Golden Highway Upgrade at Ogilvies Hill
Addendum review of environmental factors
Roads and Maritime Services | December 2018
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### Document controls

#### Approval and authorisation

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<td>Accepted on behalf of NSW Roads and Maritime Services by:</td>
<td>Ryan de Carteret Project Manager</td>
</tr>
<tr>
<td>Signed:</td>
<td></td>
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Appendices

Appendix A Design of the proposed modification
Appendix B Consideration of clause 228(2) factors and matters of national environmental significance
Appendix C Statutory consultation checklists
1. Introduction

1.1 Proposed modification overview

Roads and Maritime Services (Roads and Maritime) proposes to modify the Golden Highway Upgrade at Ogilvies Hill project to carry out additional remediation work on two slopes (Slope 15111 and Slope 15113) beyond the footprint previously assessed and approved in the project review of environmental factors (REF).

Key features of the proposed modification would include:

- Removing small trees and shrubs from the slope and crest
- Removing existing blocks, loose rocks and debris from the crest, slope and the bottom of the slope (behind the existing safety fence)
- Drilling, installing and grouting hooked anchor pins to the slope face in areas to be shotcreted on Slope 15113
- Scaling the slopes to remove loose rock and soil
- Installing a concrete lined crest drain about 100 metres long above Slope 15111 to prevent water from flowing across the face of the slope
- Applying a tinted shotcrete to Slope 15113 to improve the stability of an existing fault zone
- Extending the construction footprint beyond which was previously approved in the project REF.

The location of the proposed modification is shown in Figure 1-1 and the proposed modification is shown in Figure 1-2. Chapter 3 describes the proposed modification in more detail.

A REF was finalised for the Golden Highway Upgrade at Ogilvies Hill in July 2018 and is referred to in this addendum REF as the project REF.
Figure 1.1 | Ogilvies Hill proposal location
Figure 1-2a | The proposal

Legend
- Proposal area
- Construction footprint
- Concept design
- Ancillary site

Current stockpile location

Imagery © Department of Finance, Services & Innovation 2018
Figure 1-2b | The proposal
Figure 1-2c  |  The proposal

Legend
- Proposal area
- Construction footprint
- Proposed modification area
- Concept design
- Chainage point
- Culvert
- Basin
- Isolated artefact
- Site recorded during this survey

Imagery © Department of Finance, Services & Innovation 2018
Legend

- Proposal area
- Construction footprint
- Concept design
- Chainage point
- Ancillary site
- AHIMS site location (OEH)

Figure 1-2d  |  The proposal
Legend
- Proposal area
- Construction footprint
- AHIMS site location (OEH)
- Ancillary site

Figure 1-2e | The proposal
Legend

- Proposal area
- Concept design
- Construction footprint
- Ancillary site

Figure 1-2f | The proposal
Legend

- Proposal area
- Construction footprint
- Concept design
- Ancillary site

Figure 1-2a  |  The proposal

Imagery © Department of Finance, Services & Innovation 2018
Figure 1-2b | The proposal

Legend
- Proposal area
- Construction footprint
- Proposed modification area
- Concept design
- Chainage point
- Culvert
- Basin
- Isolated artefact
- Site recorded during this survey
- AHIMS site location (OEH)
- Artefact scatter
- Potential archaeological deposit

1:3,000 @ A4

Imagery: © Department of Finance, Services & Innovation 2018
Legend

- Proposal area
- Concept design
- Construction footprint
- Chainage point
- Ancillary site
- AHIMS site location (OEH)

**Figure 1-2d | The proposal**
Legend

- Proposal area
- Construction footprint
- Concept design
- AHIMS site location (OEH)
- Ancillary site

Figure 1-2e | The proposal
Legend

- Proposal area
- Construction footprint
- Concept design
- Ancillary site

Figure 1-2f | The proposal
1.2 Purpose of the report

This addendum REF has been prepared by Jacobs on behalf of Roads and Maritime. For the purpose of this work, Roads and Maritime is the proponent and the determining authority under Division 5.1 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

This addendum REF is to be read in conjunction with the project REF. The purpose of this addendum REF is to describe the proposed modification, document and assess the likely impacts of the proposed modification on the environment, and detail mitigation and management measures to be implemented.


In doing so, the addendum REF helps to fulfil the requirements of Section 5.5 of the EP&A Act including that Roads and Maritime examine and take into account to the fullest extent possible, all matters affecting or likely to affect the environment by reason of the activity.

The findings of the addendum REF would be considered when assessing:

- Whether the proposed modification is likely to result in a significant impact on the environment and therefore the necessity for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning under Division 5.2 of the EP&A Act.

- The significance of any impact on threatened species as defined by the BC Act and/or FM Act, in section 1.7 of the EP&A Act and therefore the requirement for a Species Impact Statement or a Biodiversity Development Assessment Report.

- The significance of any impact on nationally listed biodiversity matters under the EPBC Act, including whether there is a real possibility that the activity may threaten long-term survival of these matters, and whether offsets are required and able to be secured.

- The potential for the proposed modification to significantly impact any other matters of national environmental significance or Commonwealth land and therefore the need to make a referral to the Australian Government Department of the Environment and Energy for a decision by the Australian Government Minister for the Environment on whether assessment and approval is required under the EPBC Act.
2. Need and options considered

2.1 Strategic need for the proposed modification

Chapter 2 of the project REF addresses the strategic need for the project, project objectives and options which were considered. The proposed modification described and assessed in this addendum REF is consistent with the strategic need for the project.

As part of the detailed design development, a geotechnical assessment was carried out in March 2018 to determine potential slope risks along the project footprint. The results of the assessment indicated the following:

- **Slope 15111**: Soil and rock on the slope face is considered extremely to highly weathered shale with colluvial soil at the slope crest. The ten-year-old low impact galvanised fence located at the bottom of the slope has been impacted by south bound vehicles, resulting in damage to a section. The main risks identified during the assessment include block detachment from the colluvial soil crest and slumping of the weathered shale due to water flows over the slope face.

- **Slope 15113**: The slope comprises extremely weathered shale and highly to moderate weathered sandstone with a fault zone through the cutting approximately 12-15 metres in width. The ten-year-old low impact galvanised fence located at the toe of the cutting is partially buried by eroded sand and silt from the cutting/fault zone. The main risks identified during the assessment include the collapse or rotational failure of the slope with large sandstone blocks falling and breaching the fence, potentially reaching the road as well as the release of smaller blocks.

2.2 Proposal objectives and development criteria

Section 2.4 of the project REF identifies the proposal objectives and development criteria which apply to the proposed modification. The specific objectives relevant to the proposed modification include:

- Preserve and improve the condition of structures, cuttings and embankments
- Provide safe and efficient travel for road users by providing climbing lanes in each direction as well as wide, paved road shoulders.

2.3 Alternatives and options considered

Based on the results of the slope geotechnical assessment, two options were considered against the proposal objectives and strategic need and included:

- **Option 1 (Do-nothing)**: The do-nothing option would result in no slope stabilisation remediation being carried out at either slope. The do-nothing option would not fulfil the proposal objectives as it would not reduce the risk for rocks to fall in an uncontrolled manner on the Golden Highway in this location.

- **Option 2 (Slope stabilisation works)**: The proposed modification will reduce the potential risk associated with rock falls by removing loose materials including rocks and vegetation and scaling the slope faces. A concrete lined drain would be installed along the crest of Slope 15111 to prevent further water flows over the slope face. Shotcrete would be applied to the cutting fault zone to stabilise the slope face.
2.4 Preferred option

The do-nothing option would not achieve the project objectives, and reduce the risk of rock falls to motorists. Accordingly, this option was not pursued further. The preferred option (Option 2) would meet the proposal objectives by improving the condition of the cutting and resulting in more safe and efficient travel along the Golden Highway. This is the subject of this addendum REF.
3. Description of the proposed modification

3.1 The proposed modification

Roads and Maritime proposes to modify the Golden Highway Upgrade at Ogilvies Hill project to carry out additional remediation work on two slopes (Slope 15111 and Slope 15113) beyond the footprint previously assessed in the project REF. The proposed modification is shown in Figure 1-2 and Figures 3-1a&b and Figure 3-2 a-c.

Key features of the proposed remediation work on Slope 15111 would involve:

- De-vegetation and removal of about 15 small trees along the slope face and crest
- Removing existing blocks from the crest and slope face
- Clearing loose rock and debris from the bottom of the slope and behind the existing pipe-post fence
- Installing a concrete lined drain along the crest of the slope, about three metres back from the slope and about 100 metres in length.

Key features of the proposed remediation work on Slope 15113 would involve:

- De-vegetation and tree removal along the batter slope and crest
- Re-grading the crest to decrease the slope angle at the crest and removing rock and debris from the crest
- Scaling of the face and crest of the slope to remove all loose rock and soil
- Clearing loose rock and debris from the bottom of the slope and behind the existing pipe-post fence
- Drilling, installing and grouting hooked anchor pins into the slope face at two metre intervals
- Attaching steel mesh to the anchor pins
- Applying tinted shotcrete to the meshed area.

The proposed modification is shown in Figure 1-2 while the details of the proposed modifications for Slope 15111 and Slope 15113 are shown on Figure 3-1a&b and Figure 3-2a-c.

Slope 15111

Slope 15111 is located between chainages of around 70720 to 70790. The slope is a north facing cutting about 70 metres in length and up to eight metres in height. The cutting is generally sparsely vegetated with small trees and shrubs. Weathered shale and overlying residual soil is visible in the cutting face. The features of the proposed modification are show in figures Figure 3-1a &b.

Slope 15113

Slope 15113 is located between chainages of around 71080 to 71200. The slope is a north facing cutting about 120 metres in length and up to nine metres in height. The cutting is generally sparsely vegetated with small shrubs and trees. Weathered shale and overlying residual soil is visible in the cutting face. The features of the proposed modification are show in figures Figure 3-2a-c.
Figure 3-1a: Key features of the proposed modification – Slope 15111

- Remove-and-regrade-crest (avoid disturbance of existing communications cable)
- Remove vegetation and small trees from the face and crest of the slope
- Clear loose rock and debris from toe of slope behind the existing pipe-post fence
Figure 3-1b: Key features of the proposed modification – Slope 15111

- Remove and regrade crest (avoid disturbance of existing communications cable)
- Remove loose blocks from slope batter face
Figure 3-2a: Key features of the proposed modification – Slope 15113

- Remove and regrade crest (avoid disturbance of existing communications cable)
- Remove vegetation and small trees from the face and crest of the slope
- Clear loose rock and debris from toe of slope behind the existing pipe post fence
Figure 3.2b: Key features of the proposed modification – Slope 15113

- Remove and regrade crest (avoid disturbance of existing communications cable)
- Remove loose blocks from slope batter face
Figure 3.2c: Key features of the proposed modification – Slope 15113

- Remove and regrade crest (avoid disturbance of existing communications cable)
- Attach hooked anchor pins, steel mesh and apply tinted shotcrete to erodible areas
- Remove loose blocks from slope batter face
- Clear loose rock and debris from toe of slope behind the existing pipe post fence
3.2 Design

3.2.1 Design criteria

The design of the slope remediation work has been developed in accordance with Version 4.0 of the Roads and Maritime Guide to Slope Risk Analysis along with the guidelines and design criteria as identified in the project REF.

3.2.2 Proposed modification constraints

Engineering constraints were identified during development of the proposed modification. The main constraints included:

- Physical constraints – the cutting itself acts as a physical constraint for access to carry out the proposed modification due to the height and the vertical nature of the cutting.
- Biodiversity – additional clearing of vegetation along the top of the slope.
- Access and movement constraints – access to the base of the cutting would require closure of lanes on the Golden Highway next to the cutting for safety purposes. This has the potential to impact on traffic movements along the Golden Highway and would need to be managed during the construction of the proposed modification.
- Aboriginal heritage - An Aboriginal Heritage Impact Assessment (AHIP) permit has been sought for the whole project REF area.

3.2.3 Main features of the modification

**Surface drainage improvement on Slope 15111**

A 100 metre long concrete lined crest drain would be constructed about three metres back from the top of the crest of the slope. This would be a typical catch drain with V shape having 0.3 metre minimum depth and 1:6 side slopes.

The surface drainage improvements would reduce both seepage into the batter and minimise overland flows down the batter face.
Approximate location of crest drain

Property fence

Figure 3-3 Cross section of slope 15111 showing the location of the crest drain
3.3 Construction activities

This section provides a summary of the likely construction methodology for the slope remediation work. The main construction activities required to complete the proposed modification are described in Table 3-1. The general work methodology and sequencing is provided in Section 3.3.1. The full scope of work for each slope is provided in Appendix A.

### Table 3-1 Description of the proposed modification activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description of the activity</th>
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<tr>
<td>Vegetation removal</td>
<td>The proposed modification would require the removal of about 1,240 square metres of vegetation. The removal of vegetation would be carried out where practical by slashing to the minimum height required (suggested minimum of 100 millimetres). Woody vegetation would be poisoned using the 'cut and paint' method to allow for the regeneration of some species, while preventing further rock fall due to roots of trees and shrubs jacking rocks. Vegetation would also be removed from the face of the cutting. If vegetation is found to be free of weeds, removed vegetation would be reused on site (e.g. mulched and used in erosion and sediment control or landscaping) where possible. Any surplus vegetation would be collected and disposed of to a licenced facility. Work may be carried out from suspended lines, or may involve use of heavy equipment such as cherry pickers, cranes, loaders/bobcats and hand tools/chainsaws.</td>
</tr>
<tr>
<td>Removal of small rock and debris</td>
<td>Loose rocks representing the Assessed Risk Level (ARL 1) (Where ARL 1 is the highest rating) hazard, above the crest of the cutting would be removed using hand tools such as hand held jack hammers and barring down rods. The slope face of the cutting would be accessed from the road.</td>
</tr>
<tr>
<td>Scaling the slope</td>
<td>Loose soil, cobbles and boulders would be removed by scaling, trimming and cleaning by air or water jetting so that the surface is free of debris. The project modification would require about 50 and 15 square metres of scaling of Slope 15113 and Slope 15111 respectively.</td>
</tr>
<tr>
<td>Installation of anchor pins and steel netting for stabilisation of the cutting slope (Slope 15113 only)</td>
<td>Cement grouted hooked anchor pins (1.6 metres long by 20 millimetre diameter) would be installed as required on the face of the slope. The approximate location of the anchor pins would be determined during the detailed inspection after the vegetation clearing has been completed. Steel mesh netting would be connected to the anchor pins. It is expected that the anchor pins would be installed at about two metre centres, with steel mesh then fixed to the pins.</td>
</tr>
<tr>
<td>Shotcreting on the face of the cutting (Slope15113 only)</td>
<td>Shotcreting would be carried out over up to 75 square metres in accordance with Roads and Maritime QA Specification B82 Shotcrete Work and the Roads and Maritime Shotcrete Design Guideline. Shotcreting would be used for localised treatment of overhangs and would be carried out to achieve visual integration against the surrounding rock face.</td>
</tr>
<tr>
<td>Construction of the crest drainage channel (Slope 15111 only)</td>
<td>The concrete lined crest drain would be installed about three metres from the crest of the slope.</td>
</tr>
</tbody>
</table>
### Activity Description of the activity

- It is expected the excavation required for the drains would be by a small bobcat along the 100 metres length required for the drain.

## 3.3.1 Work methodology

Activities would be guided by a Construction Environmental Management Plan (CEMP). The CEMP would be developed in accordance with the requirements of the Roads and Maritime QA Specification G36 *Environmental Protection (Management System)*. Construction would be located within the proposal area specified within this REF and completed to incorporate all safeguards and management measures as described in this REF, and any other relevant Roads and Maritime environmental specifications. A CEMP would detail the construction and all safeguards and management measures as proposed within this REF.

## 3.3.2 Construction hours and duration

There would be no changes to the proposed construction hours identified in the project REF, with the majority of construction work being carried out during standard construction hours. As outlined in the project REF there would be a need to work outside of standard hours to minimise disruptions to traffic along the Golden Highway.

As a result of the change to the modified activity, there may be potential impacts to the proposed construction staging which may extend the planned construction program.

## 3.3.3 Plant and equipment

In addition to the plant and equipment outlined in the project REF, the following additional plant and equipment would be required as a result of the modified activity:

- Elevated work platform
- Concrete truck
- Pneumatic rock splitters and wedges
- Mobile crane
- Concrete pump
- Rock drilling equipment.

## 3.3.4 Earthworks

The earthworks would include the scaling and rock removal from the slopes. In addition, there would be some small earthworks consisting of minor cut and fill activities on Slope 15111 to construct the surface drains along the top of the crest of Slope 15111.

## 3.3.5 Source and quantity of materials

Estimated quantities of materials as outlined below would be refined after the detailed inspection and vegetation clearing has been completed. Materials would be sourced from local areas where practicable and would include about:

- One hundred square metres of shotcrete
- Seventy five square metres of welded steel mesh
• Fifty hooked anchor pins.

Water would also be required for construction activities, including drilling, anchor pinning and dust suppression. Required quantities of water are not yet known and would be calculated during detailed design. In the event that water is not available on-site in sediment basins, water for the work would be sourced from authorised off-site sources and brought into the site via tanker trucks.

3.3.6 Traffic management and access

Access to the work site for slopes would be from the westbound lane of the Golden Highway.

At this stage the proposed modified activity would be carried out at the same time as the Golden Highway Upgrade at Ogilvies Hill project. However, there may be the requirement for additional traffic control and lane closures.

3.4 Ancillary facilities

No additional ancillary facilities to that approved in the project REF would be required for the modified activity.

3.5 Public utility adjustment

An existing communications cable is located at the top of Slope 15113. This would not require any adjustment or relocation and would not be impacted as a result of the modification.

3.6 Property acquisition

No property acquisitions or property adjustment to that approved in the project REF would be required for the modified activity.
4. Statutory and planning framework

4.1 Environmental Planning and Assessment Act 1979

4.1.1 State Environmental Planning Policies

**State Environmental Planning Policy (Infrastructure) 2007**

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

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

As the proposed modification is for a road and is to be carried out by Roads and Maritime, it can be assessed under Division 5.1 of the EP&A Act. Development consent from council is not required.

The proposed modification is not located on land reserved under the *National Parks and Wildlife Act 1974* (NPW Act) and does not affect land or development regulated by *State Environmental Planning Policy (Coastal Management) 2018*, *State Environmental Planning Policy (State and Regional Development) 2011* or *State Environmental Planning Policy (State Significant Precincts) 2005*.

Part 2 of the ISEPP contains provisions for public authorities to consult with local councils and other public authorities prior to the commencement of certain types of development. Consultation, including consultation as required by ISEPP (where applicable), is discussed in chapter 5 of this addendum REF.

**State Environmental Planning Policy No 44 – Koala Habitat Protection**

The Muswellbrook LGA is identified under Schedule 1 of *State Environmental Planning Policy No 44 – Koala Habitat Protection* (SEPP 44). The SEPP encourages the conservation and management of natural vegetation areas that provide habitat for koalas to ensure that permanent free living populations would be maintained over their present range.

Roads and Maritime is not bound by the provisions of SEPP 44 for Division 5.1 assessments. However, SEPP 44 is applicable to the Muswellbrook LGA and the principles of conservation would be adopted for the proposed modification where applicable.

The Biodiversity assessment carried out by Jacobs as part of the project REF, identified that the Koala would be unlikely to inhabit the proposal area due to no evidence of Koala habitation or population and the project REF area being unlikely to contain suitable habitat.

4.1.2 Local Environmental Plans

**Muswellbrook Local Environmental Plan 2009**

The *Muswellbrook Local Environmental Plan 2009* (the Muswellbrook LEP) applies to land within the Muswellbrook LGA. The proposed modification is located within the RU1 Primary Production zone.

The zone provisions provide that the proposed modification would be permitted with consent in the RU1 zone. However, as outlined in Section 4.1.1, under Clause 94 of ISEPP the proposed modification is
permitted without the consent of council. Therefore, the consent requirements of the LEP do not apply and the proposed modification may be determined under Division 5.1 of the EP&A Act.

4.2 Other relevant NSW legislation

4.2.1 Environmental Planning and Assessment Act 1979

The primary aim of this Addendum REF is to address statutory requirements in relation to Section 5.5 of the EP&A Act and other relevant legislation. This Addendum REF has the objective of providing adequate information to allow the assessing officer to determine the likely significance of environmental impacts (and therefore, whether an Environmental Impact Statement is required) in accordance with the NSW Department of Planning and Environment’s guidelines.

This Addendum REF has been completed under Part 5 of the EP&A Act, and describes the level of impact that the proposed modified activity may have. This Addendum REF aims to address Roads and Maritime’s duty in respect to considering the environmental impact of the proposed modified activity under section 5.5 of the EP&A Act and section 228 of the Environmental Planning and Assessment Regulation 2000.

4.2.2 National Parks and Wildlife Act 1974

The National Parks and Wildlife Act 1974 (NPW Act) establishes fundamental functions of the NSW National Parks and Wildlife Service. These include the conservation of nature, objects, features, places and management of land reserved under this Act. The NPW Act also sets out to protect and preserve Aboriginal heritage values. This Addendum REF considers potential impacts to native flora and fauna and Aboriginal heritage (refer to Section 6.1 and Section 6.2).

4.2.3 Protection of Environment Operations Act 1997

The Protection of the Environment Operations Act 1997 (POEO Act) is the primary piece of legislation regulating pollution control and waste disposal in NSW and is administered by the Environmental Protection Authority (EPA). Where an activity is deemed a scheduled activity an environmental pollution licence (EPL) is required.

The proposed modified activity is not considered scheduled development work or a scheduled activity under the POEO Act and therefore does not require an EPL under this Act. However, under section 148 of the Act, the EPA must be notified of any pollution incidents that cause or threaten material harm to the environment.

The Protection of the Environment (Waste) Regulation 2005 regulates the management and disposal of waste. Any contaminated waste or soils would need to be tracked during transportation, and would need to be removed to an appropriately licensed waste facility. Section 143 of the POEO Act provides that it is an offence to transport waste to a place that cannot lawfully be used for disposal of that waste.

4.2.4 Biodiversity Conservation Act 2016

The BC Act sets out the environmental impact assessment framework for threatened species, threatened ecological communities and Areas of Outstanding Biodiversity Value (formerly critical habitat) for Part 5 activities (amongst other types of development).

However, the transitional provisions of the Biodiversity Conservation (Savings and Transitional) Regulation 2017 apply to the original proposal because the environmental impact assessment of the activity began under Part 5 of the EP&A Act before the commencement of the new Act and is pending assessment under Part 5 (clause 29(1b)). Consequently, the biodiversity assessment for the proposed modification has been assessed in accordance with the TSC Act.

The biodiversity assessment conducted for the proposed modification is documented in Section 6.2. The proposed modification would not have a significant impact on threatened species or ecological communities or critical habitat and therefore a SIS has not been prepared.

### 4.3 Commonwealth legislation

#### 4.3.1 Environment Protection and Biodiversity Conservation Act 1999

Under the EPBC Act a referral is required to the Australian Government for proposed ‘actions that have the potential to significantly impact on matters of national environmental significance or the environment of Commonwealth land. These are considered in Appendix B and chapter 6 of the addendum REF.

A referral is not required for proposed road actions that may affect nationally listed threatened species, endangered ecological communities and migratory species. This is because requirements for considering impacts to these biodiversity matters are the subject of a strategic assessment approval granted under the EPBC Act by the Australian Government in September 2015.

Potential impacts to these biodiversity matters are also considered as part of chapter 6 of the addendum REF and Appendix B.

*Findings – matters of national environmental significance (other than biodiversity matters)*

The assessment of the proposed modification’s impact on matters of national environmental significance and the environment of Commonwealth land found that there would be no change to the findings of the determined activity and would be unlikely to cause a significant impact on matters of national environmental significance or the environment of Commonwealth land. A referral to the Australian Government Department of the Environment and Energy is not required.

### 4.4 Confirmation of statutory position

The proposed modification is categorised as development for the purpose of road and road infrastructure facilities and is being carried out by or on behalf of a public authority. Under clause 94 of the ISEPP the proposed modification is permissible without consent. The proposed modification is not State significant infrastructure or State significant development. The proposed modification can be assessed under Division 5.1 of the EP&A Act. Consent from Council is not required.
5. Consultation

5.1 Consultation strategy

Community consultation would be carried out in accordance with the Communication Engagement Plan (CEP) prepared and implemented for the Golden Highway Upgrade at Ogilvies Hill project, which forms part of the Golden Highway package of work. The CEP describes the communication and consultation approach and activities for the proposal to keep key stakeholders and the community informed during the work. A range of engagement tools and activities would be utilised before and throughout the work to provide information to, and receive feedback from, stakeholders and the local community.

5.2 Consultation outcomes

During the development of the project, consultation has been carried out with the local community, the Aboriginal community as well as government and agency stakeholders. This consultation is documented in the project REF and consultation report.

No additional consultation activities from those required as part of the project REF are expected for the proposed modification.

Appendix C contains an ISEPP consultation checklist that documents how ISEPP consultation requirements have been considered.

5.3 Ongoing or future consultation

Ongoing consultation would be required by the construction contractor and Road and Maritime to update local property owners, road users and other key stakeholders of the proposal. Consultation activities would be carried out as per the project REF.
6. Environmental assessment

This section of the addendum REF provides a detailed description of the potential environmental impacts associated with the construction and operation of the proposed modification of the Golden Highway Upgrade at Ogilvies Hill project. All aspects of the environment potentially impacted upon by the proposed modification are considered. This includes consideration of the factors specified in the guidelines Roads and Related Facilities EIS Guideline (DUAP, 1996) and Is an EIS required? (DUAP, 1999) as required under clause 228(1) of the Environmental Planning and Assessment Regulation 2000. The factors specified in clause 228(2) of the Environmental Planning and Assessment Regulation 2000 are also considered in Appendix B.

Site-specific safeguards and management measures are provided to ameliorate the identified potential impacts.

6.1 Aboriginal heritage

6.1.1 Existing environment

As described in the project REF, 14 Aboriginal heritage archaeological sites are located near the REF project area. This includes nine sites recorded on the Aboriginal Heritage Information Management system (AHIMS), two isolated scatters and two potential archaeological deposits (PADs).

Two of these 14 Aboriginal heritage sites are located on the western side of the highway in the vicinity of the proposed modification (refer to Figure 1-2). They include:

- AHIMS #37-2-5465 (OH1)
- AHIMS #37-2-5466 (OH2).

The closest site (AHIMS #37-2-5465 (OH1), is located about 45 metres from the south of the Golden Highway road shoulder on private land near Slope 15111. While OH2 is located about 100 metres to the south of the Slope 15113. Refer to Figure 1-2.

An AHIP has been sought for the whole of the REF project area.

6.1.2 Potential impacts

Construction

The proposed modification falls within the existing REF project area and AHIP boundary, and no further assessment is required.

Operation

The operation of the proposed modification is consistent with the project REF and is not expected to further reduce any Aboriginal heritage significance or archaeological potential along the Golden Highway if recommended procedures are followed.

6.1.3 Safeguards and management measures
Additional safeguards and management measures to those identified in the project REF are provided in Table 6-1.

Table 6-1 Site specific management measures for Aboriginal heritage

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
</tr>
</thead>
</table>
| Tracking of vehicles over private property | The following measures would be implemented to ensure the protection of two Aboriginal heritage sites OH1 and OH2:  
- Access to the slopes will be from the Golden Highway only.  
- Fencing/flagging of the two sites will need to be carried out to ensure they will be avoided in any construction activities or by vehicular movements. | Roads and Maritime and Construction Contractor     | Pre construction | Additional safeguard       |
6.2 Biodiversity

6.2.1 Existing environment

As described in the project REF, some small areas of native vegetation along the road side are consistent with the definition of an endangered ecological community listed under the BC Act as endangered (Footslopes Slaty Gum Woodland) and as a critically endangered community under the EPBC Act (Central Hunter Valley eucalypt forest and woodland).

6.2.2 Potential impacts

**Construction**

The project REF concluded that the proposal would remove about 5.67 hectares of vegetation of which up to 5.53 hectares comprises of two overlapping endangered ecological communities, (EEC) including about:

- 4.08 hectares of Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion listed as endangered under the BC Act
- 5.53 hectares of Central Hunter Valley eucalypt forest and woodland listed critically endangered under the EPBC Act. A total of 1.59 hectares of this community in ‘moderate / good’ condition would be impacted by the proposal.

The proposed modification would require the additional clearing of about 1,240 square metres (0.124 hectares) of vegetation of which comprises of two overlapping endangered ecological communities (EEC) including about:

- 440 square metres (0.04 hectares) of Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion listed as endangered under the BC Act
- 1,240 square metres (0.124 hectares) hectares of Central Hunter Valley eucalypt forest and woodland listed critically endangered under the EPBC Act. A total of 5.65 hectares of this community in ‘moderate / good’ condition would be impacted by the proposed modification and the project.

**Operation**

The operational impact of the proposed modification would relate to the cumulative impacts associated with clearing native vegetation and the loss of habitat for flora and fauna species.

**Conclusion on significance of impacts**

The additional clearing of about 1,240 square metres required would not change the project REF conclusion on significance of impacts carried out for threatened species and ecological communities that have been positively identified or that were considered to have a moderate or high likelihood of occurring in the investigation area.

The modification is not likely to significantly impact threatened species, populations or ecological communities or their habitats, within the meaning of the BC Act or FM Act and therefore a Species Impact Statement is not required.

The modification is not likely to significantly impact threatened species, populations, ecological communities or migratory species, within the meaning of the EPBC Act.
6.2.3 Safeguards and management measures

No additional safeguards have been recommended.

6.2.4 Biodiversity offsets

About 440 square metres (0.04 hectares) of additional remnant vegetation meeting the description of the vulnerable Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion would be removed by the proposed modification. This would bring the combined total of removed Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion vegetation community to about 4.12 hectares. This does not trigger the need for offsets as the impacts for the NSW listed community are not greater than five hectares.

However, this woodland vegetation also meets the description of the EPBC Act listed critically endangered Central Hunter Valley eucalypt forest and woodland ecological community. The proposed modification would remove an additional 1,240 square metres (0.124 hectares) of this EEC, bringing the combined total to 5.65 hectares of this EEC in ‘Moderate / Good’ condition. As such, offsets would still be required to compensate for this loss.

6.3 Landscape character visual impacts

6.3.1 Existing environment

The two slopes are situated at the top of Denman Gap Hill and are clearly visible to travellers along the Golden Highway when in the immediate vicinity. Due to the existing landform and configuration of the highway, the slopes are not visible from more distant locations such as when travelling towards the apex of the hill from either direction.

Slope 15113 is less visible as it is on the inner part of the bend and therefore direct views are more limited due to the angle of view. In comparison, Slope 15111 is more visible as it is on the outer bend and therefore viewers on the highway have more direct views and a slightly longer viewing time when passing by.

6.3.2 Potential impacts

Construction

During construction the work would be visible to highway travellers when passing this part of the Golden Highway. At various times the different stages of the slope remediation work would be seen, albeit for a brief period while road travellers pass by. There would be no opportunities for viewing over a longer time, unless work traffic controls are in operation which means vehicles must wait for a period of time.

Depending upon the stage of construction, work mostly seen would include:

- Tree clearing (limited to mostly low, scrubby plants)
- Removing material such as loose rocks, debris and soil
- Constructing a crest drain above Slope 15111
- Applying tinted shotcrete to Slope 15113.
During this time machinery used for the various processes would also be evident.

Due to the temporary and relatively short period of construction, the potential impact to landscape character and viewpoints would be low and not differ from the previous assessment levels presented in the project REF.

**Operation**

Once construction is completed, the most obvious visual changes evident would be the changes to the slopes such that:

- Slope 15111 – the new crest drain above the slope which would not be visible
- Slope 15113 – the new tinted shotcrete and anchor pins (with steel mesh attached to the anchor pins) would be visible.

Both slopes would also appear to have a smoother texture due to the removal of rocks, debris and soil and clearing of the existing low scrubby vegetation that occurs in some places. Safeguards and management measures are provided below to ensure that the shotcrete and crest drain are designed so as to be as unobtrusive as possible, leading to a potential impact to landscape character and viewpoints would be relatively low and not alter the previous assessment levels presented in the project REF. Should those measures not be included, however, that level of impact is likely to increase for the area in the immediate vicinity of Denman Gap.

### 6.3.3 Safeguards and management measures

Additional safeguards and management measure to those identified in the project REF are provided in Table 6.2.

<table>
<thead>
<tr>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximise retention of existing vegetation</td>
<td>Where existing trees located along the crest of the rock cut slopes are assessed as not</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>along crest of rock</td>
<td>being detrimental to the stabilisation of the rock slope, they will be retained.</td>
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<tr>
<td>slopes</td>
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<tr>
<td>Shotcrete (Slope 15113)</td>
<td></td>
<td>Contractor</td>
<td>Pre and during construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td></td>
<td>- Shotcreting will be carried out in accordance with Road and Maritime’s Specification B82 Shotcrete Work and the Roads &amp; Maritime’s Shotcrete Design Guideline (2016)</td>
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<td>- The Roads and Maritime Centre for Urban Design will be consulted in relation to the proposed colour and texture of the shotcrete surface</td>
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<td>- Shotcreting will be designed to minimise the visual contrast between new surfaces (shotcrete, exposed fresh rock,</td>
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<td>Impact</td>
<td>Environmental safeguards</td>
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</table>
| etc.) and adjoining untreated rock surfaces  
• Shotcreting will follow the soil/rock interface and will be carried out to achieve visual integration against the surrounding rock face  
• The application of shotcrete will finish or extend from/to distinct edges, natural joints or changes in the face of the cutting  
• Shotcrete application will be controlled and applied only where required and masked off for other areas  
• Shotcrete colour and texture will be matched to the surrounding rock as closely as possible. | | | | |
## 6.4 Other impacts

### 6.4.1 Existing environment and potential impacts

<table>
<thead>
<tr>
<th>Environmental factor</th>
<th>Existing environment</th>
<th>Potential impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic, transport and access</td>
<td>The proposed modification is located on Slope 15111 and 15113, cut embankments adjacent to the Golden Highway. The project REF details the existing traffic conditions along the Golden Highway.</td>
<td>The proposed modification would not increase the traffic, transport and access impact of the approved project. The construction impacts are consistent with those identified in the project REF.</td>
</tr>
<tr>
<td>Noise and vibration</td>
<td>The project REF identified that background noise was primarily influenced by road traffic noise. One rural residential property is located within 780 metres of the project.</td>
<td>A noise and vibration impact assessment was carried out as part of the project REF. The results of the assessment concluded that noise levels at surrounding receivers would be unlikely to exceed day, evening or night time noise management levels during any phase of construction assessed, or exceed sleep disturbance criteria. Similarly, vibration levels were not expected to exceed relevant vibration criteria. The slope remediation work would result in some noise impacts associated with the excavation activities, drilling in anchor hooks and removal of rocks. These activities and the equipment used are generally consistent with those assessed in the project REF and would not result in any exceedances of the noise and vibration criteria established in the project REF.</td>
</tr>
<tr>
<td>Hydrology and flooding</td>
<td>The project REF provides a detailed description of the hydrological environment and flooding risks. The proposal is located within the Hunter River Catchment. The Hunter region, and particularly the lower Hunter catchment, supports a high level of urban and industrial development which has affected water quality. There are several unnamed waterways around</td>
<td>The proposed modification would require the removal of vegetation and additional earthworks that would disturb soils resulting in the potential to transport sediment offsite into unnamed drainage lines within and near the slopes. As there are unnamed and named drainage lines traversing the project REF proposal area coupled with the undulating and hilly nature of the</td>
</tr>
<tr>
<td>Environmental factor</td>
<td>Existing environment</td>
<td>Potential impacts</td>
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<tr>
<td>Topography, geology, soil and contamination</td>
<td>The project REF described the topography, geology and soils. The topography across the proposal area is generally dictated by a prominent north south trending ridgeline running from Ogilvies Hill in the north to Spur Hill in the south. The geology of the site is Permian sedimentary rocks. There are no known instances of contamination within the project area and the probability of acid sulfate soil is low to extremely low.</td>
<td>The proposed modification would not substantially increase the impact of the approved activity and the impacts are generally consistent with those identified in the project REF.</td>
</tr>
<tr>
<td>Socio-economic</td>
<td>The project REF provides a detailed description of the socio-economic environment on a local and regional scale. The proposal is located within the Muswellbrook LGA. There are no community facilities, social infrastructure or businesses within the proposal area. The proposal area is surrounded by agricultural land which is predominately grazing land and cleared native vegetation.</td>
<td>Socio-economic impacts associated with the project are generally associated with traffic delays and disruptions for motorists and other road users along the Golden Highway due to the implementation of traffic management measures, such as temporary lane closures or stoppages and reductions in speed limits. These delays would affect access and connectivity in the region for motorists, business owners, bus services to Denman and surrounding areas including school bus services, regional</td>
</tr>
<tr>
<td>Environmental factor</td>
<td>Existing environment</td>
<td>Potential impacts</td>
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</tbody>
</table>
| Waste and resource management        | The project REF identified that the project would generate waste streams, including:  
  - Green waste from cleared vegetation  
  - Excess fill material from any excavation of soils and fill embankments during construction  
  - Concrete waste.  
  Any remaining surplus material would be stockpiled in a suitable location for use by Roads and Maritime on future projects, or disposed of to a licenced facility following validation assessment of the type of spoil waste classification. | The proposed modification creates waste streams typical of road construction works including (among other things) rock material removed from the slope face, concrete resin residue from anchor placement, green waste from any cleared vegetation. This is generally consistent with the waste streams identified in the project REF. The proposed modification would not substantially increase the impact of the approved activity on waste minimisation and management. Construction impacts are consistent with those identified in the project REF. |
| Non-Aboriginal heritage              | The searches of the following databases were conducted on 23 August 2018:  
  - RTA section 170 register  
  - NSW Heritage database  
  - Commonwealth EPBC heritage list  
  - Australian Heritage Places Inventory  
  - Singleton Local Environmental Plan (LEP) 2013 and Muswellbrook (LEP) 2009.  
  No items were identified with 500 metres of the proposal. | Impacts to non-Aboriginal heritage as a result of construction and operation of the proposed modification would not be expected as no heritage items were identified within or near the project area. This is consistent with the impacts identified in the project REF. |
<p>| Air quality and greenhouse gas       | The project REF identified that ambient air quality is influenced by local sources including traffic along the Golden Highway, as well as regional influences arising from mining and extractive activities within the Upper Hunter. The main air pollutants from motor vehicles are carbon monoxide (CO), nitrogen dioxide (NO2) and fine particles (PM10, i.e. particulate matter with | Air quality impacts during construction identified within the project REF would largely result from dust generated during vegetation clearing and slope stabilisation work. The air quality construction impacts of the proposed modification are consistent with those |</p>
<table>
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<tr>
<th>Environmental factor</th>
<th>Existing environment</th>
<th>Potential impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilities</td>
<td>equivalent aerodynamic diameters of less than 10 microns), whereas deposited dust and particulate matter are the primary pollutants associated with regional influences.</td>
<td>identified in the project REF and would not increase the impact of the approved activity on air quality.</td>
</tr>
<tr>
<td>Utilities</td>
<td>An existing telecommunications cable runs along the crest of Slope 15113.</td>
<td>No utility relocations would be required as part of the proposed modification. Impacts to the telecommunications cable would be avoided.</td>
</tr>
</tbody>
</table>

6.4.2 Safeguards and management measures

No additional safeguards are proposed other than those detailed in the approved REF.
6.5 Cumulative impacts

Cumulative impacts as a result of the approved project are outlined in section 6.11 of the REF. The approved project originated as part of a wider program of work to upgrade the Golden Highway. As a result, the construction of several upgrade projects would be carried out at similar times along the Golden Highway resulting in delays to motorists. The project REF identified that the cumulative delay would be the greatest in August 2019 when a number of the projects would be under construction at the same time. The highest worst case cumulative delay per trip between the New England Highway and Dubbo would be 42 minutes, which is experienced by eastbound traffic in the PM peak hour.

The proposed modification is not considered to increase any cumulative impacts as a result of the approved project.
7. Environmental management

7.1 Environmental management plans

A number of safeguards and management measures have been identified to minimise adverse environmental impacts, including social impacts, which could potentially arise as a result of the proposed modification. Should the proposed modification proceed, these management measures would be addressed if required during detailed design and incorporated into the Contractors Environmental Management Plan (CEMP) and applied during the construction and operation of the proposed modification.
7.2 Summary of safeguards and management measures

Environmental safeguards and management measures for the Golden Highway Upgrade at Ogilvies Hill project are summarised in Table 7-1. Additional safeguards and management measures identified in this addendum REF are included in **bold and italicised** font and deleted measures, or parts of measures, have been struck out. The safeguards and management measures will be incorporated into the detailed design phase of the proposed modification, the CEMP and implemented during construction and operation of the proposed modification, should it proceed. These safeguards and management measures will minimise any potential adverse impacts arising from the proposed works on the surrounding environment.

Table 7-1: Summary of safeguards and management measures

<table>
<thead>
<tr>
<th>No.</th>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
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</thead>
</table>
| GEN1 | General – minimise environmental impacts during construction | A CEMP will be prepared and submitted for review and endorsement of the Roads and Maritime Environment Manager prior to starting the activity. As a minimum, the CEMP will address the following:  
  - Any requirements associated with statutory approvals  
  - Details of how the project will implement the identified safeguards outlined in the REF  
  - Issue-specific environmental management plans  
  - Roles and responsibilities  
  - Communication requirements  
  - Induction and training requirements  
  - Procedures for monitoring and evaluating environmental performance, and for corrective action  
  - Reporting requirements and record-keeping  
  - Procedures for emergency and incident management  
  - Procedures for audit and review.  
  The endorsed CEMP will be implemented during the activity. | Contractor / Roads and Maritime project manager | Pre-construction / detailed design | Core standard safeguard GEN1 |
<p>| GEN2 | General – notification | All businesses, residential properties and other key stakeholders (eg schools, local councils) affected by the activity will be notified at Contractor / Roads and Maritime | Pre-construction | Core standard safeguard GEN2 |</p>
<table>
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<tr>
<th>No.</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>least five business days prior to the start of the activity.</td>
<td>project manager</td>
<td>Pre-construction / detailed design</td>
<td>Core standard safeguard GEN3</td>
</tr>
</tbody>
</table>
| GEN3 | General – environmental awareness | All personnel working on site will receive training to ensure awareness of environment protection requirements to be implemented during the project. This will include up-front site induction and regular "toolbox" style briefings. Site-specific training will be provided to personnel engaged in activities or areas of higher risk. These include:  
- Areas of Aboriginal heritage sensitivity  
- Aboriginal heritage management including unexpected finds procedures  
- Threatened species habitat and EEC  
Records of training will be maintained by the contractor, including details of staff attending, dates, nature of training provided, and training provider(s) used. | Contractor / Roads and Maritime project manager |        |          |
| GEN4 | General – environmental awareness | Standard construction hours:  
- Monday to Friday 7.00 am to 6.00 pm  
- Saturdays 8.00 am to 1.00 pm  
- No construction on Sundays or Public Holidays.  
Works outside standard construction hours (including those detailed within this REF) will be carried out in accordance with the management and mitigation measures detailed within the Noise and Vibration Management Plan. | Contractor | Construction | Core standard safeguard GEN4 |
<p>| GEN5 | General – environmental awareness | The Roads and Maritime Project Manager will notify the Roads and Maritime Environment Manager at least five business days prior to the start of the activity. The notification will include a copy of any local community notification carried out (GEN2). | Contractor | Pre-construction / detailed design | Additional safeguard GEN7 |</p>
<table>
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<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
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</thead>
</table>
| TT-1| Traffic and transport         | A Traffic Management Plan (TMP) will be prepared and implemented as part of the CEMP. The TMP will be prepared in accordance with the Roads and Maritime *Traffic Control at Work Sites Manual* (RTA, 2010) and *QA Specification G10 Control of Traffic* (Roads and Maritime, 2008). The TMP will include:  
  - Confirmation of oversize haulage routes and/ or detours  
  - Measures to maintain access to local roads and properties  
  - Site specific traffic control measures (including signage) to manage and regulate traffic movement  
  - Requirements and methods to consult and inform the local community of impacts on the local road network  
  - Access to construction sites including entry and exit locations and measures to prevent construction vehicles queuing on public roads  
  - A response plan for any traffic incidents within the construction zone.  
  - Consideration of other developments that may be under construction to minimise traffic conflict and congestion that may occur due to the cumulative increase in construction vehicle traffic  
  - Monitoring, review and amendment mechanisms.                                                                 | Contractor                  | Detailed design / Pre-construction | Core standard safeguard TT1  
  Section 4.8 of QA G36  
  Environment Protection |
<p>| TT-2| Property access - pre-construction | Requirements for any changes to local access arrangements will be confirmed during detailed design in consultation with the local road authority and any affected landowners.                                                                                   | Roads and Maritime          | Pre construction / detailed design                                      | Additional standard safeguard TT3                                          |
| TT-3| Notifications to landowners   | Disruptions to property access and traffic will be notified to landowners at least five in accordance with the relevant community consultation processes outlined in the TMP.                                                                                   | Roads and Maritime and Construction Contractor | Construction               | Additional standard safeguard TT4                                          |</p>
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<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>TT-4</td>
<td>Property access – during construction</td>
<td>Access to properties will be maintained during construction. Where that is not feasible or necessary, temporary alternative access arrangements will be provided following consultation with affected landowners and the relevant local road authority.</td>
<td>Roads and Maritime and Construction Contractor</td>
<td>Construction</td>
<td>Additional standard safeguard TT5</td>
</tr>
<tr>
<td>TT-5</td>
<td>Reduce speeds, traffic delays and disruptions during construction</td>
<td>Road users and local communities and freight industry will be provided with timely, accurate, relevant and accessible information about changed traffic arrangements and delays owing to construction activities.</td>
<td>Roads and Maritime and Construction Contractor</td>
<td>Construction</td>
<td>Additional standard safeguard TT5</td>
</tr>
<tr>
<td>TT-6</td>
<td>Impacts of the regional road network</td>
<td>Where possible, the most disruptive work (such as work that requires lane closures) will be carried out at night to minimise potential impacts on the regional road network.</td>
<td>Roads and Maritime and Construction Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
</tr>
</tbody>
</table>
| TT-7 | Impact to oversize loads | - The ability to provide passage for oversize loads must be maintained during construction  
- The TMP will provide details on the strategy for informing oversized vehicles of the construction work and any temporary reduction in lane and/or shoulder widths or lane closures. | Construction contractor | Pre-construction | Additional safeguard |

**Aboriginal heritage**

<p>| AH-1 | Aboriginal heritage | An Aboriginal Heritage Management Plan (AHMP) will be prepared in accordance with the G36 Environment Protection. It will provide specific safeguards and mitigation measures including the installation of limits to construction fencing and sensitive area exclusion zones prior to the start of construction. | Contractor | Detailed design / pre-construction | Core standard safeguard AH1 Section 4.9 of QA G36 Environment Protection |
| AH-2 | Aboriginal heritage – unexpected finds | - The <em>Standard Management Procedure - Unexpected Heritage Items</em> (Roads and Maritime, 2015) will be followed in the event that an unknown or potential Aboriginal object/s, including skeletal remains, is found during construction | Contractor | Detailed design / pre-construction | Core standard safeguard AH2 |</p>
<table>
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<tr>
<th>No.</th>
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<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH-3</td>
<td>Minimise risks to Aboriginal cultural heritage during construction</td>
<td>• Work will only re-start once the requirements of that Procedure have been satisfied.</td>
<td>Contractor</td>
<td>Detailed design / pre-construction</td>
<td>Section 4.9 of QA G36 Environment Protection</td>
</tr>
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<td></td>
<td></td>
<td>All personnel working on site will receive training to ensure awareness of requirements of the Aboriginal Heritage Management Plan and relevant statutory responsibilities. Site-specific training will be given to personnel when working in the vicinity of identified Aboriginal heritage items.</td>
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<tr>
<td>AH-4</td>
<td>Additional Aboriginal heritage impacts</td>
<td>Any further impacts proposed beyond those assessed in this REF or beyond the proposal area must be subject to further assessment and consultation with Aboriginal stakeholders, consistent with the process in this report.</td>
<td>Roads and Maritime</td>
<td>Construction</td>
<td>Additional safeguard</td>
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<tr>
<td>AH-5</td>
<td>Impact to Ogilvies Hill 7, 8 and 9</td>
<td>• A Stage 3 assessment in accordance with Roads and Maritime (2011) PACHCI will carried, including formal consultation with the Aboriginal community, the preparation of an updated ACHAR and AHIP based upon a surface collection of Aboriginal Objects</td>
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<td>• A surface collection of Aboriginal Objects will be carried out at Ogilvie Hill 7, 8 and 9 with a view to developing a Care and Control Agreement under the <em>Code of Practice for archaeological Investigation of Aboriginal Objects in New South Wales</em> (2010) in consultation with registered stakeholders</td>
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<td>• The surface collection of Aboriginal Objects will be carried out as per the methodology that was developed in consultation with RAP and outlined in the ACHAR, which is provided in Appendix C.</td>
<td>Roads and Maritime</td>
<td>Pre-construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>AH-6</td>
<td>Impacts to Ogilvies Hill 6</td>
<td>• Ogilvies Hill 6 in the vicinity of proposal will be flagged or fenced prior to construction so as to provide an exclusion zone for the duration of the proposal.</td>
<td>Roads and Maritime</td>
<td>Detailed design / pre-construction</td>
<td>Additional safeguard</td>
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| AH-5| Tracking of vehicles over private property | The following measures would be implemented to ensure the protection of two Aboriginal heritage sites OH1 and OH2:  
- Access to the slopes will be from the Golden Highway only.  
- Fencing/flagging of the two sites will need to be carried out to ensure they will be avoided in any construction activities or by vehicular movements. | Roads and Maritime and Construction Contractor | Pre-construction | Addition safeguard                                                         |
| B-1 | Biodiversity                               | A Flora and Fauna Management Plan will be prepared in accordance with Roads and Maritime’s *Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA Projects* (RTA, 2011) and implemented as part of the CEMP. It will include, but not be limited to:  
- Plans showing areas to be cleared and areas to be protected, including exclusion zones, protected habitat features (e.g., hollow bearing trees) and revegetation areas  
- Requirements set out in the *Landscape Guideline* (RTA, 2008)  
- Pre-clearing survey requirements  
- Procedures for unexpected threatened species finds and fauna handling  
- Protocols to manage weeds and pathogens. | Contractor | Detailed design / pre-construction | Core standard safeguard B1  
Section 4.8 of QA G36 Environment Protection |
<p>| B-2 | Minimise risks to native flora and fauna during construction | A pre-construction check of native flora and fauna species and habitat will be conducted in accordance with the <em>Biodiversity Guidelines - Protecting and managing biodiversity on RTA projects</em>. Biodiversity management measures identified during the pre-construction check will be incorporated into the CEMP Flora and Fauna Management Plan. | Contractor | Pre-construction and construction | Core standard safeguard |
| B-3 | Biodiversity                               | Measures to further avoid and minimise the construction footprint and native vegetation or habitat removal will be investigated during detailed design and implemented where practicable and feasible. | Contractor | Detailed design / pre-construction | Core standard safeguard |</p>
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<tbody>
<tr>
<td>B-4</td>
<td>Protect native flora and fauna, minimise edge effects and avoid inadvertent impacts</td>
<td>All personnel working on site will receive training to ensure awareness of requirements of the Flora and Fauna Management Plan and relevant statutory responsibilities. Site-specific training will be given to personnel when working in the vicinity of areas of identified biodiversity value that are to be protected.</td>
<td>Contractor</td>
<td>Construction</td>
<td>Core standard safeguard B4</td>
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<tr>
<td>B-5</td>
<td>Unexpected threatened species</td>
<td>Consistent with the Biodiversity Guidelines - <em>Protecting and managing biodiversity on RTA projects</em>, and any specific requirements of the approved Flora and Fauna Management Plan, an unexpected finds procedure will be implemented in the event that a threatened species or ecological community that had not been identified and assessed by the REF is unexpectedly encountered during the construction process.</td>
<td>Contractor</td>
<td>Construction</td>
<td>Core standard safeguard</td>
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</table>
| B-6 | Protect native flora and fauna, minimise edge effects and avoid inadvertent impacts | Consistent with the approved Flora and Fauna Management Plan:  
• The limits of clearing within the construction site will be delineated using appropriate signage and barriers, identified on site construction drawings and during construction staff induction  
• Vegetation and habitat features to be retained, such as hollow-bearing trees, will be clearly identified and protected by suitable fencing, signage or markings.                                                                                                           | Contractor     | Construction | Additional standard safeguard                                             |
<p>| B-7 | Stockpiles, plant and ancillary sites                                  | Vehicle parking, machinery, construction compounds, material stockpiles and the like, will be located in cleared or disturbed areas, not within the drip-zone of vegetation to be retained or within other protected or exclusion zones identified in the Flora and Fauna Management Plan.                                                                                                                                   | Contractor     | Construction | Additional standard safeguard                                             |
| B-8 | Fauna handling                                                          | Consistent with the Biodiversity Guidelines - <em>Protecting and managing biodiversity on RTA projects</em>, and any specific requirements of the approved Flora and Fauna Management Plan, management arrangements will be implemented to ensure safe fauna handling. As a minimum that will include:                                                                                                                                                                                               | Contractor     | Construction | Additional safeguard                                                      |</p>
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| B-9 | Habitat management - minimising impacts | • Fauna handling being carried out by appropriately licenced ecologists or wildlife carers  
• Liaison with local animal rescue agency, wildlife carer group or vet to establish agreed arrangements for fauna rescue or injured animal assistance  
• Induction information for construction staff. | Contractor | Construction | Additional standard |
|     |        | Consistent with the Biodiversity Guidelines - *Protecting and managing biodiversity on RTA projects*. As a minimum that will include: |               |        |           |
|     |        | • No vegetation clearing or bushrock removal beyond limits identified in this REF  
• Avoiding identified exclusion zones and protected habitat features  
• Avoiding mixing of topsoil with woody debris materials  
• Separation of woody vegetation suitable for re-use during construction and rehabilitation or revegetation works  
• Implementation of staged clearing  
• Trimming and pruning to be carried out in accordance with relevant Australian Standards. |               |        |           |
|     |        | In riparian zones: avoiding clearing during likely flood periods; ensuring cleared vegetation does not enter the waterway; retaining roots and stumps to maintain bank stability; applying the hierarchy for snag management set out in the Guidelines. |               |        |           |
| B-10| Weed, Pest Species and Pathogen Management | Consistent with the Biodiversity Guidelines - *Protecting and managing biodiversity on RTA projects*. As a minimum that will include: | Contractor | Construction | Additional standard safeguard |
|     |        | • Implementation of appropriate weed control methods and weed disposal  
• Implementation of appropriate hygiene protocols where there are potential or known pathogen risks. |               |        |           |
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</table>
| B-11 | Removal of threatened species habitat and habitat features | • Habitat removal will be carried out in accordance with Guide 4: Clearing of vegetation and removal of bushrock of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects *(NSW Roads and Traffic Authority 2011)*  
• Habitat that is found to be impacted by the proposed clearing works will be replaced or re-instated in accordance with Guide 5: Re-use of woody debris and bushrock and Guide 8: Nest boxes of the Biodiversity Guidelines: Protecting and managing biodiversity on RTA projects *(NSW Roads and Traffic Authority 2011).* | Contractor | Construction | Additional safeguard |
| NV-1 | Noise and vibration | A Noise and Vibration Management sub-plan (NVMP) will be prepared and implemented as part of the CEMP. The NVMP will identify:  
• All potential significant noise and vibration generating activities associated with the activity  
• Feasible and reasonable mitigation measures to be implemented, taking into account *Beyond the Pavement: urban design policy, process and principles* (Roads and Maritime, 2014).  
• A monitoring program to assess performance against relevant noise and vibration criteria  
• Arrangements for consultation with affected neighbours and sensitive receivers, including notification and complaint handling procedures  
• Contingency measures to be implemented in the event of non-compliance with noise and vibration criteria. | Contractor | Detailed design / pre-construction | Core standard safeguard NV1 Section 4.6 of QA G36 Environment Protection |
<p>| NV-2 | Noise and vibration | All sensitive receivers (eg local residents) likely to be affected will be notified at least five business days prior to start of any works associated with the activity that may have an adverse noise or vibration impact. The notification will provide details of: | Contractor | Detailed design / pre-construction | Core standard safeguard NV2 |</p>
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<tr>
<td>43</td>
<td>Site induction</td>
<td>All personnel working on site will receive training to ensure awareness of requirements of the NVMP. Site-specific training will be given to personnel when working in the vicinity of sensitive receivers.</td>
<td>Contractor</td>
<td>Pre-construction / construction</td>
<td>Additional standard safeguard</td>
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<tr>
<td>NV-3</td>
<td>Noise and vibration</td>
<td>Where possible, work outside of standard construction hours will be planned so that noisier work is carried out in the earlier part of the evening or night time.</td>
<td>Contractor</td>
<td>Pre-construction / construction</td>
<td>Additional safeguard</td>
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</table>
| NV-4 | Out of hours works construction| • Where out-of-hours activities are required, high impact noise generating activities will be carried out prior to 11pm where possible  
• Where out-of-hours activities are required, respite periods (Respite Period 1 and Respite Period 2) in accordance with the CNVG would be implemented  
• Duration respite for out-of-hours (increase in number of nights per week but a reduced overall construction period) work will be considered in consultation with the affected sensitive receivers  
• During out of hours work, conduct monitoring to measure construction noise levels against NMLs and sleep disturbance criteria. Where required, implement additional control measures as detailed in the CNVG will be applied if noise levels require further mitigation. | Construction contractor | Construction       | Additional safeguard           |
<p>| NV-5 | Vibration impacts to underground utilities | The use of high intensity vibratory compaction equipment near underground services will be limited. If vibration-intensive plant and equipment change from that which has been in the Noise and... | Construction contractor | Construction       | Additional safeguard           |</p>
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<td><em>Vibration Assessment</em> (Jacobs, 2018d), a review will be carried out prior to commencing work.</td>
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<td><strong>Hydrology and flooding</strong></td>
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<td></td>
<td><strong>W-1</strong> Soil and water</td>
<td>Contractor</td>
<td>Detailed design / pre-construction</td>
<td>Core standard safeguard SW1 Section 2.1 of QA G38 Soil and Water Management</td>
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<td></td>
<td>A Soil and Water Management Plan (SWMP) will be prepared and implemented as part of the CEMP. The SWMP will identify all reasonably foreseeable risks relating to soil erosion and water pollution and describe how these risks will be addressed during construction.</td>
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<td><strong>W-2</strong> Soil and water</td>
<td>Contractor</td>
<td>Detailed design / Pre-construction</td>
<td>Core standard safeguard SW2 Section 2.2 of QA G38 Soil and Water Management</td>
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<td>- A site specific Erosion and Sediment Control Plan/s (ESCP) will be prepared and implemented as part of the Soil and Water Management Plan</td>
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<td>- The plan will include arrangements for managing wet weather events, including monitoring of potential high risk events (such as storms) and specific controls and follow-up measures to be applied in the event of wet weather.</td>
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<td><strong>W-3</strong> Contaminants entering receiving environments during construction</td>
<td>Construction contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
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<td>Control measures to minimise the risk of water pollution will be implemented including:</td>
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<td>- All fuels, chemicals, and liquids will be stored at least 50 metres away from the existing stormwater drainage system and stored in an impervious bunded area within the compound site</td>
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<td>- Plant and maintenance machinery will be refuelled in impervious bunded areas in the designated compound area</td>
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<td>- Vehicle washdowns and/or concrete truck washouts would be carried out within a designated bunded area of an impervious surface or carried out off-site.</td>
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| W-4 | Pollution as a result of sediment entering waterways during construction | • Water management controls and an associated maintenance and inspection program will be developed during detailed design  
• Controls to improve the water quality from construction sites will include sediment basins as described in Section 3.4.2. During detailed design, the following will be confirmed:  
  – Location and size of sedimentation basins  
  – Installation of other water quality measures where required.  
• The sediment basin design, construction and management would be in general accordance with the:  
  – Roads and Maritimes General Specifications G36 and G38. | Design contractor and Roads and Maritime | Detailed design | Additional safeguard |
| WH-5 | Extraction of water | Non potable water sources (including the potential for water extraction from the Hunter River) would be investigated during detailed design to minimise reliance on potable water where feasible. Any water extraction would occur only after consultation with the NSW Office of Water, and acquisition of associated permits and approvals. | Roads and Maritime / Construction contractor | Construction | Additional safeguard |

**Topography, geology, soils and contamination**

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<tbody>
<tr>
<td>S-1</td>
<td>Contaminated land</td>
<td>If contaminated areas are encountered during construction, appropriate control measures will be implemented to manage the immediate risks of contamination. All other works that may impact on the contaminated area will cease until the nature and extent of the contamination has been confirmed and any necessary site-specific controls or further actions identified in consultation with the Roads and Maritime Environment Manager and/or EPA.</td>
<td>Contractor</td>
<td>Detailed design / Pre-construction</td>
<td>Core standard safeguard C2 Section 4.2 of QA G36 Environment Protection</td>
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<td>S-2</td>
<td>Accidental spill</td>
<td>A site specific emergency spill plan will be developed, and include spill management measures in accordance with the Roads and Maritime Code of Practice for Water Management (RTA, 1999) and relevant EPA guidelines. The plan will address measures to be implemented in the event of a spill, including initial response and containment, notification of emergency services and relevant authorities (including Roads and Maritime and EPA officers).</td>
<td>Contractor</td>
<td>Detailed design / Pre-construction</td>
<td>Core standard safeguard C3 Section 4.3 of QA G36 Environment Protection</td>
</tr>
<tr>
<td>S-3</td>
<td>Stockpile management</td>
<td>Stockpiles will be designed, established, operated and decommissioned in accordance with the Roads and Maritimes’ Stockpile Site Management Guideline 2015.</td>
<td>Construction contractor</td>
<td>Construction</td>
<td>Additional standard safeguard</td>
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<tr>
<td>S-4</td>
<td>Soil stabilisation and restoration</td>
<td>The rehabilitation of disturbed areas will be carried out progressively as construction stages are completed, and in accordance with: • Landcom’s Managing Urban Stormwater: Soils and Construction series • Roads and Maritime Landscape Guideline (RTA, 2008) • Roads and Maritimes’ Guideline for Batter Stabilisation Using Vegetation (2015).</td>
<td>Construction contractor</td>
<td>Construction</td>
<td>Additional standard safeguard</td>
</tr>
<tr>
<td>S-5</td>
<td>Erosion and sedimentation</td>
<td>The SWMP will be implemented throughout the construction period. It will include the following safeguards: • Designated exclusion zones will be identified for the storage and use of construction plant and equipment. These zones will delineate traffic areas and restrict entry and exit points to construction sites • Areas of risk near the proposal, such as steep areas or highly erodible soils, will be identified and appropriate management controls implemented</td>
<td>Construction contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
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| S-6 | Pollution from run-off                | • Temporary or permanent diversion drains will be used to divert off-site run-off around or through the construction site to minimise the volume of flow that mixes with on-site run-off  
• Physical controls will be developed in line with the ESCP, including sediment basins, sediment fences, sediment filters, rock check dams, level spreaders, and onsite diversion drains installed before construction and maintained during construction  
• Exposed batters will be lined, if required  
• A schedule for the ongoing maintenance and inspection of temporary erosion and sediment controls will be developed. | Construction contractor  | Construction | Additional safeguard |
|     | Ancillary facilities will be managed within the ESCP. The following measures will be included to limit sediment and other contaminations entering receiving waterways: | • Chemicals will be stored within a sealed or bunded area  
• Appropriate controls will be in place where plant is stored  
• Run-off from ancillary sites will be controlled and treated before discharging into downstream waterways  
• Vehicle movements will be restricted to designated pathways where feasible  
• Areas that will be exposed for extended periods, such as car parks and main access roads, will be stabilised where feasible. | Roads and Maritime Contractor | Detailed design / pre-construction | Additional safeguard |

**Landscape character and visual impacts**

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<tr>
<th>LC-1</th>
<th>Landscape character and visual impact</th>
<th>A Landscape Plan and specification will be prepared as part of the detailed design stage and implemented as part of the CEMP. The plan and specification will include design treatments for:</th>
<th>Roads and Maritime and Contractor</th>
<th>Detailed design / pre-construction</th>
<th>Additional safeguard</th>
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<tbody>
<tr>
<td></td>
<td>Location and identification of existing vegetation and proposed landscaped areas, including species to be used</td>
<td></td>
<td>Roads and Maritime and Contractor</td>
<td>Detailed design / pre-construction</td>
<td>Additional safeguard</td>
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<td>• Details of the staging of landscape work taking account of related environmental controls such as erosion and sedimentation controls and drainage</td>
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<td>• Procedures for monitoring and maintaining landscaped or rehabilitated areas.</td>
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<td>The Landscape Plan and specification will be prepared in accordance with relevant guidelines, including:</td>
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<td></td>
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<td>• Landscape Guideline (RTA, 2008)</td>
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<td>• Shotcrete Design Guideline (RTA, 2005).</td>
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<td>LC-2</td>
<td>Visual impact of work sites</td>
<td>Project work sites, including construction areas and supporting facilities (such as storage compounds and offices) will be managed to minimise visual impacts, including avoiding temporary light spill if required, rehabilitation of disturbed areas, appropriate storage of equipment, parking, stockpile screening and arrangements for the storage and removal of rubbish and waste materials.</td>
<td>Contractor</td>
<td>Construction</td>
<td>Core standard safeguard</td>
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<td>Contractor</td>
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<td>Compound and ancillary facilities will be decommissioned and the sites rehabilitated to their existing condition or as otherwise agreed with the landowner on completion of work.</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
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<tr>
<td>LC-3</td>
<td>Visual impact of work sites</td>
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<td>Roadside cuttings will retain the natural rock surface where feasible</td>
<td>Roads and Maritime and Contractor</td>
<td>Detailed design / -construction</td>
<td>Additional safeguard</td>
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<td>Where the cutting is dominated by earth, the cutting will be stabilised with low native vegetation</td>
<td>Roads and Maritime and Contractor</td>
<td>Detailed design / -construction</td>
<td>Additional safeguard</td>
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<tr>
<td></td>
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<td>Shotcrete will be avoided.</td>
<td>Roads and Maritime and Contractor</td>
<td>Detailed design / -construction</td>
<td>Additional safeguard</td>
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<tr>
<td>LC-4</td>
<td>Treatment of cuttings and embankments</td>
<td>The removal of vegetation on the eastern downhill section, on the northern side of the highway will be an opportunity to open-up existing regional views to a far wider panoramic area and as such this area will be kept clear of large trees and be stabilised with low vegetation.</td>
<td>Roads and Maritime and Contractor</td>
<td>Detailed design / -construction</td>
<td>Additional safeguard</td>
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<td>The removal of vegetation on the eastern downhill section, on the northern side of the highway will be an opportunity to open-up existing regional views to a far wider panoramic area and as such this area will be kept clear of large trees and be stabilised with low vegetation.</td>
<td>Roads and Maritime and Contractor</td>
<td>Detailed design / -construction</td>
<td>Additional safeguard</td>
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<tr>
<td>LC-6</td>
<td>Maximising retention of existing vegetation along crest of rock slopes</td>
<td>Where existing trees located along the crest of the rock cut slopes are assessed as not being detrimental to the stabilisation of the rock slope, they will be retained.</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>LC-7</td>
<td>Shotcrete (Slope 15113)</td>
<td>• Shotcreting will be carried out in accordance with Road and Maritime’s Specification B82 Shotcrete Work and the Roads &amp; Maritime’s Shotcrete Design Guideline (2016)</td>
<td>Contractor</td>
<td>Pre and during construction</td>
<td>Additional safeguard</td>
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<td>• The Roads and Maritime Centre for Urban Design will be consulted in relation to the proposed colour and texture of the shotcrete surface</td>
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<td>• Shotcreting will be designed to minimise the visual contrast between new surfaces (shotcrete, exposed fresh rock, etc.) and adjoining untreated rock surfaces</td>
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<td>• Shotcreting will follow the soil/rock interface and will be carried out to achieve visual integration against the surrounding rock face</td>
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<td></td>
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<td>• The application of shotcrete will finish or extend from/to distinct edges, natural joints or changes in the face of the cutting</td>
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<td></td>
<td></td>
<td>• Shotcrete application will be controlled and applied only where required and masked off for other areas</td>
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<td></td>
<td></td>
<td>• Shotcrete colour and texture will be matched to the surrounding rock as closely as possible.</td>
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</tbody>
</table>

**Socio-economic**

<p>| SE-1 | Socio-economic | A Communication Engagement Plan (CEP) will be prepared and implemented as part of the CEMP to help provide timely and accurate information to the community during construction. | Contractor | Detailed design / pre-construction | Core standard safeguard |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
</tr>
</thead>
</table>
| SE-2 | Property acquisition            | The CEP will include (as a minimum):  
  - Mechanisms to provide details and timing of proposed activities to affected residents, including changed traffic and access conditions  
  - Contact name and number for complaints  
  - Mechanisms to share issues raised by stakeholders with other Golden Highway Upgrade projects  
  - Coordination with other Golden Highway Upgrade projects’ CEP will be carried out to ensure consistency in the information provided to the community during construction. | Roads and Maritime project manager | Pre construction / detailed design | Core standard safeguard |
<p>| SE-3 | Emergency vehicle access        | Access for emergency vehicles will be maintained at all times during construction. Any site-specific requirements will be determined in consultation with the relevant emergency services agency.                                                                                                                                                    | Roads and Maritime and Construction Contractor | Pre construction / detailed design | Additional safeguard |
| SE-4 | Consultation - property owners  | Consultation will be carried out with all affected property owners during detailed design and construction to develop and implement measures to mitigate impacts on their property.                                                                                                                   | Roads and Maritime and Construction Contractor | Pre construction / detailed design | Additional safeguard |
| SE-5 | Consultation – business and industry | Consultation will be carried out with business, industry, freight transport providers and managers of tourism related businesses about the timing and duration of construction activities.                                                                                                           | Roads and Maritime and Construction Contractor | Pre construction / detailed design | Additional safeguard |
| SE-6 | Complaints                      | A complaints handling procedure and register will be included in the CEMP.                                                                                                                                                                                                                                                                             | Construction Contractor              | Construction                               | Additional safeguard |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>A Waste Management Plan will be prepared and implemented as part of the CEMP. The WMP will include but not be limited to:</td>
<td>Contractor</td>
<td>Pre construction / detailed design</td>
<td>Core standard safeguard W1 Section 4.2 of QA G36 Environment Protection</td>
</tr>
<tr>
<td>W-1</td>
<td>Waste</td>
<td>Measures to avoid and minimise waste associated with the project</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Classification of wastes generated by the project and management options (re-use, recycle, stockpile, disposal)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Classification of wastes received from off-site for use in the project and management options</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Identifying any statutory approvals required for managing both on and off-site waste, or application of any relevant resource recovery exemptions</td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Procedures for storage, transport and disposal</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Monitoring, record keeping and reporting, including any documentation management obligations arising from resource recovery exemptions.</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>The Plan will be prepared taking into account the Roads and Maritime Environmental Procedure - Management of Wastes on Roads and Maritime Services Land and relevant Roads and Maritime Waste Fact Sheets, as well as the adopting the Resources Management Hierarchy principles of the WARR Act.</td>
<td></td>
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</tr>
<tr>
<td>W-2</td>
<td>Existing condition of ancillary sites</td>
<td>Prior to land being used for ancillary construction purposes (compounds, storage, parking, etc) a pre-construction land assessment will be carried out to identify the presence of any pre-existing wastes. The assessment will be prepared in accordance with the Roads and Maritime Environmental Procedure - Management of Wastes on Roads and Maritime Services Land. Where the land is privately owned, a copy of the assessment will be provided to the landowner.</td>
<td>Contractor</td>
<td>Pre construction / detailed design</td>
<td>Core standard safeguard</td>
</tr>
<tr>
<td>No.</td>
<td>Impact</td>
<td>Environmental safeguards</td>
<td>Responsibility</td>
<td>Timing</td>
<td>Reference</td>
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<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>W-3</td>
<td>Excavated material</td>
<td>Opportunity to reuse material between Golden Highway upgrades will be considered to minimise waste to landfill. This is should be viable where there is excessive cut material at Winery Hill and a deficit of cut to fill material for the proposal.</td>
<td>Contractor</td>
<td>Construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>W-4</td>
<td>Final condition of ancillary sites</td>
<td>A post-construction land assessment will be carried out of land that was used for ancillary construction purposes (compounds, storage, parking, etc) to determine the suitability for hand-back to the landowner.</td>
<td>Contractor</td>
<td>Post construction / operation</td>
<td>Additional standard safeguard</td>
</tr>
</tbody>
</table>

**Non-Aboriginal heritage**

| NAH-1 | Non-Aboriginal Heritage       | • The *Standard Management Procedure - Unexpected Heritage Items* (Roads and Maritime, 2015) will be followed in the event that any unexpected heritage items, archaeological remains or potential relics of Non-Aboriginal origin are encountered  
• Work will only re-start once the requirements of that Procedure have been satisfied. | Contractor     | Detailed design / pre-construction | Core standard safeguard H2 Section 4.10 of QA G36 Environment Protection |

| AQ-1 | Air quality                  | An Air Quality Management Plan (AQMP) will be prepared and implemented as part of the CEMP. The AQMP will include, but not be limited to:  
• Potential sources of air pollution  
• Air quality management objectives consistent with any relevant Published EPA and/or OEH guidelines  
• Mitigation and suppression measures to be implemented  
• Methods to manage work during strong winds or other adverse weather conditions  
• A progressive rehabilitation strategy for disturbed areas. | Contractor     | Detailed design / pre-construction | Core standard safeguard AQ1 Section 4.4 of QA G36 Environment Protection |
<table>
<thead>
<tr>
<th>No.</th>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
</tr>
</thead>
</table>
| U-1 | Utilities                             | Prior to the start of works:  
- The location of existing utilities and relocation details will be confirmed following consultation with the affected utility owners  
- If the scope or location of proposed utility relocation works falls outside of the assessed proposal scope and footprint, further assessment will be carried out.                                                                                                                                                                                                                          | Contractor     | Detailed design / pre-construction | Core standard safeguard            |
| Haz-1 | Hazards and risk management          | A Hazard and Risk Management Plan (HRMP) will be prepared and implemented as part of the CEMP. The HRMP will include, but not be limited to:  
- Details of hazards and risks associated with the activity  
- Measures to be implemented during construction to minimise these risks  
- Record keeping arrangements, including information on the materials present on the site, material safety data sheets, and personnel trained and authorised to use such materials  
- A monitoring program to assess performance in managing the identified risks  
- Contingency measures to be implemented in the event of unexpected hazards or risks arising, including emergency situations.  
  The HRMP will be prepared in accordance with relevant guidelines and standards, including relevant Safe Work Australia Codes of Practice, and EPA or OEH publications.                                                                                       | Contractor     | Detailed design / pre-construction | Core standard safeguard            |
<p>| C-1 | Cumulative impacts from construction of multiple projects | The CEMP will be updated as required to address cumulative impacts as other projects/activities begin. This will include a process to review and update mitigation measures as new work begins or if complaints are received.                                                                                                                                                                                                                                                                                       | Contractor     | Pre-construction /Construction | Additional safeguard               |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Impact</th>
<th>Environmental safeguards</th>
<th>Responsibility</th>
<th>Timing</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-2</td>
<td>Cumulative traffic and access impacts</td>
<td>The TMP will be prepared in consultation with the Transport Management Centre and Muswellbrook Shire Council.</td>
<td>Contractor</td>
<td>Pre-construction</td>
<td>Additional safeguard</td>
</tr>
<tr>
<td>C-3</td>
<td>Cumulative construction impacts</td>
<td>To minimise potential impacts during construction, construction of the proposal would be staged to enable work to be completed safely while maintaining traffic flows at all times. Construction would involve building one lane at a time, and moving traffic between the lanes to keep the traffic flows for the duration of work. This approach will ensure that negative cumulative impacts on both the function of the Golden Highway and the surrounding environment will be minimised where possible.</td>
<td>Roads and Maritime</td>
<td>Detailed design, pre-construction</td>
<td>Additional safeguard</td>
</tr>
</tbody>
</table>
7.3 Licensing and approvals

All relevant licenses, permits, notifications and approvals needed for the Golden Highway Upgrade at Ogilvies Hill project and when they need to be obtained are listed in Table 7-2. Additional or changed licenses and approval requirements identified in this addendum REF are indicated by underlined and/or struck out font.

Table 7-2: Summary of licensing and approval required

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Requirement</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection of the Environment Operations Act 1997</td>
<td>Environment protection licence (EPL) required for scheduled activities (road construction / extractive activities / crushing, grinding or separating waste processing or storage) &gt;30,000t/pa from the EPA.</td>
<td>Prior to start of the activity.</td>
</tr>
<tr>
<td>Roads Act 1993</td>
<td>Road Occupancy Permit would need to be obtained as necessary prior to construction commencing.</td>
<td>Prior to start of the activity.</td>
</tr>
<tr>
<td>Permission to enter from private landowners and residents</td>
<td>Permission to enter from private landowners and residents must be obtained to access proposal work sites. This would likely be obtained through temporary lease arrangements or land acquisition.</td>
<td>Before accessing any private property.</td>
</tr>
<tr>
<td>Water Act or Water Management Act</td>
<td>Licence/permit to extract water from waterway.</td>
<td>Prior to start of activity.</td>
</tr>
</tbody>
</table>
8. Conclusion

8.1 Justification

The need and justification of the approved work remains unchanged from the project REF, except that the proposed slope remediation work is outside the construction footprint which was previously assessed and approved in the review of environmental factors (REF) for the project.

The proposed modification assessment (refer to Chapter 6) found that the only impacts which would differ from the project REF are impacts on biodiversity, and landscape character and visual impacts.

This assessment also found that potential impacts generated by the proposed modification would be minor or inconsequential, and mitigated via the mitigation measures outlined in the project REF and additional mitigation measures provided in this addendum REF (refer to Section 7.2).

It is concluded that the proposed modification would not alter the original determination that the approved project is not likely to significantly affect the environment.

8.2 Objects of the EP&A Act

Table 8-1 identifies the objects of the EP&A Act and their relevance to the project.

<table>
<thead>
<tr>
<th>Object</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.3(a) To promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State’s natural and other resources.</td>
<td>The proposal would assist to improve the social and economic welfare of the community by improving the road safety on this section of the Golden Highway. The proposal design, impact, safeguards and management measures detailed in this REF allow for the proper management, development and conservation of natural and artificial resources.</td>
</tr>
<tr>
<td>1.3(b) To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment.</td>
<td>Ecologically sustainable development is considered in Sections 8.2.1 to 8.2.4 below</td>
</tr>
<tr>
<td>1.3(c) To promote the orderly and economic use and development of land.</td>
<td>The proposal would not impact on the economic use of land.</td>
</tr>
<tr>
<td>1.3(d) To promote the delivery and maintenance of affordable housing.</td>
<td>Not relevant to the project.</td>
</tr>
<tr>
<td>1.3(e) To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats.</td>
<td>The additional impacts to native animals and plants, including threatened species, populations and ecological communities and their habitats were considered in Section 6.2.</td>
</tr>
<tr>
<td></td>
<td>The proposed modification would require the additional clearing of about 1,240 square metres</td>
</tr>
</tbody>
</table>

Golden Highway Upgrade at Ogilvies Hill
Addendum Review of Environmental Factors

56
<table>
<thead>
<tr>
<th>Object</th>
<th>Comment</th>
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</thead>
</table>
| (0.124 hectares) of vegetation of which comprises of two overlapping endangered ecological communities (EEC) including about:  
- 440 square metres (0.04 hectares) of Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion listed as endangered under the BC Act  
- 1,240 square metres (0.124 hectares) hectares of Central Hunter Valley eucalypt forest and woodland listed critically endangered under the EPBC Act.  
The additional clearing of about 1,240 square meters (0.124 hectares) required would not change the project REF conclusion of conclusion on significance of impacts carried out for threatened species and ecological communities that have been positively identified or that were considered to have a moderate or high likelihood of occurring in the investigation area. |
| 1.3(f) To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage). | The proposed modification does not change the impacts to Aboriginal heritage as outlined in the project REF. Refer to Section 6.2. Not relevant to the proposal. |
| 1.3(g) To promote good design and amenity of the built environment. | Not relevant to the proposed modification. |
| 1.3(h) To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants. | Not relevant to the proposed modification. |
| 1.3(i) To promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State. | Not relevant to the proposed modification. |
| 1.3(j) To provide increased opportunity for community participation in environmental planning and assessment. | Community consultation would be carried out in accordance with the Communications Engagement Plan (CEP) prepared and implemented for project, which forms part of the Golden Highway package of work. |

**8.2.1 The precautionary principle**

This principle states: “if there are threats of serious or irreversible damage, lack of scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation”.

The proposed modification is not considered to be a threat of serious or irreversible damage that would lead to environmental degradation.
8.2.2 Intergenerational equity

The principle states: “the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations”.

The proposed modification would not result in any impacts that are likely to adversely impact on the health, diversity or productivity of the environment for future generations. The proposed modification would benefit future generations by increasing road safety along the Golden Highway.

8.2.3 Conservation of biological diversity and ecological integrity

This principle states: “the diversity of genes, species, populations and communities, as well as the ecosystems and habitats to which they belong, must be maintained and improved to ensure their survival”.

The proposed modification is located in an area that has previously been modified as a result of the construction of the existing Golden Highway and nearby agricultural activities. However, remnant areas of native vegetation and associated habitats remain next to the existing highway.

A key objective of the project is to minimise adverse impacts on the environmental values of the area. Conservation of biological diversity and ecological integrity has been considered during all stages of the proposal's development. Potential impacts have been avoided where possible and safeguards and management measures have been included where necessary.

The proposed modification would not have a significant impact on any existing flora or fauna species, biodiversity communities or the overall biological integrity of the proposal and nearby areas. The potential impacts would be acceptable and minimised through the proposed safeguards (refer to Section 7.2).

8.2.4 Improved valuation, pricing and incentive mechanisms

This principle requires ‘costs to the environment should be factored into the economic costs of a project’.

The environmental and social issues were considered in the strategic planning and establishment of the need for the approved project and in consideration of various proposal options valuation, pricing and incentive mechanisms and concluded that environmental resources were given appropriate valuation and the project developed with an environmental objective in mind.

The slope remediation work is considered justified and would not change the conclusion in the approved REF regarding environmental costs being factored into the project.

8.3 Conclusion

This addendum REF has examined and taken into account to the fullest extent possible all matters affecting or likely to affect the environment by reason of the proposed activity.

This has included consideration where relevant, of conservation agreements and plans of management under the NPW Act, joint management and biobanking agreements under the TSC Act, wilderness areas, critical habitat, impacts on threatened species, populations and ecological communities and their habitats and other protected fauna and native plants. It has also considered potential impacts to matters of national environmental significance listed under the Federal EPBC Act.

A number of potential environmental impacts from the proposed modification have been avoided or reduced during the design development and options assessment. The proposed modification as described in the addendum REF best meets the project objectives, but would still result in some impacts on biodiversity, visual and landscape character. Safeguards and management measures as detailed in this
addendum REF would ameliorate or minimise these expected impacts. The proposed modification would also improve road safety along the Golden Highway. On balance the proposed modification is considered justified and the following conclusions are made.

**Significance of impact under NSW legislation**

The proposed modification would not result in a change to the findings of the project REF and would be unlikely to cause a significant impact on the environment. Therefore, it is not necessary for an environmental impact statement to be prepared and approval to be sought from the Minister for Planning under Division 5.2 of the EP&A Act. A Species Impact Statement is not required. The proposed modification is subject to assessment under Division 5.1 of the EP&A Act. Consent from Council is not required.

**Significance of impact under Australian legislation**

The proposed modification would not likely cause a significant impact on matters of national environmental significance or the environment of Commonwealth land within the meaning of the EPBC Act. A referral to the Australian Department of the Environment and Energy is not required.
9. Certification

This addendum review of environmental factors provides a true and fair review of the proposed modification in relation to its potential effects on the environment. It addresses to the fullest extent possible all matters affecting or likely to affect the environment as a result of the proposed modification.

Oliver Edgson
Senior Environmental Planner
Jacobs
Date: 16/10/18

I have examined this addendum review of environmental factors and accept it on behalf of Roads and Maritime Services.

Ryan de Carteret
Roads and Maritime
Project Manager
Date: 18/10/2018
10. References

## Terms and acronyms used in this addendum

<table>
<thead>
<tr>
<th>Term / Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEMP</td>
<td>Construction / Contractor’s environmental management plan</td>
</tr>
<tr>
<td>EIA</td>
<td>Environmental impact assessment</td>
</tr>
<tr>
<td>EP&amp;A Act</td>
<td><em>Environmental Planning and Assessment Act 1979 (NSW).</em> Provides the legislative framework for land use planning and development assessment in NSW</td>
</tr>
<tr>
<td>EPBC Act</td>
<td><em>Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth).</em> Provides for the protection of the environment, especially matters of national environmental significance, and provides a national assessment and approvals process.</td>
</tr>
<tr>
<td>ESD</td>
<td>Ecologically sustainable development. Development which uses, conserves and enhances the resources of the community so that ecological processes on which life depends, are maintained and the total quality of life, now and in the future, can be increased</td>
</tr>
<tr>
<td>FM Act</td>
<td><em>Fisheries Management Act 1994 (NSW)</em></td>
</tr>
<tr>
<td>Heritage Act</td>
<td><em>Heritage Act 1977 (NSW)</em></td>
</tr>
<tr>
<td>ISEPP</td>
<td>State Environmental Planning Policy (Infrastructure) 2007</td>
</tr>
<tr>
<td>LALC</td>
<td>Local Aboriginal Land Council</td>
</tr>
<tr>
<td>LoS</td>
<td>Level of Service. A qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers.</td>
</tr>
<tr>
<td>NES</td>
<td>Matters of national environmental significance under the Commonwealth <em>Environment Protection and Biodiversity Conservation Act 1999.</em></td>
</tr>
<tr>
<td>Noxious Weeds Act</td>
<td><em>Noxious Weeds Act 1993 (NSW)</em></td>
</tr>
<tr>
<td>NPW Act</td>
<td><em>National Parks and Wildlife Act 1974 (NSW)</em></td>
</tr>
<tr>
<td>Roads and Maritime</td>
<td>NSW Roads and Maritime Services</td>
</tr>
<tr>
<td>SEPP 14</td>
<td><em>State Environmental Planning Policy No.14 – Coastal Wetlands</em></td>
</tr>
<tr>
<td>TSC Act</td>
<td><em>Threatened Species Conservation Act 1995 (NSW)</em></td>
</tr>
<tr>
<td>QA Specifications</td>
<td>Specifications developed by Roads and Maritime Services for use with road work and bridge work contracts let by Roads and Maritime Services.</td>
</tr>
</tbody>
</table>
Appendix A
Scope of works for each slope
Summary
De-vegetate batter and crest.
Remove blocks from crest and batter face.
Clear loose rock and debris from toe of slope and behind existing pipe-post fence.
Install concrete lined crest drain min. 3m back from slope crest.
Drawings herein are indicative only. Final scope to be inspected and marked-up by Engineering Geologist or Geotechnical Engineer.

Estimated Material & Quantities (approximate only)

Tree lopping: Remove all saplings from batter and small trees from crest (minor — approx. 15 small trees)
Scaling: 15m³ loose rock, soil and debris from batter crest and face and toe of batter and behind pipe post fence
Excavate crest drain (approx. 100m length): 15-20m³
Shotcrete lining of crest drain (B82): 15-20m³
Install concrete lined crest drain 3m back from crest—approx. up to 120m length

Remove all blocks and debris from crest and batter face and from behind catch fence

Tree Removal

Install Safety Fence
Shotcrete with mesh
Rock Scaling (removal)
Tree or limb cut

HW27 Golden Hwy: Ogilvies Hill cut batter— Denman Gap

Drawn By: C.S  Date: 11 May 2018
Engineering Services Report No. xx  Project No.
Tree Removal

- Install Safety Fence
- Shotcrete with mesh
- Rock Scaling (removal)
- Tree or limb cut

HW27 Golden Hwy: Ogilvies Hill cut batter— Denman Gap

Drawn By: C.S          Date: 11 May 2018

Engineering Services Report No. xx          Project No.
Install concrete lined crest drain min. 3m back from crest

Remove all blocks from crest and batter face and debris from behind catch fence

Shotcrete with mesh
Rock Scaling (removal)
Tree or limb cut
Install concrete lined crest drain
Shotcrete with mesh
Rock Scaling (removal)
Tree or limb cut

HW27 Golden Hwy: Ogilvies Hill cut batter—Denman Gap

Drawn By: C.S
Date: 11 May 2018

Engineering Services Report No. xx
Project No.
Summary
De-vegetate batter and crest.
Regrade crest material and remove. Note comms cable at crest—do not disturb.
Scale face and crest of all loose rock and soil.
Clear loose rock and debris from toe of slope and behind existing pipe-post fence.
Drill, install and grout hooked anchor pins into face at 2m centres in area to be shot-creted, fix F50 steel mesh to pins, apply tinted shotcrete.
Drawings herein are indicative only. Final scope to be inspected and marked-up by Engineering Geologist or Geotechnical Engineer.

Estimated Material & Quantities (approximate only)

Tree lopping: Remove all saplings from batter and crest (minor)
Scaling: 50m³ loose rock, soil and debris from batter crest and face and toe of batter and behind pipe post fence
Hooked anchor pins (D500N20): 1.6m x 20mm x 50 qty
F50 welded steel mesh: 75m²
Shotcrete (tinted) R68: 75m²
Other:
HW27 Golden Hwy: Ogilvies Hill cut batter— Denman Gap

Drawn By: C.S
Date: 11 May 2018

Engineering Services Report No. xx
Project No.

- Install Safety Fence
- Shotcrete with mesh
- Rock Scaling (removal)
- Tree or limb cut
Remove/regrade crest material. Do not disturb comms cable at crest

Clear loose rock and debris from toe of slope and behind existing pipe-post

Remove all saplings from face and crest

- Install Safety Fence
- Shotcrete with mesh
- Rock Scaling (removal)
- Tree or limb cut

HW27 Golden Hwy: Ogilvies Hill cut batter—Denman Gap

<table>
<thead>
<tr>
<th>Drawn By: C.S</th>
<th>Date: 11 May 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering Services Report No. xx</td>
<td>Project No.</td>
</tr>
</tbody>
</table>
Remove/regrade crest material. Do not disturb comms cable at crest

Remove all loose blocks from batter face

Install Safety Fence
Shotcrete with mesh
Rock Scaling (removal)
Tree or limb cut

HW27 Golden Hwy: Ogilvies Hill cut batter—Denman Gap

Drawn By: C.S  Date: 11 May 2018

Engineering Services Report No. xx  Project No.
- Install Safety Fence
- Shotcrete
- Rock Scaling (removal)
- Tree or limb cut

Remove/regrade crest material. Do not disturb comms cable
Shotcrete erodible layers under blocky sandstone layers
Remove all loose blocks from batter face
Remove loose blocks and debris from behind catch fence

HW27 Golden Hwy: Ogilvies Hill cut batter—Denman Gap

Drawn By: C.S
Date: 11 May 2018
Engineering Services Report No. xx
Project No.
Remove/regrade crest material. Do not disturb comms cable at crest

Remove all loose blocks and debris from batter face and from behind catch fence

Shotcrete erodible layers under blocky sandstone layers as marked in these drawings

Install Safety Fence
Shotcrete with mesh
Rock Scaling (removal)
Tree or limb cut

HW27 Golden Hwy: Ogilvies Hill cut batter— Denman Gap

Drawn By: C.S
Date: 11 May 2018

Engineering Services Report No. xx
Project No.
Appendix B

Consideration of clause 228(2) factors and matters of national environmental significance
Clause 228(2) Checklist

In addition to the requirements of the *Is an EIS required?* (1995/1996) guideline and the *Roads and Related Facilities EIS Guideline* (DUAP, 1996) as detailed in the addendum REF, the following factors, listed in clause 228(2) of the Environmental Planning and Assessment Regulation 2000, have also been considered to assess the likely impacts of the proposed modification on the natural and built environment.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any environmental impact on a community?</td>
<td>Nil</td>
</tr>
<tr>
<td>The proposal modification of the proposal would result in some short-term negative impacts, such as visual amenity impact, traffic and access disruptions, in addition to potential noise and air emissions impacts. These could impact negatively on the local community as described in this REF.</td>
<td></td>
</tr>
<tr>
<td>Any transformation of a locality?</td>
<td>Nil</td>
</tr>
<tr>
<td>The construction of the proposal modification would result in temporary impacts for the existing locality, predominantly through negative visual amenity impacts associated with the placement and movement of construction plant and equipment as well as the removal of vegetation. No impact has been anticipated for the operation of the proposal modification.</td>
<td></td>
</tr>
<tr>
<td>Any environmental impact on the ecosystems of the locality?</td>
<td>Long term negative</td>
</tr>
</tbody>
</table>
| The additional impacts to native animals and plants, including threatened species, populations and ecological communities and their habitats were considered in Section 6.2.  
The proposed modification would require the additional clearing of about 240 square meters (0.124 hectares) of vegetation of which comprised of two overlapping EEC, including about:  
- 440 square metres (0.04 hectares) of Hunter Valley Footslopes Slaty Gum Woodland in the Sydney Basin Bioregion listed as endangered under the BC Act  
- 1,240 square meters (0.124 hectares) of Central Hunter Valley eucalypt forest and woodland listed critically endangered under the EPBC Act. |                               |
<p>| Any reduction of the aesthetic, recreational, scientific or other environmental quality or value of a locality? | Nil                           |
| The proposal modification would not reduce the aesthetic, recreational, scientific or other environmental quality or value of the locality, as it would be contained with the existing road corridor and carried out on an existing slope. The proposal would increase the stability of the slopes. |                               |
| 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? | Nil                           |
| The proposal modification is not expected to have any further impacts that those determined in the project REF on any locality, place or building having aesthetic, anthropological, archaeological, architectural, cultural, historical, scientific or social significance or other special value for present or future generations. |                               |
| Any impact on the habitat of protected fauna (within the meaning of the <em>National Parks and Wildlife Act</em> 1974)? |                               |</p>
<table>
<thead>
<tr>
<th>Factor</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>As described in Section 6.2, the proposed modification would remove an additional 1,240 square meters (0.124 hectares) of native vegetation. The removal of habitat may also impact on threatened fauna. However, the tests of significance would be consistent with the project REF. The proposed modification would not have a significant impact to any threatened fauna.</td>
<td>Long term, minor, negative</td>
</tr>
<tr>
<td>Any endangering of any species of animal, plant or other form of life, whether living on land, in water or in the air? The proposal modification would not endanger any species of animal, plant or other form of life, whether living on land, in water or in the air.</td>
<td>Nil</td>
</tr>
<tr>
<td>Any long-term effects on the environment? The proposal modification would have positive long-term effects on the environment due to improved safety for road users. Furthermore, the proposal would increase the stability of the slope.</td>
<td>Long-term positive</td>
</tr>
<tr>
<td>Any degradation of the quality of the environment? The proposal modification has the potential to degrade the quality of the environment through accidental spills and erosion and sediment during construction. These potential impacts would be minimised with the implementation of the safeguards provided in Section 7.2.</td>
<td>Short-term, minor, negative</td>
</tr>
<tr>
<td>Any risk to the safety of the environment? Construction activities have the potential to temporarily decrease safety due to implementation or speed restrictions, lane closures and the movement of construction plant. A CEMP would be implemented to mitigate potential impacts. The proposal modification would improve the safety for road users by stabilising the slopes and providing a necessary component of the Roads and Maritime maintenance management program to reduce the safety risks associated with slopes.</td>
<td>Long-term positive</td>
</tr>
<tr>
<td>Any reduction in the range of beneficial uses of the environment? The proposal modification would result in a minor reduction in the use of the road from lane closures, which would potentially increase travelling time for road users during construction. There would be no long-term reduction in the range of beneficial uses of the environment as a result of the proposal.</td>
<td>Short-term, minor, negative</td>
</tr>
<tr>
<td>Any pollution of the environment? There is the potential for accidental spills of chemicals during construction which could affect the surrounding land and surface water. There is the potential for air quality and visual amenity to be reduced during construction. These potential impacts would be managed with the implementation of the safeguards and management measures provided in Section 7.2.</td>
<td>Short-term, minor, negative</td>
</tr>
<tr>
<td>Any environmental problems associated with the disposal of waste? Exposure of contaminated waste has not been anticipated as a result of the proposal. Waste generated by the proposal would be recycled or reused as much as practicable. All materials that cannot be reused or recycled would be disposed of appropriately.</td>
<td>Nil</td>
</tr>
<tr>
<td>Any increased demands on resources (natural or otherwise) that are, or are likely to become, in short supply?</td>
<td></td>
</tr>
<tr>
<td>Factor</td>
<td>Impact</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>The proposal modification would require resources such as concrete, resin, rock fall netting, wire and bolts which are common construction materials. The proposal would not create a significant demand on these resources. All other required resources for the proposal modification are considered to be readily available and have not been identified as being in short supply.</td>
<td>Nil</td>
</tr>
<tr>
<td>Any cumulative environmental effect with other existing or likely future activities? The identified impacts associated with the proposal modification are minor and appropriately addressed by the prescribed safeguards and management measures included in the REF. Cumulative impacts are not expected.</td>
<td>Nil</td>
</tr>
<tr>
<td>Any impact on coastal processes and coastal hazards, including those under projected climate change conditions? The proposal modification is not located within a coastal area and would not result in any impact on coastal processes and coastal hazards.</td>
<td>Nil</td>
</tr>
</tbody>
</table>
Matters of National Environmental Significance

Under the environmental assessment provisions of the EPBC Act, the following matters of national environmental significance and impacts on Commonwealth land are required to be considered to assist in determining whether the proposed modification should be referred to the Australian Government Department of the Environment.

Under the EPBC Act strategic assessment approval a referral is not required for proposed road actions that may affect nationally listed threatened species, populations, endangered ecological communities and migratory species. Impacts on these matters are assessed in detail as part of this addendum REF in accordance with Australian Government significant impact criteria and taking into account relevant guidelines and policies.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any impact on a World Heritage property?</td>
<td>Nil</td>
</tr>
<tr>
<td>There would be no impact to World Heritage properties by the proposal.</td>
<td></td>
</tr>
<tr>
<td>Any impact on a National Heritage place?</td>
<td>Nil</td>
</tr>
<tr>
<td>There would be no impact to National Heritage places by the proposal.</td>
<td></td>
</tr>
<tr>
<td>Any impact on a wetland of international importance?</td>
<td>Nil</td>
</tr>
<tr>
<td>There would be no impact to wetlands of international importance by the proposal.</td>
<td></td>
</tr>
<tr>
<td>Any impact on a listed threatened species or communities?</td>
<td>Long-term, minor, negative</td>
</tr>
<tr>
<td>As described in Section 6.2, the proposed modification would require the additional clearing of about 440 square metres (0.04 hectares) hectares of Central Hunter Valley eucalypt forest and woodland listed critically endangered under the EPBC Act.</td>
<td></td>
</tr>
<tr>
<td>Any impacts on listed migratory species?</td>
<td></td>
</tr>
<tr>
<td>The proposal would not impact any listed migratory species</td>
<td></td>
</tr>
<tr>
<td>Any impact on a Commonwealth marine area?</td>
<td>Nil</td>
</tr>
<tr>
<td>There would be no impact to Commonwealth marine areas by the proposal.</td>
<td></td>
</tr>
<tr>
<td>Does the proposed modification involve a nuclear action (including uranium mining)?</td>
<td>Nil</td>
</tr>
<tr>
<td>The proposal does not involve a nuclear action (including uranium mining)</td>
<td></td>
</tr>
<tr>
<td>Additionally, any impact (direct or indirect) on Commonwealth land?</td>
<td>Nil</td>
</tr>
<tr>
<td>There would be no direct or indirect impact to Commonwealth land by the proposal.</td>
<td></td>
</tr>
</tbody>
</table>
Appendix C
Statutory consultation checklists
### Council related infrastructure or services

<table>
<thead>
<tr>
<th>Issue</th>
<th>Potential impact</th>
<th>Yes / No</th>
<th>If ‘yes’ consult with the relevant local council(s)</th>
<th>ISEPP clause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stormwater</td>
<td>Are the works likely to have a <em>substantial</em> impact on the stormwater management services which are provided by council?</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl.13(1)(a)</td>
</tr>
<tr>
<td>Traffic</td>
<td>Are the works likely to generate traffic to an extent that will <em>strain</em> the capacity of the existing road system in a local government area?</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl.13(1)(b)</td>
</tr>
<tr>
<td>Sewerage system</td>
<td>Will the works involve connection to a council owned sewerage system? If so, will this connection have a <em>substantial</em> impact on the capacity of any part of the system?</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl.13(1)(c)</td>
</tr>
<tr>
<td>Water usage</td>
<td>Will the works involve connection to a council owned water supply system? If so, will this require the use of a <em>substantial</em> volume of water?</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl.13(1)(d)</td>
</tr>
<tr>
<td>Temporary structures</td>
<td>Will the works involve the installation of a temporary structure on, or the enclosing of, a public place which is under local council management or control? If so, will this cause more than a <em>minor</em> or <em>inconsequential</em> disruption to pedestrian or vehicular flow?</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl.13(1)(e)</td>
</tr>
<tr>
<td>Road &amp; footpath excavation</td>
<td>Will the works involve more than <em>minor</em> or <em>inconsequential</em> excavation of a road or adjacent footpath for which council is the roads authority and responsible for maintenance?</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl.13(1)(f)</td>
</tr>
</tbody>
</table>

### Local heritage items

<table>
<thead>
<tr>
<th>Issue</th>
<th>Potential impact</th>
<th>Yes / No</th>
<th>If ‘yes’ consult with the relevant local council(s)</th>
<th>ISEPP clause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local heritage</td>
<td>Is there a local heritage item (that is not also a State heritage item) or a heritage conservation area in the study area for the works? If yes, does a heritage assessment indicate that the</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl.14</td>
</tr>
<tr>
<td>Issue</td>
<td>Potential impact</td>
<td>Yes / No</td>
<td>If ‘yes’ consult with the relevant local council(s)</td>
<td>ISEPP clause</td>
</tr>
<tr>
<td>-------</td>
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<td>----------</td>
<td>---------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td></td>
<td>potential impacts to the heritage significance of the item/area are more than <em>minor or inconsequential</em>?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Flood liable land**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Potential impact</th>
<th>Yes / No</th>
<th>If ‘yes’ consult with local Council(s)</th>
<th>ISEPP clause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flood liable land</td>
<td>Are the works located on flood liable land? If so, will the works change flood patterns to more than a <em>minor</em> extent?</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl.15</td>
</tr>
</tbody>
</table>

**Public authorities other than councils**

<table>
<thead>
<tr>
<th>Issue</th>
<th>Potential impact</th>
<th>Yes / No</th>
<th>If ‘yes’ consult with</th>
<th>ISEPP clause</th>
</tr>
</thead>
<tbody>
<tr>
<td>National parks and reserves</td>
<td>Are the works adjacent to a national park or nature reserve, or other area reserved under the <em>National Parks and Wildlife Act 1974</em>, or on land acquired under that Act?</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl.16(2)(a)</td>
</tr>
<tr>
<td>National parks and reserves</td>
<td>Are the works on land in Zone E1 National Parks and Nature Reserves or in a land use zone equivalent to that zone?</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl.16(2)(b)</td>
</tr>
<tr>
<td>Aquatic reserves and marine parks</td>
<td>Are the works adjacent to an aquatic reserve or a marine park declared under the <em>Marine Estate Management Act 2014</em>?</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl.16(2)(c)</td>
</tr>
<tr>
<td>Sydney Harbour foreshore</td>
<td>Are the works in the Sydney Harbour Foreshore Area as defined by the <em>Sydney Harbour Foreshore Authority Act 1998</em>?</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl.16(2)(d)</td>
</tr>
<tr>
<td>Bush fire prone land</td>
<td>Are the works for the purpose of residential development, an educational establishment, a health services facility, a correctional centre or group home in bush fire prone land?</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl.16(2)(f)</td>
</tr>
<tr>
<td>Issue</td>
<td>Potential impact</td>
<td>Yes / No</td>
<td>If ‘yes’ consult with</td>
<td>ISEPP clause</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
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<td>--------------</td>
</tr>
<tr>
<td>Artificial light</td>
<td>Would the works increase the amount of artificial light in the night sky and that is on land within the dark sky region as identified on the dark sky region map? (Note: the dark sky region is within 200 kilometres of the Siding Spring Observatory)</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl. 16(2)(g)</td>
</tr>
<tr>
<td>Defence communications buffer land</td>
<td>Are the works on buffer land around the defence communications facility near Morundah? (Note: refer to Defence Communications Facility Buffer Map referred to in clause 5.15 of Lockhardt LEP 2012, Narrandera LEP 2013 and Urana LEP 2011).</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl. 16(2)(h)</td>
</tr>
<tr>
<td>Mine subsidence land</td>
<td>Are the works on land in a mine subsidence district within the meaning of the <em>Mine Subsidence Compensation Act 1961</em>?</td>
<td>No</td>
<td>-</td>
<td>ISEPP cl. 16(2)(i)</td>
</tr>
</tbody>
</table>
## Growth Centres SEPP

<table>
<thead>
<tr>
<th>Issue</th>
<th>Potential impact</th>
<th>Yes / No</th>
<th>If ‘yes’ consult with</th>
<th>SEPP clause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearing native vegetation</td>
<td>Do the works involve clearing native vegetation (as defined in the <em>Local Land Services Act 2013</em>) on land that is not <em>subject land</em> (as defined in cl 17 of schedule 7 of the <em>Threatened Species Conservation Act 1995</em>)?</td>
<td>No</td>
<td>-</td>
<td>SEPP 18A</td>
</tr>
</tbody>
</table>