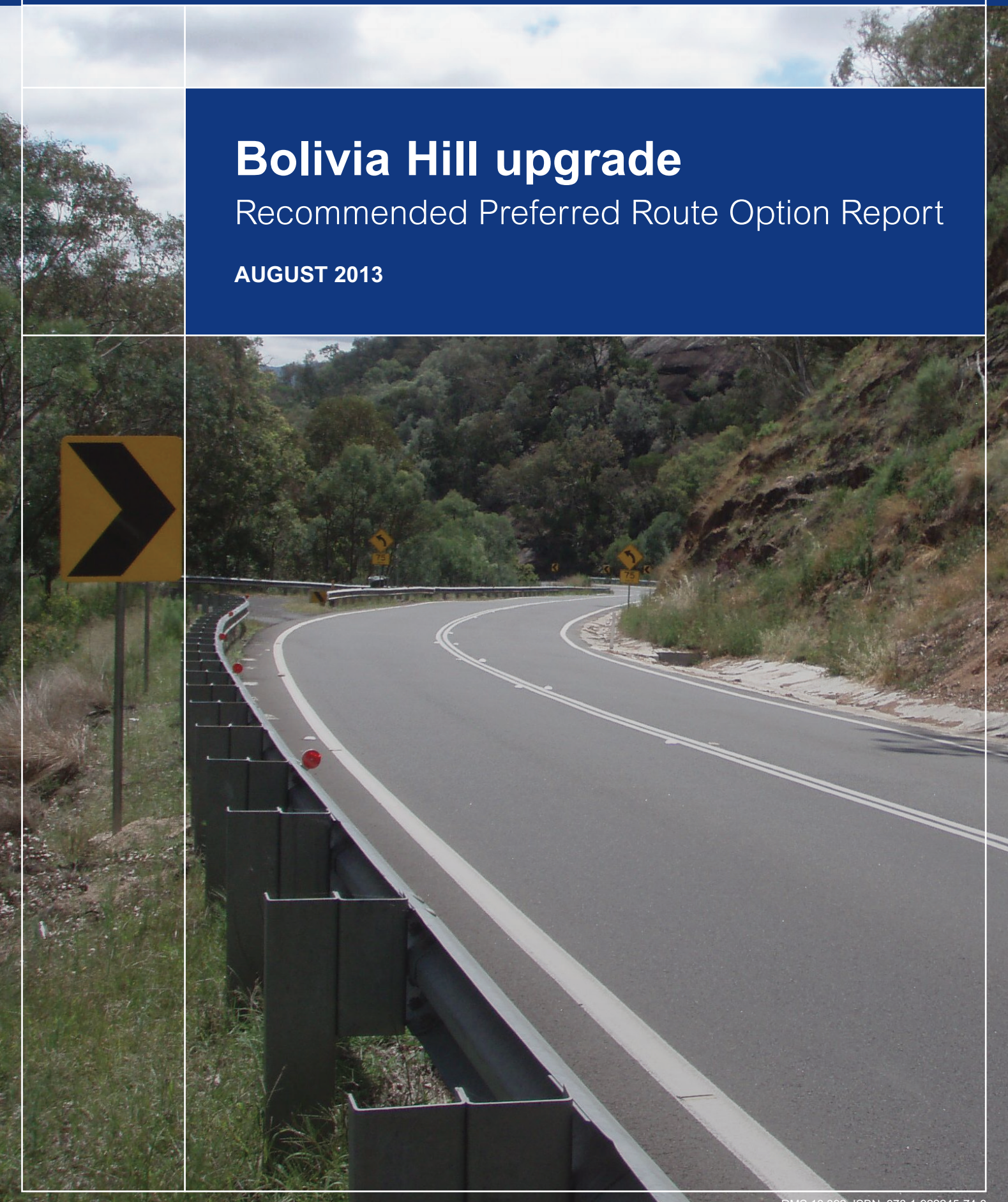
Australian Government

Transport Roads & Maritime Services
NSW GOVERNMENT

Bolivia Hill upgrade

Recommended Preferred Route Option Report

AUGUST 2013



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Glossary of terms and abbreviations

AADT	Annual Average Daily Traffic. Average annual daily traffic counts are published by RMS. The total volume of traffic passing a roadside observation point over a period of a year, divided by the number of days per year. It is calculated from mechanically obtained axle counts.
Aboriginal cultural heritage	The tangible (objects) and intangible (dreaming stories, songlines, places) cultural practices and traditions associated with past and present day Aboriginal communities.
AHD	Australian Height Datum.
AHIMS	Aboriginal Heritage Information Management System. A register of NSW Aboriginal heritage information maintained by OEH.
Alignment	The geometric layout (of a road) in plan (horizontal) and elevation (vertical).
ARI	Average recurrance interval of a flood event. Used to describe the frequency or probability of floods occurring (eg a 100 year ARI flood is a flood that occurs or is exceeded on average once every 100 years).
AR&R	Australian Rainfall and Runoff.
ASRIS	Australian Soil Resource Information System.
ASS	Acid Sulfate Soils. Naturally acid clays, mud and other sediments usually found in swamps and estuaries. They may become extremely acidic when drained and exposed to oxygen and may produce acidic leachate run-off that can pollute waters and liberate toxins.
AWS	Automatic Weather Station.
BoM	Bureau of Meteorology.
BP	Before Present.
Carriageway	The portion of a roadway used by vehicles including shoulders and auxiliary lanes.
Catchment	The area from which a surface watercourse or a groundwater system derives its water.
CHL	Commonwealth Heritage List. A list of places owned or leased by the Commonwealth, which have heritage value.
CO	Carbon monoxide.
Concept Design	Initial functional layout design for a road or road system, to establish feasibility, to provide a basis for estimating, and to determine further investigations needed for detailed design.
Cost Benefit Analysis	An economic based approach that considers the merits of a project from the viewpoint of the community at large rather than that of the organisation responsible for the project.

Critical Habitat	The habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in the recovery strategy or in an action plan for the species.
Cutting	Formation resulting from the construction of the road below existing ground level – the material is cut out or excavated.
EEC	Endangered Ecological Community under the NSW *Threatened Species Convservation Act 1995.*
Environmental Impact Assessment (EIA)	EIA is the process of identifying, predicting, evaluating and mitigating the biophysical, social and other relevant effects of proposals prior to major decisions being taken and commitments made.
Ephemeral	Existing for a short duration of time.
ESD	Ecologically Sustainable Development.
DECCW	Department of Environment, Climate Change and Water (functions are now within the Office of Environment and Heritage or the Department of Primary Industries).
ECA	Ecological Constraints Analysis.
EIS	Environmental Impact Statement.
EP&A Act	*Environmental Planning and Assessment Act 1979* (NSW).
EPBC Act	*Environmental Protection and Biodiversity Conservation Act 1999* (Commonwealth).
FM Act	*Fisheries Management Act 1994* (NSW).
GDE	Groundwater dependent ecosystem.
GIS	Geographic Information System.
GMU	Groundwater Management Units.
IAP2	International Association for Public Participation.
Impact	Influence or effect exerted by a project or other activity on the natural, built and community environment.
ISEPP	*State Environmental Planning Policy (Infrastructure) 2007* (NSW).
ITW	Internal Technical Workshop.
Key stakeholder	The key stakeholders are groups who are proactively engaged during the project.
KTP	Key Threatening Process.
LEP	Local Environmental Plan.
Level of service	A measure of the quality of road operating conditions, including speed, travel time, freedom to manoeuvre, traffic interruptions, and comfort and convenience.
LGA	Local Government Area.
MLALC	Moombahlene Local Aboriginal Land Council.

NHL	National Heritage List. A list established by the Australia Government of places of outstanding heritage significance to Australia.
NO_x	Oxides of nitrogen.
NPT	RMS Network Planning Targets.
NPWS	National Parks and Wildlife Service.
NR	Nature Reserve.
NSW	New South Wales.
OEH	NSW Office of Environment and Heritage (formerly known as Department of Environment and Climate Change and Water).
PAC	Planning Assessment Commission.
PAD	Potential Archaeological Deposit. Any location considered to have a moderate to high potential for subsurface archaeological material.
PACHCI	Procedure for Aboriginal Cultural Heritage Consultation and Investigation.
Project	Bolivia Hill Upgrade.
Project team	The team, comprising representatives of RMS, Cardno (as the lead technical consultant) and other technical specialists, that is working on the project.
Reduced level (RL)	The vertical distance between a survey point and the Australian Height Datum (AHD) .
RMS	Roads and Maritime Services (formerly known as RTA: Roads and Traffic Authority) .
RMS (Maritime)	The maritime services division of Roads and Maritime Services (RMS).
RNE	Register of the National Estate.
RPROR	Recommended Preferred Route Option Report (this report) .
RST	Road Surface Temperature.
SAL	Strategic Agricultural Lands.
SES	State Emergency Services.
SEPP	State Environmental Planning Policy.
SHI	NSW State Heritage Inventory.
SHR	NSW State Heritage Register. A register of places and items of particular importance to the people of NSW.
SO_2	Sulfur Dioxide.
SSD	State Significant Development.
SSI	State Significant Infrastructure.
TEC	Threatened Ecological Community. An ecological community identified by relevant legislation that is likely to become extinct or is in immediate danger of extinction.

TfNSW	Transport for New South Wales.
TSC Act	*Threatened Species Conservation Act 1995* (NSW).
TSR	Travelling Stock Route.
TS&CR	Travelling Stock and Camping Reserves.
VKT	Vehicle kilometres travelled.
VMS	Value management study.

Executive summary

Introduction

The New England Highway (HW9) is a major link from the Hunter Region to the New England area and beyond.

Bolivia Hill is a steep winding section of the New England Highway between Glen Innes and Tenterfield within the local government area of Tenterfield. The existing highway corridor is narrow with a rock face to the east and a steep drop to the west.

The Australian Government has committed $6 million for planning of safety works at Bolivia Hill and a future Tenterfield heavy vehicle bypass as part of the Nation Building Program. The Bolivia Hill upgrade project includes development of route options and identification of a preferred route.

Objectives for this project have been determined as follows:

- Improve road safety
- Improve road transport productivity, efficiency and reliability of travel
- Minimise the impact on the natural, cultural and built environment
- Provide value for money.

Study area characteristics

A region of approximately 4.5 square kilometres between the top of Bolivia Hill in the south and Pyes Creek bridge in the north formed the immediate study area for investigations of road upgrade options. This region covers a length of approximately three kilometres of the existing highway and extends around 750 metres either side of the highway.

There are significant constraints in the study area for road upgrade options including:

- Very steep terrain
- The Main Northern Railway (disused)
- Agricultural industry
- Aboriginal and non-Aboriginal cultural heritage at various locations across the study area
- Areas identified as Endangered Ecological Communities and the presence of threatened species.

None of these constraints lead to any potential route being discarded in its own right. However, it is combinations of desirable and non-desirable attributes of routes that lead to their recommendation or discard as a feasible route.

Community and stakeholder engagement

Community engagement is a key factor for the successful outcome of this project.

Community engagement is necessary to:

- Understand the issues raised by the community and ensure that these are considered in the route options development process
- Inform the community of the process and provide an opportunity to influence decisions taken during the course of the project
- Seek community knowledge and data to assist the investigation of potential impacts
- Improve the overall design outcomes by minimising impacts and optimising mitigation measures.

Engagement approach

The following stakeholder engagement will be undertaken throughout the project:

- Stakeholder engagement planned to occur during key periods of the project development
- Stakeholder engagement outcomes will be incorporated into project development
- Engagement will be tailored to effectively communicate with different stakeholder groups
- Stakeholder issues need to be understood early in the project and where possible addressed.

Engagement to date

Key community and stakeholder engagement activities conducted during the project familiarisation and preliminary route options development phases have comprised:

- Establishment of engagement tools:
  - 1800 freecall number
  - Project email address
  - Project webpage.
- Display and distribution of communications materials:
  - Information poster outlining the project's objectives and processes, distributed to a number of public venues in Tenterfield and Glen Innes
  - Media advertising
    - Joint annoucement of the Tenterfield Bypass and Bolivia Hill Upgrade projects, local newspapers, October 2012
    - Advertising in local newspapers and radio stations for the commuity drop-in sessions, October/November 2012.
  - Community update
    - Community update, accompanied by a community survey form, delivered to residents and businesses in Tenterfield, Glen Innes, Bolivia, Deepwater and Emmaville via Australia Post's unaddressed mail service, October 2012
    - Community update distributed through key venues such as Council customer service areas, public libraries and motor registries, June 2013.
  - Community survey, made available for completion online in November 2012. Local councils in the New England area were provided the link to the survey and an electronic version of the community update and requested to upload or provide a link from their websites
  - Community drop-in sessions, held at venues in Tenterfield and Glen Innes, 14 and 15 November, 2012
  - Property access letter for field investigations, November 2012
  - Letter sent to over 30 regional, state and national organisational stakeholders advising them of the project commencement, the project study area and the opportunity to contact the project team, November 2012.
- A meeting was held with Tenterfield Shire Council in November 2012.

Ongoing consultation

Community updates will continue to be distributed to maintain open and regular communication with the community.

The next period of stakeholder engagement will commence in August 2013 to display the recommended preferred route option. This period of stakeholder engagement will include:

- Public display
- Community update
- Public meeting and feedback
- Project website, 1800 number and project email address
- Media advertising.

The project development process

Route options identification

The identification of a shortlist of route options which best meet the objectives of the project was undertaken using the generally recognised route options development process, as described below.

Initially, a list of 10 route options (with two variants of one option, making a total of 11 options) was identified using engineering and route selection principles. The list of options is shown in **Figure ES-1**.

The development of the shortlist of route options from the list was based on a qualitative assessment of the relative impacts of each plus a quantitative assessment of the relative cost of each.

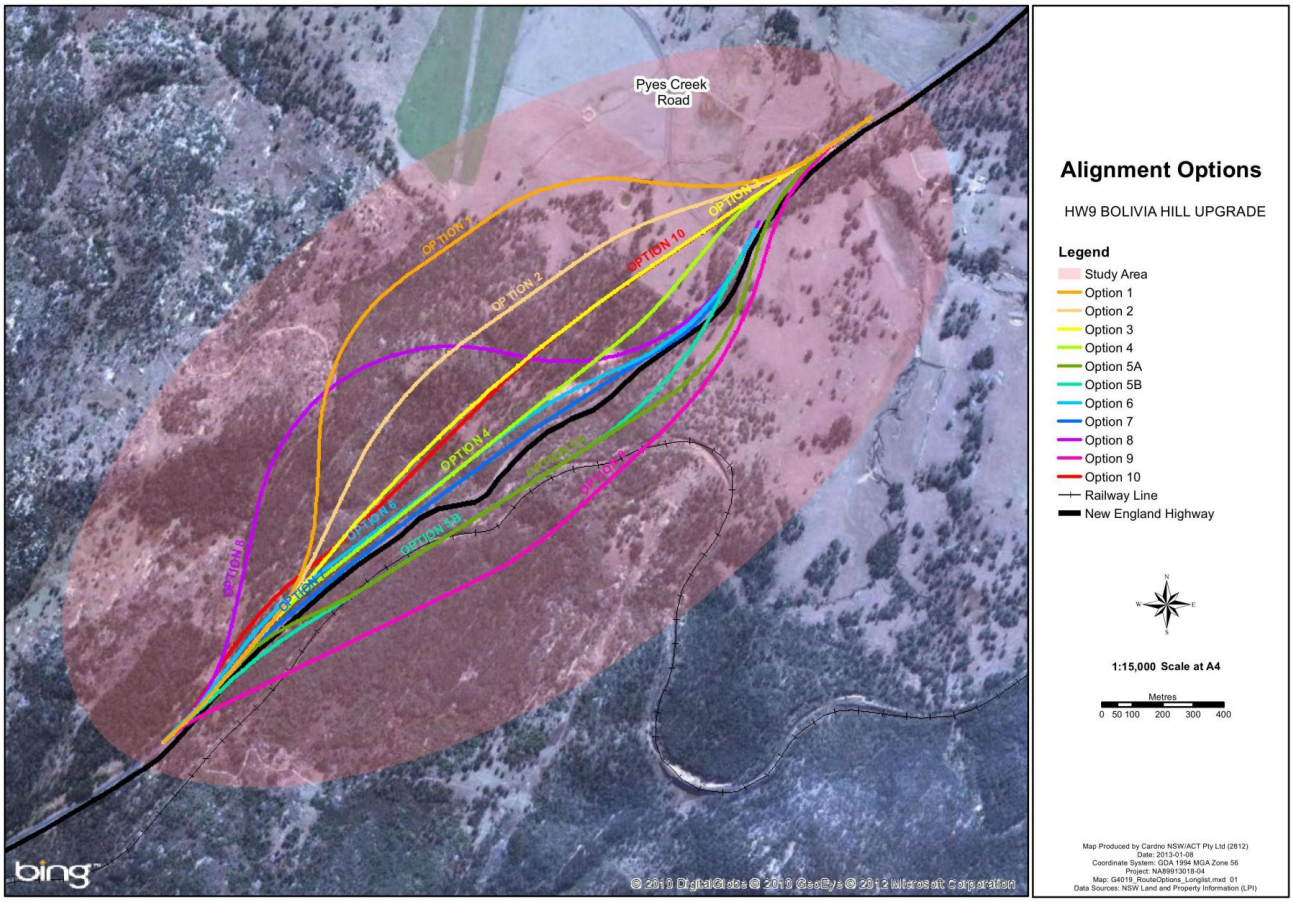


Figure ES-1 List of route options

Shortlisting of route options for further development

The shortlisting process of route options for this project followed four phases:

- *Determination of a list of options*

  A list of options was developed using engineering and route selection principles.

- *Initial assessments*

  Each potentially feasible route was reviewed in detail in relation to many specific evaluation categories. This established a preliminary understanding of how routes performed relative to the project objectives. The evaluation categories comprised:

  - Community input
  - Alignment, staging and access
  - Water quality
  - Terrestrial ecology
  - Flooding and drainage
  - Aboriginal and non-Aboriginal heritage
  - Climate
  - Utilities
  - Planning and zoning
  - Land use
  - Ground conditions
  - Cost
  - Traffic

- *Internal technical workshop*

  This process involved a qualitative assessment of how well each of the list of options best met the project objectives using a workshop format with internal technical specialists from Roads and Maritime Services (RMS), Transport for NSW and Cardno. The evaluation categories were utilised to debate each scenario in the workshop. The list of feasible route options subsequently identified routes that performed better than others, having considered all the constraints.

- *Conclusions*

  The outcome of the internal technical workshop process was a shortlist of four feasible route options. Three of the shortlisted options (Option 2, Option 6 and Option 10) are to the west of the existing highway. Option 7 is an upgrade of the existing highway that utilises as much of the existing road as possible and straightens out the substandard bends in the steepest section of the road.

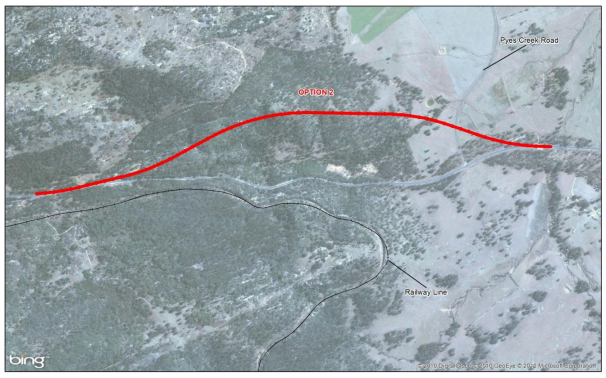
  These options were to be reviewed in relation to similar projects on the New England Highway such as Devils Pinch (south of Glen Innes) to refine the criteria and reduce the cost.

Development of the shortlisted route options

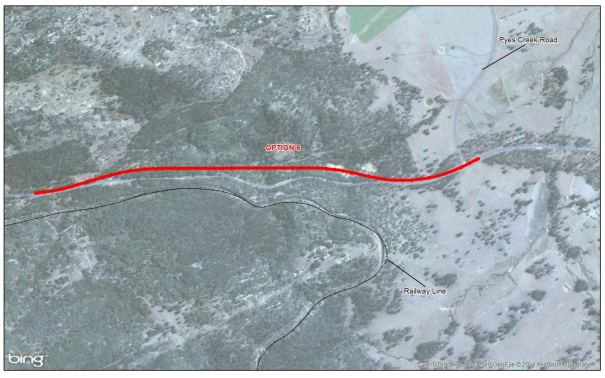
The following additional specialist studies were undertaken following the shortlisting of options to provide input into evaluation of the options and the selection of a preferred option:

- Terrestrial and aquatic biodiversity field studies
- Aboriginal and non-Aboriginal field studies.

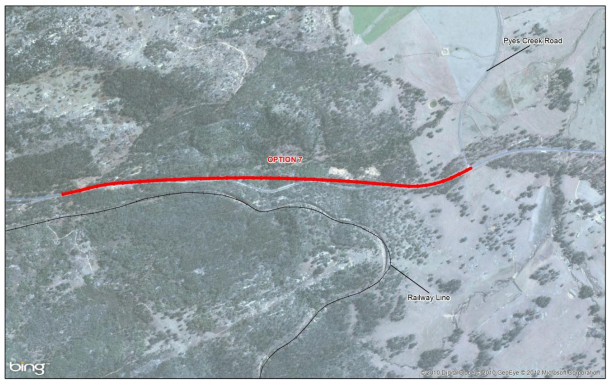
The shortlisted options were subsequently reviewed in light of the additional studies as well as a set of revised design criteria (from that used for the initial option identification and assessment). Costs of the revised shortlisted options were then reassessed. All of the revised shortlisted options contained one northbound (downhill) lane and two southbound (uphill) lanes. The revised shortlisted options are shown in **Figure ES-2**.



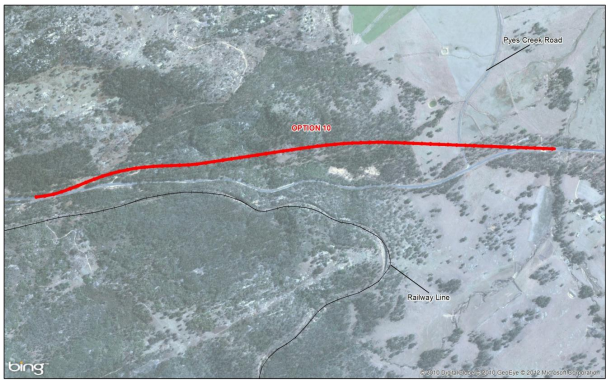
Option 2 Estimated cost $150 million



Option 6 Estimated cost $123 million



Option 7 Estimated cost $115 million



Option 10 Estimated cost $157 million

Figure ES-2 Shortlisted options

Review of shortlisted options

The shortlisted options were presented to representatives of the RMS Major Projects Review Committee (MPRC) at a pre-MPRC meeting on 18 March 2013. The committee representatives considered that the options did not demonstrate value for money and requested that the project team further investigate an optimised solution that provides greater value for money. The option should align with the objectives of the NSW Government's Nation Building 2 submission to the Australian Government by:

- realigning the small radius curves
- widening the shoulders to improve road safety.

The option was then to be presented to the MPRC for endorsement as the recommended preferred option.

Development of the recommended preferred option

The main objective of the preferred option still needs to satisfy the project objectives of improving road safety, road transport productivity, efficiency and reliability of travel, minimising the impact on the natural, cultural and built environment and providing value for money.

Revised design criteria were again proposed to aid in reducing costs.

The option would also only require one lane in each direction as it had been previously established through the option assessment process that there was no warrant for overtaking lanes.

Two options were developed and costed. The options were designated Option 7a and Option 7b as they are sub-options of the previously shortlisted Option 7.

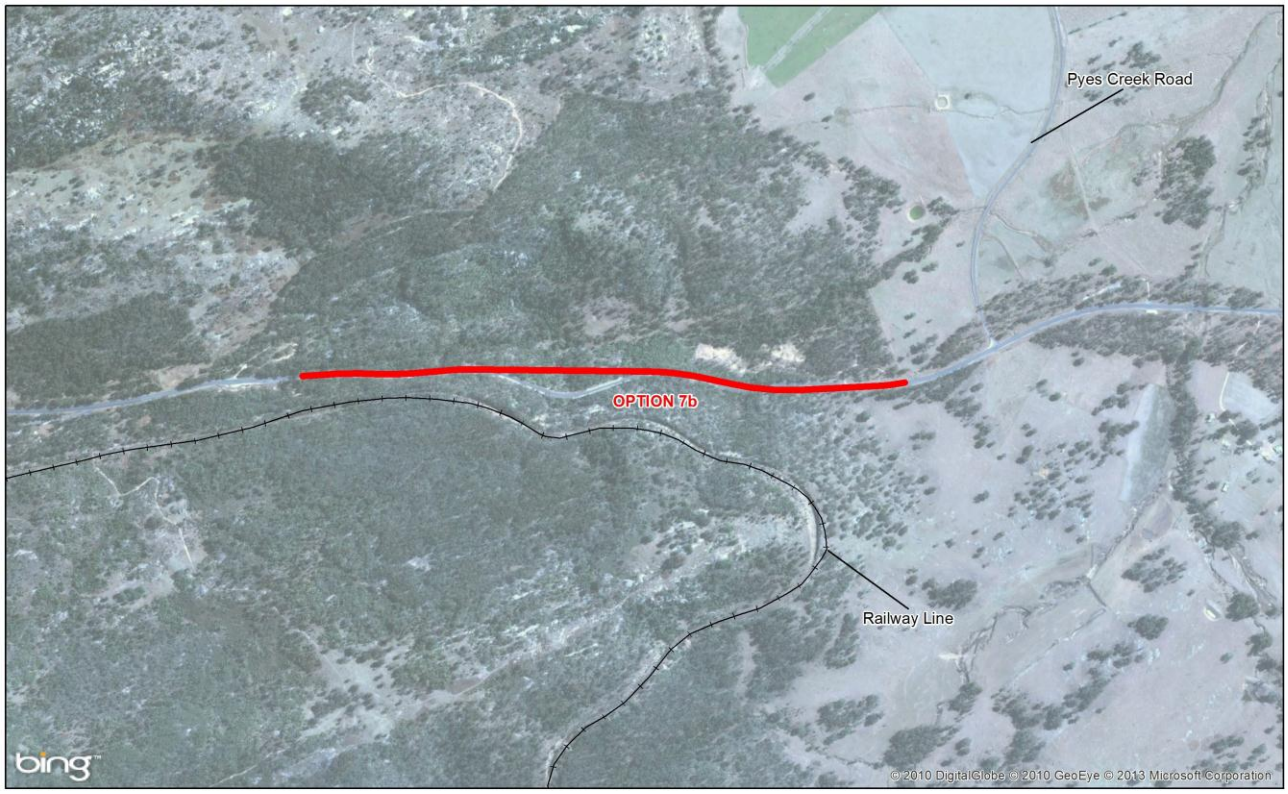


Figure ES-3 Option 7b

The options were examined in a value engineering workshop. Following a review of Options 7a and 7b and the previously shortlisted options 2, 6, 7 and 10 the workshop concluded that:

- Both the options met the project objectives as well as, or better than, the four previously shortlisted options
- Option 7b, at an estimated cost of $60 million, represents better value for money than Option 7a at an estimated cost of $80 million.

Workshop participants therefore agreed that Option 7b should be taken forward as the recommended preferred option for approval. The alignment of Option 7b is shown in **Figure ES-3**.

The recommended preferred route option

Option 7b was presented to the MPRC on 23 May 2013 with the recommendation that it be taken forward to the next stage of the project as the preferred option. The MPRC agreed that the Recommended Preferred Route Option Report be finalised with **Option 7b** as the recommended preferred option and presented to the community.

Next steps

The proposed upgrade of this section of the New England Highway is being developed considering social, environmental and economic objectives in a way that achieves the best functional and community outcome.

A public display of the preferred option will follow a joint announcement of the preferred option by the Federal Minister for Infrastructure and Transport and the State Minister for Roads and Ports.

Concept design and environmental assessment of the preferred option will then be undertaken. Further ground survey, geotechnical and other investigations will be carried out to provide input into the refinement of the design and environmental assessment.

When completed, the environmental assessment will be publicly exhibited and submissions would be sought from the community. It is anticipated that this would be in mid 2014.

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