COMPLIANCE TRACKING PROGRAM
Woolgoolga to Ballina – Stage 1

Halfway Creek to Glenugie - Six Monthly Construction Compliance Report

JUNE TO DECEMBER 2015
### Revision history

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<th>Date</th>
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| Stage 1 of the Woolgoolga to Ballina Upgrade | Section 1 – Woolgoolga to Halfway Creek  
Section 2 – Halfway Creek to Glenugie  
Wave 1- Soft soils works at Harwood  
Wave 2- Soft soils works at Whytes Road to Pimlico  
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1 Introduction

1.1 Project description

NSW Roads and Maritime Services is upgrading the Pacific Highway between Woolgoolga and Ballina on the NSW North Coast. This is known as the Woolgoolga to Ballina Pacific Highway upgrade project. An overview of the project is shown in Figure 1-1.

Figure 1-1 Woolgoolga to Ballina Pacific Highway Upgrade

The project would upgrade around 155 kilometres of highway and represents the last priority (known as ‘Priority 3’ in the upgrade program) in achieving a four-lane divided road between...
Hexham and the NSW/Queensland Border. The project therefore forms a major part of the overall upgrade program and when constructed, would complete the four-lane divided road program. It would be jointly funded by the NSW and Australian governments.

The Woolgoolga to Ballina project is Australia’s largest regional infrastructure project and will duplicate about 155 kilometres to four-lane divided road. The project starts about six kilometres north of Woolgoolga (north of Coffs Harbour) and ends about six kilometres south of Ballina.

When complete, the project will:

- Reduce overall length from 180 kilometres to about 167 kilometres, saving about 13 kilometres in travel distance
- Allow for a higher posted speed limit of up to 110 km/h
- Reduce travel time from 130 minutes to about 105 minutes, saving 25 minutes
- Reduce crash rates by an expected 27 per cent due to divided carriageways
- Improve travel reliability through better flood immunity, fewer incidents and more readily available alternative routes.

Key features of the upgrade include:

- Duplication of 155 kilometres of the Pacific Highway to a motorway standard (Class M) or arterial road (Class A), with two lanes in each direction and room to add a third lane if required in the future
- Split-level (grade-separated) interchanges at Range Road, Glenugie, Tyndale, Maclean, Yamba / Harwood, Woombah (Iluka Road), Woodburn, Broadwater and Wardell
- Bypasses of South Grafton, Ulmarra, Woodburn, Broadwater and Wardell
- About 40 bridges over rivers, creeks and floodplains, including major bridges crossing the Clarence and Richmond rivers
- Fifty-five underpasses and bridges over and under the highway to maintain access to local roads that crossing the highway
- Access roads to maintain connections to existing local roads and properties
- Structures designed to encourage animals over and under the upgraded highway where it crosses key animal habitat or wildlife corridors
- Rest areas located at about 50 kilometre intervals at Arrawarra, Pine Brush (Tyndale), north of Mororo Road and north of the Richmond River
- A heavy vehicle checking station near Halfway Creek and north of the Richmond River.

The Woolgoolga to Ballina upgrade does not include the completed Devils Pulpit and Glenugie upgrade projects.

Sections of the project are located adjacent to previously approved highway upgrades. As a result, the following approvals will also apply to the relevant sections of the project:

- Sapphire to Woolgoolga Pacific Highway upgrade – NSW Approval (06_0293) 13 January 2009

1.2 Staging

A Staging Report has been prepared and approved in accordance with the requirements of the NSW Condition of Approval A7 which states:

_The Applicant may elect to construct and/or operate the SSI in stages. Where staging is proposed, the Applicant shall submit a Staging Report to the Secretary prior to the commencement of each proposed stage. The Staging Report shall provide details of:_

Pacific Highway Upgrade – Woolgoolga to Ballina Stage 1
Compliance Tracking Program HC2G Rev 3 2
(a) how the SSI would be staged, including general details of work activities associated with each stage and the general timing of when each stage would commence; and

(b) details of the relevant conditions of approval, which would apply to each stage and how these shall be complied with across and between the stages of the SSI.

Where staging of the SSI is proposed, these conditions of approval are only required to be complied with at the relevant time and to the extent that they are relevant to the specific stage(s).

The project is also approved under the Commonwealth Environment Protection and Biodiversity Act 1999 (012/6394 approval dated 14/08/14).

The Staging Report as required by NSW approval condition A7 must be submitted to the Minister prior to the commencement of each of the proposed stage(s). In accordance with NSW approval condition A7 the Staging Report must outline how the proposal will be staged. The Staging Report must also outline the threatened species and communities, and migratory species impact in each stage.

The Staging Report describes the activities associated with the project stages and how compliance will be address across and between these.

Roads and Maritime proposes to construct the project in a number of stages. Given the nature of the project and range of procurement and delivery options involved, Roads and Maritime will update the staging report progressively as further details are confirmed. Stage 1 of the Woolgoolga to Ballina upgrade includes three construction activities. The general location of these stages is shown in Figure 1-2.

Stage 1:

1). Section 1 – Woolgoolga to Halfway Creek
2). Section 2 – Halfway Creek to Glenugie
3). Soft Soil preload construction undertaken in three waves of construction packaging to suit
   a). Wave 1- Soft soils works at Harwood
   b). Wave 2- Soft soils works at Whytes Road to Pimlico
   c). Wave 3- Soft soils works between Tyndale and Iluka Road and at Tuckombil Canal, Woodburn

This Compliance Tracking Report is for Halfway Creek to Glenugie - Section 2 of the W2B Project as highlighted in Figure 1-2.
Figure 1-2: Location of all Stage 1 activities, specifically highlighting Section 2 Halfway Creek to Glenugie.
Halfway Creek to Glenugie Project (Section 2)

The Halfway Creek to Glenugie (HC2G) project involves upgrading approximately 12 kilometres of HW10 Pacific Highway to median separated dual carriageway standard, including the construction of lean mix concrete subbase, plain concrete base, associated finishes and furniture.

The HC2G project also features twin bridges over Halfway Creek and twin bridges over Wells Crossing (Fig 1-3). Other major items of work include the construction of 15 reinforced concrete box culverts that will facilitate fauna movements / act as drainage structures, public utility adjustments, bridge demolition and design & construction of heavy vehicle inspection station facilities.

Stage 2 onwards:

Delivery of the remaining sections of the Pacific Highway Upgrade will be tailored to the project, based on the model used to build infrastructure for the London Olympics. The upgrade will be built using an industry partner contract model to harness the best ideas and solutions from the private sector and draw on knowledge from within government.

Current practice would be to deliver the Woolgoolga to Ballina upgrade as four or five separate packages using design and build or build only contracts. Under this new model, a major provider with design, building and management expertise will be engaged to oversee the project in collaboration with Roads and Maritime’s Pacific Highway Office, managing multiple contracts for professional services, supply, and building of the highway. The delivery partner model will offer better value for money and drive project efficiencies.
Once the delivery partner has been engaged and the future stages scoped, the Staging Report will be updated to describe the proposed staging of the remaining sections between Woolgoolga and Ballina.

1.3 Purpose
The key objective of this Compliance Tracking Program is to track compliance with the requirements of the Minister’s Conditions of Approval during the design and each stage of construction of the Project. This report addresses the first six months of construction of the HC2G project from 22 June 2015 to 22 December 2015.

1.4 Environmental management system overview
The Construction Environmental Management Plan (CEMP) is the primary system to manage and control the environmental aspects of the Project during construction. It also provides the overall framework for the system and procedures to ensure environmental impacts are minimised and legislative and other requirements are fulfilled. The strategies defined in the CEMP have been developed with consideration of the Project approval requirement, safeguards and mitigation measures presented in the environmental assessment and approval documents. The CEMP establishes the system for implementation, monitoring and continuous improvement to minimise impacts from the Project on the environment.

This Compliance Tracking Program is separate to the CEMP, but is part of a suite of environmental management documents prepared for the Project.

1.5 Relevant documentation
Documentation relevant to the Compliance Tracking Program includes:

- RMS, Woolgoolga to Ballina. Upgrading the Pacific Highway. Environmental Assessment (December 2012)
- New South Wales Environmental Planning and Assessment Act 1979 (SSI-4963), approval dated 24 June 2014
- Commonwealth Environment Protection and Biodiversity Act 1999 (012/6394), approval dated 14 August 2014

1.6 Scope of the activities undertaken during the reporting period
Throughout the six-month reporting period, a range of works have occurred across the project. A summary of these activities is listed below.

**Structures**
- Completed piling for Halfway Creek bridge and commenced piling at Wells Crossing bridge
- Commenced preparations for headstock pours at Halfway Creek
- Bridge girders being progressively fabricated at pre-cast yard in Coffs Harbour.

**Paving**
- Commenced establishment of the wet mix batch plant at CH 24120 (north of Parker Road)
- Paver ordered and being shipped to the project site.

**Clearing Works**
- Clearing works have been completed on approximately 99 per cent of the project.

**Drainage**
• Work on box and pipe culverts continues across the project.

**Blasting**

• Two blasts have been fired in Cut 10 in first six (6) months
• Blasted rock is being processed for use throughout the project.

**Sediment Basins and erosion/ sediment controls**

• 27 licensed sediment basins have been commissioned to date across the project in consultation with the project soil conservationist and EPA. One (1) operational licensed basin is yet to be built.
• EPA is regularly issued the licensed basin register by CMC.
• Progressive erosion and sedimentation control continues throughout the project.

**Environment Training**

• Erosion and sediment control training
• Clearing and grubbing
• Spill control and clean up
• Sedimentation basin installation and maintenance
• Incident learning sessions.
1.7 Performance of environmental controls that have been implemented

Erosion and sediment control
Progressive erosion and sediment control plans are continually being implemented by CMC in consultation with the Project Soil Conservationist and RMS. The Project Soil Conservationist continues to assist CMC by providing advice on erosion and sedimentation controls, particularly in sensitive areas. Engineers, environment personnel and foreman continue to work collaboratively in developing erosion and sediment control plans to ensure effective onsite implementation. A range of erosion and controls continue to be adopted, including the use of mulch throughout the project.

Sediment basins
Twenty seven (27) licensed basins are currently commissioned on the project. To meet project design requirements, one (1) additional licensed sediment basin will be constructed during the next reporting period between Halfway Creek and Wells Crossing.

Protection of waterways
Transverse drainage works have commenced along the entire HC2G alignment, with both box culverts and pipe culverts being constructed. Prior to each culvert works, a series of onsite planning sessions are undertaken, which detail the environmental controls and requirements for the installation of the culverts. Throughout the works, weekly environmental joint inspections occur, involving earthworks and drainage teams to provide interface in managing culvert works.

Translocation of rare plant *Lepidosperma sp. Coaldale*
While not listed as Threatened under the TSC Act, the rare species *Lepidosperma sp. Coaldale* was identified on the south bank of Wells Crossing from botanic specimens sent for analysis during pre-construction works. An exclusion area was established and the identified plants subsequently translocated for relocation following consultation with the ERG. The plants were dug up shovel deep and the placed in plastic bags with the sandy soil kept around the rhizomes. The plants were removed from 17 separate locations. Some locations had individual plants and in other locations there were clumps of *Lepidosperma*. A total of 36 plants were removed and tagged.

*Eucalyptus tetrapleura* seed collection
Together with RMS, ecologists collected seed from the felled Eucalyptus at Franklins road North. The capsules were still green in appearance with the biggest or oldest ones collected. The ecologist advised they may ripen up and estimates it may take about a month for the capsules to open. Translocation ecologists will sow a percentage of the seeds and will store the rest in the seed fridge.

Fauna
Fish and fauna passage connectivity continues to be progressed throughout the project.

In accordance with the approved Nest Box Management Plan, 70 per cent of nest boxes were installed prior to commencement of clearing operations to provide alternative habitat resources for native fauna that may be displaced. 170 nest boxes were installed, with a variety of nest box sizes, entry hole diameters and landings to mimic natural habitat features.

A total of 160 terrestrial fauna individuals, comprising 38 species, were recovered during clearing activities. 87 per cent of individuals were released or dispersed on their own choice. 7.25 per cent
of individuals were taken to a veterinarian or a carer, and 5.80 per cent of individuals were dead when found or had to be humanely euthanised. Terrestrial fauna recorded included 47 amphibians, 15 birds, one insect, 35 mammals and 62 reptiles. Specific details of all recorded threatened species, status, age and outcome are shown below in Table 1-1.

Table 1-1 Threatened Species recorded during clearing activities.

<table>
<thead>
<tr>
<th>Date of sighting</th>
<th>Species (common name)</th>
<th>Species (scientific name)</th>
<th>Number individuals</th>
<th>TSC Act</th>
<th>EPBC Act</th>
<th>Age</th>
<th>Health</th>
<th>Sex</th>
<th>Outcome</th>
<th>Vegetation community code</th>
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</thead>
<tbody>
<tr>
<td>3/08/15</td>
<td>squirrel glider</td>
<td>Petasurus norfolcensis</td>
<td>3</td>
<td>Vulnerable</td>
<td>n/a</td>
<td>1 female adult with baby and 1 juvenile</td>
<td>Healthy</td>
<td>1 female and 2 unknown</td>
<td>Released</td>
<td>NR246</td>
</tr>
<tr>
<td>19/09/15</td>
<td>squirrel glider</td>
<td>Petasurus norfolcensis</td>
<td>1</td>
<td>Vulnerable</td>
<td>n/a</td>
<td>Juvenile</td>
<td>Healthy</td>
<td>Male</td>
<td>Taken to carer</td>
<td>NR246</td>
</tr>
<tr>
<td>4/09/15</td>
<td>little bittern</td>
<td>Glossopetta puxilla</td>
<td>4</td>
<td>Vulnerable</td>
<td>n/a</td>
<td>Adults and juveniles</td>
<td>Healthy</td>
<td>Male and female with juveniles</td>
<td>Released</td>
<td>NR227</td>
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<td>7/09/15</td>
<td>squirrel glider</td>
<td>Petasurus norfolcensis</td>
<td>4</td>
<td>Vulnerable</td>
<td>n/a</td>
<td>Adults and juveniles</td>
<td>Healthy</td>
<td>Male and female with juveniles</td>
<td>Released</td>
<td>NR228</td>
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<tr>
<td>7/09/15</td>
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<td>Petasurus norfolcensis</td>
<td>4</td>
<td>Vulnerable</td>
<td>n/a</td>
<td>Adults and juveniles</td>
<td>Healthy</td>
<td>Male and female with juveniles</td>
<td>Released</td>
<td>NR220</td>
</tr>
<tr>
<td>8/09/15</td>
<td>yellow-bellied glider</td>
<td>Petasurus australis</td>
<td>5 (2 caught, 3 self-dispersed)</td>
<td>Vulnerable</td>
<td>n/a</td>
<td>Adult and juveniles</td>
<td>Healthy</td>
<td>Female with male parent</td>
<td>Released</td>
<td>NR220</td>
</tr>
<tr>
<td>8/09/15</td>
<td>elephant banded snake</td>
<td>Hypsirulus leprieolens</td>
<td>1</td>
<td>Vulnerable</td>
<td>n/a</td>
<td>Sub-adult</td>
<td>Healthy</td>
<td>Unknown</td>
<td>Released</td>
<td>NR228</td>
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</table>

The project ecologist’s were involved in the monitoring of temporary frog fencing installation on both sides of the project area for approximately 1,300 metres (2,600 metres in total). Frog fencing was installed to exclude frogs, including the threatened giant barred frog (Mixophyes iteratus) and green-thighed frog (Litoria brevipalmata) from the project area.

Aquatic Fauna Salvage

A total of six freshwater fish species were translocated from three of the five dams during the dewatering program. No fish were present at the other two dams, though tadpoles of three frog species were retained and translocated. Two exotic fish species were retained during dewatering including gambusia (Gambusia holbrooki) and goldfish (Carassius auratus). Individuals retained were euthanased and disposed of in accordance with dewatering methods and the ecologist’s permit conditions.

A total of 619 freshwater fish representing six native species were captured and translocated to the receiving dam. Of these, the firetail gudgeon (Hypseleotris galii) was the most abundant, with 609 individuals retained and translocated.

Aquatic Habitat Creation Project

CMC are proud to be able to assist NPWS in fish habitat creation projects at the newly gazetted Everlasting Swamp National Park near Lawrence in the Clarence Valley. The project donated 20 root balls from the clearing operation for the project including trimming, cleaning and transport to the Everlasting Swamp National Park. Update on the fish habitat creation project will be included in the next six monthly report.

Air Quality

To manage dust onsite, the use of multiple water carts has been working well throughout the project to minimise generation of dust from construction activities. Cover of exposed surfaces
(using cover crop seed, etc) is continuing, which also assists in dust control. Dust from internal roads and the site is also minimised through enforcement of speed limits onsite.

Weekly toolbox talks continue to emphasise the importance of speed limits onsite for safety and environmental reasons. Stabilised haul roads are also assisting with dust control as well as street sweepers at these locations. Other measures include stabilised access points throughout the project and use of soil binders to suppress dust.

Water generated from sedimentation basins and sediment traps has preferentially been reused as another source of dust suppression across the project.

**Noise and Vibration**
Prior to each production blast, detailed blast designs have been completed and approved to ensure the primary impacts, air blast and vibration levels are managed according to the rock type, weather and distance to sensitive receivers. Noise monitoring results are outlined in Section 6.2. Noise results are tabulated and discussed in the Environmental Review Group meetings.

**Heritage**
An archaeological sub-surface excavation was completed at the former Cobb and Co station on the south side of Halfway Creek during the reporting period.

During demolition of a shed at 5411 Pacific Highway an old double handled saw was discovered. The Heritage Management Tool was implemented with the find reported to RMS. Consultation and review with RMS Heritage determined the object to be a “non-relic” “moveable object”. RMS intends to donate the saw to a local heritage group or Clarence Valley Council.

**Waste**
The waste hierarchy is continually being adopted onsite, specifically Reduce, Reuse, Recycle.
Where possible, waste reuse is prioritised onsite, particularly for surplus unsuitable soils, concrete, old asphalt pavements, steel and timber as this also has cost benefits. Waste oil and oily materials are transported to the project workshops and removed regularly by a local waste recycling operator. Purchasing materials which have a recycled content also occurs where possible. Some materials (excess spoil and reclaimed asphalt, for example) have been sought by external parties with development consents and addressed under waste procedures and s143 permits, which also assist the project in reducing the volume of waste while supporting beneficial reuse opportunities.

Mulch is continually being used onsite site for erosion control and is working well.
Concrete waste generated by the project is also reused for embankment construction after being crushed. There have been reasonable volumes of concrete waste recycled on the project for reuse on the project. Steel recycling also occurs on the project. A licensed waste metal contractor collects the material regularly.

**Mulch Composting Trial**
HC2G is undertaking trial of nutrient addition to mulch stockpiles including comprehensive data collection to assess relative effectiveness of high input composting process. The purpose is to produce a high quality composted soil product from the site won hardwood mulch for reuse in landscaping to achieve high quality re-establishment of native vegetation with ground cover greater than 70 per cent, which is the target established in the “Blue Book” to prevent erosion in the operational phase. This innovative process has been highly praised by the ERG and is expected to generate significant learning’s for future projects.

Seven different ameliorant mixes are being assessed these are:

- nutrients, lime and soil builder microbes
- Cow (feedlot weed free) manure, lime and plus microbes
- Cow manure and lime
- Urea and lime
- Dynamic lifter and lime
- Water only
- “Do nothing” as baseline
2 Program requirements

The Compliance Tracking Program has been prepared as a requirement of CoA D27. The requirements, as stipulated by this CoA, are detailed in Table 2-1.

Table 2-1 CoA requirements for the Compliance Tracking Program

<table>
<thead>
<tr>
<th>CoA No.</th>
<th>Requirement</th>
<th>Reference</th>
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<tr>
<td>D27</td>
<td>The Applicant shall prepare and implement a Compliance Tracking Program, to track compliance with the requirements of this approval, prior to the commencement of construction and operate from the date of its approval to a minimum of one year following commencement of operation, or as otherwise agreed by the Secretary. The Program shall be prepared for the approval of the Secretary, and include, but not necessarily be limited to:</td>
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<td>(a) provisions for the notification of the Secretary prior to the commencement of construction and prior to the commencement of operation of the SSI (including prior to each stage, where works are being staged);</td>
<td>Section 2.1</td>
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<td>(b) provisions for periodic review of the compliance status of the SSI against the requirements of this approval;</td>
<td>Section 2.2</td>
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<td>(c) provisions for periodic reporting of compliance status to the Secretary, including a Pre-Construction Compliance Report, prior to the commencement of construction, and a Pre-Operation Compliance Report prior to the commencement of operation. These reports may be staged to suit the staged construction/operation of the SSI;</td>
<td>Section 2.3</td>
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<td>(d) a program for independent environmental auditing in accordance with ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing;</td>
<td>Section 2.4</td>
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<td>(e) mechanisms for recording environmental incidents during construction and actions taken in response to those incidents;</td>
<td>Section 2.5</td>
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<td>(f) provisions for reporting environmental incidents to the Secretary and relevant public authorities during construction;</td>
<td>Section 2.6</td>
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<td>(g) procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management; and</td>
<td>Section 2.7</td>
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<td>(h) provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.</td>
<td>Section 2.8</td>
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2.1 Secretary notification

CoA D27 (a) requirement:
“provisions for the notification of the Secretary prior to the commencement of construction and prior to the commencement of operation of the SSI (including prior to each stage, where works are being staged)”

Construction will commence on each stage of the Project according to the Staging Report following approval by the Secretary of the relevant CEMP, associated environmental plans and other relevant documentation required by the approval.

The CEMP for Section 2 was conditionally approved by the Department of Planning and Environment on 4 June 2015, with the Environment Protection Licence 20599 subsequently issued on 19 June 2015. The Secretary was notified of the intention to commence construction on the 19 June 2015. Construction subsequently commenced on 22 June 2015.

2.2 Period compliance review

CoA D27 (b) requirement:
“provisions for periodic review of the compliance status of the SSI against the requirements of this approval”

RMS will review the status of compliance and submit periodic compliance reports to the Secretary as follows:
- Prior to the commencement of construction.
- Six months after the commencement of construction and then at six monthly intervals thereafter.
- Prior to the commencement of operation.

This report captures the first six months of construction for the period 22 June 2015 to 22 December 2015. The compliance tracking tables (contained to Appendix A) form an integral part of this periodic review.

These tables establish a format for recording compliance and include:
- Description of the environmental obligation.
- The stage of the project to which it relates.
- Status.
- Responsibility

2.3 Period compliance reporting

CoA D27 (c) requirement:
“provisions for periodic reporting of compliance status to the Secretary, including a Pre-Construction Compliance Report, prior to the commencement of construction, and a Pre-Operation Compliance Report prior to the commencement of operation. These reports may be staged to suit the staged construction/operation of the SSI”

Revision 2 (dated 7 July 2015) of this Compliance Tracking Report documents the pre-construction compliance status. This report (Revision 3) is for the first six of construction and captures details relating to the construction compliance status over the period 22 June 2015 to 22 December 2015.

At intervals prescribed in Section 2.2 the status of compliance will be reviewed and reported to the Secretary in the form of a Compliance Tracking Report. The Compliance tracking report includes:
- Scope of the activities undertaken during the reporting period. (Section 1.6)
- Performance of environmental controls that have been implemented. (Section 1.7)
• Compliance with CoA, revised EMMs as recorded in the compliance tracking tables. (Appendix A)
• Non-compliances during the reporting period. (Section 2.7)
• Detail of all incidents recorded and action taken during the reporting period. (Section 2.5)
• Outcomes of monitoring undertaken over the reporting period and review of compliance against relevant criteria. (Section 3)
• Significant outcomes of audits and ERG inspections undertaken during the reporting period. (Section 2.4)
• Detail of substantiated environmental complaints received, responses taken and current status (ie open or closed). (Section 4)

2.4 Independent environmental auditing

<table>
<thead>
<tr>
<th>CoA D27 (d) requirement:</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;a program for independent environmental auditing in accordance with ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing&quot;</td>
</tr>
</tbody>
</table>

RMS will ensure that independent audits are undertaken in accordance with ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing at six monthly intervals throughout construction. The audits will assess compliance against the CoA and EMMs.

**Environmental Audits**

A Roads and Maritime Services (RMS) audit took place on 23 September 2015 on MCoA, RMS Specification G36 and G38, the CEMP and the Environmental Protection Licence 20599. The audit team complimented CMC on its high standard of documentation, safety, quality, environmental and traffic management on the site. One Corrective Action Report (CAR) was raised and two (2) OoC (Observation of Concern) were noted in relation to environmental matters.

The CAR was raised for "no consolidation of corrective actions into a register or log to enable tracking of close out", the CAR was closed to the satisfaction of the Auditor on 9 October 2015.

The first OoC was a recommendation that CMC develop an EWMS for the management of tannin leachate from mulched vegetation, CMC responded that this was not required as this issue is appropriately addressed in Appendix D of Construction Soil and Water Management Plan. It should also be noted that tannin management is reviewed during each monthly ERG. The HC2G ERG have provided positive feedback over the past year that tannin management on this project is some of the best on the Pacific Highway as recorded in meeting minutes.

The second OoC related to project access to a service that provides updates regarding changes to both NSW and Commonwealth legislation. CMC head office was subscribed to Workplace Enviro Australia Pty Ltd - Enviro Alert Service, with site Environmental Management Team added to subscription list, thus closing this OoC.

**Environmental Review Group Meetings/Inspections**

The Environmental Review Group (ERG) for the project consists of representatives from the CMC, Environment Protection Authority (POEO), Environment Protection Authority (biodiversity), DPI (Fisheries), Clarence Valley Council, Department of Planning and Environment (DP&E) and their Environmental Representative (ER), Soil Conservation Service and Roads & Maritime Services (RMS).

Monthly ERG meetings/inspections have occurred on the following dates, during the reporting period:

- 23 June 2015
- 28 July 2015
- 25 August 2015
- 22 September 2015
• 27 October 2015
• 24 November 2015

Significant issues:

• Halfway Creek abutment A scour protection works (Aug, Sep, Oct ERG)
• Establishment of Ancillary Facilities
• Bat boxes in new culvert structures – design and type
• Fauna connectivity Issues
• Glider Pole optimisation
• Wells Crossing access platform design
• Mulch composting trial
• Aquatic fauna rescue and salvage

Fortnightly Environmental Inspections

CMC, RMS and Soil Conservation Service conduct fortnightly environmental inspections throughout the project. All actions are recorded on an Actions Register, which is managed by the Environment team. Where actions are not addressed within the requested timeframe, they are elevated to senior management until the item is addressed.

2.5 Incident reporting and response

CoA D27 (e) requirement:
“mechanisms for recording environmental incidents during construction and actions taken in response to those incidents”

RMS's Environmental Incident Classification and Reporting Procedure will be implemented for all environmental incidents for the Project. The full procedure is provided in Appendix A6 of CEMP.


Typically, environmental incidents will be notified verbally immediately and in writing within 1 hour of any incident occurring to the RMS Representative and the Environmental Representative. Incident reports will be provided to RMS Representative and the Environmental Representative within 24 hours of the incident occurring, including lessons learnt from each environmental incident and proposed measures to prevent the occurrence of a similar incident. All efforts will be undertaken immediately to avoid and reduce impacts of incidents and suitable controls put in place. Incidents will be close out as quickly as possible, taking all required action to resolve each environmental incident.

The EPA will be notified of any environmental incidents or pollution incidents on or around the site via the EPA Environment Line (telephone 131 555) in accordance with Part 5.7 of the Protection of the Environment Operations Act 1997 (NSW) (POEO Act). The circumstances where this will take place include:

• If the actual or potential harm to the health or safety of human beings or ecosystems is not trivial.
• If actual or potential loss or property damage (including clean-up costs) associated with an environmental incident exceeds $10,000.

Five (5) environmental incidents were reported during the six-monthly period. These are listed below and are reported to the EPA and ERG meetings. Incident reports are retained on CMC’s reporting system.

• On 31 July 2015, clearing incident (by cut stump) of five (5) trees outside of cadastral acquisition boundary but within approved clearing boundary and approved project boundary near Bald Knob Road (ICAM Report attached in Appendix C). Ground cover
and small shrubs remained undisturbed. No threatened species or EEC were affected. Note that this area of 210m² was within the EPL premises boundary, as the EPL premises boundary was defined by the "approved project boundary" which incorporates public utility connections, ancillary facilities, local road connections etc. which are outside the RMS road reserve which is defined by the cadastral/acquisition boundary. Note that EPA requires these project related construction activities to be included in the EPL premises boundary in order to comply with legislative requirements of the Protection of the Environment Operations Act (1997), with this requirement being a driving force behind the development of the "approved project boundary" concept. During incident investigation a similar situation was discovered near Franklins Road (Incident Report attached in Appendix C). A comprehensive ICAM report was prepared and distributed to ERG members, with ERG confirming satisfaction with the corrective actions and noting quality of investigation.

- On 8 September 2015, a scrapper earthmoving plant burst a hydraulic hose while loading the bowl. This caused the scrapper to halt operations. Approximately 30L of hydraulic oil was spilled and cleaned up with absorbent pads from the spill kit. Oil affected absorbent spill material and small portion of surface soil was removed in heavy duty plastic bags for disposal to licenced facility. Spill kit was subsequently restocked.

- On 19 October 2015, an off road haul truck (moxie) burst a hydraulic hose while conducting tipping operation. Approximately 2.5-5L of hydraulic oil was spilled and cleaned up with absorbent pads from spill kit. Oil affected absorbent spill material and small portion of surface soil was removed in heavy duty plastic bags for disposal to licenced facility. Spill kit was subsequently restocked.

- On 27 October 2015, construction works at three locations outside of EPL premises boundary were identified as completed prior to approved modification of the EPL premises boundary, these locations were:
  - Parker Road Ancillary Facility Access [note the Ancillary Facility itself is within the current EPL 20599 (version 19 June 2015) premises boundary as per EPL Condition A2.2], however required shoulder widening of Parker Road for local through traffic and access ramps into ancillary facility are not included due to omission from Minister’s Conditions of Approval A2(d) Site 5a assessment. The full ancillary facility was approved by the Environmental Representative on 28 July 2015.
  - Kungala Access Track in accordance with approved Minor Consistency Review
  - Wells Crossing welded High Density Poly-Ethylene (HDPE) pipe placed on surface and pump to stand pipe in accordance with NSW Office of Water Approval 30PE002493

A show cause report was forwarded to EPA on 13 November 2015, with EPA issuing a formal warning.

- On 12 November 2015, a grader burst a hydraulic steering hose while conducting trimming operation. Approximately 2.5-5L of hydraulic oil was spilled and cleaned up with absorbent pads from spill kit. Oil affected absorbent spill material and small portion of surface soil was removed in heavy duty plastic bags for disposal to licensed facility. Spill kit was subsequently restocked.

There have been a number of learning’s from a number of these incidents, which have been used as preventative actions for this project and others.

The Project team comprising Roads and Maritime and its Delivery Partner will maintain all records relating to environmental incidents. Roads and Maritime Environment Branch will also provide assistance with maintaining records relating to environmental incidents.

### 2.6 Incident reporting to Secretary

**CoA D27 (f) requirement:**

"provisions for reporting environmental incidents to the Secretary and relevant public authorities during construction"
The Secretary will be notified of incidents in writing in circumstances where:

- The actual or potential harm to the health or safety of human beings or ecosystems is not trivial.
- The actual or potential loss or property damage (including clean-up costs) associated with an environmental incident exceeds $10,000.

An initial notification to the Secretary will be made verbally within two working days. The written notification will be made within 10 working days.

Where incidents are considered to be minor, ie do not meet the criteria above, they will be reported to the Secretary in accordance with the compliance tracking program at frequencies prescribed in Section 2.2.

### 2.7 Addressing non-compliance

**CoA D27 (g) requirement:**

"procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management"

Section 8.4 of the CEMP describes in detail the system for tracking compliance prior to and during construction.

Where a non-compliance has been identified, a corrective/preventative action (or actions) will be implemented.

Corrective/preventative actions will be entered into the contractor’s quality system database and include detail of the issue, action required and timing and responsibilities. The record will be updated with date of close out and any necessary notes. The database will be reviewed regularly to ensure actions are closed out as required.

The close-out of required actions will be reviewed during forums including Environmental Representative and ERG inspections, and the Environmental Representative will be actively involved in the review and resolution of non-compliances.

The only significant non-compliance during the reporting period was regarding works outside the EPL premises boundary as detailed in Section 2.5 for incident dated 27 October 2015.

### 2.8 Employee inductions

**CoA D27 (h) requirement:**

"provisions for ensuring all employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities"

Section 5.1 of the CEMP describes in detail how all personnel working on the Project are aware of their environmental obligations.

During construction, the Environmental Manager (or delegate) will conduct the environmental component of the site inductions. The environmental component will include, but not limited to, an overview of:

- Relevant details of the CEMP including purpose and objectives.
- Key environmental issues.
- Conditions of environmental licences, permits and approvals.
- Specific environmental management requirements and responsibilities.
- Mitigation measures for the control of environmental issues.
- Incident response and reporting requirements.
- Information relating to the location of environmental constraints.

A record of all environment inductions is maintained and kept on-site.
3 Environmental Monitoring

Monitoring and testing has been undertaken for surface water quality, noise, dust and flora and fauna in accordance with the Construction Environmental Management Plan (CEMP) during the reporting period. Monitoring results are provided in Appendix B. Further details on monitoring during the reporting period are provided below.

3.1 Water Quality

CMC undertake monthly surface water quality monitoring at predetermined locations throughout the project, in accordance with the Construction Soil, Erosion and Water Quality Management Plan. Three waterways are monitored at upstream and downstream locations. Water quality results are presented in Appendix B. The monitoring results are uploaded onto the CMC environmental monitoring database and conveyed to the Environmental Review Group (ERG) on a monthly basis. Water quality parameters include - pH, turbidity, temperature, dissolved oxygen, electrical conductivity and nutrients.

The water quality meter is calibrated on-site prior to any water quality monitoring and is serviced by qualified technicians recommended by the manufacturer. The following information provides a discussion on results.

Overall, there appears to be minor differences between the upstream and downstream water quality with some exceptions:

- Increased nutrients observed at Glenugie Creek downstream associated with microbat colony roosting within bebo arch structure
- Increased turbidity/TSS in Wells Crossing downstream following three rainfall runoff events greater than EPL 5 day threshold in November 2015 and one in December 2015
- As agreed at the ERG meeting on Tuesday 24 November 2015, CMC re-flocculated Wells Crossing pool beneath the existing highway, this process was repeated in December following rainfall event greater than EPL design storms. As noted during the ERG these pools were retaining the discharges from the runoff events over EPL 5 day threshold. This was due to there being no flow in Wells Crossing following an extended dry period over previous months, creating series of disconnected pools. Enhanced controls have been implemented in this catchment including rock/geotextile lining of open channel north east of Wells Crossing, increased contour banks and catch drains, dewatering of all traps and sumps to reinstate capacity after each rainfall event, dosing catchment with gypsum to treat runoff water and flocculation of retained pools in Wells Crossing as noted above.

Controls are constantly monitored and reviewed as part of the rainfall inspection process, taking into account water quality results.

In relation to sediment basins, flocculation is being undertaken to ensure the discharge criteria is met, within or before the five (5) day discharge criteria. Note that pH correction has not been required to date on the project for sedimentation basin discharge. Results are provided to EPA in the EPL monthly reports. The use of gypsum at inlets and use of fine gypsum continues to assist in reducing timeframes for release of sediment basins. Early flocculation and release of basins has greatly assisted in reducing water quality impacts.

3.2 Noise Monitoring

Attended noise monitoring was undertaken during the first three months of operation of the Parker Road ancillary facility which incorporates a dry mix concrete batch plant. The results are included in Appendix B, with results for each month below the relevant noise management level of 56dB(A) specified in the Construction Noise and Vibration Management Plan. These results were reviewed at each monthly ERG meeting, with the ERG agreeing at the end of the first three months of operation that monitoring will be discontinued at the ancillary facility and would be undertaken if any complaints are received. It should be noted that consultation with the adjacent residents during the first three months of operation confirms no issues with the dry mix concrete batch plant operation.
Section 10.3 of the CNVMP refers to Section 4.1 for identification of sensitive receivers. Section 4.1.2 of the CNVMP includes “Relative to the other 10 sections of the overall W2B Project, the Halfway Creek to Glenugie upgrade (HC2G) has a small number of noise and vibration sensitive receivers.

Along almost 12 kilometres of HC2G there are 29 receivers identified within the 600 metres zone from the upgraded highway. This includes four commercial/non-residential receivers.” Note also that (i) there have been no noise complaints for the duration of HC2G construction to date (ii) this has been confirmed by HC2G Community relations team, who have directly consulted with each of the 29 identified sensitive receivers during community engagement for Out of Hours Works. All residents have confirmed no noise impact from HC2G construction activities.

Based on the above it has been agreed with the ERG that routine noise monitoring is not required and that further noise monitoring will be undertaken in response to noise complaints. As noted above there have not been any noise complaints during the reporting period. This will continue to be reviewed as an agenda item at each monthly ERG meeting.

3.3 Air Quality

Monthly dust monitoring occurs at six (6) locations across the project. The results of dust monitoring are compared to the prescribed dust criteria of 4g/m2/month for the project (Refer Appendix B).

In summary, dust results were exceeded eight (8) times from June 2015 to December 2015, however only two (2) are considered related to construction. These exceedances were at dust gauge 2 (5415 Pacific Highway), with some contamination by flying ants and landowner activities (mowing). Multiple contaminations of DD1 were recorded due to gravel access road to service station, ploughing of adjacent paddock and contamination with gravel sized/non-airborne particles as reviewed during ERG meetings. Due to this repeated contamination, the ERG agreed it was best to relocate DD1. The November 2015 result for DD6 was also contaminated with horse manure. This result was therefore not attributed to construction activities.

On all occasions, dust results/ exceedances and mitigation measures have been tabulated and discussed at the next meeting of the ERG. There were no issues raised by the ERG with respect to dust in the reporting period to December 2015. The only comments were to “monitor dust around site” by Pacific Complete in October ERG, with the note also in October that “no dust complaints” had been received.

Water carts are being used to reduce dust emissions across the project with good results. It should also be noted that there have not been any dust complaints for the Halfway Creek to Glenugie project to date.

3.4 Flora and Fauna

Nest box, micro-bat and threatened flora monitoring will commence in 2016, with results to be reported in the next six monthly report.
4 Environmental Complaints

During the six months reporting period, there has been a total of one (1) recorded complaint relating to the 12 km HC2G project. A summary of this complaint and the CMC response is summarised below. All complaints are recorded into Consultation Manager and are tracked by assigning any actions to the appropriate person until they are closed out to the satisfaction of the resident and CMC. All the complaints received during the reporting period have been closed out.

- A complaint was received on 11 November 2015 about construction trucks parking in at the Halfway Creek Community Hall during school bus pick up time and not leaving enough space for parents to park. CMC investigated the complaint and found that the trucks were parked up waiting to deliver culverts to the site. This was a one off occurrence.

Community consultation activities from June to December 2015

CMC attended the Halfway Creek local markets in June, September and December 2015 with a community display to provide information to local residents about the highway upgrade.

A number of consultation activities were also undertaken with local businesses and residents for controlled blasting activities, project construction updates and upcoming traffic switches.

Feedback about the project from the local community has been very positive.
Appendix A

Compliance tables
**COMPLIANCE TRACKING - CONDITIONS OF APPROVAL PART A**

Woolgoolga to Ballina SSI-4963

Minister's Condition of Approval

<table>
<thead>
<tr>
<th>Requirement</th>
<th>W2B Section</th>
<th>Stage</th>
<th>Timing</th>
<th>Responsibility</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Construction Operation</td>
<td>RMS5</td>
<td>This is addressed within the contract documents eg. CEMP, sub-plans, design drawings, specifications, etc.</td>
</tr>
<tr>
<td>A2</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Detailed Design Construction Operation</td>
<td>RMS5</td>
<td>Part (a) of this condition does not apply to Sections 1 and 2. However part (a) applies to Sections 1 and 2 of the project with regard to the additional works outside the project boundary that may impact on heritage items to require archaeological investigations and/or conditions of the approval.</td>
</tr>
<tr>
<td>A3</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS5</td>
<td>Noted</td>
</tr>
<tr>
<td>A4</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Construction Operation</td>
<td>RMS5</td>
<td>Noted</td>
</tr>
<tr>
<td>A5</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS5</td>
<td>The project has physically commenced.</td>
</tr>
<tr>
<td>A6</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Construction Operation</td>
<td>RMS5</td>
<td>Notice have been obtained for the EPL, water use and State Forest occupation permits and further licences/permits will be applied for as construction proceeds.</td>
</tr>
<tr>
<td>A7</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Construction Operation</td>
<td>RMS5</td>
<td>No further stage proposed for Section 2 at this time.</td>
</tr>
<tr>
<td>A8</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS5</td>
<td>Noted</td>
</tr>
<tr>
<td>A9</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Construction Operation</td>
<td>RMS5</td>
<td>This is addressed within the contract documents eg. CEMP, sub-plans, design drawings, specifications, contractors training induction packages and also in documents such as EIR/W's and Blair MP.</td>
</tr>
<tr>
<td>A10</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS5</td>
<td>This is addressed within the contract documents eg. CEMP, sub-plans, design drawings, specifications, contractors training induction packages and also in documents such as EIR/W's and Blair MP.</td>
</tr>
<tr>
<td>A11</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS</td>
<td>Noted</td>
</tr>
<tr>
<td>A12</td>
<td>All</td>
<td>All</td>
<td>Construction Operation</td>
<td>RMS5/Contractors</td>
<td>This is addressed in RMS Specification G83 Clause 3.10, 4.14 Also addressed in the contractors CEMP and RMS environmental incident classification and reporting procedure. There was an oil spill incident on HG26 into Forest Corp. lands (210m² involving 5 tonnes) which was thoroughly investigated by RMS and OEH and no incident investigation undertaken. In addition, this matter was thoroughly discussed at the August 2010 EIR with EPA and regulatory agencies.</td>
</tr>
<tr>
<td>A13</td>
<td>All</td>
<td>All</td>
<td>Construction Operation</td>
<td>RMS5/Contractors</td>
<td>Noted</td>
</tr>
</tbody>
</table>
### COMPLIANCE TRACKING - CONDITIONS OF APPROVAL PART B

**Woolgoolga to Ballina SSI-4963**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Section</th>
<th>Project Stage</th>
<th>Timing</th>
<th>Responsibility</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>B1 The clearing of native vegetation shall be minimised with the objective of reducing impacts to any threatened species or EECs where feasible and reasonable, consistent with the following:</td>
<td>All</td>
<td>All</td>
<td>Post-construction</td>
<td>RMS/Detailed Designers/Contractors</td>
<td>RMS and the Contractor will ensure compliance with the approved clearing limits under the Planning Approval. Clearing of native vegetation has been minimised with a detailed design objective being to reduce impacts to any threatened species or EECs where feasible and reasonable. Clearing limits are clearly shown on relevant construction drawings and clearly tracked throughout the project. Clearing limits may change slightly with more detailed assessment. Not all clauses of this condition will apply to each stage. An assessment will be made as to the applicability of specific clauses prior to construction. Clearing has been reduced in some part of the project from the clearing limit as per detailed design. Some areas include Halfway Creek and Walls Crossing, which is a positive outcome for the project, and this includes EECs and threatened species. There have been other reductions to the detailed design clearing limit at Bald Knob Rd and Frankie Rd. Some additional vegetation has been retained beside fauna underpasses.</td>
</tr>
<tr>
<td>(a) clearing of native vegetation shall be limited to a total area of 331.7 hectares, within the SSI boundary defined in the document referred to in condition A2(e), subject to condition B(16);</td>
<td>All</td>
<td>All</td>
<td>Post-construction</td>
<td>RMS/Detailed Designers/Contractors</td>
<td></td>
</tr>
<tr>
<td>(b) clearing of native vegetation for ancillary facilities specified in the document referred to in condition A2(e) and outside the SSI boundary defined in the document referred to in condition A2(e) shall be limited to 4.75 hectares;</td>
<td>All</td>
<td>All</td>
<td>Post-construction</td>
<td>RMS/Detailed Designers/Contractors</td>
<td></td>
</tr>
<tr>
<td>(c) clearing of threatened ecological communities shall be limited to the areas specified in Table 5-1 (under the column titled ‘Revised’—direct impact (hectares)) of Appendix 2 of the document referred to in condition A2(e), subject to condition B(10);</td>
<td>All</td>
<td>All</td>
<td>Post-construction</td>
<td>RMS/Detailed Designers/Contractors</td>
<td></td>
</tr>
<tr>
<td>(d) clearing of the Litoral Rainforest in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions shall be limited to a total area of 0.5 hectares; and</td>
<td>All</td>
<td>All</td>
<td>Post-construction</td>
<td>RMS/Detailed Designers/Contractors</td>
<td></td>
</tr>
<tr>
<td>(e) clearing of Koala (Phascolarctos cinereus) primary and secondary habitat shall be limited to a total area of 375 hectares.</td>
<td>All</td>
<td>All</td>
<td>Post-construction</td>
<td>RMS/Detailed Designers/Contractors</td>
<td></td>
</tr>
<tr>
<td>B2 Where feasible and reasonable, remnant vegetation shall be retained between the SSI boundary and the SSI footprint.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS/Detailed Designers/Contractors</td>
<td>Vegetation clearing limits have been defined during detailed design for Stage 1. Roads and Marine is satisfied that the clearing has been met. Clearing has been closely monitored throughout construction.</td>
</tr>
<tr>
<td>B3 Native vegetation shall be established in or adjacent to disturbed areas, within the SSI boundary to provide habitat for wildlife following the completion of construction in the vicinity of the disturbed area, consistent with the Urban Design and Landscape Plan required under condition C02.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Detailed Designers/Contractors</td>
<td>Measures for native vegetation are included in the UCDF. Progressive rehabilitation / stabilisation has been included on Section 1 and is expected to start shortly on Sections 11, 12, and 3. Soft soil works in an early construction phase and does not include an Urban Design and Landscape Plan.</td>
</tr>
<tr>
<td>B4 Light spill from the SSI shall be avoided on Pink Underwing Moth and Atlas Rainforest Ground Beetle habitat, where feasible and reasonable.</td>
<td>Stage 2</td>
<td>Stage 2</td>
<td>Detailed Design</td>
<td>RMS/Detailed Designers/Contractors</td>
<td>Stage 2</td>
</tr>
<tr>
<td>B5 Prior to construction, pre-clearing surveys and inspections for endangered and threatened species shall be undertaken. The surveys and inspections, and any subsequent investigations, are to be undertaken under the guidance of a suitably qualified ecologist and shall be in accordance with the methodology incorporated into the approved Construction Flora and Fauna Management Plan.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Detailed Designers/Contractors</td>
<td>Stage 2</td>
</tr>
<tr>
<td>All clearing of Koala habitat trees shall be undertaken in the presence of a Koala spotter.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Detailed Designers/Contractors</td>
<td>Stage 2</td>
</tr>
<tr>
<td>B6 Incidental or unanticipated felling of flora and fauna finds shall be immediately reported and clearing work stopped in the vicinity of the find to allow for an evaluation of an appropriate response in accordance with the Construction Flora and Fauna Management Plan.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS/Contractors</td>
<td>While not listed as Threatened the rare species Lepidosperma sp. Coaldale was identified on the south bank of Pre-construction.</td>
</tr>
<tr>
<td>B7 High risk construction activities in known Oxleyan Pygmy Perch habitat shall not be undertaken during the Oxleyan Pygmy Perch spawning period, or on days when the relevant Bureau of Meteorology site predicts a 90% chance of 10mm of rain or more, unless otherwise agreed by DPI (Fisheries).</td>
<td>6, 7, 8, 9</td>
<td>Stage 2</td>
<td>Construction</td>
<td>RMS/Contractors</td>
<td></td>
</tr>
<tr>
<td>B8 Temporary bridge or arch structures in known Oxleyan Pygmy Perch habitat shall be used if the crossing is intended to be in place for more than 3 months.</td>
<td>6, 7, 8, 9</td>
<td>Stage 2</td>
<td>Construction</td>
<td>RMS/Contractors</td>
<td></td>
</tr>
<tr>
<td>B9 Where temporary crossings in known Oxleyan Pygmy Perch habitat are proposed with culverts or pipes, the Applicant shall, in consultation with DPI (Fisheries):</td>
<td>6, 7, 8, 9</td>
<td>Stage 2</td>
<td>Construction</td>
<td>RMS/Contractors</td>
<td></td>
</tr>
<tr>
<td>(a) determine the size of the culverts or pipes to facilitate fish passage; and</td>
<td>6, 7, 8, 9</td>
<td>Stage 2</td>
<td>Construction</td>
<td>RMS/Contractors</td>
<td></td>
</tr>
<tr>
<td>(b) identify the minimum size of clean rock to be used to ensure that rock material will not wash into the waterways in periods of high flow. Temporary culvert or pipe crossings shall be removed prior to the start of the Oxleyan Pygmy Perch spawning period.</td>
<td>6, 7, 8, 9</td>
<td>Stage 2</td>
<td>Construction</td>
<td>RMS/Contractors</td>
<td></td>
</tr>
<tr>
<td>B10 Subject to conditions B11 and B12, the Applicant shall review the Connectivity Strategy identified in the documents listed in condition A2(a), based on the outcomes of the Mitigation Framework required by condition D1.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS/Detailed Designers/Contractors</td>
<td>Connectivity Strategy for Sections 1 &amp; 2 was approved by DPI&amp;E on 11/5/15</td>
</tr>
<tr>
<td>(a) the requirements for the Connectivity Strategy are contained in condition D2.</td>
<td></td>
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</tr>
<tr>
<td>B11 As part of detailed design, the Applicant shall further investigate design refinements for fauna crossings and associated ecological measures, between stations 81.500 and station 80.000 to improve connectivity for the Coastal Enns, and in the proximity of station 80.500 and between station 137.900 and station 138.700 to improve connectivity for the Koala. Any changes to fauna crossings and associated measures shall be included in the Connectivity Strategy required under condition D2.</td>
<td>5, 6, 7, 8, 9, 10, 11</td>
<td>Stage 2</td>
<td>Construction</td>
<td>RMS/Submitted Designers/Contractors</td>
<td>Connectivity Strategy approved by DPI&amp;E on 11/5/15.</td>
</tr>
<tr>
<td>B12 Investigations into the location and design of connectivity structures, including but not limited to those identified in the Project team’s design under conditions A2(a) and A2(b), shall be undertaken during detailed design with the input of a suitably qualified and experienced ecologist. The investigations shall be undertaken in consultation with the DPI, DPI (Fisheries) and DoE and include workshops and on-site ground verification. The results of these investigations shall be included in the Connectivity Strategy required under condition D2.</td>
<td>All</td>
<td>All</td>
<td>Post-construction</td>
<td>RMS/Submitted Designers/Contractors</td>
<td>Required structures will be installed as per the Connectivity Strategy. If any issues are identified with structures during construction phase then consultation would be undertaken with the EPA and the ER to determine appropriate course of action.</td>
</tr>
<tr>
<td>B13 The Applicant shall continue regular vegetation felling during construction and undertake a targeted rehabilitation program post-construction to restore or re-create and improve habitat to at least the pre-construction condition or better, unless otherwise agreed by DPI (Fisheries). All areas disturbed by the SSI that are in the vicinity of known Oxleyan Pygmy Perch habitat waterways shall be stabilised prior to the Woolgoolga to Ballina SSI-4963 Construction Operation.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS/Submitted Designers/Contractors</td>
<td>Clearing has been reduced in some part of the project from the clearing limit as per detailed design. Some areas include Halfway Creek and Walls Crossing, which is a positive outcome for the project, and this includes EECs and threatened species. Not applicable to known Oxleyan Pygmy Perch habitat on Sections 1 &amp; 2.</td>
</tr>
</tbody>
</table>
The SSI shall be constructed with the aim of achieving the construction noise management levels detailed in the Interim Construction Noise Guideline (DECC, 2009). All feasible and reasonable noise mitigation measures shall be implemented and any activities that could exceed the construction noise management levels shall be identified and managed in accordance with the Construction Noise and Vibration Management Plan. Note: The Interim Construction Noise Guideline identifies ‘particularly annoying’ activities that require the addition of 5dB(A) to the predicted level before counting to the Construction Noise Management Level.

The Applicant shall, where feasible and reasonable, limit high noise impact activities and work to the mid-morning and mid-afternoon periods, except in sparsely populated areas.

Construction activities resulting in impulsive or tonal noise emission (such as rock breaking, rock hammering, pile driving) shall only be undertaken:

- All construction RMS/Contractors
- All construction RMS/Contractors
- All construction RMS/Contractors
- All construction RMS/Contractors

The SSI shall be constructed with the aim of achieving the following construction vibration goals:

- All construction RMS/Contractors
- All construction RMS/Contractors
- All construction RMS/Contractors
- All construction RMS/Contractors

The Applicant shall ensure that Air blast overpressure generated by blasting associated with the SSI shall not exceed the criteria specified in Table 1 when measured at the nearest residence/sensitive receiver. Monitoring results are reported at monthly ERG meetings.

Construction works outside the standard construction hours may be undertaken in the following circumstances:

- All construction RMS/Contractors
- All construction RMS/Contractors
- All construction RMS/Contractors
- All construction RMS/Contractors

Construction activities which cannot be undertaken during the standard construction hours for technical or other justifiable reasons (Out of Hours work) may be permitted outside the standard construction hours with the approval of the Environmental Representative. Out of Hours work shall be undertaken in accordance with an approved Construction Environment Management Plan or Construction Noise and Vibration Management Plan for the SSI, where that plan provides a process for the consideration of Out of Hours work. This consideration includes:

- All construction RMS/Contractors
- All construction RMS/Contractors
- All construction RMS/Contractors
- All construction RMS/Contractors

The works subject to this condition may be undertaken in sparsely populated areas within the standard construction hours.

The Applicant shall, where feasible and reasonable, limit high noise impact activities and work to the mid-morning and mid-afternoon periods, except in sparsely populated areas.

Monitoring results are reported at monthly ERG meetings.

The Applicant shall ensure that Air blast overpressure generated by blasting associated with the SSI shall not exceed the criteria specified in Table 1 when measured at the nearest residence/sensitive receiver.

Table: Condition of Approval

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<tbody>
<tr>
<td>B14</td>
<td>All</td>
<td>All Construction</td>
<td>RMS/Contractors</td>
<td>The NVMP for the Section has been approved by DPE.</td>
</tr>
<tr>
<td>B15</td>
<td>All</td>
<td>All Construction</td>
<td>RMS/Contractors</td>
<td>These conditions have been addressed in the approved NVMP App D Out of Hours Work. Extended hours of work have been allowed in strategic locations in consultation with adjacent residents, EPA, the ERG and the RSG. Refer to MCGA B15 below for details.</td>
</tr>
<tr>
<td>B16</td>
<td>All</td>
<td>All Construction</td>
<td>RMS/Contractors</td>
<td>Addressed in the approved NVMP App D Out of Hours Work. Extended hours of work have been allowed in accordance with HC2G in accordance with the NVMP App D Out of Hours Work Procedure which implements the Conditions of MCGA B16 and EPS 20595. In particular (b) (ii) and (i) are not upheld for this SSI. No complaints have been received regarding the approved extended hours to date.</td>
</tr>
<tr>
<td>B17</td>
<td>All</td>
<td>All Construction</td>
<td>RMS/Contractors</td>
<td>Addressed in the approved NVMP App D Out of Hours Work. A small number of Out of Hours Work permits have been issued and approved.</td>
</tr>
<tr>
<td>B18</td>
<td>All</td>
<td>All Construction</td>
<td>RMS/Contractors</td>
<td>Addressed in the approved NVMP App D Out of Hours Work. Works have been undertaken in accordance with the approved NVMP.</td>
</tr>
<tr>
<td>B19</td>
<td>All</td>
<td>All Construction</td>
<td>RMS/Contractors</td>
<td>Addressed in the approved NVMP App D Out of Hours Work. Blasting has been restricted to these hours as per the Blast MP.</td>
</tr>
<tr>
<td>B20</td>
<td>All</td>
<td>All Construction</td>
<td>RMS/Contractors</td>
<td>Addressed in the approved NVMP - Works have been undertaken in accordance with the approved NVMP.</td>
</tr>
<tr>
<td>B21</td>
<td>All</td>
<td>All Construction</td>
<td>RMS/Contractors</td>
<td>Addressed in the approved NVMP - Works have been undertaken in accordance with the approved NVMP.</td>
</tr>
<tr>
<td>B22</td>
<td>All</td>
<td>All Construction</td>
<td>RMS/Contractors</td>
<td>Addressed in the approved NVMP - Works have been undertaken in accordance with the approved NVMP.</td>
</tr>
</tbody>
</table>
The Applicant shall ensure that Ground vibration generated by blasting associated with the SSI shall not exceed the criteria specified in Table 2 and Table 3 when measured at the most affected residence or other sensitive receiver.

- a sensitive site includes houses and low rise residential buildings, theatres, schools and other similar buildings occupied by people.

B24

The blasting criteria specified in conditions B22 and/or B23 may be increased where the Applicant has obtained the written agreement of the relevant landowner to increase the criteria. In obtaining the agreement the Applicant shall make available to the landowner:

(a) details of the proposed blasting program and justification for the proposed increase to blasting criteria including alternative considered (where relevant);

(b) the environmental impacts of the increased blast limits on the surrounding environment and most affected residences or other sensitive receivers including, but not limited to noise, vibration and any risk to surrounding utilities, services or other structures;

(c) the blast management and mitigation measures, and the procedures to be implemented to monitor blasting impacts. The Applicant shall provide a copy of the written agreement to the Secretary and the EPA, including details of the consultation undertaken (with clear identification of proposed blast limits and potential property impacts) prior to commencing blasting at the increased limits.

Unless otherwise agreed by the Secretary, the following exclusions apply to the application of the condition:

(a) Any agreements reached may be terminated by the landowner at any time should concerns about the increased blasting limits be unresolved. Should an agreement be terminated by a landowner, the Applicant shall not exceed the criteria specified in conditions B22 and/or B23 for future blasting at that residence.

(b) The blasting limit agreed to under any agreement for an occupied residential building can at no time exceed a maximum Peak Particle Velocity vibration level of 25 mms or maximum Air Blast Overpressure level of 120 kPa.

B25

Wherever feasible and reasonable, piling activities shall be undertaken using quieter construction methods, such as bored piles or vibrated piles rather than impact or percussion piling methods.

B26

Not in the use of the dynamic compaction construction method, the Applicant shall undertake an assessment of vibration generated by dynamic compaction on nearby sensitive receivers. Feasible and reasonable mitigation measures shall be implemented to minimise vibration impacts.

B27

During construction, affected educational institutions shall be consulted and reasonable steps taken to ensure that noise generating construction works in the vicinity of affected receivers.

B28

All surface water and groundwater shall be adequately treated as far as is practicable, prior to entering the stormwater system to protect the receiving water source quality.

B29

Where feasible and reasonable, operational noise mitigation measures shall be implemented at the start of construction (or at other times during construction) to minimise construction noise impacts.

B30

Consult as may be expressly provided by the EPL, the Applicant shall comply with section 171 of the Protection of the Environment Operations Act 1997.

B31

The hydrological and flooding impacts resulting from the SSI are to be assessed during detailed design against the Design Standards for Flood Management described in Section 2.1 of the EIS Working Paper – Hydrology and Flooding. This shall include assessment against the ‘Flood Management Objectives’ and the ‘Other Flood Impact Considerations’ as set out in section 2.1 of the EIS Working Paper – Hydrology and Flooding. The hydrological assessment shall include the refinement of or development of new flood models (where required) for the 14 catchments investigated during the EIS. These models shall be operated for the same design floods considered in the EIS, as well as the 2000 year ARI and the probable maximum flood (PMF). All flood models shall be verified in accordance with EPL 20599.

B32

For the Corindi, Yakkas Flat and Farlows Flat project areas, flooding and hydrological impacts resulting from existing highway infrastructure shall be assessed. As part of the assessment, flood models shall assess the impacts of recent highway upgrades in this area. Where the existing highway in these areas has resulted in adverse flooding and/or hydrological impacts, opportunities to reduce the quantum of these impacts shall be considered during the detailed design of the SSI, where feasible and reasonable.

B33

Where the objectives and considerations referred to in condition B31 cannot be complied with, the Applicant shall:

(a) take all reasonable steps to minimise and manage all hydrological and flooding impacts to waterways that traverse the road alignment, to the greatest extent practicable; or

(b) achieve compliance through modified embankment or drainage design. This might include new or duplicated drainage structures designed to minimise afflux and other impacts to waterways that traverse the road alignment, to the greatest extent practicable; or

(c) achieve an acceptable level of mitigation of impacts through alternative design measures (e.g. raised access tracks) in consultation with the affected landowner; or

(d) reach agreement with affected landowners on impacts to property.

B34

All water management measures considered will Managing Urban Stormwater - Sediment and Contamination Vol 1 and 2 6th Edition (EPL 9355) and Managing Urban Stormwater and Contamination Vol 1 and 2 6th Revised Edition (EPL 3996) shall be employed during the construction of the SSI to minimise soil erosion and the discharge of sediment and other pollutants to the Maroochy River and/or to land and/or water.

B35

Where available, and of appropriate chemical and biological quality, stormwater, recycled water or other water sources shall be used, where feasible and reasonable, in preference to potable water for construction activities, including concrete mixing and dust control.

B36

All surface water and groundwater shall be adequately treated as far as is practicable, prior to entering the stormwater system to protect the receiving water source quality.
Prior to the commencement of site preparation and excavation activities, or as otherwise agreed by the Secretary, in areas identified as having a moderate to high risk of contamination, a site audit shall be carried out by a suitably accredited contaminated site auditor. A Site Audit Report is to be prepared by the site auditor detailing the outcomes of Phase 2 contamination investigations within these areas. The Site Audit Report shall detail, where relevant, whether the land is suitable (for the intended land use) or can be made suitable through remediation.

Where the investigations identify that the site is suitable for the intended operations and that there is no need for a specific remediation strategy, measures to identify, handle and manage potential contaminated soils, materials and groundwater shall be identified in the Site Audit Report and incorporated into the Construction Environmental Management Plan. Where the investigations identify that the site is suitable for the intended operations and that a remediation strategy is required, the Site Audit Report shall include a remediation strategy for addressing the site contamination, and how the environmental and human health risks will be managed during the disturbance, remediation and/or removal of contaminated soil or groundwater, and be incorporated into the Construction Environmental Management Plan. Where remediation is required, a Site Audit Statement(s) shall be prepared verifying that the site has been remediated to a standard consistent with the intended land use. Note: * Terms used in this condition have the same meaning as in the Contaminated Land Management Act 1997.

### Watercourse Crossings

Watercourse crossings shall be designed and constructed in consultation with the DPI (Fisheries), EPA, DoE, and where feasible and reasonable, be consistent with the Guidelines for Controlled Activities Watercourse Crossings (Department of Water and Energy, February 2008), Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (Farfalli and Witheridge, 2003), Policy and Guidelines for Fish Friendly Waterway Crossings (NSW Fisheries, February 2004), and Policy and Guidelines for Fish Habitat Conservation and Management (DPI Fisheries, 2013). Where multiple cell culverts are proposed for crossings of fish habitat streams, at least one cell shall be provided for fish passage, with an invert or bed level that mimics watercourse flows.

- **Stage 1**
  - **Pre-construction Detailed Design**
  - **Pre-construction Construction**
  - RMS/Designers/Contractors
  - RMS/Designers/Contractors
  - This is relevant to the construction of permanent crossings and where temporary crossings are proposed by the contractor.

- **Stage 2**
  - **Detailed Design**
  - **Detailed Design**
  - RMS/Detailed Designers/Contractors
  - RMS/Detailed Designers/Contractors
  - Significant consultation with agencies has occurred during detailed design for permanent crossings, and will also be undertaken during construction phase by the contractor.

- **Stage 3**
  - **Designers/Contractors**
  - **Designers/Contractors**

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<tr>
<td>B37</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Construction</td>
<td>RMS/Contractors</td>
<td>Contamination investigations have not identified any moderate to high risk areas within the section 1 and 2 project areas. For Section 2, an additional area of potential contamination was investigated at Mile 2 Tick Gate by contamination specialists but no contamination was identified.</td>
</tr>
<tr>
<td>B38</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS/Designers/Contractors</td>
<td>There are contact Specifications for the construction and maintenance of temporary waterway crossings. The contractors' CEMP also has specific requirements for the construction and maintenance of temporary waterway crossings.</td>
</tr>
<tr>
<td>B39</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS/Designers/Contractors</td>
<td>This is relevant to the construction of permanent crossings and where temporary crossings are proposed by the contractor. Significant consultation with agencies has occurred during detailed design for permanent crossings, and will also be undertaken during construction phase by the contractor.</td>
</tr>
<tr>
<td>B40</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS/Designers/Contractors</td>
<td>Significant consultation with agencies has occurred during detailed design for permanent crossings, and will also be undertaken during construction phase by the contractor.</td>
</tr>
</tbody>
</table>

Note: * Terms used in this condition have the same meaning as in the Contaminated Land Management Act 1997.
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<tr>
<td>B41</td>
<td>Where an Oxleyan Pygmy Perch habitat waterway is realigned or its stream profile is changed, or an in-stream structure is installed in the waterway (both permanent and temporary construction structures), the Applicant shall ensure that the final design of the waterway does not result in water velocities exceeding 0.4 metres per second under normal flow conditions. The Applicant shall determine normal flow conditions to the satisfaction of DPI (Fisheries) through baseline monitoring of known Oxleyan Pygmy Perch habitat waterways.</td>
<td>6, 7, 8, 9</td>
<td>Stage 2</td>
<td>Pre-construction Detailed Design</td>
<td>RMS/Detailed Designers/Contractors</td>
</tr>
<tr>
<td>B42</td>
<td>Prior to the commencement of construction activities affecting Aboriginal sites WWC39, WWC46, Tyndale 2 site, C3/2/2, Saw Pit Creek / New Italy, Gittoes Jali 2, Cooks Hill, Broadwater, Law PAD, Law Scarred Tree, MST 3, C21, Melino Scarred Tree 4, MST 2, MST1, Rudgley Birrugan and Mindi spiritual sites (sections 1, 2, 5 and 10), Pillar Valley men's and women's sites, Place H, Place I and Place J. Where impacts are unavoidable, works shall be undertaken in accordance with the strategy outlined in the Construction Heritage Management Plan.</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS/Aboriginal Heritage</td>
<td>Stage 2</td>
</tr>
<tr>
<td>B44</td>
<td>Prior to the commencement of construction affecting PAD site WWC Dirty Creek 1 and ancillary facilities at Section 4, Site 1; Section 4, Site 2; Section 7, Site 1; Section 10, Site 1a; and Section 11, Site 1a, the Applicant shall: (a) undertake field investigations where required; (b) undertake an archaeological investigation of the site(s) using a methodology generally consistent with testing undertaken for the Environmental Impact Statement, and prepared in consultation with the OEH (Aboriginal heritage) and the Registered Aboriginal Parties; and (c) prepare a report on the results of the archaeological investigation, including recommendations (such as further archaeological work) in consultation with the OEH and to the satisfaction of the Secretary, and shall include, but not necessarily be limited to: (i) consideration of measures to avoid or minimise disturbance to Aboriginal objects where objects of moderate to high significance are found to be present; (ii) recommendations for further investigations under condition B45 where impacts cannot be avoided; and (iii) details of management and mitigation measures to ensure there are no additional impacts due to pre-construction and construction activities, and (d) submit the report to the Secretary prior to the commencement of any bridge approach or embankment works in the vicinity.</td>
<td>1, 4, 7, 10, 11</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS/Aboriginal Heritage</td>
</tr>
<tr>
<td>B45</td>
<td>Prior to the commencement of construction activities affecting Aboriginal sites WWC33, WWC44, Tyndale 2 site, IB34W, Site 11, E32, WWC37, Cuttlepen site (New Italy) 1, 2, 8, 9, 10, 11 All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS/Aboriginal Heritage</td>
<td>Stage 2</td>
</tr>
<tr>
<td>B46</td>
<td>Identified impacts to Aboriginal heritage, shall be minimised to the greatest extent practicable through both detailed design and construction, in particular with regard to the Aboriginal Site impacts. Where impacts are unavoidable, works shall be undertaken in accordance with the strategy outlined in the Construction Heritage Management Plan.</td>
<td>2, 3, 8, 9, 10, 11 All</td>
<td>Pre-construction Detailed Design Construction</td>
<td>RMS/Detailed Designers/Contractors</td>
<td>The EA process and Detailed design has been undertaken with the objective to minimise to the greatest extent practicable impacts to Aboriginal heritage. All Aboriginal heritage investigations have been completed for Section 2. Where impacts are unavoidable in construction, works would be undertaken in accordance with the strategy outlined in the Construction Heritage Management Plan.</td>
</tr>
<tr>
<td>B47</td>
<td>The Applicant shall not destroy, modify or otherwise physically affect Aboriginal sites WWC98, WWC99, WWC100, WWC101, WW143, Tyndale 1, Barrabool/Waratah Tree (section 1), Curtis (section 1), Hunting Creek Ceremonial Site, Bowrings and Mindi spiritual sites (sections 1, 2, 5 and 10), Pillar Valley men's and women's sites, Place H, Place I and Place J. Where impacts are unavoidable, works shall be undertaken in accordance with the strategy outlined in the Construction Heritage Management Plan.</td>
<td>2, 4, 7, 8, 9, 10, 11</td>
<td>All</td>
<td>Pre-construction Detailed Design Construction</td>
<td>RMS/Detailed Designers/Contractors</td>
</tr>
<tr>
<td>B48</td>
<td>For the commencement of construction affecting the corridor (12-14 Rivers Street, Hamond, section 1), the Applicant shall carry out further historical research and investigate the options for relocation of the current building, in consultation with the Department of Planning and Environment and the OEH (Heritage Division), to the satisfaction of the Secretary.</td>
<td>Stage 2</td>
<td>Pre-construction Detailed Design Construction</td>
<td>RMS/Aboriginal Heritage</td>
<td>Stage 2</td>
</tr>
<tr>
<td>B49</td>
<td>For the commencement of construction in proximity to the following heritage items: 31, 21 (Roder’s wall and orchard), 36, 36, 35 and 34, the Applicant shall compile all archival recordings, including photographic recording of these heritage items, unless otherwise agreed by the Secretary. The archival recording shall be undertaken by an experienced heritage consultant, in accordance with the Guidelines issued by the Heritage Council of NSW. The areas containing these items shall be clearly identified and fenced prior to the completion of the archival recordings. Within 6 months of completing the archival recording, the Applicant shall submit a report containing the archival and photographic recordings and the historical research, where required, to the Department of Planning and Environment, the Heritage Council of NSW and the local library and the local Historical Society in the relevant local government area(s).</td>
<td>Stage 2</td>
<td>Pre-construction Detailed Design Construction</td>
<td>RMS/Aboriginal Heritage</td>
<td>Stage 2</td>
</tr>
</tbody>
</table>
Prior to construction affecting the following heritage items: 7, 23 (Roder’s well and orchard) and 28, the Applicant shall carry out further historical and physical archaeological investigations of these heritage items, in consultation with the Department of Planning and Environment and the OEH (Heritage Division), to the satisfaction of the Secretary. These investigations shall:
(a) include architectural investigations and excavation in accordance with the Heritage Council's Archaeological Assessments Guidelines (1996) using a methodology, prepared in consultation with the OEH (Heritage Division) and the satisfaction of the Secretary. The architectural investigations shall be undertaken by an architectural heritage consultant, whose appointment has been endorsed by the Secretary. The nomination for the Excavation Director shall demonstrate ability to comply with the Heritage Council’s Criteria for the Assessment of Excavation Directors (July 2011).
(b) provide for the detailed analysis of any heritage items discovered during the investigations.

2. 7, 9
Pre-construction


3. 7, 10
Pre-construction

Pre-construction

The Applicant shall not destroy, modify or otherwise physically affect the heritage items listed in Table 5-1, Historic (non-Aboriginal) Heritage Assessment Working Paper and Table 3-14, Condition Of Ministers for Protection of Cultural Heritage (Ministers). The measures to protect heritage sites near or adjacent to the SSI during construction shall be detailed in the Construction Heritage Management Plan.

2. 7, 9
Pre-construction


4. 7, 10
Pre-construction

Pre-construction

For Item 7 (Service Station Complex, Halfway Creek) further investigations have been undertaken for historical and archaeological impacts of the ancillary facility or other works on the SSI boundary (with the exception of drainage works in flood prone areas or similar works required for the project that are located within 5 metres of the SSI boundary where the following works associated with the construction of the highway SSI). In circumstances where pedestrian and cyclist access is restricted due to construction activities, a satisfactory alternate route shall be provided and signposted.

2. 7, 9
Pre-construction

Noted. Addressed in the Construction Heritage Management Plan - for section 1 impact to be avoided on Tree stumps at Milleara/Halfway Creek.

5. 7, 10
Pre-construction

Pre-construction

The Applicant shall not destroy, modify or otherwise physically affect the heritage items listed in Table 5-1, Historic (non-Aboriginal) Heritage Assessment Working Paper and Table 3-14, Condition Of Ministers for Protection of Cultural Heritage (Ministers). The measures to protect heritage sites near or adjacent to the SSI during construction shall be detailed in the Construction Heritage Management Plan.

2. 7, 9
Pre-construction


5. 7, 10
Pre-construction

Pre-construction

For section 1, management and mitigation of these sites will be addressed within the Construction Heritage Management Plan - for section 1 impact to be avoided on Tree stumps at Milleara/Halfway Creek.

5. 7, 10
Pre-construction

Pre-construction

The Applicant shall not destroy, modify or otherwise physically affect the heritage items listed in Table 5-1, Historic (non-Aboriginal) Heritage Assessment Working Paper and Table 3-14, Condition Of Ministers for Protection of Cultural Heritage (Ministers). The measures to protect heritage sites near or adjacent to the SSI during construction shall be detailed in the Construction Heritage Management Plan.

2. 7, 9
Pre-construction


5. 7, 10
Pre-construction

Pre-construction

RMS/Contractors


5. 7, 10
Pre-construction

Pre-construction

RMS/Contractors


5. 7, 10
Pre-construction

Pre-construction

RMS/Contractors


5. 7, 10
Pre-construction

Pre-construction

RMS/Contractors


5. 7, 10
Pre-construction

Pre-construction

RMS/Contractors


5. 7, 10
Pre-construction

Pre-construction

RMS/Contractors


5. 7, 10
Pre-construction

Pre-construction

RMS/Contractors


5. 7, 10
Pre-construction

Pre-construction

RMS/Contractors


5. 7, 10
Pre-construction

Pre-construction

RMS/Contractors


5. 7, 10
Pre-construction

Pre-construction

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5. 7, 10
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Pre-construction

RMS/Contractors


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RMS/Contractors


5. 7, 10
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RMS/Contractors


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Pre-construction

Pre-construction

RMS/Contractors


5. 7, 10
Pre-construction

Pre-construction

RMS/Contractors


5. 7, 10
Pre-construction

Pre-construction

RMS/Contractors

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<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>B59</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS/Contractors</td>
<td>This has been achieved and addressed during detailed design.</td>
</tr>
<tr>
<td>B60</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS/Contractors</td>
<td>This has been a consideration during the EA, concept design through to the detailed design and implementation phase. The project has been able to reduce clearing at an adjacent property has assisted a local landowner.</td>
<td></td>
</tr>
<tr>
<td>B61</td>
<td>All</td>
<td>All</td>
<td>Detailed Design</td>
<td>RMS/Detailed Designers</td>
<td>During the consultation process for the EA/SMD, and as required during the acquisition process, agricultural needs have been considered and addressed by design changes and/or compensation.</td>
</tr>
<tr>
<td>B62</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS/Contractors</td>
<td>This has been achieved throughout construction and still continues through duration of construction. No issues to date. Pre-construction building condition inspections have been completed for all structures within the zones specified within Specification G36, with post construction inspections to be completed following construction. Any identified damage will be rectified.</td>
</tr>
<tr>
<td>B63</td>
<td>All</td>
<td>All</td>
<td>Detailed Design</td>
<td>RMS/Detailed Designers</td>
<td>Impact to agricultural activities has been minimised as far as possible. Positive outcomes include the retention of group of trees within the acquired road reserve and approved clearing limit north of Lemon Tree Road following request from adjacent landowner.</td>
</tr>
<tr>
<td>B64</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Detailed Designers</td>
<td>Issues to note - The construction condition inspection report have been completed for all structures within the zones specified within Specification G36, with post construction inspections to be completed following construction. Any identified damage will be rectified.</td>
<td></td>
</tr>
<tr>
<td>B65</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractors</td>
<td>There has been no disruption to State Forest activities. 4.5Ha of land has been approved by Forest Corporation by Forest Occupation Permit for construction of temporary sedimentation basins. These areas will be stabilised to satisfaction of Forestry Corporation as per lease conditions prior to completion of construction.</td>
<td></td>
</tr>
<tr>
<td>B66</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Detailed Designers</td>
<td>Addressed in Air Quality MP and construction mitigation measures used on site.</td>
<td></td>
</tr>
<tr>
<td>B67</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractors</td>
<td>Addressed in Water and Energy MP.</td>
<td></td>
</tr>
<tr>
<td>B68</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractors</td>
<td>Waste from outside the site has been removed within 14 days premises boundary.</td>
<td></td>
</tr>
<tr>
<td>B69</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractors</td>
<td>Addressed in Waste and Energy MP. Waste rock material, and small quantities of spoil from the earthworks upgrade have been re-used on the HCCG Upgrade.</td>
<td></td>
</tr>
<tr>
<td>B70</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractors</td>
<td>Waste disposed of in accordance with Waste Management Plan. Stone waste can be beneficially reused as per POEO s143 permit in accordance with G36 4.11.</td>
<td></td>
</tr>
<tr>
<td>B71</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractors</td>
<td>Waste is managed in accordance with Construction Waste and Energy Management Plan. Some waste can be beneficially reused as per POEO s143 permit in accordance with G36 4.11.</td>
<td></td>
</tr>
<tr>
<td>B72</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractors</td>
<td>Waste has been addressed during detailed design and continues to be addressed during construction.</td>
<td></td>
</tr>
</tbody>
</table>

**Condition Of Approval**

- In relation to new or modified local road, parking, pedestrian and cycling infrastructure, the SSI shall, where feasible and reasonable, be designed:
- (a) in consultation with the relevant council;
- (b) take into consideration existing and future demand, road safety and traffic network impacts;
- (c) to meet relevant design, engineering and safety guidelines, including Ausroads Guide to Traffic Engineering Practice; and
- (d) be certified by an appropriately qualified person that has considered the above matters.

- Where the viability of existing agricultural operations are identified to be impacted by the land requirements of the SSI, the Applicant shall, at the request of those landowners, employ a suitably qualified and experienced independent agricultural expert, whose appointment has been endorsed by the Secretary, to assist in identifying alternative farming opportunities for the land, including purchase of other residual land to enable existing agricultural activities to continue.

- The Applicant shall ensure that the SSI is designed to minimise land take impacts to surrounding properties (including agricultural properties) as far as feasible and reasonable, in consultation with the affected landowners.

- Where the SSI traverses a state forest, the Applicant shall, in consultation with the NSW Forestry Corporation, ensure that construction does not unduly disrupt existing forestry activities, access for the fighting and access for other activities within state forests, unless otherwise agreed by the NSW Forestry Corporation.

- The SSI shall be constructed in a manner that minimises dust emissions from the site, including wind-blown and traffic-generated dust and tracking of material onto public roads. All activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site. Should such visible dust emissions occur at any time, the Applicant shall identify and implement all feasible and reasonable dust mitigation measures, including cessation of relevant works, as appropriate, such that emissions of visible dust cease.

- The SSI shall be constructed in a manner that minimises dust emissions from the site, including wind-blown and traffic-generated dust and tracking of material onto public roads. All activities on the site shall be undertaken with the objective of preventing visible emissions of dust from the site. Should such visible dust emissions occur at any time, the Applicant shall identify and implement all feasible and reasonable dust mitigation measures, including cessation of relevant works, as appropriate, such that emissions of visible dust cease.

- The reuse and/or recycling of waste materials generated on site shall be maximised as far as practicable, to minimise the need for treatment or disposal of those materials off site.
B/73 The sites for ancillary facilities that are associated with the construction of the SSI and that have not been identified and assessed in the documents listed in condition A2 shall:

(a) be located more than 50 metres from a waterway (100 metres for a State Environmental Planning Policy No. 14 wetland or known Oxley Pigmy-Pitch habitat waterway);

(b) not impact on connectivity structures or vegetation leading to a connectivity structure;

(c) be located within or adjacent to the SSI boundary;

(d) have ready access to the road network;

(e) be located in areas of low ecological significance and require no clearing of native vegetation;

(f) be located more than 30 metres from threatened species and endangered ecological communities and their habitats;

(g) be located on relatively level land;

(h) be separated from the reserve residences by at least 200 metres (or at least 300 metres for a temporary batching plant) and comply with construction noise management levels at sensitive receivers;

(i) be above the 20 year ARI flood level unless a contingency plan to manage flooding is prepared and implemented;

(j) have minor impacts on flood storage and not result in obstruction of floodplain flow or blockage of culverts and drains;

(k) not unnecessarily affect the local use of adjacent properties;

(l) operate in accordance with the construction hours set out in conditions B15 and B16;

(m) provide sufficient area for the storage of material to minimise, to the greatest extent practical, the number of deliveries required outside standard construction hours; and

(n) be located in areas of low heritage conservation significance (including areas identified as being of Aboriginal cultural value) and not impact on heritage sites beyond those already impacted by the SSI.

The Applicant shall undertake an assessment of the facility against the above criteria in consultation with the relevant public authority(s) and the relevant council. The assessment shall be approved by the Environmental Representative and included in the Ancillary Facilities Management Plan required under condition D21.

B/74 Ancillary facilities that have not been previously identified and assessed in the documents listed in condition A2 and do not meet the criteria set out under condition B/73, shall be approved by the Environmental/Representative prior to its establishment. In obtaining this approval, the Applicant shall consult with the relevant public authority(s) and the relevant council, and demonstrate to the satisfaction of the Environmental Representative, how the potential environmental impacts can be mitigated and managed to acceptable standards. The outcome of the assessment shall be documented in a report and include, but not necessarily be limited to:

(a) details of the site location and access arrangements;

(b) a description of the activities to be undertaken;

(c) outcomes of the assessment of the site against the local criteria set out in condition B/73;

(d) an assessment of the environmental impacts on the site and the surrounding environment, including, but not limited to noise, vibration, air quality, traffic and access during site establishment and operation, flora and fauna, heritage, erosion and sedimentation, water quality and light spill;

(e) details of the mitigation, monitoring and management procedures specific to the ancillary facility that would be implemented to minimise environmental impacts; and

(f) demonstrated overall consistency with the approved SSI (including impacts identified in the documents listed in condition A2).

A copy of the report shall be included in the Ancillary Facilities Management Plan.

B/75 Ancillary facilities that have not been previously identified and assessed in the documents listed in condition A2 and result in additional impacts to biodiversity, heritage, flooding and noise beyond those approved for the SSI, shall be approved by the Secretary prior to their establishment. In obtaining this approval, the Applicant shall consult with the relevant public authority(s) and the relevant council, and demonstrate to the satisfaction of the Environmental Representative, how the potential environmental impacts can be mitigated and managed to acceptable standards. The outcome of the assessment shall be documented in a report and include, but not necessarily be limited to:

(a) details of the site location and access arrangements;

(b) a description of the activities to be undertaken;

(c) outcomes of the assessment of the site against the local criteria set out in condition B/73.

The Applicant shall undertake an assessment of the facility against the above criteria in consultation with the relevant public authority(s) and the relevant council. The assessment shall be approved by the Environmental Representative prior to its establishment. In order to obtain this approval, the Applicant shall consult with the relevant public authority(s) and the relevant council. The assessment shall be submitted, at least one month prior to the establishment of the facility.

B/76 The land on which ancillary facilities are located shall be rehabilitated to at least their pre-construction condition or better, unless otherwise agreed by the landowner.

B/77 Where changes are made to the boundary or use of an ancillary facility, including facilities identified in the documents listed in condition A2, the Applicant shall assess the facility against the criteria set out under condition B/73. If the ancillary facility site:

(a) does not meet the criteria set out under condition B/73 or the Applicant shall seek the approval of the Environmental Representative in accordance with condition B/74; or

(b) results in impacts to biodiversity, heritage, flooding and noise beyond those approved for the SSI, the Applicant shall seek the approval of the Secretary in accordance with condition B/75.

The relevant approval shall be obtained prior to the establishment of the ancillary facility.

B/79 The Applicant shall ensure that material extracted from the borrow sites established for the SSI, is only used for the construction of the SSI subject to this approval, and no other sections of the Pacific Highway or other works.

B/80 The Applicant shall ensure that all plant and equipment used at the site is:

(a) maintained in a proper and efficient condition; and

(b) operated in a proper and efficient manner.

B/81 The Applicant shall ensure that during the operation of the SSI, water quality risks to the Woodburn Borefield drinking water catchment are minimised to the satisfaction of Rose Water.

RMS/Contractors

The wet batch plant site has been approved and included in the updated Ancillary MP. A wet batch plant site has been approved and included in the updated Ancillary MP.
### COMPLIANCE TRACKING - CONDITIONS OF APPROVAL PART C
#### Woolgoolga to Ballina SSI-4963

<table>
<thead>
<tr>
<th>Ministers Of Approval</th>
<th>Requirement</th>
<th>W2B Section</th>
<th>Project Stage</th>
<th>Timing</th>
<th>Responsibility</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT</td>
<td>Prior to the commencement of construction or as otherwise agreed by the Secretary, the Applicant shall prepare and implement a Community Communication Strategy to the satisfaction of the Secretary. The Strategy shall provide mechanisms to facilitate communication between the Applicant (and its contractor(s)), the Environmental Representative (see condition C22), the relevant council and community stakeholders (particularly adjoining landowners) on the construction environmental management of the SSI. The Strategy shall include, but not be limited to: (a) identification of stakeholders to be consulted as part of the Strategy, including affected and adjoining landowners; (b) procedures and mechanisms for the regular distribution of information to community stakeholders on construction progress and matters associated with environmental management; (c) the formation of community-based focus groups for key environmental management issues for the SSI. The Strategy shall provide detail on the structure, scope, objectives and frequency of the community-based focus groups; (d) procedures and mechanisms through which the community stakeholders can discuss or provide feedback to the Applicant and/or Environmental Representative in relation to the environmental management and delivery of the SSI; (e) procedures and mechanisms through which the Applicant can respond to enquiries or feedback from the community stakeholders in relation to the environmental management and delivery of the SSI; and (f) procedures and mechanisms that would be implemented to resolve issues/disputes that may arise between parties on the matters relating to environmental management and the delivery of the SSI. This may include the use of an appropriately qualified and experienced independent mediator that should be selected through the Community Communication Strategy include (but are not necessarily limited to): (i) traffic management (including property access, pedestrian access); (ii) noise; (iii) landscape and urban design matters; (iv) construction staging, hours and activities; (v) noise and vibration mitigation and management; (vi) air quality and dust; (vii) water quality, hydrology and flooding matters; and (viii) biodiversity matters. The Applicant shall maintain and implement the Strategy throughout construction of the SSI.</td>
<td>A8</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>An overarching Woolgoolga to Ballina Woolgoolga to Ballina Communication and Stakeholder Engagement Strategy has been prepared by the Roads and Maritime Services. Strategy approved by DoPR 12 May 2015. Community Action Plan for section 2 was approved by Roads and Maritime on 29 April 2015.</td>
</tr>
<tr>
<td>CT</td>
<td>Prior to the commencement of construction or as otherwise agreed by the Secretary, the Applicant shall ensure that the following are available for community enquiries and complaints for the duration of construction: (a) a 24 hour telephone number(s) on which complaints and enquiries about the SSI may be registered; (b) a postal address to which written complaints and enquiries may be sent; (c) an email address to which electronic complaints and enquiries may be transmitted; and (d) a mediation system for complaints unable to be resolved. The telephone number, the postal address and the email address shall be published in newspaper(s) circulating in the local area prior to the commencement of construction and prior to the commencement of operation. This information shall also be provided on the website (or dedicated pages) required by this approval.</td>
<td>A8</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>24 hour number established - 1800 778 900, and email address <a href="mailto:W2B@rms.nsw.gov.au">W2B@rms.nsw.gov.au</a></td>
</tr>
<tr>
<td>CT</td>
<td>Prior to the commencement of construction or as otherwise agreed by the Secretary, the Applicant shall ensure that the following are available for community enquiries and complaints for the duration of construction: (a) a 24 hour telephone number(s) on which complaints and enquiries about the SSI may be registered; (b) a postal address to which written complaints and enquiries may be sent; (c) an email address to which electronic complaints and enquiries may be transmitted; and (d) a mediation system for complaints unable to be resolved. The telephone number, the postal address and the email address shall be published in newspaper(s) circulating in the local area prior to the commencement of construction and prior to the commencement of operation. This information shall also be provided on the website (or dedicated pages) required by this approval.</td>
<td>A8</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>Roads and Maritime has created a page for HC2G under the main Woolgoolga to Ballina website. Email, post and phone details are provided on this page. Please refer to Woolgoolga to Ballina Communication and Stakeholder Engagement Strategy.</td>
</tr>
<tr>
<td>CT</td>
<td>Prior to the commencement of construction or as otherwise agreed by the Secretary, the Applicant shall ensure that the following are available for community enquiries and complaints for the duration of construction: (a) a 24 hour telephone number(s) on which complaints and enquiries about the SSI may be registered; (b) a postal address to which written complaints and enquiries may be sent; (c) an email address to which electronic complaints and enquiries may be transmitted; and (d) a mediation system for complaints unable to be resolved. The telephone number, the postal address and the email address shall be published in newspaper(s) circulating in the local area prior to the commencement of construction and prior to the commencement of operation. This information shall also be provided on the website (or dedicated pages) required by this approval.</td>
<td>A8</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>Roads and Maritime has developed an overarching Woolgoolga to Ballina Construction Complaints Management System. Please refer to Woolgoolga to Ballina Communication and Stakeholder Engagement Strategy. The Complaint procedure is addressed in Section 6.3.2 of the CEMP. Refer to the approved Community Action Management Plan for HC2G for the complaints management procedure for the project.</td>
</tr>
<tr>
<td>CT</td>
<td>Prior to the commencement of construction or as otherwise agreed by the Secretary, the Applicant shall ensure that the following are available for community enquiries and complaints for the duration of construction: (a) a 24 hour telephone number(s) on which complaints and enquiries about the SSI may be registered; (b) a postal address to which written complaints and enquiries may be sent; (c) an email address to which electronic complaints and enquiries may be transmitted; and (d) a mediation system for complaints unable to be resolved. The telephone number, the postal address and the email address shall be published in newspaper(s) circulating in the local area prior to the commencement of construction and prior to the commencement of operation. This information shall also be provided on the website (or dedicated pages) required by this approval.</td>
<td>A8</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>An overarching website addressing all active project stages has been developed: <a href="http://www.nsw.gov.au/woolgoolga-to-ballina/index.html">http://www.nsw.gov.au/woolgoolga-to-ballina/index.html</a>. Copies of the project approvals, plans and licenses are available on the W2B Project Web site. This web site is regularly updated to include latest approved project documents.</td>
</tr>
</tbody>
</table>
The Applicant shall develop a framework for finalising mitigation measures for threatened species. This Mitigation Framework shall be developed by a suitably qualified and experienced ecologist in consultation with

(a) a fencing strategy, describing the location, design and length of fencing, which must extend beyond the edges of habitat for threatened species;

(b) the Connectivity Strategy for Sections 1 & 2 was approved by the Department of Planning &

RMS

The Mitigation Framework for Sections 1 & 2 was approved by the Department of Planning &

RMS

Pre-construction

The Applicant shall prepare and implement a Biodiversity Offset Strategy to outline how the ecological values lost as a result of the SSI will be offset in perpetuity. The Strategy shall be developed from the

 draft Connectivity Strategy in the documents listed in condition A2 in consultation with the OEH, DPI (Fisheries) and DoE, to the satisfaction of the Secretary. The Strategy shall include:

(a) details of all of the design and location of fauna connectivity structures for the SSI and shall demonstrate the effectiveness of connectivity measures for the species targeted for the crossing. The Strategy shall be developed from the

 draft Connectivity Strategy in the documents listed in condition A2 in consultation with the OEH, DPI (Fisheries) and DoE, to the satisfaction of the Secretary. The Strategy shall include:

(b) the objectives and outcomes that would be sought through a biodiversity offset package, including to achieve a neutral or net beneficial outcome for all threatened species and endangered ecological communities

(d) the results of surveys undertaken to determine the habitat, species movement pattern, distribution of species to confirm the design and location;

(e) a schedule for submission of all biodiversity strategies, plans and programs required under this approval in accordance with the requirements for submission in the conditions below.

(g) any such strategy, including an agreement made with OEH and DoE, shall be approved by the Secretary within a timeframe agreed to by the Secretary.

(h) a fencing strategy, describing the location, design and length of fencing, which must extend beyond the edges of habitat for threatened species;

(i) changes to the SSI footprint due to detailed design;

(j) detailed consideration of the effects of connectivity structures on the maintenance or improvement of population viability and gene flow; and

(k) commitment that all bridges in identified wildlife corridors, or adjacent to threatened species habitat, or are likely to provide connectivity for threatened species based on surveys undertaken in accordance with the

Mitigation Framework required in condition D1, shall provide a minimum three metre wide dry passage from toe of the scour protection to the top of the bank, with natural substrate and refuge features. Where this

cannot be achieved and with the agreement of the OEH, consideration shall be given to the use of suitable materials, and the form and function of the scour protection to provide for the safe and effective passage of fauna;

(l) detailed consideration of the effects on connectivity under the existing highway, service roads and local roads (servicing over 100 vehicles per day).

(ii) the mitigation of connectivity losses and any other loss of habitat or degradation of habitat that is likely to impact species, and that the crossings:

(i) demonstrate the effectiveness of the connectivity structures (including exclusionary fencing) in terms of location, design and number of connectivity structures to mitigate impacts to the relevant threatened

species, and that the crossings:

(ii) mitigate or improve connectivity and movement pathways;

(iii) consider the effects of connectivity structures on the maintenance or improvement of population viability and gene flow; and

(iv) incorporate the outcomes of the Mitigation Framework required under condition D1.

(iii) assessment of the flooding risk for proposed structures and provide for flood immunity of those structures in light of this assessment. The agreement of the OEH on flood immunity levels shall be obtained prior to the commencement of construction of the relevant stage;

(iv) commitment that all bisques in identified wildlife corridors, or adjacent to threatened species habitat, or are likely to provide connectivity for threatened species based on surveys undertaken in accordance with the

Mitigation Framework required in condition D1, shall provide a minimum three metre wide dry passage from toe of the scour protection to the top of the bank, with natural substrate and refuge features. Where this

cannot be achieved and with the agreement of the OEH, consideration shall be given to the use of suitable materials, and the form and function of the scour protection to provide for the safe and effective passage of fauna;

(v) assess the biodiversity offset offset package, including to achieve a neutral or net beneficial outcome for all threatened species and endangered ecological communities likely to be impacted directly or indirectly during both the construction and operation of the SSI.

(vi) consideration of continuity measures for offsets to address potential changes to impacted areas as a result of detailed design changes;

(vii) provision for updating the relevant Threatened Species Management Plans required under condition D8; and

(viii) provision for updating the relevant Threatened Species Management Plans required under condition D8.

(v) consider the effects of connectivity structures on the maintenance or improvement of population viability and gene flow; and

(vi) demonstrate that all of the identified in the documents listed under conditions A2(c) and A2(j), the Strategy shall demonstrate how the new location and design would result in an improved biodiversity outcome. The Strategy shall clearly identify how the connectivity structures will work in conjunction with other biodiversity measures, such as complementary fauna exclusion fencing measures and the regeneration/restoration of native vegetation, to be implemented for the SSI.

The Applicant shall demonstrate to the satisfaction of the Secretary how public authority comments on the Strategy have been addressed. The Strategy may be submitted in stages to suit the staging of the SSI.

(vii) the identification of additional species/areas through pre-construction surveys and construction;

(viii) additional impact associated with the establishment of ancillary facilities;

(ix) the decision-making framework that would be used to select the final suite of offset measures to achieve the objectives and outcomes established within the Strategy, including the rating of offset measures, and

(x) options for securing and management of biodiversity offsets is properly.

The Applicant may elect to satisfy the requirements of this condition by identifying a suitable offset strategy which addresses impacts from multiple Pacific Highway Upgrade projects within the North Coast bioregion, any such strategy, including an agreement made with OEH and DoE, shall be approved by the Secretary within a timeframe agreed to by the Secretary.

The Biodiversity Offset Strategy shall be submitted to, and approved by, the Secretary prior to the commencement of construction work that would result in the disturbance of the relevant existing ecological communities, threatened species, or their habitat, unless otherwise agreed by the Secretary.

(x) a schedule for submission of all biodiversity strategies, plans and programs required under this approval in accordance with the requirements for submission in the conditions below.

(xi) the definition of continuity structures, the significance of which has been identified in the documents listed under conditions A2(c) and A2(j), shall be approved by the Secretary within a timeframe agreed to by the Secretary.

The Biodiversity Offset Strategy shall be submitted to, and approved by, the Secretary prior to the commencement of construction work that would result in the disturbance of the relevant existing ecological communities, threatened species, or their habitat, unless otherwise agreed by the Secretary.

The Strategy shall include, but not necessarily be limited to:

(i) a fencing strategy, describing the location, design and length of fencing, which must extend beyond the edges of habitat for threatened species;

(ii) the identification of additional species/areas through pre-construction surveys and construction;

(iii) additional impact associated with the establishment of ancillary facilities;

(iv) the decision-making framework that would be used to select the final suite of offset measures to achieve the objectives and outcomes established within the Strategy, including the rating of offset measures, and

(v) options for securing and management of biodiversity offsets is properly.

The Applicant may elect to satisfy the requirements of this condition by identifying a suitable offset strategy which addresses impacts from multiple Pacific Highway Upgrade projects within the North Coast bioregion, any such strategy, including an agreement made with OEH and DoE, shall be approved by the Secretary within a timeframe agreed to by the Secretary.

The Biodiversity Offset Strategy shall be submitted to, and approved by, the Secretary prior to the commencement of construction work that would result in the disturbance of the relevant existing ecological communities, threatened species, or their habitat, unless otherwise agreed by the Secretary.
Prior to the commencement of construction work that would result in the disturbance of the relevant existing ecological communities, threatened species, or their habitat, unless otherwise agreed by the Secretary, the Applicant shall submit for the approval of the Secretary, the offset sites for the species listed under condition D4(a). The selection of the offset sites shall be undertaken in consultation with the OEH, DPI (Fisheries) and DoE. Submission of the offset sites for approval shall be accompanied by:

- a) details of offset sites to compensate the impacts on:
  1. koala populations in Coolgardie/Bagotville, Broadwater and Woombah/Iluka;
  2. Lepidopsperma plants have been collected from the southern side of Wells Crossing and these
     3. a framework for the translocation process applicable to each affected species; and
   - b) a map that defines the location and boundaries of the offset site(s);
   - c) a description of the current quality (prior to any management activity) of the offset area(s);
   - d) a description of funding arrangements or agreements including work programs and responsible
     entities.
   - e) a description of the performance objectives for management actions that will enable maintenance
     and enhancement of habitat within the offset area, as well as contribute to the better protection of
     individuals and populations of the relevant species;
   - f) performance and completion criteria for evaluating the management of the offset area, including
     contingency actions, criteria for triggering contingency actions and a commitment to the implementation
     of these actions in the event that the performance objectives are not met in a program to monitor and
     report on the effectiveness of these measures, and progress against the performance and completion
     criteria.

The Biodiversity Offset Package shall be submitted for approval following the approval of the Biodiversity Offset Strategy. The Biodiversity Offset Package shall be prepared in consultation with the OEH, DPI (Fisheries) and DoE, and to the satisfaction of the Secretary. The Biodiversity Offset Package shall include details of the offset sites approved under condition D4(a), and timeframe for the delivery of the offset sites.

The Biodiversity Offset Package shall be prepared by a suitably qualified and demonstrated to be additional to those required for the separate approval, can be considered as an offset for this project in accordance with the EPBC Act Environmental Offsets Policy 2012 (or subsequent published variations).

<table>
<thead>
<tr>
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<th>Project Stage</th>
<th>Timing</th>
<th>Responsibility</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) the identification of the extent and types of habitat that would be lost or degraded as a result of the final design of the SSI;</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
<td>OEH</td>
<td></td>
</tr>
<tr>
<td>(b) a map that defines the locations and boundaries of the offset area;</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
<td>OEH</td>
<td></td>
</tr>
<tr>
<td>(c) the objectives and biodiversity outcomes to be achieved;</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
<td>OEH</td>
<td></td>
</tr>
<tr>
<td>(d) the monitoring and reporting requirements for compensatory habitat works and other biodiversity protection and enhancement;</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
<td>OEH</td>
<td></td>
</tr>
<tr>
<td>(i) the monitoring of the condition of species and ecological communities at offset locations;</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
<td>OEH</td>
<td></td>
</tr>
<tr>
<td>(ii) the methodology for monitoring programs, including the number and location of offset monitoring sites, and the sampling frequency of these sites;</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
<td>OEH</td>
<td></td>
</tr>
<tr>
<td>(iii) provisions for the annual reporting of the monitoring results for a set period of time as determined in consultation with the OEH, DPI (Fisheries) and DoE;</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
<td>OEH</td>
<td></td>
</tr>
<tr>
<td>(j) performance and completion criteria for evaluating the management of the offset area, including contingency actions, criteria for triggering contingency actions and a commitment to the implementation of these actions in the event that the performance objectives are not met in a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria.</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
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<tr>
<td>(k) timing and responsibilities for the implementation of the provisions of the Biodiversity Offset Package and achieving performance objectives;</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
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<td>OEH</td>
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<tr>
<td>(l) details of the objectives and biodiversity outcomes to be achieved;</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
<td>OEH</td>
<td></td>
</tr>
<tr>
<td>(m) a description of funding arrangements or agreements including work programs and responsible entities.</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
<td>OEH</td>
<td></td>
</tr>
<tr>
<td>(n) a description of the current quality (prior to any management activity) of the offset area(s);</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
<td>OEH</td>
<td></td>
</tr>
</tbody>
</table>

Where monitoring required under conditions D8 and/or D9 indicates that biodiversity outcomes are not being achieved, remedial actions, as approved by the Secretary, shall be undertaken to ensure that the objectives of the Biodiversity Offset Package are achieved.

The requirements of the Biodiversity Offset Package shall be implemented by the responsible parties according to the timelines set out in the Biodiversity Offset Package, unless otherwise agreed by the Secretary.

If an offset site proposed as a part of the Biodiversity Offset Strategy or Biodiversity Offset Package is already required to be protected as a result of a separate approval, only the management actions which can be demonstrated to be additional to those required for the separate approval, can be considered as an offset for this project in accordance with the EPBC Act Environmental Offsets Policy 2012 (or subsequent published variations).

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Section</th>
<th>Project Stage</th>
<th>Timing</th>
<th>Responsibility</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a) the identification of the extent and types of habitat that would be lost or degraded as a result of the final design of the SSI;</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
<td>OEH</td>
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</tr>
<tr>
<td>(b) a map that defines the locations and boundaries of the offset area;</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
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<tr>
<td>(c) the objectives and biodiversity outcomes to be achieved;</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
<td>OEH</td>
<td></td>
</tr>
<tr>
<td>(d) the monitoring and reporting requirements for compensatory habitat works and other biodiversity protection and enhancement;</td>
<td>C4</td>
<td>Pre-construction and Construction</td>
<td>All</td>
<td>OEH</td>
<td></td>
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<tr>
<td>(i) the monitoring of the condition of species and ecological communities at offset locations;</td>
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<td>Pre-construction and Construction</td>
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<td>OEH</td>
<td></td>
</tr>
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<td>(ii) the methodology for monitoring programs, including the number and location of offset monitoring sites, and the sampling frequency of these sites;</td>
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<td>All</td>
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<td></td>
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<td>(iii) provisions for the annual reporting of the monitoring results for a set period of time as determined in consultation with the OEH, DPI (Fisheries) and DoE;</td>
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<td>(j) performance and completion criteria for evaluating the management of the offset area, including contingency actions, criteria for triggering contingency actions and a commitment to the implementation of these actions in the event that the performance objectives are not met in a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria.</td>
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<td>(n) a description of the current quality (prior to any management activity) of the offset area(s);</td>
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<td>Pre-construction and Construction</td>
<td>All</td>
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<td></td>
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</table>
The Applicant shall prepare and implement Threatened Species Management Plans to detail how impacts of the SSI will be minimised and managed specifically for each species identified as significantly impacted in the documents listed in condition A2 or in accordance with condition D1. The Plans shall be developed from the draft Threatened Species Management Plans included in the documents listed in condition A2 or the draft Threatened Species Management Plan prepared in accordance with condition D1, including adequate data collected from surveys undertaken by a suitably qualified and experienced ecologist on threatened species and ecological communities within all habitat areas to be cleared of vegetation for the SSI, that are likely to contain these species and that are likely to be adversely impacted by the SSI (as determined by a suitably qualified expert). The Plans shall address the densities, distribution, habitat use and movement patterns of these species.

(ii) Identification of potential impacts on each species:

(a) details of any demonstrated effectiveness of the proposed avoidance and mitigation and management measures to be implemented for each threatened species including measures to at least maintain habitat areas of each habitat area as compared to baseline data and maintain connectivity for the relevant species;

(b) an adaptive monitoring program to assess the use of the mitigation measures identified in conditions B10 and C2. The monitoring program shall nominate appropriate and justified monitoring periods, performance parameters and criteria against which effectiveness of the mitigation measures will be measured and include operational road kill and fauna crossing surveys to assess the use of fauna crossings and evaluate fencing implemented as part of the SSI.

(iii) Monitoring methodology for threatened fishes and fauna adjacent to the SSI footprint:

(a) monitoring methodology for threatened species and fauna adjacent to the SSI footprint;

(b) goals and performance indicators to measure the success of mitigation measures, which shall be specific, measurable, achievable, realistic and timely (SMART), and be compared against baseline data;

(c) methodology for the ongoing monitoring of road kill, the species densities, distribution, habitat use and movement patterns, and the use of fauna crossings during construction and operation of the SSI, including the location and design of fauna crossings to create connectivity and achieve the results expected from each fauna crossing.

(d) justification that the location and design of mitigation measures:

(i) ensure that pathways to connectivity structures are not impeded by ancillary facilities, rest areas, service roads or local roads;

(ii) provide dry passage for dedicated fauna crossings and for combined fauna crossings to the satisfaction of OEH and DoE, at a flood immunity level determined in accordance with condition D2(c)(j);

(iii) provide passage for Koalas under or over the existing highway (where the existing highway forms part of the SSI) and service roads or local roads (servicing over 100 vehicles per day);

(iv) are in areas that, and are at a sufficient frequency to, achieve (i) - (iv), based on site specific information contained in the survey results required by condition D9(a) and the ecological requirements of the Koala, including but not limited to home range size, local movement patterns and habitat use, in accordance with the advice of the independent ecologist and OEH;

(v) are in areas that, and are at a sufficient frequency to, achieve (i) - (iv), based on site specific information contained in the survey results required by condition D9(a) and the ecological requirements of the Koala,

(vi) provide sufficient opportunities for species dispersal and re-colonisation as determined by the independent ecologist and OEH;

(vii) provide for ongoing monitoring during the operation of the SSI for operation/ongoing impacts until such time as the relevant species becomes re-established and can be removed from the threatened species list.

The Plans must be submitted and approved by the Secretary prior to commencement of construction of the relevant stages of the action, and implemented prior to commencement of construction of the relevant stages, unless otherwise agreed by the Secretary. The Plans must be submitted and approved by the Secretary prior to commencement of construction of the relevant stages of the action, and implemented prior to commencement of construction of the relevant stages, unless otherwise agreed by the Secretary.

(d) A detailed description, including the location and design, of all proposed avoidance and mitigation measures:

(a) The Koala Management Plan for Sections 1 & 2 was approved by the Department of Planning, Environment on the 7/5/15.

(b) The Threatened Bat Management Plan for Sections 1 & 2 was approved by the Department of Planning, Environment on the 12/5/15.

(c) The Threatened Mammal Management Plan for Sections 1 & 2 was approved by the Department of Planning, Environment on the 29/9/14.

(d) The Threatened Frog Management Plan was approved by the Department of Planning, Environment on the 29/9/14.

(e) The Threatened Glider Management Plan was approved by the Department of Planning, Environment on the 29/9/14.

(f) The Koala Management Plan for Sections 1 & 2 was approved by the Department of Planning, Environment on the 12/5/15.

These documents are part of the FFMP.

Section | Project Stage | Timing | Responsibility | Comment
--- | --- | --- | --- | ---
All | All | Pre-construction and Construction | RMS and Contractor | All
All | Pre-construction and Construction | RMS and Contractor | All
8, 9, 10 | Stage 2 | Pre-construction | RMS | Stage 2
8, 9, 10 | Stage 2 | Pre-construction | RMS | Stage 2
8, 9, 10 | Stage 2 | Pre-construction | RMS | Stage 2
The Water Quality Monitoring Program for Sections 1 & 2 was approved by the Department of Planning & Environment on the 8/5/15.

Although soft soil works are located in the Clarence and Richmond river floodplains, flood monitoring plans are being undertaken to monitor groundwater levels and water quality during construction in accordance with the approved Program.

RMS is continuing to monitor groundwater levels and water quality during construction in accordance with the approved Program.

The Hydrological Mitigation Report for Condi was submitted for approval to DPE on 19/4/15, although soft soil works are located in the Clarence and Richmond river floodplains. Flood monitoring conducted during the design detail indicates that hydrological impacts due to the Cready Roadальнiements in these areas are not predicted to exceed the relevant flood management objective.

The Hydrological Mitigation Report for Condi was submitted for approval to DPE on 19/4/15, although soft soil works are located in the Clarence and Richmond river floodplains. Flood monitoring conducted during the design detail indicates that hydrological impacts due to the Cready Roadальнiements in these areas are not predicted to exceed the relevant flood management objective.

All No DPE

The Koala Management Plan shall be submitted and approved by the Secretary prior to the commencement of construction of the relevant stages of the SSI. The approved Koala Management Plan shall be implemented prior to the commencement of construction of the relevant stages.

The Water Quality Monitoring Program for Sections 1 & 2 was approved by the Department of Planning & Environment on the 8/5/15.

RMS is continuing to monitor groundwater levels and water quality during construction in accordance with the approved Program.

The Hydrological Mitigation Report for Condi was submitted for approval to DPE on 19/4/15, although soft soil works are located in the Clarence and Richmond river floodplains. Flood monitoring conducted during the design detail indicates that hydrological impacts due to the Cready Roadальнiements in these areas are not predicted to exceed the relevant flood management objective.

All No DPE

All No DPE

2012 (5.10) The Applicant shall undertake a baseline survey to identify areas that are sensitive to construction vibration and construction ground-borne noise impacts. The results of the survey shall be incorporated into the Construction Noise and Vibration Management Plan.

A survey has been undertaken for Sections 1 & 2 to identify areas that are sensitive to construction vibration and construction ground-borne noise impacts. The results of these surveys have been incorporated into the Construction Noise and Vibration Management Plans for Sections 1 & 2.

All No Construction Contractor

The Applicant will prepare a review of the operational noise mitigation measures proposed to be implemented for the SSI, within six months of commencing construction, unless otherwise agreed by the Secretary.

The review shall be prepared in consultation with DPE, to the satisfaction of the Secretary. The review may be submitted in stages to suit the staged construction of the SSI and shall refer to the assessments described in conditions B31 and B32.

The review shall take into account the detailed design of the SSI and, where feasible, and when necessary, apply the proposed measures with the objective of meeting the criteria outlined in the NSW Road Noise Policy (Department of Environment, Climate Change and Water, 2011), based on the operational noise performance of the SSI predicted under (a) above and (c) where necessary, investigate additional feasible and reasonable noise mitigation measures to achieve the criteria outlined in the NSW Road Noise Policy (DECC, 2011).

All No Pre-construction and Construction

The Water Quality Monitoring Program for Sections 1 & 2 was approved by the Department of Planning & Environment on the 8/5/15.

Conditions for Section 1 & 2 are undertaking surface water quality monitoring in accordance with the approved program.

RMS is continuing to monitor groundwater levels and water quality during construction in accordance with the approved Program.

All No Pre-construction and Construction

The Water Quality Monitoring Program for Sections 1 & 2 was approved by the Department of Planning & Environment on the 8/5/15.

These conditions (both eligible and no longer eligible) were notified by letter (Dec 2015) and others now eligible. The total to receive treatment is 41 residence.

Monitoring shall:
(a) establish and maintain monitoring programs to measure the biological, chemical, and physical characteristics of surface and groundwater in the vicinity of the SSI;
(b) identify mitigation measures to be implemented to address these impacts;

The survey shall be incorporated into the Construction Noise and Vibration Management Plan.

The survey shall be incorporated into the Construction Noise and Vibration Management Plan.

Although soft soil works are located in the Clarence and Richmond river floodplains, flood monitoring plans are being undertaken to monitor groundwater levels and water quality during construction in accordance with the approved Program.

RMS is continuing to monitor groundwater levels and water quality during construction in accordance with the approved Program.

The Hydrological Mitigation Report for Condi was submitted for approval to DPE on 19/4/15, although soft soil works are located in the Clarence and Richmond river floodplains. Flood modelling conducted during the design detail indicates that hydrological impacts due to the Cready Roadальнiements in these areas are not predicted to exceed the relevant flood management objective.

All No Pre-construction

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All No Pre-construction

The Hydrological Mitigation Report for Condi was submitted for approval to DPE on 19/4/15, although soft soil works are located in the Clarence and Richmond river floodplains. Flood modelling conducted during the design detail indicates that hydrological impacts due to the Cready Roadальнiements in these areas are not predicted to exceed the relevant flood management objective.

All No Pre-construction

Based on the mitigation measures identified in condition D9.3, the Applicant shall prepare and implement a final schedule of feasible and reasonable flood mitigation measures proposed at each directly-affected property. The flood impact assessment schedule to be provided to the relevant landowner(s) prior to the implementation/construction of the mitigation works, unless otherwise agreed by the Secretary. A copy of each schedule of flood mitigation measures shall be provided to the Department of Planning and Environment and the relevant council prior to the implementation/construction of the mitigation measures on the property.

The Hydrological Mitigation Report for Condi was submitted for approval to DPE on 19/4/15, although soft soil works are located in the Clarence and Richmond river floodplains. Flood modelling conducted during the design detail indicates that hydrological impacts due to the Cready Roadальнiements in these areas are not predicted to exceed the relevant flood management objective.

All No Pre-construction

The Hydrological Mitigation Report for Condi was submitted for approval to DPE on 19/4/15, although soft soil works are located in the Clarence and Richmond river floodplains. Flood modelling conducted during the design detail indicates that hydrological impacts due to the Cready Roadальнiements in these areas are not predicted to exceed the relevant flood management objective.

All No Pre-construction
The Applicant shall employ a suitably qualified and experienced independent hydrological expert, whose appointment has been endorsed by the Secretary, to deal with all hydrological matters and assist landowners in negotiating feasible and reasonable mitigation measures.

The Applicant shall prepare and implement an Ancillary Facilities Management Plan to detail the management of ancillary facilities associated with the SSI. The Plan shall be prepared in consultation with the EPA, RMS and OEH, and Council.

An Ancillary Facilities Management Plan that addresses this condition has been prepared for RMS. Pre-construction and construction works, including those associated with the facility, shall be carried out in accordance with RMS Specification G10, each contractor is required to undertake this survey.

The Applicant shall prepare and implement a Business Access Strategy to address changes to access to businesses along the highway, at least six months prior to operation. The Strategy shall be prepared in consultation with the relevant council, business owners and the New South Wales Environment and Heritage Office.

The Strategy may be submitted in stages to suit the staged construction program of the SSI.

The Plan may be submitted in stages to suit the staged construction program of the SSI.

The Policy shall be consistent with the Guide: Signposting (RTA July 2007), Tourist Signposting guide (RMS and Destination NSW 2012) and provide for signage that:

(a) is located and designed in accordance with the relevant council, in the vicinity of key features of the project.
(b) meets the requirements of the relevant council and the traffic authority.

The Policy may be submitted in stages to suit the staged construction program of the SSI.

The Policy shall be consistent with the Guide: Signposting (RTA July 2007), Tourist Signposting guide (RMS and Destination NSW 2012) and provide for signage that:

(a) is located and designed in accordance with the relevant council, in the vicinity of key features of the project.
(b) meets the requirements of the relevant council and the traffic authority.

The Policy may be submitted in stages to suit the staged construction program of the SSI.

The Plan shall be approved by the Environmental Representative prior to the establishment of the ancillary facilities described therein. In considering the approval of the plan, the Environmental Representative shall:

(a) assess the current condition of the road and describe measures to restore any damage that may result due to its use by traffic and transport related to the construction of the SSI.
(b) assess the current condition of the road and describe mechanisms to restore any damage that may result due to its use by traffic and transport related to the construction of the SSI.

The Plan may be submitted in stages to suit the staged construction program of the SSI.
The Applicant shall prepare and implement a Borrow Sites Management Plan, to manage the construction, operation and rehabilitation of the borrow sites used to source construction material for the SSI, prior to the commencement of construction at the borrow sites, or as otherwise agreed by the Secretary. The Plan shall be prepared in consultation with the EPA, OEH and DPI (Fisheries) and outline the environmental management practices and procedures that are to be followed during construction, and shall be prepared in consultation with the relevant government agencies and in accordance with the Guideline for the Preparation of Environmental Management Plans (Department of Infrastructure, Planning and Natural Resources, 2019). The Plan shall include, but not necessarily be limited to:

(a) a description of activities to be undertaken during the construction of the SSI (including staging and scheduling);
(b) statutory and other obligations that the Applicant is required to fulfill during construction, including approvals, consultations and agreements required from authorities and other stakeholders under key legislation and policies;
(c) a description of the roles and responsibilities for relevant employees involved in the construction of the SSI, including relevant training and induction provisions for ensuring that employees, including contractors and subcontractors, are aware of their environmental and compliance obligations under these conditions of approval;
(d) measures to monitor and manage dust emissions including dust from stockpiles, blasting, traffic on unsealed public roads and materials tracking from construction sites onto public roads; and
(e) measures to monitor and manage hydraulic impacts, including measures to stabilise bed and bank structures as required.

The Plan shall be submitted for the approval of the Secretary no later than one month prior to the commencement of construction, or as otherwise agreed by the Secretary. The Plan may be prepared in stages, however, construction works shall not commence until written approval of the relevant stage has been received from the Secretary.

The Environment Representative(s) shall:

(a) be the principal point of advice in relation to the environmental performance of the SSI;
(b) monitor the implementation of environmental management plans and monitoring programs required under this approval and advise the Applicant upon the achievement of these plans/programs;
(c) have responsibility for considering and advising the Applicant on matters specified in the conditions of this approval, and on other matters relevant to the environmental performance and impacts of the SSI;
(d) ensure that environmental auditing is undertaken in accordance with the Applicant’s Environmental Management System(s);
(e) be given the authority to approve minor amendments to the Construction Environment Management Plan. What constitutes a “minor” amendment shall be clearly explained in the Construction Environment Management Plan;
(f) be given the authority to approve/minor Out of Hours Works in accordance with condition B17. These works shall be conducted in accordance with the Out of Hours Works Protocol (OOWP) Protocol required in accordance with condition D25(b);
(g) be provided access to key facility buildings, temporary and permanent facilities in accordance with conditions D25(a) and D25(b) and the Ancillary Facilities Management Plan under condition D25(c);
(h) be given the authority, and independence, to require reasonable steps to be taken to avoid or minimise unintended or adverse environmental impacts, and to challenge the effectiveness of such steps, to direct that relevant actions are taken immediately should an adverse impact on the environment be likely to occur; and
(i) be consulted in responding to the community concerning the environmental performance of the SSI where the resolution of points of conflict between the Applicant and the community is required.

All Section 1 CEMP was approved on 15 May 2015.

Table: Environmental Management Plan

<table>
<thead>
<tr>
<th>Section</th>
<th>Project Stage</th>
<th>Timing</th>
<th>Responsibility</th>
<th>Comment</th>
</tr>
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<tbody>
<tr>
<td>5, 6, 9, 10</td>
<td>Stage 2</td>
<td>Construction</td>
<td>Contractor</td>
<td>Stage 2</td>
</tr>
</tbody>
</table>
As part of the Construction Environmental Management Plan for the SSI, the Applicant shall prepare and implement:

- (a) Construction Noise and Vibration Management Plan to detail how construction noise and vibration impacts will be minimised and managed. The Plan shall be developed in consultation with the EPA and shall be prepared and implemented (following approval by the Secretary) for each package of works under Stage 1, prior to the commencement of construction.
- (b) Construction Erosion, Sediment and Water Quality Management Plan to detail erosion and sediment control measures to be implemented during construction and detail how spoil and fill material required by the SSI will be sourced, handled, stockpiled, reused and managed. The Plan shall be prepared and implemented (following approval by the Secretary) for each package of works under Stage 1, prior to the commencement of construction.
- (c) a Construction Soil and Water Quality Management Plan to manage surface and groundwater impacts during construction of the SSI. The Plan shall be developed in consultation with the EPA, DPI (Fisheries), Ministers for Agriculture, Department of Planning and Environment, existing Aboriginal Parties and Contractors, and include, but not necessarily be limited to:
  - (i) identification of sensitive receivers and relevant construction noise and vibration and water quality impacts applicable to the SSI;
  - (ii) identification of key noise and/or vibration generating construction activities (based on representative construction services, including at ancillary facilities that have the potential to generate noise and/or vibration impacts on sensitive receivers, particularly residential areas);
  - (iii) identification of key erosion and sediment generation activities and the measures to be implemented to minimise such impacts (including construction traffic noise impacts);
  - (iv) procedures to ensure that vibration and noise limits are achieved and monitored; (including equipment specifications, operational controls and monitoring equipment);
  - (v) a description of how the effectiveness of these measures will be monitored, including identifying how often this monitoring would be conducted, the locations where monitoring would take place, how the results of this monitoring would be recorded and reported, and if any exceedances are detected, how any non-compliance would be rectified.
  - (vi) an out-of-hours work (OOHW) protocol for the assessment, management and approval of works outside of standard construction hours as defined in condition B15, including a risk assessment process under which the Environmental Representative may approve out-of-hours construction activities. The OOHW protocol shall detail standard assessment, mitigation and notification requirements for high and low risk out-of-hours works, consultation procedures with the EPA, the relevant council and affected landowners.
  - (vii) a program for construction noise and vibration monitoring clearly indicating monitoring frequency, location, how the results of the monitoring would be recorded and, procedures to be followed where exceedances of relevant noise and vibration limits are detected; and
- (d) mechanisms for the monitoring, review and amendment of this plan.

The Section 1 CEMP and associated Management Plans were approved on 15 May 2015.
The Section 2 CEMP and associated Management Plans were approved on 4 June 2015.

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The Section 1 CEMP and associated Management Plans were approved on 15 May 2015.
The Section 2 CEMP was approved on 4 June 2015.
The applicant shall prepare and implement a Compliance Tracking Program, in each compliance with the requirements of this approval, prior to the commencement of construction and operation from the date of its approval. This Program shall be prepared for the approval of the Secretary, and include, but not necessarily be limited to:

(a) provisions for the notification of the Secretary prior to the commencement of construction and prior to the commencement of operation of the SSI (including prior to each stage, where works are being staged);

(b) provisions for periodic review of the compliance status of the SSI against the requirements of this approval;

(c) provision for periodic reporting of compliance status to the Secretary, including a Pre-Construction Compliance Report, prior to the commencement of construction, and a Pre-Operation Compliance Report prior to the commencement of the SSI.

The compliance tracking program shall:

(d) review the adequacy of any approved strategy, plan or program required under these approvals; and

(e) assess the environmental performance of the SSI and assess whether it is complying with the requirements in this approval, and any other relevant approvals (including any assessment, plan or program required under these approvals);

(f) an assessment of the performance and effectiveness of applied noise mitigation measures together with a review and if necessary, reassessment of feasible and reasonable mitigation measures; and

(g) procedures for any non-compliance identified during environmental auditing, review of compliance or incident management; and

(h) procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management; and

(i) mechanisms for recording environmental incidents during construction and actions taken in response to those incidents;

(j) provisions for reporting environmental incidents to the Secretary and relevant public authorities during construction;

(k) procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management; and

(l) provisions for ensuring all contractors, subcontractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.

The audit may be staged to suit the staged operation of the SSI.

The audit team shall be led by a suitably qualified auditor, and include experts in biodiversity, noise and vibration, hydrology and any other fields specified by the Secretary.

The audit may be staged to suit the staged operation of the SSI. The Report shall include, but not necessarily be limited to:

(a) a description of the audit; and

(b) procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management; and

(c) procedures for any non-compliance identified during environmental auditing, review of compliance or incident management; and

(d) provisions for ensuring all contractors, subcontractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.

The audit may be staged to suit the staged operation of the SSI.
**COMPLIANCE TRACKING - FEDERAL CONDITIONS OF APPROVAL**

**Woolgoolga to Ballina SSI-4963**

<table>
<thead>
<tr>
<th>Part</th>
<th>Requirement</th>
<th>WSB Section</th>
<th>Stage</th>
<th>Timing</th>
<th>Responsibility</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The Staging Report as required by NSW approval condition A7 must be submitted to the Minister prior to the commencement of each of the proposed stages. In accordance with NSW approval condition A7, the Staging Report must outline how the proposal will be staged. The Staging Report must also outline the threatened species and communities, and migratory species impacted in each stage.</td>
<td>A8</td>
<td>A8</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>Must.</td>
</tr>
<tr>
<td>2</td>
<td>In order to minimise impacts to threatened species and communities, and migratory species, the approval holder must: a) Comply with clearance limits outlined in the NSW SSI approval condition B1; b) Ensure the clearance limits are not exceeded in accordance with the NSW SSI approval condition B1; c) Undertake all soil and water management measures in accordance with NSW approval condition B4; d) Design and construct any additional enclosures in accordance with the requirements of NSW approval condition B7 to ensure that no impacts occur to threatened species and communities, and migratory species or their habitat.</td>
<td>A8</td>
<td>A8</td>
<td>Pre-construction and Construction</td>
<td>RMS and Contractor</td>
<td>Compliance is being achieved for a), b) and f). Sediment trapping, hand seedling, and weed control are being utilised to ensure and track compliance.</td>
</tr>
<tr>
<td>3</td>
<td>In order to minimise impacts to the Goolga Flying-Frog, the approval holder must undertake the actions in accordance with NSW approval conditions B4, B6, B8, B13, B41, B47 and B48.</td>
<td>2.11</td>
<td>Stage 2</td>
<td>Pre-construction and Construction</td>
<td>RMS and Contractor</td>
<td>All section 1.2 has been addressed in detailed design to assess impacts to known flying-frog habitat. Fencing has been installed, reducing impacts on GFF and GTF, including additional lengths of frog fencing.</td>
</tr>
<tr>
<td>4</td>
<td>In order to ensure the long-term viability of the Ballina Koala population, the approval holder must engage a suitably qualified expert to undertake population viability modelling of the Ballina Koala population over a time period of no less than 30 years, taking into account the impacts resulting from the road upgrade in Section 10. This modelling should consider the current proposed route and any alternative avoidance or mitigation measures as appropriate.</td>
<td>T9</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>Stage 2</td>
</tr>
<tr>
<td>5</td>
<td>The approval holder must have the modelling required by Condition 5 peer reviewed by a second suitably qualified expert.</td>
<td>T9</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>Stage 2</td>
</tr>
<tr>
<td>6</td>
<td>In addition to the Koala Management Plan required by NSW SSI approval conditions B1 and B4, to ensure that an unacceptable level of risk exists to the Ballina Koala population, the approval holder must undertake the actions in accordance with NSW SSI approval conditions B1 and B4, to ensure that the Ballina Koala population are determined to be acceptable within the Ballina Koala Polygon. The Ballina Koala Polygon will include: a) the modelling required by Condition 5 and the results of the modelling, and the peer review required by Condition 6; b) discussion of the future viability of the Ballina Koala population; c) in the context of relevant environmental social and economic considerations, any additional avoidance, mitigation or offsets, beyond those required by the NSW approval conditions, proposed to minimise the impacts to the Ballina Koala population; and d) evidence that any additional avoidance and mitigation measures proposed have been considered in the modelling required in Condition 5. The approval holder must not commence Section 10 unless the Ballina Koala Plan has been approved by the Minister. The approved Plan must be implemented.</td>
<td>T9</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>Stage 2</td>
</tr>
<tr>
<td>7</td>
<td>The approval holder must develop a Koala Management Plan pursuant to the requirements of NSW SSI approval conditions B1 and B4 for each relevant stage(s). The Koala Management Plan must minimise impacts to the Koala to the satisfaction of the Minister and must be submitted to the Minister for approval. The relevant stages cannot commence until the Koala Management Plan for that stage is approved by the Minister. The approved Plan(s) must be implemented.</td>
<td>A8</td>
<td>A8</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>The plan is included within the FFMP. Only applicable to condition B4. The Koala Management Plan for Sections 1 &amp; 2 was approved by the Department of Planning &amp; Environment on the 11/05/15. These documents form part of the FFMPs for both Sections.</td>
</tr>
<tr>
<td>8</td>
<td>The Koala Management Plan, relevant to Section 1, must be consistent with the approved Ballina Koala Plan and can only be submitted to the Minister for approval after the Ballina Koala Plan has been approved by the Minister.</td>
<td>T9</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>Stage 2</td>
</tr>
<tr>
<td>9</td>
<td>Should further offsets be required in accordance with NSW SSI approval condition 5(b) or be proposed as part of the Ballina Koala Plan, these must be in accordance with the BMS and CEMP.</td>
<td>T9</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>Stage 2</td>
</tr>
<tr>
<td>10</td>
<td>The approval holder must develop a Threatened Mammal Management Plan pursuant to the requirements of NSW SSI approval conditions D2 for each stage impacting on Threatened species and ecological communities. The Threatened Mammal Management Plan must minimise impacts to the Threatened species and ecological communities to the satisfaction of the Minister and must be submitted to the Minister for approval. The relevant stages cannot commence until the Threatened Mammal Management Plan for that stage is approved by the Minister. The approved Plan(s) must be implemented.</td>
<td>A8</td>
<td>A8</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>The Threatened Mammal Management Plan for Sections 1 &amp; 2 was approved by the Department of Planning &amp; Environment on the 7/5/15. The plan is included within the FFMP.</td>
</tr>
<tr>
<td>11</td>
<td>The approval holder must develop a Threatened Flora Management Plan pursuant to the requirements of NSW SSI approval conditions D2 for each stage impacting on Threatened species and ecological communities. The Threatened Flora Management Plan must minimise impacts to the Threatened species and ecological communities to the satisfaction of the Minister and be submitted to the Minister for approval. The relevant stages cannot commence until the Threatened Flora Management Plan for that stage is approved by the Minister. The approved Plan(s) must be implemented.</td>
<td>A8</td>
<td>A8</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>The Threatened Flora Management Plan for Sections 1 &amp; 2 was approved by the Department of Planning &amp; Environment on the 15/11/15. These documents form part of the FFMP.</td>
</tr>
<tr>
<td>12</td>
<td>The approval holder must develop a Connectivity Strategy(ies) pursuant to the requirements of NSW SSI approval conditions D2 for each stage impacting on Threatened species and ecological communities. The Connectivity Strategy must minimise impacts to Threatened species and ecological communities to the satisfaction of the Minister and must be submitted to the Minister for approval. Commencement of the relevant stages cannot occur until the Connectivity Strategy for that stage is approved by the Minister. The approved Strategy(ies) must be implemented.</td>
<td>A8</td>
<td>A8</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>Stage 2</td>
</tr>
<tr>
<td>13</td>
<td>In order to minimise impacts to threatened species and communities, and migratory species, the approval holder must develop and implement all Frameworks, Strategies, Plans or Programs, in accordance with the requirements of the following NSW approval conditions: a) The Connectivity Strategy required by NSW approval condition D2 and the requirements of NSW approval condition B12; b) The Project Wastes Management Plan required by NSW approval condition C8 and C9; c) The Construction Soil and Water Quality Management Plan required by NSW approval condition D26(c) and D26(e); d) The Construction Flora and Fauna Management Plan required by NSW approval condition D26(b); e) The Biodiversity Offset Strategy required by NSW approval condition D22; f) The Water Quality Monitoring Program required by NSW approval condition C8; and g) The Arid Rangers Management Plan required by NSW approval condition D21.</td>
<td>A8</td>
<td>A8</td>
<td>Pre-construction and Construction</td>
<td>RMS and Contractor</td>
<td>These plans have been prepared and are part of the CDP approved CEMP. FFMP.</td>
</tr>
<tr>
<td>14</td>
<td>The approval holder must prepare and implement a Biodiversity Offset Strategy and Biodiversity Offset Package that compensate for any residual significant impacts on Threatened species and communities. The Biodiversity Offset Strategy and Biodiversity Offset Package must meet the requirements of the EPBC Act, the Offset Policy and must be submitted to the Minister for approval.</td>
<td>A8</td>
<td>A8</td>
<td>Pre-construction and Construction</td>
<td>RMS</td>
<td>The Department of Planning &amp; Environment approved an extension of time for the Biodiversity Offset Strategy until 3 months after the start of construction. The Biodiversity Offset Strategy was approved by the Department of Planning &amp; Environment on the 9/11/16. The Biodiversity Offset Strategy was approved by the Department of Environment the 7/11/16. RMS will prepare and implement following approval a Biodiversity Offset Package, within twenty-four months of approval of the Biodiversity Offset Strategy, or as otherwise agreed by the Secretary.</td>
</tr>
</tbody>
</table>
The Biodiversity Offset Strategy and Biodiversity Offset Package must be prepared in accordance with the requirements NSW approval conditions D3, D4 and D5. Approved Plans published on the RMS Project Web site. Pre-construction and Construction RMS. A project-wide Biodiversity Offset Package will be prepared and updated as required.

Pre-construction and Construction RMS. The Biodiversity Offset Strategy was approved by the Department of Planning & Environment on the 6/1/16. The Biodiversity Offset Strategy was approved by the Department of Environment on the 7/1/16. RMS will prepare and implement (following approval) a Biodiversity Offset Package, within twenty-four months of approval of the Biodiversity Offset Strategy, or as otherwise agreed by the Secretary.

RMS. The Biodiversity Offset Strategy was approved by the Department of Planning & Environment on the 6/1/16. RMS will prepare and implement (following approval) a Biodiversity Offset Package, within twenty-four months of approval of the Biodiversity Offset Strategy, or as otherwise agreed by the Secretary.

RMS. The Biodiversity Offset Strategy was approved by the Department of Planning & Environment on the 6/1/16. The Biodiversity Offset Strategy was approved by the Department of Environment on the 7/1/16. RMS will prepare and implement (following approval) a Biodiversity Offset Package, within twenty-four months of approval of the Biodiversity Offset Strategy, or as otherwise agreed by the Secretary.

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RMS. The Biodiversity Offset Strategy was approved by the Department of Planning & Environment on the 6/1/16. The Biodiversity Offset Strategy was approved by the Department of Environment on the 7/1/16. RMS will prepare and implement (following approval) a Biodiversity Offset Package, within twenty-four months of approval of the Biodiversity Offset Strategy, or as otherwise agreed by the Secretary.
Aboriginal Cultural Heritage

Due diligence assessments are undertaken for all works that are proposed outside the SSI. Pre-construction due diligence assessments are undertaken for all works that are proposed outside the SSI project boundary. The methodologies proposed by RMS and Navin Officer Heritage Consultants are incorporated into the Lead Archaeologists’ RMS will be undertaken to agree on a suitable approach.

Pre-construction

Post-construction

The methodologies proposed by RMS and Navin Officer Heritage Consultants go over and above the requirements of this Management Measure.

Heritage awareness training is included in Project Induction, capturing all project workforce relevant registered stakeholders for that area.

Audits undertaken by RMS 23 September 2015 and CMC 22 October 2015 with no

All sites on HMSC project have been cleared of heritage constraints by RPS and Aboriginal Stakeholders.

Aboriginal culture awareness training for all relevant staff and contractors will occur prior to commencing work on-site. This could include information about the Aboriginal culture and history of the locality, the location of sites and items that require protection and movement corridors within the project boundary. Heritage management measures and protocols, and legal obligations. This training will be developed in consultation with suitably trained personnel from local Aboriginal organisations represented by the relevant registered stakeholders for that area.

An Aboriginal heritage interpretation strategy will be prepared as part of the Aboriginal heritage management plan. Measures will include opportunities for promoting salvage and investigation, the recovery of information, permanent installations and ways of marking the presence of Aboriginal people in the landscape, including signage, interpretation products such as written materials, and through place naming.

A Heritage awareness training is included in Project Induction, capturing all project workforce relevant registered stakeholders for that area.

Risk to be prepared by Roads and Maritime Environment Branch however still in development

Aboriginal Heritage

An AFG for Woolgoolga to Wells Crossing was held on the 21 July 2015.

Aboriginal stakeholders and will be engaged to direct this activity. In addition:

• The salvage to be excavated by machine is 30% of the Aboriginal archaeological site.

• Any portions of the Aboriginal archaeological site that are not to be impacted will be protected by exclusion zones as per management measure AH2.

• Their nominated site officers are present during removal of the plastic covering the blueberry bush rows, to identify artefacts on the surface under the plastic – an area of concern as there is a possibility that artefacts may have been missed during the survey. Exclusion zones will be established as per management measure AH2.

• If the Aboriginal archaeological site is not to be impacted, an exclusion zone will be established as per management measure AH2.

• If any part of the project site is to be impacted by works, a site officer will also be present to document finds. An AFG for Wells Crossing to Iluka Road was held on the July 2015 and above the requirements of this Management Measure for pre-construction works.

Aboriginal Heritage

The methodologies proposed by RPS Group and Navin Officer Heritage Consultants incorporated actions to take if substantially rich deposits of artefacts are located. These actions go over and above the requirements of this Management Measure.

Aboriginal Heritage

All previously recorded artefacts must be recovered and removed off-site, and posed to registered Aboriginal stakeholders for reburial or storage at a chosen location, subject to a care agreement being established.

If the Aboriginal archaeological site is not to be impacted, an exclusion zone will be established as per management measure AH2.

Any ground disturbance impacts to the archaeological site in the ancillary facility, will require the top soil and down to the sterile clay layer to be grade, stockpiled separately within a portion of the ancillary facility area, and reinstated at the same area following completion of the activity.

Any portions of the Aboriginal archaeological site not to be impacted will be protected by exclusion zones as per management measure AH2.

The methodologies proposed by RPS Group and Navin Officer Heritage Consultants incorporated actions to take if substantially rich deposits of artefacts are located. These actions go over and above the requirements of this Management Measure.

Aboriginal Heritage

Heritage awareness training for all relevant staff and contractors will occur prior to commencing work on-site. This could include information about the Aboriginal culture and history of the locality, the location of sites and items that require protection and movement corridors within the project boundary. Heritage management measures and protocols, and legal obligations. This training will be developed in consultation with suitably trained personnel from local Aboriginal organisations represented by the relevant registered stakeholders for that area.

Heritage awareness training is included in Project Induction, capturing all project workforce relevant registered stakeholders for that area.

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<th>Reference / Comment</th>
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<tbody>
<tr>
<td>SPRR-AR114h</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 1, Site 1a, 1b (at WWC39 (22-1-0343)): If impact to WWC39 is necessary, salvage excavation of the portion of the Aboriginal archaeological site to be impacted will be undertaken as detailed in the Ancillary facility and design change CHAR (Appendix D of the Submissions/Preferred Infrastructure Report) and in consultation with RAPs. If impacts to the Aboriginal archaeological site are necessary, following archaeological salvage, the top soil down to the sterile clay layer will be graded from the area, mixed separately, and placed in bulk. Where ground disturbance is not necessary, geotextile fabric and crushed rock or similar will be used to protect the ground from compaction. The area of the Aboriginal archaeological site not to be impacted will be protected by exclusion zones as per management measure AH2.</td>
<td>1</td>
<td>Stage 1</td>
<td>Pre-construction</td>
<td>RMS/Contractor</td>
<td>NA</td>
</tr>
<tr>
<td>SPRR-AR114d</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 1, Site 1b (at WWC39 (22-1-0343)): - An exclusion zone will be established around this Aboriginal site as per management measure AH2.</td>
<td>1</td>
<td>Stage 1</td>
<td>Construction</td>
<td>Contractor</td>
<td>Auxiliary facility not utilised.</td>
</tr>
<tr>
<td>SPRR-AR114g</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 2, Site 1a, 1b (at WWC39 (22-1-0343)): • Any portions of the Aboriginal archaeological site that are not to be impacted will be protected by exclusion zones as per management measure AH2.</td>
<td>1</td>
<td>Stage 1</td>
<td>Pre-construction</td>
<td>RMS/Contractor</td>
<td>NA</td>
</tr>
<tr>
<td>SPRR-AR114f</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 2, Site 4 (at Wells Crossing Archeological Site 12-13): - Salvage excavation of the portion of the Aboriginal archaeological site to be impacted will be undertaken as detailed in the Ancillary facility and design change CHAR (Appendix D of the Submissions/Preferred Infrastructure Report) and in consultation with RAPs. - Any portions of the Aboriginal archaeological site that are not to be impacted will be protected by exclusion zones as per management measure AH2.</td>
<td>1</td>
<td>Stage 1</td>
<td>Pre-construction</td>
<td>RMS/Contractor</td>
<td>NA</td>
</tr>
<tr>
<td>SPRR-AR114e</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 2, Site 4 (at Wells Crossing Archeological Site 12-13): - Salvage excavation of the portion of the Aboriginal archaeological site to be impacted will be undertaken as detailed in the Ancillary facility and design change CHAR (Appendix D of the Submissions/Preferred Infrastructure Report) and in consultation with RAPs.</td>
<td>2</td>
<td>Stage 1</td>
<td>Pre-construction</td>
<td>RMS/Contractor</td>
<td>Auxiliary facility not utilised.</td>
</tr>
<tr>
<td>SPRR-AR114c</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 2, Site 4 (at Wells Crossing Archeological Site 12-13): • If this Aboriginal archaeological site is to be impacted, salvage excavation of the portion of the Aboriginal archaeological site to be impacted will be undertaken as detailed in the Ancillary facility and design change CHAR (Appendix D of the Submissions/Preferred Infrastructure Report) and in consultation with RAPs.</td>
<td>2</td>
<td>Stage 1</td>
<td>Pre-construction</td>
<td>RMS/Contractor</td>
<td>NA</td>
</tr>
</tbody>
</table>

Mitigation No. | Category | Management Measure | Section | Stage | Timing | Responsibility | Reference / Comment |
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</thead>
<tbody>
<tr>
<td>SPRR-AR114a</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 1, Site 10 (at Leichhardt Road 1 (13-4-0166)): - An exclusion zone will be established around this Aboriginal site as per management measure AH2.</td>
<td>2</td>
<td>Stage 1</td>
<td>Construction</td>
<td>Contractor</td>
<td>Auxiliary facility not utilised.</td>
</tr>
<tr>
<td>SPRR-AR114b</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 1, Site 10 (at Leichhardt Road 1 (13-4-0166)): - An exclusion zone will be established around this Aboriginal site as per management measure AH2.</td>
<td>3</td>
<td>Stage 2</td>
<td>Construction</td>
<td>RMS/Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPRR-AR114k</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 4, Site 3: • Sub-surface test excavations will be undertaken in accordance with the methodology used in the working paper, and will occur before any ground disturbance at this location. Further recommendations for the Aboriginal archaeological site will then be made in consultation with the registered Aboriginal stakeholders.</td>
<td>3</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPRR-AR114j</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 4, Site 3: • Sub-surface test excavations will be undertaken in accordance with the methodology used in the working paper, and will occur before any ground disturbance at this location. Further recommendations for the Aboriginal archaeological site will then be made in consultation with the registered Aboriginal stakeholders.</td>
<td>4</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPRR-AR114i</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 4, Site 3: • Sub-surface test excavations will be undertaken in accordance with the methodology used in the working paper, and will occur before any ground disturbance at this location. Further recommendations for the Aboriginal archaeological site will then be made in consultation with the registered Aboriginal stakeholders.</td>
<td>5</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPRR-AR114h</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 4, Site 3: • Sub-surface test excavations will be undertaken in accordance with the methodology used in the working paper, and will occur before any ground disturbance at this location. Further recommendations for the Aboriginal archaeological site will then be made in consultation with the registered Aboriginal stakeholders.</td>
<td>6</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPRR-AR114g</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 4, Site 3: • Sub-surface test excavations will be undertaken in accordance with the methodology used in the working paper, and will occur before any ground disturbance at this location. Further recommendations for the Aboriginal archaeological site will then be made in consultation with the registered Aboriginal stakeholders.</td>
<td>7</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPRR-AR114f</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 4, Site 3: • Sub-surface test excavations will be undertaken in accordance with the methodology used in the working paper, and will occur before any ground disturbance at this location. Further recommendations for the Aboriginal archaeological site will then be made in consultation with the registered Aboriginal stakeholders.</td>
<td>8</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPRR-AR114e</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 4, Site 3: • Sub-surface test excavations will be undertaken in accordance with the methodology used in the working paper, and will occur before any ground disturbance at this location. Further recommendations for the Aboriginal archaeological site will then be made in consultation with the registered Aboriginal stakeholders.</td>
<td>9</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPRR-AR114d</td>
<td>Aboriginal Cultural Heritage</td>
<td>Ancillary facility - Section 4, Site 3: • Sub-surface test excavations will be undertaken in accordance with the methodology used in the working paper, and will occur before any ground disturbance at this location. Further recommendations for the Aboriginal archaeological site will then be made in consultation with the registered Aboriginal stakeholders.</td>
<td>10</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/Contractor</td>
<td>Stage 2</td>
</tr>
</tbody>
</table>
## Mitigation No. Category Management Measure
<table>
<thead>
<tr>
<th>Mitigation No.</th>
<th>Category</th>
<th>Management Measure</th>
<th>Section</th>
<th>Stage</th>
<th>Timing</th>
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<th>Reference / Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPIR-AH14t</td>
<td>Aboriginal Cultural Heritage</td>
<td>Salvage excavation will be undertaken within the portion of the site to be impacted by the project footprint as detailed in the Working paper Aboriginal Cultural Heritage (Woolla to Walls Crossing) and in consultation with RAPs. An exclusion zone will be erected around 40% of the site that will be avoided by construction as per management measure AH2.</td>
<td>1</td>
<td>Stage 1</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-AH18t</td>
<td>Aboriginal Cultural Heritage</td>
<td>A sequence of dates (radiocarbon or AMS) will be collected from the hand excavation.</td>
<td>2</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-AH17</td>
<td>Aboriginal Cultural Heritage</td>
<td>Any sediment from the site to 0.6 metre depth proposed to be used outside the site will be sieved to remove any cultural material.</td>
<td>3</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-AH22t</td>
<td>Aboriginal Cultural Heritage</td>
<td>Before construction, an exclusion zone will be established as per management measure AH2. An arborist will be consulted to develop a management strategy to ensure the health and preservation of the trees.</td>
<td>4</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-AH15</td>
<td>Aboriginal Cultural Heritage</td>
<td>Salvage excavation will be undertaken within the portion of the site to be impacted by the project footprint as detailed in the Working paper Aboriginal Cultural Heritage (Woolla to Walls Crossing) and in consultation with RAPs. An exclusion zone will be erected around 40% of the site that will be avoided by construction as per management measure AH2.</td>
<td>5</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-AH19</td>
<td>Aboriginal Cultural Heritage</td>
<td>Any portion of the Aboriginal archaeological material that is not to be impacted will be protected by exclusion zones as per management measure AH2.</td>
<td>6</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-AH21</td>
<td>Aboriginal Cultural Heritage</td>
<td>Prior to ground disturbance to WWC Dirty Creek 1c (22-1-0403), the ground surface will be inspected within 50 m of the site for any Aboriginal archaeological material by an archaeologist and RAP nominated site officer. Any archaeological material will be recorded, removed from the site, and a suitable location for the material determined in consultation with the RAPs. The AHIMS record will be updated with any new finds and any locations where the material is to be stored – unless reused on or near Aboriginal archaeological site, establishing a care agreement will be necessary.</td>
<td>7</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-AH16</td>
<td>Aboriginal Cultural Heritage</td>
<td>For the Gittoes Jali (09-1-0204, 09-1-0205, 09-1-0203) site: Where possible, impacts on the Gittoes Jali site will be reduced or avoided. Avoided areas will be protected by an exclusion fence as per management measure AH2. If assistance is not an option, then extensive salvage will be undertaken as per the methodology detailed in the Ancillary facilities and design change CHAR (refer to Appendix D of the Submission/Preferred Infrastructure Report).</td>
<td>8</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-AH10</td>
<td>Aboriginal Cultural Heritage</td>
<td>Any sediment from the site to 1.5 metre depth proposed to be used outside the site will be sieved to remove any cultural material. Paint wells and grinding rock: Reconnaissance analysis will be undertaken to determine if any pigment is found within the walls. This will be undertaken by a suitably qualified consultant.</td>
<td>9</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-AH14</td>
<td>Aboriginal Cultural Heritage</td>
<td>A geomorphology assessment will be undertaken. The assessment will be non-invasive, but could use observations of the machine salvage excavation. Details: Where possible, impacts on the Gittoes Jali site will be reduced or avoided. Avoided areas will be protected by an exclusion fence as per management measure AH2. If assistance is not an option, then extensive salvage will be undertaken as per the methodology detailed in the Ancillary facilities and design change CHAR (refer to Appendix D of the Submission/Preferred Infrastructure Report).</td>
<td>10</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-AH23</td>
<td>Aboriginal Cultural Heritage</td>
<td>For the E2/2 (13-1-09) site: Salvage excavation will be undertaken at and around the shell midden by the project footprint as detailed in the Working paper Aboriginal Cultural Heritage (Woolla to Walls Crossing) and in consultation with RAPs. Any sediment from the site to 1.5 metre depth proposed to be used outside the site will be sieved to remove any cultural material. Shell Midden: A sequence of dates (radiocarbon or AMS) will be collected from the hand excavation. All shell recovered will be subject to analysis including minimum number of individuals (MIN) and weight (g). An analysis of the number of individual specimens (NSP) may also be undertaken if deemed appropriate.</td>
<td>11</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-AH24</td>
<td>Aboriginal Cultural Heritage</td>
<td>For the Malino (04-4-07) site: Salvage excavations will be undertaken at the artefact scatter including a discrete knapping floor as detailed in the Working paper Aboriginal Cultural Heritage (Woolla to Walls Crossing) and in consultation with RAPs. Any sediment from the site to 1.5 metre depth proposed to be used outside the site will be sieved to remove any cultural material.</td>
<td>12</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 2</td>
</tr>
</tbody>
</table>
### Mitigation No. | Category | Management Measure | Section | Stage | Timing | Responsibility | Reference / Comment
--- | --- | --- | --- | --- | --- | --- | ---
SPIR-AH25 | Aboriginal Cultural Heritage | For Site 1 (04-4-0170): • Further salvage excavations will be undertaken as detailed in the Working paper Aboriginal Cultural Heritage (Woodburn to Ballina) and in consultation with RAPs. - Any sediment to one metre depth from the site proposed to be used outside the site will be sieved to remove any cultural material. | 10 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
SPIR-AH26 | Aboriginal Cultural Heritage | For Site 2 (04-4-0174): • Salvage excavation will be undertaken as detailed in the Working paper Aboriginal Cultural Heritage (Woodburn to Ballina) and in consultation with RAPs. - Any sediment to 1.5 metres depth from the site proposed to be used outside the site will be sieved to remove any cultural material. - Excavation at Site 2 will be undertaken at a time of the year when the water table is at its lowest, to ensure maximum depth can be reached with a machine. | 10 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
SPIR-AH27 | Aboriginal Cultural Heritage | For Site 3 (04-4-0175): • Further salvage excavations will be undertaken as detailed in the Working paper Aboriginal Cultural Heritage (Woodburn to Ballina) and in consultation with RAPs. - Any sediment to 1.5 metres depth from the site proposed to be used outside the site will be sieved to remove any cultural material. - Excavation at Site 3 will be undertaken at a time of the year when the water table is at its lowest, to ensure maximum depth can be reached with a machine. | 10 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
SPIR-AH28 | Aboriginal Cultural Heritage | For Site 4 (04-4-0182): • Further salvage excavations will be undertaken as detailed in the Working paper Aboriginal Cultural Heritage (Woodburn to Ballina) and in consultation with RAPs. - Any sediment to 0.5 metre depth from the site proposed to be used outside the site will be sieved to remove any cultural material. | 10 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
SPIR-AH29 | Aboriginal Cultural Heritage | For the Gumbaynnggir site (04-4-0184): • An exclusion zone will be established at the boundary of the site where construction is to occur within 10 m of the site, as per management measure AH2. | 10 Section 2 | Pre-occupation Construction | RMS/ Contractor | Stage 2
SPIR-AH30 | Aboriginal Cultural Heritage | For the Gumby site (04-4-0180): • The tree (registered on AHMS database) will be removed and the trunk will be relocated to an area agreed with the registered stakeholder groups in Roads and Maritime – an arborist will be consulted to guide in the removal of the tree. • The final tree location will be visually protected with culturally sensitive plantings or by existing vegetation. - Access to the tree will be provided for local Aboriginal people to enable them to be able to use the tree as a teaching site. | 10 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
SPIR-AH31 | Aboriginal Cultural Heritage | For the MacKellar Scarred Tree 4 (04-4-0186) Site: • Prior to construction a 15 metre exclusion zone will be established around the scarred tree as per management measure AH2. - An arborist will be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree. | 10 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
SPIR-AH32 | Aboriginal Cultural Heritage | For the MS-2 (04-4-0191) Site: • Prior to construction a 15 metre exclusion zone will be established around the scarred trees as per management measure AH2. - An arborist will be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree. | 10 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
SPIR-AH33 | Aboriginal Cultural Heritage | For the CS-2 (04-4-0170) Site: • Prior to construction a 15 metre exclusion zone will be established around the scarred trees as per management measure AH2. - An arborist will be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree. | 10 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
SPIR-AH34 | Aboriginal Cultural Heritage | For the MS-1 (04-4-0131) Site: • Prior to construction a 15 metre exclusion zone will be established around the scarred trees as per management measure AH2. - An arborist will be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree. | 10 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
SPIR-AH35 | Aboriginal Cultural Heritage | For the Rugger Scarred Tree (04-4-0171) Site: • Prior to construction a 15 metre exclusion zone will be established around the scarred trees as per management measure AH2. - An arborist will be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree. | 10 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
SPIR-AH36 | Aboriginal Cultural Heritage | For the MS-1 (04-4-0131) Site: • An exclusion zone will be established 5 metres from the boundary of Morphett Scarred Tree 2 as per management measure AH2. | 10 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
SPIR-AH37 | Aboriginal Cultural Heritage | For Site 1 (04-4-0170): The area of site to be impacted is subject to detailed excavation as detailed in the Addendum CHMP (Appendix J of the Multinational Pipelines Infrastructure Report) and in consultation with RAPs. All cultural material recovered will be subject to detailed analysis, interpretation and reporting. | 10 Stage 2 | Pre-construction Construction | RMS | Stage 4
SPIR-AH38 | Aboriginal Cultural Heritage | Excavation and cultural signage will be placed at suitable locations along the highway in this locality, potentially describing the history of Aboriginal occupation of the area. A minimum signage will include acknowledging the area as the traditional lands of the Gumbaynggir peoples. Any signage will be subject to approval by the registered Aboriginal statebody. | 10 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
SPIR-AH39 | Aboriginal Cultural Heritage | Tumbulgum and Woodford Island Corridors of Movement: - Pedestrian access across the project will be provided, if reasonable and feasible within the existing local road network, to maintain the connectivity of this corridor of movement. | 3 Stage 2 | Pre-construction Detailed Design Construction | RMS/ Contractor | Stage 2
SPIR-AH40 | Aboriginal Cultural Heritage | For the Valley Corridors of Movement: • Pedestrian access across the project will be provided, if reasonable and feasible within the existing local road network, to maintain the connectivity of this corridor of movement. | 3 Stage 2 | Pre-construction Detailed Design Construction | RMS/ Contractor | Stage 2
SPIR-AH41 | Aboriginal Cultural Heritage | Places B: • To maintain connectivity, access will be provided across the project area, from the end of Richmond Road, Pine Tree Road, or Fischer Street to Broadwater National Park during construction and operation, in consultation with the traditional owners. • Pedestrian access within the project boundary will be provided, where feasible and reasonable from the eastern side of the project to the western side of Broadwater National Park. A connection from the existing Pacific Highway to Broadwater National Park along Evansons Lane be considered, in consultation with traditional owners and relevant land owners. | 9, 10 Stage 2 | Pre-construction Detailed Design Construction | RMS/ Contractor | Stage 2
SPIR-AH42 | Aboriginal Cultural Heritage | Places D: • Welcome to country signage will be installed within the highway corridor between Woodburn and Wandal and information on culture installed at the rest area in Section 10, as agreed with the registered Aboriginal party. | 9, 10 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
SPIR-AH43 | Aboriginal Cultural Heritage | Places K: • A geomorphological assessment will be undertaken, including the geomorphological setting of the archaeological sites within this landscape, and how the landscape has formed and changed over the last 40,000 years. This take into account both the cultural and scientific significance of the place. • A report will be produced by a geomorphologist in conjunction with an archaeologist / anthropologist. | 11 Stage 2 | Pre-construction Construction | RMS/ Contractor | Stage 2
### Mitigation No. Category Management Measure Section Stage Timing Responsibility Reference / Comment

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</thead>
<tbody>
<tr>
<td>SPIR-AR01A</td>
<td>Aboriginal Cultural</td>
<td>Planning – This plan will be conducted to avoid accidental impact.</td>
<td>9</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-AR05A</td>
<td>Aboriginal Cultural</td>
<td>Planning – This plan will be conducted to avoid accidental impact.</td>
<td>9, 10</td>
<td>Stage 3</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>Stage 3</td>
</tr>
<tr>
<td>SPIR-AG06A</td>
<td>Aboriginal Cultural</td>
<td>Before construction at Mundubbin Road, between station 84.9 and station 87.9, a field inspection of the area to be cleared and excavated will be undertaken by an Aboriginal heritage consultant with Registered Aboriginal Permits.</td>
<td>6</td>
<td>Stage 4</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>Stage 4</td>
</tr>
<tr>
<td>SPIR-AG07A</td>
<td>Aboriginal Cultural</td>
<td>All the properties occur in an area of low-moderate Aboriginal heritage potentials, survey, and if necessary test excavation, should be undertaken to determine the presence and extent of potential archaeological evidence. This will be conducted in accordance with the methodology agreed with RAPs, and prior to ground disturbing works for the project and/or proposed design change. Further recommendations for the site will then be made in consultation with the RAPs.</td>
<td>10</td>
<td>Stage 3</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>Stage 4</td>
</tr>
<tr>
<td>SPIR-AG08A</td>
<td>Aboriginal Cultural</td>
<td>The area of the site to be impacted will be subject to salvage excavation as detailed in the Aboriginal CEMP (Appendix H of the Submission/Preferred Infrastructure Report) and in consultation with RAPs. All cultural material recovered will be subject to detailed analyses, interpretation and reporting. The portion of the site that not be impacted (at least 70%), will be protected by fencing as per management measure AH2.</td>
<td>10</td>
<td>Stage 3</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>Stage 4</td>
</tr>
<tr>
<td>SPIR-AC01A</td>
<td>Air Quality</td>
<td>Air Quality management plan will be prepared and implemented by the contractor during construction to mitigate dust. The air quality management plan will address all aspects of construction including spoil handling, machinery operating procedures, soft soil treatments, stockpile management, traffic management, haulage, dust suppression and monitoring. The following dust mitigation measures will be used on-site and included as part of the management plan: - Covering materials transported to and from construction sites. - Controlling or spraying water on stockpiles of soil or other potential dust generating materials, particularly during dry or dusty conditions. - Periodically reexamining temporary stockpiles that are planned to be in place for long periods. - Improving speed limits for vehicles and equipment travelling on unsanded or unsealed surfaces. - Minimising the extent of disturbed areas as far as practicable. This will be achieved by staging the works to minimise the number of disturbed areas at any one time. - Progressively rehabilitating disturbed areas as soon as practicable. - Suppression dust on unvegetated surfaces, temporary roadways, stockpiles and other exposed areas using water trucks, hand held hoses, temporary vegetation and other practicables. -Modifying or stopping dust generating activities during very windy conditions. -Installing wheat wash facilities at appropriate locations to reduce tracking of mud and soil off-site. - Monitoring air quality, both visually, using instrumentation and/or depositional dust gauges, near representative sensitive receptors to verify the effectiveness of controls. - Amend controls where necessary to minimise any impacts identified through monitoring, consider the use of mitigation measures (such as covers) where dust is impacting water bodies or other drinking water sources, and cannot be controlled at the dust source.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Contractor</td>
<td>The Section 1 CEMP and associated Management Plans were approved on the 15 May 2015. The Section 2 CEMP and associated Management Plans were approved on the 4 June 2015.</td>
</tr>
<tr>
<td>SPIR-B1A</td>
<td>Biodiversity</td>
<td>The Ecological Monitoring Program (Appendix K of the PIR) will be finalised in consultation with relevant State and Commonwealth agencies.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS</td>
<td>No Ecological Monitoring Program Required</td>
</tr>
<tr>
<td>SPIR-B2A</td>
<td>Biodiversity</td>
<td>The Connectivity Strategy will be further developed during detailed design, in consultation with relevant State and Commonwealth agencies, building upon the Connectivity Strategy in Appendix A of the Working paper – Biodiversity and the Supplementary Biodiversity Assessment in Appendix J of the Submission/Preferred Infrastructure Report.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS Detailed Designer</td>
<td>The Connectivity Strategy for Sections 1 and 2 was approved by the Department of Planning &amp; Environment on the 11/5/15. This document is part of the CEMP FFMP.</td>
</tr>
<tr>
<td>SPIR-B3A</td>
<td>Biodiversity</td>
<td>All fauna connectivity structures will be developed in accordance with the design principles outlined in the Connectivity Strategy in Appendix A of the Working paper – Biodiversity and the Supplementary Biodiversity Assessment in Appendix J of the Submission/Preferred Infrastructure Report.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS Detailed Designer</td>
<td>Completed as required in accordance with the approved Connectivity Strategy</td>
</tr>
<tr>
<td>SPIR-B4A</td>
<td>Biodiversity</td>
<td>Opportunities for improved connectivity for fauna and vegetation will be further investigated between stations 144.6 and 149.6.</td>
<td>9 and 10</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS Detailed Designer</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-B5A</td>
<td>Biodiversity</td>
<td>Fauna exclusion fencing locations and design will be further developed in accordance with the design principles outlined in the Connectivity Strategy in Appendix A of the Working paper – Biodiversity.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS Detailed Designer</td>
<td>Ongoing review and assessment of final treatment to ensure outcomes are in accordance with the approved Connectivity Strategy</td>
</tr>
<tr>
<td>SPIR-B6A</td>
<td>Biodiversity</td>
<td>Fauna exclusion fencing in low-lying boulder piles between stations 35.0 and 38.2 where feasible and reasonable, be placed higher on fill embankments to reduce damage from flooding.</td>
<td>3 and 4</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS Detailed Designer</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-B7A</td>
<td>Biodiversity</td>
<td>Tree height surveys will be conducted at proposed arterial crossing zones to determine the most appropriate location to place ropes or pole structures. Where feasible, the design will place arterial crossing zones where average tree heights exceed 20 metres, and/or taller trees are able to be safely retained close to the road edge.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS Detailed Designer</td>
<td>Completed for Sections 1 &amp; 2 at widened median locations. Rope bridge within Section 2 was relocated slightly in consultation with the EPA to provide for a better connectivity outcome.</td>
</tr>
<tr>
<td>SPIR-B8A</td>
<td>Biodiversity</td>
<td>The design and construction of fauna exclusion fencing, drainage of fauna underpass structures in widened median mitigation vegetation clearing.</td>
<td>1, 2 and 4</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS Detailed Designer</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPIR-B9A</td>
<td>Biodiversity</td>
<td>Where feasible and reasonable, native vegetation preceding part of the identified widened medians will not be disturbed for any ancillary construction purpose including access tracks, stockpiles, materials lay down and ancillary facilities.</td>
<td>1, 2 and 4</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS Detailed Designer</td>
<td>Ongoing review and assessment of final treatment to ensure outcomes are in accordance with the approved Connectivity Strategy</td>
</tr>
<tr>
<td>SPIR-B10A</td>
<td>Biodiversity</td>
<td>All Flora and Fauna Management Plan will be prepared in accordance with Roads and Maritime Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects (RTA, 2011a).</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
<td>The Section 1 CEMP and associated Management Plans were approved on the 10 May 2015.</td>
</tr>
</tbody>
</table>
### Mitigation No. | Category | Management Measure | Section | Stage | Timing | Responsibility | Reference / Comment
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SPIR-B11 | Biodiversity | The threatened species management plans prepared for the project will be finalised, as relevant to the element of the project to be constructed. Development of the plans will include responding, where feasible and reasonable to: 
- Responses to expert review undertaken as part of the Submissions / Preferred Infrastructure Report (and detailed in section 1.4 of the management plans). 
- Any conditions of approval. 
- Results from baseline monitoring undertaken. 
The threatened species management plans will be finalised in consultation with the relevant State and Federal government agencies. | All | All | Pre-construction | RMS | The Threatened Frogs Management Plan for Sections 1 & 2 was approved by the Department of Planning & Environment on the 5/5/15. The Threatened Mammal Management Plan for Sections 1 & 2 was approved by the Department of Planning & Environment on the 5/5/15. The Threatened Frog Management Plan was approved by the Department of Planning & Environment on the 10/5/15. The Threatened Glider Management Plan was approved by the Department of Planning & Environment on the 5/5/15. The Threatened Bat Management Plan for Sections 1 & 2 was approved by the Department of Planning & Environment on the 20/9/15. The Koala Management Plan for Sections 1 & 2 was approved by the Department of Planning & Environment on the 1/15/15. These documents are part of the PIFMP. |
SPIR-B12 | Biodiversity | A landscape management plan will be developed to provide specific details for the re-establishment of native vegetation on banks, cut faces, surrounding sediment basins and other areas disturbed during construction. This includes details for the appropriate removal and restoration of temporary creek crossings. The landscape management plan will be developed in line with Roads and Maritime Biodiversity Guidelines (RTA, 2011a), the design principles identified in the Connectivity Strategy and the design principles in Working paper – Urban design, landscape character and visual impact. | All | All | Pre-construction | RMS | The Urban Design Landscape Plan was approved by the Department of Planning & Environment on the 5/5/15. |
SPIR-B13 | Biodiversity | During detailed design, the location of water quality treatment measures will consider minimising vegetation removal, particularly where there is the potential for threatened plant species, threatened fauna habitat or in identified regional wildlife corridors. | All | All | Pre-construction | RMS/Detailed Designer | Design and clearing limits were focused on minimising clearing wherever possible during detailed design. The contractor minimised clearing during construction due to ensuring compliance with the approved clearing quantities as per NCA R-81. Section 2 has achieved vegetation savings including riparian zones at Halfway Creek and Wells Crossing including savings to SECC and threatened species. |
SPIR-B14 | Biodiversity | Temporary waterway access track mitigation measures include: 
- Foundations of any causeway are in the same or lower than the natural stream bed to reduce interference with flow.
- Habitat within a culvert is as natural as possible (e.g. allow rock and bed materials to infill the culvert bases)
- There is the maximum light penetration.
- Fauna and fish passage standards are maintained, as detailed in the Connectivity Strategy, including minimum design widths, including for natural banks, while also providing for noise protection and cut and fill batteries.
- Bridges will be designed and sized to ensure peak flood velocities are not increased by more than one metre per second than the existing flood event, where Oxleyan Pygmy Perch have been confirmed. | All | Pre-construction | Detailed Design Construction | RMS/Detailed Designer | Contractor | This has been completed utilising input from DPI / EPA |
SPIR-B15 | Biodiversity | Oxleyan Pygmy Perch have been confirmed. 
- Bridges will be designed and sized to ensure peak flood velocities are not increased by more than one metre per second than the existing flood event, where Oxleyan Pygmy Perch have been confirmed. | 7 and 8 | Stage 3 | Pre-construction | RMS/Detailed Designer | Stage 3 |
SPIR-B16 | Biodiversity | All drainage structures above elevation 14.5 5:14.5:1 will be reviewed in consultation with Department of Primary Industries, if necessary to ensure suitable connectivity for threatened fish species is maintained. | 8 and 9 | Stage 4 | Pre-construction | RMS/Detailed Designer | Contractor | This has been completed utilising input from DPI / EPA |
SPIR-B17 | Biodiversity | Each permanent waterway crossing is to be designed to ensure no physical, hydraulic, and behavioural barriers to aquatic fauna movements. Impacts are minimised by ensuring that: 
- The natural stream flow and velocity are maintained as closely as possible. 
- Surface level of any causeway is in the same or lower than the natural stream bed to reduce interference with flow. 
- Habitat within a culvert is as natural as possible (e.g. allow rock and bed materials to infill the culvert bases). 
- There is the maximum light penetration. 
- Fauna and fish passage standards are maintained, as detailed in the Connectivity Strategy, including minimum design widths, including for natural banks, while also providing for noise protection and cut and fill batteries. 
- Bridges will be designed and sized to ensure peak flood velocities are not increased by more than one metre per second than the existing flood event, where Oxleyan Pygmy Perch have been confirmed. | All | All | Pre-construction | RMS/Detailed Designer | For Sections 1 & 2. Bridge structure design has been completed in accordance with these principles. |
SPIR-B18 | Biodiversity | Bridge structures will be designed to minimise impacts to flow regimes and fish passage. Where feasible and reasonable the following principles will apply: 
- Bridge piers to be located outside the main channel. 
- Bridge structures to be designed to prevent an increase of backup of water during times of flood that will enable Plague Mice to access water bodies where they are currently not found (e.g. Broadwater National Park). 
- Construction not alter or reduce flow where there are existing or potential Oxleyan Pygmy Perch populations (primarily within Sections 7, 8 and 9). | All | All | Pre-construction | RMS/Detailed Designer | Contractor | This has been completed utilising input from DPI / EPA |
SPIR-B19 | Biodiversity | Where temporary access tracks are required over drainage lines with no flow, flood may be reinstated. | All | Detailed Design Construction | Contractor | Gateway crossings have been installed in accordance with Blue Book and Progressive Erosion and Sediment Control Plan approved by project and contractor. Crossings have been inspected during daily and monthly ERO inspections. |
SPIR-B20 | Biodiversity | Where possible, existing crossings will be used. Where this is not feasible or reasonable, the temporary crossings will be designed to minimise impacts on the existing aquatic ecology and water quality. | All | Detailed Design Construction | RMS/Detailed Designer | Contractor | Gateway crossings have been installed in accordance with Blue Book. Crossings have been inspected during daily and monthly ERO inspections. |
SPIR-B21 | Biodiversity | Temporary waterway access track mitigation measures include: 
- Temporary structure for crossing waterways will be consistent with Witheridge (2012). 
- Scour protection works will be established at temporary crossings as required. 
- At the completion of construction, the temporary crossings will be removed and reinstated. | All | Detailed Design Construction | RMS/Detailed Designer | Contractor | Temporary Crossings Designed in consultation with ERO, including these provisions |
SPIR-B22 | Biodiversity | That fish become stranded due to temporary access crossings or construction of temporary or permanent creek diversions must be captured and translocated following the Department of Primary Industries Fishery Guidelines – A Guide to Acceptable Procedures and Practices for Aquaculture and Fisheries Research. | All | All | Construction | Contractor | No blockages to fish passage have occurred due to temporary access crossings. |
Biodiversity

The pre-clearing process will be consistent with Roads and Maritime Biodiversity Guidelines: Preparing and Managing Biodiversity on RTA projects (RTA, 2011a) and Roadside Vegetation Management Manual (Richards, 2004).

• All construction

All construction

Pre-construction

Biodiversity (RTA, 2011a). Permanent fauna-exclusion fencing for the project (as described in the Connectivity Strategy), where reasonable and feasible, will be installed prior to clearing and can function as exclusion fencing.

Biodiversity

Woody debris and bushrock will be re-used on site for habitat improvement where possible and will be detailed in the landscape management plan in accordance with the Roads and Maritime Biodiversity Guidelines (RTA, 2011a).

Biodiversity

Discharges from sediment basins and/or treatment wetlands located in Oxleyan Pygmy Perch habitat that do not meet the water quality parameters for Oxleyan Pygmy Perch to provide resting and refuge habitat near crossing structures.

Details on the installation of nest boxes for Section 1 & 2: 1. Nest boxes will be installed where suitable habitat exists. 2. Nest boxes will be installed between the existing and proposed waterways. 3. Nest boxes will be installed where habitat values are known and unless reasonable and feasible, will be installed in accordance with the Roads and Maritime Biodiversity Guidelines (RTA, 2011a). 4. Nest boxes are to be installed in consultation with DIWEP (as described in the Connectivity Strategy), where feasible and reasonable.

Biodiversity

Detailed Design

Ecosure engaged to undertake aquatic salvage at Section 2. Reports prepared and transmitted to DIWEP on 17/2/15.

Biodiversity

Construction

All

Construction

Implemented in accordance with approved Construction Flora and Fauna Management Plan.

Biodiversity

Construction

All

Construction

Included as Appendix in approved Construction Flora and Fauna Management Plan.

Biodiversity

Construction

All

Construction

Included as Appendix in approved Construction Flora and Fauna Management Plan.

Biodiversity

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Included as Appendix in approved Construction Flora and Fauna Management Plan.

Biodiversity

Construction

All

Construction

All Construction RMS/ Contractor Included in approved Construction Flora and Fauna Management Plan.

Biodiversity

Construction

All

Construction

All Construction RMS/ Contractor Included in approved Construction Flora and Fauna Management Plan.

Biodiversity

Construction

All

Construction

All Construction RMS/ Contractor Implemented in accordance with approved Construction Flora and Fauna Management Plan.

Biodiversity

Construction

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Construction

All Construction RMS/ Contractor Implemented in accordance with approved Construction Flora and Fauna Management Plan.

Biodiversity

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Construction

All Construction RMS/ Contractor Implemented in accordance with approved Construction Flora and Fauna Management Plan.

Biodiversity

Construction

All

Construction

All Construction RMS/ Contractor Included in approved Construction Flora and Fauna Management Plan.
### Mitigation No.  Category Management Measure

<table>
<thead>
<tr>
<th>Mitigation No.</th>
<th>Category</th>
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</tr>
</thead>
<tbody>
<tr>
<td>SPIR-B54</td>
<td>Biodiversity</td>
<td>Water quality monitoring will be undertaken to assess the effectiveness of (and where necessary amend) water, sediment and erosion management strategies that aim to conserve native fish species, their habitat and other aquatic flora and fauna species. Water quality monitoring program be undertaken in line with details in Appendix B of the Working Paper – Biodiversity.</td>
</tr>
<tr>
<td>SPIR-B58</td>
<td>Biodiversity</td>
<td>Batch plants will be located at least 300 metres away from Oxleyan Pygmy Perch habitat where sediment erosion not runoff into waterways (due to the risk of high alkaline runoff).</td>
</tr>
<tr>
<td>SPIR-B59</td>
<td>Biodiversity</td>
<td>Specific management measures will be implemented to limit impacts from stockpiling of material for bridgeworks at known and potential areas of Oxleyan Pygmy Perch during the spawning seasons of October to December.</td>
</tr>
<tr>
<td>SPIR-B60</td>
<td>Biodiversity</td>
<td>Provide buffer around Mororo Creek and sediment fencing to protect riparian areas. Provide sediment fencing on eastern boundary where required. Avoid and buffer large remnant patches adjoining the north.</td>
</tr>
<tr>
<td>SPIR-B61</td>
<td>Biodiversity</td>
<td>Avoid mature trees. Provide buffer to the surrounding forest. Identify and mark Angophora rubra during pre-clearing and provide exclusion fencing.</td>
</tr>
<tr>
<td>SPIR-B62</td>
<td>Biodiversity</td>
<td>This compound site that was used for the Glenugie Upgrade and has been revegetated post-construction. A site inspection and survey is required prior to construction to determine its suitability for future use as an ancillary site.</td>
</tr>
<tr>
<td>SPIR-B63</td>
<td>Biodiversity</td>
<td>Avoid mature trees. Provide buffer to the surrounding forest. Identify and mark Angophora rubra during pre-clearing and provide exclusion fencing. Provide sediment fencing on eastern boundary where required. Avoid and buffer large remnant patches adjoining the north. Provide buffer from edge of the forest to reduce edge effects, sediment fencing where required.</td>
</tr>
<tr>
<td>SPIR-B64</td>
<td>Biodiversity</td>
<td>Provide buffer around the proposed area of the site adjoining Wooli Road. Identify and mark Angophora rubra during pre-clearing and provide exclusion fencing. Provide sediment fencing on eastern boundary where required. Avoid and buffer large remnant patches adjoining the north. Provide buffer from edge of the forest to reduce edge effects, sediment fencing where required.</td>
</tr>
<tr>
<td>SPIR-B65</td>
<td>Biodiversity</td>
<td>Avoid mature trees. Provide buffer to the surrounding forest. Identify and mark Angophora rubra during pre-clearing and provide exclusion fencing. Provide sediment fencing on eastern boundary where required. Avoid and buffer large remnant patches adjoining the north. Provide buffer from edge of the forest to reduce edge effects, sediment fencing where required.</td>
</tr>
<tr>
<td>SPIR-B66</td>
<td>Biodiversity</td>
<td>Avoid mature trees. Provide buffer to the surrounding forest. Identify and mark Angophora rubra during pre-clearing and provide exclusion fencing. Provide sediment fencing on eastern boundary where required. Avoid and buffer large remnant patches adjoining the north. Provide buffer from edge of the forest to reduce edge effects, sediment fencing where required.</td>
</tr>
<tr>
<td>SPIR-B68</td>
<td>Biodiversity</td>
<td>- Avoid isolated trees and flag and avoid hollow-bearing trees where possible. Site to remain cleared to benefit emus.</td>
</tr>
<tr>
<td>SPIR-B69</td>
<td>Biodiversity</td>
<td>- Site to remain clear (not vegetated) to benefit emus.</td>
</tr>
<tr>
<td>SPIR-B70</td>
<td>Biodiversity</td>
<td>- Flag and buffer hollow-bearing trees. Provide sediment fencing on eastern boundary where required. Avoid and buffer large remnant patches adjoining the north.</td>
</tr>
<tr>
<td>SPIR-B71</td>
<td>Biodiversity</td>
<td>This compound site that was used for the Glenugie Upgrade and has been revegetated post-construction. A site inspection and survey is required prior to construction to determine its suitability for future use as an ancillary site.</td>
</tr>
<tr>
<td>SPIR-B72</td>
<td>Biodiversity</td>
<td>This compound site that was used for the Glenugie Upgrade and has been revegetated post-construction. A site inspection and survey is required prior to construction to determine its suitability for future use as an ancillary site.</td>
</tr>
<tr>
<td>SPIR-B73</td>
<td>Biodiversity</td>
<td>- Site is currently being used as a compound site for the Devils Pulpit upgrade. On completion of construction for that project, the site would be stabilised with a quick growing cover crop to stabilise the site. - A site inspection and survey is required prior to construction to confirm the suitability of the site. - Site to be rehabilitated post-construction.</td>
</tr>
<tr>
<td>SPIR-B74</td>
<td>Biodiversity</td>
<td>- To be used for only low risk activities, no chemical or fuel storage on site.</td>
</tr>
<tr>
<td>SPIR-B75</td>
<td>Biodiversity</td>
<td>- To be used for only low risk activities, no chemical or fuel storage on site.</td>
</tr>
<tr>
<td>SPIR-B76</td>
<td>Biodiversity</td>
<td>- To be used for only low risk activities, no chemical or fuel storage on site.</td>
</tr>
<tr>
<td>SPIR-B77</td>
<td>Biodiversity</td>
<td>- To provide buffer of minimum 50 metres from the wetland on northern boundary and sediment fencing where required. Avoid tree removal where possible.</td>
</tr>
<tr>
<td>SPIR-B78</td>
<td>Biodiversity</td>
<td>- To recommend use for stockpile only, no chemical or fuel storage on site.</td>
</tr>
</tbody>
</table>
Biodiversity

Stage 2 Construction RMS/ Contractor Stage 2
Ancillary facility - Section 9 Site 1:
Pre-construction Noise & Vibration Street lighting on the western roundabout at the interchange at Wardell will be designed to reduce light spill during detailed design. This could include using deflection shields.
Pre-construction Noise & Vibration Equipment will be maintained in efficient working order. All Construction Contractor Included in approved Construction Noise and Vibration Management Plan
Affected receivers will be notified prior to the commencement of out of hours work. Notification includes contact details of project personnel in charge of the out of hours works.
All Construction RMS/ Contractor Included in approved Construction Noise and Vibration Management Plan
Detailed design will investigate measures to reduce impacts to Maundia triglochinoides:
Stage 2 Construction RMS/ Contractor Stage 2
Ancillary facility - Section 10 Site 1b:
Biodiversity The creekline on the ‘Lang Hill’ property will should be fenced off from cattle and the vegetation allowed to regenerate to improve the habitat conditions downstream.
Stage 2 Construction RMS/ Contractor Stage 2
Where acceptable from a work health and safety perspective, quieter alternatives to reversing alarms (such as spotters, closed circuit television monitors and ‘smart’ works).
Further investigation will be undertaken of the road runoff capture and storage to the east side of the existing Pacific Highway between station 158.2 and 159.4 to protect remaining in situ aquatic habitats south of Laws Road.
Pre-construction Noise & Vibration Machinery will not be turned on prior to the work hours outlined in this EIS. This will include daily ‘check ups’ of engines.
Construction will be timetabled to minimise noise impacts where feasible and reasonable. This may include time and duration restrictions and respite periods. These measures will be considered after consultation with affected receivers.

Noise & Vibration

Construction & Operational Noise & Vibration

Construction Noise & Vibration

Noise & Vibration

Construction and EPL L5.2 and L5.3. No complaints have been received regarding the approved extended work hours. Report within 3 months of commencement of sections 1 and 2 and approval of the Biodiversity Offset Strategy and Offset Status Report prior to commencement of Stage 2 works.

Construction Noise & Vibration

Noise & Vibration

Construction and EPL L5.2 and L5.3. No complaints have been received regarding the approved extended work hours. Report within 3 months of commencement of sections 1 and 2 and approval of the Biodiversity Offset Strategy and Offset Status Report prior to commencement of Stage 2 works.

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Construction Noise & Vibration

Noise & Vibration

Construction and EPL L5.2 and L5.3. No complaints have been received regarding the approved extended work hours. Report within 3 months of commencement of sections 1 and 2 and approval of the Biodiversity Offset Strategy and Offset Status Report prior to commencement of Stage 2 works.
A building condition survey will be undertaken for all buildings located within 200 metres of the proposed blasting area prior to the start of blasting. The proponent will be

The selection of plant and equipment will be based on noise emission levels. This equipment will be... are minimised. All All Construction Contractor Included in approved Construction Noise and Vibration Management Plan

Regular noise monitoring will be undertaken during proposed construction hours at a representative receiver location, between: • 9am to 7pm, Monday to Friday. • 9am to 5pm, Saturday.

A blast management plan will be prepared prior to the start of blasting activities. All All Pre-construction RMS/ Contractor Included in approved Blast Management Plan

Controlled blasting times will be determined in consideration of site-specific conditions and in consultation with affected residents and take place, where possible, when

Where sensitive receivers are located close to the blast site, a series of trials will be undertaken at a reduced scale to determine site-specific blast response characteristics,

A minimum of 24 hours’ notice will be provided to all residences located within 500 metres of any blast, including an indication of blasting times and a contact name and telephone number.

Mitrification No. Category Management Measure Section Stage Timing Responsibility Reference / Comment

1. SPIR-CN1 Noise & Vibration Where it has been identified as necessary (eg in response to community complaints), noise monitoring will be undertaken to check that the noise mitigation measures are effective. All All Construction RMS/ Contractor Included in approved Construction Noise and Vibration Management Plan

2. SPIR-CN1 Noise & Vibration The use of temporary noise attenuation will be considered at locations where substantial exceedances of noise criteria are predicted. All All Construction RMS/ Contractor Included in approved Construction Noise and Vibration Management Plan

3. SPIR-CN2 Noise & Vibration Sonic noise sources, such as generators, pumps and lighting towers, will be located as far as possible from sensitive receivers. All All Construction Contractor Included in approved Construction Noise and Vibration Management Plan

4. SPIR-CN3 Noise & Vibration Regular noise monitoring will be undertaken during proposed construction hours at a representative receiver location, between: • 9am to 7pm, Monday to Friday. • 9am to 5pm, Saturday.

5. SPIR-CN4 Noise & Vibration The selection of plant and equipment will be based on noise emission levels. This equipment will be operated and maintained so that noise emissions are minimised. All All Construction Contractor Included in approved Construction Noise and Vibration Management Plan

6. SPIR-CN5 Noise & Vibration Where pile, hydraulic hammering or dynamic compaction is proposed within 50 metres of any structure or service, a building condition survey will be conducted and preliminary vibration monitoring undertaken by a qualified contractor. All All Construction RMS/ Contractor Included in approved Construction Noise and Vibration Management Plan

7. SPIR-CN6 Noise & Vibration Where pile, hydraulic hammering or dynamic compaction is proposed within 50 metres of any heritage structure or potentially structurally unsound service, a building condition survey will be conducted and preliminary vibration monitoring undertaken by a qualified contractor. A follow-up survey will be conducted in response to any vibration complaints.

8. SPIR-CN7 Noise & Vibration Appropriately sized equipment will be selected to minimize vibration emissions, where required. All All Construction Contractor Included in approved Construction Noise and Vibration Management Plan

9. SPIR-CN8 Noise & Vibration A blast management plan will be prepared prior to the start of blasting activities. All All Pre-construction RMS/ Contractor Included in approved Blast Management Plan

10. SPIR-CN9 Noise & Vibration Where sensitive receivers are located close to the blast site, a series of trials will be undertaken at a reduced scale to determine site-specific blast response characteristics, to define allowable blast sizes to occur within the criteria. All All Construction RMS/ Contractor Included in approved Blast Management Plan

11. SPIR-CN10 Noise & Vibration Controlled blasting activities will only be undertaken between the hours of 9am to 5pm, Monday to Friday. These times may be increased with the written agreement of affected residents. Where the blast management plan has identified potential impacts on sensitive receivers, these hours will be subject to change.

12. SPIR-CN11 Noise & Vibration A maximum of 24 hours’ notice will be provided to all residences located within 500 metres of any blast, including an indication of blasting times and a contact name and telephone number.

13. SPIR-CN12 Noise & Vibration Monitoring of overpressure and vibration levels will be undertaken for each blast at the potentially most affected receivers.

14. SPIR-CN13 Noise & Vibration A blast condition survey will be undertaken for all buildings located within 500 metres of the proposed blasting area prior to the start of blasting. The proponent will be responsible for rectifying any damage occurring from the blasting, with the cost to be borne by the proponent.

15. SPIR-CN14 Noise & Vibration Before blasting be required in 500 metres of the water reservoirs at the Lang Hill borrow source, a vibration prior to blasting condition survey will be undertaken before blasting work commences in consultation with Richmond Valley Council and Rous Water.

16. SPIR-CN15 Noise & Vibration The maximum instantaneous charge (MIC) will be reduced to the lowest possible level by the use of delays, reduced diameter holes, and/or deck loading. All All Construction RMS/ Contractor Included in approved Blast Management Plan

17. SPIR-CN16 Noise & Vibration Low noise wearing surface will be implemented in areas identified in section 5.3.21 of the EIS. All All Construction Contractor Included in approved Construction Noise and Vibration Management Plan

18. SPIR-CN17 Noise & Vibration Weather conditions at the time of the blast will be assessed. Blasting will be avoided where possible during heavy cloud cover and/or if a strong wind is blowing towards residences. Days of severe temperature inversion will be avoided where possible or, if not possible, blasting will occur between 11am and 1pm.

19. SPIR-CN18 Noise & Vibration Blast design will be exercised over the spacing and orientation of all blast drill holes. Holes will be spaced in such a manner that the exposure hole is just sufficient to break the stone to the required size.

20. SPIR-CN19 Noise & Vibration Controlled blasting times will be determined in consideration of site-specific conditions and in consultation with affected residents and places where, when possible, the impacts are likely to be the least intrusive (eg all blasts be fired at a set time acceptable to residents and preferably when the background noise is highest).

21. SPIR-CN20 Noise & Vibration Dilapidation or preconstruction condition survey will be conducted and preliminary vibration monitoring undertaken by a qualified contractor. A follow-up survey will be conducted in response to any vibration complaints.

22. SPIR-CN21 Noise & Vibration Appropriately sized equipment will be selected to minimize vibration emissions, where required. All All Construction Contractor Included in approved Construction Noise and Vibration Management Plan

23. SPIR-CN22 Noise & Vibration A blast management plan will be prepared prior to the start of blasting activities. All All Pre-construction RMS/ Contractor Included in approved Blast Management Plan

24. SPIR-CN23 Noise & Vibration Where sensitive receivers are located close to the blast site, a series of trials will be undertaken at a reduced scale to determine site-specific blast response characteristics, to define allowable blast sizes to occur within the criteria. All All Construction RMS/ Contractor Included in approved Blast Management Plan

25. SPIR-CN24 Noise & Vibration Controlled blasting activities will only be undertaken between the hours of 9am to 5pm, Monday to Friday. These times may be increased with the written agreement of affected residents. Where the blast management plan has identified potential impacts on sensitive receivers, these hours will be subject to change.

26. SPIR-CN25 Noise & Vibration A maximum of 24 hours’ notice will be provided to all residences located within 500 metres of any blast, including an indication of blasting times and a contact name and telephone number.

27. SPIR-CN26 Noise & Vibration Monitoring of overpressure and vibration levels will be undertaken for each blast at the potentially most affected receivers.

28. SPIR-CN27 Noise & Vibration A blast condition survey will be undertaken for all buildings located within 500 metres of the proposed blasting area prior to the start of blasting. The proponent will be responsible for rectifying any damage occurring from the blasting, with the cost to be borne by the proponent.

29. SPIR-CN28 Noise & Vibration Before blasting be required in 500 metres of the water reservoirs at the Lang Hill borrow source, a vibration prior to blasting condition survey will be undertaken before blasting work commences in consultation with Richmond Valley Council and Rous Water.

30. SPIR-CN29 Noise & Vibration The maximum instantaneous charge (MIC) will be reduced to the lowest possible level by the use of delays, reduced diameter holes, and/or deck loading. All All Construction RMS/ Contractor Included in approved Blast Management Plan

31. SPIR-CN30 Noise & Vibration Controlled blasting times will be determined in consideration of site-specific conditions and in consultation with affected residents and places where, when possible, the impacts are likely to be the least intrusive (eg all blasts be fired at a set time acceptable to residents and preferably when the background noise is highest).

32. SPIR-CN31 Noise & Vibration Dilapidation or preconstruction condition survey will be conducted and preliminary vibration monitoring undertaken by a qualified contractor. A follow-up survey will be conducted in response to any vibration complaints.
### Mitigation No. Category Management Measure

<table>
<thead>
<tr>
<th>Mitigation No.</th>
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<th>Management Measure</th>
<th>Section</th>
<th>Stage</th>
<th>Timing</th>
<th>Responsibility</th>
<th>Reference / Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPR-HF1</td>
<td>Hydrology and Flooding</td>
<td>Flood models for the areas of the project that are in the Clarence, Noosa, Richmond and Glenore areas will be updated to inform detailed design.</td>
<td>4, 5, 6, 8, 9 and 10</td>
<td>Stage 2</td>
<td>Pre-construction Detailed Design</td>
<td>RMS</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPR-HF2</td>
<td>Hydrology and Flooding</td>
<td>Roads and Maritime will update the bathymetric data at the relevant crossing of the Clarence River to inform Detailed design of the crossing.</td>
<td>4, 5</td>
<td>Stage 4</td>
<td>Pre-construction Detailed Design</td>
<td>RMS</td>
<td>Stage 4</td>
</tr>
<tr>
<td>SPR-HF3</td>
<td>Hydrology and Flooding</td>
<td>Where drain diverts will be designed and constructed in consultation with the relevant cane industry stakeholders and impacted landowners, this will consider the potential diversions detailed in the Working Paper – Hydrology and flooding and the additional assessment provided in Chapter 3 of the Submissions / Preferred Infrastructure Report.</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS / Detailed Designer</td>
<td>Construction and Highways</td>
<td>Consultation held with relevant stakeholders</td>
</tr>
<tr>
<td>SPR-HF4</td>
<td>Hydrology and Flooding</td>
<td>Any permanent fencing at culvert and bridge crossings will consider the potential for blockage and be designed and operated to maintain the existing flood regime.</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS / Detailed Designer</td>
<td>This has been addressed during detailed design process</td>
<td></td>
</tr>
<tr>
<td>SPR-HF5</td>
<td>Hydrology and Flooding</td>
<td>Detailed design for permanent road fencing will consider hydrology and flooding impacts.</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS / Detailed Designer</td>
<td>This has been addressed during detailed design process</td>
<td></td>
</tr>
<tr>
<td>SPR-HF6</td>
<td>Hydrology and Flooding</td>
<td>Coastal and erosion protection measures at temporary and permanent waterway crossings will be provided upstream and downstream of the highway, particularly within 50 metres of Class 1 waterways or within the range of the Oxleyan Pygmy Perch as identified in section 3.9.6 of the Working paper – Biodiversity and the supplementary biodiversity assessment in Appendix D of the Submissions / Preferred Infrastructure Report. This will be undertaken in consultation with the Department of Primary Industries (Fisheries).</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS / Detailed Designer</td>
<td>This has been addressed during detailed design process</td>
<td></td>
</tr>
<tr>
<td>SPR-HF7</td>
<td>Hydrology and Flooding</td>
<td>Waterway diversions will be designed in consultation with the Office of Environment and Heritage, NSW Office of Water and Department of Primary Industries (Fisheries) so that the final diversion mimics, where feasible and reasonable, the characteristics of the waterway that is being diverted. Characteristics include flow regime, flow velocity, base material, vegetation and habitat for aquatic species.</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS / Detailed Designer</td>
<td>This has been addressed during detailed design process</td>
<td></td>
</tr>
<tr>
<td>SPR-HF8</td>
<td>Hydrology and Flooding</td>
<td>Navigation of waterway diversions and surrounding areas will be undertaken in accordance with the following principles:</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS / Detailed Designer</td>
<td>This has been addressed during detailed design process</td>
<td></td>
</tr>
<tr>
<td>SPR-HF9</td>
<td>Hydrology and Flooding</td>
<td>The design of these structures will consider the predicted changes to velocities from the existing case due to the project.</td>
<td>3</td>
<td>Stage 2</td>
<td>Pre-construction Detailed Design</td>
<td>RMS / Detailed Designer</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPR-HF10</td>
<td>Hydrology and Flooding</td>
<td>Waterway diversions will be designed in consultation with the Office of Environment and Heritage, NSW Office of Water and Department of Primary Industries (Fisheries).</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS</td>
<td>Stage 2</td>
<td></td>
</tr>
<tr>
<td>SPR-HF11</td>
<td>Hydrology and Flooding</td>
<td>Artificial embankments will be designed and constructed in consultation with the Office of Environment and Heritage, NSW Office of Water and Department of Primary Industries (Fisheries).</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS</td>
<td>Stage 2</td>
<td></td>
</tr>
<tr>
<td>SPR-HF12</td>
<td>Hydrology and Flooding</td>
<td>Artificial embankments will be designed and constructed in consultation with the Office of Environment and Heritage, NSW Office of Water and Department of Primary Industries (Fisheries).</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS</td>
<td>Stage 2</td>
<td></td>
</tr>
<tr>
<td>SPR-HF13</td>
<td>Hydrology and Flooding</td>
<td>Detailed design will consider flood access and evacuation for affected landowners including changes in stock access routes.</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS</td>
<td>Stage 2</td>
<td></td>
</tr>
<tr>
<td>SPR-HF14</td>
<td>Hydrology and Flooding</td>
<td>The level of flood immunity of dynamic risk controls will be set at as per the Oxleyan Pygmy Perch as identified in section 3.9.6 of the Working paper – Biodiversity and the supplementary biodiversity assessment in Appendix D of the Submissions / Preferred Infrastructure Report. This will be undertaken in consultation with the Department of Primary Industries (Fisheries).</td>
<td>3</td>
<td>Stage 1</td>
<td>Construction</td>
<td>RMS</td>
<td>Stage 1</td>
</tr>
</tbody>
</table>

**Greenhouse Gas Emissions**

**Emissions Reduction**
- Emission reduction strategies will be developed and delivered to construction personnel to promote energy-efficient work practices.

**Emissions Management**
- The project will include a commitment to monitor or avoid use of energy consumption and identify and address on-site energy waste.

**Hydrology and Flooding**

- The design of waterway diversions will consider the potential for blockage and be designed and operated to maintain the existing flood regime.
- Detailed design for permanent road fencing will consider hydrology and flooding impacts.
- Coastal and erosion protection measures at temporary and permanent waterway crossings will be provided upstream and downstream of the highway, particularly within 50 metres of Class 1 waterways or within the range of the Oxleyan Pygmy Perch as identified in section 3.9.6 of the Working paper – Biodiversity and the supplementary biodiversity assessment in Appendix D of the Submissions / Preferred Infrastructure Report. This will be undertaken in consultation with the Department of Primary Industries (Fisheries).

**Noise & Vibration**

- Noise monitoring will be undertaken to assess compliance with the operational noise levels predicted.
- A review of the operational noise levels in terms of criteria and noise goals.
- Methodology, location and frequency of noise monitoring undertaken.
- Details of any complaints and encroachments received in relation to operational noise.
- Any required recalibration of the noise model.
- An assessment of the performance and effectiveness of applied noise mitigation measures.
- Any additional feasible and reasonable measures required.

---

*References and Notes*

1. For sections 4.2 and 4.3, the design complex with the requirement, and all acquisitions have been undertaken in accordance with the Land Acquisition (Just Terms Compensation) Act 1991.
2. The design considers the impact. Consultation during land acquisition identifies these impacts and is compensated for. Reduced runoff is expected.
3. This has been addressed during the detailed design in consultation with the Clarence City Council and has achieved a 1 in 100 year flood immunity.
### Mitigation No. Category Management Measure

<table>
<thead>
<tr>
<th>Mitigation No.</th>
<th>Category</th>
<th>Management Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPIR-HF15</td>
<td>Hydrology and Flooding</td>
<td>A drainage structure with an equivalent capacity of the current Goodwood Street underpass will be installed for the duration of construction.</td>
</tr>
<tr>
<td>SPIR-HF16</td>
<td>Hydrology and Flooding</td>
<td>Any temporary infrastructure associated with the construction of bridges in the Clarence River, Clarence North Arm, Richmond River, Tuckaburra Canal and Eumirra Creek will be secured or removed from the river and floodplain during flood events so as not to create a debris hazard or blockage during a flood event.</td>
</tr>
<tr>
<td>SPIR-HF17</td>
<td>Hydrology and Flooding</td>
<td>Appropriate span length of bridge will be specified during detailed design that considers the susceptibility of individual waterfront crossings to debris blockage.</td>
</tr>
<tr>
<td>SPIR-HF18</td>
<td>Hydrology and Flooding</td>
<td>All work within the limits of a permanent waterfront, constructed by the project, will be undertaken in accordance with the NSW Office of Water guidelines for Controlled Activities and industry best practice including maintaining where feasible and reasonable the geomorphic integrity and natural hydrological flow regime.</td>
</tr>
<tr>
<td>SPIR-HF20</td>
<td>Hydrology and Flooding</td>
<td>The design of temporary fencing at cut-off and bridge crossing will consider the potential for blockage and be designed and operated in a manner that does not result in impacts on flooding.</td>
</tr>
<tr>
<td>SPIR-HF21</td>
<td>Hydrology and Flooding</td>
<td>The need for design modifications to address changes in flood behaviour as a result of climate change will be considered in accordance with Rosetta and Maritme Climate Change Plan (Roads and Maritime, 2012).</td>
</tr>
<tr>
<td>SPIR-HF22</td>
<td>Hydrology and Flooding</td>
<td>Recommendations made in Table 8-E of Working paper – Hydrology and flooding to minimise the flood impacts of auxiliary facilities will be considered in the final location and layout of auxiliary facilities.</td>
</tr>
<tr>
<td>SPIR-HF23</td>
<td>Hydrology and Flooding</td>
<td>Design objectives for road flood immunity and flood management will apply during the detailed design phase. Where these objectives are not met, Roads and Maritime will work to:</td>
</tr>
</tbody>
</table>

#### Non-Aboriginal Heritage

<table>
<thead>
<tr>
<th>Mitigation No.</th>
<th>Category</th>
<th>Management Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPIR-HH1</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>If at any time during construction associated with the project, untested historical heritage materials, features and/or deposits are found, the Roads and Maritime Standard Management Procedure: Unexpected Archaeological Finds (2012) will be followed.</td>
</tr>
<tr>
<td>SPIR-HH2</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Contractors will be given awareness training on non-Aboriginal historical heritage prior to commencement of construction works to ensure understanding of potential heritage items and the procedure in the event of discovery of historical heritage materials, features or deposits, or the discovery of human remains.</td>
</tr>
<tr>
<td>SPIR-HH3</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>The Heritage management plan will be developed in consultation with the Heritage Council of NSW.</td>
</tr>
<tr>
<td>SPIR-HH4</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Should the impact to any historic heritage item change during detailed design, further assessment of impacts on the items will be undertaken.</td>
</tr>
<tr>
<td>SPIR-HH5</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>At project section 1, site A a temporary barrier fence will be erected between transect 39 and the ancillary site. The fence will remain in place until the conclusion of the use of the ancillary site at which time it will be removed.</td>
</tr>
<tr>
<td>SPIR-HH6</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>At project section 10, site A a temporary barrier fence will be erected to protect the drainage channel that is not directly impacted by the project (item 43). The fence will remain in place until the conclusion of the use of the ancillary site at which time it will be removed.</td>
</tr>
<tr>
<td>SPIR-HH7</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Where local or state significant heritage items are not previously identified are identified on an ancillary site and use of the site will impact on the heritage significance of the item the site will not be used for ancillary facilities.</td>
</tr>
<tr>
<td>SPIR-HH8</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Where local or state significant heritage items are identified on an ancillary site and use of the site will not impact on the heritage significance of the item, appropriate management measures (such as barrier fencing) will be put in place to clearly identify the heritage item and exclude use of the ancillary site within the heritage item’s curtilage. Use of these ancillary facilities may commence:</td>
</tr>
</tbody>
</table>

#### Stage 2

<table>
<thead>
<tr>
<th>Mitigation No.</th>
<th>Category</th>
<th>Management Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPIR-HF15</td>
<td>Hydrology and Flooding</td>
<td>Pre-construction Detailed Design Construction Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF16</td>
<td>Hydrology and Flooding</td>
<td>Detailed Design Construction Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF17</td>
<td>Hydrology and Flooding</td>
<td>Construction Contractor Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF18</td>
<td>Hydrology and Flooding</td>
<td>All All Pre-construction Detailed Design Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF19</td>
<td>Hydrology and Flooding</td>
<td>All All Pre-construction Detailed Design Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF20</td>
<td>Hydrology and Flooding</td>
<td>All All Pre-construction Detailed Design Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF21</td>
<td>Hydrology and Flooding</td>
<td>All All Pre-construction Detailed Design Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF22</td>
<td>Hydrology and Flooding</td>
<td>All All Pre-construction Detailed Design Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF23</td>
<td>Hydrology and Flooding</td>
<td>All All Pre-construction Detailed Design Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF24</td>
<td>Hydrology and Flooding</td>
<td>All All Pre-construction Detailed Design Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF25</td>
<td>Hydrology and Flooding</td>
<td>All All Pre-construction Detailed Design Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF26</td>
<td>Hydrology and Flooding</td>
<td>All All Pre-construction Detailed Design Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF27</td>
<td>Hydrology and Flooding</td>
<td>All All Pre-construction Detailed Design Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF28</td>
<td>Hydrology and Flooding</td>
<td>All All Pre-construction Detailed Design Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF29</td>
<td>Hydrology and Flooding</td>
<td>All All Pre-construction Detailed Design Responsible for mitigation and contract to Contractors</td>
</tr>
<tr>
<td>SPIR-HF30</td>
<td>Hydrology and Flooding</td>
<td>All All Pre-construction Detailed Design Responsible for mitigation and contract to Contractors</td>
</tr>
</tbody>
</table>

#### Heritage Council of NSW were consulted during development of the Heritage Management Plan which has subsequently been approved by Department of Planning and Environment.
### Mitigation No. Category Management Measure

<table>
<thead>
<tr>
<th>Mitigation No.</th>
<th>Category</th>
<th>Management Measure</th>
</tr>
</thead>
<tbody>
<tr>
<td>S92P-1101</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>A temporary barrier fence will be erected between the stockyards and the works area prior to road construction works commencing. The fence will remain in place until the conclusion of the works in the vicinity of the item at which time it will be removed. The barrier fence will not be constructed within five metres of the stockyards.</td>
</tr>
<tr>
<td>S92P-1111</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to review the S40H for this item when the specific architectural noise treatment options are identified.</td>
</tr>
<tr>
<td>S92P-1102</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Salvage excavation (of the coach road station and early coach road) will be undertaken from the project boundary along the front of the complex buildings to the edge of the existing highway before construction starts in the vicinity of the heritage item. Excavations will be undertaken in accordance with Heritage Branch guidelines and under the supervision of an appropriately qualified and experienced historical archaeologist. An appropriate research design and methodology will be prepared to best realise the research potential of this area of the site.</td>
</tr>
<tr>
<td>S92P-1103</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>The batter slope for the north-west upgrade will not be constructed within eight metres of the battery/mast building.</td>
</tr>
<tr>
<td>S92P-1104</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>A temporary fence will be erected between the battery/mast building and the roadway upgrade construction before work starts in the vicinity of the heritage item. The fence will remain in place until construction is completed, at which time it will be removed.</td>
</tr>
<tr>
<td>S92P-1105</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>A photographic condition survey will be undertaken of the current condition of the heritage items with any damage to the item from construction to be repaired on completion of construction is complete.</td>
</tr>
<tr>
<td>S92P-1106</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to review the S40H for this item when the specific architectural noise treatment options are identified.</td>
</tr>
<tr>
<td>S92P-1107</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Architectural recording will be undertaken in accordance with the Heritage Branch guidelines How To Prepare Archival Records Of Heritage Items (NSW Heritage Office, 1998) prior to its removal.</td>
</tr>
<tr>
<td>S92P-1108</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Prior to the start of construction the location and condition of the mature fruit trees will be recorded by an arborist. In consultation with an arborist, protective fencing will be erected adjacent to the property boundary to control impacts on the trees.</td>
</tr>
<tr>
<td>S92P-1109</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to review the S40H for this item when the specific architectural noise treatment options are identified.</td>
</tr>
<tr>
<td>S92P-1110</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Where appropriate and before construction commences, any loose or unstable components of the heritage item will be secured to minimise vibration impact and remain in place until the conclusion of construction, at which time the securing mechanisms will be removed. Any new elements will be removed so as not to cause damage to the item.</td>
</tr>
<tr>
<td>S92P-1111</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>A photographic condition survey will be undertaken of the current condition of the heritage items with any damage to the item from construction to be repaired on completion of construction is complete.</td>
</tr>
<tr>
<td>S92P-1112</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to review the S40H for this item when the specific architectural noise treatment options are identified.</td>
</tr>
<tr>
<td>S92P-1113</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>A temporary fence will be erected between the location of the memorial and flagpole and the construction works (within five metres of the heritage items) prior to its removal or relocation.</td>
</tr>
<tr>
<td>S92P-1114</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to review the S40H for this item when the specific architectural noise treatment options are identified.</td>
</tr>
<tr>
<td>S92P-1115</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>The feasibility of relocating the building to an appropriate site within the Harwood Heritage Conservation Area will be investigated. The investigation will be undertaken in consultation with an appropriately qualified house removal contractor and an appropriately qualified heritage consultant.</td>
</tr>
<tr>
<td>S92P-1116</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to review the S40H for this item when the specific architectural noise treatment options are identified.</td>
</tr>
<tr>
<td>S92P-1117</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>A photographic condition survey will be undertaken of the current condition of the heritage items with any damage to the item from construction to be repaired on completion of construction is complete.</td>
</tr>
<tr>
<td>S92P-1118</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Monitoring of dust will be undertaken at the location in accordance with the project dust management plan.</td>
</tr>
<tr>
<td>S92P-1119</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>A temporary fence will be erected between the State Heritage Register boundary and the construction works before work starts in the vicinity of the heritage item. The fence will remain in place until construction is completed at which time it will be removed.</td>
</tr>
<tr>
<td>S92P-1120</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Appropriate directional signage to the New Baby Museum Complex will be installed at both the interchange at Woodroffe and interchange at Duke Road to divert vehicles onto the service road in order to access the museum complex. Signage will comply with relevant Pacific Highway signage policy.</td>
</tr>
<tr>
<td>S92P-1121</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Monitoring of dust will be undertaken at the location in accordance with the project dust management plan.</td>
</tr>
<tr>
<td>S92P-1122</td>
<td>Non-Aboriginal Historical Heritage</td>
<td>Salvage excavation will be undertaken to salvage any abutstructure artefacts related to the wall and adjacent wall. Excavations will be undertaken under the supervision of an appropriately qualified and experienced historical archaeologist and in accordance with the Heritage Branch guidelines, including an appropriate research design and methodology to best realise the research potential of this area of the site. Consideration will be given to providing salvaged artefacts to the New Baby Museum.</td>
</tr>
</tbody>
</table>

### Section | Stage | Timing | Responsibility |
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<tr>
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<tbody>
<tr>
<td>1</td>
<td>Stage 1</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
</tr>
<tr>
<td>NA</td>
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<td>N/A for Section 2</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Stage 1</td>
<td>Pre-construction</td>
<td>RMS</td>
</tr>
<tr>
<td>NA</td>
<td></td>
<td>N/A for Section 2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Stage 1</td>
<td>Pre-construction</td>
<td>RMS/ RMS/ Contractor</td>
</tr>
<tr>
<td>2</td>
<td>Stage 1</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
</tr>
<tr>
<td>This has been achieved as part of detailed design.</td>
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<tr>
<td>2</td>
<td>Stage 1</td>
<td>Pre-construction</td>
<td>RMS/ Detailed Design/ Contractor/ RMS/ Contractor</td>
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<tr>
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<td>RMS/ Contractor</td>
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<td>RMS/ Contractor</td>
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<td>2</td>
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<td>Pre-construction</td>
<td>RMS/ RMS/ Contractor</td>
</tr>
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<td>Stage 1</td>
<td>Pre-construction</td>
<td>RMS/ Contractor</td>
</tr>
<tr>
<td>3</td>
<td>Stage 2</td>
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<td>RMS/ Contractor</td>
</tr>
<tr>
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<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS/ Detailed Design</td>
</tr>
<tr>
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<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS</td>
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<tr>
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<td>RMS/ Contractor</td>
</tr>
<tr>
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<td>Stage 2</td>
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<td>RMS/ Contractor</td>
</tr>
<tr>
<td>2</td>
<td>Stage 2</td>
<td>Operation</td>
<td>RMS/ Contractor</td>
</tr>
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<td>Operation</td>
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<td>RMS/ Contractor</td>
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<tr>
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<td>Pre-construction</td>
<td>RMS/ Contractor</td>
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<tr>
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<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS</td>
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<tr>
<td>2</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS</td>
</tr>
</tbody>
</table>
Non-Aboriginal Historical Heritage

Before construction starts in the vicinity of the orchard, the location and condition of each of the mango trees will be recorded by an arborist.

Stage 2

Stage 2 Pre-construction RMS Stage 2

Non-Aboriginal Historical Heritage

Ceremonial barrier fencing to protect the mango orchard will be erected between the construction area and the lease with a buffer of at least four metres. This will be erected before construction starts in the vicinity of the items and remain in place until the end of construction at which time it will be removed.

Stage 2

Stage 2 Pre-construction RMS/ Contractor Stage 2

Non-Aboriginal Historical Heritage

An archival photographic recording will be made of the mango orchard and its surrounds in accordance with the Heritage Branch guidelines How To Prepare Archival Records Of Heritage items (NSW Heritage Office, 1998) prior to its demolition.

Stage 2

Stage 2 Pre-construction RMS Stage 2

Non-Aboriginal Historical Heritage

If any historical heritage remains are discovered at the New Italy Village Area during construction, management measure HH1 will be applied.

Stage 2

Stage 2 Pre-construction RMS/ Contractor Stage 2

Non-Aboriginal Historical Heritage

An archival photographic recording will be made of the buttery/creamy, the dairy and its surrounds in accordance with the Heritage Branch guidelines How To Prepare Archival Records Of Heritage items (NSW Heritage Office, 1998) prior to demolition.

Stage 2

Stage 2 Pre-construction RMS Stage 2

Non-Aboriginal Historical Heritage

Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to revise the SOHI for this item when the specific architectural noise treatment options are identified.

Stage 2

Stage 2 Pre-construction RMS Stage 2

Further investigations for gold shafts and/ or adjacent to the project corridor will occur near item 2.

Stage 2

Stage 2 Pre-construction RMS Stage 2

Non-Aboriginal Historical Heritage

If brick material or any other historical heritage remains are discovered during works, management measure HH1 will be applied.

Stage 2

Stage 2 Construction RMS/ Contractor Stage 2

Non-Aboriginal Historical Heritage

An archival photographic recording will be made of the stone quarry and small clay pit in accordance with the Heritage Branch guidelines How To Prepare Archival Records Of Heritage items (NSW Heritage Office, 1998) prior to construction.

Stage 2

Stage 2 Pre-construction RMS Stage 2

Non-Aboriginal Historical Heritage

Salvage excavations to the south of the quarry will be undertaken under the supervision of an appropriately qualified and experienced historical archaeologist. Salvage excavation will be undertaken in accordance with the Heritage Branch guidelines including an appropriate research design and methodology to best realise the research potential of this area of the site.

Stage 2

Stage 2 Pre-construction RMS Stage 2

Non-Aboriginal Historical Heritage

A photographic condition survey and structural audit of the brick-lined well will be undertaken at the current condition of the heritage item with any damage to the item from construction to be repaired once construction is complete.

Stage 2

Stage 2 Pre-construction RMS/ Contractor Stage 2

Non-Aboriginal Historical Heritage

If brick material or any other historical heritage remains are discovered during works, management measure HH1 will be applied.

Stage 2

Stage 2 Pre-construction RMS/ Contractor Stage 2

Non-Aboriginal Historical Heritage

Due to the proximity of the well to the roadway, the well may be closed for safety reasons. Any measures to close the well will enable access in the future for heritage research or other purposes and that no detrimental physical impact on the well occurs.

Stage 2

Stage 2 Construction RMS Stage 2

Non-Aboriginal Historical Heritage

An archival photographic recording will be made of the brick-lined well and the drainage system and its surrounds in accordance with the Heritage Branch guidelines How To Prepare Archival Records Of Heritage items (NSW Heritage Office, 1998) prior to its demolition. A detailed survey and recording of the location of the drainage system within the ‘Stonewashed’ property will also be undertaken.

Stage 2

Stage 2 Pre-construction RMS/ Contractor Stage 2

Non-Aboriginal Historical Heritage

Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to revise the SOHI for this item when the specific architectural noise treatment options are identified.

Stage 2

Stage 2 Pre-construction RMS/ Contractor Stage 2

Non-Aboriginal Historical Heritage

To protect the heritage item from construction activities, the boundary of the reserve will be clearly identified on site/construction plans as an area of exclusion, and temporary barrier fencing will be constructed continuously along the project boundary:

- Immediately south of the cemetery reserve.
- Where it crosses the south east corner of the cemetery reserve.
- Where it follows the east boundary of the cemetery reserve.

Stage 2

Stage 2 Pre-construction Construction RMS/ Contractor Stage 2

Non-Aboriginal Historical Heritage

Detailed design will consider the extent to which clearing High Conservation Value Old Growth Forest within the project boundary may be minimised.

Stage 1 & 2

Stage 1 & 2 Pre-construction Detailed Design RMS/ Detailed Designer Stage 2

RMS/ Detailed Designer

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<tr>
<th>Mitigation No.</th>
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<th>Management Measure</th>
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<th>Reference / Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPR-LU23</td>
<td>Property &amp; Landuse</td>
<td>Property adjustments will be completed for fencing, access tracks, cattle underpasses and other farm infrastructure in consultation with the impacted landowner.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS/ Detailed Designer</td>
<td>Standard process - ongoing</td>
</tr>
<tr>
<td>SPR-LU40</td>
<td>Property &amp; Landuse</td>
<td>The fencing strategy will be further developed during detailed design, in consultation with relevant stakeholders. This will build upon the principles of the strategy described in Chapter 3 of the Submissions and Preferred Infrastructure Report (Roads and Maritime, 2013).</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS/ Detailed Designer</td>
<td>The fencing strategy was further developed as part of detailed design for Sections 1 and 2. This involved all relevant stakeholders to maximise the potential of achieving appropriate fencing outcomes in all locations.</td>
</tr>
<tr>
<td>SPR-LU50</td>
<td>Property &amp; Landuse</td>
<td>Consultation and assessment of land uses and lots will be minimised by amalgamating surveyed parcels of land together, where possible, with provision of road access, in accordance with the project’s relevant land use strategy.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS/ Detailed Designer</td>
<td>This has been considered where ever possible, and will be finalised post-construction.</td>
</tr>
<tr>
<td>SPR-LU60</td>
<td>Property &amp; Landuse</td>
<td>Where required, acquisition of State forests will be minimised in accordance with the provisions of the Forestry Act 2012. Re-location of land dedicated or reserved as national parks or nature reserves will be in accordance with the National Parks and Wildlife Act 1974. Acquisition of land owned by Local Aboriginal Land Councils will be in accordance with the provisions of the Aboriginal Land Rights Act 1983.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS/ Detailed Designer</td>
<td>Land acquired from State Forest and Aboriginal Land Councils has been currently undertaken by RMS Property Section in accordance with relevant legislation.</td>
</tr>
<tr>
<td>SPR-LU70</td>
<td>Property &amp; Landuse</td>
<td>In relevant land strategy to minimise land use severance and avoidance, and to mitigation strategy for final land uses will be developed in consultation with cattle industry stakeholders, Coff's Harbour City, Clarence Valley, Richmond Valley and Ballina Councils.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS/ Detailed Designer</td>
<td>This requirement has been considered where ever possible, and will be finalised both during and post-construction in consultation with relevant industry and Councils.</td>
</tr>
<tr>
<td>SPR-LU80</td>
<td>Property &amp; Landuse</td>
<td>The requirement for a relating in situ structure at Station B 34, between the road reserve and adjoining property, will be confirmed during detailed design.</td>
<td>S</td>
<td>Stage 2</td>
<td>Pre-construction Detailed Design</td>
<td>RMS/ Detailed Designer</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPR-LU80</td>
<td>Property &amp; Landuse</td>
<td>Access to properties near construction works will be maintained, including where required for the movement of farm equipment and livestock between properties, unless otherwise agreed with landowners.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractor</td>
<td>Access maintained - ongoing.</td>
</tr>
<tr>
<td>SPR-LU100</td>
<td>Property &amp; Landuse</td>
<td>Where temporary changes to property access are required during construction, alternative access will be determined in consultation with affected property owners and landowners.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractor</td>
<td>Access maintained - ongoing.</td>
</tr>
<tr>
<td>SPR-LU110</td>
<td>Property &amp; Landuse</td>
<td>There will be ongoing communication with local communities about changes to the local road network, including likely delays and disruption and alternative accesses if required.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractor</td>
<td>Achieved via notifications reviewed and approved by RMS.</td>
</tr>
<tr>
<td>SPR-LU120</td>
<td>Property &amp; Landuse</td>
<td>Where possible, create noise of any spills on the protected stock for managing the impacts, although alternative options for the new or disposal of spoil will be identified in the surplus material management plan.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractor</td>
<td>Included and managed as per the approved CSWMP.</td>
</tr>
<tr>
<td>SPR-LU130</td>
<td>Property &amp; Landuse</td>
<td>The management of surplus material will be further developed during detailed design, in consultation with relevant stakeholders. This will build upon the principles of the strategy described in Chapter 3 of the Submissions and Preferred Infrastructure Report (Roads and Maritime, 2013).</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS/ Detailed Designer</td>
<td>Noted and applied to the project works.</td>
</tr>
<tr>
<td>SPR-LU140</td>
<td>Property &amp; Landuse</td>
<td>Forestry Corporation of NSW will be able to harvest millable timber in affected State forests prior to works commencing. However, consideration will also be given to opportunities for the productive use of trees removed from non-State forest areas of the project, including any riparian facilities where necessary.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS</td>
<td>Harvest of millable timber was maximised during clearing operations.</td>
</tr>
<tr>
<td>SPR-LU150</td>
<td>Property &amp; Landuse</td>
<td>Environmental management measures will be implemented to minimise potential impacts on adjoining agricultural uses, including from changes in water quality and spread of weeds and pests.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractor</td>
<td>Managed in accordance with the approved CSWMP and CFFMP for Sections 1 and 2.</td>
</tr>
<tr>
<td>SPR-LU160</td>
<td>Property &amp; Landuse</td>
<td>Where pesticides are required during construction, implement appropriate environment management measures to avoid potential impacts on adjoining agricultural properties.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractor</td>
<td>Managed in accordance with the approved CSWMP and CFFMP.</td>
</tr>
<tr>
<td>SPR-LU170</td>
<td>Property &amp; Landuse</td>
<td>Where possible, ongoing consultation and communication with managers of agricultural properties to identify any potential impacts on nearby construction workers from farm operations (ie use of pesticides on agricultural properties).</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS</td>
<td>Noted.</td>
</tr>
<tr>
<td>SPR-LU180</td>
<td>Property &amp; Landuse</td>
<td>Ongoing consultation and communication will be undertaken with commercial fishing and related aquaculture operators about construction activities within and near the Clarence and Richmond rivers. Stakeholders include the estuary prawn trawl fishery, and estuary general fishery within the Clarence River, the NSW Department of Primary Industries (Fisheries) and licensed fishing interests within the Richmond River regarding the timing and duration of construction, potential impacts (including changes to river access) and proposed mitigation measures.</td>
<td>Stage 2</td>
<td>Stage 2</td>
<td>Construction</td>
<td>Contractor</td>
<td>Stage 2</td>
</tr>
<tr>
<td>SPR-LU190</td>
<td>Property &amp; Landuse</td>
<td>Relocation or adjustment of infrastructure will be planned to minimise disruption and impacts on surrounding properties.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractor</td>
<td>Noted and is being undertaken during both preconstruction and construction.</td>
</tr>
<tr>
<td>SPR-LU200</td>
<td>Property &amp; Landuse</td>
<td>Communication will be undertaken with nearby communities about the timing and duration of potential impacts to infrastructure.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/Contractor</td>
<td>Noted and is being undertaken in accordance with the RMS Communications Strategy and the Contracting Community Action Plan.</td>
</tr>
<tr>
<td>SPR-LU210</td>
<td>Property &amp; Landuse</td>
<td>Roads and Maritime land that is required for the project will be appropriately maintained. This will be undertaken by regional Roads and Maritime officers or a designated local authority. Roads and Maritime manage the leasing and maintenance of property identified as suitable for leases.</td>
<td>All</td>
<td>All</td>
<td>Operation</td>
<td>RMS</td>
<td>This is being undertaken in accordance with RMS Property maintenance processes.</td>
</tr>
<tr>
<td>SPR-LU220</td>
<td>Property &amp; Landuse</td>
<td>Excavation works near rail/ Stage 2</td>
<td>Stage 3</td>
<td>Construction</td>
<td>Contractor</td>
<td>Stage 2</td>
<td></td>
</tr>
<tr>
<td>SPR-LU230</td>
<td>Property &amp; Landuse</td>
<td>Excavation works near rail/ Stage 3</td>
<td>Stage 3</td>
<td>Construction</td>
<td>Contractor</td>
<td>Stage 3</td>
<td></td>
</tr>
<tr>
<td>SPR-LU240</td>
<td>Property &amp; Landuse</td>
<td>Consultation with Forestry Corporation will be undertaken regarding access to and within State forests where required, in accordance with the Forestry Act 2012.</td>
<td>All</td>
<td>All</td>
<td>Detailed Design Operation</td>
<td>RMS/Contractor</td>
<td>This has been completed for Sections 1 &amp; 2, and will be ongoing during construction for the contractor. Section 2 has 4.5Ha of State Forest under Forest Permit Lease (issued by Forestry Corporation of NSW) for construction and operation of temporary sedimentation basins and stockpiles.</td>
</tr>
<tr>
<td>SPR-LU250</td>
<td>Property &amp; Landuse</td>
<td>Consultation with Forestry Corporation will be undertaken regarding the relocation of the state forest impacted by the project’s construction or operation.</td>
<td>All</td>
<td>All</td>
<td>Detailed Design Operation</td>
<td>RMS/Contractor</td>
<td>This has been completed for Sections 1 &amp; 2, and will be ongoing during construction for the contractor. Notification requirements are listed in the Stage 2 and S12.</td>
</tr>
<tr>
<td>SPR-LU250</td>
<td>Property &amp; Landuse</td>
<td>The State Forest Strategy will be further developed during detailed design, in consultation with relevant stakeholders. This will build upon the principles of the strategy described in Chapter 3 of this Submissions and Preferred Infrastructure Report.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction Detailed Design</td>
<td>RMS/Contractor</td>
<td>Noted.</td>
</tr>
<tr>
<td>SPR-LU260</td>
<td>Property &amp; Landuse</td>
<td>The State Forest Strategy will be further developed during detailed design, in consultation with relevant stakeholders. This will build upon the principles of the strategy described in Chapter 3 of this Submissions and Preferred Infrastructure Report.</td>
<td>All</td>
<td>All</td>
<td>Detailed Design Operation</td>
<td>RMS/Contractor</td>
<td>Noted.</td>
</tr>
<tr>
<td>SPR-LU270</td>
<td>Property &amp; Landuse</td>
<td>Access to national parks and nature reserves will be maintained in consultation with the relevant department in Office of Environment and Heritage.</td>
<td>All</td>
<td>All</td>
<td>Detailed Design Operation</td>
<td>RMS/Contractor</td>
<td>Noted.</td>
</tr>
<tr>
<td>SPR-LU280</td>
<td>Property &amp; Landuse</td>
<td>Consultation will be undertaken with headwater operating queues adjacent to the project, including those near Tweed, Brunswick and Magra, and relevant NSW State government agency. Consultation aim to identify appropriate management measures for each affected quarry, particularly regarding operational approaches in terms of site access, extraction limits, blasting limits, and timing of works, noise and vibration.</td>
<td>9, 10 and 11</td>
<td>Stage 4</td>
<td>Pre-construction Detailed Design</td>
<td>RMS/Detailed Designer</td>
<td>Contractor</td>
</tr>
</tbody>
</table>

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Property & Landuse Consultation will be undertaken with the relevant State Government agency to consider any future coal seam gas production in the vicinity of the project. This has been completed for Sections 1 & 2.

Social & Economic

Social and Economic Consultation will be undertaken with local business owners, industry and tourism operators directly affected by construction and located closest to construction works. The focus will be on the timing, duration and likely impact of construction activities, to identify appropriate measures to manage potential impacts.

Social and Economic Consultation will be undertaken with managers of community services and facilities near the proposed construction works, to ensure that potential impacts are appropriately managed.

Social and Economic Consultation will be undertaken with residents and local communities closest to construction works about construction activities, including timing, duration and likely impacts.

Social and Economic Consultation will be undertaken with Halfway Creek Community Hall being implemented by Community Relations Team throughout construction.

Signage will be implemented for by-passed towns in accordance with Roads and Maritime signage guidelines and in consultation with relevant councils.

Soil & Water Batter slope gradients will be designed to minimise erosion of select topsoil.

Soil & Water Any necessary approvals will be obtained in accordance with Roads and Maritime specification G36 for permanent and temporary waterway crossings.

Soil & Water All work potentially affecting wetlands will be undertaken in consideration of the requirements outlined in the NSW Wetlands Management Policy 2010.

As part of the Construction Environmental Management Plan, a soils and water management plan will be prepared and include (but not limited to):

- Erosion and sediment control plans for all stages of construction
- Consideration of soil erodibility
- Air source erosion controls (eg check dams)
- Sedimentation basin construction and management
- Protection of waterways
- Avoid suitable soil sub-layer issues (including from groundwater drawdown)
- Management of asbestos
- Management of asbestos
- Bulk plant chemical storage control
- Water quality monitoring and checklists
- Detailed consideration of measures to prevent, where possible, or minimise any water quality impacts.

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</thead>
<tbody>
<tr>
<td>SPIR-LU20</td>
<td>Property &amp; Landuse Consultation will be undertaken with the relevant State Government agency to consider any future coal seam gas production in the vicinity of the project.</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS/ RMS</td>
<td>Noted and undertaken as necessary</td>
<td></td>
</tr>
<tr>
<td>SPIR-LU21</td>
<td>Property &amp; Landuse Consultation</td>
<td>All</td>
<td>All</td>
<td>Detailed Design</td>
<td>RMS Detailed Designer/ Contractor</td>
<td>This has been completed for Sections 1 &amp; 2</td>
<td></td>
</tr>
<tr>
<td>SPIR-LU32</td>
<td>Property &amp; Landuse Consultation</td>
<td>8</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS Contractor</td>
<td>Stage 2</td>
<td></td>
</tr>
<tr>
<td>SPIR-LU33</td>
<td>Property &amp; Landuse Consultation</td>
<td>9</td>
<td>Stage 2</td>
<td>Pre-construction</td>
<td>RMS Detailed Designer</td>
<td>Stage 2</td>
<td></td>
</tr>
</tbody>
</table>

Social & Economic

SPIR-SE1 Economic Consultation will be undertaken with contractors affected by the upgrade, during detailed design, to discuss the classification of the existing Pacific Highway and where appropriate, the required transfer process of state road assets to Council.

SPIR-SE2 Economic Consultation will be undertaken with managers of community services and facilities near the proposed construction works, to ensure that potential impacts are appropriately managed.

SPIR-SE3 Economic Consultation will be undertaken with residents and local communities closest to construction works about construction activities, including timing, duration and likely impacts.

SPIR-SE4 Economic Consultation will be undertaken with Halfway Creek Community Hall being implemented by Community Relations Team throughout construction.

Signage will be implemented for by-passed towns in accordance with Roads and Maritime signage guidelines and in consultation with relevant councils.

SPIR-SE5 Economic Consultation will be undertaken with contractors affected by the upgrade, during detailed design, to discuss the classification of the existing Pacific Highway and where appropriate, the required transfer process of state road assets to Council.

SPIR-SE6 Economic Consultation will be undertaken with managers of community services and facilities near the proposed construction works, to ensure that potential impacts are appropriately managed.

SPIR-SE7 Economic Consultation will be undertaken with residents and local communities closest to construction works about construction activities, including timing, duration and likely impacts.

SPIR-SE8 Economic Consultation will be undertaken with Halfway Creek Community Hall being implemented by Community Relations Team throughout construction.

Soil & Water Batter slope gradients will be designed to minimise erosion of select topsoil.

Soil & Water Any necessary approvals will be obtained in accordance with Roads and Maritime specification G36 for permanent and temporary waterway crossings.

Soil & Water All work potentially affecting wetlands will be undertaken in consideration of the requirements outlined in the NSW Wetlands Management Policy 2010.

As part of the Construction Environmental Management Plan, a soils and water management plan will be prepared and include (but not limited to):

- Erosion and sediment control plans for all stages of construction
- Consideration of soil erodibility
- Air source erosion controls (eg check dams)
- Sedimentation basin construction and management
- Protection of waterways
- Avoid suitable soil sub-layer issues (including from groundwater drawdown)
- Management of asbestos
- Management of asbestos
- Bulk plant chemical storage control
- Water quality monitoring and checklists
- Detailed consideration of measures to prevent, where possible, or minimise any water quality impacts.

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</tr>
</thead>
<tbody>
<tr>
<td>SPIR-SR01</td>
<td>Soil &amp; Water</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS Detailed Designer</td>
<td>For sections 1 &amp; 2, this has been addressed during detailed design</td>
<td></td>
</tr>
<tr>
<td>SPIR-SR02</td>
<td>Soil &amp; Water</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS Detailed Designer</td>
<td>For sections 1 &amp; 2, this has been addressed during detailed design</td>
<td></td>
</tr>
<tr>
<td>SPIR-SR03</td>
<td>Soil &amp; Water</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS Detailed Designer</td>
<td>For sections 1 &amp; 2, this has been addressed during detailed design</td>
<td></td>
</tr>
<tr>
<td>SPIR-SR04</td>
<td>Soil &amp; Water</td>
<td>All</td>
<td>All</td>
<td>Detailed Design</td>
<td>RMS/ RMS Detailed Designer/ Contractor</td>
<td>Approved CEMP Includes Construction Soil and Water Management Plan</td>
<td></td>
</tr>
<tr>
<td>SPIR-SR05</td>
<td>Soil &amp; Water</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS Detailed Design</td>
<td>Contractor Included as part of approved Construction Soil and Water Management Plan</td>
<td></td>
</tr>
<tr>
<td>SPIR-SR06</td>
<td>Soil &amp; Water</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS Detailed Design</td>
<td>Completed</td>
<td></td>
</tr>
<tr>
<td>SPIR-SR07</td>
<td>Soil &amp; Water</td>
<td>All</td>
<td>All</td>
<td>Pre-construction</td>
<td>RMS Detailed Designer/ Contractor</td>
<td>Completed</td>
<td></td>
</tr>
<tr>
<td>SPIR-SR08</td>
<td>Soil &amp; Water</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS Detailed Design</td>
<td>Contractor Included as part of approved Construction Soil and Water Management Plan</td>
<td></td>
</tr>
<tr>
<td>SPIR-SR09</td>
<td>Soil &amp; Water</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS Detailed Design</td>
<td>Contractor Included as part of approved Construction Soil and Water Management Plan</td>
<td></td>
</tr>
<tr>
<td>SPIR-SR10</td>
<td>Soil &amp; Water</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS Detailed Design</td>
<td>Contractor Included as part of approved Construction Soil and Water Management Plan</td>
<td></td>
</tr>
<tr>
<td>Mitigation No.</td>
<td>Category</td>
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</tr>
<tr>
<td>SPIR-SSW11</td>
<td>Soil &amp; water</td>
<td>Where practicable and feasible, stockpiles will:</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Contractor</td>
<td>Included as part of approved Construction Soil and Water Management Plan</td>
</tr>
<tr>
<td>SPIR-SSW12</td>
<td>Soil &amp; water</td>
<td>- not require removal of areas of native vegetation;</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Contractor</td>
<td>Included as part of approved Construction Soil and Water Management Plan</td>
</tr>
<tr>
<td>SPIR-SSW13</td>
<td>Soil &amp; water</td>
<td>- be located outside of flood areas or protected information;</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Contractor</td>
<td>Included as part of approved Construction Soil and Water Management Plan</td>
</tr>
<tr>
<td>SPIR-SSW14</td>
<td>Soil &amp; water</td>
<td>- be located such that waterways and drainage lines are not directly or indirectly impacted.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Contractor</td>
<td>Included as part of approved Construction Soil and Water Management Plan</td>
</tr>
<tr>
<td>SPIR-SSW15</td>
<td>Soil &amp; water</td>
<td>- erosion will be stockpiled separately and expected for revival seed sowing at six month intervals and controlled with herbicide as required.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Contractor</td>
<td>Included as part of approved Construction Soil and Water Management Plan</td>
</tr>
<tr>
<td>SPIR-SSW16</td>
<td>Soil &amp; water</td>
<td>- all construction stockpiles will comply with the requirements of the Protection of the Environment Operations (NSW) Waste Management and Resource Recovery Strategy 2017 for any waste substances that involve the generation, storage and/or disposal of waste and also consider the NSW Resource Recovery Exemptions as applying to the storage of stockpiled material.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Contractor</td>
<td>Noted</td>
</tr>
<tr>
<td>SPIR-SSW17</td>
<td>Soil &amp; water</td>
<td>- stockpiles containing potential and surface soils will be treated, bunded and covered in accordance with relevant guidelines.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Contractor</td>
<td>Included as part of approved Construction Acid Sulfate Soils Management Plan</td>
</tr>
<tr>
<td>SPIR-SSW18</td>
<td>Soil &amp; water</td>
<td>- all construction stockpiles will comply with the requirements of the Protection of the Environment Operations (NSW) Waste Management and Resource Recovery Strategy 2017 for any waste substances that involve the generation, storage and/or disposal of waste and also consider the NSW Resource Recovery Exemptions as applying to the storage of stockpiled material.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Contractor</td>
<td>Included as part of approved Construction Soil and Water Management Plan</td>
</tr>
<tr>
<td>SPIR-SSW19</td>
<td>Soil &amp; water</td>
<td>- a Stage 1 Preliminary Site Investigation will be conducted to verify and prevent potentially contaminating activities, potential contaminates of concern and the need for further investigation. This will include a review of past highway crashes and spills and the associated contamination risks.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>Completed</td>
</tr>
<tr>
<td>SPIR-SSW20</td>
<td>Soil &amp; water</td>
<td>- if necessary, a Stage 2 Detailed Site Investigation will be undertaken to:</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>For sections 1 and 2, a Phase 2 contamination investigation has been undertaken. For other sections and based on outcome of the Stage 1 investigations, this has not been required.</td>
</tr>
<tr>
<td>SPIR-SSW21</td>
<td>Soil &amp; water</td>
<td>- provide information on the type, nature, extent and concentrations of contamination present, and the corresponding risks to human health and the environment.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>Based on outcome of the Stage 1 Investigations, this has not been required.</td>
</tr>
<tr>
<td>SPIR-SSW22</td>
<td>Soil &amp; water</td>
<td>- examine pathways of contamination and exposure, the potential for offsite impacts and the management requirements and options.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>Noted</td>
</tr>
<tr>
<td>SPIR-SSW23</td>
<td>Soil &amp; water</td>
<td>- during the construction phase.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>Noted and this has been undertaken during preconstruction and will continue to be applied during the construction phase.</td>
</tr>
<tr>
<td>SPIR-SSW24</td>
<td>Soil &amp; water</td>
<td>- control and clean-up of accidental spills of fuels and chemicals.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>Included as part of approved Construction Acid Sulfate Soils Management Plan</td>
</tr>
<tr>
<td>SPIR-SSW25</td>
<td>Soil &amp; water</td>
<td>- examine pathways of contaminant dispersal and exposure, the potential for offsite impacts and the management requirements and options.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>Noted</td>
</tr>
<tr>
<td>SPIR-SSW26</td>
<td>Soil &amp; water</td>
<td>- appropriate erosion and sediment controls, following the guidelines of the Blue Books (Lendcom, 2004 and DECC, 2008a) and Roads and Maritime Technical Guidelines – Temporary Stormwater Drainage for Main Road Construction (Roads and Maritime, 2010b) will be established before the start of construction and maintained in effective working order for the duration of the construction period until site stabilisation.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Contractor</td>
<td>Included as part of approved Construction Soil and Water Management Plan</td>
</tr>
<tr>
<td>SPIR-SSW27</td>
<td>Soil &amp; water</td>
<td>- works within wetlands will consider the need to maintain fish passage, in consultation with the Department of Primary Industries (Fishing).</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>There has been significant consultation with DPI and will be ongoing during construction period.</td>
</tr>
<tr>
<td>SPIR-SSW28</td>
<td>Soil &amp; water</td>
<td>- works within wetlands will consider the need to maintain fish passage, in consultation with the Department of Primary Industries (Fishing).</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>Noted and addressed during detailed design.</td>
</tr>
<tr>
<td>SPIR-SSW29</td>
<td>Soil &amp; water</td>
<td>- where appropriate, construction phase sedimentation basins will be designed as they could be retained and used as permanent operational water quality ponds, where required for operational purposes.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>Noted and addressed during detailed design.</td>
</tr>
<tr>
<td>SPIR-SSW30</td>
<td>Soil &amp; water</td>
<td>- the storage, handling and use of the chemicals and fuels will be in accordance with the WHS Health and Safety Act 2000 and Workcover’s Storage and Handling of Dangerous Goods Code of Practice (WorkCover, 2005).</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Contractor</td>
<td>Noted</td>
</tr>
<tr>
<td>SPIR-SSW31</td>
<td>Soil &amp; water</td>
<td>- strategies to remove or reduce risks associated with acid sulfate soils will be identified.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>Included as part of approved Construction Acid Sulfate Soils Management Plan.</td>
</tr>
<tr>
<td>SPIR-SSW32</td>
<td>Soil &amp; water</td>
<td>- all sedimentation basins will comply with the requirements of the Management of Acid Sulfate Soils (Roads and Maritime 2008) and Waste Classification Guidelines Part A – Acid Sulfate Soils (DECC 2016), where there is a probability of encountering acid sulfate soils during construction.</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Contractor</td>
<td>Noted</td>
</tr>
<tr>
<td>SPIR-SSW33</td>
<td>Soil &amp; water</td>
<td>- works within wetlands will consider the need to maintain fish passage, in consultation with the Department of Primary Industries (Fishing).</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>Included as part of approved Construction Soil and Water Management Plan.</td>
</tr>
<tr>
<td>SPIR-SSW34</td>
<td>Soil &amp; water</td>
<td>- works within wetlands will consider the need to maintain fish passage, in consultation with the Department of Primary Industries (Fishing).</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>Noted and addressed during detailed design.</td>
</tr>
<tr>
<td>SPIR-SSW35</td>
<td>Soil &amp; water</td>
<td>- works within wetlands will consider the need to maintain fish passage, in consultation with the Department of Primary Industries (Fishing).</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>Noted and addressed during detailed design.</td>
</tr>
<tr>
<td>SPIR-SSW36</td>
<td>Soil &amp; water</td>
<td>- works within wetlands will consider the need to maintain fish passage, in consultation with the Department of Primary Industries (Fishing).</td>
<td>All</td>
<td>All</td>
<td>Construction</td>
<td>RMS/ Detailed Design</td>
<td>Noted and addressed during detailed design.</td>
</tr>
</tbody>
</table>
Further assessment involving geotechnical boreholes, monitoring boreholes and water quality testing at cutting sites will be undertaken at Type A cutting sites to monitor

Pre-construction
Stage 2

The Water Quality Monitoring Program for Sections 1 & 2 was approved by the Department

Detailed Design

Measures to manage high-risk groundwater impact areas will continue to be considered through the detailed design process. In identified areas, the design of water quality

Soil & water Further investigations will be undertaken to identify any impacts from contaminated groundwater from the former landfill sites at Firth Heinz Road and Crowleys Road. 3 Stage 2

All

Construction

RMS/ Contractor

Included as part of approved Construction Soil and Water Management Plan

All

Construction

RMS/ Contractor

Included as part of approved Construction Soil and Water Management Plan

Major embankments will be designed to enable distributed flow of surface waters. All All

Construction

RMS/ Contractor

Included as part of approved Construction Soil and Water Management Plan

Dewatering of excavations will be undertaken in line with Roads and Maritime’ Technical Guideline – Environmental Management of Construction Site Dewatering (Roads and Maritime, 2011c), and in accordance with any licence conditions.

Discharges from the sediment basins during construction that do not meet the water quality parameters for Oxleyan Pygmy Perch habitat should not be discharged into the

Stage 2

Pre-construction

All

Detailed Design

RMS/ Contractor

Significant installation and monitoring has been undertaken to date with further monitoring as per the approved Water QM Program.

Recharging is not possible or suitable, then discharging groundwater will be collected via the sedimentation basins before discharge into natural waterways. If discharging to

Stage 2

Pre-construction

RMS

All

Construction

Contractor

Included as part of approved Construction Soil and Water Management Plan

Where groundwater is released, recharge of the water table is the preferred option of managing groundwater. Mist will be collected by collecting groundwater ingress

Stage 2

Pre-construction

RMS

All

Construction

Contractor

Included as part of approved Construction Soil and Water Management Plan

If recharging is not possible or suitable, then discharging groundwater will be collected via the sedimentation basins before discharge into natural waterways. If discharging to
downstream groundwater, then the potential effects of mounding will be mitigated.

Stage 2

Pre-construction

RMS

All

Construction

Contractor

Included as part of approved Construction Soil and Water Management Plan

The proposed management strategy to address potential impacts at type A cuttings includes:

Pre-construction

All

Pre-construction Detailed Design

RMS/ Detailed Designer

Significant installation and monitoring has been undertaken to date with further monitoring as per the approved Water QM Program.

Detailed Design

The Water Quality Monitoring Program for Sections 1 & 2 was approved by the Department of Planning & Environment on the RWS.

All

Detailed Design

Construction

RMS

All

Construction

Contractor

Included as part of approved Construction Soil and Water Management Plan

The Water Quality Monitoring Program for Sections 1 & 2 was approved by the Department of Planning & Environment on the RWS.

All

Detailed Design

Construction

RMS

All

Construction

Contractor

Included as part of approved Construction Soil and Water Management Plan

The Water Quality Monitoring Program for Sections 1 & 2 was approved by the Department of Planning & Environment on the RWS.

All

Detailed Design

Construction

RMS

All

Construction

Contractor

Included as part of approved Construction Soil and Water Management Plan

The Water Quality Monitoring Program for Sections 1 & 2 was approved by the Department of Planning & Environment on the RWS.

All

Detailed Design

Construction

RMS

All

Construction

Contractor

Included as part of approved Construction Soil and Water Management Plan

The Water Quality Monitoring Program for Sections 1 & 2 was approved by the Department of Planning & Environment on the RWS.

All

Detailed Design

Construction

RMS

All

Construction

Contractor

Included as part of approved Construction Soil and Water Management Plan

The Water Quality Monitoring Program for Sections 1 & 2 was approved by the Department of Planning & Environment on the RWS.

All

Detailed Design

Construction

RMS

All

Construction

Contractor

Included as part of approved Construction Soil and Water Management Plan

The Water Quality Monitoring Program for Sections 1 & 2 was approved by the Department of Planning & Environment on the RWS.
Soil & water
Detailed Design
The need for the overpass and the arrangement of local access at Chatsworth Road will be reviewed at the detailed design stage depending on specific staging and delivery.

Traffic & Transport
The layout of the intersection at Yamba Road will be reviewed to better meet the needs of truck movements from Harwood Mill, where reasonable and feasible.

Stage 2
All

Soil & water
Appropriate scour protection for drainage measures will be determined during detailed design.

Traffic & Transport
Access to the Clarence and Richmond rivers will be maintained for industry and recreational waterway users.

Stage 2
All

Pre-construction
Traffic control schemes will be inspected as follows:

Addressed during detailed design

Stage 2
All

Pre-construction
RMS

Traffic & Transport
The need for a full interchange at Yamba Road will be investigated should traffic growth warrant it in the future and when funding is available.

Stage 2

Pre-construction
RMS

Traffic & Transport
The traffic management plans be prepared in consultation with councils.

Detailed Design
Pre-construction
RMS/ Contractor

Traffic & Transport
Access to State Forest maintained throughout construction.

Stage 2

Pre-construction
RMS/ Detailed Designer

Traffic & Transport
Where changes in access affected bus stop locations, temporary alternatives will be provided in conjunction with bus operators and affected schools to maintain access during construction.

Stage 2
All

Pre-construction
RMS/ Detailed Designer

Traffic & Transport
Where changes in access to private property or access to lands is to be provided, Reasonable access to private property or access to lands is to be provided.

Stage 2
All

Pre-construction
RMS/ Detailed Designer

Traffic & Transport
Where changes in access to State Forest affected access, temporary alternative access will be provided in conjunction with the Department of Planning & Environment.
For sections 1 & 2, an Urban Design and Landscape Plan has been submitted and approved. All pre-construction RMS/Contractor included as part of approved Construction Soil and Water Management Plan.

The project will be carried out in accordance with the urban design and landscaping strategy, as identified in Section 11.4.1 of this EIS. Detailed design for Wave 2 will be based on the Landscape Guidelines (RTA, 2008), the requirements of the Working Paper – Biodiversity (Section 5.2.2) and the landscape strategy to provide a robust, successful and effective planting design.

Pre-construction assessment during detailed design for Sections 1 & 2.

For sections 1 & 2, an Urban Design and Landscape Plan has been submitted and approved by the Department of Planning & Environment on the 8/5/15.

The built form of the project, including consideration of the height, bulk, scale, materials and finishes for:

- Bridges
- Retaining walls
- Cuttings and embankments
- Road barriers
- Signage
- Fences
- Clear zones
- Topsoil management
- Water quality control ponds
- Fauna crossing
- Place-marking and cultural plantings.

The project will be designed in accordance with the design principles identified in Working Paper – Urban Design, Landscape Character and Visual Impact, and relevant Roads and Networks guidelines.

Mitigation No. Category Management Measure Section Stage Timing Responsibility Reference / Comment

SPIR-UD11 Urban Design & Landscape The need for the overpass and arrangement of local access at Carroll's Lane will be reviewed at the detailed design stage depending on specific staging and delivery of the project.

SPIR-UD10 Urban Design & Landscape Mitigation of any earth mound will blend suitably into the existing landscape setting. Any mounding to be landscaped will be compacted in 1.5 metre layers with ameliorants and overlaid with topsoil to minimum 150 millimetres to ensure suitable planting conditions are achieved.

SPIR-UD9 Urban Design & Landscape Landscape and rehabilitation works will be monitored and recorded measures implemented where required until vegetation has stabilised.

SPIR-UD7 Urban Design & Landscape Architectural finishes for the project shall be selected to harmonise with the existing landscape setting by the Department of Planning & Environment on the 8/5/15.

SPIR-UD6 Urban Design & Landscape The extent of earthworks and the landscaping strategy at Wave 3 will be reviewed considering material requirements on the project and the visual impact on the resultant landscape.

SPIR-UD4 Urban Design & Landscape Waste Management Wave 1,2 and 3 soft soils works will not include landscaping.
Waste

Pre-construction

All

All

Pre-construction Construction

RMS/ Contractor

This is being managed in accordance with the contractors earth works management plan.

All Construction RMS/ Contractor

Bulk supplies sourced whenever feasible.

All Construction RMS/ Contractor

All construction RMS/ Contractor Noted

All construction RMS/ Contractor

All construction RMS/ Contractor

Recycling facilities provided at site compounds

Waste

All operational waste will be managed in accordance with the Roads and Maritime waste management procedures and Environmental Management System.

All Construction Contractor

Included in approved CWEMP

Waste

Appropriate waste and recycling facilities will be provided at rest areas and heavy vehicle checking stations.

All Construction RMS/ Contractor

Addressed in approved Construction Waste and Energy Management Plan

Waste

Sediment removed from sedimentation basins will be used, where appropriate, on-site in landscaping and/or flattening of berms.

All Construction Contractor

Included in approved CWEMP

Waste

Where feasible, the contractor will be required to re-use materials. This could include, but is not limited to, concrete formwork or surplus concrete pours.

All Construction RMS/ Contractor

Included in approved CWEMP

Waste

A waste register will be maintained by each contractor, detailing types of waste collected, amounts, date, time, and details of disposal.

All Construction RMS/ Contractor

Addressed in approved Construction Waste and Energy Management Plan

Waste

Site inductions and on-site training will be required to include waste minimisation principles and measures.

All Construction Contractor

Included in Project Induction

Waste

Minable timber will be harvested for reuse off site. All other felled timber will be reused on-site in the form of habitat recreation or mulch in landscaping and erosion and sedimentation control. Where mulch cannot be reused in-situ, collection will be given to the public in accordance with the Roads and Maritime Environmental Direction 25 (2012) and the Raw Mulch Exemption (EPA, 2008).

All Construction RMS/ Contractor

Damage of inhibit timber maximised. Raw mulch exemption 2008 has been superseded.

Waste

Material captured in excavations will be required to be either:

• Managed in accordance with the construction Solid and Water Management Plan.
• Transferred to a licensed sediment basin, treated and discharged in accordance with any licence conditions that apply to the discharge of water, or,
• Re-used for construction water or dust suppression.

All Construction Contractor

Noted and managed in accordance with the approved SWMP

Waste

Appropriate waste and recycling facilities will be provided at rest areas and heavy vehicle checking stations.

All Operation RMS/ Contractor

Appropriate waste recycling facilities will be provided at rest areas and heavy vehicle checking stations.

Waste

All construction waste will be managed in accordance with the Roads and Maritime waste management procedures and Environmental Management System.

All Operation RMS

Included in approved CWEMP

Waste

Collection and removal of material fill will be undertaken in accordance with the Roads and Maritime Environmental Management System.

All Operation RMS

Included in approved CWEMP

Waste

Sediment removed from operational water quality basins will be disposed of in accordance with the Protection of the Environment Operations (Wastewater) Regulation 2005.

All Operation RMS

Sediment will be beneficially reused where ever feasible.
Appendix B

Environmental Monitoring Results
Figure M1: HC2G Environmental Monitoring Locations
## Air Quality

All results are reported in g/m²/month - Total Insoluble Matter

**All results greater than 4g/m²/month are shaded red**

NS = Not sampled (include details e.g sample tampered with, funnel broken, etc)

Comments - Sample to be taken over 30 days (+ 2)

<table>
<thead>
<tr>
<th>Month</th>
<th>Date Started</th>
<th>Date Finished</th>
<th>DD1</th>
<th>DD2</th>
<th>DD3</th>
<th>DD4</th>
<th>DD5</th>
<th>DD6</th>
<th>Project Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>26/6/2015</td>
<td>27/7/2015</td>
<td>1.9</td>
<td>0.5</td>
<td>NS</td>
<td>0.6</td>
<td>0.7</td>
<td>1.1</td>
<td>1.0</td>
</tr>
<tr>
<td>August</td>
<td>27/7/2015</td>
<td>26/8/2015</td>
<td>5.0</td>
<td>1.0</td>
<td>0.6</td>
<td>0.5</td>
<td>0.3</td>
<td>0.5</td>
<td>1.3</td>
</tr>
<tr>
<td>September</td>
<td>26/8/2015</td>
<td>28/9/2015</td>
<td>5.2</td>
<td>1.4</td>
<td>0.7</td>
<td>0.3</td>
<td>0.6</td>
<td>0.3</td>
<td>1.4</td>
</tr>
<tr>
<td>October</td>
<td>28/9/2015</td>
<td>26/10/2015</td>
<td>8.2</td>
<td>2.1</td>
<td>1.2</td>
<td>0.4</td>
<td>1.6</td>
<td>1.3</td>
<td>2.5</td>
</tr>
<tr>
<td>November</td>
<td>26/10/2015</td>
<td>23/11/2015</td>
<td>69.7</td>
<td>4.4</td>
<td>0.9</td>
<td>0.5</td>
<td>0.8</td>
<td>33.8</td>
<td>1.7*</td>
</tr>
<tr>
<td>December</td>
<td>23/11/2015</td>
<td>18/12/2015</td>
<td>5.1</td>
<td>15.8</td>
<td>0.5</td>
<td>0.7</td>
<td>0.7</td>
<td>1.8</td>
<td>3.9*</td>
</tr>
</tbody>
</table>

**Comments:**

- **July**  
  DD3 not sampled due to delay procuring landowner approval. All results less than 4g/m²/mth

- **August**  
  DD1 at Kungala Road above 4g/m²/mth criterion, with all other results well below 4g/m²/mth criterion. Potential contamination from gravel service station access road

- **September**  
  DD1 at Kungala Road above 4g/m²/mth criterion, with all other results well below 4g/m²/mth criterion. Potential contamination from gravel service station access road

- **October**  
  DD1 at Kungala Road above 4g/m²/mth criterion, with all other results well below 4g/m²/mth criterion. Potential contamination from gravel service station access road

- **November**  
  DD1 remains above 4g/m²/mth criterion with apparent contamination of gauge with non-windborne gravel particles. ERG agreed DD1 should be relocated, which will be implemented for next monitoring period. Similarly DD6 contaminated with horse manure/bird manure from non-construction sources. DD2 minor exceedence with some minor contamination with flying ants, results for subsequent months to be reviewed. *average excludes contaminated results

- **December**  
  DDG2 had a high volume of works with mulch mixing to reduce temperature to mitigate combustion risk and placement of fill for resident access road. Water carts have been servicing the area from the stand pipe at Gate 4 in the immediate vicinity and continue to do so. Note that no dust complaints have been received during the monitoring period. DD1 contaminated from gravel access road to service station. This gauge has since been relocated as agreed with ERG.

Locations:
- DD1 – Kungala Road – rose farm/service station
- DD2 – 5415 Pacific Highway, Halfway Creek
- DD3 – 20 Parker Road, Wells Crossing
- DD4 – South of Bald Knob Road
- DD5 – Wells Crossing Creek
- DD6 – 5092 Pacific Highway, Halfway Creek

Pacific Highway Upgrade – Woolgoolga to Ballina Stage 1

Compliance Tracking Program HC2G Rev 3
## Noise Monitoring

<table>
<thead>
<tr>
<th></th>
<th>Location</th>
<th>Relevant Noise Management Level</th>
<th>Type of Activity</th>
<th>Measured Construction Noise Level</th>
<th>Compliant with MCOA Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>September</td>
<td>20 Parker Road</td>
<td>56</td>
<td>Concrete batching</td>
<td>45</td>
<td>Yes</td>
</tr>
<tr>
<td>October</td>
<td>20 Parker Road</td>
<td>56</td>
<td>Concrete batching</td>
<td>51</td>
<td>Yes</td>
</tr>
<tr>
<td>November</td>
<td>20 Parker Road</td>
<td>56</td>
<td>Concrete batching</td>
<td>49</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Water Quality Monitoring
## Water Monitoring – July 2015

<table>
<thead>
<tr>
<th>Location</th>
<th>Date</th>
<th>Time</th>
<th>TEMP</th>
<th>PH</th>
<th>EC</th>
<th>TSS</th>
<th>NTU</th>
<th>DO</th>
<th>Nitrate</th>
<th>Nitrite</th>
<th>Ammonia</th>
<th>Total Nitrogen</th>
<th>Phosphate</th>
<th>Total Phosphorus</th>
<th>TPH</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halfway Ck U/S</td>
<td>07/07/15</td>
<td>4.30pm</td>
<td>11.4</td>
<td>7.42</td>
<td>0.1565</td>
<td>3</td>
<td>11.4</td>
<td>5.29</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.17</td>
<td>0.03</td>
<td>0.03</td>
<td>N/A</td>
<td>Particulate matter present slight tannin colour evident</td>
</tr>
<tr>
<td>Halfway Ck D/S</td>
<td>07/07/15</td>
<td>4.45pm</td>
<td>11.5</td>
<td>7.73</td>
<td>0.1496</td>
<td>&lt;2</td>
<td>10.7</td>
<td>6.04</td>
<td>0.05</td>
<td>0.05</td>
<td>0.05</td>
<td>0.18</td>
<td>0.03</td>
<td>0.03</td>
<td>N/A</td>
<td>Pooled water no flow</td>
</tr>
<tr>
<td>Wells Crossing U/S</td>
<td>07/07/15</td>
<td>12.19pm</td>
<td>11.2</td>
<td>4.36</td>
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<tr>
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<tr>
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<td>22/07/15</td>
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<td>0.1325</td>
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<td>&lt;0.03</td>
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<td>Wet-No Flow</td>
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<td>0.04</td>
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<td>Wet-No Flow</td>
</tr>
</tbody>
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## Rain

| Location          | 1/7/15 | 2/7/15 | 3/7/15 | 4/7/15 | 5/7/15 | 6/7/15 | 7/7/15 | 8/7/15 | 9/7/15 | 10/7/15 | 11/7/15 | 12/7/15 | 13/7/15 | 14/7/15 | 15/7/15 | 16/7/15 | 17/7/15 | 18/7/15 | 19/7/15 | 20/7/15 | 21/7/15 | 22/7/15 | 23/7/15 | 24/7/15 | 25/7/15 | 26/7/15 | 27/7/15 | 28/7/15 | 29/7/15 | 30/7/15 | 31/7/15 | Total |
|-------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| Site Compound     | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 30     |
| Halfway Creek     | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 29     |
| Franklins Road    | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 32     |
## Water Monitoring – August 2015

<table>
<thead>
<tr>
<th>Location</th>
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<th>Time</th>
<th>TEMP</th>
<th>PH</th>
<th>EC</th>
<th>TSS</th>
<th>NTU</th>
<th>DO</th>
<th>Nitrate</th>
<th>Nitrite</th>
<th>Ammonia</th>
<th>Total Nitrogen</th>
<th>Phosphate</th>
<th>Total Phosphorus</th>
<th>TPH</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Halfway Ck U/S</td>
<td>19/08/2015</td>
<td>11.15am</td>
<td>13.4</td>
<td>6.6</td>
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<td>&lt;0.03</td>
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<td>Low flow. Almost stopped running.</td>
</tr>
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<td>19/08/2015</td>
<td>11.00am</td>
<td>13.7</td>
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<td>&lt;0.05</td>
<td>0.23</td>
<td>&lt;0.03</td>
<td>&lt;0.03</td>
<td>N/A</td>
<td>Still. Floating leaves.</td>
</tr>
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<td>19/08/2015</td>
<td>12.50pm</td>
<td>13.5</td>
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<td>0.219</td>
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<td>&lt;0.05</td>
<td>0.38</td>
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<td>&lt;0.03</td>
<td>N/A</td>
<td>Reedy. Clean sample difficult to obtain.</td>
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<tr>
<td>Wells Crossing D/S</td>
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<td>12.6</td>
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<td>&lt;0.03</td>
<td>N/A</td>
<td>Clear water. Some algae on underwater structures</td>
</tr>
<tr>
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<td>19/08/2015</td>
<td>12.15pm</td>
<td>11.2</td>
<td>7.9</td>
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<td>&lt;0.05</td>
<td>&lt;0.05</td>
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<td>&lt;0.03</td>
<td>&lt;0.03</td>
<td>N/A</td>
<td>Pond getting smaller, clearing up.</td>
</tr>
<tr>
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<td>&lt;0.03</td>
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<td>N/A</td>
<td>Algae on surface</td>
</tr>
<tr>
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<td>25/08/2015</td>
<td>12.45pm</td>
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<td>13</td>
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<td>0.35</td>
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<td>N/A</td>
<td>Wet event piling pad under construction</td>
</tr>
<tr>
<td>Halfway Ck D/S</td>
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<td>12.30pm</td>
<td>12.2</td>
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<td>&lt;0.03</td>
<td>N/A</td>
<td>Wet event piling pad under construction</td>
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<tr>
<td>Wells Crossing U/S</td>
<td>25/08/2015</td>
<td>1.44pm</td>
<td>12.9</td>
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<td>&lt;0.03</td>
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<td>Wet event basin construction abut A and B</td>
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<td>1.15pm</td>
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<td>&lt;0.03</td>
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<td>Wet event basin construction abut A and B</td>
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<tr>
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<td>Pooled water no flow</td>
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<td>&lt;0.03</td>
<td>&lt;0.03</td>
<td>N/A</td>
<td>Dry Pooled water no flow algae on surface</td>
</tr>
</tbody>
</table>

## Rain

|-------------------|--------|--------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|        |
| Site Compound     | 0      | 0      | 0      | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 41      |
| Halfway Creek     | 0      | 0      | 0      | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 39      |
| Franklins Road    | 0      | 0      | 0      | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 0       | 46      |
## Water Monitoring – September 2015

<table>
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<th>TEMP</th>
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<th>EC</th>
<th>TSS</th>
<th>NTU</th>
<th>DO</th>
<th>Nitrate</th>
<th>Nitrite</th>
<th>Ammonia</th>
<th>Total Nitrogen</th>
<th>Phosphate</th>
<th>Total Phosphorus</th>
<th>TPH</th>
<th>Comments</th>
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</thead>
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<td>8.48am</td>
<td>13.6</td>
<td>7.11</td>
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<td>14</td>
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<td>14/09/15</td>
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<td>N/A</td>
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<td>18/09/15</td>
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## Rain

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### Water Monitoring – October 2015

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<th>Nitrite</th>
<th>Ammonia</th>
<th>Total Nitrogen</th>
<th>Phosphate</th>
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Rain

Values

<p>| Date  | 1/10 | 2/10 | 3/10 | 4/10 | 5/10 | 6/10 | 7/10 | 8/10 | 9/10 | 10/10 | 11/10 | 12/10 | 13/10 | 14/10 | 15/10 | 16/10 | 17/10 | 18/10 | 19/10 | 20/10 | 21/10 | 22/10 | 23/10 | 24/10 | 25/10 | 26/10 | 27/10 | 28/10 | 29/10 | 30/10 | 31/10 | Totals |
|-------|------|------|------|------|------|------|------|------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|</p>
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<th>DO</th>
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<th>Phosphate</th>
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<td>27.6</td>
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<td>&lt;0.03</td>
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<td>&lt;50</td>
<td>pH and DO marginally below P80 results. TSS, NTU and nitrogen nutrients above background but reflective of upstream values All other parameters within P80 guidelines</td>
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### Rain

<p>| Location         | 1/1/15 | 2/1/15 | 3/1/15 | 4/1/15 | 5/1/15 | 6/1/15 | 7/1/15 | 8/1/15 | 9/1/15 | 10/1/15 | 11/1/15 | 12/1/15 | 13/1/15 | 14/1/15 | 15/1/15 | 16/1/15 | 17/1/15 | 18/1/15 | 19/1/15 | 20/1/15 | 21/1/15 | 22/1/15 | 23/1/15 | 24/1/15 | 25/1/15 | 26/1/15 | 27/1/15 | 28/1/15 | 29/1/15 | 30/1/15 | 31/1/15 | Total |
|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Site Compound    | 0      | 0      | 4.2    | 2      | 0      | 0      | 4.4    | 0      | 0      | 0      | 15     | 25     | 14     | 0.2    | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 1.8    | 42     | 0.2    | 152    |
| Halfway Creek    | 0      | 0      | 14     | 20     | 3.6    | 0      | 0      | 2      | 0      | 0      | 0      | 0      | 0      | 0      | 0.4    | 18     | 19     | 0.2    | 5      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 0      | 2      | 29     | 0.2    | 114    |
| Franklins Road   | 0      | 0      | 7.8    | 23     | 5      | 0.2    | 0.4    | 6.8    | 0.2    | 0      | 0      | 0      | 2      | 27     | 0.8    | 5      | 0.2    | 0      | 0      | 0      | 0      | 0      | 3      | 0      | 0      | 0      | 0      | 3      | 14     | 0      | 99     |</p>
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<th>Time</th>
<th>TEMP</th>
<th>PH</th>
<th>EC</th>
<th>TSS</th>
<th>NTU</th>
<th>DO</th>
<th>Nitrate</th>
<th>Nitrite</th>
<th>Ammonia</th>
<th>Total Nitrogen</th>
<th>Phosphate</th>
<th>Total Phosphorus</th>
<th>TPH</th>
<th>Comments</th>
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<td>22.7</td>
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<td>All results within p80 guidelines with the exception of DO and pH marginally (0.3) above p80 guidelines</td>
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Rain

Values

| Date | 1/12 | 2/12 | 3/12 | 4/12 | 5/12 | 6/12 | 7/12 | 8/12 | 9/12 | 10/12 | 11/12 | 12/12 | 13/12 | 14/12 | 15/12 | 16/12 | 17/12 | 18/12 | 19/12 | 20/12 | 21/12 | 22/12 | 23/12 | 24/12 | 25/12 | 26/12 | 27/12 | 28/12 | 29/12 | 30/12 | 31/12 | Total |
|------|------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|      |      |      |      |      |      |      |      |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |      |

B26 and operational basin natural discharge. TSS, NTU, Nitrate, total Nitrogen and Phosphate above p80 but similar to upstream results. Increased turbidity and TSS likely to be due from surrounding area.
Appendix C
ICAMS and Incident Reports
ICAM Investigation Report

Clearing Incident South of Bald Knob Road

New South Wales

Edition / Revision Register

<table>
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<th>Rev Details</th>
<th>Approved</th>
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<td>RMS Submission</td>
<td>Alistair Pagan</td>
</tr>
<tr>
<td>2</td>
<td>20/8/2015</td>
<td>Incorporating RMS/PC/CMC comments</td>
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</table>
## Contents

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Edition / Revision Register</td>
<td>1</td>
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<tr>
<td>1 Incident Description</td>
<td>3</td>
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<tr>
<td>1.1 Incident Description</td>
<td>3</td>
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<tr>
<td>1.2 Details of damage/impact</td>
<td>3</td>
</tr>
<tr>
<td>1.3 Events Leading up to the Incident / Timeline</td>
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<td>1.4 Photographs</td>
<td>4</td>
</tr>
<tr>
<td>2 Key Findings</td>
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<tr>
<td>2.1 Basic Cause (ie &quot;Why did the incident occur?&quot;)</td>
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<td>2.2 Contributing Factors</td>
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<td>2.2.1 Absent of Failed Defenses</td>
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<td>2.2.2 Individual or team actions</td>
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<td>2.2.4 Organisational Factors</td>
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<td>3 Conclusion and Observations</td>
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<td>4 Recommendations</td>
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1 Incident Description

1.1 Incident Description
Clearing (by cut stump) of five (5) trees outside of cadastral acquisition boundary but within approved clearing boundary and approved project boundary. Ground cover and small shrubs remain undisturbed. Note that this area of 210m² is within the EPL premises boundary, as the EPL premises boundary is defined by the “approved project boundary” which incorporates public utility connections, ancillary facilities, local road connections etc which are outside the RMS road reserve which is defined by the cadastral/acquisition boundary. Note that EPA requires these project related construction activities to be included in the EPL premises boundary in order to comply with legislative requirements of the Protection of the Environment Operations Act (1997), with this requirement being a driving force behind the development of the “approved project boundary” concept.

Location: CH 24,867 to CH 25,052 on eastern boundary (approximately 60m south of current Bald Knob Road at northern extremity). 185m long total, maximum 1.995m wide, ~ 60% less than 1m wide. Total area 210m² (0.021Ha)

Time: Clearing occurred approximately midday
Date: 31 July 2015

1.2 Details of damage/impact
Inspection by project ecologists was completed on 3 August with report included in Attachment 1. A summary of the trees impacted is provided below in Table 1.1.

Table 1.1: Tree Species Impacted by clearing outside of cadastral/acquisition boundary
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<th>Species identification</th>
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</thead>
<tbody>
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<td>1</td>
<td>ironbark, 57 cm diameter at breast height (dbh)</td>
<td>Eucalyptus fibrosa</td>
</tr>
<tr>
<td>2</td>
<td>ironbark, 14 cm dbh</td>
<td>Eucalyptus fibrosa</td>
</tr>
<tr>
<td>3</td>
<td>spotted gum, 23 cm dbh</td>
<td>Possibly Corymbia henryi</td>
</tr>
<tr>
<td>4</td>
<td>Melaleuca sp., 6 cm dbh</td>
<td>Not possible to identify</td>
</tr>
<tr>
<td>5</td>
<td>Melaleuca sp., 6 cm dbh</td>
<td>Not possible to identify</td>
</tr>
</tbody>
</table>

1.3 Events Leading up to the Incident / Timeline
A detailed “Event and Condition Chart” has been prepared to provide a comprehensive timeline, depicting complex events in a logical manner. This Event and Condition Chart is included as Attachment 2.
1.4 Photographs

Photo 1: Tree 3 - CH 24900 looking south – cut stump Spotted Gum in foreground

Photo 2: Tree 2 - CH 24934 looking south – cut stump *Eucalyptus fibrosa* in foreground
Photo 3: Trees 4 and 5 - CH 24950 looking south – 2 x Melaleuca sp

Approved Clearing Limit (orange flagging) and approved project boundary (Telstra rope) and approved clearing limit peg

Photo 4: Tree 1 - CH 24964 looking south - *Eucalyptus fibrosa*
2 Key Findings

The key findings outline why the incident occurred and the contributing factors deduced from the investigation are categorised using the Incident Cause Analysis Method (ICAM). The ICAM chart is included as Attachment 3.

2.1 Basic Cause (ie “Why did the incident occur?”)

A series of defences (identified in Section 2.2) failed to prevent the incident from occurring. This combination of errors is best described as the “Swiss Cheese Model” ICAM Incident Investigation Reference Guide. Figure 7.

Figure 7

![ICAM Chart]

2.2 Contributing Factors

2.2.1 Absent of Failed Defenses

#1 - Design Quality Assurance & Document Control (Lapse)

It is understood that at some point between the 100% Substantial Design (SD) phase and the 100% Issued For Construction (IFC) design phase certain design changes were made to facilitate drainage design rectification. During this process the Clearing Boundary was shifted over the acquisition boundary, this appears to be due to a standard offset from the edge of the designed drain for constructability. The design quality assurance and document process was not followed, resulting in the clearing limit outside the acquisition boundary not being identified at the time.

#2 – Consistency Review Process failed to identify clearing limit & approved project boundary (Lapse)

After the IFC stage the major consistency review process failed to identity the “clearing limit” and “approved project boundary” outside the road reserve (ie outside the acquisition boundary).
#3 – Hold Point Release (Conditional) with unresolved high risk items / comments (Slip / Mistake)

On Preclearance walk (16/7) boundary issues were raised at CH24400 (Refer to Event & Condition Chart – Attachment 2). [There are actually two locations where the clearing limits crossed over the acquisition boundary. This would subsequently become a contributing factor to failed defense #6.]

Following the walk, Hold Point – ATP 67 was released on 22/7 with certain conditions attached. One of said conditions was “#5 Surveying matters. There is one location where surveying doesn’t match up slightly where clearing limit was just outside the acquisition. [CMC] was chasing this up with [Survey]”. Follow up email was sent on 28/7 to remind those included in ATP67 that action was needed in this regard including clarification on CH24870 to 25000.

#4 – Confirmation of Hold Point Condition close out (Lapse)

Incident investigation revealed communication issues within CMC regarding tracking of close out of conditional hold point release. Responsibility and accountability for ensuring close out was not clear. Action was initiated and discussions undertaken, however the task of relocating approved clearing limit to the cadastral acquisition boundary was not completed prior to clearing in the area of the incident. An email was sent to RMS acknowledging that survey issues were to be rectified on 28 July (Attachment 4), however as noted above this was not completed.

#5 – Survey Pegging and Flagging Relocation (Lapse)

On 2 July, the surveyor pegged out “approved clearing limit” and “approved project boundary” as per G40 2.4 requirements. Verification of “approved clearing limit” as per G40 2.4 completed 5 July and conformance report was included with G40 2.4 Hold Point release request on 6 July.

On 28 July survey was requested to relocate the approved clearing limit to the acquisition boundary. On the 30 July the acquisition boundary was pegged based off the model provided by the registered surveyor, however the clearing limit flagging was not relocated. Usually the surveyor would have 2 labourers following behind putting in star pickets and stringing up flagging (for typical clearing limit set out over large distances). On 30 July only one labourer was available for the task. Labourer followed surveyor, carrying setout pegs. Surveyor was not aware if he was just setting a peg line or relocating the flagging. Task definition was not sufficient to identify that relocation of the clearing limit flagging should have been done immediately instead of the usual process of laboring crew following up later/next day.

Communication breakdown when ‘leading hand’ managing the clearing limit labour crew had last day on 31 July. Leading hand assigned people to work crews. Usually one to check works after completion but wasn’t available pending finishing up on 31 July.

#6 – Pre-Clearance Walk (Mistake)

A Pre-Clearance walk was undertaken at approximately 6:30 on 31/7. Note high work loads with significant uncertainties at time of inspection. These uncertainties included whether saw tooth arrangement was to be adopted or not, relocation of three sedimentation basins between Bald Knob Road and Wells Crossing (which conflicted with fauna underpass, glider crossing vegetation/omission from revised clearing limit). A
consistency review process was underway and unresolved at time of incident for these sedimentation basins. The accumulated uncertainty and high work load contributed to the incident.

Survey pegs on the inside of the clearing limit were seen by some members of the walk through but the connection to their relevance was not made at the time. It is noted that the Hold Point Release document (containing the comments surrounding peg alignment issues) was not in the field with those walking, leading to all parties relying on memory to identify possible risks.

All parties acknowledge that there are severe time pressures and high workloads at the current time.

Since incident – copy of Hold Point Release including supporting comments are taken into the field.

**#7 – Failure of G71 survey process**

Incident investigation revealed the failure of the G71 Clause 3.4 survey process. A full copy of G71 3.4 is included in Attachment 6. Investigation into this failure revealed that a key contributing factor was that:

- CMC survey resources overlooked the requirements of QA Specification G71 – Construction Surveys – Section 3.4 and were over reliant on information supplied by RMS
- Some confusion between G40 2.4 approved project boundary and cadastral acquisition boundary (refer to Absent/Failed defence #8 discussion below)
- High workload of survey team during project ramp up

These items have been tabulated in the ICAM Chart included in Attachment 3 and also in Recommendations included in Section 4.

**#8 – G40 vs G71 boundary discussion**

The “approved project boundary” concept is necessary for certain situations (eg temporary sediment basins on non-RMS land – requiring lease with landowner, ancillary facilities, public utility adjustments, driveway connections etc). The “approved project boundary” should not however include any permanent design/permanent infrastructure works. The design process needs to be rectified to ensure that no permanent works occur outside RMS road reserve/RMS owned land – including any clearing offsets from permanent infrastructure for constructability.

It is also recommended that G40 2.4 be amended to require set out of the RMS acquisition boundary as the primary set out, with the “approved project boundary” (which includes temporary works outside of the road reserve acquisition boundary) being set out separately with a different flagging type for clarity in the field.

2.2.2 Individual or team actions
Refer to ICAM Chart (Appendix 3).

2.2.3 Task or environmental condition
Low light conditions during walk through on 31 July prior to sun rising over coastal ridge in the forest considered to have minor to nil effect on incident.

Refer to ICAM Chart (Appendix 3).
2.2.4 Organisational Factors
Refer to ICAM Chart (Appendix 3).

3 Conclusion and Observations

3.1 Conclusion and Observations

- It is evident that a series of processes designed to prevent this incident failed stemming from design, through consistency review, Hold Point process and close out of conditional release, pre-clearing walkthrough and survey processes
- Late changes in the design process between 100%SD and 100% IFC were not detected
- There is significant risk and confusion around the “approved project boundary” (refer to G40 2.4) and the cadastral acquisition boundary (refer to G40 2.4 and G71 3.4 – extracts included in Attachment 6)
- The “approved project boundary” concept is necessary for certain situations (eg temporary sediment basins on non-RMS land – requiring lease with landowner, ancillary facilities, public utility adjustments, driveway connections etc). The “approved project boundary” should not however include any permanent design/permanent infrastructure works. The design process needs to be rectified to ensure that no permanent works occur outside RMS road reserve/RMS owned land – including any clearing offsets from permanent infrastructure for constructability.
- The fact that the project surveying team is new to RMS projects was a contributing factor, with unfamiliarity with G71 Specification a contributing factor. Recommendations to include G71 3.4 as a HOLD POINT or alternatively RMS procured data have been made to address this risk for future projects/activities.
- Risks were identified around conditional release of Hold Points. Associated with this risk, the investigation identified deficiencies in communication and feed back processes within CMC to ensure close out of conditions is confirmed prior to proceeding
- There were several simultaneous issues of different types regarding temporary clearing limit set out that resulted in some confusion in relocating the approved clearing limit between CH 24870 to CH 25000. These included temporary exclusion (using approved blue and white tape as per flagging protocol) of (i) saw tooth arrangement (ii) three basins requiring relocation between Bald Knob Road and Wells Crossing. Each of these did not require relocation of the clearing limit, but did require temporary installation of Blue and White exclusion tape. This in combination with communication error contributed to the clearing limit flagging not being relocated to the cadastral acquisition set out on the morning of 31 July.
- Deficiencies in the pre-clearing walk process (documentation in field, composition of walk through dependent on risk profile) were identified with preventative actions recommended
- Recommendations are made with respect to identified absent/failed defences with the objective of preventing recurrence of this type of incident

4 Recommendations

4.1 Recommendations

1. Issue Learning Document to RMS/Agencies with the objective of preventing recurrence of this type of incident, addressing the identified risks and recommendations. Review learnings with entire HC2G project team
2. Any new survey resources procured on HC2G project will be trained and inducted into the recommendations presented here and significant learning developed as part of this incident review process
3. During detailed design RMS ensure that design consultants comply with design process (ie no substantial changes without notification from 100% SD to 100% IFC)
4. RMS revise current clearing boundary to remove any inconsistencies with acquisition boundary and re-issue
5. Ensure that Consistency Review process include step to ensure that all cases of clearing limit and approved project boundary outside of acquisition
6. Hold Point to appropriate seniority – especially for high risk. Recommend development of protocol for document distribution including appropriate escalation where required. Recommendation that Hold Point includes Senior Project Engineer and Environmental Coordinator as minimum.

7. Refuse Hold Point if risk too high

8. CMC complete full review of cadastral/acquisition boundary against construction activities within 300mm of the boundary in accordance with G71 3.4

9. CMC develop process for close out confirmation of conditional Hold Point releases. Recommend responsibility and accountability reside with the person who raised Hold Point. Tasks may be delegated, however responsibility and accountability for close out rests with the person who raised the Hold Point.

10. Pre-clearing walks include full copy of Hold Point release documentation including any conditions

11. Ensure site supervisor representative included in Pre-Clear walk through

12. If boundary issue identified in a section (as per Item 7 above), surveyor to be included in the pre-clearing walk with the purpose of ensuring that no construction activity occurs outside the road reserve acquisition boundary (as per G71 3.4), unless specifically approved activity (eg public utility connection or temporary sedimentation basins with approved lease arrangements with adjacent landowner etc)

13. (a) G71 Clause 3.4 boundary checking process be made a HOLD POINT, so that QA system captures this important step or (b) RMS procure the property/acquisition boundary from Registered Surveyor and issue as design string to both (i) design consultants and (ii) principal contractor. This option has the benefit of potentially eliminating the risk works outside road reserve at design stage, which has significant merit in terms of the Hierarchy of Controls – where elimination of the risk is the optimum solution.

14. CMC provide training to Survey Team regarding details of RMS Specification including G71 requirements

15. Recommended refinements to Clearing and Grubbing Specification G40 Clause 2.4:

<table>
<thead>
<tr>
<th>Reference</th>
<th>Current Clause</th>
<th>Recommended Refinements to Clause (shown in Bold Itatics for insertions and strike through for deletions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>G40 2.4 (First Paragraph)</td>
<td>Identify the Approved Project Boundary (area of acquisition plus any area outside the acquisition boundary required temporarily for road works such as sediment basins and ancillary site (Total Area of assessment), clearing limits, cadastral boundaries and the Working area on all relevant Sensitive Area Maps (refer to clause 4.13 of RMS G36). These maps prepared for the project must have markings that match or replicate the colouring and nature of limits marked in the field.</td>
<td>No change</td>
</tr>
</tbody>
</table>
2.4 (Second Paragraph)

At least seven days prior to the proposed commencement of clearing commences, Approved Project Boundary and clearing limits must be clearly delineated on site and verified as correct by a surveyor, engaged by you, independent of the parties that installed the delineation.

G40 2.4 (Third Paragraph)

Delineate the Approved Project Boundary using nightline or similar barrier rope

DELINEATE THE ROAD RESERVE (ACQUISITION BOUNDARY) USING TELSTRA ROPE OR SIMILAR. SEPARATELY
Delineate AREAS WHERE the Approved Project Boundary IS LOCATED OUTSIDE THE ROAD RESERVE (ACQUISITION BOUNDARY) using nightline or similar barrier rope, THESE AREAS OUTSIDE THE ROAD RESERVE WILL REQUIRE LEASE AGREEMENTS WITH THE LANDOWNERS PRIOR TO ANY ENTRY OR CONSTRUCTION ACTIVITY.

5 Significant Learnings

5.1 Significant Learnings

A project learning document will be prepared to capture the mechanism and failed defences of this incident and the associated preventative actions. This will be distributed to RMS and agencies to share these learning s and seek to prevent recurrence of this type of incident.

All recommendations and significant learnings will also be provided as a training package to the entire HC2G project team in order to prevent recurrence of a similar incident. Preliminary findings have already been discussed at the CMC project team meeting including all engineers, survey team, managers, support functions and site supervisors on 19 August 2015.

Implementation of the key recommendations as included in Section 4 has already commenced with respect to survey boundary checks as per G71 3.4, design review of boundary conflicts, Hold Point processes and Pre-clearing walk process.

6 Attachments

<table>
<thead>
<tr>
<th>Attachment</th>
<th>Details</th>
<th>Attached Y/N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment 1</td>
<td>Ecologist’s Report</td>
<td></td>
</tr>
<tr>
<td>Attachment 2</td>
<td>Event and Condition Chart – detailed timeline</td>
<td></td>
</tr>
<tr>
<td>Attachment 3</td>
<td>ICAM Chart</td>
<td></td>
</tr>
<tr>
<td>Attachment 4</td>
<td>Hold Point – ATP 67 Documentation (ATP &amp; correspondence)</td>
<td></td>
</tr>
<tr>
<td>Attachment 5</td>
<td>Clearing Limit Drawing x 2</td>
<td></td>
</tr>
<tr>
<td>Attachment 6</td>
<td>G40 2.4 and G71 3.4 extracts</td>
<td></td>
</tr>
</tbody>
</table>
Attachment 1 - Ecologist’s Report
20 August 2015

Martin Mulhearn
Environment Manager
CMC Pty Ltd

RE: Ecological report on clearing within approved clearing limit and approved project boundary, but outside of cadastral acquisition boundary—Section 2 of the Woolgoolga to Ballina Pacific Highway Upgrade: Halfway Creek to Glenugie – R2

Dear Martin,

This brief report summarises Ecosure’s understanding of the vegetation that has been accidentally cleared as part of temporary frog fencing installation on Section 2 of the Woolgoolga to Ballina Pacific Highway Upgrade: Halfway Creek to Glenugie. We understand that five trees were cleared outside of the clearing footprint in ironbark – spotted gum forest at Chainage 24, 867 to Chainage 25, 052 on eastern boundary, approximately 60 m south from Bald Knob Road. The total area between the approved clearing limit/approved project boundary and the cadastral/acquisition boundary was 210m². Note that within this area only five trees were felled by cut stump method and grubbing was not undertaken. Ground cover also remained undisturbed.

Photos were provided to our principal botanist, Dr Alan House for flora species identification. Dr Alan House is familiar with this area having led the field team for detailed surveys carried out for pre-clearing work in 2013 (Ecosure 2013). No re-inspection of this area was done after notification of this clearing event, however it is within the buffer area inspected as part of pre-clearing surveys.

From photographic analysis, it is considered unlikely that any threatened flora were damaged, since the ground cover appears to be largely intact and from our previous surveys, this community is considered unlikely to provide habitat for locally occurring threatened flora such as maundia (*Maundia triglochinoides*) or square-stemmed olax (*Olax angulata*).

Table 1 Tree species cleared

<table>
<thead>
<tr>
<th>Tree number</th>
<th>Plate id (see Appendix 1)</th>
<th>Description</th>
<th>Species identification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1 &amp; 2</td>
<td>ironbark, 57 cm diameter at breast height (dbh)</td>
<td><em>Eucalyptus fibrosa</em></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>ironbark, 14 cm dbh</td>
<td><em>Eucalyptus fibrosa</em></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>spotted gum, 23 cm dbh</td>
<td>possibly <em>Corymbia henryi</em></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td><em>Melaleuca sp.</em>, 6 cm dbh</td>
<td>not possible to identify</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td><em>Melaleuca sp.</em>, 6 cm dbh</td>
<td>not possible to identify</td>
</tr>
</tbody>
</table>
None of the trees cleared are likely to be the threatened square-fruited ironbark (*Eucalyptus tetrapleura*) which occurs approximately 500 metres to the south of this location. Square-fruited ironbark is listed as vulnerable under both the NSW Threatened Species Conservation Act 1995 and the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. Both of the cleared ironbarks were confidently identified as broad-leaved ironbark (*Eucalyptus fibrosa*) (Table 1); tree 3 appears to be large-leaved spotted gum (*Corymbia henryi*) and trees 4 and 5 to be *Melaleuca* species, but these cannot be confirmed from the photographs we have seen.

Kind regards,

Elvira Lanham
Senior Ecologist
Appendix 1 – Photos

Plate 1 Fruits from tree 1 – Ironbark. Confidently identified as *Eucalyptus fibrosa*.

Plate 2 Stump tree 1 cleared
Plate 3 Tree 3 stump cleared

Plate 4 Tree 4 & 5 stumps
Attachment 2- Event and Condition Chart – detailed timeline
Attachment 3- ICAM Chart
ICAM CHART

ORGANISATIONAL FACTORS

| DE Design process results in clearing limit outside road reserve |
| RM Risk Control passed conditionally at defensive lines without feedback loop to confirm close out |
| OC Desire to maintain site productivity |
| OR Wrong person, or nobody takes responsibility |
| CO Accurate Communication of required task |
| HW Absence of required document |
| PR ambiguous bdy types in specification, overlapping/conflicting procedure |
| TR training regarding detail of specification |

TASK/ENVIRONMENTAL CONDITIONS

| Complex multi-faceted design resulting in difficulty in detecting change during design review process |
| Poor judgement – making changes outside of approved process |
| Inadequate supervision |
| Poor signal to noise ratio |
| Unusual boundary modification process |
| Multiple individuals involved |
| Poor Communication |
| Time pressures re maintenance productivity onsite – a lot of simultaneous processes in parallel. |
| High workload |
| Poor signal to noise ratio |
| First RMS project for surveyors – Qld experience |
| Some confusion in spec G40 2.4 between “approved project bdy” and “cadastral acquisition bdy” |

INDIVIDUAL TEAM ACTIONS

| Significant design changes from 100%SD to 100% IFC without RMS authorization |
| Inadequate supervision |
| Time pressures re maintenance productivity onsite – a lot of simultaneous processes in parallel. |
| High workload |
| Poor signal to noise ratio |
| First RMS project for surveyors – Qld experience |
| Some confusion in spec G40 2.4 between “approved project bdy” and “cadastral acquisition bdy” |

ABSENT/FAILED DEFENCES

| Design Quality Assurance & Document Control failed to prevent design outside road reserve |
| Consistency Review Process failed to identify clearing limit & approved project boundary outside road reserve |
| Hold Point Release (Conditional) with unresolved high risk items / comments |
| Confirmation of Hold Point Condition close out incomplete – from communication issues & tasks being delegated to numerous people |
| Survey Pegging and Flagging Relocation incomplete |
| Conditional Hold Point document not in field during Pre-clearing walk through |
| Pre-Clearance Walk failed to identify latent cadastral boundary risk |
| Survey Set Out Process failed to identify “approved clearing limit” and “approved project boundary” outside road reserve (ie outside cadastral/acquisition boundary) |

INCIDENT

Clearing (by cut stump) of five (5) trees outside of road reserve (cadastral acquisition boundary) but within approved clearing boundary and approved project boundary. Total Area approx. 210m²
Attachment 4- Hold Point – ATP 67 Documentation (ATP & correspondence)
General Correspondence

Reference No.: CMC-CN1001-GC-00273
Project Title: Upgrade of HW10 Pacific Highway Upgrade, Halfway Creek

Date: 28 July 2015, 02:33:56 PM +10:00
Response required by:

To: John O’Donnell, Roads and Maritime Services
    Tom Jefferys, Civil Mining and Construction
CC: Peter Atkinson, Civil Mining and Construction
    Steven Alford, Roads and Maritime Services
    Lynden Kingsley, Roads and Maritime Services
    Team Binder, Roads and Maritime Services
From: Alex Lahey-Dillon, Civil Mining and Construction
Subject: RE: ATP 67 G40 cl 2.4 Clearing ch 22800 to ch 25100

This mail item is received via EMAIL from Alex Lahey-Dillon on 2015-07-28 02:13:31 PM +10:00 and processed by Shaun Nicho’son of Civil Mining and Construction on 28/07/2015 2:33:55 PM

From: Alex Lahey-Dillon<alaheydillon@cmc.net.au>
Sent: Tuesday, 28 July 2015 02:13:20 PM
To: 'O'DONNELL John'<John.O'Donnell@rms.nsw.gov.au>, Tom Jefferys<TJefferys@cmc.net.au>,
    CMC_CN1001_HalfwayCrk<CMC-CN1001_HalfwayCrk@cmc.net.au>,
    Peter Atkinson<PAtkinson@cmc.net.au>, ALFORD Steven B<Steven.ALFORD@rms.nsw.gov.au>,
    KINGSLY Lynden D<Lynden.KINGSLY@rms.nsw.gov.au>, WALKER Shayne<WALKER@rms.nsw.gov.au>, HC2G@rms.nsw.gov.au
Cc: From: Alex Lahey-Dillon<alaheydillon@cmc.net.au>
Sent: Tuesday, 28 July 2015 1:49 PM
To: Tom Jefferys; Alex Lahey-Dillon; CMC_CN1001_HalfwayCrk
Cc: Peter Atkinson; ALFORD Steven B; KINGSLY Lynden D; WALKER Shayne; HC2G@rms.nsw.gov.au
Subject: FW: ATP 67 G40 cl 2.4 Clearing ch 22800 to ch 25100

John,

The surveyors will pull the flagging back to the acquisition boundary in this area tomorrow.

Regards,

Alex Lahey-Dillon  |  Project Engineer  |  M 0417 076 679

From: O'DONNELL John [mailto:John.O'Donnell@rms.nsw.gov.au]
Sent: Tuesday, 28 July 2015 1:49 PM
To: Tom Jefferys; Alex Lahey-Dillon; CMC_CN1001_HalfwayCrk
Cc: Peter Atkinson; ALFORD Steven B; KINGSLY Lynden D; WALKER Shayne; HC2G@rms.nsw.gov.au
Subject: FW: ATP 67 G40 cl 2.4 Clearing ch 22800 to ch 25100

Tom,
In my release for ATP 67, I had raised as an issue “Surveying matters. There is one location where
surveying doesn’t match up slightly where clearing limit was just outside the acquisition. Tom was chasing
this up with Tim Hutch”. On the day I issued this release, I didn’t have my IPAD with me and didn’t add
further notes. Between Ch 24870 to a little north of Ch 2500 East, the blue clearing line is outside the red
acquisition line. Thus, this line would need to be pulled back into the red line.

I haven’t heard anymore re this matter and would appreciate advice pls.

John

From: O’DONNELL John
Sent: Wednesday, 22 July 2015 12:36 PM
To: ‘Peter Atkinson; Alex Lahey-Dillon; TJefferys@cmc.net.au
Cc: ALFORD Steven B; HC2G@rms.nsw.gov.au
Subject: RE: ATP 67 G40 cl 2.4 Clearing ch 22800 to ch 25100

All,
Signed release for ATP 67.

John

From: Peter Atkinson [mailto:system@teambinder.com] On Behalf Of Peter Atkinson
Sent: Monday, 6 July 2015 10:31 AM
To: ALFORD Steven B; O’DONNELL John; HC2G@rms.nsw.gov.au
Subject: ATP 67 G40 cl 2.4 Clearing ch 22800 to ch 25100

General Correspondence

Reference No.: CMC-CN1001-GC-00184
Project Title: Upgrade of HW10 Pacific Highway Upgrade, Halfway Creek

Date: 06 July 2015, 10:23:26 AM
Response required by: +10:00

To: Steven Alford, Roads and Maritime Services
John O’Donnell, Roads and Maritime Services
Team Binder, Roads and Maritime Services

CC: Tom Jefferys, Civil Mining and Construction
Alex Lahey-Dillon, Civil Mining and Construction

From: Peter Atkinson, Civil Mining and Construction
Hi John,

Please find enclosed ATP 67 for clearing approval between ch 22800 to ch 25100 for approval.

Regards

Peter Atkinson
ATP Report
CN1001: Halfway Creek to Glenugie
ATP: 67

ATP No. 67
Sent To Principal's Authorised Person,
Description HOLD POINT (G40 Cl. 2.4)
With reference to the abovementioned clause, CMC submit the attached details for the Principal's review and subsequent release of the Hold Point to enable clearing (Ch. 23600 - 25100):
- Clearing & Grubbing Environmental Work Method Statement (EWMS)
- Confirmation on the limits of clearing
- Weed infestation report

Raised By Lahey-Dillon, Alex
Date created Mon, 06 Jul 2015
Time created 7:18 AM

Date Inspect 06 Jul 2015
Lot: CGZON2003 - Clearing & Grubbing - Ch. 23600 - 25100
Item to Inspect: EWMS
Signature: ____________________________ Approved By: ____________________________ Date: ____________________________
Approval Comments: ____________________________

Date Inspect 06 Jul 2015
Lot: CGZON2003 - Clearing & Grubbing - Ch. 23600 - 25100
Item to Inspect: Survey conformance reports
Signature: ____________________________ Approved By: ____________________________ Date: ____________________________
Approval Comments: ____________________________

Date Inspect 06 Jul 2015
Lot: CGZON2003 - Clearing & Grubbing - Ch. 23600 - 25100
Item to Inspect: Weed infestation report
Signature: ____________________________ Approved By: ____________________________ Date: ____________________________
Approval Comments: ____________________________

J. O'Donnell 22/7/15
After attached please comment on the sediment loss at Change 23760.
RMS ATP Release review. ATP no: 67 from 23600 to 25100

ATP release approval comments:

1. There is frog fencing to be installed and this fencing needs to meet timeframe requirements for survey and times after frog fence installation where clearing cant commence, covered in the Frog Fence EWMS. The revised requirements took a lot of negotiation and are mandatory requirements.

2. Good discussion re retaining vegetation at fauna underpasses, and further discussion required. There is a dedicated fauna structure at Ch 23760 where vegetation needs to be retained at the ends. Unfortunately there is a sediment basin proposed there. RMS understands that the permanent basin at Ch 23880 has been deleted. There is parawebbed heritage at the SW corner another advantage of retaining along for the fauna. It is recommended that RMS and CMC explore options to keep vegetation for fauna and install the required basin and it would be appreciated if CMC could set up a meeting with Lynden, Steve and I.

3. Understand that Forest Corp has approved the extra clearing outside the acquisition line for sediment basins.

4. Machines coming into site all need to be washed down, including clearing machines, to reduce risk of spreading Phytophthora. The safest presumption is to presume the operators are bringing disease in or taking it out. If machines are coming from outside the work/ outside this catchment, they do need to be washed down and meet the requirements of the Weed and Pathogen MP, a mandatory project requirement. RMS has raised the importance of this issue and understands CMC have/ are advising all clearing and other personnel of this issue. Chytrid measures need to be in place, noting this is frog habitat in this area.

5. Surveying matters. There is one location where surveying doesn't match up slightly where clearing limit was just outside the acquisition. Tom was chasing this up with Tim Hutch.

Other comments for information/ awareness/ potential discussion/ opportunity consideration:

1. RMS hasn't received the ESCP for this area.

2. The new clearing contractor will require close supervision on clearing limits, clearing to install controls etc.

3. Seed collection for E tetrapleura has commenced and has been discussed with CMC enviro and safety personnel. Fruit has been a bit green to date, maybe better in this area.
Attachment 5 - Clearing Limit Drawing x 2
1. For general notes refer to drawing W2G-2-GN-DG-0064.
2. For general legend refer to drawing W2G-2-GN-DG-0070.
3. For utility details refer to Volume 6 - Utility Package.
1. FOR GENERAL NOTES REFER TO DRAWING W2G-2-GN-DG-0094.
2. FOR GENERAL LEGEND REFER TO DRAWING W2G-2-GN-DG-0070.
3. FOR UTILITY DETAILS REFER TO VOLUME 6 - UTILITY PACKAGE.
Attachment 6 - G40 2.4 and G71 3.4 extracts
HOLD POINT

Process Held: Covering up of work subject to a conformity survey.
Submission Details: Survey Report verifying conformity.
Release of Hold Point: The Principal will consider the submitted documents prior to authorising the release of the Hold Point.

3.4 Marking Land Property Boundaries and Boundary File

You are not to use the electronic road corridor boundary provided in the tender documents to set out any property boundaries.

Where the contract drawings, models or specifications indicate construction activity within 300 mm of a property boundary, determine the property line using the most current cadastral information. Registered Deposited Plans (DPs) supplied by the Principal where available or you are to source them from Land Titles Office of NSW. The survey and setup must be carried out by or under the immediate supervision of a Registered Surveyor, in accordance with the Surveying Act.

Provide the Principal with a composite electronic CAD boundary file developed from the DPs within two months of contract award. Where acquisition for the project is not complete at the time of Contract award, the composite electronic CAD boundary file must be updated to include any updated DPs as they become available.

The composite electronic CAD boundary file from the DP plans is to be use in the 'Work as Executed' plans and provided to RMS in electronic format.

4 Surveying Techniques

4.1 General

This Clause contains Orders of Accuracy for horizontal (two dimensional) coordinates and height or vertical control (the third dimension). Comply with these Orders of Accuracy for construction activities listed in Clause 5 to assure that spatial requirements are met.

For the purpose of this Clause, an EDM Tacheometry survey is considered to determine horizontal coordinates and vertical coordinates simultaneously.

Guide RMS NG71 contains surveying procedures using traditional survey techniques of radiation and height determination, as well as GNSS procedures, that are considered capable of meeting the Orders of Accuracy listed in this Clause. Use these procedures for traditional survey techniques or use other procedures that you can verify as capable of meeting the required Orders of Accuracy.

Where you use procedures other than those contained in RMS NG71, present evidence that the alternative procedures are capable of achieving the specified Order of Accuracy to the Principal for approval before use.

HOLD POINT

Process Held: Work process surveys.
remove the trees to ground level, the portion of the tree / stump remaining below ground is left there at your risk. Should you encounter the tree / stump during other construction activities you must bear all additional costs and/ or time involved with working around / removal of the tree / stump and associated works.

All minor built structures within the road reserve must be removed unless otherwise shown on the drawings or marked to be preserved. Where not already undertaken by the Principal, clear also for utilities.

2.3 AREA TO BE CLEARED FOR BRIDGES

At bridges all trees and stumps and all built structures must be removed within the area specified in Annexure G40/A except:

(a) where shown otherwise on the Drawings; or
(b) marked to be preserved; or
(c) within 5 metres of the bank of any stream or other waterway.

Trees outside this area but having branches overhanging the bridge must have their branches lopped to be 3 metres clear of the bridge.

Trees within 10 metres of the centreline of the bridge and within 5 metres of the bank of any stream or other waterway must be cleanly cut off between 300 and 600 mm above the adjacent ground level so that stable vegetation is retained on the banks. This work must be undertaken in consultation with the Principal.

2.4 CLEARING

Before clearing commences, identify the limits of clearing by clearly visible markers placed at 25 m intervals on each side of the road formation and bridges as shown on the Drawings.

Identify the Approved Project Boundary (area of acquisition plus any area outside the acquisition boundary required temporarily for road works such as sediment basins and ancillary sites (Total Area of assessment), clearing limits, cadastral boundaries and the Working area on all relevant Sensitive Area Maps refer to clause 4.13 of RMS G36). These maps prepared for the project must have markings that match or replicate the colouring and nature of limits marked in the field.

At least seven days prior to the proposed commencement of clearing commences, Approved Project Boundary and clearing limits must be clearly delineated on site and verified as correct by a surveyor, engaged by you, independent of the parties that installed the delineation.

Delineate the Approved Project Boundary using greenline or similar barrier rope that contains rope with reflective strips periodically along its length.

Delineate clearing limits using highly visible continuous barrier such as safety flagging, or other similarly robust and durable material.

Provide temporary exclusion fencing along the full limits of clearing using durable and sturdy construction consisting of star pickets, two wires and highly visible barrier or tape such as bunting, greenline or other similarly robust and durable material as appropriate.

Install all delineation consistently throughout the project to reduce risk of error or misinterpretation of boundaries.
Also provide a report which:

(a) includes a statement from an your Ecologist or Local Council Weeds Inspector that identifies the species and location of any weeds growing anywhere in the road reserve over the length to be cleared and grubbed;

(b) identifies all locations of threatened flora species and trees, and any other plants which have been marked or otherwise identified for preservation; and

(c) lists any trees identified by a suitably qualified arborist outside the limits of clearing which are unsound and likely to fall upon the roadway or onto private property.

In addition to any Hold Point under this Contract, implement an internal hold point system for all required clearing works to ensure that environmental protection requirements as outlined in RMS G36 are in place. The internal hold point system must provide specific details of environmental protection measures to be implemented in each clearing area and must be signed off by your Environmental Representative.

Plan and carry out all operations to ensure that there is no damage to any trees outside the limits of clearing specified or to any retained trees inside the limits of clearing.

Do not disturb native vegetation forming part of the identified widened medians including for ancillary construction purpose such as access tracks, stockpiles, materials laydown and ancillary facilities. Vegetation to be retained in widened medians is an environmentally sensitive area (Refer Clause 4.13 of RMS G36).

Trees nominated in (c) above must be marked and identified in the Clearing and Grubbing Environmental Work Method Statement (EWMS) clearing and grubbing plan in a manner which allows them to be identified as one of the listed trees and whether pruning or removal is recommended. Areas of weed infestation identified in the your ecologist report (Clause 2.4 (a) must be marked).

**HOLD POINT**

| Process Held. | Clearing any area of work. |
| Submission Details. | Clearing and Grubbing Plan Environmental Work Method Statement (Annexure G40/D) and report on the presence of weeds and unsound trees together with written notice that limits of clearing confirmed by an independent surveyor, and areas of weed infestation identified in the your ecologist report (Clause 2.4 (a) are marked), at least seven days before starting any clearing. |
| Release of Hold Point. | The Principal will consider the submitted documents, inspect and mark trees or built structures for preservation, prior to authorising the release of the Hold Point. |

Before commencing clearing and grubbing all soil erosion and sedimentation controls required for this phase of construction must be installed in accordance with the specification for SOIL AND WATER MANAGEMENT. All staff must be made aware of the Noxious Weeds present on-site and requirements related to the listing under the Noxious Weeds Act 1993.

**HOLD POINT**

| Process Held. | Clearing (excluding clearing for clean water diversions and operational and construction basins). |
**Environmental Incident Report – 624**

Complete this form for all environmental incidents that occur due to Roads and Maritime Services works or on Roads and Maritime worksites. The purpose of this form 624 is to alert Environment Branch to potential environmental incidents. It does not represent the Roads and Maritime final position for any incident reported on this form.

**Remember!** Complete all fields prior to submitting form. Be succinct, stick to the facts and **do not** make assumptions. Only record information you know to be correct.

**Project name:** Halfway Creek to Glenugie Pacific Highway Upgrade  
**Region:** Northern

**Contractor name:** Civil Mining and Construction Pty Ltd

**Incident details**

<table>
<thead>
<tr>
<th>Date</th>
<th>13 Aug 2015</th>
<th>Time</th>
<th>09:00 am</th>
<th>Duration</th>
<th>NA hr: min</th>
</tr>
</thead>
</table>

**Description**  
(provide a brief description of what happened during the incident)  
Approximately 50-80m² area was cleared within approved clearing limit and project boundary but outside of cadastral/aquisition boundary. Unknown impacts to vegetation, estimated as several small shrubs of Melaleuca species. Review of sensitive area maps confirms no impact to threatened species. The affected land outside road reserve is State Forest.

**EXACT location of the incident**  
(include chainage, landmarks, features, nearest cross street, etc make it easier to identify later) - provide a sketch if appropriate  
North eastern intersection of Franklins Road with Pacific Highway. CH 27960 east

**Quantity or volume of material escaped or causing incident**  
(provide an estimate if quantity unknown)  
Unknown impacts to vegetation, estimated as several small shrubs of Melaleuca species.

**Estimated distance to nearest waterway**  
(can include stormwater drains and dry watercourses)  
Approximately 200m to uppermost headwater of Glenugie Creek (north)

**What activity was being undertaken when the incident occurred?**  
Clearing for Franklins Road reconstruction

**How was the incident identified?**  
(e.g. Roads and Maritime employee, Council, community, complaint)  
RMS surveyor

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### Potential Category 1 Incident: (may involve one or more of the following – tick category, fill in table over page)

- [ ] Pollution, or potential pollution, of waters with sediment or chemicals/fuels/iods that travel beyond the site boundary causing or potentially causing adverse impact to the environment, including discharges or spills to waters from the Rozelle Maritime marina or Maritime operated vessels.
- [ ] Discharge of waters from site not in accordance with any applicable Minor Works memo or safeguard / Part 5 determination / approval / licence condition.
- [x] Works undertaken outside approved areas, without required approval or environmental assessment.
- [ ] Unauthorised harm to Aboriginal objects and Aboriginal places or damage to any State or locally significant relic or Heritage item.
- [ ] A spill or other incident that causes pollution to land or residual environmental impact.
- [ ] Breach of legislation, failure to comply with a Minor Works memo or safeguard / Part 5 determination / approval or permit/ environment protection licence condition.
- [ ] Unauthorised harm or damage to native vegetation, threatened species, endangered populations, endangered ecological communities or critical habitat.
- [ ] Material harm to the environment or persons as per Part 5.7 of POEO Act.
- [ ] Unauthorised harm or damage to threatened aquatic species and protected marine vegetation or unauthorised dredging or reclamation works within a watercourse.
- [ ] Unauthorised damage or destruction to any State or locally significant relic or Heritage item.
- [ ] Emission of excessive levels of dust, or an offensive odour or noise that travel beyond the site boundary and might impact on nearby land users.
- [ ] Unauthorised disposal or transport of waste.
- [ ] A fire that travels beyond the boundary causing or potentially causing adverse impact on the environment or community.

### Potential Category 2 Incident: (may involve one or more of the following – tick category, fill in table over page)

- [ ] A procedural, administrative or technical breach that relates to the preparation or submission of documents, reports or other correspondence.
- [ ] Failure to implement component of Environment Management Plan or work method statement that does not result in a Category 1 incident.
- [ ] Spills that do not leave the site boundary and are cleaned up without material environmental harm or residual environmental impact.
- [ ] A fire that is contained on site and does not cause or potentially cause adverse impact to the environment or community.
Any other details of the incident (including any information which did not fit in spaces above, as well as any special circumstances of the day or the location):

An unidentified error (approximately 11m) in cadastral/acquisition boundary utilised in the design process on clearing limit plans contributed to the incident. Review of sensitive area maps confirms no impact to threatened species.

What immediate actions/control measures were taken to rectify or contain the incident?

Nil/NA. Unknown at the time of the incident. Clearing occurred on 14 July 2015 and was only identified by audit following previous clearing incident (03 August 2015).

What corrective action has been taken to prevent similar incidents recurring?

1. Compile cadastral boundary from Land and Property Information Deposited Plans 2. Project wide review of approved clearing limit against compiled cadastral acquisition boundary (ref Item 1) 3. RMS re-design Franklin’s Road intersection to avoid conflicts with cadastral/acquisition boundary
4. Issue learnings from Incident 5. Re-vegetation in consult with Forestry Corp

Sign off (officer making report)

Print name: Martin Mulhern  
Position: CMC Environmetnal Manager  
Sign:  
Date: 13 August 2015

Approval (Roads and Maritime Project Manager)

Print name: Steven Alford  
Position: CMC Environmetnal Manager  
Date:  

Notification to EPA and other relevant authorities

To be completed by the relevant Roads and Maritime Regional Environment Manager

Was EPA notified?  
Yes [ ]  No [ ]

Peter Higgs (3:25pm 13/8/15) of OEH/EPA notified

Who notified them?  
Name: Martin Mulhern  
Position: CMC Environmental Manager

Notification method:  
[ ] Telephone  [ ] On site  
Date: 13/8/2015  
Tme: 3:25 am  [ ] 1pm [ ]

Has there been a EPA Environment Line Complaint?  
[ ] Yes  [ ] No  
EPA Complaint No.

Were any of the following authorities notified?  
[ ] NSW Fire & Rescue  [ ] Local Government  [ ] WorkCover  [ ] Ministry of Health

Were any other authorities notified and why (eg Department of Planning and Infrastructure, Department of Primary Industries (Fisheries), Sydney Catchment Authority, SES).

Forestry Corporation of NSW - Jude Parr (phone message 3:41pm 13/8/2015 by M Mulhern)

Is there an Environment Protection Licence for the project?  
[ ] Yes  [ ] No

[ ] If Yes – was the Pollution Incident Response Management Plan implemented  
[ ] Yes  [ ] No

Concurrence (Roads and Maritime Regional Environment Manager)

Print name: Sean Hardman  
Sign:  
Date: 17/8/15

Comments

Please submit all completed forms to Environment Branch by email to envops@rms.nsw.gov.au

Catalogue No. 5062565 Form No. 624 (05/2015) ABN 76 236 371 088  
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