



Roads &
Maritime

Compliance Tracking Program Stage 1

**Woolgoolga to Ballina Pacific Highway
upgrade**

April 2015

Document control

File name	W2B_Stage 1 Compliance Tracking Program
Report name	Woolgoolga to Ballina Stage 1 Compliance Tracking Program
Revision number	Rev0

Revision history

Revision		
0	30/4/15	Woolgoolga to Ballina Stage 1 Compliance Tracking Program
1		
2		

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Glossary / Abbreviations

ASS	Acid sulfate soils
CEMP	Construction environmental management plan
Compliance audit	Verification of how implementation is proceeding with respect to a construction environmental management plan (CEMP) (which incorporates the relevant approval conditions).
CoA	Conditions of approval
DP&E	Department of Planning and Environment
EA	Environmental Assessment
Ecological sustainable development	Using, conserving and enhancing the community's resources so that the ecological processes on which life depends are maintained and the total quality of life now and in the future, can be increased (Council of Australian Governments, 1992).
EPA	NSW Environment Protection Authority
ERG	Environmental Review Group – comprising representatives of RMS, Environmental Representative, Project delivery team, regulatory authorities (EPA, DPI – Fisheries Conservation and Aquaculture, NOW) and councils (Nambucca Shire Council, Bellingen Shire Council). The ERG will be maintained for the duration of the Project and will meet regularly and undertake environmental inspections. The role the ERG is to provide proactive advice on environmental management issues and review the environmental performance of the Project.
EMS	Environmental management system
Environmental aspect	Defined by AS/NZS ISO 14001:2004 as an element of an organisation's activities, products or services that can interact with the environment.
Environmental impact	Defined by AS/NZS ISO 14001:2004 as any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's environmental aspects.
Environmental incident	An unexpected event that has, or has the potential to, cause harm to the environment and requires some action to minimise the impact or restore the environment.
Environmental objective	Defined by AS/NZS ISO 14001:2004 as an overall environmental goal, consistent with the environmental policy, that an organisation sets itself to achieve.
Environmental policy	Statement by an organisation of its intention and principles for environmental performance.
Environmental target	Defined by AS/NZS ISO 14001:2004 as a detailed performance requirement, applicable to the organisation or parts thereof, that arises from the environmental objectives and that needs to be set and met in order to achieve those objectives.
Environmental Representative	A suitably qualified and experienced person independent of project design and construction personnel employed for the duration of construction. The principal point of advice in relation to all questions and complaints concerning environmental performance.
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPL	Environment Protection Licence
Minister, the	Minister for Planning and Environment

Non-compliance	Failure to comply with the requirements of the Project approval or any applicable license, permit or legal requirements.
Non-conformance	Failure to conform to the requirements of Project system documentation including this CEMP or supporting documentation.
NOW	NSW Office of Water
OEH	Office of Environment and Heritage
Project, the	The Woolgoolga to Ballina Project
RMS	Roads and Maritime Services
Secretary	Secretary of the NSW Department of Planning and Environment (<i>or delegate</i>)
SoC	Statement of commitments / mitigations
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 Wave 3- Soft soils works between Tyndale and Iluka Road and at Tuckombil Canal, Woodburn

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.

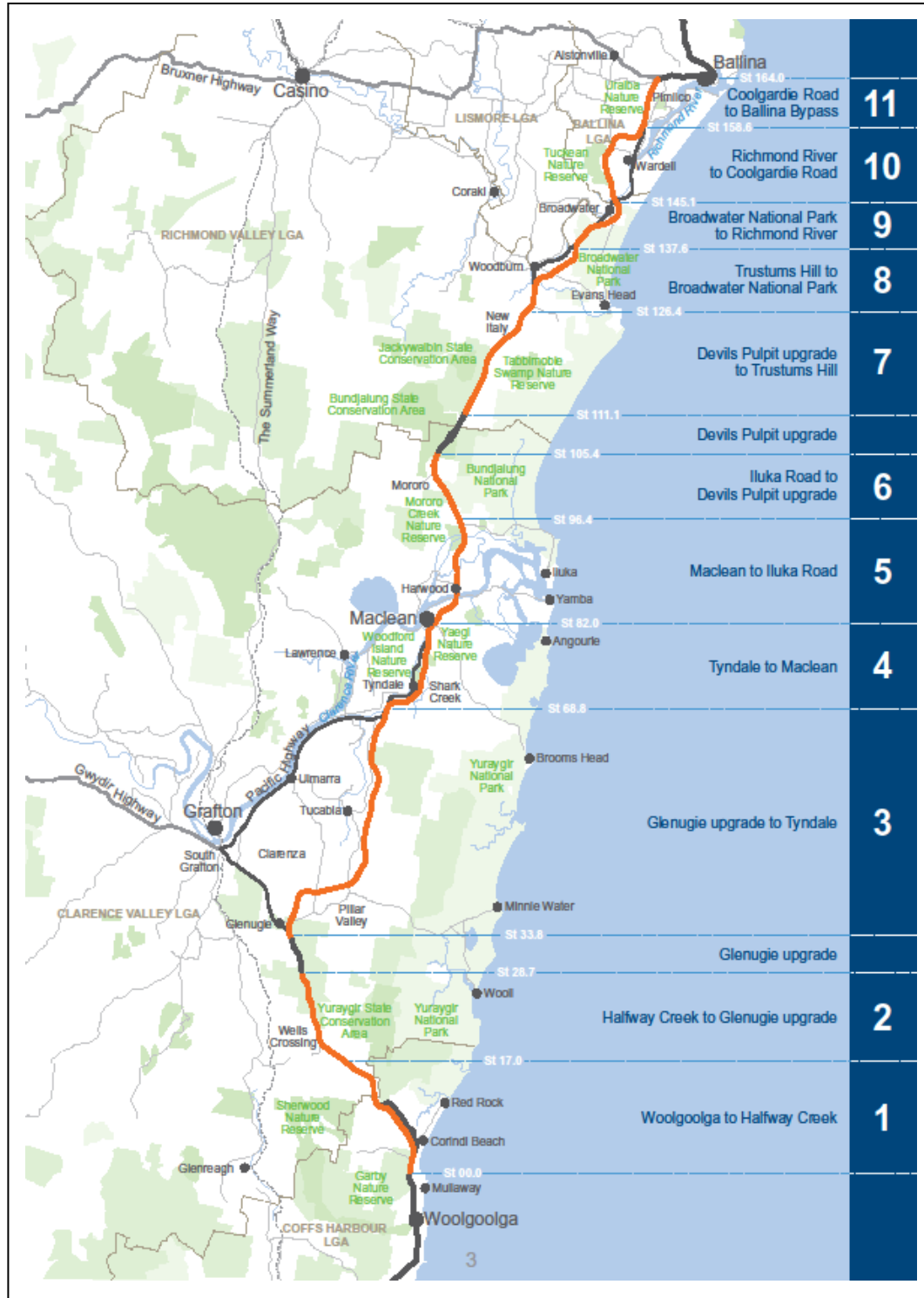


Figure 1-1 Woolgoolga to Ballina Pacific Highway Upgrade

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
- Glenugie Pacific Highway upgrade – NSW Approval (09/0073) 17 December 2009, Commonwealth Approval (2009/5002) 13 January 2010
- Devils Pulpit Pacific Highway upgrade – NSW Approval (09_0179), 1 February 2011, Commonwealth Approval (2010/8586) 20 January 2012
- Ballina Bypass Pacific Highway upgrade – NSW Approval 22 May, 2003.

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:

(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 Program is for Stage 1 of the Woolgoolga to Ballina upgrade.

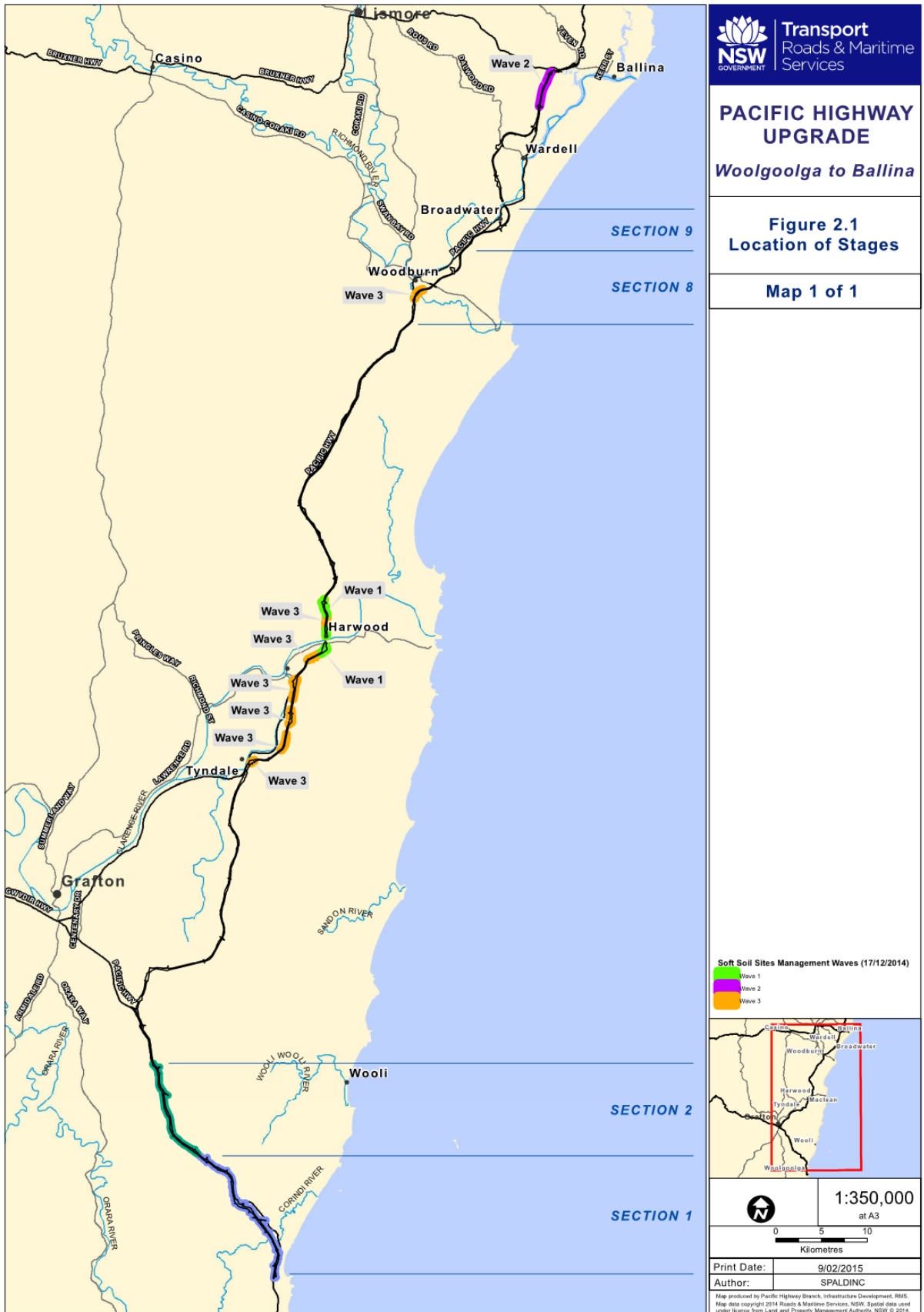


Figure 1-2 Location of Stage 1 activities

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.

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)
- RMS, *Woolgoolga to Ballina. Upgrading the Pacific Highway. Submissions and Preferred Infrastructure Report* (November 2013)
- 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

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

CoA No.		
D27	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:	This document
	(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);	Section 2.1
	(b) provisions for periodic review of the compliance status of the SSI against the requirements of this approval;	Section 2.2
	(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;	Section 2.3
	(d) a program for independent environmental auditing in accordance with ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing;	Section 2.4
	(e) mechanisms for recording environmental incidents during construction and actions taken in response to those incidents;	Section 2.5
	(f) provisions for reporting environmental incidents to the Secretary and relevant public authorities during construction;	Section 2.6
	(g) procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management; and	Section 2.7
	(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.	Section 2.8

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.

RMS will advise the Secretary in writing prior to the commencement of construction and operation.

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.

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”

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. Compliance tracking reports will typically include:

- Scope of the activities undertaken during the reporting period.
- Performance of environmental controls that have been implemented.
- Compliance with CoA, revised SoCs as recorded in the compliance tracking tables.
- Non-compliances during the reporting period.
- Detail of all incidents recorded and action taken during the reporting period.
- Outcomes of monitoring undertaken over the reporting period and review of compliance against relevant criteria.
- Significant outcomes of audits and ERG inspections undertaken during the reporting period.

- Detail of substantiated environmental complaints received, responses taken and current status (ie open or closed).

2.4 Independent environmental auditing

CoA D27 (d) requirement:

“a program for independent environmental auditing in accordance with ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing”

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 SoCs.

The initial independent environmental audit will be undertaken within three months of the commencement of construction activities.

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.

<http://home.rta.nsw.gov.au/dts/cserv/os/original/environment/ems-tp-07.pdf>

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.

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.

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 will be maintained and kept on-site.

Appendix A

Compliance tables

COMPLIANCE TRACKING - NSW CONDITIONS OF APPROVAL

Woolgoolga to Ballina SSI-4963



PART A - Administrative Conditions

Category	Part	Requirement	Stage 1 (as defined in the W2B Staging Report)					Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
			Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3						
OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT													
	A1	In addition to meeting the specific performance criteria established under this approval, the Applicant shall implement all feasible and reasonable measures to prevent and/or minimise any harm to the environment that may result from the construction or operation of the SSI.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			
TERMS OF APPROVAL													
	A2	The Applicant shall carry out the SSI generally in accordance with the: (a) State significant infrastructure application SSI-4963; (b) Pacific Highway Upgrade Woolgoolga to Ballina Environmental Impact Statement Volumes 1A, 1B, 2, 3, 4A, 4B, 5, 6A, 6B, 6C, 7A, 7B and 8, prepared by Roads and Maritime Services, dated December 2012; (c) Pacific Highway Upgrade Woolgoolga to Ballina Submissions/Preferred Infrastructure Report Main Volume and Appendices, prepared by Roads and Maritime Services, dated November 2013; (d) Ancillary facility sites listed in Woolgoolga to Ballina Pacific Highway Upgrade - Ancillary descriptions and impact assessment, prepared by Roads and Maritime Services, dated 13 December 2013; (e) Connectivity structures listed in Woolgoolga to Ballina Alliance Update 20 Feb 2014 Structures Inventory (except Sections 1 and 2) and Woolgoolga to Glenugie Fauna Connectivity Tracking Register 11/02/2014, prepared by Roads and Maritime Services, and email correspondence from Roads and Maritime Services dated 14 March 2013; (f) Pacific Highway Upgrade Woolgoolga to Ballina: Utilities impact native vegetation (D00395_0102_Uilities Clearing Vegetation_v9), prepared by Roads and Maritime Services, dated 21 May 2014, and (g) conditions of this approval.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS and Contractor			
	A3	If there is any inconsistency between the above documents, the more recent document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS and Contractor			
	A4	The Applicant shall comply with any reasonable requirement(s) of the Secretary arising from the Department of Planning and Environment's assessment of: (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this approval; and (b) the implementation of any actions or measures contained in these documents.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			
LIMITS OF APPROVAL													
	A5	This approval shall lapse 10 years after the date on which it is granted, unless the works the subject of this SSI approval are physically commenced on or before that date.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS			
STATUTORY REQUIREMENTS													
	A6	The Applicant shall ensure that all licences, permits and approvals are obtained as required by law and maintained as required throughout the life of the SSI. No condition of this approval removes the obligation for the Applicant to obtain, renew or comply with such licences, permits or approvals.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS and Contractor			
STAGING													
	A7	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: (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).	✓	✓	✓	✓	✓	✓	Pre-construction	RMS			
SUBMISSION OF ANY STRATEGY, PLAN OR PROGRAM													
	A8	The Applicant shall ensure that any strategy, plan, program or other document required by the conditions of this approval and relevant to each stage (as identified in the Staging Report) is submitted to the Secretary no later than one month prior to the commencement of the relevant stage(s), unless otherwise agreed by the Secretary. Notes: • While any strategy, plan or program may be submitted on a progressive basis, the Applicant will need to ensure that the existing operations on site are covered by suitable strategies, plans or programs at all times; and • If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program shall clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS			
COMPLIANCE													
	A9	The Applicant shall ensure that employees, contractors and sub-contractors are aware of, and comply with, the conditions of this approval relevant to their respective activities.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS and Contractor			
	A10	The Applicant shall be responsible for environmental impacts resulting from the actions of all persons that it invites onto the site, including contractors, sub-contractors and visitors.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS and Contractor			
	A11	In the event of a dispute between the Applicant and a public authority, in relation to an applicable requirement in this approval or relevant matter relating to the SSI, either party may refer the matter to the Secretary for resolution. The Secretary's determination of any such dispute shall be final and binding on the parties.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS			
INCIDENT REPORTING													
	A12	The Applicant shall notify the Secretary and relevant public authorities of any incident with actual or potential significant off-site impacts on people or the biophysical environment within 24 hours of becoming aware of the incident. The Applicant shall provide full written details of the incident to the Secretary within seven days of the date on which the incident occurred. Note: • Where an incident also requires reporting to the EPA and/or OEHL, the incident report prepared for the purposes of notifying the EPA and/or OEHL would meet this requirement.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS and Contractor			
	A13	The Applicant shall meet the requirements of the Secretary or relevant public authority (as determined by the Secretary) to address the cause or impact of any incident, as it relates to this approval, reported in accordance with condition A12, within such period as the Secretary may require.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS and Contractor			

COMPLIANCE TRACKING - NSW CONDITIONS OF APPROVAL

Woolgoolga to Ballina SSI-4963

PART B - Environmental Performance

		Stage 1 (as defined in the W2B Staging Report)											
Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
BIODIVERSITY													
	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: (a) clearing of native vegetation shall be limited to a total area of 931.7 hectares, within the SSI boundary defined in the document referred to in condition A2(c), subject to condition B1(b); (b) clearing of native vegetation for ancillary facilities specified in the document referred to in condition A2(d) and outside the SSI boundary defined in the document referred to in condition A2(c) shall be limited to 4.75 hectares; (c) clearing of threatened ecological communities shall be limited to the areas specified in Table 6-1 (under the column titled: Revised—direct impact (hectares)) of Appendix J of the document referred to in condition A2(c), subject to condition B1(d); (d) clearing of the Littoral 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 (e) clearing of Koala (<i>Phascolarctos cinereus</i>) primary and secondary habitat shall be limited to a total area of 375 hectares.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			
	B2	Where feasible and reasonable, remnant vegetation shall be retained between the SSI boundary and the SSI footprint.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			
	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 D20.	✓	✓				✓	Construction and Operation	RMS and Contractor			
	B4	Light spill from the SSI shall be avoided on Pink Underwing Moth and Atlas Rainforest Ground Beetle habitat, where feasible and reasonable.						✓	Pre-construction	RMS			
PRE CLEARING													
	B5	Prior to construction, pre clearing surveys and inspections for endangered and threatened species shall be undertaken. The surveys and inspections, and any subsequent relocation of species, shall 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. All clearing of Koala habitat trees shall be undertaken in the presence of a Koala spotter.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B6	Incidental or unanticipated threatened 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.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
OXLEYAN PYGMY PERCH HABITAT													
	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).						✓	Construction	Contractor			
	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.						✓	Construction	Contractor			
	B9	Where temporary crossings in known Oxleyan Pygmy Perch habitat are proposed with culverts or pipes, the Applicant shall, in consultation with DPI (Fisheries): (a) determine the size of the culverts or pipes to facilitate fish passage; and (b) identify the minimum size of clean rock to be used to ensure that rock material will not wash into the waterway in periods of high flows. Temporary culvert or pipe crossings shall be removed prior to the start of the Oxleyan Pygmy Perch spawning period.						✓	Construction	Contractor			
CONNECTIVITY													
	B10	Subject to conditions B11 and B12, the Applicant shall revise the Connectivity Strategy identified in the documents listed in condition A2(e), based on the outcomes of the Mitigation Framework required by condition D1. Note: • The requirements for the Connectivity Strategy are contained in condition D2.	✓	✓				✓	Pre-construction	RMS			
	B11	As part of detailed design, the Applicant shall further investigate design refinements for fauna crossings and associated exclusionary measures, between station 41.500 and station 80.000 to improve connectivity for the Coastal Emu, and in the proximity of station 96.000 and between station 137.800 and station 159.700 to improve connectivity for the Koala. Any changes to fauna crossings and exclusionary measures shall be included in the Connectivity Strategy required under condition D2.						✓	Pre-construction	RMS			
	B12	Investigations into the location and design of connectivity structures, including but not limited to those identified in the documents listed under conditions A2(c) and A2(e), 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 OEH, DPI (Fisheries) and DoE and include workshops and on-site ground verification. The results of these investigations shall be detailed in the Connectivity Strategy required under condition D2.	✓	✓				✓	Pre-construction	RMS			
	B13	The Applicant shall minimise riparian vegetation clearing during construction and undertake a targeted rehabilitation program post construction to restore in-stream and riparian 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 Oxleyan Pygmy Perch spawning period.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
CONSTRUCTION NOISE													
	B14	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 comparing to the construction Noise Management Level.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B15	Construction activities associated with the SSI shall be undertaken during the following standard construction hours: (a) 7:00am to 6:00pm Monday to Friday, inclusive; and (b) 8:00am to 5:00pm Saturday; and (c) at no time on Sunday or public holidays.	✓	✓	✓	✓	✓	✓	Construction	Contractor			

Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
	B16	Construction works outside the standard construction hours may be undertaken in the following circumstances: (a) construction works that generate noise that is: (i) no more than 5 dB(A) above rating background level at any residence in accordance with the Interim Construction Noise Guideline (DECC, 2009); and (ii) no more than the noise management levels specified in Table 3 of the Interim Construction Noise Guideline (DECC 2009) at other sensitive receivers; or (b) for the delivery of materials required outside the standard construction hours by the NSW Police Force or other authorities for safety reasons; or (c) where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; or (d) between 6.00am and 7.00am and 6.00pm and 7.00pm Monday to Friday (except public holidays) in sparsely populated areas (these construction hours may be reviewed and/or revoked by the Secretary in consultation with the EPA in the case of unresolved noise complaints); or (e) low noise impact activities and work between: (i) 6.00am and 7.00am Monday to Friday; and/or (ii) 6.00pm and 7.00pm Monday to Friday; or (f) works approved through an EPL; or (g) works approved by a Construction Environment Management Plan or Construction Noise and Vibration Management Plan for the SSI.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B17	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: (a) process for obtaining the Environmental Representative's approval for Out of Hours work; (b) details of the nature and need for activities to be conducted during the varied construction hours; (c) justifies the varied construction hours in accordance with the Interim Construction Noise Guideline (DECC, 2009); (d) provides evidence that consultation with potentially affected receivers and notification of the relevant council has been undertaken, that the issues raised have been addressed and all feasible and reasonable mitigation measures have been put in place; and (e) provides evidence of consultation with the EPA on the proposed variation in standard construction hours.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B18	Construction activities resulting in impulsive or tonal noise emission (such as rock breaking, rock hammering, pile driving) shall only be undertaken: (a) between the hours of 8:00am to 5:00pm Monday to Friday; (b) between the hours of 8:00am to 1:00pm Saturday; and (c) in continuous blocks not exceeding three hours each with a minimum respite from those activities and works of not less than one hour between each block. For the purposes of this condition 'continuous' includes any period during which there is less than a one hour respite between ceasing and recommencing any of the work the subject of this condition. The works subject to this condition may be undertaken in sparsely populated areas within the standard construction hours.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B19	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	Contractor			
CONSTRUCTION VIBRATION													
	B20	The SSI shall be constructed with the aim of achieving the following construction vibration goals: (a) for structural damage to heritage structures, the vibration limits set out in the German Standard DIN 4150-3: Structural Vibration – Part 3 Effects of vibration on structures; (b) for damage to other buildings and/or structures, the vibration limits set out in the British Standard BS 7385-1:1990 – Evaluation and measurement of vibration in buildings—Guide for measurement of vibration and evaluation of their effects on buildings (and referenced in Australian Standard 2187.2 – 2006 Explosives – Storage and use – Use of explosives); and (c) for human exposure, the acceptable vibration values set out in Assessing Vibration: A Technical Guideline (Department of Environment and Conservation, 2006).	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B21	Blasting associated with the SSI shall only be undertaken during the following hours: (a) 9:00am to 5:00pm, Monday to Friday, inclusive; (b) 9:00am to 1:00pm on Saturday; and (c) at no time on Sunday or public holidays. Blasting outside the above hours and in accordance with the standard construction hours where: (i) no sensitive receivers in sparsely populated areas would be impacted by blasting; or (ii) an agreement has been made with receivers within 200 metres of the blast zone to permit blasting in accordance with the standard construction hours. This condition does not apply in the event of a direction from the NSW Police Force or other relevant authority for safety or emergency reasons to avoid loss of life, property loss and/or to prevent environmental harm.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B22	The Applicant shall ensure that Airblast overpressure generated by blasting associated with the SSI shall not exceed the criteria specified in Table 1 when measured at the most affected residence or other sensitive receiver. Note • a sensitive site includes houses and low rise residential buildings, theatres, schools and other similar buildings occupied by people.	✓	✓	✓	✓	✓	✓	Construction	RMS			
	B23	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. Note • a sensitive site includes houses and low rise residential buildings, theatres, schools and other similar buildings occupied by people.	✓	✓	✓	✓	✓	✓	Construction	RMS			
	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 alternatives 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 air quality and any risk to surrounding utilities, services or other structures; and (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 this 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 receiver. (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 mm/s or maximum Airblast Overpressure level of 125 dBL.	✓	✓	✓	✓	✓	✓	Construction	RMS			
	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.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B26	Prior to 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.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	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 buildings are not timetabled during examination periods where practicable, unless other reasonable arrangements to the affected institutions are made at no cost to the affected institution.			✓			✓	Construction	Contractor			
OPERATIONAL NOISE													
	B28	The SSI shall be designed and operated with the objective of not exceeding the road noise criteria outlined in the NSW Road Noise Policy (DECCW, 2011).	✓	✓				✓	Pre-construction	RMS			

Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
	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.	✓	✓				✓	Pre-construction and Construction	RMS			
WATER QUALITY													
	B30	Except as may be expressly provided by an EPL, the Applicant shall comply with section 120 of the Protection of the Environment Operations Act 1997.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
HYDROLOGY AND FLOODING													
	B31	The hydrological and flooding impacts resulting from the SSI are to be assessed during detailed design against the 'Design Objectives 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 well as the other requirements of this section of the EIS. The hydrology 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) design events.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS			
	B32	For the Corindi, Shark Creek and Farlows Flat areas, flooding and hydrological impacts resulting from existing highway infrastructure shall be assessed. As part of this 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.	✓		✓		✓	✓	Pre-construction	RMS			
	B33	Where the objectives and considerations referred to in condition B31 cannot be complied with, the Applicant shall: (a) 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 (b) achieve an acceptable level of mitigation of impacts through alternative design measures (e.g. raised access tracks) in consultation with the affected landowner; or (c) reach agreement with affected landowners on impacts to property.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS and Contractor			
CONSTRUCTION SOIL AND WATER MANAGEMENT													
	B34	Soil and water management measures consistent with Managing Urban Stormwater - Soils and Construction Vols 1 and 2, 4th Edition (Landcom, 2004) and Managing Urban Stormwater Soil and Construction Vols 2A and 2D Main Road Construction (Department of Environment and Climate Change, 2008) shall be employed during the construction of the SSI to minimise soil erosion and the discharge of sediment and other pollutants to land and/or water.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	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.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	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.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
LAND CONTAMINATION													
	B37	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.						✓	Pre-construction and Construction	RMS and Contractor			
WATERCOURSE CROSSINGS													
	B38	Watercourse crossings shall be designed and constructed in consultation with the DPI (Fisheries), EPA, NOW and 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 (Fairfull 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.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			
	B39	All crossings of known Giant Barred Frog habitat or waterways with the confirmed presence of the species shall be designed and constructed with bridges. Should the Applicant construct a crossing structure other than a bridge, the Applicant shall demonstrate maintained connectivity for the Giant Barred Frog upstream and downstream of that crossing for a monitoring period of three consecutive years, or such other period agreed by the Secretary in consultation with the OEH. Demonstration of maintained habitat connectivity shall: (a) be based on baseline data that confirms the presence, nature and distribution of Giant Barred Frog population using a survey methodology that has been endorsed by the OEH, and detailed in the Mitigation Framework required in condition D1, and an assessment of the connectivity of the crossing site prior to commencement; or, if adequate baseline data is not provided to the satisfaction of the Secretary, be based on the assumption of occurrence of a population on either side of the crossing site; and (b) be based on evidence that the Giant Barred Frog has remained present upstream and downstream of the crossing site for the monitoring period, with periodic monitoring to occur at least biannually. Should the results of any instance of periodic monitoring record an absence of the Giant Barred Frog, the Applicant shall be required to demonstrate that this change is not as a result of the SSI within one month of the completion of that instance of periodic monitoring, to the satisfaction of the Secretary. Should the Secretary not be satisfied that the change is not a result of the SSI, the SSI will be deemed as the cause of the impact and the Applicant shall offset the loss of the habitat in accordance with this approval.	✓					✓	Pre-construction	RMS			
	B40	Unless otherwise agreed by DPI (Fisheries), all crossings of Class 1 watercourses in known Oxleyan Pygmy Perch habitat shall be designed and constructed with a bridge or arch structure and, where feasible and reasonable, no supporting structures shall be installed within affected waterways.						✓	Pre-construction	RMS			
	B41	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 that 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.						✓	Pre-construction	RMS			
	B42	The Applicant shall ensure that the SSI does not increase the afflux of waterways with known Oxleyan Pygmy Perch habitat by more than the relevant flood management objective in the documents referred to in condition A2 for flood events up to the 1 in 100 year event.						✓	Pre-construction	RMS			
	B43	The Applicant shall investigate the removal of the proposed embankment at station 145.2 and its replacement with an extension of the Richmond River bridge. The investigation shall consider issues around hydrology and flooding (including meeting the flooding objectives for bridges), constructability, cost, funding arrangements and visual impacts. The investigation shall include consideration of other relevant environmental impacts (noise, heritage, biodiversity, traffic etc.) and consider any alternative options. A copy of the investigation shall be submitted to the Secretary prior to the commencement of any bridge approach or embankment works in the vicinity.						✓	Pre-construction	RMS			
ABORIGINAL HERITAGE													

Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
	B44	Prior to the commencement of construction affecting PAD site WWC Dirty Creek 1 and ancillary facilities at Section 4, Site 1; Section 4, Site 3; Section 7, Site 1; Section 10, Site 1a; and Section 11, Site 1a, the Applicant shall: (a) undertake field investigation, and where required, 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 (b) 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 (c) submit the report to the Registered Aboriginal Parties, the OEH (Aboriginal heritage) and the Secretary.	✓					✓	Pre-construction	RMS			
	B45	Prior to the commencement of construction activities affecting Aboriginal sites WWC39, WWC46, Tyndale 2 site, IR2W4, Site 11, E2/2, WWC37, Dubaljeen site (New Italy 1), The Gap Road 1, WX21 Site 8, Site 1, Site 2, Site 3 and Site 4 and sites recommended by condition B44 for further investigation, the Applicant shall: (a) develop a detailed salvage strategy, prepared in consultation with the OEH (Aboriginal heritage) and the Registered Aboriginal Parties. The salvage strategy shall be prepared to the satisfaction of the Secretary; and (b) undertake any further archaeological excavation works recommended by the results of the detailed salvage strategy. Within twelve months of completing the above work, unless otherwise agreed by the Secretary, the Applicant shall prepare a report containing the findings of the excavations, including artefact analysis and Aboriginal Site Impacts Recording Forms (ASIR), and the identification of final storage location for all Aboriginal objects recovered (testing and salvage), in consultation with the Registered Aboriginal Parties, the OEH (Aboriginal heritage) and to the satisfaction of the Secretary. The report shall be submitted to the Registered Aboriginal Parties, the OEH (Aboriginal heritage) and the Secretary. Note: • Where archaeological testing has occurred as part of the environmental assessment and the results are included in the documents listed in condition A2, the sites tested shall be included in the final report prepared under condition B45.	✓		✓	✓	✓	✓	Pre-construction	RMS			
	B46	Identified impacts to Aboriginal heritage, shall be minimised to the greatest extent practicable through both detailed design and construction, particularly with regard to the Aboriginal sites Gittoes Jali and the Melino site, and the Aboriginal culturally significant places identified as Corindi Massacres (section 1), Burials (section 1), Halfway Creek Ceremonial Site, Birugan 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.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			
	B47	The Applicant shall not destroy, modify or otherwise physically affect Aboriginal sites WWC5, WWC7, WWC26, WWC92, WWC115, WWC139, Tyndale 1, Scarred/engraved Tree (section 7), 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 Scarred Tree or Saezza 1.	✓	✓				✓	Pre-construction and Construction	RMS and Contractor			
NON - ABORIGINAL HERITAGE													
	B48	Prior to the commencement of construction affecting the Convent (12-14 Rivers Street), Harwood (item 21), the Applicant shall carry out further historical research and investigate the options for relocation of the convent building, in consultation with the Department of Planning and Environment and the OEH (Heritage Division), to the satisfaction of the Secretary.						✓	Pre-construction	RMS			
	B49	Prior to the commencement of construction in proximity to the following heritage items: 21; 23 (Roder's well and orchard); 26; 28; 29; and 43, the Applicant shall complete 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/or fenced until 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).						✓	Pre-construction	RMS			
	B50	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 archaeological investigations and excavation in accordance with the Heritage Council's Archaeological Assessments Guideline (1996) using a methodology prepared, in consultation with the OEH (Heritage Division), and to the satisfaction of the Secretary. The archaeological investigation shall be undertaken by an archaeological 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; (c) include management options for these heritage items (including options for relocation and display); and (d) if the findings of the investigations are significant, provide for the preparation and implementation of a heritage interpretation plan. Within 12 months of completing the above work, unless otherwise agreed by the Secretary, the Applicant shall prepare a report containing the findings of the excavations, including artefact analysis, and the identification of a final repository for finds, prepared in consultation with the OEH (Heritage Division) and to the satisfaction of the Secretary. The report shall be submitted 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). Note: • Where archaeological testing has occurred as part of the environmental impact assessment for the SSI and the results are included in the documents listed in condition A2, the sites tested shall still form part of the methodology and final report prepared for the non-Aboriginal archaeological investigation program.		✓					Pre-construction	RMS			
	B51	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 3-38, Submissions/Preferred Infrastructure Report (RMS, November 2013).	✓					✓	Pre-construction and Construction	RMS and Contractor			
HERITAGE - GENERAL													
	B52	Identified impacts to heritage sites shall be minimised where feasible and reasonable through both detailed design and construction, particularly with regard to the historic site known as the North Coast Railway Branch Tramway, Glenugie. Where impacts are unavoidable, works shall be undertaken in accordance with the actions to manage heritage construction impacts required by condition D26(d) and under the guidance of an appropriately qualified heritage specialist.		✓					Pre-construction and Construction	RMS and Contractor			
	B53	This approval does not allow the Applicant to destroy, modify or otherwise physically affect human remains as part of the SSI.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B54	The Applicant shall not destroy, modify or otherwise physically affect any heritage items outside the SSI footprint, unless otherwise agreed by the Secretary in accordance with condition B78.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B55	The measures to protect heritage sites near or adjacent to the SSI during construction shall be detailed in the Construction Heritage Management Plan.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
TRANSPORT AND ACCESS													
	B56	The SSI shall be designed with the objective of minimising adverse changes to existing access arrangements and services for other transport modes and, where feasible and reasonable, facilitate an improved level of access and service to other transport modes comparable to or better than the existing situation.	✓	✓				✓	Pre-construction	RMS			
	B57	Safe pedestrian and cyclist access through or around worksites shall be maintained during construction. In circumstances where pedestrian and cyclist access is restricted due to construction activities, a satisfactory alternate route shall be provided and signposted.	✓	✓	✓	✓	✓	✓	Construction	Contractor			

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	B58	Construction vehicles (including staff vehicles) associated with the SSI shall be managed to: (a) minimise parking or queuing on public roads; (b) minimise idling and queuing in local residential streets where practicable; (c) minimise the use of local roads (through residential streets and town centres) to gain access to construction sites and compounds; and (d) adhere to the nominated haulage routes identified in the Construction Traffic Management Plan.	✓	✓	✓	✓	✓	✓	Construction	Contractor				
	B59	In relation to new or modified local road, parking, pedestrian and cycle 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 Austroads Guide to Traffic Engineering Practice; and (d) be certified by an appropriately qualified person that has considered the above matters.	✓	✓				✓	Pre-construction and Construction	RMS and Contractor				
PROPERTY AND LANDUSE														
	B60	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.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS				
	B61	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 these 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.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS				
	B62	Unencumbered access to private property shall be maintained during construction unless otherwise agreed with the landowner in advance. A landowner's access that is physically affected by the SSI shall be reinstated to at least an equivalent standard, in consultation with the landowner.	✓	✓	✓	✓	✓	✓	Construction	Contractor				
	B63	The Applicant shall, in consultation with relevant landowners, construct the SSI in a manner that minimises intrusion and disruption to agricultural operations/activities in surrounding properties (e.g. stock access, access to farm dams, etc.), unless otherwise agreed by the landowner.	✓	✓	✓	✓	✓	✓	Construction	Contractor				
	B64	Any damage caused to property as a result of the SSI shall be rectified or the landowner compensated, within a reasonable timeframe, with the costs borne by the Applicant. This condition is not intended to limit any claims that the landowner may have against the Applicant.	✓	✓	✓	✓	✓	✓	Construction	Contractor				
FORESTRY IMPACTS														
	B65	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 fire fighting and access for other activities within state forests, unless otherwise agreed by the NSW Forestry Corporation.	✓	✓				✓	Construction	Contractor				
AIR QUALITY														
	B66	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.	✓	✓	✓	✓	✓	✓	Construction	Contractor				
HAZARDS AND RISK														
	B67	Dangerous goods, as defined by the Australian Dangerous Goods Code, shall be stored and handled strictly in accordance with: (a) all relevant Australian Standards; (b) for liquids, a minimum bund volume requirement of 110% of the volume of the largest single stored volume, within the bund; and (c) the Environment Protection Manual for Authorised Officers: Bunding and Spill Management, technical bulletin (Environment Protection Authority, 1997). In the event of an inconsistency between the requirements listed from (a) to (c) above, the most stringent requirement shall prevail to the extent of the inconsistency.	✓	✓	✓	✓	✓	✓	Construction	Contractor				
WASTE MANAGEMENT														
	B68	Waste generated outside the site shall not be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence or waste exemption under the Protection of the Environment Operations Act 1997, if such a licence is required in relation to that waste.	✓	✓	✓	✓	✓	✓	Construction	Contractor				
	B69	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.	✓	✓	✓	✓	✓	✓	Construction	Contractor				
	B70	All liquid and/or non-liquid waste generated on the site shall be assessed and classified in accordance with Waste Classification Guidelines (Department of Environment, Climate Change and Water, 2009).	✓	✓	✓	✓	✓	✓	Construction	Contractor				
	B71	All waste materials removed from the site shall only be directed to a waste management facility or premises lawfully permitted to accept the materials.	✓	✓	✓	✓	✓	✓	Construction	Contractor				
UTILITIES AND SERVICES														
	B72	Utilities, services and other infrastructure potentially affected by construction and operation shall be identified prior to construction to determine requirements for access to, diversion, protection, and/or support. Consultation with the relevant owner and/or provider of services that are likely to be affected by the SSI shall be undertaken to make suitable arrangements for access to, diversion, protection, and/or support of the affected infrastructure as required. The cost of any such arrangements shall be borne by the Applicant.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor				
ANCILLARY FACILITIES														
	B73	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 Oxleyan Pygmy Perch 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 50 metres from threatened species and endangered ecological communities and their habitats; (g) be located on relatively level land; (h) be separated from the nearest 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 unreasonably affect the land 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.	✓	✓	✓	✓	✓	✓	✓	Construction	Contractor			

Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
	B74	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 B73, 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 outcomes of the assessment shall be documented in a report and include, but not necessarily be limited to: (a) details on 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 locational criteria set out in condition B73; (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.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B75	Notwithstanding condition B74, ancillary facilities that 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 order to obtain this approval, the Applicant shall undertake an assessment of the ancillary facility in accordance with condition B74 and forward a copy of the assessment report to the Secretary, as part of the approval submission, at least one month prior to the establishment of the facility.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B76	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.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B77	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 in condition B73. If the ancillary facility site: (a) does not meet the criteria set out under condition B73 the Applicant shall seek the approval of the Environmental Representative in accordance with condition B74; 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 B75. The relevant approval shall be obtained prior to the establishment of the ancillary facility.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
	B78	The Applicant may undertake archaeological investigations at ancillary sites that do not meet the criterion set out in condition B73, where this is required to assess the potential Aboriginal and non-Aboriginal archaeological impacts of the ancillary facility on previously unidentified heritage sites, provided: (a) any archaeological investigations undertaken under this condition shall be consistent with the requirements in condition B44 for Aboriginal heritage and condition B50 for non-Aboriginal heritage and with the Construction Heritage Management Plan or a methodology prepared to the satisfaction of the Secretary in consultation with OEH; and (b) the results of any relevant archaeological investigations undertaken under this condition shall be consistent with the reporting requirements of condition B45 for Aboriginal heritage and condition B50 for non-Aboriginal heritage and be described in the assessment of the ancillary facility required under conditions B74 and B75.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
BORROW SITES													
	B79	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.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
CONSTRUCTION ACTIVITIES													
	B80	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.	✓	✓	✓	✓	✓	✓	Construction	Contractor			
OPERATIONAL PERFORMANCE													
	B81	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 Rous Water.					✓	✓	Operation	RMS			

COMPLIANCE TRACKING - NSW CONDITIONS OF APPROVAL

Woolgoolga to Ballina SSI-4963



PART C - Community Information and Reporting

Category	Part	Requirement	Stage 1 (as defined in the W2B Staging Report)					Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
			Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3						
COMMUNITY INFORMATION, CONSULTATION AND INVOLVEMENT													
	C1	<p>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 D22), 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:</p> <p>(a) identification of stakeholders to be consulted as part of the Strategy, including affected and adjoining landowners;</p> <p>(b) procedures and mechanisms for the regular distribution of information to community stakeholders on construction progress and matters associated with environmental management;</p> <p>(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;</p> <p>(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;</p> <p>(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</p> <p>(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.</p> <p>Issues that shall be addressed through the Community Communication Strategy include (but are not necessarily limited to):</p> <p>(i) traffic management (including property access, pedestrian access);</p> <p>(ii) heritage matters;</p> <p>(iii) landscaping and urban design matters;</p> <p>(iv) construction staging, hours and activities;</p> <p>(v) noise and vibration mitigation and management;</p> <p>(vi) air quality and dust;</p> <p>(vii) water quality, hydrology and flooding matters; and</p> <p>(viii) biodiversity matters.</p> <p>The Applicant shall maintain and implement the Strategy throughout construction of the SSI.</p>	✓	✓	✓	✓	✓	✓	Pre-construction	RMS			
COMPLAINTS AND ENQUIRIES PROCEDURE													
	C2	<p>Prior to the commencement of pre-construction and 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:</p> <p>(a) a 24 hour telephone number(s) on which complaints and enquiries about the SSI may be registered;</p> <p>(b) a postal address to which written complaints and enquires may be sent;</p> <p>(c) an email address to which electronic complaints and enquiries may be transmitted; and</p> <p>(d) a mediation system for complaints unable to be resolved.</p> <p>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.</p>	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			
	C3	<p>Prior to the commencement of pre-construction and construction, or as otherwise agreed by the Secretary, the Applicant shall prepare and implement a Construction Complaints Management System consistent with AS 4269: Complaints Handling and maintain the System for the duration of construction and up to 12 months following completion of the SSI.</p> <p>Information on all complaints received, including the means by which they were addressed and whether resolution was reached, with or without mediation, shall be maintained in a complaints register and included in the construction compliance reports required by this approval. The information contained within the System shall be made available to the Secretary on request.</p>	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			
PROVISION OF ELECTRONIC INFORMATION													
	C4	<p>Prior to the commencement of pre-construction and construction, or as otherwise agreed by the Secretary, the Applicant shall establish and maintain a new website, or dedicated pages within an existing website, for the provision of electronic information associated with the SSI, for the duration of construction and for 12 months following completion of the SSI. The Applicant shall, subject to confidentiality, publish and maintain up-to-date information on the website or dedicated pages including, but not necessarily limited to:</p> <p>(a) information on the current implementation status of the SSI;</p> <p>(b) a copy of the documents listed in condition A2, and any documentation supporting modifications to this approval that may be granted from time to time;</p> <p>(c) a copy of this approval and any future modification to this approval;</p> <p>(d) a copy of each relevant environmental approval, licence or permit required and obtained in relation to the SSI;</p> <p>(e) a copy of each current strategy, plan, program or other document required under this approval;</p> <p>(f) the outcomes of compliance tracking in accordance with condition D27 of this approval; and</p> <p>(g) details of contact point(s) to which community complaints and enquiries may be directed, including a telephone number, a postal address and an email address.</p>	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			

COMPLIANCE TRACKING - NSW CONDITIONS OF APPROVAL

Woolgoolga to Ballina SSI-4963

PART D - Environmental Management, Reporting and Auditing

Category	Part	Requirement	Stage 1 (as defined in the W2B Staging Report)					Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
			Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3						
BIODIVERSITY MITIGATION FRAMEWORK													
	D1	<p>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 DPI (Fisheries), OEH and DoE, and submitted to the satisfaction of the Secretary prior to commencement of detailed design of the relevant stage, unless otherwise agreed by the Secretary. The Mitigation Framework shall detail the process for finalising the biodiversity strategies, plans and programs required under this approval. The Mitigation Framework shall include:</p> <p>(a) a description of the methodology of all proposed pre-construction species and habitat surveys, including surveys undertaken in the 2013-2014 spring and summer seasons and as otherwise required under this project approval, and with reference where relevant to compliance with relevant NSW and Commonwealth field survey methods and guidelines;</p> <p>(b) a summary of potential changes to the avoidance, mitigation and/or offset measures specified in the documents listed in condition A2, as justified by the results of surveys described in condition D1(a);</p> <p>(c) a summary of the potential avoidance, mitigation and/or offset measures for all species for which the proposed level of impact or mitigation required differs from that assessed in the documents listed in condition A2, including evidence that those measures would achieve the same or an improved biodiversity outcome;</p> <p>(d) provision for updating the relevant Threatened Species Management Plans required under condition D8; and</p> <p>(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.</p>	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		To be developed and implemented as an overarching framework addressing all active project stages and updated as required.	
	D2 (a)-(g)	<p>The Applicant shall prepare and implement a Connectivity Strategy, to be submitted and approved by the Secretary prior to the commencement of construction. The strategy shall describe the rationale for, and final 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:</p> <p>(a) details of all crossings for terrestrial and aquatic fauna, including but not limited to land bridges, bridge, arch and culvert crossings, and crossings for arboreal fauna;</p> <p>(b) justification for the location and design, and spacing of the connectivity structures, with reference to relevant State and Commonwealth threatened species guidelines and the results of on-ground surveys as required by D2(d);</p> <p>(c) demonstration of 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:</p> <p>(i) maintain or improve connectivity and movement pathways;</p> <p>(ii) reduce the risk of mortality for threatened species;</p> <p>(iii) are located at locations, at sufficient frequency along the alignment, based on the ecological requirements of the targeted species, including but not limited to home range size, movement patterns, and habitat use;</p> <p>(d) the results of surveys undertaken to determine the habitat, species movement patterns, distribution of species to confirm the design and location;</p> <p>(e) consideration of connectivity under the existing highway, service roads and local roads (servicing over 100 vehicles per day);</p> <p>(f) commitment that pathways to connectivity structures are not to be impeded by ancillary facilities, rest areas or service roads, or local roads (servicing over 100 vehicles per day) that are realigned as part of the SSI or experience an increase in traffic volumes during operation of the SSI;</p> <p>(g) commitment to implement the landscaping of vegetation leading to connectivity structures;</p>	✓	✓				✓	Pre-construction	RMS		To be implemented as an overarching strategy addressing all active project stages and updated as required.	
	D2 (h)-(m)	<p>(h) a fencing strategy, describing the location, design and length of fencing, which must extend beyond the edges of habitat for threatened species;</p> <p>(i) the maintenance of connectivity measures and fencing for the life of the impact of the action, including the timing and frequency;</p> <p>(j) an assessment of the flooding risk for proposed structures, and measures to confirm 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;</p> <p>(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 criteria cannot be achieved and with the agreement of the OEH, consideration shall be given to the use of suitable materials in, and the final form of, the scour protection to provide for the safe and effective passage of fauna;</p> <p>(l) detailed consideration of the effects of connectivity structures on the maintenance or improvement of population viability and gene flow; and</p> <p>(m) incorporate the outcomes of the Mitigation Framework required under condition D1.</p> <p>Unless connectivity measures can be demonstrated to be effective at successfully mitigating the barrier and fragmentation impact to relevant species, in accordance with the requirements of the construction flora and fauna management plan required under condition D26(e), and threatened species management plans required under conditions D8 and D9, the residual impact to connectivity shall be offset.</p> <p>Where the location and/or design of connectivity structures has changed from that identified in the documents listed under conditions A2(c) and A2(e), the Strategy shall demonstrate how the new location and/or 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/replanting of native vegetation, to be implemented for the SSI.</p> <p>The Applicant shall demonstrate to the satisfaction of the Secretary how public authority comments on the Strategy have been addressed.</p> <p>The Strategy may be submitted in stages to suit the staging of the SSI.</p>	✓	✓				✓	Pre-construction	RMS		To be implemented as an overarching strategy addressing all active project stages and updated as required.	
BIODIVERSITY OFFSET STRATEGY													

Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment	
	D3	<p>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 Biodiversity Offset Strategy in the documents listed in condition A2, in consultation with the OEH, DPI (Fisheries) and DoE, to the satisfaction of the Secretary.</p> <p>Unless otherwise agreed to by the OEH, DPI (Fisheries) and DoE, offsets shall be provided on a like-for-like basis and at a minimum ratio of 4:1 for native vegetation (including salt marsh) impacted by the SSI or as required by the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy (Commonwealth of Australia 2012) and Offsets Assessment Guide (Commonwealth of Australia 2012), whichever is the greater.</p> <p>The Strategy shall include, but not necessarily be limited to:</p> <p>(a) 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 likely to be impacted directly or indirectly during both the construction and operation of the SSI;</p> <p>(b) confirmation of the vegetation type/habitat (in hectares) to be cleared and their condition, and the size of offsets required (in hectares);</p> <p>(c) details of the available offset measures that have been selected to compensate for the loss of existing native vegetation (including mangroves, salt marsh and riparian vegetation), threatened and vulnerable species and Endangered Ecological Communities and their habitats, and identification of potential offset sites;</p> <p>(d) consideration of contingency measures for offsets to address potential changes to impacted areas as a result of detailed design changes;</p> <p>(e) a process for addressing and incorporating offset measures arising from changes in biodiversity impacts (where these changes are generally consistent with the biodiversity impacts identified for the SSI in documents listed under condition A2), including:</p> <p>(i) changes to the SSI footprint due to detailed design;</p> <p>(ii) changes to predicted impacts as a result of changes to mitigation measures;</p> <p>(iii) the identification of additional species/habitat through pre-clearance surveys and construction; and</p> <p>(iv) additional impact associated with the establishment of ancillary facilities;</p> <p>(f) 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 ranking of offset measures; and</p> <p>(g) options for securing and management of biodiversity offsets in perpetuity.</p> <p>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.</p> <p>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.</p>	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS			An overarching Biodiversity Offset Strategy will be prepared for the project and will be updated as required.	
	D4	<p>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 should be undertaken in consultation with the OEH, DPI (Fisheries) and DoE. Submission of the offset sites for approval shall be accompanied by:</p> <p>(a) details of offset sites to compensate the impacts on:</p> <p>(i) Koala populations in Coolgardie/Bagotville, Broadwater and Woombah/Illuka;</p> <p>(ii) Moonee Quassia (<i>Quassia</i> sp. Moonee Creek);</p> <p>(iii) Sandstone Rough-Barked Apple (<i>Angophora robur</i>);</p> <p>(iv) Singleton Mint Bush (<i>Prostanthera cineolifera</i>); and</p> <p>(v) Lowland Rainforest in Sub-tropical Australia;</p> <p>(b) a map that defines the locations and boundaries of the sites;</p> <p>(c) demonstration, through ground truthing survey or an alternative method(s), the adequacy of the site(s), in terms of habitat suitability and presence of the relevant species, to offset the impacts of the SSI;</p> <p>(d) consideration of how the offsets achieve the outcomes required by the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy to the satisfaction of DoE; and</p> <p>(e) details of how the offset sites would be secured and managed in perpetuity.</p>	✓	✓				✓	Pre-construction and Construction	RMS			Soft soil early works do not impact on the subject species identified in D4.	
BIODIVERSITY OFFSET STRATEGY														
	D5 (a)-(g)	<p>The Applicant shall 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. The package shall detail how the ecological values lost as a result of the SSI will be offset. The Biodiversity Offset Package shall be prepared in consultation with the OEH, DPI (Fisheries) and DoE, for the approval of the Secretary, and shall (unless otherwise agreed by the Secretary) include, but not necessarily be limited to:</p> <p>(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;</p> <p>(b) the objectives and biodiversity outcomes to be achieved;</p> <p>(c) details of the final suite of the biodiversity offset measures selected and secured in accordance with the Biodiversity Offset Strategy including the identification of all offset sites, including, offset attributes, shapfiles, textual descriptions and maps that clearly define the location, boundaries of the offset areas;</p> <p>(d) an assessment demonstrating how the offset area(s) achieve the outcomes required by the Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy and user guide to the written satisfaction of DoE;</p> <p>(e) the management and monitoring requirements for compensatory habitat works and other biodiversity offset measures proposed to ensure the outcomes of the package are achieved, including:</p> <p>(i) the monitoring of the condition of species and ecological communities at offset locations;</p> <p>(ii) the methodology for the monitoring program(s), including the number and location of offset monitoring sites, and the sampling frequency at these sites;</p> <p>(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; and</p> <p>(iv) the monitoring and reporting on the effectiveness of these measures, and progress against the performance and completion criteria;</p> <p>(f) the results of targeted field surveys within the offset sites (undertaken at any ecologically appropriate time of the year) to assess and describe habitat suitability, presence/absence of threatened species and ecological communities and an assessment of the baseline population;</p> <p>(g) a description of the current quality (prior to any management activities) of the offset area(s);</p>	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS				A project wide Biodiversity Offset Package will be prepared.

Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
	D5(h)-(m)	(h) targeted management actions, regeneration and/or revegetation strategies to be undertaken on the offset area(s) to improve the ecological quality of these areas for the relevant species and communities; (i) clear 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/or populations of the relevant species; (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 performance objectives are not met; a program to monitor and report on the effectiveness of these measures, and progress against the performance and completion criteria; (k) timing and responsibilities for the implementation of the provisions of the Biodiversity Offset Package and achieving performance objectives; (l) details of who would be responsible for monitoring, reviewing, and implementing the Biodiversity Offset Package; and (m) a description of funding arrangements or agreements including work programs and responsible entities. Land offsets shall be consistent with the Principles for the use of Biodiversity Offsets in NSW. Any land offset shall be enduring and be secured by a conservation mechanism which protects and manages the land in perpetuity. Where land offsets cannot solely achieve compensation for the loss of habitat, additional measures shall be provided to collectively deliver an improved or maintained biodiversity outcome for the region. The Biodiversity Offset Package shall include details of the offset sites approved under condition D4, and timeframe for the delivery of the offset sites. 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 timeframes set out in the Biodiversity Offset Package, unless otherwise agreed by the Secretary. Note: • 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 revisions).	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS			
	D6	Prior to the commencement of construction of the relevant stage that would result in the disturbance of native vegetation (or as otherwise agreed by the Secretary), the Applicant shall prepare and implement a Nest Box Plan to provide replacement hollows for displaced fauna. The Plan shall be prepared in consultation with the OEH and to the satisfaction of the Secretary. The Plan shall be prepared by a suitably qualified and experienced ecologist and detail the number and type of nest boxes to be installed, which shall be justified based on the number and type of hollows removed (based on pre-clearing surveys), the density of hollows in the area to be cleared and in adjacent areas, and the availability of adjacent food resources. The Plan shall also provide details of maintenance protocols for the nest boxes installed including responsibilities, timing and duration.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			
BIODIVERSITY TRANSLOCATION STRATEGY													
	D7	The Applicant shall prepare and implement a Flora Translocation Strategy to determine the feasibility and potential efficacy of translocation measures (as identified in the threatened species management plans required under condition D8), prior to the commencement of construction work that would result in the disturbance of threatened flora species for which translocation is proposed. The Strategy shall be prepared by a suitably qualified and experienced ecologist, in consultation with the OEH and DoE, and to the satisfaction of the Secretary. The Strategy shall include: (a) a feasibility assessment of timeframe and staging requirements, availability of expertise, risk effectiveness analysis and availability/suitability of translocation sites; (b) detail of species specific information on the proposed methods of, and discussion of results of past recorded responses to, translocations; (c) a framework for the translocation process applicable to each affected species; and (d) consideration of appropriate compensatory habitat in the Biodiversity Offsets Package required under condition D5 where translocation is not reasonable or feasible.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS			
BIODIVERSITY THREATENED SPECIES MANAGEMENT PLANS													
	D8 (a)-(h)	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(c) (subject to condition D9), in consultation with OEH, DPI (Fisheries) and DoE, and to the satisfaction of the Secretary, and shall include but not necessarily be limited to: (a) demonstration that adequate surveys have been undertaken to assess the impacts of the SSI with reference to the Mitigation Framework developed under condition D1, including baseline 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 data shall address the densities, distribution, habitat use and movement patterns of these species; (b) identification of potential impacts on each species; (c) details of and 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 values of habitat areas compared to baseline data and maintain connectivity for the relevant species; (d) an adaptive monitoring program to assess the use of the mitigation measures identified in conditions B10 and D2. 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 exclusion fencing implemented as part of the SSI; (e) monitoring methodology for threatened flora and fauna adjacent to the SSI footprint, (f) 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; (g) 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 proposed timing, and duration of that monitoring; (h) provision for the assessment of monitoring data to identify changes to habitat usage and whether this can be attributed to the SSI;	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			
	D8 (i)-(l)	(i) details of contingency measures that would be implemented in the event of changes to habitat usage patterns, entities, distribution, and movement patterns attributable to the construction or operation of the SSI, based on adequate baseline data; (j) mechanisms for the monitoring, review and amendment of these plans; (k) provision for ongoing monitoring during operation of the SSI (for operation/ongoing impacts) until such time as the use and effectiveness of mitigation measures can be demonstrated to have been achieved over a minimum of three successive monitoring periods, unless otherwise agreed by the Secretary in consultation with the OEH, DPI (Fisheries) and DoE; and (l) provision for annual reporting of monitoring results to the Secretary and the OEH, DPI (Fisheries) and DoE, or as otherwise agreed by those agencies. In developing the Plans, the Applicant shall demonstrate to the satisfaction of the Secretary and DoE, how the public authorities and expert reviewer recommendations provided for each draft plan in the documents listed in condition A2(c) have been addressed, including detailed justification of any variance from the recommendations of the expert reviewer of the management plans, including analysis of potential risk to the threatened species. 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.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			
	D9 (a)-(c)	As part of the Threatened Species Management Plans required under condition D8, the Applicant shall prepare and implement a Koala Management Plan to demonstrate the ongoing survival of the Koala populations at Coolgardie/Bagotville, Broadwater and Woombah/Iluka. The Plan shall be prepared by a suitably qualified and experienced species expert and shall include, but not necessarily be limited to: (a) results of detailed surveys to determine: (i) the population status of the Coolgardie/Bagotville, Broadwater and Woombah/Iluka Koala populations; (ii) habitat use and movement patterns of Koala populations within five kilometres of the proposed upgrade, or such area as determined by the independent ecologist; and (iii) habitat areas likely to be fragmented by the SSI; including the results of SPOT assessment and radio tracking. The results and adequacy of surveys shall be verified by an independent suitably qualified and experienced ecologist with appropriate qualifications and experience in Koala and road ecology. Where appropriate, the Applicant may vary the required area of survey specified under condition D9(a)(ii) to the satisfaction of the independent ecologist; (b) a detailed assessment of the impacts to the Koala populations based on the survey results required by condition D9(a), including population impacts and the identification of habitat likely to be fragmented and/or isolated as a result of the SSI; (c) a detailed description, including the location and design, of all proposed avoidance and mitigation measures;						✓	Pre-construction	RMS			

Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
	D9 (d)	<p>(d) justification that the location and design of mitigation measures:</p> <p>(i) have been designed with the objective of no Koala road kill from the commencement of construction of the SSI. In the event that a Koala is injured or killed during construction or operation, this shall be reported on the Applicant's website within 24 hours of this occurring, and the record shall remain available for a period of at least five years, unless otherwise agreed by the Secretary;</p> <p>(ii) include permanent fencing of the entire SSI for the length of the distribution of the Coolgardie/Bagotville, Broadwater and Woombah/Illuka populations and for two kilometres beyond the distribution of the Coolgardie/Bagotville, Broadwater and Woombah/Illuka population, following the highway or to the nearest natural barrier to Koala movement (e.g. river), after baseline surveys are complete in accordance with condition D9(a) and prior to operation;</p> <p>(iii) result in the complete, safe crossing of fauna crossings by the Koala. Fauna crossings shall be provided at a sufficient frequency to ensure that habitat connectivity is maintained or improved from pre-construction conditions, as determined by the independent ecologist and agreed by OEH;</p> <p>(iv) provide sufficient opportunities for species dispersal and re-colonisation as determined by the independent ecologist and OEH;</p> <p>(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, 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;</p> <p>(vi) all koala underpass structures shall have a minimum height and width of 2.4 metres and a maximum length of 40 metres, or a minimum height and width of 3 metres and a maximum length of 50 metres. The underpass/culvert entrance shall be located at ground level, and no higher in the fill. Structures that provide passage over the road shall have a minimum width of 30 metres and shall be treated with contiguous habitat features;</p> <p>(vii) 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);</p> <p>(viii) effectively minimise the risk of predation from dogs in both dedicated and combined crossings;</p> <p>(ix) 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);</p> <p>(x) provide habitat linkages to crossing structures from adjacent Koala habitat; and</p> <p>(xi) ensures that pathways to connectivity structures are not impeded by ancillary facilities, rest areas, service roads or local roads;</p>						✓	Pre-construction	RMS			
	D9 (e)-(i)	<p>(e) if the mitigation measures discussed in condition D9(d) cannot be demonstrated to be effective to the satisfaction of the Secretary, in consultation with OEH and DoE, provision for the Plan to be revised to include the design and construction of a minimum of one dedicated underpass or land bridge every 500 metres. Underpass structures shall have a minimum height and width of three metres and a maximum length of 50 metres.</p> <p>(f) provision for the installation and vegetation planting of fauna overpasses prior to the commencement of construction;</p> <p>(g) a revegetation strategy to be implemented to increase connectivity adjacent to the SSI and leading to crossing locations, and the provision of vegetation planting on land bridges, to ensure the establishment of the vegetation prior to the commencement of construction;</p> <p>(h) details of the proposed monitoring methodology to ensure the effectiveness of the mitigation measures and the ongoing survival of the Coolgardie/Bagotville, Broadwater and Woombah/Illuka Koala populations. Monitoring shall:</p> <p>(i) include goals that demonstrate the mitigation measures are effective, including clear objectives, milestones, performance measures, corrective actions, and thresholds for corrective actions, and timeframes for completion;</p> <p>(ii) occur until such time as the mitigation measures are demonstrated to be effective for three consecutive monitoring periods, or as agreed by the Secretary, to the satisfaction of the independent ecologist and OEH; and</p> <p>(iii) for the purposes of the Coolgardie/Bagotville population, consider the results of the surveys undertaken in the Koala habitat and population assessment: Ballina Shire Council LGA (Biolink Ecological Consultants Pty Ltd, November 2013) in determining the baseline population;</p> <p>(i) where the results of monitoring undertaken in accordance with condition D9(h) suggests that the mitigation measures are ineffective or changes to the population have occurred, the Applicant shall provide the Secretary, within one month of recording the changes, the corrective actions that have been implemented or proposed to be implemented, or a procedure for demonstrating that this change is not a result of the SSI. Should the Applicant be unable to demonstrate to the satisfaction of the Secretary that any change to the population is not attributable to the SSI, the SSI shall be deemed as the cause of the impact and the Applicant shall, within one month of these findings, provide, to the satisfaction of the Secretary, in consultation with the OEH and DoE, the proposed corrective actions to address the impacts of the SSI. Any required corrective actions shall include, but not necessarily be limited to:</p> <p>(i) installation of further crossings or modifications to existing crossings and the provision of evidence of the complete, safe crossing of these fauna crossings by the Koala. Any additional crossings shall be provided at a sufficient frequency to ensure that habitat connectivity is maintained or improved from pre-construction conditions, within two years of their installation; and</p> <p>(ii) reassessment of all revegetation areas and frequent reporting and maintenance including addressing failures;</p>						✓		RMS			
	D9 (j)-(k)	<p>(j) if the measures in condition D9(i) cannot be demonstrated to be successful within one year of their implementation, procedure for the submission of further offsets in accordance with conditions D5 and D6(j), to be provided within one year of these findings. Further offsets may include:</p> <p>(i) the legal protection and conservation management of additional areas of existing habitat that actively regenerated and secured into conservation management; and/or</p> <p>(ii) strategic revegetation of cleared areas to improve connectivity; and/or</p> <p>(iii) development of a supplementary feeding program and/or breeding program; and/or</p> <p>(iv) development of a long term predator control program; and</p> <p>(k) evidence of consultation with species experts, OEH and DoE in addressing the requirements of this condition, and demonstration of how comments provided by the species experts, OEH and DoE, as a result of this consultation, have been addressed.</p> <p>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.</p>						✓	Pre-construction	RMS			
NOISE AND VIBRATION LAND USE SURVEY													
	D10	Prior to the commencement of construction, the Applicant shall undertake a land use 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.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	Contractor			
NOISE AND VIBRATION OPERATIONAL NOISE REVIEW													
	D11	<p>The Applicant shall 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 the EPA, to the satisfaction of the Secretary. The review may be submitted in stages to suit the staged construction of the SSI and shall:</p> <p>(a) confirm the operational noise predictions of the SSI based on detailed design. This operational noise assessment shall be based on an appropriately calibrated noise model (which has incorporated additional noise monitoring, where necessary for calibration purposes);</p> <p>(b) review the suitability of the operational noise mitigation measures identified in the documents listed in condition A2. The review shall take into account the detailed design of the SSI and, where feasible and reasonable, and where necessary, refine 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</p> <p>(c) where necessary, investigate additional feasible and reasonable noise mitigation measures to achieve the criteria outlined in the NSW Road Noise Policy (DECCW, 2011).</p>	✓	✓				✓	Pre-construction and Construction	RMS			
WATER QUALITY MONITORING PROGRAM													

Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
	D12	The Applicant shall prepare and implement a Water Quality Monitoring Program, to monitor the construction and operation impacts of the SSI on surface and groundwater quality and resources and wetlands, prior to construction. The Program shall be prepared in consultation with the OEH, EPA, DPI (Fisheries), NOW, DoE and Rous Water (in relation to the Woodburn borefields), to the satisfaction of the Secretary, and shall include but not necessarily be limited to: (a) identification of surface and groundwater quality monitoring locations (including watercourses, waterbodies and SEPP14 wetlands) which are representative of the potential extent of impacts from the SSI; (b) the results of any groundwater modelling undertaken; (c) identification of works and activities during construction and operation of the SSI, including emergencies and spill events, that have the potential to impact on surface water quality of potentially affected waterways and known Oxleyan Pygmy Perch habitat; (d) development and presentation of parameters and standards against which any changes to water quality will be assessed, having regard to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (Australian and New Zealand Environment Conservation Council, 2000) or relevant baseline data; (e) representative background monitoring of surface and groundwater quality parameters for a minimum of twelve months (considering seasonality) prior to the commencement of construction, to establish baseline water conditions, unless otherwise agreed by the Secretary; (f) a minimum monitoring period of three years following the completion of construction or until the affected waterways and/or groundwater resources are certified by an independent expert as being rehabilitated to an acceptable condition. The monitoring shall also confirm the establishment of operational water control measures (such as sedimentation basins and vegetation swales); (g) contingency and ameliorative measures in the event that adverse impacts to water quality are identified; and (h) reporting of the monitoring results to Department of Planning and Environment, OEH, EPA, DPI (Fisheries), NOW, DoE and Rous Water (in relation to the Woodburn borefields).	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS			
HYDROLOGICAL MITIGATION REPORT													
	D13	The Applicant shall prepare and implement a Hydrological Mitigation Report for properties where flooding and/or hydrological impacts are predicted to exceed the relevant flood management objective in the documents listed in condition A2 as a result of the SSI. The Report shall be prepared by a suitably qualified expert and be based on detailed surveys (e.g. floor levels) and associated assessment of potentially flood affected properties in the Corindi, Clarence and Richmond river floodplains. The Report shall: (a) identify properties in those areas likely to have an increased/exacerbated impact and detail the predicted impact; The types of impacts to be considered include all those examined in the EIS including but not limited to changes in flood levels and velocities, alteration to drainage, reduction in flood evacuation access or capability, impacts on infrastructure, impacts on stock and agriculture, and impacts to the environment; (b) identify mitigation measures to be implemented to address these impacts; (c) identify measures to be implemented to minimise scour and dissipate energy at locations where flood velocities are predicted to increase as a result of the SSI and cause localised soil erosion and/or pasture damage; (d) be developed in consultation with the relevant council, NSW State Emergency Service and directly-affected landowners; (e) identify operational and maintenance responsibilities for items (a) to (c) inclusive; and (f) refer to the assessments described in conditions B31 and B32. The report may be submitted in stages to suit the staged construction of the SSI. Construction shall not commence within those areas likely to have altered flood conditions until such time as works identified in the hydrological mitigation report have been completed, unless otherwise agreed by the Secretary.	✓					✓	Pre-construction	RMS			
	D14	Based on the mitigation measures identified in condition D13, the Applicant shall prepare and implement a final schedule of feasible and reasonable flood mitigation measures proposed at each directly-affected property in consultation with the landowner. The schedule shall 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.	✓					✓	Pre-construction	RMS			
	D15	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.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS			
	D16	The Applicant shall provide feasible and reasonable assistance to the relevant council and/or NSW State Emergency Service, to prepare any new or necessary update(s) to the relevant plans and documents in relation to flooding, to reflect changes in flooding levels, flows and characteristics as a result of the SSI.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS			
TRANSPORT AND ACCESS.													
	D17	The Applicant shall prepare and implement a Signage Policy to addresses the impact of towns (South Grafton, Ulmarra, Tyndale, Woodburn, Broadwater and Wardell) which are bypassed by the SSI, at least six months prior to operation, unless otherwise agreed by the Secretary. The Policy shall be prepared in consultation with the relevant council and to the satisfaction of the Secretary. 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) provides information on the range of services available within the bypassed towns of South Grafton, Ulmarra, Tyndale, Woodburn, Broadwater and Wardell; and (b) informs motorists of routes through the bypassed towns that may be taken as an alternative to the highway. The Policy may be submitted in stages to suit the staged construction of the SSI.						✓	Pre-construction	RMS			
	D18	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 Italy Museum and to the satisfaction of the Secretary. Note • The Applicant may incorporate the requirements of this condition into the Signage Policy for the SSI under condition D17.	✓	✓				✓	Construction	RMS			
ROAD DILAPIDATION													
	D19	Upon determining the haulage route(s) for construction vehicles associated with the SSI, and prior to construction, an independent and qualified expert shall prepare a Road Dilapidation Report. The Report shall 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 Report shall be submitted to the relevant council for review prior to the commencement of haulage. Following completion of construction, a subsequent Report shall be prepared to assess any damage to the road that may have resulted from the construction of the SSI. Measures undertaken to restore or reinstate roads affected by the SSI shall be undertaken in a timely manner, in accordance with the reasonable requirements of the relevant council, and at the full expense of the Applicant. Note: • Nothing in this condition restricts the Applicant commencing adjustments and minor upgrades to the existing road network to cater for construction traffic and installation of temporary project signage prior to the commencement of construction.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	Contractor			
URBAN DESIGN AND LANDSCAPING													

Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment	
	D20 (a)-(d)	The Applicant shall prepare and implement an Urban Design and Landscape Plan prior to the commencement of permanent built works and/or landscaping, unless otherwise agreed by the Secretary, to present an integrated landscape and design for the SSI. The Plan shall be prepared in accordance with the Roads and Maritime Services urban design and visual guidelines, the design principles outlined in the EIS, and the revegetation principles outlined in the EIS Working Paper—Biodiversity. The Plan shall be prepared by an appropriately qualified expert in consultation with the relevant council and community, to the satisfaction of the Secretary. The Plan shall include, but not necessarily be limited to: (a) identification of design principles and standards based on: (i) local environmental values, (ii) heritage values; (iii) urban design context; (iv) sustainable design and maintenance; (v) community amenity and privacy; (vi) relevant design standards and guidelines; and (vii) the urban design objectives outlined in Section 4.2 of the EIS Working Paper—Urban Design Landscape Character and Visual Impact; (b) the location of existing vegetation and proposed landscaping (including use of indigenous and endemic species where possible). Details of species to be replanted/revegetated shall be provided, including their appropriateness to the area and habitat for threatened species; (c) a description of locations along the corridor directly or indirectly impacted by the construction of the SSI (e.g. temporary ancillary facilities, access tracks, watercourse crossings, etc.) and details of the strategies to progressively rehabilitate regenerate and/or revegetate the locations with the objective of promoting biodiversity outcomes and visual integration; (d) take into account appropriate roadside plantings and landscaping in the vicinity of heritage items and ensure no additional heritage impacts;	✓	✓				✓	Pre-construction and Construction	RMS and Contractor				
	D20 (e)-(k)	(e) a description of disturbed areas (including borrow sites) and details of the strategies to progressively rehabilitate, regenerate and/or revegetate these areas, including clear objectives and timeframes for rehabilitation works, procedures for monitoring success of regeneration or revegetation, and corrective actions should regeneration or revegetation not conform to the objectives adopted; (f) location and design treatments for any associated footpaths and cyclist elements, and other features such as seating, lighting (in accordance with AS 4282-1997 Control of the Obtrusive Effect of Outdoor Lighting), fencing, materials and signs; (g) an assessment of the visual screening effects of existing vegetation and the proposed landscaping and built elements. Where properties have been identified as likely to experience high visual impact as a result of the SSI and high residual impacts are likely to remain, the Applicant shall, in consultation with affected landowners, identify opportunities for providing at-property landscaping to further screen views of the SSI. Where agreed with the landowner, these measures shall be implemented during the construction of the SSI; (h) graphics such as sections, perspective views and sketches for key elements of the SSI, including, but not limited to built elements of the SSI; (i) strategies for progressive landscaping and other environmental controls such as erosion and sedimentation controls, drainage and noise mitigation; (j) monitoring and maintenance procedures for the built elements, rehabilitated vegetation and landscaping (including weed control), including performance indicators, responsibilities, timing and duration and contingencies where rehabilitation of vegetation and landscaping measures fail; and (k) evidence of consultation with the relevant council and community on the proposed urban design and landscape measures prior to its finalisation. The Plan may be submitted in stages to suit the staged construction program of the SSI.	✓	✓				✓	Pre-construction and Construction	RMS and Contractor				
ANCILLARY FACILITIES														
	D21	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, OEH, DPI (Fisheries), DoE, and the relevant council, and to the satisfaction of the Environmental Representative, and shall include, but not necessarily be limited to: (a) a description of the ancillary facility (including a site layout plan), its components and details of the existing environment on and in the vicinity of the site; (b) details of the activities to be carried out at the facility, including the hours of operation, staging of operation and predicted date of commissioning; (c) a description of the plant, equipment and materials to be used and/or stored on the site, including dangerous and hazardous goods; (d) details of the light and heavy construction vehicle movements to and from each facility, including site access and route(s) to be used during the establishment and operation of the facility, and an assessment of potential construction traffic impacts on the local road network and access tracks; (e) a summary of the potential environmental impacts associated with the construction and operation of the facility; (f) demonstrate compliance with the locational and environmental criteria in condition B73(a)—B73(n); (g) details of the mitigation, monitoring and management procedures specific to the facility that would be implemented to minimise environmental and amenity impacts or, where this is not possible, feasible and reasonable measures to offset these impacts; (h) a description of how the management and mitigation measures set out in the documents listed in condition A2 will be implemented on the site, and if not, justification for such decisions particularly on those sites assessed as having a high risk of flood impacts; (i) an assessment of alternative site layouts where either noise management levels are predicted to be exceeded and acoustic treatment of residences is not proposed, or where such treatment is proposed (consequent to the operational impacts of the SSI) but will not be provided prior to establishment of an ancillary facility; (j) a cumulative noise impact statement for the ancillary facility addressing the worst-case cumulative noise impacts resulting from the concurrent operation of the site (including construction traffic movements to and from the site), nearby construction works within the SSI corridor and any other nearby construction activities associated with other road upgrade projects; (k) identification of the timing for the completion of activities at the facility and how the site will be decommissioned (including any necessary rehabilitation); and (l) mechanisms for the monitoring, review and amendment of this plan. 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 take into account the Applicant's response to public authority and council comments on the plan. The Applicant may prepare a separate plan for the facility or include multiple sites within a single or multiple management plans.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor				
BORROW SITES														
	D22	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 to the satisfaction of the Secretary, and shall include, but not necessarily be limited to: (a) details of construction/extraction methods and activities carried out at the borrow site; (b) management and mitigation measures to be used to minimise surface and groundwater impacts, Aboriginal and non-Aboriginal heritage, air quality, noise and vibration, biodiversity and visual impacts; (c) consultation with sensitive receivers; and (d) details of the rehabilitation of the borrow site, including future landform and use of the borrow site, landscaping and revegetation, and measures that would be implemented to minimise or manage the ongoing environmental effects of the site. The Plan shall demonstrate that the construction and operation of the Lang Hill borrow site has no adverse impact on the known Oxleyan Pygmy Perch habitat waterway.						✓	Construction	Contractor				
ENVIRONMENTAL REPRESENTATIVE														

Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
	D23	<p>Prior to the commencement of construction of the SSI, or as otherwise agreed by the Secretary, the Applicant shall nominate for the approval of the Secretary a suitably qualified and experienced Environmental Representative(s) that is independent of the design and construction personnel. The Applicant shall employ the Environmental Representative(s) for the duration of construction, or as otherwise agreed by the Secretary. The Environment Representative(s) shall:</p> <p>(a) be the principal point of advice in relation to the environmental performance of the SSI;</p> <p>(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;</p> <p>(c) have responsibility for considering and advising the Applicant on matters specified in the conditions of this approval, and other licences and approvals related to the environmental performance and impacts of the SSI;</p> <p>(d) ensure that environmental auditing is undertaken in accordance with the Applicant's Environmental Management System(s);</p> <p>(e) be given the authority to approve/reject minor amendments to the Construction Environment Management Plan. What constitutes a "minor" amendment shall be clearly explained in the Construction Environment Management Plan;</p> <p>(f) be given the authority to approve/reject Out of Hours Works in accordance with condition B17. These works shall be conducted in accordance with the Out of Hours Works Protocol (OOHW Protocol) required in accordance with condition D26(vi);</p> <p>(g) be given the authority to approve/reject ancillary facilities in accordance with conditions B73 and B74 and the Ancillary Facilities Management Plans under condition D21;</p> <p>(h) be given the authority and independence to require reasonable steps be taken to avoid or minimise unintended or adverse environmental impacts, and failing the effectiveness of such steps, to direct that relevant actions be ceased immediately should an adverse impact on the environment be likely to occur; and</p> <p>(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</p>	✓	✓	✓	✓	✓	✓	Pre-construction	RMS			
	D24	The Environmental Representative shall prepare and submit to the Secretary a monthly report on the Environmental Representative's actions and decision on matters specified in condition D23 for the preceding month. The reports shall be submitted for the duration of construction of the SSI, unless otherwise agreed by the Secretary.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS			
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN													
	D25 (a)-(c)	<p>The Applicant shall prepare and implement (following approval) a Construction Environmental Management Plan for the SSI, prior to the commencement of construction, or as otherwise agreed by the Secretary. The Plan shall be prepared in consultation with the EPA, OEH, DPI (Fisheries), NOW and DoE 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, 2004). The Plan shall include, but not necessarily be limited to:</p> <p>(a) a description of activities to be undertaken during construction of the SSI (including staging and scheduling);</p> <p>(b) statutory and other obligations that the Applicant is required to fulfil during construction, including approvals, consultations and agreements required from authorities and other stakeholders under key legislation and policies;</p> <p>(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 sub-contractors, are aware of their environmental and compliance obligations under these conditions of approval;</p>	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	Contractor			
	D25 (d)	<p>(d) an environmental risk analysis to identify the key environmental performance issues associated with the construction phase and details of how environmental performance would be managed and monitored to meet acceptable outcomes, including what actions will be taken to address identified potential adverse environmental impacts (including any impacts arising from the staging of the construction of the SSI). In particular, the following environmental performance issues shall be addressed in the Plan:</p> <p>(v) 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;</p> <p>(vi) measures to minimise hydrology impacts, including measures to stabilise bed and bank structures as required;</p> <p>(vii) measures for the handling, treatment and management of contaminated materials;</p> <p>(viii) measures to monitor and manage waste generated during construction including but not necessarily limited to: general procedures for waste classification, handling, reuse, and disposal; use of secondary waste material in construction wherever feasible and reasonable; procedures or dealing with green waste including timber and mulch from clearing activities; and measures for reducing demand on water resources (including potential for reuse of treated water from sediment control basins);</p> <p>(ix) measures to monitor and manage spoil, fill and materials stockpile sites including details of how spoil, fill or material would be handled, stockpiled, reused and disposed in a Stockpile Management Protocol. The Protocol shall include details of the locational criteria that would guide the placement of temporary stockpiles, and management measures that would be implemented to avoid/minimise amenity impacts to surrounding residents and environmental risks (including surrounding water courses). Stockpile sites that affect heritage, threatened species, populations or endangered ecological communities require the approval of the Secretary, in consultation with the EPA, OEH and DPI (Fisheries);</p> <p>(x) measures to monitor and manage hazard and risks including emergency management and management measures to address potential risks to the Woodburn borefield drinking water catchment. These measures shall be developed in consultation with Rous Water;</p> <p>(xi) the issues identified in condition D26;</p> <p>(xii) details of community involvement and complaints handling procedures during construction, consistent with the requirement of conditions C1 to C4;</p> <p>(xiii) details of compliance and incident management consistent with the requirements of condition D27; and</p> <p>(xiv) procedures for the periodic review and update of the Construction Environmental Management Plan and Plans required under condition D26, as necessary (including where minor changes can be approved by the Environmental Representative).</p> <p>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.</p> <p>The approval of a Construction Environmental Management Plan does not relieve the Applicant of any requirement associated with this SSI approval. If there is an inconsistency with an approved Construction Environmental Management Plan and the conditions of this SSI approval, the requirements of this SSI approval shall prevail.</p>	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	Contractor			
	D26 (a)	<p>As part of the Construction Environmental Management Plan for the SSI, the Applicant shall prepare and implement:</p> <p>(a) 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 consistent with the guidelines contained in the Interim Construction Noise Guidelines (DECC, 2009) and shall include, but not necessarily be limited to:</p> <p>(i) identification of sensitive receivers and relevant construction noise and vibration goals applicable to the SSI stipulated in this approval;</p> <p>(ii) details of construction activities and an indicative schedule for construction works; including the identification of key noise and/or vibration generating construction activities (based on representative construction scenarios, including at ancillary facilities) that have the potential to generate noise and/or vibration impacts on surrounding sensitive receivers, particularly residential areas;</p> <p>(iii) identification of feasible and reasonable measures proposed to be implemented to minimise and manage construction noise and vibration impacts (including construction traffic noise impacts);</p> <p>(iv) procedures and mitigation measures to ensure relevant vibration and blasting criteria are achieved, including a suitable blast program, applicable buffer distances for vibration intensive works, use of low-vibration generating equipment/vibration dampeners or alternative construction methodology, and pre- and post-construction dilapidation surveys of sensitive structures where blasting and/or vibration is likely to result in damage to buildings and structures (including surveys being undertaken immediately following a monitored exceedance of the criteria); and</p> <p>(v) a description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating 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 exceedance is detected, how any non-compliance would be rectified;</p> <p>(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-hour construction activities. The OOHW protocol shall detail standard assessment, mitigation and notification requirements for high and low risk out-of-hour works, consultation procedures with the EPA, the relevant council and affected landowners;</p> <p>(i) procedures for notifying sensitive receivers of construction activities that are likely to affect their noise and vibration amenity, as well as procedures for dealing with and responding to noise complaints;</p> <p>(vii) a program for construction noise and vibration monitoring clearly indicating monitoring frequency, location, how the results of this monitoring would be recorded and, procedures to be followed where exceedances of relevant noise and vibration goals are detected; and</p> <p>(viii) mechanisms for the monitoring, review and amendment of this plan.</p>	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	Contractor			

Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
	D26 (b)	(b) a Construction Traffic and Access Management Plan to manage construction traffic and access impacts of the SSI. The Plan shall be developed in consultation with the relevant council and shall include, but not necessarily be limited to: (i) identification of construction traffic routes and construction traffic volumes (including heavy vehicle/spoil haulage) on these routes; (ii) details of vehicle movements for construction sites and site compounds including parking, dedicated vehicle turning areas, and ingress and egress points; (iii) identification of construction impacts that could result in disruption of traffic, public transport, pedestrian and cycle access, property access, including details of oversized load movements; (iv) details of management measures to minimise traffic impacts, including temporary road work traffic control measures, onsite vehicle queuing and parking areas and management measures to minimise peak time congestion and measures to ensure safe pedestrian and cycle access; (v) details of measures to manage traffic movements, parking, loading and unloading at ancillary facilities during out-of-hours work; (vi) a response plan which sets out a proposed response to any traffic, construction or other incident; and (vii) mechanisms for the monitoring, review and amendment of this plan.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	Contractor			
	D26 (c)	(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), NOW, Rous Water (in relation to the Woodburn borefield), DoE and the relevant council and include, but not necessarily be limited to: (i) details of construction activities and their locations, which have the potential to impact on water courses, storage facilities, stormwater flows, and groundwater; (ii) surface water and ground water impact assessment criteria consistent with Australian and New Zealand Environment Conservation Council (ANZECC) guidelines or relevant site specific baseline data collected for known Oxleyan Pygmy Perch waterways; (iii) management measures to be used to minimise surface and groundwater impacts, including details of how spoil and fill material required by the SSI will be sourced, handled, stockpiled, reused and managed; erosion and sediment control measures; salinity control measures and the consideration of flood events; (iv) a Groundwater and Soil Salinity report should geotechnical investigations determine the presence, extent and severity of soil salinity within the SSI boundary, The report shall detail the outcomes of geotechnical investigations and identify and mitigate impacts to groundwater resources; (v) an Acid Sulfate Soils contingency plan, consistent with the Acid Sulfate Soils Manual, to deal with the unexpected discovery of actual or potential acid sulfate soils, including procedures for the investigation, handling, treatment and management of such soils and water seepage; (vi) a tannin leachate management protocol to manage the stockpiling of mulch and use of cleared vegetation and mulch filters for erosion and sediment control; (vii) an Oxleyan Pygmy Perch habitat waterway management framework to detail the measures and construction methods that will be employed to avoid direct discharge of construction water to known Oxleyan Pygmy Perch habitat waterways and downstream impacts to suitable habitat; (viii) management measures for contaminated material and a contingency plan to be implemented in the case of unanticipated discovery of contaminated material during construction; (ix) a description of how the effectiveness of these actions and measures would be monitored during the proposed works, clearly indicating how often this monitoring would be undertaken, the locations where monitoring would take place, how the results of the monitoring would be recorded and reported, and, if any exceedance of the criteria is detected how any non-compliance can be rectified; and mechanisms for the monitoring, review and amendment of this plan.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	Contractor			
	D26 (d)	(d) a Construction Heritage Management Plan to detail how construction impacts on Aboriginal and non-Aboriginal heritage will be minimised and managed. The Plan shall be developed in consultation with the OEH, the NSW Heritage Council (for non-Aboriginal heritage) and Registered Aboriginal Parties (for Aboriginal heritage), and include, but not necessarily be limited to: (i) in relation to Aboriginal Heritage: (A) details of further investigation and identification of Aboriginal cultural heritage sites within the SSI boundary; (B) details of management measures to be carried out in relation to Aboriginal heritage, including a detailed methodology and strategies for protection, monitoring, salvage, and conservation, of sites and items associated with the SSI; (C) procedures for dealing with previously unidentified Aboriginal objects (excluding human remains) including cessation of works in the vicinity, assessment of the significance of the item(s) and determination of appropriate mitigation measures including when works can re-commence by a suitably qualified archaeologist in consultation with Department of Planning and Environment, OEH and Registered Aboriginal Parties and assessment of the consistency of any new Aboriginal heritage impacts against the approved impacts of the SSI, and registering of the new site in the OEH's Aboriginal Heritage Information Management System (AHIMS) register; (D) procedures for dealing with human remains, including cessation of works in the vicinity and notification of Department of Planning and Environment, NSW Police Force, OEH and Registered Aboriginal Parties and not recommending any works in the area unless authorised by the OEH and/or the NSW Police Force; (E) heritage training and induction processes for construction personnel (including procedures for keeping records of inductions) and obligations under the conditions of this approval including site identification, protection and conservation of Aboriginal cultural heritage; and (F) procedures for ongoing Aboriginal consultation and involvement for the duration of the SSI; and (ii) in relation to non-Aboriginal Heritage: (A) identification of heritage Items directly and indirectly affected by the SSI; (B) details of management measures to be implemented to prevent and minimise impacts on heritage items (including further heritage investigations, archival recordings and/or measures to protect unaffected sites during construction works in the vicinity); (C) details of monitoring and reporting requirements for impacts on heritage items; (D) procedures for dealing with previously unidentified heritage objects, (including cessation of works in the vicinity, assessment of the significance of the item(s) and determination of appropriate mitigation measures including when works can re-commence by a suitably qualified and experienced archaeologist in consultation with the OEH, NSW Heritage Council and Department of Planning and Environment, and assessment of the consistency of any new heritage impacts against the approved impacts of the SSI; and (E) heritage training and induction processes for construction personnel (including procedures for keeping records of inductions and obligations under this approval including site identification, protection and conservation of non-Aboriginal cultural heritage; and (iii) mechanisms for the monitoring, review and amendment of this plan.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	Contractor			
	D26 (e)	(e) a Construction Flora and Fauna Management Plan to detail how construction impacts on ecology will be minimised and managed. The Plan shall be prepared by a suitably qualified and experienced ecologist and developed in consultation with the OEH, DPI (Fisheries) and DoE, and shall include, but not necessarily be limited to: (i) details of pre-construction surveys undertaken by a suitably qualified and experienced ecologist to verify the SSI footprint based on detailed design; (ii) plans for impacted and adjoining areas showing vegetation communities; important flora and fauna habitat areas; locations where threatened species, populations or ecological communities have been recorded; including pre-clearing surveys to confirm the location of threatened flora and fauna species and associated habitat features; (iii) the identification of areas to be cleared and details of management measures (such as fencing, clearing procedures, removal and relocation of fauna during clearing, habitat tree management and construction worker education) to avoid any residual habitat damage or loss and to minimise or eliminate time lags between the removal and subsequent replacement of habitat; (iv) a protocol for the removal and relocation of fauna during clearing, including provision for engagement of a suitably qualified and experienced ecologist to identify locations where they would be present; to oversee clearing activities and facilitate fauna rescue and re-location; and consideration of timing of vegetation clearing with consideration to the avoidance of clearing native vegetation during the breeding/nesting periods of threatened species, where feasible and reasonable; (v) details of general work practices and mitigation measures to be implemented during construction and operation to minimise impacts on native fauna and native vegetation (particularly threatened species and their habitats and EEC) not proposed to be cleared as part of the SSI, including, but not necessarily limited to: fencing of sensitive areas; measures for maintaining existing habitat features (such as bush rock and tree branches etc); seed harvesting and appropriate topsoil management; construction worker education; weed management (including controls to prevent the introduction or spread of Phytophthora cinnamomi and myrtle rust (Puccinia psidii s.l.); erosion and sediment control, including measures to at least maintain habitat values downstream; and progressive re-vegetation; (vi) rehabilitation details, including identification of flora species and sources, and measures for the management and maintenance of rehabilitated areas; (vii) weed management measures focusing on early identification, suppression and control of invasive weeds and effective management controls; (viii) a protocol for managing aquatic and terrestrial pest animal/invasive species and plant species, and pathogens; (ix) consideration of the Threatened Species Management Plans; (x) a description of how the effectiveness of these management measures would be monitored and linked to the monitoring undertaken as part of the Threatened Species Management Plans; (xi) a procedure for dealing with unexpected EEC/threatened species identified during construction, including cessation of work and notification of the OEH, DPI (Fisheries) and DoE, determination of appropriate mitigation measures in consultation with these agencies (including relevant re-location measures) and updating of ecological monitoring and/or biodiversity offset requirements; and (xii) mechanisms for the monitoring, review and amendment of this plan.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	Contractor			

Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment	
COMPLIANCE MONITORING AND TRACKING														
	D27	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: (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) 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; (d) a program for independent environmental auditing in accordance with ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing; (e) mechanisms for recording environmental incidents during construction and actions taken in response to those incidents; (f) provisions for reporting environmental incidents to the Secretary and relevant public authorities during construction; (g) procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management; and (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.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor				
OPERATIONAL NOISE AND VIBRATION COMPLIANCE														
	D28	The Applicant shall undertake operational noise monitoring, to compare actual noise performance of the SSI against noise performance predicted in the review of noise mitigation measures required by condition D11, within 12 months of the commencement of operation of the SSI, or as otherwise agreed by the Secretary. The Applicant shall subsequently prepare an Operational Noise Compliance Report to document this monitoring. The Report shall include, but not necessarily be limited to: (a) noise monitoring to assess compliance with the operational noise levels predicted in the review of operational noise mitigation measures required under condition D11 and documents listed in condition A2; (b) a review of the operational noise levels in terms of criteria and noise goals established in the NSW Road Noise Policy 2011; (c) methodology, location and frequency of noise monitoring undertaken, including monitoring sites at which SSI noise levels are ascertained, with specific reference to locations indicative of impacts on sensitive receivers; (d) details of any complaints and enquiries received in relation to operational noise generated by the SSI between the date of commencement of operation and the date the report was prepared; (e) any required recalibrations of the noise model taking into consideration factors such as noise monitoring and actual traffic numbers and proportions; (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) identification of additional feasible and reasonable measures to those identified in the review of noise mitigation measures required by condition D11, that would be implemented with the objective of meeting the criteria outlined in the NSW Road Noise Policy 2011, when these measures would be implemented and how their effectiveness would be measured and reported to the Secretary and the EPA. The Applicant shall provide the Secretary and the EPA with a copy of the Operational Noise Report within 60 days of completing the operational noise monitoring referred to in (a) above or as otherwise agreed by the Secretary. Note: • The audit may be staged to suit the staged operation of the SSI.	✓	✓					✓	Operation	RMS			
ENVIRONMENTAL MANAGEMENT SYSTEMS														
	D29	Prior to the commencement of operation, the Applicant shall incorporate the SSI into existing environmental management systems administered by the Applicant and prepared in accordance with the AS/NZS ISO 14000 Environmental Management System series. If there is an inconsistency between the existing environmental management systems and the conditions of this SSI approval, the requirements of this SSI approval shall prevail.	✓	✓				✓	Construction and Operation	RMS				
INDEPENDENT ENVIRONMENTAL AUDIT														
	D30	Within 12 months of the commencement of operation, and then as required by the Secretary, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the SSI. This audit shall: (a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary; (b) include consultation with the relevant agencies; (c) 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); (d) review the adequacy of any approved strategy, plan or program required under the abovementioned approvals; and (e) recommend measures or actions to improve the environmental performance of the SSI, and/or any strategy, plan or program required under these approvals. Note: • This 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.	✓	✓				✓	Operation	RMS				
	D31	Within 60 days of commissioning this audit, or as otherwise agreed by the Secretary, the Applicant shall submit a copy of the audit report to the Secretary and relevant public authorities, together with its response to any recommendations contained in the audit report.	✓	✓				✓	Operation	RMS				

COMPLIANCE TRACKING - FEDERAL CONDITIONS OF APPROVAL

Woolgoolga to Ballina EPBC 2012/6394

Category	Part	Requirement	Stage 1 (as defined in the W2B Staging Report)					Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
			Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3						
STAGING OF THE ACTION													
	1	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 impacted in each stage.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS			
AVOIDANCE AND MITIGATION OF IMPACTS													
	2	In order to minimise impacts to threatened species and communities, and migratory species, the approval holder must: a) Adhere to the clearance limits outlined in the NSW approval condition B1 b) Undertake pre-clearance surveys in accordance with NSW approval condition B5 c) Undertake all soil and water management measures in accordance with NSW approval condition B34 d) Design and construct any additional ancillary facilities in accordance with the requirements of NSW approval condition B73 to ensure that no impacts occur to threatened species and communities, and migratory species or their habitat.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			
	3	In order to minimise impacts to the Oxleyan Pygmy Perch, the approval holder must undertake the action in accordance with NSW approval conditions B7, B8, B9, B13, B40, B41 and B42.						✓	Pre-construction and Construction	RMS and Contractor			
	4	In order to minimise impacts to the Giant Barred Frog, the approval holder must undertake the action in accordance with the requirements of NSW approval condition B39.	✓					✓	Pre-construction	RMS			
	5	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 50 years, taking into account the impacts resulting from the road upgrade in Section 10. This modelling should consider the current proposed route and any proposed avoidance or mitigation measures as appropriate.						✓	Pre-construction	RMS			
	6	The approval holder must have the modelling required by Condition 5 peer reviewed by a second suitably qualified expert.						✓	Pre-construction	RMS			
	7	In addition to the Koala Management Plan(s) required by NSW approval conditions D8 and D9, to ensure that an unacceptable impact will not occur to the Ballina Koala population, the approval holder must submit for the Minister's approval, a Ballina Koala Plan no less than 3 months prior to commencement of Section 10. The Minister will only approve the plan and the commencement of Section 10 of the action, if the impacts to the Ballina Koala population are demonstrated to be acceptable within the Ballina Koala Plan. The Ballina Koala Plan must include: a) the modelling required by Condition 5 and the results of this 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.						✓	Pre-construction	RMS			
	8	The approval holder must develop a Koala Management Plan(s) pursuant to the requirements of NSW approval conditions D8 and D9 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 stage(s) cannot commence until the Koala Management Plan for that stage is approved by the Minister. The approved Plan(s) must be implemented.	✓	✓				✓	Pre-construction	RMS			
	9	The Koala Management Plan, relevant to Section 10, 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.						✓	Pre-construction	RMS			
	10	Should further offsets be required in accordance with NSW approval condition 09(d)j or be proposed as part of the Ballina Koala Plan, these must be in accordance with the EPBC Offsets Policy.						✓	Pre-construction	RMS			
	11	The approval holder must develop a Threatened Mammal Management Plan(s) pursuant to the requirements of NSW approval condition D8 for each stage impacting on the Spotted-tail Quoll and the Long-nosed Potoroo. The Threatened Mammal Management Plan must minimise impacts to the Spotted-tail Quoll and Long-nosed Potoroo to the satisfaction of the Minister and must be submitted to the Minister for approval. The relevant stage(s) cannot commence until the Threatened Mammal Management Plan for that stage is approved by the Minister. The approved Plan(s) must be implemented.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS			
	12	The approval holder must develop a Threatened Flora Management Plan(s) pursuant to the requirements of NSW approval condition D8 for each stage impacting on EPBC Act listed flora species. The Threatened Flora Management Plan must minimise impacts to EPBC Act listed flora species to the satisfaction of the Minister and be submitted to the Minister for approval. The relevant stage(s) cannot commence until the Threatened Flora Management Plan for that stage is approved by the Minister. The approved Plan(s) must be implemented.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS			
	13	The approval holder must develop a Connectivity Strategy(ies) pursuant to the requirements of NSW 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 stage(s) cannot occur until the Connectivity Strategy for that stage is approved by the Minister. The approved strategy(ies) must be implemented.	✓	✓				✓	Pre-construction	RMS			
	14	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 Mitigation Framework required by NSW approval condition D1 b) The Connectivity Strategy required by NSW approval condition D2 and the requirements of NSW approval condition B12 c) The Threatened Species Management Plans required by NSW approval condition D8 and D9 d) The Construction Soil and Water Quality Management Plan required by NSW approval condition D26(c) e) The Construction Flora and Fauna Management Plan required by NSW approval condition D26(e) f) The Borrow Site Management Plan required by NSW approval condition D22 g) The Water Quality Monitoring Program required by NSW approval condition D12 h) The Ancillary Facilities Management Plan required by NSW approval condition D21.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor			
OFFSETTING OF RESIDUAL IMPACTS													
	15	The approval holder must prepare and implement a Biodiversity Offset Strategy and Biodiversity Offset Package that compensates 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 Offsets Policy and must be submitted to the Minister for approval.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS			
	16	The Biodiversity Offset Strategy and Biodiversity Offset Package must be prepared in accordance with the requirements NSW approval conditions D3, D4 and D5.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS			
	17	Commencement cannot occur until the Biodiversity Offset Strategy required by Condition 15 is approved by the Minister. Commencement of the relevant stage(s) cannot occur until the information required by NSW approval condition D4 is approved by the Minister.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS			
	18	The Biodiversity Offset Package required by Condition 15 must be approved by the Minister and the approved Biodiversity Offset Package must be implemented within 24 months of the approval of the Biodiversity Offset Strategy.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS			
REPORTING AND AUDITING													
	19	Any survey data collected for the project must be collected and recorded so as to conform to a reasonable standard such that it can be readily used by a third party or to data standards notified from time to time by the Department. When requested by the Department, the proponent must provide to the Department all species and ecological survey data and related survey information from ecological surveys undertaken for matters of national environmental significance. This survey data must be provided within 30 business days of request, or in a timeframe agreed to by the Department in writing. The Department may use the survey data for other purposes.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS and Contractor			
	20	Within 14 days after the commencement of the action, the approval holder must advise the Department in writing of the actual date of commencement.	✓	✓	✓	✓	✓	✓	Construction	RMS			

Category	Part	Requirement	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Contract Reference	Comment
	21	Within three months of every 12 month anniversary of the commencement of the action, the approval holder must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any Frameworks, Strategies, Plans, or Package as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as the compliance report is published. The approval holder must continue to publish the report until such time as agreed in writing by the Minister.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS			
	22	Upon the direction of the Minister, the approval holder must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS			
REVISIONS													
	23	If the approval holder wishes to carry out any activity otherwise than in accordance with Frameworks, Strategies, Plans, Report or Package required by Conditions 7, 8, 10, 11, 12, 14, 15, 16 and 17, the approval holder must submit to the Department for the Minister's written approval a revised version of those Frameworks, Strategies, Plans, Report or Package. The varied activity shall not commence until the Minister has approved the revised plan or agreement in writing. The Minister will not approve a revised plan or agreement, unless the revised plan or agreement would result in an equivalent or improved environmental outcome. If the Minister approves the revised plan or agreement that plan or agreement must be implemented in place of the plan or agreement originally approved.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS			
	24	If the Minister believes that it is necessary or convenient for the better protection of listed threatened species or communities to do so, the Minister may request that the approval holder submit for the Minister approval, or make revisions to any Frameworks, Strategies, Plans, Package, or Program specified in the conditions and submit the revised Frameworks, Strategies, Plans, Package, or Program for the Minister's written approval. The approval holder must comply with any such request. The approved or revised approved Frameworks, Strategies, Plans, Package, or Program must be implemented. Unless the Minister has approved the revised management plans, then the approval holder must continue to implement the management plans originally approved, as specified in the conditions.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS			
	25	If, at any time after 5 years from the date of this approval, the approval holder has not substantially commenced the action, then the approval holder must not substantially commence the action without the written agreement of the Minister.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS			
PUBLICATION OF PLANS													
	26	The approval holder must maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the Frameworks, Strategies, Plans, or Package required by this approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS			
	27	Unless otherwise agreed to in writing by the Minister, the approval holder must publish all Frameworks, Strategies, Plans, or Package referred to in these conditions of approval on their website. Each management plan must be published on the website within 1 month of being approved.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS			

COMPLIANCE TRACKING - MITIGATION MEASURES

Woolgoolga to Ballina SSI-4963



Mitigation No.	Category	Management Measure	Stage 1 (as defined in the W2B Staging Report)					Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
			Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3					
Aboriginal Heritage												
AH01	Aboriginal Cultural Heritage	Where artefact concentrations per square metre (over all depths) encountered are 50 per cent greater than previously encountered, additional salvage excavation using hand tools will be undertaken. If these artefact concentrations are encountered during machine excavation, then machine excavation will stop within 20 metres of the artefact concentrations. Up to, but no more than, an additional six square metres will be excavated in this situation at that site, unless rare features are encountered, in which case discussions with the registered Aboriginal stakeholders and NSW Office of Environment and Heritage will be undertaken to agree on a suitable approach.	✓	✓			✓	✓	Pre-construction	RMS		
AH02	Aboriginal Cultural Heritage	For areas avoided by construction, exclusion zones will be put in place. These will be fenced with high visibility construction webbing or other similar fencing and have a 'Do Not Enter' sign. Exclusion zones will be marked on construction plans and be maintained until construction is completed. A representative of the Local Aboriginal Land Council will be present during establishment of the fencing.	✓	✓			✓	✓	Construction	RMS and Contractor		
AH03	Aboriginal Cultural Heritage	Salvage excavation and systematic collection of previously recorded artefacts that will be impacted by the project, along with any other impacted sites that are identified prior to or during construction, are to be undertaken by qualified archaeologists in conjunction with the registered Aboriginal stakeholders. The location of excavations will be within the area of the site to be impacted, and be decided upon in the field by a qualified archaeologist and registered Aboriginal stakeholders. If any datable material is located, a minimum of two samples (per archaeological site) will be subject to radiocarbon, standard or accelerated mass spectrometry dating. For all salvaged material, suitable storage will be agreed upon with the registered Aboriginal stakeholders prior to commencing salvage in those areas.	✓	✓			✓	✓	Pre-construction	RMS		
AH04	Aboriginal Cultural Heritage	Curation of any collected heritage evidence in an appropriate manner, as determined in consultation with the registered Aboriginal stakeholders and the NSW Office of Environment and Heritage and in accordance with the National Parks and Wildlife Act 1974, details of the material's nature and context would also be provided.	✓	✓			✓	✓	Pre-construction	RMS		
AH05	Aboriginal Cultural Heritage	Preparation of a detailed technical report documenting the results of the salvage excavations and the archaeological material analysis. Development of a summary report (to be made public) to accompany the technical report.	✓	✓			✓	✓	Pre-construction	RMS		
AH06	Aboriginal Cultural Heritage	Lodgement of site records with NSW Office of Environment and Heritage for any previously unrecorded Aboriginal heritage evidence that is identified and for any evidence that is salvaged.	✓	✓			✓	✓	Pre-construction	RMS		
AH07	Aboriginal Cultural Heritage	In the event that the project reveals possible human skeletal remains, the following procedure would be followed (in accordance with RMS' Standard Management Procedures: Unexpected Archaeological Finds 2011): • As soon as remains are exposed, all construction would halt at that location immediately and the on-site supervisor would be immediately notified to allow assessment and management • The on-site supervisor would notify the Environmental Representative, RMS Project Manager and RMS Senior Environmental Officer. Police, EPA (Environment Line on 131 555) and the Heritage Branch ((02) 9873 8500) would also be contacted • A physical or forensic anthropologist would inspect the remains in situ (organised by the police unless otherwise directed by the police) and make a determination of ancestry (Aboriginal or non-Aboriginal) and antiquity (pre-contact, historic or forensic) • Should the remains be identified as a forensic matter (ie crime scene), liaison with the police would be undertaken • Should the remains be identified as Aboriginal, liaison with RMS, the EPA, the Department of Planning and Infrastructure (DP&I) and registered Aboriginal stakeholders would be undertaken • Should the remains be identified as non-Aboriginal (historical), liaison with RMS, the Heritage Branch and the DP&I would be undertaken • No construction is to recommence in the area until appropriate clearances have been given.	✓	✓			✓	✓	Pre-construction, construction and operation	RMS and Contractor		
AH08	Aboriginal Cultural Heritage	Aboriginal focus group consultation (through letters or meetings); will occur at least once every six months, prior to and during construction (unless management actions have been completed).	✓	✓			✓	✓	Pre-construction and Construction	RMS		
AH09	Aboriginal Cultural Heritage	Further consultation with the registered Aboriginal stakeholders in relation to the project to provide them with the opportunity to be involved in the ongoing management of the Aboriginal heritage resource within the project boundary.	✓	✓			✓	✓	Pre-construction, construction and operation	RMS		
AH10	Aboriginal Cultural Heritage	Aboriginal cultural awareness training for all relevant staff and contractors prior to commencing work on-site. This could include information about Aboriginal culture and history of the locality, nature of the identified and potential Aboriginal heritage evidence and cultural values within the project boundary, heritage management measures and protocols, and legal obligations. This service would be provided by suitably trained personnel from local Aboriginal organisations represented by the relevant registered stakeholders for that area.	✓	✓			✓	✓	Pre-construction and Construction	RMS and Contractor		
AH11	Aboriginal Cultural Heritage	Appropriate precautionary measures to avoid identified heritage evidence. This would include informing relevant staff and contractors of the nature and location of the items and the need to avoid impacts, and temporary protective fencing and signage.	✓	✓			✓	✓	Pre-construction and Construction	RMS and Contractor		
AH12	Aboriginal Cultural Heritage	Prepare an Aboriginal heritage interpretation strategy as part of the Aboriginal heritage management plan. This will identify how archaeological and cultural information can be sustainably communicated to different audiences, including the local Aboriginal community, the local general public and the broader group of people interested in Aboriginal heritage as part of the North Coast's history. Measures would 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.	✓	✓			✓	✓	Pre-construction, Construction and Operation	RMS		
AH13	Aboriginal Cultural Heritage	Regular review of the Aboriginal heritage management plan to establish that it is functioning to the standard required.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
AH14	Aboriginal Cultural Heritage	Compliance auditing of the cultural heritage management measures would be undertaken every three months during construction.	✓	✓	✓	✓	✓	✓	Construction	RMS and Contractor		
AH15	Aboriginal Cultural Heritage	At all locations proposed for ancillary facilities that are situated outside the current boundary of the project: • Before the commencement of the use of the ancillary facilities area for the project, field survey would be undertaken by a suitably qualified and experienced heritage consultant. Any Aboriginal heritage items identified would be assessed for their level of significance, and appropriate recommendations presented to RMS for avoidance, harm minimisation and / or impact mitigation. • Any investigation should be in accordance with the Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales (OEH 2010), and have regard to the Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW (DECCW 2010b).	✓	✓			✓	✓	Pre-construction and Construction	RMS and Contractor		

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
AH16	Aboriginal Cultural Heritage	Salvage excavation would be undertaken within the portion of the site to be impacted. Each excavation would be undertaken in 50 mm spits to sterile base deposits. • The WWC39 (22-1-0343) site, 80 m ² would be excavated by machine (a mechanical sieve and an excavator (about 900 mm bucket)). Around 40% of the site would be avoided by construction, exclusion zones would be put in place to ensure the remaining archaeological deposits are not incidentally damaged. These would be fenced with parawebbing or other similar fencing that would exclude entry by people or plant to avoid incidental impacts on the site.	✓						Pre-construction	RMS		
AH17	Aboriginal Cultural Heritage	Salvage excavation would be undertaken within the portion of the site to be impacted. Each excavation would be undertaken in 50 mm spits to sterile base deposits. • The WWC46 (22-1-0342) site, 40 m ² would be excavated by machine (a mechanical sieve and an excavator (about 900 mm bucket)).	✓						Pre-construction	RMS		
AH18	Aboriginal Cultural Heritage	Due to restricted property access the WWC Dirty Creek 1 (22-1-0403) site has only been subject to field survey. Therefore the following approach would be followed: • Subsurface testing: The methodology outlined in the Working paper – Aboriginal Cultural Heritage Assessment: Woolgoolga to Wells Crossing Section Volume 2 would be applied if identified as being required • Salvage would be undertaken if the requirement is identified during subsurface testing. The triggers for subsurface testing would be: • More than 10 but less than 50 artefacts – a minimum of 10 m ² to be excavated by machine • More than 50 but less than 100 artefacts – a minimum of 30 m ² to be excavated by machine • More than 100 but less than 300 artefacts – a minimum of 60 m ² to be excavated by machine and hand excavation. If multiple site components are identified or a higher number of artefacts (300+) are identified within the area, these salvage measures may require revision • All salvage quotas and revisions to salvage quotas would be approved by RMS' Senior Environmental Officer (Heritage), or the Office of Environment and Heritage • All machine excavation would be undertaken with a mechanical sieve and an excavator (900 mm bucket) • Each excavation would be undertaken in 50 mm spits to sterile base deposits.	✓						Pre-construction	RMS		
AH19	Aboriginal Cultural Heritage	Salvage excavation would be undertaken within the portion of the site to be impacted. Each excavation would be undertaken in 50 mm spits to sterile base deposits. • The Tyndale 2 (13-1-0115) site, 20 m ² would be excavated by machine (a mechanical sieve and an excavator (900 mm or 1100 mm bucket)).						✓	Pre-construction	RMS		
AH20	Aboriginal Cultural Heritage	Salvage excavation would be undertaken within the portion of the site to be impacted. Each excavation would be undertaken in 50 mm spits to sterile base deposits. • The IR2W4 (13-1-0115) site, 60 m ² would be excavated by machine (a mechanical sieve and an excavator (900 mm bucket)).						✓	Pre-construction	RMS		
AH21	Aboriginal Cultural Heritage	For the Gittoes Jali (09-1-0204, 09-1-0205, 09-1-0203) site: • Where possible, impacts on the Gittoes Jali site would be reduced or avoided. To avoid impact, avoided areas would be fenced to ensure they are protected. If avoidance is not an option, then extensive salvage is recommended • Salvage excavation would be undertaken in 50 mm spits to sterile base deposits • Any sediment from the site to 0.6 m depth that is proposed to be used outside the boundary of the site would be sieved to remove any cultural material to ensure new sites are not recorded in relocation areas • 250 m ² would be excavated by machine, which would be undertaken with a mechanical sieve and excavator (900 mm bucket). Hand excavation of around 130 m ² would be undertaken in a controlled manner using trowels and / or shovels and 5 mm hand or mechanical sieves. This would be undertaken using an open excavation methodology to explore the features (such as knapping events, caches, etc) initially detected during subsurface testing (and any new features detected). Intra-site variability should be explored to attempt to detect activity zones within the site. Paint wells and grinding rock: • Residue analysis would be undertaken to determine if any pigment is found within the wells. This would be undertaken by a suitably qualified consultant • The location of these paint wells would be accurately plotted and drawn • If the paint wells cannot be avoided, they would be relocated; this would require consultation with the registered Aboriginal stakeholders. Geomorphology assessment: • A geomorphology assessment would be undertaken that encompasses the Gittoes Jali, E2/2, Site 11, and Melino sites. The assessment would be non-invasive, but could use observations of the machine salvage excavation. Material source: • The extent of excavation at Lang Hill (encompassing the Gittoes Jali sites) would be reviewed in consultation with relevant Aboriginal stakeholders and consideration of urban design guidelines.						✓	Pre-construction	RMS		
AH22	Aboriginal Cultural Heritage	For the E2/2 (13-1-01-09) site: • Salvage excavation would be undertaken in 50 mm spits to sterile base deposits • Any sediment from the site to 1.5 m depth that is proposed to be used outside the boundary of the sites would be sieved to remove any cultural material to ensure new sites are not recorded in relocation areas Shell Midden • Hand excavation of 10 m ² (near the fence line) of the midden that would be impacted to a total depth of 500 mm. This would be excavated in a controlled manner using trowels and 3 mm and 5 mm nested sieves • It is recommended that a sequence of dates (radiocarbon or AMS) be collected from the hand excavation • All shell recovered would be subject to analysis including minimum number of individuals (MNI) and weight (g). An analysis of the number of individual specimens (NISP) may also be undertaken if deemed appropriate. Area surrounding the shell midden • 80 m ² would be excavated by machine (a mechanical sieve and an excavator (900 mm bucket)) Overburden • All overburden would be removed and sieved for cultural materials, to ensure any cultural material located within the overburden is collected. Geomorphology assessment • A geomorphology assessment would be undertaken that encompasses the Gittoes Jali, E2/2, Site 11, and Melino sites. The assessment would be non-invasive, but could use observations of the machine salvage excavation.						✓	Pre-construction			

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
AH23	Aboriginal Cultural Heritage	For Site 11 (13-1-0189): <ul style="list-style-type: none"> Salvage excavation would be undertaken in 50 mm spits to sterile base deposits Any sediment from the sites to 1.5 m depth that are proposed to be used outside the boundary of the sites would be sieved to remove any cultural material to ensure new sites are not recorded in relocation areas A minimum of 100 m² would be excavated by machine, which would be undertaken with a mechanical sieve and excavator (900 mm bucket). A minimum of 20 m² would be excavated by hand within the vicinity of the mechanical transect where a knapping floor was identified (543354E/6790489N). This would be excavated in a controlled manner using trowels and 3 mm and 5 mm nested sieves Geomorphology assessment A geomorphology assessment would be undertaken that encompasses the Gittoes Jali, E2/2, Site 11, and Melino sites. The assessment would be non-invasive, but could use observations of the machine salvage excavation.						✓	Pre-construction			
AH24	Aboriginal Cultural Heritage	For the Melino (04-4-0173) site: <ul style="list-style-type: none"> Salvage excavation would be undertaken in 50 mm spits to sterile base deposits Any sediment from the sites to 1.5 m depth that are proposed to be used outside the boundary of the sites would be sieved to remove any cultural material to ensure new sites are not recorded in relocation areas An artefact scatter including a discrete knapping floor was located on the top of the rise. 30 m² would be excavated by machine. This would be undertaken with a mechanical sieve and excavator (900 mm bucket). Unless it can be avoided, directly adjacent to the original 1 m x 1 m Test Pit (542652E/6702777N), two 2 m x 1 m areas would require hand excavation. These would be excavated in a controlled manner using trowels and 5 mm sieve Shell Midden <ul style="list-style-type: none"> Hand excavation of 20 m² of the midden that would be impacted to a total depth of 1 m (this would be excavated in a controlled manner using trowels and 3 mm and 5 mm nested sieves) It is recommended that a sequence of dates (radiocarbon or AMS) be collected from the hand excavation All shell recovered would be subject to analysis including minimum number of individuals (MNI) and weight (g). An analysis of the number of individual specimens (NISP) may also be undertaken if deemed appropriate. Area surrounding the shell midden <ul style="list-style-type: none"> 100 m² would be excavated by machine (a mechanical sieve and an excavator (900 mm bucket)) Geomorphology assessment <ul style="list-style-type: none"> A geomorphology assessment would be undertaken that encompasses the Gittoes Jali, E2/2, Site 11, and Melino sites. The assessment would be non-invasive, but could use observations of the machine salvage excavation. 						✓	Pre-construction			
AH25	Aboriginal Cultural Heritage	For Site 1 (04-4-0179): <ul style="list-style-type: none"> Further mechanical excavation would be undertaken in order to reach and record the depth of the archaeological deposit 10 m² to be excavated by machine. This would be undertaken with a mechanical sieve and an excavator (900 mm bucket). If constraints such as the water table are encountered, measures would be taken to safely stabilise and then proceed with deeper excavation Salvage excavation would be undertaken in 50 mm spits to sterile base deposits Any sediment to 1 m depth from the site that is proposed to be used outside the boundary of the site would be sieved to remove any cultural material to ensure new sites are not recorded in relocation areas. 						✓	Pre-construction			
AH26	Aboriginal Cultural Heritage	For Site 2 (04-4-0178): <ul style="list-style-type: none"> Further mechanical excavation would be undertaken in order to reach and record the depth of the archaeological deposit 30 m² to be excavated by machine. This would be undertaken with a mechanical sieve and an excavator (900 mm bucket). If constraints such as the water table are encountered, measures would be taken to safely stabilise and then proceed with deeper excavation Salvage excavation would be undertaken in 50 mm spits to sterile base deposits Any sediment to 1.5 m depth from the site that is proposed to be used outside the boundary of the site would be sieved to remove any cultural material to ensure new sites are not recorded in relocation areas. Excavation at Site 2 would 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.						✓	Pre-construction			
AH27	Aboriginal Cultural Heritage	For Site 3 (04-4-0175): <ul style="list-style-type: none"> Further mechanical excavation would be undertaken in order to reach and record the depth of the archaeological deposit 40 m² to be excavated by machine. This would be undertaken with a mechanical sieve and an excavator (900 mm bucket). If constraints such as the water table are encountered, measures would be taken to safely stabilise and then proceed with deeper excavation Salvage excavation would be undertaken in 50 mm spits to sterile base deposits Any sediment to 1.5 m depth from the site that is proposed to be used outside the boundary of the site would be sieved to remove any cultural material to ensure new sites are not recorded in relocation areas. Excavation at Site 3 would 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.						✓	Pre-construction			
AH28	Aboriginal Cultural Heritage	For Site 4 (04-04-0132): <ul style="list-style-type: none"> Further mechanical excavation would be undertaken in order to reach and record the depth of the archaeological deposit 20 m² to be excavated by machine. This would be undertaken with a mechanical sieve and an excavator (900 mm bucket). If constraints such as the water table are encountered, measures would be taken to safely stabilise and then proceed with deeper excavation Salvage excavation would be undertaken in 50 mm spits to sterile base deposits Any sediment to 0.5 m depth from the site that is proposed to be used outside the boundary of the site would be sieved to remove any cultural material to ensure new sites are not recorded in relocation areas. 						✓	Pre-construction			
AH29	Aboriginal Cultural Heritage	For Site 12 (04-4-0176): <ul style="list-style-type: none"> Further mechanical excavation would be undertaken in order to reach and record the depth of the archaeological deposit 10 m² to be excavated by machine. This would be undertaken with a mechanical sieve and an excavator (900 mm bucket). If constraints such as the water table are encountered, measures would be taken to safely stabilise and then proceed with deeper excavation Salvage excavation would be undertaken in 50 mm spits to sterile base deposits Any sediment to 1.2 m depth from the site that is proposed to be used outside the boundary of the site would be sieved to remove any cultural material to ensure new sites are not recorded in relocation areas. 						✓	Pre-construction			
AH30	Aboriginal Cultural Heritage	For the Gumi site (04-4-0180): <ul style="list-style-type: none"> The Gumi scarred tree would be removed and the trunk would be relocated to an area agreed to with the registered stakeholder groups and Roads and Maritime Services – an arborist would be consulted to guide in the removal of the tree The location would be visually protected during the construction and operation of the road with culturally sensitive plantings or by existing vegetation Access to the tree would be provided for local Aboriginal people to enable them to be able to use the tree as a teaching site. 						✓	Pre-construction			

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AH31	Aboriginal Cultural Heritage	For the Melino Scarred Tree 4 (04-4-0166) site: • Prior to construction a 15 m exclusion zone would be established around the scarred tree and maintained until construction activities have ceased. The exclusion zone would be fenced using chain wire or plastic mesh and star pickets. 'Do Not Enter' signage would be attached to the fencing. A representative of the Local Aboriginal Land Council would be present during establishment of the fencing An arborist would be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree.						✓	Pre-construction			
AH32	Aboriginal Cultural Heritage	For the MST3 (04-4-0131) site: • Prior to construction a 15 m exclusion zone would be established around the scarred trees and maintained until construction activities have ceased. The exclusion zone would be fenced using chain wire or plastic mesh and star pickets. 'Do Not Enter' signage would be attached to the fencing. A representative of the Local Aboriginal Land Council would be present during establishment of the fencing An arborist would be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree.						✓	Pre-construction			
AH33	Aboriginal Cultural Heritage	For the C21 (04-4-0107) site: • Prior to construction a 15 m exclusion zone would be established around the scarred trees and maintained until construction activities have ceased. The exclusion zone would be fenced using chain wire or plastic mesh and star pickets. 'Do Not Enter' signage would be attached to the fencing. A representative of the Local Aboriginal Land Council would be present during establishment of the fencing An arborist would be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree.						✓	Pre-construction			
AH34	Aboriginal Cultural Heritage	For the MSRT2 (04-4-0130) site: • Prior to construction a 15 m exclusion zone would be established around the scarred trees and maintained until construction activities have ceased. The exclusion zone would be fenced using chain wire or plastic mesh and star pickets. 'Do Not Enter' signage would be attached to the fencing. A representative of the Local Aboriginal Land Council would be present during establishment of the fencing An arborist would be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree.						✓	Pre-construction			
AH35	Aboriginal Cultural Heritage	For the Rudgley Scarred Tree (04-4-0170) site: • Prior to construction a 15 m exclusion zone would be established around the scarred trees and maintained until construction activities have ceased. The exclusion zone would be fenced using chain wire or plastic mesh and star pickets. 'Do Not Enter' signage would be attached to the fencing. A representative of the Local Aboriginal Land Council would be present during establishment of the fencing • An arborist would be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree.						✓	Pre-construction			
AH36	Aboriginal Cultural Heritage	• Aboriginal culture and heritage awareness induction workshops would be undertaken by all construction staff • Educational and cultural signage would be placed at viable locations along the highway in this locality, potentially describing the history of Aboriginal occupation of the area. At a minimum, signage would include acknowledging the area as the traditional lands of the Gumbaynggir peoples. Any signage would be subject to approval by the registered Aboriginal stakeholders.	✓	✓	✓	✓	✓	✓	Pre-construction, during, and post-construction	RMS and Contractor		
AH37	Aboriginal Cultural Heritage	Tyndale and Woodford Island Corridors of Movement: • Pedestrian access across the project would be provided if reasonable and feasible within the existing local road network, to maintain the connectivity of this corridor of movement.						✓	Pre-construction, during, and post-construction			
AH38	Aboriginal Cultural Heritage	Pillar Valley Corridors of Movement: • Pedestrian access across the project would be provided if reasonable and feasible within the existing local road network, to maintain the connectivity of this corridor of movement.						✓	Pre-construction, during, and post-construction			
AH39	Aboriginal Cultural Heritage	Place B • To maintain connectivity, access would 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 would 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 Eversons Lane would be considered, in consultation with traditional owners and relevant land owners.							Pre-construction, during, and post-construction			
AH40	Aboriginal Cultural Heritage	Place D • Signage acknowledging the traditional owners of the area and providing information on culture would be installed within the highway corridor between Woodburn and Wardell as agreed with the registered stakeholder group.							Pre-construction, during, and post-construction			
AH41	Aboriginal Cultural Heritage	Place K • To gather further information on the broader landscape, it is recommended that a geomorphological assessment within the extent of Place K 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 would take into account both the cultural and scientific significance of the place. • A report would be produced by a geomorphologist in conjunction with an archaeologist / anthropologist.							Pre-construction, during, and post-construction			
AH42	Aboriginal Cultural Heritage	Place E • This place would be fenced prior to and during construction to avoid incidental impact on it. • Surface water runoff from the construction site or from the highway pavement during operation of the project would be prevented from directly entering into Place E.							Pre-construction, during, and post-construction			
AH43	Aboriginal Cultural Heritage	Place C • An education package would be prepared to pass information associated with this area onto future generations. This would include at a minimum a printed document detailing the story of the occupation of this area and the ensuing massacre. Further research and interviews would be undertaken for this purpose. Where possible, oral recordings and/or video footage would also be compiled into the package • Caution would be undertaken in and around the project in this area with regard to potential human remains.							Pre-construction, during, and post-construction			
Air Quality												

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AQ1	Other Issues	An 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: <ul style="list-style-type: none"> • Covering materials transported to and from construction sites. • Covering or spraying water on stockpiles of soil or other potential dust generating materials, particularly during dry or windy conditions. • Temporarily seed and stabilise temporary stockpiles that are planned to be in place for long periods. • Imposing speed limits for vehicles and equipment travelling on 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. • Suppressing dust on unsealed surfaces, temporary roadways, stockpiles and other exposed areas using water trucks, hand held hoses, temporary vegetation and other practices. • Modifying or stopping dust generating activities during very windy conditions. • Installing wheel 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 tanks or other drinking water sources, and cannot be controlled at the dust source. 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
Biodiversity												
B01	Biodiversity	A measurable and targeted monitoring program would be developed to assess the effectiveness and success of the proposed biodiversity mitigation and management measures. The monitoring program would be prepared based on the outline in Appendix B of the Working paper – Biodiversity and in consultation with relevant state and Commonwealth agencies. This program would be finalised following project approval to incorporate any specific conditions of consent.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
B02	Biodiversity	The Connectivity Strategy would 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.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
B03	Biodiversity	All fauna connectivity structures would be developed in accordance with the design principles outlined in the Connectivity Strategy in Appendix A of the Working paper – Biodiversity, building upon the current concept design structures.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
B04	Biodiversity	Fauna exclusion fencing locations and design would be further developed in accordance with the design principles outlined in the Connectivity Strategy in Appendix A of the Working paper – Biodiversity, building upon the current concept design.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
B05	Biodiversity	Fauna exclusion fencing required in low-lying floodplains would be designed to exclude emus from the road corridor. It would be placed higher on fill embankments to reduce impacts of flooding on the fauna fence.						✓	Pre-construction	RMS		
B06	Biodiversity	Tree surveys would be conducted at proposed rope and glider crossing locations outlined in the Connectivity Strategy to determine the most appropriate location to place arboreal crossing structures. The design would aim to place arboreal crossing structures at grade level, where average tree heights exceed 20 metres, and/ or taller trees would be naturally positioned close to the road edge.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
B07	Biodiversity	Tree height surveys will be conducted at proposed arboreal crossing zones to determine the most appropriate location to place rope or pole structures. Where feasible, the design will place arboreal crossing zones where average tree heights exceed 20 metres, and/ or taller trees are able to be safely retained close to the road edge.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
B08	Biodiversity	An overall project Flora and Fauna Management Plan would be prepared to detail consistent guidance on the general management measures required for flora and fauna across all stages of the project. The management plan would cover: <ul style="list-style-type: none"> • Pre-clearing process • Exclusion zones • Re-establishment of native vegetation • Clearing of vegetation and removal of bushrock • Re-use of woody debris and bushrock • Weed management • Pathogen management • Nest boxes • Fauna handling • Aquatic habitats and riparian zones. 	✓	✓	✓	✓	✓	Pre-construction	RMS			
B09	Biodiversity	A threatened flora management sub plan would be prepared to specifically address project sections where populations of threatened flora are known to have plants immediately adjacent to the project footprint, as identified in this assessment and include: <ul style="list-style-type: none"> • Identification and physically surveying and mapping the specific location of individuals and patches along the edges of the project boundary to inform the management actions of the flora and fauna management plan • A clearing protocol, translocation trial, seed collection, storage and propagation to use in revegetation of disturbed habitats • Details for protection of retained plants, planting and maintenance and monitoring procedure during construction • A revegetation monitoring program and performance criteria, reporting and adaptive management. 	✓	✓	✓	✓	✓	Pre-construction	RMS			
B10	Biodiversity	A rainforest invertebrates management sub plan focusing on the Pink Underwing moth and Atlas Rainforest Ground Beetle would be prepared and include: <ul style="list-style-type: none"> • Details on targeted surveys of both species within and around the project boundary to identify the extent of the population and map the distribution of suitable habitat adjacent to the project. In particular potential breeding habitat containing the caterpillars' food plant, Carronia multiseppalea should be identified. This would inform the detailed design, flora and fauna management plan and translocation and habitat rehabilitation program. The surveys will aim to map the species distribution and correlate presence with the habitat characteristics at identified sites to accurately model the distribution of potential habitat in proximity to the project • Consideration to minimise or avoid impacts, where possible. The identified potential habitat would be targeted for translocation of individuals and habitat rehabilitation as compensation for the loss of habitat from the project • An outline of capture and relocation actions for Rainforest Ground Beetle and Pink Underwing Moth larvae focusing on identified suitable habitat • Identify procedures for habitat rehabilitation and revegetation of suitable habitat near the project including the planting of the host plant for the Pink Underwing Moth. • Details of a monitoring program for translocated individuals and retained habitat adjacent to the project. The monitoring program would include the collection of baseline data and would continue through construction and operation for a period of three years post-construction. The plan would include clear key milestones, performance indicators, corrective actions and timeframes for the completion of all actions outline. The plan would address the success of habitat rehabilitation as well as the translocation success by monitoring populations of the target species. 					✓	Pre-construction	RMS			

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B11	Biodiversity	<p>An emu management sub plan would be prepared and include:</p> <ul style="list-style-type: none"> The location of emu exclusion fencing to be implemented during construction. The plan should also consider fence design around bridges to exclude domestic stock but allow emus to cross Detailed landscape plan including locations for dense plantings of Melaleuca and Casuarina species, and other suitable species to act as a natural barrier fence and to also direct emus to crossing areas where exclusion fencing is not possible. These plantings would form a natural dense barrier up to 4 to 5 metres wide. The natural brush barrier fence is to be established immediately following property acquisition through sections 3 and 4 and well in advance of clearing of vegetation to assist in educating emus to use crossing points. Gaps would be placed where the dedicated and combined structures are to finally be located. This is designed to allow time for the vegetated barrier to achieve suitable height and also to educate emus to use the designated crossing locations prior to construction Fencing locations, including how permanent and temporary fencing should be used Baseline monitoring of emu movements prior to clearing Roadside plantings in emu habitat (Section 3 and 4) should not be within the first 40 metres of the road unless there is fauna exclusion fencing in place or as part of the exclusion barrier. In particular, common landscape species such as Dianella, Gahnia, Lomandra and Ficus in addition to Bangalow Palm (Archontophoenix cunninghamiana) and soy, oats or rye grass cover crops should not be used as they represent food plants for emus and may attract them to the road edge Plantings under dedicated and combined bridges in emu crossing zones (Section 3 and 4) including the approaches to the crossing are to use grasses or low ground covers and avoid dense plantings of trees including low trees such as Acacia or Casuarina. This is to leave the opening clear. Ground cover crops such as soybean and oats or rye grass could be used on disturbed ground around the approaches to the bridge to attract emus to the crossing zone as these represent known food plants Identification of a trial to test the use of tethered twirling spirals, silver on one side and red or blue on the other. These can be trialed on different bridge underpasses targeted at attracting emus. These would have to be constructed in some way that could endure and would not harm other investigating wildlife The method and approach to monitoring the effectiveness of crossing structures for emus and consider the results of the pilot program for satellite / GPS tracking and other techniques such as camera monitoring. Thresholds for action regarding the need for additional structures will also be identified. 					✓	✓	Pre-construction	RMS		
B12	Biodiversity	<p>A management sub plan for threatened fish species Oxleyan Pygmy Perch would be prepared. This would include:</p> <ul style="list-style-type: none"> Measures to avoid and mitigate impacts to threatened fish species in particular the Purple-spotted Gudgeon and Oxleyan Pygmy Perch and their habitat A methodology and program for survey of potential habitat for this species at least 6 months prior to construction in the appropriate season to inform the flora and fauna management plan and monitoring program Recommendations on the location of batch plants outside and away from Oxleyan Pygmy Perch habitat where sediment erosion will not runoff into waterway Procedures to avoid in-stream works on known and potential habitat for Oxleyan Pygmy Perch or Purple-spotted Gudgeon. The in-stream construction works should avoid the critical spring-summer period (October – December) where feasible and reasonable Where feasible and reasonable, existing pools should be retained upstream and downstream of crossings within known occurrences of the Oxleyan Pygmy Perch to provide resting and refuge habitat near crossing structures. A proposed program for monitoring the species at identified known locations, to include a before-after-control-impact design and continue during construction and operation for a period of five consecutive monitoring periods. A proposed adaptive management actions to be implemented for this species in the event that any changes to the identified populations or habitat conditions are demonstrated and can be attributed to the project construction or operation. Clear key milestones, performance indicators, corrective actions and timeframes for the completion of all actions outlined 						✓	Pre-construction	RMS		
B13	Biodiversity	<p>A threatened frog management sub plan (with a focus on the Giant Barred Frog, Green-thighed Frog, and Olongburra Frog) would be prepared and include:</p> <ul style="list-style-type: none"> A program for survey or potential habitat for these species at least 6 months prior to construction to identify potential waterways and swamp habitat locations to inform the flora and fauna management plan A record of riparian / habitat condition baseline data at identified sites near the project to inform construction and post-construction monitoring program Identification of known sites, protection measures to be implemented during construction, monitoring methods and timing for species and habitat condition and monitoring mitigation measures and reporting in line with the flora and fauna management plan An outline of methods for monitoring species and habitat condition during post-construction. 	✓	✓				✓	Pre-construction	RMS		
B14	Biodiversity	<p>A Koala management sub plan would be prepared and include details on targeted surveys to identify the presence and status of koala populations near the project alignment. The surveys will focus near the project alignment and the data used to inform further development of connectivity structures.</p>	✓	✓				✓	Pre-construction	RMS		
B15	Biodiversity	<p>A glider management sub plan would be prepared and include:</p> <ul style="list-style-type: none"> Targeted surveys for Squirrel Glider and Yellow-bellied Glider to inform the flora and fauna management plan, nest box management plan and the detailed design. The targeted surveys would inform the appropriate placement of the arboreal crossing structures and widened medians. 	✓	✓				✓	Pre-construction	RMS		
B16	Biodiversity	<p>A Lowland Rainforest management sub plan would be prepared and include targeted surveys for Lowland Rainforest to more accurately identify the distribution, condition and area of this community in proximity to the alignment. The survey would concentrate on classifying the community according to the criteria used under the EPBC Act to identify the patches which meet the Commonwealth listed separately to the State listed community. The data from the survey would provide input into the flora and fauna management plan and the compensatory habitat measures for this community and for dependent threatened fauna species such as the Pink Underwing Moth.</p>						✓	Pre-construction	RMS		
B17	Biodiversity	<p>A landscape management plan would be developed to provide specific details for the re-establishment of native vegetation on batters, cut faces, surrounding sediment basins and other areas disturbed during construction. This would include details for the appropriate removal and restoration of temporary creek crossings. The landscape management plan would be developed in line with RMS 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.</p> <p>The approach to landscape planting for the purposes of fauna management would be consistent with principles set out in the urban design and landscape strategy for this project (refer to Working paper- Urban design, landscape character and visual impact).</p>	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS		

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B18	Biodiversity	Disturbance and clearing of vegetation would be minimised, particularly : <ul style="list-style-type: none"> • Avoiding and minimising vegetation removal wherever possible through the detailed design process • Sensitive selection of ancillary facilities. The ancillary facilities identified present a selection of available sites; however during detailed design an evaluation should be conducted to select the minimum number of sites required with a priority to avoid native vegetation clearing if possible. A prior site inspection is required to survey and map hollow-bearing trees and check for large nests for species such as raptors, including Osprey and also Black-necked Stork at these sites • Construction compounds and stockpile sites are to be sited in cleared or sparsely treed portions of the ancillary facility sites where feasible and reasonable, to avoid unnecessary clearing of vegetation and threatened flora species • Water quality basins would be placed in the optimal location for treating surface runoff. During detailed design, the location of water quality treatment measures would consider the competing environmental requirement of minimising vegetation removal, particularly where there is the potential for threatened plant species, threatened fauna habitat or in identified regional wildlife corridors. 	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
B19	Biodiversity	Instream structures such as bridges and culverts are to be designed and managed to minimise any potential impact to flow regimes and fish passage, in accordance with Fairfull and Witheridge (2003). Use of bridges or bebo arch is the preferred structure for Class 1 (major fish habitat) waterways.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
B20	Biodiversity	Two Class 1 waterway crossing structures have not been designed as bridges, but rather as culverts (Redbank Creek region and an Unnamed Watercourse at Station 134.7). During detailed design, the design would be reviewed to consider bridge structures at these locations.	✓					✓	Pre-construction	RMS		
B21	Biodiversity	All drainage structures between station 134.5 to 143.0 would be reviewed in consultation with Department of Primary Industries (Fisheries) to ensure suitable connectivity for threatened fish species is maintained.						✓	Pre-construction	RMS		
B22	Biodiversity	Each waterway crossing is to be designed to ensure no physical, hydraulic and behavioural barriers to aquatic fauna movements. Impacts would be minimised by ensuring that: <ul style="list-style-type: none"> • The natural stream flow and velocity are maintained as closely as possible • Surface level of any causeway is the same or lower than the natural stream bed to reduce interference with flow • Habitat within a culvert is as natural as possible (eg allow rock and bed materials to infill the culvert base) • 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 scour protection and cut and fill batters • Creek crossing structures would be designed to maximise habitat features within the passage. To achieve this, the design of bridge and culverts would encourage the deposition of sediment creating similar bed substrate to adjacent creek and the planning of specific plant species • Pools would be constructed or retained upstream and downstream of the waterway crossings to provide resting and refuge habitat near the crossing structures • Design culverts (specifically where Oxleyan Pygmy Perch has been confirmed) so that hydraulic habitat conditions would be suitable for fish passage • Bridges would be designed and sized to limit peak flood velocities to less than 1m per second in commonly occurring flood events, similarly to the bridge design over Macdonalds Creek where Oxleyan Pygmy Perch have been confirmed. 	✓	✓	✓	✓	✓	Pre-construction	RMS			
B23	Biodiversity	Bridge structures would be designed in light of the following principles: <ul style="list-style-type: none"> • Bridges are to be single span bridges with piers located outside the main channel • Bridge structures to be designed to prevent an increase of backup of water during times of flood, that would enable Plague Minnow to access waterbodies where they are currently not found (eg Broadwater National Park) Construction would not alter or reduce flow where there are existing or potential Oxleyan Pygmy Perch populations (primarily within Sections 7, 8 and 9) which would negatively impact on this threatened species by draining the waterbodies	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
B24	Biodiversity	Where temporary access tracks are required over drainage lines with no flow, fords may be installed.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B25	Biodiversity	Where possible, existing crossings would be used. Where this is not feasible or reasonable, the temporary crossings would be designed to minimise impacts on the existing aquatic ecology and water quality.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B26	Biodiversity	Temporary crossings would be further investigated during detailed design including, location, type of structure, duration of need and rehabilitation process.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B27	Biodiversity	General temporary waterway access track mitigation measures have been provided below: <ul style="list-style-type: none"> • Installation and subsequent decommissioning of temporary crossings would be undertaken outside of Oxleyan Pygmy Perch spawning seasons (October to March). • Temporary crossings would be constructed from clean fill using pipe or box culvert cells to carry flows. • All temporary works (eg crossings, flow diversion barriers) would be removed as soon as practicable and in a way that does not promote future channel erosion. • The preferred temporary structure for crossing waterways would be consistent with Witheridge (2002) where the use of bridges is the preferred structure for Class 1 (major fish habitat waterways). • Scour protection works would be established at temporary crossings as required • At the completion of construction, the temporary crossings would be removed and rehabilitated. 	✓	✓	✓	✓	✓	Construction	Contractor			
B28	Biodiversity	Fish that become stranded due to temporary access crossings or construction of temporary or permanent creek diversions must be captured and translocated following the DPI Fisheries Guidelines – A Guide to Acceptable Procedures and Practices for Aquaculture and Fisheries Research. General mitigation measures include: <ul style="list-style-type: none"> • Fish to be captured from the creek using appropriate gear for the watercourse and species present. These methods may include electrofishing, seine nets, bait and fyke traps • Threatened fish species are unlikely to occur within Picaninny Creek, however, translocation would be done in the cooler months to minimise stress to the fish (as fish are less active in the cooler months) • Captured fish to be handled, transported and released in a manner that minimises any damage and stress to the fish (such as handling the fish with wet hands) • Fish would be released into an equivalent watercourse with similar water quality and habitat conditions. The capture of fish for translocation would require a Fisheries Permit and Animal Ethics Approval.	✓	✓	✓	✓	✓	Construction	Contractor			

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B29	Biodiversity	The pre-clearing process would be consistent with RMS Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA projects (RTA, 2011a) and include: <ul style="list-style-type: none"> • Pre-clearing surveys by an experienced ecologist to identify the location and extent of important habitats in the construction footprint to be salvaged for reuse/relocation, such as bushrock, hollow trees and woody debris. • Pre-clearing surveys by an experienced ecologist for large bird nests, particularly for listed species such as the Black-necked Stork, Eastern Osprey, Square-tailed Kite and Little Eagle during the nesting and breeding season (July to December). If the species is present in or directly adjacent to the project footprint, measures including buffer and exclusion zones, translocation of nests or establishment of adjacent nesting platforms would be considered, if required • Habitat features to be protected during construction, would be identified and marked on-site by a qualified ecologist. • Checking for threatened flora and fauna species immediately before clearing begins. This includes a targeted survey for threatened flora during the appropriate season and a survey of any bridges or culverts to be removed to search for roosting bats • Identifying and marking on-site any exclusion zones • Identifying nearby habitats on both sides of the existing highway along the length of the proposal suitable for the release of fauna that may be encountered during the pre-clearing process or habitat removal • Mapping the location of any threatened flora and/or fauna species, Threatened Ecological Communities and habitat • Developing an unexpected threatened species finds procedure to be included in the CEMP as outlined in the RMS Biodiversity Guidelines (RTA, 2011a) • No parking of vehicles and/or machinery and storage of equipment and resources under the dripline of any trees. • Construction traffic would be restricted to defined access tracks, fenced prior to the start of construction and maintained until construction is complete. 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B30	Biodiversity	The location of exclusion zones would be identified, with temporary fencing or flagging tape to indicate the limits of clearing (in accordance with the RMS Biodiversity Guidelines (RTA, 2011a)). Permanent fauna exclusion fencing for the project (as described in the Connectivity Strategy), where reasonable and feasible, would be installed prior to clearing and can function as exclusion fencing.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B31	Biodiversity	A staged habitat removal process would be implemented consistent with the RMS Biodiversity Guidelines (RTA, 2011a) and involve the following steps: <ul style="list-style-type: none"> • Contact vet and/or wildlife carers to ensure they are willing to assist in treating injured animals if necessary • An experienced and licensed wildlife carer and/or ecologist would be present during all habitat removal activities to capture and relocate any encountered fauna • Remove non-habitat vegetation first • Identified habitat (eg hollow-bearing trees) would be left for at least 24 hours after removing non-habitat vegetation to allow fauna to escape. • Remove habitat trees as carefully as possible to avoid injury to any fauna still remaining in trees. • An experienced and licensed wildlife carer and/or ecologist would inspect habitat once it is removed. • All hollows would be placed in adjacent habitat until the following day for further inspection by a licensed wildlife carer and/or ecologist to verify no fauna is present. If possible, the hollows would be permanently relocated in adjacent areas in accordance with the RMS Biodiversity Guidelines (RTA, 2011a). • Outcomes of the clearing process would be recorded to relevant personnel (eg environment manager or RMS regional environment staff). 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B32	Biodiversity	Woody debris and bushrock would be re-used on site for habitat improvement where possible and would be detailed in the landscape management plan in accordance with the RMS Biodiversity Guidelines (RTA, 2011a) and include: <ul style="list-style-type: none"> • Implementing the removal, stockpiling, transportation and relocation of woody debris and/or bushrock in a manner that minimises disturbance to native vegetation or bushrock • Engaging an ecologist in the pre-clearing phase of the proposal to provide advice on the re-use of woody debris and bushrock including potential negative impacts and positioning of woody debris and bushrock at the relocation areas • When relocating woody debris, placing it evenly across the site whilst keeping topsoil disturbance to a minimum • Avoiding the spread of any weeds or pathogens that may be in the soil when relocating woody debris and bushrock from stockpiles • Mulching would include only native vegetation and separate stockpiles need to be established for weedy vegetation and the native vegetation to be mulched. Manage stockpiles in accordance with RTA's Stockpile Site Management Guideline, RTA Environmental Protection (Management System) QA Specification G36 and RTA Vegetation QA Specification R178 • Preparing a mulch tannin management plan for the project where tannins are likely to be generated. 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B33	Biodiversity	A weed management plan would be developed as part of the CEMP, in accordance with the RMS Biodiversity Guidelines (RTA, 2011a) and the Introductory Weed Management Manual (Richards, 2004) and would include: <ul style="list-style-type: none"> • Taxa and potential sources of the weed species (including alligator weed, tropical soda apple and myrtle rust) • Weed management priorities and objectives • Sensitive environmental areas within or adjacent to the site • Location of weed infested areas • Mechanical weed control methods such as slashing or mowing, as well as a range of herbicides to avoid the development of herbicide resistance • Measures to prevent the spread of weeds • A monitoring program to measure the success of weed management • Strategic management with adjacent landowners • Appropriate disposal of weed infested materials and soils to be identified in the CEMP • Communication strategies to improve contractor awareness of weeds and weed management 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B34	Biodiversity	A site assessment by an ecologist or person trained in weed identification would be undertaken to identify the presence and extent of Alligator weeds. If present, management measures in the Weed Management Plan would be in accordance with the DPI Alligator Weed control manual (van Oosterhout, 2007).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B35	Biodiversity	Measures to prevent the introduction and/or spread of pests and disease causing agents such as bacteria and fungi would be incorporated into the CEMP, in accordance with the RMS Biodiversity Guidelines (RTA, 2011a) and would include: <ul style="list-style-type: none"> • A background search of government-maintained websites for the most up-to-date hygiene protocols for each pathogen • Provide vehicle and boot wash down facilities and ensure vehicles and footwear is free of soil before entering or exiting the site • The risk of spreading pathogens and the mitigation measures required on site should be regularly communicated to staff and contractors during inductions and toolbox talks • Construction works would be programmed to move from uninfected areas to any known infected areas • Restrict vehicles to designated tracks, trails and parking areas 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B36	Biodiversity	If pathogens are identified on site: <ul style="list-style-type: none"> • Testing may be required to confirm the presence of pathogens • Advice from government departments would be sought on practical hygiene management measures • Fenced exclusion zones would be identified to restrict access into contaminated areas. 	✓	✓	✓	✓	✓	✓	Construction	Contractor		

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
B37	Biodiversity	Nest boxes would be installed as per RMS Biodiversity Guidelines (RTA, 2011a) and a nest box strategy developed as part of the CEMP, detailing: The number and type of nest boxes required based on the number, quality and size of the hollows that would be removed. • Specifications for nest box dimensions, installation requirements, locations of nest boxes and ongoing monitoring and maintenance. • Installation timeframes, including the installation of 70 % of nest boxes prior to the removal of any vegetation.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	Contractor		
B38	Biodiversity	To prevent injury and mortality of fauna during the clearing of vegetation and drainage of farm dams an experienced and licensed wildlife carer and/or ecologist would be present to supervise vegetation clearing and capture and relocate fauna where required. Further details regarding fauna handling and vegetation clearing procedures are provided in the RMS Biodiversity Guidelines (RTA, 2011a). The following would be implemented to avoid injury and fauna mortality: • Allow fauna to leave an area without intervention as much as possible • In circumstances where the handling of fauna is completely unavoidable, best practice methods need to be followed as outlined in the RMS Biodiversity Guidelines – Guide 9 Fauna Handling (RTA 2011) • Include the procedures in project inductions for construction staff to implement if fauna is found or injured on site and also the importance of not feeding any wildlife that may be encountered on construction sites • Never deliberately kill a snake as all snakes are protected under the NSW National Parks and Wildlife Act 1974 • Keep records of fauna captured and relocated • Report any injury to or death of a threatened species to the RMS environmental staff.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B39	Biodiversity	Prior to any disturbance of waterway banks, a thorough inspection by a qualified ecologist would be undertaken for aquatic fauna such as turtle nests.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B40	Biodiversity	Streams to be crossed perpendicular to flow and where possible crossing sites selected to avoid unstable banks, bends in the channel, deep pools and confluences with other channels	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
B41	Biodiversity	Scour protection would be provided on any constructed works and temporary and permanent crossing structures within 50 m 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.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
B42	Biodiversity	The bed and banks are to be reinstated to a condition similar to or better than the original condition ensuring that there are no adverse impacts on the aquatic values (different measures may be required for each crossing). Banks are to be graded to a slope that is no steeper than existing site conditions	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B43	Biodiversity	The reinstatement process would need to ensure that there is no detrimental impact on geomorphic processes which in turn impacts aquatic values	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B44	Biodiversity	All water way crossing construction materials (rocks and gravel) are to be washed prior to being used for construction to minimise turbidity.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B45	Biodiversity	Instream and riparian disturbance would be minimised and sediment, woody snags or debris removed from a stream or stream channel would be minimised. Trimming or 'lopping' of branches and logs would be considered as a first option before moving.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B46	Biodiversity	Any instream woody debris removed during construction would be replaced at the completion of the works within the same waterways from which it was removed.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B47	Biodiversity	A vegetation clearing strategy and a revegetation management strategy would be developed and implemented to minimise instream and riparian weed invasion.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B48	Biodiversity	Avoid in-stream works on known and potential habitat (as identified in section 3.9.6 of the Working paper – Biodiversity) for Oxleyan Pygmy Perch or Purple-spotted Gudgeon to minimise sedimentation impacts. In stream works should be timed in a manner that minimises impacts to aquatic fauna. The in-stream construction works should avoid the critical spring-summer period (October – December) where feasible and reasonable as this represents the typical water temperatures between 19-34°C and high rainfall period when aquatic habitats are flowing and the spawning season for many fish species including the Oxleyan Pygmy Perch and Purple-spotted Gudgeon						✓	Construction	Contractor		
B49	Biodiversity	Where feasible and reasonable, existing pools would be retained upstream and downstream of crossings within known occurrences of the Oxleyan Pygmy Perch to provide resting and refuge habitat near crossing structures.						✓	Pre-construction and Construction	RMS and Contractor		
B50	Biodiversity	Appropriate plant species would be incorporated into the rehabilitation of disturbed aquatic habitats and drains as a result of construction, in regions of suitable Oxleyan Pygmy Perch habitat.						✓	Pre-construction	RMS and Contractor		
B51	Biodiversity	All sediment and erosion control measures would be put in place during the construction process and may include sediment and erosion control curtains in the waterways to control turbidity generated during the construction and restoration process	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B52	Biodiversity	No turbid water generated from the construction corridor or construction area is to be discharged to any waterway	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B53	Biodiversity	The proposed road surface would drain away from known Oxleyan Pygmy Perch habitat to reduce potential for pollution.						✓	Pre-construction	RMS		
B54	Biodiversity	Operational spill basins are to be installed at key locations ie near Broadwater National Park and other key drainage lines that lead directly into threatened fish habitat.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
B55	Biodiversity	Chemicals and fuels would be appropriately stored and banded, away from waterways and drainage lines.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B56	Biodiversity	Discharges from sediment basins and/or treatment wetlands that do not meet the water quality parameters for Oxleyan Pygmy Perch habitat (to be determined through pre-construction water quality monitoring) would not be discharged into waterways but rather sprayed into adjacent open grass areas or used for construction purposes such as dust suppression to avoid changing water depth and physio-chemical conditions in potential threatened fish habitat.						✓	Construction	Contractor		
B57	Biodiversity	If not reasonable and feasible, to irrigate land to completely re-use water from sedimentation basins during construction in Oxleyan Pygmy Perch habitat, as a last resort, water could be discharged to waterways after treatment (to ensure the pH less than 6.5 and total suspended solids of less than 50mg/L) depending on environmental protection licensing requirements.						✓	Construction	Contractor		
B58	Biodiversity	Water quality monitoring would be undertaken to assess the effectiveness of (and where necessary amend) water, sediment and erosion management strategies that aim to protect the Oxleyan Pygmy Perch and Purple-spotted Gudgeon, their habitat and other aquatic flora and fauna species. Water quality monitoring program would be undertaken in line with details in Appendix B of the Working paper – Biodiversity.						✓	Construction	Contractor		
B59	Biodiversity	Stockpiles would be located above the 1:100 year flood level with appropriate management control measures in place such as bunding.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B60	Biodiversity	Stockpiling of material for bridgeworks at known areas of Oxleyan Pygmy Perch would be undertaken after April to avoid the breeding seasons of October to March.						✓	Construction	Contractor		
B61	Biodiversity	Batch plants would be located outside well away from Oxleyan Pygmy Perch habitat where sediment erosion would not runoff into waterways (due to the risk of high alkaline runoff)						✓	Construction	Contractor		
B62	Biodiversity	Ancillary facilities would be sensitively located to avoid removal of any Threatened Ecological Community.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
B63	Biodiversity	Stockpiles would be managed in accordance with RTA's Stockpile Site Management Guideline.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
B64	Biodiversity	The project boundary in section 1 to be reviewed to identify any opportunities to avoid significant impacts to the existing population	✓						Pre-construction	RMS		
B65	Biodiversity	The project boundary and placement of sedimentation basins would be evaluated to minimise impacts to Slender Screw Fern.	✓					✓	Pre-construction	RMS		
B66	Biodiversity	The Biodiversity Offset Strategy (detailed in Appendix C of the Working paper – Biodiversity) would be further developed, in consultation with relevant state and Commonwealth agencies, and implemented during detailed design.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS		

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
Construction Noise & Vibration												
CNV01	Noise and Vibration	Affected receivers would be consulted prior to the commencement of out of hours work.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV02	Noise and Vibration	Construction would be timetabled to minimise noise impacts where feasible and reasonable. This may include time and duration restrictions and respite periods. These measures would be considered after consultation with affected receivers.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV03	Noise and Vibration	Haulage routes would be located as far away as possible from residential receivers, where this is reasonable and feasible.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV04	Noise and Vibration	The use of noisy plant simultaneously and/or close together would be avoided, where possible. This would include equipment operating at separate early work sites to avoid cumulative noise impacts.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV05	Noise and Vibration	Equipment/plant within ancillary facilities would be located as far as possible from receivers.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV06	Noise and Vibration	Equipment would be maintained in efficient working order.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV07	Noise and Vibration	Quieter construction methods would be used, where there are sensitive receivers potentially affected and where this is considered reasonable and feasible. These may include grinding, rock splitting or terrain levelling instead of hydraulic rock breaking.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV08	Noise and Vibration	Where acceptable from a work health and safety perspective, quieter alternatives to reversing alarms (such as spotters, closed circuit television monitors and 'smart' reversing alarms) would be used, particularly during night-time activities.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV09	Noise and Vibration	All noise complaints received would be dealt with promptly. Construction methods may need to be altered to reduce noise impacts at the affected locations.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV10	Noise and Vibration	Machinery would not be turned on prior to the work hours outlined in this EIS. This would include daily maintenance activities and/or 'warming up' of engines.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV11	Noise and Vibration	Truck movements would be restricted to identified haulage routes and the routes outlined in the Construction Traffic Management Plan.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV12	Noise and Vibration	Where it has been identified as necessary (eg in response to community complaints), noise monitoring would be undertaken to check that the noise mitigation measures are effective.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV13	Noise and Vibration	After community consultation, the use of temporary noise shielding should be considered at locations where substantial exceedances of noise criteria are predicted.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV14	Noise and Vibration	Static noise sources, such as generators, pumps and lighting towers, would be located as far as possible from sensitive receivers.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV15	Noise and Vibration	Regular noise monitoring would be undertaken during normal business hours at a representative receiver location.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV16	Noise and Vibration	The selection of plant and equipment would be based on noise emission levels. This equipment would be operated and maintained so that noise emissions are minimised.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV17	Noise and Vibration	Where piling, hydraulic hammering or dynamic compaction is proposed within 50 metres of any structure or service, a building condition survey would be conducted and preliminary vibration monitoring undertaken by a qualified contractor.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV18	Noise and Vibration	Where piling, hydraulic hammering or dynamic compaction is proposed within 50 metres of any heritage structure or potentially structurally unsound service, a building condition survey would be conducted and preliminary vibration monitoring undertaken by a qualified contractor. A follow-up survey would be conducted in response to any vibration complaints.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV19	Noise and Vibration	Appropriately sized equipment would be selected in order to minimise vibration emissions, where required.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV20	Noise and Vibration	A blast management plan would be prepared prior to the start of blasting activities.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV21	Noise and Vibration	Where sensitive receivers are located close to the blast site, a series of trials would be undertaken at a reduced scale to determine site-specific blast response characteristics, in order to define allowable blast sizes to occur within the criteria.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV22	Noise and Vibration	Controlled blasting activities would only be undertaken between the hours of: • 8am to 5pm, Monday to Friday • 8am to 1pm, Saturday. 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 would be subject to change.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV23	Noise and Vibration	A minimum of 24 hours' notice would 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.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV24	Noise and Vibration	Monitoring of overpressure and vibration levels would be undertaken for each blast at the potentially most affected receivers.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV25	Noise and Vibration	A building condition survey would be undertaken for all buildings located within 200 metres of the proposed blasting area prior to the start of blasting. The proponent would be responsible for rectifying any damage occurring from the blasting, with the cost to be borne by the proponent.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV26	Noise and Vibration	The maximum instantaneous charge (MIC) would be reduced to the lowest possible level by the use of delays, reduced diameter holes, and/or deck loading.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV27	Noise and Vibration	Adequate stemming would be provided and exposed detonating cord would be eliminated (by covering with at least 300 millimetres of quarry dust or road base).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV28	Noise and Vibration	Secondary blasting would be eliminated. (A rock breaker or drop hammer would be used instead of popping). Effort would be made to eliminate the need for toe shots (eg by better control of drill patterns).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV29	Noise and Vibration	Weather conditions at the time of the blast would be assessed. Blasting would be avoided where possible during heavy cloud cover and/or if a strong wind is blowing towards residences. Days of severe temperature inversion would be avoided where possible or, (if not possible) blasting would occur between 11am and 1pm.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV30	Noise and Vibration	Strict control would be exercised over the spacing and orientation of all blast drill holes. Holes would be spaced in such a manner that the explosive force is just sufficient to break the stone to the required size.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV31	Noise and Vibration	Controlled blasting times would be determined in consideration of site-specific conditions and in consultation with affected residents and would take place, where possible, when impacts are likely to be the least intrusive (eg all blasts would be fired at a set time acceptable to residents and preferably when the background noise is highest).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
CNV32	Noise and Vibration	Identified receivers would be notified by letter of the proposed hours and asked for comment and feedback. This would include justification for the proposed extended working hours along with the benefits the community can expect Where the community or individual residents wish to receive further clarification on the proposed hours, individual interviews or public meetings would be organised to address any further issues. Discussions would be sufficiently detailed to provide a general summary of the expected impacts but also how this relates to individual receivers. At this stage, more detail would be available regarding the proposed construction activities to be undertaken in the extended hours Property owners would be provided with the complaints management procedures to be in place for extended working hours Feedback would be collected to help determine the final adopted working hours for the project, with community consultation continuing throughout the project.	✓	✓	✓	✓	✓	✓	Construction	Contractor		

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
General												
GHG01	Other Issues	Vegetation clearance would be minimised where feasible. Areas to be revegetated would be revegetated with native species, where practicable, taking into account potential for offsetting lost CO2 from clearance.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
GHG02	Other Issues	Flyash content within concrete would be specified where feasible. Contractors would be required to propose recycled content construction materials where they are cost, quality and performance competitive.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
GHG03	Other Issues	Reuse of excavated road materials would be maximised as far as possible where they are cost, quality and performance competitive to reduce use of materials (with embedded energy).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
GHG04	Other Issues	Steel with high recycled content would be specified where feasible where they are cost, quality and performance competitive. Contractors would be required to propose recycled content construction materials where they are cost, quality and performance competitive.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
GHG05	Other Issues	The feasibility of using biofuels (biodiesel, ethanol, or blends such as E10 or B80) would be investigated by the contractor, taking into consideration the capacity of plant and equipment to use these fuels, ongoing maintenance issues and local sources. Works would be planned to minimise fuel use.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
GHG06	Other Issues	An energy management plan would be developed during the construction of the project. The plan would include a commitment to monitor on-site energy consumption and identify and address on-site energy waste.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
GHG07	Other Issues	RMS would investigate the use of LED lighting in place of incandescent lamps as part of the project's detailed design, and use them where practicable to reduce electrical energy consumption. Any energy-efficient alternatives would have to meet lighting standards for major roads.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
GHG08	Other Issues	An education program would be developed and delivered to the construction personnel to promote energy-efficient work practices..	✓	✓	✓	✓	✓	✓	Construction	Contractor		
Hydrology & Flooding												
HF01	Hydrology and Flooding	Flood models for the Clarence, mid Richmond and lower Richmond rivers would be updated with survey data (as released by the NSW government in mid 2012).						✓	Pre-construction	RMS		
HF02	Hydrology and Flooding	The bathymetrical data on which the Clarence River flood model is based would be updated to reflect the current status of bathymetry at the relevant river crossing locations.						✓	Pre-construction	RMS		
HF03	Hydrology and Flooding	Cane drain diversions would be designed and constructed in consultation with the relevant drainage unions and impacted landowners and in consideration of the potential diversions detailed in the Working Paper – Hydrology and flooding.			✓	✓	✓	✓	Pre-construction	RMS		
HF04	Hydrology and Flooding	Any permanent fencing at culvert and bridge crossings would need to consider the potential for blockage and be designed and operated in a manner that doesn't result in impacts on flooding.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS		
HF05	Hydrology and Flooding	Scour protection and erosion protection measures at waterway crossings would be designed for upstream and downstream of the highway (particularly on sugarcane floodplains).	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
HF06	Hydrology and Flooding	Waterway diversions would be designed in a manner that the final diversion mimics to the greatest extent possible the characteristics of the waterway that is being diverted. Characteristics include flow regime, flow velocity, base material, vegetation and habitat for aquatic fauna.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
HF07	Hydrology and Flooding	Revegetation of the diversion and surrounding area would: • Be completed prior to the diversion receiving flows, in conjunction with the establishment of other scour and erosion control measures • Include planting and the establishment of appropriate vegetation communities along the channel bed and banks, using endemic native species that are able to tolerate a potentially fast-flowing environment.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
HF08	Hydrology and Flooding	Velocities of flood flows through watercourse and floodplain structures (ie bridges and culverts) would need to be assessed in areas identified as potential habitat for the Oxleyan Pygmy Perch and the Purple-spotted Gudgeon. The design of these structures would need to consider the predicted changes to watercourse and floodplain velocities from the existing case due to the project. Structure design would include reviewing flood velocities in threatened aquatic species habitat during detailed design in consultation with DPI Fishing and Aquaculture.						✓	Pre-construction	RMS		
HF09	Hydrology and Flooding	Batter stability issues would be assessed due to the nearness of the water quality basin and highway batter slopes to the creek diversion. Sufficient room would be provided on both sides of the diversion route to allow access for maintenance and to satisfy stability requirements.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
HF10	Hydrology and Flooding	Farm dams located within or partially within the project boundary would be acquired as part of the acquisition process in accordance with the Land Acquisition (Just Terms Compensation) Act 1991.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
HF11	Hydrology and Flooding	Farm dams located outside the project boundary that would have a reduction in their catchment area due to the project would have mitigation measures applied, if possible. Potential mitigation options would include (but not be limited to) the diversion of rainfall runoff back into the farm dam through drainage routes (subject to land acquisition agreements and environmental assessment).	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
HF12	Hydrology and Flooding	An access track would be constructed under the eastern abutment of the Coldstream River bridge at station 43.1 to assist in the movement of stock during times of flood. This access track would need to be constructed above 2.1 metres AHD and tie into the ground adjacent to the project boundary at 2.1 metres AHD.						✓	Construction	Contractor		
HF13	Hydrology and Flooding	Specific instances of flood access impacts would be assessed in consultation with individual landowners. Mitigation measures would be developed for changes in stock access routes.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
HF14	Hydrology and Flooding	The level of flood immunity of Eggins Drive into Corindi would be further reviewed in consultation with Coffs Harbour City Council	✓						Pre-construction	RMS		
HF15	Hydrology and Flooding	Appropriate flood evacuation and stock refuges for a property at approximate station 52.0 near Chaffin Creek would be further considered.						✓	Pre-construction	RMS		
HF16	Hydrology and Flooding	The potential impacts of ancillary facilities and haul roads on cane drains would be further investigated and addressed when construction compounds are confirmed. The design would need to verify that the conveyance characteristics of the cane drains are maintained by providing waterway crossings under any construction compounds and haul roads. Temporary drainage would be oversized to prevent blockages. Consultation would be undertaken with the relevant cane cooperatives drainage unions and impacted landowners to inform the development of appropriate impact mitigation measures.			✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
HF17	Hydrology and Flooding	A drainage structure with an equivalent capacity of the current Goodwood Street underpass needs to be maintained during all flood seasons.						✓	Pre-construction	RMS		
HF18	Hydrology and Flooding	Any temporary infrastructure (which are not fixed) associated with the construction of bridges and bridge piers in following waterways (but not limited to) Clarence River, Clarence North Arm, Richmond River, Tuckombil Canal, would be removed from the river and floodplain during times of flood to avoid the creation of floating debris and potential blockages.						✓	Construction	Contractor		
HF19	Hydrology and Flooding	All works within waterways would be constructed and managed in accordance with relevant NSW Office of Water guidelines.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
HF20	Hydrology and Flooding	The design of temporary fencing at culvert and bridge crossings would consider the potential for blockage and be designed and operated in a manner that does not result in impacts on flooding. This could include temporary fencing that is easily removed during flood events (where ample warning time is provided), or specifically designed fencing so the blockage of structures would not occur.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
HF21	Hydrology and Flooding	The need for design modifications to address changes in flood behaviour as a result of climate change would be assessed periodically throughout the life of the project.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
HF22	Hydrology and Flooding	Recommendations made in Table 8-8 of Working paper – Hydrology and flooding to minimise the flood impacts of ancillary facilities would be considered in the final siting and layout of ancillary facilities.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
HF23	Hydrology and Flooding	Continued application of the design objectives (road flood immunity and flood management objectives) would be required throughout the detailed design phase to provide ongoing identification and mitigation of flood impacts as a result of the project.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
HF24	Hydrology and Flooding	The design of drainage structures across Chatsworth Island would be further reviewed during detailed design to enable the most appropriate and cost-effective structures to be installed						✓	Pre-construction	RMS		
HF25	Hydrology and Flooding	Regular clearing of drainage structures would be required to maintain the efficacy of structures by keeping culverts and bridges free of debris.	✓	✓	✓	✓	✓	✓	Construction and Operation	RMS and Contractor		
HF26	Hydrology and Flooding	Continual consultation with the NSW Office of Water and relevant councils would be required during detailed design and construction regarding flooding impacts on residences and other properties.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
Non-Aboriginal Heritage												
HH01	Non-Aboriginal Historical Heritage	If at any time during construction associated with the project, unidentified historical heritage materials, features and/or deposits are found, the NSW Roads and Maritime Services' Standard Management Procedure: Unexpected Archaeological Finds (2011) would be followed, specifically: <ul style="list-style-type: none"> All construction that could potentially harm the historical heritage materials, features or deposits would cease (including stopping all construction within at least 10 metres). Only construction that is required to comply with occupational and environmental health and safety standards and/or to protect the historical heritage would occur. Construction that does not have the potential to harm the historical heritage would continue only if it is outside the minimum 10-metre buffer A suitably qualified and experienced archaeologist (the archaeologist) would be contacted as soon as practicable in relation to the unexpected discovery of any historical heritage and would be responsible for recording, in detail, the location and context of any historical heritage. Any materials, features and/or deposits would be analysed and/or catalogued and any official site records would be created or updated (where appropriate). The archaeologist would also make recommendations for the management of the historical heritage in relation to the project If avoidance of the heritage item were not possible, the archaeologist would conduct a salvage excavation. The aims of the salvage excavation would be to obtain as much information as possible from the historical heritage materials, features and/or deposits The archaeologist would provide a report detailing the excavation, salvage and analysis results to the Heritage Branch of the Office of Environment and Heritage at the completion of the salvage RMS would be responsible for the costs associated with assessing, cataloguing, labelling and packaging (etc) any historical heritage materials, features and/or deposits Construction would only recommence within the area of exclusion when appropriate protective measures have been undertaken, relevant records updated and/or completed and when all parties agree there is no other prudent or feasible course of action. 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
HH02	Non-Aboriginal Historical Heritage	Should human skeletal remains be identified during construction, the procedure outlined in AH7 would apply (refer to section 12.4 of this EIS).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
HH03	Non-Aboriginal Historical Heritage	Contractors would 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.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
HH04	Non-Aboriginal Historical Heritage	At the nine proposed locations for ancillary facilities that have been identified as having medium potential for the presence of previously unrecorded or unknown historical heritage sites: <ul style="list-style-type: none"> Before the commencement of the use of the ancillary facilities, field survey would be undertaken by a suitably qualified and experienced heritage consultant. Any historical heritage items identified would be assessed for their level of significance. For those heritage items identified as being of state or local heritage significance an impact assessment would be undertaken and provided to the Heritage Branch of the Office of Environment and Heritage. 	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
HH05	Non-Aboriginal Historical Heritage	Where local or state significant heritage items are identified on an ancillary site and use of the site would impact on the heritage significance of the item, the site would not be used for ancillary facilities.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
HH06	Non-Aboriginal Historical Heritage	Where local or state significant heritage items are identified on an ancillary site and use of the site would not impact on the heritage significance of the item, appropriate management measures (such as barrier fencing) would 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: <ul style="list-style-type: none"> When the appropriate protective measures have been implemented When the relevant records have been updated and/or completed. 	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
HH07	Non-Aboriginal Historical Heritage	Should any new ancillary facility locations not identified as part of this EIS be considered for use, a non-Aboriginal heritage assessment would be undertaken, with a database search and site walkover to identify any potential heritage items. If items are found, HH4-HH6 would be followed	✓	✓	✓	✓	✓	✓	Construction	Contractor		
HH08	Non-Aboriginal Historical Heritage	A temporary barrier fence would be erected between the stockyards and the works area prior to road construction works commencing. The fence would remain in place until the conclusion of the works in the vicinity of the items at which time it would be removed. The batter slope would not be constructed within five metres of the stockyards.	✓						Pre-construction and Construction	RMS and Contractor		
HH09	Non-Aboriginal Historical Heritage	The house has been identified for architectural noise treatment to control noise levels from the project. The noise controls would be developed in consultation with a qualified heritage consultant to minimise impacts on the heritage significance of the item. A more detailed SOHI would be prepared for this item when the specific architectural noise treatments for the house are identified.							Pre-construction	RMS		
HH10	Non-Aboriginal Historical Heritage	Salvage excavation (to salvage any subsurface artefacts from the coach way station and early coach road) would be undertaken in an area extending from the project boundary running 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 would 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 would be prepared to best realise the research potential of this area of the site.		✓					Pre-construction	RMS		
HH11	Non-Aboriginal Historical Heritage	The batter slope for the motorway upgrade would not be constructed within eight metres of the bar/restaurant building.		✓					Pre-construction	RMS		
HH12	Non-Aboriginal Historical Heritage	A temporary fence would be erected between the bar/restaurant building and the motorway upgrade construction before work starts in the vicinity of the heritage item. The fence would remain in place until construction is completed, at which time it would be removed.		✓					Construction	Contractor		
HH13	Non-Aboriginal Historical Heritage	A photographic condition survey would be undertaken of the current condition of the heritage items with any damage to the item from construction to be repaired once construction is complete.							Pre-construction and Construction			

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
HH14	Non-Aboriginal Historical Heritage	The old residence has been identified for architectural noise treatment to control noise levels from the project. The noise controls would be developed in consultation with a qualified heritage consultant to minimise impacts on the heritage significance of the item. A more detailed SOHI would be prepared when the specific architectural noise treatments for the residence are identified.							Pre-construction			
HH15	Non-Aboriginal Historical Heritage	Archival photographic recording would 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.	✓	✓				✓	Pre-construction	RMS		
HH16	Non-Aboriginal Historical Heritage	Prior to the start of construction, the location and condition of the mature bunya trees would be recorded by an arborist. In consultation with an arborist, protective fencing would be erected adjacent to the property boundary to control impacts on the trees.	3?						Pre-construction and Construction			
HH17	Non-Aboriginal Historical Heritage	The residence has been identified for architectural noise treatment to control noise levels from the highway. The noise controls would be developed in consultation with a qualified heritage consultant to minimise impacts on the heritage significance of the item. A more detailed SOHI would be prepared when the specific architectural noise treatments for the residence are identified.							Pre-construction			
HH18	Non-Aboriginal Historical Heritage	A photographic condition survey would be undertaken of the current condition of the heritage items with any damage to the item from construction to be repaired once construction is complete.							Pre-construction			
HH19	Non-Aboriginal Historical Heritage	Where appropriate, and before construction commences, any loose or unstable components of the heritage item would be secured to minimise vibration impacts and remain secured until the conclusion of construction, at which time the securing mechanism/s would be removed. Any methods to secure the heritage item would be reversible and not cause damage to the item.						✓	Pre-construction and Construction			
HH20	Non-Aboriginal Historical Heritage	RMS would install appropriate directional signage on both the northbound and southbound highway approaches to help maintain a high level of awareness regarding the heritage item's existence.							Operation			
HH21	Non-Aboriginal Historical Heritage	The Petticoat Lane tram tracks section would have a protective covering placed over them, (eg a geo textile fabric and heavy duty metal sheeting or similar) to minimise impacts from construction in the area. The covering would be secured before construction and would remain in place until the end of construction.	3						Construction			
HH22	Non-Aboriginal Historical Heritage	The design of the new bridge would be undertaken in accordance with Bridge Aesthetics: Design Guidelines to Improve the Appearance of Bridges in NSW (RTA, 2003) with specific reference to section 6.1, New bridges next to existing bridges.	5						Pre-construction			
HH23	Non-Aboriginal Historical Heritage	An archival photographic recording would be made of the convent building 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 relocation.						✓	Pre-construction	RMS		
HH24	Non-Aboriginal Historical Heritage	The feasibility of relocating the building to an appropriate site within the Harwood Heritage Conservation Area would be investigated. The investigation would be undertaken in consultation with an appropriately qualified house removal contractor and an appropriately qualified heritage consultant.						✓	Pre-construction	RMS		
HH25	Non-Aboriginal Historical Heritage	The residence has been identified for architectural noise treatment to control noise levels from the highway. The noise controls would be developed in consultation with a qualified heritage consultant to minimise impacts on the heritage significance of the item. A more detailed SOHI would be prepared when the specific architectural noise treatments for the residence are identified.							Pre-construction			
HH26	Non-Aboriginal Historical Heritage	A photographic condition survey would be undertaken of the current condition of the heritage items with any damage to the item from construction to be repaired once construction is complete.							Pre-construction and Construction			
HH27	Non-Aboriginal Historical Heritage	Monitoring of dust would be undertaken at this location in accordance with the project dust management plan.							Pre-construction and Construction			
HH28	Non-Aboriginal Historical Heritage	A temporary fence would be erected between the State Heritage Register boundary and the construction works before work starts in the vicinity of the heritage item. The fence would remain in place until construction is completed at which time it would be removed.							Operation			
HH29	Non-Aboriginal Historical Heritage	Appropriate directional signage to the New Italy Museum Complex would be installed at both the interchange at Woodburn and interchange at Illuka Road to divert visitors onto the service road in order to access the museum complex.							Operation			
HH30	Non-Aboriginal Historical Heritage	Before construction starts, the memorial and flagpole would be removed from their current location and reinstated within the boundaries of Lot 1 DP207390, outside the project boundary to the north of the stone-lined well. This work would be undertaken under the supervision of an appropriately qualified monumental stonemason and a qualified heritage professional.						✓	Pre-construction			
HH31	Non-Aboriginal Historical Heritage	An archival photographic recording and dilapidation survey would occur prior to the movement of the memorial and flagpole in accordance with Office of Environment and Heritage guidelines.						✓	Pre-construction and Construction			
HH32	Non-Aboriginal Historical Heritage	A photographic condition survey would be undertaken of the condition of the heritage items in their re-located positions with any damage to the items from construction to be repaired once construction is complete.						✓	Pre-construction			
HH33	Non-Aboriginal Historical Heritage	Monitoring of dust would be undertaken at this location in accordance with the project dust management plan.							Construction			
HH34	Non-Aboriginal Historical Heritage	A temporary fence would be erected between the new location of the memorial and flagpole and the construction works (with a five metres from the heritage items) before work starts in the vicinity of the heritage item. The fence would remain in place until conclusion is completed at which time it would be removed.						✓	Pre-construction and Construction			
HH35	Non-Aboriginal Historical Heritage	Salvage excavation would be undertaken to salvage any subsurface artefacts related to the well and adjacent wall. Excavations would 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 in order to best realise the research potential of this area of the site.						✓	Pre-construction	RMS		
HH36	Non-Aboriginal Historical Heritage	Before construction starts in the vicinity of the orchard, the location and condition of each of the mango trees would be recorded by an arborist.						✓	Pre-construction and Construction	RMS		
HH37	Non-Aboriginal Historical Heritage	Protective barrier fencing to protect the mango orchard would be erected between the construction area and the trees with a buffer of at least five metres. This would be erected before construction starts in the vicinity of the items and would remain in place until the end of construction at which time it would be removed.						✓	Pre-construction and Construction			
HH38	Non-Aboriginal Historical Heritage	An archival photographic recording would 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.						✓	Pre-construction			

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
HH39	Non-Aboriginal Historical Heritage	If any historical heritage remains are discovered at the New Italy Village Area during construction, management measure HH1 would be applied.						✓	Pre-construction and Construction			
HH40	Non-Aboriginal Historical Heritage	An archival photographic recording would be made of the buttery/creamery, 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.							Pre-construction	RMS		
HH41	Non-Aboriginal Historical Heritage	The homestead has been identified for architectural noise treatment to control noise levels from the highway. The noise controls would be developed in consultation with a qualified heritage consultant to minimise impacts on the heritage significance of the item. A more detailed SOHI would be prepared when the specific architectural noise treatments for the homestead are identified.							Pre-construction			
HH42	Non-Aboriginal Historical Heritage	If brick material or any other historical heritage remains are discovered during works, management measure HH1 would be applied.							Construction			
HH43	Non-Aboriginal Historical Heritage	An archival photographic recording would 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) is to be undertaken prior to construction.						✓	Pre-construction	RMS		
HH44	Non-Aboriginal Historical Heritage	Salvage excavations to the south of the quarry (to salvage any artefacts relating to of the impact area of the site situated to the south of the quarry) would be undertaken under the supervision of an appropriately qualified and experienced historical archaeologist. Salvage excavation would be undertaken in accordance with the Heritage Branch guidelines including an appropriate research design and methodology in order to best realise the research potential of this area of the site.						✓	Pre-construction	RMS		
HH45	Non-Aboriginal Historical Heritage	The brick-lined well would be retained in situ and protected from all impacts.						✓	Pre-construction and Construction	RMS and Contractor		
HH46	Non-Aboriginal Historical Heritage	A photographic condition survey and structural audit of the brick-lined well would be undertaken of the current condition of the heritage item with any damage to the item from construction to be repaired once construction is complete.						✓	Pre-construction and Construction	RMS and Contractor		
HH47	Non-Aboriginal Historical Heritage	A detailed assessment of the level of vibration at the brick-lined well based on factors including distance from the blast site and the quantity of the explosive, and modelling of the predicted vibration levels at the brick-lined well. This assessment may result in additional mitigation measures for the structure including, but not limited to: • Construction of temporary or permanent supports or shoring within the brick-lined well • Stabilisation of the brick-lined well • Installation of vibration monitoring devices.							Construction			
HH48	Non-Aboriginal Historical Heritage	Protective barrier fencing would be erected around the brick-lined well with a 15-metre buffer before the start of construction and would remain in place until the conclusion of the work, at which time it would be removed.							Pre-construction and Construction	RMS and Contractor		
HH49	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 would ensure that the well could be accessed in the future for heritage research or other purposes and that no detrimental physical impact on the well occurs.							Operation			
HH50	Non-Aboriginal Historical Heritage	An archival photographic recording would be made of the main residence 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 'Stonehenge' property would also be undertaken.						✓	Pre-construction	RMS		
HH51	Non-Aboriginal Historical Heritage	The 1940s residence has been identified for architectural noise treatment to control noise levels from the project. The noise controls would be developed in consultation with a qualified heritage consultant to minimise impacts on the heritage significance of the item. A more detailed SOHI would be prepared when the specific architectural noise treatments for the residence are identified.							Pre-construction			
HH52	Non-Aboriginal Historical Heritage	To protect the heritage item from construction activities, the boundary of the reserve would be clearly identified on site/construction plans as an area of exclusion, and temporary barrier fencing would 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.							Pre-construction and Construction			
HH53	Non-Aboriginal Historical Heritage	During detailed design, further consideration would be given to minimising the area of HCVOGF to be cleared.							Pre-construction			
HH54	Non-Aboriginal Historical Heritage	The area to be cleared would be clearly identified on-site. High Conservation Value Old Growth Forest adjacent to areas to be cleared would be delineated to avoid accidental disturbance on further areas.							Construction			
Land Use												
LU01	Land Use and Property	Undertake ongoing communication and consultation with directly affected property owners about the property acquisition process. This includes the provision of information on the timing of acquisitions, and the process for property acquisitions under the Land Acquisition (Just Terms Compensation) Act 1991 and RMS' Land Acquisition Policy (RTA, 1999).	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
LU02	Land Use and Property	Undertake ongoing consultation with directly affected property owners during the detailed design phase to identify measures to mitigate potential impacts on the use and viability of land. This would relate to matters such as adjustments to fencing, access, farm infrastructure and relocation of impacted ancillary structures, as required.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
LU03	Land Use and Property	Complete property adjustments for fencing, access tracks, cattle underpasses and other farm infrastructure in consultation with the impacted land owner.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
LU04	Land Use and Property	Minimise sterilisation and severance of land uses and lots by amalgamating severed parcels of land together, where possible, with provision of road access.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
LU05	Land Use and Property	Where required, undertake acquisition of State forests in accordance with the provisions of the Forestry Act 1916. Revocation of land dedicated or reserved as national parks or nature reserves would be in accordance with the National Parks and Wildlife Act 1974. Acquisition of land owned by Local Aboriginal Land Councils would be in accordance with the provisions of the Aboriginal Land Rights Act 1983.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
LU06	Land Use and Property	A remnant land strategy to minimise land use severance and sterilisation, and a mitigation strategy for final land uses would be developed in consultation with the Cane industry, Coffs Harbour City, Clarence Valley, Richmond Valley and Ballina Councils.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS		
LU07	Land Use and Property	Maintain access to properties near construction works, including where required for the movement of farm equipment and livestock between properties.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
LU08	Land Use and Property	Where temporary changes to property access are required during construction, determine alternative access in consultation with affected property owners and tenants.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
LU09	Land Use and Property	Undertake ongoing communication with local communities about changes to the local road network, including likely delays and disruptions and alternative accesses if required.	✓	✓	✓	✓	✓	✓	Construction	Contractor		

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
LU10	Land Use and Property	Undertake early and ongoing consultation and communication with residents and local communities closest to construction works about construction activities, including timing, duration and likely impacts. This is particularly important where works are proposed outside standard daytime construction hours.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
LU11	Land Use and Property	Develop a spoil management plan to manage surplus spoil from construction. Where possible, onsite reuse of any spoil is the preferred solution for managing the impacts, although alternative options for the reuse or disposal of spoil would be identified in the spoil management plan.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
LU12	Land Use and Property	Forests NSW would harvest millable timber in affected State forests prior to works commencing. However, consideration should also be given to opportunities for the productive use of trees removed from non State forest areas of the project, including ancillary facilities where necessary.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
LU13	Land Use and Property	Implement environmental management measures to minimise potential for impacts on adjoining agricultural uses, including from changes in water quality and spread of weeds and pests.	✓	✓	✓	✓	✓	✓	Construction and Operation	RMS and Contractor		
LU14	Land Use and Property	Where pesticides are required during construction, implement appropriate environmental management measures to avoid potential impacts on adjoining agricultural properties.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
LU15	Land Use and Property	Undertake 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).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
LU16	Land Use and Property	Undertake ongoing consultation and communication with commercial fishing and relevant aquaculture operators about construction activities within and near the Clarence and Richmond rivers. Stakeholders would 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.						✓	Construction	Contractor		
LU17	Land Use and Property	Where relocation or adjustment of infrastructure is required, these should be planned to minimise disruptions and impacts on surrounding properties	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
LU18	Land Use and Property	Communicate with nearby communities about the timing and duration of potential disruptions to infrastructure.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
LU19	Land Use and Property	Ensure RMS' land that is required for the project is appropriately maintained. This would be undertaken by regional RMS officers or a designated local authority. RMS would manage the leasing and maintenance of property identified as suitable for tenants.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS and Contractor		
LU20	Land Use and Property	Ensure that excavation works near Lot7008 DP92609 are carefully managed in consultation with Richmond Valley Council to minimise potential impacts on any unknown heritage items including potential burials.						✓	Construction	Contractor		
LU21	Land Use and Property	Undertake ongoing consultation with owners of agricultural properties affected by the project – through acquisition, changes to local access or fragmentation of properties – about potential impacts on farming operations and potential measures to manage or mitigate identified impacts	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
LU22	Land Use and Property	Consult with Forests NSW regarding access to and within State forests where required, in accordance with the Forestry Act 1916	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
LU23	Land Use and Property	Consult with Forests NSW about the relocation of fire trails directly impacted by the project's construction or operation	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
LU24	Land Use and Property	Revegetate land as appropriate, particularly where there are ecological and/or landscape opportunities.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
LU25	Land Use and Property	Identify suitable locations for relocated cane pads and restore affected cane drains where possible in consultation with cane-growers and affected property owners.			✓	✓	✓	✓	Pre-construction	RMS		
LU26	Land Use and Property	As far as possible, reinstate or provide new property accesses to replace those that are lost or modified, in consultation with impacted landowners.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
LU27	Land Use and Property	The tie in to the existing highway and land requirement for the property at station 145.0 would be reviewed at the detailed design stage.						✓	Pre-construction	RMS		
LU28	Land Use and Property	Undertake on-going consultation with land owners operating quarries within the project boundary and adjacent to the project, including those near Tucabia, Broadwater and Bagotville, and relevant NSW State government agency. Consultation would aim to identify appropriate management measures required due to the realignment of the project near to operational quarries. In particular, management arrangements would be determined for each affected quarry, particularly regarding operational approvals in terms of site access, extraction limits, blasting limits, timing of works, noise and vibration.						✓	Pre-construction and Construction	RMS and Contractor		
LU29	Land Use and Property	Undertake ongoing consultation with the coal seam gas proponents operating in the study area and the relevant State Government agency to ensure that impacts on the project and on future coal seam gas production are minimised.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
LU30	Land Use and Property	Undertake ongoing consultation with service providers to verify locations and specific impacts on infrastructure and utilities.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS		
LU31	Land Use and Property	Undertake consultation with Richmond Valley Council during the detailed design phase, regarding the location and timing of the Broadwater Sewerage Scheme rising pump station, located off Broadwater-Evans Head road.						✓	Pre-construction	RMS		
Operational Noise & Vibration												
ONV1	Noise and Vibration	Architectural treatments would be considered for all identified noise-affected receivers, subject to confirmation at the detailed design stage.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
ONV2	Noise and Vibration	Low noise wearing surface would be considered for noise affected sections of the project where required, subject to confirmation at the detailed design stage.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
ONV3	Noise and Vibration	No later than one year after commencement of operation of the project, RMS would undertake operational noise monitoring to compare the actual noise performance of the project against predicted noise performance. The report would include, but not necessarily be limited to: <ul style="list-style-type: none"> Noise monitoring 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 enquiries received in relation to operational noise Any required recalibrations of the noise model An assessment of the performance and effectiveness of applied noise mitigation measures Any additional feasible and reasonable measures required. 	✓	✓	✓	✓	✓	Operation	RMS			
Social & Economic												
SE01	Social and Economic	Ongoing communication and consultation with local business owners, industry and tourism operators directly affected by construction and located closest to construction works. The focus would be on the timing, duration and likely impact of construction activities, and to identify appropriate measures to manage potential impacts.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SE02	Social and Economic	Ongoing communication and consultation with managers of community services and facilities near the proposed construction works, to ensure that potential impacts are appropriately managed.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SE03	Social and Economic	Early and ongoing consultation and communication with residents and local communities closest to construction works about construction activities, including timing, duration and likely impacts. This would be particularly important where works are proposed outside of standard daytime construction hours.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
SE04	Social and Economic	Implementation of effective signage for bypassed towns in accordance with RMS signage guidelines. Signage on the project would identify bypassed townships (Grafton, Ulmarra, Maclean, Woodburn, Broadwater and Wardell) as places for 'stopovers' for fuel, supplies and short term accommodation, to support demand for goods and services within these townships.						✓	Pre-construction	RMS		
SE05	Social and Economic	RMS would work with Councils affected by the upgrade, where relevant, to support strategies by local councils and/or chamber of commerce and industry to promote townships and villages as stopovers for tourist activities with the aim of bringing increased business to nearby townships and villages.	✓	✓				✓	Pre-construction, Construction and Operation	RMS		
SE06	Social and Economic	Maintain access to properties near to the project during construction, including, where required, for the movement of farm equipment and livestock between properties, and for access to the Berry Exchange and other affected agribusinesses.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SE07	Social and Economic	Where temporary changes to property access are required during construction, alternative access should be determined in consultation with affected property owners and tenants.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SE08	Social and Economic	Undertake consultation with the New Italy community about proposed access changes for the New Italy Museum, including potential impacts and recommended mitigation measures. In particular, access into Swan Bay-New Italy Road and the New Italy museum would be investigated at the detailed design stage.						✓	Pre-construction	RMS		
SE09	Social and Economic	Undertake consultation with the Harwood Island Public School and other community facilities located adjacent to the project about proposed changes to local access.						✓	Pre-construction	RMS		
SE10	Social and Economic	Undertake early and ongoing communication and consultation with emergency services to allow planning for potential changes to response patterns and input into the design development.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
SE11	Social and Economic	Appropriate access arrangements to and from Gulmarrad, including the provision of a highway overbridge at McIntyres Lane would be considered at the detailed design stage in consultation with Clarence Valley Council.						✓	Pre-construction	RMS		
SE12	Social and Economic	Access arrangements between Bondi Hill and Byron Lane, and north towards Gallaghers Lane, would be reviewed at the detailed design stage in consultation with affected property owners and the cane industry.						✓	Pre-construction	RMS		
SE13	Social and Economic	Access arrangements east and north of Watts Lane would be reviewed at the detailed design stage to facilitate delivery as part of the initial upgrade to arterial standard.						✓	Pre-construction	RMS		
SE14	Social and Economic	Access to Broadwater mill land between MacDonalds Street and River Road would be reviewed at the detailed design stage.						✓	Pre-construction	RMS		
SE15	Social and Economic	The access arrangements for local traffic at Whytes Lane and the tie into the Ballina bypass upgrade would be reviewed together with any potential boundary refinements at the detailed design stage.						✓	Pre-construction	RMS		
SE16	Social and Economic	Maintain access to the Clarence and Richmond rivers near construction activities, including for industry, tourism, fishing (general and prawn trawl) and recreation users.						✓	Construction	Contractor		
SE17	Social and Economic	Maintain recreational access to the Clarence and Richmond rivers near construction activities, including access to existing boat ramps upstream of the existing Clarence River bridge at Harwood. Where river access is disrupted, suitable alternative access should be provided.						✓	Construction	Contractor		
Soil & Water												
SSW01	Soils, Sediments, Ground Water & Water Quality	Batters to be designed using appropriate slope gradients to minimise erosion of selected covering topsoil where possible, to minimise the erosion potential.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW02	Soils, Sediments, Ground Water & Water Quality	Where cuttings are to be benched, benches would be diverted onto contours and surface flow drainage paths designed to spread flow at the source in preference to concentrating the flow and treating it further downstream, with consideration of site constraints.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW03	Soils, Sediments, Ground Water & Water Quality	As part of the Construction Environmental Management Plan, a soils and water management plan would be prepared and include (but not limited to): <ul style="list-style-type: none"> Erosion and sediment control plans for all stages of construction Consideration of soil erodibility At-source erosion controls (eg check dams) Sedimentation basin construction and management Protection of waterways Acid sulfate soil issues Management of stockpiles Tannin leachate management control Batch plant/ chemical storage controls Water quality monitoring and checklists Detailed consideration of measures to prevent, where possible, or minimise any water quality impacts. 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW04	Soils, Sediments, Ground Water & Water Quality	Erosion and sediment control plans would be developed in line with current RMS specifications and as detailed in the Working paper – Water quality.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW05	Soils, Sediments, Ground Water & Water Quality	A soil conservationist would be engaged during detailed design to develop an erosion and sedimentation management report to inform the soils and water management plan.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW06	Soils, Sediments, Ground Water & Water Quality	Sedimentation basins and water quality ponds would be sized and located in accordance with the principles identified in the Working paper – Water quality.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
SSW07	Soils, Sediments, Ground Water & Water Quality	Exposed areas would be progressively rehabilitated. Methods would include permanent revegetation, or temporary protection with spray mulching or cover crops.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW08	Soils, Sediments, Ground Water & Water Quality	Approval would be obtained from relevant agencies for permanent and temporary waterway crossing. Each contractor would be required to comply with any conditions the approval authority imposes.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
SSW09	Soils, Sediments, Ground Water & Water Quality	Topsoil, earthworks and other excess spoil material would be stockpiled in accordance with RMS Stockpile Management Guidelines (RMS, 2011a).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW10	Soils, Sediments, Ground Water & Water Quality	The maintenance of established stockpile sites would be in accordance with RMS' Stockpile Management Guidelines (RMS, 2011a).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW11	Soils, Sediments, Ground Water & Water Quality	Stockpiles would be positioned in low, flat elongated embankments with a height not exceeding 2.5 metres and batter slopes not steeper than 2H:1V.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW12	Soils, Sediments, Ground Water & Water Quality	Stockpiles would be placed within a designated ancillary site and would: <ul style="list-style-type: none"> not require removal of areas of native vegetation (where reasonable and feasible) not be located under the 'dripline' of trees be located outside of known areas of weed infestation be located such that waterways and drainage lines are not directly impacted. 	✓	✓	✓	✓	✓	✓	Construction	Contractor		

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
SSW13	Soils, Sediments, Ground Water & Water Quality	Where practicable, stockpiles would be located away from areas subject to concentrated overland flow. Stockpiles located on a floodplain would be finished and contoured so as to minimise loss of material in flood or rainfall events.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW14	Soils, Sediments, Ground Water & Water Quality	Materials which require stockpiling for longer than 28 days would be stabilised by compaction, covering with anchored fabrics, or seeded with sterile grass.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW15	Soils, Sediments, Ground Water & Water Quality	Potential runoff from stockpiles would be controlled by a suitable sediment trap such as a sediment fence or compost berm.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW16	Soils, Sediments, Ground Water & Water Quality	Topsoil would be stockpiled separately and inspected for noxious weed seedlings at six monthly intervals and controlled with herbicide as required.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW17	Soils, Sediments, Ground Water & Water Quality	All construction stockpiles would comply with the requirements of the Protection of the Environment Operations Act 1997 and NSW Waste Avoidance and Resource Recovery Strategy 2007 for any waste activities that involve the generation, storage and/or disposal of waste and also consider the NSW Resource Recovery Exemptions as applying the storage of stockpiled material.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW18	Soils, Sediments, Ground Water & Water Quality	Stockpiles containing potential acid sulfate soils would be lined, bunded and covered in accordance with relevant guidelines.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW19	Soils, Sediments, Ground Water & Water Quality	Management of tannin leaching from vegetation mulch stockpiles into waterways would be in accordance with RMS' Environmental Direction – Management of Tannins from Vegetation Mulch (RMS, 2012). Management measures would include: <ul style="list-style-type: none"> • Locating vegetation stockpiles away from overland flowpaths • Diverting runoff around vegetation stockpile sites • Minimising the number and size of vegetation stockpiles • Lining the base of vegetation stockpiles if they are located over a shallow water table • Treating vegetation stockpiles by covering them with plastic sheets or collecting stockpile drainage in a stockpile-specific sedimentation basin or sump and monitoring the water quality of the basin to determine its suitability for discharge to the environment. 	✓	✓	✓	✓	✓	Construction	Contractor			
SSW20	Soils, Sediments, Ground Water & Water Quality	Opportunities to refine the project alignment in vicinity of the Tucabia landfill and old Maclean Shire Council landfills would be investigated.						✓	Pre-construction	RMS		
SSW21	Soils, Sediments, Ground Water & Water Quality	A Stage 1 Preliminary Site Investigation would be conducted to verify past and present potentially contaminating activities, potential contaminants of concern and the need for further investigation. This would include a review of past highway crashes and spills and the associated contamination risks.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW22	Soils, Sediments, Ground Water & Water Quality	If necessary (based on the results of the Stage 1 Preliminary Site Investigation), a Stage 2 Detailed Site Investigation would be undertaken to: <ul style="list-style-type: none"> • Provide information on the type, nature, extent and concentrations of contamination present, and the corresponding risks to human health and the environment • Examine pathways of contaminant dispersal and exposure, the potential for off-site impacts and the management requirements and options. 	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW23	Soils, Sediments, Ground Water & Water Quality	If the Stage 2 Detailed Site Investigation recommends further action, a Stage 3 Remedial Action Plan would be produced, detailing the remediation goals, environmental safeguards, and any necessary approval and licence requirements.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW24	Soils, Sediments, Ground Water & Water Quality	Where further assessment indicates that further action is not required, RMS' Contaminated Land Management Guideline (RTA, 2005a) would be applied to address any contamination issues and prevent any associated adverse impacts.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW25	Soils, Sediments, Ground Water & Water Quality	Where required, a remedial action plan or appropriate environmental management plan would be prepared to remove and/or manage the contamination risks in accordance with NSW Office of Environment and Heritage guidelines.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
SSW26	Soils, Sediments, Ground Water & Water Quality	A hazardous materials buildings assessment would be carried out before the demolition of any structures or buildings to identify the issues of concern and the management requirements. This is required under Clause 1.6 of Australian Standard AS 2601 – 2001 The Demolition of Structures.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW27	Soils, Sediments, Ground Water & Water Quality	An emergency spill response plan would be developed and incorporated into the soils and water management plan. This plan would detail measures for the prevention, containment and clean-up of accidental spills of fuels and chemicals.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW28	Soils, Sediments, Ground Water & Water Quality	The storage, handling and use of the chemicals and fuels would be in accordance with the Work Health and Safety Act 2000 and Workcover's Storage and Handling of Dangerous Goods Code of Practice (WorkCover, 2005).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW29	Soils, Sediments, Ground Water & Water Quality	Where it is identified that a temporary sedimentation basin or permanent water quality pond is located in an area of acid sulfate soil, the basin sizing would be reviewed to reduce basin depth to avoid excavation into the acid sulfate soil layer. The minimum allowable depth would be in accordance with the Blue Book, with the volume of the basin maintained. Alternatively, where not feasible, clay capping/ lining of the basin would be undertaken.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
SSW30	Soils, Sediments, Ground Water & Water Quality	Acid-resistant construction materials would be used where possible in areas known to contain acid sulfate soils.			✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
SSW31	Soils, Sediments, Ground Water & Water Quality	Where excavation is to be carried out in areas anticipated to contain acid sulfate soils, works would proceed according to the acid sulfate soils management plan. Specific controls to be implemented would include: <ul style="list-style-type: none"> • Capping of exposed surfaces with clean fill to prevent oxidation. • Placing excavated acid sulfate soils separately in a lined, bunded and covered area. • Neutralising acid sulfate soils for reuse (where appropriate) by using additives such as lime. • Disposing of acid sulfate soils where necessary in accordance with the relevant guidelines set out in DECC (2008b). 	✓	✓	✓	✓	✓	Construction	Contractor			
SSW32	Soils, Sediments, Ground Water & Water Quality	If acid sulfate soils are disturbed, any acid produced would be neutralised and acid waste leaving the site would be prevented in accordance with the applicable guidelines.	✓	✓	✓	✓	✓	✓	Construction	Contractor		

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
SSW33	Soils, Sediments, Ground Water & Water Quality	Appropriate erosion and sediment controls, following the guidelines of the 'Blue Books' (Landcom, 2004 and DECC, 2008a), would be established before the start of construction and maintained in effective working order for the duration of the construction period until site stabilisation. Specific controls would include: <ul style="list-style-type: none"> • Sediment fences and filters to intercept and filter small volumes of non-concentrated construction runoff • Rock check dams across swales and diversion channels to reduce the velocity of flow, thereby reducing erosion of the channel bed and trapping sediment • Level spreaders to convert erosive, concentrated flow into sheet flow • Diversion drains that collect construction runoff and direct it away from unstable and/or exposed soil to treatment facilities • Diversion drains to collect clean runoff from upstream of the construction area and divert it around or through the site without it mixing with construction runoff • Lining of channels and other concentrated flow paths • Sedimentation basins to capture sediment and associated pollutants in construction runoff (see further details below) • Specific measures and procedures for works within waterways, such as the use of silt barriers and temporary creek diversions, in accordance with RMS' Technical Guideline – Temporary Stormwater Drainage for Main Road Construction (RMS, 2011b). 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW34	Soils, Sediments, Ground Water & Water Quality	Sensitive receiving environments would be reconsidered during detailed design to include any threatened ecological communities and non-aquatic species and their habitats that may be affected by the project. Appropriate management measures would be implemented, if required.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW35	Soils, Sediments, Ground Water & Water Quality	When designing and implementing specific measures and procedures for works within waterways, consideration would be given to the need to maintain fish passage.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
SSW36	Soils, Sediments, Ground Water & Water Quality	The design and construction of works within riparian corridors and within the minimum required distance from waterways would be undertaken in accordance with NSW Office of Water guidelines for working within riparian corridors.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
SSW37	Soils, Sediments, Ground Water & Water Quality	Flow discharge points would be designed with erosion controls to slow the flow velocities.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
SSW38	Soils, Sediments, Ground Water & Water Quality	In steep areas, the length between sediment fences and other physical controls would be decreased to reduce soil erosion.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW39	Soils, Sediments, Ground Water & Water Quality	Construction sequencing and temporary diversions of water would be developed and designed to consider the impact of change on flow regimes and to minimise these changes throughout construction.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW40	Soils, Sediments, Ground Water & Water Quality	Where appropriate and required, construction phase sedimentations basins would be designed so they could be retained and used as permanent operational water quality ponds.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW41	Soils, Sediments, Ground Water & Water Quality	Sediment basins would be located within the permanent boundary where possible, or on leased land, subject to approval from landowner.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW42	Soils, Sediments, Ground Water & Water Quality	The final locations and sizes of sedimentation basins would be confirmed during detailed design.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW43	Soils, Sediments, Ground Water & Water Quality	Sizing of sedimentation basins that drain into the Solitary Islands Marine Park would be reviewed to consider the use of 100th percentile sedimentation basins.	✓						Pre-construction	RMS		
SSW44	Soils, Sediments, Ground Water & Water Quality	In areas of highly erodible soils or in areas of large excavations or embankment construction, sedimentation basins would be designed to include sediment storage capacity sufficient for the increased sediment loading in these areas.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW45	Soils, Sediments, Ground Water & Water Quality	Sedimentation basins would be inspected at regular intervals and following significant rainfall events to assess available water storage capacity, water quality, structural integrity and debris levels.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW46	Soils, Sediments, Ground Water & Water Quality	Where appropriate, an approved flocculent would be applied to sedimentation basins as early as possible so that early mixing of flocculants occurs. Water quality would be tested prior to discharge in accordance with any licence requirements.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW47	Soils, Sediments, Ground Water & Water Quality	Where sediment has built up in a basin to a point where the total sediment storage zone has reached capacity, sediment would be removed and appropriately disposed of.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW48	Soils, Sediments, Ground Water & Water Quality	Water from sedimentation basins would be used for construction purposes, such as dust suppression, where feasible.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW49	Soils, Sediments, Ground Water & Water Quality	When sedimentation basins require pumping out rather than discharge via a flow outlet, a float would be attached to the suction hose or the hose would be located inside a bucket to prevent sediment from the basin floor from being discharged.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW50	Soils, Sediments, Ground Water & Water Quality	Records would be kept of water quality monitoring and erosion and sediment control inspections, including details of rain events, use of flocculants, discharge, sediment removal and dewatering activities.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW51	Soils, Sediments, Ground Water & Water Quality	Physical controls to address the potential risks associated with the use and storage of chemicals on site would include: <ul style="list-style-type: none"> • Use of appropriately bunded storage facilities for chemicals and fuels • Use of appropriately bunded areas for refuelling and washdown • Availability of effective spill kits at all construction sites. 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW52	Soils, Sediments, Ground Water & Water Quality	Measures to be implemented to minimise impacts to surface and ground water quality include: <ul style="list-style-type: none"> • Bunded storage facilities for chemicals and clay lined where located on land where groundwater is within two metres of the ground surface • Bunded areas for refuelling and washdown • Locating storage areas away from areas of known near-surface groundwater supplies, in areas where the water table is more than five metres below the surface, otherwise the areas are to be lined if they are located over a shallow groundwater source less than two metres deep. Providing bunded storage facilities for chemicals; these bunded areas would be lined with clay where located on land where groundwater is within two metres of the ground surface • Providing bunded areas for refuelling and washdown • Locating storage areas away from areas of known near-surface groundwater supplies, in areas where the water table is more than five metres below the surface; otherwise, the areas would be lined if located over a shallow groundwater source less than two metres deep. 	✓	✓	✓	✓	✓	Construction	Contractor			

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
SSW53	Soils, Sediments, Ground Water & Water Quality	At ancillary facilities, management of runoff and spills would include: <ul style="list-style-type: none"> Restricting vehicle movements to designated pathways where feasible Paving areas that would be exposed for extended periods, such as car parks and main access roads, where feasible Diverting off-site runoff around sites where required Locating chemical or other hazardous material storage areas away from areas of known near-surface groundwater supplies, in areas where the water table is more than five metres below the surface; otherwise, areas would be lined if they are to be located over a shallow groundwater source less than two metres deep If the above local controls are not implemented, and where required, treating onsite runoff with a construction or compound-specific sedimentation basin, which would be monitored for parameters such as dissolved oxygen levels and organics to determine suitable discharge to the environment (such basins would be considered during detailed design). 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW54	Soils, Sediments, Ground Water & Water Quality	Where possible, stockpiles, vehicle washdown, batch plants, refuelling and chemical storage sites would be located in areas where the groundwater table is located greater than five metres from the surface.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW55	Soils, Sediments, Ground Water & Water Quality	Mitigation of borrow source sites (particularly Lang Hill) would be in line with Volume 2E of the Blue Book which covers water management of mines and quarries.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW56	Soils, Sediments, Ground Water & Water Quality	Management of soil and erosion issues at borrow sources would include : <ul style="list-style-type: none"> Development of detailed site specific erosion sediment control plans for borrow sources covering construction and rehabilitation of the site (considering the needs for any adjacent aquatic habitats). Diverting upstream runoff around borrow sources. Treating runoff from borrow sources at the source as per the Blue Book (Landcom, 2004 and DECC, 2008) requirements, or otherwise treating with a site-specific sedimentation basin and monitoring the sedimentation basin for parameters such as dissolved oxygen levels, pH and organics to determine suitable discharge to the environment (such basins would be considered during detailed design). 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW57	Soils, Sediments, Ground Water & Water Quality	Runoff from the Lang Hill borrow source would be treated by a sedimentation basin. The required water quality parameters for the basins discharging into this area would be determined during detailed design based on pre-construction water quality monitoring. These would be included in the EPL. 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 waterway but rather sprayed into adjacent open grass areas or used for construction purposes such as dust suppression to avoid changing water depth and physico-chemical conditions in the potential Oxleyan Pygmy Perch Habitat. If it is not feasible to irrigate to land to completely re-use sediment basin water, then as a last resort discharge water from sedimentation basins to Oxleyan Pygmy Perch waterways will be treated to ensure it has the correct pH of less than 6.5 and total suspended solids of less than 50mg/L.						✓	Construction	Contractor		
SSW58	Soils, Sediments, Ground Water & Water Quality	Further assessment involving geotechnical boreholes, monitoring boreholes and water quality testing at cutting sites would be undertaken at deep cutting sites to confirm that impacts would be limited to minor impacts on local groundwater reserves.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS		
SSW59	Soils, Sediments, Ground Water & Water Quality	Where groundwater is released, recharge of the water table is the preferred option of managing groundwater. This would be facilitated by collecting groundwater in grassed swales for infiltration back to the groundwater source. Where possible, these swales would divert the groundwater around the construction area so that the groundwater does not further mix with construction runoff.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW60	Soils, Sediments, Ground Water & Water Quality	If recharging is not possible or suitable, then discharging groundwater would be collected via the sedimentation basins before discharge into natural waterways. If discharging to downstream groundwater, then the potential effects of mounding ¹ would be mitigated.	✓	✓	✓	✓	✓	✓	Construction	RMS and Contractor		
SSW61	Soils, Sediments, Ground Water & Water Quality	Dewatering of excavations would be undertaken in line with RMS' Technical Guideline – Environmental Management of Construction Site Dewatering (RMS, 2011c), and in accordance with any licence conditions.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW62	Soils, Sediments, Ground Water & Water Quality	The proposed management strategy to address potential impacts at type A cuttings includes: <ul style="list-style-type: none"> Pre-works investigations – geotechnical investigations of cuts to determine groundwater condition (quality parameters: electrical conductivity, groundwater depth, geological information), presence of actual or potential acid sulfate soils, presence or potential of salinisation, establishing groundwater monitoring sites, and gathering of other pertinent information Assessment – involving this study, the pre-works investigations carried out, groundwater modelling of cuts (and the Rous Water Woodburn borefield site), and predictions made from those results Monitoring – to assess whether the investigation and its predictions are accurate and to instigate early intervention in the unlikely case/s that the actual outcomes deviate from predictions. Monitoring would start before construction, and continue during construction. Monitoring would also continue into the operation phase of the project until groundwater conditions have stabilised Mitigation – implement environmental and engineering management measures where predictions and/or modelling and monitoring suggest that these are required to minimise impacts on groundwater. 	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS			
SSW63	Soils, Sediments, Ground Water & Water Quality	The monitoring of type B cuttings and major embankments would commence before construction to identify the need to implement any mitigation measure.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW64	Soils, Sediments, Ground Water & Water Quality	If required to manage groundwater impacts at type A and type B cuttings and major embankments, the following engineering mitigation measures would be considered: <ul style="list-style-type: none"> Engineering measures that transfer the seepage water downstream. Standard practice would be to collect the seepage from the cut face in the drainage system for the highway, which would be diverted into water quality basins before being released back into the creek or natural drainage system at some point downstream. Engineering impact mitigation measures that transfer the seepage water (where present) into the groundwater ecosystem immediately downslope of the cutting or embankments. 	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
SSW65	Soils, Sediments, Ground Water & Water Quality	Major embankments will be designed to enable distributed flow of surface waters.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW66	Soils, Sediments, Ground Water & Water Quality	Measures to manage high-risk groundwater impact areas would continue to be considered through the detailed design process. In identified areas, the design of water quality controls would be reviewed and the need for additional controls may be identified.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW67	Soils, Sediments, Ground Water & Water Quality	Where practical, sites used for stockpiles, washdown, batch plants, refuelling and chemical storage would be located in areas where the water table is more than five metres below the surface. If this is not possible, the sites would be lined to protect groundwater. The sites that require lining to protect groundwater would be identified during detailed design.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
SSW68	Soils, Sediments, Ground Water & Water Quality	All construction runoff in the catchment of the Rous Water bore fields would be diverted to sedimentation basins. No runoff would bypass the basins untreated, regardless of the size of the footprint of the work. In addition, all basins in the bore fields would be clay lined to prevent seepage. If required, the depth of the basins would be reduced from the standard depth of two metres to one metre in these areas to avoid penetration of the natural clay layer, with the volume of the basins maintained by increasing their footprint.						✓	Construction	Contractor		

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
SSW69	Soils, Sediments, Ground Water & Water Quality	Sizing of sedimentation basins in the Rous Water bore fields would be reviewed to consider the use of 90th percentile basins.						✓	Construction	Contractor		
SSW70	Soils, Sediments, Ground Water & Water Quality	The following construction activities would not be permitted within the Rous Water bore field catchment: • Refuelling • Washdown • Storage of chemicals or other hazardous substances • Installation of concrete batch plants.						✓	Construction	Contractor		
SSW71	Soils, Sediments, Ground Water & Water Quality	Water quality ponds would be designed to be shallower between stations 131.1 and 134.0 (namely one metre compared to two metres) to avoid penetration of the natural clay layer, where possible. Alternatively, where not feasible, clay capping/ lining of the basin would be undertaken.						✓	Pre-construction	RMS		
SSW72	Soils, Sediments, Ground Water & Water Quality	Alternative operational water quality management measures such as the use of biofilters, sand filters or measures used in the Tintenbar to Ewingsdale Pacific Highway upgrade project would be considered during detailed design.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW73	Soils, Sediments, Ground Water & Water Quality	Consultation will be undertaken with Rous Water to co-ordinate mitigation actions including the definition of appropriate buffer zones between the project and bores.						✓	Pre-construction	RMS		
SSW74	Soils, Sediments, Ground Water & Water Quality	Permanent water quality management and protection measures to protect adjacent waterways from pollutants from the highway upgrade would include: • Permanent water quality basins • Grassed swales • Gross pollutant traps.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW75	Soils, Sediments, Ground Water & Water Quality	All permanent water quality basins would incorporate measures to contain accidental fuel and chemical spills resulting from vehicle accidents on the highway. Basins would be designed to accommodate a spill volume of up to 40,000 litres.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW76	Soils, Sediments, Ground Water & Water Quality	For water quality treatment in floodplains and other locations with minimal changes in gradient, grassed swales would provide sufficient treatment to meet the water quality treatment targets.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW77	Soils, Sediments, Ground Water & Water Quality	In addition to water quality basins and grassed swales, rock check dams would be used to provide additional impact mitigation, including mitigation of flow concentration and scour erosion. The sizes and locations of rock check dams would be determined during detailed design.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
SSW78	Soils, Sediments, Ground Water & Water Quality	Surface water quality monitoring would be undertaken in accordance with RMS' Guideline for Construction Water quality Monitoring (RTA, 2003), and as per the framework outlined in the Working paper – Water quality.	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS		
SSW79	Soils, Sediments, Ground Water & Water Quality	Groundwater monitoring would be undertaken in accordance with the framework outlined in the Working paper – Groundwater (Section 5.2).	✓	✓	✓	✓	✓	✓	Pre-construction, Construction and Operation	RMS		
SSW80	Soils, Sediments, Ground Water & Water Quality	Consultation will be undertaken with Department of Defence regarding the potential for unexploded ordnance to be encountered within the area of the Evans Head aerial bombing ranges.						✓	Pre-construction	RMS		
Transport & Traffic												
T&T01	Traffic and Transport	Construction traffic management plans would be prepared and implemented for work sites. They would include: • Identification of all public roads to be used by construction traffic • Management methods to direct construction traffic to use identified roads • Identification of all public roads that may be partially or completely closed during construction, and the expected timing and duration of closures • Details on likely impacts on existing traffic (including pedestrians, vehicles, cyclists and disabled persons) • Temporary traffic arrangement measures, including property access • Details on access to construction sites, including entry and exit locations, and measures to prevent construction vehicles queuing on public roads • A response plan for any incident involving construction traffic • Mechanisms for monitoring, reviewing and amending the success of the plans The traffic management plans would be prepared in consultation with councils.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
T&T02	Traffic and Transport	A strategy would be prepared for bulk earthworks haulage between the crossing of the Richmond River and the interchange at Wardell. The strategy would seek to maximise the extent of haulage within the project boundary and limit the need to haul material through the town of Wardell.						✓	Pre-construction and Construction	RMS and Contractor		
T&T03	Traffic and Transport	Traffic control schemes would be inspected as follows: • Pre-start and pre-closedown inspections of short-term traffic controls • Weekly inspections of long-term traffic controls • Night-time inspections of long-term traffic controls.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
T&T04	Traffic and Transport	Vehicle movement plans and haulage route plans would be prepared. Drivers would be briefed on these vehicle movement plans during project induction. Deliveries would be planned to occur outside peak traffic periods, where possible. To minimise queuing of construction vehicles on the highway, site personnel would use two-way radios to call up haulage trucks from layover areas on a 'just in time' basis.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
T&T05	Traffic and Transport	Applications for Road Occupancy licences would be submitted to Roads and Maritime Services and the relevant council at least 10 working days prior to proposed occupancy.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
T&T06	Traffic and Transport	Pre-construction road dilapidation reports would be prepared for all roads likely to be used by construction traffic. Post-construction road dilapidation reports would be prepared following the completion of construction for all roads assessed prior to construction. Dilapidation resulting from construction activity would be repaired. Copies of road dilapidation reports would be sent to the relevant roads authority.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
T&T07	Traffic and Transport	Access would be maintained to properties during construction including, where necessary and feasible, temporary alternative access unless otherwise agreed with property owners. Where any legal access is permanently affected, alternative access to an equivalent standard to and from a public road would be provided where a property has no other legal means of access and where such alternative access is feasible and practical. Where alternative access arrangements are not feasible or practical and a property is left with no access to a public road, negotiations would be undertaken with the relevant property owner for acquisition of the property in accordance with the provisions of the Land Acquisition (Just Terms Compensation) Act 1991.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
T&T08	Traffic and Transport	Where changes in access affect bus stop locations, temporary alternatives would be provided in conjunction with bus operators and affected schools to maintain access during construction.	✓	✓	✓	✓	✓	✓	Construction	Contractor		

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
T&T09	Traffic and Transport	Where access to State forest land is affected during construction, a new access route would be provided in consultation with the Department of Primary Industries (Forests NSW).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
T&T10	Traffic and Transport	Where maritime traffic access to the Clarence and Richmond rivers is affected during construction of bridge crossings, appropriate signage would be provided indicating alternative means of access and the timing of the works.						✓	Construction	Contractor		
T&T11	Traffic and Transport	The interchange arrangement at Range Road would be reviewed to refine local access to and from the highway.	✓						Pre-construction	RMS		
T&T12	Traffic and Transport	The location of access to the service station for northbound traffic at Lemon Tree Road, Halfway Creek would be reviewed at the detailed design stage.		✓					Pre-construction	RMS		
T&T13	Traffic and Transport	Access to Glenugie State Forest around the interchange at Eight Mile Lane and Lookout Road would be further reviewed in consultation with Forests NSW.		✓				✓	Pre-construction	RMS		
T&T14	Traffic and Transport	Access arrangements between the interchange at Maclean and Townsend via Jubilee Street would be reviewed taking into consideration the current heavy vehicle movements to the industrial estate at Townsend.						✓	Pre-construction	RMS		
T&T15	Traffic and Transport	The layout of the intersection at Yamba Road would be reviewed to better meet the needs of truck movements from Harwood Mill.						✓	Pre-construction	RMS		
T&T16	Traffic and Transport	Connectivity between the shared user path from Harwood Bridge to Yamba Road would be reviewed to refine pedestrian and cyclist access						✓	Pre-construction	RMS		
T&T17	Traffic and Transport	The need for a full interchange at Yamba Road would be investigated should traffic growth warrant it in the future.						✓	Pre-construction	RMS		
T&T18	Traffic and Transport	The need for a full interchange with south facing ramps at Watts Lane, Harwood would be investigated should traffic growth warrant it in the future.						✓	Pre-construction	RMS		
T&T19	Traffic and Transport	The need for the overbridge and the arrangement of local access at Chatsworth Road would be reviewed at the detailed design stage depending on specific staging and delivery of the highway.						✓	Pre-construction	RMS		
T&T20	Traffic and Transport	The need for the overbridge and arrangement of local access at Carrols Lane would be reviewed at the detailed design stage depending on specific staging and delivery of the highway						✓	Pre-construction	RMS		
T&T21	Traffic and Transport	The need and delivery strategy for the heavy vehicle checking station at the rest area in Section 10 north of Richmond River would be reviewed.						✓	Pre-construction	RMS		
Urban Design												
UD01	Urban Design, landscape character and visual impact	If further noise modelling undertaken during detailed design identifies that noise walls would be required, further visual assessment will be required to address the visual implications of the change. Their location and design would be in accordance with the Noise Wall Design Guideline (RTA, 2007) and the principles identified in Working Paper – Urban design, Landscape Character and Visual Impact (Section 4.6.3).	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
UD02	Urban Design, landscape character and visual impact	If the design of the Clarence and Richmond rivers bridges changes from the structures identified and assessed in this EIS, further visual assessment would be required, including assessment of any shadowing impacts. Any changes would consider the principles identified in Working Paper – Urban design, Landscape Character and Visual Impact (Section 4.6.2).						✓	Pre-construction	RMS		
UD03	Urban Design, landscape character and visual impact	The project would be carried out in accordance with the urban design and landscaping strategy, as identified in Section 11.4.1 of this EIS. It would be further developed into detailed landscape design for all project batters, and median planting areas would be developed in accordance with 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	RMS		
UD04	Urban Design, landscape character and visual impact	Mitigation measures identified to mitigate visual impacts to viewpoints would be implemented as per the Working Paper – Urban Design, Landscape Character and Visual Impact (Section 4) and the urban design and landscape strategy.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
UD05	Urban Design, landscape character and visual impact	The built form of the project, including consideration of the height, bulk, scale, materials and finishes for: <ul style="list-style-type: none"> • 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 would be designed in accordance with the design principles identified in Working Paper – Urban Design, Landscape Character and Visual Impact, and relevant RMS guidelines including Beyond the Pavement (RTA, 2009a), Pacific Highway Urban Design Framework (RTA, 2005) and Bridge Aesthetic Guidelines (RMS, 2012). 	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
UD06	Urban Design, landscape character and visual impact	Further assessment would be undertaken of the impact of overshadowing on areas surrounding the project, particularly around Harwood Bridge, interchanges and overpasses near residential properties.						✓	Pre-construction	RMS		
UD07	Urban Design, landscape character and visual impact	Measures to mitigate visual impacts on particular residences would be implemented, as identified in Table 11-42 and Working Paper – Urban Design, Landscape Character and Visual Impact. If any further viewpoints were identified during detailed design that would have a moderate-high or high impact, screen planting would also be considered.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
UD08	Urban Design, landscape character and visual impact	Disturbed areas would be progressively revegetated throughout the construction period.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
UD09	Urban Design, landscape character and visual impact	Typical landscape treatments for ancillary facilities in forest areas would include: <ul style="list-style-type: none"> • Providing screen planting at ancillary facility locations to minimise visual impact and disturbance • Considering reinstatement of disturbed forest in heavily forested areas to ensure existing ecological corridors are maintained • Considering the importance of the visual landscape at each ancillary facility location and allowing restoration of important forest vegetation to prominent ridge lines or other landscape elements as appropriate • Negotiating with private landowners, as applicable, to determine future treatments for other non-forested ancillary facility locations. • Regrading disturbed areas to achieve a sustainable and functional landform • Stabilising all surfaces in accordance with good engineering and environmental practice 	✓	✓	✓	✓	✓	✓	Construction	Contractor		

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UD10	Urban Design, landscape character and visual impact	Typical landscape treatments for ancillary facilities in agricultural areas would include: <ul style="list-style-type: none"> • Considering returning remnant agricultural land to agricultural uses • Providing screen planting to ancillary facility locations to minimise visual impact and disturbance • Reinstating 'fingers' of riparian vegetation through ancillary facilities, where practicable, in the open landscape • Considering the visual landscape at each ancillary facility and considering restoration of important forest vegetation to prominent ridge lines or other landscape elements as appropriate • Regrading disturbed areas to achieve a sustainable and functional landform. • Stabilising all surfaces in accordance with good engineering and environmental practise. 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
UD11	Urban Design, landscape character and visual impact	The extent of excavation and landscaping strategy at Lang Hill and Lumleys Hill would be reviewed considering material requirements on the project and the visual impact on the resultant cutting.						✓	Pre-construction	RMS		
UD12	Urban Design, landscape character and visual impact	Landscape and rehabilitation works would be monitored and remedial measures implemented where required until vegetation has stabilised.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
UD13	Urban Design, landscape character and visual impact	Any earth mound design is to ensure the mounding profile blends suitably into the existing landscape setting. Any mounding to be landscaped should be compacted in 1.5m layers with 1:3 maximum batter slopes. Permanent mounds should be treated with ameliorants and overlaid with topsoil to minimum 150mm to ensure suitable planting conditions are achieved.	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
UD14	Urban Design, landscape character and visual impact	Where mounding batters is to be steeper than 1:3, treatments such as the use of gabions or retaining walls should be considered.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
Waste Management												
WM01	Other Issues	The cut-and-fill balance of the project would be further refined to obtain as much material as possible for reuse on the project.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
WM02	Other Issues	A resource management strategy would be prepared for construction of the project to identify the hierarchy for sourcing and use of resources. It would include provisions: <ul style="list-style-type: none"> • Available project cutting material (including Select Material Zone (SMZ) and verge material) would be used for the construction of embankments, SMZ and verge within that section to the extent that it is suitable • Project sections with a deficit in material would import surplus material from other project sections in preference to external sources • Where possible, the distances that earthworks materials are moved across the project as a whole would be minimised, notwithstanding the above two requirements • Any unsuitable material would be used for landscaping or disposed of within each project section, either for batter flattening or noise mounds or placed in stockpile • Contractors will reduce the amount of unsuitable waste generated during excavations, where feasible (eg treatment at source) • Other locations of disposal of unsuitable material will be considered including borrow source areas created as part of the project • The generation and management of unsuitable material during project earthworks will be monitored to ensure appropriate management of the issue • The resource management strategy would also identify: <ul style="list-style-type: none"> • Details on materials that would be sourced from the project (including location and type) • Viable material suppliers (including water) near the project • Proposed sustainable material sources practices (such as use of recycled materials or wastewater) • Materials that could be recycled and re-used on-site or transferred to other project sections. 	✓	✓	✓	✓	✓	✓	Pre-construction and Construction	RMS and Contractor		
WM03	Other Issues	A waste register would be maintained by each contractor, detailing types of waste collected, amounts, date, time, and details of disposal.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
WM04	Other Issues	Where possible, materials would be bought in bulk to minimise the amount of package required. Sources of material that have sustainable packaging design, recycled and recyclable packaging would be favoured over other material sources where cost effective.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
WM05	Other Issues	Waste material generated on-site will be dealt with in accordance with the Protection of the Environment Operations Act 1997 and Waste Classification Guidelines Part 1: Classifying Waste (DECCW, 2009).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
WM06	Other Issues	Waste minimisation and management measures would be developed based on the principles in the Waste Avoidance and Resource Recovery Act 2001, the NSW Government's Waste Reduction and Purchasing Policy, and waste exemptions including: <ul style="list-style-type: none"> • Excavated Natural Material Exemption (EPA, 2008). • Excavated Public Road Material Exemption (EPA, 2012) • Raw Mulch Exemption (EPA, 2008) • Reclaimed Asphalt Pavement Exemption (EPA, 2012) • Recovered Aggregate Exemption (EPA, 2010) • Stormwater Exemption (EPA, 2008) • Treated Drilling Mud Exemption (EPA, 2011) • Measures would seek to avoid, minimise, re-use, recycle, treat or dispose of waste streams during construction and address transport and disposal arrangements. 	✓	✓	✓	✓	✓	Construction	Contractor			
WM07	Other Issues	Chemical, fuel and lubricant containers, and solid and liquid wastes would be disposed of in accordance with the requirements of Waste Classification Guidelines Part 1: Classifying Waste (DECCW, 2009).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
WM08	Other Issues	Millable timber would be harvested for reuse off site. All other felled timber would be reused on-site in the form of habitat recreation or mulch in landscaping and erosion and sedimentation controls. Where mulch cannot be reused on-site, consideration would be given to making the mulch available to the public in accordance with the RMS Environmental Direction 25 (2012) and the Raw Mulch Exemption (EPA, 2008).	✓	✓	✓	✓	✓	✓	Construction	Contractor		
WM09	Other Issues	Sediment removed from sedimentation basins would, where appropriate, be used on-site in landscaping and/or flattening of batters.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
WM10	Other Issues	The use of recycled products in construction works would be investigated.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
WM11	Other Issues	Where feasible, the contractor would be required to re-use materials. This could include, but is not limited to, concrete formwork or surplus concrete pours.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
WM12	Other Issues	Site inductions and on-site training will be required to include waste minimisation principles and measures.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
WM13	Other Issues	At site compounds, on-site recycling facilities would be provided for recycling paper, plastic, glass and other re-useable materials. Liquid waste such as paints and solvents would be disposed of in accordance with the Waste Classification Guidelines Part 1: Classifying Waste (DECCW, 2009) and the Protection of the Environment Operations Act 1997.	✓	✓	✓	✓	✓	✓	Construction	Contractor		

Mitigation No.	Category	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Other W2B Stages	Timing	Responsibility	Status	Reference / Comment
WM14	Other Issues	Regular visual inspections would be conducted to ensure that work sites are kept tidy and to identify opportunities for reuse and recycling.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
WM15	Other Issues	Water captured in excavations will be required to be either: <ul style="list-style-type: none"> • Managed in accordance with the construction Soil 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 	✓	✓	✓	✓	✓	✓	Construction	Contractor		
WM16	Other Issues	Tannin rich leachate generated from mulch stockpiles would be managed in accordance with the RMS Environmental Direction – Management of Tannins from Vegetation Mulch (2012). Any tannin impacted water captured in bunded areas or traps would not be released into the environment. Tannin effected water would be removed from bunded areas or traps within five days of a rainfall event and used as construction water, dust suppression or landscape watering. These activities would be managed to prevent any pooling or runoff tannin impacted water. The reuse of this water would also be in accordance with the mitigation measures identified in Chapter 10 of this EIS.	✓	✓	✓	✓	✓	✓	Construction	Contractor		
WM17	Other Issues	Appropriate waste and recycling facilities would be provided at rest areas and heavy vehicle checking stations.	✓	✓	✓	✓	✓	✓	Pre-construction	RMS		
WM18	Other Issues	All operational waste would be managed in accordance with the RMS waste management procedures and Environmental Management System.	✓	✓	✓	✓	✓	✓	Operation	RMS		
WM19	Other Issues	Green waste from highway maintenance activities would be collected and, where possible, recycled for mulch within the road reserve.	✓	✓	✓	✓	✓	✓	Operation	RMS		
WM20	Other Issues	Collection and removal of roadside litter would be undertaken in accordance with the RMS Environmental Management System.	✓	✓	✓	✓	✓	✓	Operation	RMS		
WM21	Other Issues	Sediment removed from operational water quality basins would, where appropriate, be classified in accordance with the Waste Classification Guidelines (DECCW, 2009), and be disposed of in accordance with the Protection of the Environment Operations (Waste) Regulation 2005. Where possible, this material would be reused within the road corridor.	✓	✓	✓	✓	✓	✓	Construction	Contractor		