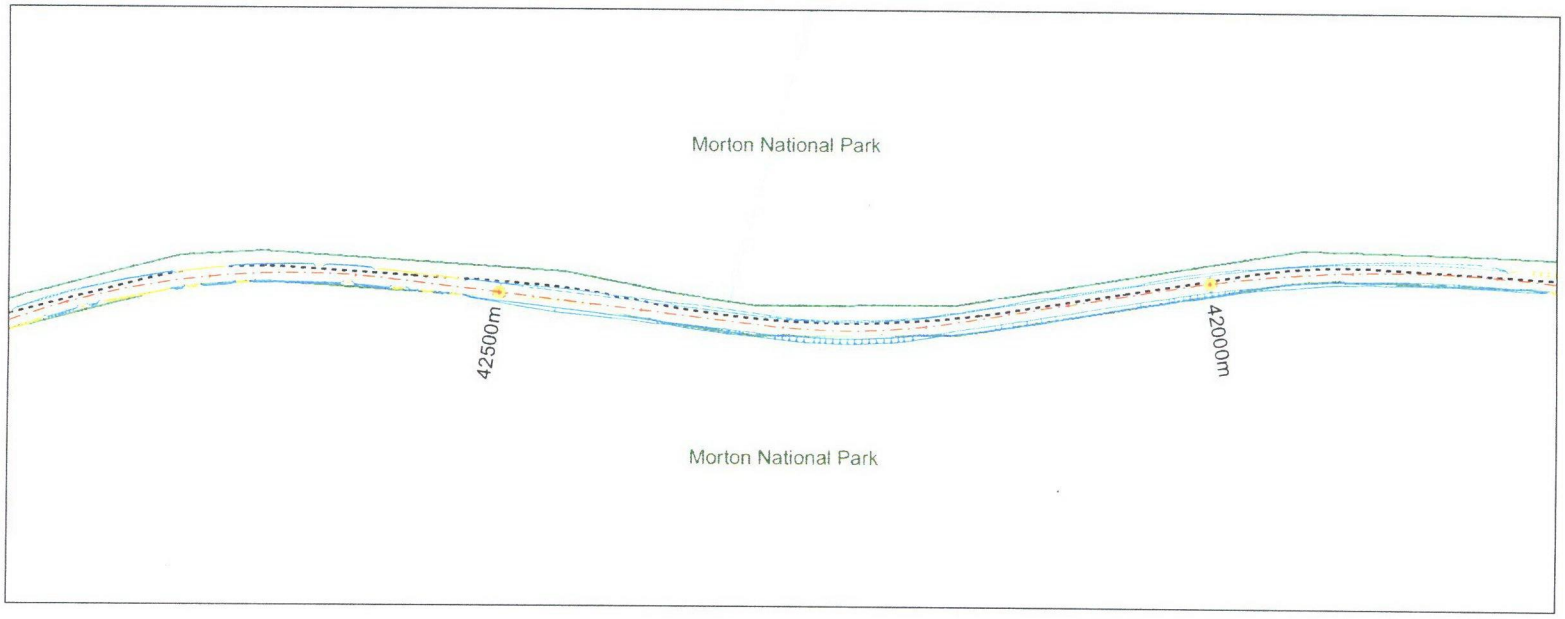
N

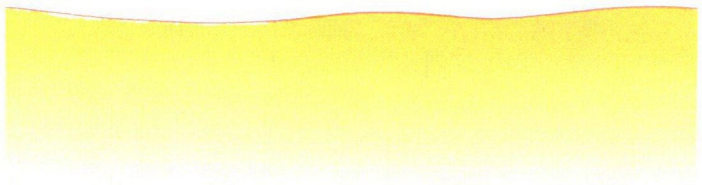
1:5,000

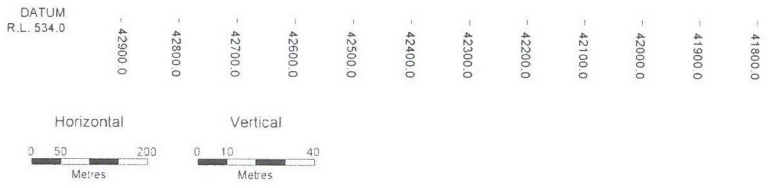
0 25 50 100 150

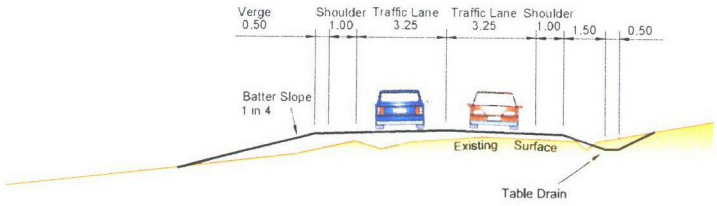
Metres

SINCLAIR KNIGHT MERZ









Typical section for general upgrade on the existing alignment

Figure 2.1ao

Design and Profile (Chainage 41780 - 42840)

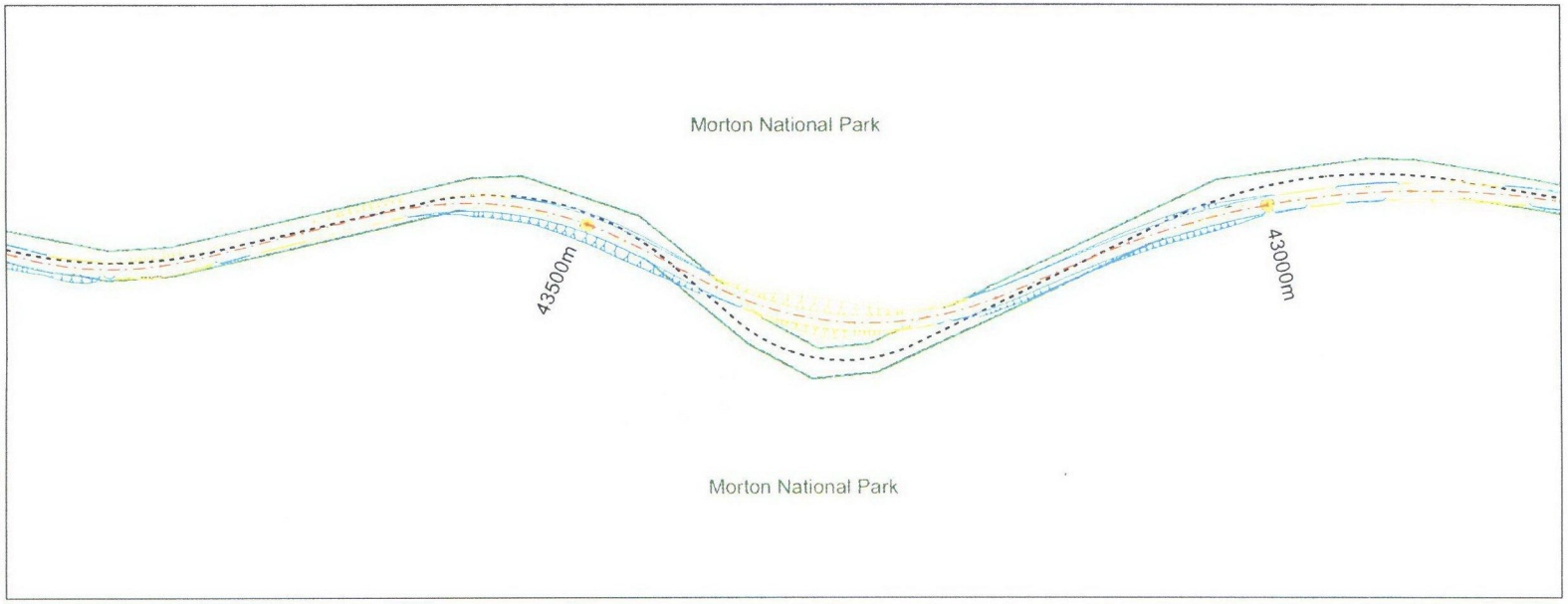
Legend

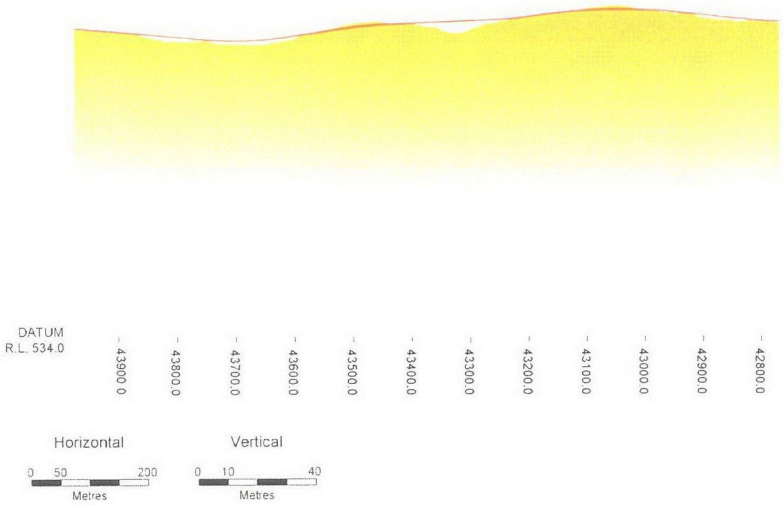
- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

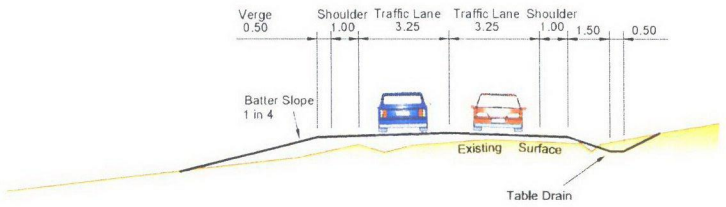




SINCLAIR KNIGHT MERZ







Typical section for general upgrade on the existing alignment

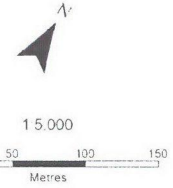
Figure 2.1ap

Design and Profile (Chainage 42790 - 43910)

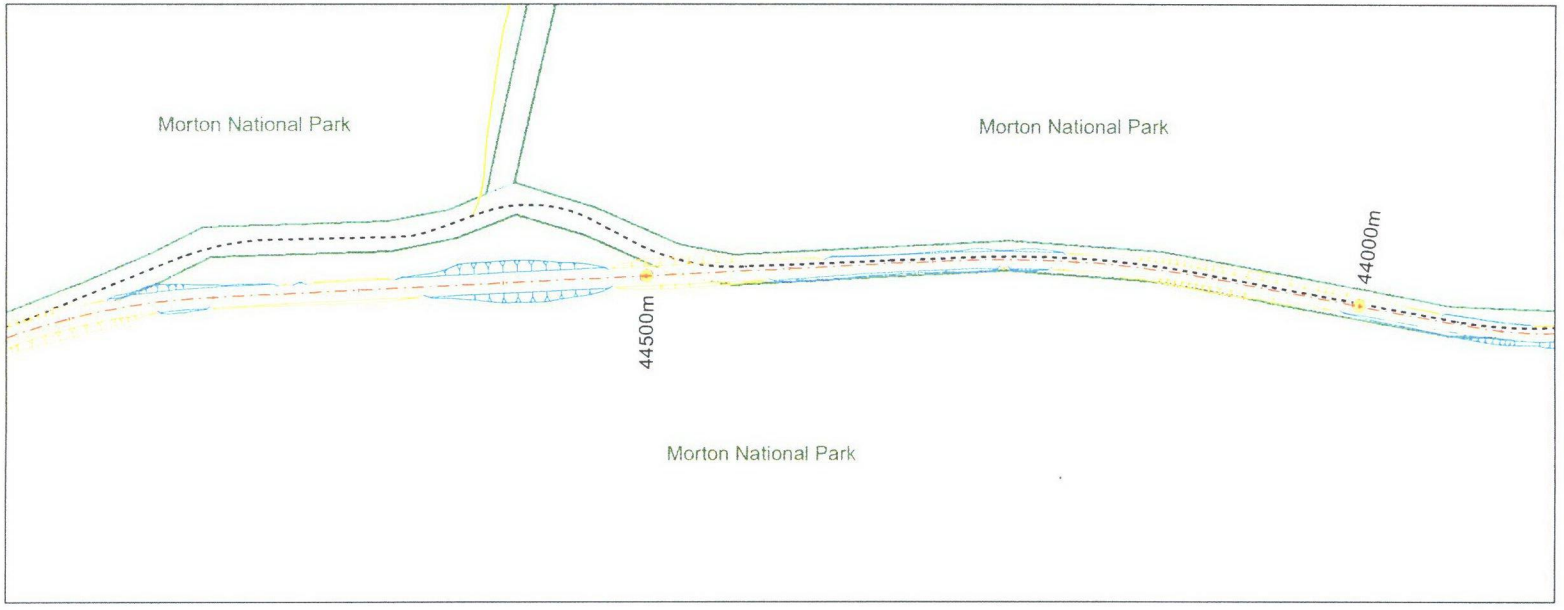
Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

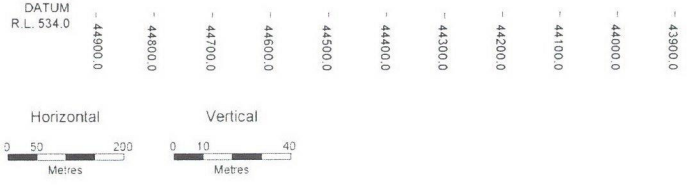


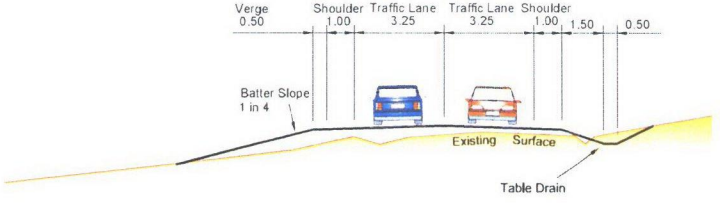


SINCLAIR KNIGHT MERZ









Typical section for general upgrade on the existing alignment

Figure 2.1aq

Design and Profile (Chainage 43860 - 44920)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge





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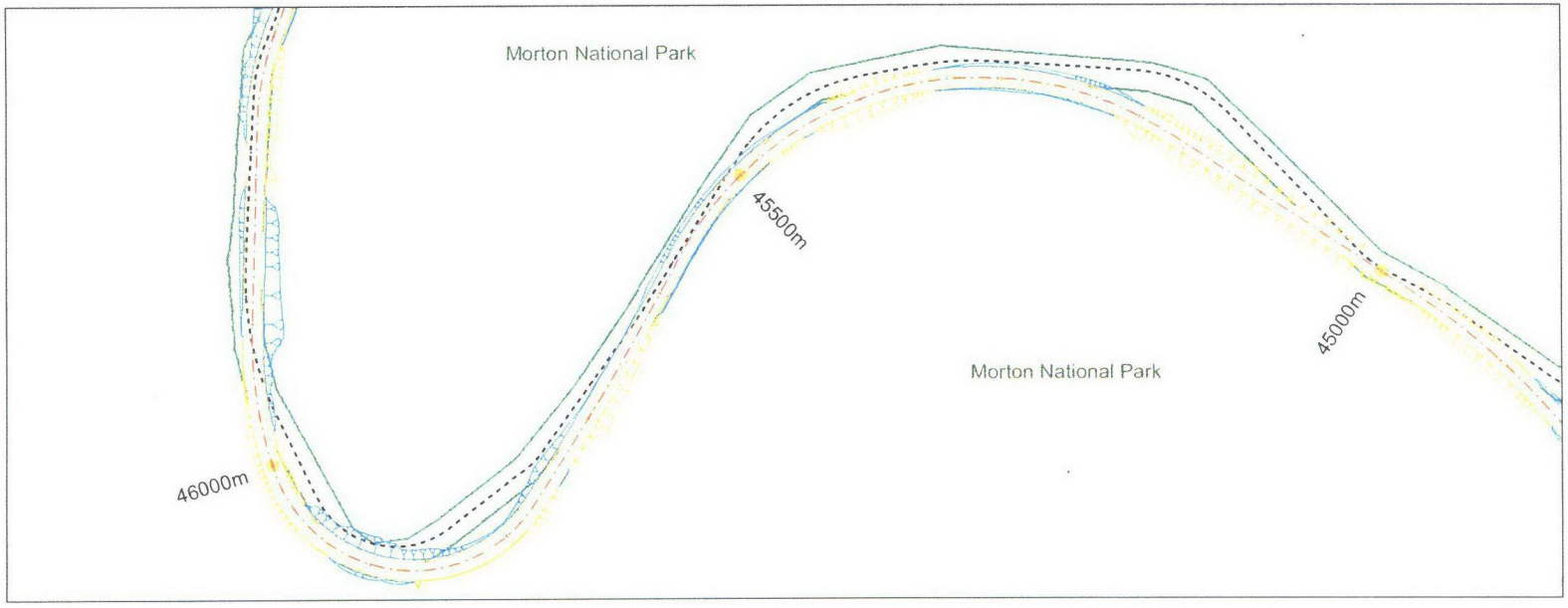
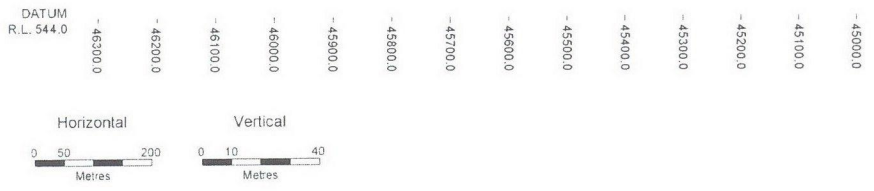
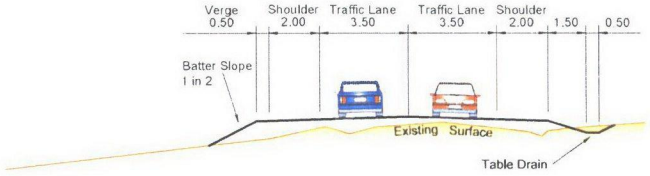
SINCLAIR KNIGHT MERZ

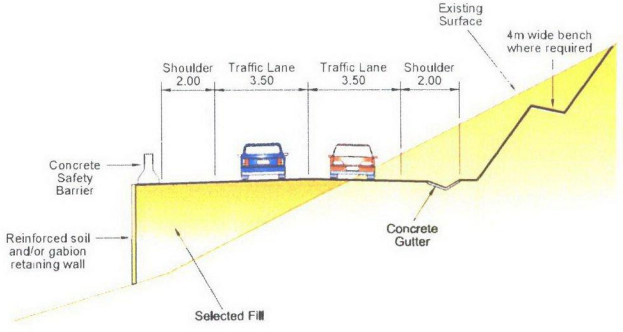








Typical section for Bulee Mountain (shallow slope)



Typical section for Bulee Mountain (steep slope)

Figure 2.1ar

Design and Profile (Chainage 44820 - 46320)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

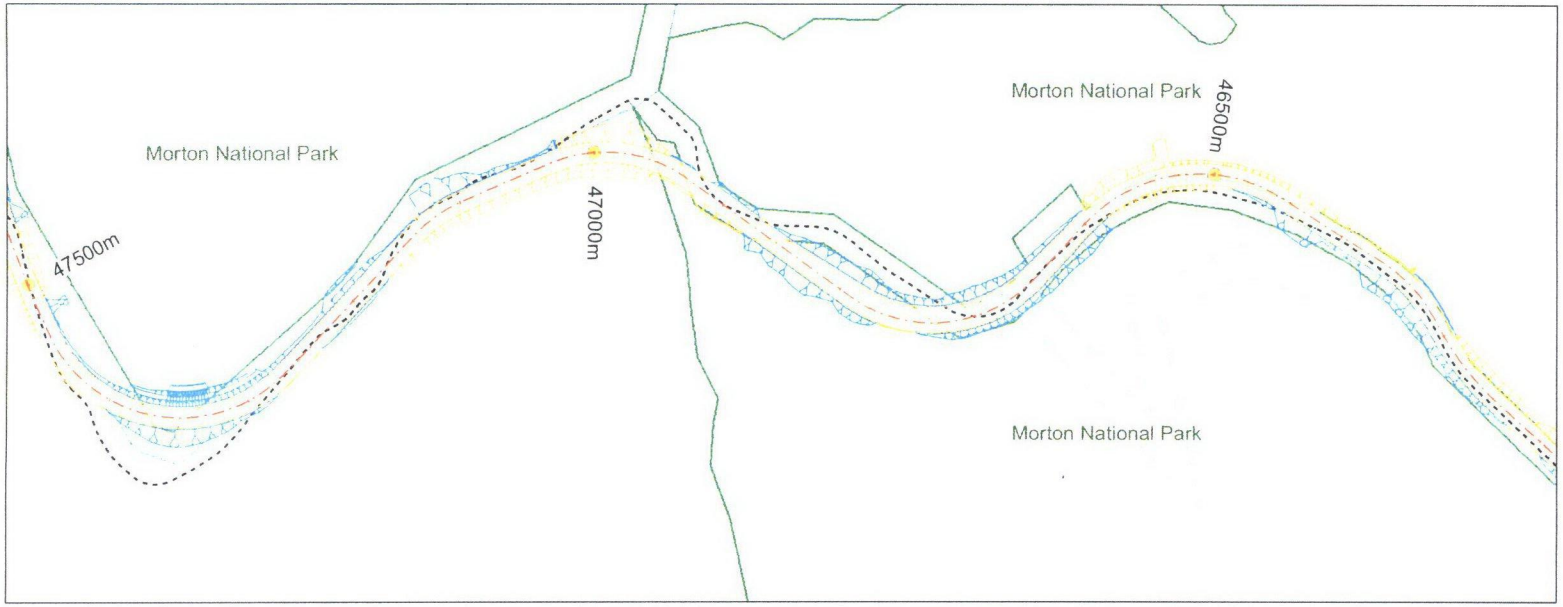


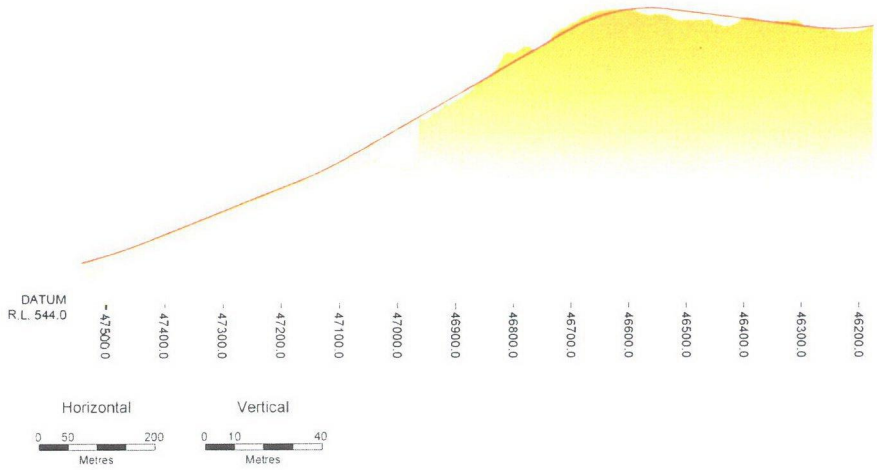
N

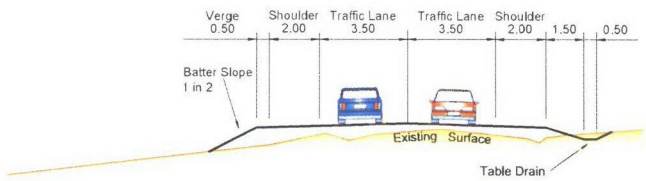
1:5,000

0 25 50 100 150
Metres

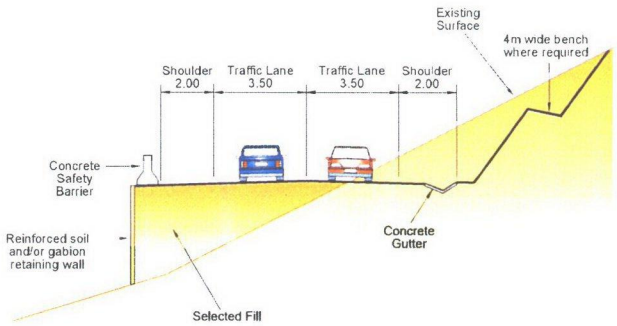
SINCLAIR KNIGHT MERZ







Typical section for Bulee Mountain (shallow slope)



Typical section for Bulee Mountain (steep slope)

Figure 2.1as

Design and Profile (Chainage 46190 - 47540)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge

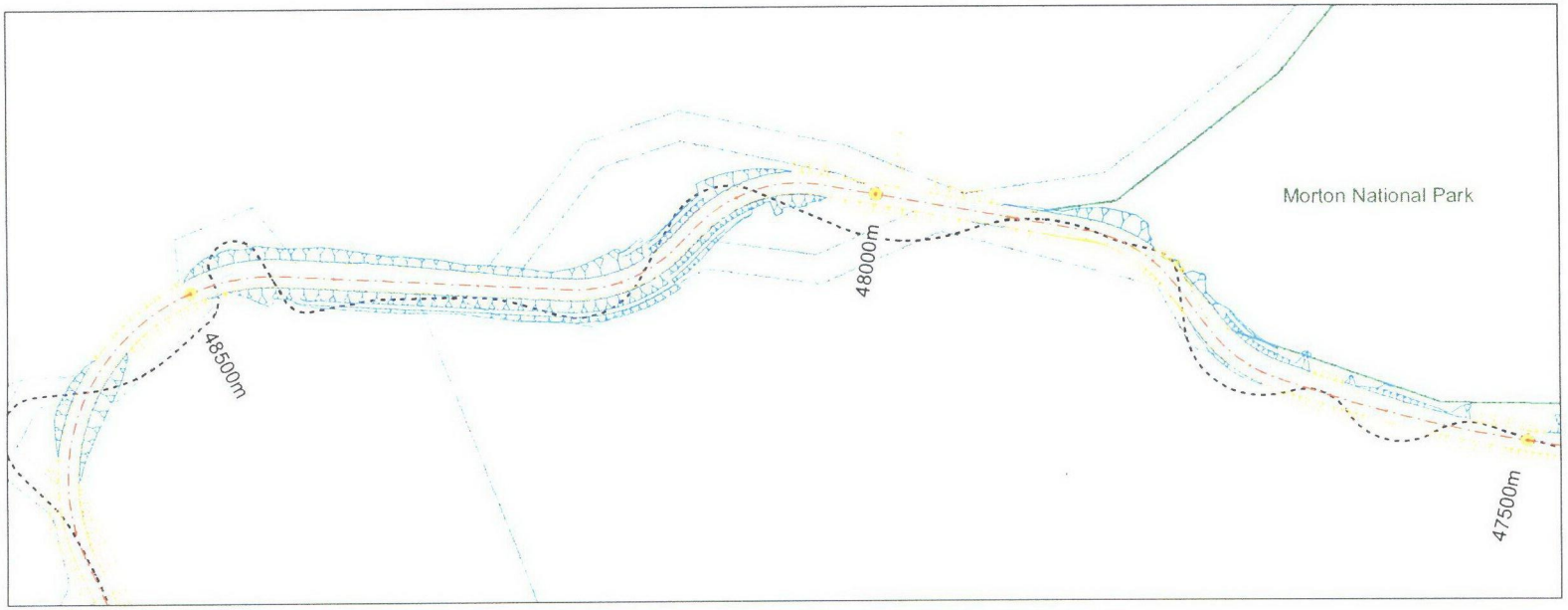


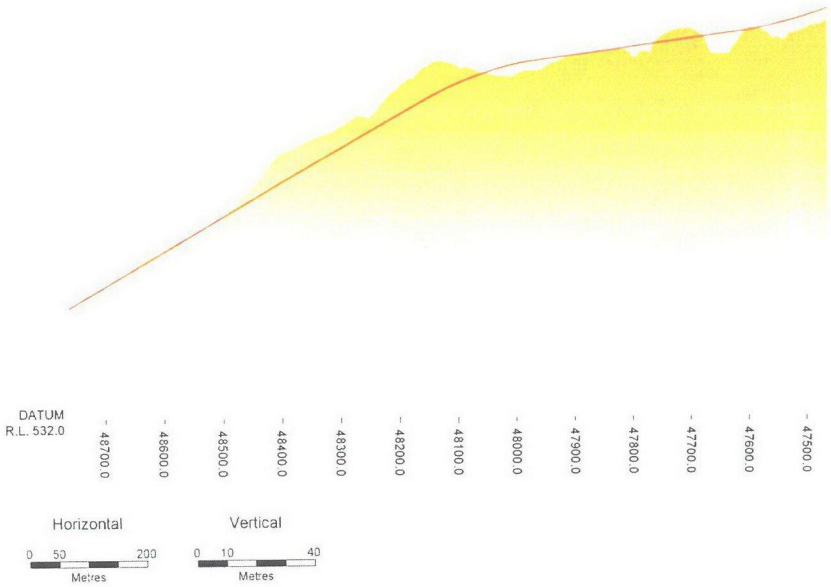
N

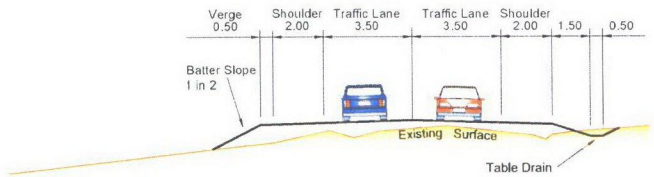
1:5,000

0 25 50 100 150
Metres

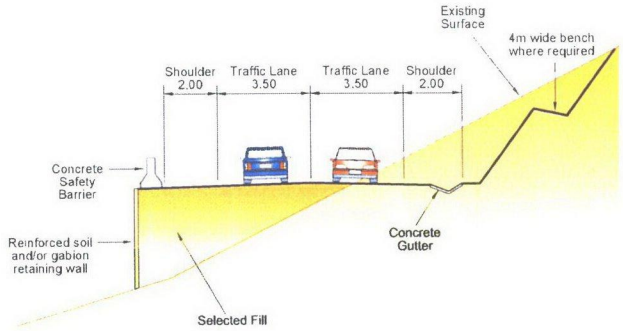
SINCLAIR KNIGHT MERZ







Typical section for Bulee Mountain (shallow slope)



Typical section for Bulee Mountain (steep slope)

Figure 2.1at

Design and Profile (Chainage 47480 - 48760)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



N

1:5,000

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ

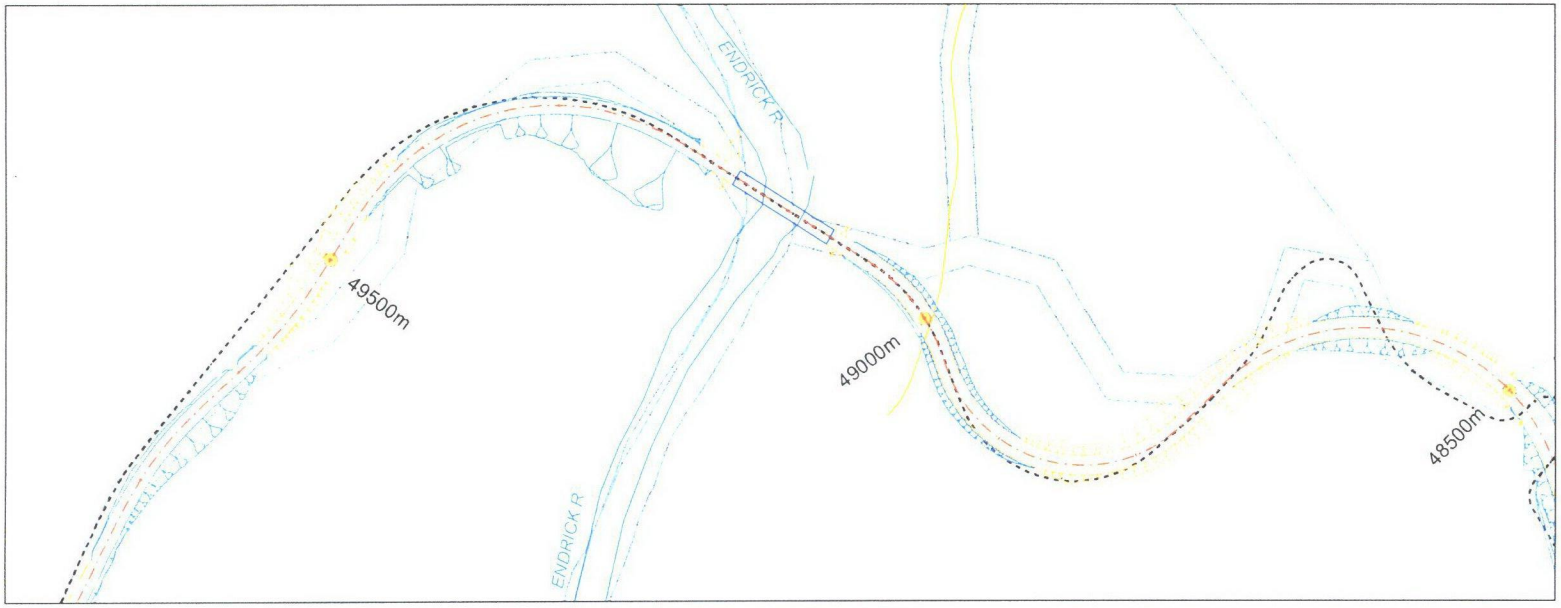
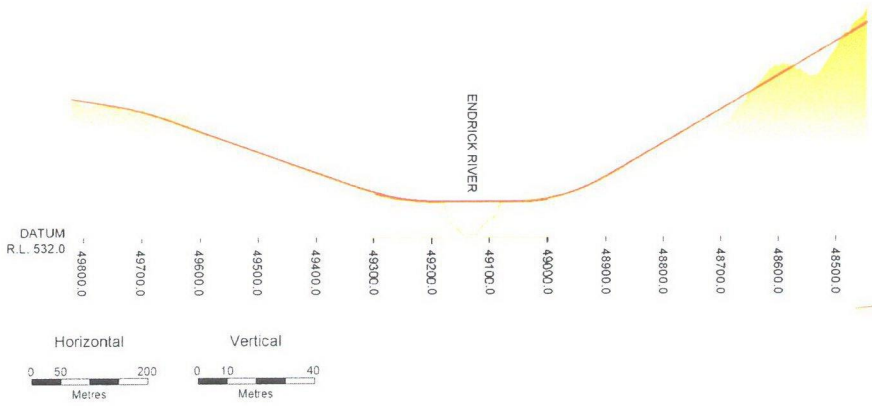


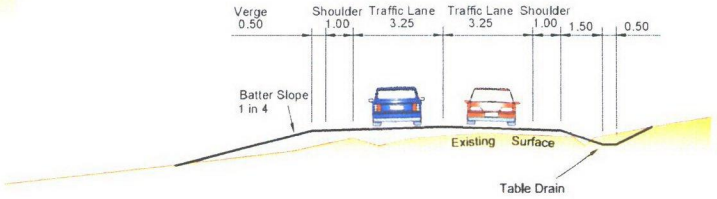
Figure 2.1au
Design and Profile (Chainage 48440 - 49810)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge







Typical section for general upgrade on the existing alignment

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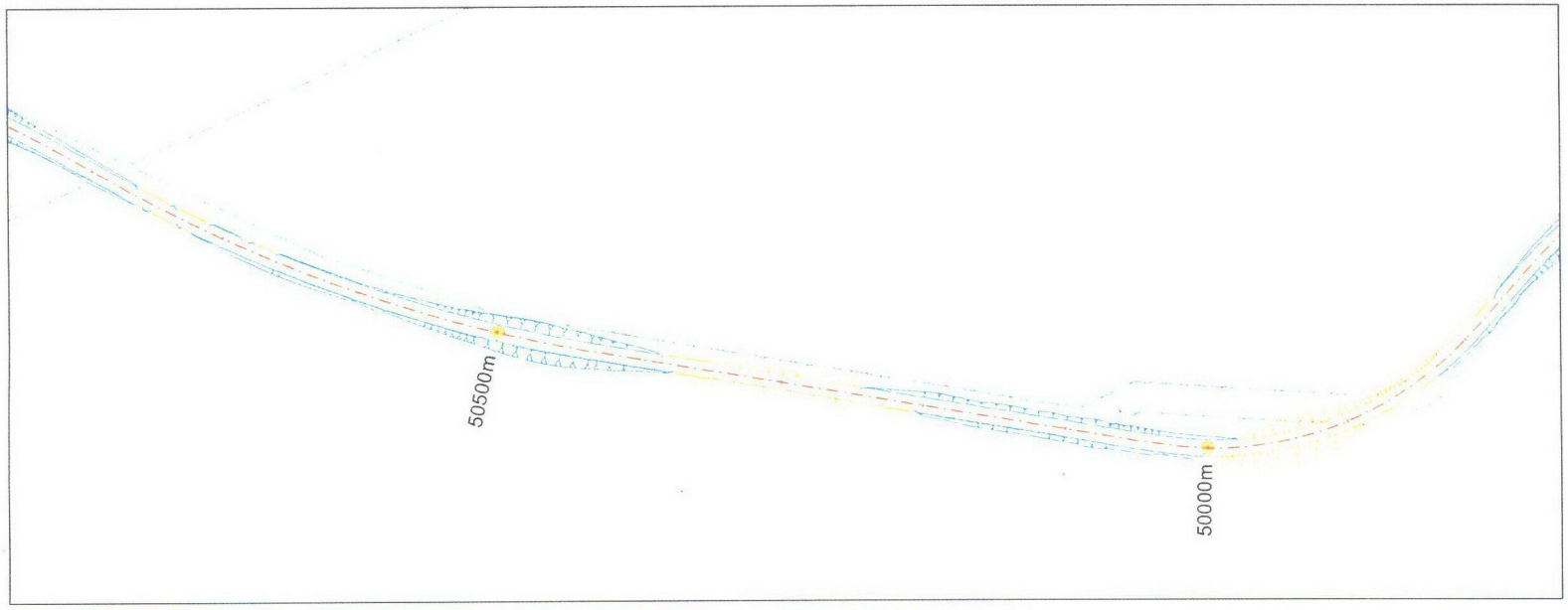

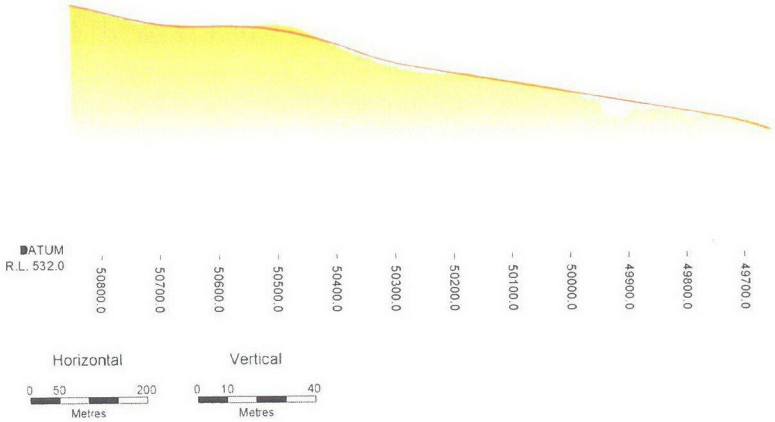

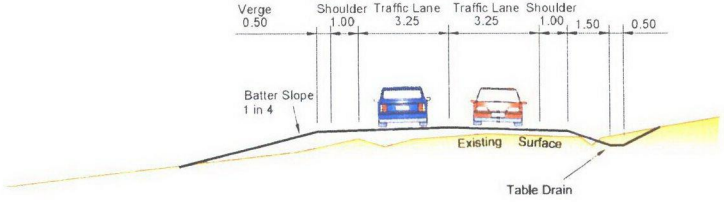

Typical section for general upgrade on the existing alignment

Figure 2.1av

Design and Profile (Chainage 49670 - 50850)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



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Metres

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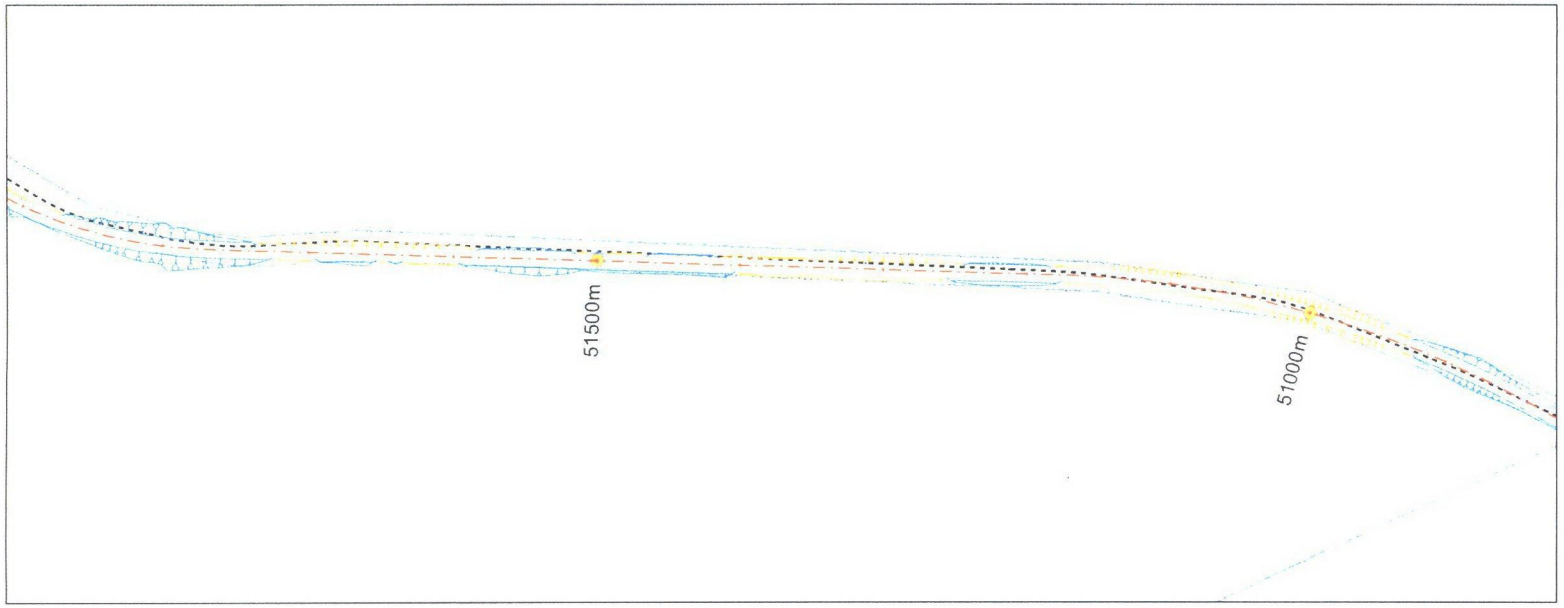



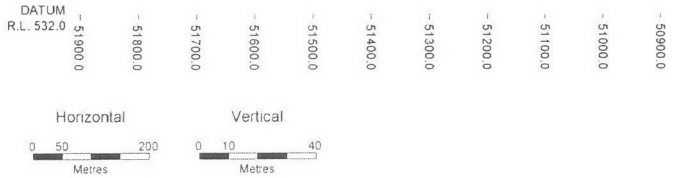

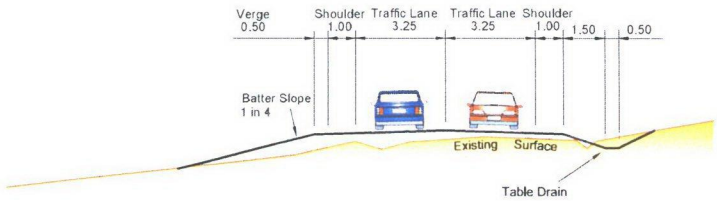

Typical section for general upgrade on the existing alignment

Figure 2.1aw

Design and Profile (Chainage 50820 - 51910)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge





1:5,000



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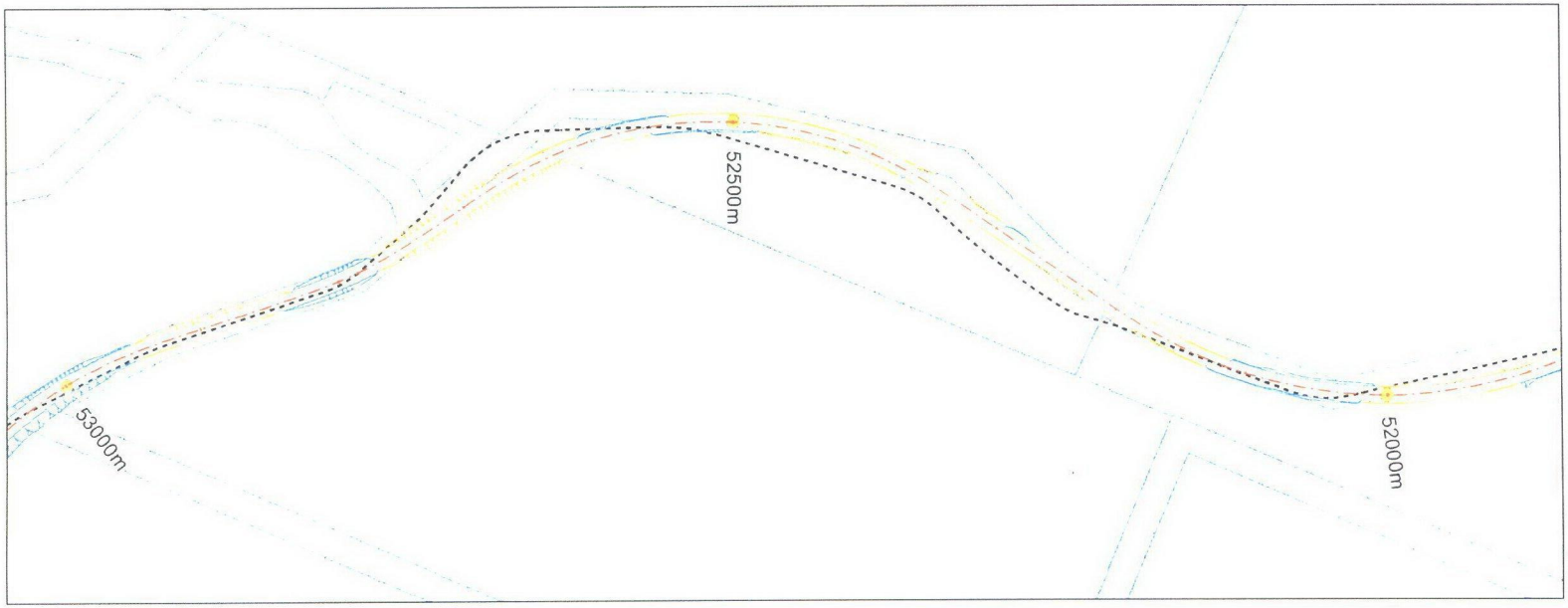



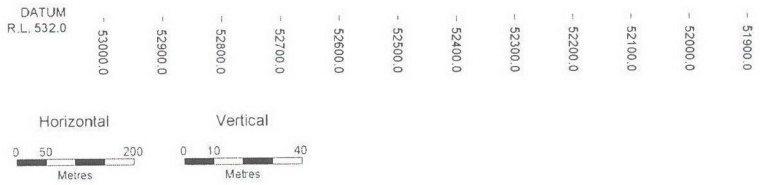

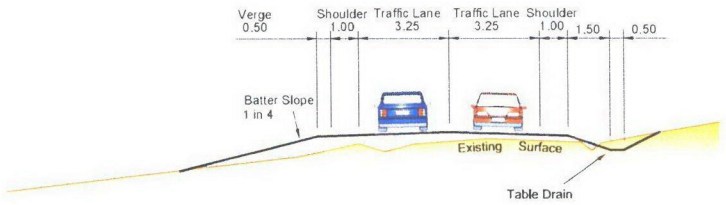

Typical section for general upgrade on the existing alignment

Figure 2.1ax

Design and Profile (Chainage 51870 - 53050)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



N

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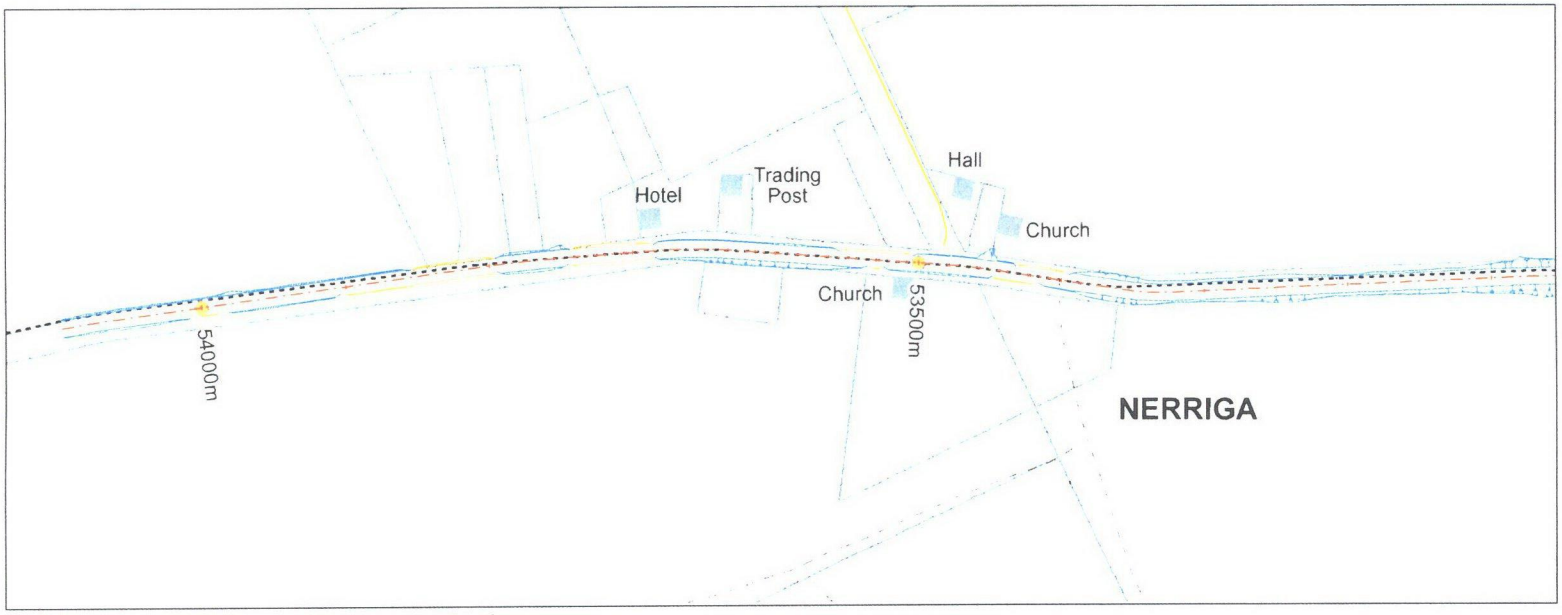

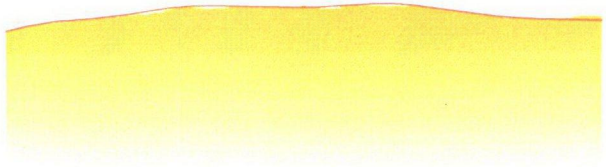

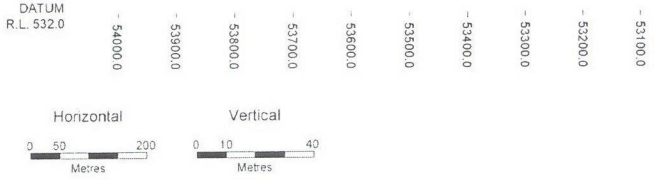

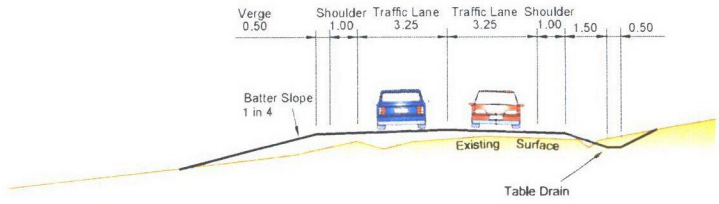

Typical section for general upgrade on the existing alignment

Figure 2.1ay

Design and Profile (Chainage 53050 - 54090)

Legend

- Proposed MR92 Centreline
- Proposed MR92 Alignment
- Fill Embankment
- Cut Embankment
- Chainages (from Hames Road)
- Existing MR92 Alignment
- Other Roads
- Tracks
- Rivers
- Conservation Areas
- Property Boundary
- Bridge



1:5,000

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ

The Proposal has the potential to significantly reduce accident rates along MR92 by up to 80%.

2.5.3 Land Use and Planning

Land use planning is discussed in Section 8 and Technical Paper 4 of the EIS. The primary land uses in the vicinity of the Proposal are National Parks and Nature Reserves, with small pockets of rural lands. The Proposal would require only minor incursions into adjacent lands and is unlikely to have a substantial impact on the current or future uses of these lands.

The Proposal may slightly increase visitation to the tourist facilities at Tianjara Falls lookout, although it is not expected that an increase in visitation to other sections of the Park would result from the upgrade of MR92. The EIS refers to the conservation objectives of the Plan of Management for Morton National Park, and concludes that the Proposal would have only minor impacts in terms of these objectives.

The EIS identifies a number of secondary impacts on land uses in the area through changes in the demand for land for particular purposes, such as industrial areas near Nowra or rural residential or rural production near Sassafras and Nerriga. It is considered possible that the Proposal would stimulate some economic development in the region in terms of demand for commercial, industrial and tourist related development. The EIS states that the actual impacts of changes to land uses are dependent on the release of land by local councils and DIPNR for development purposes.

The identified two zonings where roads are prohibited under Shoalhaven Council LEP 1985 are Rural 1(f) Forestry and National Parks Zone 8. Subsequent information received has amended this information and the Proposal can proceed under the Provisions of Part 5 of the EP&A Act. Details are included in Chapter 1.4.2 of this Report.

2.5.4 Topography, Geology and Soils

The topography, geology and soils of the study area are described in Section 9 and Technical Paper 5 of the EIS. The study concluded that there were no identified geotechnical or contamination issues that would prevent the Proposal proceeding.

The formation level of the Proposal, over most of its length, would be generally similar to that of the existing road, and new cuttings would mostly be within Nowra Sandstone and less than 3m deep. The most extensive area of excavation would occur between Bulee Gap and the Endrick River, where one 15m cutting and one 13m cutting is proposed, together with several minor cuts less than 5m.

Slope stability could be a potential problem only in the Bulee Mountain area however the existing road does not have a record of instability. Remedial measures in the form of rock bolts or shotcrete may be needed in small sections where there are localised unstable geological features.

The majority of material won from the new cuttings would be suitable for use as general fill and selected material, with waste expected to be <10%. The Nowra Sandstone is considered to be the most superior source of select fill. The phyllite cuttings would generate a lesser grade of fill, given its silty, sand deficient and micaceous nature. Soil erosion would only be a problem in areas of phyllite outcrop, generally occurring only on both sides of the Endrick River and at Nerriga.

The underlying geology at Bulee Mountain was found to provide suitable foundation for the construction of the two new bridges. The other existing bridges in the study area are suitable without modification for the proposed upgrade.

Whilst acid sulphate soils would not be an issue given the Proposal's location away from the coast, small amounts of sulphide minerals could be present in some of the more recent geological structures, which could give rise to localised acid seeps. A contaminated sites assessment was undertaken for the Proposal, which concluded that:

- site history does not indicate any previous land use (including agricultural activities) that would have resulted in significant contamination within the road corridor;

- small amounts of potential contaminants may be present from the old quarries, prior construction activities, vehicle dumping, agricultural dams and farm run off; and
- natural ground contamination may be present due to bush fires causing incomplete combustion of organic matter. The main contaminants in this case would be polycyclic aromatic hydrocarbons (PAHs).

2.5.5 Heritage

The EIS discusses non-indigenous and indigenous heritage issues in Section 10 and Technical Paper 6. Desktop studies and field surveys identified a number of heritage items and issues located adjacent to the Proposal. These items, and the potential impact on them from the Proposal, are described in Table 2.2.

Table 2.2: Heritage items potentially impacted by the Proposal

Heritage Item	Potential Impact
One native title claim adjoining the alignment of MR92 east from Nerriga	Minor acquisition of land.
Five scarred trees (one of which could not be located)	Three scarred trees would be potentially impacted from realignment or widening of the existing road. One would not be impacted by the Proposal.
Two areas of Potential Archaeological Deposits (PADs)	Both PADs would be directly impacted by the Proposal.
One open campfire/surface scatter	Would be impacted by the Proposal.
One grinding groove site	No impact.
A major intact section of the 1841 alignment and 1856 realignment of The Wool Road in the vicinity of Bulee Mountain	Would be significantly impacted by the Proposal.

Four rock overhangs/rock shelters of potential indigenous heritage significance are located within the vicinity of the Proposal, but would not be directly impacted by it.

The legal representatives of the native title claimants were contacted. Extensive liaison with the Nowra and Ulladulla Local Aboriginal Land Councils (LALCs) was undertaken as part of the heritage study, including:

- initial contact by phone;
- supply of maps of the Proposal location and request that the local Aboriginal communities and LALC inform the RTA of any issues or concerns; and
- participation of both LALCs in the field studies of the preferred route.

The Proposal would impact significantly upon the 1841 alignment and 1856 realignment of The Wool Road in the vicinity of Bulee Mountain. An assessment of heritage significance was undertaken for the Bulee Mountain section of The Wool Road, which concluded that this section was of State heritage significance. The statement of impact concluded that the heritage significance of the 1856 road would be reduced by the Proposal and a Section 140 Permit from the Heritage Office would be required.

The EIS incorrectly stated concurrence would be required from the Heritage Office for the Proposal. Given that no items listed on any heritage register would be affected by the proposed upgrade, there are no grounds for concurrence.

2.5.6 Water Quality, Hydrology and Hydraulics

The EIS discusses water quality, hydrology and hydraulic issues in Section 11 and Technical Papers 7 and 8. A combination of published water quality data from government agencies and specific dry and wet weather sampling in parts of the study area were used to analyse water quality, whilst computer models were developed to determine potential hydrological and hydraulic impacts. The water quality

assessment was conducted to comply with the relevant government guidelines, objectives, legislation and policies.

MR92 crosses three major waterways in the study area (Tianjara Creek, Boolijah Creek and Endrick River) and several minor waterways. MR92 passes through two water catchments in the study area, the Shoalhaven and Clyde River catchments.

Impacts on water quality from the Proposal would occur mainly during the construction phase from erosion of soils and sediment transport into waterways, although this risk is not expected to be any greater than the existing risk of sediment movement from the current unsealed road. The EIS considered there would be a decrease in sediment load in the long-term from the Proposal compared with the existing situation. Other contaminants, which could pollute waterways during the operation phase of the Proposal, include heavy metals, oils, greases and petroleum hydrocarbons. The increase in impervious surfaces and concentration of runoff from the Proposal could result in higher flow volumes and velocities, although this is not expected to alter the in-stream channel morphology given that the increase in impervious area compared with the entire catchment is minimal.

2.5.7 Biodiversity

Consideration of terrestrial biodiversity is presented in Chapter 2.8 Consideration of the SIS and Chapter 2.9 Consideration of the SSIS, of this Representations Report.

Aquatic ecology is discussed in Section 12.5 and Technical Paper 9 of the EIS. The aquatic ecology assessment was based on the Shoalhaven River system given that most of the study area lies within this catchment. A detailed desktop analysis of aquatic ecology was undertaken on the assumption that all waterways in the study area are of utmost conservation value. No field surveys were undertaken. The impacts on the threatened species, the Macquarie Perch and Australian Grayling, were considered.

The EIS considered that most waterways in the study area were of good condition in terms of water quality and riparian vegetation.

Whilst the Macquarie Perch was considered to potentially occur in the Endrick River in the study area, the application of the 8-part test pursuant to Section 5A of the EP&A Act found that a significant impact on this species was unlikely as a result of the Proposal. The EIS considered that the Australian Grayling was unlikely to occur in any of the waterways in the vicinity of the study area. The EIS concluded that in general, minimal impacts to aquatic ecology would occur as a result of the Proposal given that no in-stream works would be undertaken and that riparian and aquatic flora would not be directly impacted upon. Potential negative impacts include discharge of sediment into waterways during construction, although it is recognised that the sealing of the existing road would lead to a long-term decrease in sediment entering waterways.

2.5.8 Air Quality

The EIS considered air quality issues in Section 13. National air quality objectives were referred to in the assessment of potential impacts. Climatic data was obtained from the Bureau of Meteorology for Nowra and Nerriga.

Air quality was considered to be good with likely contributors to atmospheric pollution within the study area resulting from traffic, dust from agricultural activities and bushfires. Pollution from vehicles is expected to impact on residents within 10-20m from the existing road in the Sassafras, Endrick River and Nerriga localities.

Air quality impacts from the Proposal would occur during the construction phase, and include dust and vehicle emissions. Temporary dust impacts may be experienced at residences close to the road works. During the operational phase, the Proposal would improve air quality locally due to a decrease in dust emissions as a result of sealing the road. Air quality impacts from vehicles are expected to be minimal given the expected low levels of traffic. The Proposal is expected to have negligible impacts on greenhouse gas emissions.

2.5.9 *Urban Design and Landscape*

The EIS discusses the urban design, landscape and visual impact aspects of the Proposal in Section 14 and Technical Paper 10. A visual assessment, landscape concept plan and urban design strategy were prepared for the Proposal. Three visual impact criteria, visual sensitivity, effect and impact, were considered for the length of the Proposal.

The visual impact of the Proposal are summarised in Table 14-3 of the EIS. The Proposal would mostly have a low to moderate visual impact. Various landscape and urban design treatments, including landscaping, roadway furnishings and structure/building treatments, are included in the Proposal.

2.5.10 *Noise and Vibration*

Noise and vibration impacts are discussed in the EIS in Section 15 and Technical Paper 11. The assessment of road traffic noise was undertaken in accordance with the NSW Government's *Environmental Criteria for Road Traffic Noise (ECRTN)* (EPA 1999), with construction noise impacts assessed under the guidelines of the *Environmental Noise Control Manual* (EPA 1994). 'Worst-case' predicted traffic volumes of 2000 vehicles per day in 2016 were used in the noise analysis.

In accordance with the ECRTN, the Proposal was classified as a "redevelopment of an existing collector road" for the purposes of the noise assessment. It was further determined that daytime conditions would result in greater noise impacts than night-time levels, and therefore these were treated as the 'limiting case' in the EIS. Under this classification, the Proposal would comply with the road noise criteria of $L_{Aeq(1\ hour)}$ of 60dB(A) along its entire length except in Nerriga village. Here, an $L_{Aeq(1\ hour)}$ of 65dB(A) is expected as a result of the Proposal. Noise control treatments would be introduced in Nerriga Village if they were considered to be reasonable and feasible, in accordance with the RTA's *Environmental Noise Management Manual* (RTA 2001). However, should expected traffic flows be around 1000 vehicles per day, noise levels are expected to exceed the $L_{Aeq(1\ hour)}$ by only 2dB(A) at Nerriga village, and no noise treatments would be required.

Construction of the Proposal was found to potentially cause short-term impacts to nearby residences, particularly in Sassafras and Nerriga, in terms of noise emissions. A series of Noise Management Plans would be developed for the Proposal to address short-term noise impacts from construction activities.

Vibration impacts are likely to occur during excavation works, pile driving for bridges and the use of vibrating rollers. The EIS concludes that the likelihood of damage from these activities is low for residences located at least 15-20m from the vibration events. Therefore, the use of a vibrating roller in Nerriga would not be permitted. Blasting and general excavation would not impact on residences in the Bulee Mountain area, given that the nearest such dwelling is located 1.6km from the Proposal, although the Eastern Gas Pipeline would significantly constrain blasting activities in this locality.

2.5.11 *Social Impact Assessment*

The EIS discusses social impacts from the Proposal in Section 16 and Technical Paper 12. The social impact assessment was undertaken in accordance with the NSW Ministry of Urban Infrastructure Management *Guidelines for Assessing the Social Impacts of Infrastructure Projects* (Draft, December 1998). Information about community issues and potential social impacts was gathered from sources including previous economic and transport studies in relation to the route, and community and agency consultation undertaken for the EIS.

Six key social issues were identified by the EIS, including:

- general support for the upgrading of MR92;
- significance of MR92 to the community;
- regional development benefits;
- safety and condition of the existing route;
- property impacts from the Proposal; and
- alternative views.

The positive and adverse social impacts identified in the social impact assessment are summarised in the EIS in Table 16-3. These mainly related to:

- improved travelling times for traffic on MR92, improved freight access, increased visitation to the region, and safety and accident benefits;
- positive effects on tourism in the Shoalhaven area and access to industry and commerce;
- access to employment and services in the region;
- increased demand for property along the route and the potential for sub-division;
- adverse impacts on cultural heritage; and
- property acquisition impacts, particularly at Sassafras.

Overall, it was concluded that the Proposal would have important benefits for individuals, communities and businesses in Canberra, Queanbeyan, the Shoalhaven and southern Illawarra and Tallaganda areas and west of Nerriga through the greater business, social and tourism opportunities that the Proposal would deliver. The EIS notes that until roads west of Nerriga have been upgraded, however, these benefits are unlikely to be fully realised.

2.5.12 Waste Minimisation and Management

Waste minimisation and management is discussed in Section 17 and Technical Paper 13 of the EIS. The key waste streams from the Proposal are identified as:

- excavated material;
- building waste; and
- general waste from construction compounds.

The Proposal would incorporate the avoid/reuse/recycle principles of waste management outlined in the *Waste Avoidance and Resources Recovery Act 2001* (WARR Act). A Waste Management Plan (WMP) would be required to be prepared by the contractor identifying waste streams and detailing disposal methods.

The majority of waste would be in the form on non-liquid waste, such as surplus excavated soil and rock material unsuitable for use as fill. It is expected that the majority of excavated material would be used on other construction sites as general fill or incorporated into embankments and other road works. The second greatest source of waste would be green waste generated by vegetation clearing. The EIS proposes that green waste be reused wherever possible, including harvesting of economically useful timber prior to construction, use of timber for sediment control or blocking illegal access into national park areas, or mulching and used to protect exposed areas.

Waste generated from compounds, such as sewage, rubbish and contaminated soils resulting from oil and fuel spills, would be either recycled and reused where possible, or disposed of in accordance with legislation and regulations. The major transportation routes for the movement of waste include MR92, Princes Highway, Kings Highway and the Hume Highway. All these routes are major arterial roads and are suitable for use by waste disposal trucks, including spoil disposal.

2.5.13 Hazards and Risks

The EIS discusses construction and operational hazards and risks in Section 18 and Technical Paper 14. Key risk management issues were identified at a workshop involving major stakeholders and those of relevance to the Proposal were further considered in the risk analysis. A hazard assessment matrix approach was adopted to rate each hazard according to likelihood and consequences.

The highest priority risks and hazards identified during this process are discussed in Table 18-4 of the EIS, and include:

- heritage impacts;
- impacts on national parks;
- failure in bridge structures;
- impacts on threatened species encountered during construction;
- accidents by general traffic;
- collision between traffic and cyclist;

- accident involving vehicle carrying dangerous or hazardous goods resulting in injury or loss of life; and
- increased incidence of bushfires.

Risk management strategies for these and all other relevant risks and hazards are presented in Technical Paper 14.

2.5.14 Cumulative Impact Assessment

The cumulative impacts of the Proposal are discussed in Section 19 of the EIS. Other known major developments in the region were identified in the EIS, and include:

- upgrading of Port Kembla;
- transport initiatives, including:
  - upgrading of the Princes Highway;
  - better links with Sydney and better freight routes;
  - improvements for crossing the escarpment;
  - rebuilding Country Roads Program; and
  - rail improvements.
- general growth in the Shoalhaven over time.

Collectively, these developments will have impacts on demand for housing and employment, recreational services and other infrastructure. The developments occurring simultaneously with the Proposal could increase development pressures in the area, support demand for transport infrastructure and contribute to environmental impacts.

The major positive cumulative impacts from the Proposal include:

- regional growth opportunities for agricultural, industrial producers and other businesses;
- improved travel times for all drivers;
- improved access for non-4WD vehicles and freight vehicles including B-doubles;
- induced changes in income, employment, prices and sales decisions, land uses and property prices;
- tourism and cultural benefits;
- improvements in water quality due to reduction in sediment-laden runoff; and
- overall community benefits which are difficult to quantify, such as improved access for emergency services, reduction in community isolation and reduced danger of vehicle breakdown from potholes, windscreen damage, bogging etc.

Negative cumulative impacts include:

- potential impacts on threatened and/or endangered flora and fauna species and communities;
- impacts to the 1856 realignment of the Wool Road through the Bulee Mountain area;
- potential for additional disturbance or environmental impacts associated with previous development through the corridor;
- progressive 'nibbling' at boundaries of National Parks;
- potential impacts on indigenous heritage items and sites resulting in cumulative impacts on cultural heritage; and
- visual changes of the environment associated with the Proposal within the Bulee Mountain area.

2.6 Environmental Management

The environmental management framework was described in the EIS in Section 20. The process and legislative requirements to effectively mitigate and manage environmental impacts associated with construction and operation of the Proposal are presented. Details relating to the contents of the Project Environmental Management Plan (PEMP) and the Contractor's Environmental Management Plan (CEMP) are provided.

A comprehensive range of mitigation measures has been proposed to reduce the negative impacts of the proposed modifications. These measures comprise current best practice in the field of

environmental management. Consideration was given at the design stage to minimising impacts and reducing the need for mitigation. Further improvements are anticipated at the detailed design stage. In accordance with statutory requirements, the EIS outlined mitigation measures to reduce impacts. A Summary of Environmental Mitigation and Management Measures is provided in Section 20.5 of the EIS.

Subsequent to the completion of the EIS, and in response to issues raised in Representations to the Proposal, correspondence, and further design development, the RTA has proposed further alterations to the EIS Proposal. These are discussed in Chapters 7 and 8 of this Representations Report, and mitigation measures for the Preferred Activity are located in Tables 8.5 - 8.7 of this Representations Report.

2.7 Project Justification and Conclusion

A summary of the likely impacts of the Proposal together with justification for its construction and operation is given in Section 21 of the EIS. The primary needs for the Proposal relate to:

- road safety;
- regional growth;
- freight transport; and
- tourism.

Environmental justification is discussed in relation to social, biophysical and economic considerations. The Proposal would generally have positive social impacts related to the broad needs above, as well as improved access to employment and services in the region. The EIS considers that the potential adverse impacts on the biophysical environment can be mitigated, and that the design and approach of the Proposal has been undertaken within the context of the sensitive environs adjacent to much of the alignment. Furthermore, it is considered that the Proposal is justified in terms of economic benefits when put in the context of the most likely traffic and road construction scenario, that is, sealing of unsealed sections of existing roads between Nerriga and Sandy Point and Nerriga and Braidwood.

The EIS has been prepared in accordance with statutory requirements (Chapter 2.1). The potential impacts of the proposed modifications have been comprehensively assessed using current best available information. This task has been approached in an analytical manner, and substantial effort and resources have been directed towards preparing specialist studies and utilising local knowledge of the study area (Chapter 2.5).

2.8 Consideration of the SIS

2.8.1 General

Following preliminary EIS investigations, which concluded that a significant impact on threatened species, populations or ecological communities was likely as a result of the Proposal, a Species Impact Statement (SIS) was prepared by Kevin Mills & Associates on behalf of the RTA. The SIS sought to further assess the impacts of the Proposal on flora and fauna species listed as threatened on the TSC Act known to occur, or considered likely to occur, within the study area. Subsequently, a Supplementary SIS was prepared to address issues which could not be addressed in the SIS (see Chapter 2.9). Following the studies for the SIS and SSIS and the iterative design process which aimed to avoid impacts wherever possible, it was concluded that no significant impact on any threatened species, population or ecological community is likely as a result of the Proposal. The RTA is therefore not seeking concurrence for the Proposal from NPWS.

The following section provides a summary of these findings, with further detail provided in Section 12 of the EIS and within the SIS.

2.8.2 *Compliance Checklist*

Table 2.3: SIS Compliance Checklist

Requirement	Requirement	Addressed in which Chapter of this Report.
Section 112 of the EP&A Act, 1979	Relates to the preparation and consideration of an SIS in accordance with the prescribed form and manner.	2.8
Section 110 and 111 of the *Threatened Species Conservation* Act, 1995	Content of the SIS – Requirements of the Director–General of the NSW National Parks and Wildlife Service.	2.8 and 2.9

2.8.3 *Existing Environment*

Vegetation

The vegetation within the study area consists primarily of forest, woodland or heathland typically associated with sandstone soils. In a number of other locations, where the soil profiles differ (eg at Sassafras and the Turpentine Road intersection), tall forest and rainforest occur. In general, the vegetation is relatively intact and free of weed species. Large areas of cleared land only occur at Sassafras and near Nerriga. Along the existing road, clearing has generally been restricted to the narrow road corridor and shoulder, and along the Eastern Gas Pipeline corridor which has been left to regenerate.

Fauna and Fauna Habitats

Eight broad fauna habitat types were identified in the study area, including:

- rainforest;
- tall forest;
- forest;
- woodland;
- open woodland / shrubland / heathland;
- cliffs and rock outcrops;
- upland swamps; and
- streamsides.

Specific fauna surveys were conducted at those locations where the Proposal deviates from the existing MR92 alignment. Results of previous field studies in the region, and a desktop review of species likely to occur in the study area, were drawn upon in the SIS.

The results of these surveys and studies were:

- 168 bird species have been recorded in the region. It is considered that other species would also be present.
- 13 frog and 16 reptile species were recorded in the study area; and
- 14 non-flying mammal and 14 bat species were recorded along MR92.

2.8.4 *Discussion of Priority Species*

From the Director-General's requirements, two flora and seven fauna species were identified as "priority species" corresponding to those species likely to be affected by the Proposal. These are listed in Table 2.4 below.

Table 2.4: Priority species for the SIS

Species	Common Name	Status	Previously Recorded in Study Area[1]
Plants			
Acacia bynoeana	Bynoe's Wattle	Endangered	Yes
Eucalyptus langleyi	Nowra Mallee-ash	Vulnerable	Yes
Animals			
Calyptorhynchus lathami	Glossy-black Cockatoo	Vulnerable	Yes
Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Yes
Litoria littlejohni	Heath Frog	Vulnerable	Yes
Ninox strenua	Powerful Owl	Vulnerable	No
Petaurus australis	Yellow-bellied Glider	Vulnerable	Yes
Phascolarctos cinereus	Koala	Vulnerable	Yes
Varanus rosenbergi	Heath Monitor	Vulnerable	Yes

1. Recorded either during surveys for the SIS or listed as previously occurring in the study area on wildlife databases.

In addition, threatened bats were included as priority species although at the time of writing the SIS, no bat data was available. Supplementary bat surveys were undertaken in early 2003. The results of these recent surveys were included in the Supplementary SIS and are discussed in Chapter 2.9 below.

A small population of 11 *Acacia bynoeana* was recorded at curve number 2 along MR92. This species is known from only one record on the south coast of NSW, although is known to occur in other parts of the Sydney basin region. Over 1000 *Eucalyptus langleyi* Nowra Mallee-ash were recorded in the study area in four separate stands between Hames Road and Turpentine Road, the largest of which (840+ plants) occurs at Ch1000. Most trees are located outside the proposed road corridor.

There are several recent records of Koalas occurring near Bulee Mountain and the Endrick River. Whilst no Koalas were observed during surveys for the SIS, evidence for the presence of Koalas was observed around Bulee Mountain, including claw marks and scats. No Yellow-bellied Gliders were recorded in the study area during the surveys conducted for the SIS, although historic records near Sassafras indicate this species may occur in the tall forest habitats. The Eastern Pygmy-possum was not recorded during the surveys for the SIS, although historical records of its presence in forest and woodland areas indicate that this species may occur in the MR92 study area.

The Glossy-black Cockatoo was observed in the Bulee Mountain area and evidence of its feeding was also recorded there. It is apparent that a population of this species is present in the Bulee Mountain area comprising of at least 9 birds. The species, or suitable foraging habitat for it, was not recorded anywhere else in the study area. The Powerful Owl was not recorded in the study area during surveys for the SIS, although suitable habitat for it is present within tall forest vegetation near Turpentine Road, at Sassafras and in the Bulee Mountain area.

Brief surveys conducted for the Heath Frog for the SIS failed to locate this species in the study area. Previous studies at Parma Creek and Boolijah Creek recorded this species, and for the purposes of the SIS, it was assumed this species occurs in these streams. A single Heath Monitor was observed crossing MR92 5km west of Sassafras. Other records of this species are also present for the study area.

2.8.5 Discussion of Species of Secondary Interest

As identified in the Director-General's requirements for the SIS, a range of additional threatened species was considered in the SIS. Given that these species have not previously been recorded in the study area, and are considered to only potentially be affected by the Proposal, they were considered as of secondary interest in the SIS. These species were considered not to require the same level of investigation as priority species. A complete list of species of secondary interest can be found in Table 3.2 of the SIS (page 34).

2.8.6 *Other Species of Conservation Significance*

A number of additional species of conservation significance but not listed on the TSC Act as a threatened species were discussed in the SIS. These are summarised in Table 2.5 below.

Table 2.5: Other species of conservation significance

Species	Common Name	ROTAP Code[1]	Relevance to Proposal
Acacia subtilinervis	Fine-veined Wattle	3RCa	Species common in the study area.
Dillwynia crispii	Budawang Parrot-pea	2RC	Located at Bulee Mountain along BM4 alignment. Known only from a small number of sites.
Eucalyptus triflora	Budawang Ash	3RCa	Occurs at Bulee Mountain along BM4 and BM5 alignments.
Genoplesium superbum	Budawang Midge Orchid	2RC-	Restricted to Bulee Mountain area and likely to be close to MR92.
Grevillea macleayana	Large-leaved Grevillea	3RC-	Several plants (many destroyed during slashing underneath powerlines in November 2002) occur along MR92. More common in coastal areas.
Leptospermum epacridoideum	Heath-leaved Tea-tree	2RC-	Species has been recorded along MR92.
Pseudanthus divaricatissimus	Tangled Pseudanthus	3RCa	Two plants located along MR92. Found throughout Sydney basin region.
Rulingia hermanniifolia	Wringled Kerrawang	3RCa	Recorded at several locations along MR92. Rare in region.

1. ROTAP – Rare or Threatened Australian Plants (Briggs and Leigh 1996).

Two vegetation communities, Forest on the Basalt Soils and Sassafras and Upland Swamps, are also considered of conservation interest although are not formally listed as threatened or regionally or locally significant.

2.8.7 *Potential Impacts of the Proposal*

Threatened Plants

Whilst the majority of the threatened plants are located outside the proposed road corridor, up to 4 individual *Eucalyptus langleyi* would be removed by the proposed widening of MR92 between Hames Road and Turpentine Road. However, considering the size of the population of this species in this area, a significant impact is not considered likely for this species.

Acacia bynoeana would not be directly affected by the Proposal. No individuals of this species occur within the proposed road alignment. There would be no significant impact on this species from the Proposal.

Threatened Animals

The SIS identifies 7 species of threatened fauna that could be affected by the Proposal. None of these species would be significantly impacted upon by the Proposal. The Koala could be affected through interruptions to their movement patterns, removal of feeding habitat, and increasing the number of roadkills through increased traffic volumes and speed. The Yellow-bellied Glider may be impacted upon through the removal of hollow-bearing trees in the Sassafras area, although this represents only a small area of potential habitat for this species.

Impacts identified by the SIS on the Powerful Owl include removal of nest trees and habitat supporting prey species, although it is recognised that this impact would be small and only small

patches of preferred habitat would be removed. The Proposal would impact, although not significantly, on the Glossy-black Cockatoo through the removal of approximately 1.6 hectares of potential foraging habitat.

The Heath Frog may be impacted upon through indirect affects of the Proposal, including excessive sediment or turbid water entering local streams and swamps. It is recognised that the Proposal would reduce the amount of sediment potentially entering local streams through the sealing of the currently unsealed road. No direct impacts on the Heath Monitor are identified in the SIS, although the species could be adversely affected through increased roadkills.

The SIS recognises that adverse impacts on threatened bats may occur from the Proposal, however given that no surveys were possible for the SIS, these impacts could not be specified. Subsequently, surveys were undertaken in 2003 and results discussed in the Supplementary SIS (refer to Chapter 2.9.

Endangered Ecological Communities
Elements of the endangered ecological community White Box-Yellow Box-Blakely's Red Gum Woodland are present between the Endrick River and Nerriga, in the form of individual Yellow Box trees. The majority of this community has been cleared by agricultural activities, with remnant trees occurring only in the road reserve or in adjacent paddocks. The SIS was unable to determine the impacts on these trees from the Proposal, as the exact alignment had not been surveyed at the time of writing. Proposed safeguards to protect remnant trees are identified in Chapter 8 of this report.

Other Flora and Fauna
The SIS states that the Proposal would involve the removal of some other rare plants that are not listed by the TSC or EPBC Acts. Additionally, the Proposal would require approximately 31.4 hectares of bushland to be removed, which provides general habitats and resources for native flora and fauna species. Approximately 70% of this would be woodland and shrubland/heathland. The remaining area of vegetation to be cleared comprises forest. All these vegetation types and habitats are considered to be common in the region.

Key Threatening Processes
The SIS discusses four Key Threatening Processes (listed on Schedule 3 of the TSC Act) which could be triggered by the Proposal. These include:

- High Frequency Fire;
- Predation by the Feral Cat;
- Predation by the European Red Fox; and
- Clearing of Native Vegetation.

High Frequency Fire could potentially be triggered during the construction phase and as a result of increased use of the road post-construction. To minimise the risk of this occurring, specific strategies would be in place during construction to prevent fires from occurring, and measures would be undertaken to reduce the likelihood of people entering bushland adjacent to the road (eg closing fire trails, closing or gating tracks).

The SIS considers that the Proposal would have little effect on the presence and behaviour of feral cats and European Red Foxes. These species currently occur in the region and may follow roads into natural bushland. Given that the road currently exists, these Key Threatening Processes would not be triggered or worsened by the Proposal.

The amount of vegetation to be removed by the Proposal is considered to be insignificant compared with the amount of vegetation on adjacent lands. The conservation reserves near the study area support over 200,000 hectares of vegetation.

Specific impacts of these Key Threatening Processes on individual threatened species are presented in Section 6.5 of the SIS.

Potential Indirect Impacts

A number of potential indirect impacts could arise from the Proposal, including increased public access, roadkill and weed invasion. Mitigation measures were provided to reduce or avoid these indirect impacts. A discussion of the likelihood of indirect impacts affecting species of conservation significance as a result of the Proposal is given in Section 6.6 of the SIS. The majority of indirect impacts would not have any impacts on threatened flora, and would only have a minor or unlikely impact on threatened fauna.

2.9 Consideration of the SSIS

2.9.1 General

As a result of the primary field studies for the SIS being undertaken during the cooler months of 2002, additional survey work was required and this was foreshadowed in the Species Impact Statement. Supplementary field work was carried out in March and September 2003 and the results of these studies were documented in a Supplementary SIS, prepared by Kevin Mills & Associates on behalf of the RTA in September 2003. The SSIS sought to further assess the impacts of the Proposal on flora and fauna species listed as threatened on the TSC or EPBC Acts known to occur, or considered likely to occur, within the study area but which could not adequately be addressed in the SIS. The SSIS concluded that a significant impact on threatened species, populations or ecological communities is not likely as a result of the Proposal.

2.9.2 Compliance

The SSIS helps to fulfil the requirements of Section 110 and 111 of the TSC Act relating to the requirements of the Director-General of the NPWS.

2.9.3 Fauna

Targeted searches for bat species using various techniques were undertaken for the SSIS in March 2003. A range of species were recorded including four threatened species, listed in Table 2.5 below.

Table 2.6: Threatened bat species recorded during surveys for the SSIS.

Common Name	Scientific Name	EPBC Act Status	TSC Act Status
Large-eared Pied Bat	*Chalinolobus dwyeri*	Vulnerable	Vulnerable
Eastern Falsistrelle	*Falsistrellus tasmaniensi*	-	Vulnerable
Large Bentwing-bat	*Miniopterus schreibersii*	-	Vulnerable
Large-footed Myotis	*Myotis adversus*	-	Vulnerable

Based on habitat requirements and the type and amount of vegetation to be removed for the Proposal, a significant effect on these species pursuant to the EPBC and TSC Acts was found to be unlikely.

No other threatened fauna species were recorded during the surveys for the SSIS.

2.9.4 Flora

Additional vegetation surveys were carried out, mostly on an opportunistic basis, during the SSIS surveys. Due to ongoing drought conditions, targeted searches for orchid species could not be undertaken. It was confirmed that these target orchid species were not flowering elsewhere in the region during the SSIS surveys. Nevertheless, further consultation with NPWS regarding the distribution and habitat requirements of target orchid species was undertaken during the preparation of the SSIS to determine the likelihood of a significant impact being imposed by the Proposal.

Cryptostylis hunteriana

The SSIS determined that it is unlikely that this species occurs along Main Road 92, and based on this it was concluded that a significant impact on this species is unlikely.

Diuris aequalis
This species was considered very unlikely to occur on the proposed alignment for Main Road 92 and it was concluded that further consideration is not necessary.

Genoplesium superbum
This species is not listed as a threatened species on the TSC or EPBC Acts, however it is identified as a nationally rare species. The SSIS found that impacts on this species can be avoided and/or minimised through minor alignment modification during detailed design and construction.

Dillwynia crispii
Surveys for this species were undertaken during the SIS and supplementary surveys were undertaken for the SSIS given that a recent bushfire had passed through the known population along MR92 at Bulee Gap. It was concluded that the exact impact of the proposed upgrade of the road on this species can only be determined when the limits of disturbance for the upgrade are marked on the ground, however additional searches of the area around Bulee Mountain found the plants in the broad locations outside the impact zone for the Proposal. The SSIS concluded that the number of plants affected by the road would appear to be very minor. The few individual plants to be affected by the Proposal are not expected to result in a significant impact on the species as a whole.

Eucalyptus triflora
The SSIS found that the stand of *Eucalyptus triflora* at Bulee Mountain identified in the SIS had been burnt in the January 2003 bushfires. Nevertheless, small seedlings of a eucalypt that had emerged since the bushfire are thought to be this species. Further surveys for this species found that it was present along a number of escarpment cliffs in the locality. The SSIS concluded that the few individual plants to be affected by the Proposal are not expected to result in a significant impact on the species as a whole, given the extensive areas where this species occurs across Morton National Park.

Other Rare Species
The SSIS considered two additional rare species, *Acacia subtilinervis* and *Boronia subulifolia* which are not listed as threatened but which are known to occur in the region. It was found that neither of these species would be affected by the Proposal.

2.9.5 Mitigation Measures

A number of mitigation measures additional to those described in the EIS and SIS were documented in the SSIS to minimise potential negative impacts on threatened species and biota in general. These have been included in the PAR in Chapter 8 of this Representations Report.

3 Consideration of Representations to the EIS

Representations received following the exhibition of the MR92 Upgrade EIS and SIS underwent an extensive logging and consideration process including:

1. The details of each respondent were entered into a database and a representation number was allocated;
2. Each issue raised within a representation was identified as a Broad Issue (as listed below) then broken down into a more detailed Specific Issue (includes issues such as fauna, air quality, water quality etc); and
3. RTA has considered each issue, in consultation with its specialist consultants. Written responses to each Specific Issue have been included in this report. Appendix A of this report provides a detailed description of the individual issues raised in each respondent's Representation as well as a list of respondents, their allocated representation number, and the section where the issues are addressed.

3.1 Support/Object Proposal

3.1.1 Support for Proposal

In summary, respondents to the EIS raised the following issues:

a) Strong support for the upgrade of MR92 between Hames Road and Nerriga.

b) The Proposal should be constructed as soon as possible.

c) A commitment is required to complete the upgrade.

Representation Number(s)

15, 16, 17, 55, 56, 58, 62, 82, 83, 84, 85, 86, 87, 88, 89, 90, 99, 103, 105, 107, 108, 109, 117, 136, 142, 146, 150, 151, 152, 156, 158, 178, 183, 186, 192, 195, 213, 216, 222, 230, 231, 232, 234, 235, 236, 237, 238, 239, 240, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635

Response

a) Support is noted.

b) The Roads and Traffic Authority (RTA) and Members of the Steering Committee support the timely construction of this project.

c) The RTA, Federal Department of Transport and Regional Services (DoTaRS) and Shoalhaven City Council (SCC) are committed to the expenditure of $75 million to upgrade Main Road 92 (MR92) between Hames Road and Nerriga.

3.1.2 Object to Proposal

In summary, respondents to the EIS raised the following issues:

a) Do not support the upgrade of MR92.
b) Object to the upgrade of MR92.

Representation Number(s)

93, 95, 118, 180, 187, 191, 233, 241, 477, 478, 479, 480

Response

a) Non-support is noted.
b) Objection is noted.

3.2 Options Assessment

3.2.1 Bulee Mountain

In summary, respondents to the EIS raised the following issues:

a) Support the alternative route that would be quicker and safer.
b) BM4 would detrimentally impact upon heritage items, fauna, rock formations, and cannot be significantly improved in the future. Heritage and geological features cannot regenerate, unlike trees and animals.
c) BM5 would result in less pollution due to being shorter and on a less steep alignment, is more suited for trucks and other long vehicles, and meets the intended function of the road. BM5 provides the long-term solution that the community want.
d) BM5 provides for a greater number of bridges that would facilitate safe fauna movements, benefiting all terrestrial animals including the Koala. For this reason, BM5 would impact on less threatened species than BM4.
e) BM4 does not meet current design standards and its speed restrictions and safety implications are very poor. It is substantially inferior in road safety, being up to 3 times less safe than BM5. The EIS should have addressed road safety in more detail in comparison between BM4 and BM5.
f) BM4 should be handed over to NPWS and used as a tourist attraction, or used as a fire road and kept for local residents. This would be compensation for the loss of 500m of National Park if BM5 were adopted. Alternative compensation could include acquisition of private land or other assistance with the management of environmental and heritage features in the vicinity of Bulee Mountain.
g) The minor loss in National Park is offset by the substantial benefits of BM5. There is too much emphasis on impacts on National Parks. Traffic flow is important.
h) BM4 would not provide the economic benefits that BM5 would, as heavy vehicles would find the road difficult to negotiate and the road would be more likely to deteriorate due to the bends and close proximity to rock faces. The BCR for BM4 would also be lower because of increased travel times, fuel consumption and operating costs.
i) There must be substantial reasons for rejecting BM5, which would provide the community with a significantly more efficient road for their investment than BM4. Such reasons are not provided in the EIS.
j) BM4 would be more difficult to construct than BM5. These difficulties have been underestimated in the EIS.
k) Support BM4, as it would be better to upgrade an existing alignment than construct a new road.
l) BM5 is more ecologically damaging than BM4, especially with impacts on the Koala and Glossy Black Cockatoo and wilderness areas.
m) BM2 provides the straightest alignment and a design speed of 80 km/h and should be the preferred route.
n) The EIS states that the construction cost of BM4 section is slightly cheaper than the cost of BM5, which is surprising as BM5 is significantly shorter, requires fewer earthworks and does not need to be constructed under traffic. The cost data behind these estimates is not provided in the EIS documentation for validation.
o) It is better to bypass Bulee Mountain, as it would become a future black spot as people may take risks and overtake when it is unsafe. This area is very remote for emergency vehicles and would further put peoples lives at risk.

p) When investigations on constraints were reviewed the Bulee Mountain option of upgrading the existing road was not under consideration. With this now being the preferred option there are some concerns and issues regarding a section of the Eastern Gas Pipeline where it approaches the commencement into the Bulee Mountain section. Further reviews by Duke Energy will be required.

q) The main concern with BM4 is that it replicates the problems of the other three descents of the escarpment mentioned in the EIS. The area is known as the "Misty Mountain" for good reason.

r) The noise factor for local residents would be less for BM5 than BM4 particularly when looking into the future when the road extends beyond Nerriga and is utilised by more heavy vehicles.

s) There has been no detailed analysis of the greater likelihood for accidents to occur on BM4 in relation to the much twistier road with a significant drop in speed regime from 100 km/h to 60 km/h and the frustration caused to light vehicle drivers proceeding slowly up a steep and winding road. This needs to be compared with the BM5 alternative which is a higher speed configuration with lower grades, better alignment and significant opportunities for passing.

t) MR92 is a long term road system and therefore the shortest and safest route should be selected.

u) The alternative route would establish a double fire break at the southern end of the Morton National Park.

v) The EIS fails to make clear that BM4 has a greater landtake on the National Park than BM5. The impact of the BM4 land take is dismissed by claiming it is only an 'edge' effect. However, no justification is given for why such a large 'edge' effect would be any less impact than a lesser 'slot' effect created by BM5.

w) BM5 provides for more overtaking lanes and therefore should be selected over BM4.

x) BM5 best meets the project objectives.

y) BM5 would protect the wildlife that currently strays onto the Bulee Mountain section of road. With the proposed method of construction of this option, wildlife would become trapped on the road and may cause accidents and road kills. Safe egress off the road through Bulee Mountain is currently fraught with danger for any wildlife that strays onto the road. If the alternative option is not adopted, straying onto the road through this section will be a death penalty for any wildlife.

Representation Number(s)

1, 2, 4, 5, 6, 7, 8, 10, 11, 12, 15, 16, 17, 18, 55, 58, 59, 60, 69, 70, 71, 72, 73, 74, 75, 78, 80, 81, 83, 85, 86, 87, 88, 89, 90, 91, 92, 93, 95, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 117, 120, 125, 126, 127, 128, 130, 131, 133, 134, 135, 136, 137, 138, 139, 140, 144, 145, 146, 149, 150, 151, 152, 153, 154, 155, 156, 157, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 173, 174, 175, 176, 177, 179, 180, 181, 182, 183, 184, 185, 186, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 212, 213, 214, 216, 221, 222, 223, 225, 226, 227, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 642, 644, 645

Response

a) The alternative route (BM5) would result in a slightly quicker journey through the Bulee Mountain section. However, this is a minimal reduction in travel time along the overall upgrade and would not have any appreciable effect on traffic numbers using the upgraded road. A safety audit has been

carried out on the overall upgrade and further safety audits have been carried out specifically on BM4 and BM5 (see Appendix C). The conclusion of the safety audit indicates that both options would result in a road that is safe and meets the design standards. The minor design deficiencies found in the Safety Audit would be rectified during detailed design.

b) The impacts of BM4 were clearly identified in the EIS. Bridge structures have been included in the design to enable fauna movements. The BM4 option has been designed to avoid impacts to the "beehive" rock formations that are the signature of the Bulee Mountain area. The option has been designed to accommodate the expected transport growth for the foreseeable future. The impacts on the heritage features have been identified and mitigation measures are detailed in EIS section 10.3 and 10.4. The RTA would seek a Section 140 permit from the Heritage Office prior to start of any work in the Bulee Mountain area.

c) Both BM4 and BM5 have steep grades. The difference in vehicle emissions between the two options, taking into account the relatively short distances and the predicted traffic numbers, would be minimal. Neither upgrade option would result in air pollution levels approaching relevant air quality criteria. Even after 20 years following the upgrade works daily traffic is only expected to increase to between 1000 – 2000 vehicles per day and this level of traffic is not expected to result in significant vehicle emissions in the area during operation. The EIS Proposal would improve road safety, provide an improved escarpment crossing and an upgraded freight route between the Shoalhaven and ACT Region. The proposed upgrade would also reduce fuel usage, travel times and accident costs as well as increasing opportunities for tourism (refer EIS page S-3). The intended objectives of the MR 92 upgrade would be met by the EIS Proposal. An additional westbound overtaking opportunity and an extended eastbound auxiliary lane are now proposed on Bulee Mountain in response to community concerns, ensuring BM4 will service long-term transport needs.

d) The provision of bridge structures on BM5 was to minimise the footprint of the road and to enable fauna movements under the structures. The same principles have been applied to BM4 and two bridge structures have been included where appropriate. Both options have the potential to impact on threatened fauna and flora. BM4 is also a lower speed road which is expected to assist in reducing the occurrence and severity of accidents with fauna. The proposed upgrade (BM4) generally follows the existing road alignment thereby minimising disturbance to a pristine bushland area. The proposed bridges along the preferred alignment would allow movement of fauna, and mitigation measures proposed in the EIS (page 12-32) would minimise the impact on fauna.

e) Further safety audits have been carried out specifically on BM4 and BM5 (see Appendix C). These indicate that both options would result in roads that are safe and meet current road design standards. The minor deficiencies in the horizontal and vertical alignment would be rectified in the detailed design stage. The issue of road safety has been carefully reviewed and it is considered that BM4 is equivalent to BM5 in road safety.

f) It is the intact and undisturbed nature of the area of National Park that would be affected by BM5 that is important as opposed to the actual area of land. The old road, even with additional private land, would not represent acceptable compensation for the loss of the environment along the BM5 route. Offering an already disturbed area of land (ie BM4) or purchasing an area of private property would not compensate for disturbing this intact area. Assistance with the management of environmental and heritage features along the BM4 route has been considered and will be further investigated at Bulee Mountain.

g) The traffic analysis did not indicate that substantial benefits would arise from BM5 in generating additional demand for using the upgraded MR92 route. The key in attracting users from other routes and for new trips was the improvement in reliability and travel time associated with sealing the entire route. The difference in travel time and traffic flow between BM4 and BM5 is minimal especially when considered over the whole Proposal length. National Parks are important and incursions into National Parks along the MR92 route have been kept to a minimum due to the high biological value of the Parks in this area. The Proposal objectives included the development of a concept design that:

   - Minimises environmental impacts, including clearance of native vegetation; and
   - Maximises the use of the existing road corridor, where possible.

   BM4 satisfies these objectives in that the transport needs can, for the foreseeable future, be met safely without substantially leaving the existing alignment in the Bulee Mountain area. There would accordingly be insufficient justification to create a new corridor in an undisturbed area of Morton National Park.

h) BM4 would provide similar economic benefits to BM5 and over the whole project there would be more of the road constructed to a higher standard. It should be noted that both BM4 and BM5

avoid the "beehive" rocks and have steep sections. Due to the minimal travel time differences between the two options, when considered in terms of sealing the whole route, the transport modelling did not show a difference in traffic numbers attracted to the MR92 route. BM4 meets the 60 km/h design standards (refer to page 6-3 of the EIS). The road design and close proximity of the rock formations would not cause deterioration of the road. The Road User BCR for the Proposal would not change as there would be no substantial savings in overall travel times, fuel consumption and operating costs.

i) Given that BM5 would require a new alignment, there needs to be a high degree of justification for moving away from the existing alignment. With both options providing safe access, a significantly improved heavy vehicle (and future B-Double) accessible escarpment crossing, and similar patronage, there was insufficient justification to leave the existing alignment in the Bulee Mountain area to construct a new corridor through undisturbed areas. BM5 would require a new corridor of approximately 500m through the Morton National Park, and a further 2.2km through an undisturbed area west of the Morton National Park identified as being of wilderness value. It would require the construction of an additional 4 bridges, under extremely difficult conditions with respect to access and hard rock excavation. Due to the environmental sensitivity of the area, the difficult construction and potential environmental impacts from BM5, an upgrade of the existing road is preferable and would avoid impacts to the undisturbed environmentally sensitive areas. The BM4 option also has a relative cost saving of $6.5 million, which would enable these funds to be used to build other sections along the 54km length to a higher standard.

j) While neither option would be easy to construct, BM4 holds considerable constructability advantages. BM5 would require substantial removal of existing undisturbed dense vegetation, excavation involving rock blasting, which would be difficult in proximity to the Eastern Gas Pipeline, and access constraints. The BM4 option would not require extensive blasting for rock excavation. The substantial quantities of spoil from the deep cutting on BM5 would need to be hauled down the existing road which would make the construction very difficult. Aside from safety issues associated with the very high number of construction vehicle movements, BM5 could also result in some delays for non-construction traffic negotiating Bulee Mountain. Additionally, access for construction equipment and material for BM5 is likely to result in a greater area of damage to habitat than the proposed road footprint and it would also require some changes to the existing BM4 route to enable it to be used safely for haulage.

k) Support is noted.

l) Both BM4 and BM5 would have some ecological impacts and both options have similar impacts on the Koala and Glossy Black Cockatoo habitat. As stated in the EIS, BM4 would have edge effects while BM5 would involve the construction of a new corridor through undisturbed wilderness area and National Park.

m) Considerations other than alignment and design speed influenced the choice of the route at Bulee Mountain. The BM2 option (north of Willies Creek) was considered to have significant constructability issues that would result in a substantially more expensive option than BM4 and BM5, assuming that it was possible to overcome the constructability issues. It was therefore rejected.

n) Although BM5 is shorter than BM4, the majority of the excavation required is unusually hard and abrasive sandstone with significant constructability issues. The route is away from the existing road however the majority of the rock excavation would have to be hauled along the existing road, requiring traffic control and for roadwork improvements. The upgrade of the existing road is considered to have less construction and environmental risk, and managing the existing traffic on the route is not expected to add greatly to the cost of the work. Detailed cost spreadsheets were prepared for each option and, even with a higher contingency allowance for BM4, the cost of BM5 is still anticipated significantly to exceed BM4. It is therefore highly unlikely that the construction of BM4 would result in a higher cost than that of BM5.

o) Bulee Mountain represents the best location to cross the escarpment in the region. Bypassing of the area would result in significant deviation from the existing route and would increase the length and cost of the road upgrade well in excess of the proposed costs for BM4 or BM5. The BM4 upgrade is designed for a 60 km/h road and would be signposted accordingly. The design would be compatible with the steep terrain and is not expected to create road safety concerns. As more vehicles are attracted to the improved route remoteness would be less of a problem in the future.

p) The RTA has been working closely with Duke Energy in the project development phase and would continue this liaison through detailed design and construction.

q) The presence of fog is an intermittent problem that must be contended with at times on most of the escarpment crossings. In fog the safer option in the Bulee Mountain area is the lower speed route (the BM4 option).
r) The noise assessment carried out for the EIS did not indicate any significant noise exceedances in the vicinity of Bulee Mountain. It should be noted that the grades for both options are steep with heavy vehicles likely to use compression brakes on the sections of steep decline. The noise assessment was based on the predicted traffic levels for the year 2021. No residential areas exist near Bulee Gap and preliminary noise assessment in the EIS shows that noise due to the proposed upgrade would be within the EPA guidelines.
s) Slow vehicle lanes are included in the design of both BM4 and BM5. An additional westbound lane and an extension of one of the three eastbound lanes for BM4 are now proposed and are described in the Preferred Activity Report (refer to Table 8.1 of this Report). These would provide sufficient overtaking opportunities for light vehicles to overtake ascending and descending heavy vehicles safely. The design speed would be appropriately transitioned from 100 km/h to 80 km/h and then 60 km/r. This was indicated in Technical Paper No. 2: Road Concept Design Report. Traffic safety would therefore not be compromised by the EIS Proposal at Bulee Mountain and the expected cost difference would be utilised to build other sections to a more uniform standard along the whole 54 km length.
t) There is little difference in the length of the two options and the effect on overall travel times when looking at the overall length. The key issue to enhancing the safety, travel time and attractiveness of the route is the sealing of 54 km of the currently unsealed and variable condition road.
u) The existing road at the southern end of Morton NP would not provide a useful fire break as the canopy extends over the road in many places. BM5 would also not provide an effective fire break as it is only two lanes wide with vegetation under the bridge structures.
v) There is a substantial difference between the effects of an already disturbed corridor and establishing a new corridor in pristine bushland. The amount of land taken is therefore not the only measure of the impact. The issue is more about the amount of land required in currently undisturbed areas. The BM4 land requirement extends into land already disturbed by the existing road corridor. There is some potential to refine the footprint of BM4 in detailed design by steepening some batters and thereby reducing the land requirement.
w) BM 5 provided 3 eastbound auxiliary lanes and the revised BM4 would provide 3 eastbound and one westbound auxiliary lanes (refer to Chapter 8 of this Report). BM4 would therefore provide similar overtaking opportunities and its lower cost would also allow additional overtaking opportunities along the 54 km length to be constructed.
x) The EIS Proposal including BM4 meets the project objectives (refer to EIS page S-3).
y) Two new bridges are proposed along the existing corridor along the Bulee Mountain (BM4) which would enable fauna to cross under the road. The lower travel speed of the Proposal would also be important in reducing the potential for roadkills. In addition to this, fauna fencing will be provided in the vicinity of Endrick River.

3.2.2 Turpentine Road

In summary, respondents to the EIS raised the following issues:

a) This intersection should be changed to the TR1 option with a design speed of 100 km/h and priority given to MR92 because it allows the highest design speed and is the best option for moving cars, light vehicles, trucks and B-doubles efficiently and safely.
b) Support MR92 as the priority with a reduced design speed to 80 km/h to minimise environmental and cost implications.
c) At least 500m of the Turpentine Road should be upgraded and sealed as part of this upgrade.
d) Sealing Turpentine Road would be a good adjunct to the MR92 upgrade to link with Tomerong on the old Princes Highway and improve the road network to Jervis Bay.

Representation Number(s)
59, 99, 156, 170, 194, 212, 225

Response

a) As stated in the EIS, the cost and environmental impacts associated with adopting the TR1 option were seen as prohibitive. TR1 would involve incursion into National Park and the clearing of habitat that was assessed as being of high quality. The predicted traffic numbers also did not warrant a change to the priority at the intersection at this time. Even though the proposed alignment closely

follows the existing alignment there are still some impacts on the National Park (refer to page 5-13 of the EIS).

b) The provision of an 80 km/h design speed giving priority to MR92 would still impose additional impacts on the high quality habitat that is within the boundary of a National Park, which were not considered justifiable at present given the expected low volume of traffic. It is however proposed to acquire sufficient National Park land to realign the intersection if traffic volumes warrant further work.

c) Upgrading of 500m of Turpentine Road east of the intersection with MR92 is not part of this Proposal. Appropriate signposting would be required to alert drivers to the intersection and also to the unsealed status of Turpentine Road. However it is normal practice to seal the junction of local road with the main road by up to 200 m for safety and this sealing would be incorporated in the detailed design.

d) The sealing of Turpentine Road to the Princes Highway would enhance the connection to areas such as Tomerong and Jervis Bay. However, the upgrading of Turpentine Road is not part of the MR92 upgrade Proposal. This issue may be considered by Shoalhaven City Council at a later date as a separate project.

3.2.3 Nerriga Bypass

In summary, respondents to the EIS raised the following issues:

a) The upgrade should not proceed unless a bypass of Nerriga is included. The bypass should commence from the curve about 900m east of "High Forest" continuing straight ahead to rejoin the main road south of the cemetery where the road continues left into a southerly direction, south of Bindi Brook. Should this bypass be implemented, 2 properties at most would be impacted. Visual, noise and exhaust pollution would be reduced due to topography and distance from the village and costs would be only marginally more than reconstruction of the present road.

b) An upgraded MR92 through Nerriga would impact on local activities (eg horse riding), community life, the historic attractions in town (eg museum, School House, footbridge), and would be dangerous for school buses, pedestrians, and access to private properties. Facilities such as shops, the pub, church and hall are located on the roadside, as well as access to driveways and public roads.

c) The Proposal would impact on business interests in Nerriga and have a detrimental effect on tourist visitation because of the increased noise, lack of parking and difficulty moving around town.

d) Two options were presented at a public meeting when the proposal to upgrade MR92 was first considered. The preferred option provided for a bypass about 1km east of Nerriga. There is no explanation in the EIS for the failure to recognise that the Nerriga bypass option existed. There is no appraisal of the pros and cons of the bypass option or to cost this option against the current Proposal to upgrade the existing route. The EIS does not consider a bypass of Nerriga.

e) Recent strategies in improving road safety have been to bypass towns. The current Proposal contradicts this strategy.

f) Tallaganda Council has resolved to seek additional funding for the Nerriga bypass but do not support the Nerriga bypass as a part of the current MR92 Proposal.

g) Traffic noise will become unbearable in Nerriga if no bypass is built. This will destroy lifestyle, peace and quiet and the quaint character of the village.

Representation Number(s)

3, 13, 14, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 57, 61, 63, 65, 66, 67, 68, 76, 77, 79, 115, 119, 121, 122, 123, 124, 132, 172, 182, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 229, 230

Response

a) The predicted level of traffic associated with the proposed upgrade does not warrant a bypass of Nerriga. However, Tallaganda Council is considering plans to identify a road reserve in the revision of its LEP that would enable a bypass to occur if/when traffic numbers warranted.

b) The predicted traffic numbers do not support the concerns expressed. The speed limit through Nerriga would be 60 km/h. Together with the levels of traffic predicted, the Proposal would not pose unacceptable safety risks for the population of Nerriga and would not result in significant access or safety issues for residents accessing driveways.

c) The improved road condition is likely to have the effect of increasing tourism to Nerriga.

d) Due to the predicted traffic volumes, there was no justification for the additional expenditure associated with a bypass of Nerriga. However, Tallaganda Council is considering a plan to identify a road reserve in the revision of its LEP that would enable a future bypass to occur when traffic numbers warranted.
e) The strategy of bypassing towns is usually associated with roads that carry significantly more traffic than that predicted for Nerriga. Tallaganda Council has a plan to identify a road reserve in the revision of its LEP that would enable a future bypass to occur when traffic numbers warranted.
f) The position of Council is noted.
g) The noise level in Nerriga village is not expected to exceed EPA guidelines until the traffic increases to 1000 vehicles per day by approximately 2016. The EIS, page 15-10 proposes monitoring of noise after completion of the project. Mitigation measures such as a quieter road surface or architectural treatment of the existing dwellings would be considered if traffic noise exceeds EPA criteria.

3.2.4 Sassafras Bypass

In summary, respondents to the EIS raised the following issues:
a) The existing alignment through Sassafras should be maintained.
b) A bypass of Sassafras should be considered, as the current road alignment does not meet the future needs of a sealed freight access route.
c) Prefer option S3 because it allows the highest design speed and is the best option for moving cars, light vehicles, trucks and B-doubles efficiently and safely.
d) There is no need to take heavy vehicles through the middle of Sassafras. The objective of the upgrade is to allow trucks up to the size of "B-Doubles" to use this route, and a more appropriate investment in a bypass is necessary regardless of the additional cost.
e) Changes to proposed road alignment bordering this property after consultations with Maunsell McIntyre Pty Ltd have reduced the options available for the upgrade of the road, which has not been acknowledged in the EIS. The Maunsell report recommended an alignment which was to the north of this property's border. However, the subsequent gas pipeline installation has used part of this alignment forcing the development of any road upgrades closer to this property. These changes have meant there are few options left for the upgrade of the road at this point at Sassafras.
f) Upgrading the road through Sassafras on its current alignment will create development issues in the future and is incompatible with the needs of the local road users.

Representation Number(s)
59, 148, 171

Response
a) The proposed upgrade has been designed to follow the existing alignment. Generally the upgrade would require some road widening and small cuts and fills to improve sight distance and ensure a safe design.
b) The proposed upgrade on the current alignment would meet the predicted future traffic demands.
c) The proposed upgrade design is able to efficiently and safely accommodate light and heavy vehicles (including B-Doubles) on the current alignment which would result in a lower cost and less land take. Therefore, there is not sufficient justification to construct a new route away from the existing alignment.
d) The predicted levels of traffic expected to use MR92 do not justify the additional expenditure and land take to construct a new route away from the existing alignment.
e) The location of the Eastern Gas Pipeline has resulted in a constraint that has had to be addressed in the development of the concept design for the MR92 upgrade. The proposed design enables the "avenue of trees" to be largely retained while not adversely impacting the Pipeline.
f) The Proposal has been designed to meet the requirements of both local and regional users. The design of the upgrading of the road through Sassafras is on its current alignment so as to, amongst other things, maintain property access and minimising property acquisition as much as possible. Development issues associated with adjacent properties is a matter for Shoalhaven City Council, however Council has indicated that there are no processes in progress to rezone at Sassafras.

3.2.5 Beyond Nerriga

In summary, respondents to the EIS raised the following issues:

a) It appears a foregone conclusion that the ultimate road linking Nowra to Canberra will pass through Braidwood. The better route would be through Gunning and Tarago to directly link to the Hume Highway. This would be more desirable for trucks and would best meet the needs of inland NSW industries seeking an efficient access to Port Kembla.
b) The road west of Nerriga should be extended through Windellama towards Goulburn. All dirt and poorly aligned narrow sealed sections of road from Nerriga to Windellama should be similarly upgraded to current standard.
c) Support the Nerriga to Braidwood route and continuation to Cooma.
d) Roads beyond Nerriga are unsuitable for heavy vehicles, especially at Mongarlowe River and the Oallen Bridge. These should be upgraded concurrently with MR92 and completed at the same time. Having a sealed road to Nerriga but unsealed beyond won't achieve much.
e) Current fund allocations to 2006 are referred to in the EIS for the upgrading of 10 km of the existing 21km of unsealed road between Nerriga and Braidwood. What about the remaining 11 km and Mongarlowe River Bridge?

Representation Number(s)
8, 15, 55, 56, 58, 60, 87, 144, 146, 171, 179, 180, 189, 196, 197, 218, 263, 398, 399, 430, 456

Response
a) There has been no committed funding for upgrades beyond Nerriga other than that stated in the EIS. The EIS refers to a range of route options west of Nerriga and it is anticipated that sealing of the Cullalla Road and the Sandy Point Road would be completed by Mulwaree Shire Council by the end of 2006. This would provide a completely sealed route to Canberra via Tarago. 10 km of the 21 km of unsealed road between Nerriga and Braidwood is planned to be sealed by Tallaganda Shire Council by the end of 2006, leaving only 11 km unsealed between Nowra and Braidwood.
b) Any upgrading west of Nerriga is beyond the scope of this EIS.
c) Any upgrading west of Nerriga is beyond the scope of this EIS.
d) As stated in the EIS, the road to Sandy Point is expected to be sealed by the end of 2006 to coincide with the Hames Road to Nerriga upgrade. This would provide a sealed route between Nowra and Queanbeyan. Ten of the 21 km of unsealed road between Nerriga and Braidwood would also be sealed by the end of 2006. Oallen Ford does not have any load constraints with respect to heavy vehicles but is a one-lane creek crossing. Mongarlowe River Bridge is also not load limited, but it is a single lane timber structure and in the long term it is a constraint to heavy freight vehicles on that route. The upgrading of these structures is not part of the MR92 upgrade project.
e) Tallaganda Council has indicated its intention to continue the ongoing upgrading and sealing of MR92 between Nerriga and Braidwood, however no timing or funding has been committed above the 10 km referred to in the EIS. There has been no planning at present to upgrade the Mongarlowe River Bridge.

3.2.6 Road vs Rail

In summary, respondents to the EIS raised the following issues:
a) Need to focus on making existing roads safe. This does not necessarily mean upgrades such as the one proposed. The emphasis must be on strengthening the rail freight network to reduce the number of truck movements. This would go a long way to improving safety.
b) The route of the Canberra to Jervis Bay rail line should be considered. The route will suit all classes of road traffic.

Representation Number(s)
215, 245

Response
a) As stated in the EIS, there are real safety problems associated with the existing MR92. The RTA supports the enhancement of both road and rail transport infrastructure in the region. However, the cost to connect the Shoalhaven to inland NSW by a direct rail link would be high and is beyond the scope of this EIS.
b) The Canberra to Jervis Bay rail line route would not be able to be completed incrementally and it would therefore not be useful until entirely completed. It is beyond the scope of this EIS.

3.3 Justification

3.3.1 Need

In summary, respondents to the EIS raised the following issues:

a) Currently happy with existing roads. It is a relief to exit the Hume Highway which is long and boring, and move onto a more interesting road with descents and curves. It forces concentration on driving and from personal experience, the times when concentration is lacking has been on long boring roads. If the Proposal proceeds it should do so without any further infringement on Morton National Park and already stressed wildlife.

b) The Proposal is likely to save travelling times to and from Canberra.

c) MR92 is ideally suited to provide an important road link between south-west NSW, the NSW south coast and Gippsland region of Victoria, and would provide a new, efficient and viable freight route between these regions. The existing road is a gravel surface, which deteriorates significantly in wet weather and restricts the passage of heavy vehicles and caravans.

d) An upgraded MR92 would deliver benefits to the broader land transport network and encourage regional growth on both the coast and inland regions of southern NSW.

e) Existing road is not safe in its present condition.

f) The existing Kangaroo Valley roads are dangerous and inadequate for the type and amount of traffic it receives. MR92 would be a much safer road.

g) MR92 would keep trucks out of Kangaroo Valley and relieve the pressure on Moss Vale Road.

h) Without upgrading roads beyond Nerriga, the Proposal has no benefits.

i) A more direct route to the Hume Highway is needed. The Proposal would be the only reasonable road west from the Shoalhaven.

Representation Number(s)

15, 16, 17, 56, 58, 62, 83, 84, 93, 94, 136, 142, 150, 178, 186, 219, 242, 254, 261, 270, 275, 287, 302, 309, 318, 319, 323, 327, 328, 330, 340, 359, 373, 378, 380, 392, 444, 445, 457, 476, 481, 482

Response

a) The proposed upgrade of MR92 has been designed to minimise incursions into Morton National Park. The route largely follows the existing alignment.

b) As stated in section 7.3.5 of the EIS, the proposed upgrade would result in significant travel time savings between Nowra and Canberra, ranging from a saving of 23 minutes with just the Hames Road to Nerriga upgrade to 39 minutes if combined with the intended sealing of the road to Sandy Point by the end of 2006.

c) The poor condition of the existing gravel MR92 and its variability especially in wet weather was noted in the EIS as an issue that acted as a disincentive to using the road to travel between the Shoalhaven, inland NSW and Gippsland.

d) The potential for an upgrade MR92 to enhance the transport network and provide greater regional connectivity between the Shoalhaven and inland NSW was noted in the EIS.

e) As noted in the EIS, one of the reasons for the proposed upgrade is that the existing condition of MR92 has resulted in an accident rate that exceeds the State average. The proposed upgrade is expected to significantly improve road safety along the route.

f) The proposed upgrade of MR92 is expected to result in the diversion of approximately 10% of vehicles from the Moss Vale to Nowra Roads. This would provide some relief to the township of Kangaroo Valley, especially if a large proportion of vehicles switching to MR92 are heavy vehicles. The upgraded MR92 would provide a more attractive escarpment crossing for heavy vehicles than the Moss Vale to Nowra Road.

g) It is expected that there would be switching of heavy vehicles from the Moss Vale to Nowra Road to the upgraded MR92 which would provide some relief to the township of Kangaroo Valley.

h) As stated in the EIS, Mulwaree and Tallaganda Councils have planned sealing the road between Nerriga and Sandy Point by the end of 2006 and 10 km of the 21 km of unsealed road between Nerriga and Braidwood by 2006. The connection to Sandy Point would result in a sealed route between Nowra and Queanbeyan, which would provide important regional connectivity benefits to the Shoalhaven and inland NSW.

i) The issue of a more direct route to the Hume Highway is noted. The alternative escarpment crossings (eg MR51 and MR261) do not fulfil this function and the Proposal, in conjunction with the

progressive sealing of the road network within Mulwaree Shire, will provide sealed links to the Hume Highway.

3.3.2 Economics

In summary, respondents to the EIS raised the following issues:

a) This road upgrade would not become economically viable until vehicle movements reach 2000 per day. It therefore seems to be an unwise investment given that 600 movements per day are expected.

b) The EIS does not provide an economic justification for the upgrade. The total benefits from increased traffic are less than its estimated $80 million cost. The traffic estimates were highly contrived and the costs of upgrading the road further to the west (eg bridges over the Mongarlowe and Shoalhaven Rivers) were not included. Freight usage would not be possible on the upgraded road due to the necessary upgrading of bridges that are not costed nor included in the Proposal.

c) The BCR of the Proposal is highly sensitive to the predicted traffic volumes and is based on diverted, induced and perceived demand predictions. There is considerable double counting of future road users and a mass of assumptions.

d) The actual BCR for this Proposal is only 0.1 (the EIS estimate) or 0.3 (Technical Report 15 estimate) which means that the Proposal should not be done.

e) The high range BCR estimate for the total Nowra to Braidwood upgrade of 0.9 (scenario 2), based on the diverted as well as induced and perceived demand predictions, is incorrect due to:
   - the minor time travel saving for the Nerriga to Braidwood upgrade, which would not result in the predicted four fold increase in number of users; and
   - heavy freight trucks should be prevented from using the existing old wooden Mongarlowe bridge.

f) In order to achieve a BCR of 1.7, significant levels of generated traffic are needed along with the sealing of links between Nerriga and the Kings and Hume Highways.

g) Why waste $80 million on a road that trucks cannot use?

h) The Proposal would provide much-needed Canberra tourist dollars, which are currently going to Batemans Bay. The Shoalhaven has a very high unemployment rate and the economic benefits of the Proposal would create many jobs in tourism.

i) The Proposal would allow businesses in the Shoalhaven to expand inland to Canberra and other regions (eg Wagga Wagga, Yass), as it will reduce freight costs by time and fuel savings.

j) The Proposal would significantly boost the economy of the Shoalhaven through increased business opportunities, access to markets outside the Shoalhaven and increased productivity. This would reduce unemployment

Representation Number(s)

62, 70, 109, 115, 118, 134, 137, 139, 142, 171, 180, 187, 219, 233, 640

Response

a) The 600 vehicles per day (vpd) referred to was the figure (660vpd by 2021) expected to use the upgrade MR92 if no other works were carried out on roads in the area such as upgrading of Nerriga to Braidwood, Kings Highway from Braidwood to Queanbeyan or Nerriga to Bungendore via Tarago (refer to page 7-7 in the EIS and Technical Paper 3 page 4-15). Works on the above mentioned roads have been programmed by the respective Councils, which would result in traffic volumes of 1,440vpd on the upgraded MR92. If sensitivities are used, the figure could be up to 2,000vpd (refer Appendix E of Technical Paper 3). It is also important to consider that "road user economic viability" is only one factor in determining the need for upgraded infrastructure. Other issues that were considered were regional connectivity, road safety, community access and emergency service access.

b) Based on $75M capital cost of the Proposal and traffic of 1440 vehicles per day at 7% discount rate provides a Road User BCR of 1.7 (refer to page 21-5 of the EIS and Technical Paper No 15). The traffic estimates were peer reviewed by an independent traffic modeller who regarded the numbers provided by Sinclair Knight Merz as an underestimate (refer to Appendix E of Technical Paper 3 of the EIS). The peer review proposed a figure of approximately 2,000vpd that provides a Road User BCR of 2.4 at 7% discount rate and this was therefore used for sensitivity. A proportion of the

costs of sealing roads west of Nerriga was included in the Road User Benefit-Cost Analysis (BCA). This did not include upgrades of Mongarlowe River Bridge or Oallen Ford. The reason for this is that Oallen Ford is not load limited and currently carries heavy vehicles, providing a connection for heavy vehicles. In addition the upgrading of MR 92 would provide better connectivity to towns and cities west of Nowra and residents along the route, road safety and economic development.

c) All predictive modelling involves making assumptions. The assumptions have been clearly noted in the EIS and Technical Paper 15. There is no double counting of future road users.

d) The Road User BCR for the project is 1.7, as stated in Table 6-10 of the EIS. The Road User BCR has been calculated for various options and 0.3 Road User BCR is based on assuming that there would be no redirected traffic with the upgrade. The Road User BCR increases to 0.9 when benefits of redirected traffic are considered. The Road User BCR further increases to 1.7 when upgrading of MR92 and sealing of unsealed roads beyond Nerriga is assumed (refer Technical Paper No 15). The sealing of unsealed roads beyond Nerriga has been planned by councils.

e) The difference between Scenario 1 and Scenario 2 is not the minor travel time savings between Nerriga and Braidwood, but is the result of users having a sealed route between Nowra and Queanbeyan. Scenario 1 still has links of unsealed road, which act as a disincentive to motorists using the whole route. In relation to the Mongarlowe River Bridge, the bridge is not load limited. Heavy vehicles could also use the road between Nerriga and Sandy Point, which would be sealed by the end of 2006, in advance of the upgrade of MR92 between Hames Road and Nerriga.

f) The Road User BCR of 1.7 is achieved as a result of upgrading MR92 between Hames Road and Nerriga and including partial benefits and costs associated with programmed and proposed sealing of roads west of Nerriga. The Road User BCR of 1.7 under Option D (refer TP 15 page 3-11) includes redirected traffic and perceived net benefits.

g) MR 92 upgrade would be suitable for heavy vehicles with improved road surface and safe travel conditions. Heavy vehicles would be able to use the upgraded MR92.

h) The upgraded MR92 would provide a safer and more reliable connection for tourists between the Shoalhaven and inland NSW. This was indicated in the EIS on page 21-3. Increased tourism employment has not been included in the economic benefits, as the extent of increases could not be substantiated.

i) The proposed upgrade would improve transport connections between the Shoalhaven, Canberra and inland NSW. This was noted in the EIS on page 21-2.

j) The proposed upgrade would provide more direct and efficient transport links between the Shoalhaven and inland NSW. While this has the potential to enhance opportunities for business links, it will be the successful winning of business that will result in increased productivity and reduced unemployment for the Shoalhaven. These benefits cannot be directly attributed to the proposed road upgrade.

3.3.3 Funding to go to Princes Highway

In summary, respondents to the EIS raised the following issues:

a) The $80 million proposed for MR92 would be better spent on upgrading the Princes Highway, Kings Highway or public transport south of Kiama, where it would benefit more people and have lesser environmental impacts. MR92 only services a small section of the community.

b) Unless the Princes Highway is immediately upgraded both north and south of Tomerong where MR92 terminates there will be complete gridlock as traffic from MR92 will be unable to get away from Tomerong. This must be done before MR92 is upgraded. The Princes Highway is just one lane in each direction over much of its length near Tomerong. The bends in South Nowra must also be removed and the road widened.

c) A major upgrade of the Princes Highway is likely to offer greater social and economic benefits to the Shoalhaven Region at less environmental and financial cost than the proposed upgrade between Nowra and Nerriga.

d) It would be better to revisit earlier proposals to build an alternative to the Macquarie Pass road or invest in upgrading existing sealed roads from the tablelands to Nowra than proceed with the proposed upgrade of MR92. If the AusLink proposals of the Federal Government come into effect in 2004 to give "focus on meeting the major transport challenges facing Australia" then proposals such as MR92 would be very weak candidates for Federal land transport AusLink projects.

Representation Number(s)

112, 118, 180, 187, 190, 191, 224, 233, 341, 390, 469, 640

Response

a) Main Road 92 has been recognised by the Federal Government as a Road of National Importance (RONI), and the Federal and NSW State Governments as well as Shoalhaven City Council have jointly provided funding to upgrade MR92. The recognition of MR92 as a RONI reflects the role of the route (once upgraded) to provide an improved link between the growing communities of the Southern Illawarra to the Hume Highway and ACT. This link will facilitate increased economic development of the Southern Shoalhaven, providing better opportunities for efficient movement of freight as well as tourist visits to the area.

   There is also a strong warrant for increased funding to upgrade the Princes Highway to respond to traffic growth and maintain the route as an effective link for economic development along the NSW South Coast. While significant funding is already being provided by the NSW Government to upgrade the Princes Highway, a need for accelerated funding has been recognised and the Federal Government has been requested to jointly fund the Highway as a RONI. To date, the Federal Government has not agreed to this Proposal.

   In summary, upgrades to both MR92 and the Princes Highway offer significant economic development opportunities to the Southern Illawarra and South Coast of NSW. While the role of the Princes Highway is to facilitate north-south transport along the coast, an upgrade of MR92 would provide an effective additional east-west link across the escarpment.

b) Traffic modelling for the Main Road 92 upgrade has indicated that traffic would increase to up to 2,000 vehicles per day over the next 20 years following completion of the upgrade. This level of traffic would not have a significant impact on the efficiency of traffic flow on the Princes Highway near Tomerong. Future planning for the Princes Highway south of Nowra includes an objective to provide four travel lanes between Nowra and the junction with Jervis Bay Road.

c) As indicated in the response to (a), upgrades to both MR92 and the Princes Highway would offer significant economic development opportunities to the Southern Illawarra and South Coast of NSW. While the role of the Princes Highway is to facilitate north-south transport along the coast, an upgrade of MR92 would provide an effective additional east-west link across the escarpment.

   The environmental impact of upgrading Main Road 92 is expected to be significantly less than the impact of upgrading the other escarpment crossings in the Illawarra at the Illawarra Highway (Macquarie Pass), the road through Kangaroo Valley (Cambewarra and Barrengarry Mountain Passes) and Kings Highway (Clyde Mountain Pass) to an equivalent standard.

   Comprehensive investigations have been undertaken in the past for options to upgrade the Illawarra Highway Macquarie Pass to an appropriate design standard. An alternative via a route known as Caloola Pass (to the south of Macquarie Pass) was subsequently identified. Cost was estimated in the early 1990s at around $80M. The project has not proceeded mainly because of the anticipated very high environmental impacts and anticipated high cost.

   No options to upgrade either the road through Kangaroo Valley or Kings Highway mountain passes to current road design standards are available. Such options would require new corridors and would result in anticipated very significant environmental impacts. However, it should be noted that the Clyde Mountain pass could be upgraded to a minimum standard for B-Double usage at a cost tentatively estimated at around $2 Million.

   The major driving force for upgrading MR92 is that it most effectively addresses the need for improved regional economic links between the growing coastal Shoalhaven City community and the Hume Highway / ACT.

d) As noted in the response to (c) comprehensive investigations have been undertaken in the past to identify options for upgrading Macquarie Pass. The most likely option via Caloola Pass has not proceeded due to the very high environmental impact and estimated cost.

Table 3.1: A comparison of the other existing escarpment crossings

Escarpment Pass	Length	Number of Curves Below 150m Radius	Average Grade	Height Difference	Suitable for B-Doubles
SH25 Macquarie Pass	9.4km	62	6.6%	616m	No
MR261 – Cambewarra Mountain Pass and Barrengarry Mountain					
Cambewarra eastern side	5.3km	25	7.9%	420m	No
Cambewarra western side	4.4km	27	7.7%	337m	No
Barrengarry Mountain	6.8km	32	8.1%	554m	No
MR51 Clyde Mountain Pass	11.3km	29	6.5%	733m	No
MR92					
Bulee Mountain BM4	4.2km	12	8.3%	214m	Yes
East Sassafras incline	1.5km	1	8.3%	125m	Yes

The comparison shows that the proposed upgrading at Sassafras and Bulee Mountain would represent a clear improvement in most of the factors that distinguish a mountain pass. While it has a "total" length of less than 6 km and overall height differential of 339m, the pass which is the next best is Clyde Mountain, with twice the length and 733m difference in height.

MR92 and the Kings Highway are the only two passes that could provide for movement of B-Doubles. The Clyde Mountain Pass presently restricts usage of B-Doubles on the Kings Highway. This restriction could be removed by upgrading several curves on the Pass. The preliminary cost estimate for a minimal upgrading is around $2 million.

A major engineering difference that distinguishes the proposed MR92 escarpment passes is that they would be built to a design standard that conforms to the RTA Road Design Guidelines. By comparison the other mountain passes do not necessarily comply with design standards but have "evolved" from original lower standard routes and contain undesirable alignments.

As Main Road 92 has been nominated as a Road of National Importance by the Federal Government, it would conceivably rank as a good candidate for funding under the Auslink initiative.

3.3.4 Traffic Modelling

In summary, respondents to the EIS raised the following issues:

a) The traffic forecasts in the EIS are underestimated. Many more users would use the road based on experience and discussions with the community and freight, industrial and commercial users in the catchment area and due to population increase.

b) The EIS focuses on traffic flow to the year 2016, only 13 years away. This is considered to be extremely short-sighted.

c) No emphasis is made of the benefit of accessing the Hume Highway by the most direct route. The Hume Highway is a safe, high speed, divided road that may be preferred by many users to the more winding route of MR92 and other country roads. There is no consideration of the impact on traffic of the planned upgrades of the Kings Highway and Princes Highway from Batemans Bay to Nowra. These upgrades outlined in Table 7-3 of the EIS would divert tourist traffic from MR92. This diversion and a user preference to access the Hume are reasonable assumptions that run contrary to assumptions in the model.

d) The assumption that the majority of drivers would not use the Illawarra Highway because of its steepness is based on the opinion of the RTA and hearsay remarks. This diversion assumption significantly skews the model toward greatly increased use of the upgraded MR92.

e) The truck haulage traffic estimates for the proposed road upgrade unreasonably assume that all Melbourne and Canberra bound trucks from the industries specified in Appendix D2 would divert to use MR92. This results in the diversion of 92 trucks a day to MR92. This relatively low level of

use diverting off the existing roads over the Illawarra Escarpment is considered an exaggeration because not all Melbourne or Canberra bound trucks would use the proposed upgraded road. Many trucks, particularly those going to Melbourne may prefer to use the Illawarra Highway and access more directly the divided lanes of the Hume Highway.

f) It is reported that additional traffic would be attracted to the upgraded MR92 as a result of it being signposted as a "Tourist Drive". However the EIS also states that such additional use from a "Tourist Drive" designation is unlikely to be significant compared to the overall yearly traffic volumes (Technical Paper 3, p. 3-10). This contradicts the potential diverted tourist users from existing roads to MR92 which are estimated at 100 additional vehicles per day (Technical Paper 3, p. D-3). This estimate doubles current total use and these relatively high initial tourist numbers for the newly upgraded road are not further explained.

g) The EIS estimates that 213 additional vehicles would divert from existing roads to the proposed upgraded MR92 therefore sealing the road would immediately triple the usage based on the incorrect assumption that tourism will increase from very low numbers to 100 cars per day and an overly optimistic nine fold increase in current truck usage. This estimate contradicts the Melbourne case study quoted that "did not identify a significant level of induced demand". The contrary outcome of the initial MR92 traffic response estimates appears to be due to dubious assumptions.

h) The analysis of increased traffic in future years is confused by the poor separation of "induced" demand from other types of additional vehicle use predicted for the improved route. The description of tourism use in Table D2 of Appendix D (sic) is captured in "induced" demand but it appears recounted in the 180 vehicle trips that divert to MR92 due to "perceived" additional benefits (Technical Report 3, p. iv). It is very dubious to double the number of all "induced" trips to account for the return journeys, as there are several other road journey options available (Technical Report 3, p. 4-14). Tourists prefer to return by another route for the return journey, which would halve the estimated tourist use of MR92.

i) It is considered impossible that the future upgrade options, as outlined in the B2, B3, C1, C2, C3, D1, D2 and D3 scenarios, would result in up to a four fold increase in daily traffic volumes of the base scenario. There could not be such a great traffic response from the minimal time savings due to these additional road upgrade scenarios. The maximum time saving of 16 minutes 40 seconds is not going to result in 950 more trips a day on remote country roads. The double counting of future growth distorts predictions, even noting the traffic model's discounting of perceived traffic benefits at high levels of induced demand.

j) The extra traffic labelled in the model as "induced" and "perceived" demand is unlikely as community relationships established between Canberra and Batemans Bay would not be immediately altered by a new road. Many people travel to visit friends and relatives. Nowra is further away than Batemans Bay and the new road would not offer the necessary time travel savings to induce a major break in existing community relationships. Even the maximum time saving of 40 minutes by fully developing all roads would not guarantee more visitors and holiday homemakers coming to the Shoalhaven area via MR92.

k) The suggestion that road users would use Canberra Airport for interstate travel is a rather odd assumption as it would necessitate users changing planes at Sydney, and as a result be a more expensive and time consuming transportation option.

l) The suggestion of an increase in caravan traffic to the Shoalhaven and South Coast areas is unsound as caravan holidays are outmoded and their use has been in decline for decades.

m) Has consideration been given to the increase in traffic which would use the road between Nowra and the Illawarra? The Princes Highway already has a heavy traffic load between Sydney and the South Coast.

n) The estimation of 1700 vehicles a day by 2016, 220 of which are estimated to be heavy transport based on information from major trucking companies contacted by the consultants, is a considerable under-estimation. Small trucking companies and privately owned trucks have not been taken into account and these vehicles will add substantially to traffic through Nerriga.

o) The EIS does not take into account weekend traffic from Canberra and Goulburn to the coast.

p) It is estimated that by diverting traffic through Nerriga the difference to Kangaroo Valley and Moss Vale townships would be significant. The EIS fails to take into account this impact on Nerriga, currently a much quieter place than Kangaroo Valley or Moss Vale. The environmental impact of this traffic on Nerriga seems to have been completely overlooked.

q) The number of heavy vehicles that would use the road would be 3 to 4 times that shown if private truck operators are taken into account. The EIS does not address the impact of the increase in population in the district on the increased use it will have for an upgraded MR92.

Representation Number(s)

67, 68, 99, 118, 147, 170, 180, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209

Response

a) A peer review of the traffic estimates prepared by Sinclair Knight Merz indicated that the model used may have underestimated the traffic that may use an upgraded MR92. As a result, a scenario was also assessed that used 2,000vpd as recommended in the peer review. It should be noted that a conservative approach was used for predicting environmental impacts such as air and noise pollution. The 2,000vpd figure was used for these assessments. The traffic modelling is based on reasonable assumptions about future land use and population growth and on discussions with likely users (such as freight operators). The range of vehicle figures reported in the EIS is not regarded as an underestimate.

b) The EIS reports traffic predictions to 2021. Land use and population assumptions beyond this become speculative and unreliable.

c) The modelling included access to the Hume Highway. Regarding upgrading of the Kings Highway, the model included all relevant and programmed road improvements. As can be seen in Table 7-7 of the EIS, there is only minor diversion from the Kings Highway to an upgraded MR92. This indicates that they serve different markets.

d) The traffic modelling for MR92 was based on documented assumptions and an established EMME/2 model that was independently peer reviewed. There was no assumption made on the use of the Illawarra Highway based on grades. Table 7-7 of the EIS indicates that the model has only assumed a minimal 1% switching from the Illawarra Highway to MR92 as a result of the upgrade.

e) The estimates provide an indication of the potential truck volumes based on known industries. They were used as a validation for the traffic forecasts. They were not used in the forecast model. The model applied growth rates to a distribution of trucks. The industries that are based at Nowra or near Nowra and whose destination is Canberra or Melbourne are presently using other alternative routes such as Princes Highway and then Picton Road to access Hume Highway. Such users would be attracted to MR92 after the upgrade. MR92 would be a direct route as compared to other routes and there would also be savings in travel times. The estimate of diversion of cars and trucks to MR92 is based on discussion with the potential users (refer to Technical Paper No 3).

f) The number of tourist vehicles quoted would result in a doubling of current usage of MR92 by tourists, however 100vpd is still a relatively low number. The current usage of MR92 is extremely low. There is a disincentive to use the road because of its poor unsealed condition. The sealing of the road would make it a much more attractive route for general traffic and tourist related traffic.

g) The redirected and induced demand estimates are based on published research of "unexplained growth" that traditional models do not account for. The upgrading of MR92 would attract traffic from other escarpment crossings that are deficient in horizontal and vertical alignment. MR92 would be a high standard escarpment crossing with only small sections of steep gradient and fewer low speed bends including overtaking opportunities. The upgraded route would provide saving in travel time, more tourism traffic and improved safety.

h) If this type of tourist journey was to occur it would have little effect on the overall traffic volumes. Table D2 TP 3 page D-3 does not estimate the additional traffic that will be generated by the regional growth and other sources not identified in the table. The estimate is conservative and it is expected that tourists would use MR 92 (for forward or return journeys) in conjunction with either the Kings Highway or the Moss Vale – Nowra Road to make a circular trip.

i) The MR92 upgrade and further sealing of routes west of Nerriga would provide a continuous sealed route between Nowra and Queanbeyan. The sealed nature of the road is considered to be the attractor for users rather than travel time savings of the various segments of the overall route. The current state of MR92 acts as a disincentive to its use.

j) It is unlikely that significant numbers of those with an existing investment/community relationship between Canberra and Batemans Bay would change to Nowra as a result of the upgrade of MR92, although some shift may occur particularly in the long term. However, Canberra is a growing centre and new populations without existing community relationships and/or investments in

Batemans Bay may find establishing those connections with Nowra more attractive with an efficient transport route to the Shoalhaven.

k) The potential increased use of Canberra Airport was raised as a possibility. It was not included as an assumption in the modelling.

l) The suggested increase in caravan traffic to the Shoalhaven was in response to discussions with community members who indicated that the upgraded route would enable safer travel while towing a caravan. Increased caravan tourist travel was not included as an assumption in the model, however there is opportunity for such traffic to use the upgraded route.

m) The effect of the upgraded MR92 on traffic on the Princes Highway was assessed and reported in Table 7-7 of the EIS. This indicates that there would be little impact on traffic levels along the Princes Highway. This is mainly as a result of the upgraded MR92 servicing the east-west transport task rather than the north-south. These connect with different markets and as a result, the upgraded MR92 would have little effect on the Princes Highway and the existing traffic issues.

n) The use of the upgraded MR92 by heavy vehicles is not considered to have been underestimated, given that a peer review of the modelling was undertaken. The modelling has been based on reasonable assumptions and available market data. Small and major freight companies, including private truck operators, were contacted in estimating the potential users.

o) While weekend traffic from Canberra and Goulburn to the Shoalhaven is noted, it is not a significant factor in the overall vehicle numbers.

p) The EIS describes the benefits of diverted traffic from the Moss Vale to Nowra Road on the township of Nerriga (refer EIS page 16-7), including increase in tourism traffic and benefits to businesses. It also discusses likely environmental impacts (refer EIS, pages 16-7 to 12) and notes a range of mitigation and management measures to minimise impacts (refer EIS page 16-13.)

q) The traffic model has taken into account the future demands as a result of increases in the population (refer EIS page 7-4). All private truck operators were included in the future growth estimates.

3.4 Biodiversity

3.4.1 Fauna

In summary, respondents to the EIS raised the following issues:

a) Bat fauna survey work was not undertaken when the EIS was prepared. The statement in Chapter 12 (p12-1) cannot be considered correct. There is no opportunity for public review of the methodology and results of the bat studies.

b) There is no information on compensatory habitat for the loss of bat roost sites in the EIS.

c) The survey for threatened bats and the Eastern Pygmy Possum should be undertaken next summer in light of the recent drought.

d) Chapter 12 (p. 12-16) lists "Threatened bats" without any specific scientific names.

e) The list of species that will be targeted after the review period has closed (p. 12-22) contains two names with incorrect spelling.

f) Other threatened bat species that should be addressed in the EIS include the Golden-tipped Bat *Kerivoula papuensis* and the Yellow-bellied Sheathtail Bat *Saccolaimus flaviventris*. Due to their unique roost and habitat requirements, targeted surveys should be used that differ from surveys of the majority of other bats. In particular, the Golden-tipped Bat requires quite unique methodology to ensure that presence/absence data is unbiased. The methods of the proposed bat surveys have not been noted in the EIS.

g) Apart from koala underpasses, specific purpose wildlife underpasses are dismissed. The SIS and EIS should have identified all wildlife corridors not just those for threatened species and assessed the relative significance of these corridors so that mitigation could be considered to ensure local wildlife populations are preserved. As an example, the road could be built up with additional fill and underpasses constructed to retain key wildlife corridors. The Proposal should include several underpasses.

h) The increased traffic and speed through Morton National Park would result in a high rate of road kill. There is concern for both the local wildlife and occupants of vehicles who would travel this road.

i) No consideration has been given in the EIS or SIS to the provision of underpasses for the diverse range of animals present in the Sassafras area (eg emus, wombats). It is recommended the RTA

work with the community to assess the diversity and magnitude of wildlife populations at Sassafras in order to establish a common benchmark that can be used to monitor these populations should the road be upgraded. Many of these animals need to cross the current road alignment and in some places even have their burrows adjoining the road.

j) No studies of Wombat crossings in the Sassafras range area are included in the EIS.

k) Eradication of all blackberry infestations along the road reserve would significantly reduce the occurrence of emus breaching the fences at Sassafras during the fruiting season of this introduced weed.

l) The proposed mitigation measures to protect Koalas west of Bulee Mountain are contradictory and likely to be limited in their effectiveness. The EIS states that a Koala proof fence would be erected and that signs also be erected alerting motorists to the possibility of Koalas being on the road. If the fence is Koala proof, why would there be Koalas on the road? Signs are not an effective mitigation measure for protecting wildlife as they don't really affect driver behaviour.

m) Figure 6-3d in the EIS shows a koala proof fence that is continuous across the entrance to Coolumburra Creek Road (also known as Douglas Paddocks Road). There should be no gate or any barrier across this road. There is the better option of building the fence down each side of the road to the first creek. If that will not provide a sufficient barrier to the koalas, then a concrete bridge spanning the creek should carry the fence further from the road and provide an underpass for the koalas.

n) The EIS states on pages 5-22 and 6-60 that two proposed bridges in the Bulee Mountain area would be suitable for use as a fauna crossings although there is no discussion of underpasses in the section on mitigation measures. Planting suitable habitat trees close to the road may be a long-term measure for assisting Koala movements, but the EIS is silent on this matter.

Representation Number(s)

9, 58, 104, 118, 129, 132, 171, 180, 187, 191, 210, 233

Response

a) As indicated in the EIS and SIS, bat survey work was to be undertaken during the summer months of 2002/2003. This survey work has now been completed by Kevin Mills and Associates and LesryK Environmental Consultants and presented in the Supplementary Species Impact Statement (SSIS). The SSIS was publicly exhibited from 30 September to 30 October 2003 in accordance with the requirements of the TSC Act. Submissions on the SSIS have been received and addressed in Chapter 4 of this Representations Report.

b) The additional bat survey work carried out for the MR92 Proposal concluded that there were no major roost sites in the Bulee Mountain area. While there would be some minimal loss of hollow trees, the provision of compensatory habitat was not seen as necessary by the consultant due to the relatively low scale of impact on bat habitat.

c) While the drought and the bush fires did hamper the additional studies carried out, it was concluded by the consultant that waiting until next summer for additional surveys is not necessary and would not alter the results and conclusions of the study. The RTA is aware of the presence of threatened bat species and the Eastern Pygmy Possum in the study area and a number of mitigation measures have been included to minimise potential impacts to these species (refer to Chapter 8).

d) "Threatened bats" was the terminology used in Chapter 12 of the EIS as it was unknown at the time which species would be encountered within the study area, as detailed survey work had not yet been undertaken. Bat surveys were completed in March 2003 and the results included in the SSIS.

e) It is noted that one species name was spelt incorrectly for the Large Bentwing-bat. The correct spelling is *Miniopterus schreibersii*. The other names in the list were also checked and found to be correct.

f) The survey methods utilised by Kevin Mills & Associates and LesryK Environmental Consultants were detailed in the SSIS prepared for the Proposal. An extract from the report detailing the methods used is provided below. Neither the Golden-tipped Bat nor the Yellow-bellied Sheathtail Bat was recorded during field investigations:

> "The survey of microchiropterans was undertaken using ANABAT II ultrasonic detectors. The detectors used to identify the presence of these species within, or in the vicinity of, the study area were placed at twenty-four sites. Sites were selected that

exhibited habitat features known to be utilised by insectivorous bats, i.e. woodland stands, hollow bearing trees, rock outcrops, drainage lines and gullies. The detectors were left in place for a minimum of 60 minutes per site, with a total time accumulation of forty-six hours and thirty minutes of bat detecting being obtained. Sampling for microchiropteran species commenced on dusk, which at the time of the field investigation was approximately 19.30 hours, and continued for between one to four hours per sampling session. Any signals obtained using this method were sent to Glen Hoye of FBN Bat Surveys for analysis.

In addition to the use of the echolocation detectors to identify the diversity of microchiropterans present, harp trapping was undertaken at three locations. The harp trap was established during the late afternoon with the sites surveyed being selected as they corresponded to likely microchiropteran fly ways. The harp trap was left open for one night per site, the trap being checked each morning for any captured bats."

g) Other than the issue of Koalas at Bulee Mountain, no specific wildlife corridors were identified during the flora and fauna studies. Virtually all of the road route traverses natural country and is traversed by wildlife from north to south. As noted in the SIS, it is almost impossible to do anything meaningful along this route in terms of underpasses that would make any difference to fauna movements.

h) As indicated in the SIS (page 80), the replacement of the present comparatively low-key road with a high speed road is likely to result in an increased number of road kills in the first few years of operation. The SIS document outlined a number of mitigation measures that could be implemented to reduce road kills along MR92. Measures mentioned included altering vehicle speed, use of reflectors, provision of warning signs, provision of fencing, provision of fauna underpasses and monitoring of road kills. The SIS indicates that road kills would be monitored for a period of one year following the completion of construction. Any further measures recommended to be implemented along the road to reduce road kills would then be investigated and implemented as appropriate.

i) The EIS did not identify any specific sites where wombat crossings are required. While the provision of fauna underpasses would aid in the safe movement of fauna across MR92, only two locations (within the Bulee Mountain area and to the east of Sassafras) seem suitable as the topography elsewhere along the route is not conducive to underpasses as it too flat. Underpasses at two locations at Bulee Mountain would be provided and other opportunities would be investigated in greater detail during the detail design stage. The need for any additional underpasses would be re-evaluated following the recommendations made as a result of the road kill monitoring program, proposed to be undertaken for the first year of operation.

j) The SIS identified the potential for a fauna underpass east of Sassafras. However, the SIS also raised issues of practicality of the provision of underpasses without erecting significant lengths of fauna fencing which would have its own impacts on habitat connectivity.

k) Long term eradication of blackberry infestations along the road in general is not considered to be a project issue, however a weed management plan would be prepared as part of the CEMP which would address this issue as it relates to the construction of the Proposal. Weed management in the road reserve during operation is a matter for the relevant local council, as land ownership is not vested in the RTA.

l) The EIS stated that both Koala fencing and signs be provided within the Bulee Mountain area in the event that an animal overcomes the fencing and to ensure that all motorists driving through this area are specifically alert to any wildlife movements.

m) It is noted that Figure 6.3d indicates that the Koala exclusion fence would occur as a continuous line on the western side of MR92 north of the Endrick River bridge. Due to the scale of the photo and the fact that it is an artist's impression, showing the correct configuration of the fence would not have been easily detectable. To clarify, the Koala exclusion fence would be installed on the western side of the upgraded MR92 in this location, however, where Coolumburra Creek Road occurs, the fence would turn at a 90 degree angle and continue along both sides of Coolumburra Creek Road for a distance of approximately 50m.

n) It is noted that the two proposed bridges are not mentioned in Section 12.7 of the EIS which outlines mitigation measures for the Proposal. These bridges were not referred to as mitigation measures as they are part of the design of the proposed road upgrade through the Bulee Mountain area. Section 12.6 of the EIS (page 12-28) indicates that both bridges would enable fauna to cross under the road. Vegetation clearing will be restricted and trees planted to help maintain suitable koala habitat along the roadside.

3.4.2 Flora

In summary, respondents to the EIS raised the following issues:

a) The EIS indicates BM4 would result in the loss of 18 *Eucalyptus triflora* and 12 *Dillwynia crispii* plants and BM5 would result in the loss of 8 *Eucalyptus triflora* plants. Mitigation for these losses is not proposed.

b) The impact assessment and mitigation measures for the vulnerable species *Eucalyptus langleyi* is very poorly addressed. The major failings in this regard is a lack of discussion on the cumulative impact on the species at Ch1000 (given the significant impact that the gas pipeline had at this site some 18 months ago) and the complete disregard of the possibility of realigning the road to avoid this site altogether.

c) As well as endangered orchids, there are other native flora species, including *Blandfordia sp* (Christmas Bell), *Actinotis helianthi* (Flannel Flower) and *Telopea speciosissima* (NSW Waratah) which occur along the roadside and would be impacted on by the Proposal.

d) The EIS commits the proponent to carrying out surveys during the summer months of 2002/2003 on two threatened orchid species (ie. *Cryptostylis hunteriana* and *Diuris aequalis*). It is unlikely that any survey has been possible up until now given the drought and bushfire impacts in the area traversed by the road. Even if some work has been carried out, the results would be unreliable given the above events. Surveys will therefore have to be put off until next summer and concurrence for the Proposal should not be considered by NPWS until this work has been carried out and the results fully considered.

e) Approximately 6 km from Hames Road on the left side of the road, and opposite the Telstra sub-station, an orchid (*Calochilus grandiflorus*) exists which is said to occur no further south than Gosford. This is one of only two known sites in the 4660 square km of the Shoalhaven Shire.

f) Approximately 9.2 km from Hames Road on both sides of MR92 are the largest population of *Pterostylis daintreana* in NSW. The Eastern Gas Pipeline is quite close to the northern population and this section has already been degraded from work associated with this Proposal, leaving only a small island of vegetation in remnant habitat. A species of *Genoplesium* is also in situ with this island.

g) Approximately 10.2 km from Hames Road, 100m east of the Turpentine Road and MR92 intersection on both sides of the road are *Pterostylis tunstallii*, *Pterostylis nutans*, *Pterostylis obtusa*, *Pterostylis longifolia*, *Pterostylis grandiflora*, *Corybas aconitiflorus* and *Cymbidium suave*.

h) The survey of Site 4 in the EIS (Appendix 3, pages 43/44) list four species but fails to list *Pterostylis tunstallii*. This is the site of the original discovery of this species. This area of habitat has been gradually reduced over recent years and is a sensitive area due to the presence of the Eastern Gas Pipeline.

i) On the northern side, at the beginning of the ascent to Sassafras, where MR92 is proposed to be realigned, many orchid species exist. In Sites 12/13 only five species were noted. None of the orchid species mentioned are listed as either endangered or vulnerable however this is not a valid reason for their destruction.

j) A minimum of three years is required for a thorough SIS, preferably a five year period. This timeframe will ensure features such as the current lengthy drought and bushfires are taken into account when assessing flora and fauna.

k) The alignment in some areas appears to be in direct conflict with the agreement from EIS representatives that grazing land would be preferred over horticultural concerns given the length of time taken to return to current levels of land use.

l) The trees that line the road through Sassafras should be preserved because they provide important habitat, provide rural amenity significant to the village's character and act as an important windbreak that contributes to the operation of horticultural activities in the locality. The artist's impression in Figure 6-3b (page 6-56) of the EIS document makes it very clear that a considerable number of trees would be removed in Sassafras. Placing the road further north than at present would endanger these trees.

m) There is no proper documentation of the extent of the impact on the trees through Sassafras and there is no discussion of the likely long-term impacts arising from disturbance of root systems of the remaining trees and of the likely impacts resulting from changes to drainage and runoff characteristics. Given the high conservation importance of these forest habitats, much more work

is required on assessing the impacts and appropriate amelioration measures of the upgrade through Sassafras.

n) There is a thin buffer of vegetation hiding the presence of the Eastern Gas Pipeline. Presumably this buffer would be removed for construction of the upgrade thus leaving a huge expanse of tarmac and grassed area through the National Park and wilderness areas.

o) In the Bulee Mountain section, the Proposal would damage the gully over which the road would be formed.

Representation Number(s)

64, 132, 171, 180, 210, 215, 222

Response

a) Since the field surveys for the EIS were completed a large part of the study area between Hames Road and Nerriga was burnt by the January 2003 bushfire, known as the Toga Fire. During the bat surveys undertaken in March 2003, rare plants identified within the Bulee Mountain area were inspected to ascertain the impact of the most recent bushfires. Much of the area adjacent to the existing road was severely burnt. It was concluded that a few *Dillwynia crispii* plants were burnt in the fire as well as the stand of *Eucalyptus triflora* indicated on Figure 12.4 of the EIS. Although many of the plants were burnt, most would survive and reshoot from either underground roots or trunks. Mitigation measures for these plants were not provided in the EIS or SIS as it was not considered possible to minimise the impact on these plants during the road construction, however several mitigation measures were provided in the SSIS which have been included in Table 8.4.

b) The road footprint in this area has been minimised to avoid impacts on the *Eucalyptus langleyi*. The existing centre-line would be maintained and a range of mitigation measures are included in Chapter 8 of this report which would ensure that cumulative impacts are minimised in this particular location.

c) Other species of native plants would be affected by the road upgrade. The EIS/SIS concentrated on species that are of most importance, namely rare and threatened species, which is common at the environmental assessment stage. As was stated in the EIS/SIS, the rehabilitation of the disturbed road verges is the most important consideration for flora (and fauna) in general. Successful revegetation and habitat creation on disturbed areas would ensure the long-term viability of native flora species in the locality.

d) Supplementary surveys were undertaken by Kevin Mills & Associates and LesryK Environmental Consultants targeting the terrestrial orchids *Cryptostylis hunteriana* and *Genoplesium superbum* but failed to locate any plants. It is noted, however, that environmental and climatic conditions were not ideal for the detection of orchid species during the supplementary surveys.

e) This particular ground orchid is not threatened or regarded as rare. It would be of importance on a regional basis if it only occurs at this site.

f) The *Pterostylis daintreana* and *Genoplesium* identified in the representation are not threatened or endangered species. As stated in the EIS, the footprint of the proposed road follows the existing road alignment as much as practicable. Where practicable, existing native vegetation would be retained. Construction impacts would be restricted to the existing road formation as much as possible in this locality.

g) This area falls outside the footprint of the upgraded road and would therefore not be impacted on by construction works. In the area west of the Turpentine Road intersection (Ch 9300), the proposed alignment closely follows the existing centreline and there would be no disturbance 100m away from the existing road.

h) This particular ground orchid is not listed as threatened or rare. The upgrade is as close to the existing alignment as possible to minimise the impact on native flora and fauna.

i) Many common orchids would be removed as part of the upgrade. The keys to minimising the impact on common species are remaining as much as possible within the existing road alignment and rehabilitating vegetation and habitats after the road works have been completed. Given the large areas of surrounding country (>200,000 ha), and the small area to be affected, it is unlikely that any common species would be seriously affected by the proposed road upgrade.

j) Whilst it is acknowledged that a longer time period would improve the detection of certain flora and fauna species, the EIS/SIS process adopts a precautionary approach when determining the impacts of the Proposal on flora and fauna. In particular, the identification of potentially suitable habitats and resources for important species, and the provision of mitigation measures to avoid or

reduce impacts on such area, were included in the assessment of the MR92 Proposal. Such measures are commonly used and are considered appropriate to overcome the shortcomings of time constraints in the preparation of assessment documentation

k) The RTA is not aware of any commitment given during the preparation of the EIS that grazing lands would be preferred over horticultural concerns. The design of the Proposal has sought to minimise impact on existing land uses irrespective of their existing use as much as practicable while also achieving the required Proposal objectives.

l) The cross-section of an upgraded MR92 through Sassafras was designed to preserve as much of the avenue of roadside remnant vegetation on both sides of the road as possible. A safety barrier would be erected to further minimise the footprint of the road in this area. As stated in Section 6.4 of the EIS a minimum of 1m is required between the safety barrier and any tree to accommodate deflection from a vehicle impact and therefore some trees within this area would be required to be removed.

m) Minimal construction work is expected to take place through Sassafras when compared to other sections of the Proposal between Hames Road and Nerriga. The root system of the avenue of trees within this area would not be significantly affected by the proposed road upgrade and further work to assess impacts would not be warranted.

n) It is intended to minimise as much as possible the removal of native vegetation along the route. Where the buffer of vegetation between the road and the pipeline easement can be retained, the RTA will endeavour to do so, by identifying these areas on the approved construction drawings.

o) The road has been designed to minimise environmental impacts at Bulee Mountain through the provision of bridge structures and by aligning the upgrade as closely as practicable to the existing alignment.

3.4.3 Weeds

In summary, respondents to the EIS raised the following issues:

a) Concerned about the risk of Phytophthora spread into an orchard at Sassafras. There is no acknowledgment of this risk in the EIS. It is well known that Phytophthora thrives in areas of poor drainage and is frequently associated with the disruption associated with road works. A management plan for drainage and contaminant disposal is required as failure to do so may be devastating to existing horticultural businesses.

b) The greater traffic and improved access would increase environmental pressures on the National Park adjacent to the road. The spread of weeds can be expected to increase.

Representation Number(s)

171, 233

Response

a) Weed management measures were proposed in the EIS and would be included in the Construction Environmental Management Plan (CEMP). The construction contractor would liaise with orchid growers in Sassafras to include appropriate measures.

b) The upgrade of MR92 would be one of a number of sealed roads that run beside National Parks within NSW. The RTA would liaise with NPWS on appropriate operational maintenance to minimise the potential for weed impacts.

3.5 Road Design

3.5.1 Standards

In summary, respondents to the EIS raised the following issues:

a) The cumulative effect of low design standards applied to much of the Proposal, together with BM4 which has a design speed of 60 km/h, there is a propensity for crashes to occur at Bulee Mountain.

b) At Bulee Mountain, allowing for the steep downgrade of BM4, the horizontal radius becomes effectively 53m. The operating speed for a 53m horizontal curve in rolling mountainous terrain is just above 50 km/h. This is substantially less than the 60 km/h design speed claimed for BM4 in the EIS.

c) While not documented in the EIS, it is understood that the design of the Proposal at Bulee Mountain does not provide the requisite lengths of transition curves specified in the Austroads Guide.
d) Inadequate detail is provided in the EIS on sight distances. It is considered that the section through Bulee Mountain does not provide adequate sight distances, which is fundamental to safety.
e) The short overtaking lanes (100m) proposed at Bulee Mountain are well below the Austroads Guide for an operating speed of 60 km/h (250m). This poses potential safety issues particularly given the mix of traffic likely to use the road.
f) The capacity of trucks is expected to increase beyond those currently allowed on Australian roads. The Proposal should consider this and the upgrade should be undertaken to the highest possible road standards.
g) The road should be capable of carrying heavy traffic to remove trucks from the road through Kangaroo Valley. It is imperative to have as few bends as possible in the new route.
h) Some sections of the road conflict with the objective to design a road capable of meeting traffic needs for the foreseeable future, particularly in the Bulee Mountain area and at the Turpentine Road intersection. It is critical that this principle be maintained in the final approved Proposal.
i) Lane widths of 3.25m are simply too narrow and should not be permitted. This road would be used in significant numbers by heavy vehicles and others and it is a matter of concern that a road designed to encourage use by B-Doubles is so narrow. Passing lanes are also essential along the road.
j) Retaining 60 km/h sections may impact on the driving environment of an expected important link road.
k) Suggest maximum 60 km/h speed limit through Ch32000-32500 as the gradient is steep and therefore dangerous at higher speeds. Safety barriers should also be considered in this area to conserve trees and reduce the visual impact of the road upgrade.
l) Will jersey kerbs similar to those on the Mount Ousley Road be used in the Bulee Mountain section should the existing alignment be upgraded?
m) The Bindi Brook crossing is currently only just wide enough for 2 small cars to pass each other so long as their speed is kept low. There have been a number of accidents and near misses on this crossing. It would be far safer to consider the community suggestion of constructing a by-pass of Nerriga and the Bindi Brook crossing.
n) The Proposal should be dual carriageway.
o) The road should be motorcycle friendly (ie no gravel on corners, non-slip paint on road markings and no wire safety barriers).
p) During construction, there would be significant increases in the traffic flows around HMAS Albatross. Appropriate traffic control devices should be provided once an analysis of the level of traffic flow has been undertaken.
q) Additional signage required to warn motorists of the condition of the existing MR92 i.e. unsealed and steep.
r) It is disappointing to note the omission of any reference to cycling facilities as part of the EIS. It had been previously confirmed that cyclists would have 2m wide shoulders (1m smooth bitumen and 1m gravel) separated by white lines and with bicycle stencils at appropriate intervals.
s) Overtaking lanes are required for the steep sections of the road through Bulee Mountain.

Representation Number(s)
1, 82, 99, 116, 148, 171, 176, 182, 222, 234, 272, 447, 641, 643

Response
a) The proposed upgrade of MR92 has been designed to provide a safe route for vehicles adhering to the proposed speed zones. Appropriate speed transitions have been included in the design. It should be noted that the BM5 route would also have 60 km/h sections toward the foot of Bulee Mountain. BM4 has been designed to comply with the design standards and would be appropriately sign posted for safety. In addition, overtaking opportunities have been provided to reduce unsafe movements by driver's overtaking slower vehicles. The safety audit of the proposed upgrading of the road through Bulee Mountain concluded that with mitigation measures this option would meet safety requirements.
b) The minimum curve radius provided at Bulee Mountain is 100m and in accordance with the current RTA design Guide this radius is suitable for 60 km/h design speed.
c) A safety audit was carried out for both BM4 and BM5 during the preparation of this Representations Report (Appendix C). At chainages 46300, 46600, 47700, 48150, 48720 and 48959

the design has limited superelevation transition lengths but further investigation has demonstrated that this can be addressed in detailed design stage.

d) The safety audit carried out on BM4 and BM5 indicated that stopping site distances were adequate.
e) Four auxiliary lanes are now proposed (refer to Chapter 8 of this Report) along the Bulee mountain (3 eastbound and 1 westbound) and these comply with the RTA Road Design Guide.
f) The project objectives referred to designing a road that was B-double accessible. It is not clear at this stage how the design standards would differ for greater capacity vehicles or whether such vehicles would use this route. It is considered that the design is conservative and that it would adequately cater for freight transportation needs for the foreseeable future.
g) The Proposal has been designed to allow for the efficient movement of heavy vehicles, which would include B-Double vehicles. The MR92 upgrade would provide significantly improved conditions for many of the heavy vehicles that presently use the road through Kangaroo Valley.
h) The proposed upgrade has been designed to meet the expected traffic needs for the foreseeable future. Further improvement to the Turpentine Road junction would only be carried out when there is a demonstrable need.
i) The proposed lane widths of 3.25m comply with the RTA's Road Design Guide for AADT from 500 to 2000 vehicles per day. B-Doubles have a maximum width of 2.5m and the proposed lanes would accommodate the B-Doubles safely. A number of overtaking opportunities would be provided between Hames Road and Nerriga. Auxiliary lanes would be provided through the Bulee Mountain area as part of the proposed design.
j) The provision of short sections of 60 km/h is not expected to impact on the driving environment of MR92 as there is appropriate transitioning designed into the upgrade.
k) The design incorporates the provision of safety barriers as part of the upgraded MR92 between Chainages 32000 and 32500 and therefore the impact on roadside vegetation would be avoided to a large extent. This section, The East Sassafras incline, has been designed to an 80 km/h design speed standard.
l) It is not proposed to utilise New Jersey kerbs to separate opposing traffic flows as part of the proposed upgrade of MR92, given the expected low traffic flows.
m) Bindi Brook falls outside the western extent of the study area. The speed limit through Nerriga would be 60 km/h. This and the low levels of traffic predicted would not pose unacceptable safety risks in the vicinity of Nerriga. Due to the predicted traffic volumes, there was no justification for the additional expenditure associated with a bypass of Nerriga. However, Tallaganda Council is considering plans to identify a road reserve in a revised LEP that would enable a bypass to occur when traffic numbers warrant it.
n) Given the expected traffic volumes, there is no transport justification for the provision of a dual carriageway for MR92. Additionally, a dual carriageway would result in significant incursions into National Parks along the route.
o) The upgraded MR92 would provide a safer road for all types of traffic that adhere to the signposted speed limits, including motorcycles. The sealed pavement and 1m sealed shoulders would prevent loose gravel accumulating on curves. Standard line marking and steel w-beam or wire rope safety barriers are proposed.
p) The traffic volumes around HMAS Albatross are unlikely to increase significantly during construction. A detailed Traffic Management Plan would be prepared as a sub-plan to the CEMP. If traffic control measures were regarded as necessary, they would be included in the Traffic Management Plan and implemented accordingly.
q) The installation of signs to alert motorists of the existing road conditions is not considered to be part of the MR92 upgrade Proposal. Shoalhaven City Council is responsible for the maintenance of MR92 and therefore the provision of additional signage would need to be discussed with the appropriate Council representative.
r) A 1m wide sealed shoulder with a white edge line would be provided throughout. This would allow cyclists to safely move to the left to allow motor vehicles to overtake.
s) The section of Bulee Mountain road would have 3 eastbound auxiliary lanes and 1 westbound auxiliary lane (refer to Chapter 8 of this Report)

3.5.2 Costs

In summary, respondents to the EIS raised the following issues:

a) The on-ground works for MR92 were initially estimated by the Value Management Study (VMS) to cost $81.1 million (Technical Paper 1). This estimate is $11.1 million greater than the current budget of $70 million, indicating that available funding may be insufficient for the proposed works.

The VMS costings are modest estimates, as indicated by the now preferred "Bulee Mountain" option estimated to cost $24.7 million which the VMS estimated at $17 million.

b) The new cost estimates outlined in Technical Paper 2 for particular road sections focus only on specific road works and do not consider property acquisition nor the re-establishment of road entry points, closure of unnecessary 4WD tracks and other environmental requirements detailed in the EIS.

c) The economic analysis of future benefits only allows for the cost of resheeting and resealing the 30 km of road at $500,000 per kilometre. The figure quoted could be a 400 per cent underestimate given the difficult work that would be involved with soil conservation works for the very highly erodible soils around the Sandy Point area, construction on different grades for the road leaving the Shoalhaven River and two major new bridges. In summary, the total capital cost estimates for the Nowra to Braidwood link and D, the full upgrade, could be an additional $60 million not an extra $15 million as stated. The inclusion of new bridges and adequate road works would make the full project uneconomic.

Representation Number(s)
118

Response

a) The costings developed for the Value Management Workshop were preliminary, based on the preliminary concept designs that were available at the time. Construction costs for the Proposal were continually refined as greater detail was provided through more detailed assessment. The Value Management estimate was also based on the full upgrade for the full length of the Proposal (*Technical Paper No. 2: Concept Design* provides a more detailed breakdown of the type of upgrade provided for each section of the route). The ongoing refinement of the options has enabled greater certainty of costs allowing the Proposal to be constructed within the allocated budget. Technical Paper 2 details the cost figures of the Proposal and the estimates show that upgrading is achievable within the proposed budget.

b) An allocation has been included in the construction cost estimate for environmental controls. While property acquisition has not been segmented out in the cost estimate, it was included in the overall project budget of $75 million. As the Proposal largely follows the existing road corridor, property acquisition is not a significant cost.

c) Shoalhaven City Council assisted by providing the appropriate rates for resheeting and resealing works based on its experience with the construction works associated with the upgrading of MR92 east of Hames Road. Council confirmed that the rate of $500,000 per kilometre was appropriate. It should be noted that the options for west of Nerriga discussed in the economic assessment section of the EIS have been programmed and funded. They do not include upgrading of Mongarlowe River Bridge or Oallen Ford. This does not prevent heavy vehicle use as there is no load limit on Mongarlowe River Bridge and heavy vehicles can use Oallen Ford. When warranted by traffic demand these bridges could be upgraded but this may not be necessary for some time.

3.5.3 Safety

In summary, respondents to the EIS raised the following issues:

a) Ensuring that the road is developed to the highest safety standards is a primary requirement of the Proposal. It is considered that the Proposal through Bulee Mountain fails to meet the minimum road safety standards.

b) The EIS has not addressed the issue of road safety in greater detail. More compelling reasons must be given for providing the community with a new road that is constructed to a lower than achievable safety standard.

c) Increased speed, traffic and heavy truck use will result in increased serious injuries and deaths as a result of the road upgrade. This situation has been created because the budget for the road does not allow for the construction of an easement suitable for heavy vehicles. To propose B-doubles share a 10m road easement in an environment which can experience heavy rainfall, high winds and low visibility in fog is a recipe for death.

d) The heavy fog experienced on the Sassafras plateau often arrives on summer afternoons and remains into the night, and would present a serious safety risk.

e) The EIS makes no provision for how accidents would be managed in such a remote location. The conflicting aims, and incompatibility of, promoting MR92 as a tourist, local and freight route has adverse road safety implications. A 60 km/h speed limit through Sassafras and wildlife signage would

be a minimum requirement for safer travelling through our community but would not overcome the danger of travelling through the National Park.

f) There will be an expectation of motorists that the road, going west, past Nerriga will be of a similar standard to that on the eastern side of Nerriga. To finish the road before Bindi Brook will cause accidents. Motorists are not going to expect a creek crossing of such a low standard, as it currently is, after travelling a road of reasonable quality

g) Very heavy frosts are common through winter and sporadically in summer. Due to the continual cold temperatures ice puddles are a common occurrence on the current unsealed roadway and would also occur on a sealed roadway.

h) Need to focus on making existing roads safe and this does not necessarily mean upgrades such as the one proposed. The emphasis must be on strengthening the rail freight network to reduce the number of truck movements and this would go a long way to improving safety.

i) The road should not be designed for speeds that exceed 80 km/h. The reality is that most drivers exceed the speed limit by what they consider safe, so you can expect speeds of 90 to 100 km/h in an 80 km/h zone and speeds of 110 to 120 km/h in a 100 km/h zone.

j) Will there be any monitoring of speed limits on MR92?

k) An independent safety audit may assist in validating the approach that is ultimately adopted at Bulee Mountain.

l) There are inadequate emergency services, such as telephones, police stations and mobile coverage in the region. This has serious safety implications if an accident occurs.

Representation Number(s)

68, 96, 129, 132, 171, 182, 187, 198, 210, 215, 222, 229, 640

Response

a) A road safety audit has been prepared during the preparation of this Representations Report that focuses on BM4 and BM5 (Appendix C). A number of minor improvements have been identified and would be included in the detailed design phase. The Proposal through Bulee Mountain would comply with the road design standards and would be safe for the design speed.

b) The choice of a preferred design represents a balance between practical engineering considerations and minimising environmental impacts. The concept design was developed to comply with RTA design guidelines. The recent road safety audit has identified that the EIS Proposal requires only minor improvements to the alignment which would be carried out during detailed design stage. The design of an upgraded MR92 has taken into consideration the likely users of the road including B-Double vehicles. The road has been designed to provide a safe environment for motorists. It would be a vast improvement to the existing gravel road and to the other escarpment crossings which have a safety record that is significantly worse than the NSW average for rural roads, see Table 3.2. It should be noted that all other escarpment crossings (refer Table 3.1) experience similar weather conditions and also have much higher traffic volumes.

c) Motorists travelling along the upgraded MR92 would need to drive according to surrounding weather conditions. Heavy fogs are currently experienced on the Sassafras plateau and several other regional roads and other escarpment crossings.

d) The additional traffic attracted to the upgraded road and improved traffic conditions would reduce the emergency response times to breakdowns and accidents which would be a significant improvement to the existing remoteness of the route. Wildlife advisory signage would be provided along the route and the 80 km/hr speed limit through Sassafras would be lower than for the majority of the road.

e) Vehicles heading west would have slowed to comply with the 60 km/h speed limit through Nerriga. This zone would be continued with appropriate sign posting at Bindi Brook.

f) Appropriate signage would be installed between Hames Road and Nerriga providing motorists with warning information about possible frosts.

Table 3.2: Crash data for relative safety comparison of escarpment crossings

Road	Mountain Pass	Length (km)	1995-1997				1998-2000			
			YR97 AADT	Total Crashes	Crash Rate 100MVKM	Severity Index	YR2000 AADT	Total Crashes	Crash Rate 100MVKM	Severity Index
SH25 Illawarra Hwy	Macquarie Pass	7.38	2700	35	160	1.08	3063	76	306	1.41
MR261 Kangaroo Valley	Cambewarra Mountain	10.03	3100	45	132	1.17	2437	51	199	1.12
MR261 Kangaroo Valley	Barrengarry Mountain	6.23	3000	20	98	1.05	2929	20	96	1.08
MR51 Kings Hwy	Clyde Mountain	11.19	2300	88	312	1.20	2792	67	196	1.27
MR92 Nerriga Rd (existing) See notes 1 & 2 below	Bulee Mountain	4.1	91	2	501	1.25	104	1	220	1.50

Note 1: For MR92, the traffic volumes and crash figures are too small to obtain meaningful crash rates/severity indices for a single crash produces a huge variation.
Note 2: There is anecdotal evidence that some MR92 crashes are not reported because of the remote location.

g) Strengthening the rail freight network is not considered to be a practicable solution to reduce the number of truck movements on roads in and surrounding the study area. The movement of freight by road is a particularly important issue given the limited access to rail within the study area. The RTA is aware of the initiative that "moving freight from road to rail" is a NSW Government policy as detailed in *Action for Transport 2010*. The rail network in the vicinity of the study area is limited to links in the north and connection to the Main Southern Line via the Unanderra-Moss Vale Line. The Illawarra Railway line links Sydney to Wollongong, Port Kembla and Bomaderry (north of Nowra).

h) The RTA acknowledges that rail is an important mode of freight transport but there is no direct rail link between the South Coast and ACT regions. Main Road No 92 provides a road connection between the separate rail lines to the South Coast and the ACT. The Unanderra-Moss Vale Rail Line provides the only rail access from the Illawarra to southern and south-western NSW as well as Melbourne and the rest of Victoria. The rail services on the Main Southern Rail Line provide rail connections between Sydney and Melbourne through Goulburn, Wagga Wagga, and Albury. A spur line from Queanbeyan also connects to Canberra. The Goulburn – Bombala Railway Line (closed south of Michelago) passes through Tarago, Bungendore and Queanbeyan.

   The Unanderra-Moss Vale Rail Line is constrained due to the need to cross the escarpment. Improvement to this line has limitations because of the steep gradients and curvature. Freight access on the Illawarra-Sydney Rail Line is also constrained by high passenger train numbers that limit freight track availability. This issue is particularly relevant between Hurstville and Sutherland where only one track exists in each direction. Therefore, potential options for improved freight transport by rail were not considered further as part of the EIS.

i) The proposed upgrading of MR92 has been designed for safe travel at the speeds signposted.

j) The monitoring of speed limits along the upgrade MR92 would be a police enforcement issue. It is expected that speed enforcement activities would occur along the upgraded road.

k) A Stage 2 Safety Audit has been carried out on the BM4 and BM5 options during the preparation of this Representations Report. This has indicated a number of improvements to both options to enhance safety. The findings of the safety audit are attached in Appendix C. It should be noted that, while very important, safety is one of a number of issues that have been considered in the decision on the preferred route across Bulee Mountain.

l) The Proposal if approved would introduce a much safer route to that which currently exists. This combined with the expected traffic levels would reduce the accident rate and severity. It should be noted that emergency telephones are not provided on any other of the other escarpment crossings.

3.6 Eastern Gas Pipeline

In summary, respondents to the EIS raised the following issues:

a) The *Eastern Gas Pipeline Land and Roads Deed* sets out what has been agreed in the alignment of the upgrade for MR92 with detailed coordinates locating the proposed road upgrade with respect to the Eastern Gas Pipeline. The present proposed alignment varies markedly from the agreed alignment in the Deed, requiring formal approval from Duke Energy International for any deviations.

b) It is stated in Part B 5.3 that the Eastern Gas Pipeline has been included in preliminary assessments concerning constraints. During the process of the review with the consultants, they did not have final information on the section of the upgrade through Sassafras and as such this section of the road has not been reviewed in relation to impacts on the pipeline. There is one section where the proposed road has been aligned over the pipeline which is of concern.

c) A coating defect survey is required to be undertaken on the Eastern Gas Pipeline prior to construction and following road formation completion at RTA cost (but before road sealing) to ensure that the contractor has not damaged the pipeline coating.

d) No materials nor machinery are to cross or be stored over the buried pipeline and all construction crossings are to ensure protection of the pipe. Where necessary, the area adjacent to the pipeline is to be marked with "No Construction Access".

e) Under AS 2885 the Australian Standard for high pressure pipelines, there is a requirement for a risk assessment to follow very specific guidelines and address a number of matters specific to gas

pipeline operation. Duke Energy will require that those involved in the risk assessment review this section with Duke Energy personnel to ensure that all risks have been identified, assessed and control measures identified.

f) The positioning of major culverts, minor culverts and spill containment basins must ensure that the specific depth of cover is maintained when such structures cross the gas pipelines. Remedial actions need to be taken to ensure the risk profile is not impacted.

g) It is noted in EIS Volume 1, Part A2 that decisions will need to be made on land requirements outside the existing road reserve and especially within the region of Morton National Park. As the alignment in relation to the Eastern Gas Pipeline will need to be formally approved then this step must precede any finalisation on further land needs outside the existing road reserve. It is probable that further consultation will also be required under 2.7.1.

Representation Number(s)

176

Response

a) The RTA has entered into a formal agreement with Duke Energy International for MR92. Where the EIS Proposal affects the existing Eastern Gas Pipe Line, Duke Energy will be contacted to enable statutory and safety requirements (as detailed in the Company's Third Party Access Requirements and Procedures) to be met.

b) Final as-executed design information for the Eastern Gas Pipeline has been assessed. The design of the proposed MR92 upgrade through Sassafras complies with Duke Energy's design guidelines in terms of maintenance of appropriate depth of cover over the pipeline.

c) A coating defect survey where and if required would be carried out prior to sealing of the road in the location where road has crossed the existing gas pipeline

d) Measures to protect the pipeline would be included in the construction contract deed and would form part of the CEMP. This would include measures to prevent the storage of machinery and materials over the buried Eastern Gas Pipeline. Machinery would be required to cross the pipeline only at designated construction crossings where appropriate pipe protection would be implemented. The protection measures would be negotiated with Duke Energy. Other measures would include signage marked with "No construction access" in areas where these measures were deemed necessary.

e) Works impacting on the gas pipeline easement would be in accordance with the requirements of AS2885-1997 in particular, separation distance requirements, pipeline crossing requirements including the risk management plan.

f) A review has been carried out of the proposed MR92 upgrade design and the as-executed Eastern Gas Pipeline design. The road design has been developed to incorporate the required depths for the pipeline. The RTA would continue to liaise with Duke Energy to ensure that the pipeline is protected through the detailed design and construction stages.

g) As part of post determination procedures as outlined in section 2.7.1 of the EIS the RTA would undertake discussions with Duke Energy regarding the alignment of MR92 and the Eastern Gas Pipeline. The RTA would work closely with Duke Energy and NPWS to resolve boundary changes and complete the design of the final alignment.

3.7 Construction

3.7.1 General

In summary, respondents to the EIS raised the following issues:

a) There is concern regarding access to the road during construction, especially in the Bulee Mountain area.

b) More details are required on the construction and compaction methods to be employed in the major cuttings required for the Bulee Mountain section as this is very close to the horizontal directional drill of the Eastern Gas Pipeline which was undertaken to avoid impact on Bulee Gap. This could be a major constraint to building the road upgrade as proposed depending upon the construction methods and design of structures being envisaged in this area.

c) Concerned at the long delay in construction of a faster and more importantly, safer route.

d) It should be noted that the Eastern Gas Pipeline is susceptible to damage from vibration during construction and a condition highlighted was that no vibrating rollers could be used for road compaction within 20m of the pipeline. This does not appear to have been noted in the EIS and will be a constraint that needs further consideration.
e) Section 6.12.1 lists the use of a steel drum vibrating roller. The use of this item of equipment needs qualification on any agreed usage by Duke Energy near the pipeline.
f) During road construction, the effects of ripping the sandstone close to the pipeline trench will need careful monitoring and discussion prior to work commencing. This construction method could result in pipeline coating damage.
g) The EIS outlined mitigation measure for dust suppression which appears to be adequate. It should be noted however that dust not only impacts on water supply to rural housing as outlined but also impacts livestock and pasture on adjacent landholdings. Consideration should be given to implementing dust suppression measures for the entire Proposal, not just in the vicinity of rural housing.
h) Quarrying at Stony Hill for sandstone sub-base should not be considered as it would damage and degrade the existing minimally cut fire trail out to Stony Hill.
i) The suitability of materials used in the construction of the road should be checked to determine the potential environmental impacts (eg acidic drainage).
j) Residences within 500m of construction works should be notified of noisy works prior to construction commencing.

Representation Number(s)
148, 176, 182, 211, 646

Response
a) Road access would generally be maintained during reconstruction of the majority of the Proposal length. Much of the Bulee Mountain section would be constructed under traffic, but as stated in the EIS, the road may require closure for limited periods. While this would be considered a last resort, it should be noted that the ideal time to carry this out would be while the traffic levels are at their current low level. Any closure would be widely advertised in the local press with additional roadside signposting.
b) The RTA is aware of the constraints imposed by the Eastern Gas Pipeline in this area. The RTA would continue liaison with Duke Energy and require the successful construction contractor to ensure that the construction measures proposed in the vicinity of the directional drill would provide adequate protection for the pipeline.
c) The planning and design processes in place in NSW are designed to achieve the best planning outcomes for the community. The RTA has been complying with the appropriate approval processes under the *Environmental Planning and Assessment Act, 1979*.
d) The concerns about the vibration effects on the gas pipeline during construction are noted. The conditions of use of vibrating rollers for compaction would be included in the contract documentation. The successful construction contractor would be encouraged to propose innovative construction methods that would ensure that the pipeline is protected during the construction process. The construction methods would be discussed with Duke Energy and appropriate conditions and controls would be included in the CEMP.
e) The construction contractor would be required to liaise with Duke Energy on its detailed construction plan. The use of vibrating rollers would be discussed with Duke Energy prior to their use.
f) The effects of ripping the sandstone close to the pipeline trench would be closely monitored during construction. This would be included in the CEMP.
g) It should be noted that the existing condition of the unsealed road results in dust levels that are higher than desirable. The sealing of the road will reduce this ongoing dust impact. The RTA requires dust suppression techniques to be used over the whole construction site for safety as well as environmental reasons.
h) It is unlikely that quarrying from Stony Hill would be required for the Proposal. However, should the construction contractor decide that this is a viable source of material, a separate environmental assessment would need to be conducted prior to quarrying in this location proceeding.
i) The suitability of materials to be used for the construction would be assessed for potential impacts.

j) The residents close to the noisy construction activities would be notified prior to the construction commencing in accordance with the CEMP.

3.7.2 Water Quality

In summary, respondents to the EIS raised the following issues:

a) It is indicated that a soil and water management plan would be developed to manage soil erosion, sediment and water flows for the construction phase which is fully supported. Such plans should include mitigation measures to avoid siltation of adjacent pasture, contamination of dams for livestock and localised flooding across agricultural land.
b) It is essential that the sedimentation and erosion control measures outlined in the EIS, relevant Technical Papers and Species Impact Statement be thoroughly implemented.
c) NSW Fisheries request a copy of the integrated Soil and Water Management Plan and Vegetation/Habitat Rehabilitation Plan prior to the commencement of any works. The proposed water quality monitoring program should be conducted independently and produce an annual report to be forwarded to NSW Fisheries during the construction phase.
d) NSW Fisheries request accurate design detail on the main waterway crossings including Endrick River, Tianjara Creek, Boolijah Creek, Bainbrig Creek, and Titringo Creek. It is essential that any development in the catchment of Tallowa Dam does not adversely affect the quality of the water in the reservoir. Instead, the RTA should aim to achieve an improvement in water quality.
e) The proponent shall only construct sedimentation and erosion controls in locations, including stockpiles that satisfy SCA criteria.
f) During construction, an appropriately qualified soil conservationist should be consulted regularly to undertake inspections of temporary and permanent erosion and sediment control devices to ensure that the most appropriate controls are being implemented and maintained in an efficient condition at all times and meet the requirements of any relevant or licence condition(s).
g) Construction stage water quality structures shall be maintained for six months after construction or until revegetation has provided groundcover to at least 70% of the exposed ground surface (whichever is the shorter).
h) Work sites should not be located within close proximity of watercourses and other environmentally sensitive lands. Ideally work sites should be located on land which has been previously cleared of native vegetation.
i) Any drainage works associated with the construction of the new road must aim to minimise any detrimental impacts to horticultural business.

Representation Number(s)

171, 211, 217, 644

Response

a) The issues raised are noted and are a standard requirement in an integrated Soil and Water Management Plan which would be a sub-plan of the CEMP for a non-urban area such as that in the study area.
b) The sedimentation and erosion control measures noted in the EIS and Technical Papers would be included in the CEMP and implemented.
c) The CEMP would include a detailed integrated Soil and Water Management Plan as well as a Vegetation and Habitat Rehabilitation plan. A completed copy would be forwarded to NSW Fisheries prior to any construction works commencing. An independent water quality monitoring program would be conducted and an annual report produced and forwarded to NSW Fisheries during the construction phase.
d) The existing bridges would be used for the crossings of Endrick River, Tianjara Creek and Boolijah Creek. The existing culverts at Bainbrig Creek and Titringo Creek are currently inadequate and it was proposed in Table 3-4 of *Technical Paper No. 8: Hydrology and Hydraulics* to provide:
    - four box culverts (1500x900mm) at Bainbrig Creek;
    - two box culverts (1200x750mm) at Bainbrig Creek Tributary 1;
    - three box culverts (1200x900mm) at Bainbrig Creek Tributary 2;
    - four box culverts (2400x1500mm) at Titringo Creek Tributary 1;
    - three box culverts (1200x750mm) at Titringo Creek Tributary 2;

    It is expected that the MR92 upgrade would have positive effect on the quality of water in the catchment of Tallowa Dam as a result of sealing the road. Once design is finalised, NSW Fisheries would be provided with details of each creek crossing.

e) Detailed design of sediment and erosion control structures in areas covered by SEPP 58 would be submitted to SCA prior to their construction. This requirement would be included in the CEMP.
f) The use of a qualified Environmental Management Representative is standard practice on RTA major road construction projects. A requirement for an independent soil conservationist would also be included in the construction contract conditions and made part of the CEMP.
g) The CEMP would include a requirement that construction stage water quality structures would be maintained for six months after construction is completed or until revegetation has provided at least 70% groundcover.
h) It is usual practice to locate work sites / compounds more than 50m from any watercourse or any identified environmentally sensitive area. Cleared areas are usually the preferred location if they meet the above criteria. These requirements would be included in the CEMP.
i) Horticultural businesses would be identified in the PEMP and design of drainage works considered appropriately. This would also include temporary drainage structures.

3.8 Operations

3.8.1 General

In summary, respondents to the EIS raised the following issues:
a) Tracks must remain accessible, or alternative access be allowed, to the Kangaroo Valley-Canberra 330kV Transmission Line (Fdr.#6) located in the vicinity of the Nowra-Nerriga road. Any road and drainage works need to take into account the horizontal and vertical alignments of nearby access tracks to the transmission line.
b) There would be increased pollution with more vehicles, more semi trailers, introduction of B-Doubles, more diesel fumes and particles, more rubber dust and brake pad dust and dirtier water tanks polluted by vehicles.

Representation Number(s)
210, 220

Response
a) The proposed design is not expected to result in any access impediments to the maintenance tracks for the Kangaroo Valley-Canberra 330kV Transmission Line. The issue has been noted and access would be maintained.
b) The expected traffic volumes for an upgraded MR92 would not be sufficient to result in an ongoing air pollution problem resulting in water tank contamination. The area currently experiences good air quality and this is expected to continue for the foreseeable future. Dust levels and subsequent settlement in water tanks etc would reduce due to the road being sealed.

3.8.2 Water Quality

In summary, respondents to the EIS raised the following issues:
a) What provisions have been made in case of fuel, chemical and dangerous goods spillage? Waterways would be polluted/contaminated affecting wildlife and surrounds.
b) EIS Section 11.2 references work by the EPA and SCA. This section requires review having regard for the endorsed water quality objectives of the Shoalhaven River. The SCA monitors water quality in the Shoalhaven River system and suggests that the results, if not already considered, be reviewed.
c) The Proposal can impact on water quality through the erosion and transport of sediment during the operational phase. This issue should be addressed via conditions if the Proposal is approved. It is important to ensure minimum scouring and erosion of sediments to the drinking water catchment.
d) Request the consideration of an additional spill management/containment basin on the western side of the Endrick River bridge. There is a high risk of spill occurring from a vehicle travelling in an easterly direction and rounding the corner just before the bridge.
e) Specifically designed controls are needed to convey stormwater from the road adjacent to the Endrick River bridge into the river. Particular care is required at this location to prevent erosion.

f) It is suggested that despite the statement that constructed stormwater wetlands will not be used, the scope for the use of such measures be reconsidered during the preparation of the water quality management plan.
g) The water quality monitoring proposed in Section 8 of the EIS is endorsed but request monitoring also be undertaken of post construction sediment movement.
h) A formal rest stop is proposed at Endrick River crossing. The rest stop would need to be carefully designed and managed to prevent water quality impacts. Specific attention is required for the management of human wastewater, rubbish/litter and access to the river. Preparation of specific plan of management is suggested for this rest area in consultation with the SCA.
i) Permanent stormwater control measures for the operational phase of the project shall be installed and utilised as soon as possible after commencement.
j) All facilities including water pollution control ponds, stormwater wetlands, grass swales, biofiltration trenches, gross pollutant traps and sedimentation basins should be inspected regularly and maintained in a functional condition for the life of the project.
k) Drainage management at Sassafras is not adequately addressed in the EIS. There are concerns relating to chemical, oil and other road contaminants. This locality is subject to high rainfall events which result in the need to manage runoff and associated road pollutants.
l) Should a tanker carrying chemicals be damaged in an accident on the route causing a spill, the chemical would leak towards the waterways in the National Park.
m) The proponent should provide detention systems for containment of spills and materials arising from accidents. The systems should be consistent with the RTA's Code of Practice for Water Management – Road Development and Management.
n) In the event of spill, the proponent shall ensure that all material spilled is removed as soon as practicable and within at least 24 hours and shall contact the SCA's Incident Management Service.

Representation Number(s)
144, 171, 187, 210, 644, 646

Response
a) A number of containment basins have been incorporated into the design as sediment control measures to minimise the impact on the surrounding environment. Sedimentation basins used in construction would be retained as spill containment measures. Permanent basins would be maintained at all water crossings. The details of sedimentation basins are described in the EIS on page 11-7 and Technical Paper No 7, and key risk management strategies are detailed in the EIS on page 18-6.
b) Further review of Section 11.2 of the EIS is not regarded as necessary. Section 11.2 of the EIS establishes that the water quality of creeks and rivers in the study area is of high quality. This was confirmed through the water quality monitoring undertaken as part of the EIS investigations. These findings confirmed the need for inclusion in the design of effective water quality management measures to enable the maintenance of the good quality of water.
c) The issue of the potential impacts to water quality is noted. Mitigation measures are identified in the EIS and would be incorporated into the construction and operational stages of the Proposal to minimise any adverse environmental effects. As noted in the EIS, the proposed upgrade is expected to have a positive impact on sediment loads in creeks and rivers along the route, through the sealing of the existing road.
d) An additional spill management basin on the western side of the Endrick River was considered in the design of the proposed upgrade. A more appropriate solution may be to pipe runoff across the bridge and into the proposed basin on the eastern side of the Endrick River. This would be further investigated in the detailed design phase.
e) Appropriate controls were identified in the EIS. Specific measures to prevent erosion in the vicinity of the Endrick River would be included in the detailed soil and water management sub-plan to be prepared as part of the CEMP.
f) While the use of constructed wetlands is not regarded as necessary, such measures would be reconsidered during the preparation of the detailed soil and water quality management sub-plan.
g) Sedimentation control devices would be regularly maintained after completion of the project. The frequency of post construction sediment monitoring and the timing of maintenance would depend on site conditions and on advice received from environmental specialists.
h) A formal rest stop at the Endrick River has not been included as part of the proposed MR92 upgrade. It may be considered at a later stage and be subject to its own environmental assessment. If considered necessary in consultation with SCA, a plan of management may also be prepared but

this would not be carried out as part of the proposed MR92 upgrade for which approval is being sought.

i) Permanent stormwater control measures for the operational phase of the project would be in-place in readiness for the commencement of operations.

j) All water quality management facilities would be inspected regularly and maintained in a functional condition for the life of the project.

k) It is considered that drainage management in the Sassafras area has been adequately addressed in the EIS, with all drainage measures designed to address the appropriate rainfall events. The concerns for managing contaminants in road runoff at Sassafras have been identified in the EIS and would be addressed in the final design.

l) Spill containment basins have been incorporated into the design of the proposed upgrade to adequately protect waterways along the route.

m) Detention systems for containment of spills and materials have been included in the project design which are consistent with the RTA's Code of Practice for Water Management – Road Development and Management.

n) In the event of spill, the SCA's Incident Management Service would be contacted within at least 24 hours and all material would be removed as soon as practicable.

3.8.3 Amenity

In summary, respondents to the EIS raised the following issues:

a) The realignment of the road to the north in eastern Sassafras would result in amenity impacts such as visual impacts, reduced privacy and increased theft and trespassing.

b) An upgrade of the road through Sassafras, resulting in increased people and traffic and associated noise, pollution and waste, would be detrimental to the remote rural character of Sassafras which people who buy in Sassafras came there for.

c) The Proposal needs to ensure that whatever changes are made to this road do not impact the integrity of the surrounding ecosystems and the wider area between Nerriga and the coast.

d) Every consideration should be given to residents along the route and bypasses provided in the plan to protect the amenity of those residents.

e) The increased danger and noise of heavy traffic on the MR 92 would disturb the current quiet atmosphere enjoyed by the people.

Representation Number(s)

57, 187, 210, 215, 231

Response

a) There would be limited visual impact in the Sassafras area with the loss of some trees as a result of the proposed upgrade. As stated in the EIS, the RTA has designed the proposed upgrade to remain as close as practicable to the existing alignment so as to minimise the proposed impacts of the Proposal. Sealing of the road would improve accessibility, however there is no evidence to support concerns that this would increase the risk of theft and trespassing.

b) The impacts of the proposed upgrade on amenity were assessed in the EIS and adequate mitigation and management measures such as retention of the avenue of trees are included to address the concerns raised.

c) The natural and cultural value of the study area was recognised in the EIS. The RTA's intention is to minimise impacts on the surrounding area by staying as close as practicable to the existing alignment. Appropriate mitigation and management measures have been proposed to reduce the identified potential impacts of the Proposal.

d) Bypasses of the townships of Sassafras and Nerriga are not justified at this stage based on the expected levels of traffic predicted to use the upgraded MR92. In its revision of the Tallaganda LEP, Tallaganda Shire Council has indicated that it would consider establishing a road reserve for a future bypass of Nerriga should that need arise in the future.

e) The impacts of the proposed upgrade on amenity were assessed in the EIS and adequate mitigation and management measures are included to address the concerns raised.

3.8.4 Social

In summary, respondents to the EIS raised the following issues:

a) The EIS seems to have ignored safety and social issues at Nerriga that the upgrade will raise.

b) This Proposal is personally disrupting lives and impacts on future lifestyle in a stressful and negative way.
c) The community at Sassafras would be significantly impacted upon by the Proposal by making Sassafras unattractive to current residents. The EIS has ignored the impact of security issues on residents and landholders at Sassafras despite the growing statistics on rural crime in NSW.
d) Concerned about the impact of the loss of a vegetated road alignment, particularly on the exposure of the Waratah plantation and tree nursery where set backs and plant screens have been incorporated on the side closest to the road. No indication has been made in the EIS about security fencing for landholders to address these issues.

Representation Number(s)
3, 68, 123, 148, 171

Response
a) The safety and social issues associated with the proposed upgrade in the vicinity of Nerriga have been addressed in the EIS. The proposed design through Nerriga would maintain a 60 km/h speed zone. This combined with the relatively low number of vehicles for the foreseeable future would minimise any safety issues associated with the proposed upgrade through Nerriga.
b) The RTA is progressing the project as quickly as possible to provide greater certainty for affected stakeholders along the route. It is expected that the provision of a safer and more reliable upgrade would have positive social effects on the future lifestyle of stakeholders along the route.
c) Whilst any increase in activity, including improving the road, may impact on the security of Sassafras residents, the proposed upgrade would also bring benefits by reducing the response time of emergency vehicles (eg police, ambulance, fire).
d) There is no basis for the assumption that improving the quality of the existing MR92 would result in increased security risks for Sassafras residents. The proposed upgrade would increase the levels of passive surveillance in the area as a result of greater activity along the route.
e) The issue of appropriate fencing and screening for landholders would be addressed through direct consultation during the detailed design stage. Property adjustment plans would be prepared for each affected property which would incorporate property adjustments to minimise impacts associated with the proposed upgrade.

3.8.5 Noise and vibration

In summary, respondents to the EIS raised the following issues:
a) The Proposal would result in increased noise and vibration effects from heavy vehicles travelling through Nerriga, especially at social meetings and the two churches. Most of the buildings in Nerriga are probably in excess of 100 years old and it is considered that heavy vehicles would damage buildings over the long term. Insulating these buildings would be very difficult, could spoil the heritage and appearance of them, and would only reduce noise inside the buildings.
b) The proposed alignment would degrade the National Park through noise pollution.
c) Whilst it is required to reduce noise to legally acceptable levels, these levels will still be significantly higher than currently experienced in the region and the frequency of traffic noise will be substantially increased.
d) The new road at Sassafras would be even closer to farm dwellings than the existing, and noise levels would be well in excess of those recommended by RTA guidelines. Previous consultation with Maunsell Pty Ltd resulted in other recommendations as to alignment and recommended measures to buffer noise.
e) It is noted in the EIS that sound recordings at Sassafras were not able to be taken during the study. It is requested that measurements be undertaken and provided to each resident immediately. Without such data, residents cannot make their own assessments of the impacts of noise from the upgrade. It will be important for Sassafras residents to know exactly by how much the current tranquillity of the community will be spoilt by this upgrade.
f) It is believed the noise levels after the upgrade would exceed allowed levels at particular properties such as in the eastern area of Sassafras where the terrain is relatively steep. Semi-trailers and B-Doubles using gears to brake on this steep section will be audible 24 hours a day. Noise monitoring needs to be done on this eastern section of the road.

Representation Number(s)
13, 14, 57, 66, 67, 129, 148, 171, 210, 646

Response

a) An assessment of the noise and vibration effects of the proposed upgrade through Nerriga was undertaken as part of the preparation of the EIS. This indicated that noise exceedances were not sufficient to warrant further mitigation measures. The heavy vehicle traffic through Nerriga township is not expected to increase damage to existing buildings. However, the existing buildings in the township would be inspected for structural condition before the start of works in the area. If required additional inspections of buildings within the township would be carried out during the operation phase. [Need to include a commitment to repair any damage established as resulting from the road construction / operation]. Road traffic noise barriers would not be feasible or appropriate in this location and on present anticipated traffic volumes a bypass of Nerriga is not warranted.
b) The standard noise criteria would not be triggered as there are no sensitive receivers in the National Parks in the vicinity of the road.
c) Noise levels are expected to increase when compared with the existing noise levels but these are expected to comply with EPA Environmental Criteria for Road Traffic Noise (ECTRN).
d) Noise levels through Sassafras would comply with EPA criteria. Predicted noise level near Attaahua Farm Sassafras in a worst-case daytime traffic in 2016 is expected to be 55 dBA and comply with the EPA ECRTN.
e) The monitoring carried out along the route was used to validate the assumptions in the noise model. The monitoring confirmed that the environs along the route experienced very quiet conditions. The background levels used in the model were therefore assumed to be those of a quiet green field site. Further noise monitoring is not expected to change this assumption.
f) Noise monitoring would be undertaken near identified sensitive receivers along the route when the Proposal becomes operational. If noise issues arise, an assessment would be carried out on the most appropriate form of mitigation and this would be implemented as appropriate.

3.9 Land use

In summary, respondents to the EIS raised the following issues:

a) The EIS notes that the Tallaganda Shire Council is planning to review planning controls around Nerriga in 2002-03 to allow more rural residential development. The attraction of the proposed road upgrade for Council is to bring more absentee ratepayers onto the proposed rural residential developments to subsidise demands on services made by the resident ratepayers.
b) The areas proposed for rezoning are of "relatively low rural production" but these lands contain highly environmentally sensitive White Box – Yellow Box – Red Gum woodlands on erodible soils. The proposed rural subdivisions may result in the loss of high conservation value vegetation along frontages of Shoalhaven and Nerriga Rivers and facilitate soil erosion and sediment pollution of important wild rivers.
c) The Proposal would fuel undesirable land speculation at Sassafras. An upgraded road would inevitably lead to increased land values at Sassafras and thus an acceleration of subdivision projects. There would be great pressure on the authorities to rezone the private holdings on the plateau to permit closer settlement, resulting in adverse social implications, loss of rural character of Sassafras, increased land clearing, damming of streams, waste disposal, weed infestation, increased feral animal numbers, increased fire and greater population levels. This is a major impact that has been neglected.
d) Upgrading the road through Sassafras on its current alignment would create development issues in the future and is incompatible with the needs of the local road users.
e) The losses on the southern side of the road at Sassafras where the vegetation is much richer appears to be in direct conflict with the agreement that grazing land would be preferred over horticultural concerns given the length of time taken to return to current levels of land use.

Representation Number(s)

118, 171, 180

Response

a) The issue raised by the respondent is for Tallaganda Council to consider in its review of planning controls.

b) Any proposed rural subdivisions are outside the scope of the environmental assessment of the upgrade of MR92. Issues relating to rezoning would be a matter for Council consideration.
c) Any rezoning of land at Sassafras is a responsibility of Shoalhaven City Council. In the Sassafras area, development is limited to rural uses allowable under the existing Rural 1(b) and Rural 1(d) zonings, unless Council re-zones land to permit other uses. Council has advised that there are no processes in progress to rezone at Sassafras and that there is no Rural Lifestyle 1(c) zoned land at Sassafras which would permit rural residential uses.
d) Any improvement in access has the potential to increase demand for development but whether development occurs is dependent on many other economic and social factors, as well as Council land use planning controls. Local users would benefit from the improved and more reliable access and reduced travel times. Through Sassafras, a lower speed environment has been provided to enable preservation of the "avenue of trees" without requiring large areas of arable land.
e) The original concept design through the Sassafras area involved constructing the alignment on the northern side of the existing alignment. In response to community concerns regarding the avenue of trees, one stand of which would have been removed as part of the original Proposal, it was decided to stay within the existing alignment with limited widening on either side. This results in retention of the avenue of trees. Further work would be undertaken during the detail design to further reduce the road footprint at this location.

3.10 Heritage

In summary, respondents to the EIS raised the following issues:

a) The Proposal has ramifications for the heritage aspects of The Wool Road. In the re-alignment of the existing road, would the existing 19th century road construction be destroyed or buried?
b) The EIS states that a "Conservation Management Plan will be prepared to guide the future management of the remainder of The Wool Road". Does this apply to the whole Wool Road, or just the portion in the area of the MR92 and thus not including anything east of Princes Highway?
c) The EIS does not address the heritage value of buildings, monuments or trees along the road through Nerriga. The Centenary of Federation stone and the old Cypress tree, which holds special significance to the people of Nerriga, would both be in the way of the upgraded road. Other items include the Nerriga School House and the wooden footbridge.
d) No attempt is made in the EIS to explore and quantify the potential economic returns from capitalising on the European heritage features, which would further enhance the economic benefits of the Proposal.
e) A recent study of the heritage significance of The Wool Road clearly defines the great importance of this early tablelands-coast link. The community strongly advocates action to preserve at least a section of the road and highlight its heritage value.
f) There is no detailed heritage study and nothing about having a small part of the Wool Road preserved and the importance of this.

Representation Number(s)
16, 58, 63, 67, 71, 99, 170, 228, 231

Response

a) As identified in the EIS, the 1841 section of the Wool Road would not be affected by the Proposal. Sections of the 1856 realignment would be removed and/or covered by the new work. A Section 140 Certificate would be sought from the Heritage Office prior to any construction works being undertaken in the Bulee Mountain section. Additionally, a Conservation Management Plan would be prepared and provided to the relevant authority to guide the future management of the Wool Road.
b) The proposed Conservation Management Plan would apply to the Wool Road within the Bulee Mountain area.
c) The Centenary of Federation stone, the old Cyprus tree, the Nerriga School House and the wooden footbridge would not be affected by the proposed construction works. The western limit of the proposed upgrade works would be approximately 200 m west of the Nerriga Hotel
d) The tourism effects of the proposed MR92 upgrade were included in the transport modelling and the economic analysis. A proportion of this increased tourism could be expected to be heritage related.

e) The 1841 section of the Wool Road at Bulee Mountain has been avoided by the proposed design. Bridges have been included in the design at Bulee Mountain to enable some sections of the 1856 realignment and the Bulee Gap precinct to be preserved. Additionally, a Conservation Management Plan would be prepared to guide the future management of the Wool Road.
f) See response to e) above.

3.11 Consultation

3.11.1 Process

In summary, respondents to the EIS raised the following issues:

a) People in Nerriga affected by the upgrade of MR92 and subsequent use by heavy vehicles should also be given some consideration.
b) It is noted in EIS Volume 1 Appendix B Consultation Table page 7 that contact was made with Duke Energy on 6 August 2002 and up to 10 September 2002 no response was received. Following the Value Management Workshop, Duke Energy International met with the consultants to review the location of the Eastern Gas Pipeline with respect to the proposed road alignment. On 20 August 2002 a letter and large folder was sent to the consultants enclosing details of the pipeline and surrounding environments. It is extremely disappointing that no recognition has been made of this input and that critical information relating to Duke Energy requirements to protect the EGP from these exchanges were not included in the EIS.
c) The quick and efficient way the RTA contacted and consulted some residents for input into the MR92 Proposal was appreciated.

Representation Number(s)
3, 97, 176

Response

a) People of Nerriga were consulted on the proposed road upgrade on a number of occasions as noted in the EIS since February 1998. Consultation activities included a public meeting, staffed information days, newsletters, information with a feedback mechanism on the project web page and access to the project team through the freecall 1800 number. The environmental effects of the Proposal through Nerriga were assessed and documented in detail in the EIS. Mitigation measures were also provided.
b) An addendum was added to the inside cover of EISs distributed after being notified of this error. The addendum stated, *"Addendum: Appendix B, 7th page – Comment in table for 'Eastern Gas Pipeline' states: 'No response received as at 10/9/02.' A detailed package of information was received from Duke Energy in August 2002. The comment should read: 'No further issues.'"*
c) Appreciation of the consultation undertaken is noted.

3.11.2 EIS Exhibition

In summary, respondents to the EIS raised the following issues:

a) At the council, it was advised that the display had been removed and placed at the RTA. At the RTA there was no display, only a $25 purchase of a book was possible. We were disappointed the EIS was not displayed as indicated in the brochure.
b) More face-to-face consultation should have been provided during the exhibition of the EIS. One day of staff attendance at Nerriga was inadequate. Staff should also have been provided at Braidwood.

Representation Number(s)
1, 162

Response

a) The EIS documentation was on display at all of the locations nominated in the advertisements until 28 February 2003. It appears the respondent may have been mistaken about the amount of information actually on 'display' and where the EIS could be read. In addition to the public exhibition of the EIS documents, two Public Information (staffed displays) days were held at Nowra and Nerriga on Saturday 14 December 2002 and 8 February 2003.

b) Every effort was made to provide the community with an opportunity to comment. Newsletters were distributed, two staffed information days were held at both Nowra and Nerriga, and alternative methods such as an 1800 number and a web page were provided to allow comment and feedback.

3.12 Property

3.12.1 Private

In summary, respondents to the EIS raised the following issues:

a) A concern is the property impact on two blocks (Ch32100-32150) which contribute to the character of Sassafras.
b) Concern and object to the amount of property acquisition in Sassafras, including partial property acquisition. We were never consulted or advised of this.
c) If the existing alignment through Sassafras is maintained and safety barriers are incorporated to reduce width of the road corridor this would minimise required land acquisition.
d) The Proposal to move the road in eastern Sassafras to the north would impact on the only section of flat land and ruins any prospect of planned future use.
e) Duke Energy will require further consultation to ensure that its pipeline easement and the rights enjoyed under this easement are in no way compromised, cancelled or affected by the acquisition of lands for the Proposal. In this regard, there are some statements in the RTA's Land Acquisition Policy Statement that require further clarification.
f) The "identified wilderness" area that would be traversed by BM5 was not declared as wilderness during the recent wilderness reservation process, and is private land.

Representation Number(s)

99, 148, 176, 210

Response

a) The property impact is necessary to remove an unsafe curve. Property impacts of cut / fill batters would be minimised as design progresses where practicable to reduce the Proposal footprint.
b) The property impact at Sassafras is less than the previous concept design which would have seen a new corridor on one side of the existing road. The property impacts through Sassafras have been minimised by utilising the existing alignment as much as practicable. Guardrail is proposed to minimise the need for clearing and earthworks have been minimised to further reduce the impacts. Consultation with affected property owners in relation to land acquisition would begin when the actual amount of property required is known.
c) As stated in the EIS, safety barriers are being proposed through relevant sections in Sassafras to maintain the "avenue of trees", reduce the design footprint and minimise property acquisition.
d) The proposal to align the road to the north in eastern Sassafras is to remove an unsafe curve. The location of the Eastern Gas Pipeline and topographical constraints limit alternative alignments at this location.
e) The RTA would continue consultation with Duke Energy to ensure that pipeline easement rights are maintained.
f) The issue is noted. However, the wilderness value of the land has been identified and this is noted in the EIS.

3.12.2 National Parks

In summary, respondents to the EIS raised the following issues:

a) The proposal to excise 46 hectares of heavily forested land from the National Park for this Proposal is offensive. National Parks are supposed to be protected for their natural inhabitants and future generations, not reserved for the next road project.
b) The proposed acquisition of a compensatory area of 46 hectares is not acceptable as it establishes the principle that protected areas can be traded off and it is not clear the habitat value or ecological significance of the acquisition would match that of the area cleared.
c) The greater traffic and improved access will increase environmental pressures on the national park adjacent to the road. Illegal activities such as hunting, wildflower collection and bush rock removal can be expected to grow. Given the recent history of bushfires it seems clear that providing this

sort of access to large and remote areas of bushland will increase possibilities for arson or careless ignition of bushfires.

d) Old sections of the road should revert to National Park.

Representation Number(s)

129, 233

Response

a) The Proposal does not require 46 hectares of heavily forested land from Morton National Park. The EIS states that in the Bulee Mountain area (Ch 45000-49100), the area of land required from Morton National Park is approximately 46,400 sq metres. Note that this is only 4.6 hectares. Additional studies which have been carried out since the EIS have identified further opportunities to reduce the land required from Morton National Park.

b) The EIS does not propose a compensatory area for the land required from Morton National Park, however, the impacts on Morton National Park are not 46 hectares (refer to (a) above).

c) There is the potential for better access to result in more people using the area. Although a proportion of these may engage in illegal activities, more people will also be attracted to the area and act as increased passive surveillance which can mitigate against anti-social behaviour. In terms of fire, emergency service workers involved in fighting the major bushfires through the area commented that improvements were required to MR92 to enable faster and safer access for emergency vehicles to fight fires in the area.

d) The RTA has discussed the possibility of old sections of the upgraded MR92 reverting to National Park ownership. This would be dependent on NPWS being agreeable to ownership and management of these sections of road.

3.13 Environmental Management

In summary, respondents to the EIS raised the following issues:

a) Whilst the EIS specifies environmental management, these works are not part of the detailed design concept in either the EIS or Technical Paper 2. The Proposal cost estimates do not allow for property acquisition or environmental management but fully expend the available budget.

b) An Environmental Management Representative should be appointed prior to and for the duration of the project.

c) The construction contractor should have a demonstrated capability and experience in the implementation of an Environmental Management System and/or have a proven environmental management performance record.

d) A Construction Environmental Management Plan and an Operational Environmental Management Plan should be prepared in accordance with SCA and EPA criteria and conditions. The Construction Environmental Management Plan should include requirements for all liquid and solid wastes generated at site compounds to be removed off site and for fuel and chemical storage areas to be bunded and protected in accordance with EPA requirements. Copies of the plans should be provided to SCA.

e) There needs to be an environmental monitoring program for the construction period with a report prepared every six months after commencement of construction and thereafter at six monthly intervals. Copies of these reports should be provided to the SCA.

f) There needs to be an environmental monitoring program for the operational phase. Monitoring should occur for at least the first 2 years of operation but longer if necessary. A report should be prepared after 2 years and as necessary. Copies of these reports should be provided to the SCA.

g) There needs to be an audit report produced 12 months and 5 years after the project is opened. The RTA should be required to act upon the recommendations contained in these reports. Copies of these reports should be provided to the SCA.

h) There needs to be a flora and fauna management plan prepared for the construction and operation of the Proposal in consultation with the SCA. The plan should include actions to ensure terrestrial and aquatic flora and fauna downstream of any stormwater outlet is not degraded.

i) As part of the Construction and Operational EMPs, detailed Soil and Water Quality Management Plans shall be prepared in consultation with the SCA. The Plans shall be prepared in accordance with the Department of Housing's guideline Managing Urban Stormwater – Soils and Construction 1998, the RTA's Guideline for the Control of Erosion and Sedimentation in Roadworks and where appropriate, Department of Land and Water Conservation's Constructed Wetlands Manual. The Plans shall be prepared prior to construction or operation as appropriate. The Plans shall state

that all stormwater runoff collected on-site during construction which is likely to be contaminated, shall be tested, handled and disposed of in accordance with the provisions of the Protection of the Environment Operations Act.

j) The EMP should include sufficient provisions for feedback of results into the on-going management of the site.

k) Environmental management measures will be inadequate due to lack of funding for environmental management. This will effect rehabilitation of previously disturbed lands, closure of disused 4WD tracks and other bare areas, as well as the former road alignment. There is also no budget for weed management.

l) The area between Endrick River and Nerriga needs careful soil and water management planning.

Representation Number(s)

118, 217, 644, 646

Response

a) Environmental management works and property acquisition for the Proposal are included in the overall project cost.

b) It is standard practice for an Environmental Management Representative (EMR) to be appointed for major transport projects. This is usually a condition of approval from the Department of Infrastructure Planning and Natural Resources. This would be the case for MR92.

c) The contract would require the contractor to have an accredited environmental management system. This is a standard requirement for projects of this size and would be included in the tender documentation for the construction contractor.

d) A CEMP would be prepared. An OEMP may be prepared, or alternatively and subject to approval conditions, systems for operational maintenance and monitoring developed in consultation with relevant agencies. SCA and EPA would be consulted during the preparation of the EMPs and/or operating systems. The suggestions regarding liquid and solid waste management at site compounds is standard practice and would be included in the CEMP.

e) It is standard practice to have an environmental monitoring and auditing program for all major road construction projects such as the proposed upgrade of MR92. This would be developed in response to approval conditions and relevant guidelines. Due to the proximity to water catchment areas, the SCA would be provided with monitoring results on a regular basis. Copies of environmental monitoring would be provided to SCA in accordance with the requirements.

f) Monitoring of the effectiveness of the various environmental works such as sedimentation basins, spill containment devices, pollutant traps etc would be included in the OEMP / operating systems. Regular reports would be prepared to assess the effectiveness of the environmental mitigation measures and where required maintenance of the works would be performed under the construction contract.

g) The road would regularly be inspected and audited on completion of the works for safety and environmental effectiveness and the necessary measures for maintenance would be undertaken. The preparation of audit reports following project completion would also likely be a requirement of conditions of approval from the Department of Infrastructure Planning and Natural Resources.

h) A detailed fauna and flora management sub-plan would be prepared as part of the CEMP. SCA would be consulted during its preparation.

i) Detailed integrated Soil and Water Quality Management Plans would be prepared as sub-plans to the CEMP and in consultation with SCA. It is standard practice that these be prepared in accordance with the Department of Housing's guideline Managing Urban Stormwater – Soils and Construction 1998, the RTA's Guideline for the Control of Erosion and Sedimentation in Roadworks and if relevant, Department of Land and Water Conservation's Constructed Wetlands Manual. The sub-plans would include specific procedures for the effective management of stormwater runoff collected on-site during construction which is likely to be contaminated.

j) The CEMP would be prepared in accordance with ISO14001 and include a feed-back loop of monitoring and auditing results to enable continuous improvement of site practices and environmental performance.

k) All environmental mitigation measures including weed management outlined in Chapter 8 of this Report would be included as part of any contract documents. Non-compliance with these measures would constitute non-compliance with the Conditions of Approval.

l) The issue is noted and would receive special attention as part of the Project EMP.

3.14 EIS Documentation

In summary, respondents to the EIS raised the following issues:

a) The photomontage on page 13 of the EIS Project Overview shows a wide-angle view of the road which appears designed to mislead the reader. The vehicle shown in the photomontage actually takes up almost all of the left hand lane. The road does not look wide enough for trucks if it is drawn to scale. Trucks would be in danger of damaging their side mirrors when passing.

b) Prior to finalisation of the documents on public display, work was being undertaken on enhanced options for the preferred BM4 route. This work represented a significant upgrade to the current preferred alignment, with increased overtaking opportunities. It was understood this detail would be included in the EIS options but may have been deleted to meet externally imposed time restraints.

c) The EIS document does not allow a fair and equal comparison to be made between BM4 and BM5, as by nominating BM4 as the preferred route, that route is automatically given a significant advantage. To compound this situation, the EIS does not contain a detailed concept drawing of BM5 in the Design and Profile section, as it does for BM4. Council has concerns that the comparison in the EIS for BM4 and BM5, in particular Table 5.9, omits critical information, reaches dubious conclusions, and is misleading.

d) There needs to be further evaluation of the environmental impacts of BM4 against BM5.

e) A detailed estimate of costs has not been completed for the BM4-BM5 comparison. At a minimum a soundly based incremental benefit-cost ratio calculation for the two options is required.

f) It is stated in the EIS page 2-4 that RTA is seeking "an amendment to SEPP 58 which would have the effect of removing the consent requirement specified by clause 8 of that Policy". The SCA considers that this issue should be clarified as a matter of priority.

g) Section E20 includes a list of legislation, regulations and guidelines required to be referenced. Added to this should be AS 2885 and the Eastern Gas Pipeline Land and Roads Deed. A review should be undertaken to see if the NSW Pipelines Act and Pipelines Regulations should also be included.

h) The EIS makes no reference to a registered easement within the road reserve which contains the Eastern Gas Pipeline nor the joint use of the road reserve as an energy transportation corridor.

i) Duke Energy International believes that the EIS, while detailed in many areas, does not adequately address the significant implications that the road impacts will have for the Eastern Gas Pipeline.

Representation Number(s)

1, 67, 99, 176, 644

Response

a) The photomontage on page 13 of the EIS Project Overview has not been designed to mislead the reader. The road widths (3.25m with a 1m wide sealed shoulder along the route except through Bulee Mountain where lane widths would be 3.5m with 2m sealed shoulders) included in the concept design are adequate for heavy vehicles to travel safely. The maximum legal width of heavy vehicles including B-Doubles is 2.5 m. The proposed design cross section complies with the RTA and Austroads design standards. The lane width for two lane two way rural roads for AADT 150 to 500 is 3m and for AADT 500 – 2000 is 3 to 3.5m.

b) More detailed design drawings have been provided in Chapter 8 of this Report for the proposed additional auxiliary lanes on BM4. They were described in *Technical Paper No. 2: Concept Design* on page 3-21.

c) The *Environmental Planning and Assessment Act, 1979* requires that the activity be clearly defined in an EIS. Therefore, a preferred option is presented for assessment and approval. Table 5-9 of the EIS provides a summary of the issues associated with each option at Bulee Mountain. As stated in the EIS on page 5-24, the "*...RTA has made a decision to adopt BM4 as the preferred option through the Bulee Mountain area because on balance the environmental impact of creating a new road corridor through a completely undisturbed area was considered to be greater than upgrading the existing alignment. BM5 is a feasible alternative option that would also meet the project objectives.*"

d) The amount of environmental information collected and assessed to compare BM4 and BM5 is considered adequate for the selection of BM4 as the preferred option at Bulee Mountain. No further work is regarded as necessary except to assess the impacts of road widening for additional overtaking opportunities (refer to Chapters 7 and 8).

e) Detailed costing at a concept level was carried out for both Bulee Mountain options. A summary spreadsheet was included in *Technical Paper No. 2: Concept Design*. The road user cost-benefit analysis carried out was considered to be appropriate.
f) SEPP 58 has been amended to allow the Proposal to proceed under Part 5 of the EP&A Act.
g) AS 2885, the Eastern Gas Pipeline Land and Roads Deed and the NSW Pipelines Act and Regulations will be added to the list of relevant legislation, regulations and guidelines to be included in the CEMP.
h) The Eastern Gas Pipeline is included in the concept drawings in *Technical Paper No. 2: Concept Design*. The RTA and Shoalhaven Council have signed an agreement with EGP for MR92 that sets out the conditions of use of the easement for maintenance and operation of the EGP.
i) The proposed MR 92 alignment is in close proximity to the EGP pipeline at many locations and a review of the proposed MR92 upgrade design and the compatibility with the Eastern Gas Pipeline has been carried out. There appeared to be no significant issues based on the as-executed design supplied by Duke Energy. The RTA would continue to liaise with Duke Energy through the detailed design and construction to ensure that construction activities are managed to protect the pipeline asset.

4 Consideration of Representations to the SSIS

Three representations (numbers 647-649) were received following the exhibition of the MR92 Upgrade supplementary SIS. These were analysed in the same manner as discussed in Chapter 3.

4.1 Support/Object Proposal

4.1.1 Object to Proposal

a) We oppose the proposed Main Road 92 upgrade.

Representation Number
647

Response
a) Objection is noted.

4.2 Options Assessment

4.2.1 Bulee Mountain

a) A further reason to support BM5 is that there is significantly greater disturbance to the occurrences of *Dillwynia crispii* between chainages 46800 and 46950 on route BM4. A minor change to route BM5 may wholly avoid these plants and a supplementary report is required to clarify these issues.

Representation Number
648

Response
a) The additional studies carried out for the SSIS have shown that there is no threat to the *Dillwynia crispii* species. The selection of the BM4 route was based on broader environmental considerations, most importantly to avoid a new corridor through National Park and other natural areas. The distribution of *Dillwynia crispii* has been demonstrated to be relatively widespread. There is no need to relocate any section of the road to avoid these plants and no need for a supplementary report.

4.3 Justification

4.3.1 Need

a) The road upgrade is a tremendous misallocation of public funds.

Representation Number
647

Response
b) Funds for MR92 have been allocated jointly by Federal, State and Local government in recognition of the need to provide for future inter-regional transport needs. The proposed upgrade of MR92 offers significant economic development opportunities to the Southern Illawarra and South Coast of NSW. The project has received considerable support from the general public, the business community and all levels of government. While the allocation of funds to other routes such as the Princes Highway would facilitate north-south transport along the coast, an upgrade of MR92 would provide and effective additional east-west link across the escarpment.

4.4 Biodiversity

4.4.1 Fauna

a) The fact that the entire park area through which Main Road 92 traverses had recently been subjected to two bushfires and drought renders the fauna surveys results of little predictive value.
b) The fauna expert did not attempt to identify wildlife corridors.
c) The Proposal contains no specific purpose wildlife underpasses.
d) The proposed road upgrade will result in more wildlife kills and serious accidents in direct proportion to the increased speed and frequency of traffic. These impacts have not been considered in the supplementary fauna impact information.
e) We believe the impacts from road kills will eliminate any road safety benefit from upgrading the road.

Representation Number
647

Response
a) While bushfires and drought have affected wide areas of the MR92 route, this does not dismiss the value of the studies carried out. Impacts on flora and fauna have been carefully assessed and discussions with NPWS officers have taken place to identify areas of potential impact which require further monitoring.
b) See Chapter 3.4.1 response g.
c) See Chapter 3.4.1 response g.
d) See Chapter 3.4.1 response h.
e) See Chapter 3.4.1 response h.

4.4.2 Flora

a) Figure 6 of the SSIS failed to show the *Dillwynia crispii* impacts on route option BM5 which has been omitted.
b) During a recent field trip (7 October 2003) an unnamed species of *Prasophyllum* was located on both sides of the road, immediately to the east of the Telstra sub-station. These plants are within one metre of the current road alignment and if any road works were undertaken they would certainly be destroyed.
c) Given recent drought conditions, *Prasophyllum* and other terrestrial orchid species may not have flowered. As such the Telstra sub-station area must receive the most sincere and detailed attention.
d) An area of concern is at the base of the hill at Sassafras. On 13-10-03 this area was visited and *Petalochilus mentions* was located which had not previously been seen here. This species was only formally names in 1999 and has a limited distribution and is believed to exist in small numbers only. A small population of 12 plants is located approximately 10m off the road on the northern side.

Representation Number(s)
648, 649

Response
a) Figure 6.2 and Table 6.2 of the SSIS record the general distribution of *Dillwynia crispii* found in the Bulee Mountain area on a single day (8 September 2003). The purpose of the information was to give an indication of the wide distribution of *Dillwynia crispii* in the general area. The route option BM4 was selected primarily on the basis of minimising the impacts of a new road corridor, and considerations of the relative numbers of *Dillwynia crispii* affected have shown to be irrelevant.
b) On 12 November, a field trip guided by the author of the representation inspected the area immediately to the east of the Telstra sub-station where the unnamed species of *Prasophyllum* has been found. The Project Manager was confidently able to indicate that roadworks would not impact directly on the area adjacent (and to the northeast) of the sub-station. In addition, it was agreed that the proposed widening on the southern side of the current road alignment is minimal and would not have a detrimental impact on the population.

c) The site inspection on 12 November 2003 has identified the area near the Telstra sub-station where *Prasophyllum* sp. and other terrestrial orchid species may exist. The area can be protected during road construction and there is a high level of confidence that the area can be protected from the direct impact of road widening and any associated construction works.

d) An area at the base of the Sassafras incline was also inspected on 12 November 2003. The area where an unlisted orchid, *Petalochilus mentions*, has been found was located and inspected with the author of the representation. It was clearly evident and agreed that the Proposal and any associated works would not encroach on this area.

5 Correspondence

Since the exhibition of the EIS documents, correspondence has been sent to, and received from, a number of organisations regarding receipt of Representations made in response to the EIS and matters that have arisen subsequent to the EIS exhibition and receipt of representations made to the Proposal, including:

- Department of Infrastructure Planning and Natural Resources;
- NSW National Parks & Wildlife Service;
- Environment Australia;
- Department of Transport and Regional Services;
- Shoalhaven City Council; and
- NSW Heritage Office.

Correspondence and responses to matters raised by these organisations and persons are presented in Appendix B of this Representations Report. Details of recorded correspondence are listed below:

Department of Infrastructure Planning and Natural Resources – DIPNR (formerly PlanningNSW)

Two letters from DIPNR (formerly PlanningNSW), dated 13 and 28 March 2003, were provided to the RTA seeking clarification of issues, questions, and recommendations on the MR92 EIS and SIS. A copy of the letters and a response to issues raised is included in Appendix B of this report.

As part of a program of ongoing liaison, meetings between DIPNR and RTA were conducted to discuss the EIS Proposal and the mitigation of impacts on 4 February and 10 April 2003.

A letter from the Chief Executive of the RTA to DIPNR requesting an amendment to SEPP 58 was sent on 13 September 2002, with further correspondence on 24 April 2003.

NSW National Parks & Wildlife Service (NPWS)

The NPWS submitted a letter to the RTA dated 13 March 2003 providing comments and seeking clarification of the MR92 EIS and SIS. A copy of the letter is included in Appendix B of this report.

A series of on-site meetings and discussions were held between NPWS and RTA as part of the on-going consultation process for the project on 26 February, 24 June and 1 August 2003.

A further letter from NPWS dated 2 December 2003 in regard to National Park and Reserve boundaries was received. A detailed response is currently being prepared to the issues raised in the letter.

Environment Australia (EA)

A letter dated 5 March 2003 was received from EA seeking further information on threatened species considered in the EIS and SIS. Subsequent to a written response by the RTA dated 27 May 2003, a further letter was received from EA dated 26 June 2003. Following this, the RTA sent a letter to EA dated 8 October 2003, with a response received from EA dated 15 October 2003. A copy of these letters is provided in Appendix B of this report.

EA recommended that the RTA contact Dr Jonathon Webb to further discuss impacts on a threatened species, the Broad Headed Snake. Dr Webb was contacted on 1st August to discuss potential mitigation measures to reduce likely impacts on this species as a result of the Proposal. The closure of particular access tracks identified by Dr Jonathon Webb to restrict access to the habitat of the Broad Headed Snake is planned and would be undertaken in consultation with NPWS.

Department of Transport and Regional Services (DoTaRS)

DoTaRS submitted a letter dated 28 February 2003 raising issues and seeking clarification in regards to the MR92 EIS and SIS. A copy of the letter and a response to issues raised is included in Appendix B of this report. Matters raised by DoTaRS have been addressed in Section 3 of this report, discussed with the Project Steering Committee and are also the subject of ongoing discussion between the RTA and DoTaRS.

Shoalhaven City Council (SCC)

A letter from SCC, dated 28 February 2003, was provided to the RTA seeking clarification of issues, questions, and recommendations on the MR92 EIS and SIS. A subsequent letter dated 23 July 2003 was received from SCC. A copy of the letters and a response to issues raised is included in Appendix B of this report. Matters raised by SCC have been addressed in Section 3 of this report, discussed with the Project Steering Committee and are also the subject of ongoing discussion between the RTA and SCC.

NSW Heritage Office

A letter from the NSW Heritage Office, dated 2 May 2003, was provided to the RTA seeking further information on heritage issues at Sassafras. A response from the RTA was provided on 18 June 2003 addressing the issues raised by the NSW Heritage Office. Two additional letters were received from the NSW Heritage Office, dated 13 August 2003 and 29 September 2003. Copies of these correspondence can be found in Appendix B of this report.

As part of ongoing consultation with the Heritage Office, the RTA has met on several occasions with the Heritage Office (19 June and 20 August) as well as ongoing discussions during the preparation of the Representations Report. Mitigation measures that have arisen from this consultation with the NSW Heritage Office have been included in the PAR (see Chapter 8).

6 Additional Investigations

An additional investigation was undertaken by the RTA following the exhibition of the EIS to complete investigations not able to be undertaken during the preparation of the EIS, in response to issues raised in representations or to provide further information to supplement the EIS. The additional study undertaken is summarised below and contained in full in Appendix C. The report is:

- Road Safety Audit – Bulee Mountain.

Appendix C – Road Safety Audit – Bulee Mountain: A Road Safety Audit (RSA) specifically considering options BM4 and BM5 at Bulee Mountain (Ch45,000 to 49,200) was conducted by SKM in June 2003. A Stage 2 Draft Design audit was undertaken on the preliminary road design giving particular consideration to the horizontal and vertical alignments. Stage 2 Audit checklists from the Austroads Road Safety Audit Manual 1994 were used, and are appended to the RSA report.

7 Modifications to the Proposal

The Proposal was described in detail in Section 6 and Technical Paper 2 of the EIS.

A number of modifications to the EIS Proposal are proposed as a result of consideration of:

- representations in response to the exhibition of the EIS and SSIS;
- additional correspondence since the EIS;
- additional studies since the EIS; and
- further development of concept design details,

The modifications relate to the provision of overtaking lanes at Bulee Mountain. The modification provides for the addition of a westbound overtaking lane (ie downhill), refinement in the location of the three eastbound overtaking lanes, and the lengthening of the second eastbound overtaking lane. Table 7.1 compares the proposed modifications to the EIS concept design.

Table 7.1: Proposed modifications.

EIS			**Modification**			
Direction	**Chainage**	**Length[1]**	**Direction**	**Chainage**	**Length[1]**	**Length incl. tapers**
Eastbound	46650-46750	100m	Eastbound	46780-46950	120m	170m
Eastbound	47650-47750	100m	Eastbound	47455-47875	250m	420m
Eastbound	48350-48450	100m	Eastbound	48440-48610	100m	170m
			Westbound	47860-48050	100m	190m

[1] The length of the auxiliary lane noted does not include taper lengths.

The proposed modification is further discussed in Chapter 8 of this report. An environmental assessment of the modification is provided in Appendix D.

8 Preferred Activity Report

8.1 Introduction to the Preferred Activity

In accordance with Section 112 (4)(b)(i) of the EP&A Act 1979, if an activity is considered to detrimentally affect the environment, a proponent may modify a proposed activity described in an EIS to eliminate or reduce the detrimental effect of that activity on the environment.

Subsequent to the exhibition of the EIS and SSIS, a proposed modification to the Proposal has been developed in accordance with Section 112(4)(b)(i) of the EP&A Act as a result of:

- consideration of representations;
- consideration of additional correspondence from Government agencies and other bodies;
- additional studies undertaken; and
- further development of concept design details.

The RTA has undertaken additional studies in developing the modification. The major features of the Proposal however, remain substantially the same and, viewed on their own or cumulatively, the proposed modification does not involve any radical transformation of the original activity.

The Preferred Activity consists of the Proposal as described in the EIS, subject to the proposed modification and inclusive of all proposed environmental mitigation measures, controls and commitments. If the Chief Executive of the RTA decides to seek the approval of the Minister for Infrastructure and Planning for the Proposal, that decision would relate to the Preferred Activity as described below.

This Preferred Activity Report:

- describes the Preferred Activity for which the Chief Executive of the RTA will decide whether to request the Minister's approval;
- describes and assesses the differences between the Preferred Activity and the EIS Proposal;
- justifies the adoption of those differences;
- considers the Preferred Activity in relation to both State and Commonwealth legislative requirements; and
- summarises all proposed environmental mitigation measures, controls and commitments.

The list of mitigation measures in Tables 8.5 – 8.7 includes all commitments made in this Representations Report, along with mitigation measures discussed in the EIS and SSIS which have been adopted and updated where appropriate to suit the Preferred Activity. To the extent that any potential mitigation measure discussed in the EIS is not expressly set out in this Preferred Activity Report, it is not proposed to be adopted. This is because the potential mitigation measures discussed in the EIS relate to the EIS Proposal. The Preferred Activity however, has evolved from a modified concept and the mitigation measures in Tables 8.5 – 8.7 relate specifically to the Preferred Activity, and in some cases render the former mitigation measures redundant.

8.2 Description of the Preferred Activity

The EIS Proposal is described in detail in Section 6 and Technical Paper 2 of the EIS.

Following consideration of representations, consideration of additional correspondence from Government agencies and other bodies, additional studies undertaken and further development of the concept design, the Preferred Activity has been developed by refining the EIS Proposal. The Preferred Activity as set out in this Chapter therefore now supersedes the EIS Proposal, as described in the EIS.

One modification to the EIS Proposal has been developed and involves the inclusion of a westbound overtaking lane at Bulee Mountain and modifications to the three eastbound overtaking lanes at this location. This is described in Table 8.1 and Figure 8.1 below.

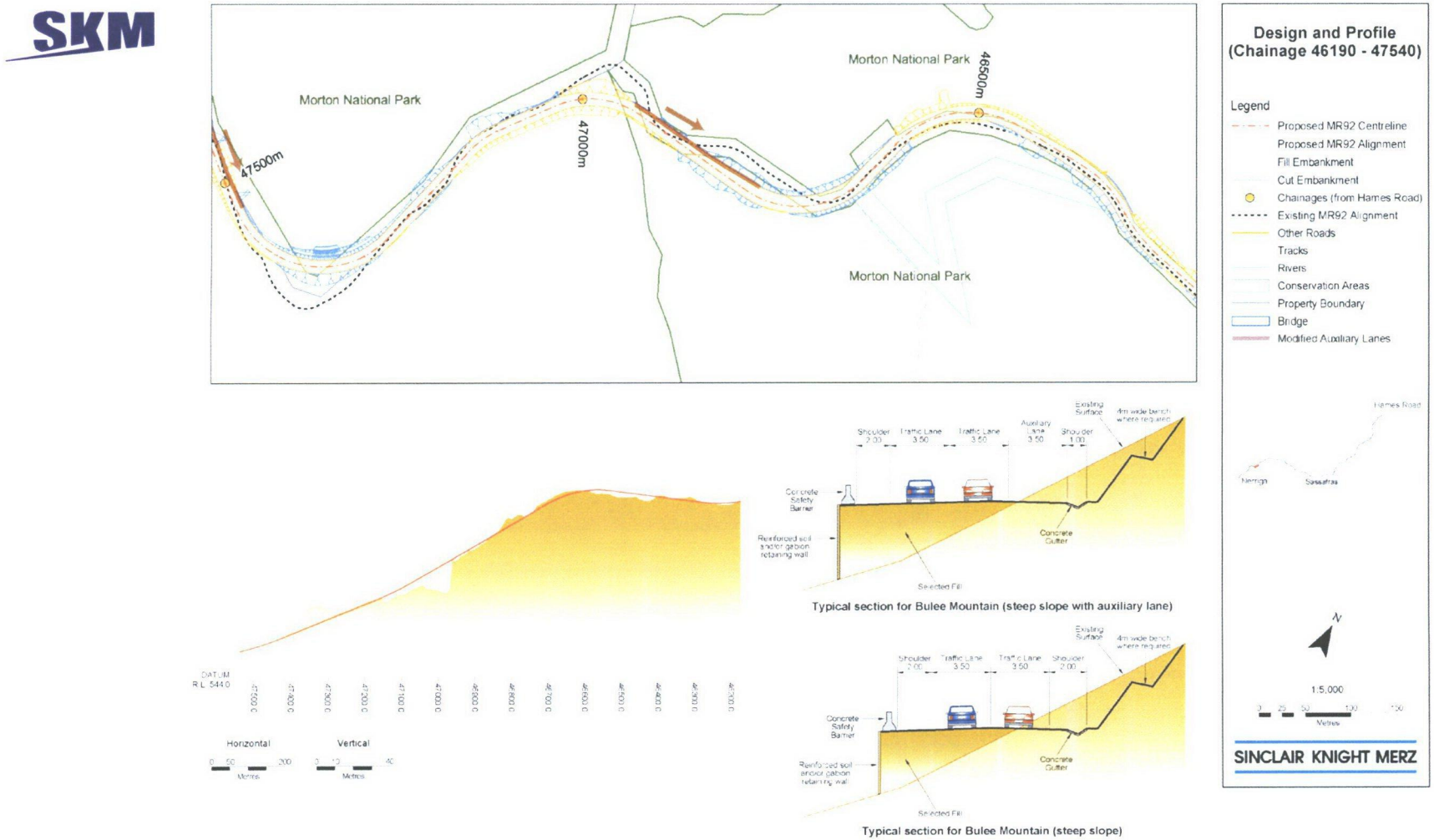

Figure 8-1a: Concept design of proposed Bulee Mountain modification

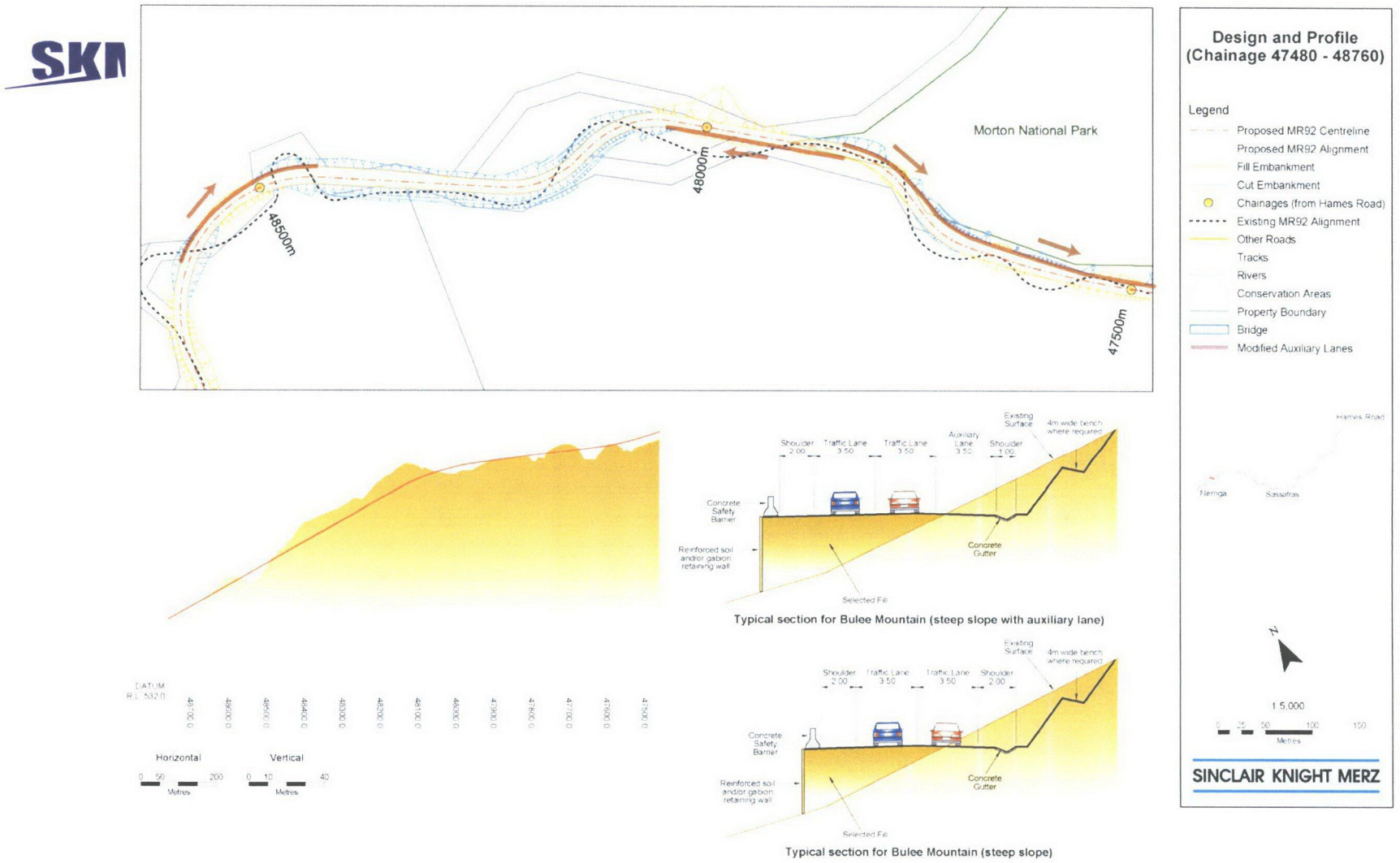

Figure 8-1b: Concept design of proposed Bulee Mountain modification

Table 8.1: Summary of modifications to the concept design.

Modification	Segment details	
New downhill overtaking lane at Bulee Mountain between 47860 and 48050	47860	Start of diverge taper
	47880	Start of overtaking lane
	48000	End of overtaking lane
	48050	End of merge taper
Uphill climbing lane at Bulee Mountain between 47455 and 47875 lengthened	47455	End of merge taper
	47560	End of overtaking lane
	47810	Start of overtaking lane
	47875	Start of diverge taper
Slight repositioning of uphill climbing lane between 46780 and 46950	46780	End of merge taper
	46830	End of climbing lane
	46930	Start of climbing lane
	46950	Start of diverge taper
Slight repositioning of uphill climbing lane between 48440 and 48610	48440	End of merge taper
	48490	End of climbing lane
	48590	Start of climbing lane
	48610	Start of diverge taper

8.3 Environmental Assessment of the Modification – Description and Assessment

In general, the environmental assessment of the modification concludes that the proposed modification would improve driving conditions at Bulee Mountain without additional significant adverse impacts on the environment. It is considered that the benefits of the modification outweigh the minor adverse impacts on the environment.

8.3.1 Justification

The additional overtaking opportunities would enhance road safety by providing opportunities in both directions for vehicles to safely overtake slower moving vehicles. This is expected to avoid drivers becoming frustrated and it would also have a positive effect on operational efficiency. While the proposed modification would have some minor adverse environmental effects, on balance, it is expected that the safety benefits outweigh the environmental costs.

8.3.2 Revised Impacts

The proposed modifications would improve operational traffic by providing for additional overtaking opportunities both east and westbound at Bulee Mountain. From a road safety perspective, the proposed modification would reduce safety risk and enhance the attractiveness of the route in terms of reliability and operational efficiency. There would also be improvements in the constructability of the road in this area as a greater road width would be required enabling construction of the overall BM4 route under traffic to be more effectively managed.

The proposed modifications would result in some minor additional clearing of vegetation increasing the overall amount of vegetation removal for the proposed upgrade. The minor increase in road footprint would have negligible additional impact on the heritage sections of The Wool Road at Bulee Mountain. The modifications would not result in substantial or significant additional impacts to either flora or fauna.

Overall, the social benefits of the proposed modifications would outweigh the minor and negligible adverse environmental impacts. There would be no additional cumulative impacts other than those discussed above.

8.3.3 Environmental Assessment of Modifications – Comparison of EIS Proposal and the Preferred Activity

A comparison of the environmental impacts of the proposed modification with the EIS Proposal is given in Table 8.2 below.

Table 8.2: Environmental Impacts of the Modification Compared with EIS Impacts

	Environmental Impacts compared with EIS ✓ = beneficial impact 0 = neutral/negligible impact x = minor adverse impact including mitigation
Planning Land Use	0
Traffic & access	✓
Noise	0
Air	✓
Heritage	0
Water Quality	0
Flora & Fauna	x
Social/Economic	✓
Visual / Landscape	0
Hazard & Risk	✓

The Proposal would not result in any additional disruption to traffic during the construction period. There may be a positive effect with greater road width enabling construction of the overall BM4 route under traffic to be more effectively managed. The proposed modification is expected to have a positive effect on operational traffic using the upgraded BM4 route when compared to the design proposed in the EIS. With the sections of steep grade, there was the potential for some delays for vehicles caught behind heavy vehicles travelling east and west. From a road safety perspective, this situation was regarded as a safety risk as a result of drivers, delayed by heavy vehicles, becoming frustrated and engaging in unsafe overtaking manoeuvres. The ability for faster moving vehicles to overtake slower vehicles also enhanced the attractiveness of the route in terms of reliability and operational efficiency.

While no air quality modelling has been carried out, it is expected that the proposed modification would have a positive, albeit minor, effect on air quality by reducing the likelihood of vehicles being delayed and travelling at a less than optimal speed for emissions efficiency.

The proposed modifications are expected to result in a negligible increase in the impact on the heritage listed 1856 realignment of the Wool Road. Heritage conservation actions have been included in the environmental mitigation measures of the EIS. However, even with these measures, a significant impact is expected on European heritage items in the Bulee Mountain area as was stated in the EIS, but the modification would not essentially change the impact as described in the EIS.

As detailed in the SIS and SSIS, this area supports two significant plant species; *Dillwynia crispii* and *Eucalyptus triflora*. Both species are ROTAP species but are not listed under the TSC or EPBC Acts. Widening the road to include the additional overtaking opportunities is expected to have a greater surface impact on these species. As stated in the SIS, the issue is the disturbance of these species in this area rather than the minor increase in area affected as a result of the proposed modification. Therefore, while there is an increase in the disturbance, this is not regarded as significant when compared to the design proposed in the EIS.

The proposed modification is also expected to increase impacts on habitat of the Glossy Black Cockatoo. The level of effect is not expected to result in substantial additional environmental effects. Therefore, it is not expected that the impacts would differ significantly from those identified in the EIS. Detailed mitigation measures could be augmented following the pegging of the alignment.

The proposed modification is considered to have a positive social impact when compared to the design as proposed in the EIS, by improving road safety, operational efficiency and greater reliability in travel. Other impacts on the local community distinct from those previously assessed in the EIS are not expected. Economic impacts would be as assessed in the EIS. In reality, there would be a small improvement in the economic performance of the road as the modifications would result in reductions in road user delays.

This modification has been proposed in response to concerns relating to road safety. The proposed modification is considered to address these safety concerns and provide a better outcome than the alignment as proposed in the EIS.

As presented in Table 8.2, the proposed modification to the upgrade of MR92 provides an overall reduction in the detrimental impacts of the Proposal (with the introduction of mitigative measures as detailed in Tables 8.5 – 8.7 of this report) compared to the Proposal described in the EIS.

8.3.4 Assessment in Accordance with State and Commonwealth Environmental Factors

An assessment was undertaken of the Preferred Activity in terms of its compliance with Clause 228 of the Environmental Planning and Assessment Regulation 2000 (NSW) (EP&A Regulation). This Clause specifies the factors that must be taken into consideration concerning the impact of an activity on the environment. The assessment in Table 8.3 shows that all of the Clause 228 factors were taken into account for the Preferred Activity. The majority of environmental impacts resulting from the Preferred Activity would be minor and additional mitigation measures proposed in Tables 8.5 – 8.7 would minimise these impacts during all phases of construction and operation.

Following the studies for the SIS and SSIS and the iterative design process which aimed to avoid impacts wherever possible, it was concluded that no significant impact on any threatened species, population or ecological community is likely as a result of the Proposal. The RTA is therefore not seeking concurrence for the Proposal from NPWS.

An assessment was also undertaken of the Preferred Activity in terms of the EPBC Act. This Act (and the associated Administrative Guidelines released by Environment Australia) specifies matters that must be taken into consideration to determine whether there would be likely to be a significant impact on any matters of national environmental significance (NES) or on Commonwealth land. Table 8.4 outlines this assessment and determines that the Preferred Activity would not have any effect on any of the six (6) listed NES matters and would not affect, directly or indirectly, any Commonwealth land. The Proposal remains a Controlled Action according to Environment Australia, and the RTA will refer it to the Commonwealth for approval.

Table 8.3: Compliance with the Clause 228 checklist

Clause 228 factor	Description of impact	Impact
a. any environmental impact on a community	The EIS considered the impacts of the Proposal on the community. Together with the modification, the Proposal would, on balance, have positive impacts on the community by improving accessibility, connectivity, reducing accident rates and providing a more efficient transport route.	Positive
b. any transformation of a locality	The Proposal would substantially modify the existing road, particularly in the vicinity of Bulee Mountain. However, the Proposal	Some negative

Clause 228 factor	Description of impact	Impact
	would only affect a relatively small number of private properties and would not transform the rural character of the locality.	
c. any environmental impact on the ecosystem of the locality	The EIS and SIS considered the potential impacts of the Proposal on the ecosystems in the locality. Whilst the EIS and SIS concluded that a significant impact was not likely on threatened biota as a result of the Proposal, some negative impacts on flora and fauna would occur.	Negative
d. any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality	The EIS considered the potential impacts of the Proposal on aesthetic, recreational, scientific and other environmental quality and values. There would be some adverse impacts on an item of heritage significance at Bulee Mountain. Conversely, the Proposal would provide greater access between coastal and inland NSW and improve tourism in the region.	Some negative
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	The EIS concluded that the Proposal would impact significantly upon the 1856 realignment of The Wool Road in the vicinity of Bulee Mountain, an item considered of State Heritage Significant. Some impacts on items and places of indigenous heritage significance would also occur as a result of the Proposal.	Negative
f. any impact on the habitat of protected fauna (within the meaning of the National Parks and Wildlife Act 1974)	The EIS and SIS considered the potential impacts of the Proposal on flora and fauna. The Proposal and modification would have some impacts on the habitat of protected fauna, although the SIS concluded that no significant impact on any threatened biota would occur as a result of the Proposal.	Some negative
g. any endangering of any species of animal, plant or other forms of life, whether living on land, in water or in the air	The EIS and SIS concluded that some impacts on animals and plants would occur as a result of the Proposal. Additionally, as a result of the modification there would be a minor increase in the impacts on stands of *Dillwynia crispii* and *Eucalyptus triflora*. However, the species would not be endangered as a direct result of the proposed upgrade.	Some negative
h. any long term effects on the environment	Long term impacts of the Proposal are discussed in the EIS. The Proposal would, on balance, have positive long term impacts for the community by providing a safer and more reliable transport connection between the Shoalhaven and NSW South Cost region and inland NSW.	Positive
i. any degradation of the quality of the environment	The Proposal would impact on the quality of the environment through the removal and disturbance of vegetation, increased	Some negative and positive

Clause 228 factor	Description of impact	Impact
	traffic and traffic noise, and impacts on heritage. Conversely, the EIS concluded that the Proposal would improve air and water quality through a reduction in dust.	
j. any risk to the safety of the environment	The EIS Proposal would significantly improve safety for road users. Additionally, the modifications would further improve safety and reduce risk of accidents by providing additional overtaking opportunities at Bulee Mountain. Mitigation measures outlined in Tables 7.5 – 7.7 would ensure that the safety of the environment is not compromised.	Positive
k. any reduction in the range of beneficial uses of the environment	There would be no reduction in the range of beneficial uses of the Environment. Conversely, improved road conditions would improve access to the tourist destinations along MR92, such as Tianjara Falls.	Nil
l. any pollution of the environment	The Proposal would, overall, improve air quality through sealing the existing unsealed road. Whilst there is the potential for minor impacts in air quality, increased noise and increased greenhouse gas emissions, on balance the Proposal would improve air quality in the locality.	Positive
m. any environmental problems associated with the disposal of waste	The majority of waste from the Proposal would be derived from excavated material, which is expected to be reused for the Proposal or at other construction sites. There would be no problems with the disposal of waste from the Proposal.	Nil
n. any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	Demand on resources were assessed in the EIS. There would be no demand on resources which are likely to become in short supply as a result of the Proposal.	Nil
o. any cumulative environmental effect with other existing or likely future activities	The EIS discussed the cumulative impacts of the Proposal with other large and small developments in the region. There would be some positive cumulative social impacts as a result of the Proposal as well as negative cumulative impacts on the natural environment and heritage items in the region. On balance, the cumulative impacts are expected to be positive.	Positive

Table 8.4: Compliance with Commonwealth EPBC Act Requirements

Matters of National Environmental Significance	Impact
Any significant environmental impact on a World Heritage Property?	Nil

Matters of National Environmental Significance	Impact
There are no world heritage properties in the area of the Proposal	
Any significant environmental impact on wetlands of international importance? There are no RAMSAR wetlands in the area of the Proposal	Nil
Any significant environmental impact on Commonwealth listed threatened species and ecological communities? The EIS and SIS concluded that, whilst there would be some impacts on a Commonwealth listed threatened species, these impacts would be minor and can be mitigated.	Some negative
Any significant environmental impact on Commonwealth listed migratory species? There are no effects on the habitat or lifecycle processes of any migratory species.	Nil
Does any part of the proposal involve a nuclear action? No part of the Proposal involves a nuclear action.	Nil
Any significant environmental impact on a Commonwealth marine area? There are no Commonwealth marine areas in the locality.	Nil
Any significant impact on Commonwealth land? There would be no impact on Commonwealth land from the modifications	Nil

8.3.5 Justification of the Preferred Activity

In accordance with Section 112(4)(b)(i) of the EP&A Act, the RTA has examined the activity and has determined that it would detrimentally effect the environment. Accordingly, the Proposal as presented in the EIS has been modified where possible to reduce the impact on the environment. The modified Proposal as described and assessed in this Chapter, in conjunction with the mitigation measures outlined in Tables 8.5 –8.7 form the Preferred Activity.

The proposed modifications described in this Preferred Activity Report have been assessed in their own right and considered comparatively with the EIS Proposal in relation to the provisions of Section 112(4)(b)(i) of the EP&A Act. No substantial environmental impacts additional to those discussed in the EIS have been identified as a result of this assessment.

Consideration of the modifications has resulted in proposed additional mitigation measures and other commitments. The proposed modifications would eliminate or reduce the detrimental impact of the activity.

Broader issues of justification beyond the proposed modifications were addressed in Chapter 21 of the EIS and canvassed further in Chapters 2.2 and 2.7 of the Representations Report.

8.4 Measures, Controls and Commitments for the Preferred Activity

Tables 8.5-8.7 below represents a summary of mitigation measures incorporated from the MR92 EIS and commitments derived from this Representations Report. The following measures, controls and / or commitments would be included in the Environmental Management Plans (EMP) for the pre-construction, construction and operation of the Proposal.

Table 8.5: Measures, Controls and Commitments for the Preferred Activity – Pre-construction

Issue	Mitigation and Management Measures	Responsibility
General	• At least one month prior to commencement of substantial construction, the RTA would submit a compliance report for approval of the Director-General, Department of Infrastructure, Planning & Natural Resources (DIPNR). The compliance report would provide details of compliance with all relevant conditions that apply prior to commencement of substantial construction.	RTA
	• The RTA would notify the Director-General, DIPNR and all relevant Government Authorities in writing of the project commencement, in terms of construction, at least 1 week prior to the relevant commencement date.	RTA
	• The RTA would require that construction contractors have an Environmental Management System prepared and accredited in accordance with the *Environment Management System Guidelines* (NSW Government 1998)	RTA/Contractor
	• Prior to the commencement of construction an Environmental Management Representative (EMR) would be appointed for the duration of the construction period. The responsibilities of the EMR would be defined jointly by the RTA and DIPNR.	RTA
	• Prior to the commencement of work, a Contractor's Environmental Management Plan(s) (EMP(s)) would be prepared following consultation with the EPA; DIPNR; NPWS; NSW Heritage Office; NSW Fisheries; Shoalhaven City and Tallaganda Councils.	Contractor
	• Where construction activities are to be undertaken in discrete stages, the Contractor may prepare individual EMPs relating to specific stages of construction.	Contractor
	• The Contractor's EMP(s) would be prepared in accordance with the conditions of this approval, all relevant Acts and Regulations and accepted best practice management sub plans.	Contractor
	• The Contractor's EMP(s) are likely to require approval by the Director-General, DIPNR and the Director-General NPWS prior to the commencement of substantial construction works, or within such time as otherwise agreed to by the Director-Generals.	RTA
	• The Contractor's EMP(s) would be certified by the EMR as being in accordance with the Conditions of Approval and all undertakings made in the EIS and Representations Report prior to seeking approval of the Director-General, DIPNR.	RTA
	• The location of construction compounds/site office areas would be provided in detail in the Contractor's EMP and be only in those areas that satisfy the following criteria:	Contractor
	▸ sites would be located within the road reserve wherever possible;	
	▸ sites would have low conservation significance for flora, fauna or heritage and would not require any clearing of native vegetation	

Issue	Mitigation and Management Measures	Responsibility
	beyond that which must be cleared for the proposal in any case; ▸ sites would be selected so that the operation of the plant and equipment does not impact on the land use of adjacent properties; and ▸ if sites are not located within the road reserve, they would be the subject of a separate environmental assessment and measures to mitigate impacts.	
Community & Stakeholder involvement	• Develop a Community Involvement Plan for the design and the construction period. The Plan would include: ▸ identification of the local community likely to be affected by the project, including identification of residences, businesses, schools and other sensitive land uses; ▸ procedures for the establishment and functioning of a Community Liaison Group; ▸ procedures for informing users of the affected road network of planned traffic arrangements including temporary traffic switches; ▸ procedures for complaints handling and investigation; ▸ procedures for informing the local community of planned investigation and construction operations; ▸ provision of training for all employees and sub-contractors on the requirements of the Community Involvement Plan; and ▸ provision of a consultation process to provide regular consultation with relevant Council(s) on all issues which affect the relevant Council(s) area arising from the construction and operation of the MR92 Upgrade.	RTA/Contractor
	• Delineate the responsibility of the RTA and the contractor in liaising with the community.	RTA
	• Establish and publicise a 24 hour toll-free information/complaints contact telephone number, which would enable any member of the general public to reach a person who can arrange appropriate response action to the complaint within two business hours.	RTA/Contractor
	• Establish an appropriate representative Community Liaison Group.	RTA/Contractor
	• Ensure the acquisition process is communicated to affected owners/occupiers to maximise certainty and understanding.	RTA
Traffic & Transport	• As a component of the CEMP, prepare a Traffic Management Sub Plan (TMP Construction) prior to the commencement of construction. The TMP Construction would include, but not be limited to: ▸ impacts on all existing traffic of the construction including, but not limited to, construction traffic, road closures, delays and detours of traffic; ▸ access to construction sites and site compounds; ▸ any changes to the existing number and width of traffic lanes; ▸ maximum and average truck volumes and expected hourly distribution; ▸ access to all properties including the garages on those properties;	Contractor

Issue	Mitigation and Management Measures	Responsibility
	▸ temporary traffic arrangements; ▸ a prohibition on heavy vehicle queuing on public roads unless otherwise agreed by the relevant Council(s); ▸ stormwater drainage; ▸ methods for implementing the TMP; ▸ access to adjoining side streets; ▸ access to adjoining properties; ▸ measures to reduce traffic intrusion along local roads; ▸ measures to be put in place in the event that MR92 is closed during construction. • Provide advance notice of road modifications using advertisements, signs, info sheets etc.	Contractor
Land Use & Planning	• Ensure that the acquisition of any land would be in a responsive and sensitive manner and in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991* and the *RTA's Land Acquisitions Policy Statement.*	RTA
	• Notify and consult DIPNR in accordance with the *Rivers and Foreshores Improvement Act, 1948.*	RTA
	• Obtain a licence from DIPNR under the *Water Act, 1912* if water is to be extracted from prescribed creeks or if the creeks are to be realigned during construction works. Note, a permit is required if water is to be extracted for dust control.	Contractor
	• Amend the boundaries of Parma Creek Nature Reserve and Jerrawangala National Park to suit the road alignment.	RTA
	• Amend boundaries of Morton National Park to exclude the preferred alignment.	RTA
	• Amend SEPP 58 to enable the MR92 Upgrade to proceed under Part V of the *Environmental Planning & Assessment Act, 1979.*	RTA
Indigenous Heritage	• Sub-surface testing would be undertaken at PAD 1 to determine if cultural heritage material is present in the area. The RTA would make an application to the NPWS for a Preliminary Research Permit to conduct this work which would be completed prior to any works being undertaken in the vicinity of the PAD.	RTA
	• Sub-surface testing would be undertaken at Site ER-OS-1 to determine the extent of the site and the degree of disturbance which has occurred to the sub-surface deposit within the identified PAD. The RTA would make application to the NPWS to a Preliminary Research Permit to conduct this work.	RTA
	• Additional investigations would be conducted at PAD-RS1, PAD-RS2, RS3 and RS4 to determine if the road construction techniques would damage these potentially sensitive areas. These sites would be vulnerable to blasting and other major road construction techniques. Both direct and indirect impacts would be considered.	RTA/Contractor
	• Sub-surface testing would be undertaken at PAD 2 on the southern side of the Endrick River to determine if cultural heritage material is present in the area. The RTA would make application to the NPWS for a Preliminary Research Permit to conduct this work. All work would be completed prior to construction works being undertaken in the vicinity of the PAD.	RTA

Issue	Mitigation and Management Measures	Responsibility
	• The Walbunja People are to be notified (through their Solicitors) of the encroachment on their claim area by the proposal.	RTA
Non-Indigenous Heritage	• A Section 140 permit would be sought from the Heritage Office for construction activities within the Bulee Mountain area to the west of the Bulee Gap.	RTA
	• A Conservation Management Plan would be prepared in consultation with the Heritage Office and NPWS to guide the future management of the Wool Road in the vicinity of Bulee Gap.	RTA
	• The RTA would prepare a nomination for that section of the Wool Road in the vicinity of Bulee Gap for inclusion in the State Heritage Register.	RTA
	• RTA will include signage containing public interpretation of the heritage values of that section of the Wool Road in the vicinity of Bulee Gap at appropriate points.	RTA
	• In addition, the AHC is to be notified of the intention to impact on the 1980 boundary of the Morton National Park within the Bulee Mountain area, classified as a registered place on the Register of the National Estate.	RTA
Water quality, erosion, sedimentation & hydrology	• Prepare an integrated Soil and Water Management Plan (SWMP) as part of the CEMP to prevent an increase in pollutant loads being exported from site both during construction and operation and to minimise the impacts of sediment movement during construction on adjacent watercourses. This would be prepared before pre-construction works commence. It would include:	Contractor
	▸ provision of drainage catchment from site compounds/ office and materials storage areas;	
	▸ a contingency plan to be implemented for managing and disposing of fuel spills;	
	▸ if flocculants (for example polyelectrolyte) were to be used in the treatment of stormwater sedimentation, procedures would be developed to minimise the threat of damage to the environment that may potentially arise from discharge of treated waters containing such flocculants to the environment;	
	▸ provision of a truck wheel washing facility, where appropriate, for the effective cleansing of wheels prior to trucks leaving the construction site;	
	▸ a soil testing program at sites where material would be extracted;	
	▸ a contaminated soil remediation strategy;	
	▸ a monitoring program to ensure all planned erosion/sediment controls are in place and effective at all times	
	▸ a strategy to manage exposed ground surfaces;	
	▸ progressive site rehabilitation requirements; and	
	▸ reporting of the effectiveness of the sediment and erosion control system against identified water quality goals.	
	• Prepare a water quality monitoring program to be incorporated into the CEMP to ensure pre, during and post construction water quality of potentially affected watercourses is fully understood and documented.	Contractor

Issue	Mitigation and Management Measures	Responsibility
	• Inspect embankments to determine the need for additional protection against scour.	Contractor
	• Educate site personnel to comply with environmental protection practice, and become familiar with the sediment and erosion control measures implemented on site.	Contractor
	• Engage a soil conservation and environmental officer(s) as required for the duration of the Project.	Contractor
	• Designate areas for plant and construction material storage and provide cutoff drains to ensure runoff from upstream areas would be diverted around the site.	Contractor
	• Designate and mark haul/transport routes to ensure minimal surface and vegetation disturbance.	Contractor
	• Construct sediment fences on upstream edges of buffer areas and at base of fill embankments.	Contractor
	• Provide appropriately designed sediment basins at the downstream end of catch drains and designated construction areas to collect excess sediment and allow adequate settlement prior to discharge to the receiving watercourse. This would include the provision of holding areas in case of spillages.	Contractor
	• Provide devices such as retained vegetation, timber windrows, hay bales, silt fences and sand bags along catch drains to slow flow, reduce scour and capture part of the sediment from the runoff.	Contractor
	• All temporary sedimentation retention basins would be designed and sized in accordance with '*Managing Urban Stormwater – Soils and Construction*'	Contractor
	• Ensure incident management plans are prepared to deal with accidental spills to prevent pollution of waters.	RTA/Contractor
Biodiversity	• Prepare an integrated Soil and Water Management Plan that would, amongst other things, outline how the vegetation and habitats surrounding the road are to be protected, particularly during the construction phase of the project. Of particular concern, is the movement of sediment from the road works into local streams, swamps and downslope habitats. It should be noted that the proposed sealing of MR92 is expected to result in a reduced sediment load entering surrounding watercourses.	Contractor
	• Prepare a Vegetation/Habitat Rehabilitation Plan to accompany the integrated Soil and Water Management Plan. Rehabilitation of the new road verges, the existing road where it is bypassed by the new alignment, and other disturbed areas, would be a major part of the post construction works. Rehabilitation would be undertaken as each stage of the road is completed under the supervision of an appropriately qualified Contractor. Among other things, the plan would specifically deal with:	Contractor
	▸ treatment of the top soils to maximise their value to rehabilitation;	
	▸ the sourcing of local plant species for revegetation;	
	▸ methods to stabilise the soil surface as soon as possible after completion of the works;	
	▸ maximising the use of organic debris, such as logs, branches and vegetation;	
	▸ methods to halt the incursion of vehicles onto the rehabilitation areas;	
	▸ methods to maximise the opportunities for fauna to recolonise the rehabilitation areas and to traverse such areas;	

Issue	Mitigation and Management Measures	Responsibility
	▸ revegetation methods to be used, such as direct seeding, brushing (i.e. spreading branches containing seed) and planting; and	
	▸ methods to collect seed from local native species for use during revegetation works.	
	• All personnel working on the project would undergo an induction program that addresses all environmental protection issues. These issues would include:	Contractor
	▸ the protection of rare and threatened plant populations;	
	▸ protecting important habitat areas;	
	▸ the measures outlined in the Soil and Water Management Plan, particularly the protection of streams and swamps;	
	▸ the measures outlined in the Vegetation/Habitat Rehabilitation Plan, particularly the protection of completed rehabilitation areas;	
	▸ the identification of "no-go" areas for vehicles;	
	▸ the need to control the spread of pollutants such as litter within the study area, much of which is in or adjacent to conservation reserves.	
	• An environmental officer would be appointed to the project and their brief include:	Contractor
	▸ ensuring that the goals set in the Soil and Water Management Plan are being achieved;	
	▸ ensuring that the goals set in the vegetation/habitat rehabilitation plan are being achieved;	
	▸ carrying out regular inspections of the works to ensure that environmental safeguards are being followed;	
	▸ identifying where environmental measures are not meeting the targets set and where improvement can be achieved;	
	▸ preparing reports on a three monthly basis outlining the works undertaken and the achievements that have been met, as well as identifying those areas where improvements were made.	
	• All "no go" areas in the project area would be identified with a standardised marking system, such as a particular colour flagging tape or fence that is not used for any other purpose.	Contractor
	• Where there is a significant deviation from the existing road alignment, the edge of the new alignment would be marked so that the bushland between the new road and the existing road is retained and is not cleared as part of the construction works.	Contractor
	• An appropriate barrier would be erected around the small population of *Acacia bynoeana*. These plants are located approximately 12 m from the proposed alignment and would ensure that these plants are not inadvertently destroyed during the construction phase or post-construction rehabilitation of the existing road. Construction personnel would also be advised of the "no-go" area.	Contractor
	• To ensure that minimal impact occurs to the stand of *Eucalyptus langleyi* in the vicinity of Hames Road, the following procedures would be undertaken before the commencement of construction:	Contractor
	▸ the area would be inspected by a botanist in the company of the construction engineer;	
	▸ appropriate barriers (either temporary or permanent) would be installed around the population on both sides of the road;	

Issue	Mitigation and Management Measures	Responsibility
	▸ personnel working on this project would undergo an induction program that includes environmental protection issues such as the protection of threatened plant populations;	
	▸ the Environmental Officer would be present when the initial earthworks are carried out to ensure the plants would be protected;	
	▸ the removal of *Eucalyptus langleyi* plants would be restricted to no more than the four plants located immediately on the existing road edge;	
	▸ the Environmental Officer would prepare a report when this section of road has been completed and submitted to the NPWS. The report would detail the measures taken to protect the population, the success or otherwise of those measures and any additional measures necessary to ensure the long-term protection of the plants. It would also comment on the need for permanent fencing and signage, and further monitoring.	
	• A Koala proof fence would be erected on either side of the proposal west of the Bulee Mountain area from the Endrick River for a distance of 460m. The location of this fence would be determined during the detailed design stage in consultation with NPWS. Additionally, appropriate signs (in accordance with RTA signage policy) would be erected in the vicinity to alert motorists to the possibility of Koalas and other fauna being present on the road, particularly at night.	Contractor
	• In terms of potential impact on Yellow-bellied Glider and Powerful Owl, the area of forest to be removed has been minimised. At Sassafras, the road width was reduced to a minimum in order to retain the tall forest and the avenues of trees along the edge of the existing road. The same principle would be followed in other places where there is forest likely to be inhabited by Yellow-bellied Gliders, for example at the Turpentine Road junction. During the detailed design, an ecologist would determine exactly where the road corridor should be made narrow to avoid clearing forest habitat.	Contractor/RTA
	• The detailed design stage would include the preparation of a comprehensive Soil and Water Management Plan to carefully control soil movement and the sedimentation of watercourses which would minimise the potential to impact the Heath Frog. The NPWS would be consulted during preparation of the Plan. The main goal would be to minimise the movement of sediment to the areas surrounding the road, particularly watercourses, and to address any impacts from the proposal.	Contractor
	• The detailed design stage would include consultation with an orchid specialist to determine the exact locations of the known populations of *Genoplesium superbum* east of Bulee Mountain, in order to determine what modifications can be made to the road alignment to reduce impacts on these populations.	RTA
	• The detailed design stage would include consideration to minimise impacts on *Eucalyptus triflora* and *Dillwynia crispii*, on sandstone escarpment areas and on vegetation present around drainage lines.	RTA
	• The detailed design stage would take into consideration minimising, and avoiding if practicable, impacts on hollow-bearing trees. The clearing of vegetation would be undertaken preferably when microchiropteran bats are most active (i.e. during the warmer months).	RTA
	• Road widening in the vicinity of the Telstra sub-station would be restricted to the southern side of the road to avoid a population of an unnamed species of *Prasophyllum* (to the east of the Telstra substation).	Contractor / RTA
	• The closure of particular access tracks identified by Dr Jonathon Webb to restrict access to the habitat of the Broad Headed Snake is planned and would be undertaken in consultation with NPWS.	Contractor / RTA

Issue	Mitigation and Management Measures	Responsibility
Noise and vibration	• Develop and Construction Noise and Vibration Sub-Plan as a component of the CEMP.	Contractor
	• Where works may cause damage to nearby buildings and structures, conduct a pre-construction dilapidation survey.	Contractor
	• Review methods of construction and detailed design for modifications that may result in changes to noise emissions or impacts, and review noise assessment as necessary.	Contractor
	• Prepare a pro-active community consultation program to assist with concerns of the community, minimising the likelihood of complaints in relation to noise.	Contractor
	• Install high efficiency mufflers for major plant items, particularly those that would be used for long periods on the project.	Contractor
	• Select plant and equipment with due considerations to the resulting noise emissions.	Contractor
	• Design noise attenuation in consultation with affected residents.	Contractor
Energy	• Conduct awareness program as part of induction training for all site personnel regarding energy and materials conservation methods contained in the CEMP.	Contractor
Waste minimisation & management	• Develop a Waste Minimisation and Management Plan to be incorporated into the CEMP. It should: ▸ identify procedures for handling, storing and transporting construction materials; and spoil and waste including water and contaminated materials; ▸ identify and implement practical strategies, for (i) waste avoidance; (ii) waste reduction; (iii) material reuse; and (iv) recycling; ▸ provide a plan for the treatment of contaminated material, as appropriate; ▸ identify any site for final disposal of any material and any remedial works required at the disposal site before material is accepted; ▸ provide a procedure for disposal to a landfill licenced by the EPA for material which cannot be used.	Contractor
	• RTA and design contractor to specify the use of recycled and recyclable products to the greatest extent possible, subject to practicality and cost effectiveness during detailed design phase.	RTA/Contractor
	• Train all employees in the waste management plan and recycling opportunities.	Contractor
	• The Contractor would use recycled materials, to the limits of design in concrete, roadbase, asphalt and other construction materials (see RTA specification R116, R3051 and R3052).	Contractor

Issue	Mitigation and Management Measures	Responsibility
Hazards & Risks	• Undertake a hazard assessment of the detailed design;	RTA
	• Procedures would be developed for the containment and clean up of any spill events, emergency procedures training programs and registers for all construction and operational staff and protocols for notifying appropriate authorities in the event of an emergency.	Contractor
	• Procedures for the management and storage of dangerous goods during construction would be developed and implemented in accordance with the *Dangerous Goods Act, 1975.*	Contractor

Table 8.6: Measures, Controls and Commitments for the Preferred Activity – Construction

Issue	Mitigation and Management Measures	Responsibility
General	• Undertake internal audits against the CEMP during the construction phase.	RTA
	• EMR to undertake quarterly audits of the CEMP and supplementary EMPs.	RTA
Community & stakeholder involvement	• Prior to the commencement of construction and then at three-monthly intervals, RTA would advertise in relevant local newspapers the nature of the works proposed for the forthcoming three months, the areas in which these works are proposed to occur, the hours of operation and a contact telephone number.	RTA/Contractor
	• Ensure that the local community and businesses are kept informed (by appropriate means such as quarterly newsletters, newspaper advertisements, monthly web site updates and community information displays, etc.) of the progress of the project, including any traffic disruptions and controls, construction of temporary detours and work required outside the nominated working hours including, but not limited to noisy works, prior to such works being undertaken.	Contractor
	• Brief all construction staff on the communications plan.	Contractor
	• During construction, record details of all complaints received relating to any works or activities carried out for this project and ensure that at least a verbal response on what action is to be taken is provided to the complainant within 2 business hours (unless the complainant agrees otherwise) and a detailed written response outlining the measures which were taken would be provided within (7) calendar days.	Contractor
	• Information about all complaints received would be made available to the EMR daily. Complaints are to be received, logged tracked and responded to within the specified timeframe.	Contractor
Traffic & Transport	• The Construction Traffic Management Sub-Plan would be implemented.	Contractor
	• Access to properties affected by the proposal would be maintained throughout the construction period. Should there be a need to close any access temporarily, then owners of the affected property would be informed of the extent, timing and duration at least 24 hours prior to it happening. Any access way affected by the proposal would be reinstated to an equivalent standard or that adequate compensation would be negotiated with the relevant landowner(s).	Contractor
	• An appropriately qualified independent auditor would be engaged to conduct a safety audit/s of the detailed design and the audit/s would be provided to the Director-General at least one month before operation commences. On the basis of this audit/s, appropriate measures would be applied which would address all safety impacts.	RTA
	• Provide clear signage of road network changes.	Contractor
	• Provide safe pedestrian access, with minimal inconvenience, at all times during construction.	Contractor
	• Ensure ongoing consultation with affected residents and other properties in areas where road closures and diversions are to occur.	Contractor/RTA

Issue	Mitigation and Management Measures	Responsibility
Geotechnical	• Compact and revegetate disturbed soils as soon as possible to reduce erodibility of alluvial soils.	Contractor
Indigenous Heritage	• Scarred trees T-ST-1, BC-ST-1, BC-St-2 and S-ST-1 would be avoided by the proposal. If avoidance is not practicable for S-ST-1 then additional research would be conducted to determine the nature of the scar as it has potential indigenous and non-indigenous heritage value. If avoidance of these trees is not practical then discussions would be held with NPWS and the Nowra LALC to determine appropriate management procedures for the site.	Contractor
	• Any clearing of vegetation from Chainage 19100 to 20200, 22500 to 23500, 27000 to 28000, 30100 to 32700, and 43200 to 45000 would be monitored by a representative of the Nowra/ Ulladulla LALC. Should any sites be identified within the impact area, work in the vicinity of the site would cease and an officer of the NPWS Queanbeyan Office informed so that an appropriate management strategy can be developed for the site.	Contractor
	• Site 58-1-0073 (grinding grooves) is located immediately north from the bridge. All work in the Tianjara Creek area would be confined to the current road alignment. No work sites spoil dumps etc would be located in the area. Construction workers would be advised of the sensitive nature of all sandstone exposures in the vicinity of the bridge to ensure that this site is protected against adverse impacts.	Contractor
	• Should any sites be found during construction works for the project, all work would stop in that area and the NPWS and Nowra and Ulladulla LALCs contacted for advice.	Contractor/RTA
	• Should project development impact upon areas outside those identified in the EIS, NPWS and the LALCs would be consulted and any additional investigations required would be undertaken prior to construction activities taking place to minimise the potential for adverse impacts to occur.	Contractor/RTA
Non-Indigenous Heritage	• Any unexpected finds of heritage items or relics during construction or clearing would result in work ceasing at that site and contact made with the local Council and the NSW Heritage Office.	Contractor/RTA
Water quality, erosion, sedimentation & hydrology	• Monitor water quality in affected watercourses both upstream and downstream of construction works in accordance with the approved schedule in the CEMP. Water quality monitoring data would be used by the contractor to determine the effectiveness of water quality management devices in controlling water pollution.	Contractor
	• Water to be discharged via any stormwater system into waterways would be treated so that it does not cause significant pollution of receiving waters, and meets the requirements of any standards specified in the approval of the project by government authorities, or in the absence of specified standards, general water quality guidelines relevant to the project.	Contractor
	• Where water quality results from monitoring indicate unacceptable levels of water pollution arising from construction activities, the design and construction of water quality management devices would be reviewed with a view to ensuring that relevant standards are met.	Contractor
	• All water collected during construction which is likely to be contaminated, would be tested, treated, handled and disposed of so that it does not pollute receiving waters.	Contractor

Issue	Mitigation and Management Measures	Responsibility
	• Best treatment practices would be used to minimise the discharge of water treated with flocculants to the environment, where those flocculants may pose a risk to the environment. The application of flocculants in treating stormwater and runoff would be made with reference to relevant guidelines.	Contractor
	• Runoff and stormwater would be used, where practicable, for dust suppression during construction with reference to the Department of Housing's *Managing Urban Stormwater - Soils and Construction* and would be used, where practicable, for irrigation of landscaping and revegetation with reference to the EPA's *Environmental Guidelines for Utilisation of Treated Effluent by Irrigation*, where practicable.	Contractor
	• Ensure that all stockpiling areas would:	Contractor
	▸ be located outside any drainage line or environmentally sensitive area so that no negative impacts occur in residential areas, heritage items, archaeological sites or in native plant communities;	
	▸ be only on land leased or owned by the RTA for the purposes of road construction;	
	▸ contain stockpiles which are:	
	(i) covered or stabilised at all times; and	
	(ii) not unduly visually intrusive on the surrounding environment or residents and which are of a size (surface area and height) that facilitates efficient management of wind and water erosion;	
	▸ be located away from areas of contaminated or potentially contaminated soils; and	
	▸ only be used during the construction period and the areas would be rehabilitated as soon as practicable once use is no longer required.	
	• Provide wheel washing areas to minimise unnecessary soil transportation from construction areas.	Contractor
	• Construct diversion banks at upstream boundary of construction activities to ensure upstream runoff is diverted around exposed areas. Construct catch drains at downstream boundary to ensure sediment laden runoff is contained and diverted to treatment areas and not allowed to flow over undisturbed areas and into existing drainage systems that may become blocked.	Contractor
	• Ensure construction activities are confined within the boundaries identified.	Contractor
	• Regularly maintain and inspect all mitigation measures and repair or desilt where necessary after severe rainfall to ensure they are in working order at all times.	Contractor
	• Progressively revegetate cut and fill areas as appropriate.	Contractor
	• Progressively complete construction areas to ensure sites are exposed for minimum duration.	Contractor
	• Cover stockpiles, if necessary, to minimise transportation of sediment material.	Contractor
	• Mulch and retain vegetation and topsoil for site rehabilitation and landscaping works.	Contractor

Issue	Mitigation and Management Measures	Responsibility
Biodiversity	• In consultation with the NPWS, the large number of tracks and roadside clearings not required for management of National Park or road maintenance would be closed off using appropriate methods. The upgrading of the road would place pressure on the National Park lands surrounding the road, as potentially more visitors would be travelling through the study area. The rationalisation of the bush tracks would go a long way to controlling impacts on park lands from inappropriate visitor use. Other measures would also be required, such as the provision of rest areas and appropriate signage.	Contractor/RTA
	• All construction works and all construction vehicle traffic would be restricted to the road construction area. The road construction area would incorporate all areas to be disturbed by the works including the easement for the new alignment, construction compounds, machinery/material storage areas, and spoil storage and disposal areas. Where necessary, this would be marked on site to restrain vehicles to the corridor and out of the "no-go" areas.	Contractor
	• Cleared vegetation would not be burnt as it provides a valuable resource for rehabilitating vegetation and habitat to disturbed areas. This material would be stored for a minimum period of time. Mulching is not necessary and is not recommended, logs, branches, etc. would be used "as is". Rocks would also be used to advantage in rehabilitation works.	Contractor
	• With regard to the requirements of the Glossy Black-Cockatoo, the clearing of Black She-oak *Allocasuarina littoralis* at Bulee Mountain would be kept to the minimum required to upgrade the road. Any vegetation rehabilitation carried out in this area would include Black She-oak, grown from local seed;	Contractor
	• In terms of protecting the endangered ecological community White Box-Yellow Box-Blakely's Red Gum Woodland, particular care would be undertaken with designing and constructing the proposal between the Endrick River and Nerriga to retain the large *Eucalyptus melliodora* trees, where possible. Understorey species from local seedbank would be used in any revegetation treatments in these areas.	Contractor
	• In terms of protecting *Eucalyptus triflora* and *Dillwynia crispii*, care would be taken during construction, as many plants occur immediately adjacent to the road alignment.	Contractor
	• The population of an unnamed species of *Prasophyllum* located on the northern side of the road to the east of the Telstra substation would be protected during construction activities.	Contractor
	• Riparian vegetation disturbance would be kept to a minimum, and any disturbed sites revegetated with local plant species.	Contractor
	• Emphasis would be placed on undertaking bridge and culvert construction during low rainfall months.	Contractor
Air Quality	• As part of the Construction EMP(s), prepare a specific Air Quality Sub Plan following consultation with the EPA. The Sub Plan would provide details of all dust control measures to be implemented during the construction stage.	Contractor
	• Under extreme wind conditions, construction activities would be halted.	Contractor
	• Where there is a risk of losing material, ensure that construction vehicles using public roads be maintained and covered to prevent any loss of load, whether in the form of dust, liquid or solids.	Contractor
	• Ensure that all spoil, waste or fill material be stored no less than 750 metres from any sensitive receptor where practicable and would be covered or stabilised at all times.	Contractor

Issue	Mitigation and Management Measures	Responsibility
	• In accordance with the *Protection of Environment Operations (Control of Burning) Regulation 2000*, ensure that no open burning or incineration be permitted on site unless otherwise approved by the EPA.	Contractor
	• Implement appropriate methods for dust control including:	Contractor
	▸ Spraying of earthworks and roads with water or other appropriate liquids;	
	▸ Install facilities such as wheel washes and washdowns to prevent sediment from being deposited on roads off the construction site;	
	▸ Ensure that the tailgates of all vehicles transporting materials to and from construction sites are securely fixed prior to loading and immediately after loading and materials covered immediately prior to transportation;	
	▸ Remove mud from the wheels and bodies of haulage equipment before they enter public roads or other sealed pavements;	
	▸ Implement procedures to clean up mud deposited on public roads;	
	▸ Put in place a "call-out" system for events that require dust suppression out of hours and on weekends;	
	▸ Install anemometer at construction site office to determine when to increase watering and when to cease works in periods of increasing winds;	
	▸ Re-program some activities during periods of high wind so as not to cause nuisance or danger to people or property	
	▸ Maintain the exhaust systems of construction plant, vehicles and machinery to manufacturers' specifications to minimise exhaust emissions.	
Noise and vibration	• Apply best practice noise mitigation measures including:	Contractor
	▸ maximising the offset distance between noisy plant items and nearby noise sensitive receivers;	
	▸ avoiding the co-incidence of noisy plant working simultaneously close together and adjacent to sensitive receivers;	
	▸ measures to control the use of reversing alarms on vehicles used during any night time works;	
	▸ minimising consecutive night time works in the same locality;	
	▸ orienting equipment away from sensitive areas;	
	▸ carrying out loading and unloading away from sensitive areas; and	
	▸ selecting site access points and roads as far as possible away from sensitive receptors.	
	• All construction and associated activities would be restricted to the hours of 7:00 am to 6:00 pm (Monday to Friday); 8:00am to 1:00 pm (Saturday) and at no time on Sundays and public holidays.[1]	Contractor

[1] Work outside these hours may be required at times and may be permitted. It would include:

- any works which do not cause noise emissions to be audible at any nearby residential property or at any community facility during operation of that facility;
- the delivery of materials which is required outside these hours as requested by Police or other authorities for safety reasons;

Issue	Mitigation and Management Measures	Responsibility
	• Construction noise levels would be monitored to verify compliance with the Construction Noise and Vibration Management Sub Plan. Should monitoring indicate exceedences consultation would be held with DIPNR and the EPA to implement best available additional mitigation measures to the satisfaction of Director-General.	Contractor
	• Ensure that sheet piling and any other activities at or near ground level which result in impulsive or tonal noise generation are only scheduled between the following hours: ‣ 8 am to 12 pm, Monday to Saturday; and ‣ 2 pm to 5 pm Monday to Friday. Where these activities are undertaken for a continuous three hour period and are audible to noise sensitive receptors, a minimum respite period of at least one hour would be scheduled before activities recommence.	Contractor
	• No construction works would occur on Sundays, when the two churches in Nerriga are normally occupied. Consequently, no significant impacts from construction activities would be expected at these special use buildings.	Contractor
	• A community consultation program would be in place to assist with concerns of the community. Residents within 100 m would be notified of the schedule of construction works and given forewarning at least a week in advance for especially noisy activities, such as rockhammering and piledriving.	Contractor
	• Ensure that public address or other communication systems at any construction site are used so as not to cause a disturbance outside the standard working hours. Any such system would be designed and installed such that sound is minimised at nearby residential buildings and sensitive receptors as by designing and installing the public address system with its long axis directed away from sensitive sites unless otherwise specified.	Contractor
	• Where rockbreakers are required in close proximity to residences (10m – 20m) a "dampened" tip would be used to minimise the transfer of vibration during hammering operations conducted at night.	Contractor
	• In order to minimise noise impacts during construction, consult with relevant Council(s) and where appropriate, erect operational noise mitigation measures prior to the commencement of construction.	Contractor
	• Investigate and apply noise source controls to reduce noise from all plant and equipment. Examples of appropriate noise source controls could include efficient silencers, low noise mufflers and alternatives to reversing alarms.	Contractor
	• All fixed and mobile plant would be inspected regularly and tested to ensure the emission levels do not deteriorate over the life of the project. Noise compliance checks would be carried out on all major equipment to ensure the noise levels meet the relevant Australian standards.	Contractor

- emergency work to avoid the loss of lives, property and/or to prevent environmental harm;
- time critical work such as cutting of joints in concrete pavement layers;
- any other work as agreed through negotiation between the RTA and potentially affected noise receivers through the Construction Noise and Vibration Sub Plan process provided local residents are informed of the timing and duration at least 48 hours prior to commencement of the work.

Issue	Mitigation and Management Measures	Responsibility
	• Maintenance of construction equipment and selection of plant and equipment would take into consideration the resulting noise emissions.	Contractor
	• Machinery used would be appropriately sized to prevent overloading and associated over-revving.	Contractor
	• Compression braking would be avoided near residential dwellings.	Contractor
	• Low speeds would be maintained within the Bulee Mountain area to minimise engine noise and chassis rumble.	Contractor
	• Monitoring of noise levels would be undertaken at key project milestones to check that noise levels are maintained within the range predicted.	Contractor
	• Undertake dilapidation surveys on residences within potential radius of effect prior to commencement of rockbreaking and pile driving activities.	Contractor
	• Where rockbreakers are required in close proximity to residences (10m – 20m) a "dampened" tip would be used to minimise the transfer of vibration during hammering operations conducted at night.	Contractor
	• Blasting may occur within the Bulee Mountain area. The distance from the area of blasting to the nearest dwelling, "Wiluna", is at least 1.6 km. In order to comply with the air overpressure objective of 115dB (Peak) and the groundborne vibration limit of 5 mm/s at the nearest dwelling, it has been predicted that the maximum allowable Maximum Instantaneous Charge (MIC) of explosive is around 2,500 kg allowing for a small safety margin. However, the Eastern Gas Pipeline is located in proximity to the existing road alignment. Blasting is not permitted within 200 m of the pipeline and therefore during the construction of the proposal, the Construction Contractor would need to comply with Duke Energy's requirements.	Contractor
	• Normal road construction requires the use of a compactor to ensure a smooth and stable sub-surface for the roadway. A vibratory compactor is frequently considered an efficient way to achieve this objective. For residents closer than 20 m, a vibratory compactor is not recommended, due to the potential for building damage. Additionally, works in the vicinity of the Eastern Gas Pipeline where the use of a vibratory roller is proposed would need to be agreed to by Duke Energy. Therefore, for works through Nerriga and in some locations affected by the Eastern Gas Pipeline, the use of a non-vibratory roller would be required.	Contractor
Energy	• Implement energy efficient work practices including:	Contractor
	▸ Conduct energy conservation awareness program as part of site induction;	
	▸ Schedule activities during off-peak traffic periods to minimise the potential for major disruption to traffic;	
	▸ Dispose of excess spoil as close to the MR92 Upgrade as possible;	
	▸ Conduct regular energy audits during the project to identify areas for greater energy savings.	
	• Water use would be minimised and regulated and, where possible, water conservation techniques would be used. This would include aerated taps, waste efficient appliances, trigger action hoses, low/dual flushing or composting toilets, and prompt repair of leaking taps and pipes.	Contractor
	• Ensure efficient operation and use of plant, equipment and vehicles during the construction phase.	Contractor

Issue	Mitigation and Management Measures	Responsibility
Waste minimisation & management	• Waste to be disposed in compliance with the requirements of the *WARR Act 2001* at a waste facility licensed to accept the type of waste presented.	Contractor
	• Minimise the size of excavations to reduce the amount of spoil generated.	Contractor/RTA
	• Balance cut and fill works where possible.	Contractor
	• Any soil not suitable for use in road embankments would be used for mounding for landscaping where practicable.	Contractor
	• Contractors to employ all reasonable measures to reuse and recycle excavated spoil material by utilising as fill for road works,	Contractor
	• Surplus excavated sandstone would be crushed and reprocessed for use in construction materials.	Contractor
	• Trees cleared during construction would be used for timber windrows for sedimentation control or revegetation to re-establish habitat on site.	Contractor
	• Topsoil free of weeds that is stripped prior to undertaking earthworks would be stockpiled and stored. Following completion of earthworks, topsoil would be spread on the road batters as part of landscaping and revegetation works. Any stored stockpiles would be protected from water and wind erosion by spreading with hydroseed until required or by covering with a geotextile fabric.	Contractor
	• Large logs and tree limbs to be used to assist in sediment control.	Contractor
	• Recycling facilities would be provided for general rubbish, i.e. glass, plastic, waste paper and metals, utilising colour-coded bins.	Contractor
	• Investigate the availability of treated wastewater for use in spraying roadworks to reduce dust generation or for watering progressive landscape works.	Contractor
	• Empty oil and fuel drums to be collected or returned to recycling facilities.	Contractor
Excavated/construction materials	• Reuse/recycle as much excavated material as possible on the construction site.	Contractor
	• Dispose of excess excavated material/spoil at a licensed landfill. No material would be permitted to be disposed of in any permanent waterway.	Contractor
Contaminated soil	• If fill or soils were identified as contaminated, these materials would be kept separate from clean material and appropriate storage, transport and disposal measures implemented to ensure that risk to workers and the public is minimised. Contaminated material would be quantified, separated from clean material and disposed of in accordance with the *Contaminated Land Management Act, 1997.*	Contractor
Hazards & Risks	• Undertake a hazard assessment of the complete project prior to commencement of operation.	RTA
	• Sufficient sedimentation and accidental spill basins would be provided at three locations along the route (adjacent to Tianjara Creek, Boolijah Creek and the Endrick River) to ensure that a minimum of 20 m^3 of a toxic spill can be contained (as specified in RTA	Contractor

Issue	Mitigation and Management Measures	Responsibility
	Code of Practice for Water Management, 1999). The spilt material would remain in the basin until pumped out and removed by an appropriately licensed contractor to an appropriately licensed waste facility	
	• Bund storage areas for oils and other hazardous liquids in accordance with Australian Standards and collect any spillages for off-site disposal at a licensed facility.	Contractor
	• Conduct regular audits of storage areas to identify and address storage concerns (inappropriate storage practices, leaking bunds).	Contractor/RTA
	• Ensure that spill control material is readily available.	Contractor
	• Permit potentially hazardous activities, including washing out of delivery vehicles, washing down of construction plant, refuelling plant and handling hazardous chemicals to be undertaken only at appropriate locations that have adequate environmental protection measures.	Contractor

Table 8.7: Measures, Controls and Commitments for the Preferred Activity – Operation

Issue	Mitigation and Management Measures	Responsibility
General	• At least one month prior to commissioning of the proposal the RTA would submit to the Director-General, DIPNR a compliance report detailing compliance with all relevant conditions that apply prior to commencement of operation and would address: ▸ results of environmental monitoring required under this Approval including interpretation and discussion by a suitably qualified person; ▸ a record of all complaints and the action taken to mitigate all such complaints; ▸ recommendations with respect to compliance issues; and ▸ action taken or proposed to implement the recommendations made in terms of approvals and/or studies.	RTA
	• The RTA would notify the Director-General, DIPNR and all relevant Government Authorities in writing of the commencement of the operation of the project at least 1 week prior to the relevant commencement date.	RTA
	• An Environmental Impact Audit Report would be submitted to the Director-General, DIPNR by the RTA, as appropriate, 2 and 7 years from the start of operations or at any time as requested by the Director-General within the first 10 years of operation. The Environmental Impact Audit Report would be undertaken by an independent person(s) or organisation. The Report would assess the key impact predictions, made in the EIS and any supplementary studies, and provide details of the extent to which actual impacts reflect the predicted impacts during the periods required. The Report would address the suitability of implemented mitigation measures and safeguards including the suitability of monitoring and training.	RTA
Landscape	• All landscaping works associated with the MR92 Upgrade proposal would be monitored and maintained by a suitably qualified landscape specialist for road verges for a period of not less than three years.	RTA
Water quality, erosion, sedimentation & hydrology	• Prepare and implement an Operational Soil and Water Management Sub Plan containing: ▸ details of emergency spill containment devices at new crossings and where space permits, at old crossings; ▸ maintenance of pavement, landscape area, drainage systems and pollution control devices; ▸ procedures for the management of impacts on surface and ground water, including stormwater in storage, sediment devices and flooding and hydrology impacts; and ▸ regular inspection and maintenance timetable and procedure for all facilities including wetland filters, grass filter strips, gross pollutant traps and sedimentation basins for the life of the project.	RTA
	• Prepare a Flood and Stormwater Management Sub Plan (Operation) at least 3 months prior to the completion of construction works, in consultation with the EPA, DIPNR and the relevant Councils. The Sub Plan would be available for implementation at the commencement of operation and would include but not be limited to: ▸ details of an effective flood emergency evacuation response. The response would consider road users, residents, business operators	RTA

Issue	Mitigation and Management Measures	Responsibility
	and rescuers; ▸ details of stormwater system maintenance sufficient to minimise flood liability and maintain discharged water quality. The Plan would be prepared to the satisfaction of relevant authorities, including the EPA and DIPNR.	
Biodiversity	• Monitoring of rehabilitation would be undertaken for a five year period after the completion of road works at each location. A qualified ecologist or botanist would undertake all monitoring. The timing of inspections would be immediately after rehabilitation has been completed, then one month after, then once every six months. A report would be prepared after each inspection and forwarded to the NPWS and the two Councils. Measures necessary to improve the success of the rehabilitation would be included in the report and acted upon after consultation with NPWS and Councils. The report would cover the following matters as a minimum: ▸ the general condition of the rehabilitated areas; ▸ the success of the revegetation methods used; ▸ the occurrence of weeds; ▸ the occurrence of any rare plants that are regenerating (including *Eucalyptus triflora* and *Dillwynia crispii*); ▸ the incidence of erosion; and ▸ comment on fauna habitat values.	RTA
	• Roadkills would be monitored for a period of one year after completion of construction. Inspections would be carried out immediately after completion of each section of road, then monthly. A report would be prepared by a qualified ecologist and forwarded to NPWS, RTA and respective Councils at three monthly intervals. Measures identified as necessary to reduce roadkills would be included in the report and discussed with the NPWS and RTA within two weeks of report preparation.	RTA
	• Along sections of the road where there are particular ecological values, permanent signs indicating this fact would be erected after completion of construction. Sites of particular concern are the stand of *Eucalyptus langleyi* in the eastern section of the study area and the Koala habitat between the Bulee Mountain area and the Endrick River. Signs would help motorists to identify these localities, but more importantly, such areas need to be identified for road maintenance crews. The location of the signs would be determined by a qualified ecologist once the construction of the road is complete and any signs erected would be required to comply with RTA signage policy.	RTA
	• Sediment input in waterways is considered to be the greatest threat to the aquatic environment as a result of road construction. Therefore, sedimentation control measures would be implemented as outlined in this table. The existing road is the main source of current sediment loads. Sealing of the road alignment would result in substantial reductions in the build up of sediment within culverts and local waterways leading to long term benefits to water quality, riparian habitat and aquatic ecology.	RTA
	• On the completion of construction work, areas of bare soil or heavily infested weedy areas would be professionally revegetated with suitable local indigenous shrub species in conjunction with stabilisation measures such as matting, and mulching to stabilise soil batters and embankments. Revegetation with locally indigenous species collected from local seed sources is preferred and would be undertaken in consultation with NPWS.	RTA

Issue	Mitigation and Management Measures	Responsibility
	• Any noxious plant species or significant environmental weeds would be removed during and following revegetation works in accordance with the *Noxious Weeds Act 1993* and *Pesticides Act, 1999*. Regular checks would be made in the early seeding stage and weeds removed.	RTA
Noise and vibration	• Following consultation with the EPA a detailed Operational Noise and Vibration Management Sub Plan (NVMP Operation) would be prepared in accordance with the NSW Government's guideline Environmental Criteria for Road Traffic Noise.	RTA
	• Monitor operational noise in accordance with the Operational Noise Management Sub Plan at adjoining properties to assess the effectiveness of noise mitigation measures, during operation of the upgraded MR92. In consultation with the EPA, assess the adequacy of the traffic noise mitigation measures at the end of one year from the commencement of operation with regard to the criteria specified in the Operational Noise Management Sub Plan. Should assessment indicate a clear trend in traffic noise levels, as a result of MR92 operations, which exceed Operational Noise Management Sub Plan defined noise goals, the Proponent would implement further mitigation measures in consultation with affected landowners and/or occupiers.	RTA
Waste minimisation & management	• Develop and implement measures, in partnership with NPWS and SCC to avoid, minimise, reuse/recycle, treat and dispose of waste streams during operation.	RTA
	• Have in place, prior to the commencement of operations, a procedure for dealing with waste along the route.	RTA
Hazards & Risks	• Co-ordinate with NSW Police to enforce speed limits and hold random breath tests along the upgraded MR92.	RTA
	• Erect appropriately visible signage to warn of the fire hazards and the fines for illegally disposing of rubbish along a roadside.	RTA

9 Conclusion

This Representations Report demonstrates that:

- statutory obligations have been met (Chapter 2);
- the RTA has considered the EIS (Chapter 2);
- the RTA has considered all issues arising from the representations and additional correspondence since the EIS and provided written responses to the issues (Chapters 3 and 4 and Appendix B);
- in responding to these issues and to other correspondence, additional studies have been undertaken which include consideration of likely impacts and the measures which might be used to mitigate these impacts (Chapters 6 and 7 and Appendices C and D) ;
- having considered the representations received, the RTA is satisfied that the Proposal as described in the EIS, would detrimentally affect certain aspects of the environment and as a result modifications have been undertaken within the original study corridor which reduce the identified impacts (Chapter 8 and Appendix D); and
- the impacts of the modification have, themselves, been considered and it has been determined that any other further environmental impacts as a consequence of these design modifications are minor (Chapter 8).

In consideration of the above, it is concluded that, if the Chief Executive of the RTA decides to proceed with the Proposal, that decision should be based on the Proposal as described in the Preferred Activity Report and inclusive of the mitigation measures and other commitments outlined in this Representations Report.

10 References

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Government Acts and Other Legislation

Aboriginal and Torres Strait Islander Heritage Protection Act, 1984 (Commonwealth)
Australian Heritage Commission Act, 1975 (Commonwealth).
Contaminated Land Management Act, 1997 (NSW).
Environmental Planning and Assessment Act, 1979 (NSW).
Environmental Planning and Assessment Regulation, 2000 (NSW).
Environment Protection and Biodiversity Conservation Act, 1999 (Commonwealth).
Fisheries Management Act, 1994 (NSW).
NSW Disability Discrimination Act, 1992 (NSW).
NSW Heritage Act, 1977 (NSW).
Land Acquisition (Just Terms Compensation) Act, 1991 (NSW).
National Parks and Wildlife Act, 1974 (NSW).
Native Vegetation Conservation Act, 1997 (NSW)
Noxious Weeds Act, 1993 (NSW).
Pesticides Act, 1999 (NSW)
Protection of the Environment Operations Act, 1997 (NSW).
Rivers and Foreshores Improvement Act, 1948.
Roads Act, 1993 (NSW).
Rural Fires Act, 1997 (NSW)
State Environmental Planning Policy No. 4 - Development Without Consent.
State Environmental Planning Policy No. 58 – Protecting Sydney's Water Supply.
Threatened Species Conservation Act, 1995 (NSW).
Waste Avoidance and Resource Recovery Act, 2001 (NSW).
Water Act, 1912 (NSW).

APPENDIX A

List of Respondents & Detailed Description of Issues

Table 1: List of Respondents

Surname	Given name	Organization	Rep. Number	Where issue is addressed
Adams	G.	Individual	307	3.1.1, 3.2.1
Adams	Kim	Individual	343	3.1.1, 3.2.1
Adams	C. E.	Tumut Shire Council	179	3.2.1, 3.2.5
Adriaanse	John	Individual	621	3.1.1, 3.2.1
Adrian	J. and Y.	Individual	406	3.1.1, 3.2.1
Aitken	Rick and Dianne	Individual	523	3.1.1, 3.2.1
Allen	Kristie	Individual	74	3.2.1
Allen	C. M. and N. D.	Individual	93	3.1.2, 3.2.1, 3.3.1
Allen	B. W.	Individual	243	3.1.1, 3.2.1
Allen	Kristie	Individual	273	3.1.1, 3.2.1
Allerton	J.	Individual	577	3.1.1, 3.2.1
Alston	Lenore	Individual	344	3.1.1, 3.2.1
Altha	M. R.	Individual	530	3.1.1, 3.2.1
Andrew	Robert	"Ataahua Farm" Ardnew Pty Ltd	71	3.2.1, 3.10
Andrew	R.	Sassafras Residents & Ratepayers Association	10	3.2.1
Andrews	Geoffrey	NPA Milton Branch	183	3.1.1, 3.2.1
Anonymous	Anonymous	Individual	112	3.2.1, 3.3.3
Anonymous	Anonymous	Individual	206	3.2.3, 3.3.4
Anonymous	Lee	Individual	455	3.1.1, 3.2.1
Anonymous	Anonymous	Individual	79	3.2.3
Anonymous	Anonymous	Individual	166	3.2.1
Anonymous	Anonymous	Individual	245	3.1.1, 3.2.1, 3.2.6
Anonymous	Anonymous	Individual	390	3.1.1, 3.2.1, 3.3.3
Archer	L.	Individual	585	3.1.1, 3.2.1
Ashford	Garry	Fosroc Mining Australia Pty Ltd	142	3.1.1, 3.3.1, 3.3.2
Asplin	A. and E.	Individual	629	3.1.1, 3.2.1
Austen	J.	Individual	275	3.1.1, 3.2.1, 3.3.1
Avosti		Individual	265	3.1.1, 3.2.1
Bailey	Terry and Diana	Individual	128	3.2.1
Baker	John	Individual	567	3.1.1, 3.2.1
Baker	G.	Individual	568	3.1.1, 3.2.1
Baldwin	Rob	Vincentia Golf Club Limited	55	3.1.1, 3.2.1, 3.2.5
Bange	Jane	Individual	191	3.1.2, 3.2.1, 3.3.3, 3.4.1
Baptist	W.	Individual	410	3.1.1, 3.2.1
Barnsley	L.	Individual	587	3.1.1, 3.2.1
Barratt	Terry	Australian Conservation Foundation	180	3.1.2, 3.2.1, 3.2.5, 3.3.2, 3.3.3, 3.3.4, 3.4.1, 3.4.2, 3.9
Barrett	W. D. and M.	Individual	296	3.1.1, 3.2.1
Baxter	Carrol	Individual	204	3.2.3, 3.3.4
Baxter	R.	Individual	207	3.2.3, 3.3.4

Baxter	A. P.	Individual	208	3.2.3, 3.3.4
Beauchamp	J.	Individual	467	3.1.1, 3.2.1
Beldom	Andy	Individual	402	3.1.1, 3.2.1
Bell	Keith	Individual	91	3.2.1
Bell	N. A. and D. A.	Individual	370	3.1.1, 3.2.1
Bell	John	Gunning Shire Council	196	3.2.1, 3.2.5
Bendall	Ian	Individual	593	3.1.1, 3.2.1
Bendall	Ian	Southern Cross Garages	75	3.2.1
Bennett	A.	Individual	65	3.2.3
Bennett	Faye	Individual	127	3.2.1
Bennett	T. and J.	Individual	153	3.2.1
Bennett	David	Individual	335	3.1.1, 3.2.1
Bennett	J. and L.	Individual	440	3.1.1, 3.2.1
Bennett	L.	Individual	596	3.1.1, 3.2.1
Bevan	Thomas	Individual	69	3.2.1
Bill	W. R.	Individual	351	3.1.1, 3.2.1
Binns	J. D.	Individual	86	3.1.1, 3.2.1
Birchley	Stephen	Navy Aviation System Program Office (Department of Defence)	181	3.2.1
Bisiker	Daniel	Individual	554	3.1.1, 3.2.1
Bjarnoe	R. and E. Y.	Individual	348	3.1.1, 3.2.1
Black	Colin	Individual	17	3.1.1, 3.2.1, 3.3.1
Blackmore	T. D. and A. M.	Individual	372	3.1.1, 3.2.1
Blundell	Raymond	Individual	347	3.1.1, 3.2.1
Boardman	J. B.	Individual	453	3.1.1, 3.2.1
Booth	Henry	Individual	342	3.1.1, 3.2.1
Borig	Paul	Individual	15	3.1.1, 3.2.1, 3.2.5, 3.3.1
Bray	Frances	Individual	190	3.2.1, 3.3.3
Brekelmans	John	Individual	412	3.1.1, 3.2.1
Brennan	Robert	Individual	454	3.1.1, 3.2.1
Brennan	D. B. and V. E	Individual	513	3.1.1, 3.2.1
Brine	J. F.	Individual	341	3.1.1, 3.2.1, 3.3.3
Brough	J. A.	Individual	325	3.1.1, 3.2.1
Brown	D. N. and D. A.	Individual	192	3.1.1, 3.2.1
Brown	Paula	Individual	278	3.1.1, 3.2.1
Brown	L. and E.	Individual	483	3.1.1, 3.2.1
Browning	Ray	Individual	468	3.1.1, 3.2.1
Bruce	A.	Individual	252	3.1.1, 3.2.1
Buddle	Gail and Steve	Individual	287	3.1.1, 3.2.1, 3.3.1
Buddle	N.	Individual	350	3.1.1, 3.2.1
Buik	John	Shoalhaven Industry & Business Association Inc	139	3.2.1, 3.3.2
Bunyan	Alan and Ann	Individual	82	3.1.1, 3.5.1
Bunyan	Alan and Ann	Individual	295	3.1.1, 3.2.1

Burban	J. R. and A. L.	Individual	340	3.1.1, 3.2.1, 3.3.1
Burgess	R. J.	Individual	309	3.1.1, 3.2.1, 3.3.1
Burman	Fred	Individual	18	3.2.1
Burns	A. J.	Individual	304	3.1.1, 3.2.1
Burton	D. G.	Individual	90	3.1.1, 3.2.1
Burton	D. G.	Individual	386	3.1.1, 3.2.1
Bush	F. D.	Individual	492	3.1.1, 3.2.1
Butler	Joan	Individual	457	3.1.1, 3.2.1, 3.3.1
Butson	L.	Individual	282	3.1.1, 3.2.1
Buttel	J.	Individual	311	3.1.1, 3.2.1
Buttle	Jan	Individual	377	3.1.1, 3.2.1
Byrne	B. J.	Individual	314	3.1.1, 3.2.1
Camiller	Peter	Individual	45	3.2.3
Campbell	Marcia	Individual	405	3.1.1, 3.2.1
Carr	Irene	Individual	557	3.1.1, 3.2.1
Chalker	J.	Individual	362	3.1.1, 3.2.1
Chappel	G.	Individual	374	3.1.1, 3.2.1
Charles	K. and M.	Individual	332	3.1.1, 3.2.1
Charter	B. and H.	Individual	574	3.1.1, 3.2.1
Cheetham	K.	Individual	286	3.1.1, 3.2.1
Chittick	Les and Shirley	Individual	81	3.2.1
Chittick	H.	Individual	267	3.1.1, 3.2.1
Cleary	D.	Individual	338	3.1.1, 3.2.1
Clegg	D.	Individual	368	3.1.1, 3.2.1
Clucas	D.	Individual	474	3.1.1, 3.2.1
Clulee	J. H.	Individual	371	3.1.1, 3.2.1
Coates	B. E.	Individual	613	3.1.1, 3.2.1
Cockrey	Jeff	Individual	107	3.1.1, 3.2.1
Cole	P. G. and N. E.	Individual	495	3.1.1, 3.2.1
Collisom	V.	Individual	481	3.2.1, 3.3.1
Collison	John and Annette	Individual	421	3.1.1, 3.2.1
Constance	Debbie	Cooma-Monaro Shire Council	214	3.2.1
Cook	K. and N.	Individual	595	3.1.1, 3.2.1
Cooper	M. S.	Individual	611	3.1.1, 3.2.1
Copp	Arthur and Barbara	Individual	248	3.1.1, 3.2.1
Corish	Terrie	Individual	316	3.1.1, 3.2.1
Cork	Maree and Gary	Individual	256	3.1.1, 3.2.1
Cory	Ed	Department of Transport and Regional Service	222	3.1.1, 3.2.1, 3.4.2, 3.5.1, 3.5.3
Costin	Max	Individual	415	3.1.1, 3.2.1
Coulthart	Rob	Individual	186	3.1.1, 3.2.1, 3.3.1
Cox	Ron and Pat	Individual	306	3.1.1, 3.2.1
Cox	Hope and Allen	Individual	419	3.1.1, 3.2.1
Cullen	S. T.	RAN Air Station	643	3.5.1

Dagger	K. J.	Individual	504	3.1.1, 3.2.1
Dale	John	Individual	489	3.1.1, 3.2.1
Dale	Peter	Riverina Regional Development Board	189	3.2.1, 3.2.5
Daley	Ron	Individual	237	3.1.1, 3.2.1
Daley	Annette	Individual	240	3.1.1, 3.2.1
Dallas	R.	Individual	253	3.1.1, 3.2.1
Dalton	L. J.	Individual	46	3.2.3
Dalton	B	Individual	84	3.1.1, 3.3.1
Dalton	B	Individual	85	3.1.1, 3.2.1
Daly	Graham	Canopy Native Forest Committee	233	3.1.2, 3.2.1, 3.3.2, 3.3.3, 3.4.1, 3.4.3, 3.12.2
Davey	Brian	Individual	445	3.1.1, 3.2.1, 3.3.1
Davidson	J.	Individual	157	3.2.1
Davidson	T.	Individual	404	3.1.1, 3.2.1
Davidson/Soeriyadi	Cath/Rhonda	Individual	571	3.1.1, 3.2.1
Davies	D. I.	Individual	111	3.2.1
Davies	D. and J.	Individual	357	3.1.1, 3.2.1
Davies	D. I.	Individual	542	3.1.1, 3.2.1
Davies	Ron	Tallaganda Shire Council	58	3.1.1, 3.2.1, 3.2.5, 3.3.1, 3.4.1, 3.10
Davies	Ron	Tallaganda Shire Council	229	3.2.1, 3.2.3, 3.5.3
Davis	Greg	Individual	379	3.1.1, 3.2.1
Davis	Karen	Individual	442	3.1.1, 3.2.1
Davis	Pat and Bruce	Individual	534	3.1.1, 3.2.1
Davoren	M.	Individual	392	3.1.1, 3.2.1, 3.3.1
Day	John	Individual	164	3.2.1
Day	John	Individual	408	3.1.1, 3.2.1
Dean		Individual	524	3.1.1, 3.2.1
Deans	Andrew	Individual	480	3.1.2,
Denman/Joyce	V./N.	Individual	19	3.2.3
Denovan	H.	Individual	496	3.1.1, 3.2.1
Dent	Barry	Individual	80	3.2.1
Deys	Brenda	Individual	573	3.1.1, 3.2.1
Dingwall	Tim	Individual	121	3.2.3
Dixon	A. and F.	Individual	155	3.2.1
Donaldson	Gloria	Individual	270	3.1.1, 3.2.1, 3.3.1
Dorrell	Rosemary	Individual	333	3.1.1, 3.2.1
Douglass	Bruce and Sandra	Individual	37	3.2.3
du Plessis	Richelieu	Individual	114	3.2.1
Dubbin	B. S. and A. R.	Individual	605	3.1.1, 3.2.1
Dudley	Fred	Individual	355	3.1.1, 3.2.1
Dunne	J. E.	Individual	461	3.1.1, 3.2.1
Dunnett	Heather	Individual	4	3.2.1
Dunstan	B. A.	Individual	397	3.1.1, 3.2.1

DuRietz	Bernie	Individual	285	3.1.1, 3.2.1
Dyer	Syd	Individual	387	3.1.1, 3.2.1
Eades	Cherrill	Individual	633	3.1.1, 3.2.1
Easton	H. and J.	Individual	260	3.1.1, 3.2.1
Edwardes	N.	Individual	435	3.1.1, 3.2.1
Edwards	Judith	Individual	628	3.1.1, 3.2.1
Egge	Maurice	Individual	384	3.1.1, 3.2.1
Elliot	Norma	Individual	443	3.1.1, 3.2.1
Elliott	L. G.	Individual	471	3.1.1, 3.2.1
Ellis	Colleen	Individual	52	3.2.3
Ellis	Arnold	Individual	62	3.1.1, 3.3.1, 3.3.2
Ellis	Michael	Cardinia Shire Council	141	-
Ellison	W. P.	Yarrowlumla Shire Council	218	3.2.5
Emblen-Reeves	Kim	Individual	507	3.1.1, 3.2.1
Emery	Tony	Soilco Pty Ltd	188	3.2.1
Emett	Eileen	Individual	602	3.1.1, 3.2.1
Emett	Jim	Individual	603	3.1.1, 3.2.1
Evans	Cheryl	Individual	26	3.2.3
Evans	A. and H.	Individual	97	3.2.1, 3.11.1
Evans	A. and H.	Individual	331	3.1.1, 3.2.1
Evans	Julie	Individual	526	3.1.1, 3.2.1
Everingham	J.	Individual	329	3.1.1, 3.2.1
Eyles	L. P. and N. B.	Individual	154	3.2.1
Falconer	D.	Individual	510	3.1.1, 3.2.1
Farmer	James	Individual	274	3.1.1, 3.2.1
Faulkner	Terry and Susan	Individual	50	3.2.3
Faulks	Stan	Individual	626	3.1.1, 3.2.1
Faulks	Elizabeth	Individual	627	3.1.1, 3.2.1
Ferguson	Ian	Individual	459	3.1.1, 3.2.1
Fersterling	Karl	Individual	149	3.2.1
Fielding	M.	Individual	43	3.2.3
Finkernagel	John	Individual	170	3.2.1, 3.2.2, 3.3.4, 3.10
Finlay	W.	Individual	203	3.2.3, 3.3.4
Finlayson	B. P.	Individual	565	3.1.1, 3.2.1
Fisher	Jane	Individual	76	3.2.3
Fitzell	B. W.	Individual	555	3.1.1, 3.2.1
Fitzgerald	Bea	Individual	231	3.1.1, 3.2.1, 3.8.3, 3.10
Fletcher	James and Shirley	Individual	327	3.1.1, 3.2.1, 3.3.1
Fletcher	V. K.	Duke Energy International	176	3.2.1, 3.5.1, 3.6, 3.7.1, 3.11.1, 3.12.1, 3.14
Flood	L.	Individual	487	3.1.1, 3.2.1
Florence	Ivan	Individual	619	3.1.1, 3.2.1
Florence	Jim	Shoalhaven Bicycle User Group	116	3.5.1
Flynn	Joy and Bob	Individual	614	3.1.1, 3.2.1

Foley	A. J.	Individual	520	3.1.1, 3.2.1
Fordyce	Trudy	Individual	472	3.1.1, 3.2.1
Foster	Warwick	Individual	199	3.2.3, 3.3.4
Fragar	C. W.	Individual	444	3.1.1, 3.2.1, 3.3.1
Frampton	C.	Individual	290	3.1.1, 3.2.1
Frampton	P.	Individual	291	3.1.1, 3.2.1
Fraser	George	Individual	522	3.1.1, 3.2.1
Freeman	F. W. and M. A.	Individual	610	3.1.1, 3.2.1
French	Graham	Individual	2	3.2.1
Gage	Neil	Individual	100	3.2.1
Gage	Neil	Individual	486	3.1.1, 3.2.1
Galea	Vic	Transgrid	220	3.8.1
Garel	Paul	Individual	322	3.1.1, 3.2.1
Gash	Joanna	Member for Gilmore	641	3.5.1
Gatenby	T. and C.	Individual	528	3.1.1, 3.2.1
Giles	J.	Individual	167	3.2.1
Giles	W. J.	Individual	168	3.2.1
Gilmore	Judith	Individual	549	3.1.1, 3.2.1
Girdlestone	G.	Individual	623	3.1.1, 3.2.1
Gliech	Peter	Individual	601	3.1.1, 3.2.1
Goodacre	E.	Individual	505	3.1.1, 3.2.1
Goodburn	Wendy	NSW Agriculture	211	3.7.1, 3.7.2
Gordon	K.	Individual	569	3.1.1, 3.2.1
Gould	Narelle	Individual	484	3.1.1, 3.2.1
Gowley	John	Individual	490	3.1.1, 3.2.1
Graham	K.	Individual	323	3.1.1, 3.2.1, 3.3.1
Graham	Stuart	Individual	398	3.1.1, 3.2.1, 3.2.5
Gray	G.	Individual	162	3.2.1, 3.11.2
Gray	Rosemary	Individual	503	3.1.1, 3.2.1
Green	K. D.	Individual	250	3.1.1, 3.2.1
Green	Richard	Individual	509	3.1.1, 3.2.1
Greig	B.	Individual	553	3.1.1, 3.2.1
Griffiths	Philip	Individual	552	3.1.1, 3.2.1
Grunsell	Allen	Individual	488	3.1.1, 3.2.1
Gurdenning	Barry	Individual	403	3.1.1, 3.2.1
Hall	H.	Individual	89	3.1.1, 3.2.1
Hall	June	Individual	268	3.1.1, 3.2.1
Hall	J.	Individual	407	3.1.1, 3.2.1
Hallam	B. and D.	Individual	433	3.1.1, 3.2.1
Halliday	M. E.	Individual	499	3.1.1, 3.2.1
Hammill	Philip	Individual	5	3.2.1
Hammond	Joyce and Ian	Individual	399	3.1.1, 3.2.1, 3.2.5
Hancock	Shelley	Member for South Coast	636	3.2.1
Hanlon	Brian	Hanlon Windows	140	3.2.1

Hannon	Julie	Individual	12	3.2.1
Hansen	Phil	Mulwaree Shire Council	146	3.1.1, 3.2.1, 3.2.5
Harris	M.	Individual	156	3.1.1, 3.2.1, 3.2.2
Hattley	Phil	Individual	572	3.1.1, 3.2.1
Hatton	John	Lady Denman Heritage Complex Huskisson Inc	228	3.10
Havyes	J. L.	Individual	475	3.1.1, 3.2.1
Hawkins	Ken	Individual	393	3.1.1, 3.2.1
Haydock	J.	Individual	476	3.2.1, 3.3.1
Heald	Jason	Individual	356	3.1.1, 3.2.1
Hecht	Gunnel	Individual	51	3.2.3
Heffernan	Jim	Individual	67	3.2.3, 3.3.4, 3.8.5, 3.10, 3.14
Heffil	John	Individual	334	3.1.1, 3.2.1
Hemens	Adrian	NSW Fisheries	217	3.7.2, 3.13
Henderse	Paul and Carolyn	Individual	288	3.1.1, 3.2.1
Henderson	David	Individual	234	3.1.1, 3.2.1, 3.5.1
Henderson	Gai	Individual	637	3.2.1
Henning	Mark	Shoalhaven Mill	136	3.1.1, 3.2.1, 3.3.1
Henry	Athol	Individual	579	3.1.1, 3.2.1
Hereward	K. E.	Individual	321	3.1.1, 3.2.1
Herne	Wilhelmina	Individual	345	3.1.1, 3.2.1
Herrott	Charles	Individual	434	3.1.1, 3.2.1
Hersovitch	Matthew	Individual	119	3.2.3
Hicks	Geoff	Individual	518	3.1.1, 3.2.1
Hicks	Barry	Individual	615	3.1.1, 3.2.1
Hide	Brian	Individual	259	3.1.1, 3.2.1
Hill	Ted	Individual	466	3.1.1, 3.2.1
Hilliar	Ian	Individual	78	3.2.1
Hilliar	Ian	Individual	527	3.1.1, 3.2.1
Hillier	Rebecca	Individual	77	3.2.3
Hilyard-Smith	M.	Individual	358	3.1.1, 3.2.1
Hindle	L.	Individual	122	3.2.3
Hindle	J. M.	Individual	123	3.2.3, 3.8.4
Hodgkinson MP	Katrina	Member for Burrinjuck	56	3.1.1, 3.2.5, 3.3.1
Holecek	D.	Individual	101	3.2.1
Holecek	D. and S.	Individual	516	3.1.1, 3.2.1
Holland	Sally	Individual	588	3.1.1, 3.2.1
Hollis	John	Individual	385	3.1.1, 3.2.1
Homprey	Colin	Individual	624	3.1.1, 3.2.1
Honeymann	M.	Individual	583	3.1.1, 3.2.1
Hood	W. F.	Individual	326	3.1.1, 3.2.1
Hopewell	Colleen	Individual	566	3.1.1, 3.2.1
Houselander	Joyce	Individual	158	3.1.1
Houselander	J.	Individual	422	3.1.1, 3.2.1

Howe	Dawn	Individual	396	3.1.1, 3.2.1
Hulland	Hilda and Reg	Individual	416	3.1.1, 3.2.1
Hulm	P.	Individual	531	3.1.1, 3.2.1
Hume	D.	Individual	497	3.1.1, 3.2.1
Hush	Thora	Individual	449	3.1.1, 3.2.1
Ince	John	Individual	54	3.2.3
Ince	Jenny	Individual	66	3.2.3, 3.8.5
Irvine	Alex	Individual	300	3.1.1, 3.2.1
Isbister/Merdith	Vicki/Graham	Individual	469	3.1.1, 3.2.1, 3.3.3
James	F.	Individual	359	3.1.1, 3.2.1, 3.3.1
James	Mike	P.O.S.M (Point of Sale Material) Pty Ltd	137	3.2.1, 3.3.2
Jameson	J. and C.	Individual	539	3.1.1, 3.2.1
Jameson	Jill	Individual	638	3.2.1
Jeannenet	M.	Individual	642	3.2.1
Jeffree	John and Joan	Individual	425	3.1.1, 3.2.1
Johnson	Norma	Individual	381	3.1.1, 3.2.1
Johnston	George	Individual	263	3.1.1, 3.2.1, 3.2.5
Jones	A.	Individual	88	3.1.1, 3.2.1
Jones	Doris	Individual	96	3.5.3
Jones		Individual	277	3.1.1, 3.2.1
Jones	Doris	Individual	456	3.1.1, 3.2.1, 3.2.5
Jones	Trevor	NSW Environment Protection Authority	646	3.7.1, 3.8.2, 3.8.5, 3.13
Jordan	Burt	Individual	23	3.2.3
Jordan	Jeanette	Individual	49	3.2.3
Kale	John	Individual	161	3.2.1
Karr	J. R.	Individual	478	3.1.2, 3.2.1
Kaye	J. and B.	Individual	622	3.1.1, 3.2.1
Keary	Daniel	Sydney Catchment Authority	644	3.2.1, 3.7.2, 3.8.2, 3.13, 3.14
Keevers	Robert, Elizabeth and Malcolm	Individual	373	3.1.1, 3.2.1, 3.3.1
Kellett	W.	Individual	439	3.1.1, 3.2.1
Kelley	W. and I. A.	Individual	570	3.1.1, 3.2.1
Kelson	G. and E.	Individual	258	3.1.1, 3.2.1
Kennedy	D.	Individual	447	3.1.1, 3.2.1, 3.5.1
Kerr	Jennie	Individual	241	3.1.2, 3.2.1
Kerr	G.	Individual	501	3.1.1, 3.2.1
King	S. J.	Individual	482	3.1.1, 3.2.1, 3.3.1
Kloot	Michael and Debbie	Individual	44	3.2.3
Knight	Matthew	Individual	47	3.2.3
Knight	E. M.	Individual	104	3.2.1, 3.4.1
Knight	N. M.	Individual	303	3.1.1, 3.2.1
Knight	Lee	Individual	582	3.1.1, 3.2.1
Koster	Laurie	Global Defence	135	3.2.1

Kramp	T.	Individual	533	3.1.1, 3.2.1
Lafrance	B.	Individual	336	3.1.1, 3.2.1
Laird	Philip	Individual	640	3.3.2, 3.3.3, 3.5.3
Lambert	Olive	Individual	125	3.2.1
Lambert	Pat	Individual	163	3.2.1
Lambert	A. and S.	Individual	594	3.1.1, 3.2.1
Lamond	M. W.	Individual	428	3.1.1, 3.2.1
Lamrock/Nicholson	N/J	Individual	187	3.1.2, 3.3.2, 3.3.3, 3.4.1, 3.5.3, 3.8.2, 3.8.3
Lane	Samantha	Individual	389	3.1.1, 3.2.1
Larson	Ray and Alice	Individual	72	3.2.1
Law	B. and S.	Individual	608	3.1.1, 3.2.1
Lay	Margaret and Alan	Individual	246	3.1.1, 3.2.1
Lay	Milton	Shoalhaven Area Consultative Committee	178	3.1.1, 3.3.1
Laylor	B.	Individual	235	3.1.1, 3.2.1
Lee	James	Individual	25	3.2.3
Lee	Rose	Individual	95	3.1.2, 3.2.1
Lee	Brian and Helen	Individual	117	3.1.1, 3.2.1
Lee	Brian and Helen	Individual	473	3.1.1, 3.2.1
Lee	Rose	Individual	479	3.1.2, 3.2.1
Leece	Colin	Individual	148	3.2.4, 3.5.1, 3.7.1, 3.8.4, 3.8.5, 3.12.1
Leedham	Hugh	Individual	639	3.2.1
Leizmann	E.	Individual	315	3.1.1, 3.2.1
Lejsek	Gillian	Individual	575	3.1.1, 3.2.1
Lennon	W. E.	Individual	604	3.1.1, 3.2.1
Leod	N.	Individual	33	3.2.3
Lewis		Individual	281	3.1.1, 3.2.1
Lincoln	Gary	Individual	438	3.1.1, 3.2.1
Little	F. W. and M. R.	Individual	165	3.2.1
Little	Alfred	Individual	354	3.1.1, 3.2.1
Little	F. W. and M. R.	Individual	498	3.1.1, 3.2.1
Little	Karen	Individual	529	3.1.1, 3.2.1
Lockeridge	John	Individual	216	3.1.1, 3.2.1
Lockeridge	John	Individual	283	3.1.1, 3.2.1
Lockwood	Leslie	Individual	16	3.1.1, 3.2.1, 3.3.1, 3.10
Long	R.	Individual	589	3.1.1, 3.2.1
Lotze	G.	Individual	242	3.1.1, 3.2.1, 3.3.1
Love	B. T.	Individual	324	3.1.1, 3.2.1
Mackenzie	Phillip	Mirrabook Alpacas (NSW) Pty Ltd	60	3.2.1, 3.2.5
Madill	Ed	Jusbrooke Pty Limited	212	3.2.1, 3.2.2
Maguire	S.	Individual	124	3.2.3
Maguire	P. F.	Bark Tree Hotel	30	3.2.3

Malitz	Cheryl	Individual	376	3.1.1, 3.2.1
Mann	Jocelyn	NPWS South Coast Region Advisory Committee	147	3.3.4
Mannesing	D.	Individual	251	3.1.1, 3.2.1
Manning	Faye	Individual	284	3.1.1, 3.2.1
Manning	Barry	Individual	318	3.1.1, 3.2.1, 3.3.1
Many	R. and B.	Individual	426	3.1.1, 3.2.1
Marquis	A. J.	Individual	436	3.1.1, 3.2.1
Marshall	C.	Individual	294	3.1.1, 3.2.1
Marshall-Taylor	Gary	Individual	132	3.2.3, 3.4.1, 3.4.2, 3.5.3
Martens	Rene	RenMart Consulting (NSW) Pty Ltd	138	3.2.1
Martin	L.	Individual	173	3.2.1
Martin	John	Individual	255	3.1.1, 3.2.1
Martin	Ray	Individual	537	3.1.1, 3.2.1
Mather	D.	Individual	578	3.1.1, 3.2.1
Maybury	Glenn	Chamber of Commerce & Tourism Huskisson	225	3.2.1, 3.2.2
Mayer	Kerry	Individual	561	3.1.1, 3.2.1
Maynard	C. A. and E. M.	Individual	175	3.2.1
Maynard	C. A. and E. M.	Individual	185	3.2.1
Maynard	E. M.	Individual	493	3.1.1, 3.2.1
Maynard	C. A.	Individual	494	3.1.1, 3.2.1
McAnalley	Reg	Individual	563	3.1.1, 3.2.1
McCable	Moya	Individual	465	3.1.1, 3.2.1
McCallum	Joy	Individual	576	3.1.1, 3.2.1
McCann	Noel	Canberra International Airport	219	3.3.1, 3.3.2
McCartney		Individual	586	3.1.1, 3.2.1
McCleod	B. E. and J. L.	Individual	430	3.1.1, 3.2.1, 3.2.5
McCorkell	Gillian	Individual	297	3.1.1, 3.2.1
McCormack	John and Marilyn	Individual	485	3.1.1, 3.2.1
McCormack	J. and M.	ABBCO Fencing (Aus) Nowra	109	3.1.1, 3.2.1, 3.3.2
McCrae	Jeanette	Individual	83	3.1.1, 3.2.1, 3.3.1
McCrae	J.	Individual	525	3.1.1, 3.2.1
McCurdy	Shaunagh	Individual	94	3.3.1
McCurdy	Shaunagh	Individual	477	3.1.2
McDonald	D. E.	Individual	280	3.1.1, 3.2.1
McDonald	Aenes	Individual	317	3.1.1, 3.2.1
McDonald	B.	Individual	360	3.1.1, 3.2.1
McDonald	James and Kathleen	Individual	464	3.1.1, 3.2.1
McDonald	R.	Individual	618	3.1.1, 3.2.1
McGrath	Shirley	Individual	269	3.1.1, 3.2.1
McGuire	Ian	Individual	414	3.1.1, 3.2.1
McIlwain	R.	Individual	630	3.1.1, 3.2.1
McIver	P.	Individual	532	3.1.1, 3.2.1

McKee	Katherine	Individual	437	3.1.1, 3.2.1
McKelvey	J.	Individual	378	3.1.1, 3.2.1, 3.3.1
McKenzie	M. T.	Individual	463	3.1.1, 3.2.1
McKinnon	Colin	Individual	551	3.1.1, 3.2.1
McMahon	V.	Individual	337	3.1.1, 3.2.1
Mee	S. A.	Individual	320	3.1.1, 3.2.1
Melville	Wanda	Individual	87	3.1.1, 3.2.1, 3.2.5
Miles	Milton	Individual	276	3.1.1, 3.2.1
Milton	R.	Individual	616	3.1.1, 3.2.1
Mitchell	B.	Individual	634	3.1.1, 3.2.1
Mon	Walter	Individual	238	3.1.1, 3.2.1
Moore	Henry and Blanche	Individual	330	3.1.1, 3.2.1, 3.3.1
Moore	Jim	Individual	388	3.1.1, 3.2.1
Moore	Catherine	Braidwood Greens	215	3.2.6, 3.4.2, 3.5.3, 3.8.3
Moran	E. M.	Individual	625	3.1.1, 3.2.1
Morgan	J. G.	Individual	193	3.2.1
Morgan	J. G.	Culburra Beach Progress Association Inc	73	3.2.1
Morrison	Jean	Individual	239	3.1.1, 3.2.1
Mors	Jennifer	Individual	160	3.2.1
Mors	J.	Individual	635	3.1.1, 3.2.1
Moulie	M. M.	Individual	48	3.2.3
Muir	Geoffrey	Individual	24	3.2.3
Muir	Margaret	Individual	41	3.2.3
Muir	Keith	Total Environment Centre Group	118	3.1.2, 3.3.2, 3.3.3, 3.3.4, 3.4.1, 3.5.2, 3.9, 3.13
Muir	Keith	Colong Foundation for Wilderness	647	4.1.1, 4.3.1, 4.4.1
Muller	John	Individual	631	3.1.1, 3.2.1
Murphy	Steven	Individual	194	3.2.1, 3.2.2
Muscat	Christopher	Individual	519	3.1.1, 3.2.1
Mutch	G. A.	Individual	564	3.1.1, 3.2.1
Nelson	David	Individual	1	3.2.1, 3.5.1, 3.11.2, 3.14
Newing	T. C.	Individual	353	3.1.1, 3.2.1
Newton	Anne	Individual	521	3.1.1, 3.2.1
Nicholls	L.	Individual	369	3.1.1, 3.2.1
Nicolae	W. R.	Individual	22	3.2.3
Nielsen	Garry	Individual	59	3.2.1, 3.2.2, 3.2.4
Nolan	G.	Individual	200	3.2.3, 3.3.4
Northill	K.	Individual	432	3.1.1, 3.2.1
Nutt	Gwen	Individual	70	3.2.1, 3.3.2
Nutt	Gwen	Individual	364	3.1.1, 3.2.1
Nutt	E. C.	Individual	584	3.1.1, 3.2.1
Nye	Bob	Manildra Group	227	3.2.1
O'Connor	J. and P.	Individual	32	3.2.3

O'Dempsey	Lionel	Individual	500	3.1.1, 3.2.1
O'Donnell	H.	Individual	581	3.1.1, 3.2.1
Oke	V. A.	Individual	232	3.1.1, 3.2.1
Oliver	Eileen	Individual	151	3.1.1, 3.2.1
Osborn	L.	Individual	383	3.1.1, 3.2.1
Osborn	P. G. and J. C.	Individual	540	3.1.1, 3.2.1
Oweny	E.	Individual	452	3.1.1, 3.2.1
Pamenter	R. M. and E. R.	Individual	411	3.1.1, 3.2.1
Parr	Justin	Individual	38	3.2.3
Parr	Simon	Individual	39	3.2.3
Parsons	L.	Individual	8	3.2.1, 3.2.5
Parsons	L.	Individual	363	3.1.1, 3.2.1
Parsons	Stuart	Illawarra Regional Development Board	224	3.3.3
Partridge	Pamela	Individual	592	3.1.1, 3.2.1
Payne	Noel	Individual	448	3.1.1, 3.2.1
Pearl	Edward	Individual	313	3.1.1, 3.2.1
Penfold	Arthur	Individual	609	3.1.1, 3.2.1
Penkaitis	John	JPA Business Advisors and Chartered Accountants	113	3.2.1
Penny	Peter and Dierdre	Individual	607	3.1.1, 3.2.1
Perkins	R. and J.	Individual	299	3.1.1, 3.2.1
Pesch	J. J.	Individual	413	3.1.1, 3.2.1
Petryszyn	Olga	Individual	367	3.1.1, 3.2.1
Phillips	Allan	Individual	150	3.1.1, 3.2.1, 3.3.1
Phillips	Tom	Shoalhaven Tourism Board	223	3.2.1
Pickerim	Trevor	Individual	401	3.1.1, 3.2.1
Pickering	Charles	Individual	272	3.1.1, 3.2.1, 3.5.1
Pierson	R.	Individual	547	3.1.1, 3.2.1
Pinson	Allyson	Individual	172	3.2.3
Plusu	J. and H.	Individual	394	3.1.1, 3.2.1
Pole	T. A.	Individual	108	3.1.1, 3.2.1
Ponden	Harold	Individual	198	3.2.3, 3.3.4, 3.5.3
Pritchard	Brian and Gail	Individual	92	3.2.1
Pritchard	Brian	Individual	512	3.1.1, 3.2.1
Prosser	Lesley	Individual	266	3.1.1, 3.2.1
Prosser	M.	Individual	600	3.1.1, 3.2.1
Pugh	Phil	Individual	305	3.1.1, 3.2.1
Pullen	Greg	Shoalhaven Hockey Inc	213	3.1.1, 3.2.1
Pye	Hayeb	Individual	382	3.1.1, 3.2.1
Ravenscroft	J.	Individual	620	3.1.1, 3.2.1
Redden	Roy and Patricia	Individual	11	3.2.1
Redfern	Michael	Individual	53	3.2.3
Reeves	Alison	Individual	632	3.1.1, 3.2.1
Reynolds	T. P.	Individual	446	3.1.1, 3.2.1

Richards	Greg	Greg Richards & Associates Pty Ltd	9	3.4.1
Richardson	Janet	Individual	271	3.1.1, 3.2.1
Rigg	K. W. and W.	Individual	548	3.1.1, 3.2.1
Roberts	Di	Individual	68	3.2.3, 3.3.4, 3.5.3, 3.8.4
Roberts	Philip	Shoalhaven River Retreat	3	3.2.3, 3.8.4, 3.11.1
Robin	Geoff	South East Australian Transport Strategy Inc	221	3.2.1
Robinson	B.	Individual	105	3.1.1, 3.2.1
Robinson	B.	Individual	450	3.1.1, 3.2.1
Robinson	D.	Individual	470	3.1.1, 3.2.1
Rockley	J.	Individual	244	3.1.1, 3.2.1
Rogerson	H.	Individual	441	3.1.1, 3.2.1
Rolfe	Yvonne	Individual	13	3.2.3, 3.8.5
Rolfe	R.	Individual	14	3.2.3, 3.8.5
Rolfe	Jason	Individual	40	3.2.3
Rolfe	C. J.	Individual	451	3.1.1, 3.2.1
Ross	John	Individual	361	3.1.1, 3.2.1
Rouse	A.	Individual	257	3.1.1, 3.2.1
Rowe	Darryl	Individual	612	3.1.1, 3.2.1
Ruffle	R. and P.	Individual	544	3.1.1, 3.2.1
Russell	B. G.	Shoalhaven City Council	99	3.1.1, 3.2.1, 3.2.2, 3.3.4, 3.5.1, 3.10, 3.12.1, 3.14
Ryan	B.	Individual	159	3.2.1
Ryan	Reggie	Individual	201	3.2.3, 3.3.4
Ryan	B.	Individual	298	3.1.1, 3.2.1
Sammut	Louis	Individual	365	3.1.1, 3.2.1
Sanders	R. and T.	Individual	106	3.2.1
Sartori	R.	Individual	27	3.2.3
Saunders	Linda	Individual	103	3.1.1, 3.2.1
Saunders	Linda	Individual	302	3.1.1, 3.2.1, 3.3.1
Saunders	John	Individual	506	3.1.1, 3.2.1
Saunders/Moxham	Alison/Richard	Sassafras Nuts	171	3.2.4, 3.2.5, 3.3.2, 3.4.1, 3.4.2, 3.4.3, 3.5.1, 3.5.3, 3.7.2, 3.8.2, 3.8.4, 3.8.5, 3.9
Schaumann	Helga	Individual	559	3.1.1, 3.2.1
Schell	Tom	Individual	431	3.1.1, 3.2.1
Schultz	L.	Individual	558	3.1.1, 3.2.1
Schultz MP	Alby	Federal Member for Hume	143	-
Scraggs	R. W.	Individual	20	3.2.3
Searson	Phillip	Individual	328	3.1.1, 3.2.1, 3.3.1
Shea	E.	Individual	429	3.1.1, 3.2.1
Sheather	Bill	Individual	29	3.2.3
Shields	Tom	Individual	174	3.2.1
Shipton	A. and S.	Individual	427	3.1.1, 3.2.1
Simmons	Roy and Noelene	Individual	536	3.1.1, 3.2.1

Simpson	Rod	Individual	409	3.1.1, 3.2.1
Sippo	Bill	Individual	543	3.1.1, 3.2.1
Skidmore	J. F.	Kangaroo Valley Community Association Inc	144	3.2.1, 3.2.5, 3.8.2
Smith	K.	Individual	42	3.2.3
Smith	Bruce	Individual	580	3.1.1, 3.2.1
Smith	F. G. and E.	Individual	606	3.1.1, 3.2.1
Southwell	Noel	Individual	184	3.2.1
Southwell	Noel	Individual	648	4.2.1, 4.4.2
Spain	B. J.	Individual	590	3.1.1, 3.2.1
Spalding	J. M. and R. E.	Individual	262	3.1.1, 3.2.1
Spratt	Kay	Individual	131	3.2.1
Staker	Robert	Individual	120	3.2.1
Staker	Robert	Individual	279	3.1.1, 3.2.1
Steiner	Marie	Individual	462	3.1.1, 3.2.1
Stephen	R. and J.	Individual	502	3.1.1, 3.2.1
Stephenson	Alan	Individual	64	3.4.2
Stephenson	Alan	Individual	649	4.4.2
Stevens	Leanne	Individual	210	3.4.1, 3.4.2, 3.5.3, 3.8.1, 3.8.2, 3.8.3, 3.8.5, 3.12.1
Stockford	Lynette	Individual	21	3.2.3
Stonestreet	W. J.	Individual	511	3.1.1, 3.2.1
Sturgiss	Jim	Individual	126	3.2.1
Sturt	K.	Stuart's Coaches Pty Ltd	145	3.2.1
Stutchbury	Jan	Individual	292	3.1.1, 3.2.1
Sutcliffe	Barry	Livestock Transporters & Bulk Carriers Association	195	3.1.1, 3.2.1
Sutton	Ken and Mona	Individual	560	3.1.1, 3.2.1
Sweeney	M.	Individual	31	3.2.3
Tait	Don	Individual	458	3.1.1, 3.2.1
Tate	John	Individual	349	3.1.1, 3.2.1
Tayler	J. A.	Individual	375	3.1.1, 3.2.1
Taylor	Beryl	Individual	98	3.2.1
Taylor	J. A.	Individual	102	3.2.1
Taylor	Eunice	Individual	236	3.1.1, 3.2.1
Taylor	Barrie and Fay	Individual	556	3.1.1, 3.2.1
Temple	Rob	Individual	36	3.2.3
Temple	Colin and Betty	Individual	57	3.2.3, 3.8.3, 3.8.5
Temple	Russell	Individual	61	3.2.3
Temple	Bruce	Nerriga Schoolhouse Museum	63	3.2.3, 3.10
Thomas	Elizabeth and Mervyn	Individual	129	3.4.1, 3.5.3, 3.8.5, 3.12.2
Thomas	Shaun	Individual	202	3.2.3, 3.3.4
Thompson	M.	Individual	261	3.1.1, 3.2.1, 3.3.1
Thorby	Flo and Ross	Individual	395	3.1.1, 3.2.1
Thornley	Angela	Individual	545	3.1.1, 3.2.1

Toth	Julianne	Individual	617	3.1.1, 3.2.1
Tranter	Graham	Individual	110	3.2.1
Tuckerman	Stephen	Individual	339	3.1.1, 3.2.1
Turner	Lloyd	Individual	34	3.2.3
Turner	Susan	Individual	598	3.1.1, 3.2.1
Tweed	Graeme	Individual	28	3.2.3
Tweed	David	Individual	35	3.2.3
Tyler	Steve	Individual	264	3.1.1, 3.2.1
Tysoe	John	Individual	366	3.1.1, 3.2.1
Van Derlinden	Adriaan, Valerie and Leny	Individual	417	3.1.1, 3.2.1
Vine	John	Individual	130	3.2.1
Waddell	Alastair	Individual	424	3.1.1, 3.2.1
Wake	L. J.	Individual	541	3.1.1, 3.2.1
Walker	G. F.	Individual	515	3.1.1, 3.2.1
Walker	K.	Individual	562	3.1.1, 3.2.1
Wallace	Rodney	Rodney Wallace Consulting	197	3.2.1, 3.2.5
Walsh	Dennis and Doris	Individual	249	3.1.1, 3.2.1
Walsh	N. P.	Individual	352	3.1.1, 3.2.1
Walters	L. and P.	Individual	230	3.1.1, 3.2.1, 3.2.3
Walton	Gwen	Individual	423	3.1.1, 3.2.1
Ward	W. S.	Individual	289	3.1.1, 3.2.1
Ward	R. W.	Bega Valley Shire Council	177	3.2.1
Watson	Michael	Individual	209	3.2.3, 3.3.4
Weatherall	Terry	Illawarra Business Chamber	645	3.2.1
Weatherill	W. C.	Individual	169	3.2.1
Weatherill	W. C.	Individual	491	3.1.1, 3.2.1
Weatherstone	W.	Individual	391	3.1.1, 3.2.1
Weaver	B. A.	Individual	550	3.1.1, 3.2.1
Webb	Geoff	Individual	310	3.1.1, 3.2.1
Weidenhofer	K.	Individual	597	3.1.1, 3.2.1
Went	V. J. and A. J.	Individual	301	3.1.1, 3.2.1
White	G. E. and Y. D.	Individual	420	3.1.1, 3.2.1
Whitehead	Wayne	Individual	308	3.1.1, 3.2.1
Whiteoak	Bruce	Individual	380	3.1.1, 3.2.1, 3.3.1
Wiggins	Gwen	Sussex Inlet & Districts Community Forum	133	3.2.1
Williams	P. and J.	Individual	346	3.1.1, 3.2.1
Williams	R.	Individual	418	3.1.1, 3.2.1
Williams	L. D.	Individual	591	3.1.1, 3.2.1
Willis	Elaine	Individual	152	3.1.1, 3.2.1
Wilson	B.	Individual	514	3.1.1, 3.2.1
Wilson	Arthur	Shoalhaven Recycling	134	3.2.1, 3.3.2
Wise	Hilary	NRMA	6	3.2.1
Wiseman	Val and Merv.	Individual	508	3.1.1, 3.2.1

Wood	Terry and Leonie	Individual	182	3.2.1, 3.2.3, 3.5.1, 3.5.3, 3.7.1
Wood	Rob	Individual	293	3.1.1, 3.2.1
Wood	R.	Individual	400	3.1.1, 3.2.1
Woodham	Bev and Geoff	Individual	115	3.2.1, 3.2.3, 3.3.2
Woodham	Bev	Individual	599	3.1.1, 3.2.1
Woodsell	B. and J.	Individual	546	3.1.1, 3.2.1
Woodward	Rusty	Individual	247	3.1.1, 3.2.1
Wright	John	Individual	7	3.2.1
Wright	S.	Individual	205	3.2.3, 3.3.4
Wright	Catherine	Individual	226	3.2.1
Wright	W. J.	Individual	312	3.1.1, 3.2.1
Wright	June	Individual	319	3.1.1, 3.2.1, 3.3.1
Wright	Julia	Individual	538	3.1.1, 3.2.1
Wynn	Robert	Individual	535	3.1.1, 3.2.1
Young	G. C.	Individual	254	3.1.1, 3.2.1, 3.3.1
Young	R. C.	Individual	517	3.1.1, 3.2.1
Zelei	J.	Individual	460	3.1.1, 3.2.1

1 Biodiversity

1.1 Fauna

Bat fauna survey work was not undertaken when the EIS was prepared. The EIS states results of forthcoming bat surveys "would be reported to NPWS to assist with its consideration of concurrence of the proposal". This process precludes public review and comment upon the methods used, and any subsequent results, interpretations and conclusions. (9)

The NPWS Director-General's Requirements for the SIS, in August 2002, advised to survey the bat fauna along the road corridor during spring or summer, and to focus upon roost sites. This work was not carried out before the EIS was published, therefore any data, interpretations and conclusions are not open to public review. (9)

Chapter 12 of Volume 1 (p.12-1) states that "Threatened species potentially affected have been assessed, and an SIS prepared under the provisions of the Threatened Species Conservation Act, 1995 and in accordance with the requirements of the Director-General of the NPWS". This statement cannot be considered correct as a bat fauna assessment has not been included in the SIS, nor has any work been shown to focus upon roost sites, and amelioration of their potential loss. (9)

Chapter 12 (p. 12-16) lists "Threatened bats" without any specific scientific names. The Director-General lists five threatened species by name. The public is provided with a list of species that will be targeted after the review period has closed (p. 12-22). There are two names with incorrect spelling in this list. (9)

Under the subheading "Mitigation Measures", there is no information for public review of details of initial planning for the compensation of loss of bat roost sites, particularly in tree hollows. The EIS states result of the surveys "would be reported to NPWS to assist with its consideration of concurrence of the proposal". (9)

The proposed method for the bat fauna assessment, ensuring a focus on roost sites, does not appear in the EIS and therefore there is no opportunity for public review. (9)

Other threatened bat species should be addressed in the EIS including the Golden-tipped Bat *Kerivoula papuensis,* and the Yellow-bellied Sheath-tail Bat *Saccolaimus flaviventris.* Due to their unique roost and habitat requirements, targeted surveys should be used that differ from surveys of the majority of other bats. In particular, the Golden-tipped Bat requires quite unique methodology to ensure that presence/absence data is unbiased. The methods of the proposed bat survey methodology have not been noted in the EIS. (9)

I am concerned about the koala proof fence (SIS section 7.3) that is to be erected on both sides of the road west of Bulee Mountain. The EIS figure 6-3d shows a koala proof fence that is continuous across the entrance to Coolumburra Creek Road (also known as Douglas Paddocks Road). I object to a gate or any barrier across this road. There is the better option of building the fence down each side of the road to the first creek. If that will not provide a sufficient barrier to the koalas, then a concrete bridge spanning the creek should carry the fence further from the road and provide an underpass for the koalas. (58)

What provisions will be made to avoid the native animals being killed with the increased traffic? If it is to be under-road crossings, there should be several. (104)

Apart from koala underpasses, specific purpose wildlife underpasses are dismissed "because the land is too flat". The EIS states if no remedial measures are undertaken it is almost certain a large number of native animals will be killed in the first few years of operation. However, after that time the local wildlife populations are assumed extinct and it may be that a considerable number of wildlife kills will continue. The SIS and EIS should have identified all wildlife corridors not just those for endangered species and assessed the relative significance of these corridors so that mitigation could be considered to ensure local wildlife populations are preserved. As an example, the road could be built up with additional fill and underpasses constructed to retain key wildlife corridors. (118)

The proposed alignment will degrade the national park through increased road kills. (129)

The increased traffic and speed through the Morton National Park will result in a high rate of road kill. Equally concerned for the wildlife and occupants of vehicles who will travel this road. Each time an animal ventures onto the road there is potential for a fatal accident for one or both parties. (132)

Another concern is running a road suitable for heavy transport through a National Park Species whether they be rare, endangered or common will be killed and their ecosystems threatened by this road. Increased traffic will undoubtedly cause accidents with vehicles travelling at speeds where they will simply not be able to avoid collision with wildlife. The EIS has not fully addressed this matter apart from some discussion on endangered species. (171)

The ecology of the Sassafras area, with its diverse ecosystems, availability of water, pastures and forest habitat, creates a concentration of marsupials and bird life. No consideration has been given to the provision of underpasses for these animals and it is not adequate to dismiss their needs based simply on the fact that they are not threatened or endangered species. It is recommended the RTA work with the community to assess the diversity and magnitude of wildlife populations at Sassafras, in order to establish a common benchmark that can be used to monitor these populations should the road be upgraded. Many of these animals need to cross the current road alignment and in some places even have their burrows adjoining the road. (180)

The proposed mitigation measures to protect Koalas west of Bulee Mountain are contradictory and likely to be limited in their effectiveness. It is proposed in the EIS that a Koala proof fence is erected and that signs also are erected alerting motorists to the possibility of Koalas being on the road. If the fence were Koala proof, why would there be Koalas on the road? Signs are not an effective mitigation measure for protection of any wildlife, as they don't really affect motorists' driving behaviour. There is a low likelihood that a fence will be totally effective in keeping Koalas off the road, but it will almost certainly cause some

disruption to the movement of the animal throughout its habitat (which the road bisects). Although limited reference is made on pages 5-22 and 6-60 of the EIS that two proposed bridges in the Bulee Mountain area would be suitable for use as a fauna crossing, there is no discussion of underpasses in the section on mitigating measures. Planting suitable habitat trees close to the road may be a long-term measure for assisting Koala movements, but the EIS is silent on this matter. Concurrence should be withheld until these issues are more fully considered. (180)

A commitment has been made to carry out summer 2002/2003 surveys for threatened bats and the Eastern Pygmy Possum. It would seem appropriate to also delay these surveys until the following summer. (180)

It is inevitable that large numbers of native animals will be killed as a direct consequence of upgrading the road. And yet no mitigating measures are proposed. Monitoring of wildlife kills is not a mitigating measure. It's like "shutting the gate after the horse has bolted"! What is the point of counting deaths? What actions will flow from such reports? The EIS is silent on the one mitigating measure that may be somewhat effective, i.e., wildlife underpasses! The proponents should be required to address this measure and provide an adequate explanation if it is not feasible. An inadequate budget allocation should not be accepted as reason for rejecting this measure. (180)

There appears to be considerable possibility of traffic accidents involving Emus on the Sassafras plateau. The EIS is, however, silent on this issue. Consideration needs to be given to measures to reduce the possibility of wildlife deaths and improving safety for motorists on the plateau. A speed limit of 60 kph would be an important measure and cooperative fencing improvements with property owners would also be a measure worth pursuing. Eradication of all Blackberry infestations along the road reserve would reduce significantly the efforts of emus to breach the fences during the fruiting season of this introduced weed. (180)

Many hundreds of wombats live in the Sassafras range area and they cross the roadway during the night and early mornings. No studies are available on wombat crossing locations in the SIS and EIS. (187)

Very concerned about the road kill from a road bisecting Morton National Park. No purpose built animal underpasses is included in the plans for the upgrade. (191)

The upgrade and widening of the road will have a dramatic effect on certain species and a considerable effect on other species. There will be the loss of habitat and the increase in vehicles will have a horrific effect in the rise of "road kill". Native animals are either forced out or run over. (210)

The proposed upgrade will unquestionably result in a large increase in road kills of native wildlife. It is understood there is no provision for wildlife underpasses and this would only be a partial solution to the problem. (233)

The fact that the entire park area through which Main Road 92 traverses had recently been subjected to two bushfires and drought renders the fauna surveys results of little predictive value. (647)

The fauna expert did not attempt to identify wildlife corridors. (647)

The Proposal contains no specific purpose wildlife underpasses. (647)

The proposed road upgrade will result in more wildlife kills and serious accidents in direct proportion to the increased speed and frequency of traffic. These impacts have not been considered in the supplementary fauna impact information. (647)

We believe the impacts from road kills will eliminate any road safety benefit from upgrading the road. (647)

1.2 Flora

6km from Hames Road on the left side of the road, 100 metres east of an on the opposite site of the road to the Telstra sub-station, an orchid (*Calochilus grandiflorus*) exists which is said to occur no further south than Gosford and this is one of only two known sites in the 4660 square km of the Shoalhaven Shire. (64)

9.2km from Hames Road on both sides of the road are the largest population of *Pterostylis daintreana* in NSW, a small, multi-flowering terrestrial species. The Eastern Gas Pipeline is quite close to the northern population and this section has already been degraded from work associated with this project, leaving only a small island of vegetation in remnant habitat. A species of Genoplesium is also in situ with this island. (64)

10.2km from Hames road and 100m east of the Turpentine and Braidwood Roads intersection within the bush on both sides of the road are *Pterostylis tunstallii, Pterostylis nutans, Pterostylis otusa, Pterostylis longifolia, Pterostylis grandiflora, Corybas aconitiflorus* and *Cymbidium suave*. (64)

The survey of Site 4 in the EIS (Appendix 3, pages 43/44) lists four species but fails to list *Pterostylis tunstallii.* This is the site of the original discovery of this species. This area of habitat has been gradually reduced in area over recent years and is a sensitive area due to the Eastern Gas Pipeline. I have seen a *Chiloglottis* species on the sides of this steep gully but do not know what other orchids might be in situ. (64)

The concern in the Bulee Mountain section is the construction of the road extension and the obvious damage that will be rendered to the gully over which it will be formed. (64)

A minimum of three years is required for a thorough SIS, preferably a five-year period. This timeframe will ensure features such as the current lengthy drought and bushfires will be taken into account when assessing flora and fauna. (64)

Another area of concern is on the northern side at the beginning of the ascent to Sassafras where the road will be realigned. Many orchids are in the area mentioned but in Sites 12/13 only five species were noted. (64)

None of the orchid species mentioned are listed as either Endangered or Vulnerable; however, this is not a valid reason for their destruction. (64)

I would like to see the lovely old trees that line the road through Sassafras preserved. Planning for a 60km/hr speed limit through this area should allow for a road with a decreased width resulting in minimal impact on the local environment. (132)

The avenue of trees at Sassafras provides an important habitat, vegetation corridor and rural amenity significant to the community's village character, and is an important functional windbreak that contributes to the operation of our horticultural enterprise. (171)

The losses to this side of the road will be devastating. The losses on the southern side of the road occur where the vegetation is much richer than on the northern side. Not only is this un-even handed in terms of tree loss to our property as opposed to that of our neighbour to the north, it appears to be in direct conflict with the agreement from SKM representatives that grazing land would be preferred over horticultural concerns given the length of time taken to return to current levels of land use. (171)

The impact assessment and mitigation measures for the vulnerable species *Eucalyptus langleyi* are very poorly addressed. The major failings in this regard is a lack of discussion on the cumulative impact on the species at Chainage 1000 (given the significant impact that the gas pipeline had at this site some 18 months ago), and the complete disregard of the possibility of realignment of the road to avoid this site altogether. It is also possible that the proponent has underestimated the number of plants likely to be affected. Concurrence to this road-upgrading proposal should not be given without these major failing having been adequately addressed. (180)

The Proposal will adversely impact on the natural environment. (180)

The Species Impact Statement (SIS) draws attention to the high conservation value of the tall eucalypt forest (*Eucalyptus cypellocarpa / radiata / fastigata*) and temperate rainforest habitats of the Sassafras plateau. The artist's impression in Figure 6-3b (page 6-56) of the EIS document makes it very clear that a considerable number of trees will be removed. There is no proper documentation of the extent of the impact and there is no discussion of the likely long-term impacts arising from disturbance of root systems of the remaining trees, and no discussion of the likely impacts resulting from changes to drainage and runoff characteristics. The relative impact of the upgrade can be expected to be significant given that much of the plateau has been cleared and the Eucalyptus and rainforest communities reduced to fragments of their former extent. The best way of avoiding impacts may be to deviate the road, although caution is required in this regard as there is no certainty that other environmental values may be put at risk as a consequence. There is, however, no discussion of this option, which negates any possibility of a meaningful consideration of this issue. Given the high conservation importance of these forest habitats, much more work is required on assessing the impacts and appropriate amelioration measures of the upgrade through Sassafras. (180)

The EIS commits the proponent to carrying out surveys during the summer months of 2002/2003 on two threatened orchid species, i.e., *Cryptostylis hunteriana* and *Diuris aequalis*. It is unlikely that any survey has been possible up until now given the drought and bushfire impacts in the area traversed by the road. Even if some work has been carried out, the results would be unreliable given the above events. Surveys will therefore have to be put off until next summer and concurrence for the project should not be considered by the NPWS until this work has been carried out and the results fully considered. It may be possible that a further SIS may be necessary if either of these two species is discovered. The proponent should commission an appropriately qualified and/or experienced consultant to carry out the surveys. (180)

The loss of vegetation, particularly mature natives trees along this property and to the east is of particular concern and I do not want to see these lovely old trees lost in the upgrade. These large trees are not great in quantity in this part of Sassafras due to logging and it is important to preserve the small pocket of rainforest on the property neighbouring on the west. Placing the road further north than at present would endanger these trees. (210)

There is a thin buffer of vegetation hiding the presence of the Eastern Gas Pipeline. Presumably, this buffer will be removed for construction of the upgrade thus leaving a huge expanse of tarmac and grassed area through these National Park and wilderness areas. Such a result is unsuited to the area as it further emphasises the carving up of this wild area. (215)

As well as endangered orchids and other flora and fauna, there are other native flora species, including Blandfordia Sp (Christmas Bell), *Actinotis helianthi* (Flannel Flower) and *Telopea speciosissima* (NSW Waratah) that occur along the roadside, which will suffer if the proceeds as proposed. (215)

The EIS indicates BM4 would result in the loss of 18 *E triflora* and 12 *D crispii* plants and BM5 would result in the loss of 8 *E triflora* plants. Mitigation for these losses is not proposed. (222)

Figure 6 of the SSIS failed to show the *Dillwynia crispii* impacts on route option BM5 which has been omitted. (648)

During a recent field trip (7/10/03) an unnamed species of *Prasophyllum* was located on both sides of the road, immediately to the east of the Telstra sub-station. These plants are within one metre of the current road alignment and if any road works were undertaken they would certainly be destroyed. (649)

Given recent drought conditions, *Prasophyllum* and other terrestrial orchid species may not have flowered. As such the Telstra sub-station area must receive the most sincere and detailed attention. (649)

An area of concern is at the base of the hill at Sassafras. On 13-10-03 this area was visited and *Petalochilus mentions* was located which had not previously been seen here. This species was only formally names in 1999 and has a limited distribution

and is believed to exist in small numbers only. A small population of 12 plants is located approximately 10m off the road on the northern side. (649)

1.3 Weeds

Concerned about the risk of Phytophthora spread into this orchard and there is no acknowledgment of this risk in the EIS. It is well known that Phytophthora thrives in areas of poor drainage and is frequently associated with the disruption associated with road works. The RTA is expected to achieve a management plan for drainage and contaminant disposal as failure to do so may be devastating to this existing horticultural business. (171)

The greater traffic and improved access will increase environmental pressures on the national park adjacent to the road. The spread of weeds can be expected to grow. (233)

2 Construction

2.1 General

Quarrying at Stony Hill for sandstone sub-base should not be considered as it will damage and degrade the existing minimally cut fire trail out to Stony Hill, if the trail has to be "improved" to take heavy earth moving vehicles and machinery out to the quarry. (148)

During road construction, the effects of rigging the sandstone close to the pipeline trench will need careful monitoring and discussion prior to work commencing. This construction method could result in pipeline coating damage. (176)

Section 6.12.1 lists the use of steel drum vibrating rollers. Based on concerns listed above, this item of equipment needs qualification on any agreed usage by Duke Energy near the pipeline. (176)

More details are required on the construction and compaction methods to be employed in the major cuttings required for the Bulee Mountain section, as this is very close to the horizontal directional drill of the pipeline, which was undertaken to avoid impact on Bulee Gap. This could be a major constraint to building the road upgrade as proposed depending upon the construction methods and design of structures being envisaged in this area. (176)

It should be noted that the Eastern Gas Pipeline was susceptible to damage from vibration during construction and a condition highlighted was that no vibrating rollers could be used for road compaction within 20 metres of the pipeline. This does not appear to have been noted in the EIS and will be a constraint that needs further consideration. (176)

Concerned about access to the road during construction. This is especially the case with the Bulee Mountain section of the upgrade. (182)

The EIS outlined mitigation measures for dust suppression that appear to be adequate. It should be noted however that dust not only impacts on water supply to rural housing as outlined but also impacts livestock and pasture on adjacent landholdings. Consideration should be given to implementing dust suppression measures for the entire project, not just in the vicinity of rural housing. (211)

Residences within 500 metres of construction works should be notified of noise works prior to construction commencing. (646)

Check suitability of all materials for road making purposes and environmental implications on the quality of the materials, such as whether it may generate acidic drainage. (646)

2.2 Water quality

Any drainage works associated with the construction of the new road must aim to minimise any detrimental impacts to properties at Sassafras. (171)

It is indicated that a soil and water management plan will be developed to manage soil erosion, sediment and water flows for the construction phase that is fully supported. Such plans should include mitigation measures to avoid siltation of adjacent pasture, contamination of dams for livestock and localised flooding across agricultural land. (211)

It is essential that the sedimentation and erosion control measures outlined in the EIS, relevant Technical Papers and Species Impact Statement, be thoroughly implemented. (217)

NSW Fisheries request a copy of the integrated Soil and Water Management Plan and Vegetation/Habitat Rehabilitation Plan prior to the commencement of any works. The proposed Water Quality monitoring program should be conducted independently and produce an annual report to be forwarded to NSW Fisheries during the construction phase. (217)

NSW Fisheries request accurate design detail on the main waterway crossings including Endrick River, Tianjara Creek, Boolijah Creek, Bainbrig Creek, Titringo Creek and Parma Creek if modification to the existing structures is required or new crossings proposed. (217)

It is essential that any development in the catchment of Tallawa Dam does not adversely affect the quality of the water in the reservoir. (644)

The SCA considers that at least for that part of the proposal located in the catchment of Tallawa Dam the outcome the RTA should achieve is an improvement in the quality of water. (644)

The proponent shall ensure that all appropriate soil and erosion and sediment control works are in place prior to any works with potential to cause soil erosion or generate sediment. Erosion and sediment protection measures shall also be in place before the commencement of any stockpiling activity. (644)

The proponent shall only construct sedimentation and erosion controls under this Approval in locations that satisfy the following criteria:-

- sites to be located within the project footprint assessed in the EIS;
- sites to be located with ready access to access tracks;
- sedimentation basins are not to be located within 100m of waterways unless adequate controls are implemented to protect water quality in case of overflows or otherwise agreed to by the SCA;
- sites are not to involve the utilisation or modification of any existing waterways;
- sites are to have low conservation significance of flora and fauna and they are not to require any clearing of native vegetation beyond that which must be cleared for the project in any case;
- if land is leased to enable construction of a temporary sediment basin, it shall be restored following construction to a level equal or better than the original condition;
- sedimentation basins on private land shall be fenced to minimise safety risks; and
- all controls are designed and constructed in accordance with the Department of Housing's Guideline Managing Urban Stormwater – Soils and Construction. (644)

During construction, an appropriately qualified soil conservationist shall be consulted regularly to undertake inspections of temporary and permanent erosion and sediment control devices to ensure that the most appropriate controls are being implemented and maintained in an efficient condition at all times and meet the requirements of any relevant or licence condition(s). (644)

Construction stage water quality structures shall be maintained for six months after construction or until revegetation has provided groundcover to at least 70% of the exposed ground surface (whichever is the shorter). (644)

The SCA considers that a condition should be included which specifically prohibits locating any work sites within close proximity of watercourses and other environmentally sensitive lands. Ideally work sites should be located on land which has been previously cleared of native vegetation. (644)

3 Consultation

3.1 Exhibition

More time for face-to-face consultation should have been provided. To only provide staff for one Saturday morning at Nerriga was inadequate. Staff should have been provided for Braidwood for one day as well. (1)

We went to see the EIS at the council and was advised the display had been removed and gone to the RTA. At the RTA there was no display, only a $25 purchase of a book was possible. Was very disappointed the EIS is not displayed as indicated in the brochure. (162)

3.2 Process

There is no mention of benefit or otherwise to Nerriga residents and its environs nor any assessment of the effect the diverted heavy vehicular traffic will have on Nerriga should the road pass through the village centre as proposed. People affected by MR92 should also be given some consideration. (3)

Appreciates the quick and efficient way the RTA contacted and consulted them for input into the MR 92 project. (97)

It is noted in EIS Volume 1 Appendix B Consultation Table (page 7) that contact was made 6 August 2002 and up to 10 September 2002 no responses were received. Following the Value Management Workshop, Duke Energy International met with the consultants to review the location of the Eastern Gas Pipeline with respect to the proposed road alignment. On 20 August 2002 a letter and large folder was sent to the consultants enclosing:-

- Environmental Monitoring Stations (EMS) along this section highlighting sensitive sites where photographs and notes were taken at defined intervals to monitor effectiveness of the erosion control, weed control program, effectiveness of revegetation, rehabilitation measures and general housekeeping of site facilities;
- the most recent photographs of EMSs;
- a list of ecologically sensitive areas known during the construction of the pipeline; and
- copies of Duke Energy International documents.

It is extremely disappointing that no recognition has been made of this input and that critical information relating to Duke Energy requirements to protect the EGP from these exchanges were not included in the EIS. (176)

4 Eastern Gas Pipeline

It is noted in EIS Volume 1, Part A2 that decisions will need to be made on land requirements outside the existing road reserve and especially within the region of Morton National Park. As the alignment in relation to the Eastern Gas Pipeline will need to be formally approved then this step must precede any finalisation on further land needs outside the existing road reserve. It is probable that further consultation will also be required under 2.7.1. (176)

Duke Energy will require a further task to the list of construction tasks shown in section 6.10.2, name a coating defect survey to be undertaken prior to construction and following road formation completion at RTA cost (but before road sealing) to ensure that the contractor has not damaged the pipeline coating. (176)

Neither materials nor machinery are to cross or be stored over the buried pipeline and all construction crossings are to ensure protection of the pipe. Where necessary, the area adjacent to the pipeline is to be marked with "No Construction Access". (176)

The positioning of major culverts, minor culverts and spill containment basins must ensure that the specific depth of cover is maintained when such structures cross the gas pipelines. Remedial actions need to be taken to ensure the risk profile is not impacted. (176)

Under AS 2885 the Australian Standard for high pressure pipelines of this nature, there is a requirement for a risk assessment to follow very specific guidelines and address a number of matters specific to gas pipeline operation. Duke Energy will require that those involved in the risk assessment review this section with Duke Energy personnel to ensure that all risks have been identified, assessed and control measures identified. (176)

5 EIS Documentation

The environmental issues associated with the alternative are not discussed in any detail in the summary brochure. To be convinced the correct decision has been made, the advantages and disadvantages of each alternative should be discussed in the summary brochure. (1)

The photomontage on page 13 over the EIS Project Overview shows wide-angle view of the road that appears designed to mislead the reader. The vehicle shown in the photomontage actually takes up almost the entire left hand lane. The road does not look wide enough for trucks if it is drawn to scale. Trucks would be in danger of smashing their side mirrors when passing. (67)

Prior to finalisation of the documents on public display, work was being undertaken on enhanced options for the preferred BM4 route. This work represented a significant upgrade to the current preferred alignment, with increased overtaking opportunities. It was understood this detail would be included in the EIS options but may have been deleted to meet externally imposed time restraints. (99)

A detailed estimate of costs has not been completed for the BM4-BM5 comparison. At a minimum a soundly based incremental benefit-cost ratio calculation for the two options is required. (99)

The EIS document does not allow a fair and equal comparison to be made, as by nominating BM4 as the preferred route, that route is automatically given a significant advantage. To compound this situation, the EIS does not contain a detailed concept drawing of BM5 in the Design and Profile section, as it does for BM4. Council has concerns that the comparison in the EIS for BM4 and BM5, in particular Table 5.9, omits critical information, reaches dubious conclusions, and is misleading. (99)

EIS Volume 1, Appendix B, page 3 refers to a comment from NSW Agriculture stating, "Did not want a repeat of the way in which the developers of Eastern Gas Pipeline designed or constructed their asset or the lack of contact with the land-holders". As this document is now a public record Duke Energy International is very concerned with the comments made. A very detailed EIS was developed as part of the approval process for this pipeline, followed by a very open Commission of Inquiry and the Department of Agriculture would have had ample opportunity to comment and for discussion. Duke Energy International seeks further contact with the NSW Agriculture. (176)

Duke Energy International believes that the EIS, while detailed in many areas, does not adequately address the significant implications that the road impacts will have for the Eastern Gas Pipeline. (176)

In EIS Volume 1, Part D8, there is no reference to the registered easement within the road reserve that contains the Eastern Gas Pipeline, nor the joint use of the road reserve as an energy transportation corridor. (176)

Section E20 includes a list of legislation, regulations and guidelines required to be referenced. Added to this should be AS 2885 and the Eastern Gas Pipeline Land and Roads Deed. A review should be undertaken to see if the NSW Pipelines Act and Pipelines Regulations should be included. (176)

It is stated in the EIS page 2-4 that RTA is seeking "an amendment to SEPP 58 which would have the effect of removing the consent requirement specified by clause 8 of that Policy". The SCA considers that this issue should be clarified as a matter of priority and would like to discuss this further with the RTA. (644)

6 Environmental Management

The proposal requires acquisition of 46.4 ha of national park and 33 ha of private land, all of which is "heavily forested and unoccupied". These lands will be affected by clearing for road works and sight lines on curves and to reduce traffic hazards. Whilst the EIS specifies environmental management, these works are not part of the detailed design concept in both the EIS and Technical Paper 2. The project cost estimates do not allow for property acquisition or environmental management but fully expend the available budget. (118)

The project was designed to meet a very tight budget and therefore the environmental management will range from inadequate to non-existent regardless of EIS reports or consent conditions. This lack of funding will affect rehabilitation of previously disturbed lands, closure of disused 4WD tracks and other bare areas, as well as the former road alignment. The sealed road will encourage weed invasion, as the soil in curbside areas will become more alkaline and nutrient rich due to contaminated run off from the asphalt surface. There is no budget for weed management. The evocation of national park lands for the road may be undertaken without adequate compensation. (118)

The EMP should include sufficient provisions for feedback of results into the on-going management of the site. (217)

An Environmental Management Representative should be appointed prior to and for the duration of the project. (644)

The construction contractor should have a demonstrated capability and experience in the implementation of an Environmental Management System and/or have a proven environmental management performance record. (644)

A Construction Environmental Management Plan and an Operational Environmental Management Plan should be prepared in consultation with SCA. The Construction Environmental Management Plan should include requirements for all liquid and solid wastes generated at site compounds to be removed off site and for fuel and chemical storage areas to be bunded and protected in accordance with EPA requirements. Copies of the plans should be provided to SCA. (644)

There needs to be an environmental monitoring program for the construction period with a report prepared every six months after commencement of construction and thereafter at six monthly intervals. Copies of these reports should be provided to the SCA. (644)

There needs to be an environmental monitoring program for the operational phase. Monitoring should occur for at least the first 2 years of operation but longer if necessary. A report should be prepared after 2 years and as necessary. Copies of these reports should be provided to the SCA. (644)

There needs to be an audit report produced 12 months and 5 years after the project is opened. The RTA should be required to act upon the recommendations contained in these reports. Copies of these reports should be provided to the SCA. (644)

There needs to be a flora and fauna management plan prepared for the construction and operation of the project in consultation with the SCA. The plan should include actions to ensure terrestrial and aquatic flora and fauna downstream of any stormwater outlet is not degraded. (644)

As part of the Construction and Operational EMPs, detailed Soil and Water Quality Management Plans shall be prepared in consultation with the SCA. The Plans shall be prepared in accordance with the Department of Housing's guideline Managing Urban Stormwater – Soils and Construction 1998, the RTA's Guideline for the Control of Erosion and Sedimentation in Road works and where appropriate, Department of Land and Water Conservation's Constructed Wetlands Manual. The Plans shall be prepared prior to construction or operation as appropriate. The Plans shall state that all stormwater runoff collected on-site during construction that is likely to be contaminated, shall be tested, handled and disposed of in accordance with the provisions of the Protection of the Environment Operations Act. (644)

The Environmental Management Plan (EMP) should include individual Environmental Control Plans for:

- Soil and Water Management including a site rehabilitation/re-vegetation plan;
- Erosion and Sediment Control Plan including dust suppression initiatives;
- Noise and Vibration Management Plan;
- Water Quality Management Plan for surface and ground water; and
- Pollution incident management procedures. (646)

The EMP must include the description of measures:

- to be implemented to minimise the generation of dust from the development.
- to be employed to minimise soil erosion and the discharge of sediment and other pollutant to lands and/or waters during construction activities; and
- to be implemented to minimise the potential to generate intrusive noise. (646)

Issues associated with other mobile facilities for concrete and bitumen that may be required, should be assessed and appropriate measures identified in the EMPs. The Noise and Impact Assessment, Air Impact Assessment and Soil and Water Management Technical Papers did not address these issues. (646)

Formally document proposed noise management measures to minimise noise impacts during the construction period in a Construction Noise Management Plan. (646)

The area between Endrick River and Nerriga needs careful soil and water management planning. (646)

A dedicated person must be available at all times for implementing plans of management, undertaking regular inspection regime and implementation of environmental awareness training for any contractors. (646)

7 Heritage

The preferred option has more ramifications for the heritage aspects of The Wool Road. In the re-alignment, will existing 19th century road construction be destroyed or buried? (16)

A "Conservation Management Plan will be prepared to guide the future Management of the remainder of The Wool Road". Does this apply to the whole Wool Road, or just the portion in the area of the MR92 and thus not including anything east of Princes Highway? (16)

In Nerriga, the large pine tree opposite the hotel and the Federation rock are both important landmarks to the community. They would be in the way if the upgraded highway were to go through Nerriga, however strong objections would be made to their removal. (58)

There are a number of historic and heritage value items in Nerriga that will be severely affected if a bypass is not constructed:

- Nerriga School House – Easy access and serenity of the place will be lost.
- Old wooden footbridge over the Bindi Brook – dwarfed or destroyed by proposed new highway.
- Historic cypress tree opposite hotel planted in 1954 – its removal or heavy pruning for the upgrade is unacceptable.
- Centenary of Federation Stone – removal or disturbance of this stone would be a tragedy.
- Nerriga itself – fine example of typical colonial village would be ruined. (63)

The EIS does not address the heritage value of building, monument or trees along the road through Nerriga. The Centenary of Federation stone and the old Cypress tree, which holds special significance to the people of Nerriga, would both be in the way of the upgraded road. (67)

There is no detailed heritage study and nothing about having a small part of the Wool Road preserved and the importance of this in the study. (71)

Main Road 92 is of historic significance. The heritage issues have implications beyond the relatively small section in the Bulee Mountain area, as the route in its totality has connection to the original "Wool Road" and upgrading will offer a raft of opportunities. No attempt is made in the EIS to explore and quantify the potential economic returns from capitalising on the European heritage features, which would further enhance the economic benefits of the project. (99)

The historic Wool Road should be retained as an example of our important European heritage. The retention of the old Bulee Gap section for future public display will result in the retention of a heritage item of regional significance. (170)

The Board of the Lady Denman Heritage Complex Huskisson is anxious to preserve the historical significance of the Wool Road. A recent study clearly defines the great importance of this early tablelands-coast link. The Board, Management Committee and many residents strongly advocates action to preserve at least a section of the road and highlight its heritage value. (228)

All consideration should be given to flora, fauna and historic places. I presume this will mean adequate funds need to be sought to cover a good outcome. (231)

8 Justification

8.1 Economics

Should be done as soon as possible for economic reasons. (62)

It would be beneficial for the whole of the Shoalhaven area to have this road constructed and finished without delay. The Shoalhaven community is currently missing out on much needed tourist dollars from Canberra as such tourists are going straight down to Batemans Bay. This area of the Shoalhaven has a very high unemployment record and the tourist dollar would create many jobs. (70)

See the upgrade will boost the economy of the Shoalhaven and will be beneficial for residents and businesses alike. (109)

Economic benefits of MR92 going through Nerriga are questioned. It is argued there will be a decline in tourism if Nerriga Bypass is not constructed. Many visitors come to the town of Nerriga because it is a peaceful and quiet location. (115)

The benefit cost ratio (BCR) of the project is highly sensitive to the predicted traffic volumes. Somewhere between the road users that use the upgrade to save time (base or diverted demand), the extra road users that use the upgraded road because they can now afford the trip (induced demand) and the users going sight seeing (perceived demand) the estimates contain considerable double counting on a mass of assumptions. (118)

Even accepting the estimated project benefits and costs for the current stage of the proposal, the proposal does not have a sound economic basis and will run over budget. (118)

The actual BCR for this project based on the diverted, as well as induced and perceived demand predictions is only 0.1 (the EIS estimate) or 0.3 (Technical Report 15 estimate) which means that the proposal should not be done (scenario 1). The other

scenarios (2, 3 and 4) assume future works that may not be done, particularly given that major works have been omitted from the costing for these subsequent scenarios. (118)

The upgrade of MR 92 would assist us by reduction in freight costs, achieved by time and fuel savings. We had a number of opportunities to expand recycling services into Canberra and Wagga Wagga, but declined to do so due to poor access through Kangaroo Valley. The MR 92 improved access to the above areas would allow additional materials to be processed in the Shoalhaven and increase employment opportunities. (134)

If MR 92 were completed in the near future, we would anticipate a conservative increase in revenues in the order of 400%, which in turn would require us to hire more staff. MR 92 will be responsible for a major economic and cultural boost for both the Shoalhaven and Canberra. (137)

The initiative is long overdue. On the Shoalhaven wide basis, we see a whole range of benefits that will grow the area. Be it manufactured goods, tourism, wine and a whole host of products, at this present time we suffer the burden of poor access to external markets. (139)

Any reduction in transport cost through a more efficient road system will assist further sales volume of product. This has multiple benefits for the region, increased employment, improved transport infrastructure to and from Sydney, increased productivity providing cost benefits and further R&D into similar opportunities in central Australia, western parts of NSW and Queensland. (142)

This road upgrade will not become economically viable until vehicle movements reach 2000 per day. It therefore seems to be an unwise investment given that only 600 movements per day are expected. (171)

Do not support the proposed upgrade because the EIS does not provide an economic justification for the upgrade. The total benefits from increased traffic are less than its estimated $80 million cost, particularly since the traffic estimates were highly contrived and the costs for bridges over the Mongarlowe and Shoalhaven rivers were not. (180)

There is no mention that the hoped for increases in truck traffic through Braidwood would necessitate replacing the existing wooden bridge over the Mongarlowe River with a new bridge and that much more work is needed on upgrading the section of road between Nerriga and Braidwood. These costly upgrades need to be assumed if predictions of appreciable increases in traffic are to be considered as legitimate components of the benefit estimates, and in turn need to be factored into the costs side of the equation. (180)

There is no economic justification to upgrade MR92. As there is nil planning in existence to build the road further to the west the estimated increased usage will not justify the cost of the upgrade. Freight usage will not be possible on the upgraded road due to the necessary upgrading of bridges that are not costed nor included in this stage of the upgrade proposal. (187)

The major impact of this upgrade will be benefits to the communities of the Shoalhaven and the Canberra/Queanbeyan Sub Region. However, flow-on benefits will be to the total South Eastern region of New South Wales. (219)

It remains to be seen whether an increase in tourist and service traffic along this road will compensate for its $80 million cost to the taxpayer, which does not include the expense of replacing the existing wooden bridge at Mongarlowe for greater truck traffic or the land acquisitions. (233)

The high range BCR estimate for the total Nowra to Braidwood project of 0.9 (scenario 2), based on the diverted as well as induced and perceived demand predictions, is incorrect due to:-

- does not include major bridging works to replace the old wooden bridge over the Mongarlowe River;
- the minor time travel saving for the Nerriga to Braidwood upgrade will not result in the predicted four fold increase in number of users; and
- heavy freight trucks should be prevented from using the existing old wooden Mongarlowe bridge.
- The option of constructing a sealed Nowra - Nerriga road needs "significant levels of generated traffic" to be included to get a BCR of 0.9, otherwise the BCR is just 0.3. In order to get a BCR of 1.7, "significant levels of generated traffic" are needed along with the sealing of links between Nerriga and the Kings and Hume Highways.

However, recent National Highway System projects have had an average BCR of 2.5 and an optimised program of work to upgrade Australia's interstate mainline track was found in 2001 by an Australian Rail Track Corporation Track Audit to have a BCR of 3.2. (640)

8.2 Funding to go to Princes Highway

Before you build MR92 you must now immediately upgrade the Princes Highway north and south of Tomerong where MR92 terminates as it has bad sections that only allows one car in each direction. (112)

Building the proposal would mean that other more pressing public works projects would go unfunded. The Princes Highway and Kings Highway upgrades are surely more pressing than MR92, particularly if the Shoalhaven District is growing. (118)

Instead of reducing congested traffic on busy roads, this proposal seeks to upgrade a remote gravel road servicing a very small section of the community. The proposal's budget of $80 million would be better spent on the Princes Highway where it would benefit many more people. (180)

There is a major economic justification to upgrade the Princes Highway. The people of Shoalhaven region deserve to have the road that they use the most upgraded. That road is the Princes Highway. (187)

A major upgrade of the Princes Highway is likely to offer greater social and economic benefits to the Shoalhaven Region at less environmental and financial cost than the proposed upgrade between Nowra and Nerriga. (190)

Do not support this upgrade and consider the money would be far better used on upgrading the existing Princes Highway and on improving public transport south of Kiama. (191)

The upgrade of MR92 is commended the highest priority identified by the Illawarra Regional Development Board, whilst endorsed by the Illawarra Region of Councils is the upgrade of the Princes Highway throughout the Illawarra Region including the Shoalhaven. (224)

The money would be better spent upgrading the Princes Highway or improving the Kings Highway. (233)

What about the bottleneck around Kiama area? (341)

Unless the Princes Highway is immediately upgraded both north and south of Tomerong where MR92 will terminate there will be complete gridlock as traffic from MR92 will be unable to get away from Tomerong. This must be done before MR92 is upgraded. The Princes Highway is just one lane in each direction over much of its length near
Tomerong. The bends in South Nowra must be removed and road widened. (390)

Fix up Princes Highway. (469)

There is no justification for the large expenditure of $80 million on a 54km section between Hames Road and Nerriga with very low Annual Average Daily Traffic (AADT). The EIS suggests the AADT to be presently only 120. In comparison, the Princes Highway AADT in 2000 of about 6800 at Wandandian and about 4000 at Termeil. There is a much stronger case for upgrading of the Princes Highway between Nowra and the Victorian Border than proceeding with the proposed upgrade of MR92. The present condition of the Princes Highway south of Nowra leaves much to be desired in terms of alignment, lack of overtaking opportunities etc. Would it be better to revisit earlier proposals to build an alternative to the Macquarie Pass road or invest in upgrading existing sealed roads from the Tablelands to Nowra than proceed with the proposed upgrade of MR92? If the AusLink proposals of the Federal Government due to come into effect in 2004 to give "focus on meeting the major transport challenges facing Australia" then proposals such as MR92 would be very weak candidates for Federal land transport AusLink projects. (640)

8.3 Need

The Proposal is required for the people of Shoalhaven and Illawarra to get better access to the inland, particularly for Canberra and the Hume Highway south, and more importantly to relieve the pressure on Moss Vale Road. (15)

The Proposal is required due to the unsuitability of Kangaroo Valley Road for large vehicles. (16)

By travelling along MR92 the journey from Canberra to Tomerong saved me half an hour and would likely be double when/if the project is finished. (17)

MR92 is ideally suited to provide an important road access between southwest NSW and the South Coast. The existing road is a gravel surface that deteriorates significantly in the wet weather and restricts the passage of heavy vehicles and caravans. (56)

Due to the opportunity to have an improved social, economic and environmental area, it is considered that this road should be upgraded particularly as it will provide a new and viable freight route from Shoalhaven, South Illawarra to inland regions of Canberra, Riverina and the Gippsland district in Victoria. (58)

Should be done as soon as possible for safety reasons. (62)

Having travelled on Main Road 92 feel it is not safe in the condition it is in. (83)

This road is a must as it is dangerous, being too narrow and very rough (not sealed) and it is the quickest way for residents to access the main highway. (84)

The existing Kangaroo valley roads are dangerous and inadequate for the type and amount of traffic it receives. MR 92 will be a much safer road. (93)

The station and country is struggling financially following drought, bushfires and impending war. Currently happy with existing roads. It is a relief to exit the Hume Highway which is long and boring and onto a more interesting road with descents and curves. It forces concentration on driving and from personal experience, the times when concentration is lacking has been on long boring roads. If the project proceeds it is proposed as to do so without any further infringement on Morton National Park and already stressed wildlife. (94)

Indications are that there are 3 proposed options beyond Nerriga as a potential for Stage II. The MR 92 project has merit provided there is a "Stage II" development. With the project finishing at Nerriga there is no benefit. (136)

The development of the road so that B-doubles can travel along this route is key to our support. (136)

The Proposal would both assist efficient delivery of product and also be more environmentally friendly than the transport options now available. (142)

It will be a great asset for coastal and highland travellers, and best for Shoalhaven community. (150)

This new escarpment crossing would deliver benefits to the broader land transport network and will encourage regional growth on both the coast and inland regions of southern NSW. (178)

This road is an important tourist and trade link with the western road network with generally better alignment than the road through Kangaroo Valley. (186)

The likely benefits include:

- Easing of congestion on the Kings Highway;
- Reduced travel times between the Shoalhaven and the Capital Region;
- Improved social inter-reactions between the regions;
- Improved business inter-reactions between the regions;
- improved business tourism opportunities;
- more economical use of Canberra based air transport from Shoalhaven based demand; and
- Development of the goal for a regional airline hub at Canberra International Airport. (219)

The Proposal will keep trucks out of Kangaroo Valley. (242)

I have a caravan and MR 92, if constructed, is the only reasonable road to access the west from this area. (254)

It is important for growth in the Shoalhaven for this road to be completed as soon as possible (261)

This road needs to be completed ASAP for the Nowra area to go cross mountain to Braidwood and beyond. (270)

A more direct and safer route of travel south to the Hume Highway is greatly needed for the Shoalhaven. (275)

The completion of this road will provide an economic boost for the Shoalhaven for many years to come. (287)

It will bring more tourism and growth that our community needs. (302)

From Nowra and Districts, we need a safer and quicker road to the Hume Highway, Canberra and districts. (309)

Finishing this road will assist business and the community. (318)

This road will be an important link from coast to tableland and should be completed ASAP. (319)

An alternative route to Canberra would mean less traffic on the Princes Highway. (323)

MR 92 would save lives through a lower accident rate. (327)

This road will bring tourism money form Canberra and Sydney. (328)

Will improve the tourist trade. (330)

This road is an urgent need in order to get the large vehicles off Kangaroo Valley road. (340)

If this road is not constructed soon there is going to be a bad accident on Cambewarra mountain road. (359)

Please build MR92 before funds go somewhere else. (373)

Safe road save lives. MR92 will help achieve this goal. (378)

This would be a good road for bigger vehicles to the Hume Highway from the Shoalhaven. (380)

This will take most of the semis out of Kangaroo Valley which is a plus and quicker. (392)

The Proposal would be safer for trucks especially, with more tourists. (444)

The existing dirt road is not being maintained and is becoming dangerous to drive. Our economy would be boosted if we open up the pathway between Nowra and Canberra and other districts that currently have limited access to the Shoalhaven. (445)

I personally will never drive down Bulee Mountain again after losing my brakes due to dust and dirt in the wheels, until the road is sealed. (457)

The MR92 road is needed and is a danger at present. (476)

This road is greatly needed. (481, 482)

The road upgrade is a tremendous misallocation of public funds. (647)

8.4 Traffic Modelling

Disagree with the traffic flow shown and while the major trucking companies were contacted, privately owned trucks were not taken into consideration. It is believed the number of heavy vehicles that will use the road will be 3 to 4 times that shown when private truck operators are taken into account. The EIS does not address the impact of the increase in population in the district on the increased use it will have for an upgraded MR92. The traffic flow through Nerriga will increase considerably once the MR92 is upgraded. The EIS focuses on traffic flow to the year 2016 - 13 years away. This is considered to be extremely shortsighted, particularly in light of what is believed to a major underestimation of the level of traffic flow. (67)

SKM have indicated that at least 1600 vehicles will use the road each day. However, this is an underestimate, in my opinion, as they only consulted major transport companies. (68)

Throughout the development of the EIS, council has been critical of the low traffic generation estimates. Though many computerised and apparently sophisticated models are available for traffic generation, it is a fact of life that it is an inexact science. Unless it can be demonstrated that these models have been properly calibrated against a comparable route development, then the outputs of these models can at best be regarded as unproven. Based on experience and discussions with the community and freight, industrial and commercial users in the catchment area, it is contended that the traffic estimates are at the lower end of the range of traffic that could reasonably be expected. (99)

The traffic model predicts that if MR92 is upgraded between Nowra and Braidwood traffic will greatly increase. This prediction is based on many assumptions, including the assumption that a significant proportion of current road users in the Shoalhaven area will avoid existing roads over the Illawarra Escarpment and instead use the upgraded MR92. A great deal of emphasis is placed on avoiding being stuck behind a truck on a steep grade. No emphasis is made of the benefit of accessing the Hume Highway by the most direct route. The Hume Highway is a safe, high speed, divided road that may be preferred by many users to the more winding route of MR92 and other country roads. There is no consideration of the impact on traffic of the planned upgrades of the Kings Highway and Princes Highway from Batemans Bay to Nowra. These upgrades outlined in Table 7-3 of the EIS would divert tourist traffic from MR92. This diversion and a user preference to access the Hume are reasonable assumptions that run contrary to assumptions in the model. (118)

The assumption that the majority of drivers would not use the Illawarra Highway because of its steepness is based on the opinion of the RTA and hearsay remarks. This diversion assumption significantly skews the model toward greatly increased use of the upgraded MR92. The assumption exaggerates the predicted traffic volumes for the proposed road and ignores the alternative assumption for a Hume Highway preference. (118)

The truck haulage traffic estimates for the proposed road upgrade unreasonably assume that all Melbourne and Canberra bound trucks from the industries specified in Appendix D2 will divert to use MR92. This results in the diversion of 92 trucks a day to MR92. This relatively low level of use diverting off the existing roads over the Illawarra Escarpment is considered an exaggeration because not all Melbourne or Canberra bound trucks would use the proposed upgraded road. Many trucks, particularly those going to Melbourne may prefer to use the Illawarra Highway and access more directly the divided lanes of the Hume Highway. (118)

It is reported additional traffic would be attracted to the upgrading MR92 as a result of it being signposted "Tourist Drive". However the EIS also states that such additional use from a "Tourist Drive" designation is unlikely to be significant compared to the overall yearly traffic volumes (Technical Paper 3, p. 3-10). This contradicts the potential diverted tourist users from existing roads to MR92, which are estimated at 100 additional vehicles per day (Technical Paper 3, p. D-3). This estimate doubles current total use and these relatively high initial tourist use numbers for the newly upgraded road are not further explained. A further 21 diverted non-tourist vehicles would also use the road, most coming from HMAS Albatross. This latter amount seems to be a reasonable estimate. (118)

The EIS estimates that 213 additional vehicles would divert from existing roads to the proposed upgraded MR92 therefore sealing the road will immediately triple the usage based on the incorrect assumption that tourism will increase from very low numbers to 100 cars per day and an overly optimistic nine fold increase in current truck usage. This estimate contradicts the Melbourne case study quoted that "did not identify a significant level of induced demand". The contrary outcome of the initial MR92 traffic response estimates appears to be due to dubious assumptions. (118)

The analysis of increased traffic in future years is confused by the poor separation between "induced" demand and other types of additional vehicles use predicted for the improved route. The description of tourism use in Table D2 of Appendix D is captured in "induced" demand but it appears recounted in the 180 vehicles trips that divert to MR92 due to "perceived" additional benefits (Technical Report 3, p. iv). It is very dubious to double the number of all "induced" trips to account for the return journeys, as there are several other road journey options available (Technical Report 3, p. 4-14). Tourists prefer to return by another route to the out going journey, which would halve the estimated tourist use of MR92. (118)

It is considered impossible that the future upgrade options, as outlined in the B2, B3, C1, C2, C3, D1, D2 and D3 scenarios, would result in up to a four fold increase in daily traffic volumes of the base scenario. There could not be such a great traffic response from the minimal time savings due to these additional road upgrade scenarios. The maximum time saving of 16 minutes 40 seconds is not going to result in 950 more trips a day on remote country roads. The double counting of future growth distorts predictions, even noting the traffic model's discounting of perceived traffic benefits at high levels of induced demand. (118)

The extra traffic labelled in the model as "induced" and "perceived" demand, is unlikely as community relationships established between Canberra and Bateman's Bay would not be immediately altered by a new road. Many people travel to visit friends and relatives. Nowra is further away than Bateman's Bay and the new road would not offer the necessary time travel savings to induce a major break in existing community relationships. Even the maximum time saving of 40 minutes by fully developing all roads will not guarantee more visitors and holiday homemakers coming to the Shoalhaven area via MR92. The suggestion that road users will use Canberra Airport for interstate travel is a rather odd transport assumption as it would necessitate users

changing planes at Sydney and as a result be a more expensive and time consuming transportation option. The suggestion of a proposed increase in caravan traffic to the Shoalhaven and South Coast areas is unsound as caravan holidays are outmoded and their use has been in decline for decades. (118)

Has consideration been given to the increase in traffic that would use the road between Nowra and the Illawarra? The Princes Highway already has a heavy traffic load between Sydney and the South Coast. (147)

It is considered the EIS traffic modelling is flawed, as the short-term use will be in the order of 2000 vpd, not the 1000 by 2021 shown in the EIS. Therefore support a higher standard of road design and construction. (170)

The predictions of future users of the road are exaggerated as they are based on many unfounded assumptions and double counting. To assume nearly all trucks going to Melbourne and Canberra from Nowra will use the proposed road is not sustainable. Many truck drivers will continue to prefer the shortest possible route to the superior conditions of the Hume Highway rather than the proposed alternative of travelling on a winding country road to either Canberra or Melbourne via Braidwood. (180)

The traffic estimates double count tourists and then double that count again by assuming all tourists would use the road for the return journey rather than more reasonably assuming alternative routes, such as the Princes Highway. That Nowra people will use Canberra Airport, and Canberra people will drive caravans to Nowra are nothing more than assumptions, and cannot be justified when no hard data is provided to support them and are hardly a basis for comparison with actual costs of road construction. (180)

Believe the estimation of 1700 vehicles a day by 2016, 220 of which are estimated to be heavy transport, based on information from major trucking companies contacted by the consultants is a considerable under-estimation. Small trucking companies and privately owned trucks have not been taken into account and these vehicles will add substantially to traffic through Nerriga. (198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208,209)

The EIS does not take into account weekend traffic from Canberra and Goulburn to the coast. (198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208,209)

It is estimated that by diverting traffic through Nerriga the difference to Kangaroo Valley and Moss Vale townships will be significant. The EIS fails to take into account the impact of this significant traffic impact on Nerriga, currently a much quieter place than Kangaroo Valley or Moss Vale. The environmental impact of this traffic on Nerriga appears to have been completely overlooked. (198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208,209)

9 Land Use

The EIS notes that the Tallaganda Shire Council is planning to review planning controls around Nerriga in 2002-03 to allow more rural resident development. The attraction of the proposed road upgrade for Tallaganda Shire is to bring more absentee ratepayers onto the proposed rural residential developments to subsidise demands on services made by the resident ratepayers. (118)

The proposed road upgrade is not supported because it will facilitate inappropriate land speculation around Nerriga and Sassafras. (118)

The losses on the southern side of the road occur where the vegetation is much richer at Sassafras appears to be in direct conflict with the agreement from SKM representatives that grazing land would be preferred over horticultural concerns given the length of time taken to return to current levels of land use. (171)

An upgraded road will lead to increased land values at Sassafras and thus an acceleration of subdivision projects. There would be greater pressure on the authorities to rezone private holdings on the plateau to permit closer settlement. Closer settlement will have adverse social implications for residents and the plateau will lose its rural landscape values. Accelerating land development will have the adverse consequences of land clearing, damming of streams, waste disposal, weed infestation, increased feral animal numbers, increased incidence of fire and greater population levels. The most effective measure to mitigate this indirect impact should the road go ahead would be to introduce suitable environmental protection zonings. (180)

10 Operations

10.1 General

There will be increased pollution with more vehicles, more semi trailers, introduction of B-Doubles, more diesel fumes and particles, more rubber dust and brake pad dust and dirtier water tanks polluted by vehicles. (210)

Tracks must remain accessible, or alternate access be allowed, to the Kangaroo Valley-Canberra 330kV Transmission Line (Fdr.#6) located in the vicinity of the Nowra-Nerriga road. It is requested that any road and drainage work takes account of the finished levels to ensure the future integrity of nearby trails. There is no particular location which does present a problem in the EIS, however the matter will require more detailed examination of the road works plan in conjunction with on site inspection. (220)

10.2 Amenity

The local hotel / shop / caravan park in Nerriga are regular social meeting places for the community and visitors. The increased danger and noise of heavy traffic on the MR 92 would disturb the current quiet atmosphere enjoyed by the people. (57)

People buy properties in remote areas, like Sassafras, because it is remote. The last thing they want is a huge volume of people and traffic, noise, pollution and waste. This is exactly what will occur if the road is upgraded. (187)

With the position of the road moving north in eastern Sassafras, this dwelling will be seen from the road and we will be able to see the road. The move to Sassafras was for peace, solitude and the natural environment and the upgrade will destroy this. It is expected there will be an increase in theft and trespass. Privacy is such a large part of this homes beauty and am very sad this will be destroyed. (210)

There are very few areas of natural beauty and significance remaining and it is important to maintain as much as we can of what we have left and this area is a jewel in the south east of NSW. Need to ensure that whatever changes are made to this road do not impact the integrity of the surrounding ecosystems and the wider area between Nerriga and the coast. (215)

In support of an alternative safer and shorter route and one which will take heavy traffic. However every consideration should be given to residents along the route and bypasses provided in the plan to protect the amenity of those residents. (231)

10.3 Noise and vibration

With the proposed road through Nerriga there will be increased noise with the sound of rushing traffic and windows rattling from vibrations, the community won't be able to walk along the road and stop to talk with the semi-trailers going past. (13)

I live in Nerriga as the peace and quiet is loved. With the proposed route the noise and pollution would be unbearable day and night. (14)

The local facilities in Nerriga are regular social meeting places for community and visitors, which is currently quiet without noise of heavy traffic. The 2 churches in Nerriga are located close to the road and the noise level will impact the services. (57)

Noise of passing cars, 4-wheel drives and trucks will make conversation difficult at social venues. To insulate is a very poor remedy, and only caters for the inside of buildings. (66)

Many of the buildings in the town of Nerriga are historical, quaint and could be heritage listed. The EIS suggests these buildings could be insulated against the noise. However, it is hard to imagine how this would be done without spoiling the heritage and appearance of the buildings. (66)

The proposal acknowledges there would be vibration from heavy vehicles but contends that this would be below the threshold where damage to buildings would occur. Most of the buildings in Nerriga are probably in excess of 100 years old and it is considered that heavy vehicles would damage buildings over the long term. (67)

The existing road passes within a few metres of a dwelling on our farm. The proposed alignment would bring the road even closer and noise levels would be well in excess of those recommended by RTA guidelines. (129)

The proposed alignment will degrade the national park through noise pollution - severe in areas, especially through valleys of the higher ground. (129)

Concerned about noise levels from increased traffic flow following proposed upgrade and the stress this causes to affected residents as EIS acknowledged in Technical Paper 11. (148)

The increase in noise levels experienced by local communities will be immense and has been totally disregarded in the EIS. Whilst it is required to reduce noise to legally acceptable levels, these levels will still be significantly higher than currently experienced in the region and the frequency of traffic noise will be substantially increased. (171)

It is noted in the EIS that sound recordings at Sassafras were not able to be taken during the study and request that these be undertaken and provided to each resident immediately. Without such data, residents cannot make their own assessments of the impacts of noise from the upgrade. It will be important for Sassafras residents to know exactly by how much the current tranquillity of the community will be spoilt by this upgrade. (171)

It is believed the noise levels after the upgrade will exceed allowed levels at this property. Semi-trailers and B-Doubles using gears to brake on this steep section will be audible 24 hours a day. Noise monitoring needs to be done on this eastern section of the road at Sassafras. That noise monitoring was carried out on a flat stretch of road where vehicles will not be producing such large amounts of noise does not make sense. (210)

The noise criteria for a "new freeway or arterial road" would be more appropriate for this development rather than "redevelopment of existing collector road" as adopted by the proponent. The 15-hour daytime/9 hour night time criteria of 55dBA and 50dBA respectively would be slightly more stringent than the one-hour 60dBA daytime/55dBA night time criteria adopted by the proponent. (646)

In the assessment traffic volumes for 2006 and 2016 affect the ability to clearly identify residences that may be significantly noise affected by the proposal and requires justification. (646)

10.4 Social

The EIS fails to address the social impact of MR92 on the village of Nerriga. (3)

People that live in and around Nerriga will, as a result of a huge increase in traffic, lose the peace and safety of their village. Many folk who stroll down the street and socialise will no longer be able to enjoy the bucolic amenity that is presently Nerriga, should the village not be bypassed. The EIS seems to have ignored safety and social issues that the upgrade will raise. (68)

The proposed level of traffic flow on the existing route would destroy the peaceful enjoyment of Nerriga for residents, visitors and property holders around Nerriga who regularly use the town's facilities. (123)

This proposal and upgrade is personally disrupting lives as it is disrupting the enjoyment of this isolated property and the amenity it provides. This residence would be visible from an upgraded busy road with the removal of mature trees on the portion of land to be acquired. This upgrade impacts on future lifestyle e.g., retirement in a stressful, negative way. (148)

The community at Sassafras is comprised largely of landholders who have invested in the locality for lifestyle reasons. The development of the road will significantly impact on the values and quality of the area making it unattractive to many of the current residents. There is no demand for a road of this nature through the centre of Sassafras. (171)

The EIS has ignored the impact of security issues on residents and landholders at Sassafras despite the growing statistics on rural crime in NSW. Apart from some isolated incidents of theft, Sassafras has been free of these problems. Concerned about the impact of the loss of a vegetated road alignment, particularly on the exposure of our Waratah plantation and tree nursery where set backs and plant screens have been incorporated on the side closest to the road. No indication has been made in the EIS about security fencing for landowners to address these issues. (171)

10.5 Water quality

Regarding the egress of stormwater from the road reserve, it is important to ensure there is the minimum scouring and erosion of sediments to the drinking water catchment. (144)

Drainage management in relation to the proposed upgrade at Sassafras is not adequately addressed in the EIS. (171)

We have significant concerns relating to chemical, oil and other road contaminants from the upgraded road. This locality is subject to high rainfall events (up to 250mls in 24 hours), which results in the need to manage this runoff and associated road pollutants. The water quality of the springs in the Shoalhaven River catchment is very high with significant economic and conservation value. As a horticultural enterprise any contamination from the road presents serious concerns. (171)

Should a tanker carrying chemicals be damaged in an accident on the route causing a spill, the chemical would leak towards the waterways in the national park. (187)

What provisions have been made in case of fuel, chemical and dangerous goods spillage? Waterways would be polluted/contaminated affecting wildlife and surrounds. (210)

EIS Section 11.2 references work by the EPA and SCA requests that this section be reviewed having regard for the endorsed water quality objectives of the Shoalhaven River. The SCA monitors water quality in the Shoalhaven River system and suggests that the results, if not already considered, be reviewed. (644)

The proposal can impact on water quality through the erosion and transport of sediment during the operational phase. The SCA expects this issue to be addressed via conditions if the proposal is approved. (644)

There is a need for environmental safeguards to include controls to prevent erosion and transport of sediment during the operational stage. (644)

SCA request consideration of an additional spill management/containment basin on the western side of the Endrick River Bridge. There is a high risk of spill occurring from a vehicle travelling in an easterly direction and rounding the corner just before the bridge. (644)

Specifically designed controls are needed to convey stormwater from the road adjacent to the Endrick River Bridge into the river. Particular care is required at this location to prevent erosion. (644)

It is suggested that despite the statement that constructed stormwater wetlands will not be used, the scope for the use of such measures be reconsidered during the preparation of the water quality management plan. (644)

The water quality monitoring proposed in Section 8 is endorsed but request monitoring also be undertaken of post construction sediment movement. (644)

A formal rest stop is proposed at Endrick River crossing. The rest stop would need to be carefully designed and managed to prevent water quality impacts. Specific attention is required for management of human wastewater, rubbish/litter and access to the river. Preparation of specific plan of management is suggested for this rest area in consultation with the SCA. (644)

Permanent stormwater control measures for the operational phase of the project shall be installed and utilised as soon as possible after commencement. (644)

All facilities including water pollution control ponds, stormwater wetlands, grass swales, biofiltration trenches, gross pollutant traps and sedimentation basins shall be inspected regularly and maintained in a functional condition for the life of the project. (644)

The proponent shall provide detention systems for containment of spills and materials arising from accidents. The systems shall be consistent with the RTA's Code of Practise for Water Management – Road Development and Management. (644)

In the event of spill, the proponent shall ensure that all material spilled is removed as soon as practicable and within at least 24 hours and shall contact the SCA's Incident Management Service. (644)

The EIS has not addressed the specific recommendations and outcomes of the Healthy Rivers Commission (HRC) for the Shoalhaven River and should address the strategies identified in the HRC Security Healthy Coastal Rivers Statement of Joint Intent. (646)

11 Options Assessment

11.1 Beyond Nerriga

The present proposal ends at Nerriga and road construction has been proceeding towards Nerriga from Braidwood. It appears a foregone conclusion has been reached as to the ultimate route of this main road linking Nowra and Canberra. The proposal should be a direct link to the Hume Highway at Gunning via Oallen Ford and Tarago. This would provide better access to Nowra and beyond for semi trailers and tourists than through either Kangaroo Valley or Bateman's Bay. (8)

The main concern is what is going to happen beyond Nerriga. It is believed the preferred route of the local councils out that way would take the road through Braidwood, which would add considerable distance to the route to the Hume Highway and therefore make it a far less desirable alternative for trucks. (15)

Having a nice sealed road to Nerriga does not achieve much, as 20 plus kilometres of unsealed and somewhat poor alignment continue to both Braidwood and Sandy Point, the two nearest exits to Canberra / Monaro and the Hume Highway. (55)

It is understood that further development of the road network past Nerriga has not yet been finalised there are benefits of continuing this road link through Tarago, Collector and Gunning. This route would provide the shortest direct connection to both the Hume and Federal Highways. The route through Gunning would significantly shorten the travelling time between the South Coast and the major routes which access the western part of NSW such as Lachlan Valley Way, the Hume Highway and the Burley. (56)

Supports the upgrading of the Nerriga to Braidwood route and continuation to Cooma. (58)

All dirt and poorly aligned narrow sealed sections of road from Nerriga to Windellama be similarly upgraded to current standard. (60)

Believe a link road between Nerriga and Goulburn should be constructed. (87)

Favours the extension of the upgrade of the northern route west of Nerriga through Windellama towards Goulburn. (144)

It is Council's view that the logical progression of MR 92 beyond Nerriga is via Tarago and on to the Hume Highway. This route will provide significant benefits to industry and transport organisations and will best suit the needs of both coastal and inland industries. (146)

To assume that roads leading from Nerriga either to Braidwood, Goulburn or Canberra are suitable for heavy vehicles is simply ludicrous with several bridge crossings that are impassable at times of flooding. (171)

Strongly of the opinion that "beyond Nerriga" the route should be from Nerriga to Tarago, and then ultimately to meet the Hume Highway at Gunning. This route will best meet the needs of inland NSW industries seeking an efficient access to Port Kembla. (179)

A major issue to arise out of this EIS is its revelation that the proposed upgrade of MR 92 does not include the full extent of the road. The project assessed in this document is for the section from Hames Road to Nerriga only, leaving a similar length of road to Braidwood subject to assumptions about future funding. Admittedly, current fund allocations to 2006 are referred to in the EIS for upgrading of 10 km of the existing 21 km of unsealed road between Nerriga and Braidwood, but what about the remaining 11 km, what about the Mongarlowe River bridge and does the current funded upgrade include the particularly difficult sections of the road? (180)

Ultimately the real value to inland NSW and Riverina in particular would be the construction of an appropriate standard of road from Nerriga to Tarago, linking with the Hume Highway at Gunning enabling safe and efficient access to Port Kembla. (189)

Gunning Shire Council supports the shortest, quickest link to the various freight destinations which is beyond Tarago and therefore Council supports the upgraded route being linked west to Tarago initially. (196)

Support the upgraded route being linked west to Tarago initially. (197)

For the future extension of MR92 beyond Nerriga Yarrowlumla Council is in favour of an extension from Nerriga to the Hume Highway through Tarago, Collector and Gunning. (218)

What about a road from Nerriga to the Hume Highway? Until it is finished you wont get the trucks out of the valley. (263)

MR92 should be completed quickly and efficiently with connection from Nerriga to Federal Highway near Collector and to Hume Highway between Yass and Jugiong. (398)

To make this a truly great road, the link from Nerriga to the Federal and Hume Highways must be completed in tandem with the MR92 upgrade. (399)

The route should go to Collector. (430)

Want to hear more about the section of MR92 between Tomerong and Nerriga. (456)

11.2 Bulee Mountain

If the aims of the proposal are to be met then the preferred alignment should provide for a 100kph standard road all the way, or as close as can be feasibly met, cars will travel at that speed and more on rural roads, for a road of National significance it seems a poor result if a section needs to drop to 60kph. The alternative route, BM5, should be reconsidered. (1)

To use the existing alignment through Bulee Gap is short sighted and akin to environmental vandalism. The road should go through on the other option to Bulee Gap as it is quicker, safer and at less gradient. (2)

Would prefer alternative route through the bush, as it would be 1km shorter, would lessen the damage to Bulee Mountain and be safer and better for trucks. (4)

The Bulee Mountain section should be route through the alternative northern deviation. This route would not impact the heritage features of the original 1856 Wool Road and is a shorter route with better gradients and a much safer route for the motoring public. (5)

BM4 should be handed to National Parks and preserved in its existing condition for posterity. (5)

The section around Bulee Mountain will retain a number of 60km sections when it may be possible to construct some of these sections to 80km or 100km speeds. The road is expected to carry additional heavy traffic in particular B-Doubles. Retaining 60km sections may impact on the driving environment of an expected important link road. There may be a serious trade off between long-term safety benefits and environmental outcomes. (6)

The alternative route is far superior. The minor loss of National Park would be more than offset by the decrease in damage to other areas. It needs to be designed to draw as many heavy vehicles or towing vehicles as possible. The alternative route is shorter and much more suitable for trucks and vehicles towing caravans. (7)

The present Bulee Mountain section needs to be preserved as a tourist attraction. BM2 takes the road away from the present location, provides the straightest alignment and 80 km/hr suitable, but it may be steeper than BM1. To damage the Bulee Mountain area in any way should be avoided, but if this route were chosen the road would have to be widened to the detriment of the rock formations. The route should be the alternative BM2 alignment 80 km/hr. (8)

Using the road corridor BM4 would destroy a bit part of the Shoalhaven heritage that could not be replaced. Only a short distance away there is an alternative road corridor BM5 with a shorter travelling distance, much better grades and would not affect the alignment of the Wool Road, would not have as many curves as BM4 and would be much safer for the travelling public. National Parks would not lose any land area if the BM5 were upgraded. If BM5 was upgraded the old easement of the Wool Road and the area surrounding would be handed over to National Parks care to make it a great nature walk with many sights and animals to be seen between the mountain and the river, fantastic rock formations. If BM5 was upgraded and a nature walk was in place along the Wool Road, at the entrance National Parks could erect a monument to the first settlers in the Shoalhaven area, local Aborigines, Chinese goldminers and the farmers. (10)

Prefers the new alignment even though it cuts through 500 metres of national park. Upgrading the existing road would destroy the historic value of the Wool Road. This road could be used as a fire road and kept for local residents. (11)

The existing old settlers road should be preserved to be used as a beautiful and tranquil walking track from Bulee mountain area to the Endrick River and would preserve the historic value of the road. The proposed new road should be the BM5, which has better gradient and safety for users. (12)

Would consider the alternative northern alignment in the area of Bulee Mountain to be preferable. It is an imperative that the chosen route will give the most incentive to the present users of Moss Vale Road, especially the trucking fraternity, to use the new highway, and thus ensure it is viable and not just a waste of taxpayers' money.
(15)

Agrees with the preferred option, as it is far better to upgrade an existing alignment than to construct a new portion through what is termed wilderness. Despite efforts in a project such as this, more damage seems to occur than was planned, and the preferred route minimises this. (16)

Would suggest BM5 as the preferred route would only end up alternative eventually, and if $80 M is going to be spent, lets not muck about. Do it right, do it once. Get on with it. (17)

It would be a pity to compromise the design of the road grades and length by taking the preferred option. By taking the alternative option through a part of Morton National Park, this would give people an opportunity to appreciate it. (18)

The preferred option of Bulee Mountain cannot be seriously considered especially Bulee Gap. It appears not many B-Double truck drivers were consulted for this one. The alternative route would be the only sensible option to preserve and encourage tourism on the bypassed historic 1856 Wool Road. National Parks belong to all of us and after the road construction a little effort in rehabilitation would benefit all concerned. Only 300 metres are actually impacted through Morton Park versus a kilometre in benefit of the shorter route. (55)

Due to the overall social, economic and environmental considerations, the BM5 should be the preferred option. BM4 is a route that cannot be significantly improved in the future due to its horizontal and vertical alignment, which cannot be improved by stages. BM5 can provide the traffic, transport and road safety benefits by the initial improvements and even though more expensive, the benefits in not having to upgrade in the future will more than justify the additional expenditure. (58)

Preferred alignment in the Bulee Mountain section is BM5 as there is a lower impact on threatened species, preserves the alignment of the Wool Road, less interruption to traffic during construction, easier travel particularly for larger vehicles and longer overtaking provisions. (59)

Favour the construction of the alternative route at Bulee Gap as the current alignment is very steep with sharp and dangerous curves with poor visibility and is very narrow through much of the area. (60)

The alternative route which bypasses the Bulee Gap and surrounds on the north-western side is much more desirable. This is due to the unique area with its heritage road works and dry-stone retaining walls, the old Gap and the interesting sandstone outcrops nearby could remain undisturbed and the alternative route could enable the building of a wider pavement and longer radius turns and would be much safer for heavy, long vehicles and more appropriate for increased traffic density. (69)

Heritage items and geological features should be considered more important than flora and fauna which would be affected by either proposal for Bulee Mountain. While trees and animals can regenerate, if geological and heritage works are destroyed, they are gone forever. (69)

The alternate route is just so much easier and quicker that anyone other than Greenies could see it's the only way to go. This road would be beneficial to the whole of the Shoalhaven area and should be constructed and finished without delay. The alternate road would be more cost effective than putting in lots of bends and curves where trucks and caravans can come to grips. The impact on the national parks is minimal. The section of the old historic road should be left for all to enjoy and not tarred over. (70)

The cost of fuel for the alternative road has to be taken into account as bends and steep inclines increase vehicle emissions released into the air and we should be trying to minimise air pollution, not increase it. (70)

Referring to Table 5-9 regarding new corridors in "Alternative Alignment (BM5)", it is believed that a study has already been done and there is nothing of significance found that has been identified in this wilderness and they would gain in area by including the easement for the BM4 which would be transferred to them when they agree to this alignment. (71)

It would be shameful to construct this section on the existing that is much steeper and longer than the proposed alternate route. Only 500 metres of national park would be affected, fewer threatened plant species would be affected and four more animal access bridges would be built. (72)

Support the alternative Bulee Pass route and provide a fast safe road for all vehicles. The original road should be considered for provision of a rest area, develop localised walking tracks and maintain a heritage link to the indigenous and European history. (73)

In favour of the alternative route. Should be thinking more about the animals that could be destroyed and on the preferred route 30 plants will be affected that are threatened species. Parts of the historic road will be threatened and destroyed and only 2 bridges will be put in for animals to cross under the road. (74)

It would be a major benefit to this business to have this road completed as soon as possible and to see the road go through the Morton National Park, as this would greatly reduce the risk of accidents for my colleagues, and reduce the time taken to deliver this company's products to the area. (75)

Support the alternative route at Bulee Mountain. Any major upgrade to Bulee Mountain would destroy parts of the historic 1856 road. Bypassing this section would preserve this historic road as a walking path, with all its spectacular views. (78)

The BM5 option has less bends and less steep grades. Records show although accidents happen on relatively straight sections of road, the frequency of accidents on sharp curves and steep inclines is considerably more. (80)

The operation of BM4 is more likely to have negative economic impacts compared to BM5. BM4 is more difficult to negotiate for B-doubles and such a road is more likely to deteriorate more rapidly due to the bends and close proximity to rock faces. (80)

The alternative route is the better option, as there is little doubt that the volume of traffic would be considerable, particularly as many heavy vehicles will use this road in preference to Kangaroo Valley. The sacrifice of passing through about half a kilometre of National Park seems a small price to pay in the interests of a safer, better route. (81)

The hold up now regarding the Bulee Mountain section is just wasting time. The best route would be the alternative route as the grades would not be as steep and the distance would be a little shorter. Although the alternative route through the Bulee Mountain section would cut through 500 metres of national park, the consideration of bridges for movement of animals and fewer affected species of plants is of greater importance. (83)

The alternative route is the answer to the problems of the other routes. E.g. Kangaroo Valley and Macquarie Pass that have to carry all the truck traffic. (88)

The alternative route would be the most suitable. The less bends to negotiate for trucks & heavier traffic flow seems to be a common sense approach. (89)

If the preferred route is followed can see another "black spot" added to our highways. (90)

Feel strongly it would be better to bypass Bulee Mountain, as it would become a future black spot as people may take risks and overtake when it is unsafe. This area is very remote for emergency vehicles and would further put the lives of people at risk. (91)

Support the alternative route, as it seems to strike a happy medium with the big trucks that will use the road and the environment. (92)

With regard to the Bulee Mountain section for the sake of a small section of national park, this alternative route is undoubtedly the best route. It would be not as winding or steep allowing for a better flow of traffic and is a shorter route. (93)

If I had to choose a preferred route then I would support the proposal to avoid the national park. To encroach on national park would affect the food sources, breeding sites and nesting sites of animals and birds etc. living in the area. It could upset the delicate balance of the fragile ecosystems in the surrounding areas. The other option would increase the chance and risk of more accidents and fatalities, as it would be quicker. If a route is claimed to be quicker then there will be more risks taken by motorists who just ignore safe driving practices. (95)

Do not support the preferred route over Bulee Mountain that is based only on the pathetic greenie whinge about going through 500 metres of national park. (97)

The alternate route suggested obviously would be preferred being cheaper to build and faster to complete. (98)

Major concern is the nomination of the alternative alignment in the Bulee Mountain area referred to as "BM4" as part of the "preferred route" which basically involves reconstruction on the existing alignment. The EIS suggests the BM4 requires substantial sections of new alignment close to the existing alignment, that the environmental and heritage impacts of BM4 have been understated and the superior transport alternative of "BM5" to the north has been too readily dismissed. (99)

The EIS fails to mention that BM4 will have a significant barrier to wildlife movement over a very long distance and contains only two short bridges, whereas, BM5 offers excellent fauna movement due to its shorter distance and significant number of bridges and culverts. While the EIS mentions that road kill impact will be higher on BM5 due to the greater design speed, it fails to take into consideration, the greater opportunity for fauna movement under BM5. It is apparent in the EIS that threatened species identified in the area are potentially more adversely impacted by BM4 than BM5. (99)

The difficulties of construction of BM4 appear to have been understated. Road closures are required for BM4, whereas BM5 can be constructed with minimal traffic impact. It is not clear whether the cost of traffic inconvenience and intermittent closure of road has been built into the BM4 estimates. (99)

The EIS fails to make clear that BM4 has a greater landtake on the National Park than BM5. The impact of the BM4 land take is dismissed by claiming it is only an 'edge' effect. However, no justification is given for why such a large 'edge' effect would be any less impact than a lesser 'slot' effect created by BM5. It should be noted that the BM5 land take ignores the significant return of land to National Park associated with the existing MR 92. (99)

The original intention of the EIS process would have allowed for equal consideration of alternative route designs. The subsequent EIS would then be based on the alignment resulting from the route selection process. Unfortunately, to allow the EIS to be exhibited as scheduled, the route selection and EIS processes were combined. This process change has not been of great consequence for most of the route, but with regard to the critical Bulee Mountain area it has resulted in a significant process failure. Support construction along the "alternate route". There are many long term advantages of the alternate route including more animal underpasses, no steep grades, shorter distances, less disruption to the historic sections, better fire fighting access and fewer threatened species affected. (100)

The alternative route would be much safer, more pleasant to drive and more economical for trucks and buses. (101)

The alternative route through Morton National Park should be used to reduce bends and increase safety. (102)

The alternative route is a better way to go. People will use this route as it will be far less steep and will be shorter. (103)

Against incursion into Morton National Park as an increase in traffic will result in the park suffering higher rates of pollution. (104)

The alternative route is the more sensible of the two options especially when you weigh up the pros and cons of the two. (109)

No preference for either Bulee Mountain route other than it needs to be capable of carrying heavy vehicles with safety, so to that end maybe the alternate route would be more suitable for the likes of B-Double trucks than to follow the existing alignment if the design alignment will not allow this. The benefit to the overall community well outweighs any detrimental impact on the national park. (110)

In balancing the two options of Bulee Mountain, it is clear that the "alternative" shorter route is most preferable. It is shorter, less steep, with no extreme grades and quicker. It is more likely to attract heavy vehicles than the other route which is most important. The disadvantages appear insignificant. (111)

Surely the better route is the alternative route proposed. (112)

The alternative route should proceed as it just makes more sense to do so, slight intrusion into the Morton National Park will not effect our environment that much. (113)

The shorter "alternative route" should be constructed through Bulee Gap as it will have fewer curves and bends and therefore will be a safer road to travel. Although the alternative route passes through a short section of national park, fewer endangered plant species will be affected and would be more environmentally friendly route to build. The existing historic section of the road should be closed off at each end but preserved as a walking track. (114)

The alternative route to the north of Bulee Gap should be considered. The bypass proposed is shorter and of lower gradient for heavy vehicles and coaches, impacts on fewer threatened plants and animals and will not affect the historic sections of the road. The alternative route using about 500m of national park, would have little impact on the flora and fauna as recent bushfires in the area have devastated many existing species and would have greater long-term benefits. (115)

The preferred route should be the way to go through the Bulee Mountain section. Whilst this route would be a kilometre longer, a little steeper and a lower speed limit it does avoid encroaching on Morton National Park. (117)

The alternative route, passing through a short section of the national park, is clearly the better option since it is shorter, affects less threatened species and gives better access for wildlife between the two sides of the road. The existing road alignment passes through considerable sections of national park without major detriment results and should not be a reason for choosing a road alignment of less merit. (120)

The alternative route in the Bulee Mountain section of MR92 is shorter, less steep, and quicker and would be preferred. (125)

BM5 should be the only one considered in the Bulee Mountain section as it is shorter, has more overtaking lanes, faster speed design and is less steep, BM5 would allow for future increase in lanes, BM4 could never be improved and BM5 does not effect the Wool Road which could be made a tourist walking track. (126)

The alternate route at Bulee Mountain should be used. The existing route can only become a "black spot" to be changed at a later date with extra expense. (127)

It is disheartening to know that serious consideration is being given to incorporating the narrow, winding, steep section - Bulee Mountain - into Main Road 92. The preferred route is reported to be cheaper at today's costing however MR92 is not a short-term project. People don't want the cheapest option, whatever reason, because long term it is sure to cost the community dearly both financially and socially. We request that RTA seriously consider the alternative Bulee Mountain route for Main Road 92, despite the work and cost involved. If a job is worth doing, it's worth doing well! (128)

Anyone who conceives that the new upgrade should follow the existing road alignment through Bulee Gap lacks common sense and application of logic. The faster, flatter route to the north makes sense as it is long term, more economic, retains the old road for its historic value and has the same impact on wildlife as the existing route. It will be a much safer route to drive on thus less potential for vehicle accidents. (130)

The alternative route must be the favoured road through the Bulee Mountain area as is a shorter, quicker trip and less dangerous. Fewer plants would be affected and more bridges for animals - 500 metres of Morton National Park should not stop us from removing a very bad section of road which could cost lives, time, money and wear and tear (131)

The BM5 would be the safest road to travel as it has fewer bends, fewer steep grades and very little impact on flora and fauna. (133)

Support the BM5 option due to the higher speed limits and passing lanes, which would increase the safety factor. (134)

Go for the BM5 option. BM5 would appear safer and better all-round except a little dearer. (135)

Support the option of route BM5 as the preferred route for Stage 1. (136)

Support the BM5 option that provides for a safer route with passing lanes. There will be increased trucking movements and these passing lanes will save lives whilst reducing travel time. (137)

Support the BM5 option, as it does seem to be the most viable to Shoalhaven-Southern inland route. It would allow transport costs to be reduced and give faster access to the Canberra region. (138)

The MR92 initiative should proceed with all haste and the BM5 option is the only option that will maximise the benefits anticipated from the successful completion of MR92. (139)

To maximise the benefits of MR92 the BM5 option is the obvious choice. (140)

Regarding the two alternative routes over Bulee Mountain, in favour of the shorter, northern route if the extra $3m is available and provided there is no serious environmental impact on Morton National Park. (144)

BM5 is preferred option, mainly for the overtaking lanes and the gradient. (145)

Prefer the alternate route described as BM5 for the section at Bulee Mountain. This route seems to provide the required safety and alignment (vertically and horizontally) benefits that form the basis of the proposal. (146)

If it is not as straight and safe as possible then it's just a waste of money. Support the alternative route as common sense says it's the right one. (153)

It is imperative that any upgrade is the safest and therefore the best route must be the option to the north of Bulee Gap. (154)

The alternative route is the obvious route being shorter and less steep. (155)

Support the Bulee Mountain option BM5 as this best meets the project objectives. (156)

The alternative route is better as it would be a good, wide road with sides cleared of trees and scrub for future widening, it has less bends and the fact it will go through 500 metres of Morton National Park is a very small detail. (157)

Use the shortest route possible and build it as a matter of urgency. (159)

Consider the road taking the alternate route around/via Bulee Mountain to avoid the steep incline and historical significance of the area. It is shorter, will be safer and have less impact on the national park. (160)

The alternative route for the Bulee Mountain area should be taken, as the grade and speed travelled over this area would be more suitable to a road of this calibre. The area affected such a small percentage of the Morton National Park and will cause insignificant interference to the flora and fauna. In the long term wildlife will be less affected and most of all human lives will be saved. (161)

The northern diversion near the Endrick River seems the most logical as it is shorter, quicker, has better grades, will save the heritage Wool Road and preserve the remarkable overhanging cliffs at the Bulee section. (162)

Should use the shorter, alternative route. The old route should be kept for historical reasons. (163)

Those concerned with building the road, do so soon, by the alternative route, using professional skills and leaving all the lamenting of the loss of the precious relics if any of the 1856 road to those who are better equipped to do so. (164)

Support the alternative route on the basis it is shorter, flatter, less steep and with far less bends and believe the small amount of national park affected should not be a consideration. (165)

The quicker and shorter route is far better than following the existing narrow, winding road. Believe in protecting the environment but fail to see how 500 metres into Morton National Park will have any major effect, there are still thousands of metres left for the wildlife. (166)

Give serious consideration to the option using the new section over Bulee Mountain for MR92. This route would produce a much safer, faster, more efficient road and it would be preferable to build a quality road initially than be forever trying to fix up the old road or build a new section anyway. (167)

The new Bulee Mountain section of road should be used as intrusion into the national park is minimal, does not destroy the old historic road and it would be shorter and safer road looking many years ahead. (168)

The "alternative" route is the way to go as it has lesser gradients, faster speed limits, less distance and less ecological disturbance and friendlier access for the local fauna. (169)

Support BM5 option as it fits best with basic design standards, has less environmental disturbance, is a safer road with easier grades for trucks and cars towing boats or caravans. (170)

On balance, with both options impacting on the Morton National Park the environmental effects of either the straighter and shorter alternative and the preferred winding route are much the same. Despite the higher estimated cost, in the long term, construction along the alternative route may be a better option. (173)

In favour of the alternative option as less of will pass through Morton National Park, the old Wool Road would be preserved and it will provide safer road conditions and thus in the long run save lives. (174)

Let common sense prevail and let the BM5 section be the option of choice. (175)

It is noted that when investigations on constraints were reviewed the Bulee Mountain option of upgrading the existing road was not under consideration. With this now being the preferred option there are some concerns and issues regarding a section of the pipeline where it approaches the commencement into the Bulee Mountain section. Further reviews will need to be undertaken on this option. (176)

Support the BM5 option as this route provides more efficient transport operations. (177)

The most beneficial route is the BM5 option as this route would the most appropriate for heavy traffic use, would be at an environmental cost no worse than the exhibited option BM4, and at a similar financial cost. This option will deliver better traffic safety outcomes for the users of the road. (179)

Due to significant impacts on Morton National Park and other pristine areas that would result from Option BM5, the preferred option (BM4) is supported should the project be approved. (180)

Support the BM5 option that provides shorter travel time, lower grades and has three full lengths of overtaking lanes is the safest and preferred option. (181)

The alternate option would protect the wildlife that currently strays onto the Bulee Mountain section of road. With the proposed method of construction of this option, this wildlife would become trapped on the road and either add to the road kill statistics, cause an motor vehicle accident, or cause a motor vehicle to go over the side of the road which would be a large vertical drop. Safe egress off the road through Bulee Mountain is currently fraught with danger for any wildlife that strays onto the road. If the alternate option is not adopted, straying onto the road through this section will be a death penalty for any wildlife. (182)

The heritage features of the 1856 Wool Road would be retained, and could be handed over to National Parks and Wildlife in exchange for the land taken by the alternate route. The area handed over would exceed the land taken. (182)

If it was to be decided that the new straight road (i.e. the 80 km/h route option) be adopted, then the old road should revert to National Park for the use of NPWS. (183)

The statements given in the EIS in respect of the alternative route BM5 that the impacts on Threatened Species are actually less than those required in improving the existing longer route. Furthermore, the improvements to the existing route will impact on part of the 1856 Wool Road that has been assessed as being of State Heritage significance. Route BM5 avoids that area completely. (184)

Let common sense prevail, include the BM5 option and get this road upgrade up and running ASAP so that the communities of southern NSW and the ACT can start to enjoy the benefits that will flow on from it. (185)

At the Bulee Mountain section of the road the alternative route to the north should be adopted. This route being shorter, less steep, with a higher design speed would be safer than the preferred route. (186)

Strongly support the BM5 option for Bulee Mountain as it wins on all comparisons with BM4 and the current route should be preserved for its historical/scenic values. (188)

The BM5 option delivers the better outcomes when all criteria are taken into account for the transport operators, government and the environment. (189)

Support the preferred option, the existing BM4 corridor. This option offers the least environmental impact although it does affect the heritage listed old Wool Road. Option BM5 will cut 500 metres through Morton National Park and this loss of fast-vanishing native forest and wilderness is considered unacceptable. (190)

As far as the two routes identified for comment, if the road does go ahead, it must follow the current alignment. To push the road further north through identified wilderness cannot be justified in any way as being "ecologically sustainable". (191)

Would prefer the alternative option at Bulee Mountain that gives a better grade and a little shorter travel time. (192)

The alternative route is the only way to travel. The cost is comparable and the only contention is the national park. The sum loss of area in Morton National Park would be less than 50ha. If this is the difference to providing a 60kph or an 80kph carriageway than it is time to take the most beneficial decision i.e. 80kph. The Old Wool Road should be maintained as a historical area as a monument to the pioneers. (193)

The northern deviation should be chosen for safety, protect the historical Wool Road and the negligible environmental impacts. (194)

The alternative route through Bulee Mountain should be selected as many of the advantages of upgrading the road would be lost if the preferred route is adopted. In particular, the steepness of the preferred road, the curves and the speed restrictions and safety implications are all very poor. (195)

Support the alternative northern deviation option down Bulee Mountain as there would be a 80kph design speed, a one kilometre saving in distance each trip which would be significant to heavy transport and would prevent the loss of the heritage features of the narrow pass through the rocks on the existing alignment. (196)

Support the alternative northern deviation option down Bulee Mountain as there would be a 80kph design speed, would reduce future reconstruction costs, a one kilometre saving in distance each trip which would be significant to heavy transport and industry in general, and would prevent the loss of the heritage features of the narrow pass through the rocks on the existing alignment. (197)

Favour Option BM5 as overall the well being of flora and fauna, as well as safety issues, outweigh any other option except possibly Option BM2. Main concern with BM4 is it replicates the problems of the other three descents of the escarpment mentioned in the EIS Preamble. The area is known as the Misty Mountain for good reason. It is considered that the noise

factor for local residents would be less for BM5 than BM4 particularly if looking into the future when the road extends beyond Nerriga and is utilised more by heavy vehicles. (212)

The alternative BM5 at Bulee Mountain is also supported from a safety point of view. To encounter a blockage at Bulee Mountain either through a breakdown, accident would be a major problem requiring retracing the route and making little use of the remaining hours in the day. The minimisation of this risk would seem to be delivered by BM5 based on its straighter and, in places, wider alignment. (213)

The BM5 option, which involves a new route through the national park is preferred, as it is the more efficient route from a transport perspective. (214)

Bulee Gap should be preserved as a national heritage site and used as a tourist drive, not a highway. By using the preferred alternative route only 500 metres of National Park would be used saving more than 1500 metres in Bulee Gap upgrade. (216)

From a transport efficiency viewpoint the BM5 option is preferred. It is shorter, safer and quicker. (221)

Consider that adoption of the BM4 route along the existing alignment, as presented in the EIS, does not fully meet contemporary standards for road design or provide the safest and most efficient escarpment crossing available. As a result BM4 may not be the best outcome for the community or achieve the project objectives. (222)

Acknowledge that BM5 would require a new 500-metre corridor through Morton National Park and other privately owned areas that have potential wilderness value and these are important issues to consider. However, upgrading along the existing alignment (BM4) also has significant environmental impacts. The EIS assessment of environmental
factors on both route options did not highlight any major environmental constraint on either route, and noted that while the type of impacts were different, there is no clear environmental preference between the options. Further the EIS highlights significant heritage impacts for BM4 where no similar impacts arise for BM5. (222)

Concerned that the proposal in the EIS is demonstrably inferior on safety and efficiency grounds to a feasible alternative with possibly no greater environmental impacts. (222)

BM4 is shown in the EIS to be substantially inferior to BM5 in regard to freight efficiency to the extent that it may not be conducive to the use of the road for its intended function. (222)

BM4 is nearly 40% longer than BM5 and has an estimated travel time for trucks 50% greater which impacts the benefit of the project and the benefit cost ratio for this section. (222)

It is stated the construction cost of BM4 section is slightly cheaper than the cost of BM5, which is surprising as it is significantly shorter, requires less earthworks and does not need to be constructed under traffic. The cost data behind these estimates is not provided in the EIS documentation for validation. (222)

There must be substantial reasons for rejecting BM5, which would provide the community with a significantly more efficient road for their investment than BM4. Such reasons are not provided in the EIS. (222)

Mitigation or compensation for impacts on the National Park from BM5 could be mitigated in negotiation with NPWS. This could include acquisition of suitable private land for addition to the National Park, return of the original road corridor to the Park, or other assistance with the management of environmental and heritage features in the vicinity of Bulee Mountain. (222)

Further work needs to be undertaken to demonstrate that BM4 can operate as a safe and efficient route and meet the standards of good design for a new road expected by the community. (222)

The more severe grades of BM4, with a maximum grade of nearly 12%, are likely to deter efficient use by large trucks. The Austroads Guide specifies a maximum grade of 9-10% even for mountainous terrain and a 60 km/hr operating speed. (222)

Both BM4 and BM5 will result in the loss of some koala food trees. Adverse affects could include interrupting patterns of movement, removal of feeding habitat and increased road kills. Similar mitigation will be required for both options including koala fencing on the western side of the road, warning signs for motorists and monitoring of road kill for the first year to determine if further mitigation is necessary. BM5 includes a greater number of bridges, which will significantly increase the opportunity for safe fauna movements, which would benefit all terrestrial animals including koala. (222)

Support the BM5 option as it is 1.1km shorter, travel will be reduced, maximum grade will be reduced, design speed will be 80km/hr, the estimated number of crashes is reduced, there are greater opportunities for safe fauna crossings and a section of the historic Wool Road could be kept for a historic walk. (223)

It is believed preference should go to the BM5 option at Bulee Mountain. (225)

In the Bulee Mountain section the shorter and straighter alternative route has enormous benefits in terms of avoiding bottlenecks, traffic delays and decreasing the accident rate. The differences in habitat damage between the two routes are minimal and the benefits of the alternative route far outweigh any arguments in favour of the preferred route. (226)

Support the BM5 option for the Bulee Mountain escarpment. (227)

There has been no detailed analysis in relation to the higher likelihood of accidents on either BM4 or BM5 in relation to the much twistier road with a significant drop in speed regime from 100km/hr to 60km/hr and the frustration caused to light vehicle drivers proceeding slowly up a steep and winding road. This needs to be compared with the BM5, which is a higher speed configuration with lower grades, better alignment and significant opportunities for passing. (229)

Before a final decision is made on the BM4 or BM5 option, there needs to be further evaluation of the environmental aspects of going through 300 metres of national park as against approximately 4 kilometres. There needs to be some evaluation of the transport task and relative road safety between the two options. (229)

The route from Billy's Hill to the Endrick Bridge is short sighted. Traffic will increase with time whether there is an upgrade or not. Realignment on the north route will be undertaken in due course so why upgrade the existing road instead of biting the bullet and doing the job properly. The stated environmental objections to the north route are spurious. Whatever decision is made for this section the progressive sealing and realignment from Nowra should occur to minimise maintenance. (230)

In support of an alternative safer and shorter route and one which will take heavy traffic. However, all consideration should be given to flora, fauna and historic places. (231)

The "alternative" route at Bulee Mountain is by far the better way. It is shorter and therefore cheaper, the historical sections of the existing route would not be affected, however, it would not matter if it was, if it is considered to go through 500 metres it won't hurt the park and with regard to "threatened species" of plants they are probably weeds anyhow. (232)

Alternative options, particularly option 2 for "Bulee Mountain", appear to be even more ecologically damaging with impacts on koala and glossy black cockatoo habitats and identified wilderness. (233)

In favour of the northern deviation option at Bulee Mountain as it would be shorter, has better grades, better inherent safety and incursion of 500m into Morton National Park is a small price to pay when offset by the potential increased safety. (234)

Would prefer the MR92 upgrade to follow the alternative north of the existing road. (235, 236, 237, 238, 239, 240)

If another road is built, would like to support the retention of any national park and its preservation along this road. (241)

Support the road following the alternative route that will be quicker and safer. (85, 86, 87, 88, 105, 106, 107, 108, 149, 150, 151, 152, 230, 231, 232, 234, 235, 236, 237, 238, 239, 240, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635,)

In planning the road, we should think to the future traffic volume and usage, with a view to increasing the size when necessary. (243)

Keep the historic section (246)

It will provide better access in the case of fires. (247)

Why have another steep road like the one that goes through Kangaroo Valley? (253)

We feel this is incredible that our leaders and experts are so backward in their planning, ignoring our safety. We have needed a MR92 for at least 30 years; give us the best possible route, which is BM5. (260)

An area of high risk driving will be duplicated (causing deaths) if the planned route is adopted. (262)

The small bite out of the park is definitely the lesser evil. Safer for the people, with reduced environmental impact. (266)

Need a road that is suitable for the expected volume of traffic and heavy transport. It is futile to build anything less. (267)

Trucks would find the alternative route easier to negotiate. It would be safer for heavier traffic. (268)

The need for a new road is to be shorter, less steep and easier for heavy traffic. (271)

I believe the RTA's preferred route will kill more animals. (273)

The traffic will get heavier and so we need good and safer roads now and for the future. Our area is growing fast (278)

Parts of the road already pass through the national park. (279)

Need a decent road out of Nowra; the road over the mountain is a disaster. (280)

We need to preserve the Bulee Pass road as heritage and use the alternative route as this only uses 500 meters of the national park, Bulee uses 2.5 kms. (283)

The alternative route serves both humans, and Flora/Fauna, and is a compromise for both factions. (284)

This road is really needed but what is the point of a main road that is steep and slow? The bush would reclaim the old dirt road in no time so no wilderness is really lost. (286)

The road should be capable of carrying heavy traffic to remove trucks from Kangaroo Valley Rd. (288)

We already have some horrendous road/highway accident records, why build another accident statistic waiting to happen? (292)

The old road could be used as a tourist attraction. (295)

Due to several near accidents with semi-trailers on the Kangaroo Valley Rd, I believe it is imperative to have as few bends as possible in the chosen route. (297)

The national parks belong to the people, not Governments. (299)

For those who have travelled this road, the Bulee Mountain section has always been the worst part of a trip. (301)

The section through the national park will not be missed by the greens two years after construction, i.e. natural regrowth. (305)

National Parks have an "ocean of land". Lets donate one drop of it for ALL of society. (306)

The alternative route is also essential for heavy trucks and tourists. Impact on the vast Morton National Park is minuscule. (310)

BM5 is better for trucks than the preferred route. (312)

With less steep downhill sections, there will be fewer accidents. (313)

The alternative route is the obvious and common sense way to go - irrespective of cost or ecology. (314)

The alternative seems much better, surely 500 metres through a national park is ok! (324)

To save lives the shorter and safer route should be used. (325)

When a road first goes through a national park it has an adverse impact. However, realignment for good reason is a sustainable approach. (329)

The alternative route appears to be the logical option. (334)

We feel the road is unsafe in the Bulee Mountain area. (342)

If the old road is used there will be quite a bit of air track work and a lot of fill to go in at the bottom. It must take B Doubles. (347)

The BM5 option will produce less obstruction to wildlife. (350)

BM5 should be a dual lane (356)

BM5 is clearly the safest, straightest way to go, both for animals and us. (360)

The alternative route will prevail ultimately - so save money and build it now. The rock faces of the existing Bulee Mountain Pass must not be damaged. They are a spectacular. (363)

Support the road following the alternative route at Bulee Mountain, which will be quicker and safer. There is too much emphasis on impact of national park land. Traffic flow is important. (377)

Main Road 92 is a long-term road system and therefore the shortest and safest route should be selected. (379)

Why have another Kangaroo Valley route? Every road out of the south coast is over a mountain. (381)

Five hundred meters of national park are no big loss, when the advantages are considered. (384)

As for the 500m of national park nobody is allowed to use it anyway. Horse riding, bike riding - why not use it for something. (385)

There is no reason to build another black spot at Bulee Mountain. (386)

There is an abundant amount of national parks in NSW. People's lives should come before flora. (388)

The alternative route will create less pollution, as vehicles will travel at a more constant speed with less gear changes. (391)

Don't worry about the national park. There is too much park now. (393)

It appears the logical, safer and more practical way for travel. (396)

Makes common sense to use the alternative route for safer driving. (400)

The small area of national park is a little price to pay for a safer road. (403)

A good wide road in this area will open it up and give country towns more tourist trade. (404)

The alternative route would establish a double firebreak at the southern end of the Morton National Park. (406)

Use common sense. The people and businesses have top priority. (416)

There is no logical alternative to the alternative route as presented. (417)

MR92 has to be a safer, shorter and quicker means of access to the Hume Highway. (418)

Do not accept the belief that responsible development will destroy wildlife. (419)

The safest route should be taken. (420)

Road should be built for safety reasons, stop erosion, sediment deposits in waterways. (421)

To use 500 metres of national park is far better than to destroy parts of the historic 1856 road. (423)

The shorter journey will be of great benefit to myself. (424)

This road will serve the people of the south coast for the future and must follow the alternative route. (427)

The road through Kangaroo Valley goes through the Morton National Park. Should not be an issue. (428)

The alternative route is a must, as this road will be used by trucks. (430)

The alternative route will eventually have to be constructed so why not now. (432)

It seems to be the safest and sensible way to go. (433)

The proposed route is not suitable for heavy vehicles. (434)

The alternative road has less bends. (437)

It is better for the environment to have good, quick roads. Slow windy roads = more emissions. (438)

The preferred route would cause delays to fire tankers in the event of bush fires and also contradicts the environmentalists desire to reduce fuel emissions. Would be sub-standard compared to other new roads. (439)

Common sense should prevail. (441)

I say this even as a bushwalker, birdwatcher and member of native plant group - who uses the national park. (442)

The Bulee Mountain section with beautiful stone structures should be left as a tourist road. The national park is a big park and won't miss 500m. (449)

Are 500m of national park more important than the safety of lives? (450)

Being frequent travellers we would appreciate a safer, better road i.e. Main Road 92 than that proposed by the RTA. (451)

Cannot see any reason to support the RTA preferred route. (455)

Why waste $80 million on a road that trucks cannot use. (458)

Safety is the main concern. (460)

Will using the alternative route affect cost or further delays? If so, stick to the RTA's route. (461)

The preferred route of the RTA is impossible to understand. I disagree with it. (462)

To deliberately plan to construct a road with more curves and bends goes against all aspects of occupational health and safety, it will lead to claims for compensation. (463)

We don't need a road like Kangaroo Valley Rd. It is a hazard to travel along at the best of times. (464)

Support the road following the alternative route, which will be quicker and safer at Bulee Mountain. The sacrifice of a small section of national park is more than compensated by the safety of the revised route. (465, 469)

Support the road following the alternative route, which will be quicker and safer at Bulee Mountain. (106, 466, 467, 468, 469, 470, 471, 472)

Choose the alternative route, as there are too many people killed on the south coast roads now. Don't want the beauty of the places destroyed by having a main road put through which may only benefit a small number of people. (469)

Support Main Road 92 being constructed without further delay. Support the preferred route avoiding the small section of national park at Bulee Mountain. (473, 476, 474)

Support the preferred route avoiding the small section of national park at Bulee Mountain. (477, 478, 479)

The EIS mentions threatened plant species but what about the food sources, breeding/nesting sites of animals that will be affected by destroying the 500 metres of national park. (479)

Support the road following the preferred route avoiding the small section of national park at Bulee Mountain. (481, 482)

It is obvious the preferred route would be much cheaper to develop with fewer bridges and a ready-made roadway. (482)

Strongly support BM5 as is shorter than BM4, the gradient involves fewer steep sections and no grade higher than 11%, travel time would be shorter, the heritage value of the 1856 Wool Road is unaffected and could be incorporated into a walking trail, significantly fewer threatened plant species are affected and there are more opportunities for animals to safety move. The BM5 is a safer and more efficient road corridor. (636)

MR92 does not need to be as narrow, steep and windy as the road presently used. It needs to be straighter, shorter and not as steep so on the Bulee Mountain section please build the alternative route and please build it now. (637)

The preferred route will have more bends and steeper hills that would not be popular with trucks. The alternative route is preferred, regardless of the intrusion into Morton National Park, since it gives a faster route to Canberra. (638)

Support the urgent construction of MR92 and the alternative route. The road through Kosciusko National Park runs some 120kms right through the middle with no problems. Why the problems with 500m of National Park? (639)

The alternative route proposed would be the most suitable, eliminating the steep grades and feel the impact on Morton National Park to be minimal. The old road was for wool-laden drays but a more streamlined road is more appropriate to modern cars. (642)

Favour the option BM4 for Bulee Mountain area as it would have less adverse impact on the environment and would be easier to manage than other options. (644)

Support the BM5 option that clearly provides better outcomes in terms of freight movement, reduced travel times and safety, whilst also providing greater access for safe fauna crossings resulting in lower road kill potential. (645)

A further reason to support BM5 is that there is significantly greater disturbance to the occurrences of *Dillwynia crispii* between chainages 46800 and 46950 on route BM4. I believe that a minor change to route BM5 may wholly avoid these plants and a supplementary report is required to clarify these issues. (648)

11.3 Nerriga Bypass

The upgrade should not proceed unless a bypass of Nerriga is included in the Stage one proposal. The bypass should commence from the curve about 900m east of "High Forest" continuing straight ahead to rejoin the main road south of the cemetery where the road continues left onto a southerly direction, south of Bindi Brook. Should this bypass be implemented, 2 properties at most would be impacted. Visual, noise & exhaust pollution would be virtually non existent due to topography & distance from the village and costs would be only marginally more than reconstruction of the present road. In these times, one primary concern of road builders is to bypass communities. (3)

Don't need a high solid wall to block out the sound when there is an alternative route around Nerriga that can and should be used. Increased traffic will make it more dangerous to walk on the road and prevent friends driving by and stopping to give greetings. There will also be exhaust fumes from trucks and increased traffic. (13)

With the proposed road through Nerriga this business will be impacted as we will not be able to ride on and cross the road when riding and training young horses. Concerned increased traffic would make it dangerous to ride their stock horses on the road. Also concerned about exhaust fumes from trucks and increased traffic. A bypass road around Nerriga must be included in Stage 1 of the MR92 upgrade. (14)

What has happened to the options of bypassing the town of Nerriga? There suddenly appears no option but for the road to go straight through town where the existing road is located. The noise and danger will stop all local functions and kill Nerriga's unique community spirit. Insulating the noise will not be enough. How can noise be stopped without spoiling the heritage and quaint-ness of the town? Who will want to stop on such a busy road when they can't hear or speak above the noise? An option to bypass Nerriga would keep the community life active. The quietness and antiquity of the town could still be enjoyed

and would give an opportunity for businesses to thrive offering tourists a truly unique experience. (19, 20, 21, 22, 23, 24, 25, 77)

It was understood the upgrade of MR92 would bypass the town of Nerriga however there is no mention of the bypass option in the EIS. Why has it been removed from discussion? There is no appraisal of the pros and cons of the bypass option or to cost this option against the current proposal to upgrade the existing route. This represents a major flaw in the EIS as the proponents of the bypass option are not included. The roar of traffic passing the sports ground in Nerriga when the road is upgraded will destroy the ambience of an afternoon's sport and will be hazardous to horse riders. There is a better bypass route at Nerriga and this should be taken into account when considering the MR92 upgrade proposal. (26, 27)

Two options were presented at a public meeting when the proposal to upgrade MR92 was first considered. The preferred option provided for a bypass about one kilometre east of Nerriga. There is no explanation in the EIS for the failure to recognise that the Nerriga bypass option existed. There is no appraisal of the pros and cons of the bypass option or to cost this option against the current proposal to upgrade the existing route. This represents a major flaw in the EIS, as the proponents of the bypass option are not included. With the proposed alignment through the town of Nerriga, the regular social functions at the Nerriga town hall will be drowned out by traffic noise. With at least 200 heavy vehicles per day passing through the town of Nerriga it will be anything but peaceful. (28, 29, 30, 31, 32)

There is a suggested bypass route and this option should be considered. To have a main road passing within metres of the hotel, shop, church etc in Nerriga will severely detract from the ability of residents and visitors to use the facilities in quiet enjoyment. This will damage the serenity of the town that is the reason most visitors come here. If the bypass is not possible due to cost or another reason, it is expected this would be explained before the final route for MR92 is determined. (33, 34, 35, 36, 37, 38, 76)

It will be too dangerous to have this main road go right through the middle of Nerriga. The road is used for walking, horse riding, bike riding, children alight from school buses, shops/pub/church/hall are located on the roadside, access to driveways/public roads/sports ground/tip/fire bridge and attend the museum funerals at the cemetery which are located on the roadside. An option to bypass Nerriga should be carefully considered so the people can continue to enjoy life to the full in the quiet town. (19, 40, 41, 122)

Why has the option for bypassing Nerriga been omitted? The bypass was a key issue at a public meeting early in the MR92 upgrade discussion with the Nerriga community. It appears the Koalas are more important than human beings. (42, 43, 44, 123, 124)

There are no options in the EIS for bypassing the town of Nerriga and protecting the lives and eardrums of residents and visitors. It is proposed to upgrade the existing road and to sound proof buildings if required. Why has the bypass not been considered? To have a main road passing through the social hub of the area is in conflict with road safety measures and social justice for residents and visitors who do not want their peace and quiet destroyed by a highway. (45, 46, 47, 48)

The EIS does not indicate that there was ever an option to bypass Nerriga. A community meeting was held when the upgrade of MR92 was first proposed and a map clearly showed two options for bypassing Nerriga. Concerned a large amount of traffic through the town will destroy the peacefulness of the place and will pose a road safety risk for both road users and pedestrians. The bypass route should be considered before making a final decision. (19, 39, 49, 50, 51, 65)

An option was circulated when upgrading MR92 was first discussed for bypassing Nerriga to avoid a noise or safety problem for residents and visitors. The EIS does not have an option for bypassing Nerriga considered and does not mention why. It seems foolish to build a new road that has the major flaw of creating a noise and road safety problem, when the bypass route would avoid these problems. (19, 52, 79)

If the road through Nerriga is upgraded the town will be spoilt with an increase in traffic and a bypass should be built so that traffic and the noise is nowhere near the buildings in town which are very close to the road. This way people can continue the activities they now enjoy. (53)

Nerriga is a lovely quiet little town people love to live in and visit. A main road through the middle of town will wreck the place for everyone. Going to the local facilities will be difficult, whether trying to park or walk. The peacefulness will disappear if trucks, 4-wheel drives and cars come through due to MR92. Suggest a bypass road be built around the town of Nerriga to retain the current peacefulness, it will be less dangerous and less noisy. (54)

Strongly object to the upgrade of MR92 through the village of Nerriga. Why should residents be subjected to exhaust, noise and vibration pollution when there is a by-pass option available around Nerriga. There are 15 private access roads and 2 public roads entering MR92 within 1 km of Nerriga, which will be hazardous to residents and users of the highway. (57)

Consideration should be given to bypass Nerriga to the east rather than upgrading the existing road through the village. Upgrading the street to highway standard would totally destroy the peaceful, quiet haven that is now enjoyed in Nerriga. It appears national parks; koalas, rocks and trees have been given favourable consideration while the well being of Nerriga has been ignored. (61)

There are a number of historic and heritage value items in and around the village of Nerriga, including Nerriga School House, old wooden footbridge at Bindi Brook, historic cypress tree opposite the hotel, the Centenary of Federation Stone and Nerriga itself, that will be severely impacted should there not be a bypass around Nerriga. (63)

If the MR 92 was to pass through Nerriga, it will have a detrimental effect on trading of the shops, restaurant, caravan- park and hotel. The noise, lack of parking and difficulty in moving around the town will deter locals (who are the majority of patrons). On the other hand, a short minor road into the town will encourage visitors and locals alike. (66)

Why were options bypassing Nerriga not subject to an environmental impact statement when there was strong agreement by the town's people at a public meeting early in the EIS process that a bypass was the only real option? The road through Nerriga would have impacts including noise, safety and freedom of movement for residents and visitors, impact of traffic vibration to the town's old buildings and detrimental affects on trading for local business. (66)

The increase in traffic, particularly large vehicles, is a real safety concern. People walking into town or between facilities regularly use the existing road. It has many driveways requiring vehicles to slow down. Additionally, the road is used by a school bus and festivals are held on occasions. (66)

Over the past 30 years or so, a key strategy in improving road safety has been to bypass towns. The existing proposal for upgrading MR 92 flies in the face of this strategy. (67)

The current proposal provides for upgrading the existing road through the township of Nerriga even though it is conservatively estimated approximately 1700 vehicles per day will use the road, with 220 vehicles being heavy transport. When community consultation was taking place on the upgrade, there was a clear option that was favoured by the community to bypass Nerriga to the east. These options have been dropped from the proposal with no explanation given or even mention that there may be another option to the upgrade of the existing road through the town. The upgrade of the road through Nerriga would pose a serious safety problem. (67)

The option to bypass Nerriga should not have been omitted and in fact, should remain as the preferred option. (68)

The proposal for bypassing the Nerriga Township has not been considered in the EIS, as presented at a public meeting regarding the upgrade of MR92. The only option considered is for the highway to go through the town on its current alignment. This would have a negative impact on such a unique, unspoiled town such as Nerriga. (115)

At present people can socialise along the main street of Nerriga. The local area, people, atmosphere, tranquillity and lifestyle are much loved. Urge reconsideration of the decision to build Main Road 92 through the main street of Nerriga. (119, 121)

The proposal fails to recognise that there were two options considered by the community for bypassing the town of Nerriga rather than upgrading the existing route through town. Both these options were presented at a public meeting when the proposal to upgrade the MR92 was first considered. The first option provided for a bypass about 100 to 200 metres to the east of the existing road and the second option placed the bypass about one kilometre further east. Neither of these options is mentioned in the EIS and no explanation has been given for their exclusion. This means that the proposal as it stands, fails to take into account an issue of major concern to property holders and regular users of MR92. (123)

Currently Nerriga experiences very little through traffic however this will change once the road is upgraded. The number of vehicles especially the heavy vehicles will have a dramatic change to the local environment. The road will literally be on the doorstep of homes, the church, the local hall and the local pub. The quality of life and safety for the local residents will be compromised. The heavy traffic should not be made to use the existing road through the town of Nerriga and a bypass should be considered. (132)

A bypass east of Nerriga should be the preferred option however the EIS fails to reference this option. (172)

Should a bypass of Nerriga be decided clarification is required as public land within Nerriga village is very limited, so whose land will be resumed to provide off-street parking for the two businesses operating within the village? (182)

The people of Nerriga do not want to stop the development of the road, however object to such an increase in the number of vehicles and the introduction of very heavy vehicles to the main street. Creating a bypass around the town should be considered. (198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209)

Tallaganda Council has resolved to seek additional funding for the Nerriga bypass but do not support the Nerriga bypass as a part of the current Main Road 92 project. (229)

Any upgraded road should bypass Nerriga. (230)

11.4 Road vs. Rail

Need to focus on making existing roads safe and this does not necessarily mean upgrades such as the one proposed. (215)

The emphasis must be on strengthening the rail freight network to reduce the number of truck movements and this would go a long way to improving safety. The route of the Canberra - Jervis Bay rail line should be considered. The route will suit all classes of road traffic. (245)

11.5 Sassafras Bypass

Prefer option S3 because it allows the highest design speed and is the best option for moving cars, light vehicles, trucks and B-doubles efficiently and safely. (59)

Wish to see the existing alignment through Sassafras maintained. (148)

Consider a bypass through Sassafras, as the current road alignment is not relevant to the future needs of a sealed freight access pathway. Upgrading the road through Sassafras on its current alignment will create development issues in the future and is incompatible with the needs of the local road users. Why is there a need to take heavy vehicles through the middle of this

locality? If the goal of the upgrade is to allow trucks up to the size of "B-Doubles" to use this route, then a more appropriate investment in a bypass is necessary regardless of the additional cost. (171)

Changes to proposed road alignment bordering this property after consultations by Maunsell McIntyre Pty Ltd have reduced the options available for the upgrade of the road and have not been acknowledged in the EIS. The Maunsell report recommended an alignment that was to the north of this property's border. However, the subsequent gas pipeline installation has used part of this alignment forcing the development of any further road upgrades closer to this property. These changes to the agreed alignment were made without knowledge or consultation. They have meant there are few options left for the upgrade of the road at this point at Sassafras. No wonder rural landholders continue to be sceptical about these types of consultative processes. If the road upgrade goes ahead on the basis in the EIS the previous agreement will be revisited in protest to the fact that we were not adequately kept informed of changes to previous agreements. (171)

11.6 Turpentine Road

Prefer option TR1 because it allows the highest design speed and is the best option for moving cars, light vehicles, trucks and B-doubles efficiently and safely. (59)

One compromise in design of the final alignment that should be reconsidered is the proposal to undertake minimal works at the intersection of Main Road 92 and Turpentine Road, and have a low speed intersection with priority given to Turpentine Road. This intersection should be changed to TR1 option with a design speed of 100kpm and priority given to Main Road 92. (99)

Do not support the option of Turpentine Road as the priority road as this will not best meet the project objectives when MR92 is upgraded. Support the MR92 as the priority with a reduced design speed to 80 km/hr to minimise environmental and cost implications. (156)

Support the Turpentine Road intersection design and suggest at least 500 metres of the Turpentine Road be upgraded and sealed as part of this upgrade. (170)

Sealing Turpentine Road would be a good adjunct to the MR92 upgrade to link with Tomerong on the old Princes Highway and open up all sealed access inland areas to Jervis Bay and villages southward. (194)

To retain the existing intersection at Turpentine Road would be a disaster. The EIS indicates the estimated traffic movement would increase again when the road is extended beyond Nerriga. The intersection in these circumstances would be a safety concern, and as Turpentine Road extends east there will be an invitation for traffic to continue to the Princes Highway along the road that is not capable of carrying medium density traffic. The TR1 option would make the invitation to turn off along the remainder of Turpentine Road less attractive. (212)

It is proposed that Turpentine Road be also sealed and upgraded. As Jervis Bay is a major tourist attraction for the Shoalhaven, this upgrade should be considered a road network priority that will significantly add value to the Shoalhaven area. (225)

12 Property

12.1 National Parks

The upgrade poses an increased fire risk to National Parks. (129)

The proposal to excise 46 hectares of heavily forested land from the national park for this project is offensive. All areas placed within national parks are supposed to be protected for their natural inhabitants and future generations, not reserved for the next road project. (233)

The proposed acquisition of a compensatory area of 46 hectares is not acceptable as it establishes the principle that protected areas can be traded off and it is not clear the habitat value or ecological significance of the acquisitions will match that of the area cleared. (233)

The greater traffic and improved access will increase environmental pressures on the national park adjacent to the road. Illegal activities such as hunting, wildflower collection and bush-rock removal can be expected to grow. Given the recent history of bushfires it seems clear that providing this sort of access to large and remote areas of bushland will increase possibilities for arson or careless ignition of bushfires. (233)

12.2 Private

The "identified wilderness" area to be traversed by BM5 was not declared as wilderness during the recent wilderness reservation process, and is private land. (99)

Main concern is property impact to two beautiful bush blocks (chainage reference 32100-32150) that contribute so much to the character of Sassafras. (148)

Do not want partial property acquisition. If the existing alignment through Sassafras is maintained and safety barriers are incorporated to reduce width of the road corridor between blocks 1 and 7, this would minimise required land acquisition. (148)

Duke Energy will require further consultation to ensure that its pipeline easement and the rights enjoyed under this easement are in no way compromised, cancelled or affected by the acquisition of lands for the upgrade project. In this regard, there are some statements in the RTA's Land Acquisition Policy Statement that will require further clarification. (176)

The proposal to move the road in eastern Sassafras to the north to the only section of flat land we have on this property ruins any prospect of planned future use. The property then becomes unable to provide the income, which is planned for the future and our family. (210)

Concerned and oppose the amount of land required from my property as we were never consulted or advised. The discovery was a shock whilst attending the public exhibition and then we had to pay for a copy of the EIS to find out more information. (210)

13 Road Design

13.1 Cost

The on-ground works for MR92 were initially estimated by the Value Management Study (VMS) to cost $81.1 million (Technical Paper 29). This estimate is $11.1 million greater than the current budget of $70 million, indicating that available funding may be insufficient for the proposed works. The VMS costing are modest estimates, as indicated by the now preferred "Bulee Mountain" option estimated elsewhere to cost $24.7 million which the VMS estimated costed at $17 million. (118)

The new cost estimates outlined in Technical Paper 2 for particular road sections focus only on specific road works and do not consider property acquisition nor the reestablishment of road entry points, closure of unnecessary 4WD tracks and other environmental requirements detailed in the EIS. None of these tasks are itemised in the construction budget. (118)

The economic analysis of future benefits only allows for the cost of re-sheeting and resealing the 30 kilometres of roads at $500,000 per kilometre. The figure quoted could be a 400 per cent underestimate given the difficult work that will be involved with soil conservation works for the very highly erodible soils around Sandy Point area, construction on different grades for the road leaving the Shoalhaven River and two major new bridges. In summary, the total capital cost estimates for the Nowra to Braidwood link and D, the full upgrade, could be an additional $60 million not an extra $15 million as stated. The inclusion of new bridges and adequate road works in the costing would make the full project uneconomic. (118)

13.2 Safety

There will be a greater likelihood of injury and even death from road accidents with the increase in heavy vehicle traffic (i.e. semi-trailers and B-Doubles). (68)

Concerned at the long delay in construction of a faster and more importantly, safer route. Have personally experienced many narrow escapes from accident while driving around the torturous curves of the present road. (96)

Heavy fog frequently reduces visibility to less than 50 metres through the settled area of Sassafras. The increase in freight and tourist traffic, especially through areas prone to frequent dense fog (Sassafras plateau) carries a high mortality risk. (129)

The road should not be designed for speeds that exceed 80km/h. The reality is that most drivers exceed the speed limit by what they consider safe, so you can expect speeds of 90 – 100 km/h in an 80km/h zone and speeds of 110 – 120 km/h in a 100km/h zone. (132)

There is absolutely no doubt that there will be an increase in human deaths and serious injuries given the increased speed, traffic and heavy truck use that will ensue from this road upgrade. This situation has been created because the budget for the road does not allow for the construction of an easement suitable for heavy vehicles. To propose B-doubles share a 10-metre road easement in an environment, which can experience heavy rainfall, high winds and poor visibility in fog is a recipe for death. The EIS makes no provision for how these accidents will be managed in such a remote location, miles from nowhere. The incompatibility of tourist, local and freight traffic will provide an additional source of danger. A 60km speed limit through Sassafras and wildlife signage will be a minimum requirement for safe travelling through our community but will not overcome the danger of travelling through the park. (171)

There will be an expectation of motorists that the road, going west, past Nerriga will be of a similar standard to that on the eastern side of Nerriga. To finish the road before Bindi Brook will cause accidents. Motorists are not going to expect a creek crossing of such a low standard, as it currently is, after travelling a road of reasonable quality. The chances of a vehicle becoming airborne on this crossing is very high and with the improvements in the road quality east of Nerriga the possibility of a vehicle becoming airborne and landing on top of another vehicle crossing Bindi Brook will increase markedly. (182)

Currently, there are many motorists travelling through Nerriga who choose to ignore the 60km/h speed limit signs. How are the greatly increased numbers of vehicles (including B-doubles) going to be forced to obey the speed limit signs? (182)

To upgrade the existing gravel road to a sealed road with improved gradient and curvatures through Sassafras, Nerriga and the Morton National Park will lead to many future vehicle accidents which will result in human death, maiming and disfigurement, increased damage to vehicles and increased insurance, towing and repair costs for motorists. (187)

Very heavy frosts are common through winter and sporadically in summer. Due to the continual cold temperatures ice puddles are a common occurrence on the current unsealed roadway and there will occur on the sealed roadway. Heavy fog often arrives on summer afternoons and remains into the night. Very heavy, wet fog or rain is often continual in winter. Sassafras range is higher than the Bulli area, which is often covered in thick fog and has many RTA traffic controls in place for the management of traffic in such conditions. (187)

Approximately 54km of this road travels through Morton National Park and is surrounded by nothing other than natural bushland. Natural bushland is filled with animal life however is not filled with telephone services, accident assistant units, police stations, ambulance stations and the like. Should an accident causing injury occur there is no public telephone or mobile telephone coverage, so there is no option but to wait for a passing motorist. Depending on the location of the accident it could take between 30 and 45 minutes for an ambulance to reach the crash site, attend to the injured and another 30 to 45 minutes for the return journey to hospital. (187)

There is no fencing to keep animals off the road other than a koala fence at the Endrick River. There are no plans to implement animal tunnels underneath the road at any location. The proposed use of this road by trucks would pose significant safety issues due to high Kangaroo traffic across this road. Animal crossings are plentiful in the national park and rural lands all the way to Nerriga. Any animal on the road way is a serious danger to traffic. (187)

How will the policing of speed limits occur during the day and night? There is no police station between Nowra and Braidwood. There is no power available on this road from HMAS Albatross until the township of Nerriga, and therefore speed cameras are not an option. (187)

The roads beyond Nerriga are not designed for heavy traffic or heavy transport. Accident rates are already high on these roads as they are windy and poorly graded. The Oallen bridge has a 15 tonne limit and is no way suitable for a significant number of trucks. (198)

The proposal states accidents will decrease with the road upgrade. It is believed the opposite will occur, with the severity of accidents increasing due to speed limit and weather conditions. Vehicles already speed on this section of road and more vehicles mean more speeding. There will be no monitoring of the speed limits and therefore many motorists will find the speed limit signs irrelevant. The mist/fog that sweeps in quickly and hangs low in Sassafras can be thick. Visibility becomes very poor. (210)

Need to focus on making existing roads safe and this does not necessarily mean upgrades such as the one proposed. The emphasis must be on strengthening the rail freight network to reduce the number of truck movements and this would go a long way to improving safety. (215)

Ensuring that the road is developed to the highest safety standards is a primary requirement of the proposal. Upgrading of MR92 through Bulee Mountain must be adequate for the very long term. In the mountainous terrain with its environmental sensitivities, it would be extremely difficult, if not impossible to try and improve safety on the existing alignment once the project is complete. It is also necessary to ensure that the full environmental impacts of the upgrading are assessed at this time. (222)

It is disappointing the EIS has not addressed the issue of road safety in greater detail. A working paper produced for the EIS, but not subsequently included showed estimated crash rate of 1.6 to 3.2 per year for BM4 and 0.6 to 1.0 for BM5. Therefore BM5 is estimated to be about 3 times safer than BM4, a substantial difference. More compelling reasons must be given for providing the community with a new road that is constructed to a lower than achievable safety standard, particularly where the EIS has discounted BM5 for environmental reasons while recommending BM4, which also has significant adverse environmental and heritage impacts. (222)

An independent safety audit may assist in validating the approach that is ultimately adopted at Bulee Mountain. (222)

Even though BM5 and BM4 comply with the relative requirements for road safety, they are not equal. A very twisty steep 60km/hr road is definitely not as safe as a less steep, less windy 80km/hr road. There needs to be some evaluation both in transport task terms and safety benefits for the higher speed route. (229)

The EIS shows an over reliance on the conflicting aims of designating an upgraded road for tourism (with pages 3-10 noting the "potential for MR92 to also be designated as a Tourist Drive") and upgrading the road for heavy freight vehicles. This conflict has adverse road safety implications. Providing a sealed road for most, but not all, of the distance between Braidwood and Nerriga may also have road safety implications. (640)

13.3 Standards

If the aim of the project is to improve the link between the Illawarra Region and the roads west of Nerriga to allow heavy vehicles better access to the Hume Highway, the ACT and the Gippsland areas then it seems a poor solution. Lane widths of 3.25m are simply too narrow and should not be permitted. This road will be used in significant numbers by heavy vehicles and others and it is a matter of concern that a road designed to encourage use by B-Doubles is so narrow. Passing lanes are essential in frequent numbers along the road, without them drivers will take risks and overtake where it is less safe. (1)

There are signs on the Pacific Highway to Braidwood at the Tomerong turnoff and at Braidwood toward Nowra however nothing to warn motorists of the state of road i.e. how rough and steep the road is in some spots. (82)

A guiding principle throughout the design development and EIS process has been the need to select an alignment that would cater for traffic needs for the foreseeable future and not have to be further upgraded. Unfortunately some sections of the

route as proposed in the EIS conflict with this basic philosophy. This is particularly true in the Bulee Mountain area and at the Turpentine Road intersection. It is critical that this principle be maintained in the final approved project. (99)

It is disappointing to note the omission of any reference to cycling facilities as part of the MR92 Upgrade EIS. It had been previously confirmed that cyclists would have 2-metre wide shoulders (one metre smooth bitumen and one metre gravel) separated by white lines and with bicycle stencils at appropriate intervals. (116)

Suggest maximum 60 kph speed limit through chainage 32000-32500 as the gradient is steep and thus dangerous at higher speeds. (148)

Between blocks 1 and 7 would like safety barriers incorporated. This will reduce the width of the road corridor. This will conserve trees and reduce the visual impact of the road upgrade to two very scenic open-forest blocks. (148)

If the road is moved north at chainage 32100-32150 to straighten out bends, this will impact on this property visually. This will destroy this family's solitude, privacy and scenic views. (148)

It is stated in Part B 5.3 that the Eastern Gas Pipeline has been included in preliminary assessments concerning constraints. During the process of the review with the consultants, they did not have final information on the section of the upgrade through Sassafras and as such this section of the road has not been reviewed in relation to impacts on the pipeline. It is noted that there is one section where the proposed road has been aligned over the pipeline that is a concern. (176)

Although the as-built alignment has been provided, the pipeline alignment showing on plans in the EIS is the design alignment and does not correctly depict the existing pipeline as noted in the as-built details and notifications by Duke Energy to Council. This will need remedial action before review by Duke Energy International. (176)

The Bindi Brook crossing is currently only just wide enough for 2 small cars to pass each other so long as their speed is kept low. There have been a number of accidents and near misses on this crossing, which consists of a steep dip with the road curving onto the crossing and with the "T" intersection with Endrick River Road, part way up the slope going away from Nerriga. Even with small amounts of rain there is water going across the roadway at the crossing, this mainly coming from run off coming out of Endrick River Road. (182)

It would be far safer to consider the community suggestion of constructing a by-pass of Nerriga and the Bindi Brook crossing. This would negate the problems of the necessity of upgrading the Bindi Brook crossing and the sound proofing of the houses in the Nerriga village and east of Nerriga. (182)

The capacity of trucks is expected to increase beyond those currently allowed on Australian roads. The Proposal should consider this and the upgrade should be undertaken to the highest possible road standards. (222)

The cumulative effect of low design standards applied to much of the Proposal, together with BM4 which has a design speed of 60km/h, there is a propensity for crashes to occur at Bulee Mountain. (222)

At Bulee Mountain, allowing for the steep downgrade of BM4, the horizontal radius becomes effectively 53m. The operating speed for a 53m horizontal curve in rolling mountainous terrain is just above 50km/h. This is substantially less than the 60km/h design speed claimed for BM4 in the EIS. (222)

While not documented in the EIS, it is understood that the design of the Proposal at Bulee Mountain does not provide the requisite lengths of transition curves specified in the Austroads Guide. (222)

Inadequate detail is provided in the EIS on sight distances. It is considered that the section through Bulee Mountain does not provide adequate sight distances, which is fundamental to safety. (222)

The short overtaking lanes (100m) proposed at Bulee Mountain are well below the Austroads Guide for an operating speed of 60km/h (250m). This poses potential safety issues particularly given the mix of traffic likely to use the road. (222)

It is frightening meeting up with semi-trailers travelling in the opposite direction both going up and down Bulee Mountain. Will jersey kerbs similar to the Mount Ousley Road (SH1) be installed if the existing alignment is upgraded? (234)

The steep parts of this new road need to be semi-trailer truck safe e.g. overtaking lanes. (272)

Make the road motorcycle friendly i.e. no gravel on corners, non-slip paint on road markings and no wire safety barriers. (447)

Consideration ought to be made for adequate provisions for cyclists along the proposed MR92. The Shoalhaven is a renowned tourist destination that includes cyclists who wish to tour the district. There are many benefits in ensuring cyclists are catered for along the route, not the least being safety. (641)

The proposed construction will significantly increase the traffic flows around HMAS ALBATROSS. It is proposed that appropriate traffic control devices be provided once an analysis of the level of traffic flow has been undertaken. (643)

14 Support/Object Proposal

14.1 Support Proposal

Support the project. (15)

Keen to see the upgrade of MR 92. (16)

Do it right, do it once. Get on with it. (17)

This project has National significance and should be completed as soon as possible. (55)

Strongly support the upgrade of the existing Main Road 92. (56)

Council supports the upgrading and improvement of Main Road 92 from Nowra to Nerriga. (58)

Main Road 92 is about 50 years late in coming. Should be done as soon as possible for economic and safety reasons. (62)

At this time have almost given up hope to travel on Main Road 92. (82)

Support the road being built and would appreciate if it was built as quickly as possible. (83)

It has been talked about for years but nothing has been done about it. Let's get started on the project. (84)

Support Main Road 92 being constructed without further delay. (85, 86, 87, 88, 105, 107, 108, 150, 151, 152, 230, 231, 232, 234, 235, 236, 237, 238, 239, 240, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635,)

I feel this road should have been a main road many years ago. I can't wait for it (87)

Would support the road being built as quickly as possible. (89)

Would like to see the proposed road finished as soon as possible. (90)

Council remains committed to the continued upgrading of Main Road 92, and to be constructively involved in the necessary processes. (99)

Support the road being built as quickly as possible. (103)

Support the upgrade of MR92. (109)

As local residents and not infrequent travellers to Canberra, Albury/Wodonga and Melbourne, we support the road being constructed as quickly as possible. (117)

We are very supportive of the project. (136)

Support the upgrade of MR92. (142)

Council supports the proposal to develop MR 92 as a transport corridor to the southern / western parts of NSW. (146)

The sooner the better and make it safer for all traffic. (150)

We strongly support the proposal to upgrade Main Road 92 to provide a regional transport link, with the prime objectives of safety and transport efficiency. (156)

This project has been discussed for 20 years and now that it is started, commit to completing it. (158)

Support the upgrade of MR92 between Nowra and Nerriga. (178)

It is accepted that there is a need to upgrade the 54km section of MR92 between Hames Road and Nerriga. (183)

This road should proceed without delay. (186)

Agree with the proposal and the benefits it will deliver to the communities of Nerriga and beyond. (192)

Livestock Transporters & Bulk Carriers Association strongly support the proposal to upgrade Main Road 92. (195)

Support the upgrading of Main Road 92 between Nowra and Nerriga to an all weather bitumen surface. (213)

Feel very strongly about getting this job completed as quickly as possible. (216)

DOTARS fully supports the project and urges planning to be completed without unnecessary delay. (222)

I travel to the ACT once or twice a month and loath the steep mountains that I am forced to travel. I will support the new road and use it. (252)

I agree that this project now requires some urgency. (334)

Get the road finished as soon as possible and the safest way. (426)

The sooner - the better. (444)

14.2 Objection to Proposal

Object to the development of MR92, but if forced to choose would pick the preferred route which minimises impact on the National Park. (93)

Do not support this development. (95)

The proposed road upgrade is not supported. (118)

Totally object to the proposal as he does not want more traffic, especially trucks on the road past Sassafras. Wishes to see the existing alignment maintained. (158)

Do not support the proposed upgrade. (180)

ACF (Shoalhaven) rejects the proposal as unjustifiably costly, environmentally destructive and of little benefit for most members of the travelling public. (180)

The upgrade of Main Road 92 is not justified in any manner. There is a complete lack of consideration for general public safety and lack of understanding of the ecosystems that exist in National Parks and wilderness areas. (187)

Do not support the upgrade of MR92 and considers funding would be far better used in upgrading the Princes Highway. (191)

Strongly object to the proposed upgrading Main Road 92 given the unacceptable environmental impacts that will be associated with it. Particularly offensive is the proposal to excise 46 hectares of heavily forested land from the national park real estate for this project. (233)

Consider the road upgrade is completely unnecessary. (241)

Do not support Main Road 92 being constructed without delay. Don't agree with spending so much money on a road when there is already access to these areas. (477, 479)

Do not support Main Road 92 being constructed without delay. Don't agree with spending so much money on a road when there is already access to these areas. The building of this road is completely unnecessary and I support saving national parks at all costs. (478)

Do not support Main Road 92 being constructed without delay. Why can't things stay the way they are? Haven't we done enough damage? (480)

We oppose the proposed Main Road 92 upgrade. (647)

APPENDIX B
Correspondence

Environment Australia

Department of the Environment and Heritage

Project Manager
Main Road 92 Upgrade
Roads & Traffic Authority
Level 4
90 Crown Street
WOLLONGONG NSW 2500

Dear Sir/Madam

COMMENTS ON ENVIRONMENTAL IMPACT STATEMENT
NSW ROADS AND TRAFFIC AUTHORITY/LAND TRANSPORT/MAIN ROAD 92, NOWRA-NERRIGA/NSW/UPGRADE OF EXISTING ROAD
(OUR REFERENCE: 2002/674)

I refer to your letter of 9 December 2003 inviting comments on the NSW Roads and Traffic Authority's Environmental Impact Statement (EIS) for the Main Road 92 Upgrade (Nowra to Nerriga). The EIS is to be assessed in accordance with the requirements of *Part 5 of the Environmental Planning and Assessment Act 1979*, and this process has been accredited for this project under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Following are Environment Australia's comments:

To assist the proponent in understanding why this project was determined a controlled action under the EPBC Act, on 8 September 2002 we provided an informal "Information for Proponent on Referral" to Ross Jones of Sinclair Knight Merz where we advised of the EPBC Act listed threatened species that may be impacted by the proposed action. The EIS does address a number of these species, and mitigation measures are proposed where necessary. The information in the EIS and SIS is, however, inadequate in relation to the following three EPBC listed species:

- Eastern Bristlebird (*Dasyornis brachypterus*).
- Southern Brown Bandicoot (*Isodon obesulus obesulus*)
- Broad Headed Snake (*Hoplocephalus bungaroides*)

The SIS notes that the Eastern Bristlebird has been reported to occur on the Tianjara plateau near the road alignment. While one record appears to be a misidentification, the other record is in an area of suitable habitat. Similarly, while the SIS notes that there are very few recent records of the Southern Brown Bandicoot in the area, there are 'huge areas of seemingly suitable habitat in the region'. The EIS states that the Broad-headed Snake 'could occur anywhere in the study area where clifflines occur'.

No targeted surveys for any of these species appear to have been conducted, and there is no discussion in the EIS or SIS of mitigation measures for these species. Given the possibility that all three could potentially occur near the road alignment, all warrant further investigation to determine whether they do, or are likely to, occur along the road alignment and whether mitigation measures are required.

Please do not hesitate to contact Ms Eva Logan (02) 6274 1953 if you wish to discuss any matters raised in this letter.

Yours sincerely

Malcolm Forbes
Assistant Secretary
Environment Assessment and Approvals Branch
5 ~~February~~ March 2003

Environment Australia

Department of the Environment and Heritage

Mr Ross Dearden
RTA Southern Region
PO Box 477
WOLLONGONG NSW 2520

Dear Mr Dearden

Main Road 92 Upgrade – Hames Road, Nowra to Nerriga (EPBC Ref: 2002/674)

Thank you for your letter (received 10 October 2003) requesting reconsideration of the delegate's decision of 28 June 2003 that the above proposal is a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

As you are aware, following receipt of preliminary information on 5 July 2003, the delegate decided on 2 August 2003 that assessment by an accredited assessment process be conducted under the NSW *Environmental Planning and Assessment Act 1979*.

Section 78 of the EPBC Act provides for reconsideration of a decision in the event of substantial new information becoming available about the likely impacts of a proposal on a matter protected under the EPBC Act.

However, given that the accredited State assessment process is well advanced and the new information you refer to has arisen as part of this process, the Department considers it would be inappropriate to discontinue the assessment and approval process under the EPBC Act. You would appreciate that if the assessment process determined that the proposal was likely to have a minimal impact on matters protected under the EPBC Act, then this would be reflected in any conditions attached to the approval.

Please do not hesitate to contact Ms Ley Kingdom (02 6274 2796) if you require further information or clarification. We would like to accept your offer for a site visit. The assessment manager for this project is Ms Kingdom who will contact you to arrange a suitable date and time.

Yours sincerely

Malcolm Forbes
Assistant Secretary
Environment Assessment & Approvals Branch
Approvals and Wildlife Division

15 October 2003

FAXED
21 OCT 2003

File: 01M1030

8 October 2003

Mr S Mercer
Environment Assessment Branch
Environment Australia
John Gorton Building
King Edward Terrace
PARKES ACT 2600

Dear Mr Mercer

SUBJECT: MAIN ROAD 92 UPGRADE - HAMES ROAD, NOWRA TO NERRIGA

I refer to the determination dated 28 June 2002 that the subject project is a controlled action under the *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act). The purpose of this letter is to advise that since the determination, substantial new information has been obtained as part of the EIS process may be relevant should the Minister decide to reconsider the first decision pursuant to Section 78(1)(a) of the EPBC Act.. The RTA would encourage such a reconsideration.

The additional information pursuant to which a reconsideration might be made, and which has been provided (marked Attention: W Furler) is as follows:

- Environmental Impact Statement (EIS), dated December 2002 (sent on 12/12/02)
- Species Impact Statement (SIS), dated December 2002 (sent on 12/12/02)
- Two copies of the Supplementary Species Impact Statement (SSIS), dated September 2003, were dispatched on 23/9/03 for exhibition. An additional copy of the SSIS is now enclosed to assist your reconsideration of the controlled action.

Following an examination of the abovementioned information the RTA now considers that the project will not, or is not likely to have, a significant impact on any matters of national environmental significance, including threatened species and ecological communities listed pursuant to the EPBC Act..

I would also like to invite you and your team to visit the site. If you do require any further clarifications or any further information, please contact me by telephone on (02) 4221 2403.

Yours sincerely,

Ross Dearden
Project Manager
Southern Client Services

File copy

R Dearden - (02) 4221 2403

Yr Ref: 2002/674)

Environment Australia
Approvals & Wildlife Division
GPO Box 787
CANBERRA ACT 2601

Attention: Mr Malcolm Forbes

27 MAY 2003

MR 92 UPRADE FROM NOWRA TO NERRIGA: RESPONSE TO MR 92 EIS COMMENTS

Dear Sir

Thank you for providing comments on the Environmental Impact Statement (EIS) and Species Impact Statement (SIS) prepared for the proposed Upgrading of MR92 on behalf of the NSW Roads and Traffic Authority.

Your letter indicated that, in the opinion of Environment Australia, the EIS and SIS did not address a number of species listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), namely:

- Eastern Bristlebird (*Dasyornis brachypterus*);
- Southern Brown Bandicoot (*Isodon obesulus obesulus*); and
- Broad-headed Snake (*Hoplocephalus bungaroides*).

The abovementioned species were referred to in both the EIS and SIS although targeted surveys for these species were not undertaken for the following reasons:

- The Eastern Bristlebird was not identified as a priority species in the SIS because the species is not likely to occur within the study area. Notwithstanding this fact, the area of potential habitat that would be removed by the construction of the proposal is considered to be tiny compared to the huge areas of suitable heathland habitat which occurs in the surrounding region.
- Similarly, the Southern Brown Bandicoot was not identified as a priority species in the SIS because:
  - There were no records of the species in the vicinity of the road;
  - The area of potential habitat to be removed is considered to be extremely small compared to the huge areas of seemingly suitable habitat that surrounds the road; and
  - The National Parks and Wildlife Service (NPWS) publication entitled *Threatened Fauna of the Shoalhaven* (NPWS, 2000) stated that the species was "very rare with records only from the coastal plain. The species has not been detected in the Shoalhaven within the last 15 years".

- The Broad-headed Snake was not identified as a priority species in the SIS because the proposed MR92 upgrade does not affect any clifflines in the eastern half of the route where the snake occurs and no areas of core habitat would be affected. In addition, the area of sandstone habitat that would be removed by the construction of the upgrade is considered to be small compared to the large areas of similar habitat in the surrounding region.

More information on each of the three species is provided below including an indication of the likely occurrence of each species within the study area. This information was compiled by Kevin Mills of Kevin Mills & Associates, the same company that prepared the SIS for the proposal.

Eastern Bristlebird *Dasyornis brachypterus*
Schedule 1, endangered. NSW *Threatened Species Conservation Act 1995* (TSC Act)
Endangered. EPBC Act

Distribution and Abundance: The Eastern Bristlebird occurs in coastal and near-coastal areas, from about 100 kilometres north of Brisbane to near Mallacoota in eastern Victoria. The species is concentrated in three main areas: the NSW/Queensland border, the Illawarra region and the NSW/Victorian border. The total population is currently estimated to be 1,000 to 2,000 birds; these mainly occur in small isolated groups in New South Wales.

The species' distribution has become more disjunct since European settlement and the population has declined.

Habitat: The habitat of the Eastern Bristlebird varies throughout its range. In the north, the species occurs in open forest with large areas of tussock (Lamb, Turnbull & Meyers 1993). In the Illawarra district and in the southern part of its range the species generally inhabits dense shrubland or tall heathland about two to three metres in height, often at the interface with woodland habitat. This observation is supported by several other ornithologists such as Jordan (1987) who noted that the Eastern Bristlebird at Barren Grounds is "a common resident in areas where woodland adjoins heath [and that it is] also found in more mature heath and, after fire, in woodland". Bramwell, Pyke, Adams and Coontz (1992) also found most Eastern Bristlebirds at Barren Grounds in the heathland/woodland ecotone.

Baker (1996) provided several detailed descriptions of the habitat in which the Eastern Bristlebird was found during the 1996 surveys and concluded that the Eastern Bristlebird "inhabits a range of fire-prone vegetation types where there is dense ground cover, particularly in association with coastal heathlands".

At Jervis Bay, Smith (1985) described its preferred habitat as dense, species rich, tall heathland bordering on woodland. In a study of the abundance of Eastern Bristlebirds at Jervis Bay, Pyke, Saillard and Smith (1995) showed that Eastern Bristlebirds "commonly occur in areas where woodland adjoins heath and in areas of relatively mature heath" and that the "densities increase with increasing time since the last fire up to about 9 years and then remain relatively constant for at least another four years".

The habitat of the Eastern Bristlebird is generally fireprone. Baker (1996) commented that "fire is a feature of eastern bristlebird habitat [although] there are no published data which demonstrate the long-term effects of fire on the Eastern Bristlebird or its habitat. Generally, it is expected that few Eastern Bristlebirds would survive the passage of a fire, that they depend on the availability of nearby fire refuges and that re-colonisation would be relatively slow after fire."

Threats: The main threats to the survival of the Eastern Bristlebird are habitat destruction related to the spread of settlement and unsuitable fire regimes. For example, it has completely disappeared from Sydney, where it once occurred from Manly to Newport and from Bondi to La Perouse. This part of the species' range has been converted to urban land uses and was no doubt subjected to regular bushfire control burns and frequent wildfires for many decades prior to development. The

NPWS has commented that "the nature of the fire regime is . . . crucial to the survival of the species and changes to the fire regime have been implicated as a cause of population decline (NPWS, 1996). The Eastern Bristlebird is particularly vulnerable to fire because it is a ground bird and does not fly long distances. Fire refuges must be available if the Eastern Bristlebird is to survive a fire, whether it is a wildfire or a prescribed burn.

Occurrence in the Region: The largest concentration of birds occurs in the Illawarra region, mostly in Barren Grounds Nature Reserve and on the Bherwerre Peninsula at Jervis Bay. Based on the results of the regional surveys undertaken by Baker (1992, 1996), and a review of the literature, the total Illawarra population is probably between 1,000 and 2,000 birds, and is likely to be considerably less than the upper estimate. Baker provided the following summary of the Illawarra populations:

> "In the Illawarra there are three disjoint populations. At the Budderoo Plateau, Barren Grounds Nature Reserve is a stronghold for the species and the maximum population was estimated as 500 individuals (Baker 1992). At Morton National Park Eastern Bristlebirds have been reported in montane areas (Humphries 1982; Virtue 1988; Baker 1992; NPWS DATABASE; B Rodgee, NPWS Ulladulla, pers. comm.; G Daly pers. comm.) but the species' continued survival there has been questioned (Thackway *et al.* c1985, Baker 1992 unpub. data). At the southern side of Jervis Bay, Bherwerre Peninsula is a stronghold for the species (Baker 1992; Garnett 1992) and a conservative estimate of the population was given as 400 individuals (Baker & French 1994). At the northern side of Jervis Bay, at Beecroft Peninsula, eastern bristlebirds were noted in 1984 (C. Chafer, Recorder, Illawarra IBOC, pers. comm.), April 1992 (M Fortescue, JBNP, pers. comm.) but not by Baker (1992) and hence they are considered to occur in very low numbers. For the Illawarra region Garnett (1992) estimated that "there may be as many as 1000 to 2000" eastern bristlebirds. The results presented in the present report suggest that this was a reasonable estimate but that currently the Illawarra populations are unlikely to total as many as 2000." (Baker 1996)

Potential to Occur in the Study Area: The Eastern Bristlebird may occur in the heathlands to the east of Tianjara Falls, although there have been no records from this locality for many years; those records mentioned by Baker in the above quote all appear to stem from observations several decades ago. The RAOU Pilot Atlas Scheme (Disney 1979) did not record Eastern Bristlebirds in this district, nor did the more intensive surveys by CSIRO in the same area (Thackway *et al.* 1985), despite "special attention" being given to surveying for this bird, and "an extensive and systematic searched". As noted by Baker, "the species' continued survival there [in Morton National Park] has been questioned". There appears only a slim chance that the species occurs near MR 92 and an even less chance that upgrading the road could impact in any significant way on this species.

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Southern Brown Bandicoot *Isoodon obesulus obesulus*
Schedule 1, endangered. TSC Act.
Endangered. EPBC Act.

Distribution and Abundance: The Southern Brown Bandicoot *Isoodon obesulus obesulus* occurs across southern Australia, in southwestern Western Australia, New South Wales and Victoria. In New South Wales, it occurs around Eden and Sydney (Ashby, Lunney, Robertshaw & Harden 1990). The range of the Southern Brown Bandicoot has contracted in southern Australia since European settlement, its distribution is patchy and the size of the population has declined.

Habitat: Although the habitat requirements of the Southern Brown Bandicoot are not fully known, it is generally agreed that the species prefers scrubby vegetation on sandy soils, with areas of low ground cover that are burnt periodically. As Braithwaite (1995) explains, "during the early stages of regeneration, after fire, the diversity of growing vegetation supports abundant insect food and is a very favourable habitat. Later, as the vegetation approaches maturity, the food supply is reduced." The Southern Brown Bandicoot is known to inhabit forest, woodland and heathland, and has been recorded in ground cover of varying density (Claridge, McNee, Tanton & Davey 1991). Ground cover of low to medium density provides good foraging habitat, and dense vegetation provides shelter. The presence of a mosaic of such habitats is probably necessary to sustain a stable population. The Southern Brown Bandicoot digs conical holes 5-10cm deep, as it seeks subterranean

food. Its diet includes insects, larvae, worms, fungi and other plant material below ground level. Its nest is concealed in dense vegetation and organic debris. The home range varies considerably but is thought to be about seven hectares (Braithwaite 1995).

Threats: Threats to the Southern Brown Bandicoot include inappropriate fire regimes, the clearing of habitat for agriculture and forestry, the fragmentation of habitat and predation by feral animals.

Occurrence in the Region: There is one report of the Southern Brown Bandicoot from the region well south of Sassafras in the Budawang Ranges (NPWS Wildlife Atlas); the veracity of this record is unproven. The extensive surveys of the CSIRO in the area (Thackway et al. 1985) failed to locate the bandicoot. Despite numerous searches of the roadside over the past 10 years, Kevin Mills & Associates have never found bandicoot diggings. The species might be more common than the records indicate; the lack of survey effort and the difficulty in trapping bandicoots may obscure the actual status of this species in this region.

Potential to Occur in the Study Area: The Southern Brown Bandicoot could conceivably occur near MR 92, but there are no records of the species from the area and no evidence of bandicoot activity (i.e. conical foraging holes in the soil) has been found along the road. The NPWS does not expect the species to occur in the area, as indicated on the map in the publication *Threatened Fauna of the Shoalhaven* (NPWS 2000).

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Broad-headed Snake *Hoplocephalus bungaroides*
Schedule 1, endangered. TSC Act
Vulnerable. EPBC Act

Distribution and Abundance: This snake is restricted to the Sydney Basin, where it is generally restricted to the sandstone formations within 250 kilometres of Sydney (Cogger 1992).

Habitat: The habitat of the Broad-headed Snake is described by NPWS (2000): "during winter and spring the Broad-headed Snake shelters in crevices and under flat sandstone rocks on exposed cliff edges. During summer they move from these sites to hollows in large trees within 200m of escarpment areas, particularly Grey Gum and Sydney Peppermint."

Threats: This snake is threatened by the removal of habitat in some locations, but most of its habitat is now within conservation reserves or water catchment areas with restricted access. The greatest threat may come from collection by snake fanciers and from the illegal removal of bushrock from bushland areas, including reserved land (Shine *et al.* 1998).

Occurrence in the Region: There are records of the Broad-headed Snake from the escarpments along the Yarramunmun Valley, to the north of MR 92 (NSW Wildlife Atlas).

Potential to Occur in the Project Area: The only location where MR 92 crosses a cliffline is in the Bulee Mountain area. There are no records of the snake from this escarpment, even though it is easily accessible to herpetologists and must have been visited many times by such people.

References

Cogger, H. (1992). *Reptiles and Amphibians of Australia.* Reed, Sydney, revised ed., 775p.

National Parks and Wildlife Service of New South Wales (2000). *Threatened Fauna of the Shoalhaven.* The NPWS and Shoalhaven Catchment Management Committee, Queanbeyan, 120pp.

Shine, R., Webb, J.K., Fitzgerald, M. & Sumner, J. (1998). The impact of bush-rock removal on an endangered snake species, *Hoplocephalus bungaroides* (Serpentes: Elapidae), CSIRO, Wildlife Research 25, 285-295.

As you can see, we are well aware of the potential impacts and are of the opinion that the proposed upgrade of MR92 is unlikely to result in a significant impact on these species. We do not see it as necessary to undertake targeted surveys for these species. It would be appreciated if you could confirm your concurrence with this approach as soon as possible.

If you have any further queries or require clarification, please do not hesitate to contact me.

Yours sincerely

Ross Dearden
Project Manager
27 MAY 2003

DOTARS
DEPARTMENT OF TRANSPORT AND REGIONAL SERVICES

File Reference: L2002/0861

Mr Ross Dearden
Project Manager, Proposed Upgrade of
MR92
Roads and traffic Authority of NSW
90 Crown Street
WOLLONGONG NSW 2500

Subject: **Main Road 92 Environmental Impact Statement**

Dear Mr Dearden

Attached is a submission from this Department in response to the Environmental Impact Statement for the proposed upgrade of Main Road 92 between Nowra and Nerriga.

Yours sincerely

Ed Cory
A/g Assistant Secretary
Road Programmes
28 February 2003

5 MAR 2003

FAXED to SKM/ENVT
5/3

GPO Box 594 Canberra ACT 2601 Australia • Telephone: 02 6274 7111 • Facsimile: 02 6257 2505
Website: www.dotars.gov.au • ABN 86 267 354 017

MAIN ROAD 92 – ENVIRONMENTAL IMPACT STATEMENT (EIS)

DEPARTMENT OF TRANSPORT AND REGIONAL SERVICES COMMENTS

Purpose

Through this submission the Federal Department of Transport and Regional Services (DOTARS) seeks to highlight concerns with the proposed Bulee Mountain section of the MR92 upgrade. This section of the project presents substantial environmental and engineering challenges. It is essential that the highest level of information is available on the implications of the proposed approach for road safety, environment, heritage and route efficiency in order to ensure that the best possible route is presented for planning approval.

Background

Main Road 92 (MR92) is a regional road that links the Shoalhaven and southern Illawarra areas to inland southern NSW and onwards to Victoria and South Australia. The proposed project involves upgrading the section of MR92 between Nowra and Nerriga. Shoalhaven City Council is responsible for nearly the whole length of this section, with Tallaganda Shire Council responsible for MR92 west of the Endrick River.

The Commonwealth, NSW and Shoalhaven City Council are jointly committed to funding $80m for the project. By agreement, the NSW Roads and Traffic Authority (RTA) is the proponent for the project after all funding partners accepted that this would be the most practical approach.

The objectives of the project are to:

- achieve safe driving conditions, generally for speeds of 80-100km/h, within the available budget;
- provide an efficient all-weather freight route which can be used by B-double vehicles; and
- minimise adverse environmental impacts arising from the project.

The existing MR92 substantially uses the alignment developed over 150 years ago. The investment that is required to effectively upgrade such a significant length of road is very high. All stakeholders have acknowledged that future opportunities to upgrade the road may be limited and have emphasised the need to provide a road that reflects contemporary road building standards and will serve traffic growth over a long period of time. The proposed upgrade could conceivably have a working life similar to the last upgrade for parts of this road that occurred in 1856.

To date the Commonwealth has funded planning undertaken by the RTA and consultant Sinclair Knight Merz as well as approved construction work on MR92 close to Nowra. This planning work has focused on identifying and developing

options that, as far as possible, minimise encroachments into Morton National Park, and are consistent with the project objectives.

The Federal Department of Transport and Regional Services (DOTARS) has participated in steering the process with the RTA, Shoalhaven and Tallaganda Councils.

A Value Management Workshop for the project was held on 20-21 November 2001 (reported in the EIS Volume 2, Technical Paper No 1). A wide range of stakeholders including the funding partners, other NSW agencies, utilities, community representatives and the project consultants attended this workshop. Much of the workshop involved consideration of route options at Bulee Mountain, resulting in a rejection of BM4 (an upgrade on the existing alignment) and a recommendation for investigation of a route on a corridor between options BM2 and BM3. This was the result of the analysis set out in section 5.8 of Technical Paper No 1 which noted that BM4 failed to meet the main project objectives of safety and efficiency. This led to the development of the BM5 route option.

Issues Arising

The EIS for MR92 that is now on display recognises that the existing escarpment crossings, such as through Kangaroo Valley, do not provide adequate levels of safety, convenience and efficiency for cars or freight between inland NSW and the Shoalhaven area, and have significant constraints for future upgrading. All alternative routes were built many years ago, follow steep and winding alignments, have less than satisfactory safety records and none are approved for use by B-double transports other than Picton Road (Mt Ousley).

While DOTARS supports the proposed concept for upgrading MR92 along most of the 54 km route proposed for upgrading, it has a number of reservations with the preferred route through the relatively short (4km) section of MR92 through Bulee Mountain, which is critical to the overall upgrade. DOTARS considers that adoption of the BM4 route along the existing alignment (as presented in the EIS) does not fully meet contemporary standards for road design or provide the safest and most efficient escarpment crossing available. As a result BM4 may not be the best outcome for the community or achieve the project objectives.

In support of this view, the EIS points to the superiority of the BM5 route through Bulee Mountain on most traffic, safety and efficiency grounds. In particular, BM4:

- is significantly longer (1.2km), and the environmental impacts of upgrading would therefore be felt over a longer distance;
- has a higher estimated accident potential;
- has a lower design speed;
- has longer travel times for both cars and heavy vehicles and higher vehicle operating costs;
- includes sections with a much steeper gradient (with 670 metres greater than 11%);
- will not provide the most efficient route for freight vehicle operation; and

- offers limited overtaking opportunities.

DOTARS acknowledges that BM5 would require a new (500-metre) corridor through Morton National Park and other privately owned areas that have potential wilderness value and these are important issues to consider. However, upgrading along the existing alignment (BM4) also has significant environmental impacts. The expert assessment in the EIS of environmental factors on both route options did not highlight any major environmental constraint on either route, and noted that while the type of impacts were different, there is no clear environmental preference between the options. Further the EIS highlights significant heritage impacts for BM4 where no similar impacts arise for BM5.

DOTARS is concerned that the proposal in the EIS is demonstrably inferior on safety and efficiency grounds to a feasible alternative with possibly no greater environmental impacts. These concerns are discussed later in this paper. Table 1 attached summarises some of the points of comparison for the two options.

Bulee Mountain – Characteristic and Features

East of Nerriga and the Endrick River, the Bulee Mountain area is a severe sandstone escarpment where the elevation rises around 250 metres along a section that is about 4km in length. It features sheer sandstone cliffs, overhangs and other elements of Sydney basin sandstone country. It is a difficult section for road construction. The existing bridge over the Endrick River defines this section's western extremity and the EIS envisages this recently constructed bridge will be retained. The existing route follows in part the 1841 alignment of the Wool Road or the 1856 realignment of that road. Significant heritage features are retained in the dry-stone retaining walls and culverts, chisel and hand drill marks in the stone faces as well as the narrow and confined alignment constructed by hand.

In addition the road is characterised by many natural features including sandstone cliffs, overhangs and 'beehive' formations. Some aboriginal heritage features are present, including an open campsite along the river frontage, possible occupation or use of overhangs and, beyond this section of road, scar trees. The area is also considered sensitive from a flora and fauna perspective, being bounded on both sides by relatively undisturbed private land and Morton National Park.

Safety Concerns

Ensuring that the road is developed to the highest safety standards is a primary requirement of the proposal. Road standards have become increasingly more demanding in recent years and available research demonstrates that improving the road environment provides significantly reduced crash rates.

Upgrading of MR92 through Bulee Mountain must be adequate for the very long term. In the mountainous terrain with its environmental sensitivities, it would be extremely difficult, if not impossible, to try and improve safety on the existing

alignment once the project is complete. It is also necessary to ensure that the full environmental impacts of the upgrading are assessed at this time.

The main benefits of upgrading will also develop over many years. Over the longer term MR92 is expected to become a more significant transport corridor across the escarpment rather than just serving the Shoalhaven region. As a result the design of MR92 must meet the best safety standards possible, and be capable of serving vehicles, especially trucks, in increasing numbers. In addition, the capacity of trucks is expected to increase beyond those currently allowed on Australian roads.

The safety issues associated with MR92 include the diversity of traffic types that will use the road. While upgrading is primarily to address the need of freight vehicles, car numbers will be dominant. Many motorists will be holiday-makers, some towing boats and caravans, frequently unfamiliar with the road. The mix of holiday-makers and heavy vehicles on a narrow, mountainous section of road following the relatively straight, high speed run from Nowra is clearly an issue demanding a high level of safety.

In this regard it is disappointing that the EIS has not addressed the important issue of road safety in greater detail. A working paper produced by the consultant (Sinclair Knight Merz) for the EIS, but not subsequently included showed an estimated crash rate of 1.6 to 3.2 per year for BM4 and 0.6 to 1.0 for BM5. That is, BM5 is estimated to be about 3 times safer than BM4, a substantial difference. More compelling reasons must be given for providing the community with a new road that is constructed to a lower than achievable safety standard. This is especially the case where the EIS has discounted BM5 for environmental reasons while recommending BM4, which also has significant adverse environmental and heritage impacts.

The Department's safety concerns with the RTA's proposed option (BM4) through Bulee Mountain are based on the standards set out in the draft Austroads Guide to the Geometric Design of Rural Roads (the Guide). The Guide, although not yet endorsed by Austroads Council, represents the combined knowledge of representatives of all Australian and NZ road agencies, including the Australian Local Government Association, of the latest design standards to be applied to future road design. The major task of updating the current Austroads Guide was initiated because much of its former contents were recognised as being obsolete and no longer suitable for application on current projects. The guide represents current best practice in road design for Australian conditions. Through Bulee Mountain there would be almost no scope to modify the project once completed making it essential to build in the maximum safety features feasible from the outset.

Issues of concern to DOTARS are discussed below. However, due to the limited design detail in the EIS, the full extent that BM4 meets, or fails to meet, the appropriate standards is not certain. Minimum standards are not desirable standards but should only be applied when a higher standard design is not feasible. Where a section of road contains a number of features all provided only to the minimum standard, the combined effect is to reduce the safety margin eg narrow shoulders on tight curves.

The BM5 option

The BM5 route option provides the opportunity to construct a high quality crossing of this escarpment. It is 1.2 km shorter and not as steep as BM4 has fewer curves and those curves are far gentler. It is generally a straight alignment compared to BM4's tighter winding design. While BM5 may also not meet all the minimum criteria of the Austroads Guide it has far fewer deficiencies and they are less serious. It offers an 80km/h design speed and is capable of further enhancement at the detailed design stage, particularly to improve curves and overtaking opportunities. Stopping sight distances are all greater than the minimum required in the Austroads Guide providing a far higher level of safety.

Environmental and heritage comparisons

Both options will result in some adverse environmental impacts and BM4 also has an adverse heritage impact.

Both options will result in the loss of some *Allocasuarina littoralis*, which provides the main habitat for the Glossy Black Cockatoo. This bird is listed as vulnerable under the *Threatened Species Conservation Act 1995 (TSC Act)*. The SIS notes that there are significant areas of this casuarina species within the region and would *seem unlikely to represent a significant impact on the Glossy Black Cockatoo*. (SIS P72)

Both options will result in the loss of some Koala food trees. The Koala is listed as vulnerable under the *TSC Act*. Adverse affects could include interrupting patterns of movement, removal of feeding habitat and increased roadkills. Similar mitigation will be required for both options including koala fencing on the western side of the road, warning signs for motorists and monitoring of roadkill for the first year to determine if further mitigation is necessary. BM5 includes a greater number of bridges, which will significantly increase the opportunity for safe fauna movements, which would benefit all terrestrial animals including koala.

Two plant species not listed under either the *TSC Act* or the *Environmental Protection and Biodiversity Conservation Act (EPBC Act)* which receive consideration are *Eucalyptus triflora* and *Dillwinia crispii*. The SIS states that *E triflora* is a ROTAP species and *D crispii* is possibly eligible for listing under the *TSC* and *EPBC Acts*. The EIS indicates BM4 would result in the loss of 18 *E triflora* and 12 *D crispii* plants and BM5 would result in the loss of 8 *E triflora* plants. Mitigation for these losses is not proposed.

Both route options will encroach on the Morton National Park however the detailed area of this encroachment is not specified in the EIS. Selection of the BM5 option will create a new corridor of 500 metres length through the Park but would release the existing 4.1km road corridor for park use.

The BM4 option follows closely the existing route for MR92 and as a result will obliterate a significant portion of the 1856 realignment of the original Wool Road. Significant features including dry stone retaining walls, chisel and drill marks and

other remnants of this hand constructed road will be lost. BM5 involves no similar heritage impact.

Mitigation and/or compensation

In proposing further consideration of BM5, DOTARS acknowledges that it involves creation of a new road corridor some 500 metres of which would be in the Morton National Park. In addition BM5 will traverse some 2.2 km private land identified by the NPWS as having wilderness value. The section within Morton National Park would possibly require 2 hectares at the edge of the 190,000-hectare park

Mitigation or compensation for these impacts remains a matter for possible negotiation with NPWS. This could include acquisition of suitable private land for addition to the National Park, return of the original road corridor to the Park, or other assistance with the management of environment and heritage features in the vicinity of Bulee Mountain.

Concluding Remarks

The MR92 project will upgrade an existing unsealed road in variable condition to a modern sealed route standard. The upgrade will provide a shorter, safer and more efficient transport route from the Shoalhaven and Illawarra area to southern inland NSW and meet traffic growth on this corridor in the long term. This project is an opportunity to develop a transport route capable of use by new generation high capacity freight vehicles such as B-doubles.

Most road users, including heavy transports, will still be able to use the route if upgrading is undertaken along the BM4 alignment. However, DOTARS considers that further work needs to be undertaken to demonstrate that BM4 can operate as a safe and efficient route and meet the standards of good design for a new road expected by the community.

Both BM4 and BM5 have potentially important environmental impacts that will require close attention and mitigation to minimise the adverse impacts. While BM4 will also impact on the heritage features of the existing road, encroachment into Morton National Park is an issue with BM5.

Prima facie BM5 offers a safer and more efficient route that avoids the steepest grades and numerous tight curves of BM4 and the overall environmental impacts of BM5 reported in the EIS appear to be no more severe than for BM4. An independent safety audit may assist in validating the approach that is ultimately adopted at Bulee Mountain.

DOTARS fully supports the project and urges planning to be completed without unnecessary delay. It is essential however, that the merits of both options at Bulee Mountain are fully explained from a technical, safety, environmental and heritage perspective and a transparent decision is made on upgrading through the Bulee Mountain area.

Table -1: Comparison of Options BM4 and BM5 based on information presented in the EIS and technical papers.

	Existing Road Corridor (BM4)	Alternative Alignment (BM5)
Length	4.1 km	3 km
Cost	Approx $24.7 million	Approx $27.7 million
Overtaking opportunities	3 east bound 100 m long (suitable for passing slow moving vehicles only)	3 eastbound 300m long
Travel time (cars)	4.5 minutes	2.4 minutes
Travel time (trucks)	11 minutes	8 minutes
Maximum Grade	11.7%	9.6%
Gradient above 10%	1.3 km	0
Length of Grade 0 - 6% 6 - 9% 9 – 11% over 11%	2.1 km 0.7 km 0.1 km 1.2 km	0.9 km 1.2 km 0.9 km 0
Design speed (as per EIS)	60km/hour *	80 km/hour
Incursion into Morton National Park	Edge effects (area not known)	Approx 500 m (2 ha est.)
Private land identified by NPWS as having wildernesss values	No impact	2.2 km road corridor through this area west of Morton NP. Possibly 4.7 ha
Fauna movement opportunities	2 bridges of 32m and 12 m	6 bridges of 100m, 90m, 33m,60m, 108m and 20m
Impact on Threatened Species	Koala, clearing of food trees Glossy Black Cockatoo, clearing of 1.6ha *Allocassuarina littoralis* *Eucalyptus triflora* (ROTAP species)- approx 18 plants affected *Dillwynia crispii*, approx 12 plants affected	Koala, clearing of food trees (slightly more than BM4) Glossy Black Cockatoo, clearing of 1.5ha *Allocassuarina littoralis* *Eucalyptus triflora* (ROTAP species)- approx 8 plants affected *Dillwynia crispii*, no plants affected
Route description	Steep Winding mountain road with 10 tight 100m radii curves and three between 110 and 140 m radii. Numerous deficient transitions between curves, poor sight distances, crests and reverse curves over one crest	Steady climb on generally straight alignment with three moderate curves of 150, 160 and 180 m radii
Road safety (estimated crashes/year as per draft version of EIS)	1.6 - 3.2 per year	0.6 – 1.0 per year
Impact on the 1856 alignment of the heritage Wool Road	Significant impact on large section of the remaining parts of this road.	No impact
Constructability	Requires significant retaining structures and two bridges. Will require numerous traffic switches and a number of road closures. Traffic management will be very difficult due to grades, confined existing roadway and environmental management. Construction will be very difficult due to slopes, proximity to gas pipeline and environmental management	Requires significant retaining structures and six bridges. As alignment is off existing road will involve minimal disruption to traffic. Construction will be very difficult due to slopes, proximity to gas pipeline (preventing rock blasting) and environmental management.

* Believed to be 50km/h – see text.

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Henry Deane Building
20 Lee Street Sydney NSW 2000
GPO Box 3927 Sydney NSW 2001
T 02 9762 8000
www.planning.nsw.gov.au

Facsimile

To	Ross Deardon	**Reference**	W98/00096
From	Jan Parsons	**Facsimile number**	02 4227 3705
Date	13 March 2003	**Total number of pages**	7

Hi Ross

Some comments on the SIS and EIS follow. The EIS comments have been generally organised according to the order in the EIS table of contents. The SIS comments have been grouped under issues of concern.

Comments on remaining issues will be forwarded by the end of next week. Please call if anything requires clarification.

Note: TP2 = technical paper and number

ENVIRONMENTAL IMPACT STATEMENT

Statutory Process

As previously discussed the Department awaits advice from the RTA on the required SEPP amendment or legislative approach proposed.

Proposal

1. Could large size (A3 or larger) copies of the concept design drawings provided in TP2 be provided (referenced Dwg Nos 01 to 31).

2. In several places the EIS states that the design speed would "generally be 100 km/hour except in key locations". The data in TP2 indicates that more than 21km of the road (~40% of the route) would have a design speed of 80 km/hr or less. That lower design speed seems to have been adopted in most places (except Sassafras and Bulee Gap) for cost reasons.

   How does the varying design speed affect the improved safety objectives of the proposal. Additionally a narrower shoulder has also been adopted (1m compared to an RTA design standard of 2m). Do these factors affect road safety or the expected road safety benefits?

3. The selection of the road design option at Georges Yard was to provide a design speed of 100km/hr. Clarify why option GY1 (the higher design speed option) was selected over option GY2 in the George's Yard area given that GY2 provides for a design speed of 80 km/hr and does not encroach significantly on an environmental protection zone.

4. Page 6.3 indicates that for sections of the proposal with a 100km/hr design speed the maximum required clear zone is 10 metres and for 80 km/hr 6.5 metres. These distances are from either side of the road pavement indicating a cleared road corridor of a minimum 22.5m (80kph) and 29.5m (100kph). Were these corridor widths included in the impact assessments, in particular the flora and fauna assessment and urban design assessment?

5. The EIS indicates that the concept design of the Bulee Mountain section was formulated to provide an upgrade solution that would not have to be revisited for the foreseeable future.

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Page 6-3 indicates that the preferred option could include up to four eastbound and three westbound auxiliary lanes and states that the need for these would be considered during detailed design. Has the road width required for these additional overtaking lanes been considered in the EIS assessment of this area, in particular flora and fauna and heritage. Could plans be provided of the widened road corridor in this area.

6. How will the steep fill batters (slope 1:2) in the Bulee Gap area be stabilised?

7. The EIS and TP2 are unclear regarding the cut and fill balance. It could be inferred that large quantities of excess cut material (that is in excess of the minimum quantity required for fill areas) will require disposal. Is it correct that his excess would be managed by disposal in extended fill areas and hence an extended road footprint? Large quantities of pavement materials may also require importing. Please clarify details of cut and fill quantities, spoil management strategies (in particular disposal of excess cut material) and the quantities of pavement materials that will be imported.

8. The EIS indicates that crushing and screening plants, construction compounds, stockpiling sites and bitumen preparation sites would be required during construction, but does not identify specific locations. While it is appreciated that it may not be possible to identify exact locations for these facilities at this stage, please provide details of the assessment criteria to be used to determine their locations.

9. Is it proposed to construct the road in stages. Similarly is it proposed to open the road to traffic in stages?

10. What would happen if, during construction, it is determined that the available funding is not adequate to complete the road?

11. Please clarify the following regarding the economic assessment of Section 6.11. The clarification would require some re-estimations of the proposal's RUCBA.

    a The capital costs used in the RUCBA seem inconsistent with other parts of the EIS. The capital costs used were $64.2m compared with a cost of $68.4m identified in TP2. Also a $5m project development expense seems not to be included. Was this an error?

    b Property acquisition costs were not included in the RUCBA. This seems to be inconsistent with normal RTA procedures. What are the property acquisition costs and why were property costs not included?

    c What traffic figures were used in Scenario 1?

    d There seems to be an inconsistent inclusion of costs for works to the west of Nerriga. Scenario 2 seems to include the benefits of improved road conditions west of Nerriga but no additional costs. Is it correct that the benefits of improving Nowra to Braidwood were proportioned for that scenario? Scenario 3 includes an additional capital cost of some $12.7m. What improved road conditions were assumed for both scenarios (2 and 3) and what do the additional costs in scenario 3 represent? Does Scenario 4 assume roads to the west of Nerriga are upgraded?

    e What travel time savings were factored into the four scenarios and what design speeds were these savings based on?

    f Scenario 3 is stated in the EIS to be the "most likely". TP3 seems to indicate that for this scenario to eventuate a number of other improvements must occur namely, "upgrade Nowra to Braidwood [i.e. include upgrade of Nerriga to Braidwood section] and upgrade of the Kings Highway from Braidwood to Queanbeyan plus upgrade from Nerriga to

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Bungendore via Tarago". When are these works programmed to be undertaken and are they funded?

g The BCR of Scenario 1, which most closely represents the preferred proposal, is 0.1 and it is estimated to cost tax payers $55 Million. What is the BCR of this scenario when the traffic volume is 370 vehicles per day in 2021(as predicted in the traffic assessment without induced demand)?

Need and Justification

12. The roads to the west of Nerriga raise several issues:

    a How would the proposal would open up new viable freight routes between the Shoalhaven and inland areas without the inclusion of a link west of Nerriga.

    b The road to Tarago via Sandy Point is a narrow road with several steep creek crossings including a long, low-level timber bridge at Oallen Ford. Although much of this road is sealed (the length unsealed depends on which road is used west of Sandy Point) it would not be suited for heavy vehicles without widening of the entire route and substantial bridgeworks. Please advise what work would be required to bring this road up to a standard suitable for heavy vehicles. Is this route intended also for B-doubles? If so what work would be required to bring this road up to a suitable standard.

    c Please provide details of upgrading works programmed by Tallaganda and Mulwaree Councils for MR92 west of Nerriga. Would the proposed works be suitable for B-Doubles? Is funding available for these works and what environmental assessment is proposed or completed for the work?

    d Is the Mongarlowe River bridge suitable for B-doubles?

13. The EIS indicates that the proposal is within the strategic planning framework of *Action for Transport 2010*. That document refers to the federal government taking responsibility for funding improvements to Main Road 92 (Nowra to Braidwood Road). It also emphasises the importance of the Mount Ousley Road improvements, the Wollongong Northern Distributor and the F6 ramps at Helensburgh in improving links with Sydney and freight routes; and the Kings and Illawarra Highway improvements in getting over the escarpment. Please clarify the relationship between this proposal and the projects referred to above and also how it fits within *Action for Transport 2010.*

14. Is the upgrading of MR92 specifically identified in the *Illawarra Action for Transport*? Please provide a copy of the requirements for MR92 detailed in that document.

15. It is unclear how the proposal would meet some key objectives of *Action for Transport 2010*. In particular, how does the proposal address the following objectives from the 12 point plan:

    - safeguarding our environment;
    - making freight more competitive;
    - giving the community value for money;

    It is also noted that moving freight from road to rail is a NSW Government policy initiative detailed in *Action for Transport 2010*.

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Consideration of Alternatives

16. Table 5.1 seems to provide the only comparative assessment between broad options for providing improved transport between Shoalhaven/Illawarra and areas west of the dividing range. The analysis of the Table is scant and does not appear subjective and the "do-nothing" option is not included. The assessment of 'improvements' does not allow the ability of each option to meet project objectives to be assessed and therefore there is no relative comparison between options. The table is also unbalanced as it places considerable weighting on traffic performance (4 out of 5 objectives). As a minimum the following information on each option would be required to provide an objective evaluation:

    - consideration of the do-nothing option;
    - description of the work required for each option;
    - assessment of the ability of the options met project objectives using performance criteria;
    - cost of and, Cost-Benefit Analysis, for each option (to a comparative level of precision);
    - relationship to *Action for Transport 2010*;
    - ability to provide or improve east-west freight movements; and
    - an environmental evaluation.

    Given the limited assessment of strategic options undertaken, it is unclear why the proposal was selected as the preferred strategic option.

17. Some comment on each of the 'improvements' listed in Table 5.1 of the EIS is provided in the table below:

Engineering	More objective assessment of required engineering improvements is required. It is noted that the Clyde Mountain section of the Kings Highway could be 'improved' to allow for B-Double access. How would this section compare to the MR92 sections at Sassafras and Bulee Mountain? The comment for MR92 is that it could be upgraded under traffic which seems to contradict later statements that temporary closure of the road is required.
Ability to improve regional road network	The ability to improve the regional road network needs to be assessed in terms of current capacity constraints and the ability of the various options to rectify these constraints
Travel time saving	Quantification of the travel times associated with each of the options is required.
Road user safety	Quantification of the road safety improvements would enable a more meaningful comparison.
Environmental	This requires a more detailed and quantified consideration. Why would impacts of works to the Kings Highway on National Parks be significant when the impacts of MR92 on National Parks are described as "edge effects"? One method of comparison may be

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	quantification of the amount and quality of vegetation to be lost under each of the options. Why would the Hampton Bridge (MR261) limit engineering options if the Wool Road (MR92) does not? It is noted that the bridge is not listed on state and local heritage registers (searched via www.heritage.nsw.gov.au). Please confirm the heritage status of that item. If visual constraints are considered in the case of the Illawarra Highway, these also need to be considered in assessing the other options. Consideration of other environmental impacts such as noise and vibration, impacts on indigenous heritage items and pressure for land use changes would also be relevant.

18. The Federal Department of Transport and Regional Services has reservations about the preferred upgrading of the existing alignment at Bulee Mountain (EIS page 5-24). The EIS indicates that this concern centres on transport efficiency and road safety and would be further investigated when community feedback is at hand. What community feedback is referred to? What are the implications of FDoTRS's concerns?

Traffic and Transport

19. The transport model makes use of "induced benefits" and perceived benefits" to generate future traffic. Is this a common technique in the evaluation of road upgrades by the RTA? Please provide examples of other RTA road upgrade studies that have included those types of additional traffic in the economic analysis. The Department also notes that the traffic assessment undertaken for a number of RTA projects, including those completed for the Cross City Tunnel and the Bangor Bypass, conclude that induced traffic cannot be modelled. How were induced traffic and diversion due to "perceived benefits" factored into this model?

20. The transport assessment provides a range of traffic scenarios for future traffic volumes in 2021 that vary between 310 to 2000 AADT. This indicates a considerable degree of uncertainty in the traffic modelling. What are the key factors (i.e. model inputs) that determine this uncertainty?

21. Page 7-4 of the EIS states that "growth in population and land activity to the west of Nerriga has been constrained by the lack of a reliable transport route to the east". What evidence is there to support this statement?

22. The EIS indicates that provision of an east-west freight route capable of taking heavy vehicle and, in particular, B-Double traffic is a strategic justification for the project, yet the traffic assessment is limited in this area. Please provide details of the number of B-Doubles used, or likely to be used, in the area and the potential for these vehicles to use MR92.

23. What land use forecasts have been used in the trip tables used to model traffic volumes? In particular, what assumptions were made in relation to the potential expansion of Port Kembla and the 'intensification of land use' along the alignment and west of Nerriga.

24. Section 7.3.5 of the EIS provides some details of travel time savings. What are the total travel times for trips from Nowra to Canberra:

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- using MR92 without the proposal (the "do-nothing" case);
- using the proposal (assuming only funded and timetabled improvements on MR92 west of Nerriga); and
- using the Princes Highway/Kings Highway link.

25. There is no assessment of the likely construction stage traffic impacts. Given the magnitude of proposed earthworks, requirement to transport significant quantities of construction materials to the site and the limitations of the existing network, the Department requires at least a preliminary assessment of these impacts. Of particular concern is how any required road closures at Bulee Gap would be managed.

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SPECIES IMPACT STATEMENT

Director-General's Requirements (NPWS)

1. The SIS does not provide a plan showing the location and type of vegetation along the proposed route at a scale of 1:4,000 or larger. (A plan is provided in Appendix 11 at 1:20,000). The plan should show all areas of native vegetation to be damaged or removed, key habitat resources, all trees with hollows, and all large trees as requested in 1.2 of D-G's Requirements (NPWS).

2. The location of fauna survey points is not mapped.

Methods of fauna and flora survey

3. The survey methods are not adequately explained in the SIS. Survey methods can be implied from the results, but a full description is required.

4. Location of survey areas/curves (Figure 2) provides no information on the vegetation or habitat present. The Department requires a map of the proposed route and location of survey areas/curves over vegetation communities. Further detail should be provided at each survey area/curve, including information on "priority species", at the detail shown in Figure 5.

5. What are the results of additional flora and fauna studies available for bat species and orchid species?

Area to be cleared

6. In Table 2.1, how was the "Approximate Area of Disturbance" calculated? Does this include the area required for clear zones?

7. Progressive rehabilitation would be undertaken, however will clearing occur progressively to lessen dust impacts and lessen the construction impacts on fauna? Is it possible to set a maximum clearing limit?

8. Does Table 6.1 correlate with vegetation communities in Appendix 11? If it does, please indicate the correlation. If it does not, please provide the area of each ecological community in Table 3 of Appendix 11 to be cleared along the entire route.

Impact on species

9. *Eucalyptus triflora* should be a "priority species".

10. Each stand of *Eucalyptus langleyi* is not described in detail in Section 5.1 (or 6.1 if this is a typo) as stated on page 39.

11. Figure 4 (Location of *Eucalyptus langleyi*) does not provide enough detail. Is more detail available, such as provided in Figure 5?

12. Given the significance of the Heath Frog (*Litoria littlejohni*) population in the area, more detail on mitigation measures for this species is required, particularly sediment controls to prevent water quality impacts.

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13. The SIS contains inconsistent statements regarding disturbance and loss of trees in the White Box – Yellow Box – Blakely's Red Gum Woodland community. For example, page 54 claims no clearing, while page 74 suggests some trees would be lost. A clearer description, including maps, of the impact on this endangered ecological community is required.

Impact mitigation

14. The SIS identifies particular concern over movement of sediment from road works into local streams, swamps and downslope habitats. Are the likely soil and water management controls, identified in the EIS section 6.4.5 and Chapter 11 adequate for those considered in the SIS?

15. What weed control strategies would be used during construction?

16. What types of strategies would be used to minimise the potential for construction activities to cause fires?

17. Is collection of local seed for rehabilitation underway?

18. The re-use of large rocks should be maximised as these provide important habitat for many plant and animal species in the area.

19. Pre-clearing fauna surveys should also target rock outcrops.

20. Final reports on rehabilitation and roadkills would be useful for the Department in assessing future infrastructure projects. Will the RTA be commissioning research on these issues?

21. Has the use of nest boxes for the Glossy Black Cockatoo and other fauna been considered?

Fauna underpasses

22. The underpasses at Bulee Mountain will be provided by two bridges. How will the underpass on the eastern side of Sassafras be provided. What is the size, target species and attributes of proposed underpasses

23. Please indicate any research opportunities that may be possible as part of this proposal. Information on the use and effectiveness of fauna underpasses would be useful for the Department in assessing future infrastructure projects.

24. What opportunities are proposed for north-south movement of the Yellow-bellied Glider?

Regards,

Jan Parsons
Manager
Major Infrastructure Assessment
Direct 61 2 9762 8107
Email jan.parsons@planning.nsw.gov.au

file copy

R Dearden – 4221 2403

RO File 01 M1030

Mr Jan Parsons
Dept of Infrastructure Planning and Natural Resources
P O Box 3927
SYDNEY NSW 2001

11 JUL 2003

MR 92 NOWRA TO NERRIGA UPGRADE, ENVIRONMENTAL IMPACT STATEMENT

Dear Jan

Thank you for your letter dated 13 March 2003 outlining PlanningNSW comments and issues of concern regarding the Main Road 92 Upgrade Environmental Impact Statement (EIS) and Species Impact Statement (SIS). In this response, each question (and your reference number) is repeated in italic text before the explanation or information provided.

Statutory Process

As previously discussed the Department awaits advice from the RTA on the required SEPP amendment or legislative approach proposed.

I understand that on 24 April 2003 the RTA's Mr Stuart Hill supplied all the information required to commence the process of drafting a SEPP 58 amendment to your Mr Gordon Kirkby,

Proposal

1. *Could large size (A3 or larger) copies of the concept design drawings provided in TP2 be provided (referenced Dwg Nos 01 to 31).*

Copies of A3 drawings of the concept design for the proposed Upgrading of MR92 were forwarded to your office on Friday 28th March 2003.

2. *In several places the EIS states that the design speed would "generally be 100km/hr expect in key locations." The data in TP2 indicates that more than 21km of the road (~40% of the route) would have a design speed of 80km/hr or less. That lower design speed seems to have been adopted in most places (except Sassafras and Bulee Gap) for cost reasons.*

   How does the varying design speed affect the improved safety objectives of the proposal. Additionally a narrower shoulder has also been adopted (1m compared to an RTA design standard of 2m). Do these factors affect road safety or the expected road safety benefits?

Table 4-1 of TP2 provides an indication of the design speed of the proposed upgrading of MR92. Between Chainages 0 and 9000, 9400 to 22100, 24100 to 28000, 38000 to 43200, 50150 to 51600 and 52900 to 54100 the design speed would be 100 km/hr. The design speed of 100 km/hr therefore occurs over 33.45 km of a possible 54.1 km of MR92 between Hames Road and Nerriga comprising 62% of the road. The remainder, approximately 38%, would have a design speed of 80 km/hr or less.

A design speed of 80 km/hr was adopted for safety reasons at the Turpentine Road intersection (Ch 9000-9400), between Chainage 22100 and 23500, on the approaches to and including the village of Sassafras (Ch 28000 to 38000), through the Bulee Mountain area and the approaches to the Endrick River Bridge (Ch 43200 to 50150) and on the approaches to Nerriga.

The reasoning behind the reduced design speed of 80 km/hr was due to both safety reasons and environmental constraints. The intersection of MR 92 and Turpentine Road for example, is located between Ch 9000 and 9400. Traffic on Turpentine Road has priority at this intersection and therefore traffic travelling along MR92 would be required to slow down and give way to traffic on Turpentine Road before continuing along MR92. This option was preferred considering low traffic volumes forecast and reduced environmental impacts.

At Sassafras, the reduced design speed and narrower road cross-section was favoured by the community over a higher design speed alternative which would have involved the removal of the large avenue of mature trees that currently line both sides of the existing road.

Varying the design speed between 80 and 100 km/hr does not have an impact on the safety objectives of the proposal as appropriate transitioning between speed zones has been incorporated into the road concept design.

Table 3.3-1 of the RTA Road Design Guide provides a shoulder width of 1 – 2 m for AADT of 500 – 1000. The AADT is not expected to increase over 1000 until 2021. However a 2 m shoulder has been provided through the proposed Bulee Mountain upgrade to avoid the need for widening in the foreseeable future.

3. *The selection of the road design option at Georges Yard was to provide a design speed of 100km/hr. Clarify why option GY1 (the higher design speed option) was selected over option GY2 in the George's Yard area given that GY2 provides for a design speed of 80km/hr and does not encroach significantly on an environmental protection zone.*

During the route option assessment phase sections of the proposal where a higher design speed could be achieved were favoured over sections where environmental or other constraints made a lower design speed preferable. The option with a design speed of 100 km/hr was therefore generally preferred and sections of 80 km/hr were only investigated where the design speed of 100 km/hr was either not cost effective or where there were significant environmental impacts. At Georges Yard the opportunity to improve the horizontal alignment was cost effective and for the most part (from Ch 18000 to 20700) the curve improvements do not require environmentally sensitive land and it is not adjacent to Jerrawangala National Park.

4. *Page 6.3 indicates that for sections of the proposal with a 100km design speed the maximum required clear zone is 10 metres and for 80km/hr 6.5 metres. These distances are from either side of the road pavement indicating a cleared road corridor of a minimum 22.5m (80kph) and 29.5m (100kph). Were these corridor widths included in the impact assessments in particular the flora and fauna assessment and urban design assessment?*

A large proportion of the existing road corridor is either lined with frangible vegetation or has previously been cleared for the installation of various utilities and therefore clear zone clearing would not be required to be undertaken along the entire length of the proposal. The amount of clear zone clearing was taken into consideration in both the flora and fauna impact assessment and the urban design assessment prepared for the project. The SIS page 22 and 27 (Table 2.1) describes the extent of study area that includes clear zones on either side of the road.

The clearing for the purposes of a clear zone would only involve selective removal of trees with trunks greater than 100 mm diameter within the clear zone and does not require removal of ground cover or shrubs.

5. *The EIS indicates that the concept design of the Bulee Mountain section was formulated to provide an upgrade solution that would not have to be revisited for the foreseeable future. Page 5-3 indicates that the preferred option could include up to four eastbound and three westbound auxiliary lanes and states that the need for these would be considered during detailed design. Has the road width required for these additional overtaking lanes been considered in the EIS assessment of this area, in particular flora and fauna and heritage. Could plans be provided of the widened road corridor in this area.*

The preferred alignment that has been assessed as part of the EIS and SIS within the Bulee Mountain area comprises three 100 m eastbound auxiliary (climbing) lanes. Flora, fauna and heritage studies included the area required for these climbing lanes (refer SIS page 22). The RTA has re-assessed the provision of climbing lanes and the modification to the EIS proposal is included in the Preferred Activity Report (PAR) in Section 7 of the Representations Report. The PAR includes an extended climbing lane (eastbound including tapers) from 47875 to 47455 and an overtaking opportunity for westbound traffic (47860 to 48050) including tapers. In addition the location of the two eastbound auxiliary lanes has been revised to Ch 46780 to 46950 and Ch 48440 to 48 610. The additional width required for these overtaking lanes has been considered in the EIS assessment of this area.

A plan showing the location of the overtaking lanes and the widened road corridor is included in Section 7 of the Representations Report.

6. *How will the steep fill batters (slope 1H:2V) in the Bulee Gap area be stabilised?*

The concept design for the Bulee Mountain area includes embankments up to 18 m in height and more than 200 m in length. In order to minimise the road footprint on the landscape and to use the available fill economically including stabilising the area, it is proposed that these embankments be narrowed by the construction of retaining walls. The two options proposed to retain the fill on Bulee Mountain section would be by gabion walls with 'terra-mesh' tie back system or reinforced soil walls. The details of the proposal are described in Technical Paper No 2 page 4-14. In either case, it is expected that benched foundations would be required. The most practical choice for the steep batters would be determined during the detailed design stage following more detailed geotechnical investigations.

7. *The EIS and TP2 are unclear regarding the cut and fill balance. It could be inferred that large quantities of excess cut material (that is in excess of the minimum quantity required for fill areas) will require disposal. Is it correct that this excess would be managed by disposal in extended fill areas and hence an extended road footprint? Large quantities of pavement materials may also require importing. Please clarify details of cut and fill quantities, spoil management strategies (in particular disposal of excess cut material) and the quantities of pavement materials that will be imported.*

To address this question the earth works quantities for the project were reviewed and the revised total earthworks (excluding topsoil) quantity is 467,800 m3. The earthworks quantities (519,520 m3) shown in TP 2 page 5-14 included 55,000 m3 of topsoil.

This quantity includes 139,595 m3 of rock excavation. A review of the earthworks shows that the estimated quantity of fill required is 402,000 m3. In order to minimise the overall cost of the earthworks the design aims to balance cut and fill so that there are minimal costs for importing material or disposal of material.

The concept design is expected to produce a surplus of approximately 70,000 m3 of material from excavations, but this material can be used in the pavement as the 'Select Material'. From initial investigations all the material on site is of sufficient quality for use as general fill and 50% of the rock to be

excavated from the cuttings can be assumed suitable to be processed and used as select material. Providing the select material can be obtained on site as planned there will be no surplus material (aside from unsuitable material) that will need to be spoiled.

There is however, not expected to be any material from the site suitable for sub-base or base course pavement material and therefore 106,000 m3 sub-base and 106,000 m3 crushed road base will need to be transported to the study area. Approximately 5,200 m^3 of 14 mm aggregate and 1,800 m^3 of 7 mm aggregate would also need to be transported to the study area for the pavement and 1.3 million litres of bitumen.

A Waste Management Plan would be required to be developed by the successful Contractor for the proposal. The Plan would be required to consider the following factors:

- the quantity and type of excavated material to be generated by the project;
- disposal strategies for each type of waste material in accordance with '*Environmental Guidelines: Assessment, Classification and Management of Liquid and Non-Liquid Wastes*' (EPA, 1999);
- details on how and if possible various waste streams will be separated;
- details of how waste is to be stored and treated on site;
- identification of all non-recyclable wastes;
- identification of strategies to reduce, reuse and recycle waste;
- identification of recycling facilities available on site;
- the need for a waste register detailing types of waste, amounts, date/time, where disposed of, by whom;
- opportunities to maximise the recycled content of construction materials where economically and technically feasible;
- determining road transport routes available for transporting waste;
- determining disposal arrangements for excavated material; and
- strategies to transport and dispose of contaminated material, if encountered.

8. *The EIS indicates that crushing and screening plants, construction compounds, stockpiling sites and bitumen preparation sites would be required during construction, but does not identify specific locations. While it is appreciated that it may not be possible to identify exact locations for these facilities at this stage, please provide details of the assessment criteria to be used to determine their locations.*

Bitumen preparation sites, construction compounds, stockpiles and a crushing plant may be required along the length of the project. The location of these facilities would be the responsibility of the successful Contractor however, the RTA would require the Contractor to ensure that these facilities are located at least 40 m from watercourses, and outside the Morton National Park, Jerrawangala National Park and Parma Creek Nature Reserve. As construction progresses, it may be possible to use sections of old road formation for these purposes prior to these areas being rehabilitated. Other possible locations include cleared Crown Land, or by arrangement with local landholders such as those in Sassafras and between the Endrick River and Nerriga.

9. *Is it proposed to construct the road in stages. Similarly is it proposed to open the road to traffic in stages?*

It is proposed that the road be constructed and opened to traffic in stages with construction staging being dependent on the project delivery method. In order to commence work early, a contract for construction of the section from 9500 to 16500 (or possibly the entire eastern section from Hames Road to 16500 would be awarded first. Then a second contract to design and construct the remaining length would be awarded. Sections within each of these contracts would be opened progressively with scheduling of works determined by the successful Contractor. Although a single contract would allow the greatest flexibility of

earthworks haulage, this separation of the project into two contracts is planned to allow work to start soon after planning approval is received.

10. What would happen if, during construction, it is determined that the available funding is not adequate to complete the road?

The construction cost estimate would be reviewed during the tender assessment and as part of the detailed design stage and further refinements made as required. The road construction would be undertaken by a contract and the tender documents would outline the required construction cost that needs to be met for the project and associated funding arrangements. This information would be finalised prior to any construction work commencing on the project and the contract will require alternative proposals to be submitted for formal approval if over-expenditure is anticipated.

11. Please clarify the following regarding the economics assessment of Section 3.11. The clarification would require some re-estimations of the proposal's RUCBA.

a) The capital costs used in the RUCBA seem inconsistent with other parts of the EIS. The capital costs used were $64.2 million compared with a cost of $68.4 million identified in TP2. Also a $5 million project development expenses seems not to be included. Was this an error?

TP2 (p.6-1) states that "An initial budget of $80 million was allocated by government for the upgrade of MR92. Of this $80 million, $5 million has been allocated for upgrading east of Hames Road, and this work was constructed by Shoalhaven City Council and opened to traffic in September 2002. Of the remaining $75 million, a further $5 million has been allocated for project related costs. This leaves $70 million for the upgrade between Hames Road and Nerriga, including contingencies".

Therefore, the total capital costs used in the RUCBA in nominal or current dollars totals $75 million (including the $5 million for project related costs) and accords with the statement above. The $68.4 million (excluding the $5 million for project related costs) is the consultant's project estimate, not the budget estimate recommended by the RTA for use in the RUCBA. Therefore, in nominal terms, the value used in the RUCBA is $1.6 million higher than the consultant's estimate. This is seen as a conservative, but reasonable approach.

b) Property Acquisition costs were not included in the RUCBA. This seems to be inconsistent with normal RTA procedures. What are the property acquisition costs and why were property costs not included?

Property acquisition has been assumed to be catered for in the $1.6 million difference between the construction estimate and the $70 million used in the RUBCA. As the upgrade alignment largely follows the existing road corridor property acquisition is not a significant cost. An allowance for acquisition has been included in the estimate and this was clearly included in the Project Management Office (PMO) review of the estimate dated 30 March 2003 that allowed a total of $3.5 million for Investigation and Design, Property Acquisition and Project Management.

c) What traffic figures were used in Scenario 1?

The traffic data used for Scenario 1 is given in TP3 (p.4-17). These data are reproduced below.

VKT (Daily)			
YEAR	2000	2011	2021
Existing	9,483,941	-	-
Base Case	-	13,467,991	16,413,152
Diverted	-	13,464,888	16,409,424
Induced	-	13,507,254	16,456,156
Induced + Perceived	-	13,504,887	16,453,245

VHT (Daily)			
YEAR	2000	2011	2021
Existing	119,672	-	-
Base Case	-	163,871	197,235
Diverted	-	163,802	197,155
Induced	-	164,324	197,730
Induced + Perceived	-	Not Assessed*	Not Assessed*

Note: VKT's are daily vehicle kilometres of travel for the entire network modelled.

d) *There seems to be an inconsistent inclusion of costs for works to the west of Nerriga. Scenario 2 seems to include the benefits of improved road conditions west of Nerriga but no additional costs. Is it correct that the benefits of improving Nowra to Braidwood were proportioned for that scenario? Scenario 3 includes an additional capital cost of some $12.7 million. What improved road conditions were assumed for both scenarios (2 and 3) and what do the additional costs in scenario 3 represent? Does Scenario 4 assume roads to the west of Nerriga are upgraded?*

Scenario 2 addresses the interdependent nature of the proposal by adjusting the traffic data to reflect the higher level of demand that would occur if the upgrade was extended westwards of Nerriga. Simulation of a scenario without this adjustment would underestimate the network benefits due to the 'missing link' effect. This issue arises because of the interdependence of upgrading activity along MR92. The implementation of a Scenario which featured an upgrade between Nowra and Nerriga only would potentially restrict travel demand below that which would occur following a full upgrade. However, an evaluation of an upgrade of the Nerriga to Braidwood section (conditional on the Nowra to Nerriga section having been upgraded) would generate a disproportionately large share of benefits because it is essentially the 'missing link', completing the total upgrade. Some of the "full link" benefits can therefore be attributed to the Nowra to Nerriga upgrade component (this project) *without any incremental increase in cost.*

Scenario 2 does not assume an improvement in road condition compared with Scenario 1 and hence does not include an increase in capital cost.

Scenario 3 simulates an upgrade of MR92 between Nowra and Nerriga plus sealing of links to Hume and Kings Highway including the benefits of induced and perceived demand. In the absence of specific cost data for the upgrade of the links westward of Nerriga, it was assumed that the additional upgrade in the context of the whole project would increase construction costs by $7.5 million in both 2004 and 2005, taking the total construction cost from $75 million to $90 million.

Scenario 4 does **not** assume that the roads westwards of Nerriga are upgraded.
It should be noted that the difference in capital cost between Scenarios 1, 2 and 3 of $12.7 million is in present value terms not current dollars.

e) *What travel time savings were factored into the four scenarios and what design speeds were these savings based on?*

The incremental changes in vehicle hours travelled (VHT) by scenario is shown in the tables below. It should be noted that the method of valuing travel time savings differs according to the source of the demand ie. whether the incremental change in VHT is attributable to changes in diverted, induced or perceived demand.

This is important because, by definition, an incremental increase in induced and perceived demand leads to an incremental increase in travel time while an increase in diverted traffic results in travel time savings. All

categories yield a benefit but each are estimated differently. The reader is referred to TP 15, p. 3-8 – 3-9 for a description of valuation methodology by type of traffic demand.

INCREMENTAL ANNUAL VHT ('000) SCENARIO 1 and 2			
YEAR	*2000*	*2011*	*2021*
Diverted	0	(25)	(29)
Induced	0	191	210
Perceived	0	191	210

INCREMENTAL ANNUAL VHT ('000) SCENARIO 3			
YEAR	*2000*	*2011*	*2021*
Diverted	0	(135)	(174)
Induced	0	392	405
Perceived	0	392	405

INCREMENTAL ANNUAL VHT ('000) SCENARIO 4			
YEAR	*2000*	*2011*	*2021*
Diverted	0	(25)	(29)
Induced	0	937	1,167
Perceived	0	124	124

The design speeds are identified in the EIS document, p. 6-73. These are:

- General travel speed of 100km/h;
- 60km/h for cars through Bulee Mountain area (lower for trucks); and
- 80 km/h through Sassafras.

f) *Scenario 3 is stated in the EIS to be the "most likely." TP3 seems to indicate that for this scenario to eventuate a number of other improvements must occur namely, "upgrade Nowra to Braidwood [i.e. include upgrade of Nerriga to Braidwood section] and upgrade of the Kings Highway from Braidwood to Queanbeyan plus upgrade from Nerriga to Bungendore via Tarago." When are these works programmed to be undertaken and are they funded?*

The upgrading works noted have been programmed by Mulwaree and Tallaganda Councils. The key links are Nerriga to Sandy Point and Nerriga to Braidwood. When completed these would each provide sealed routes from the coast to Queanbeyan. Mulwaree and Tallaganda Councils respectively have committed to these works. The completion of sealing the link between Nerriga and Sandy Point is programmed for completion prior to 2006. Of the 21km of unsealed road between Nerriga and Braidwood, 10km would be sealed by 2006. Tallaganda Shire is programming completion of the remaining 11km progressively after that.

The sealing of the road between Nerriga and Sandy Point, in combination with the proposed upgrade of MR92 between Nowra and Nerriga, provides a direct sealed route between Nowra and Queanbeyan that is able to be used by both light and heavy vehicles. This would provide an attractive, reliable, all weather route with significant travel time savings over other east-west routes.

g) *The BCR of Scenario 1, which most closely represents the preferred proposal, is 0.1 and it is estimated to cost tax payers $55 million. What is the BCR of this scenario when the traffic volume is 370 vehicles per day in 2021 (as predicted in the traffic assessment without induced demand)?*

Scenario 1 is not the option that most closely represents the preferred proposal. The preferred proposal is an upgrade of MR92 between Nowra and Nerriga, connecting with the existing road network that is slowly being upgraded west of Nerriga. This is the situation described in Scenario 3.

The BCR of Scenario 1, for the upgrade without induced demand and perceived benefit (ie when the traffic volume is 370 vpd) is 0.1. This can be seen in Appendix C1 of Technical Paper No. 15 - Economics. This information was transposed into Table 6-10 of the EIS under the heading Scenario 1. The description of Scenario 1 on page 6-73 of the EIS should refer to 370 vpd instead of 660 vpd.

Need and Justification

12. The roads to the west of Nerriga raise several issues:

a) How would the proposal open up new viable freight routes between the Shoalhaven and inland areas without the inclusion of a link west of Nerriga.

As stated in the response to issue 11 f), the combination of the programmed and funded sealing works between Nerriga and Sandy Point (which is able to be used by heavy vehicles) and the proposed upgrade of MR92 between Nowra and Nerriga, would provide an attractive freight route between Nowra and Queanbeyan with travel time advantages over other existing east-west routes.

By upgrading MR92 between Hames Road and Nerriga, the road would become more attractive for the transportation of freight due to the reduction in freight transport costs through reduced fuel usage, reduced wear and tear on vehicles, travel time savings and reduced accident costs. While the routes to the west of Nerriga remain in their current state, freight vehicles travelling between the Shoalhaven, southern Illawarra and inland regions of Canberra, Queanbeyan, Tallaganda, Mulwaree would be limited to those B doubles less than 19m in length. Although the design standard of the of MR92 Upgrade between Nowra and Nerriga would allow long B-Double vehicles (i.e. those up to 25 m long) in the future, the Mongarlowe River Bridge and Oallen Ford would be restricted to vehicles less than 19m (carrying a mass of less than 50 tonnes) in the short term.

b) The road to Tarago via Sandy Point is a narrow road with several steep creek crossings including a long, low-level timber bridge at Oallen Ford. Although much of this road is sealed (the length unsealed depends on which road is used west of Sandy Point) it would not be suited for heavy vehicles without widening of the entire route and substantial bridgeworks. Please advise what work would be required to bring this road up to a standard suitable for heavy vehicles. Is this route intended also for B-doubles? If so what work would be required to bring this road up to a suitable standard.

With the programmed sealing of the route between Nerriga and Sandy Point, the link would be enhanced for heavy vehicles that already use the route. Although the Oallen Ford creek crossing is a low level and single lane structure, it is able to safely carry heavy vehicles (including B-Doubles up to 19m). Sealing would still significantly enhance its freight capacity and most importantly, it would open up several alternative routes for heavy vehicles to destinations beyond Sandy Point.

On completion of sealing, the route would need to be further upgraded and widened in places to become a designated B-Double route. Work is also required to provide adequate sight distance and curve improvements and possibly some pavement strengthening (although the existing sealed pavement is narrow it is in good condition). These improvements could be made incrementally (according to traffic demand) together with some intersection and curve reconstruction. There are also several opportunities along the route for larger scale realignment in the future that would shorten the length of the route.

Development of the road from Nerriga to Tarago as a B Double route (which would link to the MR79: Goulburn – Tarago – Doughboy B- Double route) is seen to be a longer term objective. The Tarago route is nevertheless expected to be attractive to heavy vehicles, and completion of the Nowra to Nerriga Upgrade to a standard suitable for use by B-Doubles would facilitate future development.

c) *Please provide details of upgrading works programmed by Tallaganda and Mulwaree Councils for MR92 west of Nerriga. Would the proposed works be suitable for B-Doubles? Is funding available for these works and what environmental assessment is proposed or completed for the work?*

Mulwaree Council has programmed and committed funding to seal the road between Nerriga and Sandy Point by the end of 2006. This would provide a sealed route between Nerriga and Queanbeyan via Tarago and Bungendore. No works have been programmed to upgrade Oallen Ford itself although the western approach to the ford has been substantially improved recently.

Tallaganda Council has programmed and committed funding to seal 10km of the remaining 21km of unsealed road between Nerriga and Braidwood by the end of 2006. A commitment has also been made to continue progressive sealing of the remaining 11km of unsealed road beyond 2006. A copy of the letter from Tallaganda dated 23 November 2001 and the fax from Mulwaree dated 25 August 2002 is included as **Attachment 1**. The program of works includes pavement strengthening and improvements to the alignment prior to sealing that would meet current design standards (and therefore would be suitable for B-double vehicles).

Mulwaree and Tallaganda Councils would carry out environmental assessment for both links.

d) *Is the Mongarlowe River bridge suitable for B-doubles?*

In its current state, the Mongarlowe River Bridge has no load limit and B-doubles up to 19 m are permitted. B-Double vehicles over 19 m in length are not permitted.

13. *The EIS indicates that the proposal is within the strategic planning framework for Action for Transport 2010. That document refers to the federal government taking responsibility for funding improvements to Main Road 92 (Nowra to Braidwood Road). It also emphasises the importance of the Mount Ousley Road improvements, the Wollongong Northern Distributor and the F6 ramps at Helensburgh in improving links with Sydney and freight routes; and the Kings and Illawarra Highway improvements in getting over the escarpment. Please clarify the relationship between this proposal and the projects referred to above and also how it fits within Action for Transport 2010.*

The State Government's *Action for Transport 2010 – An Integrated Transport Plan for NSW* outlines transport and road initiatives throughout NSW. The document highlights key transport issues to be addressed, categorising them as follows:

- meeting the needs of a growing population;
- safeguarding the environment;
- improving air quality;
- reducing car dependency;
- getting more people onto public transport;
- improving access for rural communities;
- making freight more competitive;
- keeping the network in good order;
- getting the best out of the system;
- giving the community value for money;
- making space for cyclists and walkers; and
- preventing accidents and saving lives.

The document outlines specific regional transport improvements that are planned to occur by 2010. *Action for Transport* noted that at its date of publishing, the Federal Government had taken responsibility for funding improvements to MR92 (Nowra to Braidwood Road). This has now become a jointly funded initiative by the Federal and NSW Governments and Shoalhaven City Council.

Action for Transport 2010 also states that "the State Government supports the *Illawarra's Action for Transport*", a document which outlines a strategy for the development of effective transport links in the Illawarra Coastal Plain (Wollongong, Shellharbour and Kiama). While not specifically covering the NSW South Coast, the plan outlines a number of goals, strategies and actions that are relevant to the proposed upgrading of MR92. These actions include:

- Identify preferred freight corridors;
- Encourage the use of emergent freight transport technologies such as B-Doubles and Rail/Roaders.
- Upgrade existing key rail, road and sea freight links and
- Develop an improved link across the escarpment between the Illawarra and the Hume Highway/ACT including the provision of an alternative to Macquarie Pass.

Together with MR92 the other projects listed (Mount Ousley Road, Wollongong Northern Distributor, F6 Ramps at Helensburgh and the Kings and Illawarra Highways) will all facilitate improved links with Sydney and across the escarpment.

14. Is the upgrading of MR92 specifically identified in the Illawarra Action for Transport? Please provide a copy of the requirements for MR92 detailed in that document.

The upgrading of MR92 is not specifically referred to in the Illawarra's Action for Transport as that plan specifically deals with the Illawarra Coastal Plain which comprises the local government areas of Wollongong, Shellharbour and Kiama. As indicated in our response to Paragraph 13 above, however, the plan outlines a number of strategies and actions, such as the need for an alternative escarpment crossing to Macquarie Pass that requires investigation. An upgraded MR92 would provide a high standard and safe alternative to Macquarie Pass and result in reduced travel times, increased efficiencies of time, reduced vehicle wear and tear and reduced fuel usage.

15. It is unclear how the proposal would meet some key objectives of Action for Transport 2010. In particular, how does the proposal address the following objectives from the 12 point plan:

- *Safeguarding our environment;*

The design of the upgrading of MR92 has been developed to minimise potential adverse environmental impacts to the extent practicable whilst also ensuring value for money for the surrounding local and regional community. The majority of the road design utilises the existing disturbed road corridor through the study area between Hames Road and Nerriga although improvements have been made to both the horizontal and vertical geometry in particular locations to increase road safety conditions. Sensitive environments and the known locations of threatened species were mapped as constraints during the route option assessment phase and taken into consideration in the selection of the preferred option. Since that time, the concept design of the preferred option has been further refined to minimise potential impacts to the natural environment including significant flora and fauna species.

Minimal direct disturbance to existing waterways within the study area would occur as a result of the construction and operation of the proposal as the existing bridges would be utilised together with the implementation of effective sediment control measures. The existing road is a source for significant sediment load entering local waterways and the sealing of the pavement would reduce this impact, particularly during prolonged rainfall events. It would also reduce the dust in dry, windy conditions.

The decision to remain on the existing alignment in the Bulee Mountain area reduces the impact on the Morton National Park to edge effects. Based on the design approach and the extensive mitigation measures proposed, it is considered that the potential adverse effects on the environment can be mitigated. It is recognised that while there will be adverse environmental impacts associated with the proposal, the option selection process and the further refinements to the design to address environmental issues, have resulted in a project that addresses the project objectives within the context of the sensitive environs adjacent to much of the length of the route.

- *Making freight more competitive;*

The movement of freight by road is a particularly important issue given the limited access to rail within the study area. The rail network in the vicinity of the study area is limited to links in the north and connection to the Main Southern Line via the Unanderra-Moss Vale Line. The Illawarra Railway line links Sydney to Wollongong, Port Kembla and Bomaderry (north of Nowra). The section from Bomaderry to Kiama is not electrified with services provided via diesel locomotives.

While it is acknowledged that rail is an important mode of freight transport, there is no direct rail link between the South Coast and the ACT region. The Unanderra-Moss Vale Rail Line provides the only rail access to southern and south-western NSW as well as Melbourne and the rest of Victoria. The rail services on the Main Southern Rail Line provide rail connections between Sydney and Melbourne through Goulburn, Wagga Wagga, and Albury. A spur line from Queanbeyan also connects to Canberra.

The Goulburn – Bombala Railway Line passes through Tarago, Bungendore and Queanbeyan. Tarago has potential as a rail/road freight terminus now that MR79 (Goulburn to Doughboy) is a B-Double route.

The Unanderra-Moss Vale Rail Line is constrained due to the need to cross the escarpment. Improvement to this line has limitations because of the steep gradients and curvature. Freight access on the Illawarra-Sydney Rail Line is also constrained by high passenger train numbers that limit freight track availability. This issue is particularly relevant between Hurstville and Sutherland where only one track exists in each direction. Therefore, potential options for improved freight transport by rail was not considered further as part of the EIS.

The existing road system is constrained by alignment restrictions that increase transport costs. The location of the port facilities at Port Kembla results in a demand for road freight transport to and from the southern areas of NSW and the Gippsland District of Victoria to the port.

Freight traffic is an important economic component linking rural and manufacturing industries with cities and port facilities. *Action for Transport 2010* recognises that improved access to the State's ports will deliver major freight benefits. It is recognised that the economic development of the coastal region in the study area is constrained by the standard of the surrounding highway network. The Moss Vale – Nowra Road, with two sections of steep grades at Cambewarra and Barrengary Mountains, cannot be enhanced to improve freight capacity. It is inefficient and costly for many freight carriers. Fuel savings would be achieved with a switch to the upgraded MR92.

Port Kembla currently has B-Double access from the north and from Nowra, although the Illawarra Highway, Moss Vale – Nowra Road, MR92, Kings Highway and Princes Highway south of Nowra are currently unsuitable for travel by B-Double vehicles. This prevents the use of B-Doubles over a large area of south-eastern NSW, denying this region the potential freight efficiencies that they introduce and limiting the potential expansion of the regional economy.

The MR92 Upgrade from Nowra to Nerriga has been designed for B-Double access. The project would immediately reduce freight transport costs (reduced travel time, fuel usage, and vehicle wear and tear) and provide a safe and reliable all-weather route as well as facilitating the development of several B-double routes west of Nerriga in the future.

The upgraded route would also attract freight vehicles from other routes, such as the Moss Vale – Nowra Road. It would be a well-graded escarpment crossing, that provides more direct access between the Shoalhaven and south-eastern NSW, and also to the ACT.

- *Giving the community value for money;*

Three levels of Government have allocated $80 million dollars for a strategic road connection between the Shoalhaven region and inland NSW. The Department of Defence has decided to invest significant resources into a new facility to the west of Nerriga (near Braidwood) that will also result in demand for upgraded transport connections. To provide the best value for money, the design has been modified to provide a road that complies with current road design standards and focuses on meeting the transport needs of the MR92 corridor.

The available project budget of $75 million has been important in the development of the concept design for the 54 km upgrade of MR92. The alignment and construction cost estimates were based on an initial cross-section for the road comprising 2 x 3.5 m traffic lanes, 2 x 2.0 m shoulders and 2 x 1.0m unsealed verges. This cross-section was a recommended cross-section for generally high volume highway projects. As a result of further assessment this standard was considered excessive for the expected traffic volumes 20 years after upgrading MR92.

Three different cross-sections, tailored to the potential use of the upgraded road and catering for the specific environs located adjacent to it were developed: one for Sassafras, one through the Bulee Mountain area and another for the remainder of the route. With the exception of the Bulee Mountain area, the shoulder width was reduced from 2 x 2.0 m shoulders to 2 x 1.0 m shoulders for the upgraded road, similar to the current cross-section provided for the Kings Highway and the Tarago-Goulburn Road. The reduction in road width reduced the pavement requirements for the road and provided value for money to the community.

The design of the upgraded MR92 also provides value for money to the community by limiting deviations from the existing road alignment to only those required from a road safety perspective.

An iterative approach was applied to develop the most cost effective upgrade strategy that would provide the greatest improvement within the total budget. This involved identifying smaller sub-sections that generally contained only one feature requiring upgrading. Each sub-section was then costed for both the full reconstruction and minimum treatment (pavement strengthening, minor improvement to alignment, resheet and seal) options. Each sub-section was then prioritised for reconstruction by a low, medium or high rating based on three criteria:

- Increase in design speed;
- Construction priority; and
- Cost differential between reconstruction and strengthening.

The estimated costs are conservative and depending on the tender price accepted for the work additional subsections of "new standard" may be affordable. In the event that the actual cost of the work is greater than anticipated some sections of work may have to be downgraded to include only widening, pavement strengthening and bitumen sealing.

Consideration of Alternatives

16. Table 5.1 seems to provide the only comparative assessment between broad options for providing improved transport between Shoalhaven/Illawarra and areas west of the dividing range. The analysis of the Table is scant and does not appear subjective and the "do-nothing" option is not included. The assessment of 'improvements' does not allow the ability of each option to meet project objectives to be assessed and therefore there is no relative comparison between options. The table is also unbalanced as it places considerable weighting on traffic performance (4 out of 5 objectives). As a minimum the following information on each option would be required to provide an objective evaluation:

- *Consideration of the do-nothing option;*
- *Description of the work required for each option;*
- *Assessment of the ability of the options to meet project objectives using performance criteria;*
- *Cost of and, Cost-Benefit Analysis, for each option (to a comparative level of precision);*
- *Relationship to Action for Transport 2010;*
- *Ability to provide or improve east-west freight movements; and*
- *An environmental evaluation.*

Given the limited assessment of strategic options undertaken, it is unclear why the proposal was selected as the preferred strategic option.

The consideration of strategic alternative road upgrades was provided mainly to show that none of the existing escarpment crossings effectively address the transport task of moving people and freight from inland NSW to and from the Shoalhaven. This results in potential limitations to growth of the industrial areas in and around Nowra. Indirect transport links where vehicles have to travel either north or south before they can travel west limit the attractiveness of inland markets and sources of goods. As a result, alternative routes could be upgraded (some at great expense, with significant constructability issues), but they would not result in an improved connection between the Shoalhaven and inland NSW.

Regarding the "do nothing" option, it was considered in Section 4.6 of the EIS. Additionally, the issues associated with the upgrade of alternative escarpment crossings would be similar for the "do nothing" option.

As a result it is considered that the further detailed analysis proposed may not be warranted. The existing escarpment crossings clearly have major constraints and none of these provide the potential for suitable safe access conditions for heavy (B Double) vehicles. The Federal Government has declared the upgrade of MR 92 as a Road of National Importance (RONI) and three levels of Government have committed funding to complete the most difficult section of the road between Nowra and Nerriga.

It is important to note that of all the existing escarpment crossings, only MR92 has the potential for any significant improvements with a relatively low environmental impact. The generally favourable and short grades of MR92 give long term benefits as a freight route and the low population density reduces the cost and impact of the proposal.

17. Some comment on each of the 'improvements' listed in Table 5.1 of the EIS is provided in the table below:

Engineering	*More objective assessment of required engineering improvements is required.* *It is noted that the Clyde Mountain section of the Kings Highway could be 'improved' to allow for B-Double access. How would this section compare to the MR92 sections at Sassafras and Bulee Mountain?* *The comment for MR92 is that this could be upgraded under traffic seems to contradict later statements that temporary closure of the road is required.*

The steep climb on Clyde Mountain on the Kings Highway can be made suitable for B-doubles by curve reconstruction at two curves. The Clyde Mountain section has a maximum grade of over 14 % with several steep long winding climbs over a 20 km length. Upgrading the Kings Highway, however, would not give the same benefits to the freight and tourism industries in the Shoalhaven and southern Illawarra areas as are expected from the MR 92 upgrade as the routes serve different communities.

The following comparison of each of the escarpment crossings is provided to clarify some of the more critical engineering issues. Note that the comparison lists the "total" performance for each of the crossings (MR261 features two mountain passes, and MR92 has both the incline to Sassafras (uphill westbound) as well as Bulee Mountain (uphill eastbound)).

ESCARPMENT PASS	LENGTH	NO OF CURVES BELOW 150m RADIUS	AVERAGE GRADE	HEIGHT DIFFERENCE	SUITABLE FOR B-DOUBLES	COMMENTS
SH25 MACQUARIE PASS	9.4km	62	6.6%	616m	NO	
MR261 - CAMBEWARRA MOUNTAIN PASS AND BARRENGARRY MOUNTAIN						
Cambewarra eastern side	5.3km	25	7.9%	420m	NO	
Cambewarra western side	4.4km	27	7.7%	337m	NO	
Barrengarry Mountain	6.8km	32	8.1%	554m	NO	
MR51 CLYDE MOUNTAIN PASS	11.3km	29	6.5%	733m	NO	Two curves require widening for B- Doubles to use - estimated cost of this work is $2 million
MR92						
Bulee Mountain BM4	4.2km	12	8.3%	214m	YES	
East Sassafras incline	1.5km	1	8.3%	125m	YES	

The comparison shows that the proposed upgrading at Sassafras and Bulee Mountain represents a clear reduction in most of the factors that distinguish a mountain pass. While it has a "total" length of less than 6km and overall height differential of 339 metres, the pass which is the next best is Clyde Mountain, with twice the length and 733 difference in height.

MR92 and the Kings Highway are the only two passes that could provide for movement of B-Doubles. The Clyde Mountain Pass presently restricts usage of B-Doubles on the Kings Highway. This restriction could be removed by upgrading several curves on the Pass. The preliminary cost estimate for a minimal upgrading is around $2 million.

A major engineering difference that distinguishes the proposed MR92 escarpment passes is that they would be built to a design standard that conforms to the RTA Road Design Guidelines. By comparison the other mountain passes do not necessarily comply with design standards but have "evolved" from original lower standard routes and contain undesirable alignments.

The comment that Bulee Mountain could be upgraded under traffic reflects the opportunity provided by the relatively lower traffic volume currently using MR92, at only around 100 vpd. While provision for traffic will not be finalised until the detail design stage, the significantly lower volumes using MR92 may allow adoption of strategies that could at least provide continuing access to local and emergency traffic.

Ability to improve regional road network	*The ability to improve the regional road network needs to be assessed in terms of current capacity constraints and the ability of the various options to rectify these constraints.*

Reference to the above mountain pass comparison table demonstrates some of the engineering constraints that apply to the regional mountain passes. With the exception of MR92, there is very limited opportunity to upgrade these escarpment crossings.

There is some potential for Macquarie Pass on the Illawarra Highway (SH25) to be upgraded with additional passing opportunities. However the crash rate on Macquarie Pass is very poor, and there is some concern that additional traffic should not be encouraged to use the route by improving efficiency.

Kangaroo Valley Road (MR261) features two narrow, winding mountain passes. While this route is currently administered as a State Road, there is concern that the constraints offered by the steep terrain mean that further opportunities to upgrade it are very limited. Kangaroo Valley Road also exhibits very poor crash history on the steep, winding mountain pass sections.

Extensive new upgrading works have been completed on the Clyde Mountain crossing, Kings Highway (MR51) over the last 10 years. Despite this, the crash rate on Clyde Mountain is still very poor. As noted above, there is some potential for upgrading to allow minimum standards for use by B-Doubles.

Finally, the major driving force for upgrading MR92 in preference to the other escarpment crossings is that it most effectively addresses the need for improved regional economic links between the growing coastal Shoalhaven City community and inland regions of NSW, the ACT, and the Hume Highway.

Travel time saving	*Quantification of the travel times associated with each of the options is required.*

The following summary of the travel times is for trips from Nowra to Canberra obtained from information presented in Technical Paper No. 3 – Transport, and from the SKM traffic model:

- Via Kiama and the Illawarra Highway (SH25) = 181 minutes
- Via Kangaroo Valley and Moss Vale (MR261) = 153 minutes
- Via Clyde Mountain, Kings Highway (MR 261) = 182 minutes
- Via MR92 (via Braidwood with upgrade to Nerriga only) = 154 minutes
- Via MR92 and Tarago (ie with upgrade to Nerriga and beyond) = 137 minutes

Road user safety	*Quantification of the road safety improvements would enable a more meaningful comparison.*

The escarpment crossing on the Illawarra Highway, Moss-Vale Nowra Road and Kings Highway all have high accident rates and limited potential for improvement. The MR92 upgrade would result in substantially improved road and it is expected to improve road safety along the route and (by reducing heavy vehicle traffic) on the alternative routes also.

The following table provides data that quantifies the existing crash rates and shows the accident severity index for each escarpment crossing:

CRASH DATA for RELATIVE SAFETY COMPARISON of ESCARPMENT CROSSINGS

Note 1: For MR92, the traffic volumes and crash figures are too small to obtain meaningful crash rates/severity indices for a single crash produces a huge variation.

Note 2: There is anecdotal evidence that some MR92 crashes are not reported because of the remote location.

ROAD	MOUNTAIN PASS	LENGTH (KM)	1995-1997				1998-2000			
			YR97 AADT	TOTAL CRASHES	CRASH RATE 100MVKM	SEVERITY INDEX	YR2000 AADT	TOTAL CRASHES	CRASH RATE 100MVKM	SEVERITY INDEX
SH25 ILLAWARRA HWY	MACQUARIE PASS	7.38	2700	35	160	1.08	3063	76	306	1.41
MR261 KANGAROO VALLEY	CAMBEWARRA MOUNTAIN	10.03	3100	45	132	1.17	2437	51	199	1.12
MR261 KANGAROO VALLEY	BARRENGARRY MOUNTAIN	6.23	3000	20	98	1.05	2929	20	96	1.08
MR51 KINGS HWY	CLYDE MOUNTAIN	11.19	2300	88	312	1.20	2792	67	196	1.27
MR92 NERRIGA RD (existing) See notes 1 & 2 above	BULLEE MOUNTAIN	4.1	91	2	501	1.25	104	1	220	1.50

Environmental	*This requires a more detailed and quantified consideration.* *Why would impacts of works to the Kings Highway on National Parks be significant when the impacts of MR92 on National Parks are described as "edge effects?" One method of comparison may be quantification of the amount and quality of vegetation to be lost under each of the options.*

As noted previously, there is very little opportunity to upgrade the other escarpment crossings to provide safe travel conditions.

Comprehensive investigations have been undertaken in the past for options to upgrade the Macquarie Pass to an appropriate design standard. An alternative via a route known as Caloola Pass (to the south of Macquarie Pass) was subsequently identified. Cost was estimated in the early 1990s at around $80M. The project has not proceeded mainly because of the high estimated cost and anticipated very high environmental impacts.

No options to upgrade either the Moss-Vale Nowra Road (Kangaroo Valley Road) or Kings Highway mountain passes to current road design standards are available. Such options would require new corridors and would result in very significant environmental impacts. However, as noted above, the existing Kings Highway Clyde Mountain Pass could be upgraded to a minimum standard for B-Double usage at a cost tentatively estimated at around $2 Million. This work would result in edge effects on the environment.

Environmental	*Why would the Hamden Bridge (on MR261) limit engineering options if the Wool Road (MR92) does not? It is noted that the bridge is not listed on state and local heritage registers (searched via www.heritage.nsw.gov.au). Please confirm the heritage status of that item.*

The Hampden Bridge (Bridge No. 875) is listed on the RTA Heritage and Conservation (S170) Register and appears on the RTA Website as being in this register (refer - 'Environment' - 'Heritage'-'Heritage and Conservation Register'-'Southern Region'). The bridge is of State heritage significance and a Conservation Management Plan has been completed since its listing on the RTA S170 Register.

In addition, Hampden Bridge is listed under a Regional Environmental Plan, 1.1.1986. Such a listing would only be suspended if it were later incorporated into a Local Environmental Plan covering the area.

Environmental	*If visual constraints are considered in the case of the Illawarra Highway, these also need to be considered in assessing the other options. This comment refers to the significant visual effect of road widening on Macquarie Pass that would be visible from a large area of the southern Illawarra and Albion Park in particular.*

Visual constraints would apply to all of the escarpment crossing options, including the proposal for MR92 at Bulee Mountain. However, the constraint is more significant for Macquarie Pass due to more extensive visibility from the southern Wollongong / Shellharbour urban area.

Environmental	*Consideration of other environmental impacts such as noise and vibration, impacts on indigenous heritage items and pressure for land use changes would also be relevant..*

While further studies into factors such as noise, vibration, heritage and land use would be useful in refining a decision about the most appropriate escarpment crossing alternative, it is suggested that the level of study that has been completed has been sufficient to demonstrate the benefits of upgrading the new MR92 escarpment crossing instead of the options at Macquarie Pass, Kangaroo Valley and Clyde Mountain. The two principal factors in arriving at this decision are:

1. The engineering challenge and extensive environmental impacts of upgrading the latter three options to an appropriate road design standard, without significant expenditure (at least $80-$100M for Macquarie Pass, more for the others), and

2. The location of the MR92 escarpment crossing most appropriately addresses the objective to provide an improved transport link between the expanding communities of the Southern Illawarra and the Hume Highway / ACT and inland NSW region.

18. *The Federal Department of Transport and Regional Services has reservations about the preferred upgrading of the existing alignment at Bulee Mountain (EIS page 5-24). The EIS indicates that this concern centres on transport efficiency and road safety and would be further investigated when community feedback is at hand. What community feedback is referred to? What are the implications of FDoTaRS concerns?*

The community feedback referred to is that from the EIS exhibition period which is addressed in the Representations Report. A total of 645 EIS representations were received. Of these over 400 were "form letters" circulated by Shelley Hancock, MP, as part of the ~~Federal~~ State election campaign.

513 respondents favoured the alternative route (BM5) at Bulee Mountain. (The majority of the form letters received supported BM5). 18 respondents favoured the preferred route BM4.

DoTaRs concerns for safety and transport efficiency have been examined, and to a large part addressed, by an examination of the engineering design and the inclusion of minor modifications to the alignment. An additional westbound overtaking opportunity and an extended eastbound auxiliary lane are proposed on

Bulee Mountain and these will be described in a Preferred Activity Report (PAR). It is understood that these and other minor design issues that can be addressed as part of the final design process will ensure that the best overall value for money solution is achieved for the whole project length.

Traffic and Transport

19. *The transport model makes use of "induced benefits" and "perceived benefits" to generate future traffic. Is this a common technique in the evaluation of road upgrades by the RTA? Please provide examples of other RTA road upgrade studies that have included those types of additional traffic in the economic analysis. The Department also notes that the traffic assessment undertaken for a number of RTA projects, including those completed for the Cross City Tunnel and Bangor Bypass, conclude that induced traffic cannot be modelled. How were induced traffic and diversion due to "perceived benefits" factored into this model?*

Induced demand and perceived benefits are important aspects of major road projects. This is particularly so in the case of regional and inter-urban roads such as MR92, where the new or upgraded road will provide significant savings in travel times. These travel time savings are likely to make possible (or at least more practical) trips between locations that would otherwise be prohibitively time-consuming. Induced demand estimation seeks to quantify this impact.

There is generally less potential for induced demand in urban road settings, as there is often an alternative route that is not prohibitively time-consuming. The opening of a new or upgraded road in an urban setting will generally see traffic switching from other roads, but the level of induced traffic will be low.

The Bangor Bypass EIS included an assessment of induced traffic impacts, and concluded that the level of induced traffic was very low. A similar conclusion was reached in the Cross City Tunnel EIS. Both of these projects are in urban areas. The valuation of induced traffic effects in economic analysis is a standard procedure, specified in the RTA Economic Analysis Manual. Economic analysis can be undertaken if there are appropriate inputs to the analysis procedure (outputs from the traffic model).

Perceived benefits refer to the fact that some motorists will use a particular road even though an alternate route may be marginally faster. This may occur if a road is signposted as a major route to a particular destination, or if the benefits associated with using a particular road, such as road conditions, scenery or straight line distance are perceived by motorists to make a particular road more attractive than alternative routes.

The MR92 EIS produced separate scenarios for unadjusted demand, induced demand and induced and perceived demand. These were analysed separately.

20. *The transport assessment provides a range of traffic scenarios for future traffic volumes in 2021 that vary between 310 to 2000 AADT. This indicates a considerable degree of uncertainty in the traffic modelling. What are the key factors (i.e. model inputs) that determine this uncertainty:*

The EIS provides a range of forecast traffic volumes on MR92, covering 10 scenarios each for 2011 and 2021. Scenarios B, C and D relate to various network-based options, such as the length of MR92 that is to be upgraded and the "Beyond Nerriga" option that was adopted. Within each network scenario three demand scenarios were modelled. These demand scenarios were scenarios for unadjusted demand, induced demand and induced and perceived demand. Table 7-6 of the EIS outlines the source of potential future traffic flows on MR92. It shows the cumulative impact of diverted trips, induced demand and perceived demand.

By improving network conditions at either end of the proposed MR92 upgrade, benefits in terms of travel time savings and perceived benefits are increased. This makes MR92 a more attractive route. Scenario B improves travel conditions for only the section of road Nowra – Nerriga. Trips to/from beyond Nerriga are still affected by road conditions beyond Nerriga which make MR92 less attractive than if a route or

routes beyond Nerriga were upgraded. Improving the Beyond Nerriga option(s) increases the attractiveness of MR92, hence the variation in traffic volumes.

21. *Page 7-4 of the EIS states that "growth in population and land activity to the west of Nerriga has been constrained by the lack of a reliable transport route to the east." What evidence is there to support this statement?*

Without a suitable transport link between the Shoalhaven / southern Illawarra and areas west of Nerriga the economic benefits (particularly for Nerriga and areas west) that would be expected due to that relationship have not been realised to any great extent.

Although there is no substantive evidence, there is ample anecdotal evidence that the poor transport infrastructure and particularly the poor links to coastal areas has been an important limiting factor for growth in and around Nerriga. This anecdotal evidence was based on information from Shoalhaven City Council and Tallaganda Council and is confirmed by the comments received at the information days and in the EIS representations.

22. *The EIS indicates that provision of an east-west freight route capable of taking heavy vehicles and, in particular, B-Double traffic is a strategic justification for the project, yet the traffic assessment is limited in this area. Please provide details of the number of B-Doubles used, or likely to be used, in the area and the potential for these vehicles to use MR92.*

B-Double vehicles greater than 19m in length can only travel along designated B-Double routes, however roads built to current design standards are capable of accommodating B-Double vehicles. The RTA has a policy of constructing or upgrading roads to meet current design standards and conformance with these standards ensures suitability for B-Double's at any time in the future. This does not necessarily mean that they will become designated B-Double routes.

MR92 is proposed to be upgraded to meet current design standards. Construction to this design standard will enhance the safety and freight capacity of the road and would enable B-Double vehicles to use the road in future when it is eventually designated as a B-Double route. To provide continuity the Nowra to Nerriga road would have to connect to a route (or routes) upgraded to a similar standard west of Nerriga.

Appendix D of Technical Paper No. 3 identifies potential sources of traffic that would use MR92, including heavy vehicle traffic. Some of these truck movements could be undertaken by B-Doubles, and there may be scope for additional B-Double trips using MR92 to occur. Until a route west of Nerriga is upgraded freight will be carried by vehicles other than B-doubles, however it is important that this 54 km length does not become a constraint to economic growth when the road access west of Nerriga is also upgraded as programmed. The model used to produce traffic forecasts does not distinguish B-Double's from other heavy vehicles. However, as there is no proposed B-Double route west of Nerriga, the number of B-Doubles assumed in the model was zero.

23. *What land use forecasts have been used in the trip tables used to model traffic volumes? In particular, what assumptions were made in relation to the potential expansion of Port Kembla and the 'Intensification of land use' along the alignment and west of Nerriga.*

Land Use forecasts used for the traffic modelling were adapted from the Beyond Nerriga Transport Corridor Study, produced by Ove Arup and Partners (1999). These were based on NSW State Government forecasts, as detailed in Section 4.2 of Technical Paper No. 3. These forecasts comprised the most up-to-date information available at the time of commencing of the traffic modelling study.
The future development of Port Kembla has the potential to add to the predicted number of vehicles that would use an upgraded MR92. However, at the time of writing the EIS, there were no firm proposals to expand the facility and therefore, this was not included in the trip tables used in the modelling.

24. *Section 7.3.5 of the EIS provides some details of travel time savings. What are the total travel times for trips from Nowra to Canberra:*

- Using MR92 without the proposal (the "do-nothing" case);

  Scenario A1 via MR92 (No Proposal): 177 minutes
- Using the proposal (assuming only funded and timetabled improvements on MR92 west of Nerriga); and

  Scenario C1 via MR92 (with Proposal and Beyond Nerriga Upgrade): 145 minutes
- Using the Princes Highway/Kings Highway link.
- Scenario C1 via Kings Highway / Princes Highway (With Proposal): 182 minutes

These times show that travel times between Nowra and Canberra are slightly faster via MR92 compared with the Princes Highway / Kings Highway route. It should be noted that the existing condition, variability and unreliability of MR92 makes this route a much less attractive route for Nowra – Canberra trips than travel via the Princes Highway and Kings Highway.

25. *There is no assessment of the likely construction stage traffic impacts. Given the magnitude of proposed earthworks, requirement to transport significant, quantities of construction materials to the site and the limitation of the existing network, the Department requires at least a preliminary assessment of these impacts. Of particular concern is how any required road closures at Bulee Gap would be managed.*

Construction works associated with the proposed upgrade have the potential to impact on the movement of traffic along MR92 during construction. Depending on the construction method adopted, two alternatives are available for traffic control along MR92.

- Construction under Traffic (Partial closure): This would enable work to occur on one side of the road at a time. Flagmen or temporary traffic signals would be required at either end of the one-lane section of road, preventing conflict of vehicles travelling in opposite directions. This is the construction method that is the most likely for the majority of the route. Even at Bulee Mountain, construction under traffic should be feasible given the low traffic volumes.
- Full Closure: At Bulee Mountain in particular there may be advantages (such as improved safety, and reduced cost and time for construction) that would warrant full closure of MR92. Full closure would be co-ordinated with the construction work along the whole upgrade so that the time for closure is kept to a minimum. Given the low volumes of traffic currently using MR92 (~100 vehicles per day), the impact of road closure would be minimal.

Any proposed closure would be widely advertised with provision for emergency vehicles and local traffic when required.

Species Impact Statement

Director-General's Requirements (NPWS)

1. *The SIS does not provide a plan showing the location and type of vegetation along the proposed route at a scale of 1:4,000 or larger. (A plan is provided in Appendix 11 at 1:20,000). The plan should show all areas of native vegetation to be damaged or removed, key habitat resources, all trees with hollows, and all large trees as requested in 1.2 of D-G's Requirements (NPWS).*

The Director-General's requirements states that a map shall be provided "at a preferred scale of 1:4,000 or larger". A vegetation map along MR92 is shown in Figure 3 in the report contained in Appendix 11 of the SIS. This vegetation map is a GIS layer and can be prepared at any scale required. Enlarging the plan to 1:4,000 would not, however, provide any additional information than Figure 3 (of Appendix 11) of the SIS as the study area is relatively devoid of landmarks and features such as local roads, buildings, etc and the vegetation communities extend for large lengths either side of the existing road. Significant vegetation communities and significant species were targeted during field investigations and specific large scale maps were prepared showing the location of these individuals in relation to the proposed upgrade. These detailed maps are located within Chapter 12 of the EIS.

With regard to the mapping of trees with hollows, large trees, key habitat components to be removed by the upgrade, considerable information is included in the SIS in Appendix 4 (page 69 of the Appendices), where sites that required clearing were surveyed. It should be noted that there is not a great need for clearing of large trees for the proposal because the alignment generally follows the existing road corridor or adjacent scrub land. The information in Appendix 4 of the SIS includes GPS co-ordinates and description of all trees over 5cm diameter at chest height (dch), the number of tree hollows, estimated hollows per hectare, understorey and the main habitat components. Only the key areas where clearing is likely were included because the project proposal is over a length of 54 km and it was not possible to provide accurate information for the whole area at this stage.

2. *The location of fauna survey points is not mapped.*

The locations of the 30 main survey areas are shown on Figure 12-1 of the EIS and within the SIS, on Figures 2a to 2f. The SIS does not have a map showing the location of all survey points. However, Appendices 3 and 4, respectively, provide fauna information for the 30 survey areas and 11 survey plots. Additionally, other areas and the whole route were surveyed many times by Kevin Mills & Associates at varying intensities.

Methods of fauna and flora survey

3. *The survey methods are not adequately explained in the SIS. Survey methods can be implied from the results, but a full description is required.*

a) Key Threatened Species

The methods used to investigate each key threatened plant and animal species are described in Section 4.1 and 4.2 in the SIS, respectively. It was considered better to place this information under each species in association with the extensive information provided for the species, rather than in a separate section on methods. The methods employed at each of the 11 survey plots are described on pages 30 and 31 of the SIS.

b) Survey Sites at Selected Curves

At each of the 30 survey sites located at road deviations from existing curves, a proforma survey sheet was completed, recording the information provided in Appendix 3 to the SIS. The purpose was to characterise the vegetation and habitat at each of the areas where most disturbance was to take place. The resultant survey sheets provide a great deal of information on the areas likely to be affected by the proposal as well as the country traversed by the road. The data collected from each area is presented in Tables 2.1 and 2.2 and Appendix 3 of the SIS.

The following information was recorded at each survey site:

- Site number;
- Date(s);
- Chainage (of new alignment);
- Distance surveyed;
- Estimated area of disturbance;
- Side of road (north, south etc);
- Vegetation present;
- Habitat features present;
- Fauna recorded during the survey(s);
- Relevant notes;
- Significant features (species, vegetation types etc.,) observed;
- A list of the plant species observed.

c) Survey Plots

The methods employed at each of the 12 survey plots are described in Section 2.5, pages 30 and 31, of the SIS; the results are provided in Appendix 4. Twelve survey plots were selected in woodland and forest types that characterised the vegetation around the road and that were likely to be affected by the proposal. Each plot was a square of 20 metres by 20 metres. A proforma survey sheet was completed for each plot, recording the information provided in Appendix 4 to the SIS. The purpose was to characterise the forest and woodland types in the area and their habitat features.

The following information was recorded for each survey plot:

- Plot number;
- Description of the location of the plot;
- Altitude:
- GPS for the southwest corner of the plot;
- The size of all trees of each species represented that were greater than 5 cm dch;
- Number of hollows in each tree;
- Size of dead trees and whether hollows were present;
- Number of trees > 30 cm dch;
- Number of trees per hectare;
- Number of hollows per hectare;
- Dominant understorey plants;
- Notes on habitat components, e.g. logs, wetlands;
- Evidence of the presence of mammal fauna;
- Other notes, e.g. bushfire history.

4. *Location of survey areas/curves (Figure 2) provides no information of the vegetation or habitat present. The Department requires a map of the proposed route and location of survey areas/curves over vegetation communities. Further detail should be provided at each survey area/curve, including information on "Priority species," at the detail shown in Figure 5.*

The vegetation present within the study area, and many other aspects of the sites, are detailed in Appendix 3 of the SIS. As noted above, if a map showing the curves and the vegetation present is

required, then the vegetation layer shown in the report at Appendix 11 can be overlain with the site locations in Figure 2.

The priority species been mapped in relation to the preferred alignment of the MR92 Upgrade and these figures are attached (see Appendix 3). The figures in **Attachment 2** are additional to the figures provided in the EIS and SIS and illustrate the location of the following priority species:

- *Litoria littlejohni* (Figures 1a to 1c)
- *Acacia subtilinervis* (Figures 2a to 2g)
- *Leptospermum epacridoideum* (Figure 3a)
- *Rulingia hermanniifolia* (Figures 4a to 4d)
- *Acacia bynoeana* (Figure 5a)
- *Pseudanthus divaricatissimus* (Figure 6)
- *Varanus rosenbergi* (Figure 7a) and
- *Grevilliea macleayana* (Figures 8a and 8b).

5. *What are the results of additional flora and fauna studies available for bat species and orchid species.*

Surveys for tree hollow using and cave-dwelling bats were undertaken in early March 2003; and the associated report is now complete. The orchid surveys proved inconclusive this season because the effect of bush fires and severe drought meant that virtually no terrestrial orchids flowered last season (K. Mills pers. obs; S. Clarke, L. Mitchell, K. McDougall, NPWS pers. comm.). NPWS have requested that orchid surveys be repeated in the period from December 2003 to March 2004 for the two species involved, *Genoplesium superbum* (not *TSC Act 1995* listed but endemic to Bulee Mountain) and *Cryptopstylis hunteriana* (*TSC Act 1995*, listed as vulnerable). Further site inspection and negotiations are being held with NPWS although it is considered that further studies would not add value.

Area to be cleared

6. *In table 2.1, how was the "Approximate Area of Disturbance" calculated? Does this include the area required for clear zones?*

The area of disturbance in Table 2.1 of the SIS took into consideration the amount of land that would be required during the construction period for machinery access as well as any clear zone clearing.

7. *Progressive rehabilitation would be undertaken, however will clearing occur progressively to lessen dust impacts and lessen the construction impacts on fauna? Is it possible to set a maximum clearing limit?*

The exact construction schedule would be investigated during the detail design phase, however, this would need to be confirmed by the successful tenderer. Given the length of the road it is expected that it would be upgraded in stages which would result in vegetation clearing and rehabilitation being undertaken progressively between Hames Road and Nerriga.

8. *Does Table 6.1 correlate with vegetation communities in Appendix 11? If it does, please indicate the correlation. If it does not, please provide the area of each ecological community in Table 3 of Appendix 11 to be cleared along the entire route.*

Table 6.1 of the SIS does correlate with the vegetation communities outlined in Appendix 11. The communities referred to in Table 6.1 from top to bottom relate to the following vegetation communities which were numbered in Appendix 11:

- Rainforest (basalt) = Vegetation Community 10

- Tall Forest (basalt) = 12
- Tall Forest = 17
- Open Forest = 18
- Open Forest = 2
- Open Forest (TRJ) = 1
- Open Forest = 4
- Woodland = 9
- Woodland (Tablelands) = 14
- Woodland = 13
- Woodland = 17
- Woodland (Tablelands) = 19
- Woodland = 9
- Shrubland/Heathland = 6

Impact on Species

9. Eucalyptust triflora should be a "priority species."

This species is not regarded as a "priority species" because it is not listed under the TSC Act 1995. It has no higher status than any of the other ROTAP species found along the route. Considerable detail was provided in the SIS on this species' occurrence in the project area.

10. Each stand of Eucalyptus langleyi is not described in detail in Section 5.1 (or 6.1 if this is a typo) as stated on page 39.

The vulnerable species *Eucalyptus langleyi* is discussed in Section 4.1.2 of the SIS, and its distribution indicated on Figure 12.2 of the EIS and Figure 4 of the SIS. The reference on page 39 in the SIS is a typographical error, it should read 6.1. This sentence also implies that each stand is discussed in detail in Section 6.1, however, the SIS only focussed on the stand which is located closest to the existing road which is the only stand that would be impacted upon by the proposed upgrade of MR92. The other stands are located at sufficient distance from the road not to warrant further consideration in terms of potential environmental impact.

11. Figure 4 (Location of Eucalyptus langleyi) does not provide enough detail. Is more detail available, such as provided in Figure 5.

The GPS locations for *Eucalyptus langleyi have been* overlaid on to the same bases as provided in Figures 6.1a to 6.1ay of the EIS and attached it to this letter in order to provide additional detail to that shown in Figure 12.2 of the EIS. (see Attachment 3)

12. Given the significance of the Heath Frog (Litoria littlejohni) population in the area, more detail on mitigation measures for this species is required, particularly sediment controls to prevent water quality impacts.

The sediment controls outlined in Chapter 11 of the EIS would protect downstream water quality during the construction and operational phases of the project and therefore would also protect the habitat of the Heath Frog within the study area. As stated in Chapter 12 of the EIS, with the proposed mitigation measures in place to protect downstream water quality, it is not expected that the construction or operation of the proposal would result in significant impact to this species.

The proposal would actually provide an opportunity to reduce the amount of sediment entering the local watercourses through the provision of a sealed road pavement which would result in a significant improvement to the existing sediment loads that enter the local waterways as runoff following extended periods of rain.

13. The SIS contains inconsistent statements regarding disturbance and loss of trees in the White Box – Yellow Box – Blakely's Red Gum Woodland community. For example, page 54 claims no clearing, while page 74 suggest some trees would be lost. A clearer description, including maps, of the impact on this endangered ecological community is required.

The endangered ecological community known as White Box Yellow Box Blakely's Red Gum Woodland is discussed in the SIS in Sections 4.3 on page 54 and Section 6.3, page 74. Page 54 notes that the preferred option (BM4) will not involve any clearing of the Yellow Box Woodland at the base of the Bulee Mountain (chainages 48600 to 48900) and Page 74 states that some remnant trees towards Nerriga (chainages 50000 to 52000) may be removed. The two locations are quite different and therefore the statements in the document are not inconsistent.
To provide some clarification, the proposed upgrade would avoid clearing of this community at the base of Bulee Mountain but may involve clearing some remnants of the community towards Nerriga. The number of individual trees that may be affected by proposed construction works can only be accurately defined once the road alignment has been surveyed and pegged. However the approximate location of the remnant trees adjacent to the road is shown on the map attached as Attachment 4 as requested.

Impact mitigation

14. The SIS identifies particular concern over movement of sediment from road works to local streams, swamps and downslope habitats. Are the likely soil and water management controls, identified in the EIS Section 6.4.5 and Chapter 11 adequate for those considered in the SIS?

As stated above, the proposed mitigation measures to protect water quality are considered sufficient to protect local watercourses, swamps and downslope habitats. The proposal would actually provide an opportunity to reduce the sediment load entering local watercourses during rainfall events through the provision of a sealed pavement.

15. What weed control strategies would be used during construction?

Weed control strategies would be detailed as part of the proposed Vegetation/Habitat Rehabilitation Plan that would be prepared for the proposal prior to the commencement of construction. This plan is outlined in Section 7.1 of the SIS (point b on page 86). It is also recommended in the SIS that weeds be monitored as part of the monitoring program for rehabilitation.

16. What types of strategies would be used to minimise the potential for construction activities to cause fires.

The construction contractor would be required to develop bushfire management measures as part of the CEMP. This would include, but not be limited to measures such as:

- Fitting spark arrestors to all items of plant used during fire prohibition periods, as specified under the Bush Fires Act, 1949;
- No cutting, welding, grinding or other activities likely to generate fires would be undertaken outside the works compound or plant maintenance hardstand area on days of high or extreme fire danger.
- Construction staff induction training would include clear instruction about bushire risk and the measures contained in the CEMP to minimise risk.
- Smoking would not be permitted outside the construction compound. Bins with heavy lids would be provided within the site compound for disposal of cigarette butts.
- An emergency response procedure would be developed and approved by the NSW Fire Service to enable effective incident management in the event of a fire.

17. *Is collection of local seed for rehabilitation underway?*

In response to this comment Kevin Mills of Kevin Mills & Associates has advised that there is no need to collect seed for replanting rehabilitated areas ahead of the works being undertaken. As noted in the recommendations in the SIS, the Vegetation/ Habitat Rehabilitation Plan would cover matters such as revegetation methods, including seeding, brushing and planting. MR92 traverses natural country, ensuring an abundance of naturally re-seeding over rehabilitated areas. In any event, seed collection at the present time is virtually impossible as almost all of the route has been affected by bushfire in the last 14 months.

18. *The re-use of large rocks should be maximised as these provide important habitat for many plant and animal species in the area.*

The use of rocks, as well as timber debris, in rehabilitating vegetation communities and fauna habitats is worthwhile. This measure was mentioned in the SIS recommendations on page 88.

19. *Pre-clearing fauna surveys should also target rock outcrops.*

This is reasonable and would be part of the proposed pre-clearing fauna surveys recommended on page 89 of the SIS.

20. *Final reports on rehabilitation and roadkills would be useful for the Department in assessing future infrastructure projects. Will the RTA be commissioning research on these issues:*

As stated in the SIS (Section 7.1(e)) it is intended that roadkills would be monitored and reported to NPWS for a year after the completion of construction. These reports would also be made available to the Department to assist in assessing future infrastructure projects.

The RTA does have a number of research projects looking at reducing road kill but it does not have plans to commission additional specific research on this issue along MR92. It is known that Linda Beasley, a university student from University of Canberra recently undertook a study entitled "Assessment of Animal-Vehicle Collisions along Main Road 92" in September 2002. This study was supervised by NPWS South Coast Region, however please note that the study has not been formally submitted to, or endorsed by the RTA.

21. *Has the use of nest boxes for the Glossy Black Cockatoo and other fauna been considered.*

The use of nest boxes is not recommended, for various reasons. Firstly, the small area of habitat to be removed and the small number of tree hollows to be removed, as shown by the plot surveys, (refer site survey results at Appendix 4 in the SIS) does not warrant such an approach. Secondly, the maintenance effort of such nest boxes would be very high. Inspections along the route indicate that there are very few large old trees with large hollows of potential use by the Glossy Black-Cockatoo for nesting that are close to the road. There is also some uncertainty as to whether Glossy Black-Cockatoos have been recorded using nest boxes in NSW.

Fauna underpasses

22. *The underpasses at Bulee Mountain will be provided by two bridges. How will the underpass on the eastern side of Sassafras be provided. What is the size, target species and attributes of proposed underpasses.*

The underpass to the east of Sassafras would be designed for the larger forest species, particularly macropods and wombats which make up the main fatalities from vehicle collision in this part of the study area. The underpass itself would need to be fairly large and have habitat attributes either side of it and within it to encourage fauna to use it. Fencing may also be required either side of it to direct fauna into it.

23. *Please indicate any research opportunities that may be possible as part of this proposal. Information on the use and effectiveness of fauna underpasses would be useful for the Department in assessing future infrastructure projects.*

There are several research opportunities that may be possible as part of the proposal. The following are mentioned in Section 7.1 in the SIS:

- monitoring of roadkills (one year);
- monitoring of rehabilitation, including a photographic record (five years).

The suggestion to look at the effectiveness of fauna underpasses has been the subject of previous RTA research.

24. What opportunities are proposed for north-south movement of the Yellow-bellied Glider:

With respect to the movement of Yellow-bellied Gliders across the road corridor, several points are worth noting:

- it has not been established whether the glider occurs along the route or not. It was not recorded in the recent targeted surveys.
- the glider can easily glide distances of over 50 metres, so that a road corridor with a maximum width of 30 metres may not be detrimental to the species, should it occur there;
- the trees at Sassafras, where the glider is possibly most likely to occur, will be maintained along the road side so that there would be minimal change in the width of clearing; and
- most of the road length that passes through forest where the glider may occur already has a wide cleared corridor and no further clearing is required in these locations.

The above comments and attached plans provide appropriate information or clarification to the issues the proposed upgrading of MR92.

Yours sincerely

Ross Dearden
Project Manager
11 JUL 2005

TALLAGANDA SHIRE COUNCIL

MEMORANDUM

TO: Roads and Traffic Authority

ATTENTION: Ross Dearden

FROM: Ron Trevallion

SUBJECT: MR92 - Nerriga Road

FILE: EN.22.3.1

DATE: 23 November 2001

Generally

The Tallaganda Shire administers, develops and maintains approximately 56.5km of MR92 from the Endrick River Bridge in the north to the Kings Highway (MR51) at Braidwood.

Features

Of the 56.6km, there is 29.5km sealed and in relatively good condition. Of the remaining 27km, the pavement varies in width to an 8 metre wide gravel pavement, 4.5km of which exists between Endrick River and Nerriga.

There are two concrete causeways at 5.2km and 7.9km which may carry substantial flows and would need replacement with culvert structures if subjected to consistent volumes of heavy traffic.

The Mongarlowe River Bridge is a timber truss bridge, classified as a National Bridge and maintained by the Roads and Traffic Authority. Its ability to tolerate B-Double loading will need to be checked through that Authority. It is a one lane bridge.

Line Diagram

A line diagram indicating basic features has been prepared. Sheet 1 shows the present position. The second sheet indicates the likely situation in 5 years given the present level of expenditure anticipated by Council.

An increase in sealed pavement of 10km is anticipated over the next 5 years.

Alignment

Apart from the general features shown on the line diagrams, there are at least three sections approximately 1km long which require widening to allow safe passing to be achieved.

08

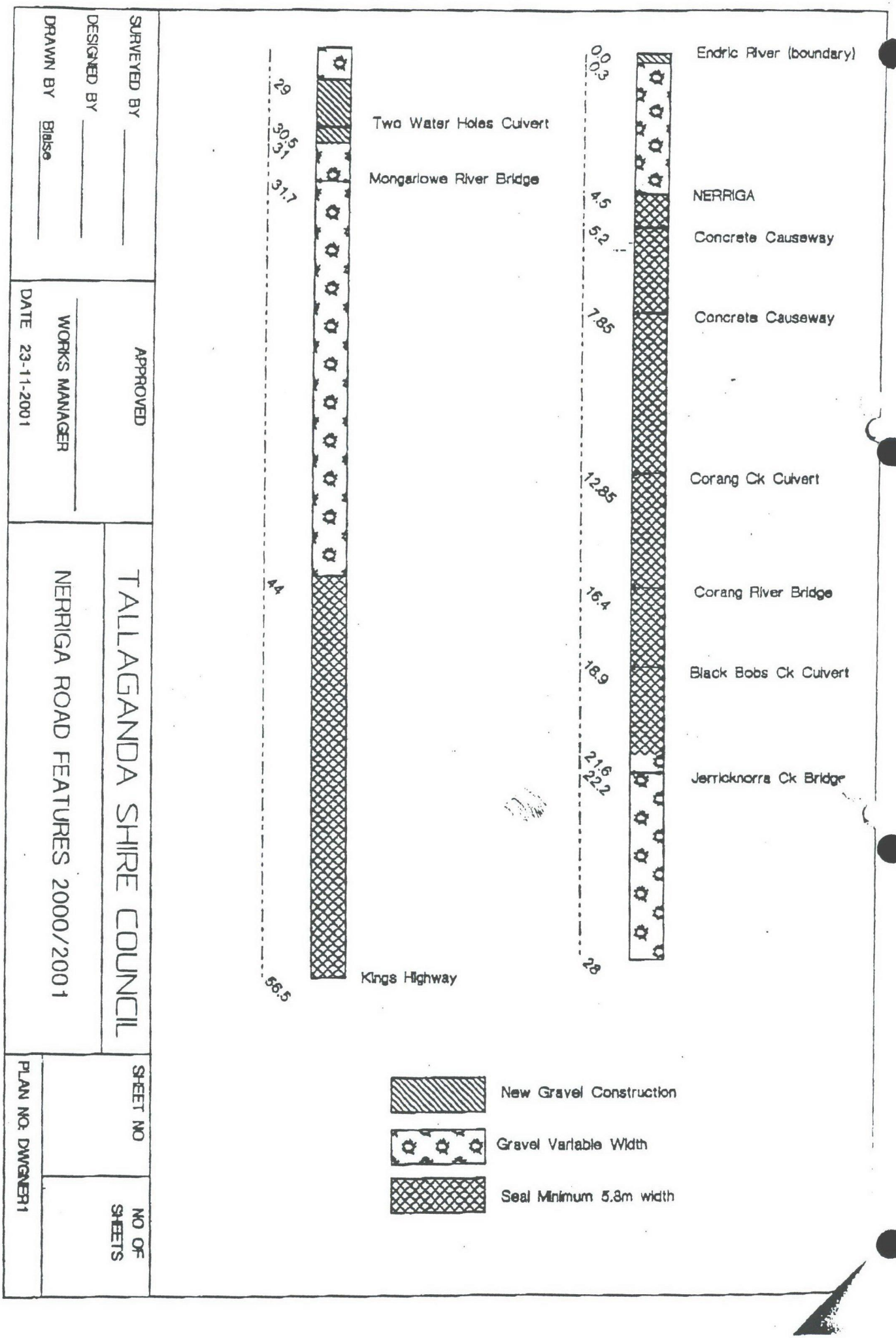
Council Progress

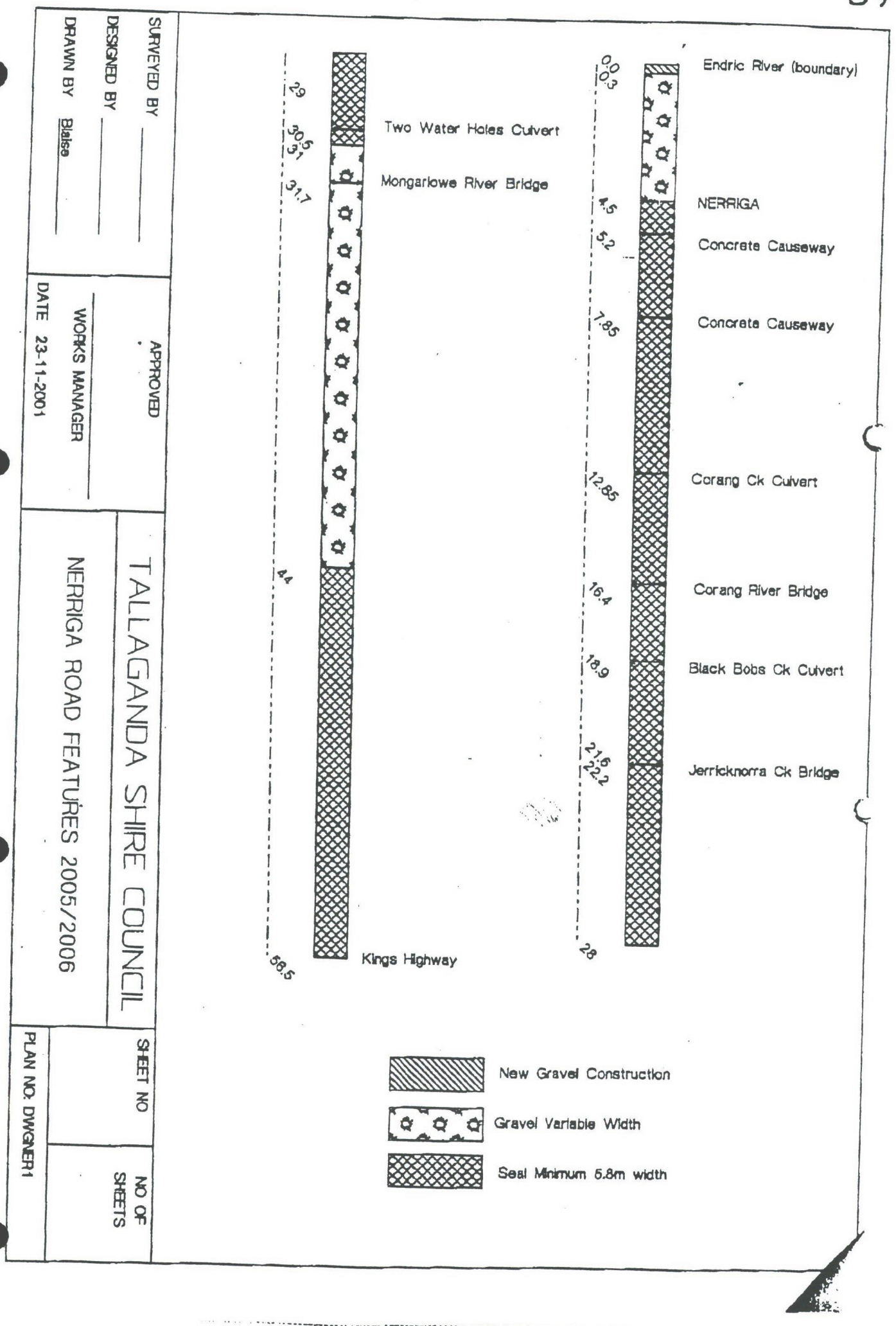
Tallaganda Shire has, over past years, generally rotated its construction priorities between the Cooma Road and the Nerriga Road with some success in providing transport facilities of relatively high quality throughout the Shire.

R. Trevallion

Ron Trevallion
Manager of Works
NF

10


Endric River (boundary)
0.0
0.3
NERRIGA
4.5
5.2
Concrete Causeway
7.85
Concrete Causeway
12.85
Corang Ck Culvert
16.4
Corang River Bridge
18.9
Black Bobs Ck Culvert
21.6
22.2
Jerricknorra Ck Bridge
28
Two Water Holes Culvert
29
30.5
31.1
Mongarlowe River Bridge
31.7
44
Kings Highway
56.5
New Gravel Construction
Gravel Variable Width
Seal Minimum 5.8m width
SURVEYED BY
DESIGNED BY
DRAWN BY Blaise
APPROVED
WORKS MANAGER
DATE 23-11-2001
TALLAGANDA SHIRE COUNCIL
NERRIGA ROAD FEATURES 2000/2001
SHEET NO
NO OF SHEETS
PLAN NO: DWGNER1


Endric River (boundary)
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Concrete Causeway
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Concrete Causeway
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Corang Ck Culvert
16.4
Corang River Bridge
18.9
Black Bobs Ck Culvert
21.6
22.2
Jerricknorra Ck Bridge
28
Two Water Holes Culvert
29
30.5
31
31.1
Mongarlowe River Bridge
44
56.5
Kings Highway
New Gravel Construction
Gravel Variable Width
Seal Minimum 5.8m width
SURVEYED BY
DESIGNED BY
DRAWN BY Blaise
APPROVED
WORKS MANAGER
DATE 23-11-2001
TALLAGANDA SHIRE COUNCIL
NERRIGA ROAD FEATURES 2005/2006
SHEET NO
NO OF SHEETS
PLAN NO: DWGNER1

DEARDEN Ross

From: Phil Hansen [PHansen@mulwaree.nsw.gov.au]
Sent: Wednesday, 21 August 2002 20:49
To: DEARDEN Ross
Subject: RE: Oallen Ford Rd

This would be a reasonable assumption.

Phil Hansen
Manager of Engineering Services
Mulwaree Shire Council

-----Original Message-----
From: DEARDEN Ross [mailto:Ross_DEARDEN@rta.nsw.gov.au]
Sent: Wednesday, 21 August 2002 5:44 PM
To: Phil Hansen
Cc: TAIT Stephen
Subject: RE: Oallen Ford Rd

Phil
Thanks for this information.
I believe that there is about 5 km unsealed near Oallen Ford. Do you agree that there would be only about 2500m remaining unsealed after you present program finishes in 2004/2005?

Ross Dearden
4221 2403

-----Original Message-----
From: Phil Hansen [mailto:PHansen@mulwaree.nsw.gov.au]
Sent: Wednesday, 21 August 2002 13:07
To: DEARDEN Ross
Subject: Oallen Ford Rd

Ross

Sorry about the delay however the following is provided:

The Cullulla Road and Sandy Point Road are currently included in Councils Bitumen Sealing Program as follows:

2002/2003	Seal 1000 metres on Sandy Point Rd
2003/2004	Seal 600 metres on Cullulla Road

The Cullulla Road and Sandy Point Road are currently included on Councils Roads to Recovery Program as follows:

2002/2003	Seal 600 metres on Cullulla Road.

The amounts provided in the above programs should cover the existing unsealed section on the Sandy Point and Cullulla Roads.

The Oallen Ford Road in currently included on Councils Roads to Recovery Program as follows:

2002/2003	Seal 500 metres from Shoalhaven River End
2003/2004	Seal 1000 metres from Shoalhaven River End
2004/2005	Seal 1000 metres from Shoalhaven River End

The above program finishes in 2004/2005. Work should continue on the Oallen Ford Road as funding allows.

Hope this info is useful.

Phil Hansen



Figure 1(a)
Location of
Litoria littlejohni

Legend
- Chainages
- Heath Frog
- MR92 Design
- Cadastre
- National Parks

N

1:5,000

0 25 50 100 150

Metres

SINCLAIR KNIGHT MERZ

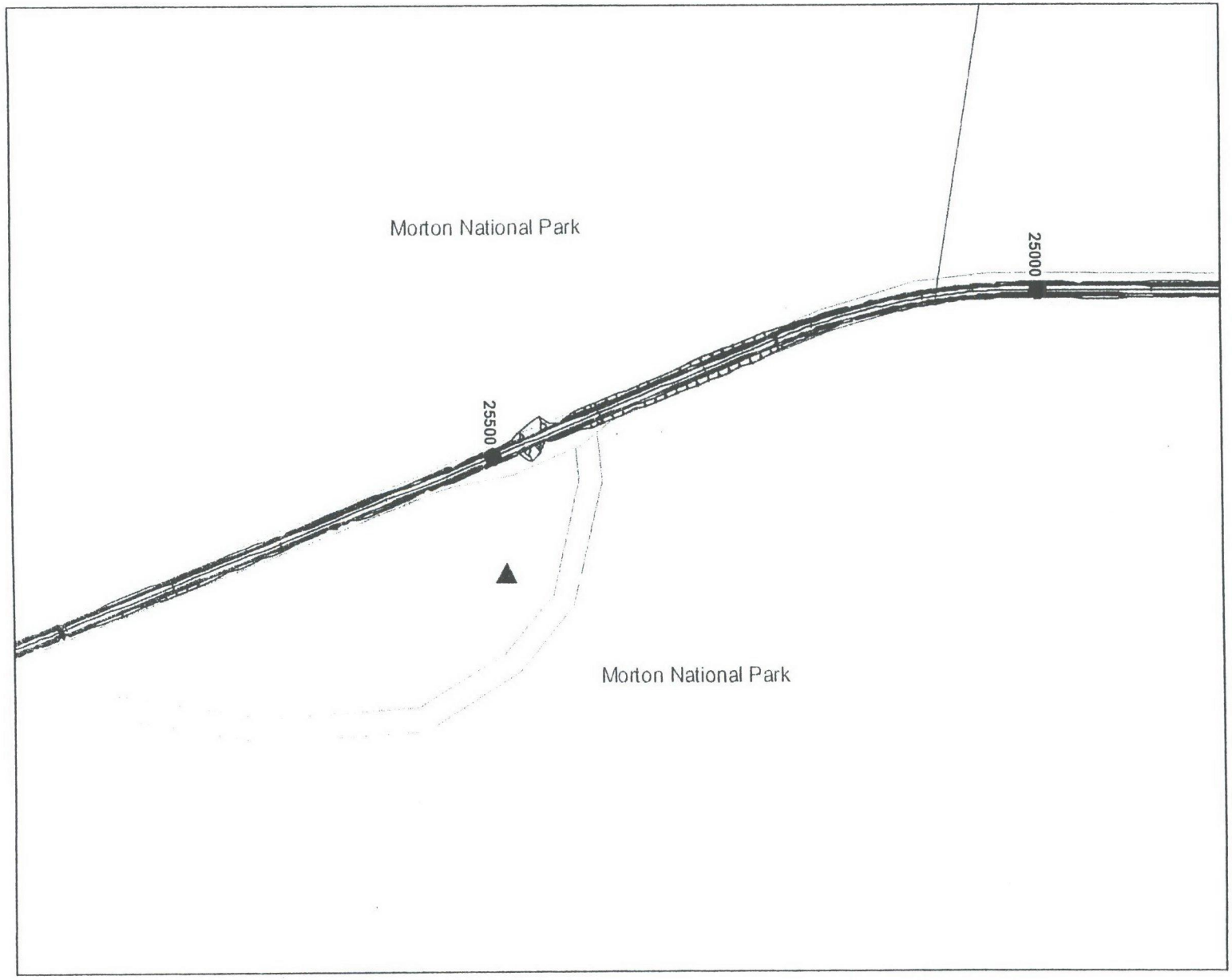


Figure 1(b)
Location of
Litoria littlejohni

Legend
- Chainages
- Heath Frog
- MR92 Design
- Cadastre
- National Parks

N

1:5,000

0 25 50 100 150

Metres

SINCLAIR KNIGHT MERZ

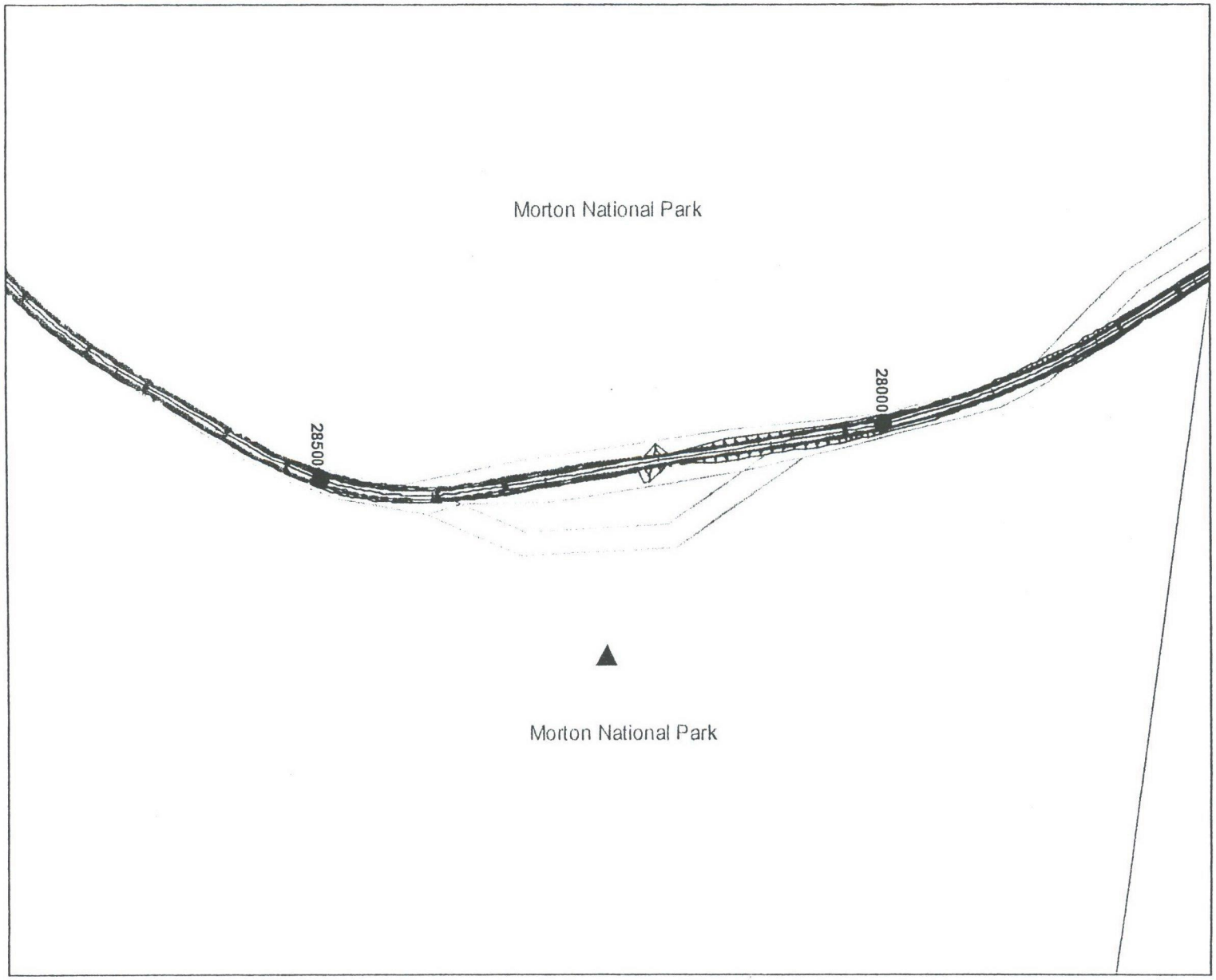


Figure 1(c)
Location of
Litoria littlejohni

Legend
- Chainages
- Heath Frog
- MR92 Design
- Cadastre
- National Parks

N

1:5,000

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ

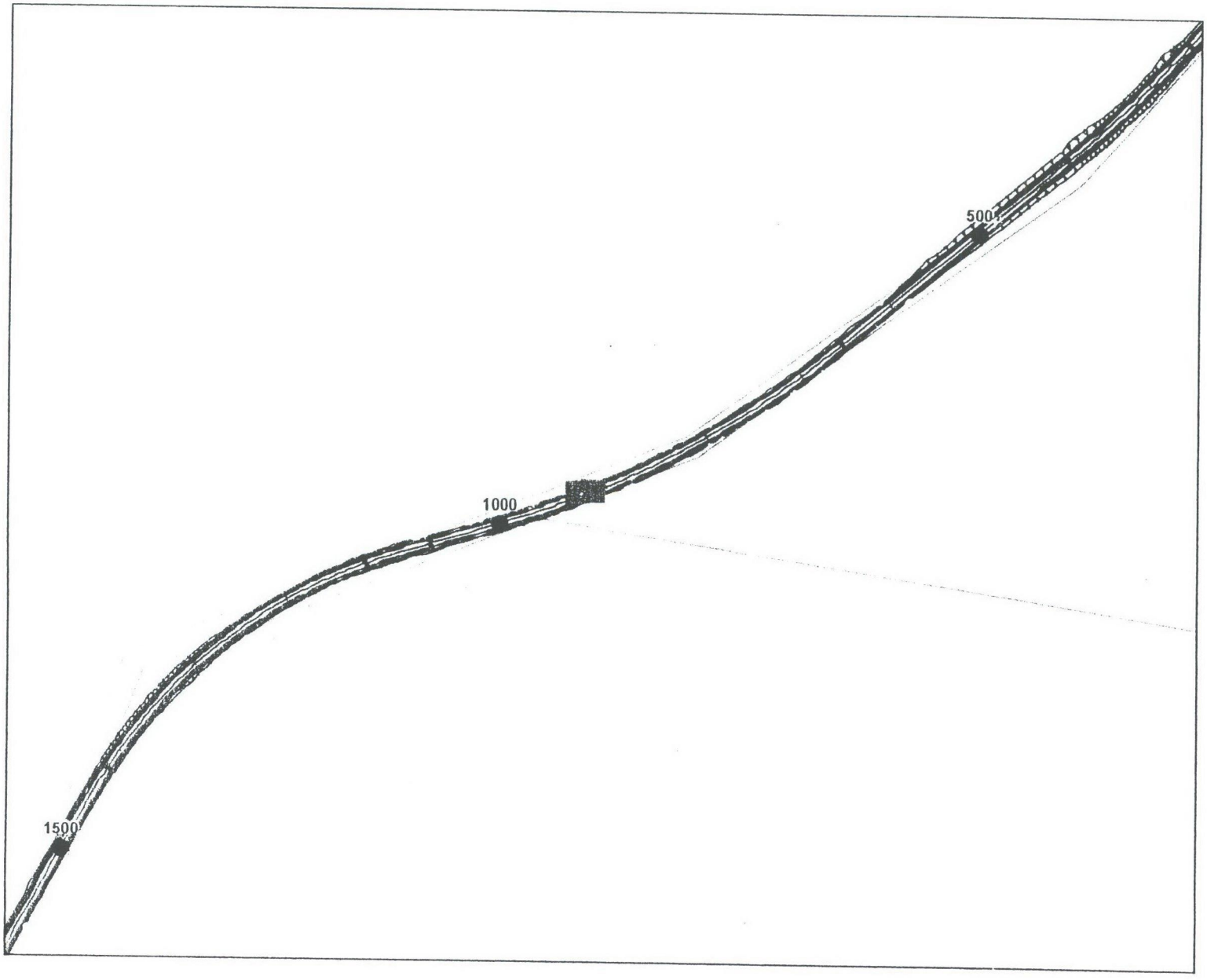


Figure 1(a)
Location of
Acacia subtilinervis

Legend

- Chainages
- MR92 Design
- Cadastre
- National Parks
- *Acacia subtilinervis*

N

1:5,000

0 25 50 100 150

Meters

SINCLAIR KNIGHT MERZ

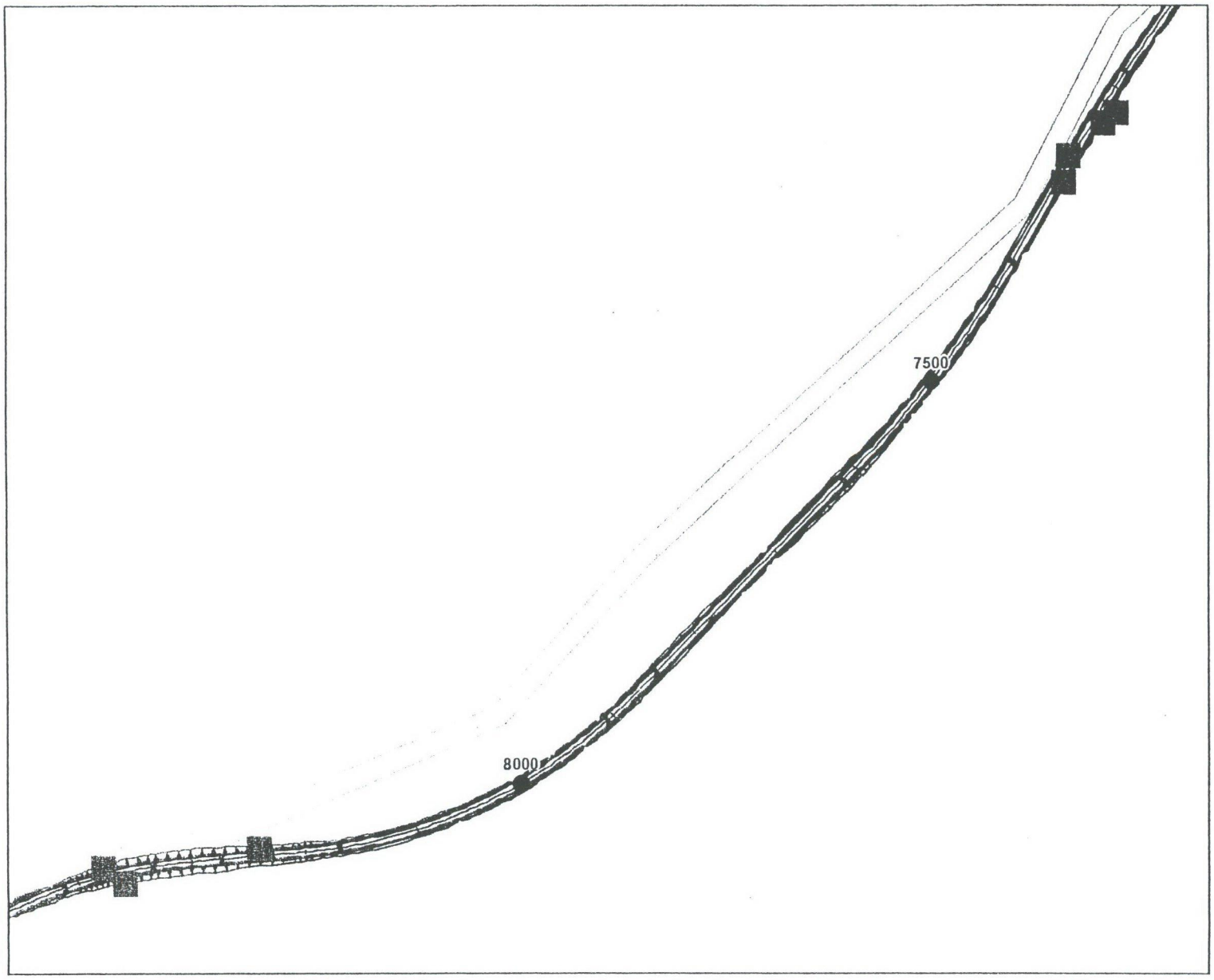


Figure 2(b)
Location of
Acacia subtilinervis

Legend

- Chainages
- MR92 Design
- Cadastre
- National Parks
- *Acacia subtilinervis*

N

1:5,000

0 25 50 100 150

Metres

SINCLAIR KNIGHT MERZ

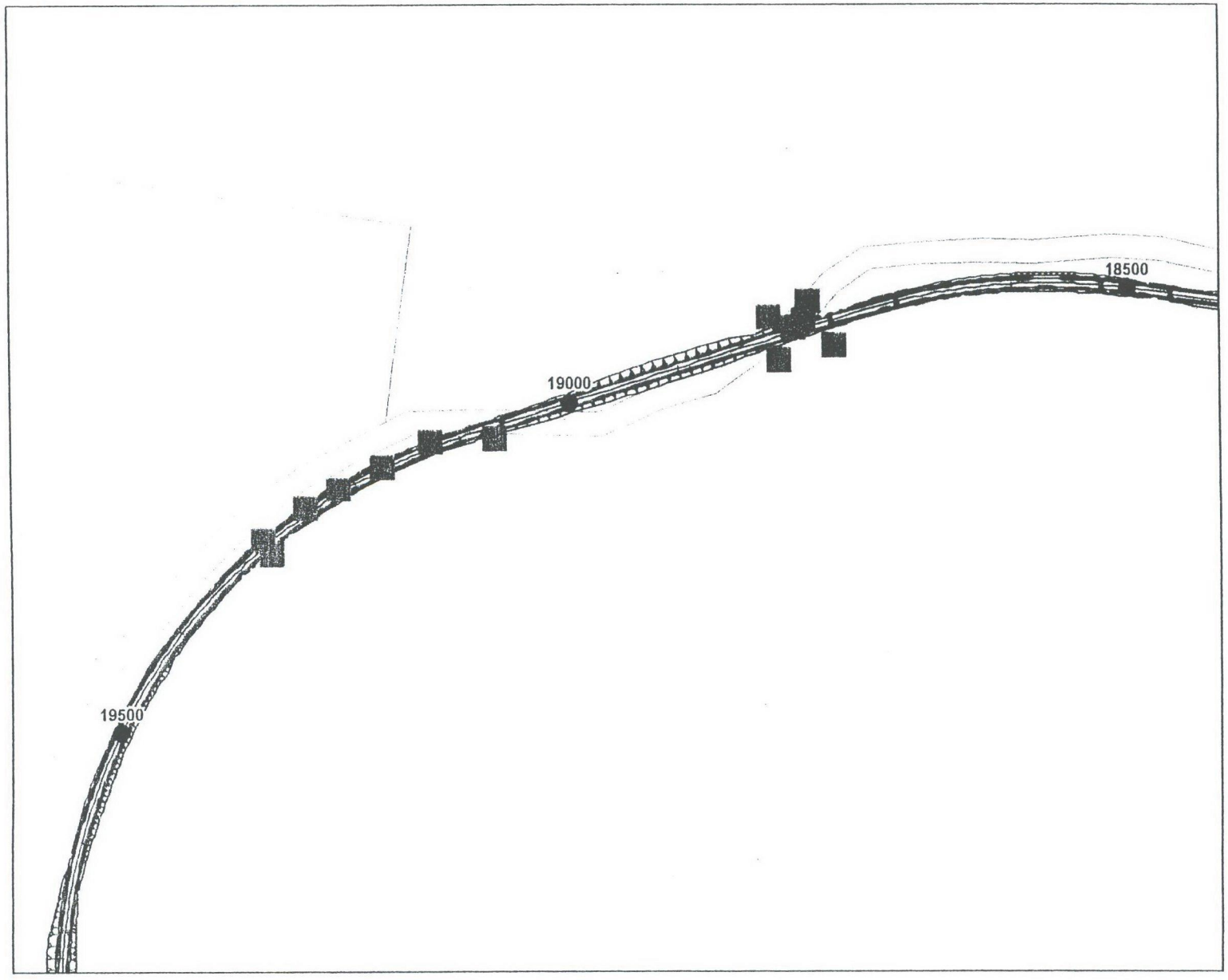


Figure 2(c)
Location of
Acacia subtilinervis

Legend

- Chainages
- MR92 Design
- Cadastre
- National Parks
- Acacia subtilinervis

N

1:5,000

0 25 50 100 150

Meters

SINCLAIR KNIGHT MERZ

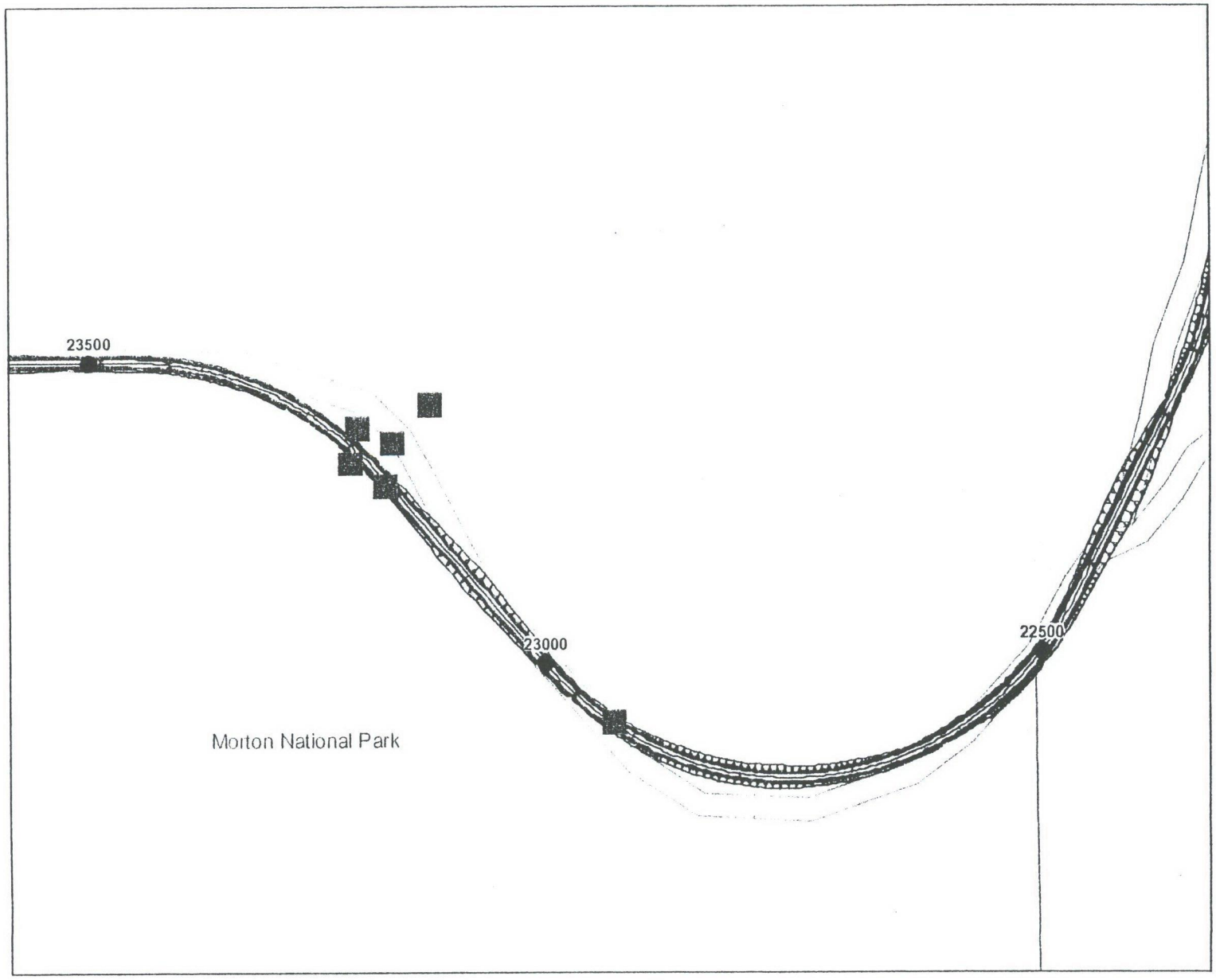


Figure 2(d)
Location of
Acacia subtilinervis

Legend
- Chainages
- MR92 Design
- Cadastre
- National Parks
- *Acacia subtilinervis*

N

1:5,004

0 25 50 100 150
Metres

SINCLAIR KNIGHT MERZ

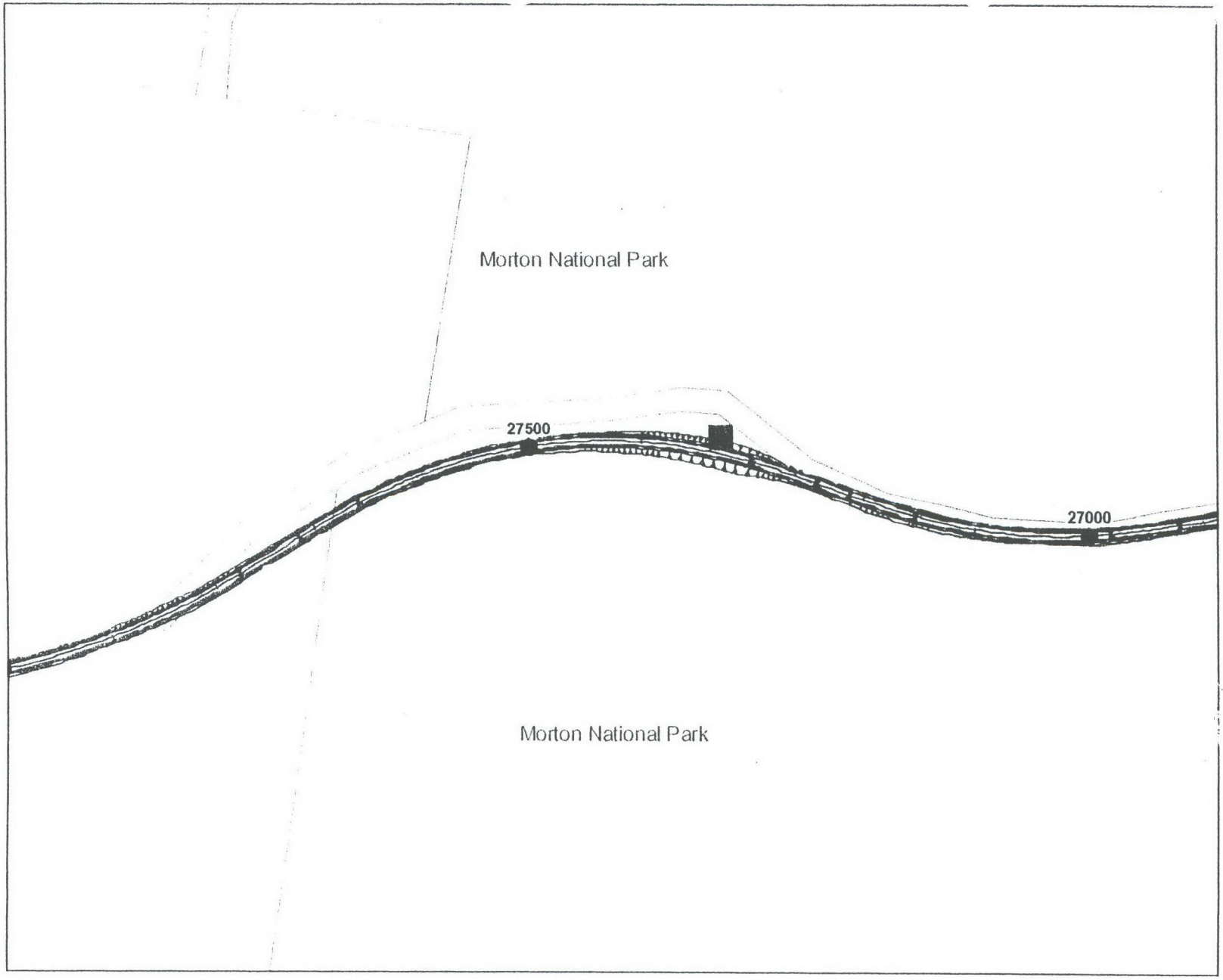


Figure 2(e)
Location of
Acacia subtilinervis

Legend
- Chainages
- MR92 Design
- Cadastre
- National Parks
- *Acacia subtilinervis*

N

1:5,000

0 25 50 100 150
Meters

SINCLAIR KNIGHT MERZ

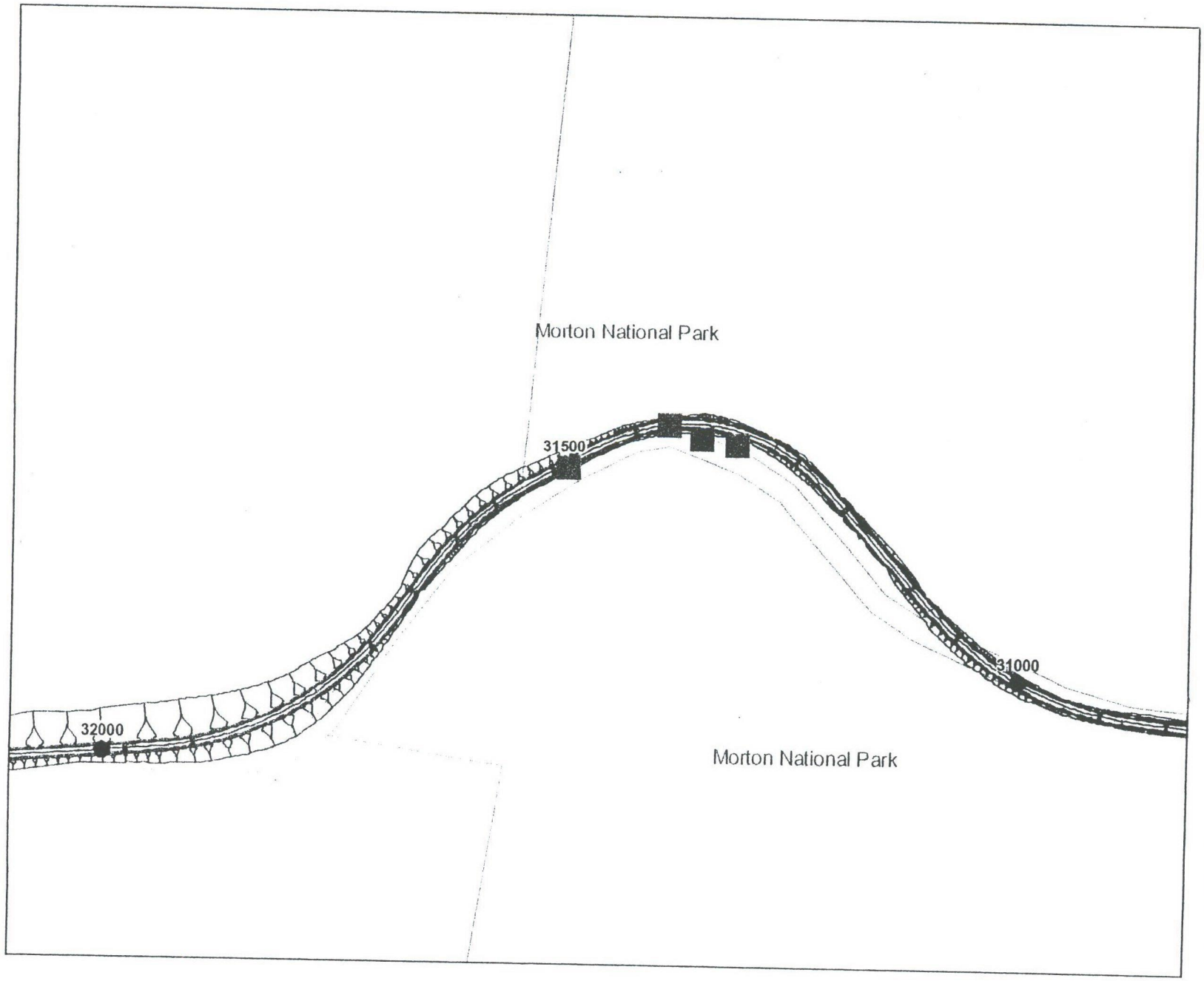


Figure 2(f)
Location of
Acacia subtilinervis

Legend

- Chainages
- MR92 Design
- Cadastre
- National Parks
- *Acacia subtilinervis*

N

1:5,000

0 25 50 100 150

Metres

SINCLAIR KNIGHT MERZ

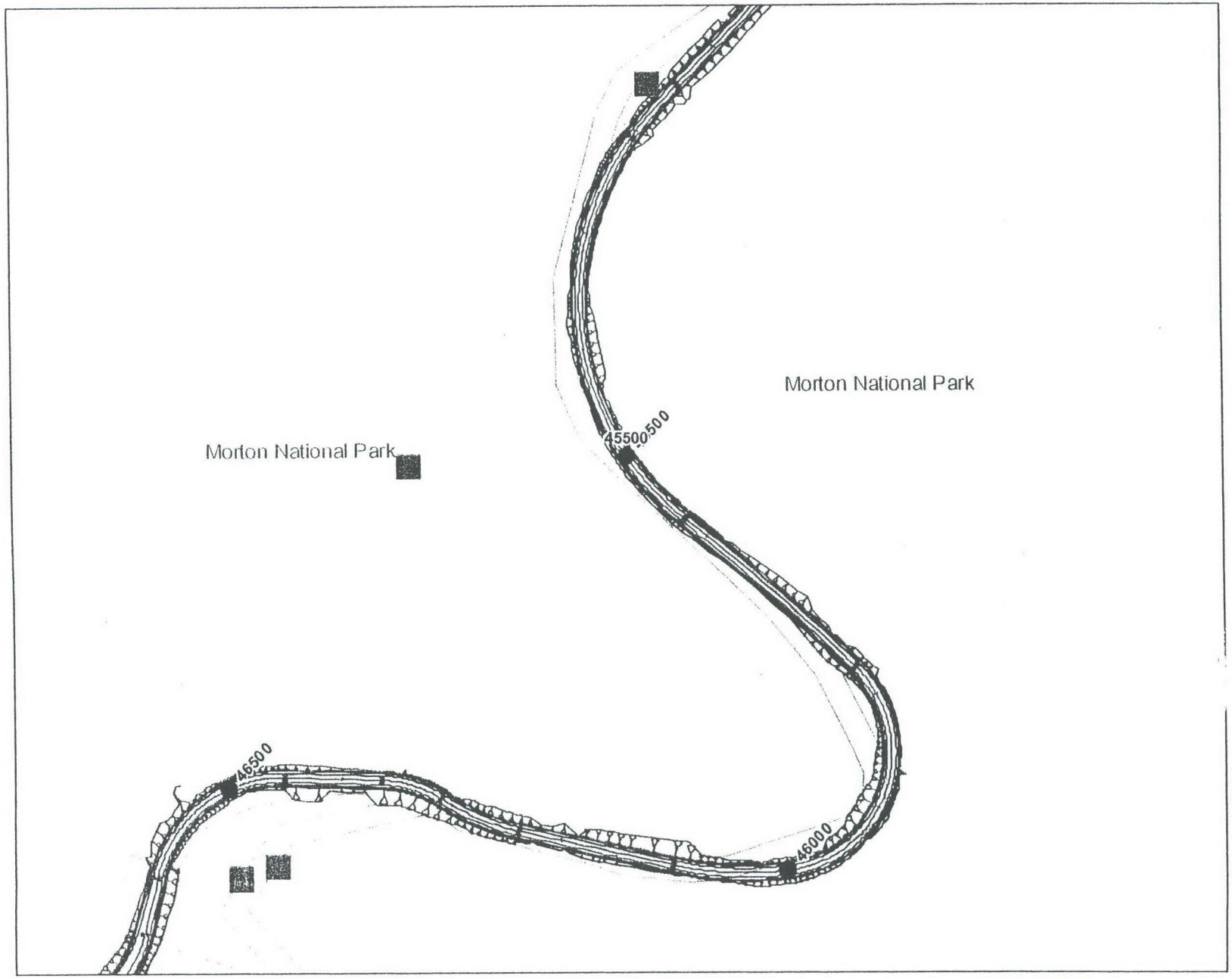


Figure 2(g)
Location of
Acacia subtilinervis

Legend

- Chainages
- MR92 Design
- Cadastre
- National Parks
- *Acacia subtilinervis*

N

1:5,000

0 25 50 100 150

Meters

SINCLAIR KNIGHT MERZ

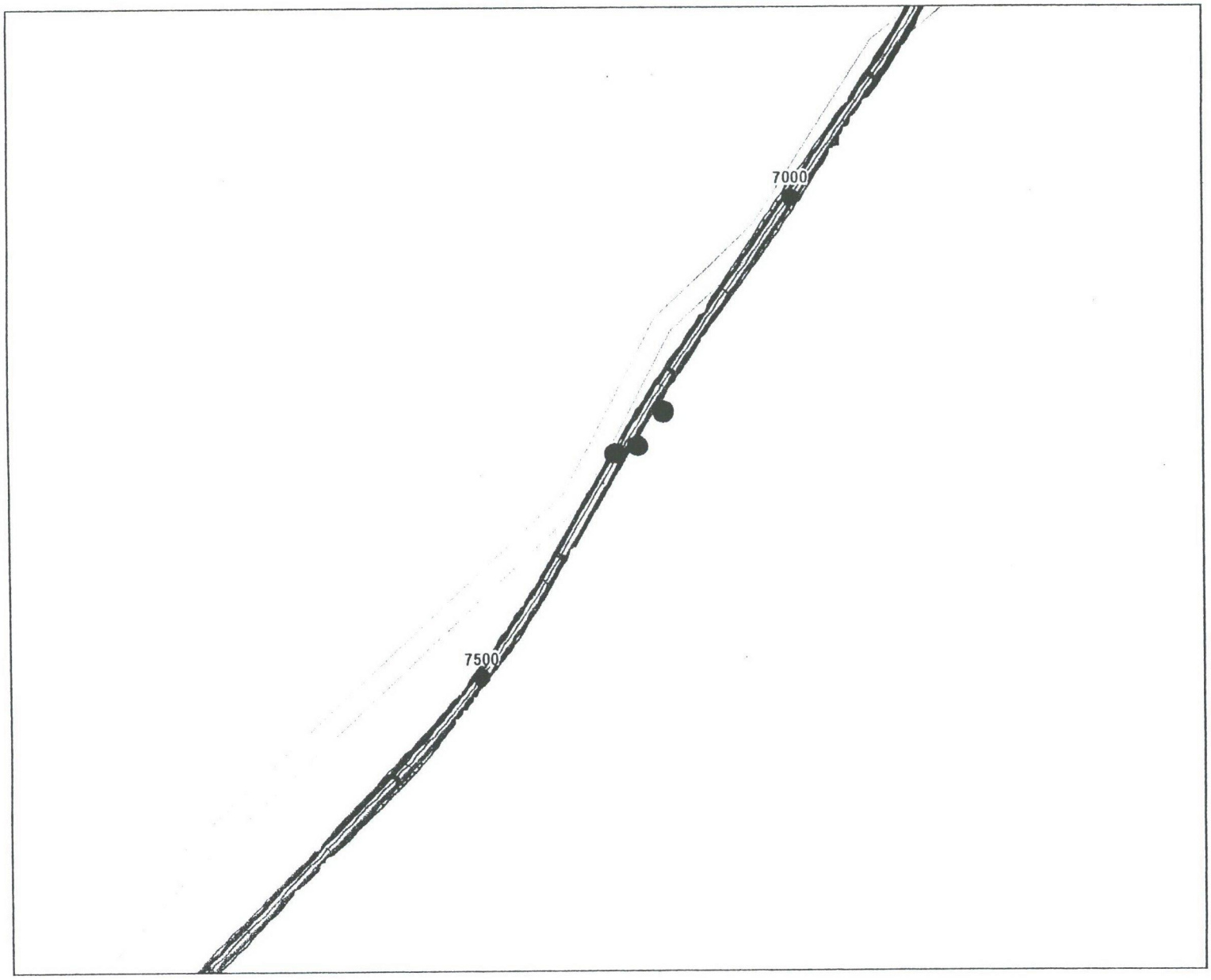


Figure 3(a)
Location of
Leptospermum epacridoideum

Legend

- Chainages
- MR92 Design
- Cadastre
- National Parks
- Leptospermum epacridoideum

N

1:5,000

0 25 50 100 150 Metres

SINCLAIR KNIGHT MERZ

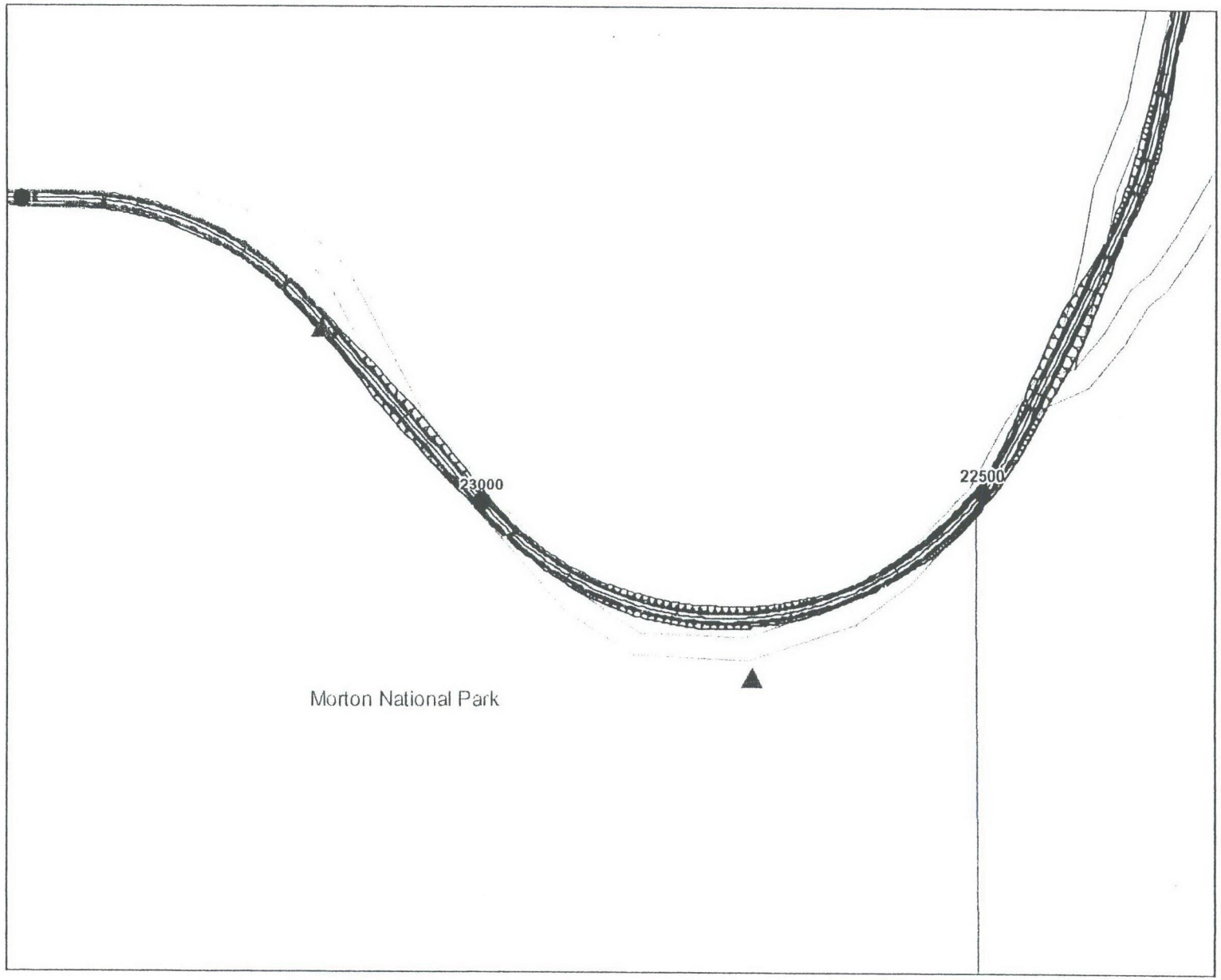


Figure 4(a)
Location of
Rulingia hermanniifolia

Legend
- Chainages
- MR92 Design
- Cadastre
- National Parks
- Rulingia hermanniifolia

N

1:5,000

0 25 50 100 150

Meters

SINCLAIR KNIGHT MERZ

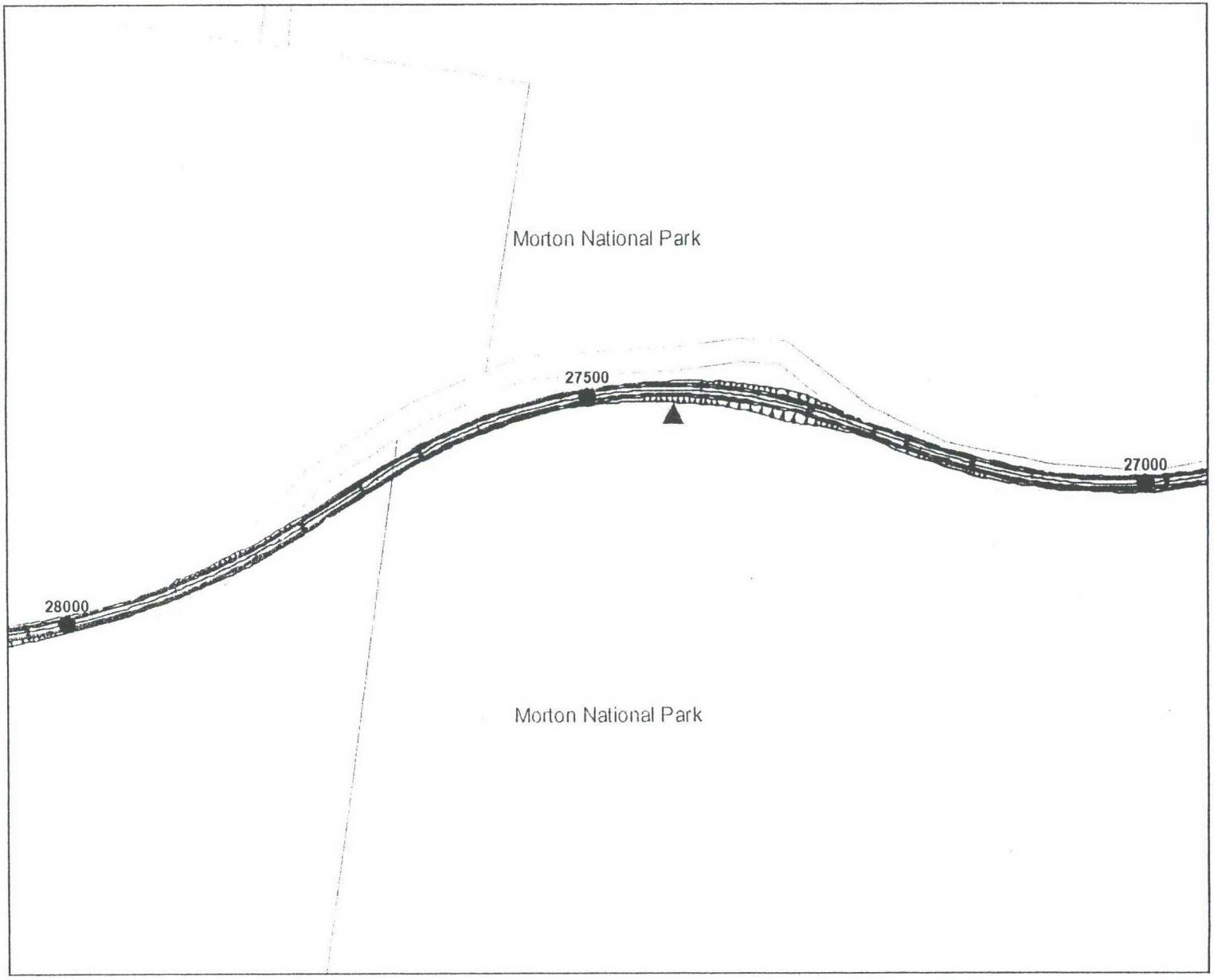


Figure 4(b)
Location of
Rulingia hermanniifolia

Legend
- Chainages
- MR92 Design
- Cadastre
- National Parks
- Rulingia hermanniifolia

N

1:5,000

0 25 50 100 150
Meters

SINCLAIR KNIGHT MERZ

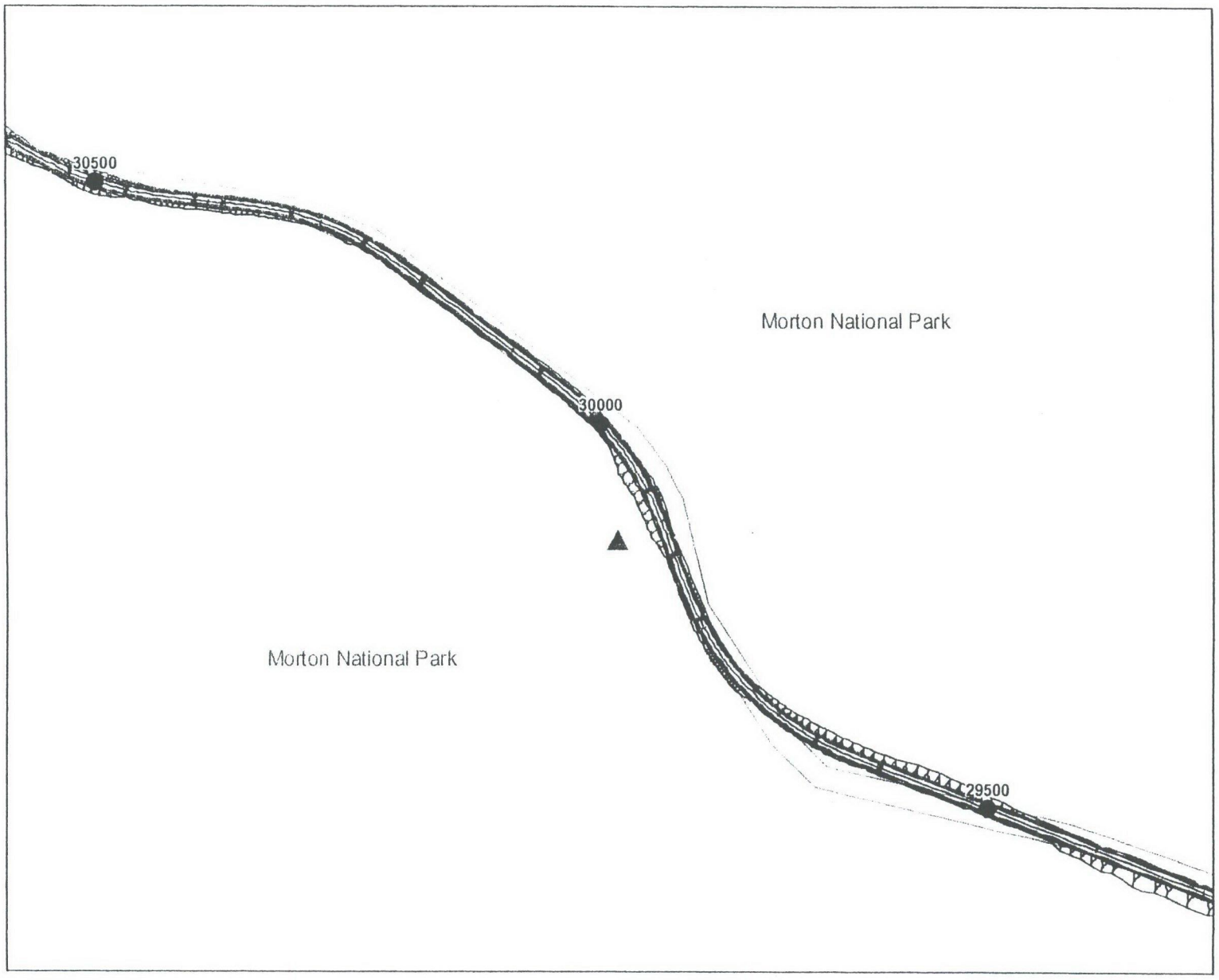


Figure 4(c)
Location of
Rulingia hermannlifolia

Legend
- Chainages
- MR92 Design
- Cadastre
- National Parks
- Rulingia hermanniifolia

N

1:5,000

0 25 50 100 150

Metres

SINCLAIR KNIGHT MERZ

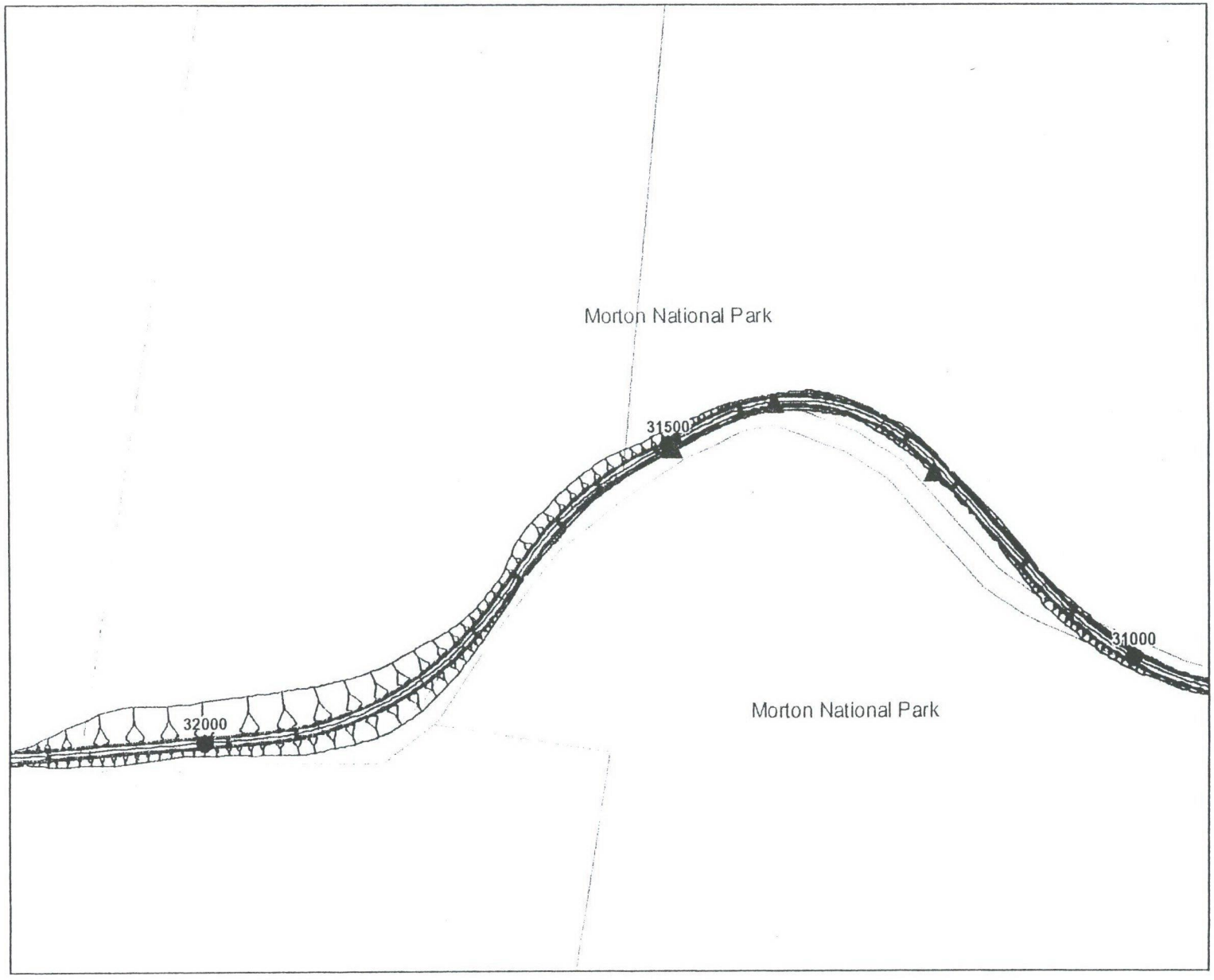


Figure 4(d)
Location of
Rulingia hermannlifolia

Legend
- Chainages
- MR92 Design
- Cadastre
- National Parks
- Rulingia hermanniifolia

N

1:5,000

0 25 50 100 150

Meters

SINCLAIR KNIGHT MERZ

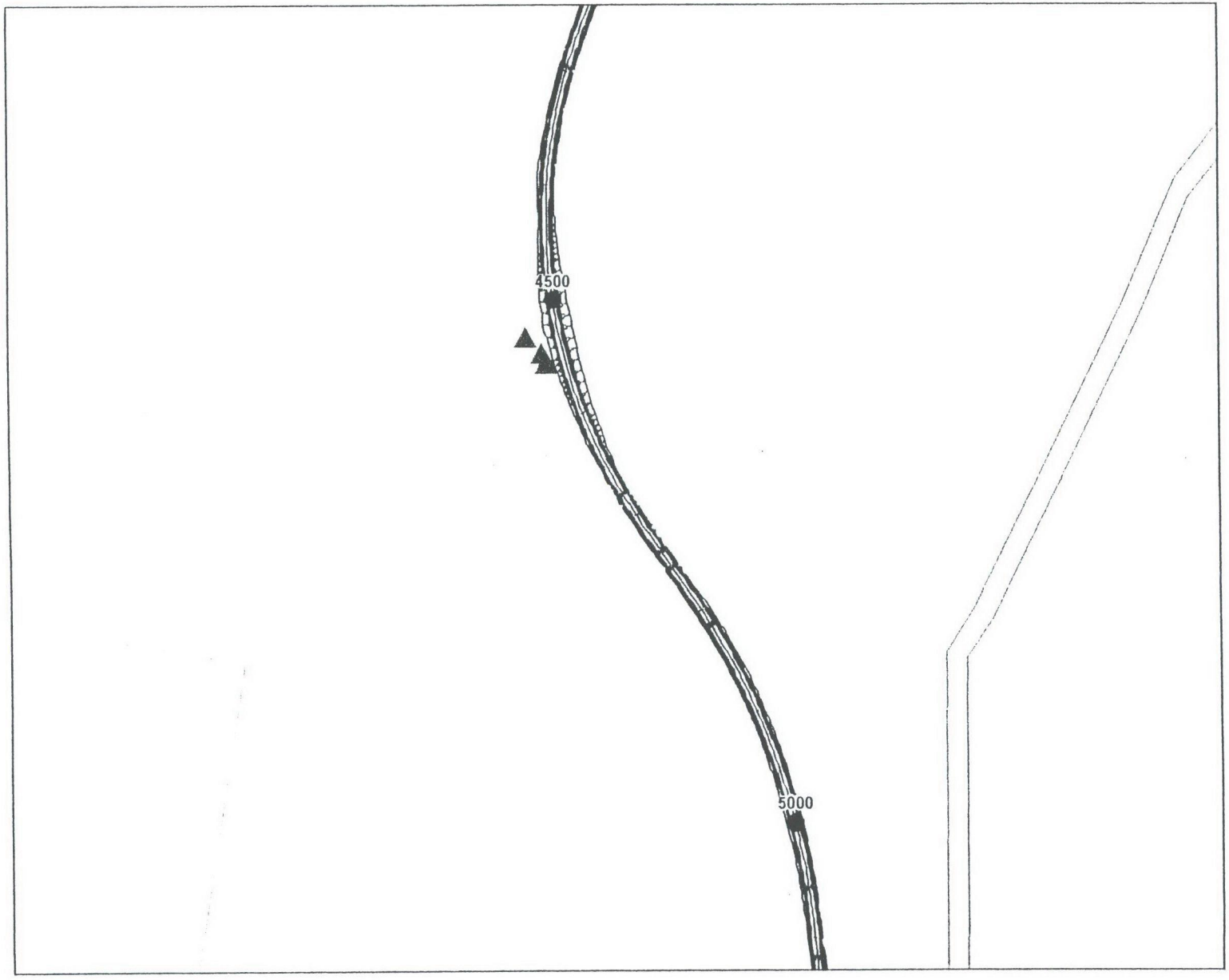


Figure 5(a)
Location of
Acacia bynoeana

Legend
- Chainages
- MR92 Design
- Cadastre
- National Parks
- Acacia bynoeana

N

1:5,000

0 25 50 100 150

Meters

SINCLAIR KNIGHT MERZ

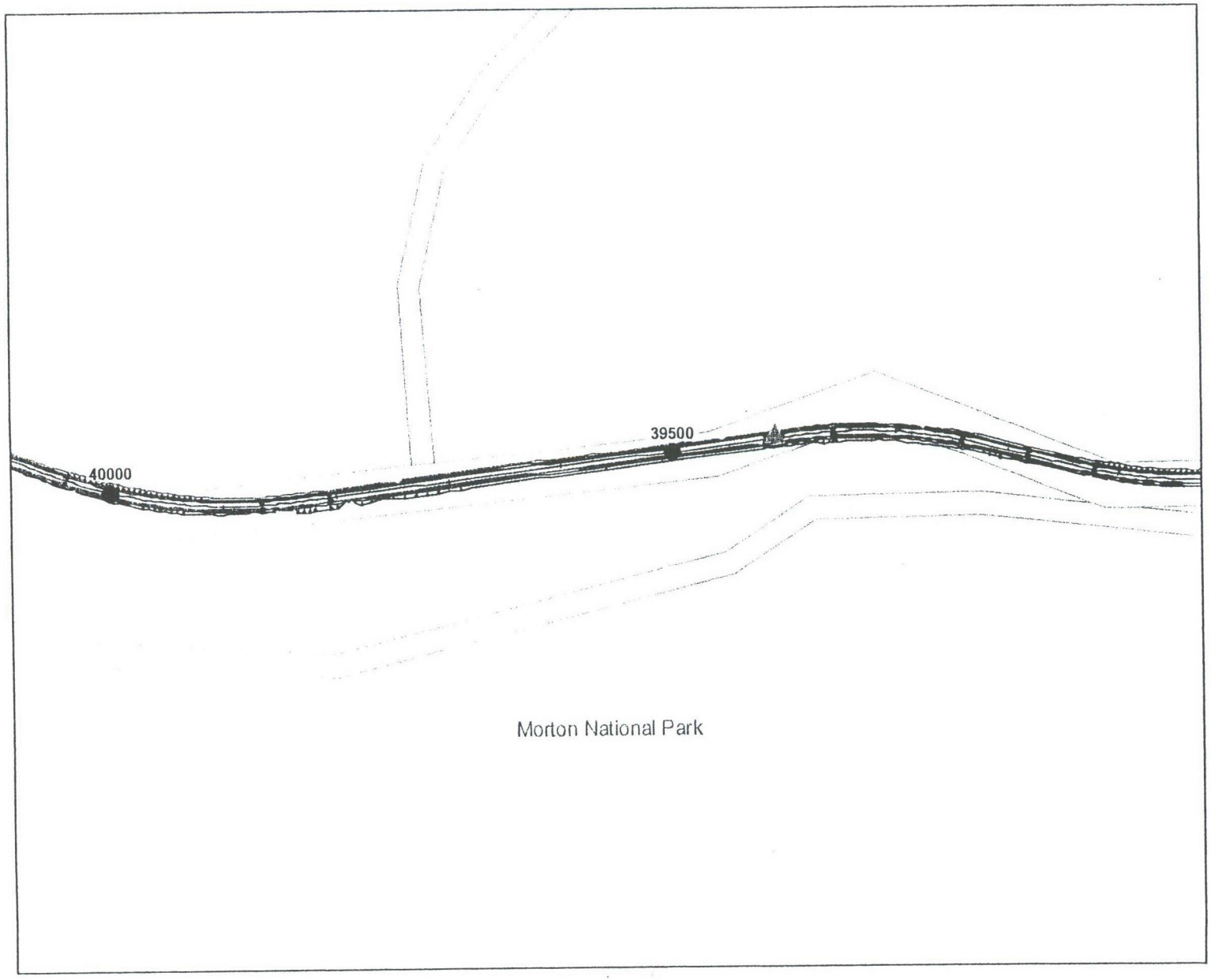


Figure 6(a)
Location of
Pseudanthus divaricatissimus

Legend
- Chainages
- MR92 Design
- Cadastre
- National Parks
- Pseudanthus divaricatissimus

N

1:5,000

0 25 50 100 150
Meters

SINCLAIR KNIGHT MERZ

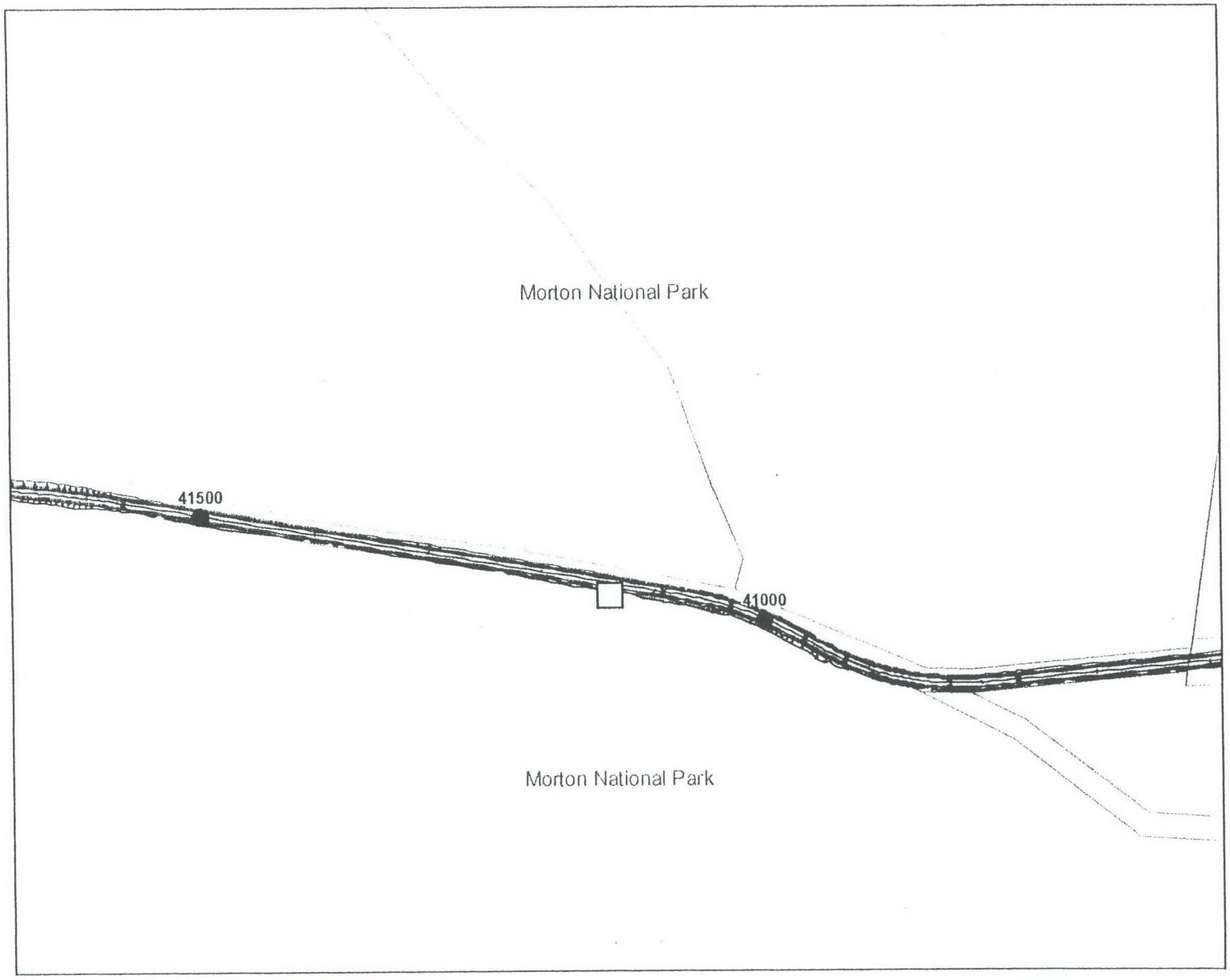


Figure 7(a)
Location of
Varanus rosenbergi

Legend
- Chainages
- MR92 Design
- Cadastre
- National Parks
- Varanus rosenbergi

N

1:5,000

0 25 50 100 150

Meters

SINCLAIR KNIGHT MERZ

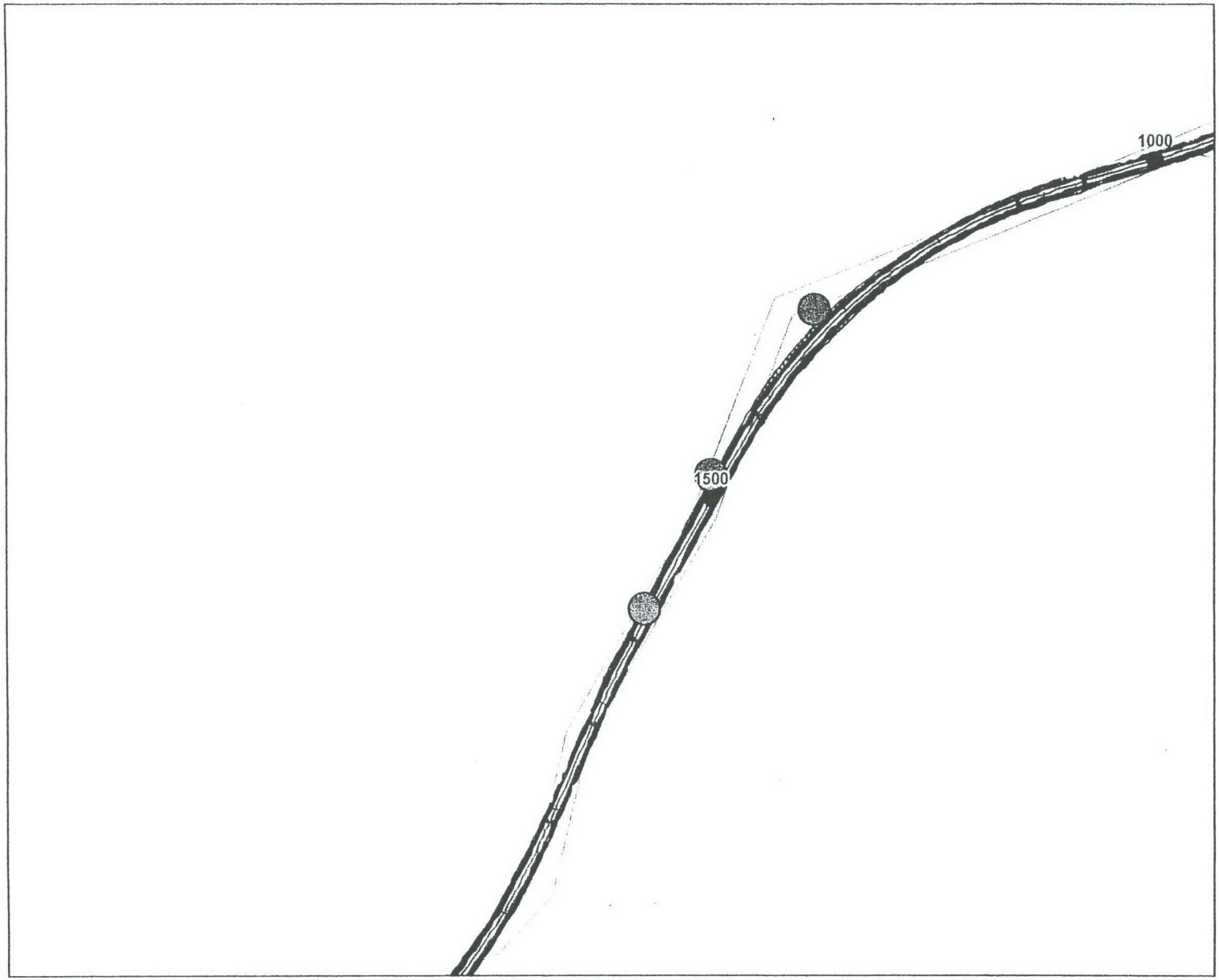


Figure 8(a)
Location of
Grevillea macleayana

Legend
- Chainages
- MR92 Design
- Cadastre
- Grevillea macleayana

N

1:5,005

0 25 50 100 150
Meters

SINCLAIR KNIGHT MERZ

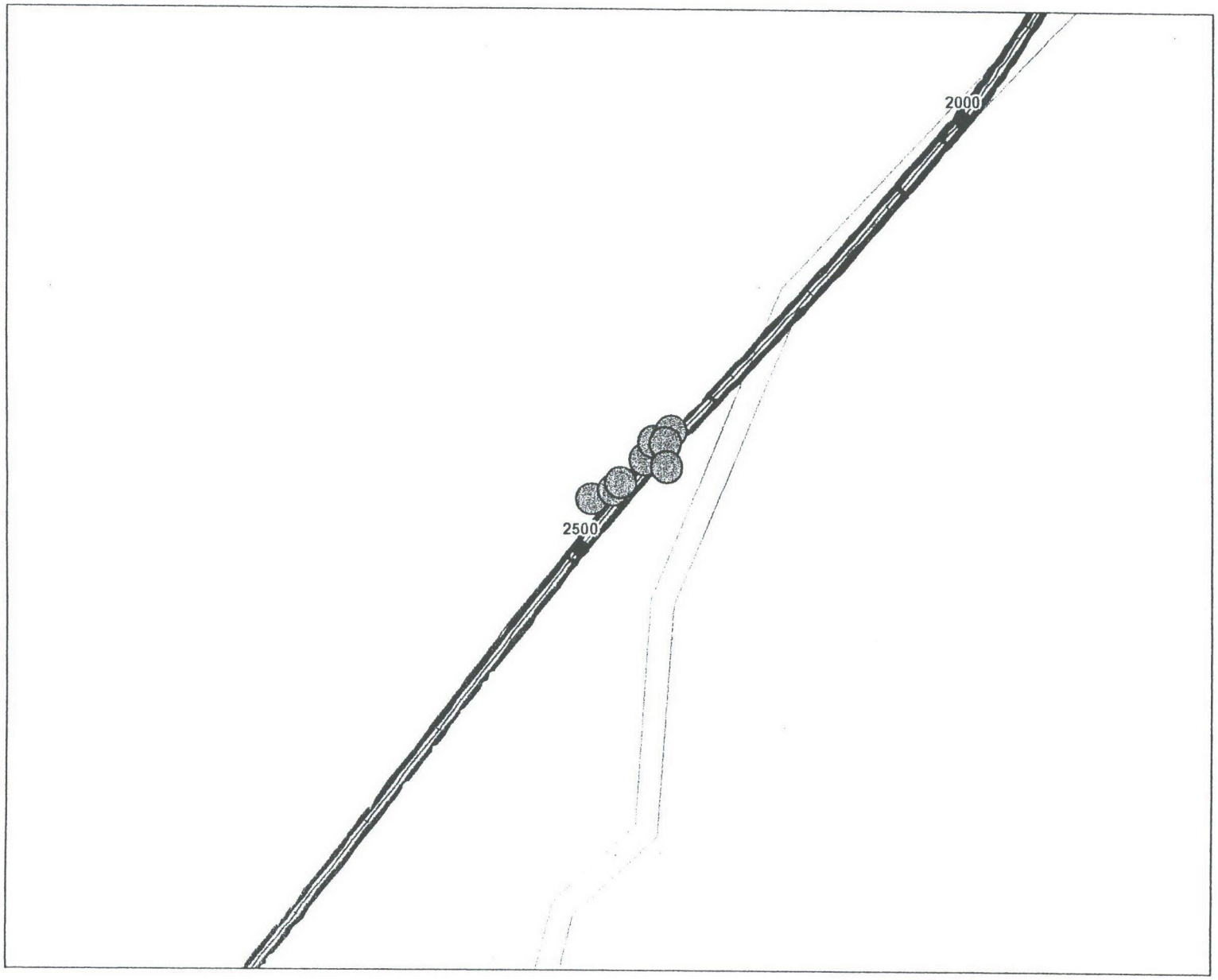


Figure 8(b)
Location of
Grevillea macleayana

Legend
- Chainages
- MR92 Design
- Cadastre
- *Grevillea macleayana*

N

1:5,000

0 25 50 100 150

Meters

SINCLAIR KNIGHT MERZ



Figure 10(a)
Location of
Eucalyptus langleyi

Legend
- Chainages
- MR92 Design
- Cadastre
- National Parks
- Eucalyptus langleyi

N

1:5,000

0 25 50 100 150

Meters

SINCLAIR KNIGHT MERZ



Figure 10(b)
Location of
Eucalyptus langleyi

Legend
- Chainages
- MR92 Design
- Cadastre
- National Parks
- Eucalyptus langleyi

N

1:5,000

0 25 50 100 150
Meters

SINCLAIR KNIGHT MERZ

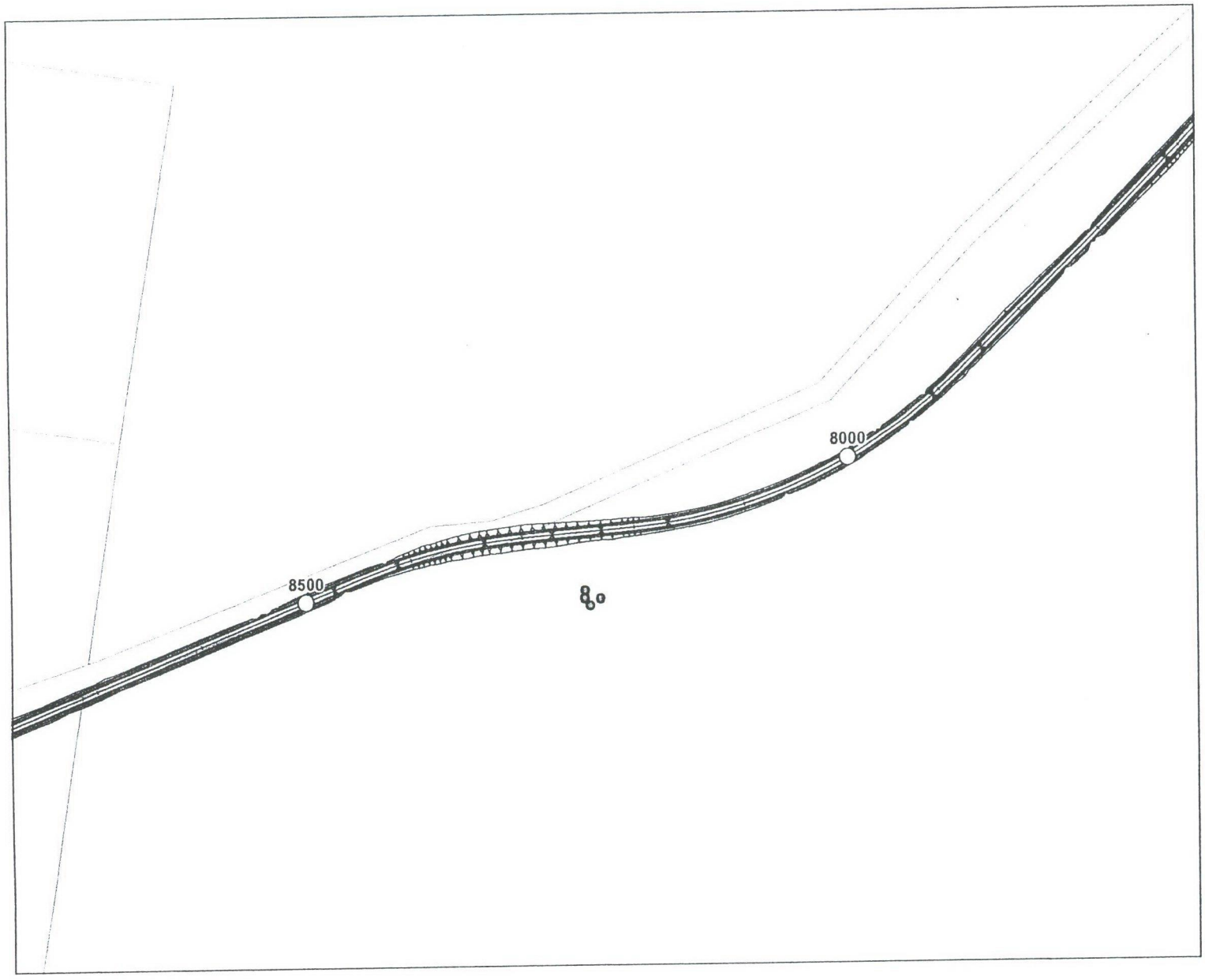


Figure 10(c)
Location of
Eucalyptus langleyi

Legend
- Chainages
- MR92 Design
- Cadastre
- National Parks
- Eucalyptus langleyi

N

1:5,000

0 25 50 100 150
Meters

SINCLAIR KNIGHT MERZ

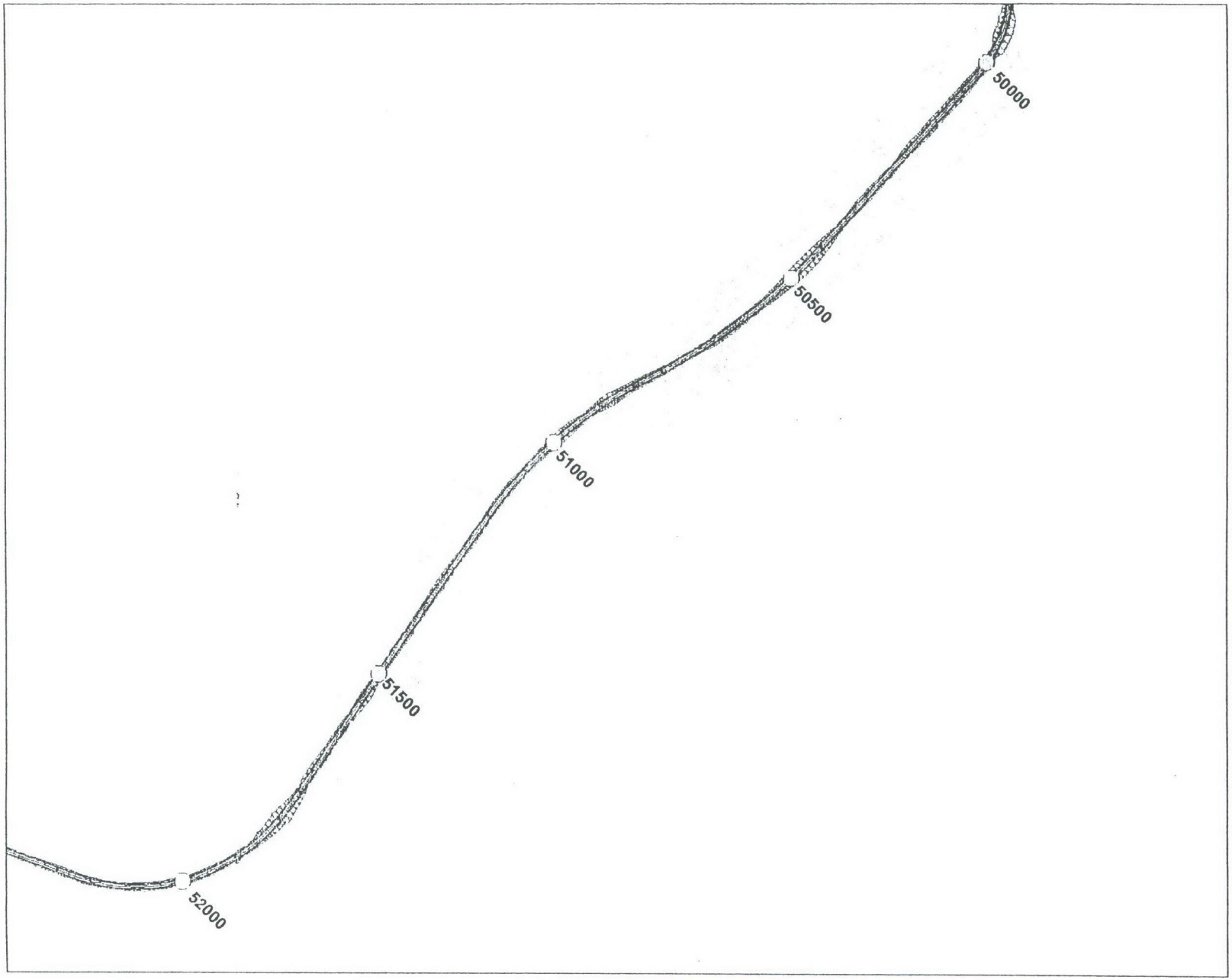


Figure 9(a)
Location of
White Box - Yellow Box
Woodland Remnants

Legend
- Chainages
- MR92 Design
- Cadastre
- National Parks
- Woodland Area

N

1:10,000

0 50100 200 300

Meters

SINCLAIR KNIGHT MERZ

file copy

R Dearden – 4221 2403

RO File 01 M1030

Mr Jan Parsons
Dept of Infrastructure Planning and Natural Resources
P O Box 3927
SYDNEY NSW 2001

11 JUL 2003

MR 92 NOWRA TO NERRIGA UPGRADE, ENVIRONMENTAL IMPACT STATEMENT

Dear Sir

Thank you for your letter dated 28 March 2003 providing additional comments regarding the abovementioned EIS. As with our response to your letter dated 13 March, your Department's comments have been repeated in italics (with the same numbering) above the response to each concern.

Heritage

1. *Could a plan be provided showing the Wool Road heritage elements in relation to both the existing road and also the proposed road in the Bulee Mountain area (Chainages 45000 to 49000).*

Please find attached a plan at scale 1:5,000 showing the proposed road design for the upgrading of MR92 and both the location of the 1841 original alignment of the Wool Road and the 1856 re-alignment to the west of Bulee Gap. This information was confirmed by reviewing Shoalhaven City Council's Heritage Schedules, one of which includes a map showing the location of the Wool Road.

2. *Was the Heritage Office contacted regarding the proposed works in this area? If so, what was their response?*

Ms Rosalynd Strong, Director of Heritage, Heritage Office (based in Parramatta) was invited to attend the Value Management Workshop where the options were assessed and the preferred option for the majority of the route selected. The Heritage Office was also on the project mailing list and received the regular newsletters which were distributed throughout the study period. The Heritage Office was also sent letters on 9/12/02 and 13/1/03 advising the release of the EIS.

As part of the option assessment and selection phase, Ms Robynne Mills, archaeologist, conducted a search of the Heritage Register held by the Heritage Council and no items were listed in the vicinity of the alignment. Additionally, Ms Mills contacted local heritage groups to discuss the proposal including the Braidwood Historical Society and Museum and the Shoalhaven Historical Society. Discussions were also held with Council planners from both Shoalhaven City and Tallaganda Shire Councils regarding heritage constraints within the study area.

On 19 June 2003 Mr Ken Collis (RTA) and I met Mr Stuart Read at the Heritage Office, Parramatta, and gave a presentation of the issues and explained the Heritage impacts of the proposal in general, and particularly in regard to the Bulee Mountain area and the Wool Road. The Heritage Office has not indicated that the proposal would be regarded unfavourably.

Water Quality/Geology

3. *The water quality monitoring results show some unusually low pH levels (as low as pH 4.5) in all three waterways (Endrick River and Boolijah and Tianjara Creeks). Tianjara Creek in particular had consistently low pH levels. This is explained as being a function of local geology and soils. Presumably these systems are in some sort of equilibrium. Is there a potential for the road works to expose "fresh" areas of acidity and result in acid runoff? The EIS and working papers do not seem to address this issue.*

Slightly acidic groundwater is often associated with sandstone geology and this has been borne out by water quality results from creeks within the MR92 study area. Broadly speaking, the MR92 monitoring results indicate more acidic water flows during dry weather. This correlates with a higher proportion of creek flow being derived from groundwater rather than surface water run-off.

Monitoring on other sites in sandstone geology such as the Ranger Mine in the Northern Territory has indicated that there are major natural fluctuations in water quality, notably seasonal ranges in pH values that are broader than could have been caused by mining operations.

It is possible that the acidity of surface water runoff may be marginally increased due to the acid producing potential of the host rock which is disturbed by road construction. However, it is considered that the limited scale and interaction between surface water run-off and disturbed rock means that the impact on creek pH is unlikely to change outside the existing fluctuation of baseline readings (pH from 4.5 to 6.7).

If considered necessary, possible options to manage this risk include:

- Specifying run-off sampling and pH trigger levels as part of an erosion sedimentation and water quality control plan. Remediation may include water treatment using settling tanks and chemical dosing for pH correction.
- Quantifying the Acid Neutralising (or "buffering") Capacity (ANC), Net Acid Producing Potential (NAPP) and Net Acid Generation (NAG) of disturbed rock samples.

4. *Grass swales and biofiltration systems are proposed as water quality mitigation measures. Given the sandy, skeletal nature of the soils, and occasional proximity of the rock surface along much of MR92, are these viable methods?*

The biofiltration swales would function properly regardless of the nature of the soils as the filtered runoff is collected in the perforated pipes and discharged downstream as treated runoff. If infiltration into the natural soils is not desirable, then a lining can be used, however, this would be subject to detail design. If hard rock is close to the surface, then the depth can be reduced and the width increased as required. In summary, the biofiltration devices are appropriate for this proposal.

Urban Design and Landscape

5. *The assessment of the visual effects and resultant management (or "landscape treatments") in the Bulee Mountain area is inadequate. The assessment seems to conclude (p28 EDAW report) that as no one can see what's being constructed in this area there is no need to consider it further. This is a strange conclusion given the difficulty of construction in this area and the special landscape techniques that may be required. Some questions for the area between Chainages 45000 and 49000:*

a) *The assessment makes no connection between the road and its heritage status. Were any discussions held with either NPWS or the Heritage Office regarding their requirements (e.g. for continued access/use of the old road, specific needs for rehabilitation)?*

Discussions were undertaken with NPWS regarding the location of feasible route options through the Bulee Mountain area as part of the Value Management Workshop and throughout the preparation of the EIS to select a preferred alignment for the project. NPWS representatives have consistently indicated alignments that resulted in minimal impact to Morton National Park would be favoured over those that involve incursion. While the European heritage aspect of the Wool Road was highlighted as a constraint to road development on balance the need to avoid creation of a new corridor through the National Park was seen as a higher priority. The proposed upgrading avoids all remnants of the original 1841 alignment of the Wool Road and only impacts on the 1856 alignment west of Bulee Gap. Prior to the EIS exhibition discussions with the Heritage Office were not undertaken specifically in regard to the impact on the 1856 alignment of the Wool Road as this item was not listed on their Register. As noted above, however, a meeting was held with the Heritage Office on 19th June 2003 to further discuss the Wool Road impacts.

b) *There are some high and extensive areas of fill in this section (seemingly fill areas up to 15 m high – difficult to estimate due to the scale of drawings). The EDAW report seems to assume these will be embankments rather than the general use of retaining walls proposed in the concept design. Where embankments are used these will be steepened to 2H:1V. How is it proposed to manage landscape treatment of steep slope batters? What techniques/treatments will be used where retaining walls are used?*

Landscape treatment of slope batters would be determined during the detailed design phase of the project when the road alignment has been refined and the slope of embankments finalised. A number of general and specific urban design principles were developed to guide the concept design for the proposed upgrading of MR92. These principles were documented on page 33 and 34 of Technical Paper No. 10. While no specific principles were developed for embankments and cuttings, deep road cuttings and high fill embankments can potentially create two of the most visually obtrusive features of a road development. Careful consideration would therefore be

given to these issues in the detailed design phase of the project. Some design principles that could apply to MR92 include:

- Rounding of earthworks batter slopes to suit the terrain;
- Using of rock pitching treatments in areas where retaining structures are required; and
- Terracing and benching in areas that gently slope to aim to provide opportunities for natural plantings rather than being too geometric in form.

c) *Are the fill areas and bridges/batters/retaining walls visible from areas to the south and west?*

It is not expected that the fill areas or batters would be visible from the south or west. With respect to the proposed bridge along the existing alignment within the Bulee Mountain area, this may be visible to the south although the closest resident to this area are located some distance away (near Nerriga) and therefore this impact was not considered to be significant.

6. *The EDAW report recommends the use of "landscape treatments" as its main means of managing the effects of the proposal. The only technique actually presented is "to replicate the timbered forest [or scrub] in terms of species type, species diversity, and planting density". A list of species follows which is just a reproduction of the species listing provided in the biodiversity assessment. Some questions:*

   a) *There are a series of plans provided (Figures 5.1 a-f) which show where different vegetation communities are to be used. As there was no such plan provided in the biodiversity study, nor the SIS, what is the source of these plans?*

Appendix 11 of the SIS provides the report prepared by Kevin Mills & Associates as part of Phase A of the study which involved a preliminary assessment of the constraints and opportunities within the study area. Within this report, Figure 3 provides an indication of the vegetation communities located along either side of the existing centreline of MR92. It is these communities that form the basis of the plans provided in Figure 5.1 of the Technical Paper No. 10 although the names of each vegetation community have been simplified for the purposes of the plan. There are a series of numbers located within each of the photos of the plan and these relate to the table within section 5.3.1 of the report which outlines the indicative species that are located within each vegetation community.

b) *Are the species nominated suitable for rehabilitation works i.e. are they a practicable and viable mix?*

As long as the planting program appreciates the different vegetation communities within the study area, the species nominated are considered to be suitable for rehabilitation works. For each specific area to be rehabilitated, Kevin Mills of Kevin Mills & Associates suggests that the species chosen to be planted in the area should be the ones that naturally occur in that area.

c) *What would be the source of propagation material for the rehabilitation? Can seeds be collected from the surrounding National Parks?*

It is not intended that seeds would be collected from any of the National Parks that occur within the study area. The existing road reserve would be adequate for the collection of seeds. During vegetation clearing activities, cut branches would be collected and used in rehabilitation works. These branches could either be brushed over or laid out on the soil surface. Assisted by this process, seeds would naturally germinate and the vegetation community would regenerate naturally over time.

d) *The species nominated are mostly trees. How would these form a viable community, and are they suited for roadside plantings?*

Trees would be used to speed up the regeneration process of the surrounding land. Depending on local weather conditions, the understorey would form naturally in the short to medium term.

e) *How will the plantings be integrated with the water management features?*

This issue would be determined during the detailed design phase when the route alignment is finalised. The mitigation measures to protect water quality and landscape treatments would be detailed at this stage of the project to ensure integration occurs with the proposed road upgrade.

f) *What ground preparation is necessary for landscaping, especially for communities which require specific ground conditions such as heathland and sedgeland (these types of community are identified in the landscape treatments)?*

According to Kevin Mills of Kevin Mills & Associates, no specific ground preparation would be necessary for landscaping works along the proposed alignment. Topsoil would be spread as one of the final activities and any logs and branches laid over the surface of the land to encourage the vegetation community to develop naturally over time.

7. *There are known areas of threatened species affected by the road. Is it possible to use these species in the rehabilitation works?*

Yes, it would be possible to use threatened species in the rehabilitation works. Seeds would be readily available through nurseries, or preferably, from collection from existing plants located within the road reserve.

8. *There is a major cut and fill area immediately to the east of Sassafras (Chainages 31400 to 32700). This feature was not considered in the urban/landscape design – why not?*

Between Chainages 31400 and 32700 the design of the upgrade comprises minor cuts (maximum of 3 metres) and a large fill with a height up to 10 metres. This area was not specifically referred to in Technical Paper No. 10 but an assessment of the visual impact is provided below following the same methodology used to assess the remainder of the proposal. As stated in Section 3.1.2 of Technical Paper No. 10, the visual effect of this part of the upgrade is expected to be high in line with the effect at Georges Yard which has similar cuts but substantially lower fill areas proposed.

The fill area is located along the southern boundary of the Morton National Park, a sensitive land use. The presence of the existing gravel road in the vicinity and the vegetation clearing which recently took place as part of the installation of the Eastern Gas Pipeline would result in a low visual sensitivity in this area to an upgraded MR92. The visual impact therefore for this particular section of the proposal would be moderate (high visual effect multiplied by low visual sensitivity). The urban design strategy that would be implemented in this section of the upgrade is proposed to be an integrated landscape treatment and would comprise revegetation of the indigenous forest and scrub landscapes. With reference to the table provided in Section 5.3.1 of Technical Paper No. 10, vegetation communities 10,11 and 12 would be replicated and would include the planting of species such as *Eucalyptus fastigata*, *Eucalyptus radiata*, *Eucalyptus viminalis*, *Eucalyptus cypellocarpa*, *Doryphora sassafras*, and *Acmena smithii*. As mentioned in 6(f) and (g) above, advice sought from Kevin Mills is that seeds from these plants would be readily available along the existing road reserve.

9. *What input did the communities in Nerriga and Sassafras have into the treatments proposed by EDAW?*

Due to the fact that much of the existing vegetation is proposed to be retained in both Sassafras and Nerriga as part of the proposed upgrading works only basic landscape treatments were

proposed for these areas. These treatments were purposefully designed so as to retain as much of the existing character of these villages as possible. This is in accordance with community preferences indicated by way of comments received throughout the consultation period. Because of the basic landscape treatments proposed, the communities of both Nerriga and Sassafras were not specifically consulted regarding the type of landscape treatment proposed.

10. Figure 2.2a of the EDAW report seems to indicate a major diversion for the new alignment of MR92. Please confirm that this is incorrect.

The dashed line on Figure 2.2a is incorrectly referred to as the existing road alignment. The dashed line represents an easement within this section of the study area. This easement forms part of the base cadastral layer used in Figures 6.2 a to 6ay, and can be more clearly seen in these figures of the EIS. By referring to Figure 6.2 f and g of the EIS, the easement is clearly shown and the existing MR92 alignment is also shown by small black dashes coinciding closely with the proposed new design.

Noise and Vibration

11. The noise assessment is based on the description of the proposal as "redevelopment of an existing collector road". Elsewhere the EIS indicates that the road is currently used mostly as a local access road due to its poor condition. One objective of the proposal is to "provide an efficient freight route" connecting inland NSW to the coast i.e. the new road would predominantly carry traffic from one region to another. The current road does not provide a road suitable for such traffic. A more appropriate description of the proposal would therefore be "construction of a new arterial road" and on that basis the noise assessment should adopt the criteria for a new arterial road. This will require a revised assessment.

Predicted traffic flows for the project are detailed on page 7-7 of Chapter 7 of the EIS. The most likely scenario is for traffic along the section of MR92 (once upgraded) to be "*1000 vehicles per day by 2011 and 1440 vehicles per day by 2021 with upgrading from Nowra to Nerriga and completion of progressive sealing between Nerriga and Braidwood (Scenario C3)".*

A traffic flow of 2000 vehicles per day (as used in the noise assessment) was selected as a conservative assessment base and represents a worst case scenario for road traffic noise.

The noise assessment assumed the road to be a redevelopment of an existing collector road, for which the highest one-hour traffic flow should not exceed a level of 60 dB (A) during the day,

and 55 dB (A) at night. If the suggestion was adopted that the road be upgraded to a new road, as the road has such low traffic flows, the appropriate criterion would be a 15 hour (daytime) average of 55 dB (A) and an $L_{Aeq\ (9hour)}$ level of 50 dB (A) at night.

In undertaking its predictions, Sinclair Knight Merz adopted an AADT to peak hour conversion of 10, ie the peak hour contains 10% of the daily traffic.

Using the lower estimate traffic flows based on the 15 hour flows, the predicted $L_{Aeq,\ (1hour)}$ noise levels predicted in the EIS would convert to $L_{Aeq\ (15hour)}$ values by subtracting 5 dB (A). The criterion (as discussed) would change from an $L_{Aeq,\ (1hour)}$ level of 60 dB (A) to an $L_{Aeq\ (15hour)}$ level of 55 dB (A). The level of impact therefore remains consistent with that indicated in the EIS.

On that basis, it is not proposed that any further reassessment be undertaken. It should be noted that the EIS stipulates that there is a requirement to undertake follow up noise surveys once the project is opened.

12. There are two buildings/residences in Sassafras not considered in the noise and vibration assessment. These are at approximately Chainages 34100 and 32970. These structures would be less than 20 m from the road centreline. A further building is located at Chainage 36050 but this may lie further from the road. Why were these buildings not considered in the assessment?

The two locations queried above during the initial site visit were identified as being:

1) Building at Chainage 34100 – Sheds and Old Huts – all non-residential buildings; and
2) Building at Chainage 32970 – Tayfield Stables and sheds– all non-residential buildings.

Given that these buildings are not residential, it is not considered appropriate that the buildings be assessed for road traffic noise.

13. The proposal could increase traffic from 100 AADT to 2000 AADT. The noise assessment does not consider the implications of this increased traffic beyond the proposal boundaries. What are the potential effects of this increase in traffic (and associated noise effects) on roads to either side of the proposal and what/where are the boundaries of the effects? (i.e. presumably the increased traffic would have effects through to some point in Nowra and similarly to some point west of Nerriga or Braidwood.

The project involved the upgrading of a section of road between Hames Road and Nerriga. To the west of Nerriga vehicles would continue to travel along the section of MR92 to Braidwood at

which time the traffic is mixed with that from the Kings Highway. Alternatively, traffic exits the MR92 roadway just west of Nerriga and travels along to Sandy Point prior to it travelling to Tarago, Goulburn or Bungonia. These latter roads are to be upgraded by local councils. As part of that assessment process, the impacts along each of these roads would be assessed and the extent of any mitigation measures determined at that time.

Travelling to the east of Sassafras towards Hames Road, some traffic will divert to Turpentine Road, whilst the remainder (and likely the majority) will continue towards Nowra. Between Hames Road and Nowra, Shoalhaven City Council has recently completed 5 km of upgrading works to MR92. It is understood that Council would have been required to assess the construction and operation of this road upgrading project as part of their environmental impact assessment procedures. Notwithstanding, the only group of residents between Nowra and the study area (ie to the east of Hames Road) is a small group of residential dwellings in the general vicinity of HMAS Albatross. Given the low daily traffic flow expected, and that there will be some dispersion of the traffic prior to the residents at Nowra, the extent of daily noise emissions from traffic could not be considered to have any significant impacts to these residents.

Miscellaneous Questions

14. The NPWS has a Plan of Management for the Morton NP (incorporating Budawang NP). How has that document been considered in the road design and urban design/landscape treatments?

A Plan of Management for Morton National Park and Budawang National Park was adopted by the Minister for the Environment on 20 September 2000. Amendments to the plan were adopted by the Minister on 11 October 2001 and a combined plan prepared. The combined plan was reviewed in terms of both the road design and urban design treatments proposed as part of the upgrading of MR92.

During the design of the proposed upgrade, the route selection process and the environmental impact assessment of the preferred option, the fact that the Morton National Park formed one of the largest conservation reserves in NSW for the protection of unique natural and cultural resources was always of the highest importance to the study team. While the existing MR92 bisects the park, the RTA was always mindful of minimising the footprint of the design so as to minimise the resultant impacts on the Park. The urban design treatments were developed to aim

to replicate the existing vegetation communities that occur along the existing road reserve and extend within the Morton National Park.

The Plan of Management lists as one of its high priority actions to redevelop visitor facilities at Tianjara Falls, and a medium priority to gate tracks along MR92. This was mentioned in the SIS in terms of minimising access to the Park from MR92 thereby also minimising potential impacts such as car dumping, trampling of vegetation, arson, rubbish dumping etc.

15. *What is proposed (i.e. who becomes responsible, what landscape treatment is proposed) for old sections of road which are not used in the new road?*

The existing road is a service corridor in that it houses existing utilities such as the Eastern Gas Pipeline (EGP), one of three Sydney to Melbourne Telstra optic fibre cables and other Telstra copper cables. While the EIS states that old sections of road could be rehabilitated and revegetated, old sections of the road that house existing utilities would still need to be accessible to the abovementioned companies for routine maintenance work or to undertake repairs to their assets.

16. *The road is proposed as a heavy vehicle route including for B-Doubles. How would these vehicles access the Princes Highway from the end of the proposal at Hames Road?*

Shoalhaven City Council has recently upgraded the section of MR92 between HMAS Albatross and Hames Road, a distance of 5 km. This upgrade is similar to that proposed for the section of the proposal between Hames Road and Nerriga and it is suitable for use by B-Doubles. The remaining section of road between HMAS Albatross and the Princes Highway at Nowra comprises Albatross Road and Flinders Road which are sealed and suitable for use by B-Double vehicles.

17. *The EIS states that there "would be no significant change to settlement patterns or land use" "due to the isolated location and limited services along the route". This seems to be at odds with the outcomes of the proposal which would decrease the isolation of Sassafras and Nerriga by reduced travel times (23 minutes between Nerriga and Hames Road) and improved road safety. This may make either location more attractive. What is the potential for further development within the existing land use zonings of the Nerriga village and the Sassafras area? It is noted that some of the land in the west of the Sassafras area has recently been subdivided and is currently for sale.*

Technical Paper No. 4 – Land Use and Planning discusses land use impacts of the proposed road upgrade. Section 6 of the Technical Paper states that in the absence of road upgrades, the poor accessibility would be a limiting factor to further development along the route. Much of the land along the route is within National Parks or other conservation reserves and the proposed upgrade would have no bearing on development activity within these areas, because further development is restricted by the reservation of these lands.

Section 7.3 of Technical Paper No. 4 identifies that pressure for rural residential development is already occurring around Nerriga, and that this pressure, according to Tallaganda Shire Council, has arisen independently of the proposed upgrade of MR 92. Council is considering amending its planning controls in the rural areas around Nerriga to allow further rural residential subdivision on land that is of low agricultural capability. While improved access may facilitate further development, development potential to a large extent remains dependent on responses from the Council's in the zoning of land and approval of development and subdivision applications. Therefore, the EIS and Technical Paper acknowledge that the proposal would improve access to areas along the route, and that this may result in heightened interest in development for a range of land uses on developable land.

There is some potential for further development within the village zoned land at Nerriga, and on land zoned 1(b) in the surrounding area, particularly to the east. This would be expected to take the form of rural residential development.

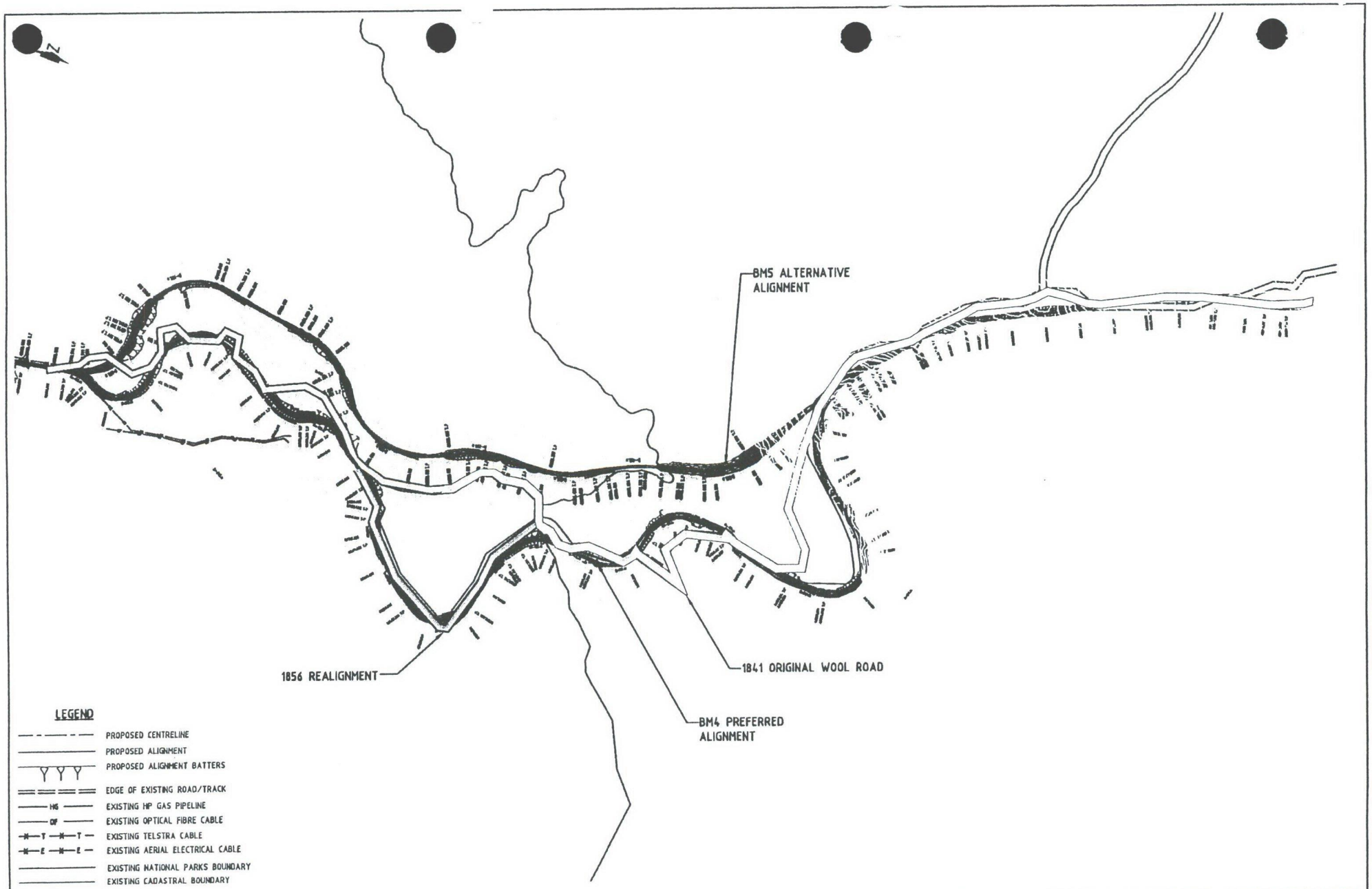
In the Sassafras area, development potential would also be limited to rural uses allowable under the existing Rural 1(b) and Rural 1(d) zonings, unless Council re-zones land to permit other uses. Council has advised that there are no processes in progress to rezone at Sassafras and that there is no Rural Lifestyle 1(c), zoned land at Sassafras.

The above comments and attached plans are provided to expand and clarify the information in the EIS in regard to the proposed MR92 Upgrading. Should you require any further information, please do not hesitate to contact me.

Yours sincerely

Ross Dearden
Project Manager

11 JUL 2003



Shoalhaven City Council

RTA ROADS AND TRAFFIC AUTHORITY
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DOTARS
DEPARTMENT OF TRANSPORT AND REGIONAL SERVICES

SINCLAIR KNIGHT MERZ
Sinclair Knight Merz Pty Ltd.
ACN 001 024 096.
100 Christie Street St Leonards,
NSW 2065 Australia.
Telephone (02) 9928 2100.
Facsimile (02) 9928 2500.

ROADS AND TRAFFIC AUTHORITY NSW

MR 92 NOWRA TO NERRIGA

LOCATION OF WOOL ROAD IN BULEE MOUNTAIN AREA

DESIGNED BY: NC	DATE: SEPT 02	CHECKED BY: JH	DATE: JULY 03	PROJECT No.: EN01134	DWG. No.: –	REV: –
DRAFTED BY: AS	DATE: MAY'03	APPROVED BY: LI	DATE: JULY 03			

planningnsw

Henry Deane Building
20 Lee Street Sydney NSW 2000
GPO Box 3927 Sydney NSW 2001
T 02 9762 8000
www.planning.nsw.gov.au

Facsimile

To	Ross Deardon	**Reference**	W98/00096
From	Jan Parsons	**Facsimile number**	02 4227 3705
Date	28 March 2003	**Total number of pages**	4

Hi Ross

Further comments on the EIS follow.

Heritage

1. Could a plan be provided showing the Wool Road heritage elements in relation to both the existing road and also the proposed road in the Bulee Mountain area (chainages 45000 to 49000).

2. Was the Heritage Office contacted regarding the proposed works in this area? If so what was their response?

Water Quality/Geology

3. The water quality monitoring results show some unusually low pH levels (as low as pH 4.5) in all three waterways (Endrick River and Boolijah and Tianjara Creeks). Tianjara Creek in particular had consistently low pH levels. This is explained as being a function of local geology and soils. Presumably these systems are in some sort of equilibrium. Is there a potential for the road works to expose "fresh" areas of acidity and result in acid runoff? The EIS and working papers do not seem to address this issue.

4. Grass swales and biofiltration systems are proposed as water quality mitigation measures. Given the sandy, skeletal nature of the soils, and occasional proximity of rock to the surface, along much of MR92 are these viable methods?

Urban Design and Landscape

5. The assessment of the visual effects and resultant management (or "landscape treatments") in the Bulee Mountain area is inadequate. The assessment seems to conclude (P28 EDAW report) that as no-one can see what's being constructed in this area there is no need to consider it further. This is a strange conclusion given the difficulty of construction in this area and the special landscape techniques that may be required. Some questions for the area between chainages 45000 and 49000:

   - The assessment makes no connection between the road and its heritage status. Were any discussions held with either NPWS or the Heritage Office regarding their

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requirements (eg for continued access/use of the old road, specific needs for rehabilitation)?

- There are some high and extensive areas of fill in this section (seemingly fill areas up to ~15m high - difficult to estimate due to scale of drawings). The EDAW report seems to assume these will be embankments rather than the general use of retaining walls proposed in the concept design. Where embankments are used these will be steepened to 2H:1V. How is it proposed to manage landscape treatment of steep batters? What techniques/treatments will be used where retaining walls are used?

- Are the fill areas and bridges/batters/retaining walls visible from areas to the south and west?

6. The EDAW report recommends the use of "landscape treatments" as its main means of managing the effects of the proposal. The only technique actually presented is "to replicate the timbered forest [or scrub] in terms of species type, species diversity, and planting density". A list of species follows which is just a reproduction of the species listing provided in the biodiversity assessment. Some questions:

   - There are a series of plans provided (figures 5.1a-f) which show where different vegetation communities are to be used. As there was no such plan provided in the biodiversity study, nor the SIS, what is the source of these plans?

   - Are the species nominated suitable for rehabilitation works i.e. are they a practicable and viable mix?

   - What would be the source of propagation material for the rehabilitation? Can seeds be collected from the surrounding National Parks?

   - The species nominated are mostly trees, how would these form a viable community, and are they suited for roadside plantings?

   - How will the plantings be integrated will the water quality management features?

   - What ground preparation is necessary for landscaping, especially for communities which require specific ground conditions such as heathland and sedgeland (these types of community are identified in the landscape treatments)?

7. There are known areas of threatened species affected by the road. Is it possible to use these species in the rehabilitation works?

8. There is a major cut and fill area immediately to the east of Sassafras (chainages ~ 31400 to 32700). This feature was not considered in the urban/landscape design – why not?

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9. What input did the communities in Nerriga and Sassafras have into the treatments proposed by EDAW?

10. Figure 2.2a of the EDAW report seems to indicate a major diversion for the new alignment of MR92. Please confirm this is incorrect.

Noise and Vibration

11. The noise assessment is based on the description of the proposal as "redevelopment of an existing collector road". Elsewhere the EIS indicates that the road is currently used mostly as a local access road due to its poor condition. One objective of the proposal is to "provide an efficient freight route" connecting inland NSW to the coast i.e. the new road would predominantly carry traffic from one region to another. The current road does not provide a road suitable for such traffic. A more appropriate description of the proposal would therefore be "construction of a new arterial road" and on that basis the noise assessment should adopt the criteria for a new arterial road. This will require a revised assessment.

12. There are two buildings/residences in Sassafras not considered in the noise and vibration assessment. These are at approximate chainages 34100 and 32970. These structures would be less than 20 m from the road centreline. A further building is located at chainage 36050 but this may lie further from the road. Why were these buildings not considered in the assessment?

13. The proposal could increase traffic from 100 AADT to 2000AADT. The noise assessment does not consider the implications of this increased traffic beyond the proposal boundaries. What are the potential effects of this increase in traffic (and associated noise effects) on roads to either side of the proposal and what/where are the boundaries of the effects? (i.e. presumably the increased traffic would have effects through to some point in Nowra and similarly to some point west of Nerriga or Braidwood).

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area? It is noted that some land in the west of the Sassafras area has recently been subdivided and is currently for sale.

Regards,

Jan Parsons
Manager
Major Infrastructure Assessment
Direct 61 2 9762 8107
Email jan.parsons@planning.nsw.gov.au

MARY V3

13 March 2003

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RECEIVED 19 MAR 2003
CORRESPONDENCE No: 03/5637
FILE No: 03M1001-3

NSW NATIONAL PARKS AND WILDLIFE SERVICE

The Project Manager
Main Road 92 Upgrade
Roads and Traffic Authority
Level 4, 90 Crown Street, Wollongong NSW 2500

02/06518

Dear Sir Madam

Our reference:
Your reference:

Main Road 92 Upgrade (Nowra to Nerriga)
NPWS submission on Environmental Impact Statement

Main Road 92 dissects an area of outstanding natural, cultural and aesthetic value. It is clear from the Environmental Impact Statement (EIS) that the proposed upgrading of this road will have a range of significant adverse impacts on these values. The EIS does not provide sufficiently convincing cost or safety benefits as justification for the impacts, nor does it include any environmental off sets, as compensation for the inevitable impacts.

The approval of the National Parks and Wildlife Service (NPWS), its Director-General and/or Minister is required for the proposal to proceed. These approvals are required because the proposal will destroy Aboriginal sites and re-alignments will intrude into Parma Creek Nature Reserve and Jerrawangala National Park. An Act of Parliament will be required for the proposed diversions of the road into Morton National Park. There is also still the possibility that the proposal may have a significant impact on threatened species and concurrent approval of the NPWS may need to be sought because of this.

The attached submission outlines the outstanding issues and missing information that will need to be addressed or provided prior to any NPWS approval. It also identifies significant issues that the NPWS considers other approval bodies will need to address.

The NPWS considers that the lack of convincing economic or social justification for the project means that justification for a large-scale environmental impact is weak. Conversely the very high conservation value of the area warrants careful consideration and protection. Consequently the NPWS does not support any major diversions away from the current road alignment. Should a decision be made to proceed with the proposal, NPWS approval would be conditional on close scrutiny of all environmental impacts, a thorough minimisation of these impacts and a package of environmental offset.

If you would like to discuss the following submission please contact Conservation Planning Officer Dr Michael Mulvaney 6298 9702.

Yours sincerely

14/3/3

Tony Fleming
Director, Southern

Southern Zone
6 Rutledge Street
Queanbeyan NSW
2620 Australia
PO Box 2115
Queanbeyan 2620
Fax: (02) 6299 4281
Tel: (02) 6298 9700

Head Office
43 Bridge Street
Hurstville NSW
Australia
PO Box 1967
Hurstville 2220
Fax: (02) 9585 6555
Tel: (02) 9585 6444

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Incursions into the national park estate

The proposal will impact significantly on the national park estate, but contains no offsets or compensation for this loss. The road will have a footprint over 5.6ha of Parma Creek NR and Jerrawangala NP and 10.6ha within the current Morton NP. Probably twice that area will be required for line of sight clearing, sedimentation traps and other drainage works or clearing required for construction access. In addition the EIS presents options for significant diversions away from the current alignment and into the park estate at Bulee Gap, Turpentine Road, Billys Hill and near Sassafras. The least intrusive option is the preferred option in the EIS and the NPWS is in agreement with the EIS that the diversion options are not justifiable.

There are 30 deviations from the existing road reserve. One of these is in Parma Creek NR, one in Jerrawangala NP and about 15 in Morton NP. The maximum centre line difference between the old and re-aligned routes ranges from 15 – 50m. The length of these deviations ranges from 200m – 1390m. Ten of the 30 deviation areas support threatened or rare plants. Of particular concern the EIS also mentions a 10m clear zone either side of a 100km per hour road and a 6.5m clearance on 80km roads. Clearance should be restricted to the road reserve.

Adequate maps or descriptions of all proposed intrusions into the park estate are not included in the EIS and will need to be provided to the NPWS prior to consideration of any approval. The NPWS will need to be satisfied that each diversion is an absolute safety requirement and not just preferable from a road engineering or speed perspective.

The NPWS will also need to be informed about the location of drainage, erosion, sedimentation and rehabilitation works (including those of a temporary nature) planned within the NPWS estate. These works should preferably be located within the existing road reserve and for those proposed within the NPWS estate only works where a strong case can be put for their construction are likely to be approved.

The EIS has not addressed the issue that the existing road is a service corridor. Areas of the existing road that are by-passed by re-alignments, will still need access for gas pipeline and fibre-optic maintenance and repair. Thus rehabilitation of disused road areas may be problematic. It is likely that disused road areas will be characterised by a widened area of disturbance, be poorly managed for conservation values, be subject to further corridor disturbance and continued degradation by off road four wheel drive use. This is another reason why incursions away from the existing alignment should be avoided.

Section 10 of the *National Park Estate (Southern Regions Reservations) Act 2000* allows for adjustments to be made to the boundary of the recently declared Jerrawangala National Park, Parma Creek Nature Reserve and portions of Morton National Park dedicated under that Act. These adjustments, which need to be made by 31 December 2005, allow boundaries to be modified to follow the formed path of existing roads and to provide appropriate setbacks from the carriageway of the road. It has been previously agreed that the setback for the road through Jerrawangala NP and Parma Creek Nature Reserve should be 20 metres from the centre line. Any works outside of this area would need a boundary adjustment if such works were supported. The D-G of NPWS, with approval from the Ministers for Roads, Forests, the

Environment, and Land and Water, is only able to declare a boundary adjustment if it does not result in any significant reduction in the size or value of the national park estate land.

Construction of the road within Morton National Park is a prohibited use, under the *National Parks and Wildlife Act* and would require an Act of Parliament to proceed.

Impact on NPWS management.
The EIS/SIS has understated the potential impact of the proposal on the integrity and management of surrounding national park areas. Increased arson, accidental fire ignition, off road vehicle use, bush rock removal, rubbish and car dumping and weed and pathogen invasion may all increase as a result of the proposal. The approach of the EIS/SIS is for these issues to be addressed in Environmental Management Plans (EMP). These plans will need to be comprehensive and supported by adequate and on-going funding. For example, page 75 of the SIS states that to reduce off-road use and risk of fire, as many as possible of the tracks off MR92 should be closed or gated. Details of exactly what works are required will need to be detailed in an EMP and provision to fund these works made.

It is also important to note that the indirect impacts listed above could be significant, have far reaching implications and be costly to address. They are definitely not just minor edge effects as suggested on page 8.6 of the EIS. NPWS approval would not be forth coming until adequate and funded EMPs have been prepared.

A hydrological impact not investigated, is that road construction may disrupt water movement which may be crucial to the survival of wet heath areas such as the large patch adjacent to the road, to the east of Tianjara. This issue needs to be given consideration.

Aboriginal cultural heritage
Avoidance and protection from construction activity of sites and areas of potential significance is and should remain a key focus of the proposal. The proposal will need approval under S90 of the *National Parks and Wildlife Act* re consent to destroy generally heavily disturbed artefact scatters and for sub-surface testing in areas of Potential Archaeological Deposit. In considering these applications the NPWS will be considering the views of relevant Aboriginal organisations and the archaeological significance of sites. The EIS does not describe areas or resources of social or cultural significance to Aboriginal people and this may be a concern.

Historic cultural heritage
The wool road and 1856 alignment are of great historic significance. Unfortunately the remnant features of the road have largely been neglected and suffered degradation through pipeline and fibre optic developments and the regular grading of MR92. The EIS has inadequately surveyed and addressed remaining aspects of the historic wool road and 1856 alignment. Both the 1841 and 1856 alignment roads between Billy's Hill and the Endrick River should be mapped and all remaining features such as wheel ruts, dry stone walling, drains and chisel marks accurately mapped. Bob Sneddon's History of the Sassafras area provides further information on the road. Until the remnants of the roads are mapped and described it is difficult to determine the impacts of the Bulee options on the historic roads. Figure 2(f) in the technical paper 6 is woefully inadequate and incorrectly maps both the Wool road and the 1856 re-alignment. Also the EIS claims a value on purely alignment grounds for the 1856 route

in the Bulee Mountain area. Surely this same argument and value would apply to much of the road, not just the Bulee Mountain section.

During NPWS inspection, what appeared to be (from the unnaturalness of the cutting) a section of the old wool road was observed to the north of the existing road, near the Endrick River, from about the 570-520m contour lines. This section of the old wool road would be destroyed by the BM5, BM2 and BM3 options. There is also the possibility that part of the 1841 road may be destroyed immediately to the north of Bulee Gap by work tied to the current alignment. There is also more than the one example of 1856 stone walling, than that photographed and referred to in the EIS. Features of the wool road and the re-alignment in this area should be clearly identified and impacts avoided where-ever possible.

The NPWS considers that any approval for MR92 should be conditional on the production of a conservation management plan for the wool road and its remnant structures. Preferably this would also include the features along the Wandian Road, near Jerrawangla Mountain. The plan should include measures required for conservation and recommendations concerning interpretation and visitor use. The plan should minimise potential impacts.

There will also be the need for a person of appropriate historic expertise to be present when initial clearing and ground disturbance for the upgraded alignment occurs in this area.

Flora and Fauna

NPWS will provide the proponent with separate detailed assessment of the Species Impact Assessment. Nevertheless outstanding issues include the following.

- The NPWS is awaiting the 2002/2003 summer orchid and bat surveys.

- Orchids: the NPWS did an inspection of known habitat on 5 February 2003. No orchids were observed and it is possible that the dry conditions are such that none of the rare or threatened orchids will flower this year. If this is the case then impact assessment will be problematic. The NPWS advises that a precautionary approach will need to be taken and all known areas of habitat of rare or threatened orchids avoided. In this regard the Bulee Midge Orchid (*Genoplesium superbum)* is only known from four locations of which three are in the Bulee Mountain vicinity. One of these locations is to the south of Billy's Hill, where a proposed road re-alignment would cut through an area of known habitat. The other two known locations are outside any proposed re-alignments or Bulee road options. However the BM5 option would involve about an additional 300m of clearance of what appears to be suitable habitat. (This clearance difference would be in excess of 1km if the proposed re-alignment of the existing route between Billy's Hill and the top of the extant old wool road was not built.)

- Budawang Parrot-pea *(Dillwynia crispii)* Although yet to be listed as threatened under NSW legislation, the NPWS understands that a nomination as endangered under the Threatened Species Conservation Act is being prepared. Certainly from what is known about the species it meets the criteria of being endangered and as currently proposed the MR92 upgrade would have a significant impact on the long term viability of this species. Peter Jobson, of the Royal Sydney Botanic Gardens, is the recognised NSW expert on Dillwynia. He stated that the plant has been

recorded from three locations, with the largest known population occurring on Bulee Mountain. The SIS counts and maps 55 plants at Bulee, most of these have survived the recent fires but at least two plants near the Gap are no longer present. The mapping in the SIS corresponded with Mr Jobson's impression of the population when he visited the area during winter 2001, except that he also observed several plants a few tens of metres south of the Gap. The presence of these plants should be ascertained. Mr Jobson said that he had seen the plant scattered on The Jumps, and that the population here was less than at Bulee Mountain. NPWS staff inspected about a quarter of The Jumps area, on 5 February 2003. Only 5 burnt and dead plants could be located. Virtually all of the Jumps area had been fairly intensively burnt. There is also an old record of the plant from Quiltys Mountain (south of Sassafras), but no recent record or estimate of population size. Peter Jobson considers that there is likely to be suitable habitat for the plant elsewhere in Morton National Park, and that it is likely to exist elsewhere. However, at this stage the precautionary approach would be to assume that Bulee Mountain is critical to the survival of this species, and that the loss of 10 plants is a significant proportion of the total population. It appears possible that the proposed realignment above Bulee Gap could with minor (in terms of distance) adjustments avoid all plants of this species. The NPWS considers that the proposal should either be redesigned to minimise impacts on this plant or the proponent should demonstrate that the plant is common elsewhere. The redesigned alignment should also try to avoid indirect impacts, such as reduced or increased drainage/runoff to or from habitat areas.

- Rare plants Appendix 3 of the SIS records several rare or threatened plants at proposed re-alignment sections. It requires clarification as to whether destruction of some or most of these plants can be avoided, what particular actions will be taken to encourage regeneration of these species following disturbance and how some of these species will be used in rehabilitation.

- Heath Monitor It will need to be determined whether any termite mounds (and possible nesting habitat of the Heath Monitor) would be affected by the proposal, and whether destruction of mounds may occur during breeding/nesting periods. If so special conditions may need to apply to mitigate against potential impact on this vulnerable species.

- Koala + Heath Frog .The SIS contains sufficient information on these species though there are additional potential mitigation measures which may be appropriate to apply. Approval consideration will involve both consideration of the impact and the best combination of mitigation measures.

  Movement of road materials and increased visitation may increase the chance of introducing chytrid fungus to Heath Frog sites, which is an issue that will need to be given thorough consideration.

- Roadkill. In addition to the measures discussed in the EIS, the NPWS considers that a light aggregate should be used in the road surfacing so that the road has a pale colouring. This is because fauna are more likely to be seen against a light rather than a dark bitumen road, while the lighter colour may reduce the attractiveness of the road to basking reptiles.

The strategic use of culverts will also need consideration. This is particularly so in the Sassafras area, which appears to support a relatively large wombat population.

The 2002 report by Beasley should be consulted and her recommendations investigated, including the future use of slow down features at road kill concentration points, and leaving roadkills as warnings to motorists.

- Spread of *Phytophthora* and other Pathogens. *Phytophthora cinnamomi* is known to occur in the Sassafras area, while the fact that susceptible plants to *Phytophthora* thrive in the Parma Creek area, suggests it has yet to become well established in this area. The project will need to include "Quarantine" or hygiene measures, such as cleaning of construction machinery before they proceed past Sassafras.

Environmental offsets

The only environmental benefits that would result from the upgrading of the road are a decreased level of siltation in those creeks that are downstream of the road and a reduction in the generation of dust. These benefits are far outweighed by the direct clearing, increased road kill, degradation of threatened and rare species habitat, loss of cultural sites and features of significance, visual landscape degradation and a host of indirect impacts which will occur as a result of the road upgrade. The NPWS considers that a package of environmental offsets needs to be an integral part of the proposal. The off-sets should include such things as:

- Appropriate land zonings in the Sassafras, Endrick River and Corang Rivers areas;
- Production of a Conservation Management Plan for the wool road and 1856 re-alignment;
- Addition of land to the national park estate as compensation for the land that will be removed.
- Measures that would enhance the viability of rare and threatened species that will be negatively affected by the proposal.

Tourist visitation

The EIS should have stated that the sensitive and wilderness nature of much of the national park land bordering MR92, together with the existence of unexploded ordinance, means that generally only low key, largely unsupported visitation is appropriate.

Currently, the only area capable of supporting a large visitation influx is the Tianjara Falls lookout facility. The EIS has not investigated whether a turning lane, into the lookout, for westbound traffic, is required for safety reasons, as a result of the proposed upgrade and increased travelling speeds. This should be investigated and if required included in the project costs.

Pressure for inappropriate intensive tourist, rural residential or agricultural developments – need for associated planning control

The upgrading of the road is likely to lead to pressure for intensive developments on inholdings in the Sassafras area and on areas bordering NPWS estate near Nerriga, and to some degree near Nowra. This issue has only been superficially addressed in the EIS.

The Sassafras area has considerable environmental significance as habitat of threatened and rare plant and animal species as well as uncommon vegetation types and it contains the headwaters of most of the creeks in Morton National Park and the Budawang and Ettrema wilderness areas. The water generated on the Sassafras plateau is currently of high quality and does not significantly impact on the naturalness of the creek and river systems within the wilderness and Park areas. The western end of the MR92 upgrade passes close to or through largely forested corridors associated with the Endrick and Corang Rivers, both of which have a wide range of environmental values. Similarly the remaining woodland in the Hames road area is important habitat of rare and threatened species.

The agricultural zonings that cover all of these areas restrict some intensive developments. However, under the Shoalhaven LEP 1985, the 1(d) and 1(b) zoning over the Sassafras lands could allow intensive animal husbandry (including feed lots, piggeries or poultry farms) and intensive horticulture without development consent. Other intensive developments may be approved with development consent. The zoning also implies that agriculture should be the dominant land use in the area, even though 75% of the area is uncleared, and the majority of the uncleared area is unsuitable for agriculture being heath and sclerophyll woodland on nutrient poor sandstone. Similarly under the Tallaganda LEP 1991 horticultural development without development consent is allowable. A further concern is that under State Environmental Planning Policy No. 15, the rural zoning for Sassafras makes it possible to have multiple dwellings on a single allotment as part of rural landsharing communities. This would potentially allow up to 80 dwellings on an area of 360 hectares or more, and dwellings on allotments as small as 10 hectares.

Perhaps the greatest concern is that both Tallaganada and Shoalhaven LEPs allow for rural residential development if lot sizes exceed 40 or 50(ha) respectively. Rural residential development has already been recently expanding at Sassafras, while a local newspaper advertisement urged buying of land near Nerriga as there will shortly be "*four-lane highway connection to Sydney and the coast*" (an obvious exaggeration but clearly the road upgrade is seen as a selling point).

Experience within Shoalhaven and Tallaganda Shires and elsewhere has shown that despite careful siting considerations there is a negative impact associated with rural residential development especially in areas of high vegetation cover. Edols-Meeves & Knox (1996) highlight the removal of vegetation and introduction of exotic weed species as a frequent environment cost associated with rural small lot development. While in the document *Rural Settlement, Guidelines on Rural Settlement on the North Coast Of NSW,* DUAP 1995 (p51) identified rural residential development as having "*a widespread effect on remnant natural areas through a range of impacts including: domestic pets killing native fauna; pollution (from pesticides, etc.); road kills; habitat clearing and degradation; habitat fragmentation and isolation; increased sediment in waterways; increased salt levels in soil or water; changes to drainage patterns; nutrient enrichment of waterways and contamination from septic tanks*".

Studies indicate that there is a high incidence of clearing associated with rural residential development, with on average 25% of the individual area of lots cleared (Edols-Meeve & Knox 1996, Dept of Planning 1988, 2001). Such clearing is usually caused by the establishment of a dwelling site, associated buildings, roads, electricity lines, dams, effluent disposal fields, and fuel reduction zones.

The NPWS considers that the current development in the Sassafras areas and areas of environmental significance close to Nerriga are close to the limits of sustainability and that land zoning and planning should seek to retain the existing character of these areas, protect their environmental values and prohibit intensive development.

In this context the NPWS considers that when considering the approval of the MR92 upgrade, the potential change in development level will either need to be considered as a major adverse environmental impact of the proposal or approval would need to be conditional on environmental planning which prevents such development. This could include a combination of measures such as 7(a) (Environment Protection "A" Ecology Zone) and 7(d1) (Environment Protection "D1" Scenic Zone) zonings, and use of Development Control Plans (DCP). The NPWS would expect that the DCP would contain the following planning principles:

- concentration of further development on cleared lands;

- no further significant clearing of native vegetation;

- protection of water quality + flow (including guidelines for the management of pesticide, fertiliser and herbicide use).

- the construction of any further assets takes into account fire protection and that adequate fire protection measures, such as radiation zones, occur within the land being developed;

- houses or other asserts or infrastructure do not abut or be in the close vicinity of Morton National Park, or the Ettrema or Budawang wilderness areas;

- the scenic amenity of the Sassafras and Corang and Endrick Rivers areas are maintained and the visual intrusiveness of structures on adjoining wilderness areas be minimised;

- cultural values are retained;

- no further significant fragmentation of remnant vegetation occurs; and

- intensive agriculture and residential development are prohibited.

The NPWS understands that Tallaganda Council is fortuitively about to review its LEP, while for the proposal to proceed, Shoalhaven Council will need to amend its LEP as some of the proposed land is zoned 8(a) or 1(f) which prohibits development.

Poor safety improvement justification

The safety advantage claimed in the EIS for the upgrade of MR92, is taken from accident figures for the whole Braidwood or Nerriga to Nowra routes – not just the area in which the upgrade will occur. Full accident figures have not been given in the EIS but from figure 3.6 in Technical paper 3 it appears that at least 25% and possibly up to 33 % of all accidents have occurred in the relatively short section up to Hames road, which is outside the proposed upgrade area. Table 2 in Technical paper 14 suggests that at a maximum only 26% of all vehicles involved in accidents on MR92 occurred within the section being upgraded. In addition the greatest concentration of accidents (including the one fatality) is in the section from HMAS Albatross to Nowra.

This has been sealed for the whole period over which the records were collected. All the upgrade may do is to increase traffic in this area, rather than the 80% reduction in accidents predicted in the EIS, it seems more likely that the upgrade would increase accidents in the most accident prone section of the route.

A safety advantage is also claimed in that traffic will be diverted off the Kangaroo Valley road (a relatively dangerous road) to the upgraded MR92. The comparison did not include however that most of this traffic is likely to have a common convergence point at Gunning. Currently traffic travels for 45km along the Kangaroo Valley road, then about 15 km along the relatively safe Illawarra Highway and 105km along the very safe Hume Highway. Once MR92 was operational traffic to Gunning would travel for about 150km along sealed country roads of a standard less than that of the Illawarra Highway and certainly of greater accident risk than the Hume Highway. In addition heavy traffic which may now take the longer (relatively safe) route via Picton to access the Hume Highway may also be diverted to MR92 and Tarago roads. It seems a likely scenario that the net accident rate between Nowra and Gunning would increase with the upgrading of MR92.

The EIS has also not considered some peculiar features of MR92, which may make a higher speed road particularly accident prone. These factors are the relatively large amount of fog that descends on the Sassafras area and that collisions with wallabies/kangaroos and wombats are likely along much of its length. Given the high population of fauna in the area, particularly of wombats in the Sassafras area, the existence of suitable habitat along most of the road and that the road follows a relatively narrow corridor between a deeply incised landscape, frequent vehicle collisions with wildlife are unfortunately inevitable. In September 2002, Linda Beasley, a student of the University of Canberra collected, as part of an internship with the NPWS, baseline data on the location, frequency and species most at risk of an animal-vehicle collision along MR 92, prior to it being sealed. In approximately an one month period vehicles killed 6 wombats and 2 swamp wallabies. Ms Beasley also interviewed local Sassafras resident, Ann Williams, who is treasurer of the Native Animal Network Association's (NANA). Ms Williams travels the road regularly, particularly the section between Sassafras and Nerriga. NANA provides for the care and rehabilitation of injured wildlife and signs at intervals along MR92 display contact details for the organisation. Ms Williams identified Sassafras as an area particularly prone to the occurrence of roadkill. According to Williams, Swamp Wallabies, the Common Wombat, and Eastern Grey Kangaroos are frequently hit along the stretch of MR92 between Sassafras and Nerriga. In addition, the occasional Red-necked Wallaby was found killed along the same stretch. Eastern Greys can be seen grazing regularly on Sassafras farms and Williams has estimated that at least two are killed every week. It seems likely that if the proposal proceeds there will be a link between higher speeds and increased accidents due to either increased collisions (or avoidance swerving) with animals or the lessening of reaction time in fog covered days.

The above issues of use of inappropriate safety figures, diversion off the Hume Highway, and potential increases in accident rates due to road kills and fog coverage need to be addressed if a credible safety advantage is to be claimed for the proposal.

Poor economic justification

The results of the quantified cost-benefit analysis are given in table 3-11 of the EIS and on page *v* of Technical Paper 15. The results are questionable. Firstly it appears (in its option B scenario) to have used capital costs for only the Hames road to Nerriga

section but an expected vehicle usage that applies to full connection to Braidwood ie 1140 vehicles per day instead of 660 (see table 6.1 in Technical Paper 3). Secondly in its option D scenario, it appears that capital costs only to Braidwood have been used when the vehicle figure used (1,440) applies to the additional connection to Bungendore and presumably the Hume highway via Tarago. In addition the costs do not seem to include a new bridge over the Mongarlowe or in relation to the Tarago route any of the sealing costs or the cost of a bridge over the Shoalhaven. RTA officials have in the past indicated that each bridge alone would cost at least several million dollars. As indicated in the technical paper the cost-benefit analysis is sensitive to changes in capital cost.

As detailed previously the perceived savings from accident reduction is questioned and appear to be an over estimate. Perhaps this benefit should not be built into the cost-benefit analysis. Another concern is that induced traffic, which is difficult to model, contributes significantly to the perceived cost benefits of the project. It is also apparent that the cost-benefit analysis of the road upgrade is highly dependent on projected uses of the road by two Bomaderry factories; the Shoalhaven Paper Mill and the Manildra Group Starch Plant. Reduction in production of these factories, increased use of shipping through Port Kembla or changes in raw material sourcing or product destination in either of these factories would significantly impact on cost-benefit.

The conclusion to be drawn from the EIS is that without further roadworks and road funding, beyond Nerriga, the project does not breakeven, with costs exceeding benefits. Even if these connections are assumed to have been created at little cost and a significant level of travel is "induced" to use the road it does little better than break even. The road is best thought of as a speculative development, which previous studies and the EIS itself, expect not to have significant regional economic development impacts.

Therefore, there appears little economic justification for a road option(s) that would result in significant environmental impact.

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QLD Department of Natural Resources and QLD Department of Local Government and Planning. *Planning Guidelines. Separating Agricultural and Residential Land Uses.*

NSW Heritage Office

3 Marist Place
Parramatta NSW 2150
Locked Bag 5020
Parramatta NSW 2124
DX 8225 PARRAMATTA

Telephone: 61 2 9873 8500
Facsimile: 61 2 9873 8599
heritagemail@heritage.nsw.gov.au
www.heritage.nsw.gov.au

Contact: Stuart Read
Telephone: 02 9873 8554
Stuart.read@heritage.nsw.gov.au
File: S90/05513
Our Ref: HRL 21378

Mr Paul Forward
Chief Executive
Roads & Traffic Authority
By facsimile: 9218 6999

Re: proposed road widening and impact on tree corridor at Sassafras, Shoalhaven

Dear Mr Forward

I write due to representation made to this office concerning the retention and possible heritage listing of a corridor of forest trees apparently threatened by proposed road widening.

I am aware that the period for public submissions has closed on the exhibited environmental impact statement (28 February 2003), and I note that this proposal does not appear to have been referred previously to the Heritage Office for comment.

I seek the Authority's assurance that an assessment will be made (or has been) of the potential heritage values of this corridor, as part of the environmental impact assessment process.

I would also suggest that this assessment be made by a qualified ecologist with experience in assessing the natural heritage value, flora or ecological value of this corridor.

The corridor appears to have value as a habitat for local fauna, aesthetic and social value to the community. As it also appears to line an old wool road of convict construction, it may also have historic significance.

I would direct any consultant to the website of the Heritage Office for information on the criteria used for assessment of heritage items in New South Wales, and other information that may be of assistance. This address is www.heritage.nsw.gov.au.

If the corridor is found to have heritage value, options should be considered to ensure its retention and conservation, and the minimisation of any adverse impact of road widening on it. Options such as a divided carriage way to enable retention may be feasible for example.

Mr Stuart Read of this office would be happy to discuss this matter further if that is of assistance. He can be contacted on telephone 9873 8554.

Yours sincerely

Stewart Watters

Stewart Watters
A/g Senior Heritage Officer
2 May 2003

Cc: Shoalhaven City Council General Manager Mr Graham Napper, fax 4422 1816

NSW
NATIONAL
PARKS AND
WILDLIFE
SERVICE

ABN 30 841 387 271

Paul Forward
Chief Executive
Roads and Traffic Authority
PO Box k198
HAYMARKET NSW 12388

- 2 DEC 2003

Our Reference: HOF36903; DOC02/06518

Dear Mr Forward

Main Road 92 Upgrade (Nowra to Nerriga)

I refer to your letter of 15 October 2003 seeking in principle agreement from the Department of Environment and Conservation (DEC) for changes to national park and reserve boundaries required by the above upgrade. With the possible exception of the Billy's Hill – Bulee Gap area (where as detailed below there are a few outstanding issues), I confirm that DEC is in agreement with the current route selection. DEC appreciates that RTA has designed an option that utilises the existing road corridor as much as safely possible.

In April 2001 a package of boundary revocations went before Parliament as the *National Parks and Wildlife (Adjustments of Areas) Bill 2001.* In response to concerns raised by Members of Parliament, revocation procedures were subsequently reviewed. The recommended revocation procedures are at **Attachment 2**. These procedures allow the Minister, in exceptional circumstances where no alternatives outside of NPWS land are available, to direct DEC to examine the potential revocation of an area. DEC is required to demonstrate to the Minister that the revocation is essential and that the public value of the proposed activity outweighs any conservation loss. DEC must consider reserve integrity, manageability, impacts on conservation values, public amenity, social and economic costs and benefits, together with any advice from the National Parks and Wildlife Advisory Council and Committees. There are also a series of compensation guidelines.

As you are aware, MR 92 dissects an area of outstanding natural, cultural and aesthetic value. DEC appreciates that in general the chosen route alignment and conditions in the Environmental Impact Statement and Species Impact Statement seek to minimise impacts. However, the list of proposed actions to minimise impacts is not exhaustive, nor do they address all of the revocation matters that DEC must consider, including an appropriate compensation package.

Head Office
43 Bridge Street
P.O. Box 1967
Hurstville NSW
1481 Australia
Tel: (02) 9585 6444
Fax: (02) 9585 6555
www.npws.nsw.gov.au

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Attachment 1 sets out detailed mitigation and compensation measures that DEC considers will need to be part of any revocation package, in addition to those already stated in the EIS/SIS. The former NPWS South Coast Regional Advisory Committee has been closely consulted throughout the impact assessment for MR 92, but has yet to be formally consulted in regard to the revocation package. This consultation and that with the National Parks and Wildlife Advisory Council will occur as soon as possible.

DEC officers are already working with RTA staff in relation to boundary adjustment arrangements and the surveying of the future boundary. The precise process of how boundary adjustments will occur is still being determined. If RTA officers would like to meet to discuss the contents of the impact minimisation/compensation package how they will be implemented and/or the boundary adjustment process the DEC contact officer is Ian Pulsford, Manager, Conservation Programs and Planning Division 6298 9721.

I re-iterate that DEC is in general agreement with proposed boundary changes required for the current alignment for an upgraded MR 92. This is provided that the attached package of minimisation and compensation measures can be met.

Yours sincerely

Lisa Corbyn

LISA CORBYN
Director General
Department of Environment and Conservation

Attachment 1

MITIGATION AND COMPENSATION MEASURES FOR MAIN ROAD 92 UPGRADING

IMPACT MINIMISATION FOR MR 92 (In addition to measures already described in EIS/SIS).

Route selection

DEC appreciates that impacts have tried to be minimised by utilising the existing road alignment as much as possible, given safety and other considerations. This includes the 70km option on the hill to the east of Sassafras. The only outstanding route selection issues are in the vicinity of Billy's Hill, and between Billy's Hill and the top of Bulee Gap. The possible presence, at Billy's Hill of a rare Bulee Midge Orchid (*Genoplesium superbum),* still needs to be clarified. Ideally RTA should engage Mark Clements and/or David Jones to survey the proposed route for the orchid during flowering time in February 2004. These are the experts who have the knowledge of previous locations of these plants. If these orchid experts can't be engaged to do the survey work then they should at least be taken on site with the RTA flora consultant (or DEC staff if they are unwilling to divulge location information to a consultant) and requested to indicate where the orchid was observed. If the road alignment was going to destroy plants of the Bulee Midge Orchid, then the road should be re-aligned to avoid impact. It is also possible that the road could indirectly impact on the orchid and advice should be obtained as to how the road should be designed so that drainage changes or sediment/nutrient running off the construction area or road will not adversely affect populations of the Bulee Midge Orchid.

The area of land take at Devils Elbow (map 27 pegs 1-4) may be reduced if speed at this bend was reduced to the 60km limit, that will apply to the Bulee Gap section of the road, just 500m further along the road.

Sedimentation and drainage works

The current conceptual design has a few large sediment basins. DEC would prefer that smaller, more numerous but less intrusive sediment control measures were in place, including strategic placing of hay bales and silt fences. Ideally these features should not intrude into the national park estate, but if they needed to intrude they should be designed to minimise long term environmental impact. DEC does not consider that the location of these features will need to be excluded from the national park estate. However, if the structures are in (or encroach into) the park, a MOU must be in place for RTA to maintain such structures at NPWS request. DEC will provide further comment once the Environmental Management Plan is produced. Particular care will be necessary for construction activities:

- on steep slopes;
- in areas of erodable soils; and
- within or adjacent to water courses;

In relation to environmental responsibility, there have been a number of legal cases where the principal has been prosecuted by DEC for the actions/inactions of contractors and sub contractors. Therefore we also suggest that the RTA contracts be very specific on environmental responsibilities and recommend the inclusion of an appropriate internal disciplinary procedure such as financial penalty for contractors or sub-contractors for in-appropriate environmental conduct.

Suitability of road base

The RTA should check the suitability for all materials for not only road making purposes but environmental implications on the quality of the materials such as whether it may generate acidic drainage.

Environmental Management Plan + noise impact assessment

I refer you to the letters from the Environment Protection Authority (EPA) of 5 November 2001 and January 2003 with detail matters which should be included within the Environmental Management Plan. It is important that these matters are appropriately addressed.

The EPA letters also contain advice in relation to noise impact assessment and abatement. This advice should be heeded.

Rehabilitation of disused road

In those situations where the national park estate borders disused sections of the current road, DEC considers that these sections should be rehabilitated and in appropriate areas added to the national park estate. Appropriate locations are likely to be those locations where the old alignment is bordered on both sides by national park.

Rehabilitation measures must be the financial responsibility of the road proponents and include the following

- Designing the new road so that access by private 4WD vehicles to the old alignment sections is physically prevented (If access to gas pipeline or other infrastructure is required then a gate may be necessary).
- Removal of surface gravel, concrete or other foreign material.
- Mitre drains no longer in use will have the pushed aside soil dragged back over them.
- Culverts will be removed (if this can be done without damaging the culverts then the DEC may approve their storage for re-use in the park).
- Deep ripping of the compacted road surface.
- Spreading of vegetative material and top soil from clearance along the nearby new alignment over the old alignment area. (Top soil and vegetative material should not be stored for longer than 3 weeks prior to use).
- Use of fertiliser and sterile crops should only be at the direction of DEC staff.. The expectation is that if required it would only be a sparing use.
- On going weed inspection and if required control of weeds in rehabilitated sections. Inspection should occur at 3,6,12, 24 and 36 months after rehabilitation work is completed. Weed control should be carried out to suit seasonality for best effect, so control may not necessarily be the same time as the inspection timeline. Timing of weed control should be as directed by DEC staff.
- Rehabilitation will include rehabilitation of old borrow pits and a few designated small dams sites adjoining the road corridor.
- RTA will enable gated access to designated fire-fighting dams adjacent to MR92.

Rehabilitation in vicinity of Acacia bynoeana – near Parma Creek

Particular measures should be used in the vicinity of the population of *Acacia bynoeana* to favour the expansion of the population. The top soil and vegetative material used in rehabilitation should be sandy in nature and from a nearby area supporting dry heath or shrub land species rather than open forest. It should be stressed that this species seems to like open areas and that a dense tree cover is not a desirable result of rehabilitation.

Seed should be collected from some of the Acacia plants (in line with standard Florabank guidelines), germinated in a nursery situation and planted back in the rehabilitation area. Care will need to be taken to ensure that the plantings are not the source of weed or pathogen invasion.

Rehabilitation in vicinity of Dillwynia crispii (Bulee Gap area)

Several plants of this rare species are likely to be destroyed during construction. If possible smaller seedlings should be transplanted into nearby rehabilitation areas, while seed should be collected off the larger plants and germinated in a nursery situation and planted back as part of rehabilitation.

Rehabilitation of old Tianjara airstrip

DEC would allow use of the old Tianjara airstrip for plant and material storage, provided the area was subject to similar rehabilitation measures as required for disused road sections. Care would need to be taken that use of the area did not compromise the helipad or helicopter use of the area. Ideally as part of rehabilitation activity, works would improve the surface of the helipad.

Signage

All existing NPWS signs that are within the area of disturbance will be moved to sites as directed by DEC staff or replaced with new signs.

Gating of side tracks

The sealing of MR92 could lead to increased visitation to the area and hence increased arson, accidental fire ignition, off road vehicle use, illegal camping, bush rock removal and rubbish and car dumping. To try and minimise these impacts all management tracks off MR2 will need to be gated, with service standard gates. Some tracks to the electricity transmission line are already gated, and it is possible that some of these gates will need to be relocated. Grid references for tracks requiring gating, in Morton and Jerrawangala National Parks, are given at Attachment B. DEC would prefer as few tracks as possible off MR92 and RTA negotiation with Transgrid for the closure, rather than the gating, of some tracks is encouraged. Gating requirements for Parma Creek Nature Reserve will be advised shortly. Road design and use of barriers should be such that it prevents 4WD vehicles from cutting across country around gates. In some areas gating will need to be supplemented by bollards (preferably) with large rocks (1m to 1.5m square) to prevent vehicles bypassing the gates. It is likely that for the first couple of years some of the barriers constructed will need to be revisited as they prove to be ineffective or as members of the public move aside placed obstructions. RTA should provide contingency funding, or be themselves responsible for the ongoing maintenance of barriers.

Gates should also be constructed on Touga, Twelve Mile and Tianjara trails/roads near their intersection with the new MR92, that can be closed in times of emergency or particular management activities, such as during fires. It should be noted that Touga Road is not a DEC road, but is managed by Shoalhaven City Council, so their approval and specifications would be required for any gate construction on this road.

Restricting off road use

In areas where adjoining tree growth does not restrict the possibility of vehicles leaving the road (such as flat rocky expanses) the construction of the road should be such that vehicles are unable to leave the road corridor. An area requiring particular attention is at the large corner just before the hill climb to the eastern end of Sassafras. In some places this may require guardrail. Rocks placed by DEC to restrict access off the current road may be used, subject to DEC approval, to prevent off-road access from the new road proposal. It is likely that these rocks will need to be supplemented by additional material or barriers.

It would also be appropriate for about 5 access points off Twelve Mile Track, to the northern end of Tianjara airstrip to be physically blocked.

The junction of the road with the Transgrid powerline in Jerrawangla National Park will also require the construction of barriers and possibly gating, so that the powerline does not become a route for inappropriate off road use.

Reducing Road Kill

DEC has previously advised the use of a light aggregate in the road surfacing. This is because fauna are more likely to be seen against a light rather than a dark bitumen road, while the lighter colour may reduce the attractiveness of the road to basking reptiles. The strategic use of culverts, or small bridges will also need consideration. This is particularly so in the Sassafras area, which appears to support a relatively large wombat population.

The 2002 report by Beasley should be consulted and her recommendations investigated, including the future use of slow down features at road kill concentration points, and leaving roadkills in situ as a warning to motorists..

Two large signs, one at the western end of Morton National Park and one at the eastern end of Parma Creek Nature Reserve, should be erected advising motorists that they are entering a significant conservation area and to be wary of animals on the road. Beware of wildlife signs should be erected in the vicinity of roadkill black spots, as well as signs giving contact details of the local wildlife care organisation.

Retaining tree canopy and tall trees close to the road, particularly in the Sassafras area and in open forest, will assist in the movement of gliders and reduce the likelihood of these possums being struck by vehicles.

In regards to roadside disturbed areas requiring rehabilitation, thought should be given to retaining roadside visibility, particularly in known hot spot road kill areas.

Preventing the spread of *Phytophthora* and other pathogens.

Phytophthora cinnamomi is known to occur in the Sassafras area, while the fact that susceptible plants to *Phytophthora* thrive in the Parma Creek area suggests it has yet to become established in this area. Soil from the Sassafras area should not be used in rehabilitation works elsewhere. Any works in the Parma Creek area requiring fill should source the fill from within the Parma Creek area. The project will need to include hygiene measures. The cleaning of dirty construction machinery used in the Sassafras area will be necessary, for instance, if it to be re-used on other sections of the road.

Movement of road materials and increased visitation may increase the chance of introducing chytrid fungus to Heath Frog sites. The presence or otherwise of this fungus in the area is currently undetermined. As a precaution, the works should not introduce water or damp soil from outside of the immediate vicinity to those sections of MR92 that pass through habitat of the threatened Heath Frog *(Litoria littlejohnii)*, ie the catchment of Tianjara and Boolijah Creeks.

Aboriginal sites

The chosen alignment and use of existing bridges over the Endrick River and Tianjara Creek means that most Known Aboriginal sites will be avoided. It should also be noted that care will need to be taken to ensure that the new alignment in the vicinity of the MR92 – Turpentine road intersection avoids the recorded scar tree (this should be possible on DEC knowledge of the proposed route). All other scar trees should also be avoided where possible, as recommended in the EIS.

The EIS recommended that applications for sub-surface testing be made for PAD 1 and PAD 2. It would appear that the current alignment would not impact on PAD 2 (assuming works are totally within the existing road surface at this point). It is also probable that a

consent to destroy application will need to be made at least for works in the vicinity of site 58 –1 –0662. It is likely that any consents and permits would be issued with particular additional conditions aimed at minimising impacts.

Support for Aboriginal Cultural Heritage

DEC suggests that the upgrade project provides an opportunity to support Aboriginal culture. It would seem appropriate for RTA to discuss with the Local Land Council and relevant Aboriginal groups how the project may provide positive support for Aboriginal culture. This could involve things like renaming Main Road 92 with an Aboriginal name or facilitating Aboriginal employment within the project.

Department of Environment and Conservation sites supervisor

RTA should provide funds for DEC to engage an on-site supervisor to be present during initial disturbance work in or adjoining the national park and to enable some ongoing inspection during construction activities.

Rezoning in Sassafras

DEC has had a long held concern that sealing of Main Road 92 will lead to pressure for inappropriate development in the Sassafras area. Attachment (A) is a recent letter written by DEC to Shoalhaven Council seeking changes to current land zoning in the Sassafras area, so that intensive development in the area is prevented. Certainly DEC would be reticent to agree to any boundary changes to facilitate the road, without first having its concerns about potential inappropriate development at Sassafras being addressed.

Minimising impact on the historic Wool Road, associated structures and other historic features

As stated previously, the upgrade of MR92 and increased visitation could have a significant impact on historic roads and associated features, and may also provide an opportunity for public interpretation of these features. There is the need for the production of a conservation management plan for the Wool Road and its remnant structures. The road upgrade should be designed to minimise impacts on significant features and how this can be done would be one component of the conservation management plan.

IMPACT OFFSET MEASURES

On going management, conservation and interpretation of the Historic Wool Road

The conservation management plan should also provide recommendations on what measures are required to conserve historic road features and what would be appropriate ongoing management and possible interpretation. The road upgrade should meet the major cost of establishing interpretation facilities and make a contribution towards ongoing management. The conservation management plan should also provide recommendations on the conservation and possible interpretation of the Billy's Hill stock yards.

Sealing of Tianjara carpark facility

Currently the lookout facility at Tianjara Falls is unsealed. It would be a fairly minor cost in relation to the overall project for the access road and car parking bays to be sealed with bitumen, in recognition of the increased usage this viewing area will get as a result of the upgrade of MR92.

DEC has previously expressed concern that the high speed alignment in the Tianjara area may constitute a danger to motorists wishing to turn off the road to the Falls lookout. It is understood that RTA have assessed this risk and conclude that a slow down lane is not needed on the eastern or western approaches. If this is the case the turn off will at least need appropriate signposting. Signage should reflect the low key nature of the facility.

Provision of toilet facility and rest area

Given that tourist traffic is likely to use an upgraded MR92, there would seem to be the need for a toilet to be located somewhere along the route. DEC would prefer that these facilities are located off park rather than DEC being required to absorb the ongoing maintenance costs of a rest facility that is needed as a direct consequence of the road upgrade and anticipated increased use. A location within Sassafras or in the vicinity of Endrick River may be appropriate. DEC would not be responsible for the maintenance of these facilities that would need to rest with either the RTA or Shoalhaven City Council.

Heath Frog Monitoring

Given that the road may effect heath frog populations through the possible introduction of pathogens and pollutants it seems appropriate for the road proponents to make a small contribution for heath frog monitoring in the Tainjara and Boolijah catchments, of approximately $2,000/yr for 5yrs = $10,000

Marking of National Park Boundary

As part of survey work, it would be good if a number of permanent boundary markers to assist in locating the park/road reserve boundary on the ground in the future could be put in place.

Compensatory land/habitat for land lost to road construction in the national park estate

The best way that the road proposal could contribute to the ongoing viability of the park estate through which the MR92 passes, is to help resolve boundary issues in relation to the park estate. The order of priority for land acquisition is as follows. The following map provides the approximate locations of these lands.

1. Addition of all the land that lies east of the new road to Parma Creek Nature Reserve (ie. The new road becomes the western boundary of the reserve). This land is currently crown reserve under Aboriginal Land Claim. About 200ha would need to be acquired. DEC encourages RTA to be comprehensive in relation to the Aboriginal groups consulted in relation to compensation concerning works within the Land Claim area.

2. Addition of all the land in the George's Yard area, that will lie east of the new road, to Jerrawangala National Park. This land is currently crown reserve under Aboriginal Land Claim. About 200ha would need to be acquired.

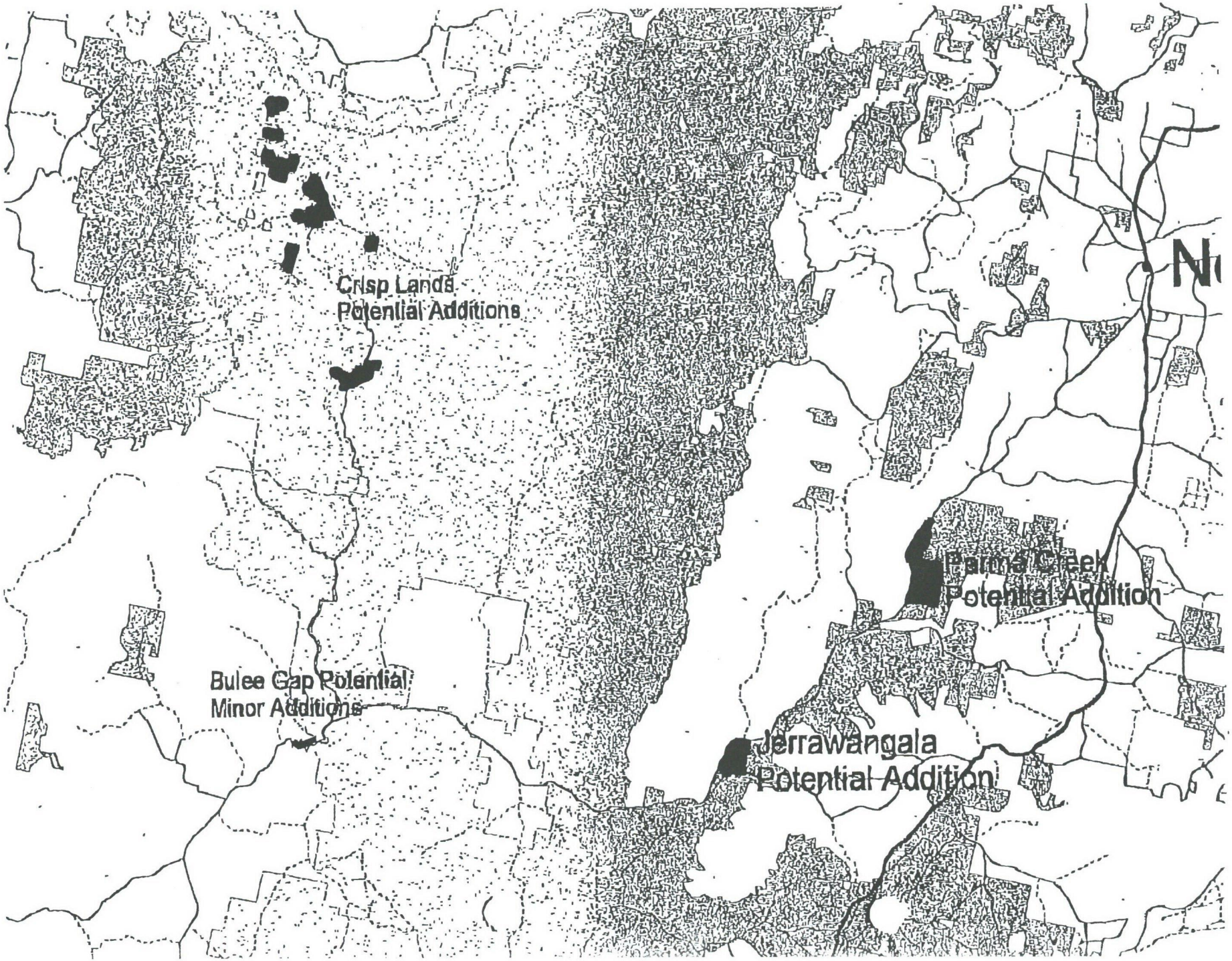
3. Addition of land in the vicinity of Bulee Gap so that features of historic wool road are included in park estate. Probably tens of hectares in area. DEC understands that this land is currently road reserve or leasehold land.

4. Contribution to the purchase of Crisp's land at the end of Tolwong Road, which is a major inholding within Morton National Park. (DEC appreciates that it may be difficult to achieve actions 1 and 2 as the land is part of a long standing Aboriginal land claim. Nevertheless RTA will need to negotiate in relation to route alignment incursions into the land claim area, so points 1 and 2 should form part of this negotiation. If area 1 and 2 cannot be acquired then area 4 is a fall back compensation acquisition.

Reference

Beasley, Linda. 2002. Assessment of Animal-Vehicle Collisions along Main Road 92. A report for NPWS.

Compensatory land/habitat for land lost to road construction in the national park estate



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Attachment A

2 October 2003

The General Manager
Shoalhaven City Council
P.O. Box 42
NOWRA NSW 2541

DOC02-6518

Attention: Ernie Royston

Dear Sir,

Planning in the Sassafras Area

As stated in letters to Council of 31 July 1996, 30 April 1997, 5 September 1997 and 22 June 1998, the National Parks and Wildlife Service (NPWS) has had a long held concern that sealing of Main Road 92 will lead to pressure for inappropriate development in the Sassafras area. The NPWS is currently negotiating with the RTA boundary changes to the park estate to facilitate the road upgrade. Changes to Morton National Park will require an Act of Parliament, while those of Jerrawangalla NP and Parma Creek Nature Reserve require Ministerial approval. Parliamentary and public support for the changes is likely to be more forthcoming if it can be demonstrated that all reasonable measures have been taken to reduce potential environmental impacts from the proposal. Planning control is one such measure.

Sassafras is already the subject of recent subdivision proposals, which have resulted in clearance of important vegetation. The NPWS is concerned that this development will only be accelerated, unless appropriate planning controls are in place.

The significant vegetation, threatened species, wilderness, catchment and scenic values of the Sassafras area and its surroundings mean that it is unsuitable for ribbon development, intensive rural lifestyle living, intensive agriculture or major tourist development. There has been general agreement on this between NPWS and Council staff.

The NPWS has a stated preference for 7(a) zoning to apply to the largely undisturbed and uncleared areas within the freehold and leasehold lands of Sassafras and that the remaining cleared or more disturbed areas be zoned 7(d1). The NPWS considers that the current combination of 7(d1), 1(d) and 1(b) zoning over the Sassafras lands is inappropriate. The objectives of the agriculture zone do not reflect that the majority of area is important native vegetation of little agriculture value, while it allows for intensive agriculture without the need for consent, and for the possibility of rural land-sharing communities.

The NPWS considers that the current development in the Sassafras area is close to the limits of sustainability and that land zoning should seek to retain the existing character of the area, protect its environmental values and prohibit intensive development.

The NPWS also considers that a Development Control Plan (DCP) should be produced to guide future development of the Sassafras area. As you area aware, a DCP is not legally binding , but simply factors to be taken into consideration before a decision is made. Thus the NPWS considers that a DCP without appropriate rezoning is insufficient to be confident that development in the Sassafras area, fuelled by the upgrading of M92, will not have a significant adverse environmental impact.

The NPWS would expect that a DCP would contain the following planning principles:

- concentration of further development on cleared lands;

- no further significant clearing of native vegetation;

- protection of water quality + flows (including guidelines for the management of pesticide, fertiliser and herbicide use).

- the construction of any further assets takes into account fire protection and that adequate fire protection measures, such as radiation zones, occur within the land being developed;

- houses or other asserts or infrastructure do not abut or be in the close vicinity of Morton National Park, or the Etterma or Budawang wilderness areas;

- the scenic amenity of the Sassafras area is maintained and the visual intrusiveness of structures within Sassafras on the adjoining wilderness areas is minimised;

- the cultural values of the Sassafras area are retained;

- that no further significant fragmentation of remnant vegetation in the Sassafras area occurs; and

- intensive agriculture or residential uses are prohibited.

The NPWS would feel more comfortable in its facilitation of the Main Road 92 upgrade, if Council can demonstrate that it will establish appropriate planning controls in the Sassafras area. I look forward to hearing about Council's endeavours. The NPWS contact officer is Dr Michael Mulvaney (02 62989702).

Yours sincerely

Michael Hood
Manager
Conservation Planning Unit
Conservation Programs and Planning Branch
Department of Environment and Conservation

Attachment B

Location of tracks requiring gating or closure in Morton National Park

56 0239772 E
6113337N – Electricity track requires gate.

0239501 E
6113650 N – Old Wool Road – access from MR92 should be closed.

0239859 E
61141711 N – Electricity track requires gate.

0240245 E
6114387 N – Close of access to Billy's Hill Cattle yards unless contrary advice provided in Conservation Management Plan.

0240287 E
6114287 N – Maintain Dam – may need gate to dam track.

0241326 E
6114975 N – Electricity track requires gate.

0241373 E
6115009 N – Old Dam that probably need not be kept, may need gating.

0243451 E
6115147 N – Preference is for closure of this track, but may require gate if required by Transgrid.

0246576 E
6114580 N – Electricity track requires gate.

0247036 E
6113866 N – Close access at private land – NPWS estate junction.

0251339 E
6112148 N – Rocky hill east of Sassafras – close of road access on both sides of road.

0252785 E
6111292 N – Closure track access

0253868 E
6110732 N – Booligah Creek, gate required.

0255252 E
6110941 N – Closure track access

0256822 E
6111252 N – Closure track access to illegal camping area

0257051 E
6111323 N – Tianjara airstrip, close multiple secondary tracks, gate main track to airstrip.

0257541 E
6111356 N – Keep closed

0258003 E
6111233 N – Close tracks off Twelve Mile Fire trail leading to eastern end of Tianjara airstrip.

0259383 E
6111433 N – Electricity track requires gate.

Plus "emergency" gating of Tianjara, Twelve Mile and Touga roads/trails.

Suggested Gate Locations- Jerrawangala National

Trail Name	Trail Type	EASTING	NORTHING
No. 1 access to powerline	Firetrail	259398.0	6111430.0
No. 2 access to powerline	Firetrail	259567.5	6111984.9
Bunya Road Firetrail	Firetrail	259845.0	6112524.4
Bunya Road Firetrail (north)	Firetrail	262234.3	6114667.1
Belah Road Firetrail	Firetrail	262496.3	6114744.1
Cassia Road Firetrail	Firetrail	262820.0	6115329.9
Needlewood Road Firetrail	Firetrail	264022.4	6116208.5
Syringa Road Firetrail	Firetrail	265348.1	6118012.1
Yarran Road Firetrail	Firetrail	266365.4	6119615.2
Blackwood Road Firetrail	Firetrail	265825.9	6119414.8
Needlewood Road	Firetrail	264315.0	6116347.0
Mallee Fire Road Firetrail (1)	Firetrail	264994.0	6116841.0
Transgrid_1	Powerline	262330.0	6114627.0
Transgrid_2	Powerline	262330.0	6114732.0
Transgrid_3	Powerline	261521.0	6113082.0
Transgrid_3	Powerline	261521.0	6112966.0

Attachment 2

REVIEW OF REVOCATION PROCEDURES
RECOMMENDATIONS

Reduction of future reserve boundary encroachments and inadvertent reservation of existing developments

1. To reduce the erroneous reservation of existing developments, the Service should, where practicable, seek to improve the identification and location of developments such as roads that may be in or adjacent to areas that are to be gazetted.
2. The Service should develop a database of reserve referral agencies and local councils within NSW to facilitate the tracking of information requests and the rapid provision of advice to these agencies. Timeframe: to be completed by December 2001.
3. The Service should send reserve gazettal notices to local councils to ensure that they are aware of newly gazetted areas and their boundaries. Timeframe: immediate.

Past reserve boundary encroachments and boundary anomalies

4. In most circumstances reserve boundary anomalies, which involve the erroneous reservation of a pre-existing development or use (such as roads), should be corrected by revocation particularly where the development or use of the area concerned is incompatible with the objects of the *National Parks and Wildlife Act*.
5. Where reserve boundary encroachments are discovered, which generally involve an encroaching development or use that occurred after reserve gazettal, the Service should consider all options available to it and their merits before revocation is considered. Factors that should be considered in the development of options include (but are not limited to):
    - (a) legal advice, including whether penalties or legal action should be considered;
    - (b) whether the encroaching development is consistent with the objects of the reserve and the Plan of Management. For example, an encroaching road that also provides access to the reserve could have potential management value for the reserve. If a nexus with the reserve can be established, licensing of the development or use could be possible;
    - (c) the nature and financial value of the development or use;
    - (d) whether the development or use is relocatable and what this may cost;
    - (e) potential management benefit of the development or use;
    - (f) the impacts that the development or use may have on the reserve; and
    - (g) what course of action will result in an optimal conservation outcome.
6. The processes for preparing or amending plans of management for parks and reserves should include a requirement to identify any boundary encroachments or anomalies. This does not preclude such identification occurring outside of the plan of management process.
7. The Director-General and the Minister should be notified of any encroachments as soon as possible.
8. The National Parks and Wildlife Advisory Council and the relevant Advisory Committee should be consulted and provided with all relevant information.

9. Where revocation is required for either reserve boundary anomalies or encroachments, the Service should introduce revocation legislation as soon as practicable.
10. The Service should produce guidelines to give effect to the above by 31 December 2001.

Proposed other proponent's activities on NPWS lands

11. In exceptional circumstances where no alternatives outside of NPWS land are available for proposed activities that are not permissible, the Minister for the Environment has the discretion to direct the Service to examine the potential revocation of the area (eg. for major road works).
12. In providing advice to the Minister on a potential revocation to allow future works, the Service should consider reserve integrity, manageability, impacts on conservation values, public amenity, social and economic costs and benefits, together with any advice from the National Parks and Wildlife Advisory Council and Committees.
13. The National Parks and Wildlife Advisory Council and the relevant Advisory Committee should be consulted following Ministerial approval in-principle for the proposal and the development of the proposal through negotiation with the proponent. All available information should be made known to these groups.

Compensation

14. The Service's negotiations on compensation should be guided by the following heads of consideration:

    (a) Compensatory land/habitat should be greater than the area of habitat impacted where possible (and at least of equal size or value);
    (b) It is desirable to match the area, type and quality of habitat impacted with the area of land proposed as compensation where possible. However, in circumstances where the habitat to be impacted is commonly represented within the reserve, compensation that includes a habitat type that is poorly reserved may be preferable. Information gathered on compensatory habitat should include species, populations and community's presence, plus an assessment of the connectivity, habitat quality, adjoining habitat uses, and the home range and territories of target species where possible; and
    (c) It is desirable that compensatory habitat is close to the area being revoked/impacted.

15. Compensatory habitat should be transferred to the Service prior to the enactment of revocation legislation where practicable. For all revocations requiring compensation, an agreement should be made with the Minister for the Environment prior to the introduction of legislation that identifies and ensures receipt of compensation.

16. Circumstances where compensation may not be appropriate include: where an area or development has been inadvertently reserved by the Service; where land is being offered for sale on the open market; orwhere an agreement or compensation may already have been made.

17. Unless the Government decides otherwise, proceeds from land sales are to be deposited in the National Parks and Wildlife Fund.

Definitions:

* *Boundary anomalies*: generally refer to a development such as a road or carpark that has been reserved in error due to inadequate knowledge of existing developments in and around gazetted reserve boundaries. In other words, the development usually occurred prior to the gazettal of the reserve.

* *Boundary encroachments*: generally refer to activities, developments or uses that have encroached upon a reserve (ie. after gazettal).

Roads and Traffic Authority
www.rta.nsw.gov.au
ABN 64 480 155 255
Centennial Plaza
260 Elizabeth Street
Surry Hills NSW 2010
Telephone (02) 9218 6888
PO Box K198
Haymarket NSW 1238
DX 13 Sydney

Your Ref: HRL 21378
CEO3/1179

18 JUN 2003

Mr Reece McDougall
Director
NSW Heritage Office
Locked Bag 5020
PARRAMATTA NSW 2150

Attention: Mr Stewart Watters

PROPOSED MAIN ROAD 92 UPGRADE

Dear Mr ~~McDougall~~ Reece

I refer to advice from Mr Watters of your Office dated 2 May 2003 (Your Ref: HRL21378) regarding the proposed upgrading of Main Road 92 between Nowra and Nerriga. Reference is also made to recent discussion between Maria Whipp of the RTA and Mr Stuart Read about this matter.

Please accept my apology that the Heritage Office did not receive a copy of the EIS. This was an oversight. However, it might be noted that several letters advising of project details have been previously forwarded as follows:

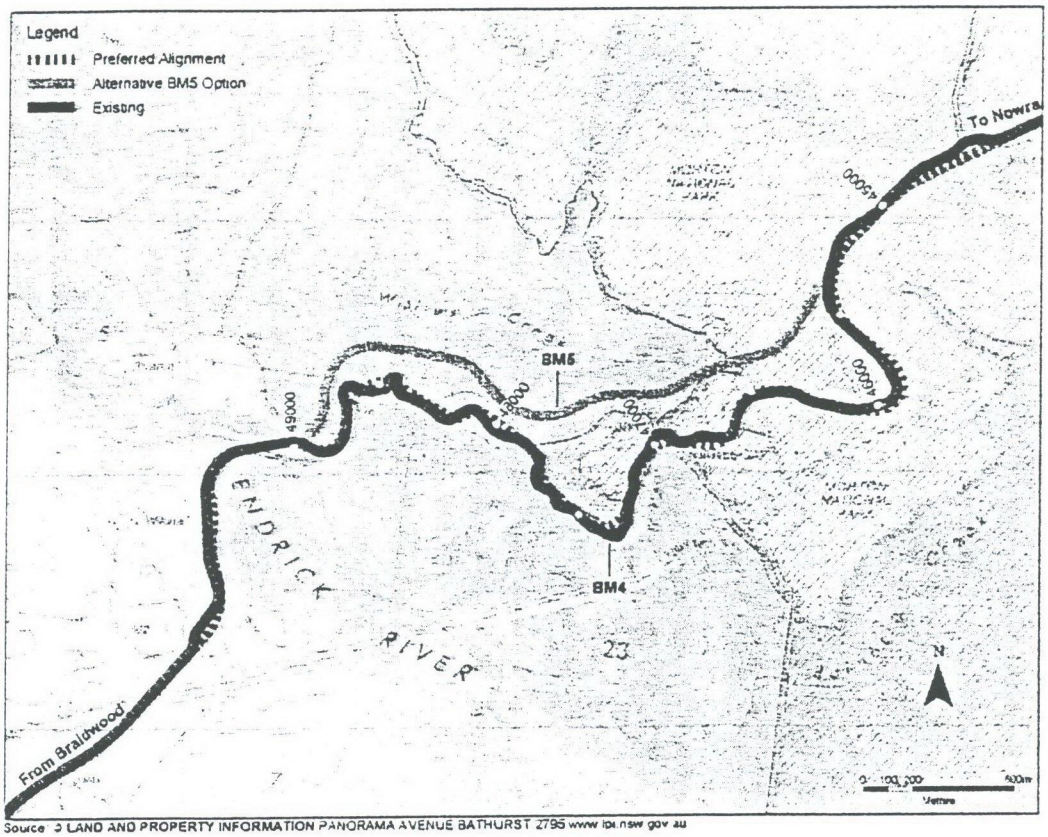
- 23/10/01 - Letter of invitation to VM Workshop and Newsletter #1;
- 17/11/01 - Information Sheet #1;
- 9/12/02 - Letter informing of the EIS display;
- 13/1/03 - Letter informing of further EIS displays.

A thorough heritage assessment has been carried out along the route, as reported in the EIS and in *Technical Paper No. 6 – Heritage*. As part of the option assessment and selection phase, Ms Robynne Mills, archaeologist, conducted a search of the State Heritage Register and no items were listed in the vicinity of the alignment. Additionally, Ms Mills contacted local heritage groups to discuss the proposal including the Braidwood Historical Society and Museum and the Shoalhaven Historical Society. Discussions were also held with Council planners from both Shoalhaven City and Tailaganda Shire Councils regarding heritage constraints within the study area.

The "avenue of trees" at Sassafras has been raised as an item of local value. It did not appear on any searches of relevant heritage databases. It should be noted that the original concept was to widen Main Road 92 through Sassafras to an extent that would have seen the trees cleared on one side of the road. In response to consultation with Sassafras residents, the concept design has been refined. While some minor clearing would be required at specific locations, the current design enables the retention of the "avenue of trees" on both sides of Main Road 92.

The proposed upgrade would impact on an item of potential heritage value in the Bulee Mountain area. A number of options were considered for the crossing of the escarpment at Bulee Mountain. These were refined to two main options as seen in Figure 1. The options are referred to as BM4 and BM5.

Figure 1 – Bulee Mountain Options



Source: © LAND AND PROPERTY INFORMATION PANORAMA AVENUE BATHURST 2795 www.lpi.nsw.gov.au

The historic Wool Road passes through the Bulee Mountain area. There are two historic alignments; the original 1841 alignment and the 1856 realignment.

The BM5 option would involve a 500 m incursion into the Morton National Park and would traverse an area identified as having wilderness values but not declared as wilderness by NPWS. BM5 would not affect either of the Wool Road alignments.

The BM4 option would generally follow the existing road corridor, with some improvements at curves where practicable. There are two bridge structures proposed at Chainages 46960 and 48800

and these would facilitate fauna movements across the alignment. Retaining walls would be used to support the embankment and reduce the "footprint" of the widened road. This option would impact on sections of the 1856 realignment of the Wool Road, although the section of Bulee Gap itself and the adjacent stone retaining wall would remain. As stated in the EIS, the road in this section at Bulee Gap is a rare example of a relatively intact length of late Colonial period roadway. Examples of roads from this period are replicated in few other locations in NSW.

The RTA is proceeding with BM4 as the preferred option at Bulee Mountain. If a decision is made to proceed with the proposal a Section 140 Permit would be sought from the Heritage Office.

I understand that a meeting is being arranged in the near future for the RTA's Project Manager for the Main Road 92 Upgrade, Ross Dearden, to meet with your Officers, provide a copy of the EIS and discuss heritage issues in further detail. He can be contacted on telephone 4221 2403.

Yours sincerely

Paul Forward
Chief Executive

NSW Heritage Office

3 Marist Place
Parramatta NSW 2150
Locked Bag 5020
Parramatta NSW 2124
DX 8225 PARRAMATTA

Telephone: 61 2 9873 8500
Facsimile: 61 2 9873 8599
heritageoffice@heritage.nsw.gov.au
www.heritage.nsw.gov.au

Contact: Isabel Cobas
Telephone: (02) 9873 8562
Isabel.cobas@heritage.nsw.gov.au
File: S90/05513/007
Our Ref: HRL20235
Your Ref:

Mr Ross Jones
Sinclair Knight Merz
Po Box 164
ST LEONARDS NSW 1590

Dear Sir/Madam

Main Road 92 Upgrade – Shoalhaven City Council and Tallaganda Shire Council

I refer to your letter dated 9th December 2002 requesting comments on the Environmental Impact Statement for the above mentioned proposal in accordance with Clause 77 of the Environmental Planning and Assessment Regulation 2000.

It is noted that the alignment of the colonial road called the Wool Road, from Vicentia to the ACT boundary, is located adjacent to MR 92. Whereas the section through Bulee Gap that was part of the original 1841 route is not to be affected, the relatively intact 1856 realignment of the Wool Road located at the west of Bulee Gap will be significantly impacted during construction if the preferred option of upgrading the existing alignment of MR92 through the Bulee Mountain area is selected.

It is noted that the heritage assessment concludes that the Bulee Mountain Section of the Wool Road, including the Bulee Gap, is of State heritage significance and recommends consideration for listing on the State Heritage Register (pages 10-15 and 10-17). Likewise, *Technical Paper No. 6- Heritage*, includes specific recommendations for the 2km length of the 1856 realignment of the Wool Road within the Bulee Mountain area which includes its *in situ* retention and the preparation of a Conservation Management Plan to guide the future management of the Wool Road (page 10-19).

After reviewing the documentation provided, the Heritage Office requests that other alternatives are considered to ensure the retention and conservation of the Wool Road, and recommends inclusion of the item in the State Heritage Register.

Likewise, it is noted that the Endrick River convict road cuttings and the Wold War II defence works are located in the vicinity of the MR 92. Clarification on whether these items are to be impacted by the proposal is also requested.

The Heritage Office recommends that a meeting with representatives of the RTA and the Heritage Office be held to discuss the proposal.

Please contact Isabel Cobas of this office on (02) 9873 8562 or via e-mail at Isabel.cobas@heritage.nsw.gov.au for any enquiries regarding this matter.

Yours sincerely

13/08/03

VINCENT SICARI
Principal Heritage Officer

Cc: General Manager, Sutherland City Council

R/S. 25 - 28.
Vol 4.

NSW Heritage Office

3 Marist Place
Parramatta NSW 2150
Locked Bag 5020
Parramatta NSW 2124
DX 8225 PARRAMATTA

Telephone: 61 2 9873 8500
Facsimile: 61 2 9873 8599
heritageoffice@heritage.nsw.gov.au
www.heritage.nsw.gov.au

Contact: Stuart Read
Telephone: 02 9873 8554
Stuart.read@heritage.nsw.gov.au
File: S94/00779
Our Refs: HRL 21378, 14385, 20235, 23066, 24384

RTA SOUTHERN REG
RECEIVED - 1 OCT 2003
CORRESPONDENCE NO. 03/6866
FILE NO: 97M7-4

Mr Geoff Style
Regional Manager, Southern Client Services
Southern Region
Roads & Traffic Authority
DX 5178 Wollongong

Attention: Mr Ross Deardon, Mr Ken Collis

Re: proposed road widening of Main Road 92 between Nowra & Nerriga, Shoalhaven & Tallaganda Local Government Areas

Dear Mr Style

I refer to RTA letters of 9 December 2002, 13 January, 5 & 19 June 2003 on the above proposal, and write to clarify the Office's position in regard to alternative routes with regard to the historic Wool Road through the Bulee Mountain area.

The Heritage Office is grateful for meetings with RTA staff on 19 June and 20 August 2003, which clarified that alternative route options have been considered through this area. Further the Office understands that of the two final options selected, the "straightest road" option (BM5) would have significant impacts on an area of Morton National Park of identified wilderness values, although not yet declared as such by the National Parks Service.

While avoiding these impacts is supported, this means a preferred option BM4 to the south, generally following the existing road corridor. It is noted that while the section of Wool Road through Bulee Gap that was part of the original 1841 route is not affected, construction of the preferred route west of Bulee Gap will have significant impacts on the 1856 realignment of the Road.

RTA *Technical Paper # 6 – Heritage* includes specific recommendations for the 2km length of the 1856 realignment of the Wool Road in the Bulee Mountain area which includes its in-situ retention and the preparation of a conservation management plan to guide future management (page 10-19). The Office is pleased to note that the RTA will be in further discussions with the National Parks & Wildlife Service on the proposal.

The Office is grateful for clarification that the Endrick River convict road cuttings and the World War II defence works located in the vicinity of MR92 will not be affected by the construction works.

While the Heritage Office would prefer such impacts on a section of road of state significance are avoided, it accepts that impacts (such as on the historic

R. DEARDEN

001

RTA SOUTHERN 29/10 '03 WED 12:27 FAX 61242212590

road alignment, width, setting and fabric) may be unavoidable to effect improvements desirable for other reasons.

The Office does not expect new alternative routes to be investigated at this late stage in the process. However it does seek the best possible heritage outcomes in this 4 kilometre long section (including the Endrick River area).

In the Office's view such outcomes would include:

1) Preparation by the RTA of a conservation management plan for this section of the Wool Road to guide its future management;
2) Preparation by the RTA of a nomination for this 4 kilometre section of Wool Road for inclusion on the State Heritage Register;
3) RTA commitment to include public interpretation of the heritage values of this section of the Road at appropriate points, so users can stop and gain some appreciation of its history, the significance of remaining road alignment, fabric, setting etc where these are not removed or obscured.

The Heritage Office notes that the RTA's heritage assessment identifies the Bulee Mountain section of the road as being of state heritage significance and recommends its nomination for inclusion on the State Heritage Register (pages 10-17). The Heritage Office supports this and offers to provide the RTA with assistance on this as required, eg: the Office library records.

Listing on the State Heritage Register need not impede road upgrade works, but will mean Heritage Council input into future decisions. The Office would be happy to work with the RTA on appropriate exemptions from normal Heritage Council approval requirements, to expedite future works which will not adversely impact on heritage values of the road. These are easier to develop once a conservation management plan has been prepared, as this will clearly identify the heritage values, and make recommendations for their conservation, appropriate change, interpretation etc.

Interpretation can take many forms but often involves provision of signage in appropriate points, for instance at rest areas, pullovers, look out points etc. It might in this example include retention of sections of the historic road proposed to be bypassed and re-use as walking trails or lookout areas.

The Office anticipates that in due course the RTA will seek Heritage Council approval of excavation permits for construction work sections.

If you have any queries in relation to this letter, please contact Mr Stuart Read on telephone 9873 8554.

Yours sincerely

R.A. McDougall

Reece McDougall
Director
29 September 2003
Cc: General Manager, Shoalhaven City Council, PO Box 42 Nowra 2541

Shoalhaven City Council

City Administrative Centre
Bridge Road, Nowra NSW Australia 2541
Phone: (02) 4429 3111 • Fax: (02) 4422 1816 • DX 5323 Nowra
Address all correspondence to
The General Manager, PO Box 42, Nowra NSW Australia 2541
COUNCIL REFERENCE: 1466-01 WP
CONTACT PERSON: William Paterson

RTA SOUTHERN RO
RECEIVED 4 - MAR 2003
CORRESPONDENCE No: 03/5527
FILE No: 03M1001-1

The Project Manager
Proposed MR92 Upgrade
Roads and Traffic Authority NSW
90 Crown Street
WOLLONGONG NSW 2500

28th February, 2003

Dear Sir

MR92 Submission

Please find enclosed Council's submission on the Environmental Impact Statement for the Nowra to Nerriga Main Road 92 Upgrade project.

Council is generally pleased with the thrust of the analysis, however, there are some aspects that are of specific interest to Council and which it feels have not be adequately addressed. Some important areas of interest also appear to have been scaled back from the earlier drafts. In Council's assessment the EIS has omitted important information and reached conclusions on critical elements of the project that are considered incorrect. It is Council's desire that its views on those issues be considered in the determination of the EIS.

If you need further information about this matter, contact William Paterson, Infrastructure Development Manager on 4429 3378. Please quote Council's reference 1466-01.

Yours faithfully

B G Russell
City Services Manager

Faxed to EnTech - SKM 3/3

4-MAR 2003

R. DEARDEN

Shoalhaven City Council

Environment - Growth - Community

"NOWRA TO NERRIGA – MAIN ROAD 92 UPGRADE"

SUBMISSION ON THE ENVIRONMENTAL IMPACT STATEMENT

Shoalhaven City Council
PO Box 42
NOWRA NSW 2541

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1. Introduction

The decision by Shoalhaven City Council, in conjunction with the Commonwealth and State governments, to commit funds to an upgrade of the Nowra to Nerriga section of Main Road 92 (MR92) is significant to a range of stakeholders. The Environmental Impact Statement (EIS) for the work is currently in the public consultation phase, with submissions being received until 28th February 2003.

This document outlines Council's views on a number of issues in the EIS as displayed.

Council is generally pleased with the thrust of the analysis, and has been involved in the preparation of the EIS documents. However, there are some aspects that are of specific interest to Council and which it feels have not be adequately addressed. Some important areas of interest also appear to have been scaled back from the earlier drafts. The EIS has reached conclusions on critical elements of the project that are incorrect. It is Council's desire that its views on those issues be considered in the determination of the EIS

Of major concern to Council is the nomination by the RTA of the alternative alignment in the Bulee Mountain area referred to as "BM4" as part of the "preferred route". BM4 is reported in the EIS as basically involving reconstruction on the existing alignment. Examination of the EIS suggests that BM4 requires substantial sections of new alignment close to the existing alignment, that the environmental and heritage impacts of BM4 have been understated and the superior transport alternative of "BM5" to the north has been too readily dismissed. Council also has concerns with traffic estimates given in the EIS, maintenance of minimum design standards, and the preferred option chosen at the Turpentine Road intersection.

2. Council Commitment

MR92 is currently a two-lane gravel road that extends to the southwest of Nowra to Nerriga, and continues on to intersect with the Kings Highway at Braidwood. Parts of this road, especially between Nowra and Nerriga, were utilised in the 1800s as a road for bullock drays hauling wool out of the Canberra area to Jervis Bay for sea transport to Sydney and other places.

It has traditionally been known as "The Wool Road" and was a significant economic route for developments at both ends during the late 19th century.

Shoalhaven City Council and Tallaganda Shire Council have, since the 1950s, agitated for an upgrading of this road as it can be seen by those concerned that it is one of the best and easiest crossings of the coastal escarpment to provide a link between the coastal plateau and the tablelands of southern NSW. Both Councils joined in lobbying for funds for upgrading of MR92, however these attempts were largely unsuccessful other than for resheeting funds and minor upgrades of the gravel alignment.

In the mid 1990s Shoalhaven City Council became increasingly conscious of the significant amount of freight leaving the Shoalhaven/Port Kembla area and moving to the Hume Highway corridor and on to Melbourne. The introduction of B-double transports, unsuited to the existing escarpment crossings through Kangaroo Valley or via the Illawarra Highway, forced vehicles to travel north to Wollongong before joining the Hume Highway adding an extra 100 kilometres to the journey to Melbourne.

A proper upgrading of MR92 will allow access to the corridors along the tablelands, being the Hume, Federal, Barton and Monaro Highways. This will vastly improve connection to areas to the south and west of Nowra, such as Victoria's Gippsland, the Melbourne industrial market, the ACT, southern NSW, and markets in South Australia and Western Australia.

Of the funding package of $80 million announced for the upgrade of MR92, Shoalhaven City Council contributed $12 million. This is a significant input of Council funds and underscores Council's commitment to the upgrading. This funding package has meant that the project has developed in the late 1990s to its current status of now having the Environmental Impact Statement being placed on exhibition as part of the public consultation process.

Council remains committed to the continued upgrading of this road, and to be constructively involved in the necessary processes.

3. Specific Issues arising from the EIS

As mentioned in the introduction, Council has concerns with the treatment of a number of issues in the EIS. These concerns are discussed in the following sections of this submission.

3.1 Road Design Standards

A guiding principle throughout the design development and EIS process has been the need to select an alignment that would cater for traffic needs for the foreseeable future and not have to be further upgraded. This principle was supported by virtually all stakeholders, with the purpose of limiting long term environmental impact on the National Park areas. Unfortunately some sections of the route as proposed in the EIS conflict with this basic philosophy. This is particularly true in the Bulee Mountain area and at the Turpentine Road intersection. It is critical that this principle be maintained in the final approved project.

From the outset, all parties involved in the development of the proposal have been conscious of the environmental values along the route of MR92, and the significance of the nearby Morton National Park. In balancing the need for a high standard road with a desire to limit any disturbance of the area to a minimum, the lowest feasible design standards have been adopted. In many cases, significant design compromises have been made to minimise intrusion and to maintain as far as practical a single corridor through the National Park adjacent to the natural gas pipeline and the fibre optic cable.

Council is concerned that the standards currently presented for much of the route are at the lower end of the acceptable bounds, and any attempt to further reduce them may threaten the viability of the road as a safe, efficient, transport and freight link. In fact, as discussed in some detail below, the standards proposed for the section through Bulee Mountain are below the minimum practical, and by admission in the EIS do not meet the stated project objective.

3.2 Bulee Mountain Preferred Route

3.2.1 Route Selection

The original intention of the EIS process was to undertake a separate route selection study for the road alignment, including public comment, and then proceed to finalise and exhibit the EIS. This process would have allowed for equal consideration of alternative route designs. The subsequent EIS would then be based on the alignment resulting from the route selection process. Unfortunately, to allow the EIS to be exhibited as scheduled, the route selection and EIS processes were combined. This process change has not been of great consequence for most of the route, but with regard to the critical Bulee Mountain area it has resulted in a significant process failure.

In exhibiting the EIS, this compromise forced the RTA to nominate a "preferred route" for the project. The RTA chose an upgrading (BM4) partially on the present alignment through the Bulee Mountain section. However the EIS, and supporting statements by the proponent and members of the State Government, indicate that the two feasible routes through the Bulee Mountain area should both be given consideration.

Unfortunately the EIS document does not allow a fair and equal comparison to be made. By nominating BM4 as the preferred route in the EIS document that route is automatically given a significant advantage. To compound this situation, the EIS does not contain a detailed concept drawing of BM5 in the Design and Profile section, as it does for BM4.

The Value Management Study (VMS) undertaken early in the EIS development process is a good indicator of the outcome if a separate route selection process had been allowed to proceed. Unfortunately the two potential routes in the EIS are not directly equivalent to those studied. Both BM4 and BM5 are improvements on the similar routes studied in the VMS. However in the VMS those routes that met the transport objectives were clearly favoured even when environmental factors were heavily weighted. Given that the environmental impacts of BM4 and BM5 are similar, and the clear transport advantages of BM5, it is believed a route selection process would have resulted in BM5 as the preferred option.

3.2.2 Environmental Impact

Council has concerns that the comparison in the EIS for BM4 and BM5, in particular Table 5.9, omits critical information, reaches dubious conclusions, and is misleading.

Landtake

With respect to incursion into Morton National Park the EIS indicates little impact by BM4 but major impact by BM5. What it fails to make clear is that BM4 has a greater landtake on the National Park than BM5.

In a supplementary document, the EIS indicates (table 8-1, page 8-2, Volume 2) that the land take for the two options are 27,349 m^2 on BM4 and 23,596 m^2 on BM5. Preliminary calculations undertaken by Council, based on 5m buffer to concept plan footprint, indicate that the land take on Morton National Park for the two routes is approximately 32,300 m^2 on BM4 and 24,600 m^2 on BM5. It should also be noted that a revised BM4, as alluded to in the EIS, would have even greater landtake than that presented in the EIS.

The impact of the BM4 landtake is dismissed by claiming it has only an "edge" effect. However, no justification is given for why such a large "edge" effect would be any less impact than a lesser "slot" effect created by BM5.

It should be noted that the BM5 landtake ignores the significant return of land to National Park associated with the existing MR92.

Wilderness

One of the major arguments used in the EIS to justify BM4 as the preferred route is a claim that BM5 has a significant impact on an area of identified wilderness to the West of Morton National Park, while BM4 is stated as having no impact.

The significance of the "wilderness" designation of part of the BM5 alternative appears to have been given an exaggerated importance. The manner of usage of the wilderness issue in the EIS is also open to question.

The Southern Wilderness Assessment Report (Exec Summary piii) states that;

> "Wilderness identification in no way alters the way a landowner can use their land nor does it affect the disposal of the private lands identified as wilderness"

and further states (p6) that;

> "wilderness assessment and identification has no effect on activities such as grazing, clearing or development applications".

The area to the south of the existing MR92 (impacted by BM4) has similar biodiversity values as the area to the north identified as wilderness. It is understood that this southern area was not assessed for wilderness values as part of the Southern Wilderness Assessment (Dec 2000).

The "Identified Wilderness" area to be traversed by BM5 was not declared as wilderness during the recent wilderness reservation process, and is private land.

In its use of wilderness to claim BM4 as the preferred route what the EIS fails to mention is:

- that this "identified wilderness" area is private land,
- that no wilderness assessment was done on the southern area traversed by BM4 only on the northern area impacted by BM5,
- that this identified wilderness area was not given Declared Wilderness status by the NPWS in the recent wilderness declaration, and
- that the Southern Wilderness Assessment Report Act makes clear that wilderness assessment and identification should have no effect on activities such as grazing, clearing or development applications.

Fauna Movement

The "Fauna movement opportunities" criteria in Table 5.9 fails to mention that BM4 will have a significant barrier effect to wildlife movement over a very long distance and contains only two short bridges. Whereas BM5, due to its shorter length and significant number and length of bridges and culverts, offers excellent fauna movement opportunities under the road.

The EIS also attempts to make the point that road kill impact will be greater on BM5 than BM4 due to the higher design speed. Again it fails to take into consideration the greater opportunity for fauna movement under BM5 compared to BM4.

Threatened Species Impact

In reading the EIS, it is apparent that threatened species identified in the area are potentially more adversely affected by BM4 than BM5 as:

- BM4 has significantly less opportunity for safe crossing by koalas. Area is "at least potentially a key north/south corridor".
- BM4 affects a greater number of *Eucayptus triflora* than BM5 (18 v 8)
- BM4 impacts on *Dillwynia crispii* that are not impacted on at all by BM5
- BM4 affects a slightly greater area of *Alocasuarina littoralis* (main habitat for Glossy Black Cockatoo)
- Capacity for easy koala movement is far greater on BM5, versus the barrier effect of BM4
- Assumption in the EIS that increased speed on BM5 compared to BM4 would increase koala roadkill ignores BM5 fauna crossing capability

If BM4 were built to a standard that was at least moderately acceptable from a transport and safety aspect, the footprint would be significantly larger and have greater impact than that indicated in the EIS.

3.2.3 European Heritage

The regionally significant heritage values and uniqueness of the Wool road to be destroyed by BM4 have been given little weight in the EIS conclusions. The Heritage report in the EIS has as Recommendation 1 that "The Bulee Mountain section of the Wool Road should be retained intact and not modified as part of the proposed upgrade." (page 51 Volume 3).

A detailed discussion of the European (non-indigenous) heritage of the section through Bulee Mountain is given in Part D, Section 10.3.2 of the main EIS report. Despite the unique nature of this section of road, little weight appears to have been given to this in the analysis. Council considers that this dismissal of the value of European heritage is unacceptable.

It is also noted that no consideration has been given to the opportunity to create an interpretative trail for the heritage road if BM5 is used as the alignment.

3.2.4 Ability to Meet Project Objectives

For the "Meets freight route objectives" criteria Table 5.9 simply says "yes" for both BM4 and BM5. There is some considerable debate as to whether BM4 meets the basic transport objectives at all, but notwithstanding that, BM5 is clearly far superior in satisfying transport needs in virtually all areas. The response in the table is not a fair and reasonable assessment of the merits of the two routes.

There is a serious question whether the RTA's preferred option under the EIS meets the key objective for the project. The published EIS makes a number of references to the need to develop a high standard route suitable for use by B-Double vehicles. The following statement is made in the EIS main document, Part A, Section 1.4 page1-6:

> "The overall aim of this project is to upgrade MR92 between Hames Road (near Nowra) and Nerriga, to a sealed 80-100km/h design speed road, which can be used by B-Double vehicles."

The following criteria are given for the design (Volume 2, Technical Paper 2,Concept Design, Section 3.3.1 Overview of Improvements):

> "The upgrading of the existing road between Nowra and Nerriga would include:
>
> - increasing the radius of curves to provide sight distance for design speeds of 80 to 100km/h"

This would involve minimum curve radii of 240m (80km/h) and 460m (100km/h) as opposed to 90m (60km/h).

In contrast, the stated "preferred option" BM4 is quoted as having a design speed of 60km/h (Technical Paper 2, table 3.4).

While it is appreciated the practical grades able to be achieved on the Bulee Mountain section will never meet normally acceptable standards, the grades on BM4, including a maximum grade of 11.6%, are totally unacceptable for a strategic transport route and for expenditure of the level of funds indicated.

The RTA has indicated that BM4 could be improved at a later date by widening the formation. This conflicts with the philosophy that has been consistent throughout the project life of upgrading the road so that major future disturbances are avoided. The EIS in discussing the Bulee section recognises this issue;

- At page 5-26 where it states "Due to the sensitive adjacent ecosystems and steep terrain, it would be very difficult to widen this section in the future under traffic."
- At page 6-2 where it states "due to the difficult terrain and sensitive surrounding environment, the Bulee Mountain section was regarded as needing an upgrade solution that would not have to be revisited for the foreseeable future."

3.2.5 Safety Issues

The EIS is silent on comparison of crash rates, although estimation done during development of the document indicated that BM4 would be inferior to BM5.

The Road Safety Audit report (RSA) shows considerably more issues for BM4 than BM5 (Technical Paper 2, Road Concept Design Report p A-5). Detail design features such as linemarking and signage can resolve many of these. However, others go to significant matters of design form such as adverse combinations of gradient and horizontal and vertical alignment, or provision of descending lanes, runaway truck facilities and full length climbing lanes.

Truck runoff zones, recommended in the RSA were earlier indicated by RTA to be part of the revised BM4, but do not appear to be part of the concept design.

The ability of maintenance crews to safely work in BM4 was raised earlier but does not appear to have been addressed in the EIS.

This section of Main Road 92 is in an isolated location with no feasible detour alternatives. In the event of a full or partial closure of the road due to accident or breakdown, this will cause major cost and inconvenience to road users. Having an alignment capable of being managed under adverse conditions or an emergency situation should be taken into consideration. In this regard BM5 is the superior route.

The overtaking opportunities shown are misleading, as they do not indicate that the BM4 option provides short courtesy lane widening only while BM5 provides full overtaking lanes. In the situation of traffic caught behind a slow moving heavy vehicle, the additional length and significantly increased travel time and minimal overtaking opportunities of BM4, will combine to produce a high degree of driver frustration and potential for dangerous driving behaviour.

Addressing these substantive issues would have major impacts for costs, and for the footprint required with associated environmental ramifications.

3.2.6 Constructability

Considering "Constructability", it is felt that both routes will have major challenges including silt control, constrained site access, excavation limitations and proximity to the gas pipeline. These issues are listed in Table 5.9 against BM5, but not BM4. The problems of having to construct BM4 under traffic (as compared to BM5 which is off the traffic line) can also be considered to be understated in the table.

The difficulties of construction of BM4 appear to have been understated (Technical Paper 2, Road Design Concept Report, table 5-2 p 5-9). Apart from the general difficulty of reconstructing BM4 on the existing alignment under traffic, there is a need to look at the issue of carting large fill volumes to or from Bulee Mountain in terms of time, cost and environmental impact.

The above quoted table 5-2 also states that blasting on the route BM5 will not be permissible because of the proximity of the Eastern Gas Pipeline. This contradicts geotechnical advice given in Technical Paper 5, Topology Geology and Soils, Appendix A, section entitled "Cutting Excavatability (sic)"

Road closures are required for BM4, whereas BM5 can be constructed with minimal traffic impact. It is not clear whether the cost of traffic inconvenience and intermittent closure of the road been built into the BM4 estimates.

The earthworks estimate (Technical Paper 2, Road Design Concept Report p5-14) indicates an overall excess of cut over fill for the project of some 120,000 m^3. The distribution of excess cut and fill varies throughout the project, however there is an overall pattern with a general surplus of fill in section 1, deficiency in section 2 through 6, surplus in sections 7 through 10, deficiency in sections 11 and 12, and surplus in sections 13 through 20.

By far the largest imbalance occurs in the difficult section 17 – BM4. Total earthworks in this section are indicated as some 196,000m^3 cut of which some 106,000m^3 is surplus. The geotechnical report indicates that despite excess material generation BM4 may require large volumes of select fill that will need to be brought in from a borrow pit outside the National Park and beyond the MR92 corridor (Technical Paper 5, Section 5.5 Fill Materials, p 5-8).

3.2.7 Improved Alignment for BM4.

Prior to release of the EIS the consultant and the RTA were developing an improved alignment based on BM4 with increased overtaking opportunities, although grades and design speed would remain substantially the same. Costs and environmental impact were expected to increase. This work is not included in the final document.

3.2.8. BM4 and BM5 Comparison Summary

Objective analysis of the information given in the EIS does not support selection of BM4 as the preferred route. Based on the restricted information given in the EIS, the environmental impact of the two alternative routes appears to be similar.

Taking into consideration information not provided in the EIS, BM4 would appear to have a greater environmental impact than that presented in the EIS and significantly greater than that of BM5.

If BM4 were to be redesigned to a standard that might marginally achieve the transport objectives, the environmental impact of BM4 would likely be significantly greater than that indicated in the EIS. The cost would also increase substantially. Given the equivalent environmental impact of the two routes, the greater area of National Park landtake of BM4, the significant impact on European heritage values of BM4, and the transport advantages of BM5, it is difficult to understand how the EIS process identified BM4 as the preferred route.

The constraint to the more desirable option in transport terms, that is BM5, taking into account the longer term nature of this infrastructure and the cost benefit, is a matter of tenure ie through National Park estate rather than one of significant environmental issues.

It is the opinion of Council that BM5 represents a superior option to that preferred in the EIS. Given the results of the Value Management Workshop, and the fact that option BM4 fails to meet the project objectives, it would require overwhelming justification for the adoption of BM4. The EIS fails to provide this justification.

The construction of option BM5 with the addition of the existing Bulee Mountain alignment into the National Park estate as compensation is the most appropriate alignment option. The existing road should be closed to vehicular traffic and promoted as a walking track of cultural and natural significance.

3.3 Turpentine Road Intersection

There have been many design compromises made in the final alignment of Main Road 92 in order to meet cost and environmental constraints. One compromise that should however be reconsidered is the proposal to undertake minimal works at the intersection of Main Road 92 and Turpentine Road, and have a low speed intersection with priority given to Turpentine Road.

This decision was based on low expected traffic volumes and claimed high habitat value of the Turpentine Rd intersection area. Council requests that this intersection be changed from the current TR2 option, with a design speed of 40 kph, to the TR1 option with a design speed of 100kph and priority given to Main Road 92.

The reconsideration would be on the basis that:

- The decision to downgrade the intersection was based on low traffic volumes but traffic volumes are likely to be higher than anticipated, and heavy vehicle traffic is likely to predominantly favour Main Road 92, not Turpentine Road.
- The area of habitat to be affected is insignificant, particularly in relation to the surrounding natural area.
- The area to be affected is considered as high habitat value in the EIS, but from the information given in the SIS, it appears the threatened species for which it is high habitat do not inhabit the area.

The road hierarchy at this intersection has been corrected in the past, from originally having Turpentine Rd as the priority direction, to its current priority of Main Road 92 to Nowra. This change was made to reflect actual traffic needs of the road network and the correct priority should be maintained in the upgraded alignment to avoid efficiency losses and safety problems. (2)

3.4 Traffic Generation Models

Throughout the development of the EIS, Council has been critical of the low traffic generation estimates. Though many computerised and apparently sophisticated models are available for traffic generation, it is a fact of life that it is an inexact science.

It is difficult for example to reconcile the projected figures for Main Road 92, in the order of 1000 vpd by 2021, with that of the existing situation on the Kings Highway between Canberra and Batemans Bay. The Kings Highway is in many ways a more difficult and dangerous route than an upgraded Main Road 92, and connects a smaller population centre, but the Kings Highway currently has a traffic loading in the order of 3,000vpd.

There have been concerns from the outset that the traffic models will not adequately replicate the situation of MR92, as there are few if any projects that can be considered similar to the projected works. Consultation with a range of stakeholders leads Council to the conclusion that the modelled outputs are generally at the lower end of reasonable expectations. This would result in the benefits of the work being underestimated.

Any model needs calibration to test the assumptions built into the model against real world experience. It is generally accepted that substantial upgrading of MR92 will both generate traffic and attract existing traffic from current, substandard routes.

There are major implications of underestimating the generated traffic:

- The economic projections of the route benefits will be understated. This will impact on the delivery timing, as the project may not show a sufficiently high Benefit Cost Ratio or First Year Rate of Return in comparison with competing works.
- The consequences of building critical sections such as Bulee Mountain at too low a standard will be magnified with higher traffic volumes. This will impose a significant time and cost penalty on traffic using the route.

- There will be a need to enhance traffic capacity in difficult areas at an early date. This will be disruptive to traffic, be very costly and result in additional environmental impact than would have been the case if constructed to an adequate standard in the first place.

It is Council's belief that models being used do not adequately cater for a catalyst route like MR92. Unless it can be demonstrated that these models have been properly calibrated against a comparable route development, then the outputs of these models can at best be regarded as unproven. Based on Council's long experience in discussions with both the general community and with freight, industrial and commercial users in the catchment area, it is Council's contention that the traffic estimates are at the lower end of the range of traffic that could reasonably be expected.

3.5 Information Not Completed

The EIS as presented does not represent the full extent of studies carried out in some areas. One example of this work is in consideration of options in the Bulee Mountain area.

Prior to finalisation of the documents on public display, the Proponent and the Consultant were working on enhanced options for the preferred BM4 route. This work represented a significant upgrade to the currently preferred alignment, with increased overtaking opportunities. It was understood that this detail was to be included in the EIS options but may have been deleted to meet externally imposed time restraints.

A detailed estimate of costs has not been completed for the BM4-BM5 comparison, despite some initial work being done. It is understood that the estimates provided have not been through the normal RTA internal checking and approval processes normally expected for a project at this stage.

As a minimum, a soundly based incremental benefit-cost ratio calculation for the two options is required.

Council believes there is a range of work commenced in the draft stage of the EIS that was not completed and included in the final document. This information should be completed and considered in the final determination.

3.6 European Heritage

As mentioned earlier in the section on Bulee Mountain options comparison, Main Road 92 is of historic significance. But the heritage issues have implications beyond this relatively small section, as the route in its totality has connection to the original "Wool Road", and upgrading will offer a raft of opportunities.

There is a growing community awareness of Australia's unique heritage, and especially the contribution made by pioneer explorers and settlers in opening up the inland areas. Accompanying this is a growth in "eco-tourism" type activities.

Both of these concepts are increasingly recognised by domestic and overseas tourists. The improved accessibility to the hinterland by upgrading MR92 potentially opens up many opportunities for coach companies and niche tourist operators, as the whole area is rich in history and provides unique access to parts of Morton National Park.

MR92 substantially follows the historic "Wool Road". Although discussed at some length in the EIS documents, little consideration seems to have been given to this both in the selection of alternative routes in the Bullee Mountain area, and the economic evaluation of the benefits. The potential for public display and access to a regionally significant heritage item appears not to have been adequately addressed in the EIS.

It is proposed that more weight should be given in the analysis and evaluation of the European heritage issues.

No attempt is made in the EIS to explore and quantify the potential economic returns from capitalising on the European heritage features, which would further enhance the economic benefits of the project.

4. Summary

As discussed in the introduction, Council is supportive of the upgrading of MR92 between Nowra and Nerriga, and has been a participant in the development of the EIS now on public display.

Nevertheless, Council has concerns at some aspects of the documentation. The most significant of these relate to the section of the "preferred option" that relates to the section through Bulee Mountain. Council believes that a number of issues have either not been fully developed, or have been incorrectly assessed in selection of the "preferred option".

Even on the information presented, it is clear to Council that the option BM5 through the Bulee Mountain section is the better alternative, and better addresses the principle objective of the project.

The Bulee Mountain issue underlines the fact that the proposal has already been developed using the minimum feasible standards (and, with Bulee Mountain, below feasible minimum), and that any suggestion of further compromising of these standards will mean the purpose of the project will not be achieved.

The proposed intersection treatment at Turpentine Road (TR2) should be reconsidered and the more appropriate TR1 option be constructed.

Further analysis of a number of traffic forecasting, economic and heritage issues, as outlined above in this submission, will further strengthen the already compelling case for upgrading of this important transport link.

R. Dearden V3

Shoalhaven City Council

City Administrative Centre
Bridge Road, Nowra NSW Australia 2541
Phone: (02) 4429 3111 • Fax: (02) 4422 1816 • DX 5323 Nowra
Address all correspondence to
The General Manager, PO Box 42, Nowra NSW Australia 2541

COUNCIL REFERENCE: 1466-01 BR
COUNCIL FOLIO NO: D03/
CONTACT PERSON: Barry Russell

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Mr Ross Dearden
Roads and Traffic Authority
PO Box 477
WOLLONGONG 2500

23rd July, 2003

Dear Ross

Main Road 92 Upgrade – Nowra to Nerriga

Please be advised that Council at its meeting on the 22nd July 2003, considered an Update Report on Main Road 92.

After due consideration, Council resolved as follows:

a) *Shoalhaven City Council, having considered the comments received from the Environmental Impact Statement for Main Road 92 placed on exhibition in 2002/2003, indicate that it is prepared to accept the RTA's preferred option of BM4 with improvements.*

b) *The RTA in completing detailed design for Main Road 92 provide other opportunity to maximise both the horizontal and vertical alignment of the road through Bulee as per their enhanced BM4 option.*

c) *The RTA be advised accordingly.*

In reaching this decision, Council expressed concern regarding the delays in proceeding to construction on this essential infrastructure project.

I would be pleased to discuss this resolution at your convenience.

If you need further information about this matter, contact Barry Russell, Director City Services on 4429 3220. Please quote Council's reference 1466-011.

Yours faithfully

Barry Russell
Director City Services

APPENDIX C
Road Safety Audit – Bulee Mountain

SKM

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1. Introduction

The Upgrading of Main Road 92 between Nowra and Nerriga facilitates the provision for an improved link, enabling access for cars and freight between the southern Illawarra region and inland NSW and the ACT. The value management workshop identified a number of primary and secondary objectives, which are as follows:

Primary Objectives

- To establish a more efficient, safe and all weather freight route across the escarpment to service South Eastern Australia
- To provide an alternative route for heavy and light traffic currently using existing corridors, that cannot be feasibly upgraded.

Secondary Objectives

- To facilitate economic development for South Eastern Australia through a project that is implemented in accordance with ESD principles
- To enhance opportunities for tourists and locals
- To enhance opportunities to experience rich environmental and cultural heritage areas
- To achieve 80-100kph design speed where practicable and feasible
- To achieve a good aesthetic outcome, and
- To achieve a corridor that can accommodate future minor improvements such as kerb upgrades.

Other objectives identified during the EIS process included minimising environmental impacts throughout the route and maintaining a project cost below $70M.

A Stage 2 Road Safety Audit was undertaken by Sinclair Knight Merz for the entire route prior to December 2002, with BM4 and BM5 considered.

This report is a Stage 2 Road Safety Audit specifically considering only options BM4 and BM5 contained within the Bulee Mountain section of the MR92 upgrade known as section 17, from Chainage 45,000 to 49,200. The Bulee Mountain pass is a crucial aspect of the project owing to the steep grades and challenging geological features associated with crossing the region. Of particular concern is the difficulty of achieving the objective design speed safely throughout this sector.

2. Audit Process

The Road Safety Audit conducted was a Stage 2 Draft Design audit. This stage audit is generally carried out at the completion of the preliminary road design giving particular consideration to the horizontal and vertical alignments.

Stage 2 Audit checklists from the Austroads Road Safety Audit Manual 1994 were used. The completed checklists can be found in Appendix A and B of this report.

The road safety auditors were Graham Watson and Alex Robinson. The lead Auditor has completed the RTA/IPWEA Road Safety Audit Training Program, and has previous experience in safety audits.

Documents provided for the audit were:

- MR92 Upgrade EIS Volume 2: Technical Paper N°.2 – Concept Design Nov 02
- Plan Option BM4, BM5: Sheets 26 Rev B, 27 Rev B, 28 Rev B (Nov 02)
- Longitudinal Sections BM4: 26L121Rev B, 27L Rev B, 28L Rev A (Nov 02)
- Longitudinal Sections BM5: 27L Rev A, 28L Rev A (Nov 02)
- Cross sections BM4: 8 Sheets and 42 Sheets
- Cross sections BM5: 37 Sheets.

3. Audit Findings

3.1 Preferred Option BM4

The following points outline some of the main features of the BM4 option:

- This route generally follows the existing configuration of Main Road 92. The new alignment is based on 2 x 3.5m traffic lanes, with a 2.0m sealed shoulder on both sides.
- Due to the difficulty associated with future upgrades of this section, the proposed BM4 alignment has been developed to cater for projected growth in traffic for the foreseeable future.
- The design speed is 80kph from Chainage 45000 to 45700 and 60kph thereafter until Chainage 49100.
- Two bridges are proposed at Chainages 46962 and 48754 with lengths 32m and 12m respectively.

Following is a list of safety issues identified by the Audit.

3.1.1 General Topics

Drainage

The cutting from Chainage 48000 to 48500 (500m) at a grade of 11.6% will require special attention at detail design to minimise flow velocities in the table drains.

Services

The existing gas pipeline will require special attention as it currently lies under the BM4 pavement and earthwork area from chainages 46050 to 46300 and 48920 to 49030.

3.1.2 Design Issues (General)

Geometry of horizontal and vertical alignment

- The horizontal and vertical design of BM4 has horizontal curves commencing within vertical curves. These are at Chainage
  - 45580 (horizontal curve over crest),
  - 45770 (poor co-ordination with under V.C),
  - 46000 (compound curve over crest),
  - 46600 (reverse curve over crest) and
  - 48040 (horizontal curve over crest).

  When horizontal and vertical curves are combined the RTA Road Design Guide requires the start of the horizontal curve to precede the start of the vertical curve and sharp horizontal curves not be introduced at or near the top of a crest vertical curve. Furthermore reverse horizontal curves in conjunction with a crest vertical curve is undesirable.

  All these scenarios are evident at the nominated locations. The implications of these issues are:

- **45580:** The eastbound approach horizontal curve commences 20m into the vertical curve. Whilst not desirable there will be sufficient sight distance for drivers to interpret the alignment.
- **45770:** undesirable but not deemed a safety issue.
- **46000:** The TP of the compound curve on the eastbound approach coincides with the limit of the horizontal curve, which is a marginal allowance. However the ratio of the curve radii exceeds the requirement of section 2.2.21 of the Road Design Guide. The horizontal and vertical alignments could be modified during detail design to provide a length of straight alignment between the curves and shift the vertical curve west to clear the TP of the 100m curve. This will have minimal impact on the road location and level.
- **46600:** a reverse horizontal curve preceded by a vertical curve will be encountered in both directions of travel. Westbound vehicles will commence the 11.6% descent as they come over the crest at this location. Improving the co-ordination of the alignments appears difficult because the vertical design is constrained by the existing Eastern Gas Pipeline that crosses the road at this location, and the horizontal alignment is constrained by the Wool Road alignment and the Beehive formations. Devices such as advance warning signs for steep descent and winding road graphic signs, together with D4-6 alignment markers approaching and through the reverse curve will improve driver readability of the alignment. This curve was identified in the previous Stage 2 road safety audit.
- **48040:** a horizontal curve entry and reverse horizontal curve are encountered through the vertical curve for westbound vehicles whilst travelling from a 2.8% downgrade to an 11.6% downgrade. The k value of the VC provides 80kph sight distance, improving drivers ability to identify the alignment. The reversal occurs near the end of the VC further improving sight distance. The section is in cutting providing visual indicators of the approaching alignment to the drivers. This is not an ideal alignment, but is tolerable. Devices such as advance warning signs for steep descent and winding road graphic signs, together with D4-6 alignment markers approaching and through the reverse curve will improve interpretation of the road conditions. This curve was identified in the previous Stage 2 road safety audit.

- Drivers may misinterpret the road characteristics at Chainage 47400 due to possible confusion with the existing alignment. This would be resolved by shielding of the old alignment.

Cross section

- The cross sectional drawings do not show superelevation. Superelevation will need to be incorporated at detail design.

- Several locations have limited superelevation transition lengths. These locations, together with the TP-TP distance are at Chainages 46300 (0m), 46600(50m), 47700(40m), 48150(20m), 48720(36m) and 48959(16m).

- Lane widening has been provided through the curves. Detail design will need to include plan transitioning of the centreline.

During detail design, adjustment to curve lengths and alignment will be required to ensure development of superelevation transitions is achieved.

Design Standards

Table 4.1 in the Concept Design Report nominates an 80kph design speed to Chainage 45700. The design speed of the sag vertical curve at Chainage 45300 is 60kph. This can be resolved at detail design.

3.1.3 Alignment Details

Visibility, Sight Distance

Local features and constraints such as vegetation and cuttings prevent the road design to meet Intermediate Sight Distance (ISD) criteria (180m) at horizontal curves. This not considered an issue in this road environment as Stopping Sight Distance (SSD) is achieved on the alignment and is acceptable.

3.1.4 Special Road Users

Heavy Vehicles

The RTA Road Design Guide Table 2.3.1 states the desirable maximum grade for a 60kph design speed in mountainous terrain is between 9-11%, with grades over 10% to be used with caution. 1.4km of the 4km BM4 route has a grade of 11.6% in 2 sections, 500m and 900m long. These grades are necessary to enable the alignment to clear the Eastern Gas Pipeline and minimise environmental impact.

One primary objective of the route is to provide a safe, efficient, all weather freight route. Grades of 11.6% will inhibit truck speeds for these sections, requiring overtaking opportunities for following vehicles to reduce the likelihood of unsafe overtaking manoeuvres to alleviate driver frustration (see 3.1.5).

The Roads and Traffic Authority regulations regarding B-Doubles stipulates that the minimum power required of a hauling unit must be 300 kilowatts, unless it can be proven, amongst other things, that the unit is capable of starting movement on a grade of 12%. Therefore B-Double hauling units will be able to climb the 11.6% grade. Slow vehicle lanes are provided on each steep section.

During detail design, the provision of safety ramps at the base of the steep sections should be considered.

3.1.5 Other Matters

Overtaking Lane Provision

There are three eastbound slow vehicle lanes throughout the Bulee Mountain section, each being 100m long, plus tapers. Table 9.1.3 of the Road Design Guide states the minimum overtaking lane in a 60kph design speed is 80m plus tapers. The provisions suit minimum requirements. At grades exceeding 10%, heavy vehicles will be travelling at or below 15kph.

It was indicated in the EIS that it is feasible to extend these and also provide an additional eastbound and three westbound auxiliary lanes subject to the Roads and Traffic Authority request. Consideration should be given to the provision of downhill

overtaking opportunities in the steep sections due to the slow travel speeds that will be required by heavy vehicles. Low gear sign posting will need to be provided.

3.2 Option BM5

The following points outline some of the main features of the BM5 option:

- This route follows a new configuration through the Morton National Park and another area identified as wilderness. The new alignment is based on 2 x 3.5m traffic lanes, with a 2.0m sealed shoulder on both sides.
- The design speed is 80kph throughout the upper section with the exception of 60kph reverse horizontal curves at the base of the main descent immediately east of Endrick River.
- Six bridges of varying dimensions are proposed along this route.

Following is a list of safety issues identified by the Audit.

3.2.1 General Topics

Drainage

The cutting from Chainage 47600 to 47900 (300m) at a grade of 9% will require special attention at detail design to minimise flow velocities in the table drains.

3.2.2 Design Issues (General)

Cross section

The cross sectional drawings do not show superelevation. This will need to be incorporated in the detail design.

There are two locations that have limited superelevation transition length, being at Chainages 46500 and 47700. At Chainage 46500 there is some confusion of horizontal alignment TPs and radii, although no blind curves exist. The TP-TP distance at 47700 is 12m. These issues will need to be resolved at detail design.

Design Standards

The design speed of the sag vertical curve at Chainage 45200 is 60kph in a proposed 80kph speed zone. This can be resolved at detail design.

The route is suitable for 80kph design speed to chainage 47300. Thereafter, tighter horizontal curves will require a 60kph design speed. The introduction of a lower design speed induced by smaller radius curves at the base of a steep descent will increase crash likelihood and severity and needs to be addressed. To maintain a consistent design speed of 80kph throughout BM5 the detail design should consider increasing the curve radii, in conjunction with providing superelevation transition lengths as noted above. Increasing the curve radii will shorten the length of that section and thus increase the grade marginally to approximately 9.5%. Deeper cuts and fills will result due to the steep terrain.

3.2.3 Alignment Details

Visibility, Sight Distance

Local features and constraints such as vegetation and cuttings prevents the road design meeting Intermediate Sight Distance (ISD) criteria at horizontal curves in both speed zones. However, Stopping Sight Distance is achieved and deemed acceptable.

3.2.4 Special Road Users

Heavy Vehicles

Table 2.3.1 of the RTA Road Design Guide nominates the maximum desirable grade for an 80kph design speed in mountainous terrain as 7-9%.

The maximum grade of 9.6% for this alignment occurs in the area with an 80kph horizontal alignment for a length of 800m. A further 800m is at a grade of 8.9%, passing through 60kph and 80kph horizontal alignments.

These grades can be traversed by B-doubles.

During detail design, the provision of safety ramps at the base of the steep sections should be considered.

3.2.5 Other Matters

Overtaking Lane Provision

There are 3 x 300m long (plus tapers) eastbound overtaking lanes throughout the Bulee Mountain section. These exceed the recommended auxiliary lane lengths for 80kph design speeds.

4. Conclusion

Route BM4 has been designed to follow, as far as practical, the existing alignment of MR92 in order to minimise the environmental impact of the proposal. Therefore the BM4 design has been constrained in its horizontal alignment. Furthermore, the presence of the existing Eastern Gas Pipeline along the first 1.6km of the alignment adds further horizontal and vertical constraints. These constraints have resulted in a number of safety issues being evident in relation to ideal horizontal and vertical curve co-ordination not being achieved.

These issues can be resolved during detail design to improve the safety of the BM4 alignment. The design will require some horizontal realignment in two locations that may result in environmental and property impacts. Some minor regrading will also be required to improve the route and to counter impacts on the EGP resulting from the horizontal realignments. The realignments required are considered minor but need to be incorporated in the detail design. Careful signposting and delineation will need to be incorporated at these locations, particularly where the alignment cannot be adjusted due to physical constraints. Furthermore, regular speed signposting along the length of BM4 is recommended.

BM5 has a few safety issues that can be addressed at detail design. The lower end of BM5 could be realigned to produce an 80kph route along its entire length. This realignment will marginally increase the longitudinal grade and result in increased cut and fill depths.

5. References

Austroads Road Safety Audit 1994
Roads and Traffic Authority Road Design Guide
EIS for Nowra to Nerriga Main Road 92 Upgrade Volume two, December 2002

Appendix A Stage 2 Audit Checklist BM4

STAGE 2 : DRAFT DESIGN BM4

2.1 GENERAL TOPICS		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1. Changes since Stage 1	Check for any major changes in principle since the Stage 1 Audit was carried out.	✔			Purpose of this audit is to compare current designs for option BM4 &BM5
	Check that the conditions for which the project was originally designed still apply, i.e. there have not been significant changes to the surrounding network or are to be served, or traffic mix.			✔	
2. Drainage	Will the new road drain adequately?				48000-48500 @ 11.6% all in cut
	Is there a possibility of surface flooding or overflowing from surrounding or intersected drains and water courses?			✔	None apparent
3. Climatic conditions	Do weather records or local experience indicate a problem (e.g. snow, ice, wind, fog)?			✔	Nerriga min temps do reach 0°C. Not considered significant problem
4. Landscaping	Is the landscaping design or planting likely to lead to a lowering of safety with mature or seasonal growth (e.g. through loss of visibility, obscuring signs, shading or light effects, leaves, flowers or seeds dropping on to the highway)?	✔			No landscaping design input. Existing mature trees known to exist, but not shown.
	Is "frangible" vegetation appropriate?	✔			
	Consider pedestrian visibility in particular.	✔			
5. Services	Does the design adequately deal with buried and overhead services?			✔	EGP under pavement and earthworks 46050-46300. 48920-49030
	At this stage the location of fixed objects or furniture associated with services should be checked, including the position of poles.				EGP WAE information currently being reviewed.
6. Access to property and developments	Can all accesses be used safety?	✔			
	Are here any downstream or upstream effects from accesses, particularly near intersections?			✔	
	Check rest are accesses.	✔			

2.1 GENERAL TOPICS (contd)		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
7. Emergency vehicles and access	Has provision been made for safe access by emergency vehicles?		✔		Through route only
	Check the design of medians and barriers, and the ability of emergency vehicles to stop without necessarily disrupting traffic.	✔			
8. Future widening and/or realignments	If the scheme is only a stage towards a wider or dual carriageway, is the signing and design adequate to impart this message to drivers?	✔			
	Is the transition from single to dual carriageway handled safely?	✔			
9. Staging of the scheme	If the scheme is to be staged or constructed at different times, are the construction plans and programme arranged to ensure maximum safety and do they include specific safety measures, signing, and adequate transitional geometry for any temporary arrange	✔			Staging not addressed at this level of design. Commented in EIS. Closures possible.
10. Staging of the works	If the construction of this scheme is to be staged or split into several contracts check that these are arranged for maximum safety.	✔			
11. Significant adjacent developments	Check that the design handles accesses to major adjacent generators to traffic and parking and developments safely.	✔			
	Check that lighting or traffic signals on an adjacent road do not affect he driver's perception of the road ahead.	✔			
12. Stability of cut and fill	Check that the geological conditions in the country through which the road is to be constructed do not pose a significant threat to safety of vehicle occupants.				
13. Maintenance	Check maintenance vehicles can be safely located.			✔	On road parking will be required. Traffic volumes will not present a problem

2.2 DESIGN ISSUES (GENERAL)		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1.Geometry of horizontal and vertical alignment	Do the horizontal and vertical design of the project fit together comfortably?			✔	45580 poor mix of HC OVC. 45770 not as critical. 46000 compound curve over crest, 46600 reverse curve over crest. 48040 poor mix HC OVC
	Check the design for adequacy having regard to the function of the road.		✔		
	Check the possibility of drivers not being able to read the road characteristics, visual illusions, subliminal delineation, etc., (e.g. line of trees, line of poles, etc).		✔		EB @ 47400 possible confusion with old alignment
2. Typical cross sections	Are the lane widths, shoulders, medians and other cross section features in accordance with standard design or adequate for the function of the road?		✔		However the cross sections do not show superelevation
3. Effect of cross sectional variation	Check that there are no undesirable variations in cross section design.		✔		None noted
	Check crossfalls which could affect safety, particularly where sections of existing highway have been utilised, or where there have been compromises to accommodate accesses, etc.	✔			
	Check where compromises have been made such as narrowing at bridge approaches or to avoid physical features.	✔			
4. Roadway layout	Check that total traffic management features in addition to horizontal and vertical alignment and cross section) are not likely to create unsafe conditions.				Limited super transition length available at 46300(0m), 46600(50m), 47700(40m), 48150(20m), 48720(36m), 48959(16m)
	Check the layout of road markings and reflective media both on the road and on the surrounds to deal with changes in alignment, particularly where these are substandard.	✔			
5. Design Standards	Check the appropriateness of the design speed and speed limit		✔		Sag V.C. @ 45300, 60kph in 80kph zone
	What design and check vehicles are used?				

2.2 DESIGN ISSUES (GENERAL) (contd)		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
6. Shoulders and edge treatment	Check the safety aspects of shoulder provision, including the provision of sealed or metalled shoulders, the width and treatment on embankments and crossfall of shoulders.				Sealed shoulder 2m wide throughout
	Are the shoulders likely to be used by slow moving vehicles or cyclists?		✔		Cyclists will use shoulder. Low cyclist no.s expected. Slow moving trucks may move over
	Check safety aspects of rest areas.	✔			
7. The effect of departures from standards or guidelines	Are there any approved departures from standards or guidelines which affect safety?				
	Are there any hitherto undetected departures from standards which should be brought to the attention of the designer?		✔		Departures - grade, superelevation, HC/VC mix are departures

2.3 ALIGNMENT DETAILS		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1. Visibility, sight distance	Are horizontal and vertical alignments consistent with the required visibility requirements.			✔	
	Check sight lines are not obstructed by:				
	a) Fences and crash barriers	✔			
	b) Boundary fences				
	c) Street furniture	✔			
	d) Parking facilities	✔			
	e) Signs	✔			
	f) Landscaping	✔			
	g) Bridge abutments	✔			
	Inappropriate consideration of horizontal and vertical alignment (e.g. horizontal curve just over a crest vertical curve).		✔		Addressed above
	Check that railway crossings, bridges and other hazards are conspicuous.	✔			
	Are there any other local features which affect visibility?		✔		
	Will sight lines be obstructed by temporary features such as parked vehicles in laybys, or by parked or queued traffic generally?			✔	
2. New/existing road interface	Have implications for safety at the interface been considered? Are there sudden changes in the speed regime or access or side friction characteristics?	✔			
	Does the interface occur near any hazard, i.e. at a crest or bend or where poor visibility or distractions occur?	✔			
	Check that the change is affected safely where carriageway standards differ.	✔			
	Check transition is safe where road environment changes, for example, urban to rural, fast to slow, lit to unlit.	✔			
	Check the need for advance warning.	✔			
3. Readability by drivers	Will the general layout, function broad features be recognised by drivers in adequate time?			✔	Some areas of poor HC/OVC mix. See previous
	Check the approach speed and general likely position of vehicles as they track through the project.		✔		

2.4 INTERSECTIONS		a			Comments
Item	Issues to be Considered	N/A	Yes	No	
1. Visibility to and visibility at intersection	Are horizontal and vertical alignments consistent with the required visibility requirements?	✔			
	Will drivers be aware of the presence of the intersection (especially if facing a Stop/Give Way sign)?	✔			
	Check sight lines are not obstructed by:	✔			
	a) Fences and crash barriers	✔			
	b) Boundary fences	✔			
	c) Street furniture	✔			
	d) Parking facilities	✔			
	e) Signs	✔			
	f) Landscaping	✔			
	g) Bridge abutments	✔			
	Check that railway crossings, bridges and other hazards are conspicuous.	✔			
	Are there any local features which require affect visibility?	✔			
	Will sight lines be obstructed by permanent or temporary features such as parked vehicles in laybys, or by parked or queued traffic generally?	✔			

2.4 INTERSECTIONS (contd)		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
2. Layout, including appropriateness	Is the type of intersection selected (crossroad, T, roundabout, signalised, etc.) appropriate for the function of the two roads?	✔			
	Are the proposed controls (Stop, Give Way, signals, etc.) appropriate for the particular intersection being considered?	✔			
	Are junction sizes appropriate for all vehicle movements?	✔			
	Are there any unusual features which could affect road safety (e.g. cyclists, heavy truck movements, public transport operations etc.)	✔			
	Are the lane widths and swept paths adequate for all vehicles?	✔			
	Are there any unusual features which could affect road safety (e.g. cyclists, heavy truck movements, public transport operations etc.)?	✔			
	Are the lane widths and swept paths adequate for all vehicles?	✔			
	Are there any upstream or downstream geometric features which could affect safety, e.g merging of lanes?	✔			
3. Readability by drivers Intersections	Will the general type, function, priority rules and broad features be recognised by drivers in adequate time?	✔			
	Check the approach speed and general likely position of vehicles as they track through the project.	✔			

2.5 SPECIAL ROAD USERS		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1. Adjacent land	Will adjacent activity and intensity of land use have an adverse safety effect on the project? Are special measures needed?			✔	
2. Pedestrians	Have pedestrian needs been considered?			✔	Pedestrian activity not expected
	If footpaths are not specifically provided, is the road layout safe for use by pedestrians, particularly at blind corners or on bridges?			✔	Pedestrian activity not expected
	Are pedestrian subways or footbridges sited to provide maximum use?	✔			
	Is the avoidance of footbridges or subways possible by crossing the road at grade?	✔			
	Has specific provision been made for pedestrian crossings, school crossings or pedestrian signals?	✔			
	Are these sited to provide maximum use?	✔			
	Are pedestrian refuges/kerb extensions needed?	✔			
	Is specific provision required for special groups, e.g. the young, elderly, sick, disabled, deaf or blind?	✔			
3. Cyclists	Have the needs of cyclists been considered, especially at intersections?			✔	Cyclists activity expected to be minimal
	Is a bicycle lane needed?			✔	2m shoulder available. But may need to be wider
	Are any cycleways separate from the main carriageway, of standard or adequate design?	✔			
	Is there a need for shared pedestrian/cycle facilities?			✔	
	Where cycleways terminate at intersections or adjacent to the carriageway, has the transition treatment been handled safely?	✔			
	Are there any needs for special bicycle facilities (e.g. bicycle signals) if not already provided?			✔	

2.5 SPECIAL ROAD USERS (contd)		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
4. Equestrians and stock	Have the needs of equestrians been considered, including the use of verges or shoulders and rules regarding the use of the carriageway?			✔	Equestrian activity not expected
	Can underpass facilities be used by equestrians/stock?	✔			
5. Freight	Have the needs of truck drivers been considered, including turning radii and lane widths?		✔		Very steep grades. Slow truck speeds expected.
6. Public Transport	Have the needs of public transport users been considered?	✔			
7. Road maintenance vehicles	Has provision been made for road maintenance vehicles to safely be used at this site?			✔	See previous

2.6 SIGNS AND LIGHTING		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1. Lighting	Is this project to be lit?			✔	
	Are there difficulties of illuminating sections of the road caused by trees or overbridges for example?	✔			
	Has the question of siting of lighting poles been considered as part of the general concept of the scheme?	✔			
	Are frangible or slip-base poles to be provided?	✔			
	Are any special needs created by ambient lighting?	✔			
	Are there any aspects of the provision of lighting poles which would require consideration from the safety point of view in their being struck by vehicles?	✔			
2. Signs	Are sign gantries needed?			✔	
	Are signs located at points to allow adequate readability?	✔			Signage not detailed
	Are signs located to limit visibility from accesses and intersecting roads?	✔			
	Are signs appropriate to the drivers needs (i.e. destination signs, advisory speed signs etc.)?	✔			
	Have the safety aspects of signs been considered as part of the general concept?	✔			
	Are there any aspects of the provision of sign posts which would require consideration from the safety point of view in their being struck by vehicles?	✔			
3. Marking and delineation	Check that the appropriate standard of delineation and marking has been adopted.	✔			Linemarking not detailed

2.7 CONSTRUCTION AND OPERATION		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1. Buildability	Are there any features which could inhibit safe construction (e.g. through traffic, construction vehicles.)?		✔		Road follows existing alignment. Careful staging and management consideration required at detail design.
2. Operation	Is adequate safe access to the works available?		✔		
3. Traffic management	Are there any factors requiring specific road safety provision, including maintenance?			✔	
4. Network management	Are there any traffic management features which would require special attention during construction or during the transition from construction to full operation?		✔		

2.8 ANY OTHER MATTER		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1. Safety aspects not already covered	Safety auditors are to check for any issue or item not already covered.				
	This could include unusual events, special effects of land uses alongside, including stock being driven onto or along the road.				
	The ability of the road to take overweight or over-dimension vehicles or other large vehicles: - Trucks - Buses - emergency vehicles - utility/road maintenance vehicles.				
	The ability to close the road for special events in a safe manner.	✔			
	The special requirements of scenic or tourist routes.				No special requirements allowed. Drivers may try to pull off the road at sites with views??
	The provision of rest areas with safe access and egress.	✔			

Project: MR 92 Nowra to Nerriga BM4

Audit by: Graham Watson, Alex Robinson

Signatures

Date: 5/06/2003

SKM

Appendix B Stage 2 Audit Checklist BM5

STAGE 2 : DRAFT DESIGN BM5

2.1 GENERAL TOPICS		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1. Changes since Stage 1	Check for any major changes in principle since the Stage 1 Audit was carried out.	✔			Purpose of this audit is to compare current designs for option BM4 &BM5
	Check that the conditions for which the project was originally designed still apply, i.e. there have not been significant changes to the surrounding network or are to be served, or traffic mix.			✔	
2. Drainage	Will the new road drain adequately?				47600-47900 @ 9% all in cut
	Is there a possibility of surface flooding or overflowing from surrounding or intersected drains and water courses?			✔	None apparent
3. Climatic conditions	Do weather records or local experience indicate a problem (e.g. snow, ice, wind, fog)?			✔	Nerriga min temps do reach 0°C. Not considered significant problem
4. Landscaping	Is the landscaping design or planting likely to lead to a lowering of safety with mature or seasonal growth (e.g. through loss of visibility, obscuring signs, shading or light effects, leaves, flowers or seeds dropping on to the highway)?	✔			No landscaping design input. Existing mature trees known to exist, but not shown.
	Is "frangible" vegetation appropriate?	✔			
	Consider pedestrian visibility in particular.	✔			
5. Services	Does the design adequately deal with buried and overhead services?		✔		No perceived problem
	At this stage the location of fixed objects or furniture associated with services should be checked, including the position of poles.				
6. Access to property and developments	Can all accesses be used safety?	✔			
	Are here any downstream or upstream effects from accesses, particularly near intersections?			✔	
	Check rest are accesses.	✔			

2.1 GENERAL TOPICS (contd)		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
7. Emergency vehicles and access	Has provision been made for safe access by emergency vehicles?		✔		Through route only
	Check the design of medians and barriers, and the ability of emergency vehicles to stop without necessarily disrupting traffic.	✔			
8. Future widening and/or realignments	If the scheme is only a stage towards a wider or dual carriageway, is the signing and design adequate to impart this message to drivers?	✔			
	Is the transition from single to dual carriageway handled safely?	✔			
9. Staging of the scheme	If the scheme is to be staged or constructed at different times, are the construction plans and programme arranged to ensure maximum safety and do they include specific safety measures, signing, and adequate transitional geometry for any temporary arrange	✔			Staging not addressed at this level of design. Commented in EIS. Closures possible.
10. Staging of the works	If the construction of this scheme is to be staged or split into several contracts check that these are arranged for maximum safety.	✔			
11. Significant adjacent developments	Check that the design handles accesses to major adjacent generators to traffic and parking and developments safely.	✔			
	Check that lighting or traffic signals on an adjacent road do not affect he driver's perception of the road ahead.	✔			
12. Stability of cut and fill	Check that the geological conditions in the country through which the road is to be constructed do not pose a significant threat to safety of vehicle occupants.				
13. Maintenance	Check maintenance vehicles can be safely located.			✔	On road parking will be required. Traffic volumes will not present a problem

2.2 DESIGN ISSUES (GENERAL)		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1.Geometry of horizontal and vertical alignment	Do the horizontal and vertical design of the project fit together comfortably?			✔	VC @ 45200 not designed for 80k/h. design speed = 60k/h
	Check the design for adequacy having regard to the function of the road.		✔		
	Check the possibility of drivers not being able to read the road characteristics, visual illusions, subliminal delineation, etc., (e.g. line of trees, line of poles, etc).			✔	No possible confusion
2. Typical cross sections	Are the lane widths, shoulders, medians and other cross section features in accordance with standard design or adequate for the function of the road?		✔		However the cross sections do not show superelevation
3. Effect of cross sectional variation	Check that there are no undesirable variations in cross section design.			✔	No undesirable variations
	Check crossfalls which could affect safety, particularly where sections of existing highway have been utilised, or where there have been compromises to accommodate accesses, etc.	✔			
	Check where compromises have been made such as narrowing at bridge approaches or to avoid physical features.	✔			
4. Roadway layout	Check that total traffic management features in addition to horizontal and vertical alignment and cross section) are not likely to create unsafe conditions.				Possible limited super elevation transition length available at 47700. 12m b/w reverse curve TPs. 46500 -some confusion of horizontal alignment TPs and radii
	Check the layout of road markings and reflective media both on the road and on the surrounds to deal with changes in alignment, particularly where these are substandard.	✔			
5. Design Standards	Check the appropriateness of the design speed and speed limit				Sag VC @ 45200 not suitable for 80k/h design speed
	What design and check vehicles are used?				

2.2 DESIGN ISSUES (GENERAL) (contd)		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
6. Shoulders and edge treatment	Check the safety aspects of shoulder provision, including the provision of sealed or metalled shoulders, the width and treatment on embankments and crossfall of shoulders.				Sealed shoulder (2.0m) throughout.
	Are the shoulders likely to be used by slow moving vehicles or cyclists?		✔		Cyclists will use shoulder. Low cyclist numbers expected. Slow moving trucks may move over into shoulder also.
	Check safety aspects of rest areas.	✔			
7. The effect of departures from standards or guidelines	Are there any approved departures from standards or guidelines which affect safety?				
	Are there any hitherto undetected departures from standards which should be brought to the attention of the designer?		✔		Departures- under design of UVC @ 45230

2.3 ALIGNMENT DETAILS		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1. Visibility, sight distance	Are horizontal and vertical alignments consistent with te required visibility requirements.			✔	2.2(1) &(5)
	Check sight lines are not obstructed by:				
	a) Fences and crash barriers			✔	No obstruction expected
	b) Boundary fences	✔			
	c) Street furniture	✔			
	d) Parking facilities	✔			
	e) Signs	✔			
	f) Landscaping	✔			
	g) Bridge abutments	✔			
	Inappropriate consideration of horizontal and vertical alignment (e.g. horizontal curve just over a crest vertical curve).			✔	
	Check that railway crossings, bridges and other hazards are conspicuous.	✔			
	Are there any other local features which affect visibility?		✔		Existing vegetation. Horizontal curve lengths do not provide ISD
	Will sight lines be obstructed by temporary features such as parked vehicles in laybys, or by parked or queued traffic generally?			✔	
2. New/existing road interface	Have implications for safety at the interface been considered? Are there sudden changes in the speed regime or access or side friction characteristics?	✔			
	Does the interface occur near any hazard, i.e. at a crest or bend or where poor visibility or distractions occur?	✔			
	Check that the change is affected safely where carriageway standards differ.	✔			
	Check transition is safe where road environment changes, for example, urban to rural, fast to slow, lit to unlit.	✔			
	Check the need for advance warning.	✔			
3. Readability by drivers	Will the general layout, function broad features be recognised by drivers in adequate time?		✔		
	Check the approach speed and general likely position of vehicles as they track through the project.		✔		

2.4 INTERSECTIONS		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1. Visibility to and visibility at intersection	Are horizontal and vertical alignments consistent with the required visibility requirements?	✔			
	Will drivers be aware of the presence of the intersection (especially if facing a Stop/Give Way sign)?	✔			
	Check sight lines are not obstructed by:	✔			
	a) Fences and crash barriers	✔			
	b) Boundary fences	✔			
	c) Street furniture	✔			
	d) Parking facilities	✔			
	e) Signs	✔			
	f) Landscaping	✔			
	g) Bridge abutments	✔			
	Check that railway crossings, bridges and other hazards are conspicuous.	✔			
	Are there any local features which require affect visibility?	✔			
	Will sight lines be obstructed by permanent or temporary features such as parked vehicles in laybys, or by parked or queued traffic generally?	✔			

2.4 INTERSECTIONS (contd)		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
2. Layout, including appropriateness	Is the type of intersection selected (crossroad, T, roundabout, signalised, etc.) appropriate for the function of the two roads?	✔			
	Are the proposed controls (Stop, Give Way, signals, etc.) appropriate for the particular intersection being considered?	✔			
	Are junction sizes appropriate for all vehicle movements?	✔			
	Are there any unusual features which could affect road safety (e.g. cyclists, heavy truck movements, public transport operations etc.)	✔			
	Are the lane widths and swept paths adequate for all vehicles?	✔			
	Are there any unusual features which could affect road safety (e.g. cyclists, heavy truck movements, public transport operations etc.)?	✔			
	Are the lane widths and swept paths adequate for all vehicles?	✔			
	Are there any upstream or downstream geometric features which could affect safety, e.g merging of lanes?	✔			
3. Readability by drivers Intersections	Will the general type, function, priority rules and broad features be recognised by drivers in adequate time?	✔			
	Check the approach speed and general likely position of vehicles as they track through the project.	✔			

2.5 SPECIAL ROAD USERS		Check			Comments
Item	**Issues to be Considered**	**N/A**	**Yes**	**No**	
1. Adjacent land	Will adjacent activity and intensity of land use have an adverse safety effect on the project? Are special measures needed?			✔	
2. Pedestrians	Have pedestrian needs been considered?			✔	Pedestrian activity not expected
	If footpaths are not specifically provided, is the road layout safe for use by pedestrians, particularly at blind corners or on bridges?			✔	
	Are pedestrian subways or footbridges sited to provide maximum use?	✔			
	Is the avoidance of footbridges or subways possible by crossing the road at grade?	✔			
	Has specific provision been made for pedestrian crossings, school crossings or pedestrian signals?	✔			
	Are these sited to provide maximum use?	✔			
	Are pedestrian refuges/kerb extensions needed?	✔			
	Is specific provision required for special groups, e.g. the young, elderly, sick, disabled, deaf or blind?	✔			
3. Cyclists	Have the needs of cyclists been considered, especially at intersections?			✔	Cyclists activity expected to be minimal.
	Is a bicycle lane needed?			✔	2m shoulder available.
	Are any cycleways separate from the main carriageway, of standard or adequate design?	✔			
	Is there a need for shared pedestrian/cycle facilities?			✔	
	Where cycleways terminate at intersections or adjacent to the carriageway, has the transition treatment been handled safely?	✔			
	Are there any needs for special bicycle facilities (e.g. bicycle signals) if not already provided?			✔	

2.5 SPECIAL ROAD USERS (contd)		Check			Comments
Item	**Issues to be Considered**	**N/A**	**Yes**	**No**	
4. Equestrians and stock	Have the needs of equestrians been considered, including the use of verges or shoulders and rules regarding the use of the carriageway?			✔	Equestrian activity not expected.
	Can underpass facilities be used by equestrians/stock?	✔			
5. Freight	Have the needs of truck drivers been considered, including turning radii and lane widths?		✔		Very steep. B-Double desirable grade <8%?
6. Public Transport	Have the needs of public transport users been considered?	✔			
7. Road maintenance vehicles	Has provision been made for road maintenance vehicles to safely be used at this site?			✔	

2.6 SIGNS AND LIGHTING		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1. Lighting	Is this project to be lit?			✔	
	Are there difficulties of illuminating sections of the road caused by trees or overbridges for example?	✔			
	Has the question of siting of lighting poles been considered as part of the general concept of the scheme?	✔			
	Are frangible or slip-base poles to be provided?	✔			
	Are any special needs created by ambient lighting?	✔			
	Are there any aspects of the provision of lighting poles which would require consideration from the safety point of view in their being struck by vehicles?	✔			
2. Signs	Are sign gantries needed?			✔	
	Are signs located at points to allow adequate readability?	✔			Signage not detailed
	Are signs located to limit visibility from accesses and intersecting roads?	✔			
	Are signs appropriate to the drivers needs (i.e. destination signs, advisory speed signs etc.)?	✔			
	Have the safety aspects of signs been considered as part of the general concept?	✔			
	Are there any aspects of the provision of sign posts which would require consideration from the safety point of view in their being struck by vehicles?	✔			
3. Marking and delineation	Check that the appropriate standard of delineation and marking has been adopted.	✔			Linemarking not detailed

2.7 CONSTRUCTION AND OPERATION		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1. Buildability	Are there any features which could inhibit safe construction (e.g. through traffic, construction vehicles.)?			✔	Route is separate from existing traffic with the exception of tie-ins
2. Operation	Is adequate safe access to the works available?		✔		
3. Traffic management	Are there any factors requiring specific road safety provision, including maintenance?			✔	
4. Network management	Are there any traffic management features which would require special attention during construction or during the transition from construction to full operation?			✔	

2.8 ANY OTHER MATTER		Check			Comments
Item	Issues to be Considered	N/A	Yes	No	
1. Safety aspects not already covered	Safety auditors are to check for any issue or item not already covered.				Overtaking lanes provided
	This could include unusual events, special effects of land uses alongside, including stock being driven onto or along the road.				
	The ability of the road to take overweight or over-dimension vehicles or other large vehicles: - Trucks - Buses - emergency vehicles - utility/road maintenance vehicles.				
	The ability to close the road for special events in a safe manner.	✔			
	The special requirements of scenic or tourist routes.				No special requirements allowed. Drivers may try to pull off the road at sites with views??
	The provision of rest areas with safe access and egress.	✔			

Project: MR 92 Nowra to Nerriga BM4

Audit by: Graham Watson, Alex Robinson

Signatures

Date: 5/06/2003

APPENDIX D
Assessment of the Proposed Modification

SINCLAIR KNIGHT MERZ

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Main Road 92 Upgrade
Nowra to Nerriga

MODIFICATION REPORT

- Final
- 01/08/2003

Main Road 92 Upgrade - Nowra to Nerriga

MODIFICATION REPORT

- Final
- 01/08/2003

Sinclair Knight Merz
ABN 37 001 024 095
100 Christie Street
PO Box 164
St Leonards NSW
Australia 1590
Tel: +61 2 9928 2100
Fax: +61 2 9928 2500
Web: www.skmconsulting.com

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1. Introduction

1.1 Background to the Design Modifications

The NSW Roads and Traffic Authority (RTA), Federal Department of Transport and Regional Services (DoTARS) and Shoalhaven City Council (SCC) propose to undertake road upgrading works on Main Road 92 (MR92) between Hames Road (near Nowra) and Nerriga, a distance of approximately 54 kilometres (km).

MR92 provides a more direct link between the coast and inland NSW. The current road, with its gravel surface and narrow winding sections, does not provide a safe and reliable route. The poor quality, isolation and unreliability of the existing road discourages potential users. During wet periods it can become unusable for drivers without four-wheel drive vehicles. Many would rather travel long distances than travel along the variable quality gravel. The existing condition of the road has also contributed to an accident rate which is well in excess of the state average for similar types of roads.

The proposal would:

- open up new viable freight routes between the Shoalhaven, southern Illawarra and inland regions of Canberra, Queanbeyan, Tallaganda, Mulwaree and areas beyond, boosting the regional economy;
- improve access to Port Kembla from south-east NSW and the Gippsland district of Victoria;
- reduce freight transport costs on the existing MR92 and on less direct alternative routes such as the Kings Highway and the Moss Vale – Nowra Road, through reduced fuel usage, reduced wear and tear on vehicles, reduced travel times and reduced accident costs;
- increase opportunities for tourism between the Shoalhaven and southern Illawarra and inland areas from Canberra and Sydney;
- significantly improve road safety;
- reduce dust and sedimentation along the route; and
- provide improved access for fire fighting and emergency services.

An Environmental Impact Statement (EIS) was prepared for the Main Road 92 Upgrade and was exhibited on 12 December 2002 for a period of 78 days. The purpose of this report is to describe and assess the environmental impacts of proposed modifications to the design of the proposed Main Road 92 Upgrade following public exhibition of the Environmental Impact Statement (EIS). The proposed modifications have arisen from issues raised in submissions as well as other assessments during the exhibition period.

This report:

- describes the proposed modifications, including the design as described and assessed in the EIS and the changes now proposed;
- documents the reasons for the proposed modifications;
- assesses the environmental, social and economic impacts of the modifications, in their own right and relative to the MR92 Upgrade as proposed in the EIS; and
- recommends mitigation and management measures required to ensure that the impacts of the modifications are minimised.

1.2 Assessment process and requirements

Section 112 of the *Environmental Planning & Assessment Act, 1979* (EP&A Act) requires determining authorities to consider an EIS for projects that are likely to have a significant impact on the environment. Where a determining authority considers that the proposal is likely to have a detrimental impact on the environment it may decide to alter the project to eliminate or reduce the detrimental effect (refer to section 112(4) of the EP&A Act).

To determine the effectiveness of modifications in minimising environmental impacts, an assessment must be undertaken. The assessment must consider the matters specified by the Regulations, the Director-General's requirements and any other requirements of determining authorities. Clause 243(4) of the EP&A Regulation requires a determining authority to prepare a report assessing the proposal and representations from the public exhibition process, and describing and assessing any modifications to the project. This report documents the assessment of modifications for this project in accordance with the requirements of section 112.

The assessment of impacts of modifications to the proposal has been undertaken with consideration to clause 228(2) of the EP&A Regulation 2000, which specifies matters for consideration when assessing activities under Part 5 of the EP&A Act. Consideration has also been made of the potential impacts of the modifications on matters of national environmental significance under the Commonwealth *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act). Reference is made to **Section 5**, which provides a summary of assessment against both clause 228(2) and EPBC Act considerations.

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2. Description of the proposed modifications

A key component of the proposed MR92 Upgrade is the escarpment crossing in the vicinity of Bulee Mountain. An options selection process was described in the EIS, which concluded that a significant enhancement of the existing alignment through the Bulee Mountain area was the preferred upgrade option. This option is referred to as BM4.

This section of the report identifies the issues associated with the design as proposed in the EIS (including issues raised in submissions), describes the modification and provides a justification for the proposed modification. **Section 3** of this report contains the environmental assessment of the modification and the proposed mitigation and management measures specific to the modification. **Section 4** also provides a collated summary of management and mitigation measures.

2.1 Description of the issues in this location

The EIS proposed that in the Bulee Mountain area, the proposal would have a design speed of 60 km/hour with a maximum grade of 11.7% over two sections, one measuring 360 m and the other 730 m. Concrete gutter would be installed in cuttings, and retaining walls would be extensively used to support the embankment and to reduce the "footprint" of the widened road. The cross section through this area was designed with adequate capacity to avoid the need for any future widening. It would comprise two 3.5 m wide traffic lanes with a 2.0 m wide sealed shoulder on both sides of the road with overtaking opportunities for eastbound traffic. On curves the lane would be widened to 3.9 m. The minimum curve radius for this section of the proposal is 100 m.

There would be no physical separation of opposing traffic flows for the entire length of the proposal. Due to the steep grades within the Bulee Mountain area, three 100 m overtaking lanes were proposed in the EIS for eastbound traffic. A detailed design (eg precise location of overtaking lanes, length of tapers) was not undertaken for the EIS.

Representations as well as discussions between the RTA, SCC and DoTARS identified the need for additional information on the overtaking lanes at Bulee Mountain, in particular the need for overtaking opportunities in both directions, to further enhance road safety and serviceability. The desirability for an increased length of overtaking lanes was also identified.

2.2 Description of modification

After looking at the overtaking opportunities at Bulee Mountain in the context of the affordable EIS Proposal, it was recognised that there would be possibilities for delays for downhill vehicles and that extended eastbound opportunities were feasible and desirable between the two steeper sections of the Bulee Mountain ascent.

The modification includes the provision of a westbound overtaking opportunity and an extended climbing lane, as well as adjustments to the location of the three proposed eastbound auxiliary lanes. **Table 2.1** provides a comparison summary of the auxiliary lanes in the EIS and the proposed modifications. This is illustrated in **Figure 2.1**.

Table 2.1: Bulee Mountain auxiliary lanes in EIS and proposed modifications

EIS				*Modification*			
Direction	Chainage	Length without tapers	Length including tapers	Direction	Chainage	Length without tapers	Length including tapers
Eastbound	46595-46845	105m	250m	Eastbound	46780-46950		170m
Eastbound	47555-47805	105m	250m	Eastbound	47455-47875		420m
Eastbound	48275-48525	105m	250m	Eastbound	48440-48610		170m
				Westbound	47860-48050		190m

2.3 Justification for the proposed modification

The proposed overtaking lanes were noted in the EIS as requiring further consideration during detailed design. In response to submissions received and correspondence, additional overtaking opportunities have been included in the Representations Report. The additional overtaking opportunities would enhance road safety by providing opportunities in both directions for vehicles to safely overtake slower moving vehicles. This is expected to avoid drivers becoming frustrated and it would also have a positive effect on operational efficiency. The potential environmental impacts of the proposed modifications are discussed in **Section 3** of this report. While the proposed modification would have some minor adverse environmental effects, on balance, the safety benefits would outweigh the environmental costs.

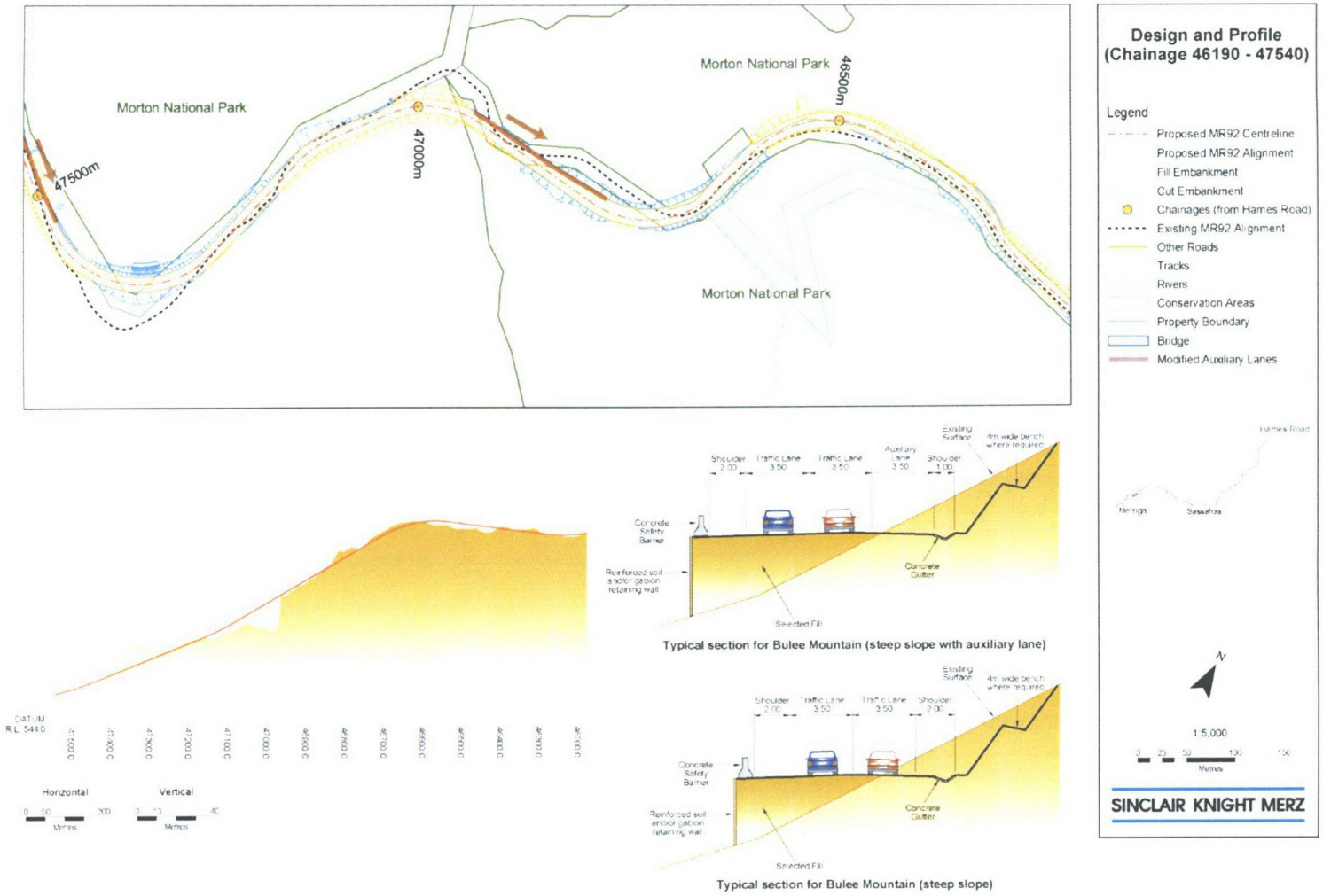

Figure 2-1a: Concept design of proposed Bulee Mountain modification

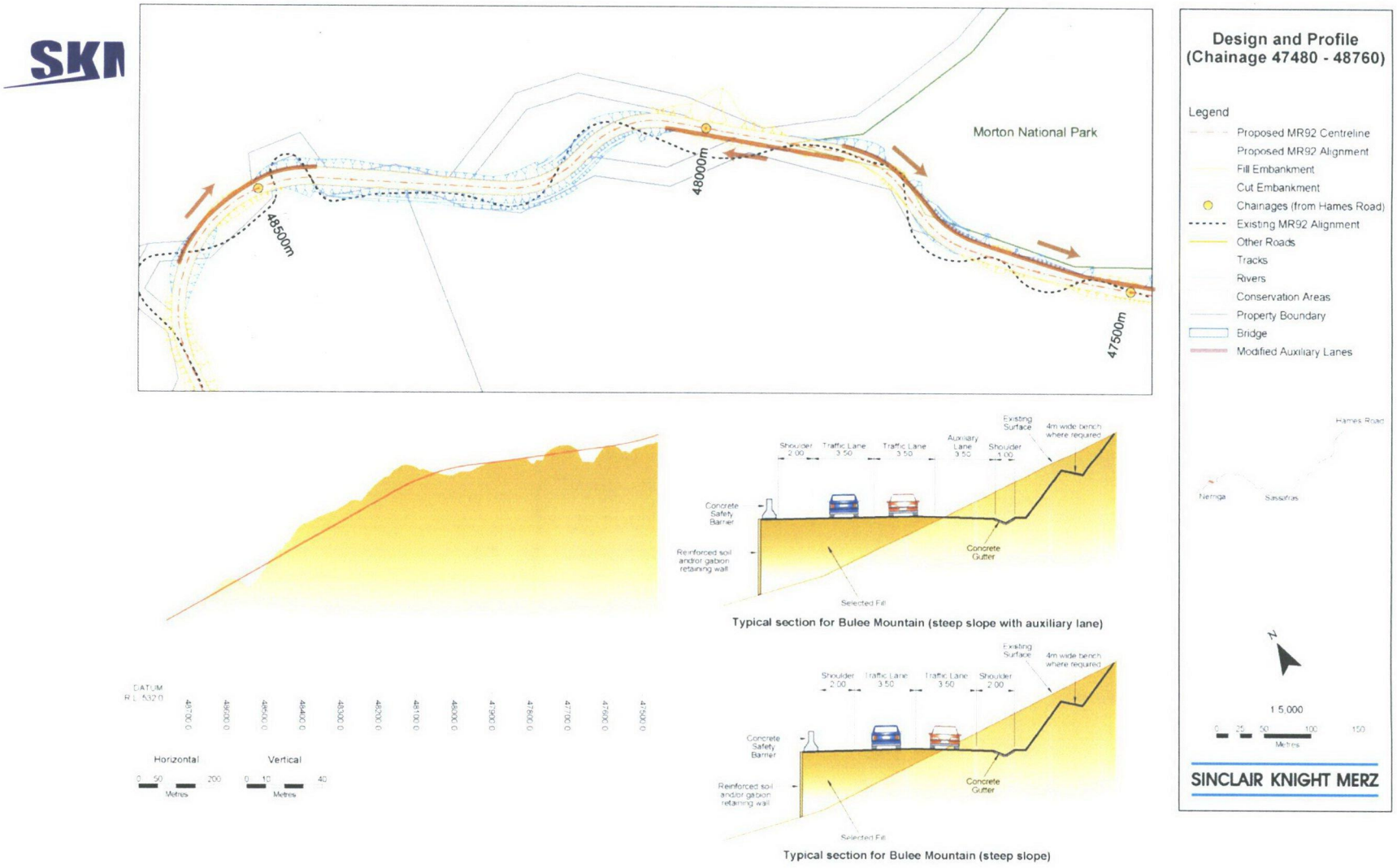

Figure 2-1b: Concept design of proposed Bulee Mountain modification

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3. Assessment of proposed modification

3.1 Assessment of impacts

3.1.1 Construction traffic impacts

The proposal would not result in any additional disruption to traffic during the construction period. There may be a positive effect with greater road width enabling construction of the overall BM4 route under traffic to be more effectively managed.

3.1.2 Operational traffic impacts

The proposed modification is expected to have a positive effect on operational traffic using the upgraded BM4 route when compared to the design proposed in the EIS. With the sections of steep grade, there was the potential for some delays for vehicles caught behind heavy vehicles travelling east and west. From a road safety perspective, this situation was regarded as a safety risk as a result of drivers, delayed by heavy vehicles, becoming frustrated and engaging in unsafe overtaking manoeuvres.

The ability for faster moving vehicles to overtake slower vehicles would also enhance the attractiveness of the route in terms of reliability and operational efficiency.

3.1.3 Visual impacts

The proposed modification would result in only minor changes in the visual impact of the proposal as described in the EIS. Some additional clearing would be required, but this is limited and it may be possible in detailed design to increase the slope of batters to reduce the project footprint. The visual effect would be similar to that predicted in the EIS.

3.1.4 Social impacts

The proposed modification is considered likely to have a positive social impact when compared to the design as proposed in the EIS, by improving road safety, operational efficiency and providing greater reliability. Other impacts on the local community distinct from those previously assessed in the EIS are not expected.

3.1.5 Land use and property impacts

The modification would not result in any significant additional property and land use impacts from those assessed in the EIS. The proposed modification would result in a total additional area of land required of approximately 0.2 hectares. This is regarded as minor.

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3.1.6 Air quality

While no modelling has been carried out, it is expected that the proposed modification would have a positive, albeit minor, effect on air quality by reducing the likelihood of vehicles being delayed and travelling at a less than optimal speed for emissions efficiency. For most modern vehicles, this optimal speed, where emission rates for Oxides of Nitrogen (NO_x) and Carbon Monoxide (CO) intersect, is between 70 and 80 km/hr. At lower speeds CO emissions are significantly higher. From a greenhouse perspective, CO_2 emissions mirror CO emissions so there would also be a positive, albeit, minor improvement with the inclusion of the proposed modification.

3.1.7 Biodiversity

As detailed in the Species Impact Statement (SIS), this area supports two significant plant species; *Dillwynia crispii* and *Eucalyptus triflora*. Both species are ROTAP species but are not listed under the *Threatened Species Conservation Act, 1995* or *Environment Protection and Biodiversity Conservation Act 1999*. Widening the road to include the additional overtaking opportunities is expected to have a greater surface impact on these species. As stated in the SIS, the issue is the disturbance of these species in this area rather than the minor increase in area affected as a result of the proposed modification. Therefore, while there is an increase in the disturbance, this is not regarded as significant when compared to the design proposed in the EIS.

The proposed modification is also expected to increase impacts on habitat of the Glossy Black Cockatoo. The level of effect is not expected to result in substantial additional environmental effects.

Therefore, it is not expected that the impacts would differ significantly from those identified in the EIS. Detailed mitigation measures could be augmented following the pegging of the alignment.

3.1.8 Water quality, hydrology and hydraulics

Impacts on water quality, hydrology and hydraulics would be as assessed in the EIS.

3.1.9 Heritage

As stated in the EIS, the proposed upgrade of the existing road in the Bulee Mountain area would significantly impact on sections of the 1856 realignment of the Wool Road but would avoid Bulee Gap and the dry stone retaining wall in the immediate vicinity. The affected sections of the Wool Road have been assessed as an excellent example of 19th century road construction that is of State heritage significance. The proposed modification would increase the footprint of the new alignment at Bulee Mountain, however, this is expected to result in only a negligible increase in the impact of the EIS Proposal.

3.1.10 Noise

Impacts on noise would be as assessed in the EIS.

3.1.11 Economic impacts

Economic impacts would be as assessed in the EIS. There would be a small improvement in the economic performance of the road as the modifications would result in reductions in road user delays.

3.1.12 Hazards and risks

This modification has been proposed in response to concerns relating to road safety. The proposed modification is considered to address these safety concerns and provide a better outcome than the alignment as proposed in the EIS.

3.1.13 Mitigation measures and safeguards

No additional mitigation or management measures are proposed to reduce the impacts of the proposed modification on the environment. Reference is made to Sections 10.4 and 12.7.1 of the EIS for mitigation measures relevant to this precinct.

3.2 Cumulative Impacts and Sustainability of the Proposed Modification

Environmental impacts identified in previous sections above are summarised in the table following.

	Environmental Impacts compared with EIS ✓ = beneficial impact 0 = neutral/negligible impact x = minor adverse impact including mitigation
Planning Land Use	0
Traffic & access	✓
Noise	0
Air	✓
Heritage	0
Water Quality	0
Flora & Fauna	x
Social/Economic	✓
Visual / Landscape	0
Hazard & Risk	✓

The proposed design modifications would be constructed and operational within the same timeframe as detailed in the EIS.

The modification is proposed in response to issues raised by the community, and design issues identified by the RTA following public exhibition of the EIS. As such it generally has a positive impact on the environment and community, when assessed in relation to the impacts of the proposal as assessed in the EIS. The proposed modification results in some environmental impacts that are slightly different or increased from those identified in the EIS. However, on balance, the impacts of the modification are considered to contribute collectively to a reduced extent and severity of impacts of the project overall. The mitigation measures described in the EIS would be implemented to ensure impacts are appropriately managed and minimised.

The proposed modifications are consistent with the principles of Ecologically Sustainable Development, as set out in the EP&A Act, as follows:

- The precautionary principle would be met as the environmental and cumulative assessments have concluded that the potential impacts of the project would be reduced as a result of the proposed design modification. The modification has responded to concerns about potential impacts raised by the community, and are primarily intended to reduce or minimise negative impacts;
- Equity issues are enhanced by providing overtaking opportunities in the Bulee Mountain area for vehicles travelling in both directions. Environmental impacts are largely unchanged from those assessed in the EIS;
- Impacts on biological diversity and ecological integrity will be slightly increased by the proposed modification from the impacts assessed in the EIS. However, on balance, the impact on the relatively small area of habitat and plant species is not seen to differ significantly from the EIS. The mitigation measures proposed in the EIS would be implemented; and
- Although no additional economic assessment was undertaken as a result of the proposed modification is expected to result in a positive, albeit minor, improvement in the economic effects of the project by enhancing the reliability in travel times and operational performance of the proposed Upgrade.

4. Environmental Management and Safeguards

The proposed environmental management measures and safeguards are the same as those identified in the EIS.

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5. Commonwealth and NSW Environmental Factors

5.1 EP&A Regulation 2000 – Clause 228 Factors

In assessing the impact of the proposed design modification for the purposes of Part 5 of the EP&A Act, the following clause 228 factors consider the likely impact of these modifications on the environment.

Clause 228 factor	Description of impact	Assessment of impact compared to EIS proposal
a. any environmental impact on a community	Some positive environmental and social impacts on the community would arise from the modification, with other impacts being slightly negative. Modification responds to issues raised by the community concerns.	Minor positive.
b. any transformation of a locality	Modification would not result in transformation of localities when compared to the design proposed in the EIS.	Nil
c. any environmental impact on the ecosystem of the locality	Impacts on ecosystems would be as assessed in the EIS.	Nil
d. any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality	Impacts on ecosystems would be as assessed in the EIS.	Nil.
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	Impacts essentially as assessed in the EIS.	Negligible impact given slight increase in footprint.
f. any impact on the habitat of protected fauna (within the meaning of the National Parks and Wildlife Act 1974)	There would be a minor increase in impact on potential habitat of the Glossy Black Cockatoo.	Minor negative
g. any endangering of any species of animal, plant or other forms of life, whether living on land, in water or in the air	While there would be minor increases in the impacts on stands of *Dillwynia crispii* and *Eucalyptus triflora*, the species would not be endangered as a direct result of the	Minor negative

Clause 228 factor	Description of impact	Assessment of impact compared to EIS proposal
	proposed additional works.	
h. any long term effects on the environment	Impacts as assessed in the EIS.	Nil
i. any degradation of the quality of the environment	As stated for factors f and g above, there would be minor negative impacts.	Minor negative
j. any risk to the safety of the environment	The proposed overtaking opportunities are expected to improve safety and reduce risk of accidents.	Positive
k. any reduction in the range of beneficial uses of the environment	Impacts as assessed in the EIS.	Nil
l. any pollution of the environment	Potential for minor improvements in air quality and Greenhouse emissions.	Minor positive
m. any environmental problems associated with the disposal of waste	Impacts as assessed in the EIS.	Nil
n. any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply	Impacts as assessed in the EIS.	Nil
o. any cumulative environmental effect with other existing or likely future activities	The modifications are considered to result in a reduction in the overall impact of the proposed MR92 Upgrade from those assessed in the EIS.	Minor positive.

5.2 EPBC Act Factors

The factors which need to be taken into account when considering the environmental impact of an activity on matters of National Environmental Significance (NES) under the Commonwealth *Environment Protection and Biodiversity Conservation* (EPBC) *Act 1999* are listed and considered below.

Matters of National Environmental Significance	Impact
Any environmental impact on a World Heritage Property? There are no world heritage properties in the area of the proposal	Nil
Any environmental impact on wetlands of international importance? There are no RAMSAR wetlands in the area of the proposal	Nil

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Matters of National Environmental Significance	Impact
Any environmental impact on Commonwealth listed threatened species and ecological communities? Detailed reviews of information and surveys indicated no Commonwealth threatened species within the area of the proposed modifications.	Nil
Any environmental impact on Commonwealth listed migratory species? There are no effects on the habitat or lifecycle processes of any migratory species.	Nil
Does any part of the proposal involve a nuclear action? No part of the proposal involves a nuclear action.	Nil
Any environmental impact on a Commonwealth marine area? There are no Commonwealth marine areas in the locality.	Nil
Any impact on Commonwealth land? There would be no impact on Commonwealth land from the modifications	Nil

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6. Conclusion

This report describes and assesses a modification to the proposed Upgrade of Main Road 92 from the proposal as described and assessed in the EIS. The proposed modification includes:

- Adjustments to the location of two of the proposed eastbound auxiliary lanes in the Bulee Mountain area;
- Increasing the length of one of the proposed eastbound auxiliary lanes at Bulee Mountain; and
- The addition of a westbound auxiliary lane in the Bulee Mountain area.

The proposed modification has been assessed to have an overall beneficial impact on the environment, when compared to the proposal as described and assessed in the EIS. The main advantages of the proposed modification are:

- Improvements to road safety;
- Reduction in accident risk;
- Improved operational performance;
- Minor reductions in vehicle emissions and fuel usage.

The proposed modification has been assessed in accordance with the requirements of Part 5 of the EP&A Act, in particular with reference to the requirements of clause 228(2) of the Regulation, and the EIS requirements issued by the Director-General. The modifications do not substantially alter the proposal from that proposed in the EIS and, on balance, would result in minor improvements to the project's potential impacts when compared to the proposal described in the EIS. It is not considered necessary to exhibit the modifications, or to undertake a supplementary EIS.