

COMPLIANCE TRACKING PROGRAM

Woolgoolga to Ballina (section 3-11)
Pacific Highway Upgrade

Six Monthly Construction
Compliance Report (April to
September 2019)

DECEMBER 2019

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Plan approved by:



Tim Gooley

Pacific Complete
Environment Planning and
Approvals Leader



Allan Gregory

Pacific Complete
Programme Director

**LAWRENCE
Scott B**

Digitally signed by LAWRENCE Scott B
DN: dc=au, dc=gov, dc=nsw, dc=rta,
dc=corp, ou=Sydney, cn=LAWRENCE
Scott B,
email=Scott.LAWRENCE@transport.nsw.
gov.au
Date: 2020.05.13 15:44:25 +10'00'

Scott Lawrence

Northern Project Office
Environment Manager

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Glossary / Abbreviations

CEMP	Construction Environmental Management Plan
CFFMP	Construction Flora and Fauna Management Plan
CHMP	Construction Heritage 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).
CRO	Community Relations Officer
DoEE	Commonwealth Department of Environment and Energy
EEC	Endangered Ecological Community
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.
EMS	Environmental Management System
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPA	Environment Protection Authority
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
EPL	Environment Protection License
ER	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.
ERG	Environment Review Group – comprising representatives of RMS, Environmental Representative, Project delivery team, regulatory authorities (eg EPA, DPI – Fisheries Conservation and Aquaculture, NOW) and councils (Clarence Valley Council and Richmond Valley Council). The ERG meets regularly and provides proactive advice on environmental management issues and review the environmental performance of the Project.
EWMS	Environmental Work Method Statements
HPG	Hydrostatic Profile Gauge
MCoA	Minister's Conditions of Approval
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.
OEH	Office of Environment and Heritage
OPP	Oxleyan Pygmy Perch
Project, the	The Woolgoolga to Ballina Project (Sections 3 to 11)

PC	Pacific Complete
Secretary	Secretary of the Department of Planning, Industry and Environment
SPIR	Submission / Preferred Infrastructure Report
RMS	Roads and Maritime Services

1 Introduction

1.1 Project description

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

The 155 kilometre upgrade between Woolgoolga to Ballina is the last highway link between Hexham and the Queensland border to be upgraded to four lanes. The project will duplicate the existing highway to two lanes in each direction from about six kilometres north of Woolgoolga (north of Coffs Harbour) to about six kilometres south of Ballina.

The project bypasses the towns of Grafton, South Grafton, Ulmarra, Woodburn, Broadwater and Wardell. The project will include building new lanes and realigning the road.

Key features of the upgrade include:

- Duplicating 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
- More than 100 bridges including major crossings of the Clarence and Richmond rivers
- Bridges over and under the highway to maintain access to local roads that cross the highway
- Access roads to maintain connections to existing local roads and properties
- Structures designed to safely encourage animals over and under the upgraded highway where it crosses key animal habitat or wildlife corridors
- Rest areas conveniently located at intervals to assist with reducing driver fatigue
- Heavy vehicle checking stations near Halfway Creek and north of the Richmond River
- Connections from the project to the local road network and other sections of the Pacific Highway

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, including the following:

- 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.

The land to which the Woolgoolga to Ballina NSW Approval (SSI_4963) applies is described as follows:

The Pacific Highway between Woolgoolga and Ballina, from about six kilometres north of Woolgoolga at Arawarra Beach Road to Pimlico Road about six kilometres to the south of Ballina, excluding the Glenugie and Devils Pulpit upgrades but including the tie-ins to those project.

Pacific Complete (PC) has been appointed by Roads and Maritime Services (RMS) as the Delivery Partner (DP). Pacific Complete comprises Laing O'Rourke Australia Pty Ltd and WSP [formerly Parsons Brinckerhoff] working in close collaboration with Roads and Maritime.

Pacific Complete is responsible for the procurement and management of the detailed design and construction phases associated with Pacific Highway Upgrade – Woolgoolga to Ballina (Sections 3 to 11).

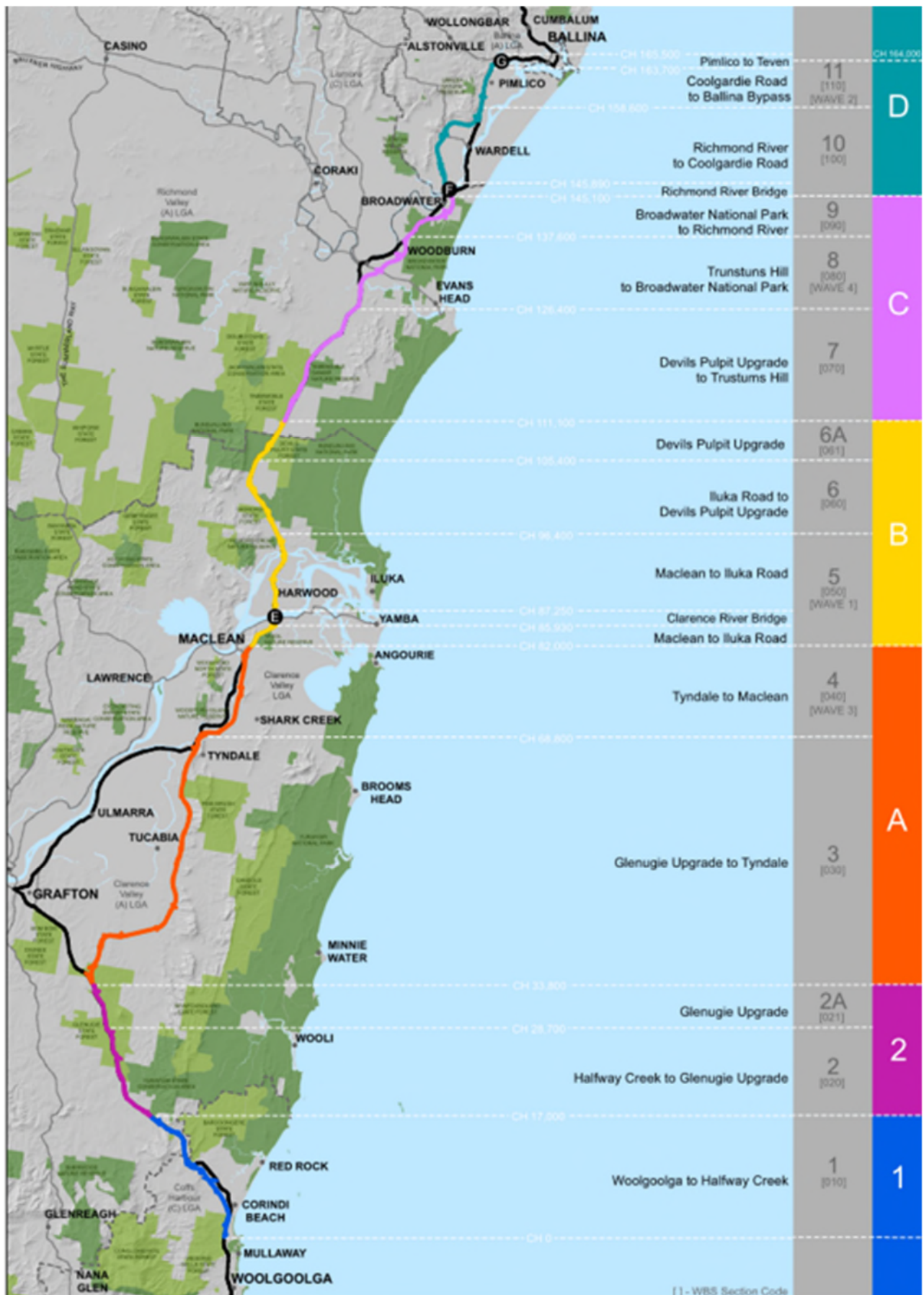


Figure 1 Woolgoolga to Ballina project

1.2 Staging

Staging Reports have been prepared in accordance with the requirements of the NSW Ministers 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 specified stage(s).

The project is also approved under the Commonwealth ***Environment Protection and Biodiversity Act 1999*** (012/6394 approval dated 14 August 2014). EPBC CoA 1 requires that:

The Staging Report as required by NSW approval conditions 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.

Roads and Maritime has prepared and submitted the Woolgoolga to Ballina Pacific Highway Upgrade Staging Report to the Department. An updated report – version 7 – was provided to the Department on 21 August 2017 and approved by DP&E 5 October 2017.

1.3 Purpose

This plan has been developed to address the requirements of the Ministers Conditions of Approval (MCoA) D27. The Woolgoolga to Ballina Compliance Tracking Program – Sections 3-11 was approved by the Department on 16 March 2016. This report addresses the reporting period 1 April to 30 September 2019.

1.4 Environmental management systems 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 minimize 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 Impact Statement*** (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 (including Modification 1 dated 15 January 2015); Modification 2 dated 7 October 2015; Modification 5 dated 27 September 2017; and Modification 6 dated 21 February 2018).

2 Scope of the activities undertaken during the reporting period

The approved Construction Environmental Management Plan Section 2.3, Table 1 provides an overview of the construction activities across the project as at 30 September 2019.

Figures 2 – 19 highlight construction activities across the project during the reporting period (sourced from the Pacific Highway Upgrade Achievement Report, March/April and May/June 2019, RMS).

Table 1 Scope of activities undertaken during the reporting period

Construction activities	Glenugie to Maclean	Maclean to Devils Pulpit	Devils Pulpit to Richmond River	Richmond River to Ballina
Enabling works	√	√	√	√
Relocation or protection of services	√	√	√	√
Site establishment	√	√	√	√
Bulk earthworks	√	√	√	√
Drainage and structures	√	√	√	√
Bridge construction	√	√	√	√
Rest areas	√	√	√	X
Pavement work	√	√	√	√
Road furniture	√	√	√	√
Landscaping and restoration	√	√	√	√
Open to traffic	X	X	X	X

2.1 Photographs of Activities Undertaken During the Reporting Period



Figure 2 Future Maclean Interchange eastern roundabout progress following release of soft soil sites, April 2019



Figure 3 Eastern Roundabout of future Iluka Interchange, April 2019



Figure 4 Woodburn-Evans Head Road overpass bridge looking north, April 2019



Figure 5 Aerial view of new overpass bridge at Wardell Road being built, April 2019



Figure 6 Site restoration works at the new Bridge over the Clarence River at Harwood, April 2019



Figure 7 Concrete completed on the new Bridge over Richmond River at Broadwater. Restoration work at the Broadwater compound site, April 2019.



Aerial view looking south of construction at Tyndale



Aerial view of the Maclean interchange



Figure 8 Construction activities, Glenugie to Maclean at 30 June 2019



Construction continues for the new bridge over Koala Drive at Farlows Flat, Maclean



Earthwork progressing at the Yamba interchange



Figure 9 Construction activities, Maclean to Devils Pulpit at 30 June 2019



Aerial view south of New Italy looking north



Aerial view of the Woodburn interchange looking south



22 days
lost to wet
weather



923 average number
workers on site



342 average number of pieces
of machinery on site



about
63%
complete



7
contractor
companies
on site

Figure 10 Construction activities, Devils Pulpit to Broadwater at 30 June 2019



Line marking completed for the new Wardell Road overpass bridge



18 days
lost to wet
weather



399 average number
workers on site



55 average number of pieces
of machinery on site



about
86%
complete



4
contractor
companies
on site

Figure 11 Construction activities, Broadwater to Ballina Bypass at 30 June 2019



Aerial view of the new bridge over the Clarence River at Harwood



6 days
lost to wet
weather



25 average number
workers on site



10 average number of pieces
of machinery on site



99%
complete



0
contractor
company
on site

Figure 12 Construction activities, new Bridge over the Clarence River at Harwood at 30 June 2019



New bridge over Richmond River facing west



Sunset at the new bridge over the
Richmond River, Broadwater



6 days
lost to wet
weather



60 average number
workers on site



7 average number of pieces
of machinery on site



about
99%
complete



1
contractor
company
on site

Figure 13 Construction activities, new Bridge over the Richmond River at Broadwater at 30 June 2019



Figure 14 Street lighting installed in Section 5



Figure 15 Installation of electrical services and structural signage footing at Harwood North in Section 5

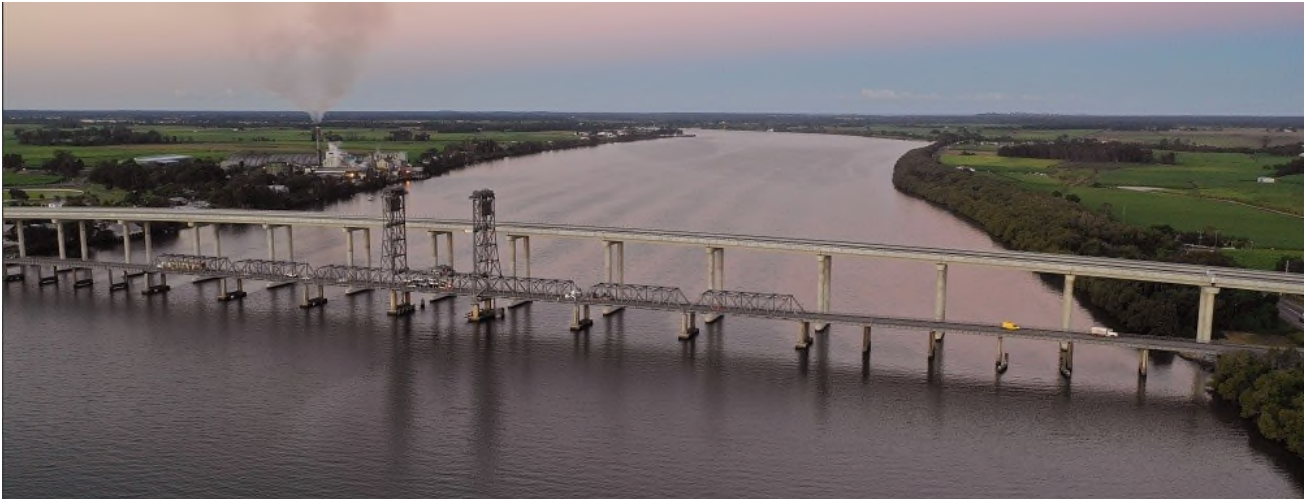


Figure 16 The new Bridge over the Clarence River at Harwood



Figure 17 Progressive rehabilitation in Section 7



Figure 18 Tyndale Borrow site rehabilitation, noting habitat trees in tact



Figure 19 Exclusion zone set up during 'bitumen transfer in progress'

2.2 Environmental Approvals

There were no additional environmental approvals received during the reporting period.

2.3 Ancillary Facilities

Ancillary Facilities for the project are being managed in accordance with the approved Ancillary Facilities Management Plan developed to satisfy MCoA D21 and approved by the Department on 10 February 2016.

Table 2 lists the Ancillary Facilities approved for use during the reporting period.

Table 2 Ancillary Facilities approved during 1 April to 30 September 2019

Facility # (ID / Name)	EIS Section	Type of Facility	Approval Date
Randal's Lane Material Storage Container & Stockpile, north side of D10 (QCP)	10	Stockpile	4-Apr-19
Bridge B66 Minor Ancillary Facility (BHA)	5	Minor	15-Apr-19
Bridge B01 Minor Ancillary Facility (BHA)	5	Minor	15-Apr-19
Harwood Laydown (BHA)	5	Minor	15-Apr-19
Harwood North S2 Stockpile - Harwood Acid Sulfate Soil Treatment Area & Unsuitable Stockpile Area CH8.350 – CH87400	5	Stockpile	17-Apr-19
Addendum 1 to Major Ancillary Facility - Firth Heinz Road, A4 - A52.20 Crushing Operations	3	Addendum Major	13-May-19
Vehicle Parking Area - RMS Compound, Harwood Bridge	5	Minor	31-May-19
VO209 Iluka West Roundabout CH95400 - Portaloos	5	Minor	6-Jun-19
Addendum 1 Major Ancillary Facility - Wooli Road Crushing Operations – Site 3.4	3	Addendum Major	14-Jun-19
Castle's Laydown & Ancillary Site CH95.900 – CH96.500	5	Major	21-Jun-19
Bridge Over Clarence River North Arm (AFS)	5	Minor	10-Jul-19
Bridge B08 South Abutment (AFS)	5	Minor	10-Jul-19

Facility # (ID / Name)	EIS Section	Type of Facility	Approval Date
Bridge B68 Minor Ancillary Facility (BHA)	5	Minor	18-Jul-19
Addendum 1 to Major Ancillary Facility - Tyndale A10, Crushing Operations - Site 3.10	3	Addendum Major	30-Jul-19
Embankment 6.7 Laydown Area	5	Minor	17-Sep-19

3 Performance of environmental controls

The construction activities are managed in accordance with the approved Construction Environmental Management Plan (CEMP) and subplans.

Key features of the environmental management during the reporting period are outlined below.

3.1 Erosion and sediment control

Erosion and sediment control measures have been implemented in accordance with the approved Construction Environmental Management Plan and Construction Soil and Water Management Plan across the project to ensure the appropriate management of erosion and runoff during construction. Erosion and sediment control plans (ESCP) have been prepared by construction contractors and their soil conservationists in consultation with the Project Soil Conservationist, Pacific Complete, Roads and Maritime and DPI Fisheries (where required).

Progressive ESCPs have also been prepared to allow for adaptation to changing site conditions and staging of the construction works. These plans continue to be developed throughout the project to address progressive changes in site conditions and stages of works. The PESCP's are reviewed & approved by Pacific Complete in accordance with RMS General Specification G38.

The Project Soil Conservationist continues to actively provide guidance to contractors through performing regular scheduled inspections and monitoring, provision of actions following inspections and the review and approval of ESCPs. Contractors' Certified Practitioner in Erosion and Sediment Control (CPESC) also provides training to site personnel, including practical sessions.

Major controls and measures implemented during the reporting include, but not limited to:

- Prevention of erosion rather than reliance entirely on water capture and filtration of sediment. This is beneficial for the environment, a long term cost efficiency, time saving by reducing the need for rework and maintenance of sediment controls. Erosion prevention includes application of double strength soil binder and for steeper slopes and longer term solutions, geofabric is used.
- Temporary erosion and sediment controls prior to and during clearing and earthworks in accordance with the Blue Book
- Temporary stabilisation measures have been implemented across site such as:
 - o Entry exit points – to reduce tracking of mud onto public roads
 - o Gravel and paved areas in ancillary, lay down and disturbed areas,
 - o Temporary seeding to encourage temporary vegetation growth rather than using materials that may be source of future waste
 - o Landscaping and application of hydromulch & hydroseeding.
 - o Use of geofabric and synthetic products to provide structural support and stabilisation in key areas.
- Use of mulch for perimeter controls of site, in accordance with Tannin Management Procedures.

- Compound and crane pads have earth bunds placed around the perimeter with rock-lined spillways installed at appropriate intervals.
- ASS/PASS management during piling excavations; management of excavated materials adjacent to waterways.
- Ensuring excavated materials on piling pads areas in / adjacent to waterways are placed into skip bins, and surface area protected.
- Use of polymer to further reduced geofabric material and to reduce soil loss.
- Contractor interface joint inspections of Erosion and Sediment Controls are undertaken to ensure all are in working condition for the next Contractor.
- Progressive revegetation of cut/fill batters and drainage lines in accordance with Specification R178PC and Approved Landscape Plans including hydromulch, hydroseed and organic fibre mesh surface treatment
- Open drains, reinforced concrete pipe cross drains, reinforced concrete box culverts and dedicated fauna reinforced concrete box culverts, together with ongoing installation of longitudinal drains and subsoil drainage.
- Expansion joints on bridges are filled with sand prior to the paving process to eliminate any leachate into waterway areas.
- Review of Erosion and Sediment Control Plans to ensure effectiveness and progressive changes.
- Decommissioning of sediment basins, including backfilling of basins were undertaken as per approved PESCPs with particular focus to rainfall forecast. Works were programmed and resourced to ensure Bluebook compliance.
- Environmental work method statements (EWMS) prepared to address erosion and sediment control, such as:
 - o EWMS for Operation of sediment basin
 - o EWMS for Piling and compound construction
 - o EWMS for Access track works and vegetation clearing
 - o EWMS for Working in proximity to a watercourse
 - o EWMS for Temporary waterway crossings
 - o EWMS for Temporary rock platforms and temporary jetty
 - o EWMS for Earthworks
 - o EWMS for Acid Sulfate Materials Management
 - o EWMS for Acid Sulfate Treatment
 - o EWMS for Local excavation of Abutments, Pour Wingwalls, Place Sill Beams and Backfill
 - o EWMS for Waterproof, Asphalt and Emulsion Spraying for Bridges
 - o EWMS for Culvert construction
 - o EWMS for Marine Piling
 - o EWMS for Edwards Drain Creek Work
 - o EWMS for Deck Pouring and Curing
 - o EWMS for Lees Drain Creek Work
 - o EWMW for Bridge Construction
 - o EWMS for Paving
 - o EWMS for Crushing and Screening
 - o EWMS for Bridge structures
 - o EWMS for Borrow pit excavation
 - o EWMS for dewatering and discharge to waters
 - o EWMS for Lime stabilisation activities
 - o EWMS for Superstructure Concrete Work for Bridges
 - o EWMS for Grouting Works for Bridges
 - o EWMS for Hydro-Demolition of Bridges
 - o EWMS for Application of Matacyl Waterproofing Membrane
 - o EWMS for Asphalt and Sealing Operations
 - o EWMS for Foam Bitumen
 - o EWMS for Lees Drain Temporary Crossing Removal
 - o EWMS for Decommissioning of Temporary Waterway Crossings
 - o EWMS for Bridge Structures Construction and Demolition
 - o EWMS for Stitch Pours over Serpentine Channel
 - o EWMS for Baily Bridge Removal

- o EWMS for Local Excavation of Abutments, Pour Wingwalls, Place Sill Beams, Backfill, Prime and Seal
- o EWMS for Bridge Demolition BR01
- o EWMS for Lime Stabilisation
- o EWMW for Prime Seal and Asphalt Works

Erosion and sediment controls are monitored regularly through:

- Daily monitoring by Contractors Construction Teams
- Pre and post rainfall inspections
- Minimum weekly inspections by the Pacific Complete project team
- Fortnightly inspections by Independent Certified Practitioner in Erosion and Sediment Control (CPESC)
- Fortnightly inspections by independent Environmental Representative (ER) and Roads and Maritime Services (RMS)
- Monthly by Pacific Complete CPESC

The PESCP revision process incorporates the feedback received during inspections.

Positive feedback in relation to erosion and sediment control received during RMS, ERG and ER inspections, commending:

- Section 3 – continual improvement of erosion and sediment controls and staging of works versus the level of risk.
- Section 4 – commended for the shotcrete lining of fauna paths near culverts.
- Section 5 – drainage installation at Maclean Cut and fauna furniture construction.



Figure 20 Sand in expansion joints prior to paving



Figure 21 Asphaltting in Section 5



Figure 22 Bridge B01 - soil binder on abutments, earth berms, lined temporary batter chutes and batters, and lined dirty diversion drain



Figure 23 Sandbag edge protection and soilbinder applied to batter

Protection of waterways

The Woolgoolga to Ballina upgrade project includes the construction of over 100 bridges over creeks, rivers and floodplains, including major bridge crossings of the Clarence and Richmond Rivers. The construction activities during the reporting period have taken place in proximity to a number of waterways, minor and major farm drains, creeks and rivers.

Specific waterways intersected by works include but are not limited to: Serpentine Channel, Shark Creek, Clarence River, Richmond River, Clarence River North Arm, Mororo Creek, Coldstream River, Tabbimoble Creek and Floodways, James Creek, Tuckombil Canal, major farm drains - Crackers, Lees; Edwards Creek, Pheasants Creek, Pillar Valley Creek, Chaffin Creek Farlows Flat, Champions Creek, Bingal Creek, Oakey Creek, Wardell Creek, Randalls Creek, Woodburn town drain Montis Creek tributary and various unnamed waterways, cane drains and drainage lines.

Modification to the Infrastructure Approval (MOD # 5) was approved 27 September 2017 in relation to Conditions of Approval MCoA B8, B9 and B13, whereby exemptions may apply for works during the Oxleyan Pygmy Perch (OPP) spawning period in OPP habitat, in consultation with Department of Primary Industries Fisheries.

Consultation was undertaken with DPI Fisheries to discuss potential construction activities within the OPP 50m buffer zone between September 2018 and May 2019 for works between Devils Pulpit and Broadwater. A risk assessment is prepared monthly and presented to DPI Fisheries for approval. Approved construction activities included the following:

- Asphalt milling;
- Completion of earthworks to underside of pavement.
- Bridge drainage installation;
- Longitudinal drainage installation;
- Slipform barrier placement;
- Lime stabilisation;
- Verge placement;
- Hydro-demolition works;
- Pavement construction; and
- Topsoiling, organic fibre mesh placement and revegetation of open drains and any disturbed sections of the batters.

A further dispensation has been granted by the DPI Fisheries to undertake construction activities in the OPP 50m buffer zone through October 2019. The works program is prepared fortnightly and presented to DPI Fisheries for approval. Approved construction activities include the following:

- Bridge refurbishment and drainage installation;
- Longitudinal drainage installation;
- Verge placement;
- Pavement construction; and
- Topsoiling, organic fibre mesh placement and revegetation of open drains and any disturbed sections of the batters.

Works within OPP habitat occurred during the reporting period at Bridges B10, C01, C02, C07, C51, C52, C53, C54, Tabbimoble Creek and Tabbimoble Floodways and Lang Hill, between Devils Pulpit and Broadwater.

Temporary OPP bridges have been removed at Bridges C52, C07, C53 and C54, with completion of revegetation at Bridge C52.

All works undertaken within the OPP spawning period were in accordance with modified MCoA requirements and were undertaken in consultation and with agreement of DPI Fisheries. Enhanced environmental controls are in place to protect the fish and habitat within these work areas.

Works within other key fish habitat occurred with bridge construction at Bridges B04 (Serpentine Channel), B08 (Clarence River North Arm), C04 (Tuckombil Canal) and C05 (town drain). The project team has engaged with regulators and stakeholders with regular inspections, auditing and monitoring conducted to demonstrate compliance with requirements.



Figure 24 Waterway crossing at Bridge B67 and contingency sediment curtain maintained at B08



Figure 25 Encapsulation for hydro demolition works at OPP Bridge site C51; and containment of hydro demolition wastewater, preventing alkaline water reaching OPP waterways.



Figure 26 Controls functioning effectively north of bridge 10 Tabbimoble Creek OPP Water Management Area



Figure 27 Runoff from works directed via a reverse grade drain towards 90th percentile rainfall event, oversized basin in OPP Water Management Area Section 6.



Figure 28 Clean water management in Section 7



Figure 29 Removal of Bridge C52 Temporary Access and Revegetation, OPP Waterway



Figure 30 Removal of Bridge C53 Temporary Access and Revegetation

Key activities to protect local waterways during the reporting period

- Waterway crossings established at all waterways in accordance with Blue Book Requirements and Pacific Complete Technical Briefing Note Temporary Waterway Crossings Minimum Standards. Permanent cross drainage constructed as early as possible. Enhanced erosion and sediment controls implemented in areas close to waterways, including lined clean water diversions, temporary surface protection, cross drainage

sumps and basins (as required). Maintained regularly with emphasis on keeping the crossing surface free from fines and maintaining functional splash curtains.

- Gypsum preloading of checks and outgoing drain lines prior to rain events and during events where overtopping is likely. This includes specific surveillance regime and monitoring.
- Incident free efficient demobilisation of marine resources at Richmond River Bridge, including two barges,
- Weekly monitoring of water quality at OPP waterways.
- The application of a specialised waterproofing system to bridge decks in Section 10 and 11 as per specific EWMS developed for the process.
- Progressive removal of temporary waterway crossings. Culvert works include the installation of permanent rock and jute lining for inlets and outlets of the culverts.

Management of bridge construction

- Ensuring no gaps within the jetty decks, provision of a material barrier between the deck and handrails to prevent windblown litter.
- Plastic barriers used under bridges during deck pours to prevent any drips from hitting the ground or waterway.
- Regular (minimum daily) sweeping down of temporary jetty to ensure deck is kept clean and free of sediment and inspected prior to mobilisation.
- Instream controls were installed at bridge B52 south while drainage works were being modified around the newly installed piers.
- Ensuring hydraulic lines where possible are sheathed with geofabric to prevent leaks which may be unable to be captured from bunding on barge. All gaps on the deck of the barge are to be sealed. All liquids on the deck of the barge are bunded (fuel pods, plant, port-a-loos). Where not all individual components are bunded perimeter bunding of the barge has been adopted.
- Spill response training prior to commencing barge based construction activities with spill kits of appropriate capability available on site.
- All pumps and hydrocarbons to be transported and used within spill trays
- Biodegradable oil is used within cranes which are working over water.
- An oil containment boom is used during piling, pile excavation and high risk activities.
- Installation of geofabric skirt during drilling activities, which is slung between the pile and pontoon. Geofabric skirt contains material that may fall from the drilling bucket as it is slewed from the pile to the skips bins located on the pontoon.
- Prior to concrete pour, a lined skip bin or other impervious container is at the activity locations to enable a concrete pump to be cleaned out (e.g. concrete blockage), preferably by air, to prevent any splashes from leaving the barge / temporary jetty deck into the water.
- Concrete wash outs and Polymer tank set ups are positioned in a way to not block site water flow pathways/ batter chutes.
- Undertake and record at least a weekly inspection that hydraulic lines over water are wrapped, no signs of leaks on sheathing / geofabric wrapping, bunds on barge in place
- Review weather forecasts checked daily and recorded when undertaking concrete pours to prevent the discharge of concrete contaminated surface runoff from concrete or curing compounds from entering the waterways or contaminating surrounding land.
- Review weather forecasts to determine the transport of excavation spoil skips to the nominated stockpile site.
- Controls installed to collect and manage curing water from deck pours, which take up to 7 days to cure. The separation of curing water (high pH) from rainwater has been implemented.
- During green cutting (high-pressure water) of concrete, temporary barriers such as plywood have been used between the works and the edge of bridges to prevent fragments of concrete from entering the water, while a wet vacuum was used to collect the wastewater produced.
- Prior to commencing stitch pours during parapet installation, the Environmental Manager and Site Engineer check the foam joint for any gaps along the construction joint. If a gap is present, expandable foam is applied to fill the gap. In addition to this, a secondary containment curtain installed across any waterway to capture any unexpected drips from the construction joint.
- Runoff water quality monitoring to measure the pH of the runoff deck water was conducted after each concrete deck pour in Section 5. Once the pH was neutralised and acceptable, water was removed and recycled. Re-use includes dust suppression and wheel washing to reduce mud tracking.

- No placing (including temporary) excavated materials on piling pads in and adjacent to waterways. No excavation work unless skip bins are available to place materials immediately in. Geosynthetic textile is laid out between slew radius and skips to further protect piling pads in / adjacent to waterways.
- Sequencing the final earthworks, topsoiling and hydromulching of creek crossings to ensure minimal impacts to waterways.
- Demobilisation of marine resources including barges used for bridge construction.
- Removal of temporary load out jetties used during construction at Richmond River Bridge.
- Hard ground treatment commenced in September 2019 for Bridges B65 and B02. This consists of compacting soft soils by two piling methods:
 - Concrete Injected Columns (CIC): CIC piles are completed by drilling a solid auger into the ground that pushes the soil sideways and downwards, compacting and stabilising around the pile. Concrete is then poured into the pile filling the void.
 - Continuous Flight Auger (CFA): CFA piling displaces the soil from the auger bring it to the surface. Once the pile is drilled to the design depth (15m at Bridge B65 and B02), concrete is poured into the pile to fill the void and support the abutment.

Spoil generated from the CIC and CFA piles is transported to the Harwood ASSTA where ASS testing is conducted. The ASS tests indicated the soils had a high amount of reducible sulphur content and required treatment with lime.



Figure 31 Covering polymer tanks prior to rainfall at Bridge B68



Figure 32 Spill kits readily available at Bridge B65 north and Bridge B68



Figure 33 Bridge B08 repair works constructing piling platforms, good use of upturn geofabric and bunding at edge of platform.



Figure 34 Waterproofing membrane application Bridge D03



Figure 35 Bridge B08 repair works, piles being installed



Figure 36 Concrete agitator & washout bay at Bridge B04



Figure 37 North side of B08 Temporary jetty pile removal with oxy-gauge cutting



Figure 38 Loaded kibble lifted & directed over the pile by crane and the cut off section lifted over water

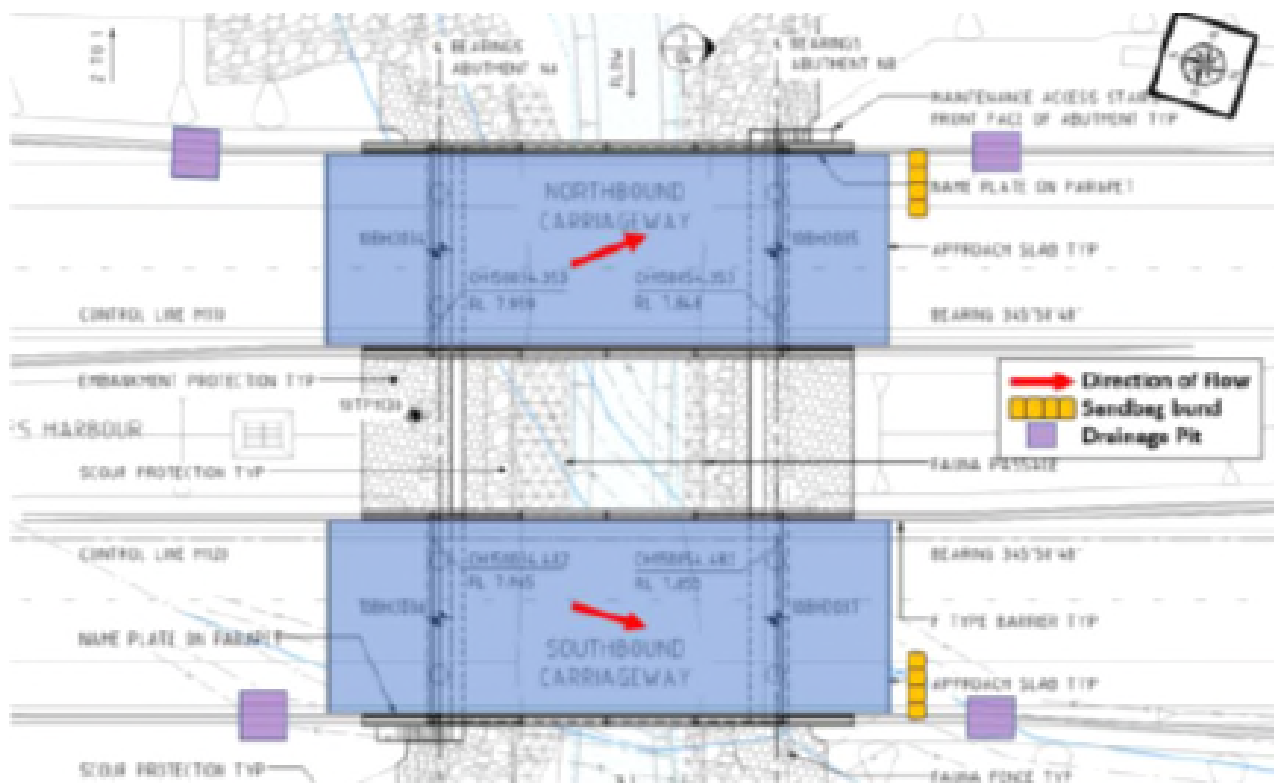


Figure 39 Site Layout Controls used to protect waterways during waterproofing

Management of local cane drains:

- Water level markers installed at fresh water sources (Crackers and Lees Drain) to ensure adequate water levels are maintained, at a certain level (0.5m), to sustain aquatic life. Due to the drought conditions experienced during this reporting period, extraction of water from Crackers Drain was ceased due to concerns regarding water levels in the drain.
- Dewatering and fish salvage by Aquatic Ecologist in various locations across the project.
- Weekly site inspections and tracking of actions.
- No go zones in some areas allowing vegetation cover to re-establish, protecting the cane drains from sediment runoff.
- Additional jute mesh and geofabric to cane drains likely to be inundated around Bridge B66/B67. These cane drains run into the North Arm of the Clarence via a cane drain that runs beneath Bridge B07.

- Watercourse crossings over cane drain at Bridge B67 were installed per BlueBook and under DPI Fisheries technical guidelines.
- Constructing water-capturing structures preventing contaminated water or concrete from mobilising from bridge deck into cane drain.



Figure 40 Drain being lined with Jute Mesh



Figure 41 Jute mesh installation & ground cover at Bridge B67; and jute mesh and geofabric protection for swale drain at Bridge B68



Figure 42 Bridge B64 south demonstrating temporary erosion and sediment controls, preventing turbid runoff entering cane drain.



Figure 43 Bridge B67 Temporary green cutting setup over cane drains

Positive feedback received from the ERG relating protection of waterways, including but not limited to:

- Covering of polymer tanks prior to rainfall at B68
- Bridge B08 setup and the erosion and sediment controls.
- Piling at Bridge B08 and associated controls.
- Housekeeping of bridge decks, minimising dust and sediments being blown off the site.
- Containment of hydro-demolition waste water to at OPP Bridge Sites C07, C51 and C52.
- Performance of erosion and sediment control measures at OPP sites during heavy rainfall events.
- Enhanced erosion and sediment around waterways in Section 5.



Figure 44 OPP Waterway Management Section 7

3.2 Flora and fauna

A wide range of Endangered Ecological Communities (EEC), Threatened Ecological Communities (TEC's) and threatened flora and fauna species are known to occur within and/or adjacent to the project.

Works occurred during the reporting period within and/or adjacent to EEC's and TEC's and threatened flora and fauna species habitats

Measures undertaken to manage and protect EEC, threatened species and their habitats during the reporting period include (but are not limited to):

- Environmental no-go areas have been installed to protect EECs, and threatened flora and fauna.
- Species-specific induction and training conducted with site personnel, such as invertebrate management, rainforest management, etc.
- Pre-clearing diurnal surveys have been undertaken and all clearing was spotted by an Ecologist as per RMS G40 specification.
- Installation of temporary and permanent fencing including frog fencing, rainforest fencing and fauna fencing.
- In Section 4, two possible Sandstone Rough-barked Apples (*Angophora robur*) were identified in the proximity of a new work area at Bondi Hill Rd (Chainage 69200). Sandstone Rough-barked Apple is listed as a threatened species (vulnerable) under the BC Act and EPBC Act and has previously been confirmed in the area. The trees did not require removal as part of the works and no-go fencing was installed around the trees.
- On the 11th of September, a Scrub Turpentine (*Rhodamnia rubescens*) was detected at approximately chainage 80050, west of the alignment (easting: 520223, northing 6740375). The main stem (approximately 3m tall) was dead and some small stems <1m tall were reshooting from the base. Evidence of light Myrtle Rust infestation was present. The **Unexpected Threatened Species/ EEC Finds Procedure** was triggered for Scrub Turpentine.

- In areas where construction activity necessitated temporary removal of the emu fencing, such as permanent fencing installation, the following mitigation measures were undertaken as per project ecologist's recommendations:
 - o Stage works so the extent of area without a temporary or permanent emu fence is minimised (200-300m at a time).
 - o Undertake daily pre-works inspection of the site to see if emus have entered the project alignment overnight.
 - o If emu's are detected, stop works and contact the ecologist in accordance with the Emu Management Plan.
 - o If emu's aren't detected, continue works cautiously under the controls below:
 - o Adopt a maximum speed of 20km/hr. for all plant and vehicles moving past the area with no fence. Speed signage and pre-start discussions would accompany this.
 - o Spotters used during construction at each location without fencing.
- The implementation of mitigation measures from the invertebrate and rainforest management plans, and the training of personnel in these measures during relevant works activities such as clearing and grubbing and night works within the relevant areas. These measures have included targeted surveys for host vegetation, monitoring of dust generation.
- Microbat exclusions have remained in place during all culvert demolitions and grout filling of pipes in Section 4.
- Light management measures including minimising wattage and avoidance of light spill implemented in relation to night works, adjacent to Southern Pink Underwing Moth habitat.
- High visibility temporary exclusion fencing installed within known threatened invertebrate habitat.
- Installation of fauna culverts and furniture (glider poles, rope bridges, drop down structures, etc).
- Additional koala monitoring undertaken adjacent to works in Section 6 after an Ecologist conducting glider surveys spotted a Koala and provided location data. The Ecologist and construction team reported no further sightings.
- Following the incident involving the Green-Leaved Rose Walnut (noted in Section 4.6), the Contractor has implemented a Remediation Plan, which involves monitoring, weeding and maintenance of an area where the Green-Leaved Rose Walnut propagations will be translocated (Management Zone 1 at approximate chainage 80660). Weeding and maintenance is being undertaken at the existing Green-leaved Rose Walnut location (Management Zone 2 at chainage 81700). Both monitoring and maintenance is to occur 6 monthly in both Management Zones.

During construction, opportunistic fauna encounters/observations, not specifically related to construction activities, are captured on fauna registers & the project fauna-spotting app. A number of fauna relocations were required during construction works as detailed below.

All unexpected flora and fauna finds were managed in accordance with the Unexpected Threatened Species Finds Procedure, Appendix O of the approved Pacific Complete Construction Flora and Fauna Management Plan (CFFMP), Sections 3 to 11, the relevant species management plans approved for the project and site specific EWMS.

Threatened fauna encounters/observations during the reporting period included (but not be limited to):

- In Section 4 there have been thirteen (13) sightings of the Coastal Emu with the majority of sightings at approximate chainages 69900 – 74300. In the majority of instances, no actions were taken as the Emus did not cross the project boundary. However, on eleven (11) occasions Emus had to be gently redirected offsite by the Environmental Representative. Appropriate actions were completed such as ceasing work activities, notifying the Environmental Site Representative (ESR) and radioing the location of Emus to onsite personnel.
- In Section 5 there were a number of fauna relocations undertaken during the reporting period, including carpet pythons (*Morelia spilota*) and a Green Tree Frog (*Litoria caerulea*).
- In Section 10 and 11, Koala sightings recorded both inside and outside the project area during the reporting period, with known Koala habitat areas in close proximity.



Figure 45 Some fauna relocated from Section 5 – a Carpet Python and a Green Tree Frog



Figure 46 Scrub Turpentine affected by Myrtle Rust in Section 4



Figure 47 Coastal Emus sighted northwest of Byrons Lane



Figure 48 Drop down for fauna at Culvert CH82030



Figure 49 Installation of temporary Koala fencing during traffic switch preparation works in Section 6

Fauna & Flora Relocations

Fauna and flora relocations during the reporting period include, but are not limited to the following:

- De-fishing of a small section of a cane drain in Portion F occurred with a number of mosquito fish (an exotic species) removed and euthanised. No native species were identified during defishing operations.
- On 8 April 19, a Carpet Python (*Morelia spilota*) was inhabiting an excavator engine. The snake was relocated offsite by the ESR.
- On 15 May 19, a Short Beaked Echidna (*Tachyglossus aculeatus*) was found walking through the alignment, it was relocated outside of the project boundary by the ESR.
- On 7 August 19, a Masked Lapwing (*Vanellus miles*) was found nesting on the alignment, the nest was demarcated and eggs allowed to hatch.
- On 17 September 19, a possible Black-fronted Dotterel (*Euseiornis melanops*) was nesting in a disturbed area destined for the final landscaping treatment. The nest was left in situ and BGC allowed the egg to hatch prior to completing landscaping in area.
- On 19 September 19, a Red-belly Black Snake (*Pseudechis porphyriacus*) was passing through site and behind trapped behind silt fence on the bottom of the permanent fencing. The animal self-relocated off site.
- Over four days in March 19 and June 19, an area of native bush was cleared from the Tyndale Intersection at approximately CH68940-69330. The following fauna were identified:
 - One Pink-tongued Skink (*Cyclodomorphus gerrardii*) was captured and relocated to the west outside of the clearing area.
 - One Bearded Dragon (*Pogona barbata*) was captured and relocated to the west outside of the clearing area.
- On the 19th of June 19, fish salvage was conducted at a cane drain near Shark Creek, approximate chainage 74000. Aquatic fauna were captured using dip nets the following were relocated offsite:
 - 196 Green Tree Frogs (*Litoria caerulea*) tadpoles; and
 - 43 Dwarf Tree Frogs (*Litoria fallax*) tadpoles
- Defishing in Section 6 of two waterholes where culvert works were being undertaken has seen the translocation of: 182 Striped Gudgeon (*Gobiomorphus australis*); 45 Firetail Gudgeons (*Hypseleotris galii*); 5 Empire Gudgeons (*Hypseleotris compressa*); 1 Ornate Rainbowfish (*Rhadinocentrus ornatus*); 1 Short Fin Eel (*Anguilla australis*); and 1 Long Fin Eel (*Anguilla reinhardtii*). 70 Mosquito fish (*Gambusia holbrooki*) were euthanased.



Figure 50 A Carpet snake and a Short Beaked Echidna, relocated from Section 4.



Figure 51 Microbat exclusion shroud maintained during construction of culverts

Nest Boxes

In accordance with the approved Nest Box Strategies for the project, nest boxes have been installed as per the Nest Box Management Plans.

3.3 Heritage

The approved Pacific Complete Construction Heritage Management Plan (CHMP) Sections 3 to 11, Appendix B5 of the CEMP and subsequent CEMP's prepared by contractors are the main sources of information and guidance for the management and protection and heritage constraints within and adjacent to the footprint of the project.

Works within the reporting period have occurred adjacent to several Aboriginal and non-Aboriginal items. The Roads and Maritime salvage package has continued throughout the reporting period to ensure heritage sites within the project boundary have been cleared prior to construction in that location. Clearance letters are prepared by the salvage contractor post salvage works. Where required additional mitigation measures (ie establishment of exclusion fencing) are including in these clearance letters and implemented out on site.

In accordance with project commitments, 10-20mm steel plates are installed over non-Aboriginal heritage train tracks at Harwood off-ramp for the section within the Harwood project boundary. These plates protect the tracks from any impacts from being traversed by construction vehicles, plant or equipment.

Liaison with representatives of the Yaegl Corporation was conducted to provide Aboriginal Cultural Heritage monitoring at Maclean Levee. The Yaegl Cultural Heritage Supervisor conducted limited monitoring in October 2018, as the works consisted of stripping and filling on a human-made levee bank, rather than excavating into natural ground.

Sections of the project are located within areas that are determined under the Native Title Act. The Federal Court of Australia recognised the native title rights and interests of the Yaegl People to land and waters in their native Title Determinations Applications (Federal Court Proceedings NSD 6052/1998 and NSD 168/2011) on June 25 2015. Sites officers from the Yaegl Traditional Owners group have previously been engaged to undertake cultural heritage monitoring.

No unexpected potential cultural heritage finds have been identified during this reporting period.

When potential heritage items are identified, works within the areas cease and the Roads and Maritime Standard Management Procedure – Unexpected Archaeological Finds (Appendix B of the approved Pacific Complete Construction Heritage Management Plan), is followed until the appropriate clearance is provided for works to continue.

3.4 Noise and vibration

Noise intensive activities undertaken during the reporting period include:

- Truck movements
- Heavy vehicles and plant used to carry out broad clearing and fill and compact
- Rock breaking
- Blasting occurred in April, June and August 2019 (4 occurrences) for production blasts at Cut 30 in Portion A and Lang Hill in Portion C. No exceedances in overpressure or ground vibration were recorded.
- Rock breaking at Tyndale south as part of drainage works
- Cut rock hammering and crushing works (associated with many cuts)
- Clearing and grubbing (including mulching)
- General earthworks – cut and fill
- Driven and bored piling
- Concrete pours (long pours out of hours)
- Girder lifting and bridge works placing precast elements in place

- Foam bitumen paving works

Key out of hour's works activities undertaken during the reporting period include:

- Delivery and installation of precast concrete girders and parapets for bridge construction, which are required due to the limitations of Road Occupancy Licences (ROL).
- Concrete pours – to manage technical requirements including temperature.
- Concrete batch plant operation and deliveries – to support concrete pour technical requirements.
- Asphalt batching and delivery – to support traffic switches.
- Warm-up, batching and delivery of foam bitumen – to support project delivery.
- Traffic control and traffic switches – to manage changing traffic conditions during construction.
- Concrete saw cutting and finishing works, including curing – to manage technical requirements including temperature and hydration.
- Sealing, line marking and installation of barriers – to support traffic switches.
- Bridge works – enabling finishing of bridge components and integration with surrounding pavement.
- Refuelling and maintenance of plant and equipment – to support technical and safety requirements.

Measures undertaken during the reporting period to manage and mitigate noise and vibration include:

- Considering potential noise impacts during the preparation of construction procedures, during the planning of Out of Hours Works and at pre-start meetings
- Review of construction activities to ensure planning of noisy works occurs during standard hours wherever possible.
- All project personnel, including relevant sub-contractors on noise and vibration requirements from this plan through inductions, toolbox talks and targeted awareness training.
- Undertaken noise monitoring to refine construction methods or techniques to minimise noise.
- Prepare EWMS relative to site works.
- Use of low noise generators and strategic placement of noise sources away from direction of sensitive receivers and behind barriers such as stockpiles. In the example in Figure 41 below, the use of plywood hoarding around the generator ensured the residents could not hear the generator. A resident contacted the project team to thank them for this initiative.
- Ongoing proactive engagement with sensitive receivers within close proximity before the commencement of works and throughout the duration of works via letterbox drop, telephone and doorknock.
- Positioning work compounds, parking areas, equipment and material stockpile sites and entry/exit points away from noise-sensitive receivers to the greatest extent possible
- Locating haulage routes as far away as possible from residential receivers where practicable.
- To mitigate truck and heavy vehicle noise annoyance, controls implemented include speed restrictions and hours of operation.
- Plant and equipment used across the project maintained in sound working order, meeting manufacturer specifications.
- Noise generating works were at times managed with reduced start and finishing times and were carried out for periods of three hours, with one-hour breaks.
- Proactive community consultation, notifications and monitoring, including six monthly bridge and piling community notifications and respite periods for high impact noise activities.
- Vibration monitoring has been carried out at nearby residents during blasting operations.
- 200m exclusion zones from blasting area.
- Use of two-way radios instead of vehicle horns in strategic areas.
- Non-tonal reverse beepers in vehicles to reduce noise and the use of spotters while reversing plant and trucks.

Overall, it is considered that the noise and vibration management, in particular the Out of Hours Works review, consultation and approval process is working effectively with hundreds of approvals being issued within the reporting period, and minimal community concerns or complaints (seven) being received on these activities.

3.5 Waste and chemical storage

Works within the reporting period have involved the generation of waste and the storage of chemicals and fuel. Waste management techniques utilised during the reporting period include:

- Utilising excess timber mulch for erosion and sediment controls
- Segregation and recycling of demolition waste by demolition sub-contractor.
- Use of segregated construction and office waste skips within the main compound
- Specific bins for cigarette butt on site within designated smoking areas.
- Ongoing re-use of onsite captured water for construction activities.
- Waste generated by the project was classified and disposed of in accordance with EPA Waste Classification Guidelines to suitably licenced facilities.
- Utilising separate skips for contaminated soil to collect any spill affected materials for off-site disposal at appropriately licensed facility.
- Placement of spill kits at appropriate locations and spill response training of staff.
- Undertaking asbestos contamination audits prior to the demolition of residential buildings.
- Transporting surplus mulch material to Cape Byron Cogeneration Plant for beneficial electricity generation.
- Re-use of root balls from clearing & grubbing for creek bank stabilisation program undertaken by EPA & DPI Fisheries and Local Land Services.
- Reuse of timber on site for fauna furniture in connectivity structures, such as culverts.
- Concrete crushed on site with machinery reused to provide road base to reduce dust suppression and mud tracking onto roads.
- Waste concrete and scrap steel / other metal sent offsite for recycling.
- Appropriate storage and handling of hazardous products (e.g. fuels and chemicals) within appropriately sized bunded areas, located away from waterways, drainage lines; including registers, and safety data sheets for all stored chemicals.
- Weekly inspections of chemical and waste storage areas.
- Onsite treatment of spent Polymer product where it is re-used onsite as dust suppression. This is an alternative to trucking spent Polymer to licensed waste facility in Brisbane.
- Reuse of alkaline waters from containment areas within the batch plant ancillary sites (ie wedge pits, wash out pits, etc).
- Surplus foamed bitumen materials have been beneficially re-used onsite in in stabilisation works.
- To date more than 50 tonnes of waste material from foam bitumen batching activities has been beneficially reused at the RPQ Asphalt Batch Plant at Swanbank, after consultation with EPA.
- Surplus asphalt waste is removed off-site for beneficial reuse under the **Reclaimed Asphalt Pavement Order 2014**, for example sent to Tomago COLAS facility for re-use in the manufacture of dense grade asphalt mixes.
- Waste concrete recycling program that allows concrete to be mixed into general fill in accordance with the R44 Specification and project environmental requirements.



Figure 52 Bridge B56 & B55 concrete washout bay / reuse of concrete with general fill.



Figure 53 Bunding of a polymer tank at Bridge 68 Stage 2



Figure 54 Mulch Reuse on Site in Section 7

Measures undertaken to appropriately store, manage and monitor chemicals during the reporting period include:

- Placement of spill kits at appropriate locations and spill response training of staff.
- Monitoring of spill kits via the weekly environmental inspections, which are restocked as required.
- Appropriate storage and handling of hazardous products (e.g. fuels and chemicals) in bunded areas
- Utilising appropriately sized bunding around chemical storage containers.
- EWMS Maintenance, Refuelling and Chemical Storage, including Safety Data Sheets.
- Use of Chemalert an online system used to assess and manage onsite chemicals.
- Self-bunding bulk fuel tanks and installing in-ground grates for catching potential re-fuelling drips
- Locating all fuel storage away from waterways and drainage lines
- Weekly inspections of chemical and waste storage areas through the weekly Environmental Inspection process
- Utilising registers and Material Safety Data Sheets for all chemicals and fuel kept onsite.
- Installation of catch-grates at refuelling points to avoid potential spillage.
- Pumps are contained inside small plastic sand pits when pumping onsite
- Bunding of polymer tanks at bridge sites

3.6 Acid Sulfate and ASTA

Potential acid sulfate soils (PASS) are prominent within the footprint of the project, due to the number of low lying wetland areas located along the alignment. Areas of PASS contain iron sulphides and when exposed to oxygen, chemical reactions between the iron sulphides and oxygen molecules can result in the formation of acid sulfate soils (ASS). These soils are highly acidic and can also result in the release of other substances occurring in soil such as heavy metals. In locations where PASS soils are likely to occur, and disturbance is unavoidable, testing for ASS is carried out prior to excavation. If the results are positive, the excavated material is taken and appropriately treated in a designated Acid Sulfate Soil Treatment Area (ASTA).

During the reporting period there were up to twenty (20) in use across the project. These were established and operated in accordance with approved Acid Sulfate Soil Management Plans and EPL requirements.

Measures undertaken to appropriately manage Acid Sulfate Soils (ASS) and Acid Sulfate Treatment Areas (ASTA) include:

- Minimisation of the disturbance to Acid Sulphate Soils by adopting driven steel piles and not bored piles.
- Management and diversion of surface runoff around potential acid sulfate material
- Modifying the installation methodology for transverse drainage to minimise soil disturbance
- Validating and subsequently remediating excavated acid sulfate material
- Transportation of acid sulfate material to appropriately licenced receivable locations.
- Monitoring the pH of water from wick drains and preloading areas and appropriately treating (where required) prior to discharge / re-use
- Training and awareness for all personnel during the site induction including toolbox talks on the ASS EWMS and ASS Unexpected Finds Procedure for all personnel involved in ASS excavation and management
- Areas that are prone to Acid Sulphate Soils, temporary sediment basins have been constructed above ground. Excavated swales along the alignment have been removed from the design where possible and instead above ground swales will be constructed.
- In-situ treatment of topsoils and subsoils with organic acidity was employed in Harwood and Chatsworth area.
- Skip bins established adjacent to pile location to capture immediately all excavated materials with slew radius protected using geo synthetic textile covering.
- Mixed approach for ASS/PASS treatment that for some sites, lime is added immediately to the skips as materials are being excavated and or lime is added at the nominated ASTA pads (to avoid need for lime storage at sensitive bridge sites)
- Establishment of Acid Sulphate Soil Treatment Areas and validation sampling to ensure treatment was successful prior to stockpiling and/or removal from treatment location.
- Establishment of liming rates via field and SPOCAS testing.
- Acid sulfate material (ASM) from Bridge B02 is transported to the Harwood ASSTA Pad and treated.

- A field trial of Electric Arc Ladle Furnace Slag (EALFS) used as a substitute for agricultural lime to neutralise acid sulphate soils (ASS) commenced in May 2018 on the southern abutment of the Harwood Bridge. The benefits of EALFS (a by-product of the steel industry) is that EALFS are believed to improve the mechanical properties of ASS as well as neutralising pH. This will increase the chances of re-using blended site won ASS material as general fill/SMZ and therefore avoid sending unsuitable material offsite in future projects. The EALFS blended ASS material was placed at the southern embankment near Chainage 85810. Approximately 150m³ of material was placed in two layers. The Contractor confirmed that the blended EALFS material has been neutralised and buried under additional surcharge placed for geotechnical reasons.



Figure 55 Harwood North ASTA sump



Figure 56 EALFS Trial Fill – now buried under surcharge at Harwood



Figure 57 ASTA sump and holding bay for bridge contractor



Figure 58 Treatment of acid sulfate material at Harwood ASSTA

Current areas of work encountering and treating PASS include Section 3, 4, 5, 6, 7, 8, 9 and 10.

3.7 Sustainability

The project approach to sustainability focuses on maximising environmental, economic and socio-economic performance in the interests of enhancing public value for the Pacific Highway stakeholders and the environment.

Since project commencement, several sustainability initiatives have been developed, including but not limited to:

- Promotion and adoption of the Reduce, Reuse, Recycle philosophy across the project
- Waste concrete of appropriate quality is poured into formwork for a 'kelly' (or Elain/Foley) block. The kelly block has been designed to include lifting points to enable it to be reused on site as separation between plant and people and plant and plant (refer to Figure 44).
- Recycling bins and signage have been placed in the site compounds and the crib sheds.
- Sediment basin construction and commissioning includes additional construction water capacity, at specific sites, ensuring dewatering into basin and adequate capacity for water to be reused for dust suppression on site.
- Recycling of coffee pods with proceeds going to charity.
- Minimising printing and use of mobile technologies and recycling of office products (paper, printer and toner cartridges); reduction of hard copy documents by use of digital technology such as tablets and associated software (ie, Dropbox, FieldView).
- Reuse of materials onsite, such as star pickets, temporary fence materials, timber pegs, spoil, permanent sediment fence, concrete (crushed and re-used on site) and clean rock.
- Use of local businesses and companies where practicable and available.
- All quarry material sourced and imported from the closest possible source meeting the required specification.
- In-situ treatment of topsoils and subsoils with organic acidity was employed in Harwood and Chatsworth Island areas during the previous reporting periods. This process prevented approximately 1,790 unnecessary truck movements to the ASTA at Mororo Cut West, representing both production efficiency and GHG emissions savings, estimated at over 56,000 kg CO₂.
- Reducing the hazardous material content in purchases, including toxicity.
- Considering the end-of-life options, including the reuse, repair, recycle and disposal options of products.
- Purchasing materials that have a recycled content, such as products made from recycled plastics (spill trays).
- Purchasing certified sustainable timber where possible.
- Separation of waste steel from other project waste streams and recycled.
- Curing capture and recirculation system for deck curing water.
- Beneficial re-use of rock platform materials to a locally approved developer.
- Where possible, site mulch is used for sediment controls reducing the need to use geofabric and sediment fence material, once used on site it is destined for landfill.
- Black builder plastic and geofabric are reused multiple times for purposes predominantly in Erosion and Sediment Controls and covering of earthen materials for quality control. Reusing these materials multiple times has saved great volumes going to landfill.
- Reuse of hessian from bridge deck curing and plywood and timber from formwork.
- Reuse of black plastic for bridge deck curing.
- Best practice energy conservation and greenhouse gas reduction by adopting energy efficient work practices, including:
 - o Developing and implementing procedures to minimise energy use
 - o Maximise use of battery operated small tools to reduce the use of generators and air powered tools
 - o Switch off computers, computer screens, heating, air conditioning and other equipment at the end of each day or when not in use.
 - o Cleared timber is used for terrestrial fauna furniture and as aquatic habitat structures
 - o Chipped timber not used for erosion and sediment control to be used for co-generation at sugar mill.
- Pacific Complete has continued the 'KeepCup' initiative rolled out during a previous reporting period.

- Promotion of using water coolers and reusable bottles rather than single use plastic bottles for agency site visits.
- In Section 6, a new recycling initiative has commenced which encourages workers and staff to recycle plastic bottles and aluminium cans in a receptacle. This is taken to a recycling facility where funds are collected and donated to a local charity.
- Investigating the beneficial re-use of RAP materials off-site under the **Reclaimed Asphalt Pavement Order 2014**.
- Approximately 17,000 tonnes of hardstand material and rock from the Richmond River Bridge site has been reused in a local development under the **Excavated Natural Material Order / Exemption 2014**.
- Contractors incorporate sustainability principles into project contracts and tender evaluation criteria.
- A beneficial reuse proposal for approximately 17,000m³ of profiled material (asphalt and foamed bitumen) has been developed by a Section 5 contractor, for donation to Clarence Valley Council and transportation to unsealed local roads surrounding the project. This would provide a significant positive benefit to the local community and also meet the goal of 100% recycling of earthworks resources.



Figure 59 Hydro demolition waste water being stored and re-used for dust suppression



Figure 60 A water cart in Section 5 reusing water for dust suppression

These initiatives have resulted in more than 90% of the waste generated at some sites diverted from landfill for beneficial reuse.

3.8 Environmental Initiatives

During the reporting period, the following positive environmental initiatives were implemented across the project:

- Continuation of the emu awareness campaign (initially rolled out in June 2017) to support implementing the project's coastal emu protection measures.
- Continuation of pre-dawn surveys and the use of a Koala detection dog and handler during pre and post clearing surveys in known Koala areas such as Section 10. Pre-clearing surveys prior to commencement of clearing also occurred.
- A positive culture on the project has assisted injured animals (caused by the local road network) and delivered these animals to carers from the WIRES organisation.
- Continuing the positive fauna culture on the project, various award systems have been established, such as staff that spot Koalas and other threatened species; and staff with the best work crew in regard to environmental controls and maintenance, are rewarded for their diligence and efforts.
- Two-stage clearing methodology continues to be used successfully.
- Continued use of the Threatened species mobile phone app for project staff to record and map sightings of threatened animal species in real time.

- There are currently significant challenges facing recycling and waste management in Australia. As it stands locally, there is greater than 12,000 tonnes of recycled glass stockpiled in the Lismore recycling facility alone, this is growing at a rate of 500 tonnes per week.

As part of the Sections 10 and 11 works, the team identified an opportunity to use locally sourced recycled glass in the projects paving mix. This use of recycled glass was the first use of glass for this purpose on a major Pacific Highway project. Use of this material facilitated the beneficial reuse of this product locally and may also open the door to future use of glass in pavement to make a contribution to resolving the significant challenges currently facing recycling in Australia.

- In Section 5 the site crew innovated a simple instant bunding system consisting of polypipe tied into a rectangle formation and overlaid with impervious plastic sheeting, to capture any spilled oil/diesel which may result from refuelling. This was both quick and efficient, while also reducing ground disturbance and risks associated with machinery use adjacent the waterway. The temporary system is quick, light and easy to move, install and dismantle, and makes spill clean-up easy as the frame can be tipped and drained from the corner into a suitable container for lawful disposal (or pads can be used to soak up the spill).
- In July 2019, the Woolgoolga to Ballina Pacific Highway Upgrade won the 2019 AILA (Australian Institute of Landscape Architects) NSW 2019 Landscape Architecture Award for Infrastructure. The unique landscape strategy included creation of linkages for wildlife between habitats. Fauna underpasses were located and designed in collaboration with ecologists to maintain habitat connectivity. Aerial structures provide connectivity across the motorway for arboreal wildlife where required. In situations where streams required realignment, the re-vegetation was designed to minimise any long-term impacts on fish habitat. Cost effective re-establishment of vegetation communities is being achieved by hydro-seeding over an area of approximately 850 hectares. A total of 16 seed mixes were carefully designed to account for variation in growing conditions and adjoining remnant vegetation to achieve an intended landscape outcome.

Part of the Landscaping Strategy is to increase Koala habitat and connect this to existing Koala habitat. To date 90,000 koala food trees have been planted, covering 110 hectares of previously cleared land. Another 10,000 trees are to be planted on the remaining 20 hectares. This will finalise the Koala food tree habitat and improve Koala habitat connectivity.



Figure 61 Innovative bunding system developed to capture any spills resulting from refuelling

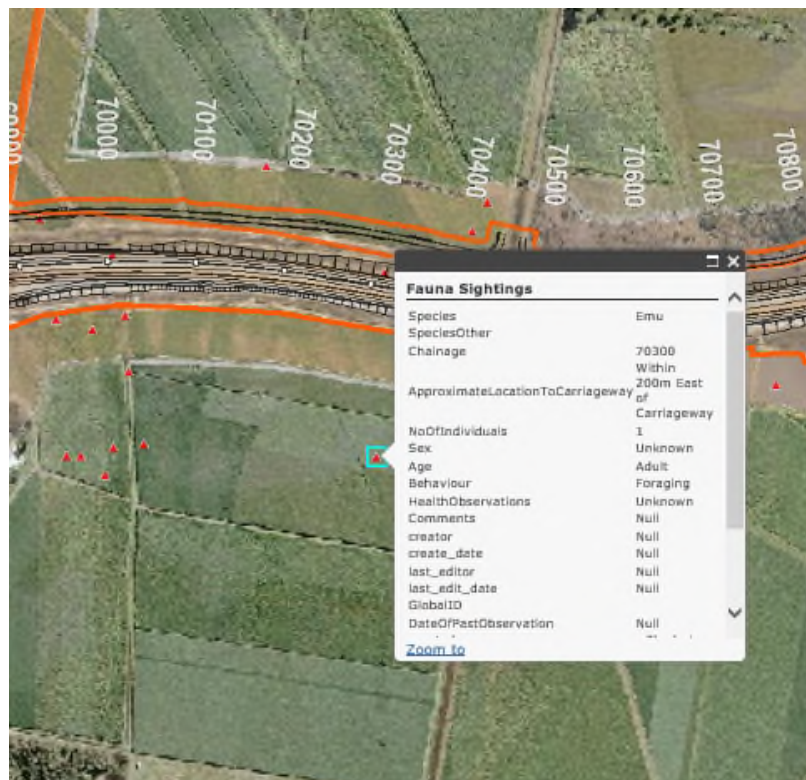


Figure 62 An extract from PC Map showing an example of the mapped threatened species fauna sightings, using the mobile app

4 Program requirements

This Compliance Tracking Program has been prepared as a requirement of MCoA D27. The requirements, as stipulated by this MCoA are detailed in Table 3.

Table 3 MCoA requirements for the Compliance Tracking Program

MCoA No.	Requirement	Reference
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 4.1
(b)	provisions for periodic review of the compliance status of the SSI against the requirements of this approval;	Section 4.2
(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 4.3
(d)	a program for independent environmental auditing in accordance with ISO 19011:2003 - Guidelines for Quality and/or Environmental Management Systems Auditing;	Section 4.4
(e)	mechanisms for recording environmental incidents during construction and actions taken in response to those incidents;	Section 4.5
(f)	provisions for reporting environmental incidents to the Secretary and relevant public authorities during construction;	Section 4.6
(g)	procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management; and	Section 4.7
(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 4.8

4.1 Secretary notification

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

The CEMP and associated subplans for Sections 3 to 11 were conditionally approved by the Department of Planning and Environment on 23 October 2015, pending the submission of a Construction Noise and Vibration Management Plan D26(a) and heritage education and training package, Appendix A of the Construction Heritage Management Plan. The Construction Noise and Vibration Management Plan (sections 3 to 11) was approved by the Department of Planning and Environment on 3 December 2015. The heritage education and training package was submitted to the Department of Planning and Environment on 4 March 2016.

Stage 2 construction commenced on 8 April 2016. The Secretary was notified prior to the commencement of construction on 31 March 2016.

4.2 Period compliance review

MCoA D27 (b) requirement:

“provisions for periodic review of the compliance status of the SSI against the requirements of this approval”

Roads and Maritime will review the status of compliance and submit periodic compliance reports to the Secretary as follows:

- Prior to the commencement of construction
- Six months after the commencement of construction and then at six monthly intervals thereafter
- Prior to the commencement of operation.

This report captures the period 1 April to 30 September 2019. The compliance tracking tables (attached in 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.

4.3 Period compliance reporting

MCoA 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”

Roads and Maritime submitted a Pre-construction Compliance Report to the Department of Planning and Environment on 4 March 2016. Appendix A of this document presents the compliance status at the end of the period 1 April to 30 September 2019 for the works associated with Sections 3 to 11.

At intervals prescribed in Section 4.2, 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 the following:

- Scope of the activities undertaken during the reporting period.
- Performance of environmental controls that have been implemented.
- Compliance - as recorded in the compliance tracking tables.
- Non-compliances during the reporting period.
- Detail of all environmental 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). The audits will assess compliance against the conditions of approval (both NSW and EPBC Act Approvals) and relevant environmental management measures as specified in the Construction Environment Plan (CEMP) for Sections 3 to 11.

4.4 Independent environmental auditing

MCoA D27 (d) requirement:

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

Environmental Audits

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

Audits carried out during the reporting period which include an environmental component, have been summarised with the relevant environmental outcomes, in the table below.

Table 4 Summary of Audits

DATE	AUDIT TYPE	LOCATION	OUTCOMES
1 April 2019	R178 Revegetation Surveillance Audit	Contractor Section 7, 8 & 9	Surveillance only, 7 issues identified.
10 April 2019	Pacific Complete Internal Environmental Audit	Contractor Section 6	0 Notable Practices 30 Conformances 4 Observations of Concern 0 Corrective Action Requests
15 – 16 May 2019	Pacific Complete Internal Environmental Audit	Contractor Section 7, 8 & 9	0 Notable Practices 37 Conformances 2 Observations of Concern 0 Corrective Action Requests
19 – 24 May 2019	Pacific Complete Internal Environmental Audit	Contractor Section 3	0 Notable Practices 37 Conformances 5 Observations of Concern

DATE	AUDIT TYPE	LOCATION	OUTCOMES
			0 Corrective Action Requests
28 – 29 May 2019	Pacific Complete Internal Environmental Audit	Contractor Section 4	0 Notable Practices 56 Conformances 1 Observations of Concern 0 Corrective Action Requests
12 June 2019	Pacific Complete Internal Environmental Audit	Contractor Section 5	1 Notable Practices 23 Conformances 1 Observations of Concern 0 Corrective Action Requests
25 June 2019	Pacific Complete Internal Environmental Audit	Contractor Section 5	1 Notable Practices 44 Conformances 3 Observations of Concern 0 Corrective Action Requests
27 June 2019	Pacific Complete Internal Environmental Audit	Contractor Section 5	0 Notable Practices 15 Conformances 2 Observations of Concern 2 Corrective Action Requests
3 July 2019	Pacific Complete Internal Environmental Audit	Contractor Section 6	0 Notable Practices 28 Conformances 4 Observations of Concern 2 Corrective Action Requests
15 July 2019	Pacific Complete Internal Environmental Audit	Contractor Section 10 & 11	1 Notable Practices 31 Conformances 0 Observations of Concern 0 Corrective Action Requests
1 August 2019	Pacific Complete Internal Environmental Audit	Contractor Section 5	1 Notable Practices 9 Conformances 4 Observations of Concern 2 Corrective Action Requests
5 August 2019	Pacific Complete Internal Environmental Audit	Contractor Sections 3 to 11	1 Notable Practices 28 Conformances 1 Observations of Concern 0 Corrective Action Requests

DATE	AUDIT TYPE	LOCATION	OUTCOMES
21 August 2019	Pacific Complete Internal Environmental Audit	Contractor Section 5	1 Notable Practices 10 Conformances 0 Observations of Concern 1 Corrective Action Requests
27 – 28 August 2019	Pacific Complete Internal Environmental Audit	Contractor Sections 3 & 4	1 Notable Practices 49 Conformances 3 Observations of Concern 1 Corrective Action Requests
18 – 20 September 2019	Pacific Complete Internal Environmental Audit	Contractor Sections 7, 8 9	0 Notable Practices Not counted Conformances 3 Observations of Concern 1 Corrective Action Requests
24 – 25 September 2019	Pacific Complete Internal Environmental Audit	Contractor Section 4	3 Notable Practices 21 Conformances 15 Observations of Concern 3 Corrective Action Requests

Environmental Review Group Meetings/Inspections

The Environmental Review Group (ERG) consists of representatives from Environment Protection Authority (POEO), Environment Protection Authority (biodiversity), DPI (Fisheries), Department of Planning, Industry and Environment (DPIE) and the project Environmental Representative (ER).

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

- 17 – 18 April 2019
- 21 – 23 May 2019
- 18 – 20 June 2019
- 23 – 25 July 2019
- 20 – 22 August 2019
- 17 – 19 September 2019

Issues raised and discussed at these meeting includes, but is not limited to:

- Update of construction activities across the project
- Site inspections with project Contractors about upcoming high-risk environmental activities and management of these activities.
- Discussions on environmental management measures including erosion and sediment controls, dust and air quality, biodiversity issues across the project.
- Site inspection of individual locations and Contractors across the W2B project length.

Of the 47 'traffic light' inspections performed by the ERG during the reporting period, 85.1% of these inspections received a 'Green' light (40), 10.6 % received an 'Amber light' (5) and 4.3% receiving a 'Red' light (2), refer to Figure 63 below.

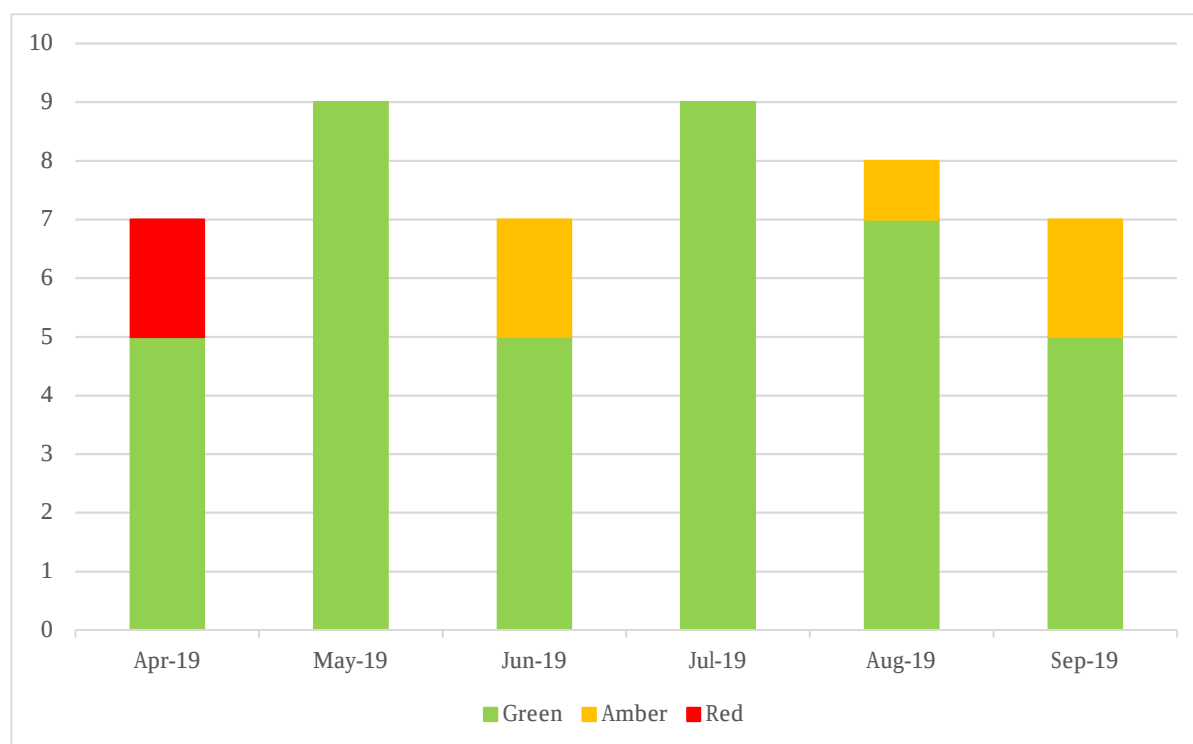


Figure 63 ERG 'Traffic Light' Inspection Status, April to September 2019.

Weekly/ Fortnightly Environment Inspections

Contractors, Soil Conservationists, Pacific Complete, the Environmental Representative and Roads and Maritime all carry out regular environmental inspections throughout the project. The individual contractors that are managed by their environment site representative, record observations requiring actions.

4.5 Incident reporting and response

MCoA D27 (e) requirement:

“mechanisms for recording environmental incidents during construction and actions taken in response to those incidents”

In accordance with the approved Construction Environmental Management Plan, Roads and Maritime's ***Environmental Incident Classification and Reporting Procedure*** is being implemented for all environmental incidents for the Project. The full procedure is provided in Appendix A5 of CEMP.

Environmental incidents are generally notified verbally immediately and in writing within 24 hours of any incident occurring to the Roads and Maritime Representative and the Environmental Representative. Incident reports will be provided to RMS Representative and the ER 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 closed out as quickly as possible, taking all required action to resolve each environmental incident.

In accordance with MCoA A12, Pacific Complete will 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.

Where an incident also requires reporting to the EPA and/or OEH, the incident report prepared for the purposes of notifying the EPA and/or OEH would meet this requirement.

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.

In accordance with Roads and Maritime's ***Environmental Incident Classification and Reporting Procedure***, environmental incidents for the reporting period are summarised below in Figure 64 and Appendix D.

Each incident is broken down into the following categories:

- Minor spill – spills <10 Litres that do not result in off-site environmental harm
- Moderate spill – spills >10 Litres that do not result in off-site environmental harm
- Potential water pollution – potential pollution of waters, or discharge of waters from site not in accordance with an approval requirement eg licence.
- Failure of process – a procedural, administrative or technical breach of environmental requirements including Environmental Work Method Statements, Erosion Sediment Control Plans etc that do not result in off-site environmental harm.
- Unauthorised Works – Failure to comply with the requirements of an approval, CEMP or EWMS. Works undertaken without required approval.
- Other – aggregate material lost from truck due to rear gate failure of truck.

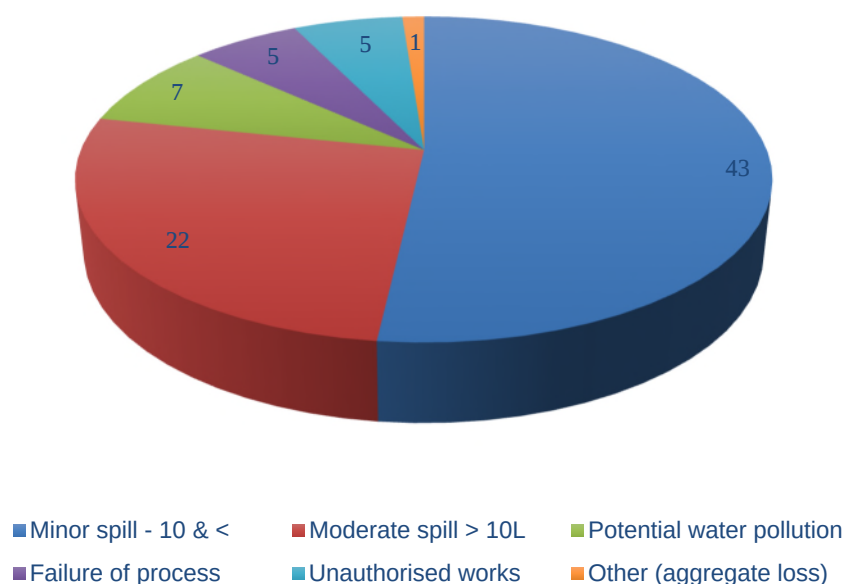


Figure 64 Environmental Incidents by Type recorded during the reporting period

4.6 Incident reporting to Secretary

MCoA 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 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 4.3.

On 4 March 2019, a clearing incident at chainage 80700 in Section 4, involving an impacted Green Leaved Rose Walnut tree (*Endiandra muelleri* spp. *Bracteata*), was reported to the Secretary (ie, within the previous reporting period – Item 71 – Unapproved works, not in accordance with Vegetation Clearing EWMS). Following this incident and investigation, a remediation plan has been developed in consultation with Agencies. The Remediation Plan involves monitoring, weeding and maintenance of an area where Green-Leaved Rose Walnut propagations will be translocated.

There were nil reportable environmental incidents during this reporting period. All Environmental incidents are detailed within Appendix D.

4.7 Addressing non-compliance

MCoA 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 (Sections 3 to 11) 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 details of the issue, action required, timing and responsibilities. The record will be updated with the date of close out and any necessary notes. The contractor's 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 (ER) and Environmental Review Group (ERG) inspections. The ER will be actively involved in the review and resolution of non-compliances.

There were six (6) non-compliances with the conditions of approval identified in this reporting period, as summarised below and included in Appendix D:

- Item 3 – works not in accordance with Erosion & Sediment Control Plan
- Item 22 – unauthorised access beyond clearing limit, no environmental harm
- Item 43 – works outside approved boundary
- Item 62 – works outside approved hours
- Item 79 – works outside approved hours
- Item 81 – works outside approved hours

Since September 2018, a monthly environmental complaint summary is submitted to the Department of Planning, Industry and Environment under MCoA A4 request.

4.8 Employee inductions

MCoA 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 including the Koala Zero Harm program
- 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 such as exclusion areas for Cultural Heritage
- Site specific additional mitigation measures relating to the Coastal Emu and Long-nosed Potoroo

Regular toolbox talks are held where environmental issues are discussed to increase awareness, outline key constraints in relation to the construction site and remind staff of the environmental commitments outlined in the CEMP, EWMS, species management plans and other environmental documentation.

Pacific Complete run environmental inductions for all construction staff and contractors. The Pacific Complete induction covers sections 3 to 11 of the project and includes the above listed environmental components of the project. Contractors also run their own environmental inductions for all staff and sub-contractors. These inductions focus more specifically on the environmental constraints located within and adjacent to their worksites.

During this reporting period, Pacific Complete inducted 898 people to the project.

Since January 2016, Pacific Complete have inducted 14,403 people to the project. A record of all environment inductions is maintained and kept on-site.

5 Environmental monitoring

A range of environmental monitoring has occurred during the reporting period including surface water, noise, dust and flora and fauna monitoring in accordance with the project approvals, approved Pacific Complete CEMP and other project documentation such as approved threatened species or environmental management plans. Monitoring results are provided in Appendix B. Further details on monitoring are outlined below.

5.1 Water Quality

The Project has engaged a contractor to undertake project wide water quality monitoring in accordance with the approved W2B Water Quality Monitoring Plan, this includes both surface and groundwater monitoring. This monitoring includes taking water quality samples throughout each month during construction and analysis of data. In accordance with the approved plan, the results of the Project Water Quality Monitoring Program (Sec 3-11) for the reporting period will be provided in the Annual Monitoring Reports for the Construction and Operational phases.

In addition to the monitoring undertaken for the approved WQMP, additional monitoring is undertaken as outlined in the approved Threatened Fish Management Plan, in areas of construction adjacent to the identified threatened fish habitat. These details are captured in the annual threatened fish monitoring reports.

Sediment basin monitoring

There are a number of licenced sediment basins associated with the Environmental Protection Licence (EPL) for the project. Details of these basin discharges are captured in the monthly EPL reports provided to the EPA and displayed on the Principals website.

5.2 Noise Monitoring

Noise monitoring was carried out throughout the reporting period. There were some exceedances of the noise management levels recorded during the reporting period. Background noise has contributed to these exceedances, ie, local road, traffic highway and other construction noise such as girder delivery, steel grinding/cutting, bridge construction works and traffic were found to be the dominant noise source at monitoring locations.

Examples of Out of hour's works (OOHW) noise monitoring undertaken during the reporting period include:

- Bridge construction: earthwork preparations; delivery and installation of pre-cast bridge components – girders, headstocks, parapets, including night works; night time girder lifts, placing of reinforcement cages for piles; concrete deck and stitch pours; and concrete curing works.
- Batch plant operations.
- Delivery and refuelling of machinery and plant.
- Sediment basin treatment and dewatering.
- Emergency maintenance of environmental controls, to prevent environmental harm.

Refer to Appendix B1 for the noise monitoring results during the reporting period.

5.2.1 Blasting

During the reporting period, four (4) blasts were carried out across the project.

No exceedances of the EPL overpressure or vibration limits occurred during blasting activities within the reporting period across the project.

Refer to Appendix B2 for the results of blast monitoring and Appendix C for Community Complaints.

5.3 Air quality

Dust monitoring was undertaken on a monthly basis at a number of locations along the alignment during the reporting period in accordance with the approved Pacific Complete Construction Air Quality Management Plan (CAQMP), Appendix B6 of the CEMP.

As construction works progressed throughout the reporting period, more dust monitoring locations have been established. During the report period there were up to one hundred and twelve (112) active dust deposition gauges installed across the project length (122km).

There were thirty-eight (38) exceedances above the air quality monitoring goals outlined in the CEMP (maximum total deposited dust level 4 g/m²/month) recorded during the six month reporting period. Noted that the Australian Standard goals are measured over a twelve-month period, not monthly. The exceedances of the air quality goals recorded are attributed to both the extensive construction works on the project and adjacent landscaping activities, organic matter within dust gauges (insects, fungal growth, bird droppings) and local bushfires. It should be noted that the project area is experiencing a severe drought, as is the whole of NSW.

Management measures implemented to minimise dust emissions from construction activities include:

- Regular use of water carts to dampen exposed areas of land
- Crushing set up at Tyndale Cut now has sprayers built into the crusher plant, or has had a dedicated water cart present where the crushing unit has not located near a suitable water source. This has resulted in no recorded exceedances during this reporting period.
- Signage onsite to remind drivers of speed limits to minimise dust generation.
- Rumble grids and rock shakedown at site exist gates to minimise the tracking of dirt and mud onto public roads
- Daily observations and weekly inspections by construction staff to identify locations at risk of dust emissions and to determine whether dust control measures are performing effectively
- Stabilisation of exposed area using geofabric and seeding.

Full air quality monitoring results are detailed in Appendix B3.



Figure 65 Watercart conducting dust suppression at Bridge B65



Figure 66 Rumble grids at Yamba Roundabout **Figure 67 Batter chute with soilbinder Bridge B01**

5.4 Flora and Fauna

Biodiversity monitoring for threatened species, populations and communities identified within the approved Threatened Species Management Plans during the construction and operation phases of the project is ongoing. Refer to Figure 52 below for the calendar of monitoring occurring during the reporting period.



Figure 68 Summary of the 2019 Threatened Species Monitoring Program

In accordance with MCoA D6, D7 and D8, annual flora and fauna monitoring reports are submitted to EPA, DPIE and DoEE in accordance with these approval requirements.

5.4.1 Additional fauna monitoring

The following fauna monitoring occurred during this reporting period:

- Flying-Fox Monitoring**

Flying-fox monitoring has been undertaken at Serpentine Channel in May and August 2019, with no individuals detected. This area is thought to be used irregularly as a temporary stopover for individuals or small numbers of predominantly male Black Flying-foxes. Only two Grey-headed Flying-foxes have ever been recorded at the site since monitoring commenced in 2017.

Results of the August 2019 monitoring is as follows:

- o No flying-foxes were recorded at the site during the August 2019 monitoring event. The data collected to date indicates that the site is used irregularly as a temporary stopover site for individuals or small numbers of predominantly male Black flying-foxes.
- o No significant Grey-headed Flying-fox occurrences or breeding activity has been recorded. Only two individual Grey-headed Flying-foxes have ever been recorded at the site, indicating that the site to date does not comprise a significant roost for this species.
- o Breeding female flying-foxes have been recorded only once at the site.
- o No correlation between the number of flying-foxes at Maclean and the presence/ number of flying-foxes at the site has been recorded, indicating the site is not a 'spill over' roost from the Maclean camp

In consultation with the Project Ecologist, EPA Biodiversity Officer and Environmental Representative, the monitoring of this area ceased in August 2019. Monitoring at this location will be reconsidered if any future information points to the presence of Grey Headed Flying Foxes in this area.



Figure 69 Serpentine Channel Bridge Flying-Fox Monitoring

• Microbat Monitoring

Microbat monitoring of previously installed roosting boxes on Bridge B08 occurred during the reporting period with Microbats observed using the artificial habitats installed.



Figure 70 Microbat habitat boxes under Bridge B08



Figure 71 Ecologist conducting Microbat monitoring beneath Bridge B08

- **Oxleyan Pygmy Perch**

Fauna surveys of OPP waterways occurred during the reporting period, aquatic ecologists were on site to conduct the surveys and contractors facilitated access to the waterways for this to occur.

- **Koala Monitoring**

Monitoring in accordance with the Approved Koala Management Plans has occurred in known Koala hot spots across the project and includes:

- o Pre-dawn spotlighting surveys
- o Fulltime supervision by an Ecologist during clearing activities, including constant visual monitoring of trees within the days clearing footprint and during the two stage clearing process.
- o Koala detection dog surveys

5.4.2 Flora Monitoring

Flora monitoring is conducted as part of the weekly monitoring undertaken by the Contractors. This is a visual inspection of adjacent flora to ensure no impacts outside the approved clearing limits are occurring. Works are managed within the approved project through EWMS, signage and flagging delineation to reduce to the potential for impacts on flora outside the approved clearing limits.

Flora monitoring is conducted as part of pre-clearing surveys and reported by the contracted ecologist in pre-clearing and post-clearing reports. Clearing is minimised to that necessary to carry out the required works and to ensure compliance with MCoA B1.

Unexpected Flora Finds

There were no unexpected flora finds recorded during the reporting period.

Weed Monitoring

Project wide weed monitoring is undertaken progressively by construction contractors. Areas are surveyed and given a priority rating of high, medium or low. Areas described as high or medium priority are required to have weed control measures implemented based on the weed species and level of infestation.

Undertaken during the reporting period, weed control targeted species such as: Coastal Morning Glory; **Lantana**; Cotton Bush; Blue Billy Goat Weed; Purple Top; Rattle Pod; Fireweed; black nightshade; pokeweed; cat's tongue; groundsel; fleabane; annual ragweed; **Ochna**; castor oil plant, devils fig; Dutchman's pipe; Cobblers peg; Wild Tobacco Bush; Tropical Soda Apple, **Camphor laurel**; Stinking Rodger; Wynn **Cassia**; and **Siratro**.

Weed control works are managed in accordance with the commitments outlined in the approved Construction Environmental Management Plan, and Construction Flora and Fauna Management Plan.

6 Community engagement and complaints management

6.1 Community consultation activities

Community consultation activities carried out during the reporting period are detailed in Figures 72 and 73 and Table 5 below.

Figure 72 summarises the 3,564 consultation activities during the reporting period, according to the type of consultation activity.

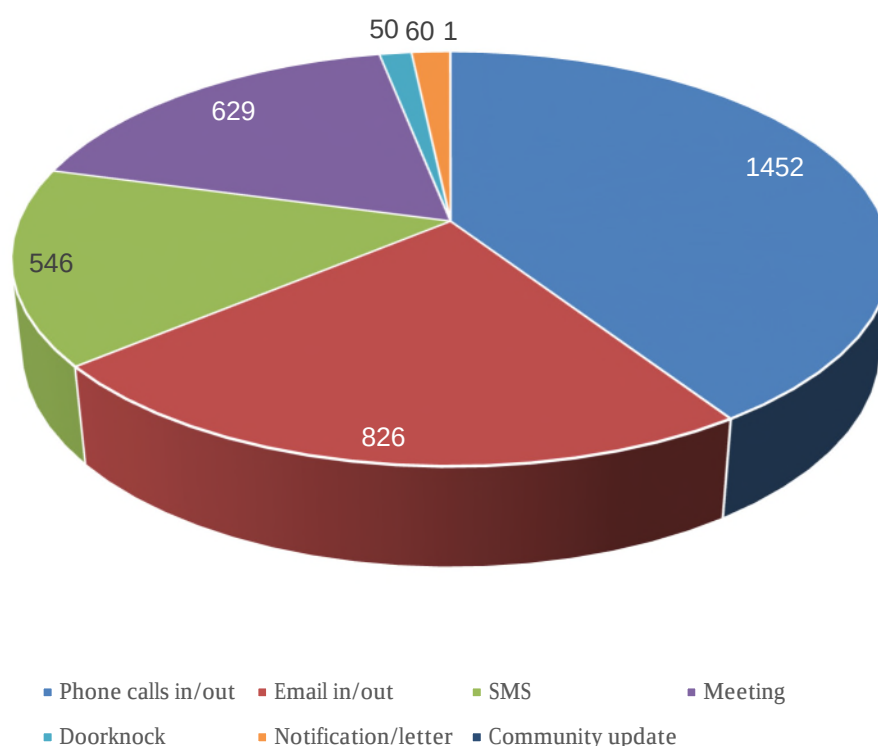


Figure 72 Summary of community consultation activities

The 3,564 consultation activities have reached 38,035 stakeholders during the reporting period, as summarised in Figure 73 below.

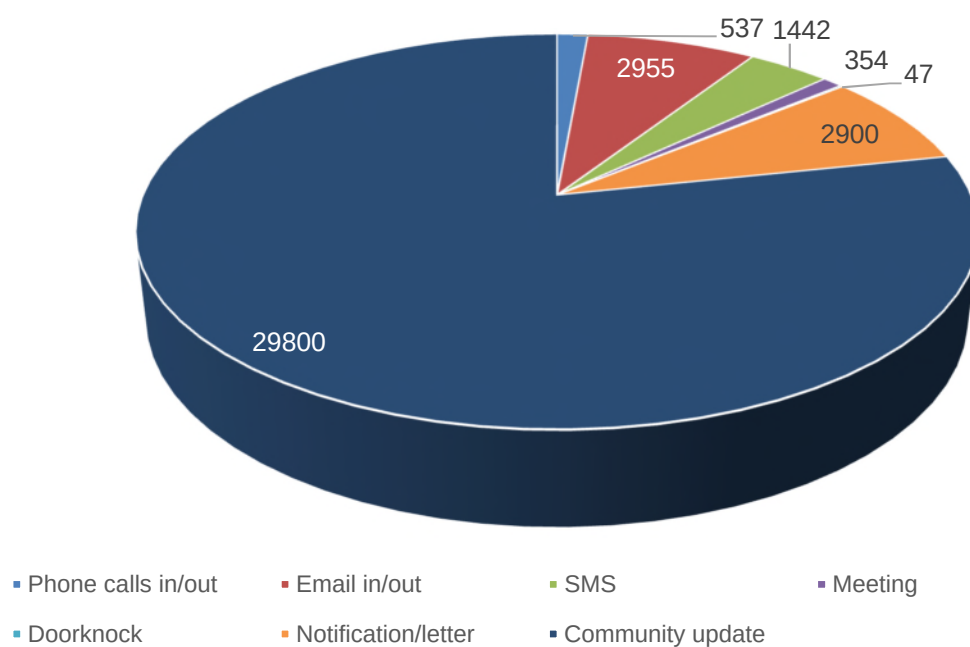


Figure 73 Number of stakeholders reached from community consultation activities

Table 5 Community Consultation Activities

Activity	Number of Events	Stakeholders Reached
Phone calls (in/out)	1452	537
Email (in/out)	826	2955
SMS blast	546	1442
Meeting	629	354
Doorknock	50	47
Notification/ letter	60	2900
Community update	1	29800

Community consultation sessions carried out during the reporting period are summarised below in Table 6.

Table 6 Community Consultation Sessions

Month	Type	Location
April 2019	Staffed display	Yamba Coles pop-up
	Staffed display	Grafton shopping world pop-up
	Staffed display	New Italy Pop-up
	Staffed display	Ferry Park pop-up
	Staffed display	Ballina Centre (Big W) pop-up
May 2019	Staffed display	Maclean Show
	Staffed display	Grafton Show
June 2019	Community information session	Grafton Services Club
July 2019	Staffed display	Ferry Park pop-up
	Staffed display	Yamba Fair pop-up
	Staffed display	Maclean Markets
August 2019	Community information session	Woodburn
September 2019	Staffed display	Ferry Park Pop-up
	Community information session	Woodburn
	Staffed display	Yamba River Market
	Staffed display	Grafton Farmers Market

6.2 Community complaints

During the reporting period, there were 189 complaints received, of which 28 were related to environmental aspects or issues.

All complaints received by Roads and Maritime, Pacific Complete and contractors are entered into the project consultation management system and assigned to the appropriate person to follow up and close out the complaint. Complaints are handled in accordance with the approved Community Communication Strategy. Complaints received during the reporting period included the following issues:

- Dust
- Noise & Vibration
- Out of Hours Works

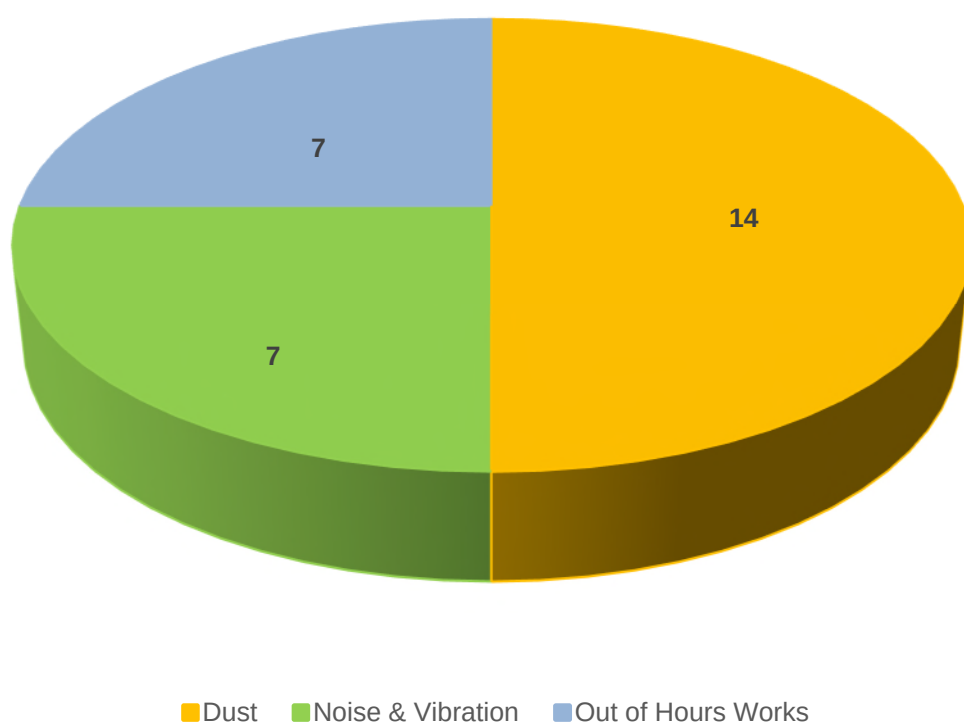


Figure 74 Summary of environmental community complaints during reporting period

Refer to Appendix C for a numbered list of complaints received during the reporting period, their status and the RMS/Pacific Complete/Contractor responses and actions taken.

Appendix A Compliance Tables

COMPLIANCE TRACKING - NSW CONDITIONS OF APPROVAL

Woolgoolga to Ballina SSI-4963

PART A - Administrative Conditions

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
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.	All	Pre-construction and Construction	RMS and Contractor	Open	This is addressed within the approved Pacific Complete Construction Environmental Management Plan (CEMP) and associated sub plans, design drawing specification etc. Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
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 2014; (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 (g) Modification request and letter dated 17 November 2014 to modify the definition of construction under subclause f in relation to section 4 utility adjustments and replacement of all references to OEH with EPA; and (h) Modification request and letter dated 24 September 2015 to modify the approval to capture additional works outside the project boundary that may impact on heritage items to require archaeological investigations; and (i) Modification request dated 1 December 2017 and accompanying environmental assessment, to modify the approval to realign the road between the Pacific Highway and Eight Mile Lane, Glenugie; and (j) conditions of this approval.	All	Pre-construction, Construction and Operation	RMS and Contractor	Open	Noted
	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.	All	Pre-construction, Construction and Operation	RMS and Contractor	Open	Noted.
	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.	All	Pre-construction and Construction	RMS and Contractor	Open	Noted. A request was received within the previous reporting period (ie, 1 April - 30 September 2018) on 17/9/2018, to supply a tabular summary of environmental complaints received each month. This commenced within this reporting period (1 October 2018 to 31 March 2019) with summaries for August & September 2018 submitted to the Department on 2/11/2018.
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.	All	Pre-construction	RMS	Closed	The project was approved by NSW Department of Planning and Environment in June 2014 and by the Federal Minister for the Environment in August 2014. The project commenced in 2015 with construction officially commencing in April 2016.
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.	All	Pre-construction, Construction and Operation	RMS and Contractor	Open	Pacific Complete has obtained an Environment Protection Licence (EPL) for S3-S11 (No. 20713, 29 January 2016). In addition, a Water Extraction Licence - Lewis Lane, Mororo (DPI Licence 30BL207354) has been directly procured by RMS. Other licences, permits and approvals will be obtained as required by law during the course of the project.
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).	All	Pre-construction	RMS	Open	The Stage 2 Staging Report (dated July 2016, Revision 5) was acknowledged by the Department of Planning and Environment on 2 August 2016. The department requested an updated Staging Report (and Compliance Report) which was submitted to the Secretary on 29/11/2016, (Version 6). A further updated Staging Report (Version 7) was submitted to the Secretary on 22/8/2017 and approval received 5/10/2017.

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
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.	All	Pre-construction	RMS	Open	Noted.
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.	All	Pre-construction, Construction and Operation	RMS and Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Main Document - Section 5 Competence, Training and Awareness). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
	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.	All	Pre-construction, Construction and Operation	RMS and Contractor	Open	Noted.
	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.	All	Pre-construction, Construction and Operation	RMS	Open	Noted.
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 OEH, the incident report prepared for the purposes of notifying the EPA and/or OEH would meet this requirement.	All	Pre-construction, Construction and Operation	RMS and Contractor	Open	This is addressed in the approved Pacific Complete CEMP (main document - Section 7.1 Incident Reporting) and RMS Environmental Incident Classification and Reporting Procedure, as well as in Pacific Complete Compliance Tracking Program – Six Monthly Construction Compliance Reports (Sections 4.5 and 4.6 Incident Reporting and Response and Incident Reporting to Secretary).
	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.	All	Pre-construction, Construction and Operation	RMS and Contractor	Open	Noted.

- Modification 1 (15/10/2015)
- Modification 2 (7 October 2015)
- Modification 5 (27 September 2017)
- Modification 6 (21 February 2018)

COMPLIANCE TRACKING - NSW CONDITIONS OF APPROVAL
Woolgoolga to Ballina SSI-4963

PART B - Environmental Performance

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	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 (Phascolarctos cinereus) primary and secondary habitat shall be limited to a total area of 375 hectares.	All	Pre-construction and Construction	RMS and Contractor	Open	RMS, Pacific Complete and the Contractors will ensure compliance with the approved clearing limits under the Planning Approval. Clearing of native vegetation has been minimised during detailed design with the objective being to reduce impacts to threatened species or EECs where feasible and reasonable. Clearing limits are clearly shown on relevant construction drawings and closely monitored and reported throughout the project.
	B2	Where feasible and reasonable, remnant vegetation shall be retained between the SSI boundary and the SSI footprint.	All	Pre-construction and Construction	RMS and Contractor	Open	Vegetation clearance limits have been defined during the detailed design. Overall vegetation clearance (design plus actual construction clearance) will be monitored on a regular basis during the W2B project, captured and tracked on the Clearing Register.
	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.	All	Construction and Operation	RMS and Contractor	Open	Urban Design and Landscape Plan(s) have been approved by the Department in accordance with MCoA D20 (17 July 2018).
	B4	Light spill from the SSI shall be avoided on Pink Underwing Moth and Atlas Rainforest Ground Beetle habitat, where feasible and reasonable.	10	Pre-construction	RMS and Contractor	Open	This has been captured as part of detailed design for the project. Light management measures including minimising wattage and avoidance of light spill have been implemented in relation to night works adjacent to Southern Pink Underwing Moth habitat.
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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 - Construction Flora and Fauna Management Plan, Section 5.4 Pre-Clearing Surveys, Section 5.4.3 Fauna Capture and Handling and Appendix N Fauna Handling and Rescue Procedure). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Qualified Ecologists are engaged to carry out pre-clearing surveys and to be present during clearing activities as required under the Construction Flora and Fauna Management Plan (approved 20 October 2015). Clearing of Koala habitat trees has been undertaken in the presence of a Koala spotter as detailed in the Koala Management Plan (approved 4 August 2016). Chapter 4.3 Mitigation & Monitoring details that pre-clearing surveys require an Ecologist / Koala spotter to be engaged prior to pre-clearing activities. As an additional measure, Pacific Complete has engaged the use of Koala Detection Dogs for pre-clearing surveys and unexpected sightings, as detailed in the 6 Monthly Compliance Report April to September 2018. Pacific Complete will apply RMS/PC specs to ensure compliance with this CoA.
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 - Construction Flora and Fauna Management Plan, Section 5.4 Pre-Clearing Surveys, Section 5.4.3 Fauna Capture and Handling and Appendix N Fauna Handling and Rescue Procedure). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Qualified ecologists are engaged to carry out pre-clearing surveys and are to be present during clearing activities as required under the Construction Flora and Fauna Management Plan. Refer to Section 3.3 of the Six Monthly Construction Compliance Report (April to September 2019) for details of unexpected finds of threatened fauna and Section 5.4.2 for details of unexpected finds of threatened flora, during the reporting period.
OXLEYAN PYGMY PERCH HABITAT							

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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).	6, 7, 8, 9	Construction	Contractor	Open	This requirement is addressed in Pacific Complete CEMP (Appendix B2 - Construction Flora and Fauna Management Plan, Appendix J Threatened Fish Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. The OPP spawning period as outlined in MCoA is October to April. High risk activities were carried out in OPP areas during this reporting period (April to September 2019) with approval from DPI Fisheries. Works were not undertaken on days where the relevant BoM site predicted >90% chance of 10mm. Works undertaken from April to September 2019 were performed in accordance with approved EWMS for these areas and for approved procedures for works during the OPP spawning period.
	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, unless otherwise agreed by DPI (Fisheries)	6, 7, 8, 9	Construction	Contractor	Open	This requirement is addressed in Pacific Complete CEMP (Appendix B2 - Construction Flora and Fauna Management Plan, Appendix J Threatened Fish Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. This was also considered as part of detailed design for the project. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs.
	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, unless otherwise agreed by DPI (Fisheries)	6, 7, 8, 9	Construction	Contractor	Open	This requirement is addressed in Pacific Complete CEMP (Appendix B2 - Construction Flora and Fauna Management Plan, Appendix J Threatened Fish Management Plan and Appendix N Fauna Handling and Rescue Procedure. Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. This was considered during detailed design. Temporary bridge structures have been established for construction activities. All works have been undertaken in consultation with NSW DPI Fisheries and monitored.
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.	All	Pre-construction	RMS	Closed	This has been undertaken during detailed design and incorporated into the development of the project Connectivity Strategy for Sections 3 to 11.
	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.	3, 4, 5, 9, 10, 11	Pre-construction	RMS	Closed	This has been undertaken during detailed design and incorporated into the development of the project Connectivity Strategy for Sections 3 to 11.
	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 ~~OE~~ EPA, 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.	All	Pre-construction	RMS	Closed	This has been undertaken during detailed design and incorporated into the development of the project Connectivity Strategy for Sections 3 to 11.
	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, unless otherwise agreed by DPI (Fisheries).	All	Construction	Contractor	Open	This requirement is addressed in Pacific Complete CEMP (Appendix B2 - Construction Flora and Fauna Management Plan, Appendix J Threatened Fish Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Riparian vegetation clearing has been minimised wherever possible. Altered construction methodology and changes to foundation resulted in the project being able to avoid a temporary crossing at Tabbimoble Floodway No.1. All disturbed areas in the vicinity of OPP have been stabilised to the satisfaction of DPI Fisheries prior to the OPP spawning period.
CONSTRUCTION NOISE							

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Section 7 Environmental Control Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Section 7 Environmental Control Measures and Appendix C Out of Hours Work Procedure). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Appendix C Out of Hours Work Procedure). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Out of hours permits have been approved in accordance with Appendix C Out of Hours Work Procedure, of the approved Pacific Complete Construction Noise and Vibration Management Plan (CNVMP). Approved Out of Hours Works are reported monthly to the Environment Protection Authority, as required under the EPL (Environment Protection Licence).
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Appendix C Out of Hours Work Procedure). and Appendix N Fauna Handling and Rescue Procedure). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Out of hours permits have been approved in accordance with Appendix C Out of Hours Work Procedure, of the approved Pacific Complete Construction Noise and Vibration Management Plan (CNVMP). Approved Out of Hours Works are reported monthly to the Environment Protection Authority, as required under the EPL (Environment Protection Licence).
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Section 7 Environmental Control Measures). Non-compliances with this condition are reporting monthly to the EPA in the EPL Report and also in the incident reporting summary for this reporting period.

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Section 7 Environmental Control Measures). Pacific Complete will approve Contractor EMPs and EWMSs to ensure compliance with this MCoA.
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).	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Section 6.5 Construction Vibration and Blasting Assessment). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Section 6.5 Construction Vibration and Blasting Assessment, Section 7 Environmental Control Measures and Appendix B Blast Management Procedure). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
	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.	All	Construction	RMS	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Section 6.5 Construction Vibration and Blasting Assessment, Section 7 Environmental Control Measures and Appendix B Blast Management Procedure). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. There were no airblast overpressure exceedances recorded during this reporting period (April to September 2019).
	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.	All	Construction	RMS	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Section 6.5 Construction Vibration and Blasting Assessment, Section 7 Environmental Control Measures and Appendix B Blast Management Procedure). Pacific Complete will approve Contractor EMPs and EWMSs to ensure compliance with this CoA. Refer to Section 5.2.1 of the 6 Monthly Construction Compliance Report, where there were no notable peak particle velocity (PPV) vibrations recorded during this reporting period (April to September 2019) that weren't aligned with MCoA-B21/B24.
	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.	All	Construction	RMS	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Section 6.5 Construction Vibration and Blasting Assessment, Section 7 Environmental Control Measures and Appendix B Blast Management Procedure). Pacific Complete will approve Contractor EMPs and EWMSs to ensure compliance with this CoA.
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Section 7 Environmental Control Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Piling carried out during the reporting period used the bored piling methods. Percussive piling is used in sparsely populated areas, as required.

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Section 7 Environmental Control Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Vibration assessments and modelling have been carried out where construction activities require dynamic compaction construction methods and additional mitigation measures have been included within the approved Piling EWMS and implemented as required.
	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.	4, 5, 8, 9	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan, Section 7 Environmental Control Measures). Pacific Complete will manage consultation with potentially affected educational institutions. Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Consultation with Harwood Public School commenced in 2016 and continued during past reporting periods, in relation to the construction of Harwood Bridge over the Clarence River, where piling activities were scheduled outside of the schools NAPLAN exam periods.
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).	All	Pre-construction	RMS	Open	This has been captured during detailed design and development of the operational noise design for the project.
	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.	All	Pre-construction and Construction	RMS	Open	Operational noise mitigation measures are proposed to be installed as soon as reasonable and feasible in accordance with the approved Operational Noise Review. Consultation with landowners about nature of mitigation is ongoing prior to agreement and commencement of mitigation measures.
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.	All	Construction	Contractor	Open	Pacific Complete has obtained an Environment Protection Licence (EPL) for S3-S11 (No. 20173, 29 January 2016).
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.	All	Pre-construction	RMS	Closed	Flood modelling (final models) have been developed as part of detailed design. The Hydrological Mitigation Report for Glenugie to Devils Pulpit (Sections 3, 4, 5 & 6) was submitted to DPE on 17 March 2017. This report represents the design at December 2016 stage of the program and includes the road alignment, channel earthworks, cross drainage and bridge designs at various levels of design development and reflects the substantial detailed design stage for infrastructure within the Clarence Regional floodplain. The flood model will be updated once the final detailed design is complete. The Hydrological Mitigation Report for Devils Pulpit (Sections 7, 8, 9, 10 & 11) has been submitted to DPE.
	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.	4, 5	Pre-construction	RMS	Closed	Corindi Creek is located within Section 1 which is outside the area of this part of the project and has been reported separately. For Shark Creek and Farlows Flat, flood modelling, this is detailed in Sections 4 and 5 of the Hydrological Mitigation Report (Glenugie to Devils Pulpit), submitted to DPE on 17 March 2017.
	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 land-owner; or (c) reach agreement with affected landowners on impacts to property.	All	Pre-construction	RMS and Contractor	Closed	Noted. This is addressed in Section 6 of the Hydrological Mitigation Report for Glenugie to Devils Pulpit (Sections 3, 4, 5 and 6), submitted to DPE on 17 March 2017 and the Hydrological Mitigation Report for Devils Pulpit to Ballina (Sections 7, 8, 9, 10 and 11), submitted to DPE.
CONSTRUCTION SOIL AND WATER MANAGEMENT							

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan, Chapter 6 Environmental Control Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. ESCPs are prepared in accordance with the Blue Book guidelines and RMS specifications in consultation with Project Soil Conservationist. ESCPs are updated as controls require and reviewed regularly. Environmental Work Method Statements (EWMS) are prepared for activities assessed as having a high environmental risk and/or that pose a risk to receiving water quality. Including: clearing, ASS / PASS, Sediment basins and dewatering, working in waterways, underboring and culvert installation.
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan, Chapter 6 Environmental Control Measures). Water collected onsite from runoff in sediment basins, tannin treatment areas and other areas is recycled and reused where appropriate for activities such as dust suppression. Drillers recycle drilling water as much as possible to reduce the use of potable water. Ancillary facilities are designed to consider the capture and reuse of stormwater and include rainwater tanks where possible.
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan, Chapter 6 Environmental Control Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Captured water onsite is reused where possible and examples are detailed in the 6 Monthly Construction Compliance reports.
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.	All	Pre-construction and Construction	RMS and Contractor	Open	Potentially contaminated sites associated with the project will be reviewed during detailed design to determine those sites that will require a phase 2 contamination investigation. The results of phase 2 contamination investigations will determine whether the sites are suitable or unsuitable for their intended land use. For those sites found to be unsuitable for their intended land use, appropriate management or remediation/validation strategies will be developed and implemented. Soft soils works will impact on a potential contaminated site at the Mills Truck depot. The Site Audit Report and associated requirements will be completed and implemented prior to the commencement of permanent construction activities. Additional contamination report has been prepared to identify asbestos prior to demolition of buildings.
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.	All	Pre-construction and Construction	RMS and Contractor	Open	During the reporting period Consultation with agencies occurred during the installation of temporary waterway crossings. Hold points were implemented prior to construction of crossings to ensure appropriate management measures were in place and the required consultation had occurred.
	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 ~~OE~~EH ~~EPA~~. 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 ~~OE~~EH ~~EPA~~, 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.	NA	Pre-construction	RMS	Closed	Not applicable to Sections 3-11. Habitat for Giant Barred Frog occurs only in Section 1 and 2
	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.	6, 7, 8, 9	Pre-construction	RMS	Closed	This has been considered as part of detailed design based on information in the Threatened Fish Management Plan. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs.

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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.	6, 7, 8, 9	Pre-construction	RMS	Open	This has been considered as part of detailed design. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs. Realignment of waterway BC52 was designed and constructed to the satisfaction of DPI Fisheries. Monitoring of the realigned waterway indicated velocities of 0.1 metres per second during normal flow conditions.
	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.	6, 7, 8, 9	Pre-construction	RMS	Open	This has been considered as part of detailed design. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs.
	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.	10	Pre-construction	RMS	Closed	An investigation into this embankment and its removal was provided to the Department on 26/7/2017. Confirmation of the receipt of the Richmond River bridge investigation was received on 15/9/2017, with the Department concluding that the proposed detailed design of the bridge without an embankment provides an improvement and reduces impacts to the concept design.
ABORIGINAL HERITAGE							
	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 ~~QEH~~ EPA (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 ~~QEH~~ EPA 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 ~~QEH~~ EPA (Aboriginal heritage) and the Secretary.	4, 7, 10, 11	Pre-construction	RMS	Open	– PAD site WWC Dirty Creek 1 does not occur within sections 3 to 11, however has been salvaged and clearance letter issued. – Section 4, Site 1 – Assessed and mitigations advised/incorporated. - Section 4, Site 3 – has not been assessed, will be carried out as part of an ancillary facility assessment if it is proposed for use. – Section 7, Site 1 – Assessed. – Section 10, Site 1a – has not been assessed, will be carried out as part of an ancillary facility. – Section 11, Site 1a , heritage assessment prepared including test pitting. Recommended management measures have been implemented in Ancillary Facility Checklist for this site.
	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 ~~QEH~~ EPA (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 ~~QEH~~ EPA (Aboriginal heritage) and to the satisfaction of the Secretary. The report shall be submitted to the Registered Aboriginal Parties, the ~~QEH~~ EPA (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.	3, 4, 7, 8, 9, 10, 11	Pre-construction	RMS	Open	A salvage strategy was prepared in consultation with RAPs and salvage works have been completed on sites that require salvage. Clearance letters have been prepared post salvage that outline that the site is clear for construction and outlines any additional mitigation measures (i.e. fencing). Detailed reports will be prepared by the heritage consultant as required by this condition. An extension to the provision of the Aboriginal Heritage Analysis Report for the northern half of the project was requested on 26 September 2017, in conjunction with the submission of the Aboriginal Heritage Analysis Report for the southern half of the project (approved 26 September 2017). The extension for submission of the report for the northern half of the project was approved for December 2019 providing a progress report was submitted by December 2018. RMS submitted the Progress Summary Report: Aboriginal Heritage Analysis Report for Iluka to Ballina, on 21 December 2018.
	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, Birrugan and Mindi spiritual sites (sections 1, 2, 5 and 10), Pillar Valley men's and women's sites, Place H, Place I and Place J. Where impacts are unavoidable, works shall be undertaken in accordance with the strategy outlined in the Construction Heritage Management Plan.	3, 8, 9, 10, 11	Pre-construction and Construction	RMS and Contractor	Open	This has been considered as part of detailed design. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs. This requirement is also addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan, Chapter 7 Environmental Mitigation and Management Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Gittoes Jali clearance letter was received prior to construction activities commencing on Lang Hill. This clearance letter outlines the required management measures for the protection of the site. Where impacts are unavoidable in construction, works would be undertaken in accordance with the strategy outlined in the Construction Heritage Management Plan.

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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.	4, 7, 8, 9, 10, 11	Pre-construction and Construction	RMS and Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan, Chapter 7 Environmental Mitigation and Management Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. WWC5, WWC7, WWC92, WWC115, WWC139, Tyndale 1 – exclusion fencing installed, WWC26 - salvage done, fencing installed, Scarred tree in Section 7 - Outside the project corridor. Exclusion fencing to be installed, C3/2/2 - Outside the project corridor, Gittoes Jali 2 – ongoing, Cooks Hill - Outside of the project boundary, Broadwater – ongoing, Law PAD - To be fenced on vacant possession of the adjacent block, MST 3 - Exclusion fencing is to be re-installed on vacant possession of the block, C21 - Exclusion fencing is to be re-installed on vacant possession of the block, Melino Scarred Tree 4 - Exclusion fencing has been installed on vacant possession of the block, MST2 - Exclusion fencing is to be re-installed on vacant possession of the block, MST1 – ongoing, Rudgley scarred tree - Fencing has been established, Saezza 1 - Exclusion fencing installed, awaiting site clearance letter.
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.	5	Pre-construction	RMS	Closed	Further historical research and investigation has been carried out for options to relocate the convent building. Community and agency consultation has been carried out. A tender called for its removal, with no compliant tenders received for the removal and relocation of the Harwood Convent building and no suitable land in or adjacent to the Harwood Heritage Conservation Area where the building could be relocated to was identified. Additional information was requested and provided to OEH and OEH concurrence with demolition was advised on 5/12/2016. Secretarial / DPE provided approval for the demolition of the convent building, dated 5 December 2016. The convent was subsequently demolished in December 2016.
	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).	5, 7, 9, 10	Pre-construction	RMS	Closed	Archival recordings completed for all items. Reports received and submitted to DPE.
	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.	7, 9	Pre-construction	RMS	Closed	Item 7 is not included in Section 3 to 11 and is therefore covered under a separate compliance report. Further historical and physical archaeological investigations has been carried out for Item 23 and 28. Reports received and submitted to DPE
	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).	5, 7, 10	Pre-construction and Construction	RMS and Contractor	Open	This was considered as part of detailed design. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs. This requirement is also addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan, Chapter 7 Environmental Mitigation and Management Measures) and these sites are also listed as being within or adjacent to the works. Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. One non-Aboriginal Heritage Item - the Harwood Convent - Item 21 was demolished in December 2016 as per approved process and with DPE approval. 10-20mm steel plates have been installed over non-Aboriginal heritage train tracks at Harwood off-ramp, for the section within the Harwood project boundary.
HERITAGE - GENERAL							

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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.	NA	Pre-construction and Construction	RMS and Contractor	Closed	This heritage item occurs in Section 2, therefore will not be impacted by the works.
	B53	This approval does not allow the Applicant to destroy, modify or otherwise physically affect human remains as part of the State Significant Infrastructure, except in accordance with an Unexpected Human Remains Procedure that has been approved by the Secretary.	All	Construction	Contractor	Open	Pacific Complete has an Unexpected Heritage Finds Procedure detailed in the CEMP (Appendix B5 Construction Heritage Management Plan, Chapter 7 Environmental Mitigation and Management Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. An Unexpected Human Remains Procedure is currently being developed and is currently with the Registered Aboriginal Parties for approval, prior to submission to the Secretary for approval.
	B53A	An Unexpected Human Remains Procedure shall be prepared and implemented to guide the relocation of recovered human remains. The Unexpected Human Remains Procedure shall: a) be prepared in consultation with the RAPs; and b) meet the requirements of OEH in relation to the National Parks and Wildlife Act 1974 and Guideles for Management of Human Skeletal Remains (NSW Heritage Office, 1998b), and NSW Health in relation to the NSW Health Policy Directive - Exhumation of human remains (December, 2013).	All	Pre-construction and Construction	RMS and Contractor	Open	An Unexpected Human Remains Procedure is currently being developed for Secretary approval, in consultation with the RAPs and once approved, the CEMP will be updated accordingly.
	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~~ B54A .	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan, Chapter 7 Environmental Mitigation and Management Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
	B54A	The Applicant may undertake archaeological investigations at sites outside the SSI boundary where the following works associated with the construction of the highway are proposed: i. ancillary sites that do not meet the criterion set out in condition B73; or ii. utilities or services, or iii. access and service roads and driveways; or iv. or similar works required for the project that are located within 5 metres of the SSI boundary (with the exception of drainage works in flood prone areas where such activities can be investigated within 20 metres of the SSI boundary). These investigations are permitted where this is required to assess the potential Aboriginal and non-Aboriginal archaeological impacts of the ancillary facility or other works 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 for ancillary sites, be described in the assessment of the ancillary facility required under conditions B74 and B75	All	Pre-construction and Construction	RMS and Contractor	Open	Noted. Addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan, Chapter 7 Environmental Mitigation and Management Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
	B55	The measures to protect heritage sites near or adjacent to the SSI during construction shall be detailed in the Construction Heritage Management Plan.	All	Construction	Contractor	Closed	Pacific Complete CEMP including Appendix B5 Construction Heritage Management Plan has been approved (23 October 2015).
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.	All	Pre-construction	RMS	Closed	This was considered as part of detailed design. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs.
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Plan, Section 5.4.1 Management of Pedestrians and Section 5.4.2 Management of Cyclists). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Plan, Section 4 Construction Activities and Impacts, Section 4.3 Road Network, Section 4.4 Construction Access Points, Section 4.5 Construction Site Office and Section 5.5 Construction Vehicle Management). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Construction sites provide ample parking to minimise parking on local roads. Access to work areas are via access gates, sufficient space for queuing is provided where feasible to prevent queuing on public roads.
	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.	All	Pre-construction and Construction	RMS and Contractor	Open	This has been considered as part of detailed design. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs.
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.	All	Pre-construction	RMS	Closed	This was considered throughout the acquisition and detailed design phase of the project.
	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.	All	Pre-construction	RMS	Closed	No impacts to the viability of existing agricultural operations have been identified to date. No requests for agricultural expertise has been received to date.
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Plan, Section 4.5.1 Site Office Locations, Section 4.6.1 Haulage Routes and Section 5.8.6 Removal of Temporary Roadways and Detours). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Access to private property has been maintained throughout construction of all current works and shall continue throughout the duration of construction.

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Plan, Section 4.6.1 Haulage Routes). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Landowners have been consulted regarding work potentially disruptive to agricultural operations / activities. This includes potential use of cane pads within the project boundary and realignment of fences through agricultural land. The project has assisted landowners with property access for cattle movement and prioritised the installation of the permanent boundary fence and gates for landowner cattle movements.
	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.	All	Construction	Contractor	Open	Noted. Pre-construction building condition inspections have been completed, with post construction inspections to be completed following construction. Any damage identified due to the project works will be rectified.
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.	3, 6, 7	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Plan, Section 4.7.3 Property Access and Section 4.7.8 State Forest Road Network). Pacific Complete will approve Contractor EMPs, EWMSs and related traffic management safety plans (or similar) to ensure compliance with this CoA. Consultation with NSW Forestry regarding access to forestry areas has been ongoing. Access to Tabbimoble forest is maintained via Glencoe Road during the works.
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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B6 Construction Air Quality Management Plan, Chapter 7 Environmental Control Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Dust mitigation measures such as the use of watercarts and temporary stabilisation are being implemented on all parts of the project. Contractor works are being monitored by Pacific Complete to ensure contractors are providing sufficient measures to control dust including monitoring and watercarts.
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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan, Chapter 6 Environmental Control Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B7 Construction Waste, Resource and Energy Management Plan, Chapter 6 Environmental Mitigation and Management Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. No waste from outside the project has been received.
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B7 Construction Waste, Resource and Energy Management Plan, Chapter 6 Environmental Mitigation and Management Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Waste generation and transport is being tracked by each contractor for the project and reported to PC/RMS on a monthly basis.
	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).	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B7 Construction Waste, Resource and Energy Management Plan, Chapter 6 Environmental Mitigation and Management Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Waste generation and transport is being tracked by each contractor for the project and reported to PC/RMS on a monthly basis.
	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.	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B7 Construction Waste, Resource and Energy Management Plan, Chapter 6 Environmental Mitigation and Management Measures). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
UTILITIES AND SERVICES							

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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.	All	Pre-construction and Construction	RMS and Contractor	Open	This was considered as part of detailed design. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs. Utilities have been relocated in areas where construction has commenced.
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.	All	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. The purpose of the AFMP is to detailed how Pacific Complete will assess, consult, gain approval and manage individual ancillary facility sites during the project. Site specific ancillary facility management plans have been and will continue to be prepared by Pacific Complete and contractors in accordance with the requirements of Appendix B9 Ancillary Facilities Management Plan (ER approved 10 February 2016). Ancillary Facility Management Plans are approved by the ER. If required the plan will be submitted to the Secretary for approval. Refer to Section 2.1 of the six monthly compliance report (March to September 2019) for a list of ancillary facilities approved for use during this reporting period.
	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.	All	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. The purpose of the AFMP is to detailed how Pacific Complete will assess, consult, gain approval and manage individual ancillary facility sites during the project. Site specific ancillary facility management plans have been and will continue to be prepared by Pacific Complete and contractors in accordance with the requirements of Appendix B9 Ancillary Facilities Management Plan (ER approved 10 February 2016). Ancillary Facility Management Plans are approved by the ER. If additional impacts are anticipated then the plan will be submitted to the Secretary for approval. Refer to Section 2.2 of the six monthly compliance report (April to September 2019) for a list of ancillary facilities approved for use during the reporting period.
	B75	Notwithstanding condition B74, ancillary facilities that have not been previously identified and assessed in the documents listed in condition A2 and result in additional impacts to biodiversity, heritage, flooding and noise beyond those approved for the SSI, shall be approved by the Secretary prior to their establishment. In 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.	All	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. The purpose of the AFMP is to detailed how Pacific Complete will assess, consult, gain approval and manage individual ancillary facility sites during the project. Site specific ancillary facility management plans have been and will continue to be prepared by Pacific Complete and contractors in accordance with the requirements of Appendix B9 Ancillary Facilities Management Plan (ER approved 10 February 2016). Ancillary Facility Management Plans are approved by the ER. If required the plan will be submitted to the Secretary for approval. Refer to Section 2.2 of the six monthly compliance report (April to September 2019) for a list of ancillary facilities approved for use during the reporting period.
	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.	All	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. The purpose of the AFMP is to detailed how Pacific Complete will assess, consult, gain approval and manage individual ancillary facility sites during the project. Site specific ancillary facility management plans have been and will continue to be prepared by Pacific Complete and contractors in accordance with the requirements of Appendix B9 Ancillary Facilities Management Plan (ER approved 10 February 2016). Individual ancillary facility approvals outline the specific rehabilitation commitments and principles for ancillary facilities. Urban Design and Landscape Plans (UDLP) have been prepared for the project and outline rehabilitation commitments and principles for ancillary facilities.

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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.	All	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. The purpose of the AFMP is to detailed how Pacific Complete will assess, consult, gain approval and manage individual ancillary facility sites during the project. Site specific ancillary facility management plans will be prepared by Pacific Complete in accordance with the requirements of Appendix B9 Ancillary Facilities Management Plan (ER approved 10 February 2016). Ancillary Facility Management Plans are approved by the ER. If required the plan will be submitted to the Secretary for approval. Refer to Section 2.2 of the six monthly compliance report (April to September 2019) for a list of ancillary facilities approved for use during the reporting period.
	~~B78~~	~~DELETED~~	~~P~~	~~Construction~~	~~Contractor~~		~~Noted.~~
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.	All	Construction	Contractor	Open	Pacific Complete will prepare site specific Borrow Site Management Plans as required by the project approval. This requirement will apply to all borrow site management plans prepared by Pacific Complete. The Tyndale Borrow Site Management Plan (Portion A) was approved in August 2016 by DPE. The Lang Hill Borrow Site Management Plan (Portion C) was approved 23 November 2016 by DPE. The Lumleys Hill Borrow Site Management Plan (Portion D) was approved on 8 September 2017. The Gibsons Borrow Site Management Plan and the Jali Borrow Site Management Plan (Portion D) were approved on 11 September 2017. An associated Haulage Strategy was prepared for Portion D and endorsed on 28 September 2017. Monthly Haulage Reports have been prepared for this from January 2018 to 8 December 2018. The Haulage Strategy expired on 8 December 2018 - Old Bagotville Road Haulage Strategy Compliance Reports).
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.	All	Construction	Contractor	Open	Pacific Complete has an approved CEMP. Pacific Complete approves Contractor EMPs and EWMSS and RMS/PC specifications are used to ensure compliance with this MCoA.
OPERATIONAL PERFORMANCE							
	B81	The Applicant shall ensure that during the operation of the SSI, water quality risks to the Woodburn Bore field drinking water catchment are minimised to the satisfaction of Rous Water.	8	Operation	RMS	Open	This has been considered as part of detailed design and has been developed in consultation with Rous Water. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs.
	Modification 1 (15/10/2015) Modification 2 (7 October 2015) Modification 5 (27 September 2017) Modification 6 (21 February 2018)						

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PART C - Community Information and Reporting

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
COMMUNITY INFORMATION, CONSULTATION AND INVOLVEMENT							
	C1	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: (a) identification of stakeholders to be consulted as part of the Strategy, including affected and adjoining landowners; (b) procedures and mechanisms for the regular distribution of information to community stakeholders on construction progress and matters associated with environmental management; (c) the formation of community-based focus groups for key environmental management issues for the SSI. The Strategy shall provide detail on the structure, scope, objectives and frequency of the community-based focus groups; (d) procedures and mechanisms through which the community stakeholders can discuss or provide feedback to the Applicant and/or Environmental Representative in relation to the environmental management and delivery of the SSI; (e) procedures and mechanisms through which the Applicant can respond to enquiries or feedback from the community stakeholders in relation to the environmental management and delivery of the SSI; and (f) procedures and mechanisms that would be implemented to resolve issues/ disputes that may arise between parties on the matters relating to environmental management and the delivery of the SSI. This may include the use of an appropriately qualified and experienced independent mediator. Issues that shall be addressed through the Community Communication Strategy include (but are not necessarily limited to): (i) traffic management (including property access, pedestrian access); (ii) heritage matters; (iii) landscaping and urban design matters; (iv) construction staging, hours and activities; (v) noise and vibration mitigation and management; (vi) air quality and dust; (vii) water quality, hydrology and flooding matters; and (viii) biodiversity matters. The Applicant shall maintain and implement the Strategy throughout construction of the SSI.	All	Pre-construction	RMS	Closed	An overarching Woolgoolga to Ballina Communication and Stakeholder Engagement Strategy has been prepared and approved. DPE Approval dated 13 May 2015.
COMPLAINTS AND ENQUIRIES PROCEDURE							
	C2	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: (a) a 24 hour telephone number(s) on which complaints and enquiries about the SSI may be registered; (b) a postal address to which written complaints and enquires may be sent; (c) an email address to which electronic complaints and enquiries may be transmitted; and (d) a mediation system for complaints unable to be resolved. The telephone number, the postal address and the email address shall be published in newspaper(s) circulating in the local area prior to the commencement of construction and prior to the commencement of operation. This information shall also be provided on the website (or dedicated pages) required by this approval.	All	Pre-construction and Construction	RMS and Contractor	Open	Information and systems required by this condition have been established. Refer to the overarching Woolgoolga to Ballina Communication and Stakeholder Engagement Strategy (DPE Approval dated 13 May 2015). Relevant details have been included in the approved Pacific Complete CEMP, refer to Section 6.3 Stakeholder and Community Communication. Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. While there were no non-compliances with the conditions of approval, Roads & Maritime did write to the Department of Planning and Environment on 17 January 2017 to inform the Department that we did not meet our obligations in the approved Communications and Engagement Strategy relating to and inadvertent administrative mistake in which the 1800 project number was diverted to a phone number that was not actively managed during the Christmas shut down period (2016/17).
	C3	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. 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.	All	Pre-construction and Construction	RMS and Contractor	Closed	Information and systems required by this condition have been established. Refer to the overarching Woolgoolga to Ballina Communication and Stakeholder Engagement Strategy (DPE Approval dated 13 May 2015). Relevant details have been included in the approved Pacific Complete CEMP, refer to Section 6.3 Stakeholder and Community Communication and Section 6.3.2 Complaints and Enquires Procedure. Pacific Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
PROVISION OF ELECTRONIC INFORMATION							
	C4	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: (a) information on the current implementation status of the SSI; (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; (c) a copy of this approval and any future modification to this approval; (d) a copy of each relevant environmental approval, licence or permit required and obtained in relation to the SSI; (e) a copy of each current strategy, plan, program or other document required under this approval; (f) the outcomes of compliance tracking in accordance with condition D27 of this approval; and (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.	All	Pre-construction and Construction	RMS and Contractor	Open	The website for the project is http://www.rms.nsw.gov.au/projects/northern-nsw/woolgoolga-to-ballina/index.html. Community & Stakeholder Engagement Strategy (approved 13/5/15) Section 6, Table 6.1 & Section 7 Enquiries & Complaints - Phone: 1800 778 900 - maintained by Pacific Complete. Copies of the project approval and management plans are available on the project website. The website is regularly updated.
		Modification 1 (15/10/2015) Modification 2 (7 October 2015) Modification 5 (27 September 2017)					

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
		Modification 6 (21 February 2018)					

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PART D - Environmental Management, Reporting and Auditing

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	D1	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), <del>OEHS</del>~~EPA~~ 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: (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; (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); (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; (d) provision for updating the relevant Threatened Species Management Plans required under condition D8; and (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.	All	Pre-construction	RMS	Closed	Mitigation Framework approved by DPE on 8 May 2015.
	D2 (a)-(g)	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 <del>EPA</del>~~OEHS~~, DPI (Fisheries) and DoE, to the satisfaction of the Secretary. The Strategy shall include: (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; (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); (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: (i) maintain or improve connectivity and movement pathways; (ii) reduce the risk of mortality for threatened species; (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; (d) the results of surveys undertaken to determine the habitat, species movement patterns, distribution of species to confirm the design and location; (e) consideration of connectivity under the existing highway, service roads and local roads (servicing over 100 vehicles per day); (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; (g) commitment to implement the landscaping of vegetation leading to connectivity structures;	All	Pre-construction	RMS	Open	The Connectivity Strategy (Sections 3-11) was submitted to Department of Planning & Environment and the Department of Environment and Energy on 14 December 2016. Approval of this plan was received by Department of Planning and Environment on 27 April 2017 and Department of the Environment and Energy on 16 May 2017. An updated Connectivity Strategy (Sections 3 - 11) which includes Glenugie Link was submitted to the Department of Planning and Environment and the Department of Environment and Energy on 30 August 2018 (ie, the previous reporting period). An Addendum to the Connectivity Strategy was submitted on 1 February 2019 and approval of the Connectivity Strategy & Connectivity Strategy Addendum was received by Department of Planning and Environment on 28 February 2019. The Department requested further comments regarding dry passage at Wardell eastern culvert, and an updated Connectivity Strategy was submitted on 6 March 2019.
	D2 (h)-(m)	(h) a fencing strategy, describing the location, design and length of fencing, which must extend beyond the edges of habitat for threatened species; (i) the maintenance of connectivity measures and fencing for the life of the impact of the action, including the timing and frequency; (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 <del>EPA</del>~~OEHS~~ on flood immunity levels shall be obtained prior to the commencement of construction of the relevant stage; (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 <del>EPA</del>~~OEHS~~, 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; (l) detailed consideration of the effects of connectivity structures on the maintenance or improvement of population viability and gene flow; and (m) incorporate the outcomes of the Mitigation Framework required under condition D1. 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. 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. The Applicant shall demonstrate to the satisfaction of the Secretary how public authority comments on the Strategy have been addressed. The Strategy may be submitted in stages to suit the staging of the SSI.	All	Pre-construction	RMS	Open	The Connectivity Strategy (Sections 3-11) was submitted to Department of Planning & Environment and the Department of Environment and Energy on 14 December 2016. Approval of this plan was received by Department of Planning and Environment on 27 April 2017 and Department of the Environment and Energy on 16 May 2017. An updated Connectivity Strategy (Sections 3 - 11) which includes Glenugie Link was submitted to the Department of Planning and Environment and the Department of Environment and Energy on 30 August 2018 (ie, the previous reporting period). An Addendum to the Connectivity Strategy was submitted on 1 February 2019 and approval of the Connectivity Strategy & Connectivity Strategy Addendum was received by Department of Planning and Environment on 28 February 2019. The Department requested further comments regarding dry passage at Wardell eastern culvert, and an updated Connectivity Strategy was submitted on 6 March 2019.
BIODIVERSITY OFFSET STRATEGY							

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	D3	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 ~~QEH~~EPA, DPI (Fisheries) and DoE, to the satisfaction of the Secretary. Unless otherwise agreed to by the ~~QEH~~EPA, 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. The Strategy shall include, but not necessarily be limited to: (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; (b) confirmation of the vegetation type/habitat (in hectares) to be cleared and their condition, and the size of offsets required (in hectares); (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; (d) consideration of contingency measures for offsets to address potential changes to impacted areas as a result of detailed design changes; (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: (i) changes to the SSI footprint due to detailed design; (ii) changes to predicted impacts as a result of changes to mitigation measures; (iii) the identification of additional species/habitat through pre-clearance surveys and construction; and (iv) additional impact associated with the establishment of ancillary facilities; (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 (g) options for securing and management of biodiversity offsets in perpetuity. 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 ~~QEH~~EPA and DoE, shall be approved by the Secretary within a timeframe agreed to by the Secretary. The Biodiversity Offset Strategy shall be submitted to, and approved by, the Secretary prior to the commencement of construction work that would result in the disturbance of the relevant existing ecological communities, threatened species, or their habitat, unless otherwise agreed by the Secretary.	All	Pre-construction and Construction	RMS	Closed	Biodiversity Offset Strategy Approved (DPE 6 January 2016 and DoE 7 January 2016), meeting the Conditions of Approval:
	D4	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 ~~QEH~~EPA, DPI (Fisheries) and DoE. Submission of the offset sites for approval shall be accompanied by: (a) details of offset sites to compensate the impacts on: (i) Koala populations in Coolgardie/Bagotville, Broadwater and Woombah/Illuka; (ii) Moonee Quassia (Quassia sp. Moonee Creek); (iii) Sandstone Rough-Barked Apple (Angophora robur); (iv) Singleton Mint Bush (Prostanthera cineolifera); and (v) Lowland Rainforest in Sub-tropical Australia; (b) a map that defines the locations and boundaries of the sites; (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; (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 (e) details of how the offset sites would be secured and managed in perpetuity.	3, 4, 6, 9, 10, 11	Pre-construction and Construction	RMS	Closed	Threatened Biodiversity Offset Status Report, update 3 was approved by DPE on 30 June 2016 and DOEE on 18 July 2016.
BIODIVERSITY OFFSET STRATEGY							
	D5 (a)-(g)	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 ~~QEH~~EPA, 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: (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; (b) the objectives and biodiversity outcomes to be achieved; (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, shapefiles, textual descriptions and maps that clearly define the location, boundaries of the offset areas; (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; (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: (i) the monitoring of the condition of species and ecological communities at offset locations; (ii) the methodology for the monitoring program(s), including the number and location of offset monitoring sites, and the sampling frequency at these sites; (iii) provisions for the annual reporting of the monitoring results for a set period of time as determined in consultation with the ~~QEH~~EPA, DPI (Fisheries) and DoE; and (iv) the monitoring and reporting on the effectiveness of these measures, and progress against the performance and completion criteria; (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; (g) a description of the current quality (prior to any management activities) of the offset area(s);	All	Pre-construction and Construction	RMS	Open	A Biodiversity Offset Package has been prepared and was submitted for approval to the Departments in December 2017 (October 2017 - March 2018). DP&E have provided comments. RMS did not receive any comments from Federal Department of Environment and Energy during the reporting period.

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	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).	All	Pre-construction and Construction	RMS	Open	A Biodiversity Offset Package has been prepared and was submitted for approval to the Departments in December 2017. DP&E have provided comments. RMS yet to receive any advice from Federal Department of Environment and Energy.
	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 ~~EPA~~ ~~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.	All	Pre-construction and Construction	RMS and Contractor	Closed	Nest Box Plan approved (DPE approval 17 February 2015). Nest Box Management Plans for sections have been developed & approved by NSW Department of Planning & Environment: Nest Box MP Section 1 & 2: approved 16/1/15 Nest Box MP Section 3: approved 23/2/15 Nest Box MP Sections 4 & 5: approved 16/1/15 Nest Box MP Section 6: approved 23/2/15 Nest Box MP Section 7: approved 23/2/15 Nest Box MP Sections 8 & 9: approved 16/1/15 Nest Box MP SSection 10 & 11: approved 16/1/15 These plans were informed by the results of detailed supplementary targeted surveys and the Nest Box Plans provide maintenance protocols, timing & duration
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~~ ~~EPA~~ 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.	All	Pre-construction	RMS	Closed	Translocation Strategy Update 3 (for Section 3 -11) Approved by DPE on 2 February 2016. DoE have confirmed no comment. Translocation Strategy Update 2 (Waves 1, 2 and 3) Approval by DPE on 11 June 2015.
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 ~~EPA~~ ~~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;	All	Pre-construction and Construction	RMS and Contractor	Closed	The following Threatened Species Management Plans have been prepared and approved: Threatened Flora Management Plan Update 1 (Section 1, Section 2, Waves 1, 2 and 3) DPE Approval 30 April 2015, DoE Approval 5 May 2015. Threatened Flora Management Plan Update 2 (Sections 3 to 11) DPE Approval 21 August 2015, DoE Approval 4 September 2015. Threatened Rainforest Plants Management Plan (Section 10) DPE Approval 11 September 2015. Threatened Mammal Management Plan Update 1 DPE Approval 7 May 2015, DoE Approval 12 May 2015. Threatened Mammal Management Plan Update 2 DPE Approval 21 October 2015, DoE Approval 25 October 2015. Threatened Invertebrates Management Plan DPE Approval 29 July 2015. Threatened Fish Management Plan DPE Approval 30 July 2015. Threatened Frog Management Plan DPE Approval 7 May 2015. Threatened Glider Management Plan DPE Approval 4 May 2015. Coastal Emu Management Plan (Sections 3 and 4, excluding Wave 3) DPE Approval 3 June 2015. Coastal Emu Management Plan (includes updates for Wave 3) DPE Approval 18 December 2015. Microbat Management Plan (Section 3 to 11) DPE approval 25 May 2015. Koala Management Plan (Section 1 to 11), DPE Approval 4 August 2016, DoE Approval 11 August 2016. Addendum to Koala Management Plan - Koala Revegetation Strategy (Section 3 to 11), DPE Approval 26 February 2019 (this reporting period October 2018 to March 2019).

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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 EPA-OEH, DPI (Fisheries) and DoE; and (l) provision for annual reporting of monitoring results to the Secretary and the OEH-EPA, 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.	All	Pre-construction and Construction	RMS and Contractor	Closed	As above. Approved Threatened Species Management Plans form part of the approved Pacific Complete CEMP (i.e. Construction Flora and Fauna Management Plan). Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with the relevant requirements of the various Threatened Species Management Plans.
	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/Illuka. 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/Illuka 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)(i) 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;	6, 9, 10	Pre-construction	RMS	Closed	Koala Management Plan (Section 1 to 11) was approved by DPE on 4 August 2016 and DoE on 11 August 2016. This updated Koala Management Plan includes the management of the Coolgardie/Bagotville, Broadwater and Woombah/Illuka koala populations and a Population Viability Analysis (PVA) for the Ballina Koala population.
	D9 (d)	(d) justification that the location and design of mitigation measures: (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; (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; (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 EPA-OEH; (iv) provide sufficient opportunities for species dispersal and re-colonisation as determined by the independent ecologist and EPA-OEH; (v) are in areas that, and are at a sufficient frequency to, achieve (i) - (iv), based on site specific information contained in the survey results required by condition D9(a) and the ecological requirements of the Koala, including but not limited to home range size, local movement patterns and habitat use, in accordance with the advice of the independent ecologist and EPA-OEH; (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; (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); (viii) effectively minimise the risk of predation from dogs in both dedicated and combined crossings; (ix) provide dry passage for dedicated fauna crossings and for combined fauna crossings to the satisfaction of EPA-OEH and DoE, at a flood immunity level determined in accordance with condition D2(c)(j); (x) provide habitat linkages to crossing structures from adjacent Koala habitat; and (xi) ensures that pathways to connectivity structures are not impeded by ancillary facilities, rest areas, service roads or local roads;	6, 9, 10	Pre-construction	RMS	Closed	Koala Management Plan (Section 1 to 11) was approved by DPE on 4 August 2016 and DoEE on 11 August 2016. This updated Koala Management Plan includes the management of the Coolgardie/Bagotville, Broadwater and Woombah/Illuka koala populations and a Population Viability Analysis (PVA) for the Ballina koala population.
	D9 (e)-(i)	(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 EPA-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. (f) provision for the installation and vegetation planting of fauna overpasses prior to the commencement of construction; (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; (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: (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; (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 (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; (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 EPA-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: (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 (ii) reassessment of all revegetation areas and frequent reporting and maintenance including addressing failures;	6, 9, 10		RMS	Closed	Koala Management Plan (Section 1 to 11) was approved by DPE on 4 August 2016 and DoEE on 11 August 2016. This updated Koala Management Plan includes the management of the Coolgardie/Bagotville, Broadwater and Woombah/Illuka koala populations and a Population Viability Analysis (PVA) for the Ballina koala population.

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	D9 (j)-(k)	(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: (i) the legal protection and conservation management of additional areas of existing habitat that actively regenerated and secured into conservation management; and/or (ii) strategic revegetation of cleared areas to improve connectivity; and/or (iii) development of a supplementary feeding program and/or breeding program; and/or (iv) development of a long term predator control program; and (k) evidence of consultation with species experts, EPA OEH and DoE in addressing the requirements of this condition, and demonstration of how comments provided by the species experts, EPA OEH and DoE, as a result of this consultation, have been addressed. 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.	6, 9, 10	Pre-construction	RMS	Closed	Koala Management Plan (Section 1 to 11) was approved by DPE on 4 August 2016 and DoEE on 11 August 2016. This updated Koala Management Plan includes the management of the Coolgardie/Bagotville, Broadwater and Woombah/Illuka Koala populations and a Population Viability Analysis (PVA) for the Ballina Koala population.
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.	All	Pre-construction and Construction	Contractor	Closed	Pacific Complete (Delivery Partner of Roads and Maritime Services) has an approved Construction Environmental Management Plan (CEMP) covering Sections 3 to 11. The land use survey was incorporated into the Construction Noise and Vibration Management Plan which was approved by DPE on 3 December 2015. Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
NOISE AND VIBRATION OPERATIONAL NOISE REVIEW							
	D11	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: (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); (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 (c) where necessary, investigate additional feasible and reasonable noise mitigation measures to achieve the criteria outlined in the NSW Road Noise Policy (DECCW, 2011).	All	Pre-construction and Construction	RMS	Closed	These reports were developed following the detailed design process. The Operational Noise Review Report for Sections 3-11 was submitted to DPE on 4 May 2018 and approved on 1 June 2018 (the previous reporting period).
WATER QUALITY MONITORING PROGRAM							
	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).	All	Pre-construction, Construction and Operation	RMS	Open	Pacific Highway Upgrade - Woolgoolga to Ballina Sections 3 to 11 Water Quality Monitoring Program (sixth issue, 21 August 2015) was approved on 24 August 2015. The Water Quality Monitoring Program forms part of the approved Pacific Complete CEMP (Appendix B4 - Construction Soil and Water Quality Management Plan). The first Annual Construction Water Quality Monitoring Report (July 2016 to June 2017) was submitted to the Department of Planning & Environment on 20 February 2018. The second Annual Construction Water Quality Monitoring Report (July 2017 to June 2018) was submitted to the Department of Planning & Environment on 5 April 2019 (within the next reporting period - April - September 2019). The third Annual Construction Quality Monitoring Report (July 2018 to June 2019) was submitted to the Department of Planning Industry & Environment on 6 November 2019 (ie, in the following reporting period).
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.	All	Pre-construction	RMS	Closed	The Hydrological Mitigation Report for Glenugie to Devils Pulpit (Sections 3, 4, 5 & 6) was submitted to DPE on 17 March 2017 with these conditions addressed in the report as follows: (a) Section 5; (b) Section 6; (c) Sections 5.2.2 and 6.4; (d) Sections 6.2 and 6.3; (e) Sections 6.5 (f) Section 5.2; (g) Noted. The Hydrological Mitigation Report for Devils Pulpit to Ballina (Sections 7, 8, 9, 10 and 11) has been submitted to DPE with these conditions addressed in this report, as follows: (a) Section 5; (b) Section 6; (c) Sections 5.2.2 and 6.4; (d) Sections 6.2 and 6.3; (e) Section 6.5; (f) Section 5.2; (g) Noted. Issues closed out and/or landowners have no issues with road works proceeding. DP&E have granted approval of HMR with requirements to provide updates to DP&E on the status of individual treatments. These updates were provided in June 2018 (within the previous reporting period April - September 2018).
	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.	All	Pre-construction	RMS	Closed	The Hydrological Mitigation Reports will advise flood mitigation measures to be implemented at directly affected properties. The Hydrological Mitigation Report for Glenugie to Devils Pulpit (Sections 3, 4, 5 & 6) was submitted to DPE on 17 March 2017 and Table 6.2 addresses this condition. The Hydrological Mitigation Report for Devils Pulpit to Ballina (Sections 7, 8, 9, 10 and 11) has been submitted to DPE and Table 6.3 addresses this condition.
	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.	All	Pre-construction	RMS	Closed	Mark Babister from WMA Water has been appointed as the suitably qualified independent hydrological expert for the project. This is detailed in Sections 1.6 and 2.5 of the Hydrological Mitigation Reports.
	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.	All	Pre-construction	RMS	Closed	Noted. This is detailed in Section 6.3 of both of the Hydrological Mitigation Reports.
TRANSPORT AND ACCESS.							

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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.	3, 8, 9 and 10	Construction and Operation	RMS	Closed	The project Signage Policy and Business Access Strategy was submitted to the Department for approval in September 2018 and approved by the Department of Planning and Environment on 26 November 2018 (reporting period October 2018 - March 2019).
	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.	All	Construction and Operation	RMS	Closed	The project Signage Policy and Business Access Strategy was submitted to the Department for approval in September 2018 and approved by the Department of Planning and Environment on 26 November 2018.
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.	All	Pre-construction and Construction	Contractor	Open	Road dilapidation reports have been prepared for haulage roads utilised during the reporting period. Subsequent reports will be prepared following completion of corresponding construction activities. Reports received have been submitted to local Councils and will continue to be.
URBAN DESIGN AND LANDSCAPING							
	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;	All	Pre-construction and Construction	RMS and Contractor	Closed	Urban Design and Landscape Plan(s) were prepared for the project and approved by the Department on 17 July 2018. An updated Urban Design and Landscape Plan for Glenugie to Maclean, Sections 3 and 4 (Revision 14) was approved on 22 March 2019
	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.	All	Pre-construction and Construction	RMS and Contractor	Closed	Urban Design and Landscape Plan(s) were prepared for the project and approved by the Department on 17 July 2018.
ANCILLARY FACILITIES							

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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.	All	Pre-construction and Construction	RMS and Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. The purpose of the AFMP is to detailed how Pacific Complete will assess, consult, gain approval and manage individual ancillary facility sites during the project. Site specific ancillary facility management plans will be prepared by Pacific Complete and contractors in accordance with the requirements of Appendix B9 Ancillary Facilities Management Plan (ER approved 10 February 2016). Ancillary Facility Management Plans are approved by the ER. If required the plan will be submitted to the Secretary for approval.
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.	3, 8, 10	Construction	Contractor	Open	The Tyndale Borrow Site Management Plan (Portion A) was approved in August 2016 by DPE. The Lang Hill Borrow Site Management Plan (Portion C) was approved 23 November 2016 by DPE. The Lumleys Hill Borrow Site Management Plan (Portion D) was approved on 8 September 2017. The Gibsons Borrow Site Management Plan and the Jali Borrow Site Management Plan (Portion D) were approved on 11 September 2017.
ENVIRONMENTAL REPRESENTATIVE							
	D23	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: (a) be the principal point of advice in relation to the environmental performance of the SSI; (b) monitor the implementation of environmental management plans and monitoring programs required under this approval and advise the Applicant upon the achievement of these plans/programs; (c) have responsibility for considering and advising the Applicant on matters specified in the conditions of this approval, and other licences and approvals related to the environmental performance and impacts of the SSI; (d) ensure that environmental auditing is undertaken in accordance with the Applicant's Environmental Management System(s); (e) be given the authority to approve/reject minor amendments to the Construction Environment Management Plan. What constitutes a "minor" amendment shall be clearly explained in the Construction Environment Management Plan; (f) be given the authority to approve/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); (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; (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 (i) be consulted in responding to the community concerning the environmental performance of the SSI where the resolution of points of conflict between the Applicant and the community is required	All	Pre-construction	RMS	Closed	Murray Curtis, from ERM, is the Environmental Representative for the Stage 2 works (i.e. Sections 3 to 11).
	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.	All	Pre-construction and Construction	RMS	Open	Noted.
CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN							
	D25 (a)-(c)	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: (a) a description of activities to be undertaken during construction of the SSI (including staging and scheduling); (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; (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;	All	Pre-construction and Construction	Contractor	Open	Pacific Complete (Delivery Partner of Roads and Maritime Services) has an approved Construction Environmental Management Plan (CEMP) covering Sections 3 to 11. The Pacific Complete CEMP was approved by DPE on 23 October 2015. Pacific Complete will approve Contractor EMPs, EWWs and ESCPs to ensure compliance with the Pacific Complete CEMP, relevant RMS/PC environmental specifications and the requirements of this CoA.

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	D25 (d)	(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: (i) 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; (ii) measures to minimise hydrology impacts, including measures to stabilise bed and bank structures as required; (iii) measures for the handling, treatment and management of contaminated materials; (iv) 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); (v) 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); (vi) 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; (vii) the issues identified in condition D26; (viii) details of community involvement and complaints handling procedures during construction, consistent with the requirement of conditions C1 to C4; (ix) details of compliance and incident management consistent with the requirements of condition D27; and (x) 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). The Plan shall be submitted for the approval of the Secretary no later than one month prior to the commencement of construction, or as otherwise agreed by the Secretary. The Plan may be prepared in stages, however, construction works shall not commence until written approval of the relevant stage has been received from the Secretary. The 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.	All	Pre-construction and Construction	Contractor	Open	Pacific Complete (Delivery Partner of Roads and Maritime Services) has an approved Construction Environmental Management Plan (CEMP) covering Sections 3 to 11. The Pacific Complete CEMP was approved by DPE on 23 October 2015. Pacific Complete will approve Contractor EMPs, EWWs and ESCPs to ensure compliance with the Pacific Complete CEMP, relevant RMS/PC environmental specifications and the requirements of this CoA.
	D26 (a)	As part of the Construction Environmental Management Plan for the SSI, the Applicant shall prepare and implement: (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: (i) identification of sensitive receivers and relevant construction noise and vibration goals applicable to the SSI stipulated in this approval; (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; (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); (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 (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; (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; (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; (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 (viii) mechanisms for the monitoring, review and amendment of this plan.	All	Pre-construction and Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 - Construction Noise and Vibration Management Plan). The Pacific Complete Construction Noise and Vibration Management Plan was approved by DPE on 3 December 2015. Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with the PC CEMP, relevant RMS/PC environmental specifications and the requirements of this CoA.
	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 oversize 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.	All	Pre-construction and Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Plan) which was approved by DPE on 23 October 2015. Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with the PC CEMP, relevant RMS/PC environmental specifications and the requirements of this CoA.
	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.	All	Pre-construction and Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan) which was approved by DPE on 23 October 2015. Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with the PC CEMP, relevant RMS/PC environmental specifications and the requirements of this CoA.

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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 EPA-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, EPA-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 EPA-OEH's Aboriginal Heritage Information Management System (AHIMS) register; (D) procedures for dealing with human remains in accordance with the Unexpected Human Remains Procedure. (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.	All	Pre-construction and Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan) which was approved by DPE on 23 October 2015. Pacific Complete will be submitting the Aboriginal and Non-Aboriginal Heritage and Education Training Package which forms Appendix A of the Construction Heritage Management Plan in February 2015 following the completion of the consultation period as of 12 February 2015. Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with the PC CEMP, relevant RMS/PC environmental specifications and the requirements of this CoA. An Unexpected Human Remains Procedure is currently in development, in consultation with the RAPs and will be submitted to the Secretary for approval once it has been finalised.
	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 EPA-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 <i>Phytophthora cinnamomi</i> and myrtle rust (<i>Puccinia psidii</i> 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 EPA-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.	All	Pre-construction and Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Sub-Plan). The Pacific Complete CEMP was approved by DPE on 23 October 2015. Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with the PC CEMP, relevant RMS/PC environmental specifications and the requirements of this CoA.
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.	All	Pre-construction and Construction	RMS and Contractor	Open	The Compliance Tracking Program & Pre-Construction Compliance Report, Stage 2 Sections 3 to 11 was submitted to the Secretary on 4 March 2016 and approved on 16 March 2016. Six monthly reports have been submitted for the following reporting periods: - Report 1 - April to September 2016 - Report 2 - October 2016 to March 2017 - Report 3 - April 2017 to September 2017 - Report 4 - October 2017 to March 2018 - Report 5 - April 2018 to September 2018 - Report 6 - October 2018 to March 2019 - Report 7 - April 2019 to September 2019 (this report)
OPERATIONAL NOISE AND VIBRATION COMPLIANCE							

Category	Part	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Comment
	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.	All	Operation	RMS	Open	Noted. The requirements of this CoA relate to the operational phase of the project.
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.	All	Construction and Operation	RMS	Open	Noted. The requirements of this CoA relate to the operational phase of the project.
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.	All	Operation	RMS	Open	Noted. The requirements of this CoA relate to the operational phase of the project.
	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.	All	Operation	RMS	Open	Noted. The requirements of this CoA relate to the operational phase of the project.
		Modification 1 (15/10/2015) Modification 2 (7 October 2015) Modification 5 (27 September 2017) Modification 6 (21 February 2018)					

COMPLIANCE TRACKING - Project Modification # 6- Glenugie Link Mitigation Measures

Woolgoolga to Ballina SSI-4963

ID #	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Contract Reference	Comment
BIODIVERSITY							
MOD3A-FF1	Works would be managed in accordance with the approved Woolgoolga to Ballina Pacific Highway Upgrade (sections 3-11) Construction Flora and Fauna Management Plan (CFFMP, Appendix B2, CEMP).		Construction	Contractor	Open		The Pacific Complete Construction Environmental Manaement Plan, includes Appendix B2 Construction Flora and Fauna Management Sub-Plan. The Pacific Complete CEMP was approved by DPE on 23 October 2015. Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with the PC CEMP, relevant RMS/PC environmental specifications and the requirements of this CoA.
MOD3A-FF2	Where necessary, additional nest boxes would be installed in accordance with the approved Nest Box Management Plan Woolgoogla to Ballina pacific Highway Upgrade (Section 3) (Appendix A of the Construcion Flora and Fauna Management Plan).		Construction	Contractor	Open		Nest Box MP Section 3 was approved 23/2/15. At 31 March 2019, 12 nest boxes have been installed within Glenugie Link.
MOD3A-FF3	Works would be undertaken in accordance with approved threatened species management plans, including (but not limited to): - Threatened Frog Management Plan (Appendix E, Construction Threatened Flora and Fauna Management Plan) - Coastal Emu Management Plan (Appendix G, Construction Threatened Flora and Fauna Management Plan) - Threatened Glider Management Plan (Appendix I, Construction Threatened Flora and Fauna Management Plan) - Threatened Mammal Management Plan (Appendix T, Construction Threatened Flora and Fauna Management Plan) - Microbat Management Plan Sections 3-11 (Appendix S, Construction Threatened Flora and Fauna Management Plan)		Construction	Contractor	Open		The following Threatened Species Management Plans have been prepared and approved: Threatened Flora Management Plan Update 1 (Section 1, Section 2, Waves 1, 2 and 3) DPE Approval 30 April 2015, DoE Approval 5 May 2015. Threatened Flora Management Plan Update 2 (Sections 3 to 11) DPE Approval 21 August 2015, DoE Approval 4 September 2015. Threatened Rainforest Plants Management Plan (Section 10) DPE Approval 11 September 2015. Threatened Mammal Management Plan Update 1 DPE Approval 7 May 2015, DoE Approval 12 May 2015. Threatened Mammal Management Plan Update 2 DPE Approval 21 October 2015, DoE Approval 25 October 2015. Threatened Invertebrates Management Plan DPE Approval 29 July 2015. Threatened Fish Management Plan DPE Approval 30 July 2015. Threatened Frog Management Plan DPE Approval 7 May 2015. Threatened Glider Management Plan DPE Approval 4 May 2015. Coastal Emu Management Plan (Sections 3 and 4, excluding Wave 3) DPE Approval 3 June 2015. Coastal Emu Management Plan (includes updates for Wave 3) DPE Approval 18 December 2015. Microbat Management Plan (Section 3 to 11) DPE approval 25 May 2015. Koala Management Plan (Section 1 to 11), DPE Approval 4 August 2016, DoE Approval 11 August 2016.
MOD3A-FF4	Survey for frog populations (including but not limited to the Greenthighed Frog) will be undertaken in accordance with the approved Woolgoolga to Ballina Pacific Highway Upgrade Threatened Frog Management Plan (Appendix E of the Threatened Flora and Fauna Management Plan) prior to construction.		Pre-Construction	Contractor	Open		Baseline monitoring, prior to construction, is included in the Appendices of the Threatened Frog Management Plan, approved by DPE 7 May 2015. This includes: Appendix C Giant Barred Frog; Appendix D Wallum Sedge Frog; and Appendix E Green Thighed Tree Frog.
MOD3A-FF5	The locations of connectivity structures will be determined in consultation with the relevant agencies. Once the final locations of the connectivity structures are determined in consultation with the EPA, they will be included in an update to the connectivity strategy required by MCoA D2.		Pre-Construction	Contractor	Open		The Connectivity Strategy (Sections 3-11) was submitted to Department of Planning & Environment and the Department of Environment and Energy on 14 December 2016. Approval of this plan was received by Department of Planning and Environment on 27 April 2017 and Department of the Environment and Energy on 16 May 2017. An updated Connectivity Strategy (Sections 3 - 11) which includes Glenugie Link was submitted to the Department of Planning and Environment and the Department of Environment and Energy on 30 August 2018.
Hydrology, water quality and soil management							
MOD3A-SWH1	Works would be managed in accordance with the Woolgoolga to Ballina Pacific Highway Upgrade (sections 3-11) Construction Soil and Water Management Plan (CSWMP, Appendix B4, CEMP).		Construction	Contractor	Open		The Pacific Complete Construction Environmental Manaement Plan, includes Appendix B4 Construction Soil and Water Management Sub-Plan. The Pacific Complete CEMP was approved by DPE on 23 October 2015. Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with the PC CEMP, relevant RMS/PC environmental specifications and the requirements of this CoA.
MOD3A-SWH2	Following development and refinement of the detailed design, the potential impacts to hydrology will be reviewed. If required an update to the hydrological mitigation report will be prepared and submitted to the Department of Planning and Environment.		Construction	Contractor	Open		The Hydrological Mitigation Report for Glenugie to Devils Pulpit (Sections 3, 4, 5 & 6) was submitted to DPE on 17 March 2017, addressing conditions of MCoA D13 and D14 in the report. Issues closed out and/or landowners have no issues with road works proceeding. DP&E have granted approval of HMR with requirements to provide updates to DP&E on the status of individual treatments. These updates were provided in June 2018. If required an update to the HMR will be submitted to DP&E.
Aboriginal Heritage							
MOD3A-AH1	Works will be managed in accordance with the Woolgoolga to Ballina Pacific Highway Upgrade (sections 3-11) Construction Heritage Management Plan (Appendix B5, CEMP).		Construction	Contractor	Open		The Pacific Complete Construction Environmental Manaement Plan, includes Appendix B5 Construction Heritage Management Sub-Plan. The Pacific Complete CEMP was approved by DPE on 23 October 2015. Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with the PC CEMP, relevant RMS/PC environmental specifications and the requirements of this CoA.
MOD3A-AH2	Measures to minimise impacts through the modification area are: - The design and construction of the proposed modification will minimise subgrade excavations where practicable. - Trees and vegetation will be cleared to the ground level with the roots left in situ. - An exclusion zone fence will be erected along the length of the proposed modification are and will remain in place for the duration of the project.		Construction	Contractor	Open		Noted.
MOD3A-AH3	In accordance with the Cultural Heritage Management Plan, a cultural awareness strategy will be developed for the proposed modification area prior to the commencement of construction in consultation with the RAPs.A RAP working group will be established and maintained throughout the construction of the proposed realignment.		Construction	Contractor	Closed		During the previous reporting period (April - September 2018), the Cultural Heritage Management Plan was developed in consultation with the RAPs and RMS.

ID #	Requirement	Stage 2 (Section 3-11)	Timing	Responsibility	Status	Contract Reference	Comment
Traffic, transportation and access							
MOD3A-TTA1	Traffic management measures would be implemented on the proposed modification site in accordance with the approved Woolgoolga to Ballina Pacific Highway Upgrade (sections 3-11) Construction Traffic and Access Management Plan (Appendix B1, CEMP).		Construction	Contractor	Open		The Pacific Complete Construction Environmental Management Plan, includes Appendix B1 Construction Traffic and Access Management Sub-Plan. The Pacific Complete CEMP was approved by DPE on 23 October 2015. Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with the PC CEMP, relevant RMS/PC environmental specifications and the requirements of this CoA.
MOD3A-TTA2	Any ancillary facilities required for the project would be undertaken in accordance with the approved Woolgoolga to Ballina Pacific Highway Upgrade (sections 3-11) Ancillary Facilities Management Plan (Appendix B9, CEMP).		Construction	Contractor	Open		Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. The purpose of the AFMP is to detailed how Pacific Complete will assess, consult, gain approval and manage individual ancillary facility sites during the project. Site specific ancillary facility management plans will be prepared by Pacific Complete and contractors in accordance with the requirements of Appendix B9 Ancillary Facilities Management Plan (ER approved 10 February 2016). Ancillary Facility Management Plans are approved by the ER. If required the plan will be submitted to the Secretary for approval.
Visual amenity and landscaping							
MOD3A-VU1	A landscape design package will be developed for the landscaping and rehabilitation of the riparian corridor surrounding Picaninny Creek. The landscape design package will be developed in consultation with the relevant government authorities.		Construction	Contractor	Open		Noted
MOD3A-VU2	The area incorporated in this modification would be incorporated into an updated Urban Design and Landscape Plan: Glenugie to Maclean Sections 3 and 4, and lodged with the Department of Planning and Environment for approval in accordance with MCoA D20. This UDLP will include landscape treatments and measures to minimise the visual impact as a result of the refined alignment.		Construction	Contractor	Open		The updated Urban Design and Landscape Plan for Glenugie to Maclean, Sections 3 and 4 (Revision 14) was approved on 22 March 2019.
Noise and vibration							
MOD3A-NV1	Works would be managed in accordance with the Woolgoolga to Ballina Pacific Highway Upgrade (sections 3-11) Construction Noise and Vibration Management Plan (Appendix B3, CEMP). Subject to approval of the modification, the CNVMP impact tables would be updated to incorporate the increase in size of Noise Catchment Area – A, and the updated impacts.		Construction	Contractor	Closed		The Construction Noise and Vibration Management Plan (Appendix B3 of the CEMP) was approved on 3 December 2015. The CEMP & CNVMP impact tables for Noise Catchment Area A, have been updated following this modification approval.
MOD3A-NV2	An Addendum to the Operational Noise Report submitted to satisfy MCoA D11 would be submitted to the Department of Planning and Environment following detailed design.		Construction	Contractor	Open		The Operational Noise Review Report for Sections 3-11 was submitted to DPE on 4 May 2018 and approved on 1 June 2018. An updated ONR has been provided to Department on 6 November 2019 (in the next reporting period), which has captured the area subject to the modification.
Non-Aboriginal heritage							
MOD3A-NAH1	Works would be managed in accordance with the Woolgoolga to Ballina Pacific Highway Upgrade (sections 3-11) Construction Heritage Management Plan (Appendix B5, CEMP), which includes the management of any unexpected finds during construction		Construction	Contractor	Open		The Pacific Complete Construction Environmental Management Plan, includes Appendix B5 Construction Heritage Management Sub-Plan. The Pacific Complete CEMP was approved by DPE on 23 October 2015. Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with the PC CEMP, relevant RMS/PC environmental specifications and the requirements of this CoA.

COMPLIANCE TRACKING - MITIGATION MEASURES
Woolgoolga to Ballina SSI-4963

Note: only includes wave 1,2,3 & 4



				Stage 1 (as defined in the W2B Staging Report)					Stage 2 (Section 3-11)		Timing	Responsibility	Status	Reference / Comment
Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3		Soft soil waves				
HYDROLOGY AND FLOODING														
HF1	Hydrology and Flooding	Flood models	Flood models for the areas of the project that are in the Clarence, mid Richmond and lower Richmond rivers will be updated to inform detailed design.						4, 5, 6, 8, 9, 10	NA	Pre-construction	RMS	Closed	Flood modelling (final models) have been developed as part of detailed design and addressed during preparation of Hydrological Mitigation Reports.
HF2	Hydrology and Flooding	Flood models	Roads and Maritime will update the bathymetrical data at the relevant crossing of the Clarence River to inform detailed design of the crossing.						4, 5	NA	Pre-construction	RMS	Closed	Pacific Complete has ensured that bathymetric data at the Clarence River crossing was obtained as part of detailed design, as described in Section 4.1 and Fibure 4.1 of the Hydrological Mitigation Report for Glenugie to Devils Pulpit (Sections 3, 4, 5 and 6), submitted to DPE on 17 March 2017. The updated Clarence River model included input of additional topographic and bathymetric survey information, refined bridge loss coefficients, re-calibration of the model to the January 2013 flood event and validation against the March 2001 flood event. The re-calibrated Clarence River flood model has been adopted as the basis for the hydraulic assessments for the detailed design phase of the project.
HF3	Hydrology and Flooding	Operational impacts on cane drains	Cane drain diversions will be designed and constructed in consultation with the relevant cane industry stakeholders and impacted landowners. This will consider the potential diversions detailed in the Working Paper – Hydrology and flooding and the additional assessment provided in Chapter 3 of the Submissions / Preferred Infrastructure Report.						All	All	Pre-construction and construction	RMS	Closed	This has been considered during detailed design and in consultation with land acquisition processes. This requirement is also addressed in Pacific Complete CEMP. Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. During construction relevant stakeholders have been consulted as required. The Hydrological Mitigation Report for Glenugie to Devils Pulpit (Sections 3, 4, 5 & 6) was submitted to DPE on 17 March 2017. This report represents the design at December 2016 stage of the program and includes the road alignment, channel earthworks, cross drainage and bridge designs at various levels of design development and reflects the substantial detailed design stage for infrastructure within the Clarence Regional floodplain. The flood model will be updated once the final detailed design is complete. The Hydrological Mitigation Report for Devils Pulpit (Sections 7, 8, 9, 10 & 11) has been submitted to DPE. This report represents the design at the April 2017 stage of the program and includes the road alignment, channel earthworks, cross drainage and bridge designs at various levels of design development. Generally, this point in the program reflects the substantial detailed design stage for infrastructure within the Richmond regional floodplain. The flood model will be updated once the final detailed design is complete.
HF4	Hydrology and Flooding	Permanent road fencing	Any permanent fencing at culvert and bridge crossings will consider the potential for blockage and be designed and operated to maintain the existing flood regime.						All	NA	Pre-construction	RMS	Closed	This has been considered during detailed design.
HF5	Hydrology and Flooding	Permanent road fencing	Detailed design for permanent road fencing will consider hydrology and flooding impacts.						All	NA	Pre-construction	RMS	Closed	This has been considered during detailed design.
HF6	Hydrology and Flooding	Scour protection	Scour and erosion protection measures at temporary and permanent waterway crossings will be provided upstream and downstream of the highway, particularly within 50 metres of Class 1 waterways or within the range of the Oxleyan Pygmy Perch as identified in section 3.9.6 of the Working paper – Biodiversity and the supplementary biodiversity assessment in Appendix J of the Submissions / Preferred Infrastructure Report. This will be undertaken in consultation with the Department of Primary Industries (Fisheries).						All	All	Pre-construction.	RMS	Open	Scour and erosion protection meaures are addressed in Section 5.2.2 of the Hydrological Mitigation Report for Glenugie to Devils Pulpit. Section 6.1.3 of the Hydrological Mitigation Report for Devils Pulpit to Ballina. All works in OPP waterways have been developed in consultation with DPI Fisheries.
HF7	Hydrology and Flooding	Waterway diversions	Waterway diversions will be designed in consultation with Office of Environment and Heritage, NSW Office of Water and Department of Primary Industries (Fisheries) so that the final diversion mimics, where feasible and reasonable, the characteristics of the waterway that is being diverted. Characteristics include flow regime, flow velocity, base material, vegetation and habitat for aquatic fauna.						All	All	Pre-construction and Construction	RMS	Open	This has been addressed during detailed design in consultation with agencies. During construction EWMS for waterway diversions/crossings have been developed in consultation with the relevant agencies.
HF8	Hydrology and Flooding	Waterway diversions	Revegetation of waterway diversions and surrounding areas will be undertaken in accordance with the following principles: • Diversions will be stabilised prior to the diversion receiving flows, in conjunction with the establishment of other scour and erosion control measures. • Diversions will establish appropriate vegetation communities along the channel bed and banks, using endemic native species.						All	All	Construction	RMS and Contractor	Open	This has been addressed within the approved landscape designs and managed during construction by the Pacific Complete Construction Soil and Water Quality Management Plan. Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
HF9	Hydrology and Flooding	Management of flows for aquatic habitat and movement	Velocities of flood flows through watercourse and floodplain structures (i.e. bridges and culverts) will be assessed during detailed design in areas identified as known and potential habitat for the Oxleyan Pygmy Perch and the Purple-spotted Gudgeon in consultation with Department of Primary Industries (Fisheries). The design of these structures will consider the predicted changes to velocities from the existing case due to the project.						All	NA	Pre-construction	RMS	Closed	This has been addressed during detailed design in consultation with DPI Fisheries.
HF10	Hydrology and Flooding	Picaninny Creek diversion	Batter stability will be assessed and sufficient room provided on both sides of the diversion to allow access for maintenance and to meet batter stability requirements.						3	NA	Pre-construction	RMS	Closed	This has been addressed during detailed design.
HF11	Hydrology and Flooding	Impacts on farm dams	Farm dams located within or partially within the project boundary will be acquired as part of the acquisition process in accordance with the Land Acquisition (Just Terms Compensation) Act 1991 .						All	All	Pre-construction	RMS	Closed	Noted.
HF12	Hydrology and Flooding	Impacts on farm dams	Potential impacts to farm dams located downstream of the project that are fed by catchments upstream, and that have a diversion of rainfall as a result of the project, will be considered during the relevant property acquisition process.						All	All	Pre-construction	RMS	Closed	Noted.
HF13	Hydrology and Flooding	Evacuation and access	Detailed design will consider flood access and evacuation for affected landowners including changes in stock access routes.						All	All	Pre-construction	RMS	Closed	This has been addressed during the property acquisition process and detailed design to ensure flood access and evacuation is maintained.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
HF14	Hydrology and Flooding	Evacuation and access	The level of flood immunity of Eggins Drive into Corindi will be built at a 100 year ARI as agreed with Coffs Harbour City Council.						1	NA	Construction	RMS	N/A	This six monthly compliance report applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
HF15	Hydrology and Flooding	Construction impacts on cane drains	The potential impacts of ancillary facilities and haul roads on cane drains will be further investigated and addressed when ancillary facility locations are confirmed. The design of these ancillary facilities will be developed in consultation with relevant cane industry stakeholders, affected landowners, and in accordance with the following principles: • Maintain conveyance characteristics of existing cane drains. • Provide adequate capacity in temporary drainage to prevent blockages.						4, 5, 6, 8,9,10,11	All	Pre-construction and construction	RMS	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. The purpose of the AFMP is to detail how Pacific Complete will assess, consult, gain approval and manage individual ancillary facility sites during the project. Site specific ancillary facility management plans will be prepared by Pacific Complete and construction contractors. Pacific Complete has been successful in minimising overall flooding impacts in the Clarence regional and local floodplains as outlined in the Hydrological Mitigation Reports for Clarence and Richmond River floodplains. These reports have been developed in consultation with relevant stakeholders.
HF16	Hydrology and Flooding	Goodwood Street underpass	A drainage structure with an equivalent capacity of the current Goodwood Street underpass will be installed for the duration of construction.						4	3	Pre-construction	RMS and Contractor	Closed	This has been addressed during detailed design and is being managed during construction as outlined in the Hydrological Mitigation Report for Clarence River.
HF17	Hydrology and Flooding	Bridge pier construction	Any temporary infrastructure associated with the construction of bridges in the Clarence River, Clarence North Arm, Richmond River, Tuckombil Canal and Emigrant Creek will be secured or removed from the river and floodplain during flood events so not to create a debris hazard or blockage during a flood event.						5, 8 and 10	NA	Construction	Contractor	Open	Noted. This requirement is addressed in Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan) and relevant Flood Action and Warning Plans for constructors workin gin these areas. These plans identify the risks and appropriate mitigation measures to minimise the potential for material and equipment to contaminate land and waters downstream and to ensure the safety of its project staff in the event of a flood warning or flood watch issued.
HF18	Hydrology and Flooding	Bridge pier construction	Appropriate span lengths of bridges will be specified during detailed design that considers the susceptibility of individual watercourse crossings to debris blockage.						All	NA	Pre-construction	RMS	Closed	This was addressed as part of detailed design.
HF19	Hydrology and Flooding	Bridge pier construction	All work within 40 metres of a permanent watercourse, crossed by the project, will be undertaken in accordance with the NSW Office of Water 'Guidelines for Controlled Actions' and industry best practice including maintaining where feasible and reasonable the geomorphic integrity and natural hydrological flow regime.						All	All	Construction	Contractor	Open	This requirement is addressed in Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMSS and RMS/PC specifications are used to ensure compliance with this MCoA. During construction relevant stakeholders have been consulted where required.
HF20	Hydrology and Flooding	Temporary fencing	The design of temporary fencing at culvert and bridge crossings will consider the potential for blockage and be designed and operated in a manner that does not result in impacts on flooding.						All	All	Construction	Contractor	Open	This requirement is addressed in Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMSS and RMS/PC specifications are used to ensure compliance with this MCoA. During construction relevant stakeholders have been consulted where required.
HF21	Hydrology and Flooding	Climate change impacts	The need for design modifications to address changes in flood behaviour as a result of climate change will be considered in accordance with Roads and Maritime' Climate Change Plan (Roads and Maritime, 2012).						All	NA	Pre-construction and operation	RMS	Open	This has been considered as part of detailed design. Section 4.2.5 of the Hydrological Mitigation Reports discusses sensitivity analyses, which includes consideration and modelling of climate change impacts. The EIS also considered the projects potential impacts under future climiate scenarios and the results are included as appendices in these reports.
HF22	Hydrology and Flooding	Impacts of ancillary facilities on flooding	Recommendations made in Table 8-8 of Working paper – Hydrology and flooding to minimise the flood impacts of ancillary facilities will be considered in the final location and layout of ancillary facilities.						All	All	Pre-construction	RMS and Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. All ancillary facility assessments consider potential impacts on hydrology and flooding.
HF23	Hydrology and Flooding	Meeting flood management objectives	Design objectives (for road flood immunity and flood management will apply during the detailed design phase. Where these objectives are not met, Roads and Maritime will work to either: • Achieve compliance thorough modified embankment or drainage design. • Achieve an acceptable level of mitigation of impacts through alternative design measures (e.g. raised access tracks) in consultation with the affected land owner.						All	All	Pre-construction	RMS	Closed	This has been addressed during detailed design and is discussed in the Hydrological Mitigation Reports for Clarence and Richmond River floodplains. The HMR details where flood immunity objectives have not been met and consultation within individual stakeholders and investigations are ongoing.
HF24	Hydrology and Flooding	Drainage structures	The design of drainage structures across Chatsworth Island will be further reviewed during detailed design to enable the most appropriate and cost-effective structures to be installed.						5	NA	Pre-construction	RMS	Closed	This has been considered during detailed design.
HF25	Hydrology and Flooding	Drainage structures	Maintenance regime of drainage structures will be considered during detailed design.						All	NA	Pre-construction	RMS	Closed	This has been addressed during detailed design. Section 6.5 of the Hydrological Mitigation Reports address the future of drainage regimes for drainage structures following commisioning of the project.
HF 26	Hydrology and Flooding	Drainage structures	Additional culverts north of Chaffin Creek at the overflow channel around station 52.6, will be hydraulically modelled and confirmed during the detailed design to manage potential flood impacts, to meet the flood management objectives detailed in the EIS.						3	NA	Pre-construction	RMS	Closed	The Chaffin Creek local catchment has been hydraulically modelled and these models used to size cross drainage structures, to test impact of the upgrade on flooding in adjacent land for local catchments. Refer to Section 4.2.3.2 of the Hydrological Mitigation Report (Glenugie to Devils Pupit), submitted to DPE on 17 March 2017.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
HF 27	Hydrology and Flooding	Drainage structures	Roads and Maritime, in consultation with Clarence Valley Council and the relevant landowner, will consider opportunities to improve the drainage system performance in the Shark Creek area, where feasible and reasonable, during the detailed design phase.						4	All	Pre-construction	RMS	Closed	Pacific Complete is consulting with Clarence Valley Council on flood impacts and mitigation measures, which are detailed in the Hydrological Mitigation Reports.
HF 28	Hydrology and Flooding	Drainage structures	The detailed design of the bridges over Shark Creek and Tyndale cane drain 1 and 2 (Crackers and Lee drain) will consider fauna connectivity in addition to the hydraulic function of these structures.						4	NA	Pre-construction	RMS	Closed	This has been addressed during detailed design and developed of Connectivity Strategy for project.
HF 29	Hydrology and Flooding	Drainage structures	Detailed design will investigate viable options to maintain the existing flood behaviour in James Creek.						5	NA	Pre-construction	RMS	Closed	This has been addressed during detailed design and is discussed in the Hydrological Mitigation Reports for Clarence and Richmond River floodplains. The HMR details where flood immunity objectives have not been met and consultation within individual stakeholders and investigations are ongoing.
HF 30	Hydrology and Flooding	On-going consultation on drainage matters	Consultation with affected landowners will be undertaken during detailed design and construction regarding flooding impacts on properties, residences and other structures.						All	All	Pre-construction and construction	RMS	Closed	This has been addressed during detailed design and is discussed in the Hydrological Mitigation Reports for Clarence and Richmond River floodplains. The HMR details where flood immunity objectives have not been met and consultation within individual stakeholders and investigations are ongoing.
SOILS, SEDIMENT AND WATER														
SSW1	Soils, sediment and water	Design of cut-and-fill batters	Batter slope gradients will be designed to minimise erosion of select topsoil.						All	All	Pre-construction	RMS	Closed	This has been addressed during detailed design and incorporated into landscape design packages.
SSW2	Soils, sediment and water	Design of cut-and-fill batters	Where feasible, bench cuttings will 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.						All	All	Pre-construction	RMS	Closed	This has been addressed during detailed design and incorporated into landscape design packages.
SSW3	Soils, sediment and water	Management of soils, sediment and water issues	As part of the Construction Environmental Management Plan, a soils and water management plan will be prepared and include (but not limited to): • Erosion and sediment control plans for all stages of construction. • Consideration of soil erodibility. • At-source erosion controls (e.g. check dams). • Sedimentation basin construction and management. • Protection of waterways. • Acid sulfate soil sub-plan issues (including from groundwater drawdown). • 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.						All	All	Pre-construction	RMS and Contractor	Closed	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW4	Soils, sediment and water	Management of soils, sediment and water issues	Erosion and sediment control plans will be developed in line with current Roads and Maritime specifications and as detailed in the Working paper – Water quality.						All	All	Pre-construction	RMS and Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete will approve Contractor EMPs, EWMs and ESCPs to ensure compliance with this requirement. Erosion & Sediment Control Plans are progressively designed to align with the current works program. These are designed and approved in conjunction with qualified Soil Conservationist/s and in line with RMS specifications.
SSW5	Soils, sediment and water	Management of soils, sediment and water issues	A soil conservationist will be engaged during detailed design to inform the soils and water management plan.						All	All	Pre-construction	RMS	Closed	Soil conservations have been engaged to inform erosion and sediment control plans prepared by contractors that form part of the soil and water management plans.
SSW6	Soils, sediment and water	Management of soils, sediment and water issues	Sedimentation basins and water quality ponds will be sized and located in accordance with the principles identified in the Working paper – Water quality.						All	All	Pre-construction and construction	RMS	Open	This has been addressed during detailed design and the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA. All sediment basins design sizes and volumes have been carried out by Soil Conservationist in accordance with RMS Specs G36, G38 and EIS working Paper (Water Quality) and Bluebook guidelines, and in accordance with project EPL requirements.
SSW7	Soils, sediment and water	Management of soils, sediment and water issues	Exposed areas will be progressively rehabilitated. Methods will include permanent revegetation, or temporary protection with spray mulching or cover crops.						All	All	Construction	RMS and Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW8	Soils, sediment and water	Management of soils, sediment and water issues	Any necessary approvals will be obtained in accordance with Roads and Maritime specification G36 for permanent and temporary waterway crossings.						All	All	Construction	Contractor	Open	Noted. This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW9	Soils, sediment and water	Management of soils, sediment and water issues	All work potentially affecting wetlands will be undertaken in consideration of the requirements outlined in the NSW Wetlands Management Policy 2010.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW10	Soils, sediment and water	Stockpile management	Topsoil, earthworks and other excess spoil material will be stockpiled and managed in accordance with Roads and Maritime Stockpile Management Guidelines (Roads and Maritime, 2011a) and the "Management of Surplus Material" in Section 3.9 of the Submissions / Preferred Infrastructure Report.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
SSW11	Soils, sediment and water	Stockpile management	Where reasonable and feasible, stockpiles will: • Not require removal of areas of native vegetation. • Be located outside of known areas of weed infestation. • Be located such that waterways and drainage lines are not directly or indirectly impacted.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA. Pacific Complete has developed Environmental Toolbox talks for Mulch Stockpiles and Managing Stockpiles, which incorporate these conditions.
SSW12	Soils, sediment and water	Stockpile management	Where practicable, stockpiles will be located away from areas subject to concentrated overland flow. Stockpiles located on a floodplain be finished and contoured so as to minimise loss of material in flood or rainfall events.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete will approve Contractor EMPs, EWMs and ESCPs to ensure compliance with this requirement. This requirement is represented in the Stockpile Toolbox talks.
SSW13	Soils, sediment and water	Stockpile management	Topsoil will be stockpiled separately and inspected for noxious weed seedlings at six monthly intervals and controlled with herbicide as required.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW14	Soils, sediment and water	Stockpile management	All construction stockpiles will 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.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA. This condition is further reinforced in Pacific Complete's Stockpile Toolbox talks.
SSW15	Soils, sediment and water	Stockpile management	Stockpiles containing potential acid sulfate soils will be lined, banded and covered in accordance with relevant guidelines.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW16	Soils, sediment and water	Stockpile management	Management of tannin leaching from vegetation mulch will be in accordance with Roads and Maritime' Environmental Direction – Management of Tannins from Vegetation Mulch (Roads and Maritime, 2012).						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA. The RMS Direction has been incorporated in the Management of Mulch Stockpiles Toolbox talk.
SSW17	Soils, sediment and water	Management of contamination	A Stage 1 Preliminary Site Investigation will be conducted to verify past and present potentially contaminating activities, potential contaminants of concern and the need for further investigation. This will include a review of past highway crashes and spills and the associated contamination risks.						All	All	Pre-construction	RMS	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B8 Construction Contamination Land Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA. The EIS identified potential contamination sites along the alignment. Further investigations have been carried out where disturbance of these sites was anticipated from construction activities.
SSW18	Soils, sediment and water	Management of contamination	If necessary, a Stage 2 Detailed Site Investigation will be undertaken to: • 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.						All	All	Pre-construction	RMS	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B8 Construction Contamination Land Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA. The EIS identified potential contamination sites along the alignment. Further investigations have been carried out where disturbance of these sites was anticipated from construction activities. Stage 2 investigations have been carried out where required.
SSW19	Soils, sediment and water	Management of contamination	If required, a Stage 3 Remedial Action Plan will be produced, detailing the remediation goals, environmental safeguards, and any necessary approval and licence requirements in accordance with NSW Office of Environment and Heritage guidelines.						All	All	Pre-construction	RMS	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B8 Construction Contamination Land Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA. The EIS identified potential contamination sites along the alignment. Further investigations have been carried out where disturbance of these sites was anticipated from construction activities. Stage 3 remediation action plans have been / will be carried out where required.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
SSW20	Soils, sediment and water	Management of contamination	Where further assessment indicates that further action is not required, Roads and Maritime' Contaminated Land Management Guideline (RTA, 2005a) will be applied to address any contamination issues and prevent any associated adverse impacts.						All	All	Pre-construction	RMS	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW21	Soils, sediment and water	Management of contamination	A hazardous materials buildings assessment will 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.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B8 Construction Contamination Land Management Plan). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this requirement. Hazardous materials buildings assessments have been carried out for structures that have been demolished as part of the project.
SSW22	Soils, sediment and water	Emergency spill response	An emergency spill response plan will be developed and incorporated into the soils and water management plan. This plan will detail measures for the prevention, containment and clean-up of accidental spills of fuels and chemicals.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW23	Soils, sediment and water	Emergency spill response	The storage, handling and use of the chemicals and fuels will 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).						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW24	Soils, sediment and water	Acid sulfate soils	Strategies to remove / reduce risks associated with acid sulfate soils will be identified.						All	All	Pre-construction and Construction	RMS and Contractor	Open	This is being considered as part of detailed design and during construction. This requirement is also addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW25	Soils, sediment and water	Acid sulfate soils	An acid sulfate soils management plan will be implemented in accordance with Guidelines for the Management of Acid Sulfate Materials (Roads and Maritime 2005) and Waste Classification Guidelines Part 4: Acid Sulfate Soils (DECC 2008), where there is a probability of encountering acid sulfate soils during construction.						All	All	Construction	Contractor	Open	This requirement is also addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW26	Soils, sediment and water	Soil erosion and sedimentation control	Appropriate erosion and sediment controls, following the guidelines of the 'Blue Books' (Landcom, 2004 and DECC, 2008a), and Roads and Maritime' Technical Guideline – Temporary Stormwater Drainage for Main Road Construction (Roads and Maritime, 2010b) will be established before the start of construction and maintained in effective working order for the duration of the construction period until site stabilisation.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW27	Soils, sediment and water	Soil erosion and sedimentation control	Works within waterways will consider the need to maintain fish passage, in consultation with the Department of Primary Industries (Fisheries).						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW28	Soils, sediment and water	Soil erosion and sedimentation control	Flow discharge points will be designed with erosion controls to manage the flow velocities.						All	All	Pre-construction	RMS	Open	This has been addressed during detailed design. All discharge points from sediment basins are designed and approved by the CPESC and PC.
SSW29	Soils, sediment and water	Design and maintenance of construction sedimentation basins	Where appropriate, construction phase sedimentations basins will be designed so they could be retained and used as permanent operational water quality ponds, where required for operational purposes.						All	All	Pre-construction	RMS	Open	This has been considered as part of detailed design.
SSW30	Soils, sediment and water	Design and maintenance of construction sedimentation basins	Sizing of sedimentation basins that drain into the Solitary Islands Marine Park will be reviewed to consider the use of 90th percentile sedimentation basins.						1	NA	Pre-construction	RMS	NA	Not Applicable for Sections 3 to 11. Only applies to Section 1.
SSW31	Soils, sediment and water	Design and maintenance of construction sedimentation basins	Sedimentation basins will be inspected at regular intervals and following significant rainfall events to assess available water storage capacity, water quality, structural integrity and debris levels.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Sediment basins are inspected regularly by environmental inspectors and Soil Conservationists. Sediment basins are also inspected pre and post rainfall events across the project.
SSW32	Soils, sediment and water	Design and maintenance of construction sedimentation basins	Where appropriate, an approved flocculent will be applied to sedimentation basins as early as possible so that early mixing of flocculants occurs. Water quality will be tested prior to discharge in accordance with any licence requirements.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Inspections and records are kept of flocculant use in sedimentation basins, according to licence requirements in the Environment Protection Licence, issued by the Environment Protection Authority.
SSW33	Soils, sediment and water	Design and maintenance of construction sedimentation basins	Where sediment has built up in a basin to a point where the total sediment storage zone has reached capacity, sediment will be removed and appropriately disposed of.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). This requirement is incorporated into EWMS for removal of sediment from sediment basins.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
SSW34	Soils, sediment and water	Design and maintenance of construction sedimentation basins	Water from sedimentation basins will be used for construction purposes, such as dust suppression, where feasible.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Water from sedimentation basins is regularly used across the project for dust suppression during construction. This condition is included in Sustainability Action Plans and relevant EWMS.
SSW35	Soils, sediment and water	Design and maintenance of construction sedimentation basins	When sedimentation basins require pumping out rather than discharge via a flow outlet, a float will be attached to the suction hose or the hose will be located inside a bucket to prevent sediment from the basin floor from being discharged.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan) and further detailed in EWMS relevant to sedimentation basin dewatering pump outs.
SSW36	Soils, sediment and water	Design and maintenance of construction sedimentation basins	Records will 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.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Water quality monitoring and erosion and sediment control inspection records are kept on site and / or electronically and are provided in monthly progress overview reports. This includes pre and post rainfall inspections, flocculant use, dewatering activities and sediment removal. These records are compiled for monthly EPL (Environment Protection Licence) reporting.
SSW37	Soils, sediment and water	Chemical use and storage	Physical controls to address the potential risks associated with the use and storage of chemicals on site will include: • 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.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Chemical storage and physical controls are detailed in EWMS such as 'Maintenance Refuelling and Chemical Storage' and 'Site Establishment'.
SSW38	Soils, sediment and water	Ancillary facility management	At ancillary facilities, management of runoff and spills will include: • Restricting vehicle movements to designated pathways where feasible. • Paving areas that will be exposed for extended periods, such as car parks and main access roads, where reasonable and 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 be lined if they are to be located over a shallow groundwater source less than two metres deep.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan) and Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP).
SSW39	Soils, sediment and water	Ancillary facility management	Soil and water management at borrow source sites will be in line with Volume 2E of the Blue Book which covers water management of mines and quarries.						3, 8 and 10	NA	Construction	Contractor	Open	This requirement is addressed in the approved Borrow Site Management Plans - The Tyndale Borrow Site Management Plan (Portion A) was approved in August 2016 by DPE. The Lang Hill Borrow Site Management Plan (Portion C) was approved 23 November 2016 by DPE. The Lumleys Hill Borrow Site Management Plan (Portion D) was approved 8 September 2017 by DPE. The Jali Borrow Site and Gibsons Borrow Site Management Plans (Portion D) were approved 11 September 2017. A subsequent Haulage Strategy was developed during this reporting period (April to September 2017) for Sections 10 and 11 of the project and published on the RMS website for community consultation and feedback.
SSW40	Soils, sediment and water	Management of groundwater intersection	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 waterways that are known habitat for Oxleyan Pygmy Perch. Strategies will be implemented during construction to manage discharge of basin water, so that water depth and physico-chemical conditions are not changed in areas of Oxleyan Pygmy Perch habitat. Discharge protocols and criteria will be developed in consultation with Department of Primary Industries (Fisheries) and Office of Environment and Heritage during detailed design.						1, 2, 7, 8 and 9	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Details regarding OPP is also addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Discharge protocols have been developed with DPI Fisheries for works in OPP habitat.
SSW41	Soils, sediment and water	Management of groundwater intersection	Further assessment involving geotechnical boreholes, monitoring boreholes and water quality testing at cutting sites will be undertaken at Type A cutting sites to monitor impacts on local groundwater reserves.						All	All	Pre-construction	Contractor	Open	Ongoing water quality monitoring is being undertaken in accordance with the approved Water Quality Monitoring Program for project.
SSW42	Soils, sediment and water	Management of groundwater intersection	Where groundwater is released, recharge of the water table is the preferred option of managing groundwater. This will be facilitated by collecting groundwater in grassed swales for infiltration back to the groundwater source. Where possible, these swales will divert the groundwater around the construction area so that the groundwater does not further mix with construction runoff.						All	All	Construction	Contractor	Closed	This has been addressed during detailed design.
SSW43	Soils, sediment and water	Management of groundwater intersection	If recharging is not possible or suitable, then discharging groundwater will be collected via the sedimentation basins before discharge into natural waterways. If discharging to downstream groundwater, then the potential effects of mounding[1] will be mitigated.						All	All	Pre-construction	RMS	Closed	This has been addressed during detailed design.
SSW44	Soils, sediment and water	Management of groundwater intersection	Dewatering of excavations will be undertaken in line with Roads and Maritime' Technical Guideline – Environmental Management of Construction Site Dewatering (Roads and Maritime, 2011c), and in accordance with any licence conditions.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
SSW45	Soils, sediment and water	Contaminated groundwater	Further investigations will be undertaken to identify any impacts from contaminated groundwater from the former landfill sites at Firth Heinz Road and Crowleys Road.						3	NA	Pre-construction	RMS	Open	Groundwater monitoring is being undertaken near Firth Heinz Rd at CH52100 (GWB3-24b and GWB3-23b) and CH64900 (GWB3-41 and GWB3-42b).
SSW46	Soils, sediment and water	Prevention of groundwater impacts	The proposed management strategy to address potential impacts at type A cuttings includes: • Pre-works investigations – geotechnical investigations 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 – including the EIS assessment, 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 start before construction, and continue during construction. Monitoring also continue into the operation phase of the project. • Mitigation – implement environmental and engineering management measures where predictions and/or modelling and monitoring suggest that these are required to minimise impacts on groundwater.						All	All	Pre-construction and construction	RMS	Open	This has been considered as part of detailed design.
SSW47	Soils, sediment and water	Prevention of groundwater impacts	The monitoring of locations in the vicinity of type B cuttings and major embankments will commence before construction to identify the need to implement any mitigation measure.						All	All	Pre-construction, construction	RMS	Open	Ongoing water quality monitoring is being undertaken in accordance with the approved Water Quality Monitoring Program for project.
SSW48	Soils, sediment and water	Prevention of groundwater impacts	If required to manage groundwater impacts at type A and type B cuttings and major embankments, the following engineering mitigation measures will be considered: • Engineering measures that transfer the seepage water downstream. Standard practice will be to collect the seepage from the cut face in the drainage system for the highway, which will 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.						All	All	Pre-construction and construction	RMS and Contractor	Open	This has been considered as part of detailed design.
SSW49	Soils, sediment and water	Prevention of groundwater impacts	Major embankments will be designed to enable distributed flow of surface waters.						All	All	Pre-construction and construction	RMS and Contractor	Closed	This has been considered as part of detailed design.
SSW50	Soils, sediment and water	Prevention of potential impacts on groundwater quality	Measures to manage high-risk groundwater impact areas will continue to be considered through the detailed design process. In identified areas, the design of water quality controls will be reviewed and the need for additional controls may be identified.						All	All	Pre-construction	RMS	Open	This has been considered as part of detailed design.
SSW51	Soils, sediment and water	Prevention of potential impacts on groundwater quality	Where reasonable and feasible, sites used for batch plants, refuelling and chemical storage will be managed so that no groundwater intrusion occurs.						All	All	Pre-construction and construction	RMS and Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). and approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP).
SSW52	Soils, sediment and water	Prevention of impacts on Rous Water bore fields	All construction runoff to the Rous Water bore fields will be diverted to appropriate sedimentation controls basins. No runoff will bypass the basins untreated, regardless of the size of the footprint of the work. In addition, all basins in the bore fields will be clay lined to prevent seepage. If required, the depth of the basins will 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 where reasonable and feasible.						8	4	Construction	Contractor	Closed	Drainage requirements in the Rous borefield were developed during detailed design in consultation with Rous Water.
SSW53	Soils, sediment and water	Prevention of impacts on Rous Water bore fields	Sizing of sedimentation basins in the Rous Water bore fields will be reviewed to consider the use of 90th percentile basins.						8	4	Construction	RMS and Contractor	Closed	This has been addressed during detailed design in consultation with Rous Water.
SSW54	Soils, sediment and water	Prevention of impacts on Rous Water bore fields	The following construction activities will not be permitted within the Rous Water bore field catchment without additional control measures to reduce risk of impact to the borefield and groundwater: • Refuelling. • Washdown. • Storage of chemicals or other hazardous substances. • Installation of concrete batch plants.						8	4	Construction	Contractor	Closed	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
SSW55	Soils, sediment and water	Prevention of impacts on Rous Water bore fields	Water quality ponds will 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 will be undertaken or consideration of appropriately designed swales.						8	4	Pre-construction	RMS	Closed	This has been addressed during detailed design in consultation with Rous Water.
SSW56	Soils, sediment and water	Prevention of impacts on Rous Water bore fields	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 will be considered during detailed design.						8	4	Pre-construction	RMS	Closed	This has been addressed during detailed design in consultation with Rous Water.
SSW57	Soils, sediment and water		Consultation will be undertaken with Rous Water to co-ordinate mitigation actions including the definition of appropriate buffer zones between the project and bores.						8	4	Pre-construction	RMS	Closed	This has been addressed during detailed design in consultation with Rous Water.
SSW58	Soils, sediment and water		Consultation will be undertaken with Rous Water to address the 12 elements of the Australian Drinking Water Guidelines Management Framework.						8	4	Pre-construction	RMS	Closed	This has been addressed during detailed design in consultation with Rous Water.
SSW59	Soils, sediment and water	Protection of water quality	All permanent water quality basins will incorporate measures to contain accidental fuel and chemical spills resulting from vehicle accidents on the highway. Basins will be designed to accommodate a spill volume of up to 40,000 litres.						All	All	Operation	RMS	Closed	This has been addressed during detailed design of operational water quality controls.
SSW60	Soils, sediment and water	Protection of water quality	For water quality treatment in floodplains and other locations with minimal changes in gradient, grassed swales will be considered during detailed design.						All	All	Pre-construction	RMS	Closed	This has been addressed during detailed design of operational water quality controls.
SSW61	Soils, sediment and water	Protection of water quality	Appropriate scour protection for drainage measures will be determined during detailed design.						All	All	Operation	RMS	Closed	This has been addressed during detailed design of operational water quality controls.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
SSW62	Soils, sediment and water	Monitoring programs	Surface water quality monitoring will be undertaken in accordance with Roads and Maritime' Guideline for Construction Water quality Monitoring (RTA, 2003), and as per the framework outlined in the Working paper – Water quality.						All	All	Pre-construction	RMS	Closed	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan) which includes the Section 3 to 11 Water Quality Monitoring Program.
SSW63	Soils, sediment and water	Monitoring programs	Groundwater monitoring will be undertaken in accordance with the framework outlined in the Working paper – Groundwater (Section 5.2).						All	All	Construction	RMS	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan) which includes the Section 3 to 11 Water Quality Monitoring Program.
SSW64	Soils, sediment and water	Ordnance contamination	Consultation will be undertaken with Department of Defence regarding the potential for unexploded ordnance to be encountered east of Broadwater.						9	NA	Pre-construction	RMS	Open	This has been undertaken during detailed design and site establishment, and is ongoing as required during cosntruction.
BIODIVERSITY														
B1	Biodiversity	Monitoring strategy	The Ecological Monitoring Program (Appendix K) will be finalised in consultation with relevant State and Commonwealth agencies and incorporate any specific conditions of approval and feedback from the expert review.						All	All	Pre-construction	RMS	Closed	The Ecological Monitoring Program has been superseded by the Biodiversity Mitigation Framework required by MCoA D1. The Biodiversity Mitigation Framework was approved by DoE on 8 May 2015. Pacific Complete is responsible for ensuring that required ecological monitoring is undertaken during the course of the project.
B2	Biodiversity	Fauna connectivity	The Connectivity Strategy will be further developed during detailed design, in consultation with relevant State and Commonwealth agencies, building upon the Connectivity Strategy in Appendix A of the Working paper – Biodiversity and the Supplementary Biodiversity Assessment in Appendix J of the Submissions / Preferred Infrastructure Report.						All	All	Pre-construction	RMS	Closed	The Connectivity Strategy (Sections 3-11) was apaproved by DPE on 27 April 2017 and DPEE on 16 May 2017. An Addendum to the Connectivity Strategy was submitted (dated 15 February 2019) on 1 February 2019. Approval of the Connectivity Strategy & Connectivity Strategy Addendum was received by Department of Planning and Environment on 28 February 2019.
B3	Biodiversity	Fauna connectivity	All fauna connectivity structures will be developed in accordance with the design principles outlined in the Connectivity Strategy in Appendix A of the Working paper – Biodiversity and the Supplementary Biodiversity Assessment in Appendix J of the Submissions / Preferred Infrastructure Report.						All	All	Pre-construction	RMS	Closed	The Connectivity Strategy (Sections 3-11) was apaproved by DPE on 27 April 2017 and DPEE on 16 May 2017. An Addendum to the Connectivity Strategy was submitted (dated 15 February 2019) on 1 February 2019. Approval of the Connectivity Strategy & Connectivity Strategy Addendum was received by Department of Planning and Environment on 28 February 2019.
B4	Biodiversity		Opportunities for improved connectivity for koala and Long-nosed Potoroo will be further investigated between station 144.2 and station 146.6.						9 and 10	NA	Pre-construction	RMS	Closed	This has been developed as part of detailed design with specific connectivity goals for the Long-nosed Potoroo and Koala identified in the Connectivity Strategy for Sections 3-11. The Connectivity Strategy (Sections 3-11) was apaproved by DPE on 27 April 2017 and DPEE on 16 May 2017.
B5	Biodiversity	Fauna exclusion fencing	Fauna exclusion fencing locations and design will be further developed in accordance with the design principles outlined in the Connectivity Strategy in Appendix A of the Working paper – Biodiversity.						All	All	Pre-construction and construction	RMS	Closed	This has been considered as part of detailed design and incorporated into Connectivity Strategy. The Connectivity Strategy (Sections 3-11) was apaproved by DPE on 27 April 2017 and DPEE on 16 May 2017. An Addendum to the Connectivity Strategy was submitted (dated 15 February 2019) on 1 February 2019. Approval of the Connectivity Strategy & Connectivity Strategy Addendum was received by Department of Planning and Environment on 28 February 2019.
B6	Biodiversity	Fauna exclusion fencing	Fauna exclusion fencing in low-lying floodplains between stations 35.0 and 80.2 will where feasible and reasonable, be placed higher on fill embankments to reduce damage from flooding.						3 and 4	3	Construction	Contractor	Closed	This has been considered as part of detailed design and incorporated into Connectivity Strategy. The Connectivity Strategy (Sections 3-11) was apaproved by DPE on 27 April 2017 and DPEE on 16 May 2017. An Addendum to the Connectivity Strategy was submitted (dated 15 February 2019) on 1 February 2019. Approval of the Connectivity Strategy & Connectivity Strategy Addendum was received by Department of Planning and Environment on 28 February 2019.
B7	Biodiversity	Arboreal crossings	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.						All	All	Pre- construction	RMS	Closed	This has been considered as part of detailed design and incorporated into Connectivity Strategy. The Connectivity Strategy (Sections 3-11) was apaproved by DPE on 27 April 2017 and DPEE on 16 May 2017. An Addendum to the Connectivity Strategy was submitted (dated 15 February 2019) on 1 February 2019. Approval of the Connectivity Strategy & Connectivity Strategy Addendum was received by Department of Planning and Environment on 28 February 2019.
B8	Biodiversity	Widened median	The design and construction of fauna exclusion fencing, drainage or fauna underpass structures in widened medians minimise vegetation clearing.						1, 2 and 7	NA	Pre-construction and construction	RMS and Contractor	Closed	This has been considered as part of detailed design and incorporated into Connectivity Strategy. The Connectivity Strategy (Sections 3-11) was apaproved by DPE on 27 April 2017 and DPEE on 16 May 2017. An Addendum to the Connectivity Strategy was submitted (dated 15 February 2019) on 1 February 2019. Approval of the Connectivity Strategy & Connectivity Strategy Addendum was received by Department of Planning and Environment on 28 February 2019.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
B9	Biodiversity	Widened median	Where feasible and reasonable, native vegetation forming part of the identified widened medians will not be disturbed for any ancillary construction purpose including access tracks, stockpiles, materials laydown and ancillary facilities.						1, 2 and 7	NA	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Sub-Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
B10	Biodiversity	Flora and fauna management plan	A Flora and Fauna Management Plan will be prepared in accordance with Roads and Maritime Biodiversity Guidelines – Protecting and managing biodiversity on RTA projects (RTA, 2011a).						All	All	Pre- construction	RMS	Closed	This requirement is addressed by the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). The Flora and Fauna Management Plan was approved on 23 October 2015 by DPE and is continually updated as required. Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
B11	Biodiversity	Threatened species management sub-plans	The threatened species management plans prepared for the project will be finalised, as relevant to the element of the project to be constructed. Development of the plans will include responding, where feasible and reasonable to: - Recommendations from expert review undertaken as part of the Submissions / Preferred Infrastructure Report (and detailed in section 1.4 of the management plans). - Any conditions of approval. - Results from baseline monitoring undertaken. The threatened species management plans will be finalised in consultation with the relevant State and Federal government agencies.						All	All	Pre- construction	RMS	Closed	The following Threatened Species Management Plans have been prepared and approved: Threatened Flora Management Plan Update 1 (Section 1, Section 2, Waves 1, 2 and 3) DPE Approval 30 April 2015, DoE Approval 5 May 2015. Threatened Flora Management Plan Update 2 (Sections 3 to 11) DPE Approval 21 August 2015, DoE Approval 4 September 2015. Threatened Rainforest Plants Management Plan (Section 10) DPE Approval 11 September 2015. Threatened Mammal Management Plan Update 1 DPE Approval 7 May 2015, DoE Approval 12 May 2015. Threatened Mammal Management Plan Update 2 DPE Approval 21 October 2015, DoE Approval 25 October 2015. Threatened Invertebrates Management Plan DPE Approval 29 July 2015. Threatened Fish Management Plan DPE Approval 30 July 2015. Threatened Frog Management Plan DPE Approval 7 May 2015. Threatened Glider Management Plan DPE Approval 4 May 2015. Coastal Emu Management Plan (Sections 3 and 4, excluding Wave 3) DPE Approval 3 June 2015. Coastal Emu Management Plan (includes updates for Wave 3) DPE Approval 18 December 2015. Microbat Management Plan (Section 3 to 11) DPE approval 25 May 2015. Koala Management Plan (Section 1 to 11), DPE Approval 4 August 2016, DoEE Approval 11 August 2016. Addendum to Koala Management Plan - Koala Revegetation Strategy (Section 3 to 11), DPE Approval 26 February 2019.
B12	Biodiversity	Re-establishment of native vegetation	A landscape management plan will 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 includes details for the appropriate removal and restoration of temporary creek crossings. The landscape management plan will be developed in line with Roads and Maritime Biodiversity Guidelines (RTA, 2011a), the design principles identified in the Connectivity Strategy and the design principles in Working paper – Urban design, landscape character and visual impact.						All	All	Pre-construction	RMS	Closed	This has been developed as part of detailed design and the Urban Design and Landscape Plans for the project.
B13	Biodiversity	Minimising loss of vegetation and habitat	Disturbance and clearing of vegetation will be minimised, particularly: - Avoiding and minimising vegetation removal wherever possible through the detailed design process. - Placing water quality basins in the optimal location for treating surface runoff. During detailed design, the location of water quality treatment measures will consider minimising vegetation removal, particularly where there is the potential for threatened plant species, threatened fauna habitat or in identified regional wildlife corridors.						All	All	Pre-construction and construction	RMS	Closed	This has been addressed during detailed design.
B14	Biodiversity	Bridge and culvert design	Instream structures such as bridges and culverts will be designed and managed to minimise any potential impact to flow regimes and fish passage, in accordance with Fairfull and Witheridge (2003).						All	All	Pre-construction	RMS	Closed	This has been addressed during detailed design in consultation with DPI Fisheries.
B15	Biodiversity	Bridge and culvert design	During detailed design, the waterway class will be confirmed and the design will be reviewed to include appropriate crossing structures for the relevant waterway class at the following locations: - Unnamed waterway station 114.0 - Oaky Creek station 122.5 - Nortons Gully station 123.6 - Unnamed waterway station 133.4 - Unnamed waterway at station 134.7 - Tributary of Macdonalds Creek at station 135.5 - Montis Gully tributary at station 141.8 - Eversons Creek station 143.6						7 and 8	NA	Pre-construction	RMS	Closed	This has been addressed during detailed design in consultation with DPI Fisheries.
B16	Biodiversity	Bridge and culvert design	All drainage structures between stations 134.5 to 143.0 will be reviewed in consultation with Department of Primary Industries (Fisheries) to ensure suitable connectivity for threatened fish species is maintained.						8 and 9	NA	Pre-construction	RMS	Closed	This has been addressed during detailed design in consultation with DPI Fisheries.
B17	Biodiversity	Bridge and culvert design	Each permanent waterway crossing is to be designed to ensure no physical, hydraulic and behavioural barriers to aquatic fauna movements. Impacts be minimised by ensuring that: - 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 (e.g. 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. - Bridges will be designed and sized to ensure peak flood velocities are not increased by more than one metre per second than the existing flood event, where Oxleyan Pygmy Perch have been confirmed.						All	All	Pre-construction	RMS	Closed	This has been addressed during detailed design in consultation with DPI Fisheries.
B18	Biodiversity	Bridge and culvert design	Bridge structures will be designed to minimise impacts to flow regimes and fish passage. Where feasible and reasonable the following principles will apply: - Bridge piers to be located outside the main channel. - Bridge structures to be designed to prevent an increase of backup of water during times of flood that will enable Plague Minnow to access waterbodies where they are currently not found (e.g. Broadwater National Park). - Construction not alter or reduce flow where there are existing or potential Oxleyan Pygmy Perch populations (primarily within Sections 7, 8 and 9).						All	All	Pre-construction	RMS	Closed	This has been addressed during detailed design in consultation with DPI Fisheries.
B19	Biodiversity	Temporary and permanent waterway diversions/ crossings	Where temporary access tracks are required over drainage lines with no flow, fords may be installed.						All	All	Construction	Contractor	Open	This requirement is addressed by the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Temporary crossing designs have been developed in consultation / approved by PC in accordance with the CEMP and consultation with agencies.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
B20	Biodiversity	Temporary and permanent waterway diversions/ crossings	Where possible, existing crossings will be used. Where this is not feasible or reasonable, the temporary crossings will be designed to minimise impacts on the existing aquatic ecology and water quality.						All	All	Construction	Contractor	Open	This requirement is addressed by the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. Where possible, low flow pipes have been installed at temporary drainage line crossings in accordance with Blue Book requirements.
B21	Biodiversity	Temporary and permanent waterway diversions/ crossings	Temporary waterway access track mitigation measures include: • Installation and subsequent decommissioning of temporary crossings will be undertaken outside of Oxleyan Pygmy Perch spawning seasons (October to December), where Oxleyan Pygmy Perch have been confirmed. • Temporary crossings will be constructed from clean fill using pipe or box culvert cells to carry flows. • All temporary works (e.g. crossings, flow diversion barriers) will be removed as soon as practicable and in a way that does not promote future channel erosion. • The preferred temporary structure for crossing waterways will be consistent with Witheridge (2002). • Scour protection works will be established at temporary crossings as required. • At the completion of construction, the temporary crossings will be removed and rehabilitated.						All	All	Construction	Contractor	Open	This requirement is addressed by the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. Temporary Crossings have been designed and implemented in accordance with the Blue Book and in consultation with ERG, including these provisions.
B22	Biodiversity	Fish translocation	Fish that become stranded due to temporary access crossings or construction of temporary or permanent creek diversions must be captured and translocated following the Department of Primary Industries Fisheries Guidelines – A Guide to Acceptable Procedures and Practices for Aquaculture and Fisheries Research.						All	All	Construction	Contractor	Open	This requirement is addressed by the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. Appropriately qualified aquatic ecologists have been used to capture and translocate fish drainage channels when closing or moving, as detailed in the 6 Monthly Construction Compliance Reports.
B23	Biodiversity	Pre-clearing surveys	The pre-clearing process will be consistent with Roads and Maritime Biodiversity Guidelines: Protecting and Managing Biodiversity on RTA projects (RTA, 2011a) and include: • 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) and tree roosting (e.g. Southern Myotis) or cave dwelling bats in trees or existing culvert/bridge structures. If the species is present in or directly adjacent to the project footprint (including ancillary facilities), measures to manage any species be considered, if required. • Mapping the location of any threatened flora and/or fauna species, Threatened Ecological Communities and habitat. • Construction traffic will be restricted to defined access tracks, fenced prior to the start of construction and maintained until construction is complete.						All	All	Pre-construction and construction	Contractor	Open	This requirement is addressed by the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. Clearing limits and access delineation are clearly shown on relevant construction drawings, surveyed and flagged in the field and closely tracked throughout the project. Suitably Qualified Ecologist is present undertake pre-clearing survey prior to commencement of all clearing in any area and to complete inspections and complete checklist and also during clearing of any habitat trees in accordance with the Construction Flora and Fauna Management Plan and Vegetation Clearing and Ground Disturbance construction procedure.
B24	Biodiversity	Exclusion zones	The location of exclusion zones will be identified, with temporary fencing or flagging tape to indicate the limits of clearing (in accordance with the Roads and Maritime Biodiversity Guidelines (RTA, 2011a)). Permanent fauna exclusion fencing for the project (as described in the Connectivity Strategy), where reasonable and feasible, will be installed prior to clearing and can function as exclusion fencing.						All	All	Construction	Contractor	Open	This requirement is addressed by the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. All exclusion zones created to date have been delineated in accordance with the Pacific Complete Flagging Protocol and verified during inspections.
B25	Biodiversity	Staged removal process	A staged habitat removal process will be implemented consistent with the Roads and Maritime Biodiversity Guidelines (RTA, 2011a).						All	All	Construction	Contractor	Open	This requirement is addressed by the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
B26	Biodiversity	Re-use of woody debris and bushrock	Woody debris and bushrock will be re-used on site for habitat improvement where possible and will be detailed in the landscape management plan in accordance with the Roads and Maritime Biodiversity Guidelines (RTA, 2011a).						All	All	Construction	RMS and Contractor	Open	This requirement is addressed by the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
B27	Biodiversity	Weed management	A weed management plan will be developed as part of the CEMP, in accordance with the Roads and Maritime Biodiversity Guidelines (RTA, 2011a) and the Introductory Weed Management Manual (Richards, 2004).						All	All	Pre-construction and construction	RMS	Open	This requirement is addressed by the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
B28	Biodiversity	Weed management	A site assessment by an ecologist or person trained in weed identification will be undertaken to identify the presence and extent of Alligator weed. If present, management measures in the Weed Management Plan will be in accordance with the Department of Primary Industries Alligator Weed control manual (van Oosterhout, 2007).						7 to 10	4	Pre-construction	Contractor	Open	This requirement is addressed by the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
B29	Biodiversity	Pathogen management	Measures to prevent the introduction and/or spread of pests and disease causing agents such as bacteria and fungi will be incorporated into the CEMP, in accordance with the Roads and Maritime Biodiversity Guidelines (RTA, 2011a).						All	All	Pre-construction and construction	RMS and Contractor	Open	This requirement is addressed by the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
B30	Biodiversity	Pathogen management	If pathogens are identified on site: • Testing may be required to confirm the presence of pathogens. • Advice from government departments will be sought on practical hygiene management measures. • Fenced exclusion zones will be identified to restrict access into contaminated areas.						All	All	Construction	RMS and Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete is in the process of procuring an investigation to determine whether Phytophthora is present within Sections 3 to 11. Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
B31	Biodiversity	Nest boxes	Nest boxes be installed as per Roads and Maritime 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 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 in the vicinity of the hollows.						All	All	Pre-construction and construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. Separate and approved CEMP documentation is in place for soft soil works (Wave 1 and Wave 2). To date (ie, 30 September 2019) over 550 Nest Boxes have been installed across Sections 3 to 11.
B32	Biodiversity	Fauna handling	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 will be present to capture and relocate fauna where required. Further details regarding fauna handling and vegetation clearing procedures are provided in the Roads and Maritime Biodiversity Guidelines (RTA, 2011a).						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this requirement. An ecologist is present during all clearing works.
B33	Biodiversity	Riparian and aquatic habitat management	Prior to any disturbance of waterway banks, a thorough inspection by a qualified ecologist will be undertaken for aquatic fauna such as turtle nests.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. Ecologist pre-inspection undertaken in accordance with approved CFFMP
B34	Biodiversity	Riparian and aquatic habitat management	Where possible, streams will be crossed perpendicular to flow, with crossing sites selected to avoid unstable banks, bends in the channel, deep pools and confluences with other channels.						All	All	Pre-construction	RMS and Contractor	Open	This is being considered as part of detailed design. Detailed design is currently underway for all portions of the project. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs.
B35	Biodiversity	Riparian and aquatic habitat management	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) and where feasible and reasonable, avoid impacts on geomorphic processes.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this requirement. Where possible, disturbance to the bed and banks will be avoided as well as any impacts on geomorphic processes.
B36	Biodiversity	Riparian and aquatic habitat management	All construction materials used for permanent watercourse crossings (rocks and gravel) are to be free of fine particles to minimise turbidity.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. Clean rock is used for the installation of permanent water crossings which is free of fines.
B37	Biodiversity	Riparian and aquatic habitat management	Instream and riparian disturbance will be minimised and sediment, woody snags or debris removed from a stream or stream channel will be minimised. Trimming or 'lopping' of branches and logs will be considered as a first option before moving.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
B38	Biodiversity	Riparian and aquatic habitat management	Any instream woody debris removed during construction will be replaced at the completion of the works within the same waterways from which it was removed, where feasible and reasonable.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
B39	Biodiversity	Riparian and aquatic habitat management	Where feasible and reasonable within the road corridor, existing pools will be retained upstream and downstream of crossings within known habitat of the Oxleyan Pygmy Perch to provide resting and refuge habitat near crossing structures.						1,2,7,8, and 9	NA	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
B40	Biodiversity	Riparian and aquatic habitat management	Appropriate plant species will be incorporated into the rehabilitation of disturbed aquatic habitats and drains as a result of construction.						All	NA	Construction	RMS and Contractor	Closed	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. During detailed design, Urban Design and Landscape Plans have been prepared in accordance with MCoA D20.
B41	Biodiversity	Riparian and aquatic habitat management	All construction sediment and erosion control measures will 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.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. Separate and approved CEMP documentation is in place for soft soil works (Wave 1 and Wave 2). Where appropriate, Sediment curtains will be included for works in waterways in consultation with DPI (Fisheries) and EPA. During this reporting period (April - September 2018) silt curtains incorporating an oil containment boom were used nearshore during construction of a temporary jetty at Harwood Bridge, Richmond River Bridge and other bridges in Portions A, B & C.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
B42	Biodiversity	Riparian and aquatic habitat management	No turbid water generated from the construction corridor or construction area is to be discharged to any waterway unless in accordance with relevant Environment Protection Licence conditions and developed in consultation with Environment Protection Authority and Department of Primary Industries (Fisheries).						All	All	Construction	Contractor	Open	Pacific Complete has obtained an Environment Protection Licence (EPL) for Sections 3 to 11 (No. 20173, 29 January 2016). This requirement is also addressed in Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. All discharges to waterways were undertaken in accordance with relevant EPL conditions.
B43	Biodiversity	Timing of in-stream works	No in-stream work will occur in known Oxleyan Pygmy Perch habitat during the Oxleyan Pygmy Perch spawning season (October to December inclusive) or within 24 hours of the commencement of any rainfall event (>10 millimetres).						1,2,7,8, and 9	NA	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Required in-stream work in known OPP habitat was carried out in consultation with DPI Fisheries and relevant MCoAs, which were modified (ie, MOD # 5) and approved in a previous reporting period (ie, April - September 2017).
B44	Biodiversity	Water quality	Operational spill basins are to be installed at key locations i.e. near Broadwater National Park and other key drainage lines that lead directly into threatened fish habitat.						All	All	Operation	RMS and Contractor	Closed	This has been addressed during detailed design of operational water quality controls.
B45	Biodiversity	Water quality	Chemicals and fuels will be appropriately stored and bunded, away from waterways and drainage lines.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
B46	Biodiversity	Water quality	Discharges from sediment basins and/or treatment wetlands located in Oxleyan Pygmy Perch habitat that do not meet the water quality parameters for Oxleyan Pygmy Perch (to be determined through pre-construction water quality monitoring) will not be discharged directly into waterways, with other methods or uses employed to discharge. This could include, but not be limited to: • Spraying onto adjacent open grass areas or used for construction purposes such as dust. • Treating the water to ensure the pH is between 5.0 and 6.5 and total suspended solids of less than 50 mg/L, before discharging, depending on environmental protection licensing requirements.						1,2,7,8, and 9	NA	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
B47	Biodiversity	Water quality	Water quality monitoring will be undertaken to assess the effectiveness of (and where necessary amend) water, sediment and erosion management strategies that aim to protect native fish species, their habitat and other aquatic flora and fauna species. Water quality monitoring program be undertaken in line with details in Appendix B of the Working paper – Biodiversity.						All	All	Construction	Contractor	Open	Following project approval water quality monitoring requirements are detailed in the Water Quality Monitoring Program (S3-S11) as required by MCoA D12 and approved by DPE on 24 August 2015 and the Threatened Fish Management Plan which was approved by DPE on 30 July 2015. Both these plans form part of the Pacific Complete CEMP (i.e. Appendix B4 Construction Soil and Water Quality Management Plan and Appendix B2 Construction Flora and Fauna Management Plan respectively).
B48	Biodiversity	Stockpile and ancillary facilities management	Where feasible and reasonable, stockpiles will be located above the 1:100 year flood level with appropriate management control measures in place such as bunding.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan) and approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
B49	Biodiversity	Stockpile and ancillary facilities management	Specific management measures will be implemented to limit impacts from stockpiling of material for bridgeworks at known and potential areas of Oxleyan Pygmy Perch during the spawning seasons of October to December.						1,2,7,8, and 9	NA	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan). Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with this requirement.
B50	Biodiversity	Stockpile and ancillary facilities management	Batch plants will be located at least 300 metres away from Oxleyan Pygmy Perch habitat where sediment erosion not runoff into waterways (due to the risk of high alkaline runoff).						1,2,7,8, and 9	NA	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan) and approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with this requirement.
B51	Biodiversity	Stockpile and ancillary facilities management	Ancillary facilities will be located in cleared or sparsely treed portions of the ancillary facility sites, and avoid unnecessary clearing of native vegetation.						All	All	Pre-construction and construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Plan) and approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with this requirement.
B52a	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 2 site 1a: • Flag and avoid hollow bearing trees • Revegetation of the section of the site in the road reserve or the entire site (if practicable).						2	NA	Construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
B52b	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 2 site 5a: • Avoid isolated trees and flag and avoid hollow bearing trees where possible. Site to remain cleared to benefit emus.						2	NA	Construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
B52c	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 2 site 6a and 6b: • Site to remain clear (not vegetated) to benefit emus.						2	NA	Construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
B52d	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 3 Site 1: • This compound site that was used for the Glenugie Upgrade and has been revegetated post-construction. A site inspection and survey is required prior to construction to determine its suitability for future use as an ancillary site. • Avoid mature trees. • Revegetation of the section of the site in the road reserve or the entire site (if practicable).						3	NA	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. The Section 3 - Site 1 Ancillary facility was assessed and approved on 8 July 2016 (Avenue Road).

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3- 11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
B52e	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 3 Site 2: • Provide a buffer of 50 metres minimum from creek and sediment fencing where required. • Avoid mature trees. • Revegetation of the section of the site in the road reserve or the entire site (if practicable).						3	NA	Construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility management plan/ checklist has been prepared and approved for this site by the ER on 8 September 2016.
B52f	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 3 Site 4: • Ancillary site to be restricted to the western parts of the site adjoining Wooli Road. • Vegetation in the road reserve along Wooli Road to be protected from disturbance. • The population of the Slender Screw Fern plants is to be avoided. • Existing trails or disturbed areas to be used for access to site. Bostock Road not to be used for access.						3	NA	Construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility management plan/ checklist has been prepared and approved for this site by the ER on 30 September 2016.
B52g	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 3 Site 8: • Identify and mark Angophora robur during pre-clearing and provide exclusion fencing.						3	NA	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. This Ancillary facility has not been assessed and approved for use.
B52i	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 3 Site 9: • Provide buffer to the surrounding forest. • Identify and mark Angophora robur during pre-clearing and provide exclusion fencing • Provide sediment fencing on eastern boundary where required. • Avoid and buffer koala feed trees in the northwest corner of the site. Buffer required from edge of the forest to reduce edge effects, sediment fencing where required.						3	NA	Construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility management plan/ checklist has been prepared and approved for this site by the ER on 19 October 2016.
B52j	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 5 Site 6: • Consult with OEH on future use of this site post-construction, which may have offset potential with assisted regeneration and could be considered as a potential addition to Mororo Creek Nature Reserve • Flag and buffer habitat patch on southern boundary.						5	1	Construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility is proposed for use and the Ancillary Facility Management Plan was approved on 31 August 2016.
B52k	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 5 Additional site 9: Provide buffer around Mororo Creek and sediment fencing to protect riparian areas Flag and buffer habitat patch on southern boundary						5	1	Construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility management plan/ checklist has been prepared and approved for this site by the ER on 31 August 2016.
B52l	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 6 Site 3a and 3b: • Mark and avoid small dam in north-west corner of site and buffer activities from a large remnant patch adjoining to the north. • Avoid scattered mature trees where possible.						6	NA	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility has not been assessed and approved for use.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
B52m	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 6 site 5: • Site is currently being used as a compound site for the Devils Pulpit upgrade. On completion of construction for that project, the site would be stabilised with a quick growing cover crop to stabilise the site. • A site inspection and survey is required prior to construction to confirm the suitability of the site. • Site to be rehabilitated post- construction.						6	NA	Pre-construction, construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. The hard stand from the Devils Pulpit Upgrade has not been removed from the site. The ancillary facility is currently being assessed for use on the Ancillary facility management plan/ checklist has been prepared and approved for this site by the ER on 4 December 2016.
B52n	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 7 Site 1: • To be used for only low risk activities, no chemical or fuel storage on site.						7	NA	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility assessment/management plan is currently being prepared for this site, approval pending and due within the next reporting period (April - September 2019).
B52o	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 7 Site 2a and 2b: • To be used for only low risk activities, no chemical or fuel storage on site.						7	NA	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility has not been assessed and approved for use.
B52p	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 7 site 3: • Provide sediment fencing along eastern boundary.						7	NA	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facilities have not been assessed and approved for use.
B52q	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 7 Site 4: • Provide buffer of minimum 50 metres from the wetland on northern boundary and sediment fencing where required. Avoid tree removal where possible						7	NA	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. An Ancillary facility assessment for a mulch stockpile has been approved for this site on 9 May 2018. There are no waterways within 200m of the stockpile site and a minimum of 50m buffer will be maintained. ERSed controls implemented as per Erosion and Sediment Control Plan.
B52r	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 8 Site 2a, 2b and 2c: • Recommend use for stockpile only, no chemical or fuel storage on site.						8	4	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility assessment is currently being prepared for Site 2a and will be approved in the next reporting period (April - September 2019). Site 2 b and 2c have not been assessed and approved for use.
B52s	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 8 Site 3: • Provide bunding around the site. No chemical storage.						8	4	Construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility management plan/checklist has been completed and approved (September 2016) and an impermeable sediment fence was used for this ancillary site.
B52t	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 9 Site 1: • Provide buffer and sediment fencing at southern end. • Provide sediment fencing at southern end of site, stockpiling only at northern half, no chemical storage						9	NA	Construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility management plan/checklist has been prepared and was approved on 15 February 2017.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
B52u	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 9 site 2: • Provide sediment fencing at southern end of site, stockpiling only at northern half, no chemical storage						9	NA	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility has not been assessed and approved for use.
B52v	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 9 site 3: • Provide sediment fencing at southern end of site, stockpiling only at northern half, no chemical storage						9	NA	Construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility assessment/management plan has been prepared and was approved by the Environmental Representative on 30 November 2016.
B52w	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 10 site 1b: • Revegetation of the section of the site in the road reserve or the entire site (if practicable).						10	NA	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility has not been assessed and approved for use.
B52x	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 10 site 3b: • Map and avoid strip of trees along northern boundary						10	NA	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary facility has not been assessed and approved for use.
B52y	Biodiversity	Stockpile and ancillary facilities management	Ancillary facility - Section 10 site 4: • Revegetate site post-construction, focus on approaches to land bridge and avoid Arthraxon hispidus.						10	NA	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Assessment/management plan/checklist has not been finalised for this site. A Stockpile Assessment/Checklist has been prepared for this site and was approved on 25 August 2017.
B53	Biodiversity	Slender Screw Fern	The project footprint in section 1 will to be reviewed to identify any opportunities to avoid significant impacts to the existing population.						1	NA	Pre-construction	RMS	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
B54	Biodiversity	Slender Screw Fern	The project footprint and placement of sedimentation basins will be evaluated to minimise impacts to Slender Screw Fern.						6	NA	Pre-construction	RMS	Closed	This has been addressed during detailed design.
B55	Biodiversity	Biodiversity Offset Strategy	The Biodiversity Offset Strategy (detailed in Appendix C of the Working paper – Biodiversity) will be developed further, in consultation with relevant State and Commonwealth agencies, and implemented during detailed design.						All	All	Pre-construction	RMS	Closed	Biodiversity Offset Strategy Approved (DPE 6 January 2016 and DoE 7 January 2016).
B56	Biodiversity	Interchange at Wardell	Street lighting on the western roundabout at the interchange at Wardell will be designed to reduce light spill during detailed design. This could include using deflection shields around the lights or using a UV light, with reduced UV light emissions.						10	NA	Pre-construction	RMS	Closed	This lighting requirement has been addressed during during detailed design.
B57	Biodiversity	Interchange at Wardell	Further investigation will be undertaken of the road runoff capture and storage to the east side of the existing Pacific Highway between station 158.2 and 159.4 to protect remaining in situ aquatic habitats south of Laws Road.						11	2	Pre-construction	RMS	Closed	This has been addressed during detailed design of operational water quality controls.
B58	Biodiversity	Interchange at Wardell	Roads and Maritime owned land surrounding the dedicated landbridge at station 156.0 be revegetated in accordance with the connectivity strategy and the landscape management plan.						10	NA	Construction	Contractor	Open	This revegetation is being considered further noting that land bridge no longer forms part of design. UDLP and Connectivity Strategy for this area captures revegetation requirements in vicinity of connectivity structures.
B59	Biodiversity	Impacts to Lang Hill	The Lang Hill Environmental Management Work Statement be further developed and implemented during the use and rehabilitation of the borrow site.						8	NA	Pre-construction and construction	RMS and Contractor	Closed	The Lang Hill Borrow Site Management Plan (Portion C) was approved 23 November 2016 by DPE. Draft EWMS prepared for the site that was included in the SPIR has been included in the management plan and was developed in consultation with DPI Fisheries, agencies and RAPs.
B60	Biodiversity	Impacts to Lang Hill	The creek line on the 'Lang Hill' property will should be fenced off from cattle and the vegetation allowed to regenerate to improve the habitat conditions downstream.						8	NA	Construction and operation	Contractor	Closed	The Lang Hill Borrow Site Management Plan (Portion C) was approved 23 November 2016 by DPE and incorporates this requirement.
B61	Biodiversity	<i>Maundia triglochinoxoides</i>	Detailed design will investigate measures to reduce impacts to Maundia triglochinoxoides: • Near Redbank Creek (population 14). • Near North of New Italy (population 12).						1 and 7	NA	Pre-construction	RMS	Closed	This has been considered during detailed design. Redbank Ck not in Sections 3-11.
URBAN DESIGN AND LANDSCAPE														
UD1	Urban Design and Landscape	Noise wall visual impacts	If further noise modelling identifies that noise walls are required, further visual assessment address the visual implications of the change. Their location and design will 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).						All	All	Pre-construction	RMS	Open	This is being considered as part of detailed design and operational noise assessment.
UD2	Urban Design and Landscape	Clarence River and Richmond River bridge impacts	Changes to the design of the Clarence and Richmond rivers bridges from this EIS, will require further visual assessment. Any changes will consider the principles identified in Working Paper – Urban design, Landscape Character and Visual Impact (Section 4.6.2), the performance criteria outlined in Chapter 5 of the EIS and funding arrangements.						5, 9 and 10	NA	Pre-construction	RMS	Closed	This has been considered as part of detailed design and development of Urban Design and Landscape Plans.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
UD3	Urban Design and Landscape	Landscaping and planting strategy	The project will be carried out in accordance with the urban design and landscaping strategy, as identified in Section 11.4.1 of this EIS. Detailed landscape design for all project batters, and median planting areas will 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.						All	All	Pre-construction	RMS	Closed	This has been considered as part of detailed design and development of Urban Design and Landscape Plans.
UD4	Urban Design and Landscape	Design of urban design features and road furniture	The built form of the project, including consideration of the height, bulk, scale, materials and finishes for: • Bridges. • Retaining walls. • Cuttings and embankments. • Road barriers. • Signage. • Fences. • Clear zones. • Topsoil management. • Water quality control ponds. • Fauna crossing. • Place marking and cultural plantings. The project will be designed in accordance with the design principles identified in Working Paper – Urban Design, Landscape Character and Visual Impact, and relevant Roads and Maritime guidelines.						All	All	Pre-construction	RMS	Closed	This has been considered as part of detailed design and development of Urban Design and Landscape Plans.
UD5	Urban Design and Landscape	Shadowing	Further assessment will be undertaken of the impact of overshadowing on areas surrounding the project, particularly around Harwood Bridge, interchanges and overpasses near residential properties.						5	NA	Pre-construction	RMS	Closed	This has been considered as part of detailed design and development of Urban Design and Landscape Plans.
UD6	Urban Design and Landscape	Visual impacts from viewpoints	Measures to mitigate visual impacts to viewpoints will 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 have a moderate–high or high impact, screen planting also be considered.						All	All	Construction	Contractor	Closed	This has been considered as part of detailed design and development of Urban Design and Landscape Plans.
UD7	Urban Design and Landscape	Construction visual impacts	Disturbed areas will be progressively revegetated throughout the construction period.						All	All	Construction	Contractor	Open	This requirement forms part of the CEMP and Urban Design and Landscaping for the project.
UD8	Urban Design and Landscape	Visual impacts of ancillary facilities	Where required, typical landscape treatments for ancillary facilities in forest areas will include: • Providing screen planting. • Considering reinstatement of disturbed forest in heavily forested. • Considering the importance of the visual landscape at each location and allowing restoration of important forest vegetation to prominent ridge lines or other landscape elements where feasible and reasonable. • Negotiating with private landowners, as applicable, to determine future treatments for other non-forested ancillary facility locations. • Re-grading disturbed areas to achieve a sustainable and functional landform. • Stabilising all surfaces in accordance with good engineering and environmental practice.						All	All	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Specific mitigation measures are captured in individual Ancillary Facility approvals.
UD9	Urban Design and Landscape	Visual impacts of ancillary facilities	Typical landscape treatments for ancillary facilities in agricultural areas will include: • Considering returning remnant agricultural land to agricultural uses. • Providing screen planting. • Reinstating 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 where feasible and reasonable. • Re-grading disturbed areas to achieve a sustainable and functional landform. • Stabilising all surfaces in accordance with good engineering and environmental practice.						All	All	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Specific mitigation measures are captured in individual Ancillary Facility approvals.
UD10	Urban Design and Landscape	Visual impact of borrow sites	The extent of excavation and the landscaping strategy at borrow sites will be reviewed considering material requirements on the project and the visual impact on the resultant cuttings.						All	NA	Pre-construction	RMS and Contractor	Closed	Pacific Complete has prepared site specific Borrow Site Management Plans as required by the project approval that incorporate specific revegetation requirements. The Tyndale Borrow Site Management Plan (Portion A) was approved in August 2016 by DPE. The Lang Hill Borrow Site Management Plan (Portion C) was approved 23 November 2016 by DPE. The Lumleys Hill Borrow Site Management Plan (Portion D) was approved 8 September 2017 by DPE. The Jali Borrow Site and Gibsons Borrow Site Management Plans (Portion D) were approved 11 September 2017.
UD11	Urban Design and Landscape	Visual impact of borrow sites	Any backfilling of the Lang Hill and West of Wardell borrow sites will be undertaken with available surplus material from the project. Rehabilitation of the sites will be undertaken in accordance of the landscape strategy (UD3), design principles (UD5) and the intended future land use of the sites.						3, 8 10	NA	Construction	Contractor	Open	Pacific Complete has prepared site specific Borrow Site Management Plans as required by the project approval that incorporate specific revegetation requirements. The Tyndale Borrow Site Management Plan (Portion A) was approved in August 2016 by DPE. The Lang Hill Borrow Site Management Plan (Portion C) was approved 23 November 2016 by DPE. The Lumleys Hill Borrow Site Management Plan (Portion D) was approved 8 September 2017 by DPE. The Jali Borrow Site and Gibsons Borrow Site Management Plans (Portion D) were approved 11 September 2017.
UD12	Urban Design and Landscape	Visual impact of borrow sites	Any backfilling of the Eatons and Gibson borrow sites will be undertaken with available surplus material from the project. Landscaping on the site use indigenous species, including those species suitable for Koala. The landscaping will connect to the existing vegetation to the east of the project by a fauna land bridge to be constructed at station 147.6. Rehabilitation of the sites will be undertaken in accordance of the landscape strategy (UD3) and design principles (UD5).						10	NA	Construction	Contractor	Open	Pacific Complete has prepared site specific Borrow Site Management Plans as required by the project approval that incorporate specific revegetation requirements. The Tyndale Borrow Site Management Plan (Portion A) was approved in August 2016 by DPE. The Lang Hill Borrow Site Management Plan (Portion C) was approved 23 November 2016 by DPE. The Lumleys Hill Borrow Site Management Plan (Portion D) was approved 8 September 2017 by DPE. The Jali Borrow Site and Gibsons Borrow Site Management Plans (Portion D) were approved 11 September 2017.
UD13	Urban Design and Landscape	Monitoring of landscaping and rehabilitation	Landscape and rehabilitation works will be monitored and remedial measures implemented where required until vegetation has stabilised.						All	All	Operation	RMS	Open	Noted.
UD14	Urban Design and Landscape	Earth mounds	The mounding profile of any earth mound will blend suitably into the existing landscape setting. Any mounding to be landscaped will be compacted in 1.5 metre layers with 1:3 maximum batter slopes where reasonable in consideration of constraints within the project corridor. Where feasible and reasonable, permanent mounds will be treated with ameliorants and overlaid with topsoil to minimum 150 millimetres to ensure suitable planting conditions are achieved.						All	All	Construction	Contractor	Open	Noted. Principles for earth mounds are outlined in the UDLP developed for the project.
ABORIGINAL HERITAGE														
AH1	Aboriginal Heritage	General impacts to Aboriginal archaeological sites	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.						All	All	Pre-construction and construction	RMS and Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. The methodologies approved for use on the Project incorporate actions to take, if substantially rich deposits of artefacts are located.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
AH2	Aboriginal Heritage	General impacts to Aboriginal archaeological sites	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.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. All required fencing has been installed prior to commencement of works during the reporting period. A representative of the local Aboriginal Land Council was present for the establishment of heritage exclusion fencing.
AH3	Aboriginal Heritage	General impacts to Aboriginal archaeological sites	If any part of the project (such as an ancillary facility) is located in an area which has not been subject to Aboriginal heritage field survey and assessment, an assessment will be undertaken before that part of the project proceeds.						All	All	Pre-construction	RMS and Contractor	Open	This requirement is addressed in the Pacific Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Due diligence heritage assessments have been carried out prior to any works outside the SSI project boundary in accordance with MCoA requirements.
AH4	Aboriginal Heritage	General impacts to Aboriginal archaeological sites	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.						All	All	Construction	RMS and Contractor	Open	As per RMS salvage program of works carried out prior to construction. This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
AH5	Aboriginal Heritage	General impacts to Aboriginal archaeological sites	Heritage evidence collected will be curated 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 will also be provided.						All	All	Construction and post-construction	RMS and Contractor	Open	As per RMS salvage program of works carried out prior to construction. This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
AH6	Aboriginal Heritage	General impacts to Aboriginal archaeological sites	A detailed technical report documenting the results of the salvage excavations and the archaeological material analysis will be prepared. A summary report (to be made public) will be developed to accompany the technical report.						All	All	Construction and post-construction	RMS and Contractor	Open	As per RMS salvage program of works carried out prior to construction. This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
AH7	Aboriginal Heritage	General impacts to Aboriginal archaeological sites	Site records will be lodged with NSW Office of Environment and Heritage for any previously unrecorded evidence that is identified and for any evidence that is salvaged.						All	All	Construction and post-construction	RMS and Contractor	Open	As per RMS salvage program of works carried out prior to construction. This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
AH8	Aboriginal Heritage	General impacts to Aboriginal archaeological sites	Aboriginal Site Impact Recording (ASIR) forms will be lodged with the Aboriginal Heritage Information Management Systems (AHIMS) Register within three months of sites being impacted.						All	All	Construction	RMS and Contractor	Open	As per RMS salvage program of works carried out prior to construction. This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
AH9	Aboriginal Heritage	Human skeletal remains	An unexpected finds (including human skeletal remains) procedure will be developed in accordance with Roads and Maritime' Standard Management Procedures: Unexpected Archaeological Finds 2012.						All	All	Construction	Contractor	Closed	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
AH10	Aboriginal Heritage	Aboriginal stakeholder consultation	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).						All	All	Pre-construction and construction	RMS and Contractor	Open	RMS has an established AFG meeting schedule in place.
AH11	Aboriginal Heritage	Awareness of Aboriginal heritage	Aboriginal culture awareness training for all relevant staff and contractors will occur prior to commencing work on-site. This could include information about the Aboriginal culture and history of the locality, the location of sites and items that require protection and movement corridors within the project boundary, heritage management measures and protocols, and legal obligations. This training will be developed in consultation with suitably trained personnel from local Aboriginal organisations represented by the relevant registered stakeholders for that area.						All	All	Pre-construction and construction	RMS and Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan) which was approved by DPE on 23 October 2015. Pacific Complete also submitted the Aboriginal and Non-Aboriginal Heritage and Education Training Package which forms Appendix A of the Construction Heritage Management Plan in February 2015 following the completion of the consultation period as of 12 February 2015.
AH12	Aboriginal Heritage	Awareness of Aboriginal heritage	An Aboriginal heritage interpretation strategy will be prepared as part of the Aboriginal heritage management plan. Measures will include opportunities for promoting salvage and investigation, the recovery of information, permanent installations and ways of marking the presence of Aboriginal people in the landscape, including, signage, interpretation products such as written materials, and through place naming.						All	All	Pre-construction and construction	RMS	Open	As per RMS salvage program of works (prior to construction). This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMS and RMS/PC specifications are used to ensure compliance with this MCoA.
AH13	Aboriginal Heritage	Awareness of Aboriginal heritage	Compliance auditing of the cultural heritage management measures will be undertaken as part of the environmental management audit regime.						All	All	Construction	Contractor	Open	This requirement is addressed by the Pacific Complete CEMP (main document). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Integrated audits are completed according to the Audit Schedule and ongoing across the project.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3- 11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
AH14a	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 1, Site 1a (at Taylors Run 2): • All previously recorded artefacts must be recovered and removed off-site, and passed to registered Aboriginal stakeholders for reburial or storage at a chosen location, subject to a care agreement being established. • If the Aboriginal archaeological site is not to be impacted, an exclusion zone will be established as per management measure AH2. Ancillary facility - Section 1, Site 1a (at Taylors Run 3): • Exclusion zones will be established as per management measure AH2. Ancillary facility - Section 1, Site 1a (at Taylors Run 1): • The surface scatter portion of this Aboriginal archaeological site outside the proposed ancillary facility will be avoided. An exclusion zone with a buffer of 15 metres of the surface artefact point will be established as per management measure AH2. • Any ground disturbance impacts to the archaeological site in the ancillary facility, will require the top soil down to the sterile clay layer to be graded, stockpiled separately (within a portion of the ancillary facility area), and reinstated at the same area following completion of the activity. • Any portions of the Aboriginal archaeological site not to be impacted will be protected by exclusion zones as per management measure AH2. Ancillary facility - Section 1, Site 1a (at WWC37 (22-1-0344)): • Within the Aboriginal archaeological site in the boundary of the project, after salvage activities, but before any other ground disturbance, the top soil down to the sterile clay layer will be graded from the area, stockpiled separately and used in batters (not fill) of the road/bridge. This will be undertaken in consultation with the relevant registered Aboriginal stakeholders and will be engaged to direct this activity. In addition: • The salvage to be excavated by machine is 30 % of the Aboriginal archaeological site. • The older house nearest to the river within the Aboriginal archaeological site will be removed, with minimal ground disturbance, before salvage excavations being undertaken, so that this area may be targeted for a portion of the salvage. • Their nominated site officers are present during removal of the plastic covering the blueberry bush rows, to identify artefacts on the surface under the plastic – an archaeologist will also be present to document finds. • All cultural material recovered will be subject to detailed analysis, which will be included in a technical report, including detailed discussion and interpretation.						1	NA	Pre-construction and construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
AH14b	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 1, Site 1a, 1b (at WWC39 (22-1-0343)): • If impact to WWC39 is necessary, salvage excavation of the portion of the Aboriginal archaeological site to be impacted will be undertaken as detailed in the Ancillary facility and design change CHAR (Appendix D of the Submissions/ Preferred Infrastructure Report) and in consultation with RAPs. • If impacts to the Aboriginal archaeological site are necessary, following archaeological salvage the top soil down to the sterile clay layer will be graded from the area, stockpiled separately and placed in batters. • Where ground disturbance is not necessary, geotextile fabric and crushed rock or similar will be used to protect the ground from compaction. • The area of the Aboriginal archaeological site not to be impacted will be protected by an exclusion zone as per management measure AH2.						1	NA	Pre-construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
AH14c	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 1, Additional site 5: • Sub-surface test excavation will be undertaken prior to the use of the ancillary facility. This will be conducted in accordance with the methodology used in the working paper, and will occur several months before any ground disturbance in this location. Further recommendations for the Aboriginal archaeological site will then be made in consultation with the registered Aboriginal stakeholders.						1	NA	Pre-construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
AH14d	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 2, Site 1b (at Lemon Tree Road 1 (13-4-0180)): • An exclusion zone will be established around this Aboriginal site as per management measure AH2.						2	NA	Construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
AH14e	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 2, Site 3 (at Kungala Road 1 (13-4-0181)): • Sub-surface test excavation will be undertaken prior to construction, conducted in accordance with the methodology used in the working paper, and occur several months before any ground disturbance at this location. Further recommendations for the Aboriginal archaeological site will then be made in consultation with the registered Aboriginal stakeholders, including potentially establishing a care agreement will be necessary to enable this. • Any portions of the Aboriginal archaeological site that are not to be impacted will be protected by exclusion zones as per management measure AH2.						2	NA	Pre-construction and construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
AH14f	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 2, Site 4 (at Wells Crossing Artefacts 1 (13-4-0183)): • If this Aboriginal archaeological site is to be impacted, salvage excavation of the portion of the Aboriginal archaeological site to be impacted will be undertaken as detailed in the Ancillary facility and design change CHAR (Appendix D of the Submissions/ Preferred Infrastructure Report) and in consultation with RAPs.						2	NA	Pre-construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
AH14g	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 2, Site 5b (at WWC139 (13-4-0157)): • The Aboriginal archaeological site that is not to be impacted will be protected by exclusion zones as per management measure AH2.						2	NA	Construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
AH14h	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 3, Site 3b (at WX21 Site 8 (09-4-0108)): • All previously recorded artefacts will be recovered and removed off-site before construction, subject to a care agreement being established. • All cultural material recovered will be subject to detailed analysis, which will be included in a technical report, including detailed discussion and interpretation.						3	NA	Pre-construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. An ancillary facility management plan/checklist has not been prepared for this site. WX21 Site 8 (09-4-0108) is located outside of the project boundary and will not be impacted by this Ancillary Facility.
AH14i	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 3, Site 6b (at Old Tucabia Dump 1 (13-4-0184)): • An exclusion zone will be established at the boundary of the Aboriginal archaeological site (including a buffer based on the drip zone of the tree) as per management measure AH2.						3	NA	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. An ancillary facility management plan/checklist has not been prepared for this site. 13-4-0184 will not be impacted as it is outside the project boundary.
AH14j	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 3, Site 9 (at Upper Coldstream 1 (13-4-0182)): • All previously recorded artefacts will be recovered and removed off-site, subject to a care agreement being established. • Any portions of the Aboriginal archaeological site not to be impacted will be protected by exclusion zones as per management measure AH2.						3	NA	Pre-construction and construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Ancillary site Section 3, Site 9 has been approved for use. A heritage assessment was included as part of the ancillary facility management plan. Fencing will be established in accordance with this condition and the ancillary facility management plan during establishment of the site. The Ancillary Facility Assessment was approved on 19 October 2016.
AH14k	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 4, Site 1: • Sub-surface test excavations will be undertaken in accordance with the methodology used in the working paper, and will occur before any ground disturbance at this location. Further recommendations for the Aboriginal archaeological site will then be made in consultation with the registered Aboriginal stakeholders.						4	3	Pre-construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. An ancillary facility management plan/checklist has been prepared and was approved on 16 August 2016.
AH14l	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 4, Site 3: • This property could not be accessed for field investigations. Sub-surface test excavations are to be undertaken. This will be conducted in accordance with the methodology used in the working paper, and will occur before ground disturbing work for the project or ancillary activities being undertaken at this location. Further recommendations for the Aboriginal archaeological site will then be made in consultation with the RAPs.						4	3	Pre-construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. An ancillary facility management plan/checklist has not been prepared for this site.
AH14m	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 4, Site 5 (at Hirst 3 (13-1-0192)): • This Aboriginal archaeological site is to be avoided if possible unless agreement can be reached with the RAPs. An exclusion zone will be established as per management measure AH2. • If agreement to use the site is reached with RAPs, salvage excavation of the portion of the Aboriginal archaeological site to be impacted will be undertaken as detailed in the Ancillary facility and design change CHAR (Appendix D of the Submissions/ Preferred Infrastructure Report) and in consultation with RAPs.						4	3	Pre-construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Section 4, Site 5 Stockpile Checklist/Plan has been approved for use on 16 August 2016. The Hirst 3 pad has been salvaged. The clearance letter for the site advises no further mitigation measures are required.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3- 11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
AH14n	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 5, Site 7 (at Mororo Creek 1 (13-1-0191)): • This Aboriginal archaeological site within the ancillary facility location will be avoided. An exclusion zone at least five metres outside the boundary of the Aboriginal archaeological site will be established as per management measure AH2.						5	NA	Construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Section 5, Site 7 has been approved for use on 6 December 2016. During the reporting period (October 2016 to March 2017) Mororo Creek 1 has been fenced by establishment of an exclusion zone of at least five metres outside the boundary of the Aboriginal archaeological site, prior to the establishment of the site in accordance with management measure AH2.
AH14o	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 5, Site 5 and Site 7 (at Mororo Creek 2 (13-1-0193)): • This Aboriginal archaeological site within the ancillary facility location will be avoided. An exclusion zone at least five metres outside the boundary of the Aboriginal archaeological site will be established as per management measure AH2.						5	NA	Construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Section 5, Site 7 has been approved for use on 6 December 2016. Mororo Creek 1 has been fenced during the establishment of the site in accordance with this condition and the ancillary facility management plan. An Ancillary Facility Checklist/Assessment has not yet been prepared for this site.
AH14p	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 7, Site 1: • A site walk over survey will be undertaken to confirm whether sub-surface test excavations are required. This will be conducted in accordance with the methodology used in the working paper, and will occur several months before any ground disturbance at this location. Further recommendations and use of the Aboriginal archaeological site will be developed in agreement with the registered Aboriginal stakeholders.						7	NA	Pre-construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Section 7, Site 1 is proposed for use. During the preparation of the ancillary facility management plan a site walkover will be carried out. The Ancillary Facility Management Plan/Checklist is pending approval.
AH14q	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 7, Site 3 (Dubaijeen Site (New Italy 1)): • Salvage excavation of the portion of the Aboriginal archaeological site to be used will be undertaken as detailed in the Ancillary facility and design change CHAR (Appendix D of the Submissions/ Preferred Infrastructure Report) and in consultation with RAPs. The excavations apply to the portion of the site that be impacted by the project as well as the ancillary facility. • Any portions of the Aboriginal archaeological site that are not to be impacted will be protected by exclusion zones as per management measure AH2.						7	NA	Pre-construction and construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. An ancillary facility management plan/checklist has not been prepared for this site. Salvage complete, Site Clearance Letter received stating fencing must remain in place until construction in that area has been completed. Consultation occurred with RAPs regarding screening installation for the Aboriginal Women's Site. Significant vegetation retained in the vicinity, acting as a natural screen (June 2018).
AH14r	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 7, Site 4 (The Gap Rd 1(13-1-0194)): • If impact to The Gap Rd 1 is necessary, salvage excavation of the portion of the Aboriginal archaeological site to be impacted will be undertaken as detailed in the Ancillary facility and design change CHAR (Appendix D of the Submissions/ Preferred Infrastructure Report) and in consultation with RAPs. • Any portions of the Aboriginal archaeological site that are not to be impacted will be protected by exclusion zones will be established as per management measure AH2.						7	NA	Pre-construction and construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. An ancillary facility management plan/checklist has been prepared for this site and is pending approval. Gap Road 1 – this site is located outside the approved project boundary (EIS/SPiR). Section 8 CH125,250. 250m west of project boundary. Near an ancillary site, will only be affected if ancillary site is used.
AH14s	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 10, Site 1a: • A site walk over survey will be undertaken to confirm whether sub-surface test excavation is required. This will be conducted in accordance with the methodology used in the working paper, and will occur several months before any ground disturbance at this location. Further recommendations for the Aboriginal archaeological site will then be made in consultation with the registered Aboriginal stakeholders.						10	NA	Pre-construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. An ancillary facility management plan/checklist has not been prepared for this site. A site walk over will occur during ancillary site assessment.
AH14t	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 10, ancillary facility 5 at Rudgley Site 1 (04-4-0167): • This Aboriginal archaeological site will be avoided, where practical, using an exclusion zone as per management measure AH2. • If avoidance is not possible, salvage excavation of the portion of the Aboriginal archaeological site to be impacted will be undertaken as detailed in the Ancillary facility and design change CHAR (Appendix D of the Submissions/ Preferred Infrastructure Report) and in consultation with RAPs. • Any portions of the Aboriginal archaeological site that are not to be impacted will be protected by exclusion zones as per management measure AH2.						10	NA	Pre-construction and construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. An ancillary facility management plan/checklist has not been prepared for this site. Site fencing has been installed along the boundary.
AH14u	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 10, Site 6 (Site 12 (11-2-0082)): • If avoidance is not possible, salvage excavation of all portions of the Aboriginal archaeological site to be impacted will be undertaken as detailed in the Ancillary facility and design change CHAR (Appendix D of the Submissions/ Preferred Infrastructure Report) and in consultation with RAPs. • Any portions of the Aboriginal archaeological site that are not to be impacted will be protected by exclusion zones as per management measure AH2.						10	NA	Pre-construction and construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Exclusion zones established (flagging and signage). An ancillary facility management plan/checklist has not been prepared for this site.
AH14v	Aboriginal Heritage	Ancillary facilities	Ancillary facility - Section 11, Site 1a: • The ground will be inspected for any Aboriginal archaeological material by an archaeologist and registered Aboriginal stakeholders during and following clearing activities. Any archaeological material will be recorded, removed from the Aboriginal archaeological site, and a suitable location for the material determined in consultation with the stakeholders. An AHIMS record will be submitted for any finds and any locations where the material is to be stored – unless reburied on or near Aboriginal archaeological site, establishing a care agreement will also be necessary.						11	2	Pre-construction and construction	Contractor	Closed	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Section 11, Site 1a was inspected for Aboriginal archaeological material, salvaged, recorded, excavation and test pitting completed. Recommended management measures have been implemented in the Ancillary Facility Checklist for this site, which was approved on 5 December 2016.
AH15	Aboriginal Heritage	Impacts on WWC39	Salvage excavation will be undertaken within the portion of the site to be impacted by the project footprint as detailed in the Working paper Aboriginal Cultural Heritage (Woolgoolga to Wells Crossing) and in consultation with RAPs. An exclusion zone will be erected around 40% of the site that will be avoided by construction as per management measure AH2.						1	NA	Pre-construction	RMS	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
AH16	Aboriginal Heritage	Impacts on WWC46	Salvage excavation will be undertaken within the portion of the site to be impacted by the project footprint as detailed in the Working paper Aboriginal Cultural Heritage (Woolgoolga to Wells Crossing) and in consultation with RAPs.						1	NA	Pre-construction	RMS	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
AH17	Aboriginal Heritage	Impacts on WWC Dirty Creek 1	Prior to ground disturbance to WWC Dirty Creek 1c (22-1-0403), the ground surface be inspected within 50 m of the site for any Aboriginal archaeological material by an archaeologist and RAP nominated site officers. Any archaeological material be recorded, removed from the site, and a suitable location for the material determined in consultation with the RAPs. The AHIMS record will be updated with any new finds and any locations where the material is to be stored – unless reburied on or near site, establishing a care agreement be necessary.						1	NA	Pre-construction	RMS	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
AH18	Aboriginal Heritage	Impacts on Tyndale 2	Salvage excavation be undertaken within the portion of the site to be impacted by the project footprint as detailed in the Working paper Aboriginal Cultural Heritage (Wells Crossing to Iluka Road) and in consultation with RAPs.						4	3	Pre-construction	RMS	Closed	Salvage completed. Additional mitigations outlined in the site clearance letter received.
AH19	Aboriginal Heritage	Impacts to Chaffin Creek Scarred tree	Chaffin Creek scarred tree (Chaffin Creek Tree 2): • Before construction, an exclusion zone will be established as per management measure AH2. An arborist will be consulted to develop a management strategy to ensure the health and preservation of the tree.						3	NA	Pre-construction	Contractor	Closed	Salvage completed, clearance letter received. Exclusion fencing and signage has been established outside the drip zone of the tree.
AH20	Aboriginal Heritage	Impacts on IR2W4	Salvage excavation will be undertaken within the portion of the site to be impacted by the project footprint as detailed in the Working paper Aboriginal Cultural Heritage (Iluka Road to Woodburn) and in consultation with RAPs.						8	4	Pre-construction	RMS	Closed	Salvage completed. Additional mitigations outlined in the site clearance letter received.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
AH21	Aboriginal Heritage	Impacts on Gittoes Jali	For the Gittoes Jali (09-1-0204, 09-1-0205, 09-1-0203) site: - Where possible, impacts on the Gittoes Jali site will be reduced or avoided. Avoided areas will be protected by an exclusion fence as per management measure AH2. If avoidance is not an option, then extensive salvage will be undertaken as per the methodology detailed in the Ancillary facilities and design change CHAR (refer to Appendix D of the Submissions/ Preferred Infrastructure Report). - Any sediment from the site to 0.6 metre depth proposed to be used outside the site will be sieved to remove any cultural material. Paint wells and grinding rock: - Residue analysis will be undertaken to determine if any pigment is found within the wells. This will be undertaken by a suitably qualified consultant. - The location of these paint wells will be accurately plotted and drawn. - If the paint wells cannot be avoided, they will be relocated; this requires consultation with the registered Aboriginal stakeholders. Geomorphology assessment: - A geomorphology assessment will be undertaken. The assessment will be non-invasive, but could use observations of the machine salvage excavation. Borrow site: - Haul routes from the project formation to the borrow source that limit direct impacts to Aboriginal heritage will be confirmed in consultation with Registered Aboriginal Parties.						8	NA	Pre-construction and construction	RMS and Contractor	Open	Salvage completed. Additional mitigations outlined in the site clearance letter received. Works still to be completed - geomorphological assessment to be done. Letter from Navin Officer Heritage Consultants dated 20/9/2016 advised that residue analysis on the paint wells will not be completed as paint wells are in a "no-go" zone where impacts are anticipated. This area is to be fenced off/conserved without impact. This will be taken to the Aboriginal Focus Group meeting on 4 October 2016.
AH22	Aboriginal Heritage	Impacts on E2/2	For the E2/2 (13-1-01-09) site: - Salvage excavation will be undertaken at and around the shell midden by the project footprint as detailed in the Working paper Aboriginal Cultural Heritage (Woodburn to Ballina) and in consultation with RAPs. - Any sediment from the site to 1.5 m metre depth proposed to be used outside sites will be sieved to remove any cultural material. Shell Midden: - A sequence of dates (radiocarbon or AMS) will be collected from the hand excavation. - All shell recovered will be subject to analysis including minimum number of individuals (MNI) and weight (g). An analysis of the number of individual specimens (NISP) may also be undertaken if deemed appropriate. Overburden: - All overburden will be removed and sieved for cultural materials. Geomorphology assessment: - A geomorphology assessment will be undertaken. The assessment will be non-invasive, but could use observations of the machine salvage excavation.						9	NA	Pre-construction and construction	RMS and Contractor	Open	Salvage completed. Additional mitigations outlined in the site clearance letter received: site fencing to be installed between CH 144100 and 145000 (both eastern and western side of project boundary) prior to commencement of construction and in consultation with Aboriginal community. Site fencing is yet to be installed as construction has not yet commenced.
AH23	Aboriginal Heritage	Impacts on Aboriginal heritage Site 11	For Site 11 (13-1-0189): - Salvage excavation will be undertaken by the project footprint as detailed in the Working paper Aboriginal Cultural Heritage (Woodburn to Ballina) and in consultation with RAPs. - Any sediment from the sites to 1.5 metre depth proposed to be used outside the site will be sieved to remove any cultural material. Geomorphology assessment: - A geomorphology assessment will be undertaken. The assessment will be non-invasive, but could use observations of the machine salvage excavation.						9	NA	Pre-construction and construction	RMS and Contractor	Open	Salvage completed. Additional mitigations outlined in the site clearance letter received.
AH24	Aboriginal Heritage	Impacts on Melino site	For the Melino (04-4-0173) site: - Salvage excavation will be undertaken at the artefact scatter including a discrete knapping floor as detailed in the Working paper Aboriginal Cultural Heritage (Woodburn to Ballina) and in consultation with RAPs. - Any sediment from the sites to 1.5 metre depth proposed to be used outside the site will be sieved to remove any cultural material. Shell Midden: - Salvage excavations as detailed in the Working paper Aboriginal Cultural Heritage (Woodburn to Ballina) and in consultation with RAPs. - A sequence of dates (radiocarbon or AMS) will be collected from the hand excavation. - All shell recovered will be subject to analysis including minimum number of individuals (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: - Salvage excavations will be undertaken as detailed in the Working paper Aboriginal Cultural Heritage (Woodburn to Ballina) and in consultation with RAPs. Geomorphology assessment: - A geomorphology assessment will be undertaken. The assessment will be non-invasive, but could use observations of the machine salvage excavation.						10	NA	Pre-construction and construction	RMS and Contractor	Closed	Salvage completed. Additional mitigations outlined in the site clearance letter received. All geomorphological investigations were undertaken within the Phase 1 and 2 excavation areas. Site fencing has been installed along project boundary, and around four scarred trees (MST2, MST3, MST4 & C21). Sign has been posted indicating exclusion zone. Construction may commence subject to Unanticipated Discovery Protocols.
AH25	Aboriginal Heritage	Impacts on Site 1	For Site 1 (04-4-0179): - Further salvage excavations will be undertaken as detailed in the Working paper Aboriginal Cultural Heritage (Woodburn to Ballina) and in consultation with RAPs. - Any sediment to one metre depth from the site proposed to be used outside the site will be sieved to remove any cultural material.						10	NA	Pre-construction and construction	RMS and Contractor	Open	Salvage complete. Additional mitigations outlined in the site clearance letter received 4 November 2016 - site fencing to be installed. Fencing has been included along the northern side of the alignment.
AH26	Aboriginal Heritage	Impacts on Site 2	For Site 2 (04-4-0178): - Salvage excavation will be undertaken as detailed in the Working paper Aboriginal Cultural Heritage (Woodburn to Ballina) and in consultation with RAPs. - Any sediment to 1.5 metres depth from the site proposed to be used outside the site will be sieved to remove any cultural material. - Excavation at Site 2 will be undertaken at a time of the year when the water table is at its lowest, to ensure maximum depth can be reached with a machine.						10	NA	Pre-construction and construction	RMS and Contractor	Closed	Salvage completed. Additional mitigations outlined in the site clearance letter received - construction may commence subject to protocol in the event of discovery of human remains.
AH27	Aboriginal Heritage	Impacts on Site 3	For Site 3 (04-4-0175): - Further salvage excavations will be undertaken as detailed in the Working paper Aboriginal Cultural Heritage (Woodburn to Ballina) and in consultation with RAPs. - Any sediment to 1.5 metres depth from the site proposed to be used outside the site will be sieved to remove any cultural material. - Excavation at Site 3 will be undertaken at a time of the year when the water table is at its lowest, to ensure maximum depth can be reached with a machine.						10	NA	Pre-construction and construction	RMS and Contractor	Closed	Salvage completed. Additional mitigations outlined in the site clearance letter received - site fencing. Site fencing has been installed.
AH28	Aboriginal Heritage	Impacts on Site 4	For Site 4 (04-04-0132): - Further salvage excavations will be undertaken as detailed in the Working paper Aboriginal Cultural Heritage (Woodburn to Ballina) and in consultation with RAPs. - Any sediment to 0.5 metre depth from the site proposed to be used outside the site will be sieved to remove any cultural material.						10	NA	Pre-construction and construction	RMS and Contractor	Closed	Salvage completed. Additional mitigations outlined in the site clearance letter received. Site fencing has been installed on the eastern side of the alignment.
AH29	Aboriginal Heritage	Impacts on Site 12	For Site 12 (04-4-0176): An exclusion zone be established at the boundary of the site where construction is to occur within 10 m of the site, as per management measure AH2.						10, 11	NA	Pre-construction and construction	RMS and Contractor	Closed	Salvage completed. Additional mitigations outlined in the site clearance letter received. Clearing flagging installed around the site and 'Environmental Protection Zone' signs are in place.
AH30	Aboriginal Heritage	Impacts on the Gumi Site	For the Gumi site (04-4-0180): - The tree (registered on AHIMS database) will be removed and the trunk will be relocated to an area agreed to with the registered stakeholder groups and Roads and Maritime – an arborist will be consulted to guide in the removal of the tree. - The final tree location will be visually protected with culturally sensitive plantings or by existing vegetation. - Access to the tree will be provided for local Aboriginal people to enable them to be able to use the tree as a teaching site.						10	NA	Pre-construction and construction	RMS and Contractor	Closed	This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSS and ESCPs to ensure compliance with this measures. Arborist report has been prepared. Negotiations for relocation with stakeholders was finalised in June 2017 with scar tree removal was complete in August 2017
AH31	Aboriginal Heritage	Impacts on the Melino Scarred Tree	For the Melino Scarred Tree 4 (04-4-0166) site: - Prior to construction a 15 metre exclusion zone will be established around the scarred tree as per management measure AH2. - An arborist will be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree.						10	NA	Pre-construction and construction	RMS and Contractor	Closed	This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSS and ESCPs to ensure compliance with this measures. Arborist report has been prepared. Site fencing has been installed along the project boundary and around the scarred trees.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
AH32	Aboriginal Heritage	Impacts on the MST3 Scarred Tree	For the MST3 (04-4-0131) site: • Prior to construction a 15 metre exclusion zone will be established around the scarred trees as per management measure AH2. • An arborist will be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree.						10	NA	Pre-construction and construction	RMS and Contractor	Closed	This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this measures. Site fencing has been installed along the project boundary where the project boundary crossed the Melino site boundary. Site fencing has been installed around the scar tree MST3. Arborist report has been prepared.
AH33	Aboriginal Heritage	Impacts on the C21 Scarred Tree	For the C21 (04-4-0107) site: • Prior to construction a 15 metre exclusion zone will be established around the scarred trees as per management measure AH2. • An arborist will be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree.						10	NA	Pre-construction and construction	RMS and Contractor	Closed	This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this measures. Site fencing has been installed along the project boundary where the project boundary crossed the Melino site boundary. Site fencing has been installed around the scar tree C21. Arborist report has been prepared.
AH34	Aboriginal Heritage	Impacts on the MSRT2 Scarred Tree	For the MSRT2 (04-4-0130) site: • Prior to construction a 15 metre exclusion zone will be established around the scarred trees as per management measure AH2. • An arborist will be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree.						10	NA	Pre-construction and construction	RMS and Contractor	Closed	This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this measures. Site fencing has been installed along the project boundary where the project boundary crossed the Melino site boundary. Site fencing has been installed around the scar tree MST2. Arborist report has been prepared.
AH35	Aboriginal Heritage	Impacts on the Rudgley Scarred Tree	For the Rudgley Scarred Tree (04-4-0170) site: • Prior to construction a 15 metre exclusion zone will be established around the scarred trees as per management measure AH2. • An arborist will be consulted to develop an ongoing management strategy to ensure the preservation and health of the tree.						10	NA	Pre-construction and construction	RMS and Contractor	Closed	This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this measures. Site clearance received 4/11/2016 with fencing required to be installed prior to commencement of works around two scarred trees. An Arborist report has been prepared. Site fencing has been installed along the boundary. Temporary Fencing has been installed around the Scar trees to create a tree protection zone.
AH36	Aboriginal Heritage	Coolgardie Road, Rudgley Scarred Tree 2	An exclusion zone will be established 5 metres from the boundary of Rudgley Scarred Tree 2 as per management measure AH2.						10	NA	Pre-construction	RMS and Contractor	Closed	This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this measures. Arborist report has been prepared. Fencing has been established as per report.
AH37	Aboriginal Heritage	Coolgardie Road, Rudgley Site 2	The area of site to be impacted be subject to salvage excavation as detailed in the Addendum CHAR (Appendix D of the Submissions/ Preferred Infrastructure Report) and in consultation with RAPs. All cultural material recovered will be subject to detailed analysis, interpretation and reporting.						10	NA	Pre-construction	RMS and Contractor	Closed	Salvage completed. Additional mitigations outlined in the site clearance letter received.
AH38	Aboriginal Heritage	Impacts to Corridors of Movement	Educational and cultural signage will 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 will include acknowledging the area as the traditional lands of the Gumbaynggir peoples. Any signage will be subject to approval by the registered Aboriginal stakeholders.						1	NA	Pre-construction and construction	RMS and Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
AH39	Aboriginal Heritage	Impacts to Corridors of Movement	Tyndale and Woodford Island Corridors of Movement: • Pedestrian access across the project will be provided, if reasonable and feasible within the existing local road network, to maintain the connectivity of this corridor of movement.						3	NA	Pre-construction and construction	RMS and Contractor	Closed	This requirement is also addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this measure.
AH40	Aboriginal Heritage	Impacts to Corridors of Movement	Pillar Valley Corridors of Movement: • Pedestrian access across the project will be provided, if reasonable and feasible within the existing local road network, to maintain the connectivity of this corridor of movement.						3	NA	Pre-construction and construction	RMS and Contractor	Closed	This has been covered during detailed design. This requirement is also addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this measure.
AH41	Aboriginal Heritage	Direct impact on culturally significant places	Place B: • To maintain connectivity, access will be provided across the project area, from the end of Richmond Road, Pine Tree Road, or Fischer Street to Broadwater National Park during construction and operation, in consultation with the traditional owners. • Pedestrian access within the project boundary will be provided, where feasible and reasonable from the eastern side of the project to the western side of Broadwater National Park. A connection from the existing Pacific Highway to Broadwater National Park along Eversons Lane be considered, in consultation with traditional owners and relevant land owners.						9, 10	NA	Pre-construction and construction	RMS and Contractor	Closed	This has been addressed during detailed design. This requirement is also addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this measure.
AH42	Aboriginal Heritage	Direct impact on culturally significant places	Place D: • Welcome to country signage will be installed within the highway corridor between Woodburn and Wardell and information on culture installed at the rest area in Section 10, as agreed with the registered Aboriginal parties.						9, 10	NA	Pre-construction and construction	RMS and Contractor	Open	This is being reviewed as part of signage strategy for project. This requirement is also addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan).
AH43	Aboriginal Heritage	Direct impact on culturally significant places	Place K: • A geomorphological assessment will be undertaken, including the geomorphological setting of the archaeological sites within this landscape, and how the landscape has formed and changed over the last 40,000 years. This take into account both the cultural and scientific significance of the place. • A report will be produced by a geomorphologist in conjunction with an archaeologist / anthropologist.						11	2	Pre-construction and construction	RMS	Open	Work is ongoing following RMS salvage program of works.
AH44	Aboriginal Heritage	Indirect impact on culturally significant places	Place E: • This place will be fenced prior to and during construction to avoid incidental impact. • Surface water runoff from the construction site or from the highway pavement during operation of the project will be prevented from directly entering into Place E.						9	NA	Pre-construction and construction	RMS and Contractor	Open	Also known as LilyPad. Covered under E2/2 clearance letter. Fencing to be established.
AH45	Aboriginal Heritage	Indeterminate impact on culturally significant places	Place C: • An education package will be prepared. This will include at a minimum a printed document detailing the story of the occupation of this area and the ensuing massacre. Further research and interviews will be undertaken for this purpose. Where possible, oral recordings and/ or video footage will also be compiled into the package. • Caution will be undertaken in and around the project in this area with regard to potential human remains.						9, 10	NA	Pre-construction and construction	RMS and Contractor	Open	RMS carrying out consultation at AFGs.
AH46	Aboriginal Heritage	Mororo Road cutting site	Before construction at Mororo Road, between station 97.45 and 98.9, a field inspection of the area to be cleared and excavated will be undertaken by an Aboriginal heritage consultant with Registered Aboriginal Parties.						6	NA	Pre-construction	RMS	Closed	Works carried out as per RMS salvage program of works.
AH47	Aboriginal Heritage	Old Bagotville Road Lot 109 DP1137975	As the property occurs in an area of low-moderate Aboriginal heritage potential, survey, and if necessary test excavation, should be undertaken to determine the presence and extent of potential archaeological evidence. This will be conducted in accordance with the methodology agreed with RAPs, and prior to ground disturbing works for the project and/or proposed design change. Further recommendations for the site will then be made in consultation with the RAPs.						10	NA	Pre-construction	RMS	Closed	Works carried out as per RMS salvage program of works.
AH48	Aboriginal Heritage	Saezza 1 artefact scatter: salvage excavation	The area of this site to be impacted will be subject to salvage excavation as detailed in the Addendum CHAR (Appendix D of the Submissions/ Preferred Infrastructure Report) and in consultation with RAPs. All cultural material recovered will be subject to detailed analysis, interpretation and reporting. The portion of the site that not be impacted (at least 70%), will be protected by fencing as per management measure AH2.						10	NA	Pre-construction	RMS	Closed	Works were carried out as per RMS salvage program of works. This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this measure. Redesign was proposed in reporting period April to September 2017, in August 2017, to minimise impacts, yet to be finalised. Fencing has been installed.
NON-ABORIGINAL (HISTORICAL HERITAGE)														
HH1	Non-Aboriginal (Historical) heritage	Unidentified historical heritage materials, features and/or deposits	If at any time during construction associated with the project, unidentified historical heritage materials, features and/or deposits are found, the Roads and Maritime Standard Management Procedure: Unexpected Archaeological Finds (20121) will be followed.						All	All	Construction	Contractor	Open	This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan, Appendix B Roads and Maritime Standard Management Procedure - Unexpected Archaeological Finds). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this measure.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
HH2	Non-Aboriginal (Historical) heritage	Awareness of non-Aboriginal heritage items	Contractors will be given awareness training on non-Aboriginal historical heritage prior to commencement of construction works to ensure understanding of potential heritage items and the procedure in the event of discovery of historical heritage materials, features or deposits, or the discovery of human remains.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan, Appendix A Aboriginal and Non Aboriginal Heritage Education and Training Package). Pacific Complete will conduct site induction/awareness training of all contractors to ensure compliance with this requirement. All staff inducted onto the project have received Aboriginal and non-Aboriginal cultural heritage induction training.
HH3	Non-Aboriginal (Historical) heritage	Awareness of non-Aboriginal heritage items	The Heritage management plan will be developed in consultation with the Heritage Council of NSW.						All	All	Construction	Contractor	Closed	This requirement was addressed during the preparation of the Pacific Complete Construction Heritage Management Plan which forms Appendix B5 of the Pacific Complete CEMP for Sections 3 to 11. Pacific Complete CEMP was approved by DPE on 23 October 2015.
HH4	Non-Aboriginal (Historical) heritage	Awareness of non-Aboriginal heritage items	Should the impact to any historic heritage item change during detailed design, further assessment of impacts on the items will be undertaken.						All	All	Pre- construction	RMS and Contractor	Closed	This was considered during detailed design.
HH5	Non-Aboriginal (Historical) heritage	Ancillary facilities	At project section 1, site 2: a temporary barrier fence will be erected between item 39 and the ancillary site. The fence will remain in place until the conclusion of the use of the ancillary site at which time it will be removed.						1	NA	Construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
HH6	Non-Aboriginal (Historical) heritage	Ancillary facilities	At project section 10, site 4: a temporary barrier fence will be erected to protect the drainage channel that is not directly impacted by the project (item 43). The fence will remain in place until the conclusion of the use of the ancillary site at which time it will be removed.						10	NA	Construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. An ancillary facility management plan/checklist has been prepared for this Stockpile site, approved 25 August 2017. The mitigation measures detailed in the assessment incorporate this condition.
HH7	Non-Aboriginal (Historical) heritage	Ancillary facilities	Where local or state significant heritage items not previously identified are identified on an ancillary site and use of the site will impact on the heritage significance of the item, the site will not be used for ancillary facilities.						All	All	Pre- construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016.
HH8	Non-Aboriginal (Historical) heritage	Ancillary facilities	Where local or state significant heritage items are identified on an ancillary site and use of the site will not impact on the heritage significance of the item, appropriate management measures (such as barrier fencing) will be put in place to clearly identify the heritage item and exclude use of the ancillary site within the heritage item's curtilage. Use of these ancillary facilities may commence: • When the appropriate protective measures have been implemented. • When the relevant records have been updated and/or completed.						All	All	Pre- construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016. Appropriate management measures such as barrier fencing and exclusion fencing have been put in place as required.
HH9	Non-Aboriginal (Historical) heritage	Ancillary facilities	Any new ancillary facility and spoil placement locations not identified as part of this EIS will require a non-Aboriginal heritage assessment, with a database search and site walkover to identify any potential heritage items. If items are found, HH4, HH7-HH8 will be followed.						All	All	Pre- construction	Contractor	Open	Pacific Complete has an approved Ancillary Facilities Management Plan (Appendix B9 of the Pacific Complete CEMP). The AFMP was approved by the Environmental Representative on 10 February 2016.
HH10	Non-Aboriginal (Historical) heritage	Impacts on item 2: House, sheds and stockyards, Milleara	A temporary barrier fence will be erected between the stockyards and the works area prior to road construction works commencing. The fence will remain in place until the conclusion of the works in the vicinity of the items at which time it will be removed. The batter slope will not be constructed within five metres of the stockyards.						1	NA	Pre- construction and construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
HH11	Non-Aboriginal (Historical) heritage	Impacts on item 2: House, sheds and stockyards, Milleara	Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to revise the SOHI for this item when the specific architectural noise treatment options are identified.						1	NA	Pre- construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
HH12	Non-Aboriginal (Historical) heritage	Impacts on item 7: Service station complex, Halfway Creek	Salvage excavation (of the coach way station and early coach road) will be undertaken from the project boundary along the front of the complex buildings to the edge of the existing highway before construction starts in the vicinity of the heritage item. Excavations will be undertaken in accordance with Heritage Branch guidelines and under the supervision of an appropriately qualified and experienced historical archaeologist. An appropriate research design and methodology will be prepared to best realise the research potential of this area of the site.						2	NA	Pre- construction and construction	RMS and Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
HH13	Non-Aboriginal (Historical) heritage	Impacts on item 7: Service station complex, Halfway Creek	The batter slope for the motorway upgrade will not be constructed within eight metres of the bar/restaurant building.						2	NA	Construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
HH14	Non-Aboriginal (Historical) heritage	Impacts on item 7: Service station complex, Halfway Creek	A temporary fence will be erected between the bar/restaurant building and the motorway upgrade construction before work starts in the vicinity of the heritage item. The fence will remain in place until construction is completed, at which time it will be removed.						2	NA	Pre- construction and construction	Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
HH15	Non-Aboriginal (Historical) heritage	Impacts on item 7: Service station complex, Halfway Creek	A photographic condition survey will be undertaken of the current condition of the heritage items with any damage to the item from construction to be repaired once construction is complete.						2	NA	Pre- construction and construction	RMS and Contractor	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
HH16	Non-Aboriginal (Historical) heritage	Impacts on item 7: Service station complex, Halfway Creek	Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to revise the SOHI for this item when the specific architectural noise treatment options are identified.						2	NA	Pre- construction	RMS	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
HH17	Non-Aboriginal (Historical) heritage	Impacts on item 36: North Coast Railway Branch Tramway	Archival photographic recording will be undertaken in accordance with the Heritage Branch guidelines How To Prepare Archival Records Of Heritage Items (NSW Heritage Office, 1998) prior to its removal.						2	NA	Pre- construction	RMS	N/A	This Tracking Program applies to sections 3 to 11. For Sections 1 and 2, refer to Stage 1 Compliance Program.
HH18	Non-Aboriginal (Historical) heritage	Impacts on item 11: Tyndale residence, Tyndale	Prior to the start of construction, the location and condition of the mature bunya trees will be recorded by an arborist. In consultation with an arborist, protective fencing will be erected adjacent to the property boundary to control impacts on the trees.						3	NA	Pre- construction and construction	RMS and Contractor	Open	This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSS and ESCPs to ensure compliance with this measures. Arborist Report has been received for the Tyndale Residence. Protective fencing is to be installed.
HH19	Non-Aboriginal (Historical) heritage	Impacts on item 11: Tyndale residence, Tyndale	Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to revise the SOHI for this item when the specific architectural noise treatment options are identified.						3	NA	Pre- construction	RMS and Contractor	Open	To be addressed during detailed operational noise design and at house treatment program.
HH20	Non-Aboriginal (Historical) heritage	Impacts on item 12: Cane barge and former Ashby ferry, Maclean	A photographic condition survey will be undertaken of the current condition of the heritage items with any damage to the item from construction to be repaired once construction is complete.						4	3	Pre- construction	RMS and Contractor	Open	Pacific Complete will arrange for an appropriate photographic survey of heritage items to be undertaken in accordance with the requirements of this measure.
HH21	Non-Aboriginal (Historical) heritage	Impacts on item 12: Cane barge and former Ashby ferry, Maclean	Where appropriate, and before construction commences, any loose or unstable components of the heritage item will be secured to minimise vibration impacts and remain secured until the conclusion of construction, at which time the securing mechanism/s will be removed. Any methods to secure the heritage item will be reversible and not cause damage to the item.						4	3	Pre- construction and construction	RMS and Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSS and RMS/PC specifications are used to ensure compliance with this MCoA.
HH22	Non-Aboriginal (Historical) heritage	Impacts on item 17: Harwood tram tracks, Harwood	The Petticoat Lane tram tracks section will have a protective covering placed over them, (e.g. a geo textile fabric and heavy duty metal sheeting or similar) to minimise impacts from construction in the area. The covering will be secured before construction and will remain in place until the end of construction.						5	NA	Pre- construction and construction	RMS and Contractor	Closed	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSS and RMS/PC specifications are used to ensure compliance with this MCoA. During the reporting period October 2016 to March 2017, the Petticoat Lane Tram Tracks have been covered with 100mm-200mm steel plates for protection. This will remain in place until the end of construction.
HH23	Non-Aboriginal (Historical) heritage	Impacts to item 20: Harwood Bridge, Harwood	The design of the new bridge will be undertaken in accordance with Bridge Aesthetics: Design Guidelines to Improve the Appearance of Bridges in NSW Roads and Maritime 2012 with specific reference to section 6.1, New bridges next to existing bridges.						5	NA	Pre- construction	RMS and Contractor	Closed	This guideline was considered as part of detailed design and development of UDLP for the bridge.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
HH24	Non-Aboriginal (Historical) heritage	Impacts on item 21: Convent, Harwood	An archival photographic recording will 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 removal or relocation.						5	NA	Pre- construction	RMS and Contractor	Closed	Archival photographic record has been prepared for Item 21: Convent, Harwood. Report has been received.
HH25	Non-Aboriginal (Historical) heritage	Impacts on item 21: Convent, Harwood	The feasibility of relocating the building to an appropriate site within the Harwood Heritage Conservation Area will be investigated. The investigation will be undertaken in consultation with an appropriately qualified house removal contractor and an appropriately qualified heritage consultant.						5	NA	Pre- construction	RMS and Contractor	Closed	Further historical research and investigation has been carried out for options to relocate the convent building. Community and agency consultation has been carried out. No compliant tenders were received for the removal and relocation of the Harwood Convent building and no suitable land in or adjacent to the Harwood Heritage Conservation Area where the building could be relocated to was identified. DPE has provided approval for the demolition of the convent building, letter dated 5 December 2016 and the Harwood Convent was demolished in December 2016 (in this reporting period - October 2016 to March 2017).
HH26	Non-Aboriginal (Historical) heritage	Impacts on item 34 Townsend Residence, Townsend	Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to revise the SOHI for this item when the specific architectural noise treatment options are identified.						5	NA	Pre- construction	RMS and Contractor	Open	To be addressed following approval of the Operational Noise Design Report
HH27	Non-Aboriginal (Historical) heritage	Impacts on New Italy Settlement (State Heritage Register 1648), New Italy Museum Complex (item 23: New Italy Settlement sites, New Italy)	A photographic condition survey will be undertaken of the current condition of the heritage items with any damage to the item from construction to be repaired once construction is complete.						7	NA	Pre- construction and construction	RMS and Contractor	Closed	A photographic archival record has been completed of Item 23, within the reporting period - October 2016 to March 2017.
HH28	Non-Aboriginal (Historical) heritage	Impacts on New Italy Settlement (State Heritage Register 1648), New Italy Museum Complex (item 23: New Italy Settlement sites, New Italy)	Monitoring of dust will be undertaken at this location in accordance with the project dust management plan.						7	NA	Pre- construction and construction	Contractor	Open	Pacific Complete proposed to established a dust monitoring station (deposition gauge) at this location to ensure compliance with this measure. This requirement is addressed in the Pacific Complete CEMP (Appendix B4 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSS and ESCPs to ensure compliance with this requirement.
HH29	Non-Aboriginal (Historical) heritage	Impacts on New Italy Settlement (State Heritage Register 1648), New Italy Museum Complex (item 23: New Italy Settlement sites, New Italy)	A temporary fence will be erected between the State Heritage Register boundary and the construction works before work starts in the vicinity of the heritage item. The fence will remain in place until construction is completed at which time it be removed.						7	NA	Pre-construction and Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSS and RMS/PC specifications are used to ensure compliance with this MCoA.
HH30	Non-Aboriginal (Historical) heritage	Impacts on New Italy Settlement (State Heritage Register 1648), New Italy Museum Complex (item 23: New Italy Settlement sites, New Italy)	Appropriate directional signage to the New Italy Museum Complex will be installed at both the interchange at Woodburn and interchange at Iluka Road to divert visitors onto the service road in order to access the museum complex. Signage will comply with relevant Pacific Highway signage policy.						7	NA	Operation	RMS	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSS and RMS/PC specifications are used to ensure compliance with this MCoA.
HH31	Non-Aboriginal (Historical) heritage	Impacts on New Italy Memorial and Stone-lined well (item 23: New Italy Settlement sites, New Italy)	Monitoring of dust will be undertaken at this location in accordance with the project dust management plan.						7	NA	Pre- construction and construction	Contractor	Closed	Pacific Complete has established a dust monitoring station (deposition gauge) at this location to ensure compliance with this measure (# 7-2 New Italy). This requirement is addressed in the Pacific Complete CEMP (Appendix B6 Construction Heritage Management Plan).Pacific Complete approves Contractor EMPs and EWMSS and RMS/PC specifications are used to ensure compliance with this MCoA.
HH32	Non-Aboriginal (Historical) heritage	Impacts on New Italy Memorial and Stone-lined well (item 23: New Italy Settlement sites, New Italy)	A temporary fence will be erected between the location of the memorial and flagpole and the construction works (within five metres of the heritage items) before work starts in the vicinity of the heritage item. The fence will remain in place until conclusion is completed at which time it will be removed.						7	NA	Pre- construction and construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSS and RMS/PC specifications are used to ensure compliance with this MCoA.
HH33	Non-Aboriginal (Historical) heritage	Impacts on Roder's stone-lined well and orchard (item 23: New Italy Settlement sites, New Italy)	Salvage excavation will be undertaken to salvage any subsurface artefacts related to the well and adjacent wall. Excavations will be undertaken under the supervision of an appropriately qualified and experienced historical archaeologist and in accordance with the Heritage Branch guidelines, including an appropriate research design and methodology to best realise the research potential of this area of the site. Consideration will be given to providing salvaged artefacts to the New Italy Museum.						7	NA	Pre- construction and construction	RMS and Contractor	Closed	Investigation and photogrammetric recording of the stone-lined well, and excavation and recording of the adjacent stone wall structure has been completed. Glass and ceramic artefacts recovered from the excavation were collected from the site for artefact analysis. Timber and metal artefacts were recorded and left on site. Letter of completion dated 14 April 2016
HH34	Non-Aboriginal (Historical) heritage	Impacts on Roder's stone-lined well and orchard (item 23: New Italy Settlement sites, New Italy)	Before construction starts in the vicinity of the orchard, the location and condition of each of the mango trees will be recorded by an arborist.						7	NA	Pre- construction and construction	RMS and Contractor	Closed	Arborist survey of the mango orchard has been completed. Report received.
HH35	Non-Aboriginal (Historical) heritage	Impacts on Roder's stone-lined well and orchard (item 23: New Italy Settlement sites, New Italy)	Protective barrier fencing to protect the mango orchard will be erected between the construction area and the trees with a buffer of at least five metres. This will be erected before construction starts in the vicinity of the items and remain in place until the end of construction at which time it will be removed.						7	NA	Pre- construction and construction	RMS and Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSS and RMS/PC specifications are used to ensure compliance with this MCoA.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
HH36	Non-Aboriginal (Historical) heritage	Impacts on Roder's stone-lined well and orchard (Item 23: New Italy Settlement sites, New Italy)	An archival photographic recording will be made of the mango orchard and its surrounds in accordance with the Heritage Branch guidelines How To Prepare Archival Records Of Heritage Items (NSW Heritage Office, 1998) prior to its demolition.						7	NA	Pre- construction	RMS and Contractor	Closed	Archival photographic recording completed. Report has been prepared.
HH37	Non-Aboriginal (Historical) heritage	Impacts on Historic New Italy Village Area	If any historical heritage remains are discovered at the New Italy Village Area during construction, management measure HH1 will be applied.						7	NA	Pre- construction and construction	Contractor	Open	Noted. This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with this measure.
HH38	Non-Aboriginal (Historical) heritage	Impacts on item 26, Broadwater	An archival photographic recording will 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.						9	NA	Pre- construction	RMS and Contractor	Closed	Archival photographic record has been prepared. Report has been received.
HH39	Non-Aboriginal (Historical) heritage	Impacts on item 26, Broadwater	Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to revise the SOHI for this item when the specific architectural noise treatment options are identified.						9	NA	Pre- construction	RMS and Contractor	Open	This is being considered as part of operational noise and at house treatment program
HH40	Non-Aboriginal (Historical) heritage	Impacts on item 26, Broadwater	Further investigations for gold shafts within and adjacent to the project corridor will occur near item 26.						9	NA	Pre- construction	RMS and Contractor	Closed	Investigation carried out. Report received. Report determined that gold shafts are not considered to be heritage items and are located well outside the W2B project corridor, therefore there will be no heritage impacts to the Broadwater Gold Shafts. No management measures required.
HH41	Non-Aboriginal (Historical) heritage	Impacts on item 27: Meerscham Vale brickworks, Wardell	If brick material or any other historical heritage remains are discovered during works, management measure HH1 will be applied.						10	NA	Construction	Contractor	Open	Noted. This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with this measure.
HH42	Non-Aboriginal (Historical) heritage	Impacts on item 28, Broadwater	An archival photographic recording will be made of the stone quarry and small clay pit in accordance with the Heritage Branch guidelines How To Prepare Archival Records Of Heritage Items (NSW Heritage Office, 1998) prior to construction.						9	NA	Pre- construction	RMS and Contractor	Closed	Archival photographic record has been prepared. Report has been received.
HH43	Non-Aboriginal (Historical) heritage	Impacts on item 28, Broadwater	Salvage excavations to the south of the quarry will be undertaken under the supervision of an appropriately qualified and experienced historical archaeologist. Salvage excavation will be undertaken in accordance with the Heritage Branch guidelines including an appropriate research design and methodology to best realise the research potential of this area of the site.						9	NA	Pre- construction	RMS and Contractor	Closed	Archaeological investigation report has been prepared. Report has been received.
HH44	Non-Aboriginal (Historical) heritage	Impacts on item 28, Broadwater	A photographic condition survey and structural audit of the brick-lined well will 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.						9	NA	Pre- construction	RMS and Contractor	Closed	Structural inspection report has been prepared. Report has been received.
HH45	Non-Aboriginal (Historical) heritage	Impacts on item 28, Broadwater	Should blasting be required in the vicinity of this item, a detailed assessment of the level of vibration at the brick-lined well will be undertaken based on factors including distance from the blast site and the quantity of the explosive, and modelling of the predicted vibration levels. 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.						9	NA	Pre- construction and construction	Contractor	Open	Noted. This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
HH46	Non-Aboriginal (Historical) heritage	Impacts on item 28, Broadwater	Protective barrier fencing will be erected around the brick-lined well with a 15-metre buffer before the start of construction and will remain in place until the conclusion of the work, at which time it will be removed.						9	NA	Pre- construction and construction	Contractor	Open	This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
HH47	Non-Aboriginal (Historical) heritage	Impacts on item 28, Broadwater	Due to the proximity of the well to the roadway, the well may be closed for safety reasons. Any measures to close the well will enable access in the future for heritage research or other purposes and that no detrimental physical impact on the well occurs.						9	NA	Construction	Contractor	Open	This requirement is addressed in Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with this measure.
HH48	Non-Aboriginal (Historical) heritage	Impacts on item 29: 'Stonehenge' Property, Wardell	An archival photographic recording will 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 will also be undertaken.						10	NA	Pre- construction	RMS and Contractor	Closed	Archaeological investigation report has been prepared. Report has been received. Archival photographic records have been completed and issued as required.
HH49	Non-Aboriginal (Historical) heritage	Impacts on item 29: 'Stonehenge' Property, Wardell	Architectural noise treatment to the house will be investigated and provided where reasonable and feasible and in consultation with a qualified heritage consultant. Consideration will be given for the need to revise the SOHI for this item when the specific architectural noise treatment options are identified.						10	NA	Pre- construction	RMS and Contractor	Open	To be addressed following approval of the Operational Noise Design Report
HH50	Non-Aboriginal (Historical) heritage	Impacts on item 38: Cemetery reserve	To protect the heritage item from construction activities, the boundary of the reserve will be clearly identified on site/construction plans as an area of exclusion, and temporary barrier fencing will be constructed continuously along the project boundary: • Immediately south of the cemetery reserve. • Where it crosses the south east corner of the cemetery reserve. • Where it follows the east boundary of the cemetery reserve.						9	NA	Pre- construction and construction	Contractor	Open	Noted. Fencing to be established. This requirement is addressed in the Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
HH51	Non-Aboriginal (Historical) heritage	Impacts on Item 33: High Conservation Value Old Growth Forest	Detailed design will consider the extent to which clearing High Conservation Value Old Growth Forest within the project boundary may be minimised.						2, 6 and 7	NA	Pre-construction	RMS and Contractor	Closed	This will be covered during detailed design. Detailed design is currently underway for all portions of the project. Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
HH52	Non-Aboriginal (Historical) heritage	Impacts on Item 33: High Conservation Value Old Growth Forest	The area to be cleared will be clearly identified on-site. High Conservation Value Old Growth Forest adjacent to areas to be cleared will be delineated to avoid accidental disturbance on further areas.						2, 6 and 7	NA	Construction	Contractor	Closed	This has been addressed during detailed design.
HH53	Non-Aboriginal (Historical) heritage	Impacts on Item 43: Drainage channels, Broadwater	An archival photographic recording be made of the drainage channels and its surrounds in accordance with the Heritage Branch guidelines prior to its destruction.						10	NA	Pre-construction	RMS and Contractor	Closed	Archaeological investigation report has been prepared. Report has been received. Archival photographic records have been completed.
TRAFFIC AND TRANSPORT														
T&T1	Traffic and Transport	Construction traffic management	Construction traffic management plans will be prepared and implemented for work sites. They will 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 be prepared in consultation with councils.						All	All	Pre-construction and construction	Contractor	Open	This requirement is addressed in Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Separate and approved CEMP documentation is in place for soft soil works (Wave 1 and Wave 2). Construction Traffic Management Plans are included in Audit Checklists for construction sites.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3- 11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
T&T2	Traffic and Transport	Bulk earthworks haulage	A strategy will be prepared for bulk earthworks haulage between the crossing of the Richmond River and the interchange at Wardell. The strategy will seek to maximise the extent of haulage within the project boundary and limit the need to haul material through the town of Wardell.						10	NA	Pre-construction and construction	Contractor	Closed	Pacific Complete will plan and execute it material haulage works with the aim of maximising the extent of haulage within the Project Boundary and limit the need to haul material through the town of Wardell. This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Pan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. Separate and approved CEMP documentation is in place for soft soil works (Wave 1 and Wave 2). A Haulage Strategy was prepared for Sections 10 and 11 (Portion D), endorsed on 28 September 2017. Commencement of haulage commences in previous reporting period (October 2017 - March 2018) and monthly Haulage Compliance Reports have been prepared since January 2018 to December 2018. Haulage approval until 8 December 2018.
T&T3	Traffic and Transport	Inspection of roadwork traffic schemes	Traffic control schemes will 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.						All	All	Construction	Contractor	Open	Pacific Complete will plan and execute it material haulage works with the aim of maximising the extent of haulage within the Project Boundary and limit the need to haul material through the town of Wardell. This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Pan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
T&T4	Traffic and Transport	Vehicle movement	Vehicle movement plans and haulage route plans will be prepared. Drivers will be briefed on these vehicle movement plans during project induction. Deliveries be planned to occur outside peak traffic periods, where possible. To minimise queuing of construction vehicles on the highway, site personnel use two-way radios to call up haulage trucks from layover areas on a 'just in time' basis.						All	All	Construction	Contractor	Open	Pacific Complete will plan and execute it material haulage works with the aim of maximising the extent of haulage within the Project Boundary and limit the need to haul material through the town of Wardell. This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Pan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
T&T5	Traffic and Transport	Road occupancy	Applications for Road Occupancy licences will be submitted to Roads and Maritime Services and the relevant council at least 10 working days prior to proposed occupancy.						All	All	Pre-construction and construction	Contractor	Open	Pacific Complete will plan and execute it material haulage works with the aim of maximising the extent of haulage within the Project Boundary and limit the need to haul material through the town of Wardell. This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Pan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
T&T6	Traffic and Transport	Road damage	Pre-construction road dilapidation reports will be prepared for all roads likely to be used by construction traffic. Post-construction road dilapidation reports will be prepared following the completion of construction for all roads assessed prior to construction. Dilapidation resulting from construction activity will be repaired. Copies of road dilapidation reports will be sent to the relevant roads authority.						All	All	Pre-construction and construction	Contractor	Open	Pacific Complete will plan and execute it material haulage works with the aim of maximising the extent of haulage within the Project Boundary and limit the need to haul material through the town of Wardell. This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Pan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
T&T7	Traffic and Transport	Property and road access	Access 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 will 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 will 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.						All	All	Construction	Contractor	Open	Pacific Complete will plan and execute material haulage works with the aim of maximising the extent of haulage within the Project Boundary and limit the need to haul material through the town of Wardell. This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Pan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
T&T8	Traffic and Transport	Bus services	Where changes in access affect bus stop locations, temporary alternatives will be provided in conjunction with bus operators and affected schools to maintain access during construction.						All	All	Construction	Contractor	Open	Pacific Complete will plan and execute it material haulage works with the aim of maximising the extent of haulage within the Project Boundary and limit the need to haul material through the town of Wardell. This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Pan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
T&T9	Traffic and Transport	Access to State forests	Where access to State forest land is affected during construction, a new access route will be provided in consultation with the Department of Primary Industries (Forests NSW).						All	All	Construction	Contractor	Open	Pacific Complete will plan and execute it material haulage works with the aim of maximising the extent of haulage within the Project Boundary and limit the need to haul material through the town of Wardell. This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Pan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
T&T10	Traffic and Transport	Maritime traffic	Where maritime traffic access to the Clarence and Richmond rivers is affected during construction of bridge crossings, appropriate signage will be provided indicating alternative means of access and the timing of the works.						5 and 10	NA	Construction	Contractor	Open	Pacific Complete will plan and execute it material haulage works with the aim of maximising the extent of haulage within the Project Boundary and limit the need to haul material through the town of Wardell. This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Pan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
T&T11	Traffic and Transport	Waterway access	Access to the Clarence and Richmond rivers will be maintained for industry and recreational waterway users.						5 and 10	NA	Construction	Contractor	Open	Pacific Complete will plan and execute it material haulage works with the aim of maximising the extent of haulage within the Project Boundary and limit the need to haul material through the town of Wardell. This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Pan). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
T&T12	Traffic and Transport	Access and connectivity	Access to Glenugie State Forest around the interchange at Eight Mile Lane and Lookout Road will be further reviewed in consultation with State Forest Corporation.						3	NA	Pre-construction and construction	RMS and Contractor	Closed	This has been considered as part of consultation with State Forests.
T&T13	Traffic and Transport	Access and connectivity	The layout of the intersection at Yamba Road will be reviewed to better meet the needs of truck movements from Harwood Mill, where reasonable and feasible.						5	NA	Pre-construction	RMS and Contractor	Closed	This has been reviewed and updated during detailed design and consultation with industry and community.
T&T14	Traffic and Transport	Access and connectivity	The need for a full interchange at Yamba Road will be investigated should traffic growth warrant it in the future and when funding is available.						5	NA	Pre-construction	RMS and Contractor	Closed	This has been reviewed and updated during detailed design and consultation with industry and community. Future M class upgrades may still be undertaken subject to need and funding.
T&T15	Traffic and Transport	Access and connectivity	The need for a full interchange with south facing ramps at Watts Lane, Harwood will be investigated should traffic growth warrant it in the future and when funding is available.						5	NA	Pre-construction	RMS and Contractor	Closed	This has been reviewed and updated during detailed design and consultation with industry and community.
T&T16	Traffic and Transport	Access and connectivity	The need for the overpass and the arrangement of local access at Chatsworth Road will be reviewed at the detailed design stage depending on specific staging and delivery of the highway.						5	NA	Pre-construction	RMS and Contractor	Closed	This has been reviewed and updated during detailed design and consultation with industry and community.
T&T17	Traffic and Transport	Access and connectivity	The need for the overpass and arrangement of local access at Carrols Lane will be reviewed at the detailed design stage depending on specific staging and delivery of the highway.						5	NA	Pre-construction	RMS and Contractor	Closed	This has been reviewed and updated during detailed design and consultation with industry and community.
T&T18	Traffic and Transport	Access and connectivity	Connectivity between the shared user path from Harwood Bridge to Yamba Road would be reviewed to refine pedestrian and cyclist access						5	NA	Pre-construction	RMS and Contractor	Closed	This has been reviewed and updated during detailed design and consultation with industry and community.
CONSTRUCTION NOISE AND VIBRATION														

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3- 11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
CNV1	Construction Noise and Vibration	Noise	Affected receivers will be notified prior to the commencement of out of hours work. Notification includes contact details of project personnel in charge of the out of hours works.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan), in particular Appendix C out of hours works procedure. Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV2	Construction Noise and Vibration	Noise	Construction will be timetabled to minimise noise impacts where feasible and reasonable. This may include time and duration restrictions and respite periods. These measures will be considered after consultation with affected receivers.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV3	Construction Noise and Vibration	Noise	Haulage routes will be located as far away as possible from residential receivers, where this is reasonable and feasible.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Traffic Control Plans are prepared prior to commencement of works and these are assessed for suitability of haulage routes and their proximity to sensitive receivers.
CNV4	Construction Noise and Vibration	Noise	To be addressed following approval of the Operational Noise Design Report						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Pre-start checklists for Plant & Equipment are performed prior to commencement of daily works.
CNV5	Construction Noise and Vibration	Noise	Quieter construction methods will 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.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV6	Construction Noise and Vibration	Noise	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) will be used, particularly during night-time activities.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. These quieter methods are being utilised on the project.
CNV7	Construction Noise and Vibration	Noise	All noise complaints received will be dealt with promptly. Construction methods may need to be altered to reduce noise impacts at the affected locations.						All	All	Construction	Contractor	Open	All complaints (including noise) will be managed as per the Pacific Complete CEMP (main document - Section 6.3.2) which is aligned to the Communications and Stakeholder Engagement Strategy. Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV8	Construction Noise and Vibration	Noise	Machinery will not be turned on prior to the work hours outlined in this EIS. This will include daily maintenance activities and/or 'warming up' of engines.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV9	Construction Noise and Vibration	Noise	Truck movements will be restricted to identified haulage routes and the routes outlined in the Construction Traffic Management Plan.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV10	Construction Noise and Vibration	Noise	Where it has been identified as necessary (e.g. in response to community complaints), noise monitoring will be undertaken to check that the noise mitigation measures are effective.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV11	Construction Noise and Vibration	Noise	The use of temporary noise shielding will be considered at locations where substantial exceedances of noise criteria are predicted.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV12	Construction Noise and Vibration	Noise	Static noise sources, such as generators, pumps and lighting towers, will be located as far as possible from sensitive receivers.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV13	Construction Noise and Vibration	Noise	Regular noise monitoring will be undertaken during proposed construction hours at a representative receiver location, between: • 6am to 7pm, Monday to Friday. • 8am to 5pm, Saturday						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Monthly noise monitoring data is recorded and reported to the EPA each month and available onthe Principals website.
CNV14	Construction Noise and Vibration	Noise	The selection of plant and equipment will be based on noise emission levels. This equipment will be operated and maintained so that noise emissions are minimised.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
CNV15	Construction Noise and Vibration	Vibration	Where piling, hydraulic hammering or dynamic compaction is proposed within 50 metres of any structure or service, a building condition survey will be conducted and preliminary vibration monitoring undertaken by a qualified contractor.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV16	Construction Noise and Vibration	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 will be conducted and preliminary vibration monitoring undertaken by a qualified contractor. A follow-up survey will be conducted in response to any vibration complaints.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV17	Construction Noise and Vibration	Vibration	Appropriately sized equipment will be selected to minimise vibration emissions, where required.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV18	Construction Noise and Vibration	Blasting (controlled)	A blast management plan will be prepared prior to the start of blasting activities.						All	All	Pre-construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV19	Construction Noise and Vibration	Blasting (controlled)	Where sensitive receivers are located close to the blast site, a series of trials will be undertaken at a reduced scale to determine site-specific blast response characteristics, to define allowable blast sizes to occur within the criteria.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV20	Construction Noise and Vibration	Blasting (controlled)	Controlled blasting activities will only be undertaken between the hours of: • 9am to 5pm, Monday to Friday. • 9am 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 will be subject to change.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV21	Construction Noise and Vibration	Blasting (controlled)	A minimum of 24 hours' notice will be provided to all residences located within 500 metres of any blast, including an indication of blasting times and a contact name and telephone number.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV22	Construction Noise and Vibration	Construction Blasting (controlled)	Monitoring of overpressure and vibration levels will be undertaken for each blast at the potentially most affected receivers.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Monthly vibration and overpressure data is recorded and reported to the EPA each month and available onthe Principals website.
CNV23	Construction Noise and Vibration	Blasting (controlled)	A building condition survey will be undertaken for all buildings located within 200 metres of the proposed blasting area prior to the start of blasting. The proponent will be responsible for rectifying any damage occurring from the blasting, with the cost to be borne by the proponent.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Building condition surveys were completed (as required) as per Pacific Complete specifications.
CNV24	Construction Noise and Vibration	Blasting (controlled)	Should blasting be required within 200 metres of the water reservoirs at the Lang Hill borrow source, a dilapidation or preconstruction condition survey will be undertaken before blasting work commences in consultation with Richmond Valley Council and Rous Water.						8	4	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV25	Construction Noise and Vibration	Blasting (controlled)	The maximum instantaneous charge (MIC) will be reduced to the lowest possible level by the use of delays, reduced diameter holes, and/or deck loading.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV26	Construction Noise and Vibration	Blasting (controlled)	Adequate stemming will be provided and exposed detonating cord be eliminated (by covering with at least 300 millimetres of quarry dust or road base).						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV27	Construction Noise and Vibration	Blasting (controlled)	Secondary blasting will be eliminated. (A rock breaker or drop hammer will be used instead of popping). Effort will be made to eliminate the need for toe shots (e.g. by better control of drill patterns).						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with this measure.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3- 11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
CNV28	Construction Noise and Vibration	Blasting (controlled)	Weather conditions at the time of the blast will be assessed. Blasting will be avoided where possible during heavy cloud cover and/or if a strong wind is blowing towards residences. Days of severe temperature inversion will be avoided where possible or, (if not possible) blasting will occur between 11am and 1pm.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV29	Construction Noise and Vibration	Blasting (controlled)	Strict control will be exercised over the spacing and orientation of all blast drill holes. Holes will be spaced in such a manner that the explosive force is just sufficient to break the stone to the required size.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV30	Construction Noise and Vibration	Blasting (controlled)	Controlled blasting times will be determined in consideration of site-specific conditions and in consultation with affected residents and take place, where possible, when impacts are likely to be the least intrusive (e.g. all blasts be fired at a set time acceptable to residents and preferably when the background noise is highest).						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
CNV31	Construction Noise and Vibration	Consultation	Identified receivers will be notified by letter of the proposed hours and asked for comment and feedback. This will include justification for the proposed extended working hours along with the benefits the community can expect. Where the community or individual residents wish to receiver further clarification on the proposed hours, individual interviews or public meetings will be organised to address any further issues. Discussions will 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 will be available regarding the proposed construction activities to be undertaken in the extended hours. Property owners will be provided with the complaints management procedures to be in place for extended working hours. Feedback will be collected to help determine the final adopted working hours for the project, with community consultation continuing throughout the project.						All	All	Pre-construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA. The Out of Hours Work Approval Procedure implements the Conditions of MCoA B16 and EPL 20713, in particular B16 (d) and (e) and EPL L5.2 and L5.3.
OPERATION NOISE AND VIBRATION														
ONV1	Operation Noise and Vibration	Road traffic noise	Architectural treatments will be considered for noise-affected receivers identified in the EIS and Submissions / Preferred Infrastructure Report (Appendix F), subject to confirmation at the detailed design stage.						All	All	Pre-operation	RMS and Contractor	Open	This is being considered as part of detailed design and operational noise design reports have been prepared to satisfy MCoA D11.
ONV2	Operation Noise and Vibration	Road traffic noise	Low noise wearing surface will be implemented in areas identified in section 5.3.21 of the EIS.						1,3,4,5,8, and 10	NA	Pre-operation	RMS and Contractor	Open	This has been included as part of detailed design and operational noise assessment.
ONV3	Operation Noise and Vibration	Road traffic noise	No later than one year after commencement of operation of the project stages as they are constructed, Roads and Maritime will undertake operational noise monitoring to compare the actual noise performance of the project against predicted noise performance. The report will include, but not necessarily be limited to: • 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.						All	NA	Post-operation	RMS	Open	RMS will arrange for the Operational Noise Compliance Report as per MCoA D28 to be undertaken to ensure compliance with this measure. Extensions were approved for submission of the Operational Noise Review Report and this was submitted on 1 June 2018 and approved on 1 June 2018 (reporting period April to September 2018).
LAND USE AND PROPERTY														
LU1	Land use and property	Property acquisition and managing surplus land	Ongoing communication and consultation will be undertaken 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 Roads and Maritime' Land Acquisition Policy (RTA, 1999).						All	All	Pre-construction	RMS	Open	RMS is managing the ongoing communication and consultation requirements with support from Pacific Complete.
LU2	Land use and property	Property acquisition and managing surplus land	Ongoing consultation will be undertaken 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 will relate to matters such as adjustments to fencing, access, farm infrastructure and relocation of impacted ancillary structures, as required.						All	All	Pre-construction	RMS	Open	RMS is managing the ongoing consultation requirement with support from Pacific Complete. During detailed design, Pacific Complete will review relevant detailed design deliverables/design lot reports to ensure compliance with this requirement.
LU3	Land use and property	Fencing Strategy	Property adjustments will be completed for fencing, access tracks, cattle underpasses and other farm infrastructure in consultation with the impacted land owner.						All	All	Pre-construction	RMS	Open	RMS is managing the ongoing consultation requirement with support from Pacific Complete. During detailed design, Pacific Complete will review relevant detailed design deliverables/design lot reports to ensure compliance with this requirement.
LU4	Land use and property	Fencing Strategy	The Fencing Strategy will be further developed during detailed design, in consultation with relevant stakeholders. This will build upon the principles of the strategy described in Chapter 3 of the Submissions and Preferred Infrastructure Report (Roads and Maritime, 2013).						All	All	Pre-construction	RMS	Open	RMS and Pacific Complete are working together to ensure a consistent, practical, environmentally efficient and cost effective fencing strategy is developed and applied to the project. Pacific Complete will review relevant detailed design deliverables/design lot reports to ensure compliance with this requirement.
LU5	Land use and property	Property acquisition and managing surplus land	Sterilisation and severance of land uses and lots will be minimised by amalgamating severed parcels of land together, where possible, with provision of road access, in accordance with the project's remnant land use strategy.						All	All	Pre-construction	RMS	Closed	This has been considered during property acquisition process and consultation with landowners.
LU6	Land use and property	Property acquisition and managing surplus land	Where required, acquisition of State forests will be minimised in accordance with the provisions of the Forestry Act 2012. Revocation of land dedicated or reserved as national parks or nature reserves will be in accordance with the National Parks and Wildlife Act 1974 . Acquisition of land owned by Local Aboriginal Land Councils will be in accordance with the provisions of the Aboriginal Land Rights Act 1983 .						All	All	Pre-construction	RMS	Closed	This has been considered during property acquisition process and consultation with landowners.
LU7	Land use and property	Property acquisition and managing surplus land	A remnant land strategy to minimise land use severance and sterilisation, and a mitigation strategy for final land uses will be developed in consultation with cane industry stakeholders, Coffs Harbour City, Clarence Valley, Richmond Valley and Ballina Councils.						All	All	Pre-construction	RMS	Open	Remnant Land Strategy is being prepared to outline the status following property acquisition process.
LU8	Land use and property	Property acquisition and managing surplus land	The requirement for a retaining wall structure at station 83.2, between the road reserve and adjoining property, will be confirmed during detailed design.						5	NA	Pre-construction	RMS	Closed	This was considered detailed design.
LU9	Land use and property	Property access during construction	Access to properties near construction works will be maintained, including where required for the movement of farm equipment and livestock between properties, unless otherwise agreed with landowners.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
LU10	Land use and property	Property access during construction	Where temporary changes to property access are required during construction, alternative access will be determined in consultation with affected property owners and tenants.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
LU11	Land use and property	Property access during construction	There will be ongoing communication with local communities about changes to the local road network, including likely delays and disruptions and alternative accesses if required.						All	All	Construction	RMS and Contractor	Open	Ongoing communication will be managed in accordance with the Communications and Stakeholder Engagement Strategy which the Pacific Complete CEMP (main document) is aligned too. Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. During the reporting period notification letters have been sent out to residents as required.
LU12	Land use and property	Construction impacts to primary industry, including forestry, and agriculture uses	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 will be identified in the surplus material management plan.						All	All	Construction	Contractor	Open	This is managed in accordance with Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management Plan) is in place. Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with this requirement.
LU13	Land use and property	Construction impacts to primary industry, including forestry, and agriculture uses	The management of surplus material will be further developed during detailed design, in consultation with relevant stakeholders. This will build upon the principles of the strategy described in Chapter 3 of the Submissions and Preferred Infrastructure Report (Roads and Maritime, 2013).						All	All	Pre-construction	RMS	Open	This is managed in accordance with Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management Plan) is in place. Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with this requirement.
LU14	Land use and property	Construction impacts to primary industry, including forestry, and agriculture uses	Forestry Corporation of NSW will be able to harvest millable timber in affected State forests prior to works commencing. However, consideration will also be given to opportunities for the productive use of trees removed from non-State forest areas of the project, including ancillary facilities where necessary.						All	All	Construction	Contractor	Open	Pacific Complete Mulch Management Strategy. Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management Plan). Pacific Complete will approve Contractor EMPs, EWMSs and ESCPs to ensure compliance with this requirement. Forestry Corporation have been given opportunities to harvest timber, of which the harvest of millable timber is maximised during clearing operations.
LU15	Land use and property	Construction impacts to primary industry, including forestry, and agriculture uses	Environmental management measures will be implemented to minimise potential for impacts on adjoining agricultural uses, including from changes in water quality and spread of weeds and pests.						All	All	Construction	Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B2 Construction Flora and Fauna Management Sub-Pan and Appendix B4 Construction Soil and Water Quality Management Plan).
LU16	Land use and property	Construction impacts to primary industry, including forestry, and agriculture uses	Where pesticides are required during construction, implement appropriate environmental management measures to avoid potential impacts on adjoining agricultural properties.						All	All	Construction	Contractor	Open	Pesticide use must be in accordance with the requirements of the Pesticides Act 1999, Protection of the Environment Operations Act 1997 and the Pacific Complete CEMP (main document). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA. Herbicides are only applied by appropriately qualified personnel.
LU17	Land use and property	Construction impacts to primary industry, including forestry, and agriculture uses	There will be ongoing consultation and communication with managers of agricultural properties to identify any potential impacts on nearby construction workers from farm operations (i.e. use of pesticides on agricultural properties).						All	All	Construction	RMS and Contractor	Open	Ongoing communication will be managed in accordance with the Communications and Stakeholder Engagement Strategy. Pacific Complete will undertake the coordination of communications and engagement with managers of agricultural properties in the vicinity of construction work sites.
LU18	Land use and property	Construction impacts to primary industry, including forestry, and agriculture uses	Ongoing consultation and communication will be undertaken with commercial fishing and relevant aquaculture operators about construction activities within and near the Clarence and Richmond rivers. Stakeholders include the estuary prawn trawl fishery, and estuary general fishery within the Clarence River, the NSW Department of Primary Industries (Fisheries) and licensed fishing interests within the Richmond River regarding the timing and duration of construction, potential impacts (including changes to river access) and proposed mitigation measures.						All	All	Construction	RMS and Contractor	Open	Ongoing consultation and communication will be undertaken in accordance with the Communications and Stakeholder Engagement Strategy. Pacific Complete will implement the Strategy.
LU19	Land use and property	Utilities and infrastructure	Relocation or adjustment of infrastructure will be planned to minimise disruptions and impacts on surrounding properties.						All	All	Construction	Contractor	Open	Pacific Complete will liaise and co-ordinate with utility/service owners to ensure any relocation or adjustment is planned and undertaken so as to minimise disruption and impacts on surrounding properties.
LU20	Land use and property	Utilities and infrastructure	Communication will be undertaken with nearby communities about the timing and duration of potential disruptions to infrastructure.						All	All	Construction	RMS and Contractor	Open	Communication will be managed in accordance with the Communications and Stakeholder Engagement Strategy. Pacific Complete's CEMP is aligned to the Strategy. Pacific Complete will implement the Strategy.
LU21	Land use and property	Property management	Roads and Maritime' land that is required for the project will be appropriately maintained. This will be undertaken by regional Roads and Maritime officers or a designated local authority. Roads and Maritime manage the leasing and maintenance of property identified as suitable for tenants.						All	All	Operation	RMS	Open	Noted. Operational phase requirement.
LU22	Land use and property	Property management	Excavation works near Lot7008 DP92609 will be carefully managed in consultation with Richmond Valley Council to minimise potential impacts on any unknown heritage items including potential burials.						9	NA	Construction	Contractor	Open	Noted. Pacific Complete CEMP (Appendix B5 Construction Heritage Management Plan - Appendix B Roads and Maritime Standard Management Procedures - Unexpected Archaeological Finds). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
LU23	Land use and property	Operational impacts to primary industries	Ongoing consultation will be undertaken 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.						All	All	Operation	RMS	Open	Noted. Operational phase requirement.
LU24	Land use and property	Operational impacts to primary industries	Consultation with Forestry Corporation will be undertaken regarding access to and within State forests where required, in accordance with the Forestry Act 2012.						All	All	Operation	RMS	Open	Noted. Operational phase requirement.
LU25	Land use and property	Operational impacts to primary industries	Consultation with Forestry Corporation will be undertaken regarding the relocation of fire trails directly impacted by the project's construction or operation.						All	All	Operation	RMS	Open	Noted. Operational phase requirement.
LU26	Land use and property	Cane Farm Strategy	The Cane Farm Strategy will be further developed during detailed design, in consultation with relevant stakeholders. This will build upon the principles of the strategy described in Chapter 3 of this Submissions and Preferred Infrastructure Report.						All	All	Pre-construction	RMS	Open	This has been considered as part of detailed design. Consultation held with relevant stakeholders to capture design requirements. Property acquisition plans include drainage.
LU27	Land use and property	Property access	As far as possible, property accesses will be reinstated or new access provided, in consultation with impacted landowners.						All	All	Operation	RMS and Contractor	Open	New property accesses have been designed to replace those that are lost or modified. This has been undertaken in consultation with impacted landowners.
LU28	Land use and property	Property access	Access to national parks and nature reserves will be reinstated in consultation with the relevant department in Office of Environment and Heritage.						All	All	Operation	RMS and Contractor	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
LU29	Land use and property	Mining and petroleum production	Consultation will be undertaken with land owners operating quarries adjacent to the project, including those near Tucabia, Broadwater and Bagotville, and relevant NSW State government agency. Consultation aim to identify appropriate management measures for each affected quarry, particularly regarding operational approvals in terms of site access, extraction limits, blasting limits, and timing of works, noise and vibration.						3, 9 and 10	NA	Pre-construction	RMS	Open	This requirement is addressed in the Pacific Complete CEMP (Appendix B3 Construction Noise and Vibration Management Plan). Pacific Complete approves Contractor EMPs and EWMSs and RMS/PC specifications are used to ensure compliance with this MCoA.
LU30	Land use and property	Mining and petroleum production	Consultation will be undertaken with the relevant State Government agency to consider any future coal seam gas production in the vicinity of the project.						All	All	Pre-construction	RMS	Open	Noted.
LU31	Land use and property	Utilities and infrastructure	Consultation will be undertaken with service and utility providers to verify locations, impacts and any relocation or construction protection work required.						All	All	Operation	RMS	Open	Noted. It is anticipated that during detailed design consultation with utility owners will be undertaken where the project design interfaces/interacts with existing utilities.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
LU32	Land use and property	Utilities and infrastructure	Consultation will be undertaken with Rous Water and local Aboriginal stakeholders before the removal of part or any of the abandoned pipelines through Lang Hill will be undertaken in consultation						8	4	Pre-construction	RMS	Open	This requirement is addressed in the Pacific Complete CEMP (main document). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA.
LU33	Land use and property	Utilities and infrastructure	Consultation will be undertaken 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.						9	NA	Pre-construction	RMS	Open	This has been undertaken during detailed design in consultation with stakeholders.
SOCIAL AND ECONOMIC														
SE1	Social and economic	Consultation	Consultation will be undertaken with local business owners, industry and tourism operators directly affected by construction and located closest to construction works. The focus will be on the timing, duration and likely impact of construction activities, to identify appropriate measures to manage potential impacts.						All	All	Pre-construction and construction	RMS and Contractor	Open	Consultation will be managed in accordance with the Communications and Stakeholder Engagement Strategy. Pacific Complete will implement the strategy. The Pacific Complete CEMP is aligned to the strategy.
SE2	Social and economic	Consultation	Consultation will be undertaken with managers of community services and facilities near the proposed construction works, to ensure that potential impacts are appropriately managed.						All	All	Pre-construction and construction	RMS and Contractor	Open	Consultation will be managed in accordance with the Communications and Stakeholder Engagement Strategy. Pacific Complete will implement the strategy. The Pacific Complete CEMP is aligned to the strategy.
SE3	Social and economic	Consultation	Consultation will be undertaken with residents and local communities closest to construction works about construction activities, including timing, duration and likely impacts.						All	All	Pre-construction and construction	RMS and Contractor	Open	Consultation will be managed in accordance with the Communications and Stakeholder Engagement Strategy. Pacific Complete will implement the strategy. The Pacific Complete CEMP is aligned to the strategy. During the reporting period notification letters have been sent out to residents where required.
SE4	Social and economic	By-passed towns	Signage will be implemented for bypassed towns in accordance with Roads and Maritime signage guidelines and in consultation with relevant councils. Signage on the project will identify bypassed townships (Grafton, Ulmarra, Tyndale, Maclean, New Italy, 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.						All	NA	Construction and operation	RMS	Open	Noted. RMS Responsibility (Signage Policy as per CoA D17)
SE5	Social and economic	By-passed towns	Roads and Maritime will 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.						All	All	Construction and operation	RMS	Open	Noted. RMS responsibility (Business Access Strategy as per CoA D18).
SE6	Social and economic	Existing Pacific Highway	Roads and Maritime will work with Councils affected by the upgrade, during detailed design, to discuss the classification of the existing Pacific Highway and, where appropriate, the required transfer process of state road assets to Council.						All	All	Pre-construction	RMS	Open	Noted. To be addressed during detailed design by RMS.
SE7	Social and economic	Access and connectivity	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.						All	All	Construction	RMS and Contractor	Open	Pacific Complete CEMP (Appendix B1 Construction Traffic and Access Management Plan). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs to ensure compliance with this measure.
SE8	Social and economic	Access and connectivity	Where temporary changes to property access are required during construction, alternative access will be determined in consultation with affected property owners and tenants.						All	All	Construction	Contractor	Open	To be addressed during detailed design. Pacific Complete will review relevant detailed design deliverables / design lot reports to ensure compliance with this measure. Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. Consultation was carried out with affected landowners during the reporting period.
SE9	Social and economic	Access and Connectivity	Undertake consultation with the Harwood Island Public School and other community facilities located adjacent to the project about proposed changes to local access.						All	All	Operation	RMS	Open	This is being considered as part of detailed design. Detailed design is currently underway for all portions of the project. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs.
SE10	Social and economic	Access and Connectivity	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.						All	All	Operation	RMS	Open	This is being considered as part of detailed design. Detailed design is currently underway for all portions of the project. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs.
SE11	Social and economic	Access and Connectivity	Access to Broadwater mill land between MacDonalds Street and River Road will be reviewed at the detailed design stage.						9	NA	Pre-construction	RMS	Open	This is being considered as part of detailed design. Detailed design is currently underway for all portions of the project. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs.
SE12	Social and economic	Access and Connectivity	The access arrangements for local traffic at Whytes Lane and the tie into the Ballina bypass upgrade will be reviewed together with any potential boundary refinements at the detailed design stage.						11	NA	Pre-construction	RMS	Open	This is being considered as part of detailed design. Detailed design is currently underway for all portions of the project. Pacific Complete reviews detailed design lot reports to ensure compliance with relevant MCoAs.
GREENHOUSE GAS EMISSIONS														
GH1	Greenhouse gas emissions	Embodied carbon in concrete production	Flyash content within concrete will be specified where feasible. Contractors will be required to propose recycled content construction materials where they are cost, quality and performance competitive.						All	All	Pre-construction and construction	RMS and Contractor	Open	This requirement is addressed in the approved Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs and apply relevant RMS/Pacific Complete specifications to ensure compliance with this measure. Fly ash is included in concrete mix designs where feasible.
GHG2	Greenhouse gas emissions	Re-use of excavated road materials	Reuse of excavated road materials will be maximised as far as possible where they are cost, quality and performance competitive to reduce use of materials (with embedded energy).						All	All	Pre-construction and construction	RMS and Contractor	Open	This requirement is addressed in the approved Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. Where feasible, unsuitable material excavated on site has been reused under stockpile pads and under the rock drainage layer.
GHG3	Greenhouse gas emissions	Embodied carbon in steel	Steel with high recycled content will be specified where feasible where they are cost, quality and performance competitive. Contractors will be required to propose recycled content construction materials where they are cost, quality and performance competitive.						All	All	Pre-construction and construction	RMS and Contractor	Open	This requirement is addressed in approved Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. Where available from commercial steel suppliers within RMS specification and cost, quality and performance competitive; recycled steel will be sourced
GHG4	Greenhouse gas emissions	Carbon in fuel	The feasibility of using biofuels (biodiesel, ethanol, or blends such as E10 or B80) will 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 will be planned to minimise fuel use.						All	All	Construction	Contractor	Closed	This requirement is addressed in Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management). Pacific Complete will approve Contractor EMPs, EWMSSs and ESCPs and apply relevant RMS/Pacific Complete specifications to ensure compliance with this measure.
GHG5	Greenhouse gas emissions	Energy consumption: construction	An energy management plan will be developed during the construction of the project. The plan will include a commitment to monitor on-site energy consumption and identify and address on-site energy waste.						All	All	Pre-construction and construction	RMS and Contractor	Closed	This requirement is included in the approved Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management). Pacific Complete approves Contractor EMPs and EWMSSs and RMS/PC specifications are used to ensure compliance with this MCoA. Energy consumption is recorded in accordance with reporting requirements of the National Greenhouse and Energy Reporting Act and the National Pollution Inventory, as applicable. Contractors have implemented energy saving measures in accordance with their Construction Waste Management Plans
GHG6	Greenhouse gas emissions	Energy consumption: operation	Roads and Maritime will 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 will have to meet lighting standards for major roads.						All	All	Pre-construction	RMS	Open	This is being considered as part of detailed design in consultation with RMS
GHG7	Greenhouse gas emissions	Education	An education program will be developed and delivered to the construction personnel to promote energy-efficient work practices.						All	All	Construction	RMS and Contractor	Open	Requirements for site environmental inductions are addressed in the Pacific Complete CEMP (main document). Pacific Complete will conduct site environmental inductions for all personnel undertaking activities at project work sites. Included as part of project inductions.
AIR QUALITY														

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3-11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
AQ1	Air Quality	Air quality management during construction	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: • 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.						All	All	Construction	Contractor	Closed	This requirement is addressed in the Pacific Complete CEMP (Appendix B6 Construction Air Quality Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
WASTE MANAGEMENT														
WM1	Waste management	Sustainable management of resources	The cut-and-fill balance of the project will be further refined to obtain as much material as possible for reuse on the project.						All	All	Pre-construction	RMS and Contractor	Open	The cut and fill balance of the project will be continually assessed and refined through the duration of the project and project phases (e.g. detailed design and construction) by Pacific Complete.
WM2	Waste management	Sustainable management of resources	A resource management strategy will be prepared for construction of the project to identify the hierarchy for sourcing and use of resources. It include the following provisions: • Available project cutting material (including Select Material Zone (SMZ) and verge material) will 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 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 be minimised, notwithstanding the above two requirements. • Contractors will reduce the amount of unsuitable waste generated during excavations, where feasible (e.g. treatment at source). • The generation and management of unsuitable material during project earthworks will be monitored to ensure appropriate management of the issue. The resource management strategy will also identify: • Details on materials that 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.						All	All	Pre-construction and construction	Contractor	Closed	Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
WM3	Waste management	Minimising construction waste	A waste register will be maintained by each contractor, detailing types of waste collected, amounts, date, time, and details of disposal.						All	All	Construction	Contractor	Open	Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA. The project maintains a current waste register which is continually updated.
WM4	Waste management	Minimising construction waste	Where possible, materials will be bought in bulk to minimise the amount of package required. Sources of material that have sustainable packaging design, recycled and recyclable packaging will be favoured over other material sources where cost effective.						All	All	Construction	Contractor	Open	Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA. All materials are purchased in bulk where possible to reduce packaging.
WM5	Waste management	Minimising construction waste	Waste material generated on-site (including chemical, fuel and lubricant containers, and solid and liquid wastes) will be classified and disposed of in accordance with the Protection of the Environment Operations Act 1997 and Waste Classification Guidelines Part 1: Classifying Waste (DECCW, 2009).						All	All	Construction	Contractor	Open	Included in the approved Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
WM6	Waste management	Minimising construction waste	Waste minimisation and management measures will 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: • 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 seek to avoid, minimise, re-use, recycle, treat or dispose of waste streams during construction and address transport and disposal arrangements.						All	All	Construction	Contractor	Open	Included in the approved Pacific Complete Mulch Management Strategy. Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
WM7	Waste management	Minimising construction waste	Millable timber will be harvested for reuse off site. All other felled timber will be reused on-site in the form of habitat recreation or mulch in landscaping and erosion and sedimentation controls. Where mulch cannot be reused on-site, consideration will be given to making the mulch available to the public in accordance with the Roads and Maritime Environmental Direction 25 (2012) and the Raw Mulch Exemption (EPA, 2008).						All	All	Construction	Contractor	Open	Pacific Complete Mulch Management Strategy. Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management Plan). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA.
WM8	Waste management	Minimising construction waste	Sediment removed from sedimentation basins will be used, where appropriate, on-site in landscaping and/or flattening of batters.						All	All	Construction	Contractor	Open	This requirement is addressed by approved Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA. Where appropriate, accumulated sediment removed from sediment basins check dams has been used within the general fill layers.
WM9	Waste management	Minimising construction waste	Where feasible, the contractor will be required to re-use materials. This could include, but is not limited to, concrete formwork or surplus concrete pours.						All	All	Construction	Contractor	Open	This requirement is addressed in the approved Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA. Reuse of concrete, timber, plastic, fabric regularly occurs on the project within the various disciplines wherever possible.
WM10	Waste management	Minimising construction waste	Site inductions and on-site training will be required to include waste minimisation principles and measures.						All	All	Construction	Contractor	Open	Requirements for site environmental inductions are addressed in the approved Pacific Complete CEMP (main document). Pacific Complete conducts site environmental inductions for all personnel undertaking activities at project work sites and the Environmental Induction includes sustainability and waste reduction principles. 3,368 people were inducted to the project during the reporting period (October 2018 - March 2019).
WM11	Waste management	Minimising construction waste	At site compounds, on-site recycling facilities will be provided for recycling paper, plastic, glass and other re-useable materials.						All	All	Construction	Contractor	Open	This requirement is addressed in the approved Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management). Pacific Complete approves Contractor EMPs and EWMs and RMS/PC specifications are used to ensure compliance with this MCoA. Recycling bins are provided at Ancillary Facilities and Site Compounds, as appropriate.

Mitigation No.	Aspect	Issue	Management Measure	Section 1 (W2HC)	Section 2 (HC2G)	Soft Soils - Wave 1	Soft Soils - Wave 2	Soft Soils - Wave 3	Stage 2 (Section 3- 11)	Soft soil waves	Timing	Responsibility	Status	Reference / Comment
WM12	Waste management	Minimising construction waste	Regular visual inspections will be conducted to ensure that work sites are kept tidy and to identify opportunities for reuse and recycling.						All	All	Construction	Contractor	Open	This requirement is addressed in the approved Pacific Complete CEMP (Appendix B7 Construction Waste, Resources and Energy Management). Pacific Complete approves Contractor EMPs and EWMsS and RMS/PC specifications are used to ensure compliance with this MCoA. Site housekeeping is regularly discussed at daily toolboxes, induction, pre-starts and continually enforced by Pacific Complete. Appropriate waste segregationand waste storage are inspected as part of weekly inspections and facilities maintenance.
WM13	Waste management	Management of waste water	Water captured in excavations will be required to be either: • 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.						All	All	Construction	Contractor	Open	This requirement is addressed in the approved Pacific Complete CEMP (Appendix B4 Construction Soil and Water Quality Management Plan) and by the Environment Protection Licence for Sections 3 to 11 obtained for the project. Pacific Complete approves Contractor EMPs and EWMsS and RMS/PC specifications are used to ensure compliance with this MCoA.
WM14	Waste management	Management of operational wastes	Appropriate waste and recycling facilities will be provided at rest areas and heavy vehicle checking stations.						All	All	Operation	RMS	Open	Noted. Operational phase requirement.
WM15	Waste management	Management of operational wastes	All operational waste will be managed in accordance with the Roads and Maritime waste management procedures and Environmental Management System.						All	All	Operation	RMS	Open	Noted. Operational phase requirement.
WM16	Waste management	Management of operational wastes	Collection and removal of roadside litter will be undertaken in accordance with the Roads and Maritime Environmental Management System.						All	All	Operation	RMS	Open	Noted. Operational phase requirement.
WM17	Waste management	Management of operational wastes	Sediment removed from operational water quality basins will , where appropriate, be classified in accordance with the Waste Classification Guidelines (DECCW, 2009), and be disposed of in accordance with the <i>Protection of the Environment Operations (Waste) Regulation 2005</i> .						All	All	Operation	RMS	Open	Noted. Operational phase requirement.

Appendix B1 Noise Monitoring Result

Noise Monitoring - 1 April - 30 September 2019



Licensee: Laing O'Rourke Australia Construction Pty Ltd

Premises: Woolgoolga to Ballina Pacific Highway Upgrade Project, Harwood NSW 2465

Licence No: 20713

Contractor	Type of Noise Monitoring - Monthly or OOHW	Date of Noise Monitoring	Time of Noise Monitoring	Location	RBL (for OOHW noise monitoring)	Noise Monitoring Results						Comments
					* NML	Laeq	Lafmax	Lzpk	Lafmin	Laf10	Laf90	
SWC	Monthly	11/04/2019	10:29	566 Coldstream Road, Tucabia	42	45	58		39	48	42	Project related noise 40dB. Monitoring noise levels of batch plant. Report attached
SWC	Monthly	11/04/2019	10:47	566 Coldstream Road, Tucabia	42	45	58		38	47	41	Project related noise 40dB. Monitoring noise levels of batch plant. Report attached
BGC	OOHW	15/04/2019	7:00PM	1.5m from fog line, 3 Jubilee Street	44	69.4	86.2	99	66.8	70.4	68.3	Dominant source of noise traffic from Jubilee Street/existing Pacific Highway
BGC	OOHW	16/04/2019	7:00PM	30 Jubilee Street	44	66	99.3	95.6	48.1	68.3	52.9	Dominant source of noise traffic from Jubilee Street/existing Pacific Highway
Pacific Complete	OOHW	8/04/2019	21:06	Lot 23 / DP1195140 34 Fishers Lane, Chatsworth North	39	49.4	77.2		34.1	53.4	37.9	App No. MAR19-024 Monitoring undertaken to verify noise levels from Stage 2: Line Marking & Barrier Placement activities at closest receiver. Note: main noise impact was trucks on highway. No noise impacts were identified from construction activities.
Pacific Complete	OOHW	8/04/2019	21:40	Lot 23 / DP1195140 34 Fishers Lane, Chatsworth North	39	54.8	77.8		41	56.4	45.9	App No. MAR19-024 Monitoring undertaken to verify noise levels from Stage 2: Line Marking & Barrier Placement activities at closest receiver. Note: main noise impact was trucks braking on highway. no noise impacts were identified from construction activities.
Pacific Complete	OOHW	8/04/2019	22:20	Lot 23 / DP1195140 34 Fishers Lane, Chatsworth North	35	52.4	73.4		38.3	55.8	43.2	App No. MAR19-024 Monitoring undertaken to verify noise levels from Stage 2: Line Marking & Barrier Placement activities at closest receiver.
Pacific Complete	OOHW	8/04/2019	23:00	Lot 23 / DP1195140 34 Fishers Lane, Chatsworth North	35	52	82.8		28.3	55.1	41.2	App No. MAR19-024 Monitoring undertaken to verify noise levels from Stage 2: Line Marking & Barrier Placement activities at closest receiver.
Pacific Complete	OOHW	8/04/2019	23:25	Lot 23 / DP1195140 34 Fishers Lane, Chatsworth North	35	55.6	60.3		51.9	57.1	52.8	App No. MAR19-024 Monitoring undertaken to verify noise levels from Stage 2: Line Marking & Barrier Placement activities at closest receiver.
Pacific Complete	OOHW	9/04/2019	19:19	Lot 7000 / DP 1134029 9a Jubilee Street, Townsend	44	59.9	73.2		51	63.7	53.4	App No. APR19-016 Monitoring undertaken to verify noise levels from heavy asphalt patching activities at closest receiver. Note: main noise impacts were from cars passing, B-doubles taking off in line of traffic, insects, B-double engine breaks, trucks passing, local traffic. Jackhammers were audible at 9.30 and 12.26 of monitoring. Works were completed by 22:00pm (i.e. evening time hours)
Pacific Complete	OOHW	9/04/2019	18:38	Lot 60 / DP 802939 9 Old Pacific Highway, Woombah	39	50.8	76.2		41	52.6	43.9	App No. APR19-015 Monitoring undertaken to verify noise levels from Iluka asphalt batching plant operation at closest receiver. Note: no noise impacts were identified from construction activities. Works were completed by 22:00pm (i.e. evening time hours)
Pacific Complete	OOHW	9/04/2019	18:21	Lot 110 / DP 1121323 47 Old Pacific Highway, Woombah	39	58.8	82.7		48.1	61.7	54.1	App No. APR19-015 Monitoring undertaken to verify noise levels from Iluka asphalt batching plant haluage through construction gate at closest receiver. Note: main noise impacts were from car door opening, telephone ringing and slow moving traffic slowing down to look at monitoring activities. No noise impacts were identified from construction activities. Works were completed by 22:00pm (i.e. evening time hours)
BMD	OOHW	3/04/2019	18:08	7175 Pacific Highway, Devils Pulpit	46	62.6	74.7		42	67.5	47.1	Representative data obtained from previous noise monitoring undertaken for the same activities undertaken at 6.6. Refer to item 43 - OOH noise monitoring undertaken 06/03/2019. Noise levels were found to be compliant at monitoring location at 7175 Pacific Highway, Devils Pulpit (540m from work area). Nearest sensitive receiver was 1.3km to the work area therefore these works are also considered compliant.
BMD	Monthly	18/04/2019	7:19	7175 Pacific Highway, Devils Pulpit	46	63.6	74.2		43.1	65	50.9	Pacific Highway traffic 54.8-65.3 dB(A) with peaks at 72.8 and 73.1 dB(A). Generator at residence 50.3-51.0 dB(A). Truck movement onsite - 54 dB(A) and excavator tracking onsite - 56 dB(A). Construction noise below NML.

Contractor	Type of Noise Monitoring - Monthly or OOHW	Date of Noise Monitoring	Time of Noise Monitoring	Location	RBL (for OOHW noise monitoring)	Noise Monitoring Results						Comments
					* NML	Laeq	Lafmax	Lzpk	Lafmin	Laf10	Laf90	
BMD	Monthly	18/04/2019	12:18	6530 Pacific Highway Jackybulbin	46	63.3	74.4		42.7	67.2	51	Pacific Highway traffic dominant noise source. Traffic 50.1-64.6 with peaks at 70.1 and 73.6 dB(A). Background 43.2 dB(A). Truck and dogs onsite inaudible over traffic noise. Other construction activities inaudible from monitoring point. Construction noise below NML.
BMD	Monthly	29/04/2019	9:39	1 Jackybulbin Road, Mororo	46	57.1	81.1		42.2	54.1	45.5	Local traffic on Jackybulbin Road 69.3-70.8 dB(A) with peaks of 75.8 and 80.1 dB(A). Pacific Highway traffic 46.9-50.1 dB(A) with peak of 53.6 dB(A). Construction works were audible at construction gate - truck movements 48.1-48.8 dB(A) and excavator 47.0 dB(A). Birds 45.9-59.3 dB(A). Construction noise below NML.
LendLease	Monthly	15/04/2019	10:49	NMP03 (1202 Wardell Rd)(R242)	46	53.1	62.4	96.7	47.9	55	50	Main contributing source R2B. Boral working on the bridge. Extraneous noise sources: Birds, Traffic on Wardell Rd and wind in trees. Reading was below modelled/approved noise scenario as detailed within the CCNVMP. Winds: SW 2.8m/sec
LendLease	Monthly	15/04/2019	11:10	NMP04 (1175 Wardell Rd)(R245)	46	58.7	83.3	104.7	37.9	58	41.2	Wardell Rd main contributing source. Extraneous noise sources: Birds, flight overhead, wind in trees. Winds: SW 1.2m/sec.
LendLease	Monthly	15/04/2019	11:48	NMP06 (109 Meridian Drive)	46	52	72.7	94.2	43.5	50.1	45.3	Pac Highway main contributing source. Extraneous noise sources: Birds, Traffic on Meridian Dr, wind in trees. Winds: SW 1.6m/sec.
LendLease	Monthly	17/04/2019	10:35	NMP08	46	63.2	77.5	90.3	50.4	67	55.6	Pac Highway main contributing source with noise levels ranging between 57-77dB. Extraneous noise sources: circardas. Constrction works including crane lifts and water cart operation were inaudible.
LendLease	OOHW	29/03/2018	5:46	Jali Quarry	43	40.9	66.6	89.5	31.9	45.7	36.6	R2B not audible during reading (paving operations). Extraneous noise sources: birds, insects, frogs and faint traffic. Reading was below modelled/approved noise scenario as detailed within the CCNVMP
LendLease	OOHW	28/02/2019	6:18	R240 56 Hillside Lane	38	47.8	94.3	70.9	43.1	49.5	46	R2B audible during reading (batch plant operations), however extraneous noise sources were dominant. Extraneous noise sources: birds, insects, traffic on Wardell Road, cows. Reading was below modelled/approved noise scenario as detailed within the CCNVMP. Wind: still
Quickway	Monthly	26/03/2019	11:00	E: 542196, N: 6797642, 106 Thurgates Lane, Wardell, NSW	41	56.7	74.2	76.3	42.6	68.7	53.1	Noise audible, but not obtrusive. Noisy works intermittent rather than constant. All noise mitigation measures in place as per approved EWMS. No complaints received as a result of the works.
AFHJV	Monthly	30/04/2019	14:03	1 Petticoat Lane (R1331)	45	55	68.3		46.1	56.6	50.5	
AFHJV	Monthly	30/04/2019	14:24	8 Martin Road (R1283)	45	55.9	64.7		48	52.9	50.3	
AFHJV	Monthly	30/04/2019	14:46	40 Morpeth Street (R1396)	45	59	67.9		49.8	62.5	54.1	
AFHJV	Monthly	30/04/2019	15:16	35 James Creek Road (R1256)	45	54.7	71.2		45	55.7	47.9	
Georgiou Group	OOHW	8/04/2019	10:05pm	77 Uralba road	51	50.1	69.6	108.4	40.2	49	41	
Georgiou Group	OOHW	9/04/2019	10:20pm	77 Uralba road	51	48.7	65.1	107.6	39.1	48	40	
Georgiou Group	OOHW	10/04/2019	10:10pm	77 Uralba road	51	49.1	65.4	109.4	39.2	48	40	
Georgiou Group	Monthly	29/04/2019	11:10am	83 Smith Drive	62.8	59.4	83.2	119.3	42.3	59	48	
Georgiou Group	Monthly	29/04/2019	11:35am	55 Pimlico road	58.3	56.3	82.8	110.1	32.1	57	45	
Seymour Whyte	OOHW	9/05/2019	06:43	566 Coldstream Road, Tyndale	52	48.9	65		69.8	46.7	43.6	OOHW noise monitoring. Birds constantly fluctuating 48-61dBA, cars on local road 46-50dBA x13, trucks on local road 54-59dBA x2, batching running but not batching continuously 43dBA, Loader 40-46dBA x 13, Scraping of bucket on ground 49-55dBA x2, cows 44-48dBA x2, batch plant batching 45-53dBA x3
Seymour Whyte	OOHW	10/05/2019	05:05	3152 Pacific Highway, Tyndale	38	52.9	60.2		44	50.4	47.6	OOHW noise monitoring. Predicted noise level of 61.1 (Category D). Actual was 52.9 putting the works at a Category C. Sawcutting works 48-55dBA x3, Saw cutting & Pacific Highway constantly fluctuating 53-58. Highway traffic dominantly B-Doubles
Seymour Whyte	OOHW	15/05/2019	04:40	100 Byrons Lane, Tyndale	38	41.3	50.1		25.2	40.5	30.7	no saw cutting activities were being undertaken during this monitoring period. Traffic on existing highway constantly fluctuating 39-48dBA. Moniroing was undertaken at agreed location with land owner
Seymour Whyte	OOHW	15/05/2019	05:13	100 Byrons Lane, Tyndale	38	43.7	51.2		27.4	43.7	38.6	Saw cutting and traffic at same time was constantly fluctuating 43-48 dBA, 3 times only saw cutting was heard (no traffic) 40-45dBA

Contractor	Type of Noise Monitoring - Monthly or OOHW	Date of Noise Monitoring	Time of Noise Monitoring	Location	RBL (for OOHW noise monitoring)	Noise Monitoring Results						Comments
					* NML	Laeq	Lafmax	Lzpk	Lafmin	Laf10	Laf90	
Seymour Whyte	OOHW	31/05/2019	09:28	566 Coldstream Road, Tyndale	52	45.3	57.9		40.9	44.6	43.2	Predicted noise levels as per the approved Ancillary addendum is 61.1 actual noise levels at time of monitoring was 45.3dBA. Birds were constantly fluctuating, btach running constantly, alarms and beeper were heard and traffic on local road
BGC	OOHW	7/05/2019	18:40	2967 Pacific Highway, Tyndale	38	75	103.6	92.5	44.9	79.4	51.6	
BGC	OOHW	7/05/2019	19:20	2991 Pacific Highway, Tyndale	38	77.7	107.3	94.4	54.2	82.1	61.5	
BGC	OOHW	7/05/2019	22:26	2991 Pacific Highway, Tyndale	33	74.9	104.5	96.7	56.8	78.1	60.1	
BGC	OOHW	7/05/2019	22:08	2967 Pacific Highway, Tyndale	33	76.1	105.7	96.5	46	79.8	56.3	
BGC	OOHW	8/05/2019	18:42	2967 Pacific Highway, Tyndale	38	72.3	101.9	86.9	57.4	75.1	60.4	
BGC	OOHW	8/05/2019	22:25	2963 Pacific Highway, Tyndale	33	75.1	104.7	92.4	58.3	77.8	61.2	
BGC	OOHW	8/05/2019	18:52	2991 Pacific Highway, Tyndale	38	74	103.6	89.3	56	78	59.9	
BGC	OOHW	8/05/2019	22:03	2991 Pacific Highway, Tyndale	33	73	102.6	92.6	59.6	76.6	61.7	
BGC	OOHW	8/05/2019	15:44	132 McIntyres Ln, Gulmarrad	41	55	84.6	83.2	28.7	50.4	31.8	
BGC	OOHW	8/05/2019	16:04	3986 Pacific Highway, Tyndale (BP Lane)	41	54.3	83.9	76.9	41.9	53.8	48	
BGC	OOHW	9/05/2019	18:26	2971 Pacific Highway, Tyndale	38	71.6	101.2	86.1	54.5	76.1	57.4	
BGC	OOHW	9/05/2019	18:46	2991 Pacific Highway, Tyndale	38	75.1	104.7	92.2	62.5	79.2	64.9	
BGC	OOHW	9/05/2019	22:38	2963 Pacific Highway, Tyndale	38	66.7	96.3	82.5	57.4	90.2	59.9	
BGC	OOHW	9/05/2019	22:18	2967 Pacific Highway, Tyndale	38	72.4	102	88.9	60	75.1	62.1	
BGC	OOHW	10/05/2019	20:06	2963 Pacific Highway, Tyndale	38	67.1	96.7	82.8	57.9	70.4	60.9	
BGC	OOHW	10/05/2019	20:18	2991 Pacific Highway, Tyndale	38	72.8	102.4	88.3	56.7	76.8	63.8	
BGC	OOHW	10/05/2019	23:05	2991 Pacific Highway, Tyndale	33	68.3	97.9	89.1	61	72.2	63.1	
BGC	OOHW	13/05/2019	19:15	2991 Pacific Highway, Tyndale	38	73.5	103.1	87.5	57.1	78.8	60.4	
BGC	OOHW	13/05/2019	19:30	2963 Pacific Highway, Tyndale	38	66.3	95.9	90.5	59.5	69.1	61.6	
BGC	OOHW	13/05/2019	23:12	2967 Pacific Highway, Tyndale	33	81.8	100.1	91	67.3	86.9	68.3	
BGC	Monthly	24/05/2019	8:55	Ferry Park - Corner of Pacific Highway and Cameron Street, Maclean	43	71.9	101.5	87.2	48.3	78.8	56.5	
SEE Civil	OOHW	23/05/2019	18:15 - 18:30	James Creek Lane - Lot 31 on DP1136907	44	48.3	57.6	85.3	38.2	51.2	43.9	Construction works not audible, Noise from traffic on existing highway clearly audible for entire monitoring period
BMD	Monthly	20/05/2019	12:42	7175 Pacific Highway, Devils Pulpit	46	65.5	82		53.1	68.6	60.3	Pacific Highway traffic dominant noise source 62.8-67.3 with peaks of 74.0 and 74.7 dB(A). Truck movement onsite - 57.4-60.8 dB(A) and excavator onsite - 60.2-61.3 dB(A). Extrapolation calculation indicates 53.9 dB(A) therefore construction noise considered below NML and compliant.
BMD	Monthly	21/05/2019	15:53	1 Jackybulbin Road, Mororo	46	60.2	81		43	58.8	48.6	Local traffic on Jackybulbin Road 70.3-80.4 dB(A). Pacific Highway traffic 51.7-58.6 dB(A) with peaks of 61.4 and 62.1 dB(A). Truck and water cart at construction gate 51.3-52.4 dB(A). Rooster 59.4-60.0 dB(A). Other construction activities inaudible at monitoring point. Construction noise below NML.
BMD	Monthly	23/05/2019	11:56	6530 Pacific Highway Jackybulbin	46	59.4	77.4		41.6	62.5	48.2	Pacific Highway traffic dominant noise source 45.3-61.4 dB(A) with peaks of 75.1 and 76.5. Light vehicle onsite - 50.1 dB(A). Other construction activities inaudible. Construction noise below NML.
LendLease	Monthly	2/05/2019	10:27	NMP03 (1202 Wardell Rd)(R242)	46	62.4	70	93.4	51.5	65.3	58.2	Main contributing source R2B. Boral laying asphalt on the bridge and street sweeper servicing Wardell Rd. Extraneous noise sources: Birds, Traffic on Wardell Rd. Reading was below modelled/approved noise scenario as detailed within the CCNVMP. Winds: Still
LendLease	Monthly	2/05/2019	10:40	NMP04 (1175 Wardell Rd)(R245)	46	55.5	62.6	88.2	50.3	57.5	53.1	Main contributing source R2B. Boral laying asphalt on the bridge and street sweeper servicing Wardell Rd. Extraneous noise sources: Birds, Traffic on Wardell Rd. Reading was below modelled/approved noise scenario as detailed within the CCNVMP. Winds: Still
LendLease	Monthly	2/05/2019	9:52	NMP06 (109 Meridian Drive)	46	48.4	69.8	83.3	38.5	47.2	46.9	Pac Highway main contributing source. Extraneous noise sources: Birds, 2 cars passed on Meridian Dr. Winds: Still
LendLease	Monthly	2/05/2019	12:30	NMP08 (55 Whytes Lane West)	46	48.7	57.7	86.2	41.3	50.9	44.7	R2B not audible. Main source Pac Highway.

Contractor	Type of Noise Monitoring - Monthly or OOHW	Date of Noise Monitoring	Time of Noise Monitoring	Location	RBL (for OOHW noise monitoring)	Noise Monitoring Results						Comments
					* NML	Laeq	Lafmax	Lzpk	Lafmin	Laf10	Laf90	
LendLease	OOHW	9/05/2019	6:23	NMP04 (1175 Wardell Rd)(R245)	30	58.1	76.7	97.2	43.4	60.8	48.3	Traffic on Wardell Road was the main contributing noise source with noise levels ranging between 60dB and 80dB. 23 vehicles passed during the monitoring period. Birds were continuous throughout the monitoring period and were recorded at upto 53 dB. During lulls in background noise the batchplant was measured at upto 49 dB. A barking dog, vehicles in the Wardell Road compound car park and tipper trucks within the project alignment were also audible during the monitoring period. However, peak noise generation from these sources was indistinguishable from other background noise sources.
AFHJV	OOHW	3/05/2019	7:28pm	530 Yamba Road	44	59.4	77		51.4	61.5	54.9	Yamba Road asphaltting.
Georgiou	OOHW & Monthly	25/05/2019	14:15	83 Smith Drive	62.8	59.6	82.8	120.3	42.4	59	48	
Georgiou	OOHW & Monthly	25/05/2019	14:45	55 Pimlico Road	58.3	56.2	79.7	117.1	33.1	56	47	
Georgiou	Monthly	27/05/2019	11:55	87 Smith drive	62.8	59.4	87.9	104.1	44.8	58	49	
Georgiou	Monthly	27/05/2019	12:30	55 Pimlico road	58.3	55.7	78.6	110.8	42.6	54	46	
SEE Civil	OOHW	20/06/2019	18:14 - 18:29	132 Farlow's Lane, Maclean	44	49	71.2	58.1	47.8	43.7	40.8	Construction works only audible when traffic noise subsided, Noise from traffic on existing highway clearly audible for majority of monitoring period One (1) LV passed close by monitor
SEE Civil	OOHW	21/06/2019	18:14 - 18:29	James Creek Lane - Lot 31 on DP1136907	44	56.9	74.1	43.7	60.1	54.8	49.1	Construction works only audible when traffic noise subsided, Noise from traffic on existing highway clearly audible for majority of monitoring period. One (1) LV passed close by monitor
BMD	OOHW	1/06/2019	6:30	7175 Pacific Highway, Devils Pulpit	42	62.6	74.7		42	67.5	47.1	Representative data obtained from previous noise monitoring undertaken for the same activities undertaken at 6.6. Refer to item 43 - OOH noise monitoring undertaken 06/03/2019. Noise levels were found to be compliant at monitoring location at 7175 Pacific Highway, Devils Pulpit (540m from work area). Nearest sensitive receiver (Lot 15 DP1196340) was 1.1km to the work area therefore these works are also considered compliant.
BMD	OOHW	5/06/2019	18:10	6530 Pacific Highway	42	62.8	79.7		35.5	66.5	45	Highway traffic main influence on record; trucks up to 78dB(A) cars peaking at 55dB(A). 45dB(A) recorded when no vehicle in immediate vicinity. Construction inaudible. Construction works below NML and therefore compliant.
BMD	OOHW	18/06/2019	18:37	79 Mororo Road	42	44.9	71		33.6	44.9	37.4	1 x Local traffic vehicle 70dB(A). Construction inaudible. Construction works below NML and therefore compliant.
BMD	Monthly	21/06/2019	14:00	1 Jackybulbin Road, Mororo	42	65.4	90		45.4	64.4	49.4	Local traffic on Jackybulbin Road dominant noise source (67.8-79.5 dB(A)) with peak of 85.6 dB(A). Pacific Highway traffic 49.3-60.2 dB(A). Truck at bus turnaround (north) 48.0-50.0 dB(A). Other construction activities inaudible at monitoring point. Construction noise below NML and therefore compliant.
BMD	Monthly	21/06/2019	15:00	7175 Pacific Highway	42	64.2	76.8		44.8	68.3	53.4	Pacific Highway traffic dominant noise source 50.8-67.0 with peaks of 73.9 and 76.0 dB(A). Construction noise inaudible from monitoring point. Construction noise below NML and therefore compliant.
BMD	Monthly	21/05/2019	15:53	1 Jackybulbin Road, Mororo	42	60.2	81		43	58.8	48.6	Local traffic on Jackybulbin Road 70.3-80.4 dB(A). Pacific Highway traffic 51.7-58.6 dB(A) with peaks of 61.4 and 62.1 dB(A). Truck and water cart at construction gate 51.3-52.4 dB(A). Rooster 59.4-60.0 dB(A). Other construction activities inaudible at monitoring point. Construction noise below NML.
BMD	Monthly	23/05/2019	11:56	6530 Pacific Highway Jackybulbin	42	59.4	77.4		41.6	62.5	48.2	Pacific Highway traffic dominant noise source 45.3-61.4 dB(A) with peaks of 75.1 and 76.5. Light vehicle onsite - 50.1 dB(A). Other construction activities inaudible. Construction noise below NML.
Pacific Complete	OOHW	3/06/2019	18:59	Lot 60 / DP 802939 9 Old Pacific Highway, Woombah	39	61.2	87.1		39.9	56.4	44.5	App No. APR19-015 Monitoring undertaken to verify noise levels from Iluka Asphalt Batch Plant operations at closest receiver during evening hours. Note: main noise impact was trucks on highway. No noise impacts were identified from construction activities.

Contractor	Type of Noise Monitoring - Monthly or OOHW	Date of Noise Monitoring	Time of Noise Monitoring	Location	RBL (for OOHW noise monitoring)	Noise Monitoring Results						Comments
					* NML	Laeq	Lafmax	Lzpk	Lafmin	Laf10	Laf90	
Pacific Complete	OOHW	3/06/2019	19:21	Lot 110 / DP 1121323 10 Old Pacific Highway, Woombah	39	58.9	73.8		36.9	63	44.8	App No. APR19-015 Monitoring undertaken to verify noise levels from Iluka Asphalt Batching & Hauling operations at closest receiver during evening hours. Note: main noise impact was trucks on highway. No noise impacts were identified from construction activities.
Pacific Complete	OOHW	3/06/2019	23:25	Lot 60 / DP 802939 9 Old Pacific Highway, Woombah	39	48.1	72.8		39.1	50.8	42	App No. APR19-015 Monitoring undertaken to verify noise levels from Iluka Asphalt Batch Plant operations at closest receive during night-time hours. Note: main noise impact was trucks on highway. No noise impacts were identified from construction activities.
Pacific Complete	OOHW	3/06/2019	23:51	Lot 110 / DP 1121323 10 Old Pacific Highway, Woombah	39	56.7	70.5		38.9	61.2	42.9	App No. APR19-015 Monitoring undertaken to verify noise levels from Iluka Asphalt Batching & Hauling operations at closest receive during night-time hours. Note: main noise impact was trucks on highway. No noise impacts were identified from construction activities.
LendLease	OOHW	30/05/2019	18:20	NMP06 (109 Meridian Drive)	42	45.8	64.4	80.8	37.6	47.6	40.5	Pac Highway main contributing source. Extraneous noise sources: Birds, Traffic on Coolgardie Rd. R2B only audible on one occasion from a reversing quacker at Coolgardie Interchange. Winds: Still
LendLease	Monthly	19/06/2019	9:24	NMP08 (55 Whytes Lane West)	41	55.7	71.4	95	47.9	57	52.3	R2B not audible. Main source Pac Highway. Two cars on Whytes lane, frogs.
LendLease	Monthly	19/06/2019	9:47	NMP06 (109 Meridian Drive)	41	46	69.2	83	39.5	45.4	41.5	Pac Highway main contributing source. Extraneous noise sources: Birds, 2 cars passed on Meridian Dr. Winds: SW 1.2m/sec.
LendLease	Monthly	19/06/2019	12:25	NMP04 (1175 Wardell Rd)(R245)	41	58	77.5	92.8	43.3	56.5	46.1	Wardell Rd main contributing source. Extraneous noise sources: Birds, flight overhead, wind in trees. Winds: W 1.5m/sec.
LendLease	Monthly	19/06/2019	13:00	NMP03 (1202 Wardell Rd)(R242)	41	59.3	73.1	98	51.8	62.3	54.3	Main contributing source R2B. Sweeper cart, high pressure water cleaning of pavement and some LV movements. Extraneous noise sources: Birds, Traffic on Wardell Rd. Reading was below modelled/approved noise scenario as detailed within the CCNVMP. Winds: W 1.6m/sec.
LendLease	OOHW	20/06/2019	18:20	NMP04 (1175 Wardell Rd)(R245)	42	48.5	65.5	86.8	32.4	49.7	41.2	R2B audible during reading (batch plant operations), however extraneous noise sources were dominant. Extraneous noise sources: birds, insects, traffic on Wardell Road. Reading was below modelled/approved noise scenario as detailed within the CCNVMP
Georgiou	OOHW	10/06/2019	22:05	83 Smith Drive	54.7	53.1	77.1	103.4	40.9	51	42	
Georgiou	OOHW	11/06/2019	22:10	83 Smith Drive	54.7	52.3	75.6	111.2	41.3	51	42	
Georgiou	OOHW	12/06/2019	22:05	83 Smith Drive	54.7	52.8	81.2	111.7	43.7	52	44	
Georgiou	OOHW	13/06/2019	22:10	83 Smith Drive	54.7	51.9	73.4	104.6	41.1	51	42	
Georgiou	OOHW	17/06/2019	22:25	83 Smith Drive	54.7	51.8	75.6	111.2	41.4	51	43	
Georgiou	OOHW	18/06/2019	22:10	83 Smith Drive	54.7	52.5	81.4	119.3	40.6	52	41	
Georgiou	OOHW	19/06/2019	22:20	83 Smith Drive	54.7	51.2	77.6	111.2	41.3	51	43	
Georgiou	OOHW & Monthly	22/06/2019	15:15	83 Smith Drive	62.8	61.2	43.9	119.3	44.2	57	46	
Georgiou	OOHW & Monthly	22/06/2019	14:45	55 Pimlico Road	58.3	56.4	81.4	118.3	41.6	55	44	
Georgiou	Monthly	24/06/2019	11:55	87 Smith drive	62.8	57.4	79.4	114.3	42.1	51	42	
Georgiou	Monthly	24/06/2019	12:30	55 Pimlico road	58.3	51.4	67.2	111.4	40.9	49	41	
SWC	OOHW	17/07/2019	6:27	100 Byrons Lane, Tyndale	38 *	48.3	72.5		42.5	47.5	45.2	Predicted level 61.5 see separate report attached
SWC	OOHW	17/07/2019	6:47	100 Byrons Lane, Tyndale	38 *	51.9	57		44	51.8	49.5	Predicted level 61.5 see separate report attached
SWC	OOHW	24/07/2019	4:40	165 Sommervale Road, Tucabia	34 *	43.4	51		21.4	41.1	24.2	Predicted level 41.8. see separate report attached
SWC	Quarterly	24/07/2019	9:32	2860 Pacific Highway, Tyndale	51 *	58.1	77.9		43.6	60.3	49.4	Landowners chicken and highway dominant noise source constantly fluctuating Roosters up to 73 dBA constantly fluctuating Minimal background (bird & Hwy) with mainline works 45dBA constantly fluctuating

Contractor	Type of Noise Monitoring - Monthly or OOHW	Date of Noise Monitoring	Time of Noise Monitoring	Location	RBL (for OOHW noise monitoring)	Noise Monitoring Results						Comments
					* NML	Laeq	Lafmax	Lzpk	Lafmin	Laf10	Laf90	
SWC	Quarterly	24/07/2019	10:15	566 Coldstream road, Tyndale	42 *	43.9	57.6		37.8	46.2	40.9	Approved noise level 54dBA as per the Ancillary Facility Approval General background noise from batch plant & Passing vehicles on Tyndale Tucabia Rd 44-53dBA constantly fluctuating Vehicle entering the property 50dBA once Minimal background with batch at full noise 39 Dog barking 47dBA initially 1min Truck tipping at batch 52dBA 3times
SWC	Quarterly	24/07/2019	11:00	15 Tallowood Lane, Tucabia	42 *	41.6	58.8		28.6	44.4	31.1	Minimal construction noise 2 trucks passing 54dBA Birds nearby 51-55dBA constantly fluctuating Horse messing with a tin 43dBA periodically Wind gusts in trees 45dBA
SWC	Quarterly	24/07/2019	11:15	165 Sommervale Road, Tucabia	42 *	44.5	76.7		34.4	44.9	37.1	Minimal construction noise, occasional noise from nearby excavator and passing truck. Aeroplane passing overhead 51dBA once Minimal noise other than wind 35dBA periodically Truck along alignment 42dBA once
SWC	Quarterly	24/07/2019	12:33	970 Wooli Road, Pillar Valley	42 *	49.6	77.1		32.1	51.6	36.5	Minimal construction noise – distant background noise only Birds nearby 42-51dBA constantly fluctuating Cars on Wooli Rd 50-58dBA Trucks on Wooli Rd 63-69dBA With minimal wind and bird noise 34dBA
SWC	Quarterly	24/07/2019	13:03	37 Old Six Mile Lane, Clarenza	42 *	60.6	76.4		36.6	65.5	40	Dogs barking constantly & dominant noise 60-72dBA No barking & just background and construction noise 39dBA Construction noise, trucks on alignment & Avenue Rd 40-48dBA
SWC	OOHW	25/07/2019	6:27	566 Coldstream Road, Tyndale	34 *	58.2	71.1		45.5	56.3	50.3	Predicted level 54. Not project related. Separate report attached
BGC	OOHW	23/07/2019	7.59pm	2967 Pacific Highway, Tyndale	38	70	93	99.6	52.5	70.8	55.3	Main/dominant source of noise from Pacific Highway traffic.
BGC	OOHW	24/07/2019	8.00pm	Tyndale Sheds, 2991 Pacific Highway, Tyndale -10m South of driveway	38	71.9	87.5	101.5	48.3	75.8	56.5	Main/dominant source of noise from Pacific Highway traffic.
BGC	OOHW	26/07/2019	1.07am	Tyndale Sheds, 2991 Pacific Highway, Tyndale	33	72.2	92.8	101.8	61.1	75.5	62.6	Main/dominant source of noise from Pacific Highway traffic.
BGC	OOHW	27/07/2019	12.44am	Tyndale Sheds, 2991 Pacific Highway, Tyndale	33	74.3	89.8	103.9	56.2	78.7	58	Main/dominant source of noise from Pacific Highway traffic.
SEE Civil	OOHW	3/07/2019	6:37 - 6:52pm	James Creek Lane - Lot 31 on DP1136907	44	49.2	67.7		40.6	49.8	46	Dominant noise sources - frogs and insects and highway traffic. Construction works inaudible for majority of monitoring period. One (1) LV and truck passed close by monitor
Pacific Complete	Periodic	3/07/2019	8:40	Lot 1 / DP 815944 Iluka Road, Woombah	39	50.1	64.4		42.5	52.7	49.1 (Laf50)	Periodic monitoring to verify crusher noise output at Castles Ancillary Facility (CH95.890 - CH96.300) - Highway traffic clearly audible over crusher. - Crusher operating between 8:48am-8:52am & was audible. - Mostly unobscured line of site from monitor to crusher. - Noise from movements of bobcat audible over crusher. - Multiple truck movements in and out of site and other plant operating concurrently with crusher.
Pacific Complete	Periodic	3/07/2019	8:57	Lot 1 / DP 815944 Iluka Road, Woombah	39	52.5	62.8		43.1	55.2	51.6 (Laf50)	Periodic monitoring to verify crusher noise output at Castles Ancillary Facility (CH95.890 - CH96.300) - Highway traffic clearly audible over crusher. - Crusher operating for entire duration of monitoring and clearly audible. - Mostly unobscured line of site from monitor to crusher. - Noise from movements of bobcat audible over crusher. - Multiple truck movements in and out of site and other plant operating concurrently with crusher.
Pacific Complete	Periodic	10/07/2019	8:57	Garrett's Lane CH94200 Lot 80 / DP1193425	39	52.5	66.5		38.9	55.1	50.1 (Laf50)	Periodic monitoring for general construction activities at Iluka Interchange - Distance between monitor and work site approx. 430m - Monitor separated from construction sites by river and thin line of trees along river bank - Construction noise from Bridge B67 very faint - reversing alarms and intermittently audible - Birds chirping near the monitor also very loud

Contractor	Type of Noise Monitoring - Monthly or OOHW	Date of Noise Monitoring	Time of Noise Monitoring	Location	RBL (for OOHW noise monitoring)	Noise Monitoring Results						Comments
					* NML	Laeq	Lafmax	Lzpk	Lafmin	Laf10	Laf90	
Pacific Complete	Periodic	10/07/2019		Garrett's Lane East, Woombah CH94890 Lot 29 / DP1195140	39	62.2	84.4		48.6	63.5	59.7	Periodic monitoring for general construction activities at Iluka Interchange - Distance between work site and monitor approx. 200m - Activities: line marking, finishing works for Stage 2 Switch (to occur that night) - Construction noise on new southbound alignment very faint - Bobcat moving around on site could be heard intermittently - Reversing alarms and quackers audible - Construction related LVs and public vehicles passing noise monitor at various times during the monitoring period. - Construction noise inaudible over noise from trucks on existing highway which are very noisy
Pacific Complete	Periodic	10/07/2019	15:31	395 Chatsworth Road CH93690 Lot 11 / DP774168	39	63.1	87.5		36.4	58.1	43.8 (Laf50)	Periodic monitoring of general construction activities at Iluka Interchange, Bridge B67 and Bridge B07 - Distance between monitor and work site approx. 480m - Bridge B67 activities: Grouting for mortar pads and curing, loading of materials into trucks by digger, trucks moving around on site - Bridge B07 activities: construction workers, digger, EWP Crusher operating for entire duration of monitoring and clearly audible. - Direct line of site between monitor and works - Mostly a very quiet location - Construction noise inaudible at monitoring location. - Highway traffic audible but not very loud, public and construction related light vehicles and trucks travelling down Chatsworth road and passing monitor very noisy
Pacific Complete	Periodic	10/07/2019	15:50	385 Chatsworth Road CH93690 Lot 11 / DP774168	39	48.9	77.9		33	45.9	40.7 (Laf50)	Periodic monitoring of general construction activities at Iluka Interchange, Bridge B67 and Bridge B07 - Distance between monitor and work site approx. 600m - Bridge B67 activities: Grouting for mortar pads and curing, loading of materials into trucks by digger, trucks moving around on site - Bridge B07 activities: construction workers, digger, EWP Crusher operating for entire duration of monitoring and clearly audible. - Direct line of site between monitor and works - Construction noise inaudible at monitoring location. - Highway traffic audible but not very loud, - Public and construction related light vehicles and trucks travelling down Chatsworth road and passing monitor very noisy
Pacific Complete	Complaint	15/07/2019	8:59	Garrett's Lane East, Woombah Lot 110 / DP1121323	39	68.8	89		58.1	69.9	65.5 (Laf50)	Noise monitoring in response to a complaint. Note: Rubbleisor was in use to break up pavement on existing highway after Stage 2 Iluka Traffic Switch. - Rubbleisor can be clearly heard over all other noise including highway traffic. - Can hear the noise generated by the engine of the rubbleisor, as well as the sound of the metal piles hitting the ground. - Construction related LVs and trucks travelling down Garretts Lane East and passing monitor. - Dogs at nearby property also barking intermittently.
Pacific Complete	Complaint	15/07/2019	9:17	Garrett's Lane East, Woombah Lot 110 / DP1121323	39	64.7	85.8		48.5	64.5	58.7 (Laf50)	Noise monitoring in response to a complaint. Note: Rubbleisor in use to break up pavement on existing highway after Stage 2 Iluka Traffic Switch. - Rubbleisor can be clearly heard over all other noise including highway traffic. - Can hear the noise generated by the engine of the rubbleisor, as well as the sound of the metal piles hitting the ground. - Construction related LVs and trucks travelling down Garretts Lane East and passing monitor.
BMD Constructions	OOHW	12/07/2019	13:17	400m along Mororo Rd (representative)	44	38.7	63.2		29.4	38.6	32	Bird call up to 63 dB(A) monitoring area very quiet. Construction inaudible from monitoring spot

Contractor	Type of Noise Monitoring - Monthly or OOHW	Date of Noise Monitoring	Time of Noise Monitoring	Location	RBL (for OOHW noise monitoring)	Noise Monitoring Results						Comments
					* NML	Laeq	Lafmax	Lzpk	Lafmin	Laf10	Laf90	
BMD Constructions	Monthly	24/07/2019	9:50	1 Jackybulbin Rd, Mororo	44	62.9	83		37.9	57.2	45.2	Local traffic on Jackybulbin Road dominant noise source 68.0-82.4 dB(A). Pacific Highway traffic 46.8-59.3 dB(A). Construction Gate 102.7 North not in use. Construction noise inaudible from monitoring therefore works are compliant.
BMD Constructions	Monthly	24/07/2019	10:18	7175 Pacific Highway	44	65	83.4		48.2	68.9	53.8	Pacific Highway traffic dominant noise source 52.0-64.2 dB(A) with peaks of 70.0 and 71.8 dB(A). Bobcat idling onsite - 50.4 and reversing onsite - 50.6 dB(A). Truck movements onsite 49.4-52.0 dB(A). Construction noise below NML and therefore compliant.
BMD Constructions	Monthly	24/07/2019	10:52	6530 Pacific Highway	44	59.1	71.5		43.6	63.7	49.1	Pacific Highway traffic dominant noise source 47.6-57.8 dB(A) with peaks of 68.8 and 69.9 dB(A). Trucks at construction gate - 50.4-51.1 dB(A), trucks idling onsite - 46.4 dB(A) and truck movements onsite 49.3-51.2 dB(A). Other construction activities inaudible. Construction noise below NML and therefore compliant.
LendLease	Monthly	10/07/2019	11:05	NMP03 (1202 Wardell Rd)(R242)	36	49.4	72.1	88.7	35.5	49.4	38.8	Main contributing source R2B. Sweeper cart and some LV movements. Extraneous noise sources: Birds, Traffic on Wardell Rd. Reading was below modelled/approved noise scenario as detailed within the CCNVMP. Winds: Still
LendLease	Monthly	10/07/2019	11:23	NMP04 (1175 Wardell Rd)(R245)	36	48.3	66.3	83.6	29.6	51.3	33.8	Main contributing source R2B. Some LV movements and some activity south of batch plant. Extraneous noise sources: Birds, Traffic on Wardell Rd. Reading was below modelled/approved noise scenario as detailed within the CCNVMP. Winds: Still
LendLease	Monthly	10/07/2019	11:50	NMP06 (109 Meridian Drive)	41	48.7	75.5	92.3	34.2	43.2	36.4	Pac Highway main contributing source. Extraneous noise sources: Birds, 1 car passed on Meridian Dr. Winds: Still
LendLease	Monthly	10/07/2019	12:13	NMP08 (55 Whytes Lane West)	41	46.3	57.1	87.3	36.5	49.6	41.4	R2B not audible. Main source Pac Highway. Frogs/Winds: Still
LendLease	OOHW	8/07/2019	19:40	R126 (716 Pimlico Rd)	41	48.1	60	83.7	42.5	50.1	44.6	Pac Highway main contributing source. Extraneous noise sources: Frogs, Traffic on Pimlico Rd. Reading was below modelled/approved noise scenario as detailed within the CCNVMP. Winds: Still
LendLease	OOHW	9/07/2019	19:15	R18 (218 Pacific Highway, Broadwater)	41	64.7	74.5	94.7	49.2	67.9	57.1	Pac Highway main contributing source. Extraneous noise sources: Frogs. Construction noise (saw cutting at Abutment A) was inaudible. Reading was below modelled/approved noise scenario as detailed within the CCNVMP. Winds: Still
Georgiou	OOHW & Monthly	20/07/2019	14:15	83 Smith Drive	62.8	59.6	81.9	119.3	43.9	58	46	
Georgiou	OOHW & Monthly	20/07/2019	14:45	55 Pimlico Road	58.3	56.3	77.6	114.9	39.1	56	43	
Georgiou	Monthly	25/07/2019	11:10	87 Smith drive	62.8	59.4	81.2	117.6	42.1	59	44	
Georgiou	Monthly	25/07/2019	11:35	55 Pimlico road	58.3	56.1	78.1	111.3	41.1	56	43	
SWC	OOHW	14/08/2019	21:28	73 Cameron Street	38	55.9	68.7		27.7	47.6	34.7	Predicted levels for saw cutting works 56.2dB(A). Dominant noise source was the B-doubles travelling on the existing Pacific Highway. See attached noise monitoring sheet
SWC	OOHW	23/08/2019	21:20	73 Cameron Street	38	58	76.6		37.1	47.4	41.2	Dominant noise source was the traffic on the existing high and traffic on the local road adjacent. No saw cutting works were being undertaken at time of attended noise monitoring
SWC	Monthly	30/08/2019	11:15	566 Coldstream Road	42	47.6	63.2		40.7	46.5	42.9	Dominant noise source was the batch plant operations. No exceedance as per the predicted noise levels of 52dB(A).
BGC	OOHW	19/08/2019	17:43	Lot 113 DP1183289 - 125m east of closest sensitive receiver, 60m from works	38	61	78.6	90.6	52.1	63.2	56	Consistent with noise model for Cat A
BGC	OOHW	24/08/2019	6:49	Lot 3031 DP1231714 Bondi Hill Rd - 3240 Pacific Highway, Tyndale	33	43.1	55.9	72.7	33.6	46.4	N/A	Construction noise inaudible, dominant source of noise is existing highway traffic
BGC	OOHW	29/08/2019	18:30	In line with Lot DP837655 - 380m south of work zone inside project boundary	44	56.8	62.7	86.4	49.2	58.9	54	Dominant source of noise: existing highway traffic
BGC	OOHW	30/08/2019	18:00	40m north of Lot 10 DP837655	44	60.1	73.1	89.7	38.3	63.8	46.4	Dominant source of noise: existing highway traffic
Pacific Complete	Periodic	5/08/2019	13:01	34 Fischers Lane, Chatsworth	37	49.5	74		39.4	50.2	46.4 *	Bridge B08 remediation works including piling and jackhammering. Some light works on Bridge B07. Distance between monitor and work site approx. 300m. Traffic passing on existing highway clearly audible especially large trucks. Jackhammering at Bridge B08 intermittent but very loud. Public vehicles passing monitor travelling down Fischers Lane also very loud.

Contractor	Type of Noise Monitoring - Monthly or OOHW	Date of Noise Monitoring	Time of Noise Monitoring	Location	RBL (for OOHW noise monitoring)	Noise Monitoring Results						Comments
					* NML	Laeq	Lafmax	Lzpk	Lafmin	Laf10	Laf90	
Pacific Complete	Periodic	5/08/2019	13:32	46 Morpeth Street, Harwood	45	57.3	75.2		46.7	60	55 *	Minor earthworks between Harwood Bridge and B52 - excavator moving around on site. Distance between monitor and site approx. 100m. Highway traffic extremely loud, frequent heavy vehicles. Cannot hear noise from construction activities over noise from existing highway. Public vehicles passing monitor on Morpeth St also very loud. Line of sight broken by thin line of trees.
Pacific Complete	Periodic	5/08/2019	13:57	3 Palm Lane, Harwood	45	67.8	84		49.4	71.5	65.4 *	Hydromulching along access road to west of new alignment between B52 and B56. Distance between monitor and construction activities approx. 65m Earthworks - excavator & grader on access road, bogie delivering materials & roller new alignment. Highway traffic extremely loud. Construction activities inaudible over noise from highway traffic. Can feel vibration of large trucks when they pass on existing highway. T&Ds turning left onto existing highway from Watt's Lane also extremely loud.
Pacific Complete	Periodic	5/08/2019	14:15	29 Palm Lane, Harwood	45	66.3	87.7		39.3	69.5	58.8 *	Works on new alignment between B52 and B56. Distance between monitor and construction activities approx. 35m Hydromulching along access road to west of new alignment between B52 and B56. Digger loading materials into bogie, light vehicles moving around on site. Highway traffic extremely loud. Can feel vibration of large trucks as they pass on the existing highway. Construction noise inaudible over noise from highway.
Pacific Complete	Periodic	5/08/2019	14:47	Two Bridge Coffee Van Carpark Yamba Road, Yamba	45	58.3	74.6		51.2	60.1	57.5 *	SEE Civil Ancillary Facility Distance between monitor and construction activities approx. 100m Minor earthworks Yamba Interchange West 1 x truck moving around on site. Noise from existing highway extremely loud. Frequent vehicle movements along adjacent Yamba Road. Construction related noise inaudible over noise from existing highway. Couple having loud argument in carpark.
Pacific Complete	Periodic	5/08/2019	15:21	124 Farlows Lane, Maclean	43	56.9	84		41.6	52.4	47.5 *	Bridge B01 works & SEE Civil soil sorting Distance between monitor and construction activities approx. 320m. Very quiet location. Highway traffic very loud Soil sorting operations inaudible over noise of highway Public and construction related light vehicles and trucks passing monitor travelling down Farlows Lane very loud cows.
BMD	OOHW	26/08/2019	9:42	1 Jackybulbin Road, Mororo	46	58.5	80.8		32.4	55.2	41.7	Local traffic on Jackybulbin Road dominant noise source 69.0-79.9 dB(A). Pacific Highway traffic 48.0-60.0 dB(A). Construction Gate 102.7 North not in use. Construction noise inaudible from monitoring site.
BMD	Monthly	26/08/2019	10:16	7175 Pacific Highway	46	59.2	75.6		37.6	63.7	45.5	Pacific Highway traffic dominant noise source 64.0-73.9 dB(A). Truck reversing onsite - 53.0 dB(A). Birds 51.2-56 dB(A).
BMD	Monthly	26/08/2019	11:00	6530 Pacific Highway	46	58.1	72		48.7	61.1	52.1	Construction dominant noise source 51.8-65.4 dB(A) with peaks of 68.4 and 71.6 dB(A). Trucks at construction gate 103.7 - 52 dB(A). truck movements on the Pacific Highway 59.7-66.0 dB(A). Reversing alarms 57.0-64.0dB(A).
LendLease	Monthly	21/08/2019	15:30	NMP03 (1202 Wardell Rd)(R242)	36	44.7	56.6	84.5	34.1	47.4	38.1	Main contributing source R2B. Loading of moxys and some LV movements. Extraneous noise sources: Birds, Traffic on Wardell Rd. Reading was below modelled/approved noise scenario as detailed within the CCNVMP. Winds: Still
LendLease	Monthly	21/08/2019	15:50	NMP04 (1175 Wardell Rd)(R245)	36	50.8	67.3	90.4	29.8	54.7	35.2	Wardell Rd main contributing source. R2B audible on one instant loading moxys. Extraneous noise sources: Birds. Reading was below modelled/approved noise scenario as detailed within the CCNVMP Winds: Still

Contractor	Type of Noise Monitoring - Monthly or OOHW	Date of Noise Monitoring	Time of Noise Monitoring	Location	RBL (for OOHW noise monitoring)	Noise Monitoring Results						Comments
					* NML	Laeq	Lafmax	Lzpk	Lafmin	Laf10	Laf90	
LendLease	Monthly	21/08/2019	16:15	NMP06 (109 Meridian Drive)	41	50.3	70.7	85.5	40.8	50.5	43.6	Pac Highway main contributing source. R2B audible on one instant during reversing of a vehicle (quacker). Extraneous noise sources: Birds, cattle in adjoining paddocks, 4 cars passed on Meridian Dr. Winds: Still
LendLease	Monthly	21/08/2019	16:45	NMP08 (55 Whytes Lane West)	41	48	69.4	82.8	38.6	50.5	42.7	Main source Pac Highway. R2B audible during reversing of grader (quacker). Extraneous noise sources: Birds, 2 cars using Whytes lane West. Winds: Still
Georgiou	Monthly	15/08/2019	3:15pm	83 Smith Drive	62.8	59.1	82.3	116.6	44.3	59	47	
Georgiou	Monthly	15/08/2019	3:45pm	55 Pimlico Road	58.3	57.6	77.5	111.3	40.6	57	43	
Georgiou	OOHW	27/08/2019	10:05pm	83 Smith Drive	54.7	51.1	75.6	111.2	41.3	51	43	
Georgiou	OOHW	27/08/2019	10:25pm	55 Pimlico Road	51	48.7	66.1	106.3	39.2	48	40	
SWC	OOHW	25/09/2019	21:39	Within the project boudary in line with ID851 121 Shark Creek Road, Gulmarrad	43	61.7	68.6		44.2	59.9	57.9	Predicted nosie levels were 62.0dBA for saw cutting activities
SWC	OOHW	25/09/2019	22:00	Within the project boudary in line with ID851 121 Shark Creek Road, Gulmarrad	38	57.2	47.3		47.3	55.7	50.8	Predicted nosie levels were 62.0dBA for saw cutting activities
BGC	OOHW	11/09/2019	18:59	30 Jubilee Street, Townsend - 50m from works	44	64.6	94.2	72.3	61.9	65.5	63.4	Dominant source of noise from Jubilee Street traffic.
BGC	OOHW	11/09/2019	22:05	30 Jubilee Street, Townsend - 50m from works	39	64	93.6	74.4	61	65.2	62.5	Works within predicted levels (Cat D 60-69dB)
BGC	OOHW	24/09/2019	20:19	Lot 10 DP837655 (R886) - 420 from works	44	60.7	90.3	76.2	32	65.1	38.9	Dominant source of noise from existing highway traffic.
BGC	OOHW	25/09/2019	6:29	30 Jubilee Street, Townsend - 25m from works	39	62.7	92.3	78.2	51.6	66.1	56	Dominant source of noise from trucks Jubilee Street traffic.
SEE Civil	OOHW	2/09/2019	18:30	526 Yamba Road	44	47.3	64.6	93.1	35.1	50.4	41.4	Traffic on existing highway dominant noise source. Construction works inaudible for majority of monitoring period.
SEE Civil	OOHW	9/09/2019	18:45	35 James Creek Road	44	41.7	64.3	88.9	34.4	43.3	36.2	Traffic on existing highway dominant noise source. Construction works inaudible for majority of monitoring period.
BMD	Monthly	24/09/2019	11:22	1 Jackybulbin Road, Mororo	46	57.2	78.6		34.2	52.3	42.6	Local traffic on Jackybulbin Road dominant noise source 70-78 dB(A). Pacific Highway traffic 48-60 dB(A). Construction Gate 102.7 North not in use. Construction noise inaudible from monitoring site.
BMD	Monthly	24/09/2019	11:56	7175 Pacific Highway	46	58.1	76.5		36.7	62.7	44.5	Pacific Highway traffic dominant noise source 65-72 dB(A). Birds in background 50-55 dB(A). Reversing alarms 57.0-64.0dB(A).
BMD	Monthly	24/09/2019	12:45	6530 Pacific Highway	46	59.3	73.2		49.5	62.3	53.4	Construction dominant noise source 51.8-65.4 dB(A) with peaks of 68.4 and 71.6 dB(A). Trucks at construction gate 103.7 - 52 dB(A). truck movements on the Pacific Highway 59.7-66.0 dB(A). Reversing alarms 50.0-62.0dB(A).
CPB	OOHW	6/09/2019	17:55	Trustums Hill Road (reciever #1673)	45	58	74.5	95.5	51.2	60	54.5	Principal noise source road traffic into RMS Depot adjacent works on site and vehicles leaving work or returning from work on Trustums hill road.
LLE	Monthly	2/09/2019	13:30	NMP03 (1202 Wardell Rd)(R242)	36	53	70.7	93.4	41.4	53.9	45	Main contributing source R2B. Excavator and some LV movements. Extraneous noise sources: Birds, Traffic on Wardell Rd. Reading was below modelled/approved noise scenario as detailed within the CCNVMP. Winds: W @ 3m/sec
LLE	Monthly	2/09/2019	13:48	NMP04 (1175 Wardell Rd)(R245)	36	46	68.2	87	34.8	48.1	37.1	Main contributing source R2B. Excavator and some LV movements. Extraneous noise sources: Birds, Traffic on Wardell Rd. Reading was below modelled/approved noise scenario as detailed within the CCNVMP. Winds: W @ 2.8m/sec
LLE	Monthly	2/09/2019	14:16	NMP06 (109 Meridian Drive)	41	50.1	60.5	80.5	43.9	51.8	47.5	Main contributing source R2B. Boral works on South bound on ramp. Extraneous noise sources: Birds, Traffic on Wardell Rd. Reading was below modelled/approved noise scenario as detailed within the CCNVMP. Winds: W @ 2.9m/sec
LLE	Monthly	2/09/2019	14:42	NMP08 (55 Whytes Lane West)	41	49.1	56.2	83.5	40.4	51.4	45.3	Pac Highway main contributing source. R2B not audible . Extraneous noise sources: Birds. Winds: W @ 1.8m/sec

Appendix B2 Blast Monitoring Results

Blast Monitoring - 1 April - 30 September 2019



Licensee: Laing O'Rourke Australia Construction Pty Ltd

Premises: Woolgoolga to Ballina Pacific Highway Upgrade Project, Harwood NSW 2465

Licence No: 20713

Contractor / Portion / Wave	Date of blast monitoring	Time	Location	MCoA B22 Criteria	Overpressure Reading (dB)L	Ground Vibration peak particle velocity (PPV) (mm/s)
				>12 months / > 20 blasts <12 months / <20 blasts Private Agreement	Note 1	Note 2
CPB Portion C	9/04/2019	0:00	Lang Hill	< 12 months	111.1	4.79
SWC / Portion A S3	6/06/2019	14:00	Cut 30 Blast 43 / Monitor 1	Private agreement	114.5	2.57mm
SWC / Portion A S3	6/06/2019	14:00	Cut 30 Blast 43 / Monitor 2	Private agreement	No trigger	No trigger
SWC / Portion A S3	6/06/2019	14:00	Cut 30 Blast 43 / Monitor 3	Private agreement	No trigger	No trigger
SWC / Portion A S3	6/06/2019	14:00	Cut 30 Blast 43 / Monitor 4	Private agreement	No trigger	No trigger
CPB Portion C	21/06/2019	13:00	Lang Hill	< 12 months	108.4	4.6
CPB Portion C	12/08/2019	11:30	Lang Hill	< 12 months	109.5	4.5
Note 1				Note 2		
Receiver	Type of Blasting Operations		Airblast Ovepressure Limit		Receiver	Airblast Ovepressure Limit
Sensitive Site	Blasting operations lasting more than 12 months or more than 20 blasts		115 dBL for 95% of blasts per year / 120 dBL maximum limit		Sensitive Site	5 mm/s for 95% of blasts per year. 10 mm/s maximum limit
Sensitive Site	Blasting operations lasting less than 12 months or less than 20 blasts		120 dBL for 95% of blasts per year / 125 dBL maximum limit		Sensitive Site	10 mm/s maximum limit
Occupied non-sensitive sites, such as factories and commerical premises	All Blasting		125 dBL maximum limit. For sites containing equipment sensitive to vibration, the vibration level should be kept below manufacturer's specifications or levels that can be shown to adversely affect the equipment operation.		Occupied non-sensitive sites, such as factories and commerical premises	25 mm/s maximum limit. For sites containing equipment sensitive to vibration, the vibration level should be kept below manufacturer's specifications or levels that can be shown to adversely affect the equipment operation.

Appendix B3 Air Quality Monitoring Results

Air Quality Monitoring - 1 April - 30 September 2019



Licensee: Laing O'Rourke Australia Construction Pty Ltd

Premises: Woolgoolga to Ballina Pacific Highway Upgrade Project, Harwood NSW 2465

Environment Protection Licence No: 20713

Air Monitoring for Solid Particles is conducted monthly - Units of measure: g/m2/month

Contractor	Location	Exposure Period - Date on / Date off (DD/MM/YY)	Sample Name	Sample Number	Sample Comments	Sampling Days	Sample Volume (L)	Target Total Suspended Solids (g/m2/month)	Total Suspended Solids (g/m2/month)	Laboratory Results			
										Ash (g/m2/month)	Combustible Matter (g/m2/month)	Soluble Matter (g/m2/month)	Grand Total Solids (g/m2/month)
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG2	1035/1	cloudy, org. matter	29	1.2	<4	4.3	2.2	2.1	2.2	6.5
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG3	1035/2	yellow, org. matter	29	0.8	<4	0.9	0.6	0.3	1.4	2.3
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG4	1035/3	org. matter	29	1.2	<4	0.5	0.0	0.5	0.9	1.5
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG5	1035/4	yellow, org. matter	29	0.9	<4	3.3	1.0	2.3	1.5	4.8
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG6	1035/5	yellow, org. matter	29	1.2	<4	2.5	0.1	2.4	1.3	3.8
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG7	1035/6	org. matter	29	1.2	<4	0.2	0.2	0.0	1.0	1.3
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG8	1035/7	org. matter	29	0.9	<4	0.1	0.2	0.1	1.2	1.5
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG9	1035/8	org. matter	29	1.2	<4	0.3	0.3	0.5	1.1	1.8
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG10	1035/9	org. matter	29	1.1	<4	0.6	0.2	0.4	1.2	1.8
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG11	1035/10	ants	29	1.2	<4	0.2	0.1	0.1	1.0	1.2
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG12	1035/11	.	29	0.0	<4	0.3	0.2	0.1	1.9	2.1
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG13	1035/12	yellow, org. matter	29	0.7	<4	0.6	0.1	0.5	1.4	2.1
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG14	1035/13	ants, org. matter	29	1.0	<4	0.9	0.3	0.5	1.2	2.0
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG15	1035/14	org. matter	29	0.9	<4	0.2	0.1	0.1	0.8	1.0
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG16	1035/15	org. matter	29	0.7	<4	0.2	0.2	0.1	0.7	1.0
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG17	1035/16	leaves, yellow	29	0.7	<4	0.6	0.4	0.2	1.2	1.7
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG18	1035/17	leaves, yellow	29	0.6	<4	1.5	1.1	0.5	1.7	3.2
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG19	1035/18	org. matter	29	0.4	<4	0.5	0.4	0.7	1.1	1.6
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG20	1035/19	leaf, org. matter	29	1.0	<4	0.3	0.2	0.1	1.3	1.6
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG21	1035/20	empty, 0.2L mili Q added	29	0.2	<4	0.1	0.2	0.0	2.1	2.3
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG22	1035/21	ants	29	1.0	<4	0.2	0.1	0.1	1.0	1.2
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG23	1035/22	org. matter	29	1.0	<4	0.2	0.1	0.0	1.0	1.2
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG24	1035/23	.	29	1.1	<4	0.3	-0.4	0.7	0.7	1.0
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG25	1035/24	brown, org. matter	29	0.7	<4	0.9	0.6	0.3	2.1	3.0
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG26	1035/25	limited volume	29	0.0	<4	0.4	0.3	0.1	1.7	2.1
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG27	1035/26	org. matter	29	1.0	<4	0.8	0.5	0.3	0.9	1.6
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG28	1035/27	.	29	1.2	<4	4.3	0.4	0.4	0.7	5.4
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG29	1035/28	org. matter	29	0.9	<4	0.4	0.4	0.1	1.5	1.9
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG30	1035/29	org. matter	29	0.8	<4	0.5	0.2	0.2	1.7	2.0
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG31	1035/30	org. matter	29	1.0	<4	0.5	0.4	0.3	1.3	2.0
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG32	1035/31	org. matter	29	1.2	<4	0.7	0.3	0.1	0.7	1.0
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG33	1035/32	org. matter	29	1.4	<4	0.4	0.9	0.5	1.6	3.1
SWC	Portion A S3	20/3/2019 - 18/4/2019	DDG34	1035/33	org. matter	29	1.2	<4	1.4	0.2	0.1	1.1	1.3
BGC	Portion A S4	21/3/2019 - 20/4/2019	DG02	Tyndale	.	30	1.000	<4	0.3	0.7	0.3	1.3	2.4
BGC	Portion A S4	21/3/2019 - 20/4/2019	DG03	Maloneys	cloudy, org. matter	30	1.000	<4	1.0	2.4	4.0	4.9	11.4
BGC	Portion A S4	21/3/2019 - 20/4/2019	DG04	Byrons Lane	brown, org. matter	30	1.080	<4	15.6	4.1	11.5	19.3	34.9
BGC	Portion A S4	21/3/2019 - 20/4/2019	DG05	Shark Creek	cloudy, org. matter	30	1.450	<4	7.1	4.8	2.3	4.1	11.2
BGC	Portion A S4	21/3/2019 - 20/4/2019	DG07	Clyde Essex Drive	brown, org. matter	30	1.420	<4	7.2	1.0	6.2	14.5	21.7
BGC	Portion A S4	21/3/2019 - 20/4/2019	DG1A	Schwonberg St	.	30	1.150	<4	0.5	0.2	0.2	1.5	2.0
BGC	Portion A S4	21/3/2019 - 20/4/2019	DG08	Causeways	.	30	1.430	<4	0.5	0.1	0.0	1.3	1.4
BGC	Portion A S4	21/3/2019 - 20/4/2019	DG09	BP Lane	.	30	1.360	<4	0.1	0.4	0.1	1.4	1.9
BGC	Portion A S4	21/3/2019 - 20/4/2019	DG10	visitor info Centre	.	30	1.420	<4	0.5	0.7	0.1	1.4	2.1
BGC	Portion A S4	21/3/2019 - 20/4/2019	DG11	Motel	.	30	1.400	<4	0.8	0.6	0.1	1.7	2.5
BGC	Portion A S4	21/3/2019 - 20/4/2019	DG12	M1 Norley - Byron	cloudy	30	1.230	<4	1.8	1.1	0.7	2.3	4.1
BGC	Portion A S4	21/3/2019 - 20/4/2019	DG13	Tyndale	.	30	1.000	<4	0.4	0.4	0.0	1.3	1.7
Pacific Complete	Portion B S5	20/03/2019 - 17/04/2019	BDG 5-03	Farlows Lane, Maclean	.	28	1.2	<4	0.6	0.0	0.6	1.5	2.1
Pacific Complete	Portion B S5	20/03/2019 - 17/04/2019	BDG 5-04	Fill 5.1 East, FarlowsFlat	.	28	1.0	<4	0.6	0.2	0.4	1.5	2.1
Pacific Complete	Portion B S5	20/03/2019 - 17/04/2019	BDG 5-05	Fill 5.4 East, Yamba Interchange	.	28	1.0	<4	2.0	1.3	0.7	9.7	11.7
Pacific Complete	Portion B S5	18/03/2019 - 17/04/2019	BDG 5-06	Watts Lane	.	30	1.4	<4	3.4	2.0	1.5	4.3	7.8
Pacific Complete	Portion B S5	18/03/2019 - 17/04/2019	BDG 5-08	Serpentine Channel North	.	30	1.5	<4	0.5	0.4	0.4	3.1	3.1
Pacific Complete	Portion B S5	18/03/2019 - 17/04/2019	BDG 5-09	Chatsworth South East	.	30	1.6	<4	0.9	0.1	2.5	3.5	6.0
Pacific Complete	Portion B S5	18/03/2019 - 17/04/2019	BDG 5-10	Chatsworth Village	.	30	1.4	<4	2.6	0.4	0.4	2.4	3.2
Pacific Complete	Portion B S5	18/03/2019 - 17/04/2019	BDG 5-11	Fischers Lane - Control Gauge	.	30	1.7	<4	0.8	0.2	0.3	3.1	3.6
Pacific Complete	Portion B S5	18/03/2019 - 17/04/2019	BDG 5-12	Fischers Lane	.	30	1.4	<4	0.5	0.2	0.5	2.6	3.2
Pacific Complete	Portion B S5	18/03/2019 - 17/04/2019	BDG 5-13	Mororo Bridge South West	.	30	1.4	<4	0.7	0.5	0.4	3.2	4.1
Pacific Complete	Portion B S5	18/03/2019 - 17/04/2019	BDG 5-14	Garretts Lane West	.	30	1.7	<4	0.4	0.2	0.2	3.1	3.4
Pacific Complete	Portion B S5	18/03/2019 - 17/04/2019	BDG 5-15	Garretts Lane North	.	30	1.4	<4	0.5	0.3	0.2	3.3	3.8
Pacific Complete	Portion B S5	18/03/2019 - 17/04/2019	BDG 5-16	Iuka Road Compound	.	30	1.4	<4	0.4	0.2	0.3	2.0	2.5
Pacific Complete	Portion B S5	18/03/2019 - 17/04/2019	BDG 5-17	Woombah Woods Caravan Park	.	30	1.6	<4	0.5	0.2	0.2	2.5	2.9
Pacific Complete	Portion B S5	18/03/2019 - 17/04/2019	BDG 5-18	Castles Stockpile Area	.	30	1.3	<4	0.5	0.2	0.2	1.5	2.0
BMD	Portion C S6	21/02/2019 - 21/03/2019	BDG15	Ellen Property	cloudy, org. matter	28	2.1	<4	0.8	0.4	0.8	7.3	12.9
BMD	Portion C S6	21/02/2019 - 21/03/2019	BDG16	McLaren Property	org. matter	28	0.2	<4	0.5	0.5	1.0	0.3	1.8
BMD	Portion C S6	21/02/2019 - 21/03/2019	BDG17	De-Winton Property / Control	org. matter	28	3.2	<4	0.8	0.1	0.5	4.2	4.7
BMD	Portion C S6	21/02/2019 - 21/03/2019	BDG18	Jacky Bulbin Road	org. matter	28	3.0	<4	1.5	0.8	0.7	4.1	5.6
BMD	Portion C S6	21/02/2019 - 21/03/2019	BDG19	Rainbow	cloudy, org. matter	28	3.2	<4	1.9	0.8	1.1	5.7	7.6
BMD	Portion C S6	21/02/2019 - 21/03/2019	BDG20	Devils Pulpit	org. matter	28	3.0	<4	1.0	0.7	0.4	4.1	5.2
CPB	Portion C S7, 8 & 9	30/03/2019-24/04/2019	BDG 7 Control	1061/1	beetles, org. matter	35	3.15	<4	1.4				
CPB	Portion C S7, 8 & 9	30/03/2019-24/04/2019	BDG 7-1	1061/2	ants, org. matter	35	2.4	<4	0.5				
CPB	Portion C S7, 8 & 9	30/03/2019-24/04/2019	BDG 7-2	1061/3	ants	35	2.92	<4	1.1				
CPB	Portion C S7, 8 & 9	30/03/2019-24/04/2019	BDG 7-3	1061/4	...	35	3.15	<4	1.0				
CPB	Portion C S7, 8 & 9	30/03/2019-24/04/2019	BDG 8-1	1061/5	...	35	2.87	<4	0.4				
CPB	Portion C S7, 8 & 9	30/03/2019-24/04/2019	BDG 8-2	1061/6	org. matter, #mb. On day of collection it was noted that slabs in the immediate area of the DGC had been #mb. Photo on file if required.	35	3.13	<4	2.0				
CPB	Portion C S7, 8 & 9	30/03/2019-24/04/2019	BDG 8-4	1061/7	org. matter	35	3.4	<4	0.8				
CPB	Portion C S7, 8 & 9	30/03/2019-24/04/2019	BDG 8-5	1061/8	org. matter	35	3	<4	1.1				
CPB	Portion C S7, 8 & 9	30/03/2019-24/04/2019	BDG 9-2	1061/9	...	35		<4					

Contractor	Location	Exposure Period - Date on / Date off (DD/MM/YY)	Sample Name	Sample Number	Sample Comments	Sampling Days	Sample Volume (L)	Target Total Suspended Solids (g/m2/month)	Total Suspended Solids (g/m2/month)	Laboratory Results			
										Ash (g/m2/month)	Combustible Matter (g/m2/month)	Soluble Matter (g/m2/month)	Grand Total Solids (g/m2/month)
COP	Portion D S10	30/03/2019 - 24/04/2019	DDG 9-3	11061/10	...	35	2.95	<4	0.6				
		22/02/2019 - 22/03/2019	DDG 10-03	1	org. matter	28	1.49	<4	0.5	0.1	0.4	3.6	4.0
		22/02/2019 - 22/03/2019	DDG 10-04	2	org. matter	28	1.83	<4	0.6	0.3	0.4	3.0	3.7
		22/02/2019 - 22/03/2019	DDG 10-05	3	org. matter	28	2.51	<4	1.7	0.0	1.7	1.4	3.1
		22/02/2019 - 22/03/2019	DDG 10-06	4	org. matter, yellow	28	3.5	<4	2.3	1.0	1.3	1.5	3.8
		22/02/2019 - 22/03/2019	DDG 10-07	5	org. matter, cloudy	28	3.2	<4	1.0	0.0	1.0	3.3	4.3
		22/02/2019 - 22/03/2019	DDG 10-08	6	org. matter	28	3.4	<4	1.0	0.0	1.0	4.1	5.1
		22/02/2019 - 22/03/2019	DDG 10-09	7	org. matter	28	3.1	<4	1.4	0.5	0.9	4.1	5.4
		22/02/2019 - 22/03/2019	DDG 10-10	8	org. matter	28	3.2	<4	1.1	0.0	1.1	3.6	4.6
		22/02/2019 - 22/03/2019	DDG 10-11	9	org. matter	28	2.9	<4	1.0	0.3	0.6	4.1	5.1
		22/02/2019 - 22/03/2019	DDG 10-12	10	org. matter	28	3.3	<4	1.1	0.1	1.0	4.4	5.5
		22/02/2019 - 22/03/2019	DDG 11-01	11	org. matter	28	2.5	<4	0.8	0.3	0.5	4.2	4.9
		22/02/2019 - 22/03/2019	DDG 11-02	12	org. matter, cloudy	28	2.5	<4	26.4	21.4	4.1	6.3	31.7
		22/02/2019 - 22/03/2019	DDG 11-03	13	org. matter, yellow	28	1.8	<4	1.0	0.8	0.1	3.9	4.9
		22/02/2019 - 22/03/2019	DDG 11-04	14 - Control	cloudy, insects	28	1.7	<4	2.7	0.9	1.8	9.9	12.5
Quickway	Portion D S10	18/03/2019 - 17/04/2019	DDG 10-13	10994/1	Bulk of earthworks completed, construction area generally stable. Pollen in sample. 200 mm of water in sample bottle. Below average rainfall during sample period.	30	3.150	<4	1.6	0.7	0.9	3.8	5.4
Quickway	Portion D S10	18/03/2019 - 17/04/2019	DDG -10-14	10994/2	Bulk of earthworks completed, construction area generally stable. Insects present in sample. Approx. 200 mm of water in sample bottle. Below average rainfall during sample period.	30	2.420	<4	1.0	0.2	0.8	3.8	4.9
Quickway	Portion D S10	18/03/2019 - 17/04/2019	DDG -10-15	10994/3	Bulk of earthworks completed, construction area generally stable. Approx. 200 mm of water in sample bottle. Below average rainfall during sample period.	30	2.770	<4	0.4	0.3	0.2	4.2	4.6
Quickway	Portion D S10	18/03/2019 - 17/04/2019	DDG -10-16	0994/4	Bulk of earthworks completed, construction area generally stable. Approx. 250 mm of water in sample bottle. Below average rainfall during sample period.	30	2.550	<4	0.9	0.5	0.3	3.3	4.2
AFHJV	Portion E	12/03/2019 - 11/04/2019	DDG1	0905/1	org. matter, cloudy	30	1.560	<4	1.1	0.7	0.4	1.9	3.1
AFHJV	Portion E	12/03/2019 - 11/04/2019	DDG2	0905/2	org. matter	30	1.640	<4	1.3	1.1	0.3	1.7	3.0
AFHJV	Portion E	12/03/2019 - 11/04/2019	DDG3	0905/3	org. matter, brown	30	1.520	<4	13.8	4.7	9.0	13.3	27.0
AFHJV	Portion E	12/03/2019 - 11/04/2019	DDG4	0905/4	org. matter	30	1.700	<4	1.2	1.1	0.0	1.7	2.8
AFHJV	Portion E	12/03/2019 - 11/04/2019	DDG5	0905/5	org. matter	30	1.620	<4	1.2	0.9	0.3	1.8	2.9
LendLease	Portion F RRB	22/02/2019 - 22/03/2019	DDG 10 - 02	RRB - S	org. matter	28	1.330	<4	0.6	0.3	0.3	3.2	3.8
LendLease	Portion F RRB	22/02/2019 - 22/03/2019	DDG 10 - 03	RRB - N	org. matter	28	1.490	<4	0.5	0.1	0.4	3.6	4.0
LendLease	Portion F RRB	22/02/2019 - 22/03/2019	DDG 10 - 01	RRB - C	org. matter	28	1.580	<4	0.4	0.0	0.4	2.1	2.5
Georgiou	Portion G P2T3	6/03/2019 - 08/04/2019	DDG 11 - 05	DDG 11 - 05 - Control	org. matter	33	2.670	<4	0.7	0.2	0.5	2.6	3.3
Georgiou	Portion G P2T3	6/03/2019 - 08/04/2019	DDG 11 - 06	DDG 11 - 06 - 5th	insects	33	2.660	<4	1.0	0.3	0.7	2.5	3.4
Georgiou	Portion G P2T3	6/03/2019 - 08/04/2019	DDG 11 - 07	DDG 11 - 07 - Nth	insects	33	1.840	<4	0.5	0.0	0.5	2.0	2.5
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG2	1952/1	Organic matter	29	1.3	<4	0.8	0.3	0.5	1.1	1.9
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG3	1952/2	Yellow/ organic matter	29	0.7	<4	1.2	0.2	1.0	1.3	2.5
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG4	1952/3	Organic matter	29	1.4	<4	1.5	0.2	1.3	2.0	3.5
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG5	1952/4	Brown/ organic matter	29	0.8	<4	1.2	0.2	1.0	1.6	2.8
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG6	1952/5	Organic matter	29	1.1	<4	0.8	0.0	0.8	0.9	1.7
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG7	1952/6	Organic matter	29	1.0	<4	0.3	0.1	0.2	0.7	0.9
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG8	1952/7	Cloudy/ organic matter	29	0.7	<4	1.5	0.1	1.5	2.0	3.5
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG9	1952/8	Organic matter	29	1.1	<4	0.6	0.1	0.5	1.1	1.7
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG10	1952/9	Organic matter	29	1.0	<4	0.6	0.1	0.5	1.0	1.6
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG11	1952/10	Organic matter	29	1.1	<4	0.4	0.1	0.3	0.9	1.3
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG12	1952/11	Organic matter	29	0.1	<4	0.0	0.1	0.0	2.2	2.2
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG13	1952/12	Yellow/ organic matter	29	0.9	<4	1.2	0.1	1.1	1.8	3.0
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG14	1952/13	Organic matter	29	1.2	<4	0.5	0.2	0.3	1.1	1.6
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG15	1952/14	Organic matter	29	1.3	<4	0.4	0.1	0.3	1.0	1.5
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG16	1952/15	Organic matter	29	0.9	<4	0.5	0.1	0.4	0.9	1.4
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG17	1952/16	Organic matter	29	0.9	<4	0.9	0.4	0.6	1.1	2.1
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG18	1952/17	Organic matter	29	0.9	<4	1.0	0.4	0.7	2.1	3.2
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG19	1952/18	Organic matter	29	0.9	<4	0.6	0.0	0.6	1.2	1.8
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG20	1952/19	Organic matter	29	1.2	<4	0.5	0.2	0.4	1.2	1.7
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG21	1952/20	Organic matter	29	0.2	<4	0.2	0.1	0.2	2.4	2.6
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG22	1952/21	Organic matter	29	1.6	<4	0.8	0.5	1.5	1.5	2.3
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG23	1952/22	Organic matter	29	1.5	<4	0.6	0.2	0.4	1.3	1.9
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG24	1952/23	Organic matter	29	1.4	<4	0.7	0.3	0.4	1.1	1.8
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG25	1952/24	Brown/ organic matter	29	1.3	<4	1.7	0.5	1.3	1.9	3.6
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG26	1952/25	Organic matter	29	1.5	<4	0.2	0.1	0.1	2.8	2.9
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG27	1952/26	Organic matter	29	1.2	<4	0.4	0.1	0.4	0.8	1.3
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG28	1952/27	Organic matter	29	1.3	<4	2.6	2.1	0.5	1.2	3.8
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG29	1952/28	Organic matter	29	1.2	<4	1.3	0.6	0.7	1.9	3.2
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG30	1952/29	Organic matter	29	0.9	<4	0.7	0.3	0.4	1.1	1.9
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG31	1952/30	Organic matter	29	1.2	<4	1.0	0.4	0.5	1.4	2.4
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG32	1952/31	Organic matter	29	1.3	<4	0.4	0.1	0.3	0.9	1.3
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG33	1952/32	Cloudy/ organic matter	29	1.2	<4	1.6	1.6	0.6	2.3	3.9
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG34	1952/33	Organic matter	29	1.0	<4	0.3	0.1	0.2	0.9	1.2

Contractor	Location	Exposure Period - Date of Date off (DD/MM/YY)	Sample Name	Sample Number	Sample Comments	Sampling Days	Sample Volume (L)	Target Total Suspended Solids (g/m2/month)	Total Suspended Solids (g/m2/month)	Laboratory Results			
										Ash (g/m2/month)	Combustible Matter (g/m2/month)	Soluble Matter (g/m2/month)	Grand Total Solids (g/m2/month)
BGC	Portion A S4	17/04/2019 - 2 1/05/2019	Tyndale	DG02	org. matter	34	1.5	<4	0.5	0.3	0.2	1.1	1.5
BGC	Portion A S4	17/04/2019 - 2 1/05/2019	Maloneys	DG03	org. matter	34	1.5	<4	1.3	0.8	0.5	1.7	3.0
BGC	Portion A S4	17/04/2019 - 2 1/05/2019	Byrons Lane	DG04	cloudy, org. matter	34	1.4	<4	4.1	2.3	1.8	2.6	6.7
BGC	Portion A S4	17/04/2019 - 2 1/05/2019	Shark Creek	DG05	cloudy, org. matter	34	1.6	<4	1.6	0.9	0.7	3.3	4.9
BGC	Portion A S4	17/04/2019 - 2 1/05/2019	Clyde Essex Drive	DG07	yellow, org. matter	34	1.8	<4	1.5	0.8	0.7	15.7	17.2
BGC	Portion A S4	17/04/2019 - 2 1/05/2019	Schwonberg St	DG1A	org. matter	34	1.0	<4	0.3	0.1	0.2	0.7	1.0
BGC	Portion A S4	17/04/2019 - 2 1/05/2019	Castles	DG08	org. matter	34	1.3	<4	0.3	0.1	0.1	0.8	1.1
BGC	Portion A S4	17/04/2019 - 2 1/05/2019	BP Lane	DG09	yellow, org. matter	34	1.6	<4	1.5	0.8	0.8	1.9	3.5
BGC	Portion A S4	17/04/2019 - 2 1/05/2019	Visitor Info Centre	DG10	cloudy, org. matter	34	1.3	<4	1.0	0.6	0.6	2.4	3.5
BGC	Portion A S4	17/04/2019 - 2 1/05/2019	Motel	DG11	cloudy, org. matter	34	1.4	<4	1.6	1.1	0.5	3.1	4.8
BGC	Portion A S4	17/04/2019 - 2 1/05/2019	M1 Norley - Byron	DG12	org. matter	34	1.5	<4	0.2	0.1	0.1	1.0	1.2
BGC	Portion A S4	17/04/2019 - 2 1/05/2019	Tyndale	DG13	org. matter	34	1.3	<4	0.4	0.3	0.2	1.0	1.4
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Farlows Lane, Maclean	DDG 5-03	Organic matter	30	1.5	<4	0.5	0.2	0.3	1.5	2.0
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Fill 5.1 East, FarlowsFlat	DDG 5-04	Organic matter	30	1.4	<4	0.4	0.1	0.3	1.4	1.8
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Fill 5.4 East, Yamba Interchange	DDG 5-05	Cloudy/ organic matter	30	0.3	<4	0.6	0.3	0.3	2.3	2.9
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Watts Lane	DDG 5-06	Organic matter	30	1.0	<4	1.1	0.6	0.4	1.4	2.4
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Serpentine Channel North	DDG 5-08	Organic matter	30	1.4	<4	0.8	0.3	0.5	1.7	2.5
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Chatsworth South East	DDG 5-09	Organic matter	30	1.1	<4	0.7	0.1	0.5	1.6	2.3
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Chatsworth Village	DDG 5-10	Organic matter	30	1.0	<4	0.6	0.1	0.5	1.6	2.2
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Fischers Lane - Control Gauge	DDG 5-11	Organic matter	30	1.0	<4	0.4	0.1	0.3	1.3	1.6
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Fischers Lane	DDG 5-12	Organic matter	30	1.0	<4	0.6	0.1	0.4	0.0	0.6
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Morroo Bridge South West	DDG 5-13	Organic matter	30	1.1	<4	0.7	0.2	0.5	1.9	2.6
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Garretts Lane West	DDG 5-14	Organic matter	30	1.3	<4	0.6	0.1	0.5	2.0	2.5
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Garretts Lane North	DDG 5-15	Cloudy/ organic matter	30	1.0	<4	1.2	0.1	1.1	1.3	2.4
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Iluka Road Compound	DDG 5-16	Organic matter	30	1.3	<4	0.3	0.1	0.3	0.0	0.3
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Woombah Woods Caravan Park	DDG 5-17	Organic matter	30	1.4	<4	1.3	0.3	1.0	2.6	3.9
Pacific Complete	Portion B S5	17/04/2019 - 17/05/2019	Castles Stockpile Area	DDG 5-18	Brown/ organic matter	30	1.1	<4	3.4	0.6	2.8	30.3	33.7
Golding	Portion B S5	22/03/2019 - 22/04/2019	Palm Lane	DDG5-07		31	0.1	<4	0.6	0.3	0.2	-0.1	0.5
BMD	Portion C S6	21/03/2019 - 18/04/2019	Ellem Property	DDG15	org. matter	28	1.5	<4	0.6	0.3	0.2	2.7	3.3
BMD	Portion C S6	21/03/2019 - 18/04/2019	McLaren Property	DDG16		28	1.5	<4	0.7	0.7	0.0	2.2	2.9
BMD	Portion C S6	21/03/2019 - 18/04/2019	De-Winton Property	DDG17 Control		28	1.8	<4	0.3	0.3	0.0	2.0	2.3
BMD	Portion C S6	21/03/2019 - 18/04/2019	Jacky Bulbin Road	DDG18		28	1.8	<4	1.1	0.7	0.4	2.2	3.3
BMD	Portion C S6	21/03/2019 - 18/04/2019	Rainbow	DDG19	org. matter	28	1.7	<4	1.6	0.9	0.7	2.2	3.8
BMD	Portion C S6	21/03/2019 - 18/04/2019	Devils Pulpit	DDG20		28	1.2	<4	0.5	0.4	0.1	1.8	2.3
LendLease	Portion D S10	22/03/2019 - 18/04/2019	DDG 10-03	1	org. matter	28	2.6	<4	0.9	0.3	0.7	3.1	4.0
LendLease	Portion D S10	22/03/2019 - 18/04/2019	DDG 10-04	2	org. matter	28	2.9	<4	1.7	0.8	0.9	3.1	4.8
LendLease	Portion D S10	22/03/2019 - 18/04/2019	DDG 10-05	3	org. matter	28	2.6	<4	1.0	0.3	0.7	2.6	3.6
LendLease	Portion D S10	22/03/2019 - 18/04/2019	DDG 10-06	4	org. matter	28	2.8	<4	1.2	0.2	0.9	3.4	4.6
LendLease	Portion D S10	22/03/2019 - 18/04/2019	DDG 10-07	5	cloudy, org. matter	28	3.0	<4	2.6	0.2	2.4	5.1	7.6
LendLease	Portion D S10	22/03/2019 - 18/04/2019	DDG 10-08	6	brown, org. matter	28	2.5	<4	6.4	0.0	6.4	11.5	17.9
LendLease	Portion D S10	22/03/2019 - 18/04/2019	DDG 10-09	7	org. matter	28	2.5	<4	1.2	0.3	0.9	3.3	4.5
LendLease	Portion D S10	22/03/2019 - 18/04/2019	DDG 10-10	8	org. matter	28	2.430	<4	0.6	0.0	0.6	3.1	3.7
LendLease	Portion D S10	22/03/2019 - 18/04/2019	DDG 10-11	9	brown, org. matter	28	3.180	<4	7.0	0.0	7.0	5.5	12.5
LendLease	Portion D S10	22/03/2019 - 18/04/2019	DDG 10-12	10	org. matter	28	2.770	<4	0.8	0.0	0.7	3.2	4.0
LendLease	Portion D S11	22/03/2019 - 18/04/2019	DDG 11-01	11	org. matter	28	3.150	<4	1.3	0.2	1.1	4.2	5.6
LendLease	Portion D S11	22/03/2019 - 18/04/2019	DDG 11-02	12	org. matter	28	2.980	<4	5.2	0.8	1.4	3.9	9.0
LendLease	Portion D S11	22/03/2019 - 18/04/2019	DDG 11-03	13	org. matter	28	3.100	<4	0.8	0.0	0.8	4.4	5.2
LendLease	Portion D S11	22/03/2019 - 18/04/2019	DDG 11-04	14 - Control	insects, org. matter	28	3.130	<4	1.9	0.2	1.7	5.8	7.7
Quickway	Portion D S10	17/04/2019 - 17/05/2019	DDG 10-13	1860/1	Bulk of earthworks completed, construction area generally stable. Insects in sample. 60 mm of water in sample bottle. Below average rainfall during sample period.	30	1.220	<4	1.0	0.5	0.5	1.7	2.7
Quickway	Portion D S10	17/04/2019 - 17/05/2019	DDG -10-14	1860/2	Bulk of earthworks completed, construction area generally stable. Insects and spider webs in sample. Approx. 30 mm of water in sample bottle. Below average rainfall during sample period.	30	1.000	<4	0.6	0.3	0.4	2.3	2.9
Quickway	Portion D S10	17/04/2019 - 17/05/2019	DDG -10-15	1860/3	Bulk of earthworks completed, construction area generally stable. Insects in sample, spider webs in funnel. Approx. 90 mm of water in sample bottle. Below average rainfall during sample period.	30	1.750	<4	0.7	0.3	0.4	2.5	3.2

										Laboratory Results			
Contractor	Location	Exposure Period - Date on / Date off (DD/MM/YY)	Sample Name	Sample Number	Sample Comments	Sampling Days	Sample Volume (L)	Target Total Suspended Solids (g/m2/month)	Total Suspended Solids (g/m2/month)	Ash (g/m2/month)	Combustible Matter (g/m2/month)	Soluble Matter (g/m2/month)	Grand Total Solids (g/m2/month)
Quickway	Portion D S10	17/04/2019 - 17/05/2019	DDG -10-16	1860/4	Bulk of earthworks completed, construction area generally stable. Insects in sample. Approx. 90 mm of water in sample bottle. Below average rainfall during sample period.	30	1.920	<4	0.4	0.3	0.2	2.0	2.5
AFHJV	Portion E	12/03/2019 - 11/04/2019	DDG1		organic matter	29	1.1	<4	1.0	0.3	0.7	1.2	2.2
AFHJV	Portion E	12/03/2019 - 11/04/2019	DDG2		organic matter	29	14	<4	0.8	0.4	0.4	1.0	1.8
AFHJV	Portion E	12/03/2019 - 11/04/2019	DDG3		organic matter	29	0.92	<4	3.8	3.4	0.3	1.1	4.8
AFHJV	Portion E	12/03/2019 - 11/04/2019	DDG4		organic matter	29	1.21	<4	0.8	0.4	0.4	1.2	2.0
AFHJV	Portion E	12/03/2019 - 11/04/2019	DDG5		cloudy organic matter	29	1.16	<4	1.7	0.2	1.6	1.1	2.8
LendLease	Portion F RRB	22/03/2019 - 22/04/2019	DDG 10 - 02	RRB - S	org. matter	28	2.450	<4	1.0	0.3	0.6	2.2	3.2
LendLease	Portion F RRB	22/03/2019 - 22/04/2019	DDG 10 - 03	RRB - N	org. matter	28	2.600	<4	0.9	0.3	0.7	3.1	4.0
LendLease	Portion F RRB	22/03/2019 - 22/04/2019	DDG 10 - 01	RRB - C	cloudy, org. matter	28	2.790	<4	2.1	0.3	1.8	4.9	7.0
Georgiou	Portion G P2T3	8/04/2019 - 06/05/2019	DDG 11 - 05	DDG 11 - 05 - Control	org. matter	28	1.780	<4	0.2	0.1	0.1	2.0	2.2
Georgiou	Portion G P2T3	8/04/2019 - 06/05/2019	DDG 11 - 06	DDG 11 - 06 - 5th	org. matter	28	1.580	<4	0.7	0.3	0.4	1.8	2.5
Georgiou	Portion G P2T3	8/04/2019 - 06/05/2019	DDG 11 - 07	DDG 11 - 07 - Nth	org. matter	28	1.300	<4	0.2	0.1	0.1	1.6	1.8
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG2	12926/1	org. matter	31	0.5	<4	0.6	0.2	0.4	0.4	1.0
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG3	12926/3	yellow, org. matter	31	0.3	<4	1.8	0.5	1.4	0.3	2.1
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG4	12926/3	org. matter	31	0.5	<4	0.6	0.2	0.3	0.5	1.1
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG5	12926/4	yellow, org. matter	31	0.4	<4	1.2	0.3	0.9	0.4	1.6
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG6	12926/5	yellow, org. matter	31	0.5	<4	0.5	0.2	0.2	0.4	0.9
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG7	12926/6	cloudy, org. matter	31	0.6	<4	2.6	0.7	1.9	6.1	8.7
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG8	12926/7	org. matter	31	0.3	<4	0.7	0.1	0.6	0.3	0.9
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG9	12926/8	org. matter	31	0.6	<4	0.9	0.1	0.7	0.4	1.3
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG10	12926/9	org. matter	31	0.6	<4	0.8	0.2	0.5	0.3	1.0
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG11	12926/10	org. matter	31	0.7	<4	0.4	0.1	0.3	0.3	0.7
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG12	12926/11	org. matter	31	0.1	<4	0.2	0.0	0.2	0.0	0.2
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG13	12926/12	yellow, org. matter	31	0.3	<4	1.1	0.4	0.7	0.4	1.6
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG14	12926/13	org. matter	31	0.5	<4	0.5	0.2	0.3	0.2	0.7
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG15	12926/14	org. matter	31	0.3	<4	0.4	0.1	0.3	0.0	0.4
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG16	12926/15	org. matter	31	0.3	<4	0.5	0.1	0.4	0.1	0.6
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG17	12926/16	yellow, org. matter	31	0.3	<4	0.9	0.3	0.6	0.0	0.9
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG18	12926/17	cloudy, org. matter	31	0.4	<4	0.7	0.3	0.4	1.4	2.2
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG19	12926/18	org. matter	31	0.1	<4	0.6	0.3	0.3	0.0	0.6
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG20	12926/19	org. matter	31	0.5	<4	0.5	0.1	0.5	0.4	1.0
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG21	12926/20	dry, 0.2L milli Q added	31	0.2	<4	0.4	0.1	0.2	0.0	0.4
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG22	12926/21	org. matter	31	0.4	<4	0.4	0.1	0.3	0.1	0.6
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG23	12926/22	org. matter	31	0.5	<4	0.5	0.1	0.4	0.0	0.5
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG24	12926/23	org. matter	31	0.2	<4	0.6	0.3	0.3	0.0	0.6
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG25	12926/24	yellow, org. matter	31	0.2	<4	0.7	0.2	0.5	0.1	0.9
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG26	12926/25	org. matter	31	0.3	<4	0.4	0.2	0.2	0.0	0.4
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG27	12926/26	org. matter	31	0.3	<4	0.4	0.2	0.2	0.0	0.4
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG28	12926/27	org. matter	31	0.3	<4	0.7	0.5	0.2	0.0	0.7
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG29	12926/28	cloudy, org. matter	31	0.4	<4	1.0	0.4	0.6	0.8	1.9
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG30	12926/29	brown, org. matter	31	0.1	<4	1.6	0.8	0.7	0.0	1.6
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG31	12926/30	org. matter	31	0.5	<4	0.3	0.2	0.2	0.0	0.3
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG32	12926/31	org. matter	31	0.3	<4	0.4	0.2	0.2	0.1	0.5
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG33	12926/32	cloudy, org. matter	31	0.8	<4	4.0	1.6	2.4	2.3	6.3
SWC	Portion A S3	18/04/2019 - 17/05/2019	DDG34	12926/33	org. matter	31	0.6	<4	0.3	0.2	0.2	0.3	0.6
BGC	Portion A S4	21/05/2019 - 21/06/2019	DG02	Tyndale	cloudy, org. matter	31	0.450	<4	0.96	0.6	0.4	0.0	1.0
BGC	Portion A S4	21/05/2019 - 21/06/2019	DG03	Maloneys	brown, org. matter	31	0.350	<4	7.54	1.7	5.9	12.0	19.6
BGC	Portion A S4	21/05/2019 - 21/06/2019	DG04	Byrons Lane	org. matter	31	0.400	<4	0.47	0.4	0.1	0.2	0.7
BGC	Portion A S4	21/05/2019 - 21/06/2019	DG05	Shark Creek	cloudy, org. matter	31	0.600	<4	2.50	1.4	1.1	1.1	3.6
BGC	Portion A S4	21/05/2019 - 21/06/2019	DG07	Clyde Essex Drive	yellow, org. matter	31	0.700	<4	2.15	0.5	1.7	11.7	13.8
BGC	Portion A S4	21/05/2019 - 21/06/2019	DG1A	Schwonberg St	org. matter	31	0.590	<4	0.25	0.1	0.1	0.4	0.6
BGC	Portion A S4	21/05/2019 - 21/06/2019	DG08	Causleys	brown, org. matter	31	0.800	<4	4.38	0.7	3.7	1.8	6.1
BGC	Portion A S4	21/05/2019 - 21/06/2019	DG09	BP Lane	org. matter	31	0.700	<4	0.99	0.7	0.3	0.4	1.4
BGC	Portion A S4	21/05/2019 - 21/06/2019	DG10	Visitor Info Centre	org. matter	31	0.620	<4	0.53	0.0	0.5	0.3	0.9
BGC	Portion A S4	21/05/2019 - 21/06/2019	DG11	Motel	cloudy, org. matter	31	1.000	<4	2.57	1.3	1.3	1.5	4.1
BGC	Portion A S4	21/05/2019 - 21/06/2019	DG12	M1 Norley - Byron	org. matter	31	0.520	<4	0.34	0.2	0.2	0.4	0.7
BGC	Portion A S4	21/05/2019 - 21/06/2019	DG13	Tyndale	cloudy, org. matter	31	0.450	<4	1.54	0.7	0.9	0.7	2.3
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-03	Farlows Lane, Maclean	org. matter	32	0.470	<4	0.39	0.2	0.2	0.3	0.7
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-04	Hill 5.1 East, FarlowsFlat	org. matter	32	0.400	<4	0.37	0.1	0.3	0.2	0.6
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-05	Hill 5.4 East, Yamba Interchange	dry, 0.2L milli Q added	32	0.200	<4	0.68	0.3	0.4	0.0	0.6
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-06	Watts Lane	org. matter	32	0.270	<4	1.83	1.4	0.4	0.2	2.0
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-08	Serpentine Channel North	org. matter	32	0.500	<4	0.68	0.2	0.5	0.4	1.1
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-09	Chatsworth South East	org. matter	32	0.400	<4	0.45	0.1	0.3	0.3	0.7
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-10	Chatsworth Village	org. matter	32	0.460	<4	0.73	0.3	0.4	0.0	0.7
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-11	Fischers Lane - Control Gauge	cloudy, org. matter	32	0.470	<4	0.9	0.5	0.7	0.0	2.1
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-12	Fischers Lane	cloudy, org. matter	32	0.400	<4	1.08	0.4	0.7	0.7	1.7
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-13	Mororo Bridge South West	org. matter	32	0.410	<4	0.77	0.3	0.4	0.8	1.5
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-14	Garretts Lane West	org. matter	32	0.530	<4	0.51	0.1	0.4	0.7	1.2
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-15	Garretts Lane North	org. matter	32	0.240	<4	0.59	0.3	0.3	0.1	0.7
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-16	Luka Road Compound	org. matter	32	0.450	<4	0.45	0.2	0.2	0.0	0.5
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-17	Woombah Woods Caravan Park	org. matter	32	0.570	<4	0.70	0.3	0.4	0.5	1.2
Pacific Complete	Portion B S5	17/05/2019 - 18/06/2019	DDG 5-18	Castles Stockpile Area	brown, org. matter	32	0.500	<4	4.56	1.0	3.6	1.2	5.8

Contractor	Location	Exposure Period - Date on / Date off (DD/MM/Y)	Sample Name	Sample Number	Sample Comments	Sampling Days	Sample Volume (L)	Target Total Suspended Solids (g/m2/month)	Total Suspended Solids (g/m2/month)	Laboratory Results			
										Ash (g/m2/month)	Combustible Matter (g/m2/month)	Soluble Matter (g/m2/month)	Grand Total Solids (g/m2/month)
Golding	Portion B S5	22/04/2019 - 22/05/2019	DDG5-07	Palm Lane 1		31	0.250	<4	0.60	0.3	0.3	0.0	0.6
BMD	Portion C S6	18/04/2019 - 22/05/2019	DDG15	Ellem Property	Cloudy, org. matter	34	1.000	<4	1.60	0.9	0.7	1.9	3.5
BMD	Portion C S6	18/04/2019 - 22/05/2019	DDG16	McLaren Property	org. matter	34	1.115	<4	0.40	0.3	0.1	1.1	1.5
BMD	Portion C S6	18/04/2019 - 22/05/2019	DDG17	De-Winton Property / Control	org. matter	34	1.620	<4	0.20	0.1	0.0	0.1	0.3
BMD	Portion C S6	18/04/2019 - 22/05/2019	DDG18	Jacky Bulbin Road	Cloudy, org. matter	34	1.380	<4	1.50	0.7	0.8	2.1	3.6
BMD	Portion C S6	18/04/2019 - 22/05/2019	DDG19	Rainbow	org. matter	34	1.000	<4	0.60	0.3	0.3	1.0	1.6
BMD	Portion C S6	18/04/2019 - 22/05/2019	DDG20	Devils Pulpit	org. matter	34	0.630	<4	0.50	0.3	0.2	1.0	1.4
CPB	Portion C S7, 8 & 9	24/04/2019 - 23/05/2019	DDG 7	2030/1 / Control	org. matter	29	0.580	<4	0.29				
CPB	Portion C S7, 8 & 9	24/04/2019 - 23/05/2019	DDG 7-1	2030/2	org. matter	29	0.710	<4	0.23				
CPB	Portion C S7, 8 & 9	24/04/2019 - 23/05/2019	DDG 7-2	2030/3	org. matter	29	0.520	<4	1.03				
CPB	Portion C S7, 8 & 9	24/04/2019 - 23/05/2019	DDG 7-3	2030/4	org. matter, insects	29	0.480	<4	0.60				
CPB	Portion C S7, 8 & 9	24/04/2019 - 23/05/2019	DDG 8-1	2030/5	org. matter	29	0.740	<4	0.74				
CPB	Portion C S7, 8 & 9	24/04/2019 - 23/05/2019	DDG 8-2	2030/6	org. matter	29	0.660	<4	0.73				
CPB	Portion C S7, 8 & 9	24/04/2019 - 23/05/2019	DDG 8-4	2030/7	org. matter	29	0.690	<4	0.43				
CPB	Portion C S7, 8 & 9	24/04/2019 - 23/05/2019	DDG 8-5	2030/8	org. matter	29	0.740	<4	0.73				
CPB	Portion C S7, 8 & 9	24/04/2019 - 23/05/2019	DDG 9-2	2030/9	org. matter	29	0.790	<4	0.69				
CPB	Portion C S7, 8 & 9	24/04/2019 - 23/05/2019	DDG 9-3	2030/10	org. matter	29	0.780	<4	0.42				
LendLease	Portion D S10	18/04/2019 - 22/05/2019	DDG 10-03	1	org. matter	32	0.980	<4	0.14	0.1	0.0	1.3	1.4
LendLease	Portion D S10	18/04/2019 - 22/05/2019	DDG 10-04	2	org. matter	32	1.100	<4	0.14	0.1	0.0	1.2	1.3
LendLease	Portion D S10	18/04/2019 - 22/05/2019	DDG 10-05	3	org. matter	32	1.230	<4	1.17	0.9	0.3	1.2	2.4
LendLease	Portion D S10	18/04/2019 - 22/05/2019	DDG 10-06	4	org. matter	32	1.200	<4	0.78	0.4	0.3	1.1	1.9
LendLease	Portion D S10	18/04/2019 - 22/05/2019	DDG 10-07	5	brown/org. matter	32	1.100	<4	2.51	1.1	1.5	3.8	6.3
LendLease	Portion D S10	18/04/2019 - 22/05/2019	DDG 10-08	6	org. matter	32	1.490	<4	0.40	0.1	0.3	1.4	1.8
LendLease	Portion D S10	18/04/2019 - 22/05/2019	DDG 10-09	7	brown/org. matter	32	1.420	<4	9.49	2.9	6.6	28.8	38.3
LendLease	Portion D S10	18/04/2019 - 22/05/2019	DDG 10-10	8	.	32	1.800	<4	0.34	0.2	0.2	1.6	2.0
LendLease	Portion D S10	18/04/2019 - 22/05/2019	DDG 10-11	9	org. matter	32	1.640	<4	1.18	0.9	0.3	1.8	2.9
LendLease	Portion D S10	18/04/2019 - 22/05/2019	DDG 10-12	10	org. matter	32	1.850	<4	0.47	0.2	0.3	1.6	2.0
Quickway	Portion D S10	17/05/2019 - 18/06/2019	DDG 10-13	2969/1		32	1.690	<4	2.54	1.6	0.9	1.4	3.9
Quickway	Portion D S10	17/05/2019 - 18/06/2019	DDG -10-14	2969/2		32	2.100	<4	0.74	0.2	0.5	1.4	2.2
Quickway	Portion D S10	17/05/2019 - 18/06/2019	DDG -10-15	2969/3		32	2.320	<4	0.66	0.1	0.6	1.6	2.2
Quickway	Portion D S10	17/05/2019 - 18/06/2019	DDG -10-16	2969/4		32	2.190	<4	0.86	0.4	0.4	1.4	2.3
LendLease	Portion D S11	18/04/2019-22/05/2019	DDG 11-01	11	cloudy/org. matter	32	1.580	<4	2.26	1.0	1.3	6.2	8.4
LendLease	Portion D S11	18/04/2019-22/05/2019	DDG 11-02	12	org. matter	32	1.380	<4	1.39	1.3	0.1	1.5	2.9
LendLease	Portion D S11	18/04/2019-22/05/2019	DDG 11-03	13	org. matter	32	1.550	<4	0.46	0.4	0.0	1.7	2.2
LendLease	Portion D S11	18/04/2019-22/05/2019	DDG 11-04	14 / Control	cloudy/org. matter	32	1.400	<4	1.36	0.7	0.6	2.5	3.9
LendLease	Portion F RRB	18/04/2019 - 22/05/2019	DDG 10 - 02	RRB - S: DDG 10 - 02	org. matter	32	0.750	<4	0.40	0.2	0.2	1.4	1.8
LendLease	Portion F RRB	18/04/2019 - 22/05/2019	DDG 10 - 03	RRB - N: DDG 10 - 03	org. matter	32	0.980	<4	0.10	0.1	0.0	1.3	1.4
LendLease	Portion F RRB	18/04/2019 - 22/05/2019	DDG 10 - 01	RRB - C: DDG 10 - 01	cloudy/org. matter	32	0.760	<4	0.80	0.3	0.5	2.0	2.8
Georgiou	Portion G P2T3	6/05/2019 - 8/06/2019	DDG 11 - 05	DDG 11 - 05 - Control	org. matter	31	1.150	<4	0.40	0.0	0.4	1.2	1.6
Georgiou	Portion G P2T3	6/05/2019 - 8/06/2019	DDG 11 - 06	DDG 11 - 06 - Sth	org. matter	31	1.000	<4	0.50	0.1	0.4	0.8	1.3
Georgiou	Portion G P2T3	6/05/2019 - 8/06/2019	DDG 11 - 07	DDG 11 - 07 - Nth	org. matter	31	0.940	<4	0.40	0.0	0.3	1.0	1.4
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG2	4038/1	fine org. matter	30	1.500	<4	0.31	0.19	0.12	1.22	1.53
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG3	4038/2	yellow, fine org. matter	30	1.100	<4	0.87	0.29	0.58	3.87	4.75
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG4	4038/3	.	30	1.300	<4	0.44	0.23	0.21	0.90	1.35
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG5	4038/4	yellow, fine org. matter	30	1.000	<4	1.17	0.45	0.72	1.77	2.94
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG6	4038/5	fine org. matter	30	1.220	<4	0.37	0.14	0.24	1.13	1.51
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG7	4038/6	fine org. matter	30	1.250	<4	0.88	0.57	0.31	1.17	2.05
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG8	4038/7	fine org. matter	30	1.000	<4	0.21	0.08	0.13	1.26	1.47
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG9	4038/8	fine org. matter	30	1.320	<4	0.60	0.05	0.55	1.31	1.91
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG10	4038/9	.	30	1.300	<4	0.32	0.10	0.22	1.14	1.47
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG11	4038/10	leaf	30	1.530	<4	0.23	0.10	0.12	1.34	1.56
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG12	4038/11	.	30	0.200	<4	0.06	0.03	0.11	0.20	0.20
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG13	4038/12	yellow, fine org. matter	30	1.250	<4	0.63	0.18	0.45	1.94	2.57
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG14	4038/13	grass, yellow, fine org. matter	30	1.400	<4	0.24	0.10	0.14	1.56	1.80
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG15	4038/14	.	30	0.500	<4	0.10	0.03	0.07	0.42	0.52
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG16	4038/15	.	30	1.200	<4	0.34	0.12	0.22	0.97	1.31
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG17	4038/16	yellow, fine org. matter	30	1.400	<4	1.45	0.89	0.55	1.52	2.96
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG18	4038/17	yellow, fine org. matter	30	1.530	<4	1.13	0.58	0.55	2.37	3.49
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG19	4038/18	.	30	1.500	<4	0.71	0.41	0.31	1.32	2.03
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG20	4038/19	.	30	1.400	<4	0.35	0.14	0.21	1.18	1.52
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG21	4038/20	.	30	0.450	<4	0.25	0.16	0.08	0.03	0.28
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG22	4038/21	.	30	2.000	<4	0.50	0.23	0.27	1.47	1.97
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG23	4038/22	.	30	1.850	<4	0.27	0.08	0.19	1.32	1.59
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG24	4038/23	.	30	1.380	<4	0.52	0.19	0.33	1.21	1.73
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG25	4038/24	pine needles, yellow, fine org. matter	30	1.200	<4	0.88	0.23	0.65	4.05	4.93
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG26	4038/25	.	30	1.400	<4	0.33	0.25	0.08	1.13	1.47
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG27	4038/26	.	30	1.330	<4	0.32	0.08	0.24	1.09	1.41
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG28	4038/27	.	30	1.200	<4	1.20	0.94	0.26	0.97	2.16
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG29	4038/28	cloudy, fine org. matter	30	1.350	<4	2.13	0.93	1.20	1.84	3.97
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG30	4038/29	.	30	1.100	<4	0.30	0.12	0.17	0.98	1.28
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG31	4038/30	.	30	1.380	<4	0.41	0.10	0.31	1.26	1.67
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG32	4038/31	.	30	1.100	<4	0.19	0.10	0.09	1.05	1.24
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG33	4038/32	.	30	1.500	<4	0.46	0.36	0.10	1.55	2.01
SWC	Portion A S3	17/06/2019 - 17/07/2019	DDG34	4038/33	.	30	1.250	<4	0.14	0.11	0.03	1.13	1.27
BGC	Portion A S4	21/06/2019-18/07/2019	DG02	Tyndale	fine org. matter	27	1.570	<4	1.90	0.80	1.10	2.10	4.00
BGC	Portion A S4	21/06/2019-18/07/2019	DG03	Maloneys	brown, fine org. matter	27	1.750	<4	6.20	1.10	8.10	23.40	32.60
BGC	Portion A S4	21/06/2019-18/07/2019	DG04	Byrons Lane	.	27	1.850	<4	0.20	0.20	0.60	1.60	2.30
BGC	Portion A S4	21/06/2019-18/07/2019	DG05	Shark Creek	fine org. matter	27	1.780	<4	0.80	1.00	0.90	2.00	3.90
BGC	Portion A S4	21/06/2019-18/07/2019	DG07	Clyde Essex Drive	brown, fine org. matter	27	1.870	<4	1.80	0.10	5.40	31.20	36.70
BGC	Portion A S4	21/06/2019-18/07/2019	DG1A	Schwonberg St	.	27	2.400	<4	0.00	0.00	0.60	1.50	2.20

Contractor	Location	Exposure Period - Date on / Date off (DD/MM/YY)	Sample Name	Sample Number	Sample Comments	Sampling Days	Sample Volume (L)	Target Total Suspended Solids (g/m2/month)	Total Suspended Solids (g/m2/month)	Laboratory Results			
										Ash (g/m2/month)	Combustible Matter (g/m2/month)	Soluble Matter (g/m2/month)	Grand Total Solids (g/m2/month)
BGC	Portion A S4	21/06/2019-18/07/2019	DG08	Causleys	cloudy, fine org. matter	27	1.800	<4	5.70	3.00	2.70	2.80	8.50
BGC	Portion A S4	21/06/2019-18/07/2019	DG09	BP Lane	..	27	2.100	<4	0.90	0.30	0.60	1.50	2.40
BGC	Portion A S4	21/06/2019-18/07/2019	DG10	Visitor Info Centre	..	27	1.900	<4	1.00	0.20	0.80	1.70	2.60
BGC	Portion A S4	21/06/2019-18/07/2019	DG11	Motel	fine org. matter	27	2.350	<4	2.10	0.50	1.60	2.60	4.60
BGC	Portion A S4	21/06/2019-18/07/2019	DG12	M1 Norley - Byron	fine org. matter	27	1.800	<4	1.00	0.20	0.90	1.70	2.80
BGC	Portion A S4	21/06/2019-18/07/2019	DG13	Tyndale	fine org. matter	27	1.650	<4	0.90	0.40	0.60	1.20	2.20
Golding	Portion B S5	22/05/2019 - 22/06/2019	DDG5-07	1	Palm Lane	31	1.400	<4	0.20	0.30	1.00	1.40	1.90
Pacific Complete	Portion B S5	18/06/2019 - 17/07/2019	DDG 5-03	DDG 5-03	Farfows Lane, Maclean	29	2.300	<4	0.40	0.11	1.85	2.12	2.12
Pacific Complete	Portion B S5	18/06/2019 - 17/07/2019	DDG 5-04	DDG 5-04	Fill 5.1 East, FarfowsFlat	29	1.800	<4	0.27	0.19	0.17	0.76	1.11
Pacific Complete	Portion B S5	18/06/2019 - 17/07/2019	DDG 5-05	DDG 5-05	Fill 5.4 East, Yamba Interchange	29	2.100	<4	0.36	2.87	1.97	4.03	8.86
Pacific Complete	Portion B S5	18/06/2019 - 17/07/2019	DDG 5-06	DDG 5-06	Watts Lane	29	2.200	<4	1.57	1.21	0.36	2.51	4.08
Pacific Complete	Portion B S5	18/06/2019 - 17/07/2019	DDG 5-08	DDG 5-08	Serpentine Channel North	29	2.200	<4	0.77	0.39	0.39	2.03	2.80
Pacific Complete	Portion B S5	18/06/2019 - 17/07/2019	DDG 5-09	DDG 5-09	Chatsworth South East	29	2.400	<4	0.77	0.70	1.55	2.86	5.11
Pacific Complete	Portion B S5	18/06/2019 - 17/07/2019	DDG 5-11	DDG 5-11	Fischers Lane - Control Gauge	29	2.100	<4	2.25	0.68	0.40	2.26	3.43
Pacific Complete	Portion B S5	18/06/2019 - 17/07/2019	DDG 5-12	DDG 5-12	Fischers Lane	29	2.630	<4	0.73	0.32	0.41	2.59	3.33
Pacific Complete	Portion B S5	18/06/2019 - 17/07/2019	DDG 5-14	DDG 5-14	Garretts Lane-West	29	2.400	<4	0.96	0.35	0.61	2.25	3.21
Pacific Complete	Portion B S5	18/06/2019 - 17/07/2019	DDG 5-15	DDG 5-15	Garretts Lane North	29	2.730	<4	0.49	0.24	0.24	2.40	2.89
Pacific Complete	Portion B S5	18/06/2019 - 17/07/2019	DDG 5-16	DDG 5-16	Huka Road Compound	29	2.750	<4	0.68	0.13	0.55	2.46	3.14
Pacific Complete	Portion B S5	18/06/2019 - 17/07/2019	DDG 5-17	DDG 5-17	Woombah Woods Caravan Park	29	3.100	<4	0.76	0.15	0.62	2.65	3.42
BMD	Portion C S6	22/05/2019 - 21/06/2019	DDG 5-18	DDG 5-18	Castles Stockpile Area	30	2.550	<4	1.40	0.70	0.60	0.50	1.90
BMD	Portion C S6	22/05/2019 - 21/06/2019	DDG15	Ellem Property	cloudy, org-matter	30	0.270	<4	0.50	0.40	0.10	0.20	0.70
BMD	Portion C S6	22/05/2019 - 21/06/2019	DDG17	De-winton Property / Control	insects, org-matter	30	0.500	<4	0.40	0.20	0.30	0.40	0.80
BMD	Portion C S6	22/05/2019 - 21/06/2019	DDG19	Jackybutlin Road	cloudy, org-matter	30	0.430	<4	1.90	0.90	1.00	1.00	2.90
BMD	Portion C S6	22/05/2019 - 21/06/2019	DDG19	Rainbow	cloudy, org-matter	30	0.370	<4	2.10	1.30	0.80	3.50	5.50
CPB	Portion C S7, 8 & 9	22/05/2019 - 21/06/2019	DDG20	Devils Pulpit	org-matter	30	0.460	<4	1.40	0.80	0.50	0.30	1.70
CPB	Portion C S7, 8 & 9	23/05/2019 - 20/06/2019	DDG 7	13002/1 - Control	org-matter	28	0.880	<4	0.45				
CPB	Portion C S7, 8 & 9	23/05/2019 - 20/06/2019	DDG 7-1	13002/2	org-matter	28	0.440	<4	0.27				
CPB	Portion C S7, 8 & 9	23/05/2019 - 20/06/2019	DDG 7-2	13002/3	cloudy, org-matter	28	0.690	<4	2.94				
CPB	Portion C S7, 8 & 9	23/05/2019 - 20/06/2019	DDG 7-3	13002/4	org-matter	28	0.920	<4	0.40				
CPB	Portion C S7, 8 & 9	23/05/2019 - 20/06/2019	DDG 8-1	13002/5	org-matter	28	0.660	<4	0.34				
CPB	Portion C S7, 8 & 9	23/05/2019 - 20/06/2019	DDG 8-2	13002/6	org-matter	28	0.640	<4	0.55				
CPB	Portion C S7, 8 & 9	23/05/2019 - 20/06/2019	DDG 8-4	13002/7	org-matter	28	0.690	<4	0.33				
CPB	Portion C S7, 8 & 9	23/05/2019 - 20/06/2019	DDG 8-5	13002/8	org-matter	28	1.500	<4	0.38				
CPB	Portion C S7, 8 & 9	23/05/2019 - 20/06/2019	DDG 8-2	13002/9	org-matter	28	1.270	<4	0.66				
CPB	Portion C S7, 8 & 9	23/05/2019 - 20/06/2019	DDG 9-3	13002/10	org-matter	28	1.460	<4	0.38				
LendLease	Portion D S10	20/05/2019 - 20/06/2019	DDG 10-03	1	org-matter	31	1.200	<4	0.22	0.21	0.18	0.86	1.18
LendLease	Portion D S10	20/05/2019 - 20/06/2019	DDG 10-04	2	org-matter	31	1.140	<4	0.42	0.07	0.16	0.58	0.81
LendLease	Portion D S10	20/05/2019 - 20/06/2019	DDG 10-05	3	org-matter	31	1.340	<4	0.25	0.17	0.17	0.59	1.01
LendLease	Portion D S10	20/05/2019 - 20/06/2019	DDG 10-06	4	org-matter	31	1.170	<4	0.70	0.32	0.38	0.73	1.43
LendLease	Portion D S10	20/05/2019 - 20/06/2019	DDG 10-07	5	cloudy, org-matter	31	1.350	<4	0.43	0.32	0.77	2.94	4.14
LendLease	Portion D S10	20/05/2019 - 20/06/2019	DDG 10-08	6	insects, org-matter	31	1.410	<4	0.33	0.43	0.77	2.94	1.16
LendLease	Portion D S10	20/05/2019 - 20/06/2019	DDG 10-09	7	brown, org-matter	31	1.280	<4	0.31	0.33	0.94	1.44	20.09
LendLease	Portion D S10	20/05/2019 - 20/06/2019	DDG 10-10	8	org-matter	31	1.330	<4	0.48	0.17	0.17	0.36	0.59
LendLease	Portion D S10	20/05/2019 - 20/06/2019	DDG 10-11	9	org-matter	31	1.280	<4	0.42	0.32	0.16	0.74	1.23
LendLease	Portion D S10	20/05/2019 - 20/06/2019	DDG 10-12	10	org-matter	31	1.580	<4	0.80	0.20	0.14	0.75	1.18
LendLease	Portion D S11	20/05/2019 - 20/06/2019	DDG 11-01	11	org-matter	31	2.000	<4	0.30	0.50	1.45	2.25	2.25
LendLease	Portion D S11	20/05/2019 - 20/06/2019	DDG 11-02	12	org-matter	31	1.580	<4	0.44	0.32	0.12	0.95	1.39
LendLease	Portion D S11	20/05/2019 - 20/06/2019	DDG 11-03	13	org-matter	31	1.270	<4	0.65	0.52	0.13	1.17	1.82
LendLease	Portion D S11	20/05/2019 - 20/06/2019	DDG 11-04	14 - Control	cloudy, org-matter	31	1.270	<4	1.81	0.77	1.04	1.94	3.74
Quickway	Portion D S10	17/05/2019 - 18/06/2019	DDG -10-13	3932/4	Bulk of earthworks completed, construction area generally stable. Insects and seeds in sample. Approx. 300 mm of water in sample bottle. Slightly above average rainfall during sample period.	29	4.000	<4	0.89	0.51	0.38	4.00	4.88
Quickway	Portion D S10	17/05/2019 - 18/06/2019	DDG -10-14	3927/2	Bulk of earthworks completed, construction area generally stable. Insects and plant matter in sample. Recent slashing. Approx. 250 mm of water in sample bottle. Slightly above average rainfall during sample period.	29	3.000	<4	0.53	0.18	0.35	3.35	3.88
Quickway	Portion D S10	17/05/2019 - 18/06/2019	DDG -10-15	3927/3	Bulk of earthworks completed, construction area generally stable. Insects in sample. Approx. 300 mm of water in sample bottle. Slightly above average rainfall during sample period.	29	3.640	<4	0.30	0.00	0.30	3.95	4.25
Quickway	Portion D S10	17/05/2019 - 18/06/2019	DDG -10-16	3927/4	Bulk of earthworks completed, construction area generally stable. Insects and seeds in sample. Approx. 300 mm of water in sample bottle. Slightly above average rainfall during sample period.	29	3.600	<4	0.89	0.51	0.38	4.00	4.88
LendLease	Portion F RRB	20/05/2019 - 20/06/2019	DDG 10 - 02	RRB - S: DDG 10 - 02	org-matter	31	1.510	<4	0.60	0.45	0.20	0.40	1.10
LendLease	Portion F RRB	20/05/2019 - 20/06/2019	DDG 10 - 03	RRB - N: DDG 10 - 03	org-matter	31	1.460	<4	0.40	0.21	0.20	0.80	1.20
LendLease	Portion F RRB	20/05/2019 - 20/06/2019	DDG 10 - 01	RRB - C: DDG 10 - 01	org-matter	31	1.560	<4	0.50	0.30	0.20	0.80	1.30
Georgiou	Portion G P2T3	8/06/2019 - 08/07/2019	DDG 11 - 05 - Control	DDG 11 - 05 - Control	org-matter	31	1.150	<4	0.40	0.00	0.40	1.20	1.60
Georgiou	Portion G P2T3	8/06/2019 - 08/07/2019	DDG 11 - 06 - Sth	DDG 11 - 06 - Sth	org-matter	31	1.000	<4	0.50	0.10	0.40	0.80	1.30
Georgiou	Portion G P2T3	8/06/2019 - 08/07/2019	DDG 11 - 07 - Nth	DDG 11 - 07 - Nth	org-matter	31	0.940	<4	0.40	0.00	0.30	1.00	1.40
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG2	5010/1	large org-matter	29	0.100	<4	0.60	0.30	0.30	0.11	0.71
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG3	5010/2	dry, 0.2L milli Q added, fine org-matter	29	0.220	<4	0.44	0.22	0.23	0.23	0.68
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG4	5010/3	dry, 0.2L milli Q added, fine org-matter	29	0.250	<4	0.45	0.24	0.21	0.37	0.82
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG5	5010/4	dry, 0.2L milli Q added, yellow, large org-matter	29	0.260	<4	0.67	0.21	0.46	0.49	1.16

										Laboratory Results			
Contractor	Location	Exposure Period - Date on / Date off (DD/MM/YY)	Sample Name	Sample Number	Sample Comments	Sampling Days	Sample Volume (L)	Target Total Suspended Solids (g/m2/month)	Total Suspended Solids (g/m2/month)	Ash (g/m2/month)	Combustible Matter (g/m2/month)	Soluble Matter (g/m2/month)	Grand Total Solids (g/m2/month)
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG6	5010/5	large org. matter	29	0.100	<4	0.39	0.12	0.28	0.18	0.57
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG7	5010/6	cloudy, large org. matter	29	0.100	<4	1.42	0.50	0.92	0.54	1.97
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG8	5010/7	dry, 0.2L milli Q added, cloudy, green, very large org. matter	29	0.100	<4	4.88	0.98	3.90	2.94	7.82
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG9	5010/8	large org. matter	29	0.100	<4	0.54	0.25	0.29	0.12	0.66
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG10	5010/9	cloudy, fine and large org. matter	29	0.100	<4	0.73	0.33	0.40	1.02	1.75
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG11	5010/10	fine and large org. matter	29	0.180	<4	0.46	0.23	0.23	0.32	0.79
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG12	5010/11	dry, 0.2L milli Q added, fine org. matter	29	0.200	<4	0.39	0.18	0.21	0.16	0.55
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG13	5010/12	yellow, fine org. matter	29	0.050	<4	0.52	0.16	0.36	0.00	0.52
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG14	5010/13	large org. matter	29	0.100	<4	0.44	0.20	0.25	0.26	0.70
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG15	5010/14	dry, 0.2L milli Q added, fine org. matter	29	0.200	<4	0.33	0.17	0.16	0.23	0.56
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG16	5010/15	dry, 0.2L milli Q added, large org. matter	29	0.200	<4	0.44	0.20	0.24	0.21	0.64
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG17	5010/16	yellow, large org. matter	29	0.045	<4	0.52	0.37	0.14	0.00	0.52
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG18	5010/17	dry, 0.2L milli Q added, cloudy, large org. matter	29	0.220	<4	0.98	0.62	0.36	0.54	1.51
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG19	5010/18	dry, 0.2L milli Q added, fine org. matter	29	0.200	<4	0.45	0.28	0.17	0.26	0.71
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG20	5010/19	cloudy, large org. matter	29	0.100	<4	0.68	0.36	0.33	0.00	0.68
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG21	5010/20	dry, 0.2L milli Q added, large org. matter	29	0.200	<4	0.56	0.37	0.19	-0.01	0.56
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG22	5010/21	large org. matter	29	0.150	<4	0.60	0.36	0.24	0.24	0.83
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG23	5010/22	large org. matter	29	0.130	<4	0.31	0.25	0.16	0.12	0.53
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG24	5010/23	large org. matter	29	0.120	<4	0.78	0.56	0.22	0.03	0.81
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG25	5010/24	dry, 0.2L milli Q added, yellow, large org. matter	29	0.250	<4	0.60	0.23	0.37	0.56	1.16
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG26	5010/25	large org. matter	29	0.180	<4	0.60	0.36	0.24	0.24	0.83
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG27	5010/26	large org. matter	29	0.100	<4	0.40	0.18	0.19	0.21	0.57
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG28	-	bottle smashed	-	-	<4	-	-	-	-	-
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG29	5010/27	green, cloudy, large and fine org. matter	29	0.100	<4	2.34	1.36	0.97	3.81	6.14
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG30	5010/28	dry, 0.2L milli Q added, fine org. matter	29	0.200	<4	0.71	0.47	0.24	0.30	1.01
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG31	5010/29	large org. matter	29	0.110	<4	0.65	0.33	0.32	0.02	0.67
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG32	-	entire gauge was missing	-	-	<4	-	-	-	-	-
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG33	5010/30	large org. matter	29	0.190	<4	0.49	0.18	0.30	0.40	0.88
SWC	Portion A S3	17/07/2019 - 15/08/2019	DDG34	5010/31	cloudy, fine org. matter	29	0.100	<4	0.95	0.53	0.43	0.78	1.73
BGC	Portion A S4	18/07/2019 - 20/08/2019	DG02	Tyndale	yellow, cloudy, large org. matter	33	0.290	<4	0.75	1.20	1.60	2.70	5.50
BGC	Portion A S4	18/07/2019 - 20/08/2019	DG03	Maloneys	cloudy, large org. matter	33	0.220	<4	1.40	0.80	0.60	0.70	2.10
BGC	Portion A S4	18/07/2019 - 20/08/2019	DG04	Byrons Lane	large org. matter	33	0.350	<4	0.70	0.50	0.20	0.20	0.90
BGC	Portion A S4	18/07/2019 - 20/08/2019	DG05	Shark Creek	cloudy, large and fine org. matter	33	0.470	<4	3.70	1.90	1.80	2.10	5.90
BGC	Portion A S4	18/07/2019 - 20/08/2019	DG07	Clyde Essex Drive	brown, cloudy, large org. matter	33	0.320	<4	2.90	0.60	2.20	8.60	11.40
BGC	Portion A S4	18/07/2019 - 20/08/2019	DG1A	Schwonberg St	large org. matter	33	0.490	<4	0.60	0.40	0.20	0.20	0.80
BGC	Portion A S4	18/07/2019 - 20/08/2019	DG08	Causleys	large org. matter	33	0.270	<4	0.60	0.30	0.40	0.10	0.80
BGC	Portion A S4	18/07/2019 - 20/08/2019	DG09	BP Lane	yellow, fine org. matter	33	0.630	<4	1.50	0.70	0.80	1.70	3.20
BGC	Portion A S4	18/07/2019 - 20/08/2019	DG10	Valer Info Centre	fine org. matter	33	0.550	<4	0.90	0.40	0.40	0.40	1.20
BGC	Portion A S4	18/07/2019 - 20/08/2019	DG11	Motel	cloudy, fine org. matter	33	0.420	<4	0.80	0.40	0.40	0.50	1.30
BGC	Portion A S4	18/07/2019 - 20/08/2019	DG12	M1 Norley - Byron	cloudy, fine org. matter	33	0.630	<4	1.80	0.90	0.90	2.00	3.80
BGC	Portion A S4	18/07/2019 - 20/08/2019	DG13	Tyndale	yellow, cloudy, large org. matter	33	0.300	<4	2.20	0.90	1.30	3.10	5.30
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-03	Farlows Lane, Maclean	ash, fine and large org. matter	28	0.450	<4	0.73	0.49	0.24	0.30	1.02
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-04	Fill 5.1 East, FarlowsFlat	large org. matter	28	0.330	<4	0.50	0.27	0.23	0.03	0.54
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-05	Fill 5.4 East, Yamba Interchange	large org. matter	28	0.500	<4	1.57	1.17	0.40	0.56	2.13
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-06	Watts Lane	fine org. matter	28	0.350	<4	2.33	1.90	0.43	0.26	2.59
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-08	Serpentine Channel North	cloudy, large org. matter	28	0.480	<4	6.10	5.19	0.90	0.40	6.50
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-09	Chatsworth South East	ash, fine and large org. matter	28	0.500	<4	1.87	1.20	0.67	0.54	2.41
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-10	Chatsworth Village	fine org. matter	28	0.500	<4	1.10	0.65	0.45	0.51	1.61
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-11	Fischers Lane - Control Gauge	large org. matter	28	0.530	<4	1.63	1.27	0.36	0.28	1.90
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-12	Fischers Lane	large org. matter	28	0.480	<4	0.78	0.40	0.38	0.42	1.20
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-13	Mororo Bridge South West	ash, fine and large org. matter	28	0.540	<4	1.34	0.94	0.41	0.55	1.89
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-14	Garretts Lane West	fine org. matter	28	0.550	<4	0.75	0.50	0.25	0.35	1.10
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-15	Garretts Lane North	cloudy, yellow, large org. matter	28	0.460	<4	3.18	0.89	2.29	4.31	7.49
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-16	Iuka Road Compound	fine org. matter	28	0.500	<4	0.54	0.32	0.22	0.00	0.54
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-17	Woombah Woods Caravan Park	fine and large org. matter	28	0.630	<4	0.70	0.46	0.24	0.21	0.91
Pacific Complete	Portion B S5	17/07/2019 - 14/08/2019	DDG 5-18	Castles Stockpile Area	spiders, brown, cloudy, large org. matter	28	0.500	<4	5.15	2.43	2.73	3.47	8.63
Golding	Portion B S5	22/06/2019 - 22/07/2019	DDG5-07	1	Palm Lane	30	0.550	<4	0.18				
Golding	Portion B S5	22/07/2019 - 22/08/2019	DDG5-07	1	Palm Lane	31	0.470	<4	2.10	1.30	0.80	1.30	3.40
BMD	Portion C S6	21/06/2019 - 22/07/2019	DDG15	Ellem Property	fine org. matter, cloudy	31	2.050	<4	1.20	0.60	0.50	2.50	3.70
BMD	Portion C S6	21/06/2019 - 22/07/2019	DDG16	McLaren Property	fine org. matter, cloudy	31	1.830	<4	1.30	0.60	0.80	2.30	3.60
BMD	Portion C S6	21/06/2019 - 22/07/2019	DDG17	De-Winton Property / Control		31	1.750	<4	0.10	0.10	0.00	1.70	1.90
BMD	Portion C S6	21/06/2019 - 22/07/2019	DDG18	Jacky Bulbin Road	fine org. matter, cloudy	31	1.650	<4	1.00	0.40	0.60	2.80	3.80
BMD	Portion C S6	21/06/2019 - 22/07/2019	DDG19	Rainbow	fine org. matter, cloudy	31	1.580	<4	1.40	0.40	1.00	2.00	3.40
BMD	Portion C S6	21/06/2019 - 22/07/2019	DDG20	Devils Pulpit	fine org. matter, cloudy	31	1.880	<4	2.60	0.60		5.80	8.30
CPB	Portion C S7, 8 & 9	20/06/2019 - 18/07/2019	DDG 7 Control	8931/1		28	2.600	<4	0.69				
CPB	Portion C S7, 8 & 9	20/06/2019 - 18/07/2019	DDG 7-1	8931/2		28	2.170	<4	0.47				
CPB	Portion C S7, 8 & 9	20/06/2019 - 18/07/2019	DDG 7-2	8931/3		28	2.320	<4	1.04				
CPB	Portion C S7, 8 & 9	20/06/2019 - 18/07/2019	DDG 7-3	8931/4		28	2.640	<4	0.51				
CPB	Portion C S7, 8 & 9	20/06/2019 - 18/07/2019	DDG 8-1	8931/5		28	2.900	<4	0.46				
CPB	Portion C S7, 8 & 9	20/06/2019 - 18/07/2019	DDG 8-2	8931/6		28	3.000	<4	0.87				
CPB	Portion C S7, 8 & 9	20/06/2019 - 18/07/2019	DDG 8-4	8931/7		28	3.270	<4	2.38				
CPB	Portion C S7, 8 & 9	20/06/2019 - 18/07/2019	DDG 8-5	8931/8		28	3.200	<4	0.54				
CPB	Portion C S7, 8 & 9	20/06/2019 - 18/07/2019	DDG 9-2	8931/9		28	3.220	<4	0.66				
CPB	Portion C S7, 8 & 9	20/06/2019 - 18/07/2019	DDG 9-3	8931/10		28	3.140	<4	0.65				
CPB	Portion C S7, 8 & 9	18/07/2019 - 21/08/2019	DDG 7	5049/1 / Control	org. matter	34	0.330	<4	0.40				
CPB	Portion C S7, 8 & 9	18/07/2019 - 21/08/2019	DDG 7-1	5049/2	org. matter	34	0.480	<4	0.28				
CPB	Portion C S7, 8 & 9	18/07/2019 - 21/08/2019	DDG 7-2	5049/3	cloudy, org. matter	34	0.250	<4	0.91				

Contractor	Location	Exposure Period - Date on / Date off (DD/MM/YY)	Sample Name	Sample Number	Sample Comments	Sampling Days	Sample Volume (L)	Target Total Suspended Solids (g/m2/month)	Total Suspended Solids (g/m2/month)	Laboratory Results			
										Ash (g/m2/month)	Combustible Matter (g/m2/month)	Soluble Matter (g/m2/month)	Grand Total Solids (g/m2/month)
CPB	Portion C S7, 8 & 9	18/07/2019 - 21/08/2019	DDG 7-3	i5049/4	org. matter	34	0.300	<4	0.25				
CPB	Portion C S7, 8 & 9	18/07/2019 - 21/08/2019	DDG 8-1	i5049/5	org. matter	34	0.410	<4	0.68				
CPB	Portion C S7, 8 & 9	18/07/2019 - 21/08/2019	DDG 8-2	-	DDG missing on day of collection.		-	<4					
CPB	Portion C S7, 8 & 9	18/07/2019 - 21/08/2019	DDG 8-4	i5049/6	brown, fine org. matter	34	0.170	<4	1.60				
CPB	Portion C S7, 8 & 9	18/07/2019 - 21/08/2019	DDG 8-5	i5049/7	ash, fine org. matter	34	0.170	<4	0.96				
CPB	Portion C S7, 8 & 9	18/07/2019 - 21/08/2019	DDG 9-2	i5049/8	fine org. matter	34	0.600	<4	1.22				
CPB	Portion C S7, 8 & 9	18/07/2019 - 21/08/2019	DDG 9-3	i5049/9		34	0.550	<4	0.45				
Quickway	Portion D S10	17/07/2019 - 14/08/2019	DDG 10-13	i4826/1	fine and large org. matter	28	0.560	<4	2.61	1.99	0.62	0.56	3.17
Quickway	Portion D S10	17/07/2019 - 14/08/2019	DDG 10-14	i4826/2	fine org. matter	28	0.530	<4	0.54	0.24	0.30	0.55	1.09
Quickway	Portion D S10	17/07/2019 - 14/08/2019	DDG 10-15	i4826/3	fine org. matter	28	0.750	<4	0.67	0.29	0.38	0.70	1.37
Quickway	Portion D S10	17/07/2019 - 14/08/2019	DDG 10-16	i4826/4	fine org. matter	28	0.660	<4	0.74	0.46	0.28	0.43	1.18
LendLease	Portion D S10	20/06/2019-19/07/2019	DDG 10-03	1	cloudy, fine org. matter	29	3.130	<4	4.40	0.37	4.12	8.24	12.73
LendLease	Portion D S10	20/06/2019-19/07/2019	DDG 10-04	2	large org. matter	29	3.380	<4	1.19	0.00	1.19	2.87	4.06
LendLease	Portion D S10	20/06/2019-19/07/2019	DDG 10-05	3	yellow, large org. matter	29	3.100	<4	2.74	0.65	2.10	3.63	6.38
LendLease	Portion D S10	20/06/2019-19/07/2019	DDG 10-06	4	large org. matter	29	2.550	<4	1.37	0.15	1.22	2.45	3.82
LendLease	Portion D S10	20/06/2019-19/07/2019	DDG 10-07	5	large org. matter	29	2.570	<4		3.34	1.96	2.48	7.78
LendLease	Portion D S10	20/06/2019-19/07/2019	DDG 10-08	6	cloudy, fine org. matter	29	2.700	<4		0.95	2.21	10.40	13.56
LendLease	Portion D S10	20/06/2019-19/07/2019	DDG 10-09	7	brown, cloudy, fine org. matter	29	2.550	<4	3.16	0.50	18.91	19.86	39.27
LendLease	Portion D S10	20/06/2019-19/07/2019	DDG 10-10	8		29	2.900	<4		0.07	1.12	2.62	3.81
LendLease	Portion D S10	20/06/2019-19/07/2019	DDG 10-11	9	fine org. matter	29	3.270	<4	1.19	0.15	1.23	2.81	4.19
LendLease	Portion D S10	20/06/2019-19/07/2019	DDG 10-12	10	fine org. matter	29	3.190	<4	1.98	0.11	1.05	2.79	3.95
LendLease	Portion D S11	20/06/2019-19/07/2019	DDG 11-01	11	fine org. matter	29	3.120	<4	1.16	0.07	1.02	3.28	4.37
LendLease	Portion D S11	20/06/2019-19/07/2019	DDG 11-02	12	large org. matter	29	2.750	<4	1.10	4.00	1.93	2.72	8.65
LendLease	Portion D S11	20/06/2019-19/07/2019	DDG 11-03	13	fine org. matter	29	3.140	<4	1.10	0.07	1.03	3.01	4.12
LendLease	Portion D S11	20/06/2019-19/07/2019	DDG 11-04	14 - Control	yellow, large org. matter	29	3.380	<4	1.98	0.20	1.78	4.05	6.03
LendLease	Portion F RRB	20/06/2019 - 19/07/2019	DDG 10 - 02	RRB - S: DDG 10 - 02		29	2.880	<4	7.02	1.18	6.74	27.26	35.18
LendLease	Portion F RRB	20/06/2019 - 19/07/2019	DDG 10 - 03	RRB - N: DDG 10 - 03		29	3.130	<4	4.49	0.37	4.12	8.24	12.73
LendLease	Portion F RRB	20/06/2019 - 19/07/2019	DDG 10 - 01	RRB - C: DDG 10 - 01		29	3.400	<4		0.20	1.20	3.01	4.37
Georgiou	Portion G P2T3	08/07/2019 - 06/08/2019	DDG 11 - 05	DDG 11 - 05 - Control	fine org. matter	29	0.630	<4	1.35	0.10	0.20	0.40	0.70
Georgiou	Portion G P2T3	08/07/2019 - 06/08/2019	DDG 11 - 06	DDG 11 - 06 - Sth	fine org. matter	29	0.710	<4	0.30	0.30	0.30	0.40	1.10
Georgiou	Portion G P2T3	08/07/2019 - 06/08/2019	DDG 11 - 07	DDG 11 - 07 - Nth	large org. matter	29	0.530	<4	0.70	0.10	0.90	0.90	1.90
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG2	i5951/1	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.10	0.08	0.02	0.00	0.10
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG3	i5951/2	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.41	0.35	0.06	0.00	0.40
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG4	i5951/3	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.20	0.16	0.04	0.02	0.22
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG5	i5951/4	0.2L Milli Q added, large org. matter	28	0.200	≤ 4	0.52	0.26	0.26	0.00	0.52
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG6	i5951/5	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.28	0.18	0.10	0.00	0.28
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG7	i5951/6	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.30	0.10	0.20	0.00	0.30
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG8	i5951/7	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.30	0.24	0.06	-0.02	0.29
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG9	i5951/8	0.2L Milli Q added, large org. matter	28	0.200	≤ 4	0.51	0.33	0.18	0.54	1.05
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG10	i5951/9	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.61	0.48	0.13	0.00	0.61
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG11	i5951/10	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.36	0.27	0.09	0.09	0.45
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG12	i5951/11	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.34	0.25	0.09	0.00	0.34
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG13	i5951/12	0.2L Milli Q added, fine org. matter, fly	28	0.200	≤ 4	0.38	0.21	0.17	0.38	0.76
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG14	i5951/13	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.64	0.41	0.24	0.00	0.64
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG15	i5951/14	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.73	0.45	0.28	0.00	0.73
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG16	i5951/15	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.73	0.50	0.24	0.00	0.73
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG17	i5951/16	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.84	0.59	0.25	0.00	0.84
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG18	i5951/17	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	1.01	0.78	0.23	0.00	1.01
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG19	i5951/18	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	1.16	0.93	0.23	-0.02	1.13
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG20	i5951/19	0.2L Milli Q added, fine org. matter, brown	28	0.210	≤ 4	0.88	0.44	0.44	0.09	0.97
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG21	i5951/20	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.57	0.41	0.16	0.00	0.57
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG22	i5951/21	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.78	0.64	0.15	-0.01	0.77
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG23	i5951/22	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	2.44	0.87	1.58	1.35	3.79
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG24	i5951/23	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.43	0.31	0.12	0.01	0.44
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG25	i5951/24	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.53	0.32	0.21	0.00	0.53
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG26	i5951/25	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.75	0.52	0.23	0.00	0.75
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG27	i5951/26	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.32	0.26	0.06	0.00	0.32

Contractor	Location	Exposure Period - Date on / Date off (DD/MM/YY)	Sample Name	Sample Number	Sample Comments	Sampling Days	Sample Volume (L)	Target Total Suspended Solids (g/m2/month)	Total Suspended Solids (g/m2/month)	Laboratory Results			
										Ash (g/m2/month)	Combustible Matter (g/m2/month)	Soluble Matter (g/m2/month)	Grand Total Solids (g/m2/month)
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG28	i5951/27	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.98	0.83	0.15	0.00	0.98
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG29	i5951/28	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.61	0.35	0.26	0.04	0.65
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG30	i5951/29	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	1.10	0.78	0.32	0.06	1.15
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG31	i5951/30	0.2L Milli Q added, fine org. matter	28	0.210	≤ 4	0.65	0.49	0.16	0.00	0.65
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG32	i5951/31	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.59	0.42	0.17	0.00	0.59
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG33	i5951/32	0.2L Milli Q added, fine org. matter	28	0.200	≤ 4	0.33	0.20	0.13	0.00	0.33
SWC	Portion A S3	16/08/2019 - 13/09/2019	DDG34	i5951/33	0.2L Milli Q added, fine org. matter, ants	28	0.200	≤ 4	0.52	0.33	0.19	0.57	1.09
BGC	Portion A S4	20/08/2019 - 20/09/2019	DG02	Tyndale	yellow, cloudy, fine org. matter	31	0.350	≤ 4	2.40	1.50	0.90	1.30	3.70
BGC	Portion A S4	20/08/2019 - 20/09/2019	DG03	Maloneys	brown, fine org. matter	31	0.400	≤ 4	0.90	2.30	5.70	15.00	23.00
BGC	Portion A S4	20/08/2019 - 20/09/2019	DG04	Byrns Lane	fine org. matter	31	0.250	≤ 4	1.00	1.00	0.50	0.20	1.70
BGC	Portion A S4	20/08/2019 - 20/09/2019	DG05	Shark Creek	fine org. matter	31	0.400	≤ 4	1.50	0.90	1.70	3.20	3.20
BGC	Portion A S4	20/08/2019 - 20/09/2019	DG07	Clyde Essex Drive	brown, fine org. matter	31	0.370	≤ 4	1.50	1.80	6.20	12.40	20.50
BGC	Portion A S4	20/08/2019 - 20/09/2019	DG1A	Schwonberg St	fine org. matter	31	0.400	≤ 4	1.30	0.70	0.60	0.50	1.80
BGC	Portion A S4	20/08/2019 - 20/09/2019	DG08	Causleys	brown, cloudy, fine org. matter	31	0.350	≤ 4	0.90	0.40	0.50	2.50	3.40
BGC	Portion A S4	20/08/2019 - 20/09/2019	DG09	BP Lane	yellow, fine org. matter	31	0.400	≤ 4	3.90	2.10	1.80	0.70	4.60
BGC	Portion A S4	20/08/2019 - 20/09/2019	DG10	Visitor Info Centre	fine org. matter	31	0.400	≤ 4	1.20	0.80	0.40	0.30	1.50
BGC	Portion A S4	20/08/2019 - 20/09/2019	DG11	Motel	fine org. matter	31	0.350	≤ 4	1.00	0.60	0.40	0.10	1.10
BGC	Portion A S4	20/08/2019 - 20/09/2019	DG12	M1 Norley - Byron	fine org. matter	31	0.400	≤ 4	1.50	0.50	1.00	0.50	2.00
BGC	Portion A S4	20/08/2019 - 20/09/2019	DG13	Tyndale	fine org. matter	31	0.350	≤ 4	1.90	1.00	0.90	0.50	2.40
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-03	Farlows Lane, Maclean	0.2L milli Q added, fine org. matter	30	0.250	≤ 4	0.36	0.31	0.05	0.28	0.64
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-04	Fill 5.1 East, FarlowsFlat	fine org. matter	30	0.120	≤ 4	0.37	0.29	0.08	0.00	0.37
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-05	Fill 5.4 East, Yamba Interch	fine org. matter	30	0.300	≤ 4	0.82	0.71	0.11	2.10	2.92
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-06	Watts Lane	brown, moth, fine org. matter	30	0.350	≤ 4	1.50	15.75	1.74	0.64	18.13
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-08	Serpentine Channel North	fine org. matter	30	0.550	≤ 4	1.60	1.29	0.31	0.65	2.25
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-09	Chatsworth South East	brown, cloudy, fine org. matter	30	0.500	≤ 4	2.21	1.10	1.10	1.00	3.20
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-10	Chatsworth Village	spider, fine org. matter	30	0.400	≤ 4	0.89	0.71	0.18	0.19	1.08
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-11	Fischers Lane - Control Ga	ants, fine org. matter	30	0.450	≤ 4	1.41	1.16	0.25	0.50	1.91
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-12	Fischers Lane	spider, fine org. matter	30	0.400	≤ 4	0.36	0.29	0.07	0.01	0.38
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-13	Monaro Bridge South West	cloudy, fine org. matter	30	0.350	≤ 4	2.62	1.79	0.72	1.12	3.64
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-14	Garretts Lane West	worm, fine org. matter	30	0.500	≤ 4	0.71	0.65	0.06	0.51	1.21
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-15	Garretts Lane North	fine org. matter	30	0.090	≤ 4	0.45	0.35	0.10	0.00	0.45
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-16	Iluka Road Compound	fine org. matter	30	0.350	≤ 4	1.17	0.95	0.22	0.30	1.47
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DDG 5-17	Woombah Woods Caravan	fine org. matter	30	0.100	≤ 4	0.84	0.67	0.27	-0.02	0.92
Pacific Complete	Portion B S5	14/08/2019 - 13/09/2019	DE52-E66DG 5-18	Castles Stockpile Area	fine org. matter	30	0.190	≤ 4	0.95	0.81	0.14	0.08	1.03
Golding	Portion B S5	22/07/2019 - 21/08/2019	DDG 5-17	Woods Lane	fine org. matter	30	0.200	≤ 4	0.40	0.30	0.20	0.20	0.60
BMD	Portion C S6	22/07/2019-21/08/2019	DDG15	Ellem Property	brown, cloudy, large org. matter	30	0.300	≤ 4	2.40	1.10	1.30	4.40	6.70
BMD	Portion C S6	22/07/2019-21/08/2019	DDG16	McLaren Property	large org. matter	30	0.330	≤ 4	1.90	1.50	0.30	0.20	2.10
BMD	Portion C S6	22/07/2019-21/08/2019	DDG17 Control	De-Winton Property	large org. matter	30	0.560	≤ 4	0.40	0.20	0.30	0.30	0.80
BMD	Portion C S6	22/07/2019-21/08/2019	DDG18	Jacky Bulbin Road	cloudy, fine org. matter	30	0.460	≤ 4	1.10	0.40	0.70	0.60	1.70
BMD	Portion C S6	22/07/2019-21/08/2019	DDG19	Rainbow	brown, cloudy, large org. matter	30	0.220	≤ 4	2.20	1.00	1.20	0.20	2.40
BMD	Portion C S6	22/07/2019-21/08/2019	DDG20	Devils Pulpit	large org. matter	30	0.310	≤ 4	1.10	0.70	0.40	0.30	1.40
CPB	Portion C S7, 8 & 9	21/08/2019-25/09/2019	DDG 7 Control	i6235/1	..	35	0.450	≤ 4	1.09				
CPB	Portion C S7, 8 & 9	21/08/2019-25/09/2019	DDG 7-1	i6235/2	..	35	0.400	≤ 4	1.13				
CPB	Portion C S7, 8 & 9	21/08/2019-25/09/2019	DDG 7-2	i6235/3	..	35	0.300	≤ 4	3.49				
CPB	Portion C S7, 8 & 9	21/08/2019-25/09/2019	DDG 7-3	i6235/4	..	35	0.300	≤ 4	0.41				
CPB	Portion C S7, 8 & 9	21/08/2019-25/09/2019	DDG 8-1	i6235/5	..	35	0.500	≤ 4	0.90				
CPB	Portion C S7, 8 & 9	21/08/2019-25/09/2019	DDG 8-2	i6235/6	..	35	0.050	≤ 4	0.85				
CPB	Portion C S7, 8 & 9	21/08/2019-25/09/2019	DDG 8-4	i6235/7	..	35	0.110	≤ 4	2.46				
CPB	Portion C S7, 8 & 9	21/08/2019-25/09/2019	DDG 8-5	i6235/8	..	35	0.130	≤ 4	1.08				
CPB	Portion C S7, 8 & 9	21/08/2019-25/09/2019	DDG 9-2	i6235/9	..	35	0.150	≤ 4	1.74				
CPB	Portion C S7, 8 & 9	21/08/2019-25/09/2019	DDG 9-3	i6235/10	..	35	0.110	≤ 4	0.81				
Lend/Lease	Portion D S10	19/07/2019-21/08/2019	DDG 10-03	1	fine org. matter	33	0.550	≤ 4	0.36	0.14	0.22	0.00	0.36
Lend/Lease	Portion D S10	19/07/2019-21/08/2019	DDG 10-04	2	fine org. matter	33	0.540	≤ 4	0.27	0.14	0.13	0.21	0.49
Lend/Lease	Portion D S10	19/07/2019-21/08/2019	DDG 10-05	3	fine org. matter	33	0.400	≤ 4	0.86	0.69	0.17	0.21	1.07
Lend/Lease	Portion D S10	19/07/2019-21/08/2019	DDG 10-06	4	yellow, fine org. matter	33	0.490	≤ 4	0.37	0.21	0.16	0.24	0.60
Lend/Lease	Portion D S10	19/07/2019-21/08/2019	DDG 10-07	5	fine org. matter	33	0.500	≤ 4	0.55	0.39	0.16	0.25	0.80
Lend/Lease	Portion D S10	19/07/2019-21/08/2019	DDG 10-08	6	cloudy large org. matter	33	0.550	≤ 4	1.11	0.21	0.91	0.66	1.78
Lend/Lease	Portion D S10	19/07/2019-21/08/2019	DDG 10-09	7	fine org. matter	33	0.550	≤ 4	0.98	0.74	0.25	0.33	1.31
Lend/Lease	Portion D S10	19/07/2019-21/08/2019	DDG 10-10	8	large org. matter	33	0.550	≤ 4	0.22	0.14	0.08	0.27	0.49
Lend/Lease	Portion D S10	19/07/2019-21/08/2019	DDG 10-11	9	brown, cloudy, fine org. matter	33	0.650	≤ 4	8.15	7.02	1.12	0.50	8.64
Lend/Lease	Portion D S10	19/07/2019-21/08/2019	DDG 10-12	10	fine org. matter	33	0.620	≤ 4	1.12	0.81	0.31	0.28	1.41
Lend/Lease	Portion D S11	19/07/2019-21/08/2019	DDG 11-01	11	cloudy large org. matter	33	0.640	≤ 4	1.04	0.41	0.64	0.85	1.89
Lend/Lease	Portion D S11	19/07/2019-21/08/2019	DDG 11-02	12	cloudy large org. matter, insects	33	0.610	≤ 4	1.40	0.88	0.52	0.62	2.02
Lend/Lease	Portion D S11	19/07/2019-21/08/2019	DDG 11-03	13	yellow, fine org. matter	33	0.820	≤ 4	0.89	0.54	0.35	0.76	1.65
Lend/Lease	Portion D S11	19/07/2019-21/08/2019	DDG 11-04 (Control)	14	large org. matter	33	0.800	≤ 4	0.59	0.27	0.33	0.67	1.26
Quickway	Portion D S10	14/08/2019 - 13/09/2019	DDG10-13	S863/1	ants, fine org. matter	30	0.880	≤ 4	1.47	0.85	0.62	0.99	2.46
Quickway	Portion D S10	14/08/2019 - 13/09/2019	DDG10-14	S863/2	ants, fine org. matter	30	0.220	≤ 4	0.76	0.63	0.14	0.36	1.12
Quickway	Portion D S10	14/08/2019 - 13/09/2019	DDG10-15	S863/3	fine org. matter	30	0.550	≤ 4	0.31	0.30	0.02	0.88	1.19
Quickway	Portion D S10	14/08/2019 - 13/09/2019	DDG10-16	S863/4	fine org. matter	30	0.350	≤ 4	0.67	0.60	0.07	0.43	1.10

										Laboratory Results			
Contractor	Location	Exposure Period - Date on / Date off (DD/MM/YY)	Sample Name	Sample Number	Sample Comments	Sampling Days	Sample Volume (L)	Target Total Suspended Solids (g/m2/month)	Total Suspended Solids (g/m2/month)	Ash (g/m2/month)	Combustible Matter (g/m2/month)	Soluble Matter (g/m2/month)	Grand Total Solids (g/m2/month)
LendLease	Portion F RRB	19/07/2019 - 21/08/2019	DDG 10 - 02	RRB S		33	0.550	≤ 4	0.98	0.47	0.51	0.36	1.34
LendLease	Portion F RRB	19/07/2019 - 21/08/2019	DDG 10 - 03	RRB N		33	0.550	≤ 4	0.36	0.14	0.22	0.00	0.36
LendLease	Portion F RRB	19/07/2019 - 21/08/2019	DDG 10 - 01	RRB C		33	0.630	≤ 4	0.29	0.13	0.16	0.37	0.66

Appendix C Community Complaints

Complaint Summary - April to September 2019



ID #	Event Type	Event Date	Summary	Issues	Complaint details	Response	Status	Action
1	Call in (specify team member)	5/04/2019	Out of hours, heavy vehicles and consultation	Project components: Out of hours work Traffic and transport: Increase in heavy vehicles Consultation process: Inadequate consultation	Complaint about increased heavy vehicle movements, out of hours work and lack of consultation about design	Stakeholder advised details of approved out of hours work and timing of work. Stakeholder contact details updated for project notifications and advised of consultation process about change to design in this area.	Closed	Contact details updated
2	Meeting	16/04/2019	Dust and vibration	Air quality: Dust Noise and Vibration: Vibration - construction	Complaint about potential damage to property from vibration and dust	Stakeholder advised a building inspection report would be carried out. Property dilapidation survey took place on 18/4/2019. Stakeholder advised that blasting was not from project and advised to contact the quarry. Advised that construction dust would continue to be managed according the CEMP.	Closed	Property dilapidation survey booked and took place on 18/04/2019.
3	Letter	29/04/2019	Noise, noise treatment, dust, and traffic	Traffic and transport: Increase in traffic volume; Air quality: dust; Noise and Vibration: Noise - construction; Noise and Vibration; Noise mitigation/ treatments	Complaint about business not receiving AHNT as well as construction noise, dust and traffic	Stakeholder advised eligibility criteria for AHNT and that the project was compliant with noise and dust monitoring in the Harwood area.	Closed	Ongoing noise and dust monitoring
4	Call in (1800 778 900)	2/05/2019	Personnel behaviour, damage, dust, noise and out of hours work	Project components: Project personnel - behaviour; Noise and Vibration: - Noise - construction; Construction: Damage (to property/environment); Project components: out of hours work; Air quality: Dust	Complaint about personnel behaviour, damage to property, dust, OOH work and noise	Stakeholder advised that personnel behaviour had been addressed with traffic control. Advised that the U-turn facility had been relocated to reduce dust. Stakeholder was added to the distribution list to be kept up to date with all OOH work occurring in the area. Stakeholder advised that the team will supply gravel for driveway if issue continues.	Closed	Team members addressed regarding behaviour, U-turn facility relocated and stakeholder added to distribution list
5	Email	6/05/2019	Dust	Air Quality: Dust	Complaint about dust	Stakeholder advised of agreement to carry out goodwill work to remove dust from windows.	Closed	Goodwill work completed
6	SMS	8/05/2019	Out of hours work and traffic management	Project components: Out of hours work; Traffic and Transport: Traffic management - local roads	Complaint about out of hours work and heavy vehicles on local roads	Stakeholder was provided further information about out of hours work in the area and advised when work was complete. Advised the project team would monitor speeding on local roads to ensure they are compliant with speed limits.	Closed	Monitoring of heavy vehicles carried out
7	SMS	9/05/2019	Out of hours work	Project components: Out of hours work	Complaint about out of hours work	Stakeholder advised that out of hours work was now completed and was sent additional information on the works which occurred.	Closed	Further information on out of hours work sent to stakeholder
8	Email	17/05/2019	Out of Hours Work	Project components: Out of hours work	Complaint about out of hours work	Stakeholder advised agreement for out of hours work until the end of the project has been updated to only refer to the bridge work in her area.	Closed	Nil
9	Email	24/05/2019	Noise and vibration	Noise and vibration: noise - construction; Noise and vibration: Vibration - construction	Complaint about noise and vibration from highway traffic	Stakeholder advised of results of noise and vibration monitoring carried out during construction hours and after hours and explained that the work were compliant. Project team explained that additional monitoring will be carried out post-completion at full operational speed limit.	Closed	Noise and vibration monitoring carried out at property

ID #	Event Type	Event Date	Summary	Issues	Complaint details	Response	Status	Action
10	Call in (specify team member)	31/05/2019	Dust	Air Quality: Dust	Complaint about dust	Stakeholder advised to call the W2B project hotline directly, rather than RMS as soon as dust was noticed so the project team could manage concern immediately and increase water trucks.	Closed	Nil
11	Call in (specify team member)	6/06/2019	Dust	Air Quality: Dust	Complaint about dust	Stakeholder advised dust monitors had not recorded any exceedances and road is due to be sealed in the coming weeks. Stakeholder did not require any further information at this stage.	Closed	Road to be sealed
12	Call in (1800 778 900)	14/06/2019	Out of hours and consultation	Project components: Out of hours work, Consultation process: Inadequate consultation	Complaint about out of hours work and inadequate consultation	Stakeholder advised he was outside notification area for this out of hours work however would be informed as a courtesy of future out of hours work.	Closed	Nil
13	Call in (1800 778 900)	11/07/2019	Dust	Air Quality: Dust	Complaint about dust	Stakeholder advised water cart was deployed and the project team would continue monitoring the area.	Closed	Water cart deployed and monitoring ongoing
14	Call in (specify team member)	15/07/2019	Noise	Noise and Vibration: Noise – construction	Complaint about construction noise	Stakeholder provided details of type of work being carried out and that it needed to continue for another three days. Confirmed noise and vibration monitoring would be carried out to ensure compliance and respite periods implemented to mitigate impact.	Closed	Nil
15	Drop in - PHO	2/08/2019	Traffic safety, noise, damage, general construction impact	Project components: General construction impact Traffic and transport: Traffic safety Noise and Vibration: Noise – construction Noise and Vibration: Noise –	Complaint about traffic safety, noise, damage and general impact from construction activities	Stakeholder advised traffic safety audit was carried out and access was compliant, building condition report scheduled, information provided regarding construction and operational noise and inspection of pool carried out.	Closed	Traffic safety audit, building condition report and pool inspection carried out
16	Call in (1800 778 900)	9/08/2019	Dust	Air Quality: Dust	Complaint about dust from trucks	Stakeholder advised water cart and street sweeper would be deployed.	Closed	Water cart and street sweeper deployed
17	Call in (specify team member)	12/08/2019	Out of hours	Project components: Out of hours work	Complaint about work out of hours	Stakeholder advised the OOH work was for a technical reason and would be intermittent.	Closed	Project team providing weekly updates for OOH work near stakeholder.
18	Call in (specify team member)	14/08/2019	Dust, health, design	Air Quality: Dust Health concerns Design_: Alignment	Complaint about dust, design and health concerns once highway is operational	Stakeholder advised water cart would be sent on higher rotation, explained UDLP design for that area and provided a link to UDLP and EIS documents on the project website for design and operational compliance.	Closed	Water truck rotation increased and link to UDLP and EIS emailed
19	SMS	22/08/2019	Noise and heavy vehicles	Traffic and transport: Increase in heavy vehicles; Noise and Vibration: Noise - construction	Complaint about noise from trucks	Stakeholder advised the project team were unable to identify any project vehicle entering the site compound at this time, however will ensure the gates are locked at night and not opened until later in the morning.	Closed	Compound gates to be locked at night

ID #	Event Type	Event Date	Summary	Issues	Complaint details	Response	Status	Action
20	Meeting	28/08/2019	Dust	Air Quality: Dust	Complaint about dust	Stakeholder advised water truck would be deployed for hand held dust mitigation as required.	Closed	Water truck deployed
21	Email	2/09/2019	Dust	Air Quality: Dust	Complaint about dust from mulch	Stakeholder advised the project team would implement dust control measures to manage dust including use of soil binding polymer on access road.	Closed	Dust control measures implemented including soil binding polymer on access road
22	Call in (specify team member)	3/09/2019	Noise	Noise and Vibration: Noise – construction Noise and Vibration: Noise – operation	Complaint about construction noise and operational noise compliance	Stakeholder advised investigation confirmed no OOH work had been completed by the project team at that time. Stakeholder advised of operational noise mitigation and process for operational compliance requirement once highway is open to traffic.	Closed	Nil
23	Call in (specify team member)	9/09/2019	Noise	Noise and Vibration: Noise – construction	Complaint about generator noise coming from site office	Stakeholder advised generator suspected of causing noise would be turned off at night and advised to contact project team if further noise was heard.	Closed	Generator turned off at night
24	Call in (1800 778 900)	9/09/2019	Dust	Air Quality: Dust	Complaint about dust from trucks	Contractor ceased work, water cart dispatched and work resumed once area was wet down. Stakeholder did not require call back.	Closed	Work ceased until water truck wet down area
25	SMS	13/09/2019	Dust	Air Quality: Dust	Complaint about dust	Stakeholder advised water truck deployed immediately to wet down batch plant area and stockpiles.	Closed	Water truck deployed
26	SMS	16/09/2019	Out of hours	Project components: Out of hours work	Complaint about why out of hours work was required	Stakeholder advised OOH work would decrease after traffic switch and agreed to provide a schedule of expected OOH work for the coming month.	Closed	Project team provided overview of expected OOH work for the coming month
27	Call in (specify team member)	18/09/2019	Dust	Air Quality: Dust	Complaint about dust from local road	Stakeholder advised there would be increased street sweeper and water cart use in this area.	Closed	Water carts and street sweepers increased
28	Call in (1800 number)	24/09/2019	Dust	Air Quality: Dust	Complaint about dust	Stakeholder advised water cart and sweeper deployed to area and rotation would be increased.	Closed	Water cart and sweeper deployed

Appendix D Environmental Incident Summary

Summary of Environmental Incidents - 1 April - 30 September 2019



ID #	Date of Event	RMS Incident Category	Nature of Event	Summarise the Event Details	Corrective Actions	Event Status
1	1-Apr-19	2	Pollutant	A small diesel leak was observed coming from a parked body truck which resulted in a leak of approximately 2 litres of diesel to the hardstand inside gate 2. The leak was temporarily repaired and the truck was removed from site immediately to undergo repairs. A spill kit was deployed to clean up the spill. Contaminated material was placed in contaminated waste bags and disposed of at a suitably licensed waste facility.	The spill was observed and the leak was temporarily repaired and the truck was removed from site. The spill was cleaned up using spill kit material and contained in contaminated waste bags and transported to off site for disposal at a suitably licensed facility.	Closed
2	2-Apr-19	2	Pollutant	Whilst loading and unloading IBC's of curing resin from the storage container behind the Section 9 Batch Plant a hose became dislodged resulting in <SL of product spill to the ground. Hydrocarbon booms and pads were laid out to soak any surplus hydrocarbons. A sand bund was constructed downstream of the spill area to prevent transportation of excess chemical to the water storage basin. A pump was dug into the batch plant pad and flex drive pump utilised to pump water/ resin mix into spare IBC's. Sensitive Receptor: 175m. Waterway: 58m.	Spill was contained in the immediate area, cleaned up using spill material. Contaminated waste bin to be ordered for waste to be disposed of appropriately. Discuss incident at local pre-start. Review loading practices. More information to follow after investigation.	Closed
3	2-Apr-19	1	Breach of license conditions/Act or Regulation	During an inspection on site it was identified that water was moving from the eastern side of Woodburn cut around to the western side of the bottom of the cut around through an access and through controls into a Triple cell culvert and offsite. The site had received significant rainfall at the time and the discharge was not in accordance with the implemented erosion and sediment control plan. Significant rainfall was received during the event greater than 90mm of rainfall.	8 inch pump was installed at the triple cell culvert to assist with transfer of the water from the culvert to the irrigation area. Future Action: Review of site controls was completed, work area was adjusted to manage flows at this location, drainage altered to allow better management of water from the east of the alignment.	Closed
4	8-Apr-19	2	Pollutant	During an earthworks operation on the 08/04/19, the driver of a tipper truck noticed the return line on the hydraulics had ruptured. Approximately 20L of hydraulic oil leaked onto a clay based surface - the Mororo West Laydown. Works stopped and spill kit was deployed immediately. Oil did not enter any stormwater drains or waterways. The closest waterway is a sediment basin located approximately 160m to the south.	Vehicle stopped immediately. Spill kit was deployed and absorbent granules were used and placed on the location of the leak, absorbing fresh oil coming from vehicle. Operator contacted the area supervisor to report the incident. Affected material will be disposed of in accordance with NSW EPA Waste Disposal Guidelines 2014. Future Action: Damage to hydraulic hoses was not identified during daily pre-start checklist. Incident response was prompt and effective to contain and clean-up the spill. Spill kit to be re-stocked as necessary.	Closed
5	9-Apr-19	2	Pollutant	Macerator pump 2 failed causing pit to fill. A small amount of fluid leaked from the pit onto the hardstand surface. Unknown, fluid evaporated before arrival to site.	All connected toilets were shut down, macerator pit was pumped dry. Corrective Action: Pump to be investigated to identify cause of failure, rectification of fault/s to be carried out.	Closed
6	11-Apr-19	2	Pollutant	15L of hydraulic oil was lost to ground, following hydraulic hose failure on Excavator working on embankment at B68. Nearest Waterway Clarence North Arm approximately 50m to south upstream of spill.	Machine stopped, spill contained and cleaned up, disposed of lawfully. Machine to be repaired. PC notified. Future Corrective Actions: Machine to be repaired by appropriately qualified person and other hoses checked over. Toolbox conducted 12/4/19 and daily pre-start and defect report for machine received. Daily Plant pre-start checks to continue - to identify hoses requiring repair / replacement.	Closed
7	12-Apr-19	2	Pollutant	Wax runoff was identified within the projects site environmental controls on the western side of Fill 11D, following shoulder paving and wax curing the day prior, 11 April 2019. 2.4mm was recorded at Firth Heinz RG on 12 April 2019. Localised heavy rainfall received onsite. Wax had runoff the shoulder pavement into the subsoils then contained in a mulch perimeter bund and basin. Wax did not leave the project boundary. Approx. 175m3 of shoulder paving partially affected.	Paving crews reported the incident immediately to the Environment Manager and deployed a sucker truck to commence removal of the wax contained within the mulch bund and basin. The basin had capacity at the time of the incident and was dewatered completely and the wax covered sediment from within the basin was removed. Soil samples have also been taken of the basin wall post clean up. The controls in place at the time of incident were in accordance with the currently approved EWMS and Paving Control Plan. Future Action: Where subsoil headwalls are in place, temporarily remove headwall and up-turn the subsoil pipe higher than the fill. Review wax application rate and wax placement method for shoulder pavement. Limit the preparation of wax application to 500 metres ahead of shoulder paving. EWMS and paving control plans updated to include additional measures.	Closed
8	15-Apr-19	2	Pollutant	While working on the Pier 2 north bound columns a hydraulic hose on the EWP blew resulting in a minor hydraulic oil spill. The spill occurred approximately 15 meters from the waterway at C05. The EWP was being used to strip the columns form work. Approx. 2-5 litres.	The EWP was stopped and absorbents placed on the spill, source of the leak was stopped and hose fitter was called to repair the hose. Future Action: Hose fitter has been called to repair the hose.	Closed
9	15-Apr-19	2	Pollutant	Small leak observed at top of septic tank, resulting in very small spill >20 Ltrs into a bunded area. No water has been released from bund, no possibility of accidental release.	Spill reported to Pacific Complete. Future Action: Issue reported to Shamrock Civil for rectification and casual analysis.	Closed
10	16-Apr-19	2	Failed environmental controls	Whilst undertaking an ERG inspection it was observed that there was a break in the bund on the western perimeter of the access track that resulted in turbid water exiting and being deposited into a secondary bund within site. There was no evidence of turbid water leaving site. The area was 150m from a mapped cane drain and 290m from a mapped drainage line. The nearest sensitive receiver was 890m. 11.2mm of rain was recorded on the 16/04 in the Pacific Complete weather station at CH132 200.	1. The area was immediately graded to remove low spots; 2. Earth berm constructed on the western edge; 3. Sandbag checks placed in the secondary bunded area; 4. Rock filter constructed within the eastern low point; and 5. Erosion and Sediment Control Plan revised to ensure currency.	Closed
11	16-Apr-19	2	Failed environmental controls	During an ERG inspection on site it was observed that there was hole in geofabric fence from where a previous drainage pipe had gone through. There was potential that dirty water had moved through the control and into the clean water flow path. There was no evidence of turbid water leaving site at the time of the inspection. The adjacent drainage line is for highway drainage onto the floodplain. The water flowpath travels 190m through the site prior to exiting project boundary. The nearest sensitive receiver is 195m away. 10.8mm of rainfall was recorded on the 16/04 in the Pacific Complete weather station at CH130.	The area was sheeted with 50- 150mm rock and a diversion bund and sump was constructed in lieu of the geofabric sediment fence.	Closed
12	16-Apr-19	1	Breach of license conditions/Act or Regulation	During an ERG inspection on site it was identified that a silt fence which was in poor condition appeared to have potentially allowed the release of turbid water from the access ramp into the adjacent drainage line in the area. During rectification works by a grader on the 17/04/19 it was observed that material removed from the track had resulted in a small release of turbid water into the drain at this location. This was 940m from the nearest sensitive receiver and immediately adjacent to a constructed cane drain. 11.2mm of rain was recorded on the 16/04 in the Pacific Complete weather station at CH132 200.	1. Notification to supervisor 2. Grade adjustment of ramp to direct water away from this location to the scour rock under Bridge C50 3. Construction of geofabric wrapped rock bund at low point 4. Construction of geofabric wrapped earth berm in lieu of sediment fence. Corrective Action: Investigation underway. 1. Review of controls to identify any areas that may have old or poorly maintained controls with a focus around drainage lines. 2. Review and amendment of ESCP by Project Soil Conservationist. Redline markup complete, submission due by 26/04 3. Increased awareness of site supervision with areas subject to Worksite Transfer.	Closed
13	16-Apr-19	2	Pollutant	A labourer applied soil binder to a disturbed batter west of the main alignment between CH80560-80540 and between CH360-380 M1G0 on the 15/04/2019. Subsequent to the soil binder application, a minor rainfall event occurred overnight and has resulted in soil binder running into a nearby drain construction, approximately <5m from the soil binded batter. The drain is blocked further down stream and does not connect to a clean water drainage system or flow off-site. Less than approximately 10m linear of soil binder runoff was noticed on the surface of water held in the drain. No soil binder left the project boundary nor entered additional waterways. No environmental harm has resulted from this incident.	The incident was identified by Pacific Complete (PC) Environmental Advisor on the morning following the minor rain event (16/04/2019). This individual has then notified BGC. Additional bunding was installed to prevent any further movement of identified runoff. Potentially impacted water was then pumped to a water cart to be reused for dust suppression on site. Future Action: Toolbox talk to raise awareness with responsible personnel. A review of soil binder application procedures is being undertaken by BGC to mitigate risks associated with rainfall.	Closed
14	17-Apr-19	2	Breach of license conditions/Act or Regulation	A small amount of water 2m3 was dewatered towards a median drainage pit. This median drainage pit drained towards an on-site water quality treatment swale which tied into another on-site drain approximately 170 metres to the south. The water which was dewatered had a lower NTU i.e. was better quality, then both the swale and on-site drain. However, the swale was at full capacity 170 metres to the south. Water quality monitoring and drainage volume calculations length x width of the swale confirmed that the water was contained within the on-site water quality treatment swale. The nearest sensitive receiver was located approximately 430 metres to the south west. 2m3 was dewatered on-site. The water was contained on-site.	Follow up water quality monitoring and drainage calculations were undertaken to confirm that the water was contained on-site within the projects water quality treatment swale. The EWMS was also reviewed and it was found that project procedure had not been breached. However, it was considered that this process could be improved for this activity. Future Action: 1. The dewatering EWMS will be reviewed and updated to detail that all on-site dewatering into swales requires consultation with the environmental team prior to dewatering being undertaken. Land irrigation areas are also to be reviewed. 2. Review and update ESCP where required 3. Review Project dewatering procedure to ensure process are still consistent with current construction phase.	Closed
15	16-Apr-19	2	Pollutant	Roller blew hose during bulk earthworks activities. The operator immediately shut down machine and used the near by spill kit. The spill did not leave site nor did it enter a waterway. Closest receiver was approx. 575m away to the north west Closest waterway was 39m away to the west being a clean water drain. 2-3L.	The operator immediately shut down the machine and used the near by spill kit. The fitter was called to come to site and enviro notified. The spill was contained to immediately underneath the machine and was reduced to a slow drip after the machine was shut down. The hose was replaced and the contaminated materials were cleaned up and placed into the hydrocarbons bin at Tyndale which is serviced by JR Richards and disposed of at the licensed landfill at Grafton.	Closed

ID #	Date of Event	RMS Incident Category	Nature of Event	Summarise the Event Details	Corrective Actions	Event Status
16	30-Apr-19	2	Pollutant	Sub-contractor truck and dog was importing fill to Iluka West Interchange. During tipping operation of dog trailer, a hydraulic hose fitting (which feeds hoist) failed spilling approximately 25-30L of hydraulic oil to compacted fill /ground. Spill occurred 25m south of 3 Cell culvert open channel.	The spill was immediately contained using earthen bunds, and covered with spill absorbent material. Contaminated material currently stored on site awaiting off-site disposal to licenced facility.	Closed
17	3-May-19	2	Pollutant	A fuel line and tank on a tipper truck was struck and damaged by a rock spilling diesel onto the existing Watts Lane pavement at CH87820. The estimated distance to the nearest waterway was approximately 5m - dry roadside table drain. Nyang creek is located approx. 290m to the west. The nearest residential sensitive receiver is located approx. 110m away to the west on Palm Lane. 50 - 60 litres of Diesel.	The truck was immediately isolated and spill clean-up materials were deployed to control the spilled diesel. The fitter attended site to repair the fuel line/ hose. The truck pre-start was sighted by the Contractors Supervisor. Spill clean-up materials were placed in a bunded area constructed immediately following the incident. as temporary storage whilst arranging for disposal at an appropriately licensed landfill.	Closed
18	6-May-19	2	Pollutant	A concrete pump washed out in an area that was not adequately set up as a controlled washout area. The concrete slurry was able to run 10m across unsealed ground. Closest receiver was greater than 700m away to the Northwest Closest water way was approximately 80m away to the South being a clean water drain 50L.	As soon as Contractor was aware of the slurry the affected area was scraped back and removed of using an excavator and disposed of appropriately.	Closed
19	13-May-19	2	Pollutant	Whilst undertaking a combined site inspection, PC and Contractors Environmental Representatives, were notified by a PC Site Officer of some discoloured water at the headwall of a culvert. Upon inspecting the water it was identified that the water was originating from a washdown operation from the subcontractor completing a concrete pour at the Western roundabout. The water had left the immediate area through a subsoil drain adjacent to the works. There was evidence to suggest some of the washdown water had travelled down the open swale drain and was captured in the sumps within the open drain. Sensitive Receptor: 620m Waterway: 430m.	Subcontractor was directed to immediately cease the wash-down activity. Water quality monitoring (pH) was undertaken at one of the sumps within the drainage line on site. Water quality was pH 8.5 and showed no signs of discoloration. All sumps and headwalls to be pumped dry to remove any potential for offsite release. Future Actions: Supervisor to discuss incident at local pre-start. Ensure all crews have signed onto and are aware of mitigation measures contained within the EWMS for Wet Concrete Placement - N01037-EN-EWM-00028.	Closed
20	18-May-19	2	Pollutant	Concrete pump working at Bridge B61 leaked approx. 2L of hydraulic oil onto the chip seal on Abutment A. The oil spill was not noticed by personnel on Saturday but was identified Monday 20 May and reported. The spill location is approx. 39m south of an unnamed cane drain running beneath Bridge B61. No hydraulic oil mobilised into any waterways. The closest sensitive receiver is located approx. 700m to the west on Chatsworth Rd.	Contractor deployed spill kits and bunded area being cleaned to prevent oil mobilising into adjacent drainage lines or cane drains. Remove contaminated material off-site. Contractor to refill the spill kit as a corrective action.	Closed
21	21-May-19	2	Pollutant	A hydraulic hose on a water cart failed spilling hydraulic onto the ground at the Yamba interchange CH85.500. The estimated distance to the nearest waterway was approximately 20m to the east tributary to James Creek. The nearest residential sensitive receiver is located approx. 110m away to the west on Palm Lane. 10-15L.	The truck was immediately isolated and spill clean-up materials were deployed to control the spilled hydraulic oil. The fitter attended site to repair the hose. The truck pre-start was sighted by the Contractors Environmental Site Representative. Spill clean-up materials were placed in a covered/sealed bin to be disposed at a suitably licensed facility. A toolbox talk was undertaken on 22/05/19 to raise awareness of the environmental risks associated with hydraulic equipment and spill response procedures.	Closed
22	22-May-19	2	Breach of license conditions/Act or Regulation	Unapproved access beyond the clearing limit had occurred without approval. A 5-tonne excavator was tracked outside the limit of works in a grassed paddock. The land is within the project boundary and RMS-owned. Nil vegetation clearing has occurred and nil heritage impacts. No excavation works had occurred and limited ground disturbance caused by the tracks. Works being undertaken at the time of incident was fauna pole installation. The closest waterway is a site drain approximately 20 metre from the works. 15m2.	Works ceased immediately. A system procedure failure had occurred prior to approval been granted.	Closed
23	23-May-19	2	Pollutant	The curing agent was applied to concrete on the north of Bridge A11 between 7am - 9.30am. The tarp was placed over this area until 1pm. The tarp was then removed and taken across the bridge. At 3.00pm the paving and curing operation were placed on hold as per the EWMS requirements. At 4.00 pm rain squall occurred and a small portion of the curing agent applied in the morning had not cured. This caused curing agent runoff into the pit drains and into the basin. The EWMS were followed and the runoff control plan was in place. No off-site pollution occurred. Pillar 2 was the closest waterway. 40m3 of water containing the curing agent.	A thorough inspection of the site confirmed the basin had capacity prior to the rain event and no curing water left site. Water trucks flushed residue from the pipe and the spill contained in the basin was disposed of appropriately. The remnants within the basin have been sampled at sent to the lab to provide evidence that all resin pollutants have been removed. Team meeting organized to discuss improvements to the current system and allocate timely actions.	Closed
24	28-May-19	2	Pollutant	During pre-start of EWP delivered to site on 28/05/2019, hydraulic oil was noticed leaked out of the front axle. The spill location is approx. 50m south of Serpentine Channel which is surrounded by EEC - Grey Mangrove low closed forest of the NSW Coastal Bioregions. No hydraulic oil mobilised into the waterway or mangrove area. All hydraulic oil was contained on site beneath the EWP. The closest sensitive receiver is located approx. 400m to the north west on South Bank Serpentine Channel Rd.	Spill kit was deployed as soon as hydraulic oil leak was noticed. Hydraulic oil contained beneath EWP and area was banded.	Closed
25	30-May-19	2	Pollutant	Connecting rod of a pulverising machine failed releasing the piston through the side of the engine while the operator was placing lime at chainage: 98550. This resulted in approximately 5-10L of engine oil being spilt onto the working surface. Works stopped and spill kit was deployed immediately. engine oil has not entered any stormwater drains or waterways. The closest waterway is a open drain 5m away.	Vehicle stopped immediately. Spill kit was deployed and absorbent granules and container were used and placed at the location of the leak containing fresh oil coming from the vehicle. Operator contacted the area supervisor to report the incident. Effected material will be disposed of in accordance with NSW EPA Waste Disposal Guidelines 2014. No signs of potential engine failure evident or identified during daily pre-start checklist. Continue pre-starts everyday and look for signs of engine failure or malfunction. Incident reporting and response was prompt and effective to contain and clean-up the spill. Provide this feedback to the workforce. Spill kit inventory to be conducted and kit re-stocked (as necessary).	Closed
26	27-May-19	2	Pollutant	Approximately 20 litres of diesel was spilt from a ruptured fuel tank on a Concrete truck at approximate project chainage 149000. Following further investigation, it was determined that the driver had left the designated ramp off the pavement early and damaged the fuel tank on the concrete. The event occurred approximately 66 metres from the project boundary to the East, approximately 975 metres East of the nearest sensitive receiver and approximately 265 metres South of the nearest waterway.	The diesel spill was immediately contained. Hydrocarbon spill response materials - absorbent material, were applied to the spill. All hydrocarbon contaminated material was removed. The material was transported to a nearby hazardous materials storage container within the project. Concrete paving truck operators have been toolboxed regarding driving on and off mainline pavement and entry/exit points have been clearly delineated.	Closed
27	29-May-19	2	Pollutant	Westernmost effluent tank at the Pacific Complete Iluka compound has developed a leak from the underside. The spill has occurred in a concrete bunded area. The volume of the spill is estimated at 1-2 litres, although the moisture is being evaporated rapidly, which makes quantity estimation difficult.	Daily pump out of effluent tanks has been organised until leak can be repaired. - Spill kits at effluent bunds in case spill gets worse.- Increased (hourly) monitoring of spill to ensure flow rate has not increased. - No dewatering to take place until leak is repaired/water is PH tested. Daily/weekly inspections of similar tanks moving forward.	Closed
28	31-May-19	2	Pollutant	Subcontract fuel cart truck was on site refuelling other plant and machinery and caught his fuel line on rough surface and split fuel line open. Incident occurred in the Watts Lane, Harwood work area CH87.800 approx. 200m east of the existing Pacific Highway. Nearest waterway is ~10m from the area of the spill. This waterway is an ephemeral drain that is currently dry.	Truck immediately stopped and spill contained with spill kit materials. Split line sealed to prevent further loss of diesel. Fuel truck to be repaired by suitably qualified person. PC Environment and Construction departments advised. Spill cleaned up and materials stockpiled on-site to be disposed of lawfully. Fuel truck driver and site supervisor to discuss limitations of fuel truck for access and site accesses to be adjusted accordingly. Fuel truck driver not to attempt access into areas where surface is rough enough to cause damage to underside of truck - rather immediate notification to the Supervisor and the site will be adjusted to allow him safe ingress. Toolbox talk to be delivered to all work crews on safe access/egress especially ensuring surfaces are stable and secure for vehicle access.	Closed
29	31-May-19	2	Pollutant	A hydromulch truck tipped over on Farlow's Flat whilst undertaking amelioration of open drains causing 20 - 30L of hydraulic oil to leak onto the existing fill material. The estimated distance to the nearest waterway was approximately 10m to the east - newly constructed roadside water quality swale. An unnamed tributary to James creek is located approximately 620m to the north-east. The nearest residential sensitive receiver is located approx. 375m away to the south-west on Palm Road.	The truck was immediately isolated and spill clean-up materials were deployed to control the spilled hydraulic oil. The fitter and fire brigade attended site to ensure the truck was properly isolated. A bund was immediately constructed around the spill location to prevent any spill material migrating offsite or away from the immediate area. The spilled oil will be removed with a vac truck and disposed at a suitably licensed facility.	Closed
30	5-Jun-19	2	Pollutant	Soil binder product has been decanted into a labelled and capped 10L container to transport between site and the site compound. During travel the container has tipped onto its side and leaked a thin, intermittent trail of soil binder along Jackybulbin Road and the southbound lane of the Pacific Highway. Soil binder has not entered any stormwater drains or waterways. The closest stormwater drain was approximately 15m to the west.	Driver has noticed soil binder on pavement and pulled over to an emergency stopping bay and secured the container. Driver has contacted environmental coordinator to report the incident. Traffic management was set up and a street sweeper deployed to remove soil binder from pavement. Due to the thin distribution the majority of binder has sealed to pavement and could not be removed by the street sweeper. Incident response was prompt and effective to contain and clean-up the soil binder product. Traffic control was well coordinated to ensure clean-up was undertaken safely.	Closed

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31	6-Jun-19	2	Pollutant	Hydraulic Line on a concrete truck burst. Hydraulic oil to ground, approximately 20L at ASSTA Garrett's Lane. 45m from clean water drain / amphitheatre area; 200m upstream of project boundary.	Spill was contained and cleaned up. PC notified. Waste disposed of lawfully, and truck taken off site for repair. Unforeseeable event due to weakness in the hose. All vehicles regularly pre-started and checked, however very difficult to spot this kind of weakness. Vehicle repaired and checked by suitably qualified person prior to remobilisation to site.	Closed
32	15-Jun-19	2	Pollutant	Evenrange XDS curing compound was identified within the projects site environmental controls between the southbound & southbound off-ramp at Tyndale, in Section 4, following base paving and curing the day prior, 14 June 2019. Some residual resin from the overspray off the side spray deposited on the sub base pavement layer after receiving 3.2 mm. Lee Crackers Drain AWS 15 June 2019 - nil received 14 June 2019. Resin was contained within the controls and did not leave the project boundary. Paving crews paved off early on 14 June 2019. <5L curing compound, 50 litres of recovered volume.	Crews were deployed to clean out the curing compound within the eastern bunded swale, approximately 50 litres in total, which was used as dust suppression as per EWMS. The controls in place at the time of the spill were in accordance with the currently approved EWMS and Paving Control Plan. 1. Contractor to review side spray discharge coverage, specifically the application rate on the vertical face. 2. Potholes above subsoils to be backfilled prior to paving. 3. Subsoil carrier pipe to headwalls to be installed as per design.	Closed
33	17-Jun-19	2	Pollutant	Moxy blew hydraulic steering hose whilst on the northbound off ramp at Tyndale. The operator stopped immediately and shut down the machine. The spill was contained onsite and did not enter a waterway. The closest resident was over 280m away to the north-east. The closest waterway was 80m away to the north being a site constructed clean water drain. <2L.	The operator immediately pulled up and shut the machine down. The supervisor and enviro were advised. A nearby spill kit was used to contain and clean up the spill. The contaminated material was placed into the hydrocarbons bin at Tyndale which is disposed of by JR Richards at the licensed landfill at Grafton. The machine pre start was inspected and no prior issues had been identified. Continue to report all spills and undertake daily machine pre starts. Spill kit to be refilled. Crew to be commended for quick response of spill.	Closed
34	17-Jun-19	2	Pollutant	On Friday the 14th of June a prime was applied to the site opposite New Italy to protect the works prior to potential rainfall forecast for Sunday Night. The forecast for Friday and Saturday was less than 40% chance of less than 2mm of rainfall for both days. On the 15th of June following overnight rainfall some of the prime washed off of the SMZ into the established controls and hydrocarbon berms. Prime moved through the controls on site and did not leave the project boundary. The prime has been captured within the drains within the alignment. Unknown estimated 250 litres of prime captured within controls and the alignment.	Additional hydrocarbons installed onsite around the drainage lines. Sucker truck mobilised to pump out controls on the alignment. Review approach to works, including looking at options to manage and protect works prior to rainfall and prior to primer seal	Closed
35	17-Jun-19	2	Pollutant	On Friday the 14th of June a prime was applied to the site opposite New Italy to protect the works prior to potential rainfall forecast for Sunday Night. The forecast for Friday and Saturday was less than 40% chance of less than 2mm of rainfall for both days. On the 16th to 17th of June following overnight rainfall some of the prime washed off of the SMZ into the established controls and hydrocarbon berms. The prime has been captured within the drain adjacent the alignment. Unknown estimated 20 litres of prime captured within controls.	Additional hydrocarbons installed onsite around the drainage line. Sucker truck mobilised for the 18/06/19. Review approach to works, including looking at options to manage and protect works prior to rainfall	Closed
36	18-Jun-19	2	Pollutant	A Moxy was hauling material in a construction activity area when a coolant leak was discovered. The operator ceased work immediately and the spill was contained by spill absorbent material. The incident occurred more than 50m away from the closest watercourse. <2L.	The operator ceased work and contained the spill from the ground and from the machinery with absorbent material. Contaminated waste material was then cleaned up and placed into contamination bin situated in a bunded container for later disposal at a licensed waste facility. Immediately contacted supervisor who advised the Environmental Site Representative. Pre-start talk to raise awareness. Ensure regular plant and equipment maintenance and pre-start checklist completed.	Closed
37	19-Jun-19	2	Pollutant	On Wednesday the 19th of June a small hydraulic oil spill to ground occurred as a result of a leaking hydraulic hose on a 20t excavator. 5 Litres.	Work ceased. Spill clean up initiated. Spill reported. Machine repaired. Check spill response material in the area. Raise awareness by discussing at pre-start meeting. Pre-start checks and regular maintenance for plant including excavators.	Closed
38	20-Jun-19	2	Pollutant	On Thursday the 20th of June a small oil spill to ground occurred as a result of mechanical failure on a rubber tired roller.	Work ceased. Spill clean up materials deployed and clean up initiated. Spill reported. Machine repaired. Check spill response material in the area. Raise awareness by discussing at pre-start meeting. Pre-start checks and regular maintenance for plant including excavators.	Closed
39	21-Jun-19	2	Pollutant	Macerator pit 1 overflowed. A small amount of fluid leaked from the pit onto the hardstand surface. Unknown quantity, fluid evaporated before arrival to site.	All connected toilets were shut down. Pump to be investigated to identify cause of failure, rectification of fault(s) to be carried out.	Closed
40	21-Jun-19	2	Pollutant	While placing scour rock on Abutment B of Bridge C05 a hydraulic hose on the arm of the excavator got caught on the tilt arm of the bucket, pulling the hose out of the fitting. The excavator was immediately shut down until the leak was stopped and a replacement hose was fitted. Clean up of the area started promptly after the incident. Spill occurred 20 meters from the cane drain located at C05, no oil flowed into the waterway. Daily pre-start was completed on the excavator prior to starting work. Approximately 5-10 litres of hydraulic oil.	Work stopped and the excavator was shut down to repair the leak. The hydraulic hose was replaced with a shorter hydraulic hose to reduce the likelihood of the incident occurring again. Clean up started promptly after the incident. Hydraulic hose was replaced with a shorter hydraulic hose to minimise the likelihood of being caught on the bucket.	Closed
41	2-Jul-19	2	Pollutant	On Tuesday the 02nd of July a small oil spill to ground occurred as a result of a leak from a tip truck that was delivering to site. Work ceased, the spill was reported and spill clean up; materials deployed immediately. 8 Litres. Corrective Action: Work ceased. Spill clean up materials deployed and clean up initiated. Spill reported.	Work ceased. Spill clean up materials deployed and clean up initiated. Spill reported. Tipper truck is being repaired. Check spill response material in the area. Raise awareness by discussing at pre-start meeting. Pre-start checks and regular maintenance for plant including excavators.	Closed
42	2-Jul-19	2	Pollutant	A diesel spill of approximately 2L was discovered in the afternoon at 2pm on Tuesday 2nd July 2019 on the new alignment at ~CH95.720 on the southbound fast lane just north of Bridge B09 Iluka overbridge. A steel-drummed roller that had been parked on the new alignment leaked diesel onto the asphalt after being over-fuelled earlier that day. The nearest waterway is an open drain located approx. 30m west of the spill location - separated by the Iluka roundabout on-ramp. The nearest sensitive receiver is located approx. 422.5m west of the spill site on Iluka Road, Woombah Lot 5, DP263404. Corrective Action: As soon as the diesel spill was identified, the affected asphalt was profiled out, removed from site and returned to the asphalt batch plant for further disposal.	As soon as the diesel spill was identified, the affected asphalt was profiled out, removed from site and returned to the asphalt batch plant for further disposal. A toolbox talk on refuelling, spill prevention and spill response will be given to workers.	Closed
43	4-Jul-19	1	Breach of license conditions/Act or Regulation	Between the 11th and 13th June 2019 an additional access was constructed at Gate 132 western connection. This temporary access had been discussed with Pacific Complete and determined to be acceptable via the driveway on the western end of the alignment from a traffic safety perspective. The area of works was outside of the approved project boundary and the approved ancillary facility. The site was previously utilised as a water pump station by Richmond Valley Water prior to being sold to the landholder. Approx. 250m3 of clean fill material placed over an area of 350m2.	Area was cordoned off and access restricted. File Note developed in order to commence approval process to utilise access. Lease agreement agreed with resident to utilise land for the next 12 months. Corrective Action: Incident investigation underway.	Closed
44	9-Jul-19	2	Pollutant	Whilst positioning concrete barriers along Ryan's Lane, a hydraulic hose on crane of hiab truck failed, spilling hydraulic oil to ground. 10m from dry open drain. 100m north of Serpentine Channel. 10L Hydraulic Oil to compacted ground.	Spill kit deployed and leak stopped. PC notified. Waste cleaned up and disposed of lawfully. Machine put in for repair. Unforeseen event due to blown hose. Machine prestarted daily and checked for where and tear but this type of fatigue in the hose can be difficult to spot due to the sheathing. Machine to be repaired by a suitably qualified person prior to remobilisation. Prestart provided PC.	Closed
45	12-Jul-19	2	Pollutant	Hydraulic hose of an excavator has ruptured during earthworks activities onsite. Approximately <5L of hydraulic oil has spilled onto a sealed surface. The hydraulic oil was contained using spill kit materials and has not entered any stormwater drains or waterways or left site / Approved Project Boundary or EPL. The nearest waterway is Tabbimoble Creek 650m to the north-west.	Excavator operator has stopped work and reported incident to their supervisor. Spill kit material was used to contain and absorb the hydraulic oil. The impacted material will be removed and disposed of in accordance with NSW EPA Waste classification guidelines 2014. The impacted clean-up material does not contain free-liquids and so will be disposed of as 'General solid waste non-putrescible'. A daily pre-start checklist had been completed for the plant and no defects had been observed. Incident response was prompt and effective to contain and clean-up the spill.	Closed
46	12-Jul-19	2	Pollutant	Macerator pump 2 failed causing pit to fill. A small amount of fluid leaked from the pit onto the hardstand surface. Approx. 8 - 10 litres.	All connected toilets were shut down, spill kit deployed and macerator pit was pumped dry. Pump to be investigated to identify cause of failure, rectification of fault(s) to be carried out.	Closed
47	12-Jul-19	2	Pollutant	Shoulder paver caught fire during operation on project. There are no waterways within the vicinity. Water from putting out fire was captured in the existing constructed drain. There was no release offsite from the extinguishing of the fire.	Supervisor was aware of incident, spill booms deployed, spill absorbents deployed, bunds installed within drain to contain any further runoff. Waste contractor engaged to suck out any wastewater generated. Drainage line flushed with watercart while sucking out water from the event, spill containment materials placed in lined waste bins for disposal as part of cleanup. Wastewater taken to licenced facility and disposed of. Debriefing of incident response process completed with Crew. Incident response materials re-ordered in preparation for any further incidents.	Closed
48	19-Jul-19	2	Pollutant	Macerator pump 2 failed causing pit to fill. A small amount of fluid leaked from the pit onto the hardstand surface. Approximately 8 litres. Corrective Action: All connected toilets were shut down, spill kit deployed and macerator pit was pumped dry.	All connected toilets were shut down, spill kit deployed and macerator pit was pumped dry. Pump was investigated, floats covered with paper prevented pump start or alarm activation.	Closed

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49	19-Jul-19	2	Pollutant	Approximately 1 litre of hydraulic oil was spilt from a ruptured hose on a side tipper at approximate chainage 154600. The event occurred approximately 49m from the project boundary to the north, approximately 193m south west of the nearest sensitive receiver and approximately 100m north west of the nearest waterway.	The oil spill was immediately contained. Hydrocarbon spill response materials (absorbent material) were applied to the spill. All hydrocarbon contaminated material was removed. The material was transported to a nearby hazardous material storage container within the project. Tipper taken out of service and damaged hose repaired. Ongoing inspection and regular service of plant and equipment which is part of Contractors preventative maintenance program.	Closed
50	15-Jul-19	2	Pollutant	During Hydro demolition works of the bridge expansion joint at Bridge site BC52, the vacuum truck for capturing waste water from the works reached capacity requiring the crew to empty the vacuum truck at the discharge point. This caused the additional containment drum to reach capacity and has had minor overflow. This overflow was captured well within secondary sump. Upon returning from discharging all waste water, the vacuum truck emptied the containment drum. The minor overflow occurred on abutment B of the northbound bridge, approximately 3 meters from the waterway at C52. No waste water made it to the waterway. Less than 5 litres of waste water.	Containment drum was cleaned out as soon as the vacuum truck was available, spilled waste water on maintenance bench was cleaned up and water was removed from sump. Additional containment drum/ bund to prevent future over flows. Spotter to ensure there is always adequate capacity within containment drum/ bunds.	Closed
51	29-Jul-19	2	Pollutant	Whilst installing F-Type Barriers on eastern side of Bridge 59 northern abutment, A hydraulic hose ruptured on concrete agitator spilling hydraulic oil to ground. Spill occurred approximately 40 metres from open drain, 110 metres upstream from culvert. 10L to compacted earth.	Spill was contained and cleaned up. Supervisor notified Contractor ESR who then notified PC Environmental Representative. Waste disposed of lawfully, and truck taken off-site for repair. Unforeseeable event due to weakness in the hydraulic hose. All vehicles regularly pre-started and checked, however very difficult to spot this kind of weakness. Vehicle repaired and checked by suitably qualified person prior to remobilisation to site	Closed
52	30-Jul-19	2	Pollutant	At approximately 1300 hrs, the western macerator pit at the compound toilet block overtopped, causing a small effluent leak onto the surrounding bitumen hardstand. The spill was controlled as much as possible with spill booms. 3L.	Spill booms placed around spill area. Toilets closed to prevent any further spillage. Pits were cleaned out by waste contractor and pumps cleaned. Future Action: More regular maintenance of macerator pits to ensure continuous operation.	Closed
53	30-Jul-19	2	Pollutant	At approximately 1315 hrs, the eastern macerator pit at the compound toilet block overtopped, causing a small effluent leak onto the surrounding bitumen hardstand. The spill was controlled as much as possible with spill booms. 6L.	Spill booms placed around spill area. Toilets closed to prevent any further spillage. Pits were cleaned out by waste contractor and pumps cleaned. Future Action: More regular maintenance of macerator pits to ensure continuous operation	Closed
54	5-Aug-19	2	Pollutant	On Monday the 05th of August a loader burst a radiator hose causing a small spill of radiator fluid to ground. Work ceased, the spill was reported and spill clean up; materials deployed immediately.	Work ceased. Spill clean up materials deployed and clean up initiated. Spill reported. Loader is being repaired. Check spill response material in the area. Raise awareness by discussing at pre-start meeting. Pre-start checks and regular maintenance for plant including excavators.	Closed
55	6-Aug-19	2	Pollutant	At approximately 0900 hrs, the western macerator pit at the compound toilet block overtopped, causing a small effluent leak onto the surrounding bitumen hardstand. The spill was controlled as much as possible with spill booms. 5L.	Spill booms placed around spill area. Toilets closed to prevent any further spillage. Pits were cleaned out by waste contractor and pumps cleaned. More regular maintenance of macerator pits to ensure continuous operation.	Closed
56	6-Aug-19	2	Failed environmental controls	An inspection identified the mixing of turbid water with 'clean' water within a cane drain. The plume of turbid water was observed within the shallow drain and extended 50m away from the active works area. The turbid water was observed not to have left the Project or EPL boundary. An assessment had determined that the downstream controls, sandbags at edge of works area to contain all turbid water generated, had been removed.	1. An excavator was used to create a sump to contain the source of the turbid water. 2. Sand bags were installed downstream of the works and turbid water. 3. The pooled water located in the cane drain was immediately pumped out and used for dust suppression on the alignment. 4. Controls were reinstated at the outlet of the excavated drain (sand bag check dam) Re-toolbox on Earthworks (land excavation) as per the specified EWMS before any further earthworks are completed in area. .	Closed
57	8-Aug-19	2	Pollutant	During a routine Environmental Site Inspection at Bridges B66 & B67, observed a leak in the bottom of a portable toilet located on a hardstand near the main access gate to Chatsworth Road North. The incident resulted in <1L of effluent laden water leaking onto the ground beneath the portable toilet. The closest watercourse is the Clarence North Arm which is approx. 270m north west. Smaller unnamed cane drains run through the area but no effluent left the project boundary.	Spill kit was deployed as soon as effluent leak was noticed. The leaking portable toilet has been replaced by hire company and the area around it has been dug up and placed in a skip. The area dug out was <80L and does not require a contaminated waste certificate for removal by JR Richards. Contaminated material will be lawfully removed off-site.	Closed
58	10-Aug-19	2	Pollutant	Whilst travelling between work areas the operator of a subcontractor water cart was alerted to a loss of hydraulic pressure from the alarm within the cab. The operator stopped the vehicle and noticed a trail of approximately 10 - 20m of staining on the compacted fill. A hydraulic hose had blown from underneath the vehicle causing hydraulic oil to be spilt. 10 litres.	Work ceased. Spill clean up materials deployed and clean up initiated. Spill reported. Spill material to be disposed of in contaminated waste bin. Continued focus on pre starts on all vehicles ensuring hydraulic hoses are checked for integrity. Unavoidable hydraulic incident.	Closed
59	13-Aug-19	2	Pollutant	Approximately 1 litre of lanolin fluid was identified on the ground at approximately project chainage 153900. Following further investigation it was a cleaning lubricant used during the pack down of concrete pumping works in the area earlier in the day. No material left side or entered the waterway. The event occurred approximately 17 metres from the project boundary to the south east, approx. 435 metres south of the nearest sensitive receiver and approx. 5 metres west of the nearest waterway.	Hydrocarbon spill response materials (absorbent material) were applied to the spill. All hydrocarbon contaminated material was removed. The material was transported to a nearby hazardous materials storage container within the project.	Closed
60	20-Aug-19	2	Pollutant	A hydraulic hose blew on the crane truck outrigger onto rock surface when it was being used to move materials on-site. The spill occurred approximately 100m north of bridge C51 on the W2B alignment.	The crane truck was shut down and the leak stopped to prevent further spill. Clean up of the spill commenced immediately after the source was stopped and the hose disconnected to be repaired. Repair of the hose to reduce the likelihood of a similar incident.	Closed
61	21-Aug-19	2	Pollutant	Whilst undertaking work on the Eastern Abutment of C10 - CH 142 600 the operator of a backhoe noticed loss of hydraulic pressure from a burst hose on the main arm. The burst hydraulic hose caused approximately 3L hydraulic oil to be spilt onto compacted subgrade. The operator disengaged the plant and commenced spill containment and clean up. Waterway: 340m Sensitive receiver: 342m. ~ 3 litres.	Work ceased. Spill clean up materials deployed and clean up initiated. Spill reported. Spill material to be disposed of in contaminated waste bin. Continued focus on pre-starts on all plant ensuring hydraulic hoses are checked for integrity.	Closed
62	22-Aug-19	1	Out of hours work	Dozer operator started machine and began preparation works for fill operations at Iluka west roundabout spoil mound between 6:45 and 6:50am. No OOHW application had been approved. No community complaints were received. The nearest sensitive receiver is located 414m from location of incident. This receiver was shielded by 13m high fill embankment.	PC notified Contractor Project Manager at 0650hr, works ceased and plant switched off @ 0655-0700am. Site foreman reminded operator of approved work hours at this point. Incident was reviewed with all concerned parties (PC, contractor management and site team) in Collective Insight at 0930am. Corrective Actions identified by Collective Insight: 1) Propose moving pre-start meeting from 0630hr to 0645hr to prevent 'dead' time (prior to 0700hr); 2) Vehicle Movement Plan (VMP) to be reviewed for the busy intersection where works are occurring; ensuring appropriate controls are in place and all interfacing contractors are clear on requirements (including Traffic Control and UHF channels); 3) Contractor to conduct OOHW and Standard Work Hours toolbox to all work crews; 4) Clearly communicate activities that may be completed prior to approved working hours (0700hr); and 5) RMS Incident Notification Procedure to be re-communicated to contractor team.	Closed
63	22-Aug-19	2	Failed environmental controls	Approximately 1m of fill material was placed over a Groundwater Monitoring Bore GWB5-01 at the Yamba Interchange Roundabout west. Unsuitable/surplus fill was being placed in the roundabout area when the bore was covered. The sensitive areas plans for the area show a single monitoring bore, however two bores are actually present in the roundabout area. Once the first bore was identified the site team did not look for a second bore.	Contractor notified Pacific Complete of the Groundwater Bore GWB5-01 at Yamba Interchange Western Roundabout that was no longer present to undertake monitoring during their quarterly groundwater monitoring conducted on Thursday 22/08/19. Pacific Complete Construction Team were notified and the Survey Team identified the location of the bore. The Contractors Site Team uncovered the bore and determined repairs/extension of the casing would be required to restore the bore to operation. SAPs will be reviewed by ESR including location of water quality bores in all work areas. A toolbox box talk has been booked to raise awareness with the site team of the features shown Sensitive Area Plans.	Closed
64	26-Aug-19	2	Pollutant	Macerator pump between crib room and toilet block failed causing pit to fill. Small amount of fluid leaked from pit to hardstand surface. Approximately 4-8 litres.	Nil actions reported.	Closed
65	26-Aug-19	2	Pollutant	At approximately 0900hrs, the eastern macerator pit at the compound toilet block overtopped, causing an effluent leak onto the surrounding bitumen hardstand. The spill was controlled as much as possible with spill booms. The total volume of the spill is approximately 40L, however the leak occurred slowly over a period of time, which meant the liquid was easily contained on the hardstand, evaporating before reaching the perimeter drains.	Spill booms placed around spill area. Toilets closed to prevent any further spillage. Pits were cleaned out by waste contractor and pumps cleaned. More regular maintenance of macerator pits to ensure continuous operation.	Closed

ID #	Date of Event	RMS Incident Category	Nature of Event	Summarise the Event Details	Corrective Actions	Event Status
66	27-Aug-19	2	Pollutant	A minor hydraulic oil leak was identified to be coming from the telehandler on-site, with the leak starting at the pre-cast yard and continuing until the telehandler stopped at abutment A of C04 bridge. The leak was identified once the telehandler had stopped. The plant was shut down after the leak was identified and fitter called out to repair the leak. The minor spill trail started approximately 400m from Tuckombil canal and ending approximately 70m from the waterway. < 5L.	The telehandler was shut down once the leak was identified and fitter called to repair the leak. Clean up of the spill started promptly after the spill was identified. Repair of the leak and regular checks of hydraulic lines.	Closed
67	27-Aug-19	2	Pollutant	An unidentified vehicle has exited Castle's Ancillary Area onto Iluka southbound acceleration lane, spilling an approximately 50 metre trail of diesel < 10 litres onto the existing road and Pacific Highway. 30 metres from open drain.	Spill kit material placed over diesel to soak up spill. All Portion B contractors utilising Castles Ancillary Area were contacted, to identify if vehicle is related to their contracted works. A positive identification of the vehicle / driver / or responsible contractor has been yet to be made. It is likely that it was a Portion B contractor. PC will continue to seek responsible vehicle / driver to identify root cause of spill. PC issued a spill response toolbox for all Portion B contractors to deliver.	Closed
68	14-Aug-19	2	Pollutant	Median drain crew commenced washing down the paver after completion of works to find the water tank had been contaminated with diesel. Washing down stopped as the crew investigated the cause of the contamination. No water left the median. Fuel cart operator had mistakenly filled the water tank with diesel as this was consistent with the other machines being filled on the alignment. Distance to nearest waterway: 192m Eversons Creek. Distance to sensitive receiver: 380m #1800. ~ 20 Litres oily water, no release from median on site.	Work ceased. Spill clean up materials deployed and clean up initiated. Spill reported. Contaminated water was bypassed and pumped into a 44 gal drum. Spill material and impacted subgrade to be disposed of in contaminated waste bin. Incident investigation still being undertaken, further information to be supplied once complete.	Closed
69	29-Aug-19	2	Pollutant	On Thursday afternoon, a Posit-track working on fence installation developed a small leak from a hydraulic hose fitting. The operator ceased operation of the plant as soon as a trail of approximately 5m of staining on the loose fill was noticed.	Work ceased. Spill clean up materials deployed and clean up initiated. Spill reported. Spill material to be disposed of in contaminated waste bin. Continued focus on pre starts on all vehicles ensuring hydraulic hoses are checked for integrity.	Closed
70	30-Aug-19	2	Pollutant	Tipper truck driver, subcontractor to Tropic Asphalts, was driving on existing northbound Pacific Highway and realised that tailgate of his tipper truck was not locked. Driver stopped in the nearby emergency stopping bay and noted that clean, raw aggregates had been spilled from the tipper body. Upon investigation, it was noted that approx. 100 kilograms of clean, raw aggregates had been spilled onto the existing Pacific Highway surface.	1. The driver stopped. Locked the gate and reported the event; 2. Tropic Asphalt and Pacific Complete teams informed; 3. Photos of event site taken; 4. Tropic Asphalts utilised a light vehicle under traffic control to collect / clean-up the aggregate from the highway surface; and 5. Tipper truck sent to the mechanic to check the fault. Increase the frequency of inspection program for vehicles. Toolbox presentation to all truck drivers on the importance of tailgate inspections and frequency.	Closed
71	2-Sep-19	2	Pollutant	Rubber tyre tracking from Wants Lane through to Gate 41.7 to Bridge 7 (Coldstream) when gear oil was observed from behind the plant. Oil drips were all contained on northbound pavement. No oil entered pits or any waterways. Closest waterway is Coldstream & site drains leading into Coldstream - within 50 metres. 2 litres.	Upon identification of leak, rubber tyre ceased and material was contained using absorbent material, including additional controls around pits near bridge. Environment Manager was notified and fitter contacted to repair final drive on plant. Continue to report spills, ensure spill kits have adequate supplies and continue to conduct plant checks prior to commencing operations.	Closed
72	2-Sep-19	2	Pollutant	Hydraulic oil spill from moxy hauling through Cut 30 from crushing area. Closest waterway is a site drain south of the cut, approximately 80 metres from spill. 2 Litres.	Upon spill identification, moxy ceased hauling and pads were used with absorbent material to contain spill. Continue to report spills with a quick response and conduct plant machine start up inspections for any identifiable leaks or cracks in hoses.	Closed
73	4-Sep-19	2	Pollutant	At approximately 0900hrs, the western macerator pit at the compound toilet block overtopped causing a small effluent leak onto the surrounding bitumen hardstand. The spill was controlled as much as possible with spill booms. 3 Litres.	Spill booms placed around spill area. Toilets closed to prevent any further spillage. Pits were cleaned out by waste contractor and pumps cleaned. Macerator units to be replaced to reduce instances of failure/blockages. Work carried out 09-09-19.	Closed
74	4-Sep-19	2	Pollutant	During refuelling of an excavator at chainage 104500 the driver of a Caltex truck noticed the feed-line on the hose wheel ruptured a seal. Approximately 8L of diesel leaked onto a sealed based surface. Works stopped and spill kit was deployed immediately. Diesel has not entered any stormwater drains or waterways. The closest waterway is an open drain located approximately 15m to the east. 8L of diesel.	Caltex truck stopped immediately. Spill kit was deployed and absorbent granules were used and placed on the location of the leak, absorbing fresh oil coming from Caltex truck. Operator contacted the area supervisor to report the incident. Affected material will be disposed of in accordance with NSW EPA Waste Classification Guidelines 2014. Damage to feed-line hose was not identified during daily pre-start checklist. Incident response was prompt and effective to contain and clean-up the spill. Spill kit to be re-stocked as necessary.	Closed
75	4-Sep-19	2	Pollutant	IBC Pod containing curing compound was being relocated by the backhoe when the forks clipped the corner of the pod causing it to spill compound onto the median. The closest waterway was a site drain approximately 20 metres. The spill was fully contained and did not enter any drainage line. Approximately 50 litres.	Spill was contained immediately and the damaged IBC was siphoned into another IBC for containment. Refresher training with backhoe operator and raise awareness across project through pre-starts.	Closed
76	4-Sep-19	2	Pollutant	Contractor identified diesel spill had been observed on the existing pavement at the intersection of the Bridge B07 site access gate and Chatsworth Road North at -CH93800. Source of the spill is unknown. The spill is located approximately 10m from an open roadside drain. Note that spilled materials migrated into the waterway. <1L diesel.	Contractor attended the scene and placed spill kit materials over the spilled materials. Source of the spill is unknown. All contractors will be reminded to complete pre-start inspections on all plant and equipment and to ensure site vehicles are in adequate condition (i.e. with no potential for spills/leaks).	Closed
77	5-Sep-19	2	Pollutant	A traffic incident occurred when member of public driving north on Pacific Highway took evasive action to avoid another vehicle. One vehicle has travelled across highway and local road and has struck private vehicle - painters van - on adjacent private property. The vehicles were removed by tow trucks. Police attended the scene. A small amount of paint was spilled onto the ground as a result of the impact. This was cleaned up by the painting crew.	Spilled paint was cleaned up immediately where possible.	Closed
78	17-Sep-19	2	Pollutant	Whilst preparing to sweep the bridge and pavement south of C54 the operator of the water cart noticed the sweeper attachment wouldn't drop down and pulled up to stop off the bridge. The operator noticed a leak from a burst hydraulic line at the front of the vehicle. No hydrocarbons left the bridge or entered the waterway. Waterway: 2m. Sensitive Receiver: 300m. ~ 15 Litres.	The water cart was stopped to cease hydraulic pressure. Spill clean up materials deployed and clean up initiated. Spill reported. Spill material disposed of in contaminated waste bin. Street sweeper undertook a final clean of the bridge and approach slab surface. Continued focus on pre-starts on all plant ensuring hydraulic hoses are checked for integrity. Sub contractor has reduced the length of the hydraulic line to sweeper attachment to prevent additional wear when approaching ramps. Continued focus on pre-starts on all plant ensuring hydraulic hoses are checked for integrity. Sub contractor has reduced the length of the hydraulic line to sweeper attachment to prevent additional wear when approaching ramps.	Closed
79	18-Sep-19	1	Out of Hours Work	Foam bitumen placement continued until 9:40pm, with rolling and curing until 10:20pm. Approved OoHs permit covers foam bitumen rolling, trimming and curing (not placement) on a weekday 6pm-10pm. 350m to closest receiver(R385). Due to an unexpected rainfall event (Attach. B) 11am-1pm, the placement of foam bitumen was delayed due to quality and enviro risks. Foam bitumen is transported 1.5hrs from Coraki to site. The placement of foam bitumen could not re-commence until the pavement was dry. Not continuing works would have resulted in non-compliance to Q6, Annexure Q/L, L1, RMS Q Cl.7.5.3 requiring a lot to be completed to achieve continuous homogeneous end product (i.e. completed on same shift). If material not placed, 210m3 would have hardened over night and be non-conforming material.	Contractor had internal discussions with the construction team to confirm the incident details and to reinforce the Out of Hours works procedure.	Closed
80	20-Sep-19	2	Pollutant	19 September, debond was applied to north bound shoulder. 20 September, additional debond wax was applied to same area, unexpected rain scud came through <1mm predicted. 0.6mm recorded at Cox RG, caused the debond to mobilise and enter the no fines, subsoil then pits and ultimately ran into TB59400. Closest waterway was within 50 metres, runoff was contained with a basin. No offsite impact or entry into the waterway. 50 litres of debond curing wax compound - approx. 30,000 litres mixed with basin water.	Incident was reported immediately. Basin TB59400 was dewatered completely using water carts and the drainage lines flushed to remove any residual compound. Water used for dust suppression as per EWMS. Future Action: Toolbox to crews regarding change in application by site surveillance officers to be escalated to Paving Manager or Superintendent. Paving tarps to be readily available at all paving fronts. EWMS to be updated and recirculated.	Closed
81	24-Sep-19	1	Out of Hours Work	OOH was in place and had been extended several times previously for the Switch 2 works. The switch the occurred on the 24th of September five days after the OOH had expired. The communications and notifications were still current at the time. The nearest sensitive receiver is located 95m from the area as part of the switch..	This was an oversight by both Contractor and PC teams, as such both parties will be raising internal CARs. Following becoming aware of the incident a review of OOH was undertaken. OOH sheet on expiry dates for OOH work will be included as part of the Planning meeting for each of the OOH works moving forward to prevent a recurrence.	Closed
82	12-Sep-19	2	Pollutant	Whilst undertaking paving work at Chainage 123200 a truck onsite blew a hydraulic hose. ~ 12 Litres. Nearest waterway is located 400m away.	Work ceased. Spill clean up materials deployed and clean up initiated. Spill reported. Spill material to be disposed of in contaminated waste bin. Continued focus on pre-starts on all plant ensuring hydraulic hoses are checked for integrity.	Closed
83	30-Sep-19	2	Pollutant	Macerator pump between crib room and toilet block failed causing pit to fill. Small amount of fluid leaked from pit to hardstand surface. Approximately 2-3 litres.	Closed toilets blocks to ensure no further spillage. Check macerator alarm functions are operating correctly to ensure spill response times are adequate.	Closed