# Warrell Creek to Nambucca Heads Compliance Tracking Report February 2016 – August 2016

Pacific Highway Upgrade: Warrell Creek to Urunga Stage 2

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# Document control

Report name

Warrell Creek to Nambucca Heads compliance tracking report (3)

February 2016 – August 2016

Revision Number

C

# **Revision history**

Rev	Description	Originator	Reviewed	Approved	Date
Α	Initial Draft	A.Dwyer	N.Rutherford	N.Rutherford	18/9/2016
В	Incorporating comments from RMS/ER	N.Rutherford	S.Hardiman	C. Clark	13/10/16
С	Incorporating comments from DP&E	C.Wicks	S.Hardiman	C. Clark	18/01/17

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## **Terms and Abbreviations**

AADJV	Arup and Aurecon Design Joint Venture
ACCIONA	ACCIONA Infrastructure Australia Pty Ltd
AFG	Aboriginal Focus Group
AFJV	ACCIONA and Ferrovial Joint Venture
AADJV	Arup Aurecon Design Joint Venture
ASF	Ancillary Site Facility
AS/NZS	Australian and New Zealand Standard
СЕМР	Construction Environmental Management Plan
D&C	Design and Construction
DG	Director General – Department of Planning and Environment
DPE	Department of Planning and Environment
EDMS	Electronic Document Management System (TeamBinder)
EPA	Environment Protection Authority
ERG	Environmental Review Group
Ferrovial	Ferrovial Agroman (Australia) Pty Ltd
ID Planning	ID Planning Pty Ltd
IMS	Integrated Management System
ISO	International Standards Organisation
КРІ	Key Performance Indicator
MCoA	Ministers Conditions of Approval
NSW	New South Wales
O&M	Operations and Maintenance
OEH	Office of Environment and Heritage
РМТ	Project Management Team
PV	Project Verifier

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Roads and Maritime	Roads and Maritime Services
SoC	Statement of Commitments
SWTC	Scope of Works and Technical Criteria
WC2NH	Warrell Creek to Nambucca Heads (the Project)

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## **Definitions**

Client	An organisation inviting and receiving tenders and letting contracts. For the purposes of this project - Roads and Maritime Services
Contractor	An organisation that contracts with a client to carry out construction and related services. For the purposes of this Project - ACCIONA Ferrovial Joint Venture.
Deed	D&C Project Deed, IC-DC-C91-1, Pacific Highway Warrell Creek to Nambucca Heads
Design Joint Venture	Joint Venture consisting of Arup and Aurecon
Director General	Director General of the Department of Planning and Environment
Government Agency	NSW government department, authority, corporation or entity established by an Act of the NSW Parliament
Persons Conducting a Business or Undertaking	Is an employer, corporation, partnership, unincorporated association that has the primary duty of care for workplace health and safety - (AFJV and Contractors are a PCBU)
Planning Approval	Refers to the Consolidated Instrument for Modification 8 of the Planning Approval which contains the Ministers Conditions of Approval.
Principal Contractor	A person conducting a business or undertaking that commissions a construction project. For the purposes of this project - AFJV
Project	The design and construction of the upgrade to the Pacific Highway between Warrell Creek and Nambucca Heads
Project Verifier	For the purpose of the Project, this is Davis Langdon Australia Pty Ltd
Proof Engineer	For the purpose of the Project, Cardno Pty Ltd
Site	'Site' generally refers approved construction site.  'site' may refer to other sites specifically referred to, such as sensitive area sites, compound sites, on-site activities, site inspections etc.
Subcontractor	Organisation that contracts with a principal contractor as the client to carry out construction and related services
Worker	Is anyone who carries out work for a PCBU and includes: an employee, contractor or sub-contractor or an employee of, labour hire personnel, apprentice or trainee, work experience student

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## 1. Introduction

The Pacific Highway Warrell Creek to Nambucca Heads Upgrade project (the Project) is being designed and constructed by Pacifico, a joint venture consisting of ACCIONA Infrastructures Pty Ltd (ACCIONA) and Ferrovial Agroman (Australia) Pty Ltd (Ferrovial), herein referred to as the Pacifico - ACCIONA Ferrovial JV (AFJV), with overall project management and site supervision of the project by Roads and Maritime Services (Roads and Maritime).

#### 1.1. Project Background

The Warrell Creek to Nambucca Heads (WC2NH) Upgrade project consists of the detailed design and construction of 19.6 km of new dual carriageway road on the Pacific Highway between the northern end of the existing Allgomera Deviation south of Warrell Creek and the southern end of the Nambucca Heads to Urunga Pacific Highway upgrade project west of Nambucca Heads. The project includes:

- 19.6 km of new divided dual carriageway;
- two grade separated interchanges at Warrell Creek and Bald Hill Road south of Macksville.
- a northbound on-ramp and southbound off-ramp at North Macksville;
- longitudinal bridges across Upper Warrell Creek, Williamson Creek, Warrell Creek, Nambucca River floodplain (2 of) and Nambucca River;
- overbridges on Cockburns Lane, Rosewood Road, Albert Drive, Scotts Heads Quarry access road, Bald Hill Road, Old Coast Road South, Mattick Road and Old Coast Road North;
- Underpass underneath North Coast Railway Line near Browns Crossing Road;
- · local roads, drainage and fauna crossing structures; and
- associated infrastructure.

#### 1.2. Compliance

This report has been prepared to fulfil the requirements of Planning Approval Condition B25 for the for the period 9 February 2016 to 8 August 2016

Table 1 – Compliance reference.

MCoA Reference	Comment	Section Reference
B25 The Proponent shall develop and implement a <b>Compliance Tracking Program</b> to track compliance with the requirements of this approval. The Program shall be submitted to the Director General for approval prior to the commencement of construction and relate to both the construction and operational phases of the project, and include, but not necessarily be limited to:	Compliance Tracking Program prepared by Roads and Maritime and approved in March 2013 by the Director General. Document updated in October 2014 for WC2NH Project and resubmitted to the Director General. The Compliance Tracking Program was approved by the Director General on the 16/12/14. Construction Phase of the WC2NH Project commenced on the 9 <sup>th</sup> of February 2015.	NA
(a) provisions for the notification of the Director General of the commencement of works prior to the commencement of construction and prior to the commencement of operation of the project (including	Compliance Tracking Program states that 48 hours' notice to be provided to the Director General prior to the commencement of construction. Notification provided to Director General by RMS to	NA

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MCoA Reference	Comment	Section Reference
prior to each stage, where works are being staged);	commence construction on the 9/2/2015.	
(b) provisions for periodic review of project compliance with the requirements of this approval, Statement of Commitments and documents listed under condition A1;	Compliance Tracking Program requires 6 monthly reviews of the MCoA, SoC and other relevant approvals. This report will be produced after the compliance review and reported to the Director General 6 months after the commencement of construction and every six months thereafter during the construction phase of the Project. Independent Compliance Audit undertaken 26-28/04/16 by SNC Lavalin.	This report Section 3
(c) provisions for periodic reporting of compliance status against the requirements of this approval, Statement of Commitments and documents listed under condition A1 to the Director General including at least one month prior to the commencement of construction and operation of the project and at other intervals during the construction and operation, as identified in the Program;	A Compliance Tracking Report will be prepared and submitted to the Director General six months after the commencement of construction and every six months thereafter throughout the construction phase of the WC2NH Project.	This report
(d) a program for independent environmental auditing in accordance with ISO 19011:2003 - Guidelines for Quality and/ or Environmental Management Systems Auditing;	The Compliance Tracking Program and the Project Construction Environmental Management Plan include the requirements for regular independent auditing.	Section 3
	Six-monthly independent audits will be undertaken in accordance with ISO 19011:2003 – Guidelines for Quality and/or Environmental Management Systems Auditing and the findings included in the Compliance Tracking Report.	
	Independent Compliance Audit undertaken 26-26/04/16 by SNC Lavalin.	
(e) mechanisms for reporting and recording incidents and actions taken in response to those incidents;	The Compliance Tracking Program refers to the Roads and Maritime's Environmental Incident Classification and Reporting Procedure and includes details on incident reporting in Section 2.5.	Section 6
(f) provisions for reporting environmental incidents to the Director General during construction	This Compliance Tracking Report will include a brief description of the incidents that have occurred in	Section 6

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MCoA Reference	Comment	Section Reference
and operation; and	the reporting period, including the corrective and preventative actions to prevent reoccurrence.	
(g) procedures for rectifying any non- compliance identified during environmental auditing, review of compliance or incident management.	This Compliance Tracking Report will include a brief description on audits undertaken during the reporting period, a review of the Project's compliance with the MCoA and SoC and any noncompliance raised. This report will also address the corrective/preventative actions undertaken to rectify the noncompliance.	Section 3
	The Compliance Tracking Program includes procedures for rectifying non-compliance in Section 2.7.	

# 2. Scope of Activities undertaken during reporting period

The Construction works undertaken during the reporting period include:

- Topsoil stripping and stockpiling including the establishment of temporary stockpile locations;
- Ongoing earthworks including cut excavation and embankment filling works;
- Production blasting in Cut 9, 10, 11 and 12;
- Crushing and screening of rock material;
- Installation of cross drainage culverts and transverse drainage;
- Installation of temporary working platforms for bridge installation;
- Bored and driven piling and ongoing bridgeworks;
- Bridge headstock construction;
- Bridge deck construction;
- Precast and Batch Plant Construction and Operation;
- Girder manufacture and installation;
- Fauna Fence Installation;
- Installation of permanent rural fencing;
- Environmental Monitoring including water quality, noise, air and ecological monitoring;
- Permanent Landscaping;
- · Waterway Crossing installation and removal;
- Williamson Creek Realignment;

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- Stoney Creek realignment and rehabilitation;
- Installation of frog friendly treatments in the culvert at Butchers Creek;
- Installation of permanent noise mounds;
- Installation of longitudinal pavement drainage;
- Commence laying upper zone material in preparation for paving;
- Opening of permanent Old Coast Road Central alignment to live traffic;
- Opening of Local Access Road E to live traffic;
- Opening of the rail diversion near Cockburns lane to allow access to existing train line for cut and cover works;
- Acid Sulfate Soil Treatment:
- Basin installation, augmentation, decommissioning and dewatering activities.

#### 2.1. General performance of environmental controls

The Project has been subject to several heavy rainfall events in June and August 2016. The heaviest rainfall event generated >300mm of rainfall. Robust erosion and sediment control measures were in place prior to the rainfall events with considerable effort made in the lead up to ensure the site was compliant with the "Blue Book". Two non-compliances were recorded during the reporting period, the details of which are provided in Section 3 below. It was noted overall by the EPA and Fisheries that the erosion and sediment controls had worked appropriately throughout the heavy rainfall events. Maintenance and repair to the controls was required after the rainfall events. Ongoing water quality monitoring in the major creeks and rivers (in accordance with the approved Water Quality Monitoring Program) has indicated that construction activities have not impacted on the water quality of these waterways.

Ecological monitoring is ongoing in accordance with the Ecological Monitoring Program. Results of ecological monitoring undertaken in Autumn and Winter of year 2 of construction have shown the construction activities are not having an impact on threatened species located adjacent to the Project construction works. Monitoring to be undertaken in Autumn and Winter of year 2 of construction (this reporting period) include:

- Microbat monitoring including:
  - roost box monitoring;
  - persistence and behaviour in the vicinity of Crouches Creek Bridge;
  - habitat monitoring;
  - o over-wintering survey of existing and new culverts;
- In-situ threatened flora; and,
- translocated areas.

RMS and the ER team currently conduct fortnightly inspections assessing issues raised during the inspection based on the environmental risk.

An Environmental Work Method Statement (EWMS) has also been prepared for each high risk activity, which is reviewed by Roads and Maritime, the ER and relevant agency representatives. The EWMS includes control measures required to reduce the risk of hazards to the environment and compliance is closely monitored on site by AFJV and Roads and Maritime.

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#### 2.2. Outcome of Independent Audits

There were three audits conducted on the project during the reporting period including:

- An independent audit of the Ministers Conditions of Approval and the Statement of Commitments (April 2016).
- An audit of the CEMP Out of Hours (OOHW) Works Procedure by the project ER (Feb 2016).
- An audit of the CEMP Community Involvement Plan (CIP) by the project ER (June/August 2016).

The independent audit was undertaken by SNC Lavalin on 26 – 28 April 2016. The audit reviewed the Project's compliance with the Ministers Conditions of Approval (MCoA) and the Statement of Commitments (SoC) as required by the CEMP.

Compliance with the Project approval was assessed over the reporting November 2015 – April 2016. In accordance with the Compliance Tracking Program Section 2.4 the first independent audit was conducted within 3 months of the commencement of construction activities and therefore ongoing audits are conducted every six months thereafter.

There were no corrective actions raised with the MCoA and SoC that were not already reported in the previous Six-Monthly Compliance Report. The following conclusion was raised:

- There is strong evidence to suggest that environmental management plans as required by the MCoA and the SoC continue to be implemented on site.
- The standard of environmental controls, protection and management is generally high
- AFJV have implemented a management programme for tracking compliance with MCoA and SoC and this appears to be effective.
- The Project is reaching the stages of peak production and it is recognised that during this period, the risk of incident is increased. There are a number of instances where repeat incidents have occurred. While corrective actions have been implemented by Pacifico, it is recommended that a higher level of focus and prioritisation of resources is applied to the management of these issues to minimise the risk of recurrence. It is also recommended that DPE feedback and/or approval of technical submissions and reports is followed up to ensure there are no unexpected changes imposed on the project at later stages of construction.

The audit of the CEMP Out of Hours Works Procedure and associated management plans by the project ER found that the Projects management of OOHW has generally been undertaken in accordance with the approval requirements, although minor departures from the approved management plans were also found. These observations related to:

- Implemented mitigation measures highlighted for the ancillary compounds
- Timing of notifications to the community
- Consultation material provided to the community

The audit of the CEMP Community Involvement Plan by the project ER found that the Project's management of community has generally been undertaken in accordance with the approval requirements; however non-compliances were found relating to community notification of OOHW and detailed below in section 3.

It is important to note that the final report of the audit of the CEMP Threatened Flora Management Plan (TFMP) by the project ER undertaken during the previous reporting period in September 2015 was finalised during this reporting period. The report found that not all translocated plants were tagged in the method described in the TFMP. All plants had been tagged with flagging tape however the tape had deteriorated and were not visible at the time of the audit. All plants were tagged with GPS coordinates. All plants are located within dedicated 'no-go' zones to be visible to surveyors and personnel walking through the translocation area in accordance with section 5.1.5 of the plan. The plants were re-tagged immediately before the audit was closed out. The tags are checked during the monitoring of translocated areas. This CAR was closed out before the audit report was issued and no further corrective/preventative actions were required

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# 3. Non-compliances

Four (4) non-compliances against the Ministers Condition of Approval occurred during the reporting period as outlined below.

1. MCoA B31 (a) – Breach of Road Occupancy Licence (ROL)

This breach of the Traffic and Safety Management Plan (section 6.5) resulted in excessive queue lengths during work on the Pacific Highway.

#### Description:

On Tuesday 23rd February 2016 during asphalt activities for the New Albert Drive intersection, traffic queues exceeded the ROL (532366) Condition of removing the obstruction to traffic once queue lengths exceed 500m. At approx. 0630hrs queues were approximately 1.3km long. The 60km/h zone and PREPARE TO STOP signage implemented extended 1km from the Traffic Controller. No queue monitors were in place at the time. The Traffic Manager and/or Traffic Superintendent were not notified immediately and the TMC was not notified of excessive queuing.

#### Corrective / Preventative Actions:

- Traffic lanes were re-opened and traffic flushed by the Traffic Superintendent. Queue monitors were implemented by the day shift crew.
- Change Management process developed by Quality Manager and tool-boxed 04/04/2016 to determine whether additional hazards will be created (e.g. working during a higher traffic volume period) and whether suitable controls can be implemented. Process to include accurate and timely notifications to the Traffic Manager / Traffic Superintendent where required.
- 2. MCoA B31 (d) and C17 Non-compliance with the CEMP Construction Water Quality Management Plan and AFJV Environment Protection Licence (EPL) no. 20533.

On one occasion, AFLV was not able to achieve the water quality limits to permit the dewatering all of the sediment basins on site within five days after the cessation of the rainfall event in accordance with the CEMP Construction Water Quality Management Plan and Condition 05.9 of the EPL.

## Description:

On 10 June 2016, following a significant rainfall event resulting in over 300mm of rainfall between the 2nd-6th June 2016, the Project was unable to dewater all of the sediment basins on site as the water quality required for dewatering could not be met post treatment with flocculant. The majority of sediment basins were dewatered within 5 days from the cessation of the rainfall event (Sunday afternoon 05/06). Only 8 out of 64 basins were released after Day 5 (Friday 10 June). These basins were released on Saturday 11 June (Day 6).

#### Corrective/Preventative Actions:

- Communicate to the project the interpretation of the EPL condition 05.9 requiring release of water within 5 days of the cessation of the rainfall event and not at the cessation of runoff which had been the understanding of AFJV.
- Ensure there are adequate resources to treat and release basins within the 5 day period
  after the cessation of the rainfall event. Due to the nature of the significant rainfall event, it
  was difficult to treat and release all of the sediment basins within the strict timeframes (53
  basins were commissioned and in use on the WC2NH Project at the time) within the 5-day
  period as the pre-dosing of flocculant was washed away and the basins required retreated.
- 3. MCoA B28 / B31 (b) Non-compliance with the CEMP Community Involvement Plan (B28) and Construction Noise and Vibration Management Plan (B31 (b)) and AFJV Environment Protection Licence (EPL) no. 20533

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This non-compliance relates to community notification of Out of Hours Works and has breached related aspects of the Community Involvement Plan (B28) and Construction Noise and Vibration Management Plan (B31 (b)).

#### Description:

The plans and requirements associated with the management of Out of Hours Works include

The Out of Hours Works Procedure (Appendix C of the Construction Noise and Vibration Management Plan)

- The actions prescribed to manage OOWH works/extended working hours issues described in item 5.1.20 of the Community Involvement Plan
- Condition L4.4 of the contractor EPL

During the reporting period, although agreements had been obtained for all OOWH works as required. quarterly out of hours notifications have not been routinely sent to all sensitive receivers outlined in the CEMP and published on the project website in accordance with the EPL.

Corrective / Preventative Actions:

- In accordance with the ER audit recommendations, AFJV and RMS are working to determine how OOHW is to be managed and communicated and revise plan where necessary to meet current practices or where changes are required to ensure conditions of the EPL are fully complied with.
- 4. MCoA B30 / A6 Construction Environment Management Plan AFJV Environment Protection Licence (EPL) no. 20533

The project CEMP and MCoA requires the project to comply with the requirements of the POEO Act 1997 and EPL issued for the Project. This non-compliance was a breach of both the POEO Act and the EPL by undertaking activities outside the EPL premises which relates to undertaking works without a licence.

#### Description:

On 27 May 2016, approximately 20t of rock was stockpiled on the old council access track in the Gumma Floodplain on the mistaken assumption that the stockpile area was within the Project Boundary. The EPA was notified of this incident. There was no environmental harm as a result of the stockpiling

Corrective / Preventative Actions:

The rock was removed, and the area was topsoiled and hand seeded. The Project Boundary was flagged and signed. The requirements for correct signage and flagging were toolboxed and a flagging audit was undertaken. As a result of the incident here are now more stringent approvals and assessments required for any works near and proposed outside the project boundary to ensure similar incidents do not reoccur.

# 4. Outcomes of ERG Inspections

The Project has held five Environmental Review Group meetings during the reporting period. The meetings generally have involved the following discussions / briefings:

- Approval Update (CEMP, Sub-plans, Consistency Assessments);
- · Design Updates;
- Construction Status Updates and Activities Completed;
- Ecologist Update (Flora and Fauna)
- Monitoring Update (Air Quality, Noise Monitoring, Water Quality etc.);
- Environmental Incidents;
- EWMS Updates; and
- Workshops;

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This meeting is then typically followed with a site inspection with RMS, AFJV, EPA and DPI to gain an understanding of the design / construction implications for different aspects of the works as well as to gauge the environmental management and associated processes being delivered by AFJV on the ground during daily operations. Inspections also focus on high risk activities being undertaken onsite during this scheduled meeting including clearing and grubbing, design refinements, basin inspections (including augmentation and decommissioning), stockpile management, utility relocations, erosion and sediment controls for works adjacent to sensitive areas, creek realignments (Williamson Creek/Stoney Creek), widened medians inspections, consistency assessment site inspections and bridge construction. Inspections have also been undertaken during the ERG's on specific mitigation measures contained within the flora and fauna management plans (i.e. Giant Barred Frog Management Plan) where inspections have focused on the installation and monitoring associated with exclusion fencing, translocation of fauna species etc. and this provides an opportunity for both agencies and contractor to discuss these mitigation measures, their effectiveness and monitoring results of works undertaken to date.

Table 2 below provides a summary of the items discussed at each ERG undertaken during the reporting period.

Table 2 - FRG Discussion Notes

Table 2 – ERG Discussion Notes			
Date	Stakeholder Attendees	Summary of Items Discussed	
ERG # 22 16/02/2016	Chris Wicks – RMS	Approval Update;	
	Jim Steen – RMS	North Facing Ramps Update;	
	Chris Clark – RMS	<ul> <li>Design Update – Lowering of Raised Median Old Coast Road North;</li> </ul>	
	Sean Hardiman - RMS	Proposed Temporary Bridge – Lower	
	Brian Tolhurst – EPA	Warrell Creek;	
	Justin McCarthy - AFJV	<ul> <li>Biodiversity Update; Glidability Assessment – Widened Median;</li> </ul>	
	Jason Haslett – AFJV Jack Henderson- AFJV	Blasting Update; Site Access Standard Drawings;	
	Alex Dwyer – AFJV	Construction Update;	
	Chris Churcher – Alt ER	Landscaping / Stabilisation Update;	
	James Sakker – DPI	Roadkill Survey Update;	
	Craig Dunk – EPA	Monitoring Update;	
	Brett Nudd - EPA	Out of Hours Works;	
		Incidents;	
		Complaints	
ERG #23 14/03/2016	Chris Wicks – RMS	Approval Update;	
	Jim Steen – RMS	Design update – fauna furniture and	
	Chris Clark – RMS	dropdown structures, glidability assessment	
	Sean Hardiman - RMS	Biodiversity Update	
	Brian Tolhurst – EPA	Construction Update;	
	Justin McCarthy - AFJV	Landscaping/Stabilisation Update;	
	Jason Haslett – AFJV	Monitoring Update;	
		Out of Hours Works;	

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Date	Stakeholder Attendees	Summary of Items Discussed
	Allison Kelly – AFJV	Incidents;
	David Bone – ER	Complaints;
	Glenn Snow – DPE	
	Lauren Rose – DPE	
	Lindsay Cooper – RMS	
	James Sakker - DPI	
ERG #24 12/4/16	Chris Wicks – RMS	Review of action tracker;
	Jim Steen – RMS	Approval Update;
	Chris Clark – RMS	Design Update – Fauna Drop Down Structures, State Forest Turnaround
	Sean Hardiman - RMS	Bays;
	Brian Tolhurst – EPA	6 Monthly Compliance Report Update
	Craig Dunk – EPA	Biodiversity Update
	Alex Dwyer – AFJV	Construction Update;
	Jason Haslett – AFJV	Basin decommissioning
	David Bone – ER	Easter Shut Down
	Chris Churcher – ER	End of Day Controls focus
	Justin McCarthy - AFJV	Internal WEMP
		Monitoring Update;
		Out of Hours Works;
		Incidents;
ERG #25 17/05/16	Chris Wicks – RMS	ER's Action Tracker review
	Justin McCarthy - AFJV	Approvals Update;
	Sean Hardiman - RMS	Stoney Creek Realignment
	Jim Steen – RMS	Dust Management Update
	Glenn Snow – DPE	Biodiversity Update;
	Lauren Rose - DPE	Roadkill Survey Update;
	Craig Dunk – EPA	Asphalting Update – Primer Seal Permit
	Peter Higgs - EPA	Construction Update
	Noelene Rutherford –	Urban Design and Landscape Plan Update
		Basin Decommissioning
	Edward McPhillips – AFJV	Monitoring Update;
	David Bone - ER	Blasting Update;
		Out of Hours Works;

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Date	Stakeholder Attendees	Summary of Items Discussed		
		Incidents;		
		Complaints;		
ERG #26 15/06/16	Chris Wicks – RMS	Review of actions tracker		
	Sean Hardiman - RMS	Approvals Update;		
	Jim Steen – RMS	Pre-rainfall event preparation		
	Brian Tolhurst – EPA	Post rainfall event actions		
	Peter Woods - RMS	Biodiversity Update		
	Craig Dunk – EPA	Update on Widened median workshop and glidability assessment		
	James Sakker – DPI	Construction Update;		
	Joe Bartlett - RMS	Monitoring update;		
	Justin McCarthy – AFJV	Out of Hours Works;		
	Noelene Rutherford -	Incidents;		
	AFJV	Complaints;		
	Matthew Francisco – RMS	Update on Asphalt Plant;		
	Allison Kelly – AFJV			
	Lindsay Cooper - RMS			
	David Bone - ER			
ERG # 27 12/07/2016	Chris Wicks – RMS	ER Action Tracker		
	Jim Steen – RMS	Approvals Update;		
	Justin McCarthy - AFJV	Biodiversity Update;		
	Joe Bartlett – RMS	Autumn Ecological Monitoring Update;		
	Sean Hardiman - RMS	<ul> <li>Overwintering Mircobat Monitoring Update;</li> </ul>		
	Craig Dunk – EPA	Proposed changes to NBMP;		
	Brian Tolhurst - EPA	Roadkill Update;		
	James Sakker - DPI Allison Kelly – AFJV	Construction Update;		
		Paving Update;		
	Noelene Rutherford –	Monitoring Update;		
	AFJV	Out of Hours Works;		
	David Bone - ER	Incidents;		
		Complaints;		

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#### 5. Incidents

Roads and Maritime, and its contractors, take the view that any environmental related unplanned events, whether they impact the environment or not, are reported and recorded as incidents. This type of approach allows for the analysis of trends and encourages a culture within the workforce for continual improvement. This approach is well accepted within the Workplace Health and Safety industry as a tool to recognise unsafe practices early and put in place appropriate controls before significant incidents occur.

Environmental incidents are identified by the AFJV in accordance with the Roads and Maritime Incident Classification and Reporting Procedure. Roads and Maritime has acknowledged the AFJV incident reporting culture and the focus that the AFJV takes on minimising recurrences of incidents.

A total of 35 environmental related unplanned events categorised as environmental incidents occurred on the project during the reporting period. Thirty two (32) incidents were of a minor nature; with the remaining three classified as category 1 incidents in accordance with the Incident Classification and Reporting Procedure. The procedure states that:

"An environmental incident...need not necessarily be an incident that comprises a breach of legislation. Nonetheless, it is important to capture this information to improve RMS's environmental practices and contractor performance".

- Category 1: Generally breaches of environmental legislation, such as pollution of waters, noncompliance with EPL / approval conditions, and unauthorised or non-approved works.
- Category 2: Generally less environmentally serious with no or minimal offsite environmental impact. E.g. Minor non-compliances with CEMP, small spills.

A breakdown of the Category incidents is provided below.

Table 5.1 – Category 1 incidents reported to RMS by AFJV during this reporting period.

Date	Description	
22 February 2016	Sediment laden water left premises at Butchers Creek following rainfall due to failure to reinstate a drainage diversion bund to a sediment basin following construction activities in the area. EPA was notified of the incident and procedures were put in place to mitigate impacts and minimise the likelihood of recurrence including re-establishing end of day controls.	
22 February 2016	Sediment laden water left premises at Rosewood Creek following rainfall due to failure to reinstate all stormwater controls temporarily taken off line during construction activities in the area. EPA was notified of the incident and procedures were put in place to mitigate and the likelihood of recurrence including reestablishing end of day control.	
27 May 2016	A small rock stockpile was placed on an old council access road located outside the project and adjacent to EPL boundary. The EPA was notified of this incident. There was no environmental harm as a result of the stockpiling. As a result of the incident here are now more stringent approvals and assessments required for any works near and proposed outside the project boundary to ensure similar incidents do not reoccur. This incident has been reported in section 3 as non-compliance to the MCoA B30.	

There was also one potential Category 1 incident that was reclassified as a Category 2 relating to sediment basin management. The incident was due to failure to restore the capacity of 8 out of the 64 sediment basins on the project within 5 days from the cessation of the rainfall event as per the Acciona EPL. The basins were restored the following day, (i.e. within 6 days of the rainfall event) and as soon as water quality discharge criteria were able to be achieved. The non-conformance followed a significant rainfall event resulting in over 300mm of rainfall falling over the  $2^{nd} - 6^{th}$  June 2016. The Project was unable to dewater the sediment basins on site within the prescribed 5 days as the water quality required

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for dewatering could not be met post treatment with flocculant. The project chose to retain the stormwater in the basins until the water quality reached acceptable levels for an extra day rather than risk the pollution of waters by discharging outside licence limits

. In accordance with the Roads and Maritime Incident Classification and Reporting Procedure, the AFJV reported a number of minor fuel and oil spills as Category 2 incidents. During the reporting period, there were:

- 24 minor oil spills (including 18 hydraulic hose leaks)
- 5 minor fuel / solvent spills
- 2 minor concrete spills and
- · one incident relating to sediment basin management

All the spills were managed within the site and installed controls. Any contaminated material or soil was collected and disposed of at licensed waste facilities in accordance with the approved CEMP. The table below summarises the general statistics regarding hydrocarbon spills on site.

Total No	Average	Average Total spills/ volume spilled (litre)	Average Volume range (litre)		Average	No.	Total	
hydrocarbon Spills			volume per spill (litre)	Min	Median	Max	>5 litres	volume leaving project boundary
29	1.1	340.1	11.75	0.1	5	50	13	0

During the reporting period there was, on average, approximately 140 pieces of major plant operating on the project ranging from heavy earthmoving and lifting equipment, not including light vehicles, pumps and generators. The summary data shows that of the 29 hydrocarbon spills that occurred during the reporting period, there was generally just over 1 spill per week. This is considered a small amount given the large number of major plant operating on the project each day.

The management of spills from this equipment remains an important challenge for all industry contractors including AFJV. Roads and Maritime enjoys a positive reporting culture from the AFJV with regard to spill management which assists in the ongoing mitigation and consideration of these occurrences in operating equipment in sensitive environments.

Lessons learnt from the identification, reporting and management of spills provide benefits to the project and other RMS construction and maintenance activities. There are several good examples in this regards such as:

- Oil spills that occurred on 17th & 18th November 2015 during activities on the Nambucca River. On the 17th, a hydraulic hose burst at the fitting. This was repaired and the equipment put back into service. On the 18<sup>th</sup>, the same thing happened. An investigation revealed subtle differences between brands of hoses and fittings that affected the operational capabilities of the equipment. The subsequent repairs correctly matched the hoses and fittings. Procedures were then changed to ensure brands of hoses and fittings were correctly matched To date, there have been no repeat occurrences. The learnings from the investigation were also passed on to the Smithbridge/RMS bridge project at Stingray Creek down at North Haven. . Awareness of this risk was also raised across the wider RMS organization to begin improving this practice
- On 18/3/16, a 6" self-priming pump used to dewater the Nambucca River bridge works was found
  to have been discharging up to 200ml of oil within the hydrocarbon boom surrounding the
  worksite. A thorough root-cause analysis was undertaken, finding that under certain
  circumstances, such discharges could be expected as part of the pump's normal operation. This
  finding prompted a project-wide review of the types of self-priming pumps used for similar
  purposes. The result was a better understanding of the risk profile and improved management of

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the hazard. Awareness of this risk was also raised across the wider RMS organization to begin improving this practice.

.. .

# 6. Outcome of monitoring undertaken

Preconstruction and background monitoring / ground truthing have been undertaken to set trigger value data for reference once construction commences. This has consisted of surface water and groundwater quality monitoring, ground truthing of vegetation communities and threatened flora locations.

## 6.1. Surface Water and Groundwater Monitoring

Roads and Maritime have developed water quality parameter trigger levels based on the preconstruction surface water monitoring data for the construction phase as per MCoA Condition B17. Currently, AFJV are comparing construction phase data with these 80<sup>th</sup> and 20<sup>th</sup> percentile trigger values provided by RMS in October 2015, as well as ANZECC guidelines where no trigger values were provided in the final interpretive report.

The surface water monitoring has generally shown elevated nitrogen and nitrate levels, lower dissolved oxygen levels and occasionally elevated turbidity in the creeks and rivers adjacent to the Project both upstream and downstream of the Project (not associated with the Project activities). The monitoring has shown metals levels generally consistent with the trigger values or marginally above these levels. The pH is generally low after rainfall and the turbidity is generally higher during rainfall (due to background sources). Graphical representations of the key physical parameters for each waterway have also been provided in Appendix A.

Groundwater trigger levels have been developed for comparison with data collected during construction. The groundwater quality is within or only marginally above the trigger levels provided for metals. Elevated phosphorus and total petroleum hydrocarbons occur from the monitoring bore in the vicinity of Cut 6. Major cations and anions are elevated near Fill 15. The elevated levels have not been contributed to by construction activities.

#### 6.2. Noise and Vibration Monitoring

Noise monitoring has been undertaken in accordance with the approved Noise and Vibration Management Plan (NVMP). Monthly noise monitoring is conducted at eight monitoring locations alongside the Project alignment. Noise levels have been monitored above Noise Management Levels on 21 occasions during the reporting period. The noise levels have been within the predicted levels for the Project. Mitigation measures as outlined in the NVMP have been implemented and noise complaints have been addressed. Vibration monitoring has been undertaken in response to complaints made in the vicinity of Letitia Close. The monitoring results have shown levels below the human comfort criteria set out in the *Environmental Noise Management Assessing Vibration: A Technical Guideline (DEC 2006)* in accordance with MCoA C8.

Vibration and airblast over pressure monitoring has been undertaken for eleven (11) production blasts that have been undertaken during the reporting period. The vibration and airblast overpressure results are available in Appendix B. Roads and Maritime obtained approval from DPE on 17/7/2015 to increase the blast criteria in compliance with Condition C11 of the Planning Approval from 5mm/s to 25mm/s. This has reduced the number of blasts required to 45 from approximately 300., While resulting in fewer overall blasts and therefore fewer predicted exceedances compared with the original allowance, the reduction in the number of blasts has resulted in an increase in the percentage of exceedances. It is noted that the airblast overpressure monitored was below the criteria provided in Condition C9 for all eleven production blasts undertaken during the reporting period.

#### 6.3. Air Quality Monitoring

Air Quality Monitoring has been undertaken in accordance with the approved Air Quality Management Plan (AQMP). Nine dust deposition gauges were placed at strategic locations alongside the Project

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alignment, with an additional five installed in response to complaints or to further identify sources of dust exceedances. The air quality monitoring results are available in Appendix C.

The Project has recorded elevated dust levels from the dust deposition gauges on eleven occasions. The dust exceedances have been mainly in the vicinity of Gumma Road and Letitia Close. There has been evidence of tampering with two of the dust gauges which occurred on six occasions. In these instances, following discussions with ERG stakeholders, the project team contacted those persons who owned the properties where the dust gauges were located. The residents were advised of the purpose of the monitoring, how the results drive improved environmental performance of earthworks activities and how obvious outliers / exceedances to general trends cannot assist in managing dust emissions from the project. Following these discussions, the results of monitoring returned to realistic levels.

Further discussion in relation to air quality monitoring and dust related complaints is provided in section 7.1.

#### 6.4. Ecological Monitoring

Ecological Monitoring has been undertaking during the reporting period in accordance with the approved Ecological Monitoring Program, developed in consultation with the EPA as per MCoA Condition B10. The following monitoring was undertaken between March 2016 – August 2016:

- Grey-Headed Flying Fox monthly detailed population counts and daily pre works presence checks (undertaken prior to the 1st May). This is a variance from the fortnightly monitoring prescribed in the approved plan as population counts over the prior 12months construction period indicated gray-headed flying fox only present once prior to works commencing with the camp relocated to outside of the project foot print. The ER has endorsed this change (October 2015) to the Grey-Headed Flying Fox Management Plan to reduce monitoring frequency to monthly and permit haulage during the breading period (Sept May) however the Project is waiting for endorsement from the Federal Department of Environment to formally change the Plan.
- Microbat Monitoring including roost box, habitat behaviour and persistence monitoring (Year 2 Autumn and Winter Monitoring).
- In situ threatened flora (Year 2 Autumn) and translocated flora (Year 2 June) monitoring.
- Roadkill monitoring in accordance with the Roadkill Monitoring Strategy
- Monthly Weed Monitoring Reports

The above listed monitoring of key threatened species conducted during the second year of construction activities has confirmed there has been negligible change to habitat usage from construction activities. The monitoring has also indicated use of the micro-bat roost boxes and confirmed the relative success of the threatened flora species translocation program compared with similar programs on other RMS Pacific Highway Upgrade Projects.

## 6.5. Heritage Monitoring

Monitoring of heritage significant areas is undertaken during the weekly Environmental Inspections. Nogo zone fencing is rectified where necessary.

An Aboriginal Focus Group Meeting also occurred during the reporting period (AFG#6 – May 2016). This meeting was attended by the LALC's, RMS, Pacifico and Jacobs. This meeting included a welcome to country, project update, an update on Pacifico's Aboriginal Participation Plan, cultural heritage assessment outcomes for the north facing ramps, forestry trail augmentation and an update on the Urban Design and Landscaping Plan.

# 7. Community Engagement

AFJV has an approved Community Involvement Plan (which covers the requirements of the Condition B28 of the MCoA Community Communication Strategy) to provide the mechanisms to facilitate communication between the Roads and Maritime, AFJV, the Environmental Representative, Nambucca Shire Council and the local community (broader and local stakeholders).

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The Plan was approved by DPE on the 16/12/14. AFJV has been maintaining and implementing the Plan throughout construction of the project.

#### 7.1. Complaints relating to Environmental Issues

There were 23 community complaints relating to environmental issues raised during the reporting period. Figure 7.1 below shows the breakdown of the complaints by type and number. A full list of complaints and relevant information is provided in Appendix D.

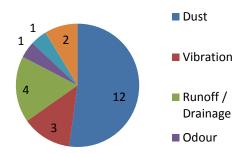


Figure 7.1 Environmental related complaints by type and number

The 12 dust complaints received during the reporting period is a reduction from the 19 received during the previous period. It is expected that these will further reduce through the ongoing consultation with residents and as progress on rehabilitation and paving activities continue. The nature of these complaints and associated responses are detailed in Appendix C.1. The sheets provided in the Appendix provide information on the issue of the complaint received, a detailed wind rose analysis of the wind occurring on the day of the complaint, a description of the works being carried out at the time of the complaint and actions taken in response to the complaint.

The project received eight of the 12 dust complaints during May 2016 from three residents in the Lettitia Close area, impacted from earthworks being undertaken in the vicinity of the north facing ramps. Extra vigilance in controlling dust in the vicinity of these locations has been implemented as per the project approved Air Quality Management Plan which, among other things, includes the following management measures:

**AQ8** Construction activities will be modified, reduced or controlled during high or unfavourable wind conditions if they have a potential to increase the generation or emission of dust.

**AQ9** Control measures including water carts, mechanical sweepers, sprinklers, sprays, dust screens or the application of geo-binding agents will be utilised where applicable to control dust emissions. The frequency of use will be modified to accommodate prevailing conditions.

A meeting with residents in Letitia Close and surrounds regarding dust emissions was held in May 2016. From this meeting it was agreed to continue meeting on a fortnightly basis to discuss project updates and other issues including dust. A number of mitigation measures including a dust curtain and sprinklers along the boundary were discussed. A dedicated water cart has been provided in the vicinity of Letitia Close during earthworks activities and the location is regularly inspected by the Environment Team. Additional controls over and above the Air Quality Management Plan have been implemented in the vicinity of Letitia Close including:

- Ongoing meetings and toolbox talks with the Project's earthworks subcontractor regarding vigilance in dust control and management
- Additional supervisory staff have been appointed specifically to this area to ensure dust has been adequately managed
- Daily inspections are being undertaken by the site Environmental Team
- A water source has been located close to this area to ensure the water carts on duty do not need to travel far to obtain water

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- Dedicated water cart for all earthworks operations in the area even during periods where no work
  is being undertaken. For example, on 15/10/15, the AFJV obtained and implemented an Out-ofHours work permit 029, enabling the use of water carts for dust suppression due to high winds
  and hot days on weekends and public holidays. The permit is in force until December 2018 and
  allows this activity within the project boundary as nominated in the EPL. Water cart operators are
  generally authorised to undertake watering as they see fit and according to the conditions they
  observe.
- Ceasing works during periods of high wind that have the potential to generate dust. On a number
  of occasions the AFJV have also elected to either cease works due to hot and windy conditions
  generating dust in and around Lettitia Close or, not programming to undertake works on days
  when such conditions are forecast.

Complaints' relating to dust in the Gumma Road area is not entirely clear. Although there have been earthworks activities occurring in the Gumma Floodplain, this has not been extensive and the majority of work in the vicinity of Gumma Road has been for the concrete bridge structure across Nambucca River

There were three complaints from a single resident relating to vibration during the reporting period which were received on Wednesday 29 June, Monday 4 July and Wednesday 6 July 2016. The following summarises the work being undertaken when each complaint was received. Monitoring undertaken on the 6 July recorded vibration levels below the Peak Particle Velocity (PPV) limit of 5mm/s at residential properties and below that for human comfort (0.28mm/s).

ID	Date of Complaint	Works activity	Distance of works from complainant	Peak Partial Velocity recorded
1	29 June	Foundation treatment for roundabout on North Macksville Ramps	>200 m	Not monitored
2	4 July	Foundation treatments	>200 m	Not monitored
3	6 July	Foundation treatments	>200 m	0.14 mm/s

Vibration monitoring was also undertaken on 6, 7 and 13 July at the complainants' residence as part of a specific community consultation strategy adopted for the Leticia Close area to mitigate residents' concerns. Vibration monitoring results were below human comfort criteria each occasion.

The action of holding fortnightly meetings with the Lettica Close residents including those off Old Coast rd. and Mattick Road in the vicinity who also have other concerns with construction activities (e.g. dust traffic access), mitigated further community concerns through the active involvement and engagement of the sensitive residents.

### 7.2. Community Engagement

During the reporting period the Community Team published and distributed

- 26 community notifications
- 2 project updates

Held community information and drop-in sessions on the following dates:

- 16 and 19 March 2016 (Warrell Creek temporary closure)
- 7 April 2016 (North Facing Ramps)
- 8 and 9 April 2016 (Macksville Show)

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4 and 5 May 2016 (regular quarterly Community Information Sessions)

Included updates relevant to the community in the weekly Toolbox Talk/ Presentation.

Relevant and timely community relations topics were provided to Toolboxes every week during this period.

Made feedback available at the following locations:

- Site compound at 124 Albert Drive, Warrell Creek
- Nambucca Shire Council
- Macksville Library
- Nambucca Library
- Roads and Maritime Service motor registry office at Nambucca Heads

# 8. Licencing, Permits and Changes

The Warrell Creek to Urunga Pacific Highway Upgrade project was referred to the Commonwealth Minister in accordance with the requirements of the EPBC Act. The Project received Minister's Approval on the 11 December 2014 (2013/7101) subject to a number of conditions.

The Project has applied for, and has been granted an Environment Protection Licence, number 20533. This was issued on the 16/12/14.

The Project has also obtained permits to access surface water from Upper and Lower Warrell Creek. Groundwater bore licences have also been obtained. The details of the permits are provided in Table 8.1.

Table 8.1 - Groundwater and Surface Water Permits

Type of Permit	Permit Number	Location
Groundwater Bore Licence – Industrial Use (Road Construction and dust suppression)	30BL207257	Lot 5 DP258324
Groundwater Bore Licence – Industrial Use (Road Construction and dust suppression)	30BL207262	Lot 16 DP1154963
Groundwater Bore Licence – Industrial Use (Road Construction and dust suppression)	30BL207263	Lot 5 DP1067522
Groundwater Bore Licence – Industrial Use (Road Construction and dust suppression)	30BL207307	Lot 1 DP1209891
Groundwater Bore Licence –	30BL207307	Lot 1 DP1209891

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Type of Permit	Permit Number	Location
Industrial Use (Road Construction and dust suppression)		
Groundwater Bore Licence – Industrial Use (Road Construction and dust suppression)	30BL207310	Lot 22 DP1185837
Groundwater Bore Licence – Industrial Use (Road Construction and dust suppression)	30BL207308	Lot 2 DP1018234
Surface Water Taking for industrial (road construction and dust suppression)	30PE002487	Warrell Creek Lot 66 DP 1175835
Surface Water Taking for industrial (road construction and dust suppression)	30PE002486	Warrell Creek Lot 108 DP 1181639
Surface Water Taking for industrial (road construction and dust suppression)	30PE002485	Warrell Creek Lot 48 DP 1172072
Surface Water Taking for industrial (road construction and dust suppression)	30PE002488	Warrell Creek Lot 6 DP 1014123

A number of Consistency Reviews have been prepared and approved by RMS and endorsed by the ER for works that are consistent with the Planning Approval and environmental assessment and planning documents during the reporting. A summary is provided below:

Table 8.2 – List of Consistency Assessments approved throughout the reporting period

Consistency Assessment	Date Approved	Reference to Approval Condition
Addendum to Major Consistency Review – Utilities adjustments outside of the Project Boundary	18/03/16	MCoA A6, B30
Major Consistency Review – Scotts Head Road Side Track	21/03/16	MCoA A6, B30

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Consistency Assessment	Date Approved	Reference to Approval Condition
Addendum to Major Consistency Review — Utilities adjustments outside of the Project Boundary	18/03/16	MCoA A6, B30
Major Consistency Review – Proposed Design Refinements to Old Coast Road	21/03/16	MCoA A6, B30
Major Consistency Review – Cut 15 Batter Alignment Widening	11/04/16	MCoA A6, B30
Minor Consistency Review – Central Old Coast Road Temporary Intersection Works	28/04/16	MCoA A6, B30
Minor Consistency Review – Floodplain Bridge 2 Temporary Works	16/05/16	MCoA A6, B30
Minor Consistency Review – State Forest Turnaround Bays	1/08/16	MCoA A6, B30

Submissions to Planning have been undertaken during the reporting period including:

1. Pacific Highway Upgrade Warrell Creek to Nambucca Heads – Proposal to Modify the Planning Approval to include North Facing Ramps in North Macksville

On the 21 March 2016 the Project proposed a modification to the Planning Approval to include a south-bound off-ramp and a north-bound on ramp in the vicinity of North Macksville. This modification was approved by the Secretary (Modification 8) on the 3<sup>rd</sup> June 2016.

An addendum to the approved Threatened Flora Management Plan to include translocation of Slender Marsdenia individuals impacted by the North Facing Ramps proposal was prepared in July 2016. The Slender Marsdenia have since been translocated outside of the directly impacted footprint of the north facing ramps work area.

- 2. The Project Urban Design and Landscape Plan Stage 2
  - Stage 2 of the Urban Design and Landscape Plan was submitted to DPE on the 1<sup>st</sup> December 2015 and was approved on the 19 February 2016.
- 3. The Project Warrell Creek to Nambucca Heads Pacific Highway Upgrade Environmental Design Fauna Crossing Refinements (July 2015)
  - The above reference report was submitted to DPE on the 17<sup>th</sup> July 2015 to comply with the MCoA Conditions B1, B2 and B3. A letter confirming compliance with these conditions was received from DPE on the 21<sup>st</sup> April 2016.
- 4. Extension of time to submit the Operational Noise Mitigation review in accordance with condition C12

A proposal was made to DPE to extend the submission date for the Operational Noise Mitigation Review on the 16<sup>th</sup> May 2016. The proposal was approved on the 20<sup>th</sup> May 2016. The Project was granted a 12 month extension to the submission date for the report. The report is now due on the 8<sup>th</sup> May 2017 (an update to DPE is required prior to the 8<sup>th</sup> February 2017).

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Minor changes to the CEMP accepted by the Project ER under MCoA B29 (g) during the reporting period were:

- Minor Change to Flora and Fauna Management Sub plan (Appendix N Grey-Headed Flying Fox Management Plan) to allow "low noise activities such as haulage" to be undertaken during the flying fox exclusion period under advice from GHFF expert Peggy Eby;
- Minor Change to the Flora and Fauna Management Sub plan (Appendix N Grey-Headed Flying Fox Management Plan) to change the monitoring frequency from fortnightly to monthly for monitoring of the GHFF population (that has not returned to the Gumma Floodplain camp);
- Minor Change to the Flora and Fauna Management Sub plan (Appendix A Nest Box Management Plan) for a minor change to the location for nest box zones approved on the 10<sup>th</sup> August 2016.
- Minor Change to the Flora and Fauna Management Sub plan (Appendix B Threatened Flora Management Plan) to modify the monitoring periods in year 1 and 2 of Construction.

Nineteen minor ancillary sites including crib sheds and ablution blocks have been approved in total for the Project by the Project ER under conditions C27 and C28 of the MCoA.

# 9. Summary of Compliance Status

Appendix E (Compliance Tracking Tables) provides details of the compliance status of the Ministers Conditions of Approval (MCoA) and Statement of Commitments (SoC's), in summary of the:

- 68 No MCoA, 10 No are closed and 3 are not applicable to this stage.
- 49 SoC's all are still open at this stage.

The finding being ongoing compliance to the project conditions and commitments is generally maintained.

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# **APPENDIX A – Surface Water and Groundwater Monitoring**

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Surface Water Results -Februa	ary 2016 -	Wet 2			5W01	Weather:	Fine				SW03			5W04			98/05	LowTide:	5:40 PM	SW06			SW07			SWOS			28009			SW10			SW11	
Location	Units	Levels of	Concern	и	pper Warrell Cre	sak	L	lpper Warrell Cree	ak		Storry Creek			Stony Creek		ь	ower Warrell Cree		L	ower Warrell Cre	nek	Urram	ned Creek Gumma	West	Unnan	ned Creek Gumm	a East	Uhner	ned Creek Gumma	North	No	mbucca River Sou	uth	Na	mbucca River South	
Freshwater / Estuarine		ANZECC 200	0 95% species		Upstream Freshwater			Downstream Freshwater			Upstream Freshwater			Downstream Freshwater			Upstream Freshwater		Downstream Freshwater			Upstream Freshwater				Upstream Freshwater			Downstream Freshwater			Upstream Estuarine			Downstream Estuarine	
Date of Sampling Time of Sampling		Freshwater ANZECC 2000	Marine Marine		22-Feb-16 9:30 AM			22-Feb-16 9:00 AM			22-Feb-16 10:20 AM		22-Feb-16 9:50 AM			22-Feb-16 1:30 PM			22-Feb-16 1:10 PM			22-Feb-16 11:30 AM			22-Fab-16 12:00 PM			22-Feb-16 11:45 AM			22-Feb-16 12-45 PM				22-Feb-16 12:30 PM	
Type Comments		ANZECC 2000		80th %-like	20th %še	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ãe	Result	80th %ãe	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ãe	Result	80th 168s	20th %ãe	Result
Laboratory data Metals																																				
Atuminium Arsenic	mgt. mgt.	0.055 0.024	0.0023	0.244 0.001	0.0162 0.001		0.194 0.001	0.016 0.001		0.098 0.002	0.02 0.001		0.114 0.002	0.01 0.001		0.28 0.001	0.01 0.001		0.28 0.001	0.01 0.001		0.25 0.002	0.02 0.001		0.25 0.002	0.02 0.001		0.25 0.002	0.02 0.001	-	0.11 0.002	0.01 0.001		0.11 0.002	0.01 0.001	
Cadmium Chromium	mgt. mgt.	0.0002	0.0055	- :	- 1		-			- 1	-		-	-		0.0002	0.0001		0.0002	0.0001		-	-		-	-		- :	-	- 1	-	:		-	-	
Copper Lead	mgL mgL	0.0014 0.0034	0.0013 0.0044	-	-		-	-		-	-		-	-								0.001	0.001		0.001	0.001		0.001	0.001		0.001	0.001		0.001	0.001	
Manganese Nickel	mgt mgt mgt	1.9 0.011 11	0.08	0.3	0.01		0.158	0.0178		0.0726	0.0218		0.083	0.0164		0.35 0.0034	0.087 0.001		0.35 0.0034	0.087 0.001		0.49 0.002	0.011 0.001		0.49 0.002	0.011 0.001		0.49 0.002	0.011 0.001		0.076	0.006		0.076	0.006	
Silver	mgL mgL	0.00005	0.0014	0.007	0.005		0.0062	0.0042		0.0064	0.005		0.006	0.005		0.018	0.005		0.018	0.005		0.011	0.005		0.011	0.005		0.011	0.005	-	0.005	0.005		0.005	0.005	
Iron Morrore	mgt. mgt.	0.0006	0.0004	1.38	0.48		0.0062	0.366		1.4	0.41		1.48	0.35		0.52	0.005		0.52	0.005		1.65	0.37		1.65	0.005		1.65	0.37	-	0.26	0.005		0.26	0.005	
Total Recoverable Hydrocarbons	HB/L	16	50	16			16	-		16			16			16			16			16			16			16			50			50		
C6 - C10 Fraction C6 - C10 Fraction minus BTEX (F1)	Ma/r			-			-			-			-			-			-			-			-			-		-	-			-		
>C10 - C16 Fraction >C16 - C34 Fraction	HB/L						-			-			-			-			- 1			-			-			-		-						
>C34 - C40 Fraction >C10 - C40 Fraction (sum)	HB/L												-						- 1						-					-				-		
>C10 - C16 Fraction minus Naphthalene (F2) BTEX	MB/r						-			-			-			-			-			-			-			-			-			-		
Benzene Toluene	MB/F MB/F	950 180	700 180	950 180			950 180			950 180			950 180			950 180			950 180			950 180			950 180			950 180		-	700 180			700 180		
Ethylbenzene m&p-Xylenes	MB/F	80	5	80			80			80			- 80			80			80			80			80			80 -		-	5			5		
o-Xylene Xylenes - Total	http:// http://	350	350	350			350			350			350			350			350			350			350			350			350			350		
Sum of BTEX Nutrients Total Phosphorus				0.05	0.02		0.044	0.016		0.03	0.016		0.034	0.01		0.04	0.01		0.04	0.01		0.11	0.03		0.11	0.03			0.03			0.02		0.07	0.02	
Phosphate (reactive phosphorus)	mgt.	-	-	0.01	0.0034		0.01	0.004		0.018	0.0022		0.034	0.003		0.011	0.006		0.011	0.006		0.013	0.005		0.013	0.005		0.013	0.005		0.029	0.02		0.029	0.02	
Total Nitrogen Total Kjeldahl Nitrogen	mgt. mgt.	0.5	0.3	0.56 0.5	0.3 0.3		0.52 0.5	0.2		0.48 0.34	0.2 0.2		0.63	0.2		0.54 0.5	0.31 0.2		0.54 0.5	0.31		3.1 2.8	0.9 0.8		3.1 2.8	0.9		3.1 2.8	0.9	-	0.46	0.2		0.46 0.3	0.2 0.2	
Nitrate	mgt	0.7		0.102	0.01		0.054	0.01		0.208	0.01		0.2	0.01		0.05	0.01		0.05	0.01		0.03	0.01		0.03	0.01		0.03	0.01	-	0.04	0.01		0.04	0.01	
Nărite Ammonia	mgt. mgt.	0.9		0.036	0.01		0.02	0.01		0.046	0.02		0.02 0.062	0.01 0.012		0.02 0.116	0.01 0.022		0.02 0.116	0.01 0.022		0.02 0.06	0.01 0.01		0.02	0.01 0.01		0.02	0.01 0.01	-	0.02 0.15	0.01 0.024		0.02 0.15	0.01 0.024	
TSS Turbidity		50	10	26.16	5.94		27.32	3.72		14.98	3.34		17.16	4.59		26.1	2.4		26.1	2.4		66.8	11.6		66.8	11.6		66.8	11.6		19.04	5.81		19.04	5.81	
TSS Field Physical data	mgL	<40	<30	19	5		12.8	5		14.8	5		8.7	5		25	5.5		25	5.5		350	9		350	9		350	9							
Temperature pH Conductivity	°C pH mS/cm	0.125-2.2	6.5-8	24.3 7.478 0.3204	16.27 6.23 0.20184	22.87 7.2 0.207	24.52 7.192 0.3242	16.79 6.42 0.19076	23.45 7.08 0.224	23.98 7.138 0.313	17.36 6.61 0.2024	23.02 7.45 0.234	24.7 6.98 0.309	17.65 6.21 0.20188	7.33 0.254	25.9 6.86 20.918	19.5 6.46 0.50928	27.94 8.08 6.06	25.9 6.86 20.918	19.5 6.46 0.50928	28.36 8.19 5.54	25.84 6.9 0.842	19.1 6.08 0.334	7.42 0.644	25.84 6.9 0.842	19.1 6.08 0.334	6.79 0.54	25.84 6.9 0.842	19.1 6.08 0.334	7.13 0.719	26.56 7.56 48.42	21.32 6.58 12.65	28.95 8.61 39.6	26.56 7.56 48.42	21.32 6.58 12.65	28.82 8.5
Turbidity Distributed Operation	NTU mg/L	50	10	26.16 7.43	5.94 1.5	133	27.32 6.88	3.72 2.28	63.7	14.98 8.472	3.34 5.08	16.2	17.16 7.59	4.59 2.63	19.5	26.1 6.65	2.4 5.02	1.7	26.1 6.65	2.4 5.02	1.3	66.8 7.3	11.6 1.78	55.2	66.8 7.3	11.6 1.78	29.3	66.8 7.3	11.6 1.78	44.3	19.04 8.47	5.81 6.88	3.1 4.21	19.04 8.47	5.81 6.88	40.2 2 3.9
TDS	-91			7.43	1.5	0.13	0.00	2.20	0.148	0.472	3.06	0.148	7.33	2.03	0.152	0.03	3.02	3.82	0.03	3.02	3.49		1.76	0.412		1.76	0.346	7.5	1.70	0.46	0.47	0.00	24.1	0.47	0.00	25.5
Surface Water Results -Februa	ary 2016 -	Dry				Weather:												Low Tide:	7:44pm	•					•											
Surface Water Results Testas	., 2010				5W01			5W02			5W03			5W04		1	5W05			SW06			5W07			SWOR	1		2M08			SW10			5W11	
Location	Units	Levels of	Concern	u	lpper Warrell Cre Upstream	sak	L	pper Warrell Cree	ek		Storry Creek Upstream			Stony Creek Downstream		L	ower Warrell Cree			ower Warrell Cre	sak	Unnem	ned Creek Gumma Ubstream	West	Uman	ned Creek Gumm	a East	Uhner	ned Creek Gumma	North	No	mbucca River Sou Upstream	uth	Na	mbucca River South	
Freshwater / Estuarine Date of Sampling		ANZECC 200	0 95% species acted		Freshwater 26-Feb-16			Freshwater 26-Feb-16			Freshwater 26-Feb-16			Freshwater 26-Feb-16			Freshwater 26-Feb-16			Freshwater 28-Feb-16			Freshwater 26-Feb-16			Freshwater 28-Feb-16			Freshwater 28-Feb-16			Estuarine 26-Feb-16			Estuarine 26-Feb-16	
Time of Sampling Comments		Freshwater	Marine		1:25 PM			1:10 PM			12:42 PM			12:23 PM			3:14 PM			3:05 PM			2:13 PM			1:51 PM		Unable	2:03 PM to sample - water I	level low		2:45 PM			2:36 PM	
Type Lebonstory date				80th %-like	20th %še	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ãe	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result
Metals Aluminium	mgL			0.06	0.01	0.01	0.05	0.01	0.02	0.05	0.01	<0.01	0.04	0.01	<0.01	0.06	0.01	<0.01	0.06	0.01	<0.01	0.1	0.01	0.01	0.1	0.01	0.02	0.1	0.01	NA.	0.02	0.01	<0.10	0.02	0.01	<0.10
Arsenic Cadmium	mgt. mgt.	0.024	0.0023			<0.001 <0.0001			<0.001 <0.0001			<0.001	0.001	0.001	0.001 <0.0001	0.001	0.001	0.001 <0.0001	0.001	0.001 0.0001	<0.001 <0.0001	0.002	0.001	0.003 <0.0001	0.002	0.001	0.002 <0.0001	0.002	0.001	NA NA	0.002	0.001	<0.010 <0.0010	0.002	0.001	<0.010 <0.0010 <0.010
Chromium Copper	mgt. mgt.	0.0014	0.0044	-		<0.001 <0.001	-	-	<0.001		-	<0.001 <0.001	-	-	<0.001 <0.001	-	-	<0.001 <0.001	-	-	<0.001 <0.001	-	-	<0.001 <0.001	-	-	<0.001 <0.001	- :	-	NA NA	0.001	0.001	<0.010 <0.010	0.001	0.001	< 0.010
Lead Manganese	mgt.	1.9	0.0044	0.21	0.02	<0.001 0.266	0.2	0.03	<0.001 0.368	0.06	0.02	<0.001	0.052	0.013	<0.001 0.154	0.26	0.08	<0.001 0.254	0.26	0.08	<0.001 0.172	0.23	0.019	<0.001 0.347	0.23	0.019	<0.001 0.201	0.23	0.019	NA NA	0.03	0.002	<0.010	0.03	0.002	<0.010 0.013
Selenium	mgt mgt mgt	0.011 11 0.00005	0.07			<0.001			0.001 <0.01			<0.001			<0.001	0.001	0.001	<0.001	0.001	0.001	<0.001	0.001	0.001	<0.001	0.001	0.001	<0.001	0.001	0.001	NA NA			<0.010			<0.010
Zinc	mgt mgt mgt	0.00005	0.0014	0.99	0.46	<0.001 <0.005 0.44	0.93	0.31	<0.001 <0.005 0.39	0.005	0.005	<0.001 <0.005 0.14	0.005	0.005	<0.001 <0.005 <0.05	0.006	0.005	<0.001 <0.005 <0.05	0.006	0.005	<0.001 <0.005 <0.05	0.005	0.005 0.25	<0.001 0.006 0.36	0.005	0.005	<0.001 <0.005 0.72	0.005	0.005 0.25	NA NA NA	0.005	0.005	<0.010 <0.050 0.21	0.005	0.005	<0.010 <0.050 0.12
Mercury Total Recoverable Hydrocarbons	mgt.	0.0006	0.0004	- 0.39	0.46	<0.0001	- 0.93	0.51	<0.0001	- 0.82	0.42	<0.0001	- 0.78	- 0.37	<0.001	0.83	U.U5	<0.001	0.83	0.05	<0.001		-	<0.0001		0.25	<0.0001		-	NA NA			<0.0001			<0.0001
Naphthalene C8 - C10 Fraction	pg/L	16	50	16		NA NA	16		NA NA	16		NA NA	16		NA NA	16		NA NA	16		NA NA	16		NA NA	16		NA NA	16		NA NA	50		NA NA	50		NA NA
C6 - C10 Fraction minus BTEX (F1) >C10 - C16 Fraction	MS/r		-	-		NA NA	-		NA NA	-		NA NA	-		NA NA			NA NA			NA NA			NA NA	-		NA NA NA			NA NA NA			NA NA NA	-		NA NA NA
>C16 - C34 Fraction	yg/L yg/L	<u>_</u> :	-			NA NA	-		NA NA			NA NA	-		NA NA	_		NA NA			NA NA			NA NA	-		NA NA			NA NA	-		NA NA	-		NA NA NA
>C34 - C40 Fraction			-			NA NA			NA NA			NA NA	-		NA NA			NA NA	-		NA NA			NA NA	-		NA NA			NA NA			NA NA	-		NA NA
	HB/L																	NΔ	950			950														
>C34 - C40 Fraction >C10 - C40 Fraction (sum)	1/84 1/84	950	700	950		NA	950		NA	950		NA	950		NA	950			950		NA	950		NA	950		NA	950		NA.	700		NA.	700		NA
>C34 - C40 Fraction >C10 - C40 Fraction (sum) >C10 - C16 Fraction minus Naghthalens (F2) BTEX Benzane Tolsane Ettyberzene	hillyr hillyr	950 180	700 180 5	950 180 80		NA NA	950 180 80		NA NA	950 180 80		NA NA	950 180 80		NA NA	950 180 80		NA NA	180 80		NA NA	180 80		NA NA	950 180 80		NA NA	950 180 80		NA NA	700 180 5		NA NA	700 180 5		NA NA NA
>C34 - C40 Fraction >C10 - C40 Fraction (sum) >C10 - C40 Fraction (sum) >C10 - C40 Fraction minus Naphthalane (F2) BEX Benanes Tollane Ethyllanoses  Ethyllanoses  Ethyllanoses  MgA-Yylanos  >Yylanos	Help Help Help Help Help Help	950 180 80	700 180 5	950 180 80 -		NA NA NA	950 180 80 - 350		NA NA NA	950 180 80 - 350		NA NA NA	950 180 80 - 350		NA NA NA NA	950 180 80 - 350		NA NA NA	950 180 80 - 350		NA NA NA	950 180 80 - 350		NA NA NA NA	950 180 80 - 350		NA NA NA	950 180 80 - 350		NA NA NA	700 180 5 - 350		NA NA NA	700 180 5 -		NA NA NA
s-CS4 - CMF Facilities - SC10 - CMF Facilities (series - SC10 - CS16 Facilities - SC10 -	Age Age Age	950 180 80	700 180 5 - 350	950 180 80 - 350		NA NA NA	950 180 80 - 350 -		NA NA NA	950 180 80 - 350		NA NA NA	950 180 80 - 350		NA NA NA	950 180 80 - 350		NA NA NA	180 80 - 350		NA NA NA	950 180 80 - 350		NA NA NA	950 180 80 - 350 -		NA NA NA	950 180 80 - 350		NA NA NA	700 180 5 - 350		NA NA NA	700 180 5 - 350		NA
+CSA - CASP Facilion -CT0 - CASP Facilion (Numb) -CT0 - CT6 Facilion (nexa Negóthalana (P2) -STEX -CT0 - CT6 Facilion (nexa Negóthalana (P2) -STEX -CT0 - CT6 Facilion (nexa Negóthalana (P2) -STEX -CT0 - CT0 - C	HE/L HE/L HE/L HE/L HE/L HE/L	950 180 80	700 180 5 - 330 -	950 180 80 - 350 - -	0.01	NA NA NA NA	950 180 80 - 350 - -	0.01	NA NA NA NA	950 180 80 - 350 - -	0.01	NA NA NA NA	950 180 80 - 350 - - -	0.01	NA NA NA NA	950 180 80 - 350 - - -	0.01	NA NA NA NA	950 180 80 - 350 - - -	0.01	NA NA NA NA	950 180 80 - 350 - - 0.12 0.01	0.03	NA NA NA NA	950 180 80 - 350 - - - 0.12 0.01	0.03	NA NA NA NA	950 180 80 - 350 - - -	0.03 0.005	NA NA NA NA	700 180 5 - 350 - - 0.04 0.01	0.02	NA NA NA	700 180 5 - 350 - -	0.02	NA NA NA

Total Nitrogen	mgt.	0.5	0.3	0.62	0.2	0.5	0.6	0.2	0.4	0.3	0.1	0.2	0.41	0.1	0.5	0.5	0.2	0.7	0.5	0.2	4 2.3	1.1	0.8	2.8	1.1	3.4	2.8	1.1	NA NA	0.5	0.2	0.4	0.5	0.2 0.5
rous Kjelani Nitoges		-		0.04	0.01	0.03	0.03	0.01	0.4	0.3	0.01	0.03	0.03	0.01	0.5	0.04	0.01	0.7	0.04	0.01 <0				0.04	1	3.4	0.04	0.01	NA NA	0.02	0.2	<0.01	0.5	0.01 <0.01
Nitrite	mgL mgL	0.7		-	- 0.01	< 0.01	0.03	0.01	< 0.01	0.03	0.01	< 0.01	0.03	0.01	<0.01	0.01	0.01	0.02 <0.01	0.01	0.01 <0	0.0	0.01	< 0.01	0.05	0.01	<0.01 <0.01	0.05	0.01	NA.	0.02	0.01	< 0.01		0.01 < 0.01
Amuonia TSS	mgt	0.9			-	0.05	-	-	0.04	-	-	0.01	-	-	0.05	0.16	0.06	0.05	0.16	0.06 0.						<0.01	0.04	0.01	NA	0.03	0.01	<0.05	0.03	0.01 <0.05
Turbidity TSS	mgt	50	10	10.96 14.8	4 5	<5	9.9	3.5 5	6	6	3	5	5.97 5.8	3.74 5	12	6.82 17.6	5	14	6.82 17.6	5	52.7		21	52.78 290	11.3	<s< td=""><td>52.78 290</td><td>11.3 15</td><td>NA NA</td><td>19.3 71</td><td>6.7 19</td><td>&lt;5</td><td>19.3 71</td><td>6.7 19 10</td></s<>	52.78 290	11.3 15	NA NA	19.3 71	6.7 19	<5	19.3 71	6.7 19 10
Field Physical date				24.86		25.25		16.3	24.3	24.4		24.5		15.94	23.67	27.9		20.20	27.9		32 26.							16.3	NA.	27.9	18.1	20.47		18.1 29.26
pH pH	°C pH		6.5-8	7.25	14.99 6.48	6.45	25.1 7.3	6.4	6.51	7.5	16 6.6	7.07	26.46 7.33	6.26	6.73	7.02	6.57	7.79	7.02	18.4 30 6.57 7	9 7	6.1	6.75	7	6.1	24.51 6.11	26.5 7	6.1	NA	7	7	29.47 8.53	7	7 8.41
Conductivity Turbidity	mS/cm NTU	0.125-2.2 50	- 10	0.316 10.96	0.232	0.265 2.9	0.348 9.9	0.227 3.5	0.263 5.3	0.348 9.9	0.227 3.5	0.259	0.3338 5.97	0.2168 3.74	0.241	20.946 6.82	0.679 1.83	7.87 2.5	20.946 6.82	0.679 7. 1.83 1	9 0.80 4 52.7	8 0.4234 8 11.3	0.659 85.3	0.808 52.78		0.576 51.4	0.808 52.78	0.4234 11.3	NA NA	47.32 19.3	29.44 6.7	42.9 2.6	47.32 19.3	29.44 44.5 6.7 27.3
Dissolved Oxygen	mgL	5	5	4.98	1.91	2.76	4.8	2.6	1.08	4.8	2.6	6.21	6.34	3.52	2.44	7.98	5.07	4.50	7.98	5.07 4.	11 6.4	1.75	3.05	6.4	1.75	7.08	6.4	1.75	NA	9.1	7.4	4.55	9.1	7.4 4.69
TDS	g/L	-	-			0.172	-		0.171	-		0.168	-		0.157			4.64	-	4.	17 -		0.422	-		0.369	-	-	NA	-		26.1	-	27.2
Surface Water Results -March 2	2016 - Di	У			5W01	Weather:	Fine	5W02			5W03			SW04			swos	ow Tide:	12:07 PM	SW06		5W07			SWOE			SWOP			SW20			5W11
Location	Units	Levels o	of Concern	ı	pper Warrell Cre	ak		Upper Warrell Cr	sek		Story Creek			Stony Creek		Lo	wer Warrell Creek		ь	wer Warrell Creek		Unnamed Creek Gum	na West	Umamed	Creek Gumma Ea	ast	Uhname	d Creek Gumma h	North	Na	mbucca River Sou	uth		ibucca River South
Freshwater / Estuarine		ANZECC 300	10 95% species		Upstream Freshwater			Downstream Freshwater			Upstream Freshwater			Downstream Freshwater			Upstream Freshwater			Downstream Freshwater		Upstream Freshwater			Upstream Freshwater			Downstream Freshwater			Upstream Estuarine			Downstream Estuarine
Date of Sampling		prot	ected		16-Mar-16			16-Mar-16 7:45 AM			16-Mar-16			16-Mar-16			16-Mar-16			16-Mar-16		16-Mar-16			16-Mar-16			16-Mar-16			16-Mar-16 11:00 AM			16-Mar-16 10:45 AM
Time of Sampling Commerts		Freshwater	Marine		8:00 AM						9:00 AM			8:30 AM			11:45 AM			11:30 AM		9:30 AM			9:45 AM		Unable to	9:28 AM sample - water le	ovel low					
Type Lebonstory data				80th % like	20th %ãe	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ãe	20th %ile Re	ult 80th 1	ile 20th %ile	Result	80th %ile	20th %ille	Result	80th %ile	20th %ile	Result	80th %ile	20th %ãe	Result	80th %like	20th %ãe Result
Metals				0.00	0.04		0.05	0.04		0.05	0.04		0.04	0.04		0.05	0.04		0.00	0.04		0.04		0.4	0.04		0.4	0.04		0.02	0.04		0.00	0.04
Atsenic Arsenic	mgt.	0.024	0.0023	0.06	0.01		0.05	0.01		0.05	0.01		0.04	0.01		0.06 0.001	0.01 0.001			0.01 0.001	0.00	0.01 2 0.001		0.1	0.01		0.1 0.002	0.01 0.001	NA NA	0.02	0.01 0.001		0.02	0.01 0.001
Cadmium Chromium	mgt.	0.0002	0.0055				-			-	-					0.0001	0.0001		0.0001	0.0001				-	-		-		NA NA	-	-		-	-
Copper	mgl. mgl.	0.0014	0.0013	-	-		-	-		-	-		-	-			-		-	-	-	-		-	-		-	-	NA	0.001	0.001		0.001	0.001
Marganese	mgt mgt mgt	0.0034	0.0044 0.08	0.21	0.02		0.2	0.03		0.06	0.02		0.052	0.013		0.26				0.08	0.2				0.019			0.019	NA NA	0.03	0.002		0.03	0.002
Nickel Selenium	mgt.	1.9 0.011	0.07	-	-				<b> </b>						$\vdash \exists$	0.001	0.001		0.001	0.001	0.00	1 0.001		0.001	0.001	=	0.001	0.001	NA NA	-	-			-
Silver	mgt.	0.00005	0.0014	-	-		-	-																			-	- :	NA.					-
Zinc Iron	mgL mgL		0.015	0.99	0.46		0.93	0.31	1	0.005 0.82	0.005		0.005	0.005		0.006	0.005 0.05		0.006	0.005	0.00 2.0			0.005 2.01	0.005		0.005 2.01	0.005 0.25	NA NA	0.005	0.005		0.005	0.005
Mercury	mg1.	0.0006	0.0004	-	-						-		-	-											-		-	-	NA	-	-		-	-
Total Recoverable Hydrocarbons Naphthalene	µg/L		50	16			16			16			16			16			16		16			16			16		NA	50			50	
C6 - C10 Fraction C6 - C10 Fraction minus BTEX (F1)	yg/L	-	-	-			-			-			-			-			-		-			-			-		NA NA	-			-	
>C10 - C18 Fraction	MAY.																												NA					
>C16 - C34 Fraction >C34 - C40 Fraction	MB/F		- :	-			-			-			-			-			-		-			-			-		NA NA				-	
>C10 - C40 Fraction (sum)	yg/L	-		-			-			-			-			-			-		-			-			-		NA	-			-	
>C10 - C16 Fraction minus Naphthalene (F2) BTEX	µg/L	-	-	-			-			-			-			-			-		-			-			-		NA	-			-	
Benzene	µg/1. µg/1.	950	700	950			950			950			950			950			950		95			950			950		NA NA	700			700	
Toluene Ethylberzene	18/L	180	180	180			180 80			180 80			180 80			180 80			180 80		18			180 80			180 80		NA NA	180			180	
m&p-Xylenes o-Xylene	MB/r MB/r	350		250			250			- 250			250			-			- 250		-			250			250		NA NA	250			250	
Xylenes - Total	µg/L			-			-			-			-			-			-		-			-			-		NA.	-			-	
Sum of BTEX Nutrients	1/gu		-	-			-			-			-			-			-		-			-			-		NA	-			-	
Total Phosphorus	mgt	0.05	0.03	0.04	0.01		0.03	0.01		0.04	0.01		0.02	0.01		0.04	0.01		0.04	0.01	0.1				0.03		0.12	0.03	NA	0.04	0.02		0.04	0.02
Phosphate (reactive phosphorus)	mgt	-	-	-	-		-	-		-	-		-	-		0.01	0.0044		0.01	0.0044	0.0	0.005		0.01	0.005		0.01	0.005	NA NA	0.01	0.008		0.01	0.008
Total Nitrogen Total Kuddshl Nitrogen	mgL mgL	0.5	0.3	0.62	0.2		0.6	0.2		0.3	0.1 0.1		0.41	0.1 0.1		0.5 0.5	0.2		0.5 0.5	0.2	2.5			2.8	1.1		2.8 2.4	1.1	NA NA	0.5 0.5	0.2		0.5	0.2
Total Agentus Antropia			-																						1				NA				0.3	0.2
Nitrate Nitrite	mgL mgL	0.7	-	0.04	0.01		0.03 0.01	0.01 0.01		0.03	0.01		0.03	0.01		0.04	0.01		0.04	0.01 0.01	0.0	0.01		0.04	0.01		0.04	0.01 0.01	NA NA	0.02	0.01 0.01		0.02	0.01
Ammonia	mgt	0.9	-	-	-		-	-		-			-	-		0.16	0.06		0.16	0.06	0.0	0.01		0.04	0.01		0.04	0.01	NA	0.03	0.01		0.03	0.01
Turbidity		50	10	10.96	4		9.9	3.5		6	3		5.97	3.74		6.82			6.82		52.7				11.3		52.78	11.3	NA	19.3	6.7		19.3	6.7
TSS Field Physical data	mgL	<40	<30	14.8	5		8	5	$\vdash$	9	5		5.8	5		17.6	5		17.6	5	29	15		290	15		290	15	NA	71	19		71	19
Temperature	°c			24.86	14.99	22.95	25.1	16.3	23.71	24.4	16	21.75 6.84	26.46	15.94	22.89 6.9	27.9	18.4	26.84	27.9	18.4 26		16.3	23.04	26.5	16.3	22.5	26.5	16.3	NA NA	27.9	18.1	26.6	27.9	18.1 26.55
pH Conductivity	pH mS/cm	0.125-2.2	6.5-8	7.25 0.316	6.48 0.232	7.4 0.271	7.3 0.348	6.4 0.227	7.34 0.24	7.5 0.348	6.6 0.227	6.84 0.278	7.33 0.3338	6.26 0.2168	6.9 0.26	7.02 20.946	6.57 0.679	7.90 11.20	7.02 20.946	6.57 8. 0.679 1		6.1 8 0.4234	7.28 0.75	7 0.808	6.1 0.4234	7.33 0.866	7 0.808	6.1 0.4234	NA NA	7 47.32	7 29.44	8.13 33.5	7 47.32	7 7.96 29.44 40.3
Turbidity	mS/cm NTU	50	10	10.96	4	5.3 3.97	9.9	3.5 2.6	28.9	9.9	3.5 2.6	0.278 6.5	5.97	3.74 3.52	19.3	6.82 7.98	1.83 5.07	1.4	6.82 7.98	1.83 2 5.07 3.	4 52.3	8 11.3	41.7	52.78 6.4	11.3	10.6	52.78 6.4	11.3 1.75	NA.	19.3	6.7	24.3	19.3	6.7 2.8 7.4 5.56
Consumer of System	mgt			4.20	1.91		4.0	2.0	5.53	4.0	2.0	1.02	0.34	3.32	3.08	7.30	3.07	2.40	7.50	3.07	6.4	1./5		0.4		1.53	0.4	1./3	NA	3.1	7.4	4.52	5.1	5.56
TDS	g/L	1 -	]	•		0.176	-		0.168	-		0.181	-		0.169			6.95	-	6.	19 -		0.48	-		0.555	-		NA	-		21.5	-	24.6
Surface Water Results -April 20	016 - Wet	:			SW01	Weather:	Fine				5W03			5W04			5W05	ow Tide:	2:02 PM	SW06		5W07			SWOE			SW09			SW10			5W11
Location	Units	Levels o	of Concern	ı	Joper Warrell Cre	ak	-	Upper Warrell Cr	sek		Storry Creek			Stony Creek		Lo	wer Warrell Creek		ь	wer Warrell Creek		Unnamed Creek Gum	na West	Umamed	Creek Gumma Ea	ast	Unname	d Creek Gumma h	North	Na	mbucca River Sou	uth	Nami	ibucca River South
L					Upstream Freshwater			Downstream Freshwater			Upstream Freshwater			Downstream Freshwater			Upstream Freshwater			Downstream Freshwater		Upstream Freshwater			Upstream Freshwater			Downstream Freshwater			Upstream			Downstream
Freshwater / Estuarine Date of Sampling		prot	10 95% species lected		4-Apr-16			Freshwater 4-Apr-16			Freshwater 4-Apr-16			4-Apr-16			Freshwater 4-Apr-16			4-Apr-16		Freshwater 4-Apr-16			Freshwater 4-Apr-16			4-Apr-16			Estuarine 4-Apr-16			Estuarine 4-Apr-16
Time of Sampling		Freshwater Areceuc 2000 95% species	Marine		12:05 PM			12:00 PM			12:50 PM			12:30 PM	,	i	4:00 PM			3:45 PM	1	1:45 PM			1:30 PM	J		1:20 PM			3:10 PM	, ,		3:00 PM
Type		95% species		80th %-like	20th %ãe	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ãe	20th %ile Re	ult 80th 1	ile 20th %ile	Result	80th %ile	20th %ile	Result	80th %ile Unable to s	20th %ile	Result	80th %ile Wind o	20th %ãe	Result	80th %ile	20th %ãe Result
Commerts																											Unable to s	ample - water leve	as too low	Wind o	nop - sedment sti	пча ир	Wind cho	op - swament strred up
Laboratory data		0.055		0.244	0.0162	<0.01	0.194	0.016	<0.01	0.098	0.02	<0.01	0.114	0.01	<0.01	0.28	0.01	0.02	0.28	0.01 0.	13 0.2	0.02	0.04	0.25	0.02	0.04	0.25	0.02		0.11	0.01	<0.10	0.11	0.01 <0.10
Leboratory data Metals Alaminiam	mo?		0.0023	0.001	0.001	< 0.001	0.001	0.001	< 0.001	0.002	0.001	0.001	0.002	0.001	< 0.001	0.001	0.001	0.001	0.001	0.001 0.0	0.00	2 0.001	0.003	0.002	0.001	0.001	0.002	0.001	-	0.002	0.001	< 0.010	0.002	0.001 <0.010
Enboratory data Metals Aluminium Arsenic	mgL mgL	0.024			-	< 0.0001	-	-	<0.0001 <0.001	-		<0.001			<0.0001 <0.001	0.0002	0.0001	<0.001	0.0002	0.0001 0.0			<0.0001 <0.001		- <	<0.0001 <0.001						<0.0010 <0.010		- <0.0010 - <0.010
Extension date Metals Abaniniam Arseric Codmium Chromium	mgL mgL mgL	0.024	0.0055	-		<0,001						< 0.001	-	-	< 0.001			< 0.001		<0.	0.00	1 0.001	< 0.001	0.004		comment .								10.010
Eshoratory data Metals Aluminium Arsanic Cedemium Chromism Copper	mgt.	0.024 0.0002 0.001 0.0014	0.0044 0.0013			<0.001	-	-	< 0.001	-	-													0.001		<0.001	0.001	0.001		0.001	0.001	<0.010	0.001	0.001 <0.010
Lationary data Matala Alaminan Arasric Cadrium Chronium Copper Land Marganasa	mgt.	0.024 0.0002 0.001 0.0014 0.0034 1.9	0.0044 0.0013 0.0044	0.3	0.01	<0.001 <0.001 0.472	0.158	0.0178	<0.001 <0.001 0.28	0.0726	0.0218	<0.001	0.083	0.0164	<0.001 0.076	0.35	0.087	<0.001	0.35	0.087 2.	0.4	0.011	<0.001 0.361	0.49	0.011	<0.001 0.184	0.49	0.011		-	-	<0.010 0.026	0.001	- <0.010 0.006 0.034
Editoristry data Material Summira Arterial Cardenium Chromium Copper Land Marganes Makel	mgt.	0.024 0.0002 0.001 0.0014 0.0034	0.0044 0.0013		0.01	<0.001 <0.001 0.472 <0.001	0.158	0.0178	<0.001 <0.001 0.28 0.002	0.0726	0.0218	<0.001 0.094 <0.001	0.083	0.0164	0.076 0.001	0.35 0.0034	0.087 0.001	0.811 0.022	0.35 0.0034	0.087 2 0.001 0.0	73 0.00	0.011	<0.001 0.361 0.002	0.49	0.011 0.001	<0.001 0.184 0.001	-	0.001 - 0.011 0.001	-	0.001 - 0.076 -	0.001 - 0.006	<0.010 0.026 <0.010	-	- <0.010 0.006 0.034 - <0.010
Labousoy dalay Metala Alamisian Alamisian Cassisis Cadesium Copera Land Marygrose Kidol Salesum Salesum Salesum Salesum Salesum Salesum Salesum Salesum Salesum	mgt mgt mgt mgt mgt	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11	0.0044 0.0013 0.0044 0.08 0.07 -	-	-	<0.001 <0.001 0.472 <0.001 <0.01	-		<0.001 <0.001 0.28 0.002 <0.01 <0.001	-	-	<0.001 0.094 <0.001 <0.01 <0.001			0.076 0.001 <0.01 <0.001	0.0034	0.087 0.001 -	<0.001 0.811 0.022 <0.01 <0.001	0.0034	0.087 2 0.001 0.1 - <0 - <0.	73 0.00 01 -	0.011 0.001 0.001	<0.001 0.361 0.002 <0.01 <0.001	0.49 0.002	0.011 0.001	<0.001 0.184 0.001 <0.01 <0.001	0.49 0.002 -	0.011 0.001 -	-	0.076	0.006	<0.010 0.026 <0.010 <0.10 <0.010	0.076	- <0.010 0.006 0.034 - <0.010 - <0.010 - <0.010
Adolosiny John Metals Shimistra Shimistra Cadelinin Copper Gale Sale Sale Sale Sale Sale Sale Sale S	mgt mgt mgt mgt mgt	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011	0.0044 0.0013 0.0044 0.08	0.007	0.005	<0.001 <0.001 0.472 <0.001 <0.01 <0.001 0.007	0.0062	0.0042	<0.001 <0.001 0.28 0.002 <0.01 <0.001	0.0064	0.005	<0.001 0.094 <0.001	0.006	0.0164 - - - 0.005 0.35	0.076 0.001 <0.01 <0.001 <0.005	0.0034 - - 0.018	0.087 0.001 - - 0.005	0.811 0.022 <0.01 <0.001 0.051	0.0034 - - 0.018	0.087 2 0.001 0.1 - <0 - <0.005 0.	73 0.00 01 - 101 - 13 0.00	0.011 2 0.001 - 1 0.005	<0.001 0.361 0.002 <0.01 <0.001 0.006	0.49 0.002 - - 0.011	0.011 0.001 -	<0.001 0.184 0.001 <0.01 <0.001 0.008	0.49 0.002 - - 0.011	0.011 0.001 - - 0.005	-	0.076 - - - 0.005	0.006 - - - 0.005	<0.010 0.026 <0.010 <0.10 <0.010 <0.050	0.076 - - - 0.005	- <0.010 0.006 0.034 - <0.010 - <0.010 - <0.010
Laboracy (ana Matelia Administra Administra Cadministra Cadministr	mgt mgt mgt mgt mgt	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11	0.0044 0.0013 0.0044 0.08 0.07 -	-	-	<0.001 <0.001 0.472 <0.001 <0.01	-		<0.001 <0.001 0.28 0.002 <0.01 <0.001	-	-	<0.001 0.094 <0.001 <0.01 <0.001			0.076 0.001 <0.01 <0.001	0.0034	0.087 0.001 - - 0.005 0.05	0.811 0.022 <0.01	0.0034	0.087 2 0.001 0.1 - <0 - <0.005 0.	0.4 0.4 0.00 0.01 0.01 0.01 0.01 0.01 1.00 1.	0 0.011 2 0.001 - - 1 0.005	<0.001 0.361 0.002 <0.01 <0.001 0.006	0.49 0.002 - - 0.011	0.011 0.001 - 0.005 0.37	<0.001 0.184 0.001 <0.01 <0.001	0.49 0.002 -	0.011 0.001 -	-	0.076	0.006	<0.010 0.026 <0.010 <0.10 <0.010	0.076	- <0.010 0.006 0.034 - <0.010 - <0.10 - <0.010
Materia Materia Alameter Alameter Consolina Consolina Land Land Land Land Land Land Land La	mgt.	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.08 0.07 - 0.0014 0.015	0.007	0.005	<0.001 <0.001 0.472 <0.001 <0.001 <0.001 0.007 0.4	0.0062	0.0042	<0.001 <0.001 0.28 0.002 <0.01 <0.001 <0.005 0.17	0.0064	0.005	<0.001 0.094 <0.001 <0.001 <0.001 <0.005	0.006		0.076 0.001 <0.01 <0.001 <0.005 <0.005	0.0034 - - 0.018	0.087 0.001 - - 0.005 0.05	0.811 0.022 <0.01 <0.001 0.051 <0.05	0.0034 - - 0.018	0.087 2 0.001 0.1 - <0 - <0.005 0.00	15 0.4 73 0.00 01 - 101 - 13 0.00 11 1.6 001 -	0.011 2 0.001 - 1 0.005	<0.001 0.361 0.002 <0.01 <0.001 0.006 0.46	0.49 0.002 - - 0.011	- 0.011 0.001 - 0.005 0.005 0.37	<0.001 0.184 0.001 <0.01 <0.001 0.008 0.48	0.49 0.002 - - 0.011	0.011 0.001 - - 0.005		0.076 - - - 0.005	0.006 - - - 0.005	<0.010 0.026 <0.010 <0.10 <0.010 <0.050 <0.50	0.076 - - - 0.005	- <0.010 0.006 0.034 - <0.010 - <0.10 - <0.010 0.005 <0.050 0.05 <0.50

C6 - C10 Fraction minus BTEX (F1)	P8/L		-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA NA	-		NA	-		NA.	-		NA NA
>C10 - C16 Fraction >C16 - C34 Fraction	PR/L			-		NA NA			NA NA	-		NA NA	-		NA NA			NA NA	-		NA NA	-		NA NA			NA			NA NA			NA NA	-		NΔ
>C34 - C40 Fraction	PB/L	-	-	-		NA NA	-		NA	-		NA	-		NA.	-		NA	-		NA NA	-		NA	-		NA	-		NA.	-		NA	-		NA NA
>C10 - C40 Fraction (sum) >C10 - C16 Fraction minus Naphthalene (F2)	HB/L HB/L			-		NA NA	-		NA NA	-		NA NA	-		NA NA			NA NA	-		NA NA	-		NA NA	-		NA NA			NA NA			NA NA	-		NA NA
BTEX	pg/L	950	700	950		NA.	950		NΔ	950		NΔ	950		NΔ	950		NΔ	950		NΔ	950		NΔ	950		NΔ	950		NΔ	700		NΔ	700		NA
Benzene Toluene	HE/L	950	700	950 180		NA NA	950 180		NA NA	950 180		NA NA	950 180		NA NA	950 180		NA NA	950 180		NA NA	950 180		NA NA	950 180		NA NA	950 180		NA NA	180		NA NA	180		NA NA
Ethylberzene	PB/L	80	5	80		NA	80		NA	80		NA	80		NA	80		NA	80		NA	80		NA	80		NA	80		NA	5		NA	5		NA
m&p-Xylenes o-Xylene	1/84 1/84	350	350	350		NA NA	350		NA NA	350		NA NA	350		NA NA	350		NA NA	350		NA NA	350		NA NA	350		NA NA	350		NA NA	350		NA NA	350		NA NA
Xylenes - Total Sum of BTEX	PB/L	-	-	-		NA NA	-		NA NA	-		NA NA	-		NA NA			NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA
Nutrients	MS/F					IVA										-						-		NA.			INA			TRA				-		
Total Phosphorus Phosphate (reactive phosphorus)	mgt. mgt.	0.05	0.03	0.05	0.02	0.09 <0.01	0.044	0.016	0.03 <0.01	0.03	0.016	0.02	0.034	0.01	0.02 <0.01	0.04	0.01	0.02 <0.01	0.04	0.001	0.02 <0.01	0.11	0.03	0.34 <0.01	0.11	0.005	0.03 <0.01	0.11	0.03	-	0.07	0.02	0.09	0.07	0.02	0.1 <0.01
						40.01			40.01			0.02						40.01			10.01			40.01												
Total Nitrogen Total Kjeldahl Nitrogen	mgL mgL	0.5	0.3	0.56 0.5	0.3	1	0.52 0.5	0.2	0.6	0.48 0.34	0.2	0.4	0.63	0.2	0.4	0.54 0.5	0.31	0.6	0.54 0.5	0.31	1.2	3.1 2.8	0.9	4.5 4.5	3.1 2.8	0.9	1.2	3.1 2.8	0.9		0.46	0.2	<0.2 <0.2	0.46	0.2	0.6
								0.01																					0.01	-	0.04					
Nitrite	mgt.	0.7		0.102	0.01	0.01 <0.01	0.054	-	0.02 <0.01	0.208	0.01	< 0.01	0.2	0.01	0.05 <0.01	0.05	0.01	0.34	0.05	0.01	0.04	0.03	0.01	<0.01	0.03	0.01	< 0.01	0.03		-		0.01	<0.01	0.04	0.01	0.03 <0.01
America	mgt	0.9		0.036	0.01	0.1	0.02	0.01	0.1	0.046	0.02	0.03	0.062	0.012	0.04	0.116	0.022	0.1	0.116	0.022	0.51	0.06	0.01	<0.01	0.06	0.01	0.06	0.06	0.01 0.01	-	0.02 0.15	0.024	0.07	0.15	0.024	0.06
TSS	mgt	<40	<30	19	5	6	12.8	5	<5	14.8	5	<5	8.7	5	6	25	5.5	10	25	5.5	<5	350	9	150	350	9	13	350	9	-	-	-	72	-	-	150
Field Physical deta	°C			24.3	16.27	23.94	24.52	16.79	23.94	23.98	17.36	20.98	24.7	17.65	21.91	25.9	19.5	25.66	25.9	19.5	25.53	25.84	19.1	22.73	25.84	19.1	22.01	25.84	19.1		26.56	21 32	25.58	26.56	21 32	25.67
pH	pH		6.5-8	7.478	6.23	7	7.192	6.42	7.11	7.138	6.61	6.97	6.98	6.21	6.84	6.86	6.46	7.88	6.86	6.46	7.71	6.9	6.08	6.92	6.9	6.08	6.64	6.9	6.08		7.56	6.58	7.92	7.56	6.58	7.75
Conductivity Turbidity	mS/cm NTU	0.125-2.2 50	- 10	0.3204 26.16	0.20184 5.94	0.25 8.5		0.19076 3.72	0.261 15.5	0.313 14.98	0.2024	0.277	0.309 17.16	0.20188 4.59	0.257	20.918	0.50928 2.4	12.7	20.918 26.1	0.50928	13.4 0.8	0.842 66.8	0.334	0.766 54.2	0.842 66.8	0.334 11.6	0.608 28.9	0.842 66.8	0.334	-	48.42 19.04	12.65 5.81	43.9	48.42 19.04	12.65 5.81	44.1
Dissolved Oxygen	mg1.	5	5	7.43	1.5	2.15			2.38	8.472	5.08	4.03	7.59	2.63	2.18	6.65	5.02	2.95	6.65	5.02	1.75	7.3	1.78	2.35	7.3	1.78	0.28	7.3	1.78	-	8.47	6.88	4.3	8.47	6.88	4.41
Dissolved Oxygen TDS	%			-		0.163		-	0.17	-		0.18	-		0.167	-		7.9		-	8.33	-		0.49			0.389	-		-			26.7	-		26.9
1	9-																					•														
Surface Water Results -April 201	16 - Wet	2			SW01	Weather	Fine				swos			SW04			5W05	Low Tide:	10:47 AM	SW06			SW07			SWOS			SW09			SW20			SW11	
Loration	Linits	Levels	f Concern		Joper Warrell Cre	sek		Upper Warrell Cre	nek		Storry Creek			Stony Creek		le.	wer Warrell Creek		1/	wer Warrell Cree		Linnama	ed Creek Gumma I	Nea	Liman	ned Creek Gumm	va Foot	Linnor	ed Creek Gumm	a North	N	ambucca River So	uth.	No	ambucca River Sou	о.
					Upstream			Downstream			Upstream			Downstream			Upstream		_	Downstream	-	-	Ukoteone		-	Upstream		-	Downstream			Upstream			Downstream	
Freshwater / Estuarine			10 95% species		Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Estuarine			Estuarine	
Date of Sampling Time of Sampling		prot			14-Apr-16 9:20 AM			14-Apr-16 9:00 AM			14-Apr-16 10:15 AM			14-Apr-16 9:45 AM			14-Apr-16 1:00 PM			14-Apr-16 12:45 PM			14-Apr-16 11:00 AM			14-Apr-16 11:30 AM			14-Apr-16 10:45 AM			14-Apr-16			14-Apr-16	
Type		Freshwater ANZECC 2000	Manne	80th %-like	20th %ão	Result	80th %ile		Result	80th %ile	20th %ile	Result	80th %ile		Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile		Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %še	Result	80th %ile	20th % še	Result
Comments Leboratory desa																												Unable to	sample - water le	evel too low	Wind	chop - sediment st	tirred up	Wind o	thop - sediment sti	red up
Metals				0.244	0.0162		0.194	0.016		0.098	0.02		0.114	0.01		0.28	0.01		0.28	0.01		0.25	0.02		0.25	0.02		0.25	0.02		0.11	0.01		0.11	0.01	
Aluminium	mgt																								0.25				0.02							
Arsenic		0.055	0.0023	0.001	0.001		0.001	0.001		0.002	0.001		0.002	0.001	I	0.001	0.001		0.001	0.001	I	0.002	0.001		0.002	0.001		0.002	0.001	-	0.002	0.001		0.002	0.001	
Arsenic Cadmium	mgL mgL	0.024 0.0002	0.0023				0.001	0.001		0.002	0.001		0.002	0.001									0.001		0.002	0.001		0.002	0.001	-				0.002	0.001	
Arseric Cadmium Chromium Copper	mgt mgt mgt	0.024 0.0002 0.001 0.0014	0.0044 0.0013				0.001	0.001		0.002	0.001		0.002	0.001		0.001	0.001		0.001	0.001			0.001 - - 0.001		0.002 - - 0.001	0.001 - - 0.001		0.002 - - 0.001	0.001 - - 0.001	-				0.002 - - 0.001	0.001 - - 0.001	
Auseric Cadmium Chromium Copper Lead	mgt mgt mgt	0.024 0.0002 0.001 0.0014 0.0034	0.0044	0.001	0.001		-	-		-	-			-		0.001 0.0002	0.001 0.0001		0.001 0.0002	0.001 0.0001		0.002 0.001	0.001		0.001	0.001		0.001	0.001	-	0.002	0.001		0.001	0.001	
Arsenic Cadrisium Chronisum Copper Lead Marganese Nickel	mpt mpt mpt mpt mpt mpt	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011	0.0044 0.0013				0.001	0.001 - - - - 0.0178		0.002 - - - - 0.0726	0.001 - - - - - 0.0218		0.002 - - - - - 0.083	0.001 - - - - - 0.0164		0.001	0.001		0.001	0.001		0.002	:		-	- :		- :	- :	-	0.002	0.001			-	
Aziaric Cadrium Chronium Coppar Load Marganeso Mickel Sükrikm Sükrikm	mpL mpL mpL mpL mpL mpL mpL	0.024 0.0002 0.001 0.0014 0.0034 1.9	0.0044 0.0013 0.0044	0.001	0.001		-	-		-	-			-		0.001 0.0002	0.001 0.0001		0.001 0.0002	0.001 0.0001		0.002 - - 0.001 - 0.49	0.001 - 0.011		0.001 - 0.49	0.001 0.011		0.001 - 0.49	0.001 0.001		0.002	0.001		0.001	0.001	
Anaric Cudetum Corenium Copper Copper Lead Marganese Marsan Salerium Salerium Salerium Salerium	mpt mpt mpt mpt mpt mpt mpt mpt mpt	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011	0.0044 0.0013 0.0044 0.08 0.07	0.001 - - - - - 0.3 - - - -	0.001 - - - - - 0.01 - - - - 0.005		0.158 - - - - - - -	0.0178 - - - - - - - 0.0042		0.0726 - - - - - 0.0064	0.0218 - - - - - - 0.005		0.083 - - - - - 0.006	0.0164		0.001 0.0002 0.35 0.0034 - -	0.001 0.0001 0.087 0.001 - - 0.005		0.001 0.0002 0.35 0.0034 - -	0.001 0.0001 0.087 0.001 -		0.002 - - 0.001 - 0.49 0.002 - -	0.001 0.011 0.001 -		0.001 - 0.49 0.002 0.011	0.001 0.011 0.001 - - - 0.005		0.001 - 0.49 0.002 0.011	0.001 0.001 0.001 0.001	-	0.002 - - 0.001 - 0.076 - - - 0.005	0.001 - - 0.001 - 0.006 - - - - 0.005		0.001 0.076 - - - 0.005	0.001 - 0.006 - - - 0.005	
Anneric Controller Chroniste Chroniste Chroniste Chroniste Chroniste Chroniste Land Medical Salarista	mpt mpt mpt mpt mpt mpt mpt mpt mpt	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11	0.0044 0.0013 0.0044 0.08 0.07 -	0.001 - - - - 0.3 - -	0.001 - - - - - 0.01 - -		0.158	0.0178		0.0726	0.0218		0.083	0.0164		0.001 0.0002 0.35 0.0034	0.001 0.0001 0.087 0.001		0.001 0.0002 0.35 0.0034	0.001 0.0001 0.087 0.001		0.002 - - 0.001 - 0.49 0.002 -	0.001 - 0.011 0.001		0.001 0.49 0.002	0.001 - 0.011 0.001		0.001 - 0.49 0.002	0.001 - 0.011 0.001		0.002 - - 0.001 - 0.076 - -	0.001 - 0.001 - 0.006 - -		0.001 - 0.076 -	0.001 - 0.006 -	
Arrante Cadelum Strontina Copper seet Stad Stad Stad States Stad States	mpt mpt mpt mpt mpt mpt mpt mpt mpt mpt	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.00 0.07 - 0.0014 0.015	0.001 - - - 0.3 - - - 0.007 1.38	0.001 - - - - - 0.01 - - - - 0.005		0.158 - - - - - - 0.0062 0.99	0.0178 - - - - - - - 0.0042		0.0726 - - - - 0.0064 1.4	0.0218 - - - - - - 0.005		0.083 - - 0.006 1.48	0.0164		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 - - 0.005		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 -		0.002 - - 0.001 - 0.49 0.002 - -	0.001 0.011 0.001 -		0.001 - 0.49 0.002 0.011 1.65	0.001 0.011 0.001 - - - 0.005		0.001 - 0.49 0.002 0.011 1.65	0.001 0.001 0.001 0.001		0.002 - - 0.001 - 0.076 - - - 0.005 0.26	0.001 - - 0.001 - 0.006 - - - - 0.005		0.001 - 0.076 0.005 0.26	0.001 - 0.006 - - - 0.005	
Naphthalene C8 - C10 Fraction	mgL mgL mgL mgL mgL mgL mgL mgL mgL mgL	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.00 0.07 - 0.0014 0.015	0.001 - - - - - 0.3 - - - -	0.001 - - - - - 0.01 - - - - 0.005		0.158 - - - - - - -	0.0178 - - - - - - - 0.0042		0.0726 - - - - - 0.0064	0.0218 - - - - - - 0.005		0.083 - - - - - 0.006	0.0164		0.001 0.0002 0.35 0.0034 - -	0.001 0.0001 0.087 0.001 - - 0.005		0.001 0.0002 0.35 0.0034 - -	0.001 0.0001 0.087 0.001 -		0.002 - - 0.001 - 0.49 0.002 - -	0.001 0.011 0.001 -		0.001 - 0.49 0.002 0.011	0.001 0.011 0.001 - - - 0.005		0.001 - 0.49 0.002 0.011	0.001 0.001 0.001 0.001		0.002 - - 0.001 - 0.076 - - - 0.005	0.001 - - 0.001 - 0.006 - - - - 0.005		0.001 0.076 - - - 0.005	0.001 - 0.006 - - - 0.005	
Naphthaliene	mgL mgL mgL mgL mgL mgL mgL mgL mgL mgL	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.00 0.07 - 0.0014 0.015	0.001 - - - 0.3 - - - 0.007 1.38	0.001 - - - - - 0.01 - - - - 0.005		0.158 - - - - - - 0.0062 0.99	0.0178 - - - - - - - 0.0042		0.0726 - - - - 0.0064 1.4	0.0218 - - - - - - 0.005		0.083 - - 0.006 1.48	0.0164		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 - - 0.005		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 -		0.002 - - 0.001 - 0.49 0.002 - -	0.001 0.011 0.001 -		0.001 - 0.49 0.002 0.011 1.65	0.001 0.011 0.001 - - - 0.005		0.001 - 0.49 0.002 0.011 1.65	0.001 0.001 0.001 0.001		0.002 - - 0.001 - 0.076 - - - 0.005 0.26	0.001 - - 0.001 - 0.006 - - - - 0.005		0.001 - 0.076 0.005 0.26	0.001 - 0.006 - - - 0.005	
Naphthalisme C8 - C10 Fraction C8 - C10 Fraction minus BTEX (F1) >-C10 - C16 Fraction >-C16 - C34 Fraction	mgl	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.00 0.07 - 0.0014 0.015	0.001 - - - 0.3 - - - 0.007 1.38	0.001 - - - - - 0.01 - - - - 0.005		0.158 - - - - - - 0.0062 0.99	0.0178 - - - - - - - 0.0042		0.0726 - - - - 0.0064 1.4	0.0218 - - - - - - 0.005		0.083 - - 0.006 1.48	0.0164		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 - - 0.005		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 -		0.002 - - 0.001 - 0.49 0.002 - -	0.001 0.011 0.001 -		0.001 - 0.49 0.002 0.011 1.65	0.001 0.011 0.001 - - - 0.005		0.001 - 0.49 0.002 0.011 1.65	0.001 0.001 0.001 0.001		0.002 - - 0.001 - 0.076 - - - 0.005 0.26	0.001 - - 0.001 - 0.006 - - - - 0.005		0.001 - 0.076 0.005 0.26	0.001 - 0.006 - - - 0.005	
Naphthaliene C8 - C10 Fraction C8 - C10 Fraction minus BTEX (F1) >C10 - C16 Fraction minus BTEX (F1) >C16 - C34 Fraction >C34 - C40 Fraction >C10 - C40 Fraction	mgl	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.00 0.07 - 0.0014 0.015	0.001 - - - 0.3 - - - 0.007 1.38	0.001 - - - - - 0.01 - - - - 0.005		0.158 - - - - - - 0.0062 0.99	0.0178 - - - - - - - 0.0042		0.0726 - - - - 0.0064 1.4	0.0218 - - - - - - 0.005		0.083 	0.0164		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 - - 0.005		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 -		0.002 - - 0.001 - 0.49 0.002 - -	0.001 0.011 0.001 -		0.001 - 0.49 0.002 0.011 1.65	0.001 0.011 0.001 - - - 0.005		0.001 - 0.49 0.002 0.011 1.65	0.001 0.001 0.001 0.001		0.002 - - 0.001 - 0.076 - - - 0.005 0.26	0.001 - - 0.001 - 0.006 - - - - 0.005		0.001 - 0.076 0.005 0.26	0.001 - 0.006 - - - 0.005	
Naghthalene C8 - C10 Fraction C8 - C10 Fraction minus BTEX (F1) - C10 - C16 Fraction - C16 - C34 Fraction - C34 - C40 Fraction - C34 - C40 Fraction - C10 - C00 Fraction (sum) - C10 - C10 Fraction minus Naghthalene (F2)	mgl	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.00 0.07 - 0.0014 0.015	0.001 - - - 0.3 - - - 0.007 1.38	0.001 - - - - - 0.01 - - - - 0.005		0.158 - - - - - - 0.0062 0.99	0.0178 - - - - - - - 0.0042		0.0726 - - - - 0.0064 1.4	0.0218 - - - - - - 0.005		0.083 - - 0.006 1.48	0.0164		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 - - 0.005		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 -		0.002 - - 0.001 - 0.49 0.002 - -	0.001 0.011 0.001 -		0.001 - 0.49 0.002 0.011 1.65	0.001 0.011 0.001 - - - 0.005		0.001 - 0.49 0.002 0.011 1.65	0.001 0.001 0.001 0.001		0.002 - - 0.001 - 0.076 - - - 0.005 0.26	0.001 - - 0.001 - 0.006 - - - - 0.005		0.001 - 0.076 0.005 0.26	0.001 - 0.006 - - - 0.005	
Naghritukine CB - C10 Fixaction minus BTEX (F1) >C10 Fixaction minus BTEX (F1) >C10 - C16 Fixaction >C16 - C34 Fixaction >C34 - C30 Fixaction >C34 - C30 Fixaction >C10 - C34 Fixaction >C10 - C46 Fixaction minus Naghritukine (F2) BTEX BEXEX	mgt. mgt. mgt. mgt. mgt. mgt. mgt. mgt.	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.00 0.07 - 0.0014 0.015	0.001 - - - 0.3 - - - 0.007 1.38	0.001 - - - - - 0.01 - - - - 0.005		0.158 - - - - - - 0.0062 0.99	0.0178 - - - - - - - 0.0042		0.0726 - - - - 0.0064 1.4	0.0218 - - - - - - 0.005		0.083 	0.0164		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 - - 0.005		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 -		0.002 - - 0.001 - 0.49 0.002 - -	0.001 0.011 0.001 -		0.001 - 0.49 0.002 0.011 1.65	0.001 0.011 0.001 - - - 0.005		0.001 - 0.49 0.002 0.011 1.65	0.001 0.001 0.001 0.001		0.002 - - 0.001 - 0.076 - - - 0.005 0.26	0.001 - - 0.001 - 0.006 - - - - 0.005		0.001 - 0.076 0.005 0.26	0.001 - 0.006 - - - 0.005	
Naghthaline CB - C10 Fraction CB - C10 Fraction minus BTEX (F1)	mgt	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11 0.0008 - 0.0008	0.0044 0.0013 0.0044 0.005 0.007 - 0.0014 0.015 - 0.0004	0.001 	0.001 - - - - - 0.01 - - - - 0.005		0.158 	0.0178 - - - - - - - 0.0042		0.0726 	0.0218 - - - - - - 0.005		0.0083	0.0164		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 - - 0.005		0.001 0.0002 0.35 0.0034 	0.001 0.0001 0.087 0.001 -		0.002 - 0.001 - 0.49 0.002 - 0.011 1.65 - 16 - 0.011	0.001 0.011 0.001 -		0.001 - 0.49 0.002 - 0.011 1.65 - 16 	0.001 0.011 0.001 - - - 0.005		0.001 0.49 0.002 - - - 0.011 1.65 - - - -	0.001 0.001 0.001 0.001		0.002 - - 0.001 - - - 0.005 0.26 - - - - - - - - - - - - - - - - - - -	0.001 - - 0.001 - 0.006 - - - - 0.005		0.001 0.076 - - 0.005 0.26 - - - - - - - - - - - - - - - - - - -	0.001 - 0.006 - - - 0.005	
hapithatism Co C10 Fraction minus BTEX (F1) C-C10 Fraction minus BTEX (F1) C-C10 Fraction minus BTEX (F1) C-C10 Fraction C-C10 - C14 Fraction C-C10 - C14 Fraction C-C10 - C10 Fraction C-C10 Fr	mgL	0.024 0.0021 0.001 0.0014 0.0014 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.008 0.07 - 0.0014 0.015 - 0.0004	0.001 	0.001 - - - - - 0.01 - - - - 0.005		0.158 	0.0178 - - - - - - - 0.0042		0.0726 	0.0218 - - - - - - 0.005		0.0083	0.0164		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 - - 0.005		0.001 0.0002 0.35 0.0034 	0.001 0.0001 0.087 0.001 -		0.002 - 0.001 - 0.49 0.002 - 0.011 1.65 - 16 - 0.011	0.001 0.011 0.001 -		0.001 - 0.49 0.002 - 0.011 1.65 - 16 	0.001 0.011 0.001 - - - 0.005		0.001 0.49 0.002 - - - 0.011 1.65 - - - -	0.001 0.001 0.001 0.001		0.002 - - 0.001 - - - 0.005 0.26 - - - - - - - - - - - - - - - - - - -	0.001 - - 0.001 - 0.006 - - - - 0.005		0.001 - 0.076 0.005 0.26 	0.001 - 0.006 - - - 0.005	
Naprimire  G CIO Franciso G CIO Franciso minus BEEX (F1) CIO - CIO Franciso minus BEEX (F1) CIO - CIO Franciso minus Naprimirenza (F2) BEEX BEEX Explancisores Explancisores CIO - CIO Franciso CIO - CIO	mgL	0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11 0.0008 - 0.0008	0.0044 0.0013 0.0044 0.008 0.07 - 0.0014 0.015 - 0.0004	0.001	0.001 - - - - - 0.01 - - - - 0.005		0.158 - 0.0062 0.099 - 166 	0.0178 - - - - - - - 0.0042		0.0726 	0.0218 - - - - - - 0.005			0.0164		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 - - 0.005		0.001 0.0002 0.35 0.0034 	0.001 0.0001 0.087 0.001 -		0.002 	0.001 0.011 0.001 -		0.001 - 0.49 0.002 - 0.011 1.65 - 16 	0.001 0.011 0.001 - - - 0.005		0.001 0.49 0.002 - - - 0.011 1.65 - - - -	0.001 0.001 0.001 0.001		0.002 	0.001 - - 0.001 - 0.006 - - - - 0.005		0.001 0.076 - - 0.005 0.26 - - - - - - - - - - - - - - - - - - -	0.001 - 0.006 - - - 0.005	
Naprimume GE - CIO Franciso mena BTEX (F1) ol-10- CIO Franciso mena BTEX (F1) ol-10- CIO Franciso mena BTEX (F1) ol-10- CIO Franciso color Cio Franciso color Cio Franciso color Cio Franciso (color color color Cio Franciso color colo	mgL	0.024 0.0021 0.001 0.0014 0.0014 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.008 0.07 - 0.0014 0.015 - 0.0004	0.001	0.001 - - - - - 0.01 - - - - 0.005		0.158 - 0.0062 0.099 - 166 	0.0178 - - - - - - - 0.0042		0.0726 	0.0218 - - - - - - 0.005			0.0164		0.001 0.0002 0.35 0.0034 - - 0.018 0.52	0.001 0.0001 0.087 0.001 - - 0.005		0.001 0.0002 0.35 0.0034 	0.001 0.0001 0.087 0.001 -		0.002 	0.001 0.011 0.001 -		0.001 - 0.49 0.002 - 0.011 1.65 - 16 	0.001 0.011 0.001 - - - 0.005		0.001 0.49 0.002 - - - 0.011 1.65 - - - -	0.001 0.001 0.001 0.001		0.002 	0.001 - - 0.001 - 0.006 - - - - 0.005		0.001 0.076 - - 0.005 0.26 - - - - - - - - - - - - - - - - - - -	0.001 - 0.006 - - - 0.005	
Nephralum C G. C-07 Fraction man BTEX (P1)	mgt	0.024 0.0021 0.001 0.0014 0.0014 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.008 0.07 - 0.0014 0.015 - 0.0004	0.001	0.001 		0.158 	0.0178 - - 0.0042 0.366		0.0726 	0.0218 - 0.005 0.41		0.083 0.006 1.48 	0.0164		0.001 0.0002 0.35 0.0034 	0.001 0.0001 0.087 0.001 - - 0.005 0.05		0.001 0.0002 0.0002 0.0034 	0.001 0.0001 0.087 0.001 - - 0.005 0.05		0.002 0.001 0.49 0.002 0.011 1.65 - 16 - - - - - - - - - - - - -	0.001 0.011 0.001 - - - 0.005 0.37		0.001 0.49 0.002 0.011 1.65 - - - - - - - - - - - - - - - - - - -	0.001 0.011 0.001 - - - 0.005 0.37 -		0.001 0.49 0.002 - - - - - - - - - - - - - - - - - -	0.001 - 0.011 0.001 - 0.005 0.005 0.37		0.002 0.001 - 0.001 0.005	0.001 - 0.001 - 0.006 - - 0.005 -			0.001 0.006 0.005 0.005	
Nephrative  Co - C10 Fraction mines ETEX (F1)  CC - C10 Fraction mines ETEX (F1)  CC10 - C10 Fraction mines ETEX (F1)  CC10 - C10 Fraction  CC10 - C10 Fraction  CC10 - C10 Fraction  CC10 - C10 Fraction mines Nephratiene (F2)  ETEX.	mgt	0.024 0.0021 0.001 0.0014 0.0014 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.008 0.07 - 0.0014 0.015 - 0.0004	0.001	0.001 		0.158 	0.0178 - - 0.0042 0.366		0.0726 	0.0218		0.083 	0.0164		0.001 0.0002 0.35 0.0034 - - 0.018 0.52 16 - - - - - - - - - - - - - - - - - -	0.001 0.0001 0.087 0.001 - - 0.005 0.05		0.001 0.0002 0.35 0.0034 - - 0.018 0.52 16 - - - - - - - - - - - - - - - - - -	0.001 0.0001 0.087 0.001 - 0.005 0.05		0.002 0.001 0.49 0.002 0.002 0.01 1.65 1.65 1.65 1.65 1.65 1.65	0.001 0.011 0.001 - 0.005 0.37		0.001 - 0.49 0.002 - 0.011 1.65 	0.001 0.011 0.001 - - 0.005 0.37		0.001 0.49 0.002 0.011 1.65 16 - - - - - - - - - - - - -	0.001 0.011 0.001 - - 0.005 0.37		0.002	0.001 - 0.001 0.006 - - 0.005 0.05		0.001 - 0.076 	0.001 0.006 0.005 0.005	
Nephralum C  G COT Pration  G COT Pration minus BTEX (P1)  - COL - COT Pration minus BTEX (P1)  - COL - COT Pration minus  - COL - COT Pration minus  - COL - COT Pration (pure)  - COL - CO	mgt. mgt. mgt. mgt. mgt. mgt. mgt. mgt.	0.024 0.0021 0.001 0.0014 0.0014 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.008 0.07 - 0.0014 0.015 - 0.0004	0.001	0.001 		0.158 	0.0178 		0.0726 	0.0218 		0.083 	0.01 0.003 0.2		0.001 0.0002 0.35 0.0034 	0.001 0.0001 0.087 0.001 - - - 0.005 0.05		0.001 0.0002 0.355 0.0034 	0.001 0.0001 0.007 0.001 - - 0.005 0.05		0.002 0.001 0.49 0.002 0.011 1.65 0.011 1.65 0.011 1.65 0.011 1.60 0.013 3.1			0.001 0.49 0.002 - - - 0.011 1.65 - - - - - - - - - - - - - - - - - - -			0.001 - 0.49 0.002 0.011 1.65 			0.002	0.001 		- 0.001 - 0.076 0.005 - 0.26	0.001 - 0.006 - 0.005 0.005 - 0.002 0.01	
Naphralume GE - COT Practice mines BTEX (FT) - COL - COT Practice mines BTEX (FT) - COL - COT Practice mines BTEX (FT) - COL - COT Practice - COT Practice - COL - COT Practice - CO	mgt	0.024 0.0002 0.0001 0.00014 0.00014 0.00014 1.9 0.011 11 0.00005 0.0006 16	0.0044 0.0013 0.0044 0.008 0.07 - 0.0014 0.015 - 0.0004	0.001	0.001 		0.158 	0.0178 			0.0218 			0.0164 		0.001 0.0002 0.35 0.0034 - - 0.018 0.52 16 - - - - - - - - - - - - - - - - - -	0.001 0.0001 0.0001 - - 0.005 0.005 0.005		0.001 0.0002 0.35 0.0034 - 0.018 0.52 16 - - - - - - - - - - - - -	0.001 0.0001 0.087 0.001 - 0.005 0.005 0.005		0.002 . 0.001 . 0.49 0.002 0.011 1.65	0.001 - 0.001 - 0.001 - 0.005 0.37 - 0.005 0.03 0.005		0.001 	0.001 - 0.001 - 0.001 - 0.005 0.37 - 0.005 0.37 - 0.03 0.005					0.002 . 0.001 . 0.001 . 0.076 	0.001 			0.001 - 0.006 0.005 0.05 - 0.005 - 0.005 - 0.005 - 0.005 - 0.002 - 0.002	
Neptralum C C - C OF Princiso Princis OF C - C OF Princiso	mgt. mgt. mgt. mgt. mgt. mgt. mgt. mgt.	0.024 0.0021 0.001 0.0014 0.0014 1.9 0.011 11 0.00005 0.008	0.0044 0.0013 0.0044 0.008 0.07 - 0.0014 0.015 - 0.0004	0.001	0.001 		0.158 	0.0178 		0.0726 	0.0218 			0.0164 		0.001 0.0002 0.35 0.0034 0.018 0.52 16	0.001 0.0001 0.0001 - - 0.005 0.05 0.05		0.001 0.0002 0.355 0.0034 - - - - - - - - - - - - - - - - - - -	0.001 0.0001 0.0001 0.087 0.001 - 0.005 0.005 0.005 0.005 0.006 0.006 0.006		0.002 . 0.001 . 0.49 0.002 0.011 1.65	0.001 0.001 0.001 0.005 0.37 0.37		0.001 - 0.49 0.002 - 1 0.011 1.65 	0.001 - 0.011 0.001 - 0.005 0.37 - 0.005 0.37 - 0.005 0.005 0.005 0.005			0.001 0.001 0.001 0.005 0.37		0.002 	0.001 - 1 0.001 0.005 - 1 0.005 0.005 - 1			0.001 - 0.006 - 0.005 0.05 - 0.05 - 0.01	
Neptralum C C - C OF Princiso Princis OF C - C OF Princiso	mgt. mgt. mgt. mgt. mgt. mgt. mgt. mgt.	0.002	0.0044 0.0013 0.0044 0.008 0.07 - 0.0014 0.015 - 0.0004	0.001	0.001 		0.158 	0.0178 			0.0218 			0.0164 		0.001 0.0002 0.35 0.0034 - - 0.018 0.52 16 - - - - - - - - - - - - - - - - - -	0.001 0.0001 0.0001 - - 0.005 0.005 0.005		0.001 0.0002 0.35 0.0034 - 0.018 0.52 16 - - - - - - - - - - - - -	0.001 0.0001 0.087 0.001 - 0.005 0.005 0.005		0.002 . 0.001 . 0.49 0.002 0.011 1.65	0.001 - 0.001 - 0.001 - 0.005 0.37 - 0.005 0.03 0.005		0.001 	0.001 - 0.001 - 0.001 - 0.005 0.37 - 0.005 0.37 - 0.03 0.005					0.002 . 0.001 . 0.001 . 0.076 	0.001 			0.001 - 0.006 0.005 0.05 - 0.005 - 0.005 - 0.005 - 0.005 - 0.002 - 0.002	
Nephralum C  G COT Pration  G COT Pration minus BTEX (P1)  - COL - COT Pration minus BTEX (P1)  - COL - COT Pration minus  - COL - COT Pration minus  - COL - COT Pration (pure)  - COL - CO	mgt. mgt. mgt. mgt. mgt. mgt. mgt. mgt.	0.002	0.0044 0.0013 0.0044 0.0013 0.0044 0.02 0.07 0.0014 0.015 0.0004 0.005 0.0004 0.005 0.0004 0.	0.001	0.001 		0.0062 0.999 166 	0.0178 			0.016 0.0022 0.0022 0.002					0.001 0.0002 0.35 0.0034 0.52 16 - - - - - - - - - - - - -	0.001 0.0001 0.0001 0.001 0.005 0.005 0.005 0.005 0.01 0.006 0.21 0.2		0.001 0.0002 0.35 0.0034 0.52 16 0.022 16 0.0038 0.52 0.0038 0.0018	0.001 0.0001 0.087 0.001 0.005 0.005 0.005 0.005 0.001 0.006 0.005		0.002	0.001 - 0.001 - 0.001 - 0.005 0.37 - 0.005 0.005 0.9 0.005		0.001 0.002 0.002 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.003 0.002 0.003	0.001 0.001 0.001 0.001 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005					0.002 . 0.001 . 0.0076 . 0.005 0.26 . 0.005	0.001 -1 0.001 -0 0.006 -1 0.005 0.005 -1 0.005 -1 0.005 0.005 -1 0.005 -1 0.005 -1 0.006 -1 0 0.006 -1 0 0.006 -1 0 0.006 -1 0 0.006 -1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			0.001 	
Neptralum C C - C OF Princiso Princis OF C - C OF Princiso	mgt. mgt. mgt. mgt. mgt. mgt. mgt. mgt.	0.002	0.0044 0.0013 0.0044 0.008 0.07 - 0.0014 0.015 - 0.0004	0.001	0.001		0.158 	0.015 0.004 0.004 0.004 0.004		950 180 950 0.03 0.03 0.018 1.4 	0.016 0.00218 0.41 0.005 0.41			0.0164 		0.001 0.002 0.35 0.0034 0.52 16 	0.001 0.0001 0.0001 1 0.005 0.005 0.005 0.005		0.001 0.0002 0.0002 0.35 0.0034 0.0018 0.018 0.052 16	0.001 0.0001 0.0001 0.0001 1.0000 0.005 0.005 0.005 0.005		0.002 0.001 0.49 0.002 0.011 1.65 950 180 0.11 0.013 330 0.11 2.8	0.001 - 0.001 - 0.001 - 0.005 0.37 - 0.005 0.005 0.005		0.001 0.002 0.002 0.002 0.001 1.05 0.001 1.6				0.001 - 0.011 0.001 - 0.005 0.37 - 0.005 0.37 - 0.005		0.002 0.001 . 0.007 . 0.005	0.001			0.001 - 0.006 0.005 0.05 - 0.005 - 0.02 0.01	
Neptritudes CE - COT Prisation Prisa BTEX (P1) CE - COT Prisation Prisa BTEX (P2) CE - COT Prisation Prisa Neptritudes (P2) CE - COT Prisation Prisation Prisa Neptritudes (P2) CE - COT Prisation Prisat	mgst.	0.002	0.0004	0.001	0.001	20.47		0.0178 	2151	0.0764 1.4 1.7 16 16 17 18 18 18 18 18 18 18 18 18 18 18 18 18		19.94	0.083 - 0.006 1.48 - 1.48 - 1.49 - 1.40 - 1.40 - 1.40 - 1.40 - 1.40 - 1.	0.0164 	21.74	0.0002  0.35 0.0034 0.018 0.52 16 350 0.04 0.01 0.54 0.5 0.05 0.02 0.116 25	0.001 0.0001 0.0001 0.0001 0.0005 0.005 0.005 0.005 0.006 0.006 0.006 0.006 0.006 0.006 0.006 0.006 0.006	24.31	0.0002  0.35 0.0034 0.52 0.0018 0.52 0.0018 0.52 0.0018 0.52 0.0018 0.52 0.0018 0.52 0.0018 0.52 0.0018 0.52 0.0018 0.53 0.0018 0.54 0.55 0.004 0.55 0.005 0	0.001 0.0001 0.0001 0.087 0.001 0.005 0.005 0.005 0.005 0.005 0.005	24.17	0.002 0.001 0.49 0.002 0.011 1.65 16		23.21	0.001 0.002 0.002 0.002 0.001 1.65 0.001 1.65 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.001 0.002 0.	0.001 0.001 0.001 0.001 0.005 0.005 0.37 0.005 0.005 0.005 0.005 0.005 0.005	22.86	950 180 950 10013 0.002 1.65 16 16 16 17 180 180 180 180 180 180 180 180 180 180	0.001 0.001 0.001 0.001 0.005 0.005 0.005 0.005 0.005 0.005		0.002	0.001 	2573			25.53
Naphtalwa CG - CG Fraction Private PTEX (P1) - CG - CG Fraction CG - CG Fraction Private PTEX (P1) - CG - CG Fraction (private CG - CG Fraction CG	mgst.  year.  ye	0.002	0.0004	0.001 0.001 0.007 1.38 0.007 1.38 0.007 1.38 0.007 0.007 0.007 0.005 0.001 0.005 0.005 0.001 0.005 0.0	0.001 	5.79		0.0178 0.00128 0.00042 0.366 0.0004 0.00004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.0004 0.00004 0.0004	6.03			5.99		0.0164 	21.74	0.001 0.0002 0.15 0.0034 1. 0.018 0.52 16 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	0.001 0.0001 0.0001 0.001 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.001 0.00	6.96	0.0002  0.305  0.0002  0.305  0.0004  0.50  0.0018  0.50  0.0018  0.50  0.0018  0.50  0.0018  0.50  0.0018  0.50  0.0018  0.50  0.0018	0.001 0.0001 0.0001 0.005 0.00	7.02	0.001 0.001 0.002 0.002 0.002 0.001 1.001	0.001 0.001 0.001 0.005 0.37 0.005 0.37 0.005 0.39 0.005 0.39 0.005	2321	0.001 0.000 0.002 0.001 1.65 0.001 1.65 0.001 1.65 0.001 1.65 0.001 1.65 0.001 1.65 0.001 1.65 0.001 0	0.001 0.001 0.001 0.001 0.005 0.27 0.27 0.005 0.005 0.005 0.005 0.005 0.005 0.005	21.56				0.002	0.001 	25.73 7.43		0.001 0.006 0.005	7.07
Nagerbalune CE - COT Praction mean BTEX (PT) CE - COT Praction CE - COT Praction mean BTEX (PT) CE - COT Praction CE - COT Practice CE - C	에 어떤 보다 이 어떤	0.002	0.0044 0.0015 0.0014 0.0014 0.0014 0.0015 0.0014 0.0015 0.	0.001	0.001	5.79 0.253 8.3		0.0178 0.0042 0.366 0.0042 0.366 0.004 0.004 0.004 0.001 0.0	6.03 0.264 7.4		0.0218 0.0218 0.0055 0.44 0.0055 0.44 0.0022 0.2 0.2 0.01 0.02 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.	5.99 0.276 8.7		0.0164 - 0.005 - 0.005	6.28 0.263 12.4	0.001 0.002 0.35 0.0034 0.002 16 0.52 16 17 180 180 180 180 180 180 180 180	0.001 0.0001 0.001 0.001 0.005 0.005 0.005 0.005 0.005	6.96 14.6 6.5	0.0002 0.35 0.003 0.003 0.0002	0.001 0.0001 0.0001 0.0001 0.0001 0.0005 0.005 0.005 0.005 0.001 0.006 0.001 0.001 0.002 0.001 0.002 0.002 0.002 0.002 0.003 0	24.27 7.103 10 7.8	0.002		6.3 0.816 37.6	0.001 0.010 0.010 0.011 0.05 0.011 0.05 0.011 0.	0.001 0.001 0.001 0.005 0.37 0.005 0.37 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005	6.37 0.897 31.3				0.002	0.001 	2672 7-741 462 125			7.07 44.9
Naprindum C  G. C.OT Praction Product Prince (PT)  COL. C.OT Praction Prince Of Prince (PT)  COL. C.OT Praction Prince Of Prin	에 어떤 보다 이 어떤	0.002	0.0004 0.0015 0.	0.001	0.001	5.79 0.253 8.3	0.158 	0.0178 0.0178 0.0178 0.0042 0.366 0.0042 0.366 0.0042 0.004	6.03 0.264 7.4 3.73	0.0726 0.0726 1.4 1.4 1.4 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6 1.6	0.018 0.0218 0.005 0.41 	5.99 0.276 8.7 4.09	0.083 -0.006 1.48	0.0164 	6.28 0.263 12.4 2.68	0.0002  0.35  0.0024  0.35  0.0034  0.52  0.018  0.52  0.019  0.52  0.005  0.001  0.010  0.011  0.05	0.001 0.0001 0.0001 0.0001 0.005 0.005 0.005	6.96 14.6 6.5 4.88	0.0002  0.35 0.0034  0.35 0.0034  0.52  0.018 0.52  16 0.52  10 0.018 0.52  0.004 0.011 0.54 0.05 0.05 0.05 0.05 0.05 0.05 0.05	0.001 0.0001 0.087 0.001 0.005 0.005 0.005 0.005 0.006 0.006 0.006 0.002 0.002 0.002 0.002 0.002	7.02 10 7.8 4.72	0.001 0.001 0.002 0.002 0.002 0.002 0.002 0.003		6.3 0.816 37.6 4.07		0.001 0.001 0.001 0.001 0.005 0.37 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005	6.37 0.897 31.3 4.11				0.002	0.001 	7.43 45.2 12.5 5.42		0.001 0.006 0.005	7.07 44.9 18.2 5.61
Nagerbalune CE - COT Praction mean BTEX (PT) CE - COT Praction CE - COT Praction mean BTEX (PT) CE - COT Praction CE - COT Practice CE - C	mgt.	0.002	0.0004 0.0015 0.	0.001	0.001	5.79 0.253		0.0178 0.0042 0.366 0.0042 0.366 0.004 0.004 0.004 0.001 0.0	6.03 0.264 7.4		0.0218 0.0218 0.0055 0.44 0.0055 0.44 0.0022 0.2 0.2 0.01 0.02 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.2 0.	5.99 0.276 8.7		0.0164 - 0.005 - 0.005	6.28 0.263 12.4	0.001 0.002 0.35 0.0034 0.002 16 0.52 16 17 180 180 180 180 180 180 180 180	0.001 0.0001 0.001 0.001 0.005 0.005 0.005 0.005 0.005	6.96 14.6 6.5	0.0002 0.35 0.003 0.003 0.0002	0.001 0.0001 0.0001 0.0001 0.0001 0.0005 0.005 0.005 0.005 0.001 0.006 0.001 0.001 0.002 0.001 0.002 0.002 0.002 0.002 0.003 0	7.02 10	0.002		6.3 0.816 37.6	0.001 0.010 0.010 0.011 0.05 0.011 0.05 0.011 0.	0.001 0.001 0.001 0.005 0.37 0.005 0.37 0.005 0.005 0.005 0.005 0.005 0.005 0.005 0.005	6.37 0.897 31.3				0.002	0.001 	7.43 45.2			7.07 44.9

Lower Warrell Creek

Upstream Freshwater 28-Apr-16 9:45 AM

80th 168s 20th 168s Result

Lower Warrell Creek

Downstream Freshwater 28-Apr-16 9:30 AM

80th Nate 20th Nate Result 80th Nate 20th Nate Result

Unnamed Creek Gumma West

Upstream
Freshwater
28-Apr-16
12-45 PM

Unnamed Creek Gumma East

80th %ile 20th %ile Result

Upstream Freshwater 28-Apr-16 12-21 PM Unnamed Creek Gumma North

| Downstream | Feathwater | 28-8ye-16 | 1230 PM | Unable to sample - water level low | 806-168 | 20th Sale | Result |

Nambucca River South

Upstream Estuarine 28-Apr-16 11:30 AM

80th %ile 20th %ile Result

Nambucca River South

Downstream Estuarine 28-Apr-16 11:35 AM

80th %ãe 20th %ãe Result

Upper Warrell Deals
Upstream
Fessionater
28-Apr-18
1:20 PM
800n Nills
20th Nills
Result

ANZECC 2000 95% species protected
Freshwater Marine

Freshwater / Estuarine Date of Sampling Time of Sampling Comments Type Upper Warrell Creek

Downstream Freshwater 28-Apr-16 1:40 PM

80th 9clie 20th 9clie Result

Storry Creek
Upstream
Freshwater
28-Apr-16
3:20 PM

80th Nate 20th Nate Result 80th Nate 20th Nate Result

Stony Creek
Downstream
Freshwater
28-Apr-16
3:10 PM

Metals																																				
Aluminium	mg1.	0.055	-	0.06	0.01	< 0.01	0.05	0.01	< 0.01	0.05	0.01	< 0.01	0.04	0.01	0.02	0.06	0.01	0.02	0.06	0.01	< 0.01	0.1	0.01	< 0.01	0.1	0.01	0.03	0.1	0.01	NA	0.02	0.01	< 0.10	0.02	0.01	< 0.10
Arseric	mg1.	0.024	0.0023	-	-	< 0.001	-	-	< 0.001	-	-	< 0.001	0.001	0.001	< 0.001	0.001	0.001	0.001	0.001	0.001	< 0.001	0.002	0.001	0.002	0.002	0.001	0.001	0.002	0.001	NA.	0.002	0.001	< 0.010	0.002	0.001	< 0.010
Cadmium	mg1.	0.0002	0.0055	-	-	< 0.0001	-	-	0.0002	-	-	< 0.0001	-	-	< 0.0001	0.0001	0.0001	< 0.0001	0.0001	0.0001	< 0.0001	-	-	< 0.0001	-	-	< 0.0001	-	-	NA.	-	-	< 0.0010	-	-	< 0.0010
Chromium	mgL	0.001	0.0044		-	< 0.001	-		< 0.001	-		< 0.001	-	-	< 0.001		-	< 0.001	-	-	< 0.001	-		< 0.001	-	-	< 0.001		-	NA.			< 0.010		-	< 0.010
Copper	mg1.	0.0014	0.0013	-	-	< 0.001	-	-	< 0.001	-	-	< 0.001	-	-	< 0.001	-	-	< 0.001	-	-	< 0.001	-	-	0.002	-	-	0.004	-	-	NA.	0.001	0.001	0.026	0.001	0.001	< 0.010
Lead	mg1.	0.0034	0.0044	-	-	< 0.001	-	-	< 0.001	-	-	< 0.001	-	-	< 0.001	-	-	< 0.001	-	-	< 0.001	-	-	< 0.001	-	-	< 0.001	-	-	NA.	-	-	< 0.010	-	-	< 0.010
Marganese	mg1.	1.9	0.08	0.21	0.02	0.249	0.2	0.03	0.486	0.06	0.02	0.038	0.052	0.013	0.046	0.26	0.08	1.54	0.26	0.08	0.282	0.23	0.019	0.313	0.23	0.019	0.152	0.23	0.019	NA.	0.03	0.002	0.046	0.03	0.002	0.029
Nickel	mgL	0.011	0.07		-	0.001		-	0.006	-		< 0.001	-	-	0.002	0.001	0.001	0.048	0.001	0.001	< 0.001	0.001	0.001	0.002	0.001	0.001	< 0.001	0.001	0.001	NA.	-	-	< 0.010	-	-	< 0.010
Selenium	mg1.	11		-	-	< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	0.01	-	-	NA.	-	-	< 0.10	-	-	< 0.10
Silver	mgL	0.00005	0.0014		-	< 0.001		-	< 0.001	-		< 0.001	-	-	< 0.001		-	< 0.001	-	-	< 0.001	-		< 0.001	-	-	< 0.001		-	NA.	-		< 0.010	-	-	< 0.010
Zirc	mg1.	0.008	0.015	-	-	< 0.005	-	-	0.012	0.005	0.005	< 0.005	0.005	0.005	0.007	0.006	0.005	0.079	0.006	0.005	0.006	0.005	0.005	< 0.005	0.005	0.005	< 0.005	0.005	0.005	NA.	0.005	0.005	< 0.050	0.005	0.005	< 0.050
Iron	mgL			0.99	0.46	0.23	0.93	0.31	0.1	0.82	0.42	< 0.05	0.78	0.37	< 0.05	0.83	0.05	0.58	0.83	0.05	0.05	2.01	0.25	0.21	2.01	0.25	0.37	2.01	0.25	NA.	-		< 0.50	-	-	< 0.50
Mercury	mg1.	0.0006	0.0004	-	-	< 0.0001	-	-	< 0.0001	-	-	< 0.0001	-	-	< 0.0001			< 0.0001			< 0.0001	-	-	< 0.0001	-	-	< 0.0001	-	-	NA.	-	-	< 0.0001	-	-	< 0.0001
Total Recoverable Hydrocarbons																																				
Naphthalene	µg/L	16	50	16		NA	16		NA	16		NA	16		NA	16		NA	16		NA.	16		NA	16		NA	16		NA	50		NA	50		NA
C6 - C10 Fraction	pg/L			-		NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA	-		NA	-		NA	-		NA	-		NA
C6 - C10 Fraction minus BTEX (F1)	µg/L		-	-		NA	-		NA	-		NA			NA	-		NA	-		NA.	-		NA			NA	-		NA.	-		NA NA	-		NA
>C10 - C16 Fraction	pg/L			-		NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA	-		NA	-		NA	-		NA	-		NA
>C16 - C34 Fraction	µg/L		-	-		NA	-		NA	-		NA			NA	-		NA	-		NA.	-		NA			NA	-		NA.	-		NA NA	-		NA
>C34 - C40 Fraction	PB/L	-		-		NA NA	-		NA	-		NA	-		NA.	-		NA.	-		NA.	-		NA	-		NA	-		NA.	-		NA.	-		NA
>C10 - C40 Fraction (sum)	µg/L			-		NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA	-		NA	-		NA.	-		NA NA	-		NA
>C10 - C16 Fraction minus Naphthalene (F2)	PB/L	-		-		NA NA	-		NA	-		NA	-		NA.	-		NA.	-		NA.	-		NA	-		NA	-		NA.	-		NA.	-		NA
BTEX																																				
Benzene	PB/L	950	700	950		NA	950		NA	950		NA	950		NA.	950		NA.	950		NA.	950		NA	950		NA	950		NA.	700		NA	700		NA
Toluene	µg/L	180	180	180		NA	180		NA	180		NA	180		NA	180		NA	180		NA	180		NA	180		NA	180		NA	180		NA	180		NA
Ethylberzene	PB/L	80	5	80		NA	80		NA	80		NA	80		NA.	80		NA.	80		NA.	80		NA	80		NA	80		NA.	5		NA	5		NA
m&p-Xylenes	µg/L			-		NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA	-		NA	-		NA.	-		NA NA	-		NA
o-Xylene	PB/L	350	350	350		NA	350		NA	350		NA	350		NA.	350		NA.	350		NA.	350		NA	350		NA	350		NA.	350		NA	350		NA
Xylenes - Total	µg/L			-		NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA	-		NA	-		NA	-		NA.	-		NA
Sum of BTEX	Ma/r			-		NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA	-		NA	-		NA.	-		NA NA	-		NA
Nutrients																																				
Total Phosphorus	mg1.	0.05	0.03	0.04	0.01	< 0.01	0.03	0.01	< 0.01	0.04	0.01	< 0.01	0.02	0.01	< 0.01	0.04	0.01	< 0.01	0.04	0.01	< 0.01	0.12	0.03	< 0.01	0.12	0.03	0.02	0.12	0.03	NA	0.04	0.02	0.04	0.04	0.02	0.05
Phosphate (reactive phosphorus)	mgL				-	< 0.01		-	< 0.01	-		< 0.01	-	-	< 0.01	0.01	0.0044	< 0.01	0.01	0.0044	< 0.01	0.01	0.005	< 0.01	0.01	0.005	< 0.01	0.01	0.005	NA.	0.01	0.008	0.02	0.01	0.008	0.01
																														NA.						
Total Nitrogen	mgt	0.5	0.3	0.62	0.2	0.4	0.6	0.2	0.5	0.3	0.1	0.2	0.41	0.1	0.3	0.5	0.2	0.9	0.5	0.2	0.3	2.8	1.1	0.8	2.8	1.1	0.9	2.8	1.1	NA	0.5	0.2	0.5	0.5	0.2	0.4
Total Kjeldahl Nitrogen	mg1.			0.6	0.2	0.4	0.6	0.2	0.4	0.3	0.1	0.1	0.4	0.1	0.2	0.5	0.2	0.6	0.5	0.2	0.3	2.4	1	0.8	2.4	1	0.9	2.4	1	NA.	0.5	0.2	0.5	0.5	0.2	0.4
																														NA.						
Nitrate	mg1.	0.7		0.04	0.01	0.01	0.03	0.01	0.06	0.03	0.01	0.07	0.03	0.01	0.06	0.04	0.01	0.32	0.04	0.01	0.01	0.04	0.01	< 0.01	0.04	0.01	< 0.01	0.04	0.01	NA.	0.02	0.01	0.01	0.02	0.01	< 0.01
Nitrite	mgt			-	-	< 0.01	0.01	0.01	< 0.01	0.01	0.01	< 0.01	0.01	0.01	< 0.01	0.01	0.01	< 0.01	0.01	0.01	< 0.01	0.05	0.01	< 0.01	0.05	0.01	< 0.01	0.05	0.01	NA	0.02	0.01	< 0.01	0.02	0.01	< 0.01
Ammonia	mg1.	0.9		-	-	0.08	-		0.1	-		0.02	-	-	0.08	0.16	0.06	0.32	0.16	0.06	0.16	0.04	0.01	0.07	0.04	0.01	< 0.01	0.04	0.01	NA.	0.03	0.01	0.14	0.03	0.01	0.08
TSS																																				
TSS	mg1.	<40	<20	14.8	5	8	8	5	13	9	5	<5	5.8	5	6	17.6	5	<5	17.6	5	<5	290	15	9	290	15	<5	290	15	NA	71	19	6	71	19	<5
Field Physical data																																				
Temperature	°C		-	24.86	14.99	21.67	25.1	16.3	21.79	24.4	16	21.06	26.46	15.94	20.05	27.9	18.4	19.91	27.9	18.4	19.82	26.5	16.3	24.44	26.5	16.3	22.01	26.5	16.3	NA	27.9	18.1	24.02	27.9	18.1	24.09
pH	pH		6.5-8	7.25	6.48	7.23	7.3	6.4	6.82	7.5	6.6	6.72	7.33	6.26	6.68	7.02	6.57	7.32	7.02	6.57	7.02	7	6.1	6.97	7	6.1	6.71	7	6.1	NA	7	7	7.86	7	7	7.97
Conductivity	mS/cm	0.125-2.2	-	0.316	0.232	0.217	0.348	0.227	0.267	0.348	0.227	0.273	0.3338	0.2168	0.27	20.946	0.679	7.16	20.946	0.679	14.3	0.808	0.4234	0.695	0.808	0.4234	1.01	0.808	0.4234	NA	47.32	29.44	39.9	47.32	29.44	40.6
Turbidity	NTU	50	10	10.96	4	0	9.9	3.5	0	9.9	3.5	0	5.97	3.74	0	6.82	1.83	0.0	6.82	1.83	0	52.78	11.3	2.5	52.78	11.3	0	52.78	11.3	NA	19.3	6.7	5.8	19.3	6.7	0.6
Dissolved Oxygen	mg1.	5	5	4.98	1.91	4.32	4.8	2.6	2.6	4.8	2.6	5.76	6.34	3.52	4.99	7.98	5.07	6.56	7.98	5.07	9.94	6.4	1.75	5.58	6.4	1.75	1.91	6.4	1.75	NA	9.1	7.4	10.97	9.1	7.4	8.98
Dissolved Oxygen	%					50.3			29.2			66.5			56.6			75.7			117.4			68.3			22.5			NA			154	-	-	126.7
TDS	g/L					0.141	-		0.174	-		0.178	-		0.176			4.49	-		8.8	-		0.445	-		0.645	-		NA	-		24.4	-		24.7
								•																												

Surface Water Results - May 201	16 Dry					Weather:	Fine											Low Tide:	8:18 AM																	
					SW01			5W02			5W03			5W04			5W05			5W06			5W07			SWOR			SW09			5W10			5W11	
Location	Units	Levels of	Concern	l.	Joper Warrell Cree	ak	U	Joper Warrell Cre	ek		Storry Creek			Stony Creek		L	ower Warrell Creel	t .	L	ower Warnell Cre	eek	Unnam	ned Creek Gumma	West	Unnar	med Creek Gumr	na East	Unner	med Creek Gumme	North	N	lambucca River Sc	ruth	N	lambucca River Sc	ath .
					Upstream			Downstream			Upstream			Downstream			Upstream			Downstream			Upstream			Upstream			Downstream			Upstream			Downstream	
Freshwater / Estuarine		ANZECC 2000			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Estuarine			Estuarine	
Date of Sampling		prote	cted		11-May-16			11-May-16			11-May-16			11-May-16			11-May-16			11-May-16			11-May-16			11-May-16			11-May-16			11-May-16			11-May-16	
Time of Sampling		Freshwater	Marine		2:25 PM			2.45 PM			11:50 AM			12:00 PM			10:45 AM			10:55 AM			3:15 PM			3:30 PM			3:25 PM			10:05 AM			9:55 AM	
Commerts																													to sample - water							
Туре				80th % No	20th %še	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %No	20th %ile	Result
Laboratory data																																				
Metals																																				
Alumnum	mgL	0.055	-	0.06	0.01		0.05	0.01	1	0.05	0.01		0.04	0.01		0.06	0.01		0.06	0.01		0.1	0.01	1	0.1	0.01		0.1	0.01	NA NA	0.02	0.01		0.02	0.01	
Arsenc	mg1.	0.0002	0.0023	-	-		-	-	1	-	-		0.001	0.001		0.001	0.001		0.0001	0.001		0.002	0.001	1	0.002	0.001		0.002	0.001	NA NA	0.002	0.001		0.002	0.001	
Character	mgt.	0.0002	0.0055		-			-	1	-				-		0.0001	0.0001		0.0001	0.0001			-	1					-	NA NA		-	-	-		
Creation	mgt.	0.0014	0.0044					_	1															1						NA NA	0.001	0.001	-	0.001	0.001	
I out	mgt.	0.0014	0.0013																											NA NA	5.001	0.001	<del>                                     </del>	0.001	- 0.001	-
Marranese	mgL	1.9	0.004	0.21	0.02		0.2	0.03		0.06	0.02		0.052	0.013		0.26	0.08		0.26	0.08		0.23	0.019		0.23	0.019		0.23	0.019	NA.	0.03	0.002	<del>                                     </del>	0.03	0.002	-
Nickel	mgt.	0.011	0.07	-			-	-		-	-		-	-		0.001	0.001		0.001	0.001		0.001	0.001		0.001	0.001		0.001	0.001	NA.	-			-	-	
Selenium	mgL	11	- "	-	-						-		-	-		-	-		-	-		-	-		-	-		-		NA.	-	-			-	
Silver	mgt.	0.00005	0.0014	-	-		-			-			-	-			-		-	-		-	-		-	-		-	-	NA.	-	-			-	
Zinc	mgt	0.008	0.015	-	-		-	-		0.005	0.005		0.005	0.005		0.006	0.005		0.006	0.005		0.005	0.005		0.005	0.005		0.005	0.005	NA.	0.005	0.005		0.005	0.005	
Iron	mgt			0.99	0.46		0.93	0.31		0.82	0.42		0.78	0.37		0.83	0.05		0.83	0.05		2.01	0.25		2.01	0.25		2.01	0.25	NA	-	-			-	
Mercury	mgt	0.0006	0.0004		-					-	-		-	-								-	-		-	-		-	-	NA	-	-			-	
Total Recoverable Hydrocarbons																																				1
Naphthalene	pg/L	16	50	16			16			16			16			16			16			16			16			16		NA	50			50		
C6 - C10 Fraction	HS/L	-		-			-			-			-						-			-			-			-		NA.	-			-		
C6 - C10 Fraction minus BTEX (F1)	pg/L			-			-			-			·															-		NA.	-			-		
>C10 - C16 Fraction	µg/L			-			-			-			-						-			-			-			-		NA	-					
>C16 - C34 Fraction	µg/L	-	-	-			-			-			-						-			-			-			-		NA	-			-		
>C34 - C40 Fraction	µg/L	-		-			-			-			-						-			-			-			-			-			-		
>C10 - C40 Fraction (sum)	µg/L	-		-			-			-			-						-			-			-						-			-		
>C10 - C16 Fraction minus Naphthalene (F2)	µg/L			-			-			-			-						-			-			-			-			-			-		
BTEX Benzene	P8/L	950	700	950			950			950			950			950			950			950			950			950			700			700		
Toluene	MR/r	950	700	180			180			180			180			180			180			180			180			180			180			180		
Ethylbergene	MR/r	180	180	100			80	_		80			100			100			100			80		_	100			100			100			100		
m&p-Xylenes	PE/L	-		80			-			-			80			-			-			-			80			- 00			-					
o-Xylana	PE/L	350	150	250			250			250			250			250			250			250			250			250			250			350		
Xylenes - Total	pg/L		-	-			-			-			-			-			-			-			-			-			-			-		-
Sum of BTEX	PE/L			-			-						-						-			-			-			-			-					
Nutrients																																				
Total Phosphorus	mgt	0.05	0.03	0.04	0.01		0.03	0.01		0.04	0.01		0.02	0.01		0.04	0.01		0.04	0.01		0.12	0.03			0.03		0.12	0.03		0.04	0.02		0.04	0.02	$\overline{}$
Phosphate (reactive phosphorus)	mgL			-	-		-	-		-	-		-	-		0.01	0.0044		0.01	0.0044		0.01	0.005		0.01	0.005		0.01	0.005		0.01	0.008		0.01	0.008	
Total Nitrogen	mgt	0.5	0.3	0.62	0.2		0.6	0.2		0.3	0.1		0.41	0.1		0.5	0.2		0.5	0.2		2.8	1.1		2.8	1.1		2.8	1.1		0.5	0.2		0.5	0.2	
Total Kjeldahl Nitrogen	mgL			0.6	0.2		0.6	0.2		0.3	0.1		0.4	0.1		0.5	0.2		0.5	0.2		2.4	1		2.4	1		2.4	1		0.5	0.2		0.5	0.2	
Nitrate	mgt	0.7		0.04	0.01		0.03	0.01		0.03	0.01		0.03	0.01		0.04	0.01		0.04	0.01		0.04	0.01		0.04	0.01		0.04	0.01		0.02	0.01		0.02	0.01	
Nitrite	mgL		-	-	-		0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01		0.05	0.01		0.05	0.01		0.05	0.01		0.02	0.01	ļ	0.02	0.01	
America	mgL	0.9		-	-		-	-			-		-	-		0.16	0.06		0.16	0.06		0.04	0.01		0.04	0.01		0.04	0.01		0.03	0.01		0.03	0.01	
138				440	_			-					5.0	_		47.0	_		47.0	_		200	45		200	45		200	45		- 74	40		74	40	
Esta Obraina I dans	mgL	<40	<30	14.8	5		8	5		9	5		5.8	5		17.6	5		17.6	5		290	15		290	15		290	15		71	19		71	19	
risio Physical data	10			24.86	14.99	20.49	25.1	16.3	23.8	24.4	16	19.01	26.46	15.94	18.85	27.9	18.4	21.64	27.9	18.4	20.04	26.5	16.3	21.18	26.5	16.3	19.67	26.5	16.3		27.9	18.1	22.68	27.9	18.1	22.36
Temperature	°C pH		6.5-8	7.25	6.48	6.95	7.3	6.4	6.64	7.5	6.6	7.3	7.33	6.26	7.27	7.02	6.57	21.64	7.02	6.57	20.84	7	6.1	6.84	7	6.1	6.83	7	6.1	NA NA	7	7	22.68	7	7	22.36 7.47
Conductivity	mS/om	0.125-2.2	0.50	0.316	0.232	0.208	0.348	0.227	0.278	0.348	0.227	0.27	0.3338	0.2168	0.263	20.946	0.679	18.00	20.946	0.679	16.2	0.808	0.4234	0.719		0.4234	0.83	0.808	0.4234	NA NA	47.32	29,44	41.7	47.32	29.44	42
Turbifty	NTU	90	10	10.96	4	1.4	9.9	3.5	5.3	9.9	3.5	7.4	5.97	3.74	12.2	6.82	1.83	3.6			3.5	52.78	11.3	33.8		11.3	15.8	52.78	11.3	NA NA	19.3	6.7	25.1	19.3	6.7	32.3
urbidity	NTU	50	10	10.96	4	1.4	9.9	3.5	5.3	9.9	3.5	1.4	5.97	3.74	12.2	0.82	1.83	3.6	0.82	1.83	3.5	52.78	11.3	33.8	52.78	11.3	15.8	54.78	11.3	NA.	19.3	0.7	25.1	19.3	6.7	32.3

				4.00	1.01	7.24	4.0	2.6	7.20	4.0	2.6	2.04	6.24	2.52	2.00	7.00	E 07	2.45	7.00	E 07	4.7	E A	1.75	2.02	6.4	1.75	0.00	6.4	1 70		0.1	7.4	5.22	0.1	7.4	4.70
Dissolved Oxygen Dissolved Oxygen	mpt.	5	5	4.98	1.91	82.7	4.8	-	7.36 89.1	4.8	-	32.3	0.34	3.52	29.5	7.98	5.07	39.0	7.98	5.07	20.6	0.4	1.75	3.92 45.3	-	-	10.9	-	1./5	NA NA	9.1		74.3	9.1		66
Surface Water Results - June - W	Vet	-		-	5W01	0.135 Weather:	Overcast		0.181	-	SW03	0.175	- 1	5W04	0.171	-	SWOS	11.20 Low Tide:	10:47 AM	SW06	10	-	5W07	0.46	-	SWOE	0.543	-	5W09	NA.	-	5W10	25.4	-	5W11	25.6
Location	Units	Levels of	Concern	U	Joper Warrell Cr	eak	- 1	Upper Warrell Cree	ek		Storry Creek			Stony Creek		ь	ower Warrell Creel	k	L	ower Warrell Cre	nek	Unnam	ned Creek Gumma	West	Uman	ned Creek Gumma	East	Unner	ed Creek Gumma	North	N	ambucca River Sou	th	Nar	mbucca River Sout	th
					Upstream Freshwater			Downstream Freshwater			Upstream Freshwater			Downstream Freshwater			Upstream Freshwater			Downstream Freshwater			Upstream			Upstream			Downstream Freshwater			Upstream			Downstream	
Freshwater / Estuarine Date of Sampling		ANZECC 200 prote	ected		6-Jun-16			6-Jun-16			6-Jun-16			6-Jun-16			6-Jun-16			6-Jun-16			Freshwater 6-Jun-16			Freshwater 6-Jun-16			6-Jun-16			Estuarine 6-Jun-16			Estuarine 6-Jun-16	
Time of Sampling Time		Freshwater	Marine	90% N 3v	11:40 20th %ão	Result	90% N 3o	11:25 AM 20th %ile	Result	900 Wile	12:30 PM 20th %ile	Result	900 9/30	12:00 PM 20th %ile	Result	900 NA	3:30 PM 20th %ãe	Roset	900 0720	3:31 PM 20th %ile	Result	90% N 2n	1:10 PM 20th %ile	Result	90% 9/30	1:24 PM 20th %ile	Result	909, 9/35	1:39 PM	Result	80th %ile	2:25 PM	Result	900 Wile	2:30 PM 20th %ão	Result
Commerts				COLIT FRANK	2001 7886		OOST AME	2001 7000		0031 7886	2001 7000		OZIII ZEME	2001 7000		00017488	2001 7000		OCCUT AREA	2001 7000		COLIT MANA	2011 7000		OUT AND	2001 7000		Unable to	20th %ile sample - water le	el too low	Wind	20th %ãe hop - sediment sti	red up	Wind ch	op - sediment stin	.ved up
Metals																																				
Aluminium Arsenic	mgt. mgt.	0.055	0.0023	0.244 0.001	0.0162 0.001	0.21 <0.001	0.194 0.001	0.016 0.001	<0.001	0.098	0.02	0.04 <0.001	0.114	0.01 0.001	0.03 <0.001	0.28 0.001	0.01 0.001	0.19 <0.001	0.28 0.001	0.01	0.2 <0.001	0.25 0.002	0.02 0.001	0.09 <0.001	0.25	0.02	0.47	0.25 0.002	0.02	0.09	0.11	0.01 0.001	0.05 <0.001	0.11 0.002	0.01 0.001	0.06 <0.001
Cadmium	mgL mgL	0.0002	0.0055	-	-	<0.0001	-	-	0.0001	-	-	<0.0001 <0.001	-	-	0.0001	0.0002	0.0001	0.0003 <0.001	0.0002	0.0001	< 0.0001	-	-	<0.0001 <0.001	-	-	0.008 <0.001	-		0.0012 <0.001	-		<0.0001	-	-	<0.0001
Copper	mg1.	0.0014	0.0013	-	-	<0.001 <0.001 <0.001	-	-	<0.001 <0.001	-	-	< 0.001	-	-	<0.001 <0.001	-	-	< 0.001	-	-	0.001 <0.001	0.001	0.001	< 0.001	0.001	0.001	0.026	0.001	0.001	0.003	0.001	0.001	<0.001 <0.001	0.001	0.001	<0.001 <0.001
Marganese	mpt mpt mpt mpt mpt mpt mpt	0.0034 1.9	0.08	0.3	0.01	0.061	0.158	0.0178	<0.001 0.105	0.0726	0.0218	<0.001 0.07	0.083	0.0164	<0.001 0.172	0.35	0.087	<0.001 0.29	0.35	0.087	<0.001 0.061	0.49	0.011	<0.001 0.023	0.49	0.011	<0.001 1.24	0.49	0.011	<0.001 0.265	0.076	0.006	<0.001 0.056	0.076	0.006	<0.001 0.059
Nickel Selenium	mgt. mgt.	0.011	0.07	-	-	<0.001 <0.01	-	-	0.003 <0.01	-	-	<0.001 <0.01	-	-	0.002 <0.01	0.0034	0.001	<0.01	0.0034	0.001	<0.001 <0.01	0.002	0.001	< 0.01	0.002	0.001	< 0.01	0.002	0.001	<0.012	-	-	<0.001 <0.01	-	-	0.001 <0.01
Silver Zinc	mgt. mgt.	0.00005	0.0014	0.007	0.005	<0.001 <0.005	0.0062	0.0042	<0.001	0.0064	0.005	<0.001 <0.005	0.006	0.005	<0.001	0.018	0.005	<0.001	0.018	0.005	<0.001 <0.005	0.011	0.005	<0.001 0.015	0.011	0.005	<0.001	0.011	0.005	<0.001	0.005	0.005	<0.001 <0.005	0.005	0.005	<0.001 <0.005
Iron Moreover	mgt.	0.0006	0.0004	1.38	0.48	0.21 <0.0001	0.99	0.366	0.17 <0.0001	1.4	0.41	0.11 <0.0001	1.48	0.35	0.08 <0.0001	0.52	0.05	0.19 <0.0001	0.52	0.05	0.23 <0.0001	1.65	0.37	0.15 <0.0001	1.65	0.37	0.08 <0.0001	1.65	0.37	0.11 <0.0001	0.26	0.05	0.06 <0.0001	0.26	0.05	0.08 <0.0001
Total Recoverable Hydrocarbons	-9.	16	50	46					<0.0001 NA	46		<0.0001 NA	46		<0.0001 NA	46		<0.0001 NA	46		<0.0001	46			46			46		<0.0001 NA			<0.0001	50		
Naphthalene C8 - C10 Fraction	MB/F MB/F MB/F	16		16		NA NA	16		NA	- 16		NA	16 -		NA	16		NA	16 -		NA	16		NA NA	16 -		NA NA	16		NA NA	-		NA	50		NA NA
C6 - C10 Fraction minus BTEX (F1) >C10 - C16 Fraction	1/84 1/84			-		NA NA			NA NA			NA NA			NA NA			NA NA			NA NA			NA NA			NA NA			NA NA			NA NA	-		NA NA
>C16 - C34 Fraction >C34 - C40 Fraction	MB/F MB/F MB/F					NA NA			NA NA			NA NA			NA NA			NA NA			NA NA			NA NA	-		NA NA			NA NA			NA NA			NA NA NA
>C10 - C40 Fraction (sum) >C10 - C16 Fraction minus Naphthalene (F2)	PR/L					NA NA			NA NA			NA NA	-		NA NA			NA NA			NA NA			NA NA	-		NA NA			NA NA			NA NA	- 1		NA NA
BTEX	MR/I			950		NA NA	950		NA NA	0		NA NA	05.		NA NA	950		NA NA	950			950			05.		NA NA	051		NA NA	700		NA NA	700		
Benzene Toluene	MB/r	950 180	700 180	180		NA NA NA	180		NA NA NA	180		NA NA NA	180		NA NA NA	180		NA NA NA	180		NA NA NA	180		NA NA NA	180		NA NA NA	180		NA NA NA	180		NA NA NA	180		NA NA NA
Ethylberzene m&p-Xylenes	MB/F	80	5	80		NA NA	80		NA NA	80		NA NA	80		NA NA	80		NA NA	80		NA NA	80		NA NA	80		NA NA	80		NA NA	5		NA NA	5		NA NA
o-Xylane Xylanes - Total	Make Table	350	350	350		NA NA NA	350		NA NA NA	350		NA NA NA	350		NA NA NA	350		NA NA NA	350		NA NA NA	350		NA NA NA	350		NA NA NA	350		NA NA NA	350		NA NA NA	350		NA NA NA
Sum of BTEX	pg/L			-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA NA	-		NA.	-		NA NA
Nutrients Total Phosphorus	mg/L	0.05	0.03	0.05	0.02		0.044	0.016	0.07	0.03	0.016	0.04	0.034	0.01	0.03	0.04		0.06	0.04	0.01	0.05	0.11	0.03	0.05	0.11	0.03	0.05	0.11	0.03	0.06	0.07	0.02	0.33	0.07	0.02	0.24
Phosphate (reactive phosphorus)	mgL	-		0.01	0.0034	<0.01	0.01	0.004	<0.01	0.018	0.0022	<0.01	0.01	0.003	<0.01	0.011	0.006	<0.01	0.011	0.006	<0.01	0.013	0.005	<0.01	0.013	0.005	0.04	0.013	0.005	<0.01	0.029	0.01	0.01	0.029	0.01	0.02
Total Nitrogen Total Kjeldahl Nitrogen	mgt. mgt.	0.5	0.3	0.56 0.5	0.3	1.3	0.52 0.5	0.2	1.1	0.48	0.2	1.5	0.63	0.2	1.8 0.5	0.54 0.5	0.31	2.6	0.54 0.5	0.31	1.1	3.1 2.8	0.9	0.7 0.6	3.1 2.8	0.9	0.7	3.1 2.8	0.9	0.7	0.46	0.2	1.8	0.46	0.2	1.6
Nime	mgL	0.7		0.102	0.01	0.49	0.054	0.01	0.21	0.208	0.01	1.02	0.2	0.01	1.21	0.05	0.01	1.56	0.05	0.01	0.40	0.03	0.01	0.00	0.03	0.01	0.24	0.03	0.01	0.00	0.04	0.01	0.26	0.04	0.01	0.4
Nitrite	mgL	0.9		0.036	0.01	<0.01 <0.01	0.034	0.01	<0.01	0.046	0.02	<0.01 0.02	0.02	0.01 0.012	<0.01 0.01	0.02 0.116	0.01	0.09	0.02	0.01	<0.01	0.02	0.01 0.01	<0.01 <0.01	0.02	0.01 0.01	<0.01	0.02	0.01 0.01	<0.01 <0.01	0.02	0.01	<0.01 0.02	0.02	0.01	<0.01
TSS	mgL mgL					<0.01			<0.01			0.02	0.062		0.01			0.19	0.116	0.022	<0.01			<0.01			0.14			<0.01			0.02			0.06
Turbidity TSS	mgL	50 <40	10	26.16 19	5.94 5	18	27.32 12.8	3.72 5	12	14.98 14.8	3.34 5	<5	17.16 8.7	4.59 5	<5	26.1 25	2.4 5.5	10	26.1 25	2.4 5.5	14	66.8 350	11.6 9	12	66.8 350	11.6 9	5	66.8 350	11.6 9	18	19.04	5.81	341	19.04	5.81	107
Field Physical data Temperature	'C			24.3	16.27	16.97	24.52	16.79	16.63	23.98	17.36	16.54	24.7	17.65	16.95	25.9	19.5	17.14	25.9	19.5	16.52	25.84	19.1	17.93	25.84	19.1	17.63	25.84	19.1	16.78	26.56	21.32	16.73	26.56	21.32	16.99
pH Conductivity	pH mS/cm	0.125-2.2	6.5-8	7.478	6.23 0.20184	5.51	7.192 0.3242	6.42 0.19076	5.71 0.111	7.138 0.313	6.61 0.2024	6.08 0.175	6.98 0.309	6.21	5.83 0.209	6.86 20.918	6.46	6.19 0.246	6.86 20.918	6.46 0.50028	6.13 0.137	6.9 0.842	6.08 0.334	5.97 0.133	6.9 0.842	6.08 0.334	5.6 0.298	6.9 0.842	6.08 0.334	5.77 0.251	7.56 48.42	6.58 12.65	6.19 0.765	7.56 48.42	6.58 12.65	6.03 0.967
Turbidity	mS/om NTU mg/L %	50	10	26.16 7.43	5.94	63.7	27.32	3.72	62.1 12.79	14.98 8.472	3.34 5.08	9.7 5.24	17.16 7.59	4.59	10.9 7.18	26.1 6.65	2.4 5.02	65.9	26.1 6.65	2.4 5.02	66.4 5.21	66.8	11.6 1.78	41.7	66.8	11.6 1.78	49.7	66.8	11.6 1.78	65.7 2.81	19.04 8.47	5.81	241	19.04	5.81	309
Dissolved Oxygen Dissolved Oxygen	%	3	,	-	1.5	127.2	-	2.20	135.5		3.06	55.4	-	2.03	76.6	-	3.02	46.9	-	3.02	55		1.76	46.2	-	1.78	1.65 17.9	-	1.78	29.9	-	0.88	65.9	- 0.47	0.00	70 0.618
TDS	g/L	-		-		0.075	-		0.072	-		0.114	-		0.136	-		0.16	-		0.09	-		0.067	-		0.189	-		0.163	-		0.409	-		0.618
Surface Water Results -June 201	16 - Dry				5W01	Weather:		5W02			SW03			SW04			98/05	Low Tide:		5W06			5W07			SWOR			SW09			SW10			5W11	
Location	Linits	Levels of	Concern		Joper Warrell Cr	eak		Upper Warrell Cree	ek		Storry Creek			Story Creek		L	ower Warrell Creel	k		ower Warrell Cre	sek	Urnam	ned Creek Gumma	West	Uman	ned Creek Gumma	East	Uhnem	ed Creek Gumma	North	N	ambucca River So:	rh .	Nar	mbucca River Sout	th
					Upstream			Downstream			Ubstream			Downstream			Upstream			Downstream			Upstream			Upstream			Downstream			Upstream			Downstream	
Freshwater / Estuarine Date of Sampling		ANZECC 200 prote	0 95% species		Freshwater 16-Jun-16			Freshwater 16-Jun-16			Freshwater 16-Jun-16			Freshwater 16-Jun-16			Freshwater 16-Jun-16			Freshwater 16-Jun-16			Freshwater 16-Jun-16			Freshwater 16-Jun-16			Freshwater 16-Jun-16			Estuarine 16-Jun-16			Estuarina 16-Jun-16	
Time of Sampling		Freshwater			11:20 AM			10:50 AM			3:35 PM			3:14 PM			12:10 PM			11:50 AM			3:00 PM			2:20 PM			2:40 PM			1:00 PM			12:40 PM	
Comments Type		L '		80th %/like	20th %še	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ãe	Result	80th %ãe	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	Unable t 80th %ile	o sample - water l 20th %ile	evel low Result	80th %ile	20th %še	Result	80th %ile	20th %ile	Result
Laboratory data Metals																																				
Aluminium Arsenic	mgt.	0.055	0.0023	0.06	0.01		0.05	0.01		0.05	0.01		0.04	0.01		0.06 0.001	0.01 0.001		0.06 0.001	0.01 0.001		0.1 0.002	0.01 0.001		0.1	0.01 0.001		0.1	0.01	NA NA	0.02	0.01 0.001		0.02	0.01	
Cadmium	mgt. mgt.	0.0002	0.0055	-	-		-	-		-	-		-	-		0.0001	0.0001		0.0001	0.0001		-	-		-	-		-	-	NA NA	-	-		-	-	
Copper	mgt mgt	0.0014	0.0013								-																			NA NA	0.001	0.001		0.001	0.001	
Manganese	mgt. mgt.	0.0034	0.0044	0.21	0.02		0.2	0.03		0.06	0.02		0.052	0.013		0.26	0.08		0.26	0.08		0.23	0.019		0.23	0.019		0.23	0.019	NA NA	0.03	0.002		0.03	0.002	
Nickel Selenium	mgt. mgt.	0.011	0.07	-	-	<u> </u>	-	-	$\blacksquare$		-		-	-		0.001	0.001		0.001	0.001		0.001	0.001	$\vdash \exists$	0.001	0.001		0.001	0.001	NA NA				-	-	
Silver Ziro	mgt. mgt.	0.00005	0.0014	-				-		0.005	0.005		0.005	0.005		0.006	0.005		0.006	0.005		0.005	0.005		0.005	0.005		0.005	0.005	NA NA	0.005	0.005		0.005	0.005	
Iron	mgL mgL	-	-	0.99	0.46		0.93	0.31		0.82	0.42		0.78	0.37		0.83	0.05		0.83	0.05		2.01	0.25		2.01	0.25		2.01	0.25	NA NA	-	-		-	-	
Mercury Total Recoverable Hydrocarbons	mgt	0.0006	0.0004																											NA						
Naphthalene C8 - C10 Fraction	pg/L	16	50	16			16			16			16 -			16			16 -			16			16			16		NA NA	50			50		
C6 - C10 Fraction minus BTEX (F1) >C10 - C16 Fraction	μg/L μg/L																													NA NA						
>C16 - C34 Fraction >C34 - C40 Fraction	HB/L HB/L	-	•	-			-			-						-						-								NA.						
>C10 - C40 Fraction (sum)	MB/r			-									-																							
>C10 - C16 Fraction minus Naphthalene (F2) BTEX	PR/1			-																																
Benzene Toluene	HB/L	950 180	700 180	950 180			950 180			950 180			950 180			950 180			950 180			950 180			950 180			950 180			700 180			700 180		
Ethylberzene m&o-Xvienes	pg/L pg/L	80	5	80			80			80			80			80			80			80			80			80			5			5		=
o-Xylene Xylenes - Total	µg/L	350	350	350			350			350			350			350			350			350			350			350			350			350		
Sum of BTEX	µg/L µg/L			-																																

Nutrients Total Discretions	mpt	0.05	om.	0.04	0.01		0.03	0.01		0.04	0.01		0.02	0.01		0.04	0.01		0.04	0.01		0.12	0.03		0.12	0.03		0.12	0.03		0.04	0.02		0.04	0.02	
Phosphate (reactive phosphorus)	mgt	-		-	-		-	-		-	-		-	-		0.01	0.0044		0.01	0.0044		0.01	0.005		0.01	0.005		0.01	0.005		0.01	0.008		0.01	0.008	
Total Nitrogen Total Kjeldahl Nitrogen	mgl. mgl.	0.5	0.3	0.62	0.2		0.6	0.2		0.3	0.1		0.41	0.1		0.5	0.2		0.5	0.2		2.8	1.1		2.8	1.1		2.8	1.1		0.5	0.2		0.5	0.2	
Nitrate	mg1.	0.7		0.04	0.01		0.03	0.01		0.03	0.01		0.03	0.01		0.04	0.01		0.04	0.01		0.04	0.01		0.04	0.01		0.04	0.01		0.02	0.01		0.02	0.01	
Nitrite Ammonia	mgl.			-	-		0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01		0.01	0.01		0.05 0.04	0.01 0.01		0.05	0.01		0.05	0.01 0.01		0.02	0.01		0.02	0.01	
TSS	- U	0.9														0.10	0.00		0.10	0.00		0.04	0.01		0.04	0.01		0.04	0.01		0.03	0.01		0.03	0.01	
TSS	mgt	<40	<30	14.8	5		8	5		9	5		5.8	5		17.6	5		17.6	5		290	15		290	15		290	15		71	19		71	19	
Temperature	°C		6.5-8	24.86 7.25	14.99 6.48	14.87	25.1 7.3	16.3 6.4	15.5	24.4	16	16.11	26.46 7.33	15.94 6.26	16.38	27.9 7.02	18.4 6.57	19.77	27.9 7.02	18.4 6.57	20.16	26.5	16.3 6.1	16.28	26.5	16.3	18.92	26.5	16.3 6.1	17.03	27.9	18.1	20.01	27.9	18.1	18.99
Conductivity	pH mS/cm NTU	0.125-2.2	6.5-8 - 10	0.316 10.96	0.232 4	0.25 12.1	0.348 9.9	0.227	0.245	0.348 9.9	0.227	6.96 0.226	0.3338 5.97	0.2168	7.29 0.234	20.946	0.679	1.09	20.946	0.679	1.23	0.808 52.78	0.4234 11.3	0.352	0.808	0.4234	0.378	0.808 52.78	0.4234	6.78 0.426	47.32 19.3	29.44	19.2	47.32 19.3	29.44	20.1
Dissolved Oxygen	mgL	5	10	4.98	1.91	5.84	4.8	2.6	13.1 3.22	4.8	2.6	6.3 4.23	6.34		5.9 5.72	7.98	5.07	10.9 3.31	7.98	5.07	8.9 2.57	6.4	1.75	21.05 1.18	6.4	1.75	1.4	6.4	1.75	13.7 2.88	9.1	7.4	5.26	9.1		9.2 4.59
Dissolved Oxygen TDS	% g/L				-	59.7 0.163			33.4 0.159			44.3 0.147	-	-	60.3 0.152	-	-	37.3 0.698	-		29.3 29.3		-	12.4 0.229	-		15.5 0.246	-	-	30.8 0.277	-	-	63 12.1		-	4.59 54.5 12.5
Surface Water Results - June - \	Wet				SW01	Weather:	Overcast				SW03			5W04			9W05	Low Tide:	10:47 AM	5W06			SW07			SWOR			2M03			SW10			SW11	
Location	Units	Levels of	Concern	U	pper Warrell Cres	ak	1	Jpper Warrell Cre	sek		Storry Creek			Stony Creek		Lo	ower Warrell Creel	k	L	ower Warnell Cre	sek	Urrem	ned Creek Gumma	Vest	Uman	ned Creek Gumma Es	est		d Creek Gumma I	North	Na	mbucca River Sou	ath .		mbucca River South	
Freshwater / Estuarine		ANZECC 200	95% species		Upstream Freshwater			Downstream Freshwater			Upstream Freshwater			Downstream Freshwater			Upstream Freshwater			Downstream Freshwater			Upstream Freshwater			Upstream Freshwater			Downstream Freshwater			Upstream Estuarine			Downstream Estuarine	
Date of Sampling Time of Sampling		Prote Freshwater	cted		20-Jun-16 3:15 PM			20-Jun-16 3:00 PM			20-Jun-16 2:30 PM			20-Jun-16 2:20 PM			20-Jun-16 4:30 PM			20-Jun-16 4:20 PM			20-Jun-16 12:34 PM			20-Jun-16 12:44 PM			20-Jun-16 12:54 PM			20-Jun-16 3:55 PM		i	20-Jun-16 3:40 PM	
Type				80th % like	20th %ão	Result	80th %ile	20th %ile	Result	80th %ile	20th %like	Result	80th %ile		Result	80th %ile	20th %ile	Result	80th %ãe	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile		Result	80th %ile Unable to se	20th %ile ample - water lew	Result el too low	80th %ile Wind c	20th %ãe hop - sediment sti	Result med up	80th %ile Wind cho		Result d up
Laboratory data																																				
Metals Aluminium	mgL	0.055		0.244 0.001	0.0162 0.001		0.194 0.001	0.016 0.001		0.098	0.02		0.114 0.002	0.01 0.001		0.28 0.001	0.01 0.001		0.28 0.001	0.01		0.25 0.002	0.02		0.25	0.02		0.25 0.002	0.02		0.11 0.002	0.01 0.001		0.11 0.002	0.01 0.001	
Cadmium	mpt mpt mpt	0.024	0.0023	0.001	0.001		0.001	0.001		0.002	0.001		0.002	0.001		0.001	0.001		0.001	0.001		0.002	0.001		0.002	0.001			0.001		0.002	0.001		0.002	0.001	
Copper	mg L mg L	0.001	0.0044																			0.001	0.001		0.001	0.001		0.001	0.001		0.001	0.001		0.001	0.001	
Leed Marganese	mpt mpt mpt mpt mpt mpt mpt	0.0034 1.9	0.0044	0.3	0.01		0.158	0.0178		0.0726	0.0218		0.083	0.0164		0.35	0.087		0.35	0.087		0.49	0.011		0.49	0.011			0.011		0.076	0.006		0.076	0.006	
Näckel Selenium	mgL mgL	0.011	0.07										-			0.0034	0.001		0.0034	0.001		0.002	0.001		0.002	0.001		0.002	0.001					-		
Silver Zinc	mgt. mgt.	0.00005	0.0014	0.007	0.005		0.0062	0.0042		0.0064	0.005		0.006	0.005		0.018	0.005		0.018	0.005		0.011	0.005		0.011	0.005		0.011	0.005		0.005	0.005		0.005	0.005	
Iron Mercury	mgt. mgt.	0.0006	0.0004	1.38	0.48		0.99	0.366	-	1.4	0.41		1.48	0.35		0.52	0.05		0.52	0.05		1.65	0.37		1.65	0.37		1.65	0.37		0.26	0.05		0.26	0.05	
Total Recoverable Hydrocarbons Naphthalene	ME/F	16	50	16		NA	16		NA.	16		NA	16		NA	16		NA	16		NA	16		NA	16		NA	16		NA	50		NA NA	50		NA
C6 - C10 Fraction C6 - C10 Fraction minus BTEX (F1)	he/r he/r		-	-		NA NA	-		NA NA	-		NA NA	-		NA NA			NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA
>C10 - C16 Fraction	pg/L			- : -		NA NA			NA NA	-		NA NA	-		NA NA			NA NA			NA NA	- :		NA NA	-		NA NA			NA NA	- :		NA NA			NA NA NA NA
>C16 - C34 Fraction >C34 - C40 Fraction >C10 - C40 Fraction (sum)	MB/r			-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA			NA NA
>C10 - C40 Fraction minus Naphthalene (F2) BTEX	HB/L HB/L HB/L HB/L	- :	- :			NA NA			NA NA			NA NA			NA NA			NA.			NA.			NA NA	-		NA NA			NA.			NA NA			NA NA
Benzene Toluene	PB/L	950	700	950		NA NA	950		NA NA	950		NA NA	950		NA NA	950		NA NA	950		NA NA	950		NA NA	950		NA NA	950		NA NA	700		NA NA	700		NA NA
Ethylberzene m&p-Xylenes	HBV HBV HBV HBV	80	5	80		NA NA	80		NA NA	80		NA NA	80		NA NA	80		NA NA	80		NA NA	80		NA NA	80		NA NA	80		NA NA	5		NA NA	5		NA
o-Xylene	MB/r MB/r	350	350	350		NA	350		NA NA	350		NA NA	350		NA NA	350		NA NA	350		NA NA	350		NA NA	350		NA	350		NA.	350		NA NA	350		NA NA
Xylenes - Total Sum of BTEX	ME\r		- 1			NA NA	-		NA NA	-		NA NA	-		NA NA			NA NA	-		NA NA			NA NA	-		NA NA	-		NA NA			NA NA			NA NA
Nutrients Total Phosphorus Phosphorus Phosphorus(reactive phosphorus)	mgt.	0.05	0.03	0.05	0.02		0.044	0.016		0.03	0.016		0.034	0.01		0.04	0.01 0.006		0.04	0.01		0.11	0.03 0.005		0.11	0.03		0.11	0.03 0.005		0.07	0.02 0.01		0.07 0.029	0.02 0.01	
				0.01	0.0034		0.01	0.004		0.018	0.0022		0.01			0.011			0.011	0.006		0.013			0.013	0.005					0.029					
Total Nitrogen Total Kjeldahl Nitrogen	mgL mgL	0.5	0.3	0.56 0.5	0.3		0.52 0.5	0.2		0.48 0.34	0.2		0.63	0.2		0.54	0.31		0.54 0.5	0.31		3.1 2.8	0.9		3.1 2.8	0.9		3.1 2.8	0.9		0.46	0.2		0.46	0.2	
Nitrate		0.7		0.102	0.01		0.054	0.01	-	0.208	0.01		0.2	0.01		0.05	0.01		0.05	0.01		0.03	0.01		0.03	0.01		0.03	0.01		0.04	0.01		0.04	0.01	
Nitrite America	mgL mgL mgL	0.9	-	0.036	0.01		0.02	0.01		0.046	0.02		0.02	0.01		0.02 0.116	0.01		0.02	0.01		0.02	0.01		0.02	0.01		0.02	0.01		0.02	0.01		0.02	0.01	
TSS Turbidity		50	10	26.16	5.94		27.32	3.72		14.98	3.34		17.16	4.59		26.1	2.4		26.1	2.4		66.8	11.6		66.8	11.6		66.8	11.6		19.04	5.81		19.04	5.81	
TSS Field Physical data	mgL	<40	10 <30	19	5		12.8	5		14.8	5		8.7	5		25	5.5		25	5.5		350	9		350	9		350	9							
Temperature nH	°C pH mS/cm		6.5-8	24.3 7.478 0.3204	16.27 6.23	15.86 6.41	24.52 7.192	16.79 6.42	15.87 6.5	23.98 7.138	17.36 6.61	17.17	24.7 6.98	17.65 6.21	18.22 6.71	25.9 6.86	19.5 6.46	16.48	25.9 6.86	19.5 6.46	16.63	25.84 6.9	19.1 6.08	18.99 6.18	25.84 6.9	19.1	16.96 6.37	25.84 6.9	19.1 6.08	18.41	26.56 7.56	21.32 6.58	18.99 7.2	26.56 7.56	21.32 6.58	19.03
Conductivity Turbidity	mS/cm NTU	0.125-2.2 50	- 10	0.3204 26.16	0.20184 5.94	0.249	0.3242	0.19076 3.72	0.248	0.313	0.2024	0.213	0.309	0.20188	0.225	20.918	0.50928	0.956	20.918	0.50928	0.104	0.842	0.334	0.564	0.842	0.334	0.322	0.842	0.334	0.465	48.42 19.04	12.65 5.81	26.3	48.42 19.04	12.65	6.9 26.7
Dissolved Oxygen Dissolved Oxygen	mg/L %	5	5	7.43	1.5	3.65 38.1	6.88	2.28	3.65	8.472	5.08	4.44	7.59	2.63	32.4 5.5	6.65	5.02	2.3 2.48	6.65	5.02	2.1	7.3	1.78	29.2 4.68	7.3	1.78	1.45	7.3	1.78	29.7	8.47	6.88	4.13	8.47	6.88	39.1 4.25
Drawofvied Chygen TDS	% g/L					38.1 0.162			38.1 0.161			47.5 0.138			60.2 0.152			26.3 0.612			24.5 0.654			52 0.361			15.5 0.209			29.7 0.303			50.2 16.3			51.8 16.5
Surface Water Results -July 201	16 - Dry				SW01	Weather		SW02			SW03			5W04			5W05	Low Tide:		SW06			5W07			SWOR			SWO9			SW10			SW11	
Location	Units	Levels or	Concern	u	pper Warrell Cres	ak		Upper Warrell Cre	sek		Storry Creek			Stony Creek		Lo	ower Warrell Creel	k.	L	ower Warrell Cre	sek	Urram	ned Creek Gumma	Vest	Uman	ned Creek Gumma Es	ist		d Creek Gumma I	North	Na	mbucca River Sou	.th		mbucca River South	
1	1	ANZECC 200	195% snarion		Upstream Freshwater			Downstream Freshwater			Upstream Freshwater			Downstream Freshwater			Upstream Freshwater			Downstream Freshwater			Upstream Freshwater			Upstream Freshwater			Downstream Freshwater			Upstream Estuarine			Downstream Estuarine	_
Freshwater / Estuarine		~~ £200 £00			14-Jul-16 12-20 PM			14-Jul-16			14-Jul-16			14-Jul-16 12-40 PM			14-Jul-16 3-55 PM			14-Jul-16 4:10 PM			14-Jul-16 1-25 PM			14-Jul-16 2:30 PM			14-Jul-16 2-50 PM			14-Jul-16		1	14-Jul-16	
Date of Sampling					12:20 PM								l																		80th %ile			80th %ile		
		Freshwater	Marine								20th %ile		80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ãe	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result		20th %še	Result		20th %ile	Result
Date of Sampling Time of Sampling			Marine	S0th %Like	20th %ãe	Result	80th Nile	20th %ile	Result	8021 7688		PORTUGE																			0021 7888		Nearth	BOOT TAINS		
Date of Sampling Time of Sampling	mg1.	Freshwater	Marina	80th %ile	20th %ão	0.01	80th % like 0.05	20th %ile 0.01	0.02	0.05	0.01	<0.01	0.04	0.01	0.02	0.06	0.01	0.03	0.06	0.01	0.21	0.1	0.01	0.03	0.1		0.04	0.1	0.01	0.02	0.02	0.01	<0.10	0.02	0.01	<0.10
Date of Sampling Time of Sampling	mgL	0.055 0.024	. 0.0023											0.01	0.02 0.002 <0.0001	0.06 0.001 0.0001	0.001	0.03 0.002 <0.0001	0.001		0.21 0.001 <0.0001	0.1 0.002	0.01 0.001	0.03 0.002 0.0002	0.1 0.002	0.001		0.1		0.02 <0.001 <0.0001			<0.10 <0.010		0.001	< 0.010
Date of Sampling Time of Sampling	mgt mgt mgt	Freshwater				0.01			0.02			<0.01 <0.001	0.04	0.01	0.002	0.001	0.001	0.002	0.001	0.001	0.21 0.001 <0.0001 <0.001 0.002			0.002		0.001	0.002		0.01	< 0.001	0.02	0.01	<0.10	0.02	0.001	
Date of Sampling Time of Sampling	mgt. mgt. mgt. mgt. mgt.	0.055 0.024 0.0002 0.001 0.0014 0.0034	0.0023 0.0055 0.0044 0.0013	0.06	0.01	0.01 <0.001 <0.0001 <0.001 <0.001	0.05	0.01	0.02 <0.001 0.0002 <0.001 0.002 <0.001	0.05	0.01	<0.01 <0.001 <0.0001 <0.001 0.001 <0.001	0.04 0.001 - -	0.01 0.001 - -	<0.001 <0.001 <0.001 <0.001	0.001 0.0001 - -	0.001 0.0001 - -	0.002 <0.0001 <0.001 <0.001 <0.001	0.001 0.0001 - -	0.001 0.0001 - -	<0.0001 <0.001 0.002 <0.001	0.002	0.001	0.002 0.0002 <0.001	0.002 - - -	0.001	0.002 :0.0001 <0.001	0.002	0.01 0.001 - -	<0.001 <0.0001 <0.001 <0.001 <0.001	0.02 0.002 - - 0.001	0.01 0.001 - - 0.001	<0.10 <0.010 <0.0010 <0.010	0.02 0.002 - - 0.001	0.001 - - 0.001	<0.010 <0.0010 <0.010 <0.010
Date of Sampling Time of Sampling	mgL mgL mgL mgL mgL mgL	0.055 0.024 0.0002 0.0014 0.0034 1.9 0.011	- 0.0023 0.0055 0.0044 0.0013 0.0044 0.08			0.01 <0.001 <0.0001 <0.001 <0.001 <0.001 0.042			0.02 <0.001 0.0002 <0.001 0.002 <0.001 0.119			<0.01 <0.001 <0.0001 <0.001 0.001 <0.001	0.04	0.01	0.002 <0.0001 <0.001 <0.001 <0.001 0.035	0.001	0.001 0.0001 - - - 0.08	0.002 <0.0001 <0.001 <0.001 <0.001 0.064	0.001	0.001	<0.0001 <0.001 0.002 <0.001 0.101			0.002 0.0002 <0.001 0.002 <0.001 0.246		0.001	0.002 :0.0001 <0.001 <0.001 <0.001 0.259	0.002 - - - - - 0.23	0.01	<0.001 <0.0001 <0.001 <0.001 <0.001 0.204	0.02 0.002 -	0.01 0.001 -	<0.10 <0.010 <0.0010 <0.0010 <0.010 <0.010 0.051	0.02	0.001 - - 0.001 - 0.002	<0.010 <0.0010 <0.010 <0.010 <0.010 0.051
Date of Sampling Time of Sampling	mgt mgt mgt mgt mgt mgt mgt mgt	0.055 0.024 0.0002 0.001 0.0014 0.0034 1.9 0.011 11		0.06	0.01	0.01 <0.001 <0.0001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001 <0.001	0.05	0.01	0.02 <0.001 0.0002 <0.001 0.002 <0.001 0.119 0.005 <0.01	0.05 - - - - - 0.06	0.01 - - - - - 0.02 - -	<0.01 <0.001 <0.0001 <0.001 0.001 <0.001	0.04 0.001 - - - - 0.052 - -	0.01 0.001 - - - 0.013 - -	0.002 <0.0001 <0.001 <0.001 <0.001 0.035 0.001 <0.001 <0.001	0.001 0.0001 - - - 0.26 0.001	0.001 0.0001 - - - 0.08 0.001	0.002 <0.0001 <0.001 <0.001 <0.001 0.064 0.001 <0.001 <0.001	0.001 0.0001 0.26 0.001	0.001 0.0001 - - - 0.08 0.001	<0.0001 <0.001 0.002 <0.001	0.002 - - - - - 0.23 0.001	0.001 - - - - 0.019 0.001	0.002 0.0002 <0.001 0.002	0.002 - - - - 0.23 0.001 -	0.001 -	0.002 0.0001 <0.001 <0.001 <0.001 0.259 0.002 <0.001 <0.001	0.002 - - - 0.23 0.001	0.01 0.001 - - - - 0.019 0.001	<0.001 <0.0001 <0.001 <0.001 <0.001	0.02 0.002 - - 0.001 - 0.03	0.01 0.001 - 0.001 - 0.002	<0.10 <0.010 <0.0010 <0.010 <0.010 <0.010 <0.010 <0.010 <0.010	0.02 0.002 - - 0.001 - 0.03	0.001 - - 0.001 - 0.002	<0.010 <0.0010 <0.010 <0.010 <0.010 0.051 <0.010 <0.10
Date of Sampling Time of Sampling	mgL mgL mgL mgL mgL mgL	0.055 0.024 0.0002 0.0014 0.0034 1.9 0.011	- 0.0023 0.0055 0.0044 0.0013 0.0044 0.08	0.06	0.01	0.01 <0.001 <0.0001 <0.001 <0.001 <0.001 0.001 0.001 <0.001	0.05	0.01	0.02 <0.001 0.0002 <0.001 0.002 <0.001 0.119 0.005 <0.01	0.05	0.01	<0.01 <0.001 <0.0001 <0.001 0.001 <0.001 0.048 <0.001 <0.01	0.04 0.001 - -	0.01 0.001 - -	<pre>0.002 &lt;0.0001 &lt;0.001 &lt;0.001 &lt;0.001 0.035 0.001 &lt;0.01</pre>	0.001 0.0001 - - - 0.26	0.001 0.0001 - - - 0.08	0.002 <0.0001 <0.001 <0.001 <0.001 0.064 0.001 <0.001	0.001 0.0001 - - - 0.26	0.001 0.0001 - - - 0.08	<0.0001 <0.001 0.002 <0.001 0.101 0.003 0.01	0.002 - - - - - 0.23	0.001 - - - - - 0.019	0.002 0.0002 <0.001 0.002 <0.001 0.246 0.007 <0.01	0.002 - - - - - 0.23	0.001 -	0.002 :0.0001 <0.001 <0.001 <0.001 0.259 0.002 <0.01	0.002 - - - - - 0.23	0.01 0.001 - - - - - 0.019	<0.001 <0.0001 <0.001 <0.001 <0.001 0.204 0.006 <0.01	0.02 0.002 - - 0.001	0.01 0.001 - - 0.001	<0.10 <0.010 <0.0010 <0.0010 <0.010 <0.010 0.051	0.02 0.002 - - 0.001	0.001 - - 0.001 - 0.002	<0.010 <0.0010 <0.010 <0.010 <0.010 0.051

Mercury	mg1.	0.0006	0.0004		-	< 0.0001	-	-	<0.0001	-	-	< 0.0001	-	-	< 0.0001			< 0.0001			< 0.0001		-	< 0.0001	-	-	< 0.0001	-		< 0.0001		-	<0.0001	-	-	< 0.0001
Total Recoverable Hydrocarbons																																				
Naphthalene	pg/L	16	50	16		NA	16		NA	16		NA	16		NA	16		NA	16		NA	16		NA	16		NA	16		NA.	50		NA	50		NA
C6 - C10 Fraction	PB/L			-		NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA NA	-		NA	-		NA.			NA.			NA
C6 - C10 Fraction minus BTEX (F1)	pg/L			-		NA	-		NA	-		NA	-		NA	-		NA			NA	-		NA	-		NA	-		NA.	-		NA	-		NA
>C10 - C16 Fraction	PB/L			-		NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA NA	-		NA	-		NA.			NA.			NA
oC16 - C34 Fraction	pg/L			-		NA	-		NA	-		NA	-		NA	-		NA			NA	-		NA	-		NA	-		NA.	-		NA	-		NA
>C34 - C40 Fraction	PB/L			-		NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA NA	-		NA	-		NA.			NA.			NA
>C10 - C40 Fraction (sum)	pg/L			-		NA	-		NA	-		NA	-		NA.	-		NA	-		NA.	-		NA.	-		NA	-		NA.	-		NA	-		NA
>C10 - C16 Fraction minus Nachthelene (F2)	PB/L			-		NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA NA	-		NA	-		NA.			NA.			NA
BTEX																																				
Benzene	PB/L	950	700	950		NA	950		NA	950		NA	950		NA	950		NA	950		NA.	950		NA	950		NA	950		NA.	700		NA	700		NA
Toluene	pg/L	180	180	180		NA	180		NA	180		NA	180		NA.	180		NA	180		NA.	180		NA.	180		NA	180		NA.	180		NA	180		NA
Ethylbergene	pg/L	80	5	80		NA	80		NA	80		NA	80		NA	80		NA	80		NA	80		NA	80		NA	80		NA.	5		NA	5		NA
m&p-Xylenes	µg/L					NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA	-		NA	-		NA.			NA			NA
o-Xylene	pg/L	350	350	350		NA	350		NA	350		NA	350		NA	350		NA	350		NA	350		NA	350		NA	350		NA.	350		NA	350		NA
Xylenes - Total	PB/L		-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA NA	-		NA	-		NA.	-		NA.			NA
Sum of BTEX	pg/L			-		NA	-		NA	-		NA	-		NA	-		NA			NA	-		NA	-		NA	-		NA.	-		NA	-		NA
Nutrients																																				
Total Phosphorus	mgL	0.05	0.03	0.04	0.01	< 0.01	0.03	0.01	< 0.01	0.04	0.01	< 0.01	0.02	0.01	< 0.01	0.04	0.01	0.01	0.04	0.01	0.02	0.12	0.03	< 0.01	0.12	0.03	0.03	0.12	0.03	0.01	0.04	0.02	< 0.02	0.04	0.02	0.02
Phosphate (reactive phosphorus)	mg1.			-	-	< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	< 0.01	0.01	0.0044	< 0.01	0.01	0.0044	0.02	0.01	0.005	< 0.01	0.01	0.005	< 0.01	0.01	0.005	< 0.01	0.01	0.008	< 0.01	0.01	0.008	< 0.01
	_																																			
Total Nitrogen	mgt	0.5	0.3	0.62	0.2	0.3	0.6	0.2	0.1	0.3	0.1	< 0.1	0.41	0.1	0.1	0.5	0.2	0.4	0.5	0.2	0.6	2.8	1.1	0.4	2.8	1.1	0.7	2.8	1.1	0.4	0.5	0.2	< 0.2	0.5	0.2	< 0.2
Total Kjelduhl Nitrogen	mgt			0.6	0.2	0.2	0.6	0.2	0.1	0.3	0.1	< 0.1	0.4	0.1	< 0.1	0.5	0.2	0.3	0.5	0.2	0.4	2.4	1	0.4	2.4	1	0.7	2.4	1	0.4	0.5	0.2	< 0.2	0.5	0.2	< 0.2
Nitrate	mg1.	0.7		0.04	0.01	0.08	0.03	0.01	0.03	0.03	0.01	0.05	0.03	0.01	0.11	0.04	0.01	0.09	0.04	0.01	0.25	0.04	0.01	< 0.01	0.04	0.01	< 0.01	0.04	0.01	< 0.01	0.02	0.01	0.03	0.02	0.01	0.02
Nitrite	mgt			-	-	< 0.01	0.01	0.01	< 0.01	0.01	0.01	< 0.01	0.01	0.01	< 0.01	0.01	0.01	< 0.01	0.01	0.01	< 0.01	0.05	0.01	< 0.01	0.05	0.01	< 0.01	0.05	0.01	< 0.01	0.02	0.01	< 0.01	0.02	0.01	< 0.01
Ammonia	mg1.	0.9		-	-	< 0.01	-	-	0.02	-	-	< 0.01	-	-	< 0.01	0.16	0.06	0.05	0.16	0.06	0.07	0.04	0.01	0.08	0.04	0.01	0.01	0.04	0.01	< 0.01	0.03	0.01	< 0.05	0.03	0.01	< 0.05
TSS																																				
TSS	mg1.	<40	<30	14.8	5	<5	8	5	<5	9	5	<5	5.8	5	<5	17.6	5	15	17.6	5	22	290	15	15	290	15	5	290	15	108	71	19	<5	71	19	<5
Field Physical data																																				
Temperature	,C	-	-	24.86	14.99	12.47	25.1	16.3	14.26	24.4	16	12.71	26.46	15.94	11.74	27.9	18.4	13.48	27.9	18.4	13.55	26.5	16.3	15.47	26.5	16.3	13.19	26.5	16.3	13.95	27.9	18.1	15.86	27.9	18.1	15.09
pH	pH		6.5-8	7.25	6.48	7.14	7.3	6.4	7.44	7.5	6.6	6.94	7.33	6.26	6.99	7.02	6.57	7.44	7.02	6.57	7.36	7	6.1	6.36	7	6.1	6.53	7	6.1	6.54	7	7	7.73	7	7	7.4
Conductivity	mS/cm	0.125-2.2		0.316	0.232	0.287	0.348	0.227	0.277	0.348	0.227	0.244	0.3338	0.2168	0.24	20.946	0.679	1.51	20.946	0.679	1.8	0.808	0.4234	0.515	0.808	0.4234	0.482	0.808	0.4234	1.19	47.32	29.44	35.9	47.32	29.44	34.2
Turbidity	NTU	50	10	10.96	4	4.8	9.9	3.5	19.7	9.9	3.5	2.5	5.97	3.74	10.6	6.82	1.83	1.2	6.82	1.83	4.6	52.78	11.3	66.6	52.78	11.3	25.5	52.78	11.3	26.2	19.3	6.7	2.9	19.3	6.7	3.8
Dissolved Oxygen	mgL	5	5	4.98	1.91	3.98	4.8	2.6	6.38	4.8	2.6	5.33	6.34	3.52	4.61	7.98	5.07	3.37	7.98	5.07	3.74	6.4	1.75	1.15	6.4	1.75	5.62	6.4	1.75	3.4	9.1	7.4	3.65	9.1	7.4	4.91
Dissolved Oxygen	%			-	-	38.6	-	-	64.4	-	-	52	-	-	44	-	-	33.6	-	-	37.3	-	-	11.9		-	55.4	-	-	34.1	-	-	43.4	-	-	57.1
TDS	g/L			-		0.186	-		0.18	-		0.159	-		0.156	-		0.963	-		1.15	-		0.33			0.314	-		0.76	-		21.9	-		20.9
Surface Water Results - August 2	2016 - W	et	•		SW01	Weather:	Overcast				5W03			5W04			5W05	Low Tide:	10:47 AM	SW06			SW07			SWOR			2M/09			SW10			5W11	

Surface Water Results - August	2016 - W	Vet			5W01	Weather:	Overcast				SW03			5W04			SW05	Low Tide:	10:47 AM	SW06			SW07			SWOR			5W09			5W10			SW11	
Location	Units	Levels o	of Concern	L	Joper Warrell Cre	sak	п	pper Warrell Cres	uk		Storry Creek			Stony Creek		ь	ower Warrell Cree	k	L	ower Warrell Cr	oek	Unname	ed Creek Gumma	West	Umar	ned Creek Gumn	na East	Unner	ned Creek Gumma	a North	N	ambucca River So	sh	Na	embucca River Sou	th
					Upstream			Downstream			Upstream			Downstream			Upstream			Downstream			Upstream			Upstream			Downstream			Upstream		<u> </u>	Downstream	
Freshwater / Estuarine		ANZECC 200	10 95% species sected		Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Estuarine			Estuarine	
Date of Sampling					5-Aug-16			5-Aug-16			5-Aug-16			5-Aug-16			5-Aug-16			5-Aug-16			5-Aug-16			5-Aug-16			5-Aug-16			5-Aug-16		i	5-Aug-16	
Time of Sampling		Freshwater	Marine				l .												l .										sample - water le					1 .		.
Туре				80th %ile	20th %-like	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %-lie	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result	80th %ile	20th %ile	Result		20th %ile			20th %ile		80th %ile		Result
Comments																												Unable to	sample - water le	wil too low	Wind	chop - sediment st	rred up	Wind ci	hop - sediment stir	/ed up
Laboratory data																																		-		
At mind an	mgt	0.055		0.244	0.0162	0.20	0.194	0.016	0.22	0.098	0.02	0.45	0.114	0.01	0.05	0.28	0.01	0.46	0.28	0.01	0.08	0.25	0.02	0.04	0.25	0.02	0.03	0.25	0.02		0.11	0.01	0.04	0.11	0.01	0.03
Asserts	mgt.	0.024	0.0023	0.001	0.0162	<0.001		0.016	<0.001	0.098		< 0.001	0.002		< 0.001	0.001		< 0.001	0.001	0.001	<0.001	0.002	0.02	< 0.001	0.002		0.03	0.002	0.02	-	0.002	0.001	< 0.001	0.002	0.001	<0.001
Carlmin	mgL	0.0002	0.0055	0.001	0.001	< 0.0001	0.001	0.001	<0.0001	0.002	0.001	<0.001	0.002	0.001	<0.001	0.0002	0.0001	< 0.0001	0.0002	0.0001	< 0.0001	0.002	0.001	< 0.0001	200.0	0.001	0.0004	0.002	0.001		0.002	0.001	<0.0001	0.002	0.001	< 0.0001
Chromium	mgL	0.001	0.0044			< 0.0001			< 0.0001			< 0.0001			< 0.0001	0.0002	0.0001	< 0.0001	0.0002	0.0001	<0.001			< 0.0001	- :	- :	<0.001	- :				- :-	<0.001	$\vdash$		< 0.0001
Copper	mg1.	0.0014	0.0013	-	-	<0.001	-	-	0.002	-		< 0.001	-		< 0.001			0.001			< 0.001	0.001	0.001	< 0.001	0.001	0.001	0.002	0.001	0.001	-	0.001	0.001	< 0.001	0.001	0.001	<0.001
Lead	mgL	0.0034	0.0044	-	-	< 0.001	-	-	< 0.001	-	-	< 0.001	-		< 0.001			< 0.001			< 0.001	-	-	< 0.001		-	< 0.001	-	-	-	-	-	< 0.001	-	-	< 0.001
Marganese	mgt	1.9	0.08	0.3	0.01	0.029	0.158	0.0178	0.043	0.0726	0.0218	0.058	0.083	0.0164	0.081	0.35	0.087	0.092	0.35	0.087	0.079	0.49	0.011	0.051	0.49	0.011	0.338	0.49	0.011		0.076	0.006	0.066	0.076	0.006	0.063
Nickel	mgt	0.011	0.07	-	-	< 0.001	-		0.003	-	-	< 0.001	-	-	0.001	0.0034	0.001	0.002	0.0034	0.001	0.002	0.002	0.001	< 0.001	0.002	0.001	0.006	0.002	0.001		-	-	< 0.001	- 1	-	< 0.001
Selenium	mgL	11		-	-	< 0.01	-		< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	< 0.01	-	-	< 0.01	-	-		-	-	< 0.01	- 1	-	< 0.01
Silver	mgL	0.00005	0.0014	-	-	< 0.001	-		< 0.001	-	-	< 0.001	-	-	< 0.001		-	< 0.001	-	-	< 0.001	-	-	< 0.001	-	-	< 0.001	-	-	-	-		< 0.001	- 1	-	< 0.001
Zinc	mgl	0.008	0.015	0.007	0.005	< 0.005	0.0062	0.0042	0.013	0.0064		< 0.005	0.006	0.005	0.012	0.018		0.012	0.018	0.005	0.016	0.011	0.005	0.007	0.011	0.005	0.023	0.011	0.005	-	0.005	0.005	0.014	0.005	0.005	0.005
Iron	mgl	-	-	1.38	0.48	0.28	0.99	0.366	0.28	1.4	0.41	0.61	1.48	0.35	0.1	0.52	0.05	0.45	0.52	0.05	0.07	1.65	0.37	0.26	1.65	0.37	1.06	1.65	0.37	-	0.26	0.05	0.11	0.26	0.05	0.09
Mercury	mg1.	0.0006	0.0004	-	-	< 0.0001	-	-	< 0.0001	-	-	< 0.0001	-		< 0.0001			< 0.0001			< 0.0001	-	-	< 0.0001	-	-	<0.0001	-	-	-	-	-	< 0.0001	-	-	< 0.0001
Total Recoverable Hydrocarbons																																				
Naphthalene	MR/F	16	50	16		NA	16		NA	16		NA	16		NA	16		NA	16		NA.	16		NA	16		NA	16		NA	50		NA	50		NA
C6 - C10 Fraction	MR/F	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA NA	-		NA	-		NA	-		NA	-		NA			NA NA
C6 - C10 Fraction minus BTEX (F1)	PB/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA	-		NA	-		NA	-		NA			NA
>C10 - C16 Fraction	PB/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA	-		NA	-		NA.	-		NA			NA
>C16 - C34 Fraction >C34 - C40 Fraction	PB/L	-	-	-		NA NA	-		NA	-		NA NA	-		NA	-		NA NA	-		NA	-		NA NA	-		NA	-		NA	-		NA NA			NA NA
>C34 - C40 Fraction >C10 - C40 Fraction (sum)	HB/L			-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	-		NA NA	$\vdash$		NA NA
>C10 - C40 Fraction (sum) >C10 - C16 Fraction minus Naphthalene (F2)	per-	1 .		_		NA NA			NA NA			NA NA			NA NA			NA NA			NA NA			NA NA			NΔ			NA NA			NA NA	-		NA NA
RTFY	PR/-		-			INA			INA			IVA			IVA			IVA			NA.			INA			INA			INA			NA.	-		IVA
Benzene	PB/L	950	700	950		NA	950		NA	950		NA	950		NA	950		NA	950		NA.	950		NA	950		NA	950		NA.	700		NA.	700		NA.
Toluene	PR/L	180	180	180		NA.	180		NA.	180		NA	180		NA.	180		NA.	180		NA.	180		NA.	180		NA	180		NA.	180		NA.	180		NA
Ethylberzene	PB/L	80	5	80		NA	80		NA	80		NA	80		NA	80		NA	80		NA	80		NA	80		NA	80		NA.	5		NA.	5		NA
m&p-Xylenes	PB/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA.	-		NA	-		NA	-		NA	-		NA.	-		NA	-		NA
o-Xylana	µg/L	350	350	350		NA	350		NA	350		NA	350		NA	350		NA	350		NA	350		NA	350		NA	350		NA	350		NA NA	350		NA
Xylenes - Total	µg/L		-	-		NA	-		NA			NA			NA			NA	-		NA	-		NA			NA			NA	-		NA	-		NA
Sum of BTEX	µg/L	-	-	-		NA	-		NA NA	-		NA	-		NA	-		NA	-		NA.	-		NA NA	-		NA	-		NA.	-		NA	-		NA
Nutrients																																				
Total Phosphorus	mg1.	0.05	0.03	0.05	0.02	0.15	0.044	0.016	0.05	0.03	0.016	0.02	0.034	0.01	0.04	0.04	0.01	0.04	0.04	0.01	0.07	0.11	0.03	0.02	0.11	0.03	0.02	0.11	0.03	-	0.07	0.02	0.04	0.07	0.02	0.05
Phosphate (reactive phosphorus)	mg/L		-	0.01	0.0034	<0.01	0.01	0.004	< 0.01	0.018	0.0022	< 0.01	0.01	0.003	<0.01	0.011	0.006	<0.01	0.011	0.006	<0.01	0.013	0.005	<0.01	0.013	0.005	<0.01	0.013	0.005	-	0.029	0.01	0.01	0.029	0.01	0.02
Total Nitroann			0.1	0.56	0.3	1.0	0.52	0.2	- 1	0.48	0.2	0.0	0.63	0.2	0.0	0.54	0.31	0.0	0.54	0.31	1.2	3.1	0.9	0.5	3.1	0.9	0.5	3.1	0.9	-	0.46	0.2	0.5	0.46	0.2	0.5
Total Kieldahl Nitrogen	mg1.	0.5	0.3	0.56	0.3	1.9	0.52	0.2	0.8	0.48	0.2	0.8	0.63	0.2	0.6	0.54	0.31	0.9	0.54	0.31	1.2	2.8	0.9	0.5	2.8	0.9	0.5	2.8	0.9	H	0.46	0.2	0.5	0.46	0.2	0.3
The April 100 (100 (100 (100 (100 (100 (100 (100	mgt			0.5	0.3	4.7	0.5	0.2	0.8	0.34	0.2	0.4	0.6	0.2	0.0	0.5	0.2	0.7	0.5	0.2	- 1	2.8	0.8	0.5	2.8	0.8	0.5	4.8	0.8	-	0.3	0.2	0.4	0.3	0.2	0.4
Nitrate	mgt	0.7	Ι.	0.102	0.01	0.16	0.054	0.01	0.16	0.208	0.01	0.35	0.2	0.01	0.33	0.05	0.01	0.21	0.05	0.01	0.21	0.03	0.01	0.04	0.03	0.01	0.01	0.03	0.01		0.04	0.01	0.08	0.04	0.01	0.07
Nimine	mgt.	-		-	-	< 0.01	0.034	-	< 0.01	-	-	< 0.01	0.02	0.01	<0.01	0.03	0.01	< 0.01	0.03	0.01	< 0.01	0.03	0.01	< 0.01	0.03	0.01	< 0.01	0.03	0.01		0.04	0.01	< 0.01	0.02	0.01	< 0.01
Amesonia	mol	0.9		0.036	0.01	< 0.01	0.02	0.01	< 0.01	0.046	0.02	< 0.01	0.062	0.012	0.02	0.116	0.022	0.02	0.116	0.022	0.01	0.06	0.01	< 0.01	0.06	0.01	0.06	0.06	0.01	-	0.15	0.024	0.04	0.15	0.024	0.03
TSS						,,,,,,				. ,		,,,,,,					,,			-							- /-	- , , ,								
TSS	mg1.	<40	<10	19	5	110	12.8	5	25	14.8	5	8	8.7	5	<5	25	5.5	32	25	5.5	28	350	9	23	350	9	79	350	9	-			9			9
Lab Physical data (no field data available)																																				
pH	pН		6.5-8	7.478	6.23	6.42	7.192	6.42	6.28	7.138	6.61	6.59	6.98	6.21	6.63	6.86		6.61	6.86	6.46	6.52	6.9	6.08	6.65	6.9	6.08	6.45	6.9	6.08		7.56	6.58	6.96	7.56	6.58	7.09
Conductivity	mS/am	0.125-2.2		0.3204	0.20184	0.099	0.3242	0.19076	0.097	0.313	0.2024	0.197	0.309	0.20188	0.212	20.918	0.50928	0.225	20.918	0.50928	0.222	0.842	0.334	0.298	0.842	0.334	0.37	0.842	0.334	-	48.42	12.65	12.8	48.42	12.65	15.8
Turbidity	NTU	50	10	26.16	5.94	94.1	27.32	3.72	53.4	14.98	3.34	25.3	17.16	4.59	38.5	26.1	2.4	61.6	26.1	2.4	56.5	66.8	11.6	50.4	66.8	11.6	105	66.8	11.6	-	19.04	5.81	16.6	19.04	5.81	13
Dissolved Oxygen	mgt	5	5	7.43	1.5		6.88	2.28		8.472	5.08		7.59	2.63		6.65	5.02		6.65	5.02		7.3	1.78		7.3	1.78		7.3	1.78		8.47	6.88		8.47	6.88	
Dissolved Oxygen	%						-			-			-			-			-			-			-			-		-	-					
TDS	g/L					81	-		84	-		114	-		139			134	-		138	-		164	-		254	-		-			7690			9610

February 2016 Groundwater Monitoring	Field Physical Data Only

Location	Units	Groundwater Investigation Levels (GILs) from	4BH007	4BH008	4BH010	4BH011	4BH021	4BH022	4BH025	4BH026	4BH037	4BH038	1BH49	4BH058	4BH061	4BH062
CutFill		Interpretive Report	Cut	Cut	Fill 15	FIII	Cut	Cut	Cut 26	Cut 26						
Date of Sampling			24/02/2016	24/02/2016	24/02/2016	24/02/2016	25/02/2016	25/02/2016					25/02/2016		25/02/2016	
Comments			DRY	DRY	24/02/2016	DRY	23/02/2016	20/02/2016	23/02/2016	DRY	23/02/2016	2302/2010	23/02/2016	DRY	DRY	DRY
Field Physical data			DRI	DKI		DKI				DK1				DRI	DRI	DKI
Depth to standing water level from TOC	m	-	-	-	16.20	-	7.58	1.18	6.98	-	0.72	0.92	0.42	-	-	-
pH	pH		-	-	4.78	-	6.20	7.20	5.90	-	6.20	7.10	6.00	-	-	-
Conductivity	mS/cm		-	-	4.60	-	0.118	0.694	0.131	-	5.620	9,420	72.000	-	-	-
Temperature	∘C		-	-	20.60	-	19.60	25.80	23.00	-	21.20	21.00	20.60	-	-	-
Dissolved Oxygen	mg/L		-													
Turbidity	NTU		-	-												
Total Dissolved Solids	mg/L															

March 2016 Groundwater Monitoring Field Physical Data Only

Location	Units	Groundwater Investigation Levels (GILs) from	4611007	4BH008	4BH010	4BH011	4BH021	4BH022	4BH025	4BH026	4BH037	4BH038	1BH49	4BH058	4BH061	4BH062
Cut/Fill		Interpretive Report	Cut 4	Cut 4	Cut 6	Cut 6	Cut 11	Cut 11	Cut 12	Cut 12	Fill 15	Fill 15	Cut 17	Cut 17	Cut 26	Cut 26
Date of Sampling			24/03/2016	24/03/2016	24/03/2016	24/03/2016	24/03/2016	24/03/2016	24/03/2016	24/03/2016	24/03/2016	24/03/2016	24/03/2016	24/03/2016	29/03/2016	29/03/2016
Comments			DRY	DRY		DRY				DRY				DRY	DRY	DRY
Field Physical data																
Depth to standing water level from TOC	п		-	-	16.60	-	8.40	1.50	8.80	-	0.90	1.10	15.00			-
pH	pH		-	-	5.82	-	6.84	7.74	7.55	-	8.81	7.50	6.37	-	-	-
Conductivity	mS/cm		-	-	5.33	-	0.144	0.138	0.186	-	2.440	11.200	0.169	-	-	-
Temperature	∘C			-	16.30		20.44	18.20	23.09	-	21.95	21.40	24.34			
Dissolved Oxvaen Turbidity	mg/L NTU	:	- :	-												

April 2016 Groundwater Monitoring Laboratory and Field Physical Data

		Groundwater														
Location		Investigation	4BH007	4BH008	4BH010	4BH011	4BH021	4BH022	4BH025	4BH026	4BH037	4BH038	1BH49	4BH058	4BH061	4BH062
Location		Levels	400007	400000	460010	460011	460021	4BH022	4BH025	4BHU26	460037	400030	10049	40000	400001	400002
	Units	(GILs) from Interpretive	-													
Cut/Fill		Report	Cut 4	Cut 4	Cut 6	Cut 6	Cut 11	Cut 11	Cut 12	Cut 12	Fill 15	Fill 15	Cut 17	Cut 17	Cut 26	Cut 26
Date of Sampling			27/04/2016	27/04/2016	27/04/2016	27/04/2016	27/04/2016	27/04/2016	27/04/2016	27/04/2016	27/04/2016	27/04/2016	27/04/2016	27/04/2016	27/04/2016	27/04/2016
Comments			DRY	DRY		DRY				DRY			DRY		DRY	DRY
Laboratory data Metals																
Aluminium	mg/L	0.055			<0.01		<0.01		<0.01		<0.01	<0.01		<0.01		
Arsenic	mg/L	0.024			<0.001		0.0010		<0.001		<0.001	<0.001		<0.001		
Cadmium	mg/L	≺LOR			<0.0001		<0.0001		<0.0001		<0.0001	<0.0001		<0.0001		
Chromium	mg/L	0.001			<0.001		< 0.001		< 0.001		< 0.001	<0.001		<0.001		-
Copper	mg/L	0.0014			<0.001		< 0.001		< 0.001		< 0.001	<0.001		<0.001		-
Lead	mg/L	0.0034			<0.001		<0.001		<0.001		<0.001	<0.001	-	0.0090		-
Manganese	mg/L	-			0.3370		0.0180		0.0040		5.0700	1.5500	-	0.0160		-
Nickel	mg/L	0.011			<0.001		0.0060		<0.001		0.0030	0.0080		0.0020		
Selenium	mg/L				<0.01	-	<0.01	-	<0.01		<0.01	<0.01	-	<0.01		
Silver	mg/L	<lor< td=""><td></td><td>-</td><td>&lt;0.001</td><td>-</td><td>&lt;0.001</td><td>-</td><td>&lt;0.001</td><td>-</td><td>&lt;0.001</td><td>&lt;0.001</td><td>-</td><td>&lt;0.001</td><td></td><td>-</td></lor<>		-	<0.001	-	<0.001	-	<0.001	-	<0.001	<0.001	-	<0.001		-
Zinc	mg/L mg/L	0.008			<0.005	-	0.0100	-	0.0110	-	0.0180 55.2000	0.0110	-	<0.005		-
Iron Mercury	mg/L mg/L	0.0006			<0.05		0.3500 <0.0001		<0.005 <0.0001		<0.0001	<0.0001		<0.05 <0.0001		
Total Petroleum	HQL	0.0006			₹0.0001		40.0001		<0.0001		<0.0001	₹0.0001		₹0.0001		
Hydrocarbons		-														
C6-C9 Fraction	ugit or ppb				<20		<20		<20		<20	<20		<20		
C10-C14 Fraction	µg/L or ppb				<50		<50		<50		290.0000	<50		<50		
C15-C28 Fraction	µg/L or ppb				<100		<100		<100		<100	<100		<100		
C29-C36 Fraction	µg/L or ppb				<50		<50		<50		<50	<50		<50		
C10-C36 Fraction (sum)	µg/L or ppb				<50		<50		<50		290.0000	<50		<50		
BTEX			•													
Benzene	µg/L or ppb	950			<1		<1		<1		<1	<1		<1		
Toluene	µg/L or ppb	-			<2		<2		<2		<2	<2		<2		
Ethylbenzene	µg/L or ppb				-2		<2		<2		<2	<2		-2		
m+o-Xvlene	µg/L or ppb	-			-2		<2		<2		<2	<2	-	<b>-2</b>		
o-Xvlene	µg/L or ppb				<2		<2		<2		<2	<2	-	<2		-
Naphthalene	µg/L or ppb				<5		<5		<5		<5	<5		<5		
Nutrients																
Total Phosphorus Phosphate	mg/L mg/L				0.0400 <0.01		0.0800 <0.01		0.0600 <0.01		<0.01 <0.01	0.2800 <0.01		<0.01		:
Phosphate	mg/L				<0.01		<0.01		<0.01		<0.01	<0.01		<0.01		
Total Nitrogen	mg/L				1.8000		0.6000		1.1000		3.3000	1.1000		0.5000		
Total Kieldahl Nitrogen	mg/L				1.8000		0.6000		0.7000		3.3000	0.9000		0.2000		
Total regulation remogen	meg.c.				1.0000		0.0000		0.7000		5.5000	0.3000		0.2000		
Ntrate	mg/L				0.0400		0.0300		0.4000		0.0200	0.2000		0.3200		
Nitrite	mg/L				< 0.01		<0.01		<0.01		<0.01	<0.01		< 0.01		
Ammonia	mg/L	-			0.9500		0.4200		0.1600		1.2900	0.3400		0.1600		
Major anions																
Chloride	mg/L				88.0000		14.0000		34.0000		976.0000	2300.0000		23.0000		
Sulfate	mg/L	-			43.0000		6.0000		4.0000		1960.0000	2330.0000		13.0000		
Ricarhonate	mg/L		-	-	165.0000		29.0000		14.0000		46.0000	911.0000		31.0000		
Maior cations	mg/L															
Sodium Potassium	mg/L mg/L	-			69.0000 4.0000	-	18.0000		28.0000	-	755.0000 43.0000	1710.0000 92.0000	-	32.0000	-	:
Potassium Calcium	mg/L mg/L				4.0000 53.0000		1.0000		<1		43.0000 197.0000	92.0000 235.0000		1.0000		
Magnesium Magnesium	mg/L				11.0000		2.0000		<1		316.0000	521.0000		2.0000		
Field Physical data					11.3000		2.0000		- 51		510.0000	321.0000		2.0000		
Depth to standing water																
level from TOC	m	- 1	-	-	17.30	-	8.10	-	6.45	-	0.72	0.96	-	15.91	-	-
nH	pН				6.55		6.40		6.02		6.10	7.03		6.76	1 -	
Conductivity	mS/cm			- 1	3.55	- 1	0.204	- 1	0.172		5.750	10.100	1	0.323		- 1
Temperature	oG.	1 1		1	22.30	1 1	21.59	1 1	22.16	1 1	22.60	22 40	1 1	22.50	1 .	
Dissolved Oxygen	mg/L		-		AA.30		21.05		10		******	40		22.00		
Turbidity	NTU		1 .	- 1											l	l

May 2016 Groundwater Monitoring Field Physical Data Only

Location	Units	Groundwater Investigation Levels (GILs) from	4BH007	4BH008	4BH010	4BH011	4BH021	4BH022	4BH025	4BH026	4BH037	4BH038	1BH49	4BH058	4BH061	4BH062
Cut/Fill		Interpretive Report	Cut 4	Cut 4	Cut 6	Cut 6	Cut 11	Cut 11	Cut 12	Cut 12	Fill 15	Fill 15	Cut 17	Cut 17	Cut 26	Cut 26
Date of Sampling			26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016	26/05/2016		26/05/2016	26/05/2016
Comments			DRY	DRY	DRY	DRY				DRY			DRY	Unable to sample	DRY	DRY
Field Physical data																
Depth to standing water level from TOC	ш		-	-	-	-	8.51	2.00	8.37	-	0.82	0.97	-	-	-	-
pH	pH	-	-	-	-	-	6.72	7.29	8.00	-	6.33	7.36	-	-	-	-
Conductivity	mS/cm	-	-	-	-	-	0.136	0.671	0.116	-	7.010	10.8	-	-	-	-
Temperature	∘C			-			16.27	20.25	17.11		17.40	17.84				
Dissolved Oxvaen Turbidity Total Dissolved Solids	mg/L NTU mg/L		- :	- 1												

June 2016 Groundwater Monitoring Field Physical Data Only

Location	Units	Groundwater Investigation Levels (GILs) from	4BH007	4BH008	4BH010	4BH011	4BH021	4BH022	4BH025	4BH026	4BH037	4BH038	1BH49	4BH058	4BH061	4BH062
Cut/Fill		Interpretive Report	Cut 4	Cut 4	Cut 6	Cut 6	Cut 11	Cut 11	Cut 12	Cut 12	Fill 15	Fill 15	Cut 17	Cut 17	Cut 26	Cut 26
Date of Sampling			17/06/2016	17/08/2016	17/06/2016	17/06/2016	17/06/2016	17/06/2016	17/06/2016	17/06/2016	17/06/2016	17/06/2016	17/06/2016	17/06/2016	17/06/2016	17/06/2016
Comments			DRY	DRY		DRY				DRY			DRY	Unable to sample	DRY	DRY
Field Physical data																
Depth to standing water level from TOC	В		-	-	18.53	-	6.80	1.42	5.97	-	0.48	0.64	-	-	-	-
pH	pH	-	-	-	6.6	-	6.39	7.01	6.52	-	6.85	7.32	-	-	-	-
Conductivity	mS/cm	-	-	-	1.71	-	0.183	0.663	0.184	-	8.9	10.8	-	-	-	-
Temperature	∘C			-	21.2200	-	20.79	20.90	20.70	-	18.14	19.54				-
Dissolved Oxygen Turbidity Total Dissolved Solids	mg/L NTU		- :													

July 2016 Groundwater Monitoring Laboratory and Field Physical Data

																																		=		
Location	Units	Investigation	4BH00		4BH0		4BH010			1011		4BH021			1022		4BH025			4BH026			4BH037			4BH038			1BH49		4BH058		4BH			1062
Cut/Fill		Levels	Cut 4		Cut		Cut 6			ıt 6		Cut 11			11		Cut 12			Cut 12			Fill 15			Fill 15			Cut 17		Cut 17		Cut		Cut	
Date of Sampling			25/07/20	016	25/07/2	2016	26/07/2016	6	25/07	//2016		26/07/2016		25/07	/2016		26/07/2016			26/07/2016			26/07/2016			26/07/2016			26/07/2016		25/07/2016		26/07	/2016	26/07/	2016
			Trigger levels 80 / 20%ile	Results	Trigger levels 80 / 20%/le+A1	Results	Trigger levels 80 / 20%ile	Results	Trigger levels 80 / 20%ile	Results	Trigger level	s 80 / 20%ile	Results	Trigger levels 80 / 20%ile	Results	Trigger leve	ls 80 / 20%ile	Results	Trigger leve (from 4L	ts 80 / 20%ite DBH015)	Results	Trigger level	is 80 / 20%ile	Results	Trigger level	Is 80 / 20%ile	Results	Trigger levels	s 80 / 20% ile	Results	Trigger levels 80 / 20%ile	Results	Trigger levels 80 / 20%ile	Results	Trigger levels 80 / 20% le	Results
Comments				DRY		DRY		•		DRY		,			Unable to sample		,				DRY									DRY		Unable to sample		DRY		DRY
Metals								_																											-	
Aluminium	mg/L.	0.055					0.2740	0.0200			0.0216		0.0100	0.0122		0.0324		0.0300	0.0422			0.0264		<0.01	0.0050		<0.01	0.0050			0.0050					
Arsenic Cadmium	mg/L mg/L	0.024 ≼LOR		-		-	0.0009	<0.0010			0.0020		0.0020 <0.0001	0.0001	-	0.0005		<0.001	0.0074		-	0.0005		<0.001	0.0010		<0.001 <0.0001	0.0010			0.0005					_
Chromium	mg/L	0.001		-: 1	- :		0.0003	0.0010			0.0001		0.0001	0.0001		0.0002			0.0022		- : 1	0.0002		0.00001	0.0005		0.0010	0.0005		-	0.0005	- :	- :	-:	-	
Copper	mg/L	0.0014					0.1620	< 0.001			0.0108		0.0280	0.0030		0.0139		0.0010	0.0272			0.0139			0.0026		0.0030	0.0009			0.0082					
Lead	mg/L	0.0034					0.0010	<0.001			0.0002		0.0010	0.0016		0.0022			0.0008			0.0005		<0.001 3.5000	0.0005 1.5084		<0.001	0.0009			0.0005					
Manganese Nickel	mg/L mg/L	0.011	- :	-:-			0.2258 0.0196	0.2190			0.0139		0.0070	0.4856		0.0124		0.0060 <0.001	0.1676			5.2480		3.5000 0.0010	0.0060		0.0060	0.4518			0.0800					
Selenium	mg/L	0.011					0.0050	<0.01			0.0050		<0.01	0.0050		0.0050			0.0037		-	0.0050		<0.01	0.0050		<0.01	0.0050		-	0.0050					
Silver	mg/L.	∠I OR					0.0005	<0.001			0.0001		<0.001	0.0001		0.0005			0.0005			0.0005		<0.001	0.0005		<0.001	0.0005			0.0005					
7inc	mg/L mg/L	n nna			-		0.0532 6.5800	0.0140			0.0176 0.0354		0.0230	0.0085		0.0102			0.0432			0.0196 84.5600		0.0050 38.2000	0.0132 1.7500		0.0090	0.0090 4.6344			0.0100		-			
Mercury	mg/L	0.0006				-	0.0003	#0.0001	-		0.0354		<0.0001	0.0001		0.0322			0.6574			0.0001		±0.0001	0.0003			0.0003		-	0.0600	- :		-		
Total Petroleum																																				
Hydrocarbons																															10,0000			-		
C6-C9 Fraction	µg/L or ppb µg/L or ppb	-	-	-	-	-	10 85	<20		-	16 25		<20 <50	16 45		10.0000 25.0000		<20	25.0000		-	10.0000 219.0000		<20 110,0000	10.0000 25.0000		√20 √50	10.0000		-	10.0000 25.0000	-	-			
C10-C14 Fraction C15-C28 Fraction	µg/L or ppb			-: 1	- :		50	¢100	-		50		×100	50		50,0000		<100	50,0000		- : 1	190,0000		±100	50,0000		<100	25,0000		-	25.0000	- :	- :	-:	-	
C29-C36 Fraction	µg/L or ppb						50	<50			50		<50	50		35.0000		<50	50.0000			35.0000		<50	50.0000		<50	25.0000			25.0000					
C10-C36 Fraction (sum)							178	190.0000			35		<50	226		25.0000		<50	25.0000			556.0000		110.0000	25.0000			1426.0000			149.0000					
BTEX		-																																-		-
Benzene Toluene	µg/L or ppb µg/L or ppb	950	- :	-:-	-		0.5	<1 <2			0.5		<1	0.5	_	0.5000 1.0000		<1	0.5000			0.5000 1.0000		<1	0.5000 1.0000		<1	1.0000			0.5000 1.0000					
Fithulbenzene	µg/L or ppb						1	<2			1		-2	1	-	1.0000		-2	0.5000		-	1.0000		<2	1.0000		-2	1.0000		-	1.0000					
men-Xvlene	µg/L or ppb						1	<2			1		-2	1		1.0000		-2	1.0000			1.0000		-2	1.0000		-2	1.0000			1.0000			_		
o-Xviene Naphthalene	µg/L or ppb µg/L or ppb	-		-		-	1 2.5	<2 <5			1		-2	11	-	1.0000 2.0000		-2 -5	0.5000		-	1.0000 2.5000		<2 <5	1.0000 2.5000		-2	1.0000 2.0000			1.0000					_
Nutrients	pgr. or ppo				-	_	2.5	<5	-	_	Z		<5	2	_	2.0000		0	-			2.5000		<0	2.5000		<5	2.0000			2.0000		-		-	
Total Phosphorus	mg/L						0.0284	0.0400			0.0568		<0.01	0.0480		0.0680			0.1096			0.1260		0.3400	0.4064		0.1000	0.0740			0.0300		-	$\overline{}$		
Phosphate	mg/L	-					0.0110	<0.01			0.0142		<0.01	0.0126		0.0070		10.09	0.0504			0.0160		<0.01	0.0410		0.0200	0.0090			0.0070					
Total Nitrogen Total Kjeldahl Nitrogen	mg/L mg/L		-		-	-	0.5800 0.5800	0.6000			0.3800		0.4000	0.5786	-	0.7000		0.6000	0.4970			2.1600 2.1600		3.2000	1.1232 0.7752	_	0.6000	0.6600			0.7000	-	-			
Ntrate	mg/L					-	0.0250	0.0200			0.2460		0.0700	0.4000		0.4000		0.3400	0.0694			0.4000		0.0300	0,4546		0.5500	0.3678		-:-	0.1200					
Ntrite	mg/L.						0.0050	0.0200 <0.01			0.0050		< 0.01	0.0050		0.0050		<0.01	0.0050			0.0130		<0.01	0.0160		<0.01	0.0050			0.0050					
Ammonia	mg/L		-	-	-	-	0.1148	0.2400	-		0.0640		0.0400	0.0940		0.0440		0.0400	0.0424			0.7920		1.2900	0.2300		0.0200	0.0672			0.0310		-			
Maior anions Chloride	ma/L				-		1704.3180	1140 0000			15.2		13,0000	78.8		24.4400		37,0000	102.5453			948 8000		1540 0000	2340.3736		2320.0000	22,2000			39.1000		-	-	-	
Sulfate	mg/L	-					53.0000	31.0000			10.392		8.0000	61.8		10.5600			227.7600			2056.0000		2540.0000	2752.0000		2470.0000	22.9680			35.0000					
Bicarbonate	mg/L						63.6000	63.0000			27.4		21.0000	142.2		18.4000		13.0000	55.0000			61.2000		285.0000	942.0000		899.0000	34.4000			29.0000					_
Major cations Sodium	mg/L						865,6000	596,0000			18		18.0000	72.0000		29.0800		29.0000	151.5752			700,0000		4300 0000	1871.5397		1740.0000	28,2000			51,9000			-	-	-
Potassium	mg/L			-: 1	- :		2.0000	2.0000			0.96		ra.0000	5,0000		0.5000		29.0000	1 6257		- : 1	41 4000		60,0000	96.6986		88 0000	1.5509		-	0.5700	- :	- :	-:	-	
Calcium	mg/L						5.9909	5.0000			1.4797		1.0000	50.4000		1.4000		1.0000	5.7660			189.6000		355.0000	265.9524		276.0000	2.7120			1.2100					
Magnesium	mg/L	-			-		134.7963	82.0000			2		2.0000	11.8000	-	0.9280		1.0000	3.0800			306.2000		550.0000	565.0706		542.0000	8.0077			2.7300					
Physical Total Dissolved Solids	mg/L						3572.992	2570.0000			94.68		69.0000	130.624		132,6000		121.0000	464.8560			132 6000		9270 0000	8095,1200	_	9550 0000	106.3280			110.9040			=		
Field Physical data	rigic			_		_	3372.332	2570.0000			34.00		39.0000	130.024	_	732.0000		121.0000	404.0000		_	*32.0000		5270,0000	5099.1200		Uuuu.uccc	100.3200			110.3040					
Depth to standing water							16.802	16.20			8.7420		7.36	16.0140		8.4500		6.72	14.4820			1,2000		0.58	1.3520		0.80	17.4120			13.8440			$\neg$		
level from TOC	-11			-		-						5.0400	7.30		-		0.0000	0.72		0.0000	-		5,0000			0.7000			5.0400	-		-				
DH Conductivity	mS/cm	1 :					6.264 4.736 3630.000	5.84 4.15			6.7800	5.8100	0.169	7.0900 231.000		0.342	6.2080	0.216	7.34	6.2600		5.550	5.9220	6.19	7.3040 8366.000		6.87 12.3	6.9800 121.100	5.2400	$\div$	6.3960 5.5620 132.660			-		-
Temperature	oC			-			22 4420	21.54			22.3600		22.87	21 1500		22 6040		24.25	21.3000		- :	25.9820		18 79	22.5600		18.79	22.8200			23 1940			-		=
Dissolved Oxygen	mg/L		-					-1.54																										-		
Turbidity	NTU		-			-		1	1					1					l	1														, 1	1 1	
Total Dissolved Solids	mg/L																																			

# **APPENDIX B – Noise and Vibration Monitoring**

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Date	Time	Location	Rec ID	NCA	NML		Predicted levels for activity	Laeq	Lafmax	Lafmin	Lceq	Lafos	Laf10	Lafso	Laf90		Measure ments exceedin g criteria, plant/ operation s causing	Correctiv e actions	Notes
18/02/2016	1:40 PM	Albert Drive	74	1	50	Services	70	48.9	68	40.2	65.1	52.5	49.7	45.4	43.1	Utilities works	NA		Within predicted levels for activity
18/02/2016	2:11 PM	Cockburns Lane	16	1	50	Cut	65	47.1	68.3	40	62.1	48.4	47.3	44.8	42.5	Excavator	NA		Within predicted levels for activity
18/02/2016	1:15 PM	Bald Hill Rd	197	3	50	Cut	72	53.6	79.4	38.4	66.9	55.3	52.6	44	41.5	Moxy, truck + dog, excavator	NA		Within predicted levels for activity
18/02/2016	12:09 PM	Letitia Rd	406	4	59	Cut	74	61.9	80.2	45	75.2	68.5	64.3	54.9	50.4	Scrapers, dozer	NA		Within predicted levels for activity
24/02/2016	2:38 PM	Mattick Rd	442	6	44	Cut	62	57.3	86.6	45	73.9	61	57.5	50.4	47.3	Moxy, loader, utilities, trailer	NA		Within predicted levels for activity
18/02/2016	12:30 PM	Nursery Rd	415	4	59	NA	NA	46.9	55.4	41.1	60.2	50.1	49	46.2	43.6	Highway Traffic	NA	NA	Background - construction not audible
18/02/2016	12:50 PM	Wallace St	148	3	50	NA	NA	57.4	74.2	43.1	65.7	61.9	58.5	50.7	43.2	Highway, local traffic	NA	NA	Background - construction not audible
18/02/2016	11:39 AM	Gumma Rd	383	3	50	Bridgeworks	67	54.1	64.1	42.8	79.2	56.9	56.4	54	49.4	Roller, crane	NA		Within predicted levels for activity

#### Monthly Noise Monitoring Results March 2016

Date	Time	Location	Rec ID	NCA	NML	Activity	Predicted levels for activity	Laeq	Lafmax	Lafmin	LŒQ	Lafos	Laf10	Laf50	Laf90	Principal sources/ operation s	Measure ments exceedin g criteria, plant/ operation s causing		Notes
17/03/2016	4:09 PM	Albert Drive	74	1	50	Cut	62	51.5	72.7	38.3	67.6	54.7	50.8	45	42.1	Moxy, excavator	NA		Within predicted levels for activity
7/03/2016	2:30 PM	Cockburns Lane	16	1	50	Cut	65	52.8	72.4	43.9	64.5	53.4	51.6	48.8	46.9	Excavator loading	NA		Within predicted levels for activity
17/03/2016	2:45 PM	Bald Hill Rd	197	3	50	Cut	72	48.4	69.3	36.9	67	50.6	46.3	42.5	40.1	Truck + dog, loader	NA		Within predicted levels for activity
7/03/2016	4:03 PM	Letitia Rd	406	4	59	Cut	74	59.1	77.4	47.6	72.3	64.3	62	52.8	49.6	Dozer, grader	NA	NA	Within predicted levels for activity
7/03/2016	3:42 PM	Mattick Rd	442	6	44	Cut	62	49.7	66.3	38.7	71.3	56	53.1	43.9		loader, roller	NA		Within predicted levels for activity
7/03/2016	4:29 PM	Nursery Rd	415	4	59	NA	NA	62.6	81.1	50.3	70	68.8	66.1	55.7	53.3	Highway, mower	NA		Background - construction not audible
7/03/2016	3:03 PM	Wallace St	148	3	50	NA	NA	59.3	74.3	47.1	67.2	65.6	62.1	53.1	49.7	Highway	NA		Background - construction not audible
17/03/2016	3:28 PM	Gumma Rd	383	3	50	Bridgeworks	67	52.2	65.6	40.5	65.2	57.2	55.5	49.9	44.6	Crane, water truck	NA	NA	Within predicted levels for activity

#### Monthly Noise Monitoring Results April 2016



Date	Time	Location	Rec ID	NCA	NML		Predicted levels for activity		Lafmax	Lafmin	LCEQ	Lafos	Laf10	Lafso	LAEGO	Principal sources/ operation	Measure ments exceedin g criteria, plant/ operation s causing	e actions	Notes
6/04/2016	5:00 PM	Albert Drive	74	1	50	Cut	62	55.3	70.3	48.3	71.8	58.7	57.6	54.3	51.4	Excavator , moxy, LV traffic	NA	NA	Within predicted levels for activity
6/04/2016	1:30 PM	Cockburns Lane	16	1	50	Cut	65	50.2	73	42.8	62.7	51.5	50.6	47.1	45.2	Hand tools	NA	NA	Within predicted levels for activity
29/04/2016	1:10 PM	Bald Hill Rd	197	3	50	Cut	72	57.5	81.8	47	69.9	59.1	57.6	54.7	51.3	Excavator s + moxy being loaded	NA	NA	Within predicted levels for activity
29/04/2016	11:26 AM	Letitia Rd	406	4	59	Bridgeworks	55	45.5	63.5	37.5	62.9	48	46.2	43.2	41.1	Air compress or, crane	NA	NA	Within predicted levels for activity
29/04/2016	10:59 AM	Mattick Rd	442	6	44	Cut	62	55.6	69	45.9	62.6	60.6	58.9	53.1		Dozers, excavator s	NA	NA	Within predicted levels for activity

29/04/2016	11:53 AM	Nursery Rd	415	4	59	NA	NA	57.6	81.4	39.7	65.7	54.5	50.6	46.7	44	NA	NA	NA	Construction not audible; other sources: highway + local traffic, boat
29/04/2016	12:42 PM	Wallace St	148	3	50	NA	NA	54.6	70.2	43	61.5	61.5	57.2	49.5	45	NA	NA	NA	Construction not audible; other sources: highway + local traffic
29/04/2016	12:18 PM	Gumma Rd	383	3	50	Bridgeworks	67	55.2	78.4	45.6	65.5	59.3	58	53.1	49.6	Concrete boom truck, crane	NA		Within predicted levels for activity

#### Monthly Noise Monitoring Results May 2016

Date	Time	Location	Rec ID	NCA	NML	Activity	Predicted levels for activity	Laeq	Lafmax	Lafmin	Lceq	Lafos	Laf10	Laf50		operation	Measure ments exceedin g criteria, plant/ operation s causing	Correctiv e actions	Notes
20/05/2016	4:08 PM	Albert Drive	74	1	50	Cut	62	58.4	82.2	43.7	70.2	59.8	57.6	53.2	48.3	Excavator loading moxy	NA		Within predicted levels for activity
17/05/2016	2:45 PM	Cockburns Lane	16	1	50	Cut	65	55.4	74.7	42.3	63.8	61.7	59.6	49.4	45.5	Excavator loading rock	NA		Within predicted levels for activity
20/05/2016	1:23 PM	Bald Hill Rd	197	3	50	Cut	72	56.7	79.6	41.8	64.1	59.8	53.8	47.7	44.7	Rock hammeri ng	NA		Within predicted levels for activity
17/05/2016	4:10 PM	Letitia Rd	406	4	59	Cut	74	59.3	73.6	45.5	70.6	66.2	63	53.8	49.8	Scraper, grader, excavator	NA		Within predicted levels for activity
14/05/2016	4:08 PM	Mattick Rd	442	6	44	Cut	62	56.1	68.8	44.2	68.8	63	61.2	50.8	47.2	Scrapers	NA	NA	Within predicted levels for activity
17/05/2016	2:45 PM	Nursery Rd	415	4	59	NA	NA	60.1	77.1	47.7	64.7	64.5	62.1	57.1	53	NA	NA	NA	Construction not audible. Other noise sources - birds, highway
17/05/2016	3:45 PM	Wallace St	148	3	50	NA	NA	67.1	85.5	49	79.4	73.4	69.4	56.4	51.1	NA	NA		Construction not audible. Other noise sources - highway, local traffic
20/05/2016	1:11 PM	Gumma Rd	383	3	50	Bridgeworks	67	52.6	77.1	44	68.3	55.8	53.7	48.9	46.2	Formwor k, saw, grader, side tipper dumping, crane	NA	NA	Within predicted levels for activity

#### Monthly Noise Monitoring Results June 2016

Date	Time	Location	Rec ID	NCA	NML	Activity	Predicted levels for activity	Laeq	Lafmax	Lafmin	Lceq	Lafos	Laf10	Laf50	Laf90	sources/ oneration	Measure ments exceedin g criteria, plant/ operation s causing	Correctiv e actions	Notes
17/06/2016	1:52 PM	Albert Drive	74	1	50	Cut	62	48.4	67.8	38.9	60.6	51.6	49.9	46.5	43.3	Excavator	NA	NA	Within predicted level for activity
17/06/2016	12:01 PM	Cockburns Lane	16	1	50	Cut	65	43.3	65	37.1	58.5	44.9	44	41.5	39.5	Dozer	NA	NΔ	Within predicted level for activity
17/06/2016	1:10 PM	Bald Hill Rd	197	3	50	Cut	72	50.4	74.4	35.7	57.2	50	45.5	40.5	38.1	Moxy, concrete truck	NA		Within predicted level for activity
15/06/2016	3:53 PM	Letitia Rd	406	4	59	Cut	74	54.2	72.2	39.2	67.1	60.4	58.9	49.3	42	Excavator , hand tools, tractor broom	NA		Within predicted level for activity
15/06/2016	3:27 PM	Mattick Rd	442	6	44	Cut	62	54.5	70.2	45.6	64.7	59	57.6	52.8	50.5	Moxy dumping, compacto r rolling	NA		Within predicted level for activity
15/06/2016	4:10 PM	Nursery Rd	415	4	59	Bridgeworks	45	59.9	71.5	46.2	64.5	66	63.7	56.2	50.2	NA	NA	NA	Construction not audible - other sources: birds, highway traffic
17/06/2016	12:01 PM	Wallace St	148	3	50	Cut	47	51.5	67.2	37.1	63.3	58	53.3	43.5	40.1	NA	NA		Construction not audible - other sources: highway, traffic
15/06/2016	4:30 PM	Gumma Rd	383	3	50	Bridgeworks	67	54.4	76.6	42.7	64.4	60.4	58.5	48.1	44.7	Hand tools	NA	NA	Within predicted level for activity

#### Monthly Noise Monitoring Results July 2016

Date	Time	Location	Rec ID	NCA	NML	Activity	Predicted levels for activity	Laeq	Lafmax	Lafmin	LCEQ	Lafos	Laf10	Laf50		Principal sources/ operation s	Measure ments exceedin g criteria, plant/ operation s causing	Correctiv e actions	Notes
27/07/2016	12:30 PM	Albert Drive	74	1	50	Cut	62	54.4	74.8	45.2			55.3	50.6	47.8	Front End Loader	NA	NΔ	Other noise sources - highway
25/07/2016	11:53 AM	Cockburns Lane	16	1	50	Cut	65	47.9	58.8	42.5			50	47.3	45.6	Excavator	NA	NΔ	Other noise sources - highway
25/07/2016	4:50 PM	Bald Hill Rd	197	3	50	Cut	72	61	81.7	51.3			64.1	57.4	54.2	Excavator	NA	NA	Other noise sources - local traffic, highway
25/07/2016	4:01 PM	Letitia Rd	406	4	59	Cut	74	57.8	77.9	45			61.2	54.5	47.9	Dozer tracking + reversing			Other noise sources - local traffic

25/07/2016	3:30 PM	Mattick Rd	442	6	44	Cut	62	56.1	70.7	50.9		58	55.3	53.2	Excavator s, moxys, FEL	NA		Other noises - dogs barking, birds
25/07/2016	2:28 PM	Nursery Rd	415	4	59	Bridgeworks	NA	51.5	61.8	44.1		54.2	50.7	47.5	Bridgewo rks	NA	NA	Construction not audible. Other noise sources - highway, local traffic
27/07/2016	1:05 PM	Wallace St	148	3	50	Cut	NA	54.7	70.2	44.8		56.4	51.2	47.7	Excavator	NA	NA	Construction not audible. Other noise sources - highway, local traffic
25/07/2016	2:41 PM	Gumma Rd	383	3	50	Bridgeworks	67	53.5	66.8	41.9		56.7	52.1	46.7	Crane,	NA		Other noise sources -

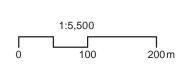
# **APPENDIX C – Air Quality Monitoring**

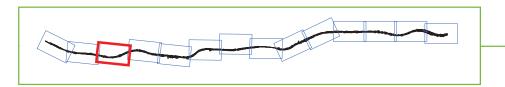
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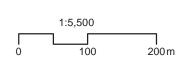
**Projection:** GDA 1994 MGA Zone 56 **Source:** RMS, AADJV, AFJV

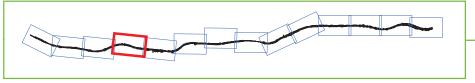
FIGURE: Dust Catchment Areas (Map 3 of 14)











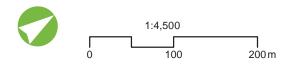
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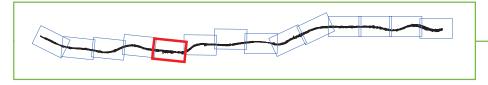
FIGURE: Dust Catchment Areas (Map 4 of 14)











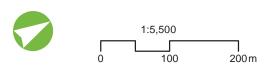
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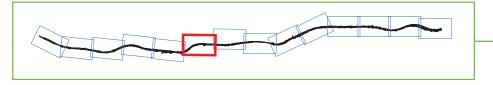
FIGURE: Dust Catchment Areas (Map 5 of 14)











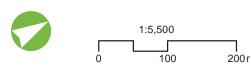
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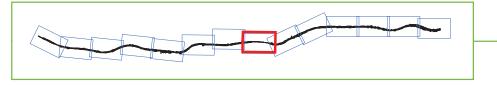
FIGURE: Dust Catchment Areas (Map 6 of 14)







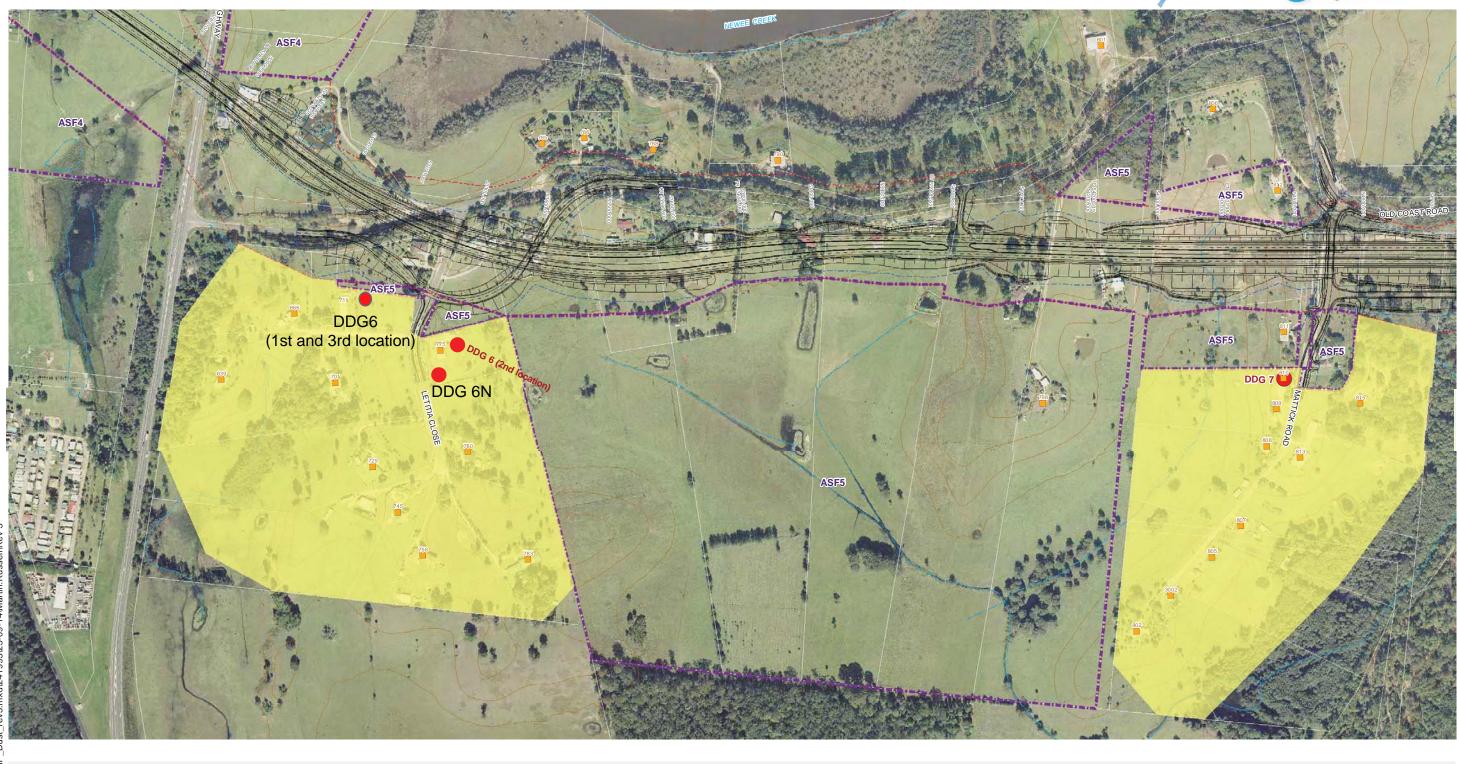




**Projection:** GDA 1994 MGA Zone 56 **Source:** RMS, AADJV, AFJV

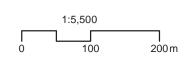
FIGURE: Dust Catchment Areas (Map 8 of 14)

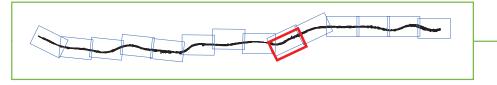










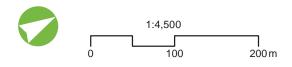


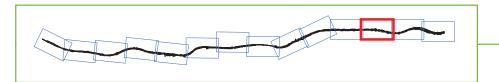
**Projection:** GDA 1994 MGA Zone 56 **Source:** RMS, AADJV, AFJV

FIGURE: Dust Catchment Areas (Map 9 of 14)









**Projection:** GDA 1994 MGA Zone 56 **Source:** RMS, AADJV, AFJV

FIGURE: Dust Catchment Areas (Map 12 of 14)

			DD	3 ID	DDG1	DDG2	DDG3	DDG4	DDG5	DDG6	DDG7	DDG8	DDG A1	DDG A2
			Start date						8/01/2016				8/01/2016	8/01/2016
			Finish		5/02/2016								29/02/2016	
Analyte	Fime Perio	Unit	els of Conc	LOR	.,.,	.,.,	.,.,	.,.,	.,.,	.,.,	.,.,	.,.,	.,.,	,,,,,
- ,	Current	g/m².mont	4	0.1	0.4	0.5	2.2	0.6	49.4	0.8	0.6	1.2		
	Month	mg	N/A	1	6	9	36	10	814	14	10	19		
Ash Conten	Previous Month	g/m².mont	th		0.1	0.4	0.9	0.4	15.7	0.8	0.4	0.7		
	Change	g/m².mon	ncrease of	2	0.3	0.1	1.3	0.2	33.7	0	0.2	0.5		
Combusti	Current	g/m².mont	N/A	0.1	0.5	0.5	0.5	0.4	8.7	0.5	0.1	0.5		
ble	Month	mg	N/A	1	9	7	9	6	144	7	2	9		
Total	Current	g/m².mon	4	0.1	0.9	1	2.7	1	58.1	1.3	0.7	1.7		
Insoluble	Month	mg	N/A	1	15	16	45	16	958	21	12	28		
Matter (TIM)	Previous Month	g/m².mon	th	0.1	0.2	0.9	1.5	0.4	18.6	0.8	0.7	1.3		
(11101)	Change	g/m².mon	ncrease of	0.1	0.7	0.1	1.2	0.6	39.5	0.5	0	0.4		
Arsenic	Current Month	mg/L		0.001									0.003	<0.001
Comments	3				Insects in gauge		Sprouted grass seeds in gauge	Insects in gauge	Vegetation + insects in gauge, appeared cloudy					insects in gauge

#### Monthly Dust Monitoring Results -March/April 2016

			DDC		DDG1	DDG2	DDG3	DDG4	DDG5	DDG5E	DDG5W	DDG6	DDG7	DDG8	DDG9N	DDG9NE		DDG A2
			Start date of	of sampling	8/03/2016	8/03/2016	8/03/2016	8/03/2016	8/03/2016	8/03/2016	8/03/2016	8/03/2016	8/03/2016	8/03/2016	8/03/2016	8/03/2016	8/03/2016	8/03/2016
			Finish o	late of	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016
Analyte	Time Period	Unit	els of Conc	LOR														
	Current	g/m².mont	4	0.1	0.5	0.6	0.7	0.9	203	2.3	220	8.1	1.2	NA	1.3	1		
	Month	mg	N/A	1	9	10	12	15	3470	39	3750	138	21	NA	22	17		
Ash Conten		g/m².mont	:h		0.3	0.4	1.2	0.6	187	1.1	679	4.2	0.9	2.1				
	Change	g/m².mont	ncrease of 2	2	0.2	0.2	-0.5	0.3	16	1.2	-459	3.9	0.3	NA				
Combusti	Current	g/m².mont	N/A	0.1	0.4	0.4	0.4	0.5	14.9	0.6	19	1.1	0.4	NA	0.4	0.3		
ble	Month	mg	N/A	1	6	7	7	9	254	10	326	20	6	NA	7	6		
Total	Current	g/m².mont	4	0.1	0.9	1	1.1	1.4	218	2.9	239	9.2	1.6	NA	1.7	1.3		
Insoluble	Month	mg	N/A	1	15	17	19	24	3720	49	4080	158	27	NA	29	23		
Matter (TIM)	Previous Month	g/m².mont	:h	0.1	0.4	0.5	1.3	0.8	218	1.4	751	8.1	1.2	2.7				
(TIIVI)	Change	g/m².mont	ncrease of	0.1	0.5	0.5	-0.2	0.6	0	0.9	-531	1.1	0.4	NA				
	Current Month	mg/L		0.001													<0.001	<0.001
Comments	•								Clumps of dirt in gauge		Clumps of dirt in gauge	Grass in gauge		Gauge broken				

#### Monthly Dust Monitoring Results -April/May 2016

			DDG	i ID	DDG1	DDG2	DDG3	DDG4	DDG5	DDG5E	DDG5W	DDG6	DDG7	DDG8	DDG9N	DDG9NE	DDG A1	DDG A2
			Start date o	of sampling	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016	6/04/2016
			Finish d	late of	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016
Analyte	Fime Period	Unit	els of Conc	LOR														
	Current	g/m².mont		0.1	0.2	0.5	1.6	3.6	24.6	0.5	347	0.5	0.4	1.3	0.5	0.3		
		mg	N/A	1	4	9	26	59	405	8	5730	9	6	21	9	5		
Ash Conten		g/m².mont	h		0.5	0.6	0.7	0.9	203	2.3	220	8.1	1.2	NA	1	1.3		
	Change	g/m².mont	ncrease of 2	!	-0.3	-0.1	0.9	2.7	-178.4	-1.8	127	-7.6	-0.8	NA	-0.5	-1		
Combusti	Current	g/m².mont	N/A	0.1	0.3	0.2	0.6	0.8	2.2	0.6	24.3	0.5	0.2	1.5	<0.1	0.5		
ble		mg	N/A	1	5	2	10	14	37	10	401	8	4	26	<1	8		
Total	Current	g/m².mont	4	0.1	0.5	0.7	2.2	4.4	26.8	1.1	372	1	0.6	2.8	0.5	0.8		
Insoluble	Month	mg	N/A	1	9	11	36	73	442	18	6130	17	10	47	9	13		
Matter (TIM)	Previous Month	g/m².mont	h	0.1	0.9	1	1.1	1.4	218	2.9	239	9.2	1.6	NA	1.3	1.7		
(11101)	Change	g/m².mont	ncrease of	0.1	-0.4	-0.3	1.1	3	-191.2	-1.8	133	-8.2	-1	NA	-0.8	-0.9		
	Current Month	mg/L		0.001													<0.001	<0.001
Comments					Insects in gauge - ants	Insects in ga	auge		Dirt in gauge		Dirt clumps in gauge						Wasp + grass in gauge	Grass in gauge

#### Monthly Dust Monitoring Results -May/June 2016

			DDC	G ID	DDG1	DDG2	DDG3	DDG4	DDG5	DDG5E	DDG5W	DDG6	DDG7	DDG8	DDG9N	DDG9NE	DDG A1	DDG A2
			Start date of	of sampling	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016	4/05/2016
			Finish o	late of	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016
Analyte	Fime Period	Unit	els of Conc	LOR														
	Current	g/m².mont	4	0.1	0.2	0.6	0.2	0.5	0.9	0.7	0.5	0.7	0.3	1.2	0.2	0.5		
	Month	mg	N/A	1	4	11	4	8	16	13	8	13	6	21	4	8		
Ash Conten		g/m².mont	th		0.2	0.5	1.6	3.6	24.6	0.5	347	0.5	0.4	1.3	0.5	0.3		
	Change	g/m <sup>2</sup> .mont	ncrease of 2	2	0	0.1	-1.4	-3.1	-23.7	0.2	-346.5	0.2	-0.1	NA	-0.3	0.2		
Combusti	Current	g/m <sup>2</sup> .mont	N/A	0.1	0.2	0.1	0.1	<0.1	0.2	0.1	<0.1	0.1	0.2	0.2	0.3	0.1		
ble	Month	mg	N/A	1	3	2	1	1	4	2	<1	2	2	4	4	3		
Total	Current	g/m².mont	4	0.1	0.4	0.7	0.3	0.5	1.1	0.8	0.5	0.8	0.5	1.4	0.5	0.6	-	
Insoluble	Month	mg	N/A	1	7	13	5	9	20	15	8	15	8	25	8	11		
Matter (TIM)	Previous Month	g/m².mont	th	0.1	0.5	0.7	2.2	4.4	26.8	1.1	372	1	0.6	2.8	0.5	0.8		
(TIIVI)	Change	g/m².mont	ncrease of	0.1	-0.1	0	-1.9	-3.9	-25.7	-0.3	-371.5	-0.2	-0.1	NA	0	-0.2		
	Current Month	mg/L		0.001													0.033	<0.001
Comments					Small insects in gauge	·	Leaf in gauge							Leaf in gauge				

			DDC		DDG1	DDG2	DDG3	DDG4	DDG5	DDG5E	DDG5W	DDG6	DDG7	DDG8	DDG9N	DDG9NE	DDG A1	DDG A2
			Start date of	of sampling	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016	3/06/2016
			Finish o	date of	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016
Analyte	Fime Period	Unit	els of Cond	LOR														
	Current	g/m².mont	4	0.1	0.1	0.4	1.8	0.5	0.4	1.1	0.7	19.7	0.2	0.1	1	0.4		
	Month	mg	N/A	1	2	7	33	9	8	20	13	372	3	1	18	8		
Ash Conten		g/m².mont	th.		0.2	0.6	0.2	0.5	0.9	0.7	0.5	0.7	0.3	1.2	0.2	0.5		
	Change	g/m².mont	ncrease of 2	2	-0.1	-0.2	1.6	0	-0.5	0.4	0.2	19	-0.1	-1.1	0.8	-0.1		
Combusti	Current	g/m².mont	N/A	0.1	0.3	0.4	0.9	0.4	0.4	0.4	0.3	4.8	0.3	0.5	0.2	0.2		
ble	Month	mg	N/A	1	6	9	17	8	8	8	6	90	7	10	4	4		
Total	Current	g/m <sup>2</sup> .mont	4	0.1	0.4	0.8	2.7	0.9	0.8	1.5	1	24.5	0.5	0.6	1.2	0.6		
Insoluble	Month	mg	N/A	1	8	16	50	17	16	28	19	462	10	11	22	12		
Matter (TIM)	Previous Month	g/m².mont	h	0.1	0.5	0.7	2.2	4.4	26.8	1.1	372	1	0.6	2.8	0.5	0.8		
(11111)	Change	g/m².mont	ncrease of	0.1	-0.1	0.1	0.5	-3.5	-26	0.4	-371	23.5	-0.1	-2.2	0.7	-0.2		
Arsenic	Current Month	mg/L		0.001													<0.001	<0.001
Comments																		

#### Monthly Dust Monitoring Results -July/Aug 2016

			DDO	G ID	DDG1	DDG2	DDG3	DDG4	DDG5	DDG5E	DDG5W	DDG6	DDG7	DDG8	DDG9N	DDG9NE	DDG A1	DDG A2
			Start date of	of sampling	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016	5/07/2016
			Finish o	late of	2/08/2016	2/08/2016	2/08/2016	2/08/2016	2/08/2016	2/08/2016	2/08/2016	2/08/2016	2/08/2016	2/08/2016	2/08/2016	2/08/2016	2/08/2016	2/08/2016
Analyte	Fime Period	Unit	els of Conc	LOR														
	Current	g/m².mont	4	0.1	0.1	0.3	0.8	0.1	0.7	0.2	0.2	6.1	0.4	0.3	0.8	0.3		
	Month	mg	N/A	1	1	5	13	1	11	4	3	101	6	5	13	5		
Ash Conten		g/m².mont	h		0.1	0.4	1.8	0.5	0.4	1.1	0.7	19.7	0.2	0.1	1	0.4		
	Change	g/m².mont	ncrease of 2	2	0	-0.1	-1	-0.4	0.3	-0.9	-0.5	-13.6	0.2	0.2	-0.2	-0.1		
Combusti	Current	g/m².mont	N/A	0.1	0.1	0.1	0.8	0.3	0.2	0.2	<0.1	1.1	<0.1	0.2	0.2	0.1		
ble	Month	mg	N/A	1	3	2	14	5	4	3	1	17	<1	4	3	2		
Total	Current	g/m².mont	4	0.1	0.2	0.4	1.6	0.4	0.9	0.4	0.2	7.2	0.4	0.5	1	0.4		
Insoluble	Month	mg	N/A	1	4	7	27	6	15	7	4	118	6	9	16	7		
Matter (TIM)	Previous Month	g/m².mont	h	0.1	0.4	0.8	2.7	0.9	0.8	1.5	1	24.5	0.5	0.6	1.2	0.6		
(TIIVI)	Change	g/m².mont	ncrease of	0.1	-0.2	-0.4	-1.1	-0.5	0.1	-1.1	-0.8	-17.3	-0.1	-0.1	-0.2	-0.2		
Arsenic	Current Month	mg/L		0.001													<0.001	0.002
Comments							Grass clipping in gauge		·		Insects in gauge					·		·

### APPENDIX D -Complaints related to Environmental issues

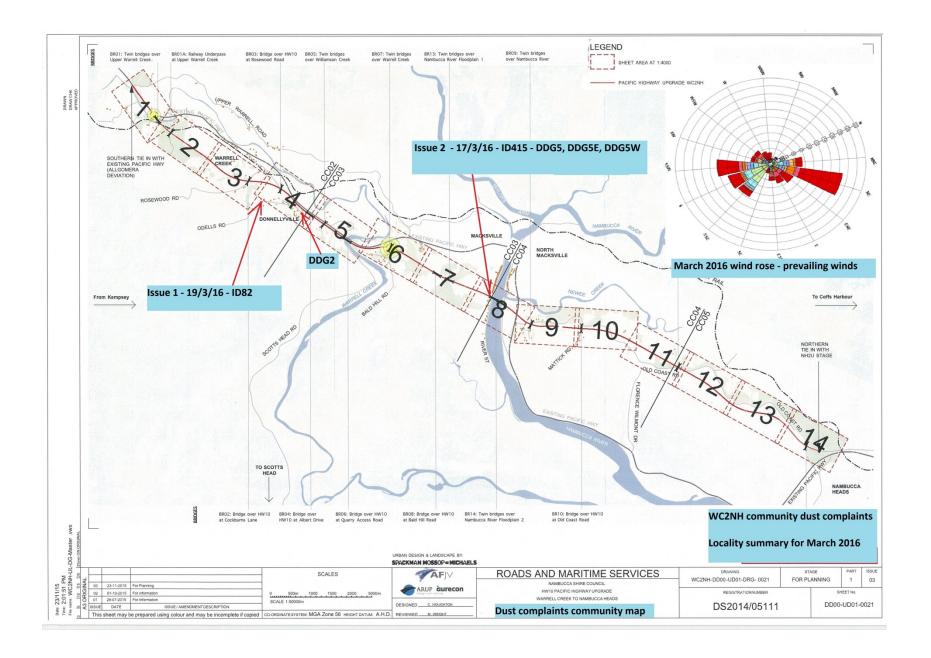
This Appendix provides information relating to environmental complaints received by the project.

Appendix D.1 provides information on dust related issues; Appendix D.2 relates to non-dust related matters.

#### D.1 Dust related complaints

The following sheets provide a detailed analysis of the dust related complaints reviewed by the project during the reporting period. The sheets show the details for 2 complaints in March 2016, 2 complaints in April 2016 and 8 complaints in May 2016 discussed in Section 6.3. No dust related complaints were received by the project in February, June, July or August (up to 8 August which is the end of the reporting period)

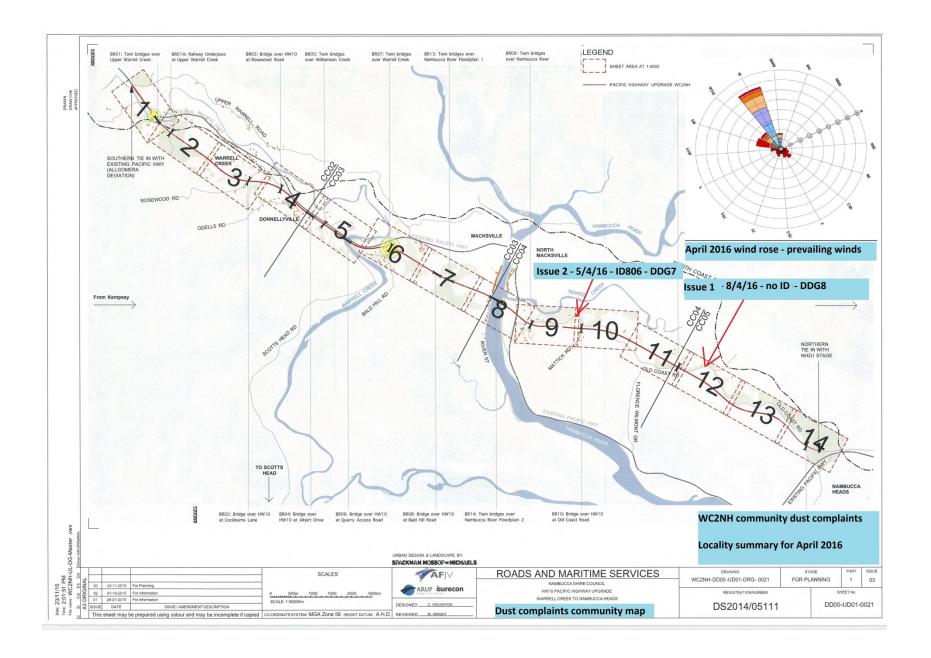
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#### March 2016 dust complaints

	aust compia						We	eather: 09:00 t	to 17:00.			Mitigations	Dust gua	ages (DDG)
Dat	e Location	Receiver ID	Time	Торіс	Wind direction	Ave wind speed (km/hr)	Ave wind speed Direction	Max wind gust (km/hr)	Max wind gust Direction	Temp (°C)	Works activity	Initial and/or ongoing	DDG No.	Results (<4mg/m2/month
1 Sat 19/03		d 82	13:46	Dust and pool equipment/water supply. Abusive behaviour by complainant at the Community Display Office		11.3	SSW	20.1	SSE	23.8		Following the complainant's confrontational site visit, an email followed from him soon after at 14:03. Likely ongoing before resolution. The wind rose shows prevailing winds for the period between 09:00 and 17:00 on 19/3/16.	None nearby	n/a
2 17/3	16 River St	415	15:30	Telephone to complain of large volumes of dust over the past 3 days from the bridgeworks activities. In addition to his personal discomfort, also affecting his paddocks and his cattle's grazing.		29.3	SSE	43.4	NE	28.7		Immediate internal actions mobilising Site supervision to inspect the area and implement mmeasures such as instructing all vehicle drivers to slow down, additional water carts to target the problem areas. Complainant refused an offer of respite but accepted a site tour at some point in the near future. The windrose depicts prevailing winds for the period from 14/3 to 17/3.	DDG5W.	DDG5E =1.4. DDG5 = 218. DDG5W = 751. Following consultation with NSW EPA, results from DDG5 & DDG5W are ignored due to tampering.

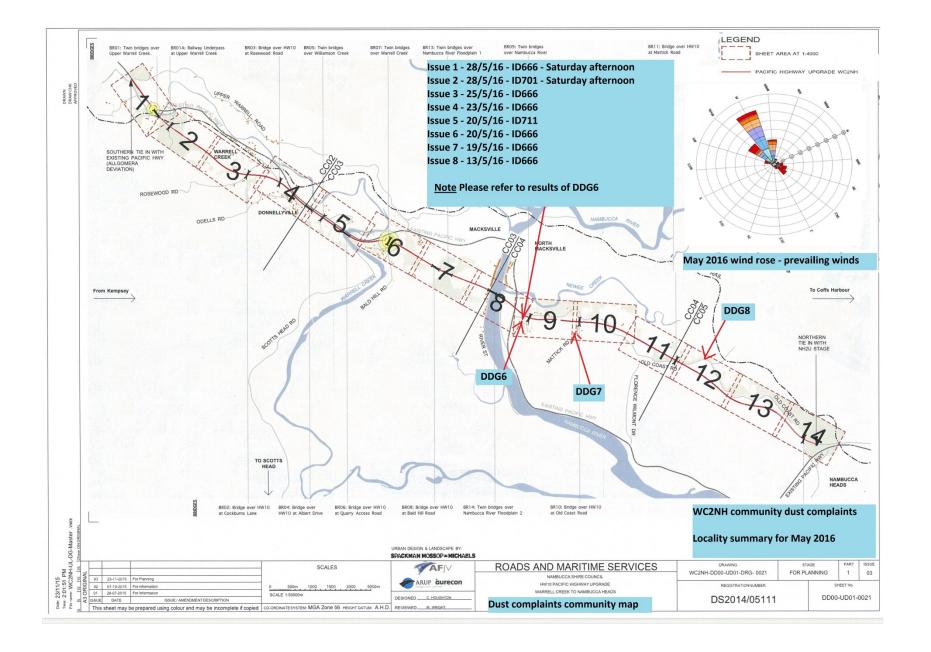
Note. Sampling methodology, sampling period, analysis & reporting is in accordance with AS3580.10.1-2003. Results are reported in arrears for the previous 30 days (+/- 2 days.).



#### April 2016 dust complaints

		complaints						We	eather: 09:00	to 17:00.			Mitigations	Dust gu	iages (DDG)
	Date	Location	Receiver ID	Time	Topic	Wind direction	Ave wind speed (km/hr)	Ave wind speed Direction	Max wind gust (km/hr)	Max wind gust Direction	Temp (°C)	Works activity	Initial and/or ongoing	DDG No.	Results (<4mg/m2/month )
1	8/04/16	Old Coast Rd	none	16:51	Dust exacerbating or causing health issues	n/a	n/a	n/a	n/a	n/a	n/a	General earthworks	Emailed response on 11/4/16, advising of settlement of a previous claim for tyre damage and an acknowledgement of the complainant's health concerns	DDG8	No results reported. Dust guage damage as reported by complainant on 17/3/16. Consulted with complainant at the time as to the integrity of any sample obtained in this monitoring period.
2	5/04/16	Mattick Rd	806	8:32	Email & complaint to the 1800(etc.) about dust		25.7	w	36.7	NE	28.1	General construction	Arranged immediately for the allocation of a water cart to the area. The wind rose shows prevailing winds for th period between 09:00 and 17:00 on 5/4/16.	DDG7	1.6

Note. Sampling methodology, sampling period, analysis & reporting is in accordance with AS3580.10.1-2003. Results are reported in arrears for the previous 30 days (+/- 2 days.).



May 2016 dust complaints.

	dust compla							eather: 09:00				Mitigations	Dust g	uages (DDG)
Date	Location	Receiver ID	Time	Topic	Wind direction	Ave wind speed (km/hr)	Ave wind speed Direction	Max wind gust (km/hr)	Max wind gust Direction	Temp (°C)	Works activity	Initial and/or ongoing	DDG No.	Results (<4mg/m2/month )
1 Sat.	Lettitia Cl.	666	15:45	Windy day causing dust. Phone call from complainant about dust being blown around off the earthworks.		37.1	w	48.5	w	20.5	Saturday afternoon - no works in progress. Not permitted in this area under approved hours of work - 08:00 to 13:00. Use of water carts out of approved hours is permitted using the Out-of-Hours permit	Due to weather forecast for strong afternoon winds, a water cart already on standby allocated to the area and authorised to operate as he saw fit in the conditions. Operator was advised to continue	DDG6	1
28/05/	16	701	15:30	Returned previous phone call at 1pm to 1800 number and discussed complaint about the "horrendous, windy conditions" blowing dust around off the earthworks.			·				029, obtained on 2/10/15 to allow ongoing, proactive management of dust generation due to weather conditions during weekends and public holidays and remains in force until 31/12/18.	watering in the complainant's area. Use of water carts out of approved hours is permitted using the Out-of-Hours permit 029, obtained on 15/10/15.	3360	
<b>3</b> 25/5/1	L6 Lettitia Cl.	666	11:22	Complainant called to request an immediate onsite meeting about dust from earthworks		15	ENE	18.9	E	21.4	General earthworks	Area managers ceased the activity. Held an onsite meeting held the complainants within the hour. Agreement on more efficient use of water carts during earthworks as well as the option to cease the activity should conditions be considered extreme.	DDG6	1
4 23/5/1	l.6 Lettitia Cl.	666	14:17	Call from area manager confirming the onsite meeting arranged Friday 20/5/16, following the direct call complaining to them of dust from earthworks.		14.7	ENE	18.9	ENE	27.2	General earthworks	Area managers met with the complainant around 15:00 as arranged. Explained that they had undertaken toolbox information sessions with the relevant work crews and subcontractors. Today they had mobilised additional water carts to better manage dust from earthworks. Based on this discussion and "from what he had seen today", the complainant was satisfied with the actions described and left open the option of cleaning his property at some time in the future.	DDG6	1
5		711	16:00	Call to 1800(etc) complaining that the pool "is full of dust".								Arranged to visit the complainants to discuss options.	DDG6	1
20/5/1	L6 Lettitia Cl.	666	10:00	Called area managers direct to complain of dust from earthworks.		19.9	ENE	23.7	ENE	26.7	General earthworks	Area managers ceased the activity and arranged an onsite meeting for the following Monday 23/5/16. Discussions were to focus on options available to better manage dust generated by the earthworks. Options could include more efficient use of water carts during earthworks as well as the option to cease the activity should weather conditions be considered extreme.	DDG6	0.8
<b>7</b> 19/5/1	L6 Lettitia Cl.	666	11:58	Dust around the property noted after returning from a two-week absence. absence	n/a	n/a	n/a	n/a	n/a	n/a	General earthworks	Discussed options for cleaning but this was refused by the complainant. Site managers will monitor resources to manage dust generation, including better use of water carts.	DDG6	0.8

8 13/5/16	5 Lettitia Cl.	711	9:42	Dust due to earthworks and weather conditions (westerlies)		15.6	ENE	18.9	ENE	24.4	General earthworks	Area managers ceased the activity. Held an onsite meeting held the complainants within the hour. Agreement on more efficient use of water carts during earthworks as well as the option to cease the activity should weather conditions be considered extreme.	DDG6	1	
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Note. Sampling methodology, sampling period, analysis & reporting is in accordance with AS3580.10.1-2003. Results are reported in arrears for the previous 30 days (+/- 2 days.).

### D.2 Non-dust related complaints

The table below summarises the complaints received by the project during the reporting period.

Date	Complaint type	Summary	Response
06/07/2016	Vibration	Felt vibrations again late in the afternoon – complained of sore teeth and migraine	Since the first complaint monitoring has been undertaken at various times with various machinery working to determine vibration impacts, if any. All monitoring outcomes were collated and presented to resident by Pacifico.
04/07/2016	Vibration	Woken up at around 8am because of vibrations.	Continuing to monitor with view to provide feedback.
29/06/2016	Vibration	Felt her windows vibrating and watching machinery nearby she believes is causing impact on her property.	Monitoring was undertaken a few days later and found to be well below acceptable human comfort levels.
15/06/2026	Run-off and drainage	Unhappy that project drains into land that she uses for gardening etc.	Site inspected and drainage temporarily stopped and released elsewhere despite having licence to discharge at this location. Ongoing issue through solicitors.
09/06/2016	Drainage	Drainage and drainage design not effectively managing rainfall events.	Feedback over heavy rainfall weekend 5 and 6 June led to enviro officer and superintendent inspection of location. Many meetings occurred and some upgrade works carried out to ensure appropriate drainage controls.
05/06/2016	Run-off	Unhappy about project allowing direct run-off into river	Environment Officer investigated location after having been in that location many times earlier that day – complainant advised Project retained as much run-off as possible, well within licence requirements.

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Date	Complaint type	Summary	Response
22/04/2016	Odour	Fumes from traffic control vehicle were impacting his property.	Controllers instructed to ensure vehicles are turned off when they are parked near this residential property.
18/04/2016	Noise (OOHW)	Unhappy with noise on Saturday afternoon.	Resident was reminded that he had agreed with the work on Saturday afternoon. He was ok with the work once reminded he had signed the agreement.
06/04/2016	Muddy driveway / drainage	Resident mentioned that recently she found it difficult to drive up the driveway when wet.	There is some obvious clay lying on the driveway, Pacifico will scrape it off prior to finishing for the day. The project will spread road base at that location in front of the water cart which will be enough to make the driveway safe.
10/03/2016	Vegetation clearing	Disgruntled with contradictory statements about clearing, don't feel the project has consulted appropriately.	Project held a meeting with residents where they stated their frustration about general amenity impacts. The footprint of the proposed design is impacting on visual amenities and noise levels, a meeting with RMS to discuss AHNT was organised.
04/03/2016	Vegetation clearing	Complained about the clearing required by the property adjustment works and refuse to sign up for proposed works until they have guaranteed that the trees in their front yard remain + both driveways (to house and to stud farm) are kept operational.	A meeting was held on site and the project agreed to minimise the footprint as much as possible.

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## **APPENDIX E – Compliance Tracking Tables**

E.1 Minister's Conditions of Approval

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CoA No.	Requirement	Stage	Timing	Status	Reference / Comment				
Part A	rt A – Administrative conditions								
	Terms of approval								
A1	The Proponent shall carry out the project generally in accordance with the:  a Major Projects Application 07_0112;  b Upgrading the Pacific Highway – Warrell Creek to Urunga – Environmental Assessment (Volumes 1 and 2), prepared by Sinclair Knight Merz Pty Ltd for the NSW Roads and Traffic Authority and dated January 2010;  c Upgrading the Pacific Highway – Warrell Creek to Urunga – Environmental Assessment Submissions and Preferred Project Report, prepared by the NSW Roads and Traffic Authority and dated November 2010;  d Letter from the NSW Roads and Traffic Authority titled Pacific Highway Upgrade – Warrell Creek to Urunga Upgrade Addendum to Submissions Report – Fauna Crossing Structures, dated 25 May 2011 and accompanying attachments and Letter from the NSW Roads and Traffic Authority titled Pacific Highway Upgrade – Warrell Creek to Urunga Upgrade Addendum to Submissions Report – Fauna Crossing Structures, dated 1 June 2011 and accompanying attachment;  e The Roads and Maritime Services modification request and letter dated 23 October 2012 (07_0112 MOD1);  f The Roads and Maritime Services modification	Stage 1 and 2	Preconstruction, Construction and Operation	Open	Status of Compliance with this condition is detailed in this document. The Scope of Work and Technical Criteria (SWTC) requires compliance with these documents.  The Project has prepared seven Consistency Reviews this reporting period that compare the proposed detailed design to the concept design. Details of the Consistency Reviews are provided in Section 9 above.				

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CoA No.		Requirement	Stage	Timing	Status	Reference / Comment
		request and letter dated 23 November 2012 to correct a minor error in condition C28 (07_0112 MOD2);				
	g	The Roads and Maritime Services modification request and letter dated 18 January 2013 to correct minor errors in condition A1 (07_0112 MOD3);				
	h	The Roads and Maritime Services modification request and letter dated 13 February 2013 to amend the definition of construction in Schedule 1 (07_0112 MOD4);				
	i	The Roads and Maritime Services modification request and letter dated 9 September 2013 to amend the heritage management requirements in conditions C16 and C27 (07_0112 MOD5);				
	j	The Roads and Maritime Services modification request and letter dated 12 February 2014 to delete reference to 'vegetation group remnant forest' conservation area in condition C15 (07_0112 MOD6);				
	k	The Roads and Maritime Services modification request and letter dated 29 October 2014 to delete reference to four cultural sites in condition C14 (07_0112 MOD7);				
	I	The Roads and Roads and Maritime Services modification request and letter dated 21 March 2016 and Pacific Highway Upgrade – Warrell Creek to Nambucca Heads North Macksville Ramps – Modification Environmental Assessment, prepared by Arup Aurecon Design Joint Venture and dated March 2016; and				

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CoA No.	Requirement	Stage	Timing	Status	Reference / Comment
	m The conditions of this approval.				
A2	In the event of an inconsistency between:  a the conditions of this approval and any document listed from condition A1(a) to A1(j) inclusive, the conditions of this approval shall prevail to the extent of the inconsistency; and;  b any document listed from condition A1 (a) to A1 (j) inclusive, and any other document listed from condition A1 (a) and A1 (j) inclusive, the most recent document shall prevail to the extent of the inconsistency.	Stage 1 and 2	Preconstruction, Construction and Operation	Open	No issues were prevalent during the reporting period.
A3	The Proponent shall comply with any reasonable requirement(s) of the Director General arising from the Department's assessment of:  a any reports, plans or correspondence that are submitted in accordance with this approval; and b the implementation of any actions or measures contained within these reports, plans or correspondence.	Stage 1 and 2	Preconstruction, Construction and Operation	Open	No requests have been raised by the Director General in the reporting period.
A4	Subject to confidentiality, the Proponent shall make all	Stage 1 and 2	Preconstruction, Construction	Open	All documents required under the Planning Approval are available for public inspection on the Project Website and

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	documents required under this approval available for public inspection on request.		and Operation		in the Community Display Centre located at 124 Albert Drive, Warrell Creek. The documents currently available include:
					- Approved CEMP and Sub-plans
					- Nest Box Management Plan
					- Threatened Flora Management Plan
					- Ecological Monitoring Program
					- Water Quality Monitoring Program
					- Community Involvement Plan (Community Communications Strategy).
					- Construction Compliance Tracking Reports #1 and #1
					- Urban Design and Landscape Plan
					- Nambucca River and Floodplain Flood Modelling Report
					- Fauna Connectivity Report
					- Biodiversity Offset Strategy
					Project Approval documents are available on the RMS Project Website: Link to website with project Documents
	Staging				
A5	The Proponent may elect to construct and/ or operate the project in stages. Where staging of the project is proposed, these conditions of approval are only required to be complied with at the relevant time and to	Stage 1 and 2	Preconstruction	Closed	Initial staging report issued to DPE on 12 March 2013 in regards Stage 1 and Stage 2, stage 2 being Warrell Creek to Urunga. Updated staging report for Stage 2 (2.1 and 2.2) issued to DPE on 19 February 2014. DPE responded 23 May 2014 noting the staging report satisfactorily

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	the extent that they are relevant to the specific stages of works. Where staging is proposed, the Proponent shall submit a Staging Report to the Director General prior to the commencement of the first proposed stage, which provide details of:				addressed requirements of MCoA A5.
	how the project 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 project.				
	The Proponent shall ensure that an updated Staging Report (or advice that no changes to staging are proposed) is submitted to the Director General prior to the commencement of each stage, identifying any changes to proposed staging or applicable conditions.				
	The Proponent shall ensure that relevant plans, sub- plans and other management documents required by the conditions of this approval relevant to each stage (as identified in the Staging Report) are submitted to the Director General. no later than one month prior to the commencement of the relevant stages, unless an alternative timeframe is agreed to by the Director General.				

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	Statutory requirements							
A6	The Proponent shall ensure that all necessary licences, permits and approvals required for the development of the project are obtained and maintained as required throughout the life of the project. No condition of this approval removes the obligation for the Proponent to obtain, renew or comply with such necessary licences, permits or approvals except as provided under Section 75U of the Act. This shall include relevant certification requirements in accordance with section 109R of the Act.	Stage 1 and 2	Preconstruction, Construction and Operations	Open	AFJV (Acciona Infrastructure) have obtained an Environment Protection Licence (EPL 20533) pursuant to Section 48 of the Protection of the Environment Operations Act 1997 (POEO Act). A copy of the licence is kept on the premises and is publically available on the Acciona Infrastructure website:  Link to Acciona Website and Environmental Documents and RMS Website Link to Project Documents  A list of the groundwater bore and surface water permits is available in Section 9 above.			
	Limits of approval							
A7	This approval shall lapse ten years after the date on which it is granted, unless construction works the subject of this project approval are physically commenced on or before that date.	Stage 1 and 2	Preconstruction	Closed	Construction for WC2NH commenced on 9 February 2015			
A8	The Proponent shall implement the bridge crossing option (Option 2 in the Environmental Assessment) to traverse the floodplain from the northern bank of the Nambucca River to the existing Pacific Highway.	Stage 2	Preconstruction and Construction	Closed	Option 2 has been adopted and has been incorporated into the detailed design of the Nambucca River bridge structure. Construction has commenced on 9 February 2015 with construction commencing on the Nambucca Bridge structure in July 2015.			
A9	The proposed trailer exchange facility located in the vicinity of the Nambucca Heads rest area does not form part of this approval.	Stage 2	NA	NA	Not included in the scope of this Project			

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	Biodiversity – Mitigation measures – Fauna an	d Waterway C	Crossings		
B1	The Proponent shall implement the fauna and waterway crossings identified in the documents listed under condition A1 (d) at the locations and in accordance with the minimum design dimensions identified in the documents listed under condition A1 (d), unless otherwise agreed to by the Director General.	Stage 1 and 2	Preconstruction and Construction	Open	Fauna crossing structures and waterway crossings have been designed to address the minimum requirements in the letter "Pacific Highway Upgrade – Warrell Creek to Urunga Upgrade Addendum to Submission Report – Fauna Crossing Structures (25/5/11)" referred to in condition A1 (d) and progressed by AFJV in detailed design with ecological input.
	Conordi.				Consultation has been undertaken with EPA, DPI and DoE. Structures have been refined in consultation with EPA and DPI (Fisheries); several locations of the combined and dedicated structures have been moved as a result of this consultation. Specific fauna crossings/ fish passage requirements outlined within SWTC App 4.5 and Table 4.1 as well as SWTC App 5.
					Initial fauna and fish design discussions were held with EPA and DPI on 18 June 2014 (ERG 2).
					Onsite investigation / walkthrough with EPA, DoE and experienced ecologists to determine fauna crossing arrangements was undertaken in Aug 2014. The outcomes of this meeting were used to update the SWTC Table 4.1 to ensure the most appropriate underpass locations were identified and carried through into the design.
					The Design is based on the updated Table 4.1 of the SWTC. The detailed design has been issued to the EPA and DPI (Fisheries) for comment and has also been discussed at ERG meetings.

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					The following fauna connectivity culverts have moved to more suitable locations (please note the new location is shown in the new Project chainage):
					- 13285 (55050) now located at 55120
					- 14555 (56320) now located at 56410
					- 16630 (58395) now located at 58510 and 58560 (as 1 x 3m x 3m combined culvert and 1 x 3m x 3m Dedicated culvert)
					- 17205 (58970) now located at 59090
					- 17720 (59485) now located at 59550
					- 18515 (60280) now located at 60600 NB and 60610 SB
					- 19350 (61115) now located at 61115
					A Fauna Connectivity report was provided to the Director General in accordance with Condition B3 prior to the commencement of construction of the fauna connectivity structures, this was sent to DPE by RMS on 17/7/2015. A letter confirming compliance was received by DPE on the 21 <sup>st</sup> April 2016.
					Construction of the crossings has commenced in accordance with the approved design and above report.
B2	As part of detailed design, the Proponent shall further investigate design refinements to improve fauna connectivity between Chainages 19150 and 19820.	Stage 1 and 2	Preconstruction	Closed	Roads and Maritime proposed to increase the widened median area from 2500 m2 to 7500 m2 in ERG 2 (June 2014) and have agency comments in regards to this. The SWTC requires the addition of three crossing points (two glider poles and 1 rope ladder) to be installed within the widened median area. A pre-clearing assessment of the potential glider trees has been undertaken by Geolink. The potential glider trees have been identified to be

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					retained.
					Post mainline clearing a Widened Median Detailed Glidability Assessment was completed on the 18/1/16 by Geolink (in consultant with Ross Goldingay) on behalf of AFJV to determine the retained glider trees and number of crossing points.
					The assessment determined that due to the existing terrain causing the carriageways to remain grade separated, the opportunities for two-way complete alignment crossing points is limited. The retained glider crossing trees allowed movements in a mostly west-east direction with minimal crossing points in an east-west direction.
					The updated Widened Median Glidability Assessment Report (Ver 5) includes a total of 2 crossing points between chainages 59620 and 61180 utilising vegetation retained in the widened median. In both of these circumstances, movement of gliders is from west to east only. No movement east to west across both carriageways was demonstrated in the calculations.
					A workshop was held on site (2/6/16) with Pacifico, RMS and the EPA to discuss the potential for additional glider crossing points including glider poles and rope bridges.
					Roads and Maritime are investigating an option to install a total of 3 rope bridges and 4 sets of glider poles creating 7 crossing points. This is an additional 4 crossing points to the original 3 proposed as part of the SWTC. The EPA is supportive of AFJV's proposal.
					Three additional dedicated fauna connectivity culverts have been installed. The details have been included in the

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					Fauna Connectivity Report provided to DPE in July 2015. A letter confirming compliance was received from DPE on the 21 <sup>st</sup> April 2016.
B3	All investigations into fauna crossings design undertaken during detailed design (with respect to the crossing design and locations identified in conditions B1 and B2 shall be undertaken with the input of a qualified and experienced ecologist and in consultation with EPA and DPI (Fisheries) through a process of workshops and on-site ground verification. Where detailed design refinements are made, the Proponent shall prior to the commencement of construction of the relevant crossings, submit a report to the Director General identifying the final design of the fauna crossings and demonstrating consistency with the locations and minimum design parameters identified in the documents listed under condition A1 (d) or where there have been changes, how the new location and/ or design would result in a better biodiversity outcome. The report shall also clearly identify how the fauna crossings structures will work in conjunction with complementary fauna exclusion fencing measures to be implemented for the project. The report must be accompanied by evidence of consultation with EPA and DPI (Fisheries) in relation to the suitability of any changes to the crossings design.	Stage 1 and 2	Preconstruction and Construction	Closed	Initial fauna and fish design discussions with EPA and DPI (Fisheries) were held on 18 June 2014 (ERG 2).  Onsite investigation / walkthrough with EPA, DoE and experienced ecologists to determine fauna crossing arrangements was undertaken in Aug 2014. The outcomes of this meeting were used to update the SWTC Table 4.1 to ensure the most appropriate underpass locations were identified and carried through into the design.  The Design has progressed based on the updated Table 4.1 of the SWTC. The detailed design was provided to the EPA and Fisheries for comment and was also discussed during ERG meetings.  There are SWTC App 4.5 / SWTC App 5 requirements in regards to fauna fencing. The fauna fencing locations have been revised based on advice from Roads and Maritime to address comments raised by DoE. The location of revised fauna fencing was discussed at the ERG meeting in August and September 2014. The revised fauna fencing locations were agreed in principle with the EPA during the ERG to progress the detailed design.  A review of the locations of the fauna drop down structures is due to take place during the next reporting period.  The Fauna Connectivity Report was submitted to DPE in accordance with the approval conditions on 17 <sup>th</sup> July

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					2015. A letter confirming compliance was received from DPE on the 21 <sup>st</sup> April 2016.
B4	The Proponent shall in consultation with EPA, ensure that the design of the project as far as feasible and reasonable, incorporates provision for glider crossings (such as widened medians and maintenance or	Stage 1 and 2	Preconstruction	Open	The Project has incorporated a "widened median" design between chainage 59700 – 61100 through an area identified as glider habitat. This has been incorporated into the detailed design.
	enhancement of habitat within the medians and corresponding carriageway boundaries) where the alignment crosses areas of recognised glider habitat.				The SWTC requires the addition of three crossing points (two glider poles and 1 rope ladder) to be installed within the widened median area. A pre-clearing assessment of the potential glider trees has been undertaken by Geolink. The potential glider trees have been identified to be retained.
					Post mainline clearing a Widened Median Detailed Glidability Assessment was completed on the 18/1/16 by Geolink (in consultation with Ross Goldingay) to determine the retained glider trees and number of crossing points.
					The assessment determined that due to the existing terrain causing the carriageways to remain grade separated, the opportunities for two-way complete alignment crossing points is limited. The retained glider crossing trees allowed movements in a mostly west-east direction with minimal crossing points in an east-west direction.
					The updated Widened Median Glidability Assessment Report (Ver 5) includes a total of 2 crossing points between chainages 59620 and 61180 utilising vegetation retained in the widened median. In both of these circumstances, movement of gliders is from west to east only. No movement east to west across both

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					carriageways was demonstrated in the calculations.  A workshop was held on site (2/6/16) with Pacifico, RMS and the EPA to discuss the potential for additional glider crossing points including glider poles and rope bridges.  Roads and Maritime is investigating an option to install proposed a total of 3 rope bridges and 4 sets of glider poles creating 7 crossing points. This is an additional 4 crossing points to the original 3 proposed as part of the SWTC. The EPA is supportive of the proposal.
B5	The Proponent shall in consultation with DPI (Fisheries) ensure that all waterway crossings are designed and constructed consistent with the principles of the <i>Guidelines for Controlled Activities Watercourse Crossings (DWE), Fish Note: Policy and Guidelines for Fish Friendly Waterway Crossings (NSW Fisheries) and Policy and Guidelines for Design and Construction of Bridges, Roads, Causeways, Culverts and Similar Structures (NSI4/ Fisheries).</i> As far as feasible and reasonable, culvert replacements as part of the project shall incorporate naturalised bases and where multiple cell culverts are proposed for creek crossings, shall include at least one cell for fish passage, with an invert or bed level that mimics creek flows.	Stage 1 and 2	Preconstruction	Open	Early design consultation with DPI (Fisheries) has been undertaken the culverts requiring fish passage as agreed with Fisheries have been noted in Table 4.1 of the SWTC.  All waterway crossings are being designed in accordance with the SWTC which incorporates the requirements of this condition (B5) and DPI Fisheries requirements. DPI Fisheries have been provided with the opportunity to comment on the detailed design of culverts that provide fish passage.  The fish passage culverts have been designed to incorporate naturalised bases. Where multiple cell culverts have been proposed, an invert that mimics bed level and natural creek flows has been incorporated. DPI Fisheries have requested that the low flow channel be conveyed through the scour rock at the culvert inlet and outlet. This has been incorporated into the detailed design.  An unexpected find of Giant Barred Frogs occurred at Butchers Creek during the previous reporting period. EPA

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					cells to provide a robust surface treatment for the base slabs which would be conducive to frog movements. A rock treatment has been provided in this culvert which has been inspected by the EPA. The EPA is supportive of AFJV's approach in this culvert.
					DPI (Fisheries) and the EPA have also raised the use of alternative "soft treatments" in creek lines and channel realignments in conjunction with the use of scour rock. Soft treatments have been incorporated into the design at several creek lines along the Project alignment including Williamsons Creek, Stony Creek, Butchers Creek and Rosewood tributary. This detail has been included in the Urban Design and Landscaping Drawings (UD02) and has been reviewed by the EPA and DPI (Fisheries) as part of this process. Discussions on the implementation of the soft landscaping treatments will continue during the construction phase of the project via the ERG site inspections and design updates.  Issues are being raised at the monthly ERG meetings and closed out through site visits and/or ongoing communication. The installation of soft landscaping treatments has commenced at Stoney Creek.

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	Biodiversity – Mitigation measures – Nest Boxe	es	1	ı	
B6	Prior to the commencement of any construction work that would result in the disturbance of any native vegetation (or as otherwise agreed to by the Director General), the Proponent shall in consultation with EPA prepare and submit for the approval of the Director General a Nest Box Plan to provide replacement hollows for displaced fauna consistent with the requirements of SoC F7. The plan shall detail the number and type of nest boxes to be installed which must be justified based on the number and type of hollows removed (based on detailed pre-construction surveys), the density of hollows in the area to be cleared and adjacent forest, 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.	Stage 1 and 2	Preconstruction and Construction	Open	The Nest Box plan prepared by Roads and Maritime was approved by DPE on 20/03/2013.  In accordance with the Nest Box Management Plan, 92 nest boxes have been installed along the Project alignment between the 26 November and the 11 December 2014 prior to the commencement of vegetation clearing on the Project. The nest boxes were installed by the Project Ecologist David Havilah (Geolink) in appropriate locations mapped within the approved Plan.  Nest box monitoring in accordance with the approved Plan commenced for Winter 2016 in August (results pending).  45 out of the remaining 60 nest boxes to be installed post-clearing have been installed. At the end of the reporting period, the Project was awaiting approval from the federal Department of Environment to clear vegetation for the North Facing Ramps at North Macksville. Once this vegetation is cleared, a re-calculation of the number of nest boxes required for the actual number of hollows removed for the Project will be undertaken. An update to the NBMP will be provided to the EPA for comment in accordance with the approved Plan. The remaining nest boxes will be installed after the re-calculation is complete.
	Biodiversity – Mitigation measures – Amorphos	spermum whit	⊥ tei and <i>Marsdeni</i>	a longiloba	9
B7	Prior to the commencement of any construction work that would result in the disturbance of	Stage 1 and 2	Preconstruction and Construction	Open	Potential impacts to <i>Amorphospermum whitei</i> and Marsdenia longiloba are incorporated into the Threatened Flora Management Plan (Ver 4) (TFMP) which was

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	Amorphospermum whitei and Marsdenia longiloba, the Proponent shall in consultation with the EPA develop a management plan for these species which:				provided to DPE and approved on the 16/12/14. The TFMP was further updated on the 24/12/14 to incorporate comments from the Federal Department of Environment.
	<ul> <li>a investigates the potential for the translocation of plants impacted by the project;</li> <li>b if investigation under Condition B7(a) reveals translocation of impacted plants is feasible, includes details of a translocation plan for the plants consistent with the Australian Network for Plant Conservation 2"d Ed 2004: Guidelines for the Translocation of Threatened Species in Australia, including details of ongoing maintenance such as responsibilities, timing and duration;</li> <li>c identifies a process for incorporating appropriate compensatory habitat for the impacted plants in the Biodiversity Offset Strategy referred to in Condition B8 should the information obtained during the investigation referred to in Condition B7(a) find that translocation is not feasible or where the monitoring undertaken as part of condition B10 finds that translocation measures have not been successful (as identified through performance criteria); and</li> <li>d includes detail of mitigation measures to be implemented during construction to avoid and minimise impacts to areas identified to contain these species, including excluding construction plant, equipment, materials and unauthorised</li> </ul>				The TFMP recommended translocating <i>A. whitei</i> and <i>M. longiloba</i> individuals that are either directly or indirectly impacted by the Project works.  AFJV has engaged Ecos Environmental (Andrew Benwell) to complete the translocation of these species in accordance with the translocation plan detailed in the approved Plan. The translocation has been completed.  Translocated individuals and individuals noted to be "protected In situ" in the Plan have been protected on site using "No-Go Zone fencing" and signage.  Monitoring of the translocated individuals was undertaken in June 2016 in accordance with the Approved Plan. The outcomes of the monitoring are summarised below:  The current survival rate of <i>M. longiloba</i> is 80% after 18 months, which is a slight decrease from the previous monitoring period, however is expected based on previous results.  The survival rate for <i>A. whitei</i> is 86% after 18 months.  Insitu Threatened Flora Monitoring has also been conducted in Autumn 2016:  In-situ Rusty Plums in the Cockburns Lane locality
	personnel.  Unless otherwise agreed to by the Director General, the Plan shall be submitted for the Director General's				are generally healthy and in good condition, the one exception to this being NW56. This plant shows some signs of discolouration which may be due to its now

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	approval prior to the commencement of any construction work that would result in the disturbance of <i>Amorphospermum whitei</i> and <i>Marsdenia longiloba</i> .				exposed position. This observation was also made during previous (spring) monitoring and has not worsened. Remediation measures to protect this plant from edge effects will be initiated if deterioration in health is detected.
					<ul> <li>Slender Marsdenia plants were generally in good condition at the time of survey with improved leaf condition scores. One plant (ML131) had died back which is not surprising given that this species is known to naturally die back as part of its natural lifecycle.</li> </ul>
					The Tall Knotweed individuals that were reported to have died back in the previous reporting period (through natural biological means) were showing signs of regeneration with several new plants growing in low lying areas on site.  As a result of the non-compliance reported in the previous reporting period, Roads and Maritime has closely monitored the ecological monitoring program to ensure all monitoring requirements have been met. Monitoring requirements are tracked and discussed regularly and the Project ER and AFJV.
					An audit of the TFMP was undertaken by the Project ER in September 2015. No new non-compliances were raised. The results of the audit are discussed in Section 3 above.
	Biodiversity offsets	1	I	1	
B8	The Proponent shall, in consultation with the EPA and DPI (Fisheries), develop a Biodiversity Offset Strategy that identifies available options for offsetting the	Stage 1 and 2	Preconstruction and Construction	Open	Comments were received from DPE on the draft Biodiversity Offset strategy for Warrell Creek to Urunga (12 September 2013, April 2014).

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	biodiversity impacts of the project in perpetuity, with consideration to EPA's <i>Principles for the Use of Biodiversity Offsets in NSW</i> (EPA Website, June 2011). Unless otherwise agreed to by EPA, offsets shall be provided on a like-for-like basis and at a minimum ratio of 4:1 'for areas of high conservation value (including EEC and threatened species or their habitat identified in the Environmental Assessment to be impacted by the project and poorly conserved vegetation communities identified as being more than 75% cleared in the catchment management area) and 2:1 for the remainder of native vegetation areas (including mangroves, seagrass, salt marsh and riparian vegetation). The Strategy shall include, but not necessarily be limited to:  a confirmation of the vegetation communities/ habitat (in hectares) to be offset and the size of offsets required (in hectares);  b details of the available offset measures that have been identified to compensate for the biodiversity impacts of the project, such as (but not necessarily limited to): suitable compensatory land options and/ or contributions towards biodiversity programs for high conservation value areas on nearby lands (including research programs). Where the use of State Forest land managed in accordance with an Integrated Forestry Operations Approval is proposed to offset biodiversity impacts, the Proponent shall clearly demonstrate how this would provide the biodiversity outcomes required under this condition including any additional offset requirements to cover residual impacts;				The Final Biodiversity Offset Strategy was submitted to DPE on 23/10/14 for approval.  DPE approved the WC2U Biodiversity Offset Strategy on the 24 November 2014.  The DoE comments were received in February 2016 on the Commonwealth Biodiversity Offset Package for WC2NH, which will be submitted in November 2016.

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	c the decision-making framework that would be used to select the final suite of offset measures to achieve the aims and objectives of the Strategy, including the ranking of offset measures;				
	d a process for addressing and incorporating offset measures for changes to impact (where these changes are generally consistent with the biodiversity impacts identified for the project in the documents listed under condition A1, including:				
	i. changes to footprint due to design changes;				
	<ul><li>ii. changes to predicted impacts resulting from changes to mitigation measures;</li></ul>				
	iii. identification of additional species/habitat through pre-clearance surveys; and				
	iv. additional impacts associated with ancillary facilities; and				
	e options for the securing of biodiversity options in perpetuity.				
	The Biodiversity Offset Strategy shall be submitted to, and approved by, the Director General prior to the commencement of any construction work that would result in the disturbance of any native vegetation, unless otherwise agreed by the Director General. Unless otherwise agreed, the Biodiversity Offset Strategy shall be submitted to the Director General for approval no later than 6 weeks prior to the commencement of any construction that would result in the disturbance of any native vegetation.				
	The Proponent may elect to satisfy the requirements of this condition by implementing a suitable offset				

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	package which addresses impacts from multiple Pacific Highway Upgrade projects (including the Warrell Creek to Urunga Project) within the North Coast Bio-region. Any such agreement made with the EPA must be made in consultation with the Department and approved by the Director General within a timeframe agreed to by the Director General.				
В9	Within two years of the approval of the Biodiversity Offset Strategy, unless otherwise agreed by the Director General, the Proponent shall prepare and submit a <b>Biodiversity Offset Package</b> which identifies the final suite of offset measures to be implemented for the project for the approval of the Director General. The Package shall be developed in consultation with EPA, and shall provide details of:	Stage 1 and 2	Construction and Operations	Open	Roads and Maritime have identified sites to cover the Commonwealth requirements, but not all have been acquired. For example the Boambee site is owned by FCNSW and the Swain site is privately owned. Roads and Maritime /GHD are currently assessing the best way to address the State offsets shortfall. RMS will be providing an update to EPA and DP&E in the coming weeks, as a couple of different options exist to address the shortfalls.
	a the final suite of the biodiversity offset measures selected for the project demonstrating how it achieves the requirements and aims of the Biodiversity Offset Strategy (including specified offset ratios);				The State offset package for WC2U is due in late November
	b the final selected means of securing the biodiversity values of the offset package in perpetuity including ongoing management, monitoring and maintenance requirements; and				
	c timing and responsibilities for the implementation of the provisions of the package over time.				
	The requirements of the Package shall be implemented by the responsible parties according to the timeframes set out in the Package.				

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	Ecological Monitoring	ı		I	
B10	Prior to the commencement of any construction work that would result in the disturbance of any native vegetation, the Proponent shall develop an Ecological Monitoring Program to monitor the effectiveness of the mitigation measures implemented as part of the project. The program shall be developed in	Stage 1 and 2	Preconstruction and Construction	Open	Ecological Monitoring Program for WC2NH has been finalised and submitted to DPE for approval on the 25/11/14. All EPA comments have been addressed as part of the final Ecological Monitoring Program. The Ecological Monitoring Program was approved by DPE on the 16/12/14.
	consultation with EPA and prepared by a suitably qualified ecologist and shall include but not necessarily be limited to:				The Ecological Monitoring Program has been implemented on site with the following monitoring undertaken during the reporting period:
	a an adaptive monitoring program to assess the effectiveness of the mitigation measures identified in condition B1 to B6, B7(b), B7(d), B21(c) and B31(b)and allow amendment to the measures if necessary. The monitoring program shall nominate				<ul> <li>Microbat Monitoring including roost box, flyway monitoring, habitat monitoring and behaviour and persistence monitoring (Year 2 Autumn and Winter, micro-bat habitat monitoring – March only);</li> </ul>
	appropriate and justified monitoring periods and				Microbat Overwintering Habitat Survey – June 2016
	performance targets against which effectiveness will be measured. The monitoring shall include operational road kill surveys to assess the effectiveness of fauna crossing and exclusion fencing implemented as part of the project;				In situ threatened flora and translocated flora (Year 2     Autumn and June 2016 for translocated areas).
					Roadkill monitoring in accordance with the Roadkill Monitoring Strategy
	b mechanism for developing additional monitoring protocols to assess the effectiveness of any				<ul> <li>Flying Fox monitoring over the last 6 months - no present of GHFF noted reports on RMS web site.</li> </ul>
	additional mitigation measures implemented to address additional impacts in the case of design				No negative impacts from construction to habitat usage have been noted.
	amendments or unexpected threatened species finds during construction (where these additional impacts are generally consistent with the biodiversity impacts identified for the project in the documents listed under condition A1;				The Project ER endorsed a change to the GHFF Plan to support the change in monitoring frequency from fortnightly to monthly. Final approval of the amended plan by DoE is required and is currently outstanding.
	c monitoring shall be undertaken during construction				

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	(for construction-related impacts) and from opening of the project to traffic (for operation/ongoing impacts) until such time as the effectiveness of mitigation measures can be demonstrated to have been achieved over a minimum of five successive monitoring periods (i.e. 5 years) after opening of the project to traffic, unless otherwise agreed to by the Director General. The monitoring period may be reduced with the agreement of the Director General in consultation with EPA, depending on the outcomes of the monitoring;				
	d provision for the assessment of the data to identify changes to habitat usage and if this can be attributed to the project;				
	e details of contingency measures that would be implemented in the event of changes to habitat usage patterns directly attributable to the construction or operation of the project; and				
	f provision for annual reporting of monitoring results to the Director General and EPA, or as otherwise agreed by those agencies.				
	The Program shall be submitted for the Director General's approval prior to the commencement of any construction work that would result in the disturbance of any native vegetation. Unless otherwise agreed, the Program shall be submitted to the Director General for approval no later than 6 weeks prior to the commencement of any construction that would result in the disturbance of any native vegetation.				

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	Hydrology and flooding	1			
B11	The Proponent shall undertake further flood modelling during detailed design to ensure that the Nambucca River crossing is designed and constructed with the aim of not exceeding the afflux and other flood characteristics predicted in the Environmental Assessment and Response to Submissions.	Stage 2	Preconstruction	Closed	AFJV have undertaken flood modelling based on the detailed design. The flood modelling identified that there would be a minor increase in water levels directly upstream of the Nambucca Bridge structure due to the presence of the bridge piers but this effect does not result in any change to the flow distributions through the channel or across the floodplain. Predicted water level increases are within the afflux limit of 15mm specified in the Project EA. This also meets the afflux requirements included in Section 4.28 of Appendix 4 of the SWTC.
					The Flood Modelling and Hydrology Report for the Nambucca River and Floodplain were provided to DPE on the 23/04/15 for review. This document aims to demonstrate compliance with Conditions B11, B12, B13, B14 and B15. The ER endorsed the report and confirmed compliance with Conditions B11-B15 on the 23/04/15. RMS provided AFJV with written approval to commence works within the floodplain on the 24/04/15.
					Comments from DPE were received on the 22/05/15 which was addressed by AFJV and a revised report submitted to DPE on 24 <sup>th</sup> July 2015. DPE approval obtained on 10/8/2015.
					No changes to the document or the design throughout the reporting period.
B12	Prior to the commencement of construction within areas affected by an increased afflux from the project, the Proponent shall in consultation with the EPA, DPI (Fisheries) and Nambucca Shire Council undertake flood modelling of the Nambucca River and floodplain	Stage 2	Preconstruction	Closed	AFJV have undertaken flood modelling based on the detailed design. The flood modelling identified that there would be a minor increase in water levels directly upstream of the Nambucca Bridge structure due to the presence of the bridge piers but this effect does not result

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	based on the detailed design of the project, and submit the flood modelling report for the approval of the Director General. The flood modelling shall:  a assess the impacts of the project on flood				in any change to the flow distributions through the channel or across the floodplain. Predicted water level increases are within the afflux limit of 15mm specified in the Project EA. This also meets the afflux requirements included in
	behaviour (in relation to Nambucca River and floodplain;  b confirm the location and size of structures for the crossing the Nambucca River and floodplain which meet the performance criteria outlined in Condition B11;  c examine flood behaviours through the full range of flood events including but not limited to the 10%, 5%, 2%, 1% 0.5% and 0.2% Annual Exceedance Probability;				Section 4.28 of Appendix 4 of the SWTC.  The Flood Modelling and Hydrology Report for the Nambucca River and Floodplain were provided to DPE on the 23/04/15 for review. This document aims to demonstrate compliance with Conditions B11, B12, B13, B14 and B15. The ER endorsed the report and confirmed compliance with Conditions B11-B15 on the 23/04/15. RMS provided AFJV with written approval to commence works within the floodplain on the 24/04/15.  Comments from DPE were received on the 22/05/15,
	d examine any changes in the flood behaviour under climate change conditions; and e examine any changes to existing conditions for flood timing, afflux, inundation, flood velocity, scour and siltation flood warning and flood evacuation				addressed by AFJV and formal response sent on 31/7/2015 (Version 8 of B12 Report). DPE approved on 10/08/2015.  No changes to the document or the design throughout the reporting period.
B13	Prior to commencement of construction within areas affected by an increased afflux from the Nambucca River and Kalang River crossings, the Proponent shall submit a hydrological mitigation report for the approval of the Director General detailing all feasible and reasonable flood mitigation measures for all properties where flood impacts are predicted to increase as a result of the project. The Report shall be based on detailed floor level survey and associated assessment of potentially flood affected properties. The report shall:	Stage 1 and 2	Preconstruction and Construction	Closed	AFJV have undertaken flood modelling based on the detailed design. The flood modelling identified that there would be a minor increase in water levels directly upstream of the Nambucca Bridge structure due to the presence of the bridge piers but this effect does not result in any change to the flow distributions through the channel or across the floodplain. Predicted water level increases are within the afflux limit of 15mm specified in the Project EA. This also meets the afflux requirements included in Section 4.28 of Appendix 4 of the SWTC.

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	a identify all properties likely to have an increased flooding impact and detail the predicted increased				afflux from the Project works. Therefore, no mitigation measures are proposed for properties.
	flooding impact; b identify mitigation measures to be implemented where increased flooding is predicted to adversely affect access, property or infrastructure;				The Flood Modelling and Hydrology Report for the Nambucca River and Floodplain were provided to DPE on the 23/04/15 for review. This document aims to demonstrate compliance with Conditions B11, B12, B13,
	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 project and cause localised soil				B14 and B15. The ER endorsed the report and confirmed compliance with Conditions B11-B15 on the 23/04/15. RMS provided AFJV with written approval to commence works within the floodplain on the 24/04/15.
	erosion and/or pasture damage; d be developed in consultation with EPA, the relevant Council, NSW State Emergency Service and directly-affected property owners; and				Comments from DPE were received on the 22/05/15 which was addressed by AFJV and a revised report submitted to DPE on 24 <sup>th</sup> July 2015. DPE approval obtained on 10/8/2015.
	e identify operational and maintenance responsibilities for items (a) to (e) inclusive.				No changes to the document or the design throughout the reporting period.
	The Proponent shall not commence construction of the project on or within areas likely to alter flood conditions until such time as works identified in the hydrological mitigation report have been completed, unless otherwise agreed by the Director General.				
B14	Based on the mitigation measures identified in condition B13, the Proponent shall prepare a final schedule of feasible and reasonable flood mitigation	Stage 1 and 2	Preconstruction and Construction	Closed	No properties were identified as impacted by increased afflux from the Project works. Therefore, no mitigation measures are proposed for properties.
	measures proposed at each directly affected property in consultation with the property owner. The schedule shall be provided to the relevant property owner(s) no later than two months prior to the implementation of the mitigation works, unless otherwise agreed by the Director General. A copy of each schedule of flood				The Flood Modelling and Hydrology Report for the Nambucca River and Floodplain were provided to DPE on the 23/04/15 for review. This document aims to demonstrate compliance with Conditions B11, B12, B13, B14 and B15. The ER endorsed the report and confirmed compliance with Conditions B11-B15 on the 23/04/15.

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	mitigation measures shall be provided to the relevant Council and the Department prior to the implementation / construction of the mitigation measures on the property.				RMS provided AFJV with written approval to commence works within the floodplain on the 24/04/15.  Comments from DPE were received on the 22/05/15 which was addressed by AFJV and a revised report submitted to DPE on 24 <sup>th</sup> July 2015. DPE approval obtained on 10/8/2015.  No changes to the document or the design throughout the reporting period.
B15	In the event that the Proponent and the relevant property owner cannot agree on feasible and reasonable flood mitigation measures to be applied to a property within one month of the first consultation on the measures (as required under Condition B14), the Proponent shall employ a suitably qualified and experienced independent hydrological engineer (who has been approved by the Director General for the purposes of this condition prior to the commencement of construction) to advise and assist affected property owners in negotiating feasible and reasonable mitigation measures.	Stage 1 and 2	Preconstruction and Construction	Closed	WMA still are the project hydrological consultant used for independent review/ comment of designs eg. the B12/B13 report as approved.
B16	The Proponent shall provide assistance to the relevant Council's 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 project, as identified in the documents listed under condition A1 and the modelling undertaken as part of condition B12.	Stage 1 and 2	Preconstruction and Construction	Open	AFJV provides Roads and Maritime with all the information, details and data as a consequence of the Project Works that Roads and Maritime requires in providing assistance.  RMS has provided assistance to NSC and SES for WC2U Stage 2 component as per B16. B12 Report submitted to NSC and SES as part of the consultative component for preparation finalisation of the report. RMS has provided assistance to council to prepare any new or necessary update to relevant plans and documents in relation to flooding to reflect changes in flooding levels, flows and

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					characteristics as a result of the project. Email sent from RMS to DPE detailing consultation on 31/7/2015.  No changes to the document or the design throughout the reporting period.
	Water Quality				
B17	The Proponent shall prepare and implement a Water Quality Monitoring Program to monitor the impacts of the project on SEPP 14 wetlands, surface water quality and groundwater resources during construction and operation. The Program shall be developed in consultation with EPA and DPI and shall include but not necessarily be limited to:  a identification of surface water and groundwater quality monitoring locations which are representative of the potential extent of impacts from the project;  b identification of works and activities during construction and operation of the project, including emergencies and spill events, that have the potential to impact on surface water quality and risks to oyster farming in the Nambucca, Bellinger, and Kalang rivers;  c representative background monitoring of surface	Stage 1 and 2	Preconstruction, Construction and Operation	Open	<ul> <li>a) Shown in the Geolink approved WQMP plan as approved by DPE 23 May 2014. The interpretative report recommends refinement of bore locations based on prior monitoring results and the detailed design of cuts and fills. The final plan indicating refinements are issued to DPE as an addendum to the 3 May 2014 approved WQMP once completed end of September 2015.</li> <li>b) Outlined in the approved WQMP as approved by DPE 23 May 2014</li> <li>c) The attached interpretative report and data sets are pursuant with the approval letter dated 25 May 2014 and forms the additional 4 months baseline monitoring data to that approved for January and February 2014 per DPEs approval letter dated 23.5.14. It is noted that the monitoring data sets were collected 6 months prior to start of construction on 9 February 2015 and those up to Dec 2014 were issued to DPE via the required preconstruction compliance report (PCCR) as approved in December 2014</li> </ul>
	water and groundwater quality parameters for a minimum of six (6) months (considering seasonality) prior to the commencement of construction to establish baseline water conditions;  d development and presentation of indicators or				<ul> <li>d) Outlined in the approved WQMP as DPE approved 23 May 2014</li> <li>e) Outlined in the approved WQMP plan DPE approved 23 May 2014</li> <li>f) Not yet entered completion phase anticipated such</li> </ul>

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standards against whi water quality will be as Australian and New Zo and Marine Water Quality and Marine Water Quality are identified;  f a minimum monitoring following the completed disturbed waterways/certified by an independent of an accommonitoring shall also coperational water consisted mentation basis a greporting of the monitor Department, EPA and The Program shall be sub General for approval six (6 commencement of construction of the program of the Department	groundwater resources are ndent expert as being reptable condition. The confirm the establishment of trol measures (such as nd vegetation swales); and oring results to the DPI.  mitted to the Director (b) months prior to the uction of the project, or as				end of 2017 g) Results are presented to EPA and DPI monthly via the ERG and 6 monthly via the CTR to the DPE Submission of WQMP to DG DPE 6 months prior to commencement of construction; The WQMP was submitted on 22 April 2014 and approved on 23 May 2014. Construction commenced 9 February 2015 thus DPE DG approval sought and obtained 6 months prior to construction commencing. Any addendum or refinement to the approved plan recommend in the interpretative report and the soon to be completed addendum report whave the Departments Environmental Representatives endorsement before issuing the plan to the DPE DG for information.  Pacifico (AFJV) is currently undertaking the Surface Water and Groundwater monitoring programs during the construction phase of the Project.  Monitoring results are summarised in Section 7 above. The results are presented at the monthly ERG meetings and are discussed in detail. The surface water monitoring results are compared with trigger values and ANZECC guidelines where the trigger value is absent. The Project has not recorded any impacts on surface water or groundwater that is attributable to construction activities AFJV are currently proposing a change to the approved Groundwater Monitoring Program to remove several bores from the program that have been dry throughout construction.

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B18	As part of detailed design, the Proponent shall ensure that the final design of the alignment is aligned to minimise project impacts on the Cow Creek Aboriginal Reserve (21-6-0228) as far as practicable and detail these design considerations in the Heritage Management Plan required to be prepared under condition B31(e).	Stage 1	Preconstruction	NA	Not applicable to the WC2NH Project (Stage 2).
B19	Prior to the commencement of pre-construction and construction activities affecting the following Aboriginal sites the Proponent shall undertake the relevant salvage mitigation measures outlined in the Environmental Assessment for these sites:  a Butchers Creek 1 (previously PAD 1);  b Stoney Creek 1 (previously PAD 24);  c Bald Hill Road 1 (previously PAD 7);  d Old Coast Road Stone Artefact (previously PAD 2);  e Boggy Creek Artefact 1 & resource gathering area (previously PAD 16);  f Cow Creek Artefact Scatter (previously PAD 8);  g Kalang Spur Artefact Scatter (previously PAD 12);  h Kalang Flat 1 9(a) (previously PAD 9);  i Kalang Flat 2 9(b) (previously PAD 9);  j South Arm Road 1;  k Tyson's Flat Ridge Artefact Scatter (previously PAD 29);  I Tyson's Flat I (previously PAD 28); and	Stage 1 and 2	Preconstruction	Closed	Archaeological Salvage works have been undertaken by Roads and Maritime. Sites located within the Project Boundary have been cleared to commence construction in October 2014.  RMS submitted salvage report to LALC's in August 2012. RMS submitted the results of the salvage report to DPE (formally DOPI) on 1/8/2012.
	m Tyson's Flat 2 (previously PAD 27).				

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The results of the salvage program shall be provided to the Department, OEH and Aboriginal stakeholders within six months of the completion of the salvage program, unless otherwise agreed by the Director General.				
Prior to the commencement of pre-construction and construction activities affecting the possible house site identified as Site 12 in Table 19-3 of the Environmental Assessment, the Proponent shall prepare an archaeological assessment in consultation with the OEH (Heritage Branch), and generally in accordance with the Departments Archaeological Assessments Guideline (1996), and submit the assessment for the Director General's approval.	Stage 1	Preconstruction	NA	Not applicable to the WC2NH Project (Stage 2).
Any further archaeological work recommended on this site by the assessment shall be undertaken by the Proponent in consultation with the OEH (Heritage Branch) and reported to the Director General within six months of the completion of the work, unless otherwise agreed by the Director General.				
Urban design and landscaping	1			
Prior to the commencement of construction (unless otherwise agreed to by the Director General), the Proponent shall prepare and implement an Urban Design and Landscape Plan for the project. The plan shall be prepared in consultation with the relevant Council and shall present an integrated urban design for the project. The plan shall include, but not	Stage 1 and 2	Preconstruction and Construction	Open	A letter seeking approval for a staged Plan and to submit the UDLP after the commencement of construction was provided to DPE on the 25/11/14.  A letter confirming staged submission of the Project UDLP was provided by DPE on the 04/12/14.  Stage 1 of the UDLP was provided to DPE on the 01/06/15. Stage 1 of the UDLP included the Project
	The results of the salvage program shall be provided to the Department, OEH and Aboriginal stakeholders within six months of the completion of the salvage program, unless otherwise agreed by the Director General.  Prior to the commencement of pre-construction and construction activities affecting the possible house site identified as Site 12 in Table 19-3 of the Environmental Assessment, the Proponent shall prepare an archaeological assessment in consultation with the OEH (Heritage Branch), and generally in accordance with the Departments Archaeological Assessments Guideline (1996), and submit the assessment for the Director General's approval.  Any further archaeological work recommended on this site by the assessment shall be undertaken by the Proponent in consultation with the OEH (Heritage Branch) and reported to the Director General within six months of the completion of the work, unless otherwise agreed by the Director General.  Urban design and landscaping  Prior to the commencement of construction (unless otherwise agreed to by the Director General), the Proponent shall prepare and implement an Urban Design and Landscape Plan for the project. The plan shall be prepared in consultation with the relevant Council and shall present an integrated urban design	The results of the salvage program shall be provided to the Department, OEH and Aboriginal stakeholders within six months of the completion of the salvage program, unless otherwise agreed by the Director General.  Prior to the commencement of pre-construction and construction activities affecting the possible house site identified as Site 12 in Table 19-3 of the Environmental Assessment, the Proponent shall prepare an archaeological assessment in consultation with the OEH (Heritage Branch), and generally in accordance with the Departments Archaeological Assessments Guideline (1996), and submit the assessment for the Director General's approval.  Any further archaeological work recommended on this site by the assessment shall be undertaken by the Proponent in consultation with the OEH (Heritage Branch) and reported to the Director General within six months of the completion of the work, unless otherwise agreed by the Director General.  Urban design and landscaping  Prior to the commencement of construction (unless otherwise agreed to by the Director General), the Proponent shall prepare and implement an Urban Design and Landscape Plan for the project. The plan shall be prepared in consultation with the relevant Council and shall present an integrated urban design for the project. The plan shall include, but not	The results of the salvage program shall be provided to the Department, OEH and Aboriginal stakeholders within six months of the completion of the salvage program, unless otherwise agreed by the Director General.  Prior to the commencement of pre-construction and construction activities affecting the possible house site identified as Site 12 in Table 19-3 of the Environmental Assessment, the Proponent shall prepare an archaeological assessment in consultation with the OEH (Heritage Branch), and generally in accordance with the Departments Archaeological Assessments Guideline (1996), and submit the assessment for the Director General's approval.  Any further archaeological work recommended on this site by the assessment shall be undertaken by the Proponent in consultation with the OEH (Heritage Branch) and reported to the Director General within six months of the completion of the work, unless otherwise agreed by the Director General.  Urban design and landscaping  Prior to the commencement of construction (unless otherwise agreed to by the Director General), the Proponent shall prepare and implement an Urban Design and Landscape Plan for the project. The plan shall be prepared in consultation with the relevant Council and shall present an integrated urban design for the project. The plan shall include, but not	The results of the salvage program shall be provided to the Department, OEH and Aboriginal stakeholders within six months of the completion of the salvage program, unless otherwise agreed by the Director General.  Prior to the commencement of pre-construction and construction activities affecting the possible house site identified as Site 12 in Table 19-3 of the Environmental Assessment, the Proponent shall prepare an archaeological assessment in consultation with the OEH (Heritage Branch), and generally in accordance with the Departments Archaeological Assessments Guideline (1996), and submit the assessment for the Director General's approval.  Any further archaeological work recommended on this site by the assessment shall be undertaken by the Proponent in consultation with the OEH (Heritage Branch) and reported to the Director General within six months of the completion of the work, unless otherwise agreed by the Director General.  Urban design and landscaping  Prior to the commencement of construction (unless otherwise agreed to by the Director General), the Proponent shall prepare and implement an Urban Design and Landscape Plan for the project. The plan shall be prepared in consultation with the relevant Council and shall present an integrated urban design for the project. The plan shall include, but not

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	a a principle goal of achieving the urban design objectives outlined in Section 13.4 of Volume 1 of the Environmental Assessment;				methodology for bushland regeneration, riparian zone rehabilitation, preferred seed mixes and concepts for the design of built elements.
	b sections and perspective sketches; c locations along the project corridor directly or indirectly impacted by the construction of the project (e.g. temporary ancillary facilities, access tracks, watercourse crossings, etc.) which are proposed to be actively rehabilitated, regenerated and/ or revegetated to promote biodiversity outcomes and visual integration. Details of species to be replanted/ revegetated shall be provided,, including their appropriateness to the area and considering existing vegetation and habitat for threatened species;				Comments were received from DPE on the 26/06/15. The comments were addressed by AFJV as part of the 85% UDLP Review Process.  UDLP Community Consultation was undertaken by RMS/AFJV on the 07/11/2015 at the Macksville Senior Citizens Centre  Stage 2 of the UDLP was provided to DPE on the 1/12/2016 and included details of the final design of built elements, evidence of community consultation and other outstanding information.  Comments were received from DPE on the
	d location of existing vegetation and proposed landscaping, including use of indigenous and endemic species where possible. The plan shall assess the visual screening effects of existing vegetation and the proposed landscaping at residences and businesses, which have been identified as likely to experience high visual impact as a result of the project. Where high residual impacts are identified to remain (including in relation to headlight intrusion), the plan shall in consultation with affected receptors, identify opportunities for providing at-receptor landscaping to further screen views of the project. Where agreed to with the landowner, these measures shall be implemented during the construction of the project;				15/1/2016. The comments were addressed by AFJV and a response provided by RMS to DPE on the 5/2/2016.  Approval of the Stage 2 of the UDLP was provided by DPE on 19/02/2016  The UDLP has been updated to include the North Facing Ramps into the design and is currently with RMS for review. The design has incorporated headlight screening mounds as required by Modification 8. Ongoing consultation and discussion with residents located in the vicinity of the North Facing Ramps is being undertaken to determine the surface treatment of these mounds. Advice has been received from DPE that construction on the North Facing Ramps can commence prior to the submission of the updated UDLP. This was confirmed in an email from DPE in May 2016. Once RMS has completed their review of the updated UDLP, this will be

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	incorporating other environmental controls such as erosion and sedimentation controls, drainage, noise mitigation;				provided to DPE.
	f location and design treatments for built elements including retaining walls, cuttings, bridges, and noise barriers;				
	g 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, and signs;				
	h evidence of consultation with the community on the proposed urban design and landscape measures prior to its finalisation; and				
	i monitoring and maintenance procedures for the built elements and landscaping (including weed control) including responsibilities, timing and duration and contingencies where landscaping measures fail.				
	The Plan shall be submitted for the approval of the Director General prior to commencement of construction of the project. The Plan may be submitted in stages to suit the staged construction program of the project.				
	Traffic and access				
B22	The Proponent shall ensure that the project is	Stage 1 and 2	Preconstruction and	Open	Roads and Maritime has reached agreement with Forestry Corporation in regards to this requirement, with proposal

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	designed in consultation with DPI (Forests NSW) to ensure that access of a standard that is at least		Construction		from Forestry Corporation on the work it will undertake in State Forests.
	equivalent to that currently existing and which meets relevant road safety standards is maintained within the State forests to enable continued forestry operations, fire management and recreation during construction				The detailed design has incorporated permanent adjustments to forestry tracks to maintain access at an equivalent standard to that which currently exists.
	and operation.				AFJV in consultation with Forests NSW is maintaining safe access to forestry tracks during temporary traffic staging/construction.
					AFJV notified Forests NSW in May 2015 that vegetation clearing operations were due to commence. Consultation on the property adjustment drawings was undertaken in December 2015. Access ways are currently under construction in accordance with the approved design.
					AFJV to comply with requirements for merchantable timber and construction property adjustments as per agreements made by RMS.
					No issues have been raised by Forestry NSW regarding access during the reporting period. Minor adjustments to the design have been made in consultation with RMS and these changes will be discussed with State Forests prior to finalising construction on site.
B23	The Proponent shall ensure that the project is designed to incorporate appropriate signage for townships along the project alignment, in consultation with the relevant Council and businesses policy, and provide information on the range of services available within the towns including advice that the route through the towns may be taken as an alternative route to the	Stage 1 and 2	Preconstruction and Construction	Open	The requirement of this condition has been included as part of the permanent signage and line-marking (Road Furniture) design package. The Road Furniture Design package has been provided to Nambucca Shire Council for comment and approval prior to finalizing the package. The package is not issued for construction and approved by Council.

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	bypass.				
	Property and landuse			1	
B24	The Proponent shall ensure that the project is designed to minimise land take impacts to surrounding properties (including agricultural properties) as far as feasible and reasonable, in consultation with the affected landowners. Where the viability of existing agricultural operations are identified to be highly affected by the land requirements of the project, the Proponent shall as part of detailed design employ a suitably qualified and experienced independent agricultural specialist (that is approved by the Director General for the purpose of this condition), to assist in the following (where agreed to by the relevant landowner):  a identifying alternative farming opportunities for the relevant properties including purchase of other residual land to enable existing/new agricultural activities to continue; and/or  b negotiating appropriate compensation and/or arrangements for the purchase of the property under the Land Acquisition (Just Terms Compensation) Act 1991.	Stage 1 and 2	Preconstruction	Open	The acquisition for the final property to the south of the Project was executed in February 2016  No land use has been identified as being affected by the project to such an extent jeopardising continued agricultural use – the design has allowed for parcels separated under the one title for grazing to have stock under passes provided. No agricultural specialist has been required to be employed to determine offsets. Landholders have been consulted with in regards to acquisitions and offset works (gates fences access tracks revegetation) as required.  Acquisitions complete and works for property adjustments fencing accesses permanent and temporary are ongoing
	Compliance tracking				
B25	The Proponent shall develop and implement a Compliance Tracking Program to track compliance	Stage 1 and 2	Preconstruction, Construction	Open	Roads and Maritime submitted Compliance Tracking Program to DPE on 7 March 2013, which was

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	with the requirements of this approval. The Program shall be submitted to the Director General for approval prior to the commencement of construction and relate to both the construction and operational phases of the project, and include, but not necessarily be limited to:		and Operation		subsequently approved by DPE on 20 March 2013.  The Compliance Tracking Program was updated and approved by DPE on the 16/12/14.  A standalone compliance tracking register is in place for
	a provisions for the notification of the Director General of the commencement of works prior to the commencement of construction and prior to the commencement of operation of the project (including prior to each stage, where works are being staged);				WC2NH is reviewed and updated on an ongoing basis and summarised at progressive six (6) monthly intervals within Compliance Tracking Reports (first report issued one (1) month prior to commencement of construction and an update reports issued to cover each six (6) months during construction).
	b provisions for periodic review of project compliance with the requirements of this approval, Statement of Commitments and documents listed under condition A1;				This report is the third Six (6) Monthly Compliance report prepared for the Project to cover the reporting period 9 February 2016 – 8 August 2016.
	c provisions for periodic reporting of compliance status against the requirements of this approval, Statement of Commitments and documents listed under condition A1 to the Director General including at least one month prior to the commencement of construction and operation of the project and at other intervals during the construction and operation, as identified in the Program;				
	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 reporting and recording incidents and actions taken in response to those incidents;				
	f provisions for reporting environmental incidents to				

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	the Director General during construction and operation; and g procedures for rectifying any non-compliance identified during environmental auditing, review of compliance or incident management.  Community information and involvement – prov				
B26	Prior to the commencement of construction, the Proponent shall establish and maintain a new website, or dedicated pages within an existing website, for the provision of electronic information associated with the project. The Proponent 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 project;  b a copy of the documents referred to under condition A1 of this approval, 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 project;  e a copy of each current strategy, plan, program or other document required under this approval; and  f the outcomes of compliance tracking in accordance with the requirements of Condition	Stage 1 and 2	Preconstruction and Construction	Open	Roads and Maritime managed web site for WC2NH is in place. Project documentation and information can be found at the link below:  Link to Project Documents  AFJV will provide Roads and Maritime with all relevant information, details and data (electronically in WCAG 2.0 web accessible format) in regards to construction in compliance with the requirements of this condition, to enable Roads and Maritime to maintain the website and ensure it is up to date.

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	B25.															
	Complaints and enquiries procedure															
B27	Prior to the commencement of construction, the Proponent shall ensure that the following are available for community complaints and enquiries during the construction period:	Stage 1 and 2	Preconstruction and Construction	Open	AFJV has established the following methods and tools for community complaints and enquiries about construction activities:  (a) a telephone number for registration of complaints and											
	a a telephone number on which complaints and enquiries about construction and operation activities may be registered;				enquiries: 1800 074 588  (b) a postal address enabling written complaints and enquiries to be received: PO Box 254, Macksville NSW											
	b a postal address to which written complaints and enquiries may be sent; and				2447 (c) an email address to which electronic complaints and											
	c an email address to which electronic complaints and enquiries may be transmitted. The telephone number, the postal address and the email address shall be published in a newspaper circulating in the local area prior to the commencement of construction and prior to the commencement of									enquiries may be transmitted: community@afjv.com.au  An advertisement advising of the commencement of Early Works was undertaken on the 31/11/2015 and was presented in the Bellingen Shire Courier-Sun on 31/10/2015						
	project operation. The above details shall also be provided on the website (or dedicated pages) required by this approval.				A Construction Complaints Management System consistent with AS 4269 Complaints Handling is in place (Consultation Manager). Information on the complaint raised and the resolution is maintained in this register.											
	The Proponent must prepare and implement a Construction Complaints Management System consistent with AS 4269 Complaints Handling prior to the commencement of construction activities and must maintain the System for the duration of construction activities.															
	Information on all complaints received, including the means by which they were addressed and whether resolution was reached and whether mediation was															

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	required or used, must be maintained by the Proponent and included in a complaints register. The information contained within the System must be made available to the Director General on request.				
	Community involvement	I			
B28	The Proponent shall prepare and implement a Community Communication Strategy for the project. This Strategy shall be designed to provide mechanisms to facilitate communication between the Proponent, the Contractor, the Environmental Representative, the relevant Council and the local community (broader and local stakeholders) on the construction and environmental management of the project. The Strategy shall include, but not necessarily be limited to:	Stage 1 and 2	Preconstruction and Construction	Open	AFJV has an approved Community Involvement Plan (which covers the requirements of the Condition B28 Community Communication Strategy) to provide the mechanisms to facilitate communication between the Proponent, the Contractor, the Environmental Representative, the relevant Council and the local community (broader and local stakeholders) on the construction and environmental management of the project, covering all tasks and procedures in meeting the requirements of this condition.
	a identification of stakeholders to be consulted as part of the Strategy, including affected and adjoining landowners;				The Plan was approved by DPE on the 16/12/14.  AFJV will maintain and implement the Strategy throughout construction of the project.
	b procedures and mechanisms for the regular distribution of information to stakeholders on the progress of the project and matters associated with environmental management;				During the reporting period the Community Team have published and distributed  • 26 community notifications
	c procedures and mechanisms through which stakeholders can discuss or provide feedback to the Proponent and/or Environmental Representative in relation to the environmental management and delivery of the project;				<ul> <li>2 project updates</li> <li>Held community information and drop-in sessions on the following dates:</li> <li>16 and 19 March 2016 (Warrell Creek temporary</li> </ul>
	d procedures and mechanisms through which the Proponent can respond to any enquires or feedback from stakeholders in relation to the				closure)  • 7 April 2016 (North Facing Ramps)

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	environmental management and delivery of the project; and  e procedures and mechanisms that would be implemented to resolve any issues/disputes that may arise between parties on the matters relating to environmental management and the delivery of the project. This may include the use of an appropriately qualified and experienced independent mediator.  The Proponent shall maintain and implement the Strategy throughout construction of the project. The Strategy shall be approved by the Director General prior to the commencement of construction, or as otherwise agreed by the Director General.				<ul> <li>8 and 9 April 2016 (Macksville Show)</li> <li>4 and 5 May 2016 (regular quarterly Community Information Sessions)</li> <li>Included a topic relevant to the community in the weekly Toolbox Talk/Presentation.</li> <li>Relevant and timely community relations topics were provided to Toolboxes every week during this period.</li> <li>Made feedback available at the following locations:</li> <li>Site compound at 124 Albert Drive, Warrell Creek</li> <li>Nambucca Shire Council</li> <li>Macksville Library</li> <li>Nambucca Library</li> <li>Roads and Maritime Service motor registry office at Nambucca Heads.</li> <li>Noncompliance to this condition was identified in an ER Audit and reported in Section 34</li> </ul>
B29	Prior to the commencement of construction of the project, or as otherwise agreed by the Director General, the Proponent shall nominate for the approval of the Director General a suitably qualified and experienced Environment Representative(s) that is independent of the design (including preparation of documentation referred to condition A1), and construction personnel. The Proponent shall employ the Environmental Representative(s) for the duration of	Stage 1 and 2	Preconstruction and Construction	Open	David Bone – Onsite Environmental Management – approved as the Environmental Representative (ER) for WC2NH on 12 September 2013. The ER Deed has been signed and the ER is now engaged on the project and undertaking the requirements of this condition.

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	construction, or as otherwise agreed by the Director General. The Environment Representative(s) shall:				
	a be the principal point of advice in relation to the environmental performance of the project;				
	b be consulted in responding to the community concerning the environmental performance of the project;				
	c monitor the implementation of all environmental management plans and monitoring programs required under this approval;				
	d monitor the outcome of all environmental management plans and advise the Proponent upon the achievement of all project environmental outcomes;				
	e have responsibility for considering and advising the Proponent on matters specified in the conditions of this approval, and all other licences and approvals related to the environmental performance and impacts of the project;				
	f ensure that environmental auditing is undertaken in accordance with the requirements of condition B25 and the project Environmental Management System(s);				
	g 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 required under condition B30; and				
	h be given the authority and independence to require				

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	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.				
	Construction Environmental Management Plan				
B30	Prior to the commencement of construction, the Proponent shall prepare and (following approval) implement a Construction Environmental Management Plan for the project. The Plan shall outline the environmental management practices and procedures that are to be followed during construction, and shall be prepared in consultation with the EPA, DPI and relevant Council and include, but not necessarily be limited to:  a a description of all relevant activities to be undertaken during construction of the project or stages of construction, as relevant;  b statutory and other obligations that the Proponent is required to fulfil during construction including all approvals, consultations and agreements required from authorities and other stakeholders, and key legislation and policies. Evidence of consultation with relevant public authorities, shall be included identifying how issues raised by these public authorities have been addressed in the plan;  c a description of the roles and responsibilities for all relevant employees involved in the construction of the project including relevant training and induction provisions for ensuring that all employees,	Stage 1 and 2	Preconstruction and Construction	Open	<ul> <li>DPE approved the WC2NH CEMP and Sub-plans on the 16/12/14.</li> <li>CoA B30 Requirements (a) to (e) are covered within the approved CEMP, prescribing: <ul> <li>Scope and description of all relevant activities to be undertaken during construction</li> <li>Statutory and other obligations that AFJV is required to fulfil during construction</li> <li>Consultation with relevant public authorities,</li> <li>Roles and responsibilities for all relevant personnel involved in the construction</li> <li>Training and awareness for all employees, including contractors and sub-contractors</li> <li>identification of ancillary facility site locations including a detailed Ancillary Facilities Assessment (Also refer to Reference / Comment provided in condition C27)</li> <li>Environmental risk analysis and register</li> <li>Details on environmental performance monitoring</li> </ul> </li></ul>

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	including contractors and sub-contractors are aware of their environmental and compliance obligations under these conditions of approval; dientification of ancillary facility site locations, including an assessment against the location criteria outlined in condition C27; en environmental risk analysis to identify the key environmental performance issues associated with the construction phase and details of how environmental performance would be monitored and managed to meet acceptable outcomes including what actions will be taken to address identified potential adverse environmental impacts (including any impacts arising from concurrent construction works with adjacent Pacific Highway Upgrade projects, as relevant). In particular, the following environmental performance issues shall be addressed in the Plan:  i. measures to monitor and manage dust emissions including dust generated by haulage trucks, traffic on unsealed public roads and stockpile management;  ii. measures to monitor and manage waste generated during construction including but not necessarily limited to: general procedures for waste classification, handling, reuse, and disposal; how contaminated materials would be handled and disposed; use of secondary waste material in construction wherever feasible and reasonable; procedures for dealing with green waste including timber and much from clearing activities; and measures				The CEMP is also supplemented by construction Subplans to address specific environmental aspects of the projects in accordance with the requirements of this condition as follows:  Requirement (e)(i) is covered within the Air Quality Management Sub-plan (AQMP).  Requirement (e)(ii) is covered within the Waste & Energy Management Sub-plan (WEMP).  Requirement (e)(iii) is covered by the Spoil Management Protocol (Appendix I to the Soil and Water Management Sub-plan (SWMP)).  Requirement (e)(iv) is covered by the CEMP incorporating measures to monitor and manage hazard and risks including emergency management.  Requirement (e)(v) is covered by the CEMP and associated Sub-plans (see B31 Reference / Comment response).  Requirement (f) and (g) are covered within the Community Involvement Plan (CIP) and linked to the CEMP.  Requirement (h) is covered by the CEMP on procedures for the periodic review and continual improvement of the CEMP.

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	for reducing demand on water resources (including the potential for reuse of treated water from sediment control basins);				
	fill including details of how excavated material would be handled, stockpiled, reused and disposed and a stockpile management protocol detailing location criteria that would guide the placement of stockpiles and minimum management measures (including rehabilitation) that would be implemented to avoid/ minimise amenity impacts to surrounding residents and environmental risks (including to surrounding watercourses);				
	<ul><li>iv. measures to monitor and manage hazard and risks including emergency management; and</li></ul>				
	v. the issues identified in condition B31;				
	f details of community involvement and complaints handling procedures during construction, consistent with the requirements of conditions B26 to B28;				
	g details of compliance and incident management consistent with the requirements of condition B25; and				
	h procedures for the periodic review and update of the Construction Environmental Management Plan as necessary (including where minor changes can be approved by the Environmental Representative).				
	The Plan shall be submitted for the approval of the Director General no later than one month prior to the				

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	commencement of construction, or within such period otherwise agreed by the Director General.  Construction works shall not commence until written approval has been received from the Director General.				
B31	As part of the Construction Environment Management Plan for the project required under condition B30 of this approval, the Proponent shall prepare and implement the following sub plan(s):	Stage 1 and 2	Preconstruction and Construction	Open	A non-compliance was raised during the reporting period relating to the road occupancy licence requirements not being met (refer Section 3). This is a breach of the requirements in the Traffic and Safety Management Plan section 6.5.
	a a Construction Traffic Management Plan, prepared in accordance with the RTA's QA Specification G10 - Control of Traffic and Traffic Control at Work Sites Manual (2003) to manage disruptions to highway and local traffic movements as a result of construction traffic associated with the project. The Plan shall be developed in consultation with Council and shall include, but not necessarily be limited to:  i. identification of construction traffic routes and quantification of 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. potential impacts to traffic on the existing highway and associated local roads including				DPE approved the WC2NH CEMP and associated Subplans on the 16/12/14.  The approved Traffic and Safety Management Plan has been prepared in accordance with RMS Specification G10 and complies with the requirements of this condition.  An audit of the TSMP was conducted by RMS in December 2015, no non-compliances were raised. The traffic arrangements are regularly inspected by both RMS and the site team.  Details of the NCR raised for the breach of the Traffic and Safety Management Plan is provided in Section 3 above.
	highway and associated local roads including intersection level of service and potential disruptions to arrangements for pedestrians, property access, public transport, parking and/ or cyclist;				

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	<ul> <li>iv. details of temporary and interim traffic arrangements including intersections, property access and alternative traffic routes;</li> <li>v. traffic and other arrangements to minimise impacts including safe pedestrian access at all times, and the provision of alternative facilities and locations for pedestrians and/or cyclist access;</li> <li>vi. a response procedure for dealing with traffic incidents; and</li> <li>vii. mechanism for the monitoring, review and amendment of this plan;</li> </ul>				
	b a Construction Flora and Fauna Management Plan to detail how construction impacts on ecology will be minimised and managed. The Plan shall be developed in consultation with the EPA and shall include, but not necessarily be limited to:	Stage 1 and 2	Preconstruction and Construction	Open	DPE approved the Flora and Fauna Management Plan (FFMP) on the 16/12/14. The Flora and Fauna Management Plan (FFMP) incorporates the following plans and strategies in regards to minimising impacts on flora and fauna:
	i. details of pre-construction surveys undertaken to verify the construction boundaries/ footprint of the project based on detailed design and to confirm the vegetation to be cleared as part of the project (including tree hollows, threatened flora and fauna species, mangroves and riparian vegetation). The surveys shall be undertaken by a qualified ecologist and include surveys of existing bridges and culverts for the presence of micro-bat roosting at least 6 months prior to the planned disturbance of such structures and targeted surveys for the				<ul> <li>Giant Barred Frog Management Strategy</li> <li>Grey-Headed Flying Fox Management Plan</li> <li>Koala Management Plan</li> <li>Spotted Tail Quoll Management Plan</li> <li>Threatened Flora Management Plan</li> <li>Nest Box Management</li> <li>Ecological Monitoring Program</li> <li>Green-Thighed Frog Management Strategy</li> <li>Microchiropteran Bat Management Strategy</li> </ul>

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	location, clearing timing with consideration to breeding periods, measures for maintaining existing habitat features (such as bush rock and tree branches etc), seed harvesting and appropriate topsoil management, construction				ground-truthed data. No disturbance to bridge or culvert structures with the presence of micro-bats has occurred. A colony of micro-bats present in a bridge structure adjacent to the Project alignment at Crouches Creek (Williamson Creek) is being monitored in accordance with

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	worker education, weed management, erosion and sediment control and progressive revegetation;  vi. specific procedures to deal with EEC/ threatened species anticipated to be encountered within the project corridor including re-location, translocation and/or management and protection measures;  vii. a procedure for dealing with unexpected EEC/ threatened species identified during construction including stopping works and notification of EPA, determination of appropriate mitigation measures in consultation with EPA (including relevant relocation measures) and update of ecological monitoring and/ or biodiversity offset requirements consistent with conditions B8 and B10; and  viii. mechanism for the monitoring, review and amendment of this plan;	Stage	Timing	Status	the approved <i>Microchiropteran</i> Bat Management Strategy. Targeted surveys for Giant barred Frog were also completed at Butchers Creek and Upper Warrell Creek prior to clearing commencing in accordance with the Giant Barred Frog Management Strategy.  The majority of vegetation clearing on the Project is now complete. Vegetation clearing processes have been monitored regularly to ensure vegetation clearing is minimised. Exclusion flagging is checked during preclearing inspections and whilst clearing is being undertaken. Exclusion of sensitive habitat and retention of features for landscape rehabilitation are consistent with the requirements of the FFMP.  Fauna rescue and retrieval has been in accordance with the approved procedure attached to the FFMP.  Several documents that make up appendices to the FFMP were updated during the reporting period. These included:  Nest Box Management Plan  Threatened Flora Management Plan  Grey Headed Flying Fox Management Plan.  Details of the updates are discussed above in Section 9. The minor changes to these plans were accepted and endorsed by the Project Environment Representative.
					An addendum to the Threatened Flora Management Plan has been prepared to detail the requirements of the North Macksville Ramps. The modification document required the "biodiversity plans" to be updated. It was identified that the only Biodiversity Plan that required updating was the Threatened Flora Management Plan which included

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					translocating several Slender Marsdenia individuals from the clearing footprint. Several nest boxes were also moved out of the NFR clearing footprint.	
	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 include, but not necessarily be limited to:	Stage 1 and 2	Preconstruction and Construction	Open	DPE approved the WC2NH Noise and Vibration Management Plan (NVMP) on the 16/12/14. The Plan incorporates the identification and procedures of: Nearest sensitive receptors and relevant construction noise and vibration goals	
	<ul> <li>i. identification of nearest sensitive receptors and relevant construction noise and vibration goals applicable;</li> </ul>				Key noise and vibration generating construction activities accompanied with Plant and Equipment sound power data Measures proposed to be implemented to minimise	
	<ul> <li>ii. identification of key noise and/or vibration generating construction activities (based on representative construction scenarios) that have the potential to impact on surrounding sensitive receivers including expected noise/ vibration levels;</li> </ul>				construction noise and vibration impacts Out-Of-Hour Works Procedure Blast Management Program Notification to sensitive receivers and handling of noise and vibration complaints	
	<ul> <li>iii. identification of all feasible and reasonable measures proposed to be implemented to minimise construction noise and vibration impacts (including construction traffic noise impacts);</li> </ul>					Noise and vibration monitoring and managing potential exceedances  As required by the AFJV scope of work, AFJV will implement the requirements of the NVMP and subordinate
	<ul> <li>iv. procedure for dealing with out-of-hour works in accordance with condition C4, including procedures for notifying the Director General concerning complaints received in relation to the extended hours approved under condition C4(d);</li> </ul>				procedures and programs.  The Blast Management Program has been updated to reflect the vibration and air blast overpressure limit change approved by DPE on 17/7/2015.  Implementation of the NVMP has been ongoing throughout construction. AFJV have monitored potentially	

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	v. procedures and mitigation measures to ensure relevant vibration and blasting criteria are achieved, including a suitable blast program supported by test blast results, 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 building damage;				high noise impact activities such as impact piling and provided respite periods in accordance with the mitigation measures listed in the NVMP. Out of hours activities are managed through a permit system to ensure compliance with the Out of Hours Approvals Procedure (attached to the NVMP) and the Project EPL. Vibration and air blast overpressure monitoring for the blasting activities is presented above in Section 7.
	vi. 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; and				
	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 significant exceedances of relevant noise and vibration goals are detected;				
	d a Construction Water Quality Management Plan to manage surface water quality and groundwater impacts during construction of the project. The Plan shall be developed in consultation with EPA, DPI (Fisheries and NOW) and include, but not necessarily be limited to:	Stage 1 and 2	Preconstruction and Construction	Open	Two Non-compliances raised during the reporting period relating to breaches of the Environment Protection Licence conditions. One two occasions after major rainfall events, sediment basins were not dewatered within the required timeframe after the cessation of the rainfall event. Details of the non-compliances are provided above in Section 3.

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	<ul> <li>i. a contingency plan, consistent with the Acid Sulfate Soils Manual, to deal with the unexpected discovery of actual or potential acid sulfate soils;</li> <li>ii. a tannin leachate management protocol to manage the stockpiling of mulch and use of cleared vegetation and mulch filters for erosion and sediment control;</li> <li>iii. details of how construction activities would be managed and mitigated to minimise erosion and sedimentation consistent with condition C17;</li> <li>iv. where construction activities have the potential to impact on waterways or wetlands (through direct disturbance such as construction of waterway crossings or works in close proximity to waterways or wetlands), site specific mitigation measures to be implemented to minimise water quality, riparian and steam hydrology impacts as far as practicable, including measures to stabilise bank structure and rehabilitate affected riparian vegetation to existing or better condition (including relevant performance indicators and monitoring requirements). The timing of rehabilitation of the waterways shall be as agreed to with DPI (Fisheries and NOW) shall be identified in the plan;</li> <li>v. construction water quality monitoring requirements consistent with condition B17; and</li> </ul>				DPE approved the WC2NH Soil and Water Management Plan (SWMP) on the 16/12/14. The Plan incorporates requirements for soil and water quality management including requirements for mitigation and management of erosion and sedimentation. The SWMP incorporates specific plans and procedures including:  • Acid Sulfate Soil Management Procedure  • Management of Tannins from Vegetation Mulch  • Sediment Basin Management and Discharge Procedure  • Pacific Highway Projects Dewatering Practice Note  • Water Quality Monitoring Program  • Groundwater Management Strategy  • Spoil and Fill Management Procedure  • Stockpile Management Protocol  • Unexpected Discovery of Contaminated Land Procedure  • Arsenic Rock Management Strategy  As required by the AFJV scope of work, AFJV will implement the requirements of the SWMP and subordinate procedures and programs.  Implementation of the SWMP is monitored regularly by AFJV including weekly inspections by the Project Soil Conservationist to determine compliance with the "Blue Book". Site controls are also regularly inspected by AFJV staff prior to, during and after rainfall events.

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	<ul><li>vi. a groundwater management strategy, including (but not necessarily limited to):</li></ul>				Monitoring results for groundwater and surface water are summarised in Section 7 above.
	i. description and identification of groundwater resources (including depths of the water table and groundwater quality) potentially affected by the proposal based on baseline groundwater monitoring undertaken in accordance with condition B17(c);				Incidents raised relating to erosion and sediment controls are detailed in Sections 5 above.
	ii. identification of surrounding licensed bores, dams or other water supplies and groundwater dependant ecosystems and potential groundwater risks associated with the construction of the project on these groundwater users and ecosystems;				
	<ul><li>iii. measures to manage identified impacts on water table, flow regimes and quality and to groundwater users and ecosystems;</li></ul>				
	<ul><li>iv. groundwater inflow control, handling, treatment and disposal methods; and</li></ul>				
	v. a detailed monitoring plan to identify monitoring methods, locations, frequency, duration and analysis requirements; and				
	e a <b>Construction Heritage Management Plan</b> to detail how construction impacts on Aboriginal and non-Aboriginal heritage will be minimised and managed. The Plan shall be developed in consultation with the OEH (Heritage Branch) (for non-Aboriginal heritage) and EPA and Registered	Stage 1 and 2	Preconstruction and Construction	Open	DPE approved the WC2NH Heritage Management Plan (HMP) on the 16/12/14. The Plan incorporates requirements for mitigation and management of construction impacts on Aboriginal and Non-Aboriginal heritage, including management measures to be carried out in relation to already recorded sites and potential

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	Aboriginal Stakeholders (for Aboriginal heritage), and include, but not necessarily be limited to:  ii. In relation to Aboriginal Heritage:  i. details of management measures to be carried out in relation to already recorded sites and potential Aboriginal deposits (including further archaeological investigations, salvage measures and/ or measures to protect unaffected sites during construction works in the vicinity);  ii. procedures for dealing with previously unidentified Aboriginal objects excluding human remains (including halting 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 qualified archaeologist in consultation with registered Aboriginal stakeholders, assessment of the consistency of any new Aboriginal heritage impacts against the approved impacts of the project, and registering of the new site in the OEH AHIMS register);  iii. procedures for dealing with human remains (including halting of works in the vicinity and notification of the NSW Police, OEH and registered Aboriginal stakeholders and not-recommending any works in the area unless authorised by OEH and/ or the NSW Police); and  iv. Aboriginal cultural heritage induction				<ul> <li>Aboriginal deposits and non-Aboriginal heritage sites. The HMP incorporates specific plans and procedures including: <ul> <li>Methodology for Aboriginal and Historical Heritage Investigation for Works Outside the Project Corridor</li> <li>Aboriginal heritage education and training package</li> <li>Non-Aboriginal heritage education and training package</li> <li>Roads and Maritime Standard Management Procedure – Unexpected Heritage Items</li> </ul> </li> <li>As required by the AFJV scope of work, AFJV will implement the requirements of the HMP and subordinate management procedures, and training packages for heritage induction and training.</li> <li>Cultural Heritage Awareness training was undertaken on the 1<sup>st</sup> October 2015.</li> <li>HMP implementation is ongoing, AFJV are undertaking ongoing consultation with the RAP's in accordance with the approved HMP.</li> <li>An AFG was held on the 13/05/16. An update to the Aboriginal Participation Plan was provided, discussion regarding the heritage assessments undertaken for the North Facing Ramps and Forestry Trails as well as an update on the UDLP was undertaken. An update on construction was also provided.</li> <li>Protective fencing around heritage significant areas is inspected regularly and reinstated where required.</li> </ul>

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	processes for construction personnel (including procedures for keeping records of inductions undertaken for the duration of the project) and procedures for ongoing Aboriginal consultation and involvement; and				
	(iii) In relation to non-Aboriginal Heritage:				
	i. details of management measures to be carried out in relation to already recorded sites (including further heritage investigations, archival recordings and/ or measures to protect unaffected sites during construction works in the vicinity), consistent with the measures listed in Environmental Assessment Table 19-4;				
	ii. procedures for dealing with previously unidentified non-Aboriginal objects, (including halting of works in the vicinity, assessment of the significance of the item(s) and determination of appropriate mitigation measures including when works can recommence by a qualified archaeologist and assessment of the consistency of any new non-Aboriginal heritage impacts against the approved impacts of the project; and				
	iii. non-Aboriginal cultural heritage induction processes for construction personnel.				
	Part C – During construction				

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	Biodiversity		1		
C1	The Proponent shall employ all feasible and reasonable measures to minimise the clearing of native vegetation to the greatest extent practicable during the construction of the project.	Stage 1 and 2	Preconstruction and Construction	Open	AFJV has conducted ground truthing surveys whilst preparing the FFMP. The ecology surveys have informed the clearing extent for detailed design to minimise the clearing of native vegetation to the greatest extent practicable.
					All vegetation clearing required for the Project is assessed and determined to be consistent with the Planning Approval and Environmental Assessment by RMS and the ER prior to being undertaken.
					A Vegetation Clearing Tracking Register is maintained and compared with the approved clearing requirements. The approved clearing is consistent with the Biodiversity Offset Strategy. The quantity of EEC clearing is much lower than the area provided in the EA, however the overall quantity of native vegetation clearing is marginally higher than the area provided in the EA. The Project considers the retention of vegetation with conservation significance is a positive outcome for the Project.
					Exclusion flagging is provided on site along the clearing limits to prevent incidental clearing of unapproved areas. The majority of clearing for the Project is complete and no major incidents regarding breaches of the clearing limits have been recorded.
	Air quality impacts				
C2	The Proponent shall employ all feasible and reasonable measures (including temporary cessation	Stage 1 and 2	Preconstruction and Construction	Open	AFJV has detailed management and mitigation measures to achieve this requirement within the approved Air Quality Management Plan (AQMP). The AQMP includes

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	of relevant works, as appropriate) to ensure that the project is constructed in a manner that minimises dust emissions from the site, including wind-blown, trafficgenerated dust, stockpiles and material tracking from construction sites onto public roads.				the locations of dust sensitive areas and monitoring locations.  The Project is currently using chemical suppressants on haul roads, stockpiles and for batter stabilisation. Dust monitoring is ongoing. Several exceedances of the requirements stipulated in the AQMP have been reported to the EPA in the EPA Monthly Report. The Project has investigated each exceedance and applied additional dust mitigation measures. Results of the monitoring are provided above in Section 7. Improvements have been made to the crushing activities to increase water sprays and stabilised material has been used on haul roads to reduce dust where practical.  The Project is undertaking early topsoiling and revegetation of exposed batters to minimise dust impacts.
	Noise and vibration impacts – construction hours				
C3	The Proponent shall only undertake construction activities associated with the project during the following standard construction hours:  a 7:00am to 6:00pm Mondays to Fridays, inclusive; and  b 8:00am to 1:00pm Saturdays; and	Stage 1 and 2	Preconstruction and Construction	Open	The requirements of this condition are included within the NVMP Sub-plan for implementation by AFJV during construction.  These construction hours have been implemented on the Project.
C4	c at no time on Sundays or public holidays.  Works outside of the construction hours identified in conditions C3 may be undertaken in the following circumstances:  a works that generate noise that is not audible at any sensitive receptor;	Stage 1 and 2	Preconstruction and Construction	Open	The requirements of this condition are included within the NVMP Sub-plan and the Out-Of-Hours Works procedure included in the NVMP, for implementation by AFJV during construction.  Noise requirements are also subject to the Environment

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	b	for delivery of materials required outside these				Protection Licence 20533 conditions.
		hours by the Police or other authorities for safety reasons; or				The Project has undertaken a number of activities outside of standard construction hours in accordance with this
	С	where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; or				condition and the conditions of the EPL. Works undertaken outside of standard construction hours are managed in accordance with the Out of Hours Approval
	d	construction works undertaken through sparsely populated areas in which sensitive receptors are located greater than 300 metres away from the project boundary. In this case construction is permissible during the following hours: 6.00am to 6.00pm Monday to Friday and 7.00am to 4.00pm Saturdays and at no time on Sundays or public holidays. These works hours may be reviewed and/ or revoked by the Director General in consultation with the EPA in the case of excessive or unresolved noise complaints; or				Procedure and require a Permit signed by the Environment and Community prior to commencement.  Notification is also provided to the EPA, RMS and the ER in accordance with the procedure.
	е	where an EPL applies to the construction of the project, construction hours which are approved in accordance with the conditions of an EPL for the project; or				
	f	where an EPL does not apply to the construction of the project, Out of Hours Works as agreed to by the Director general in accordance with condition C5.				
C5	co all sp	or the purposes of condition C4 (f), certain nstruction activities (Out of Hours Works) may be owed to occur outside the construction hours ecified in conditions C3 with the prior written	Stage 1 and 2	Preconstruction and Construction	Open	The NVMP contains an Out of Hours Works Procedure which covers the process for considering activities to be undertaken outside of standard construction hours. This has been approved by DPE in December 2014.
		proval of the Director General. Requests for out of ours approval will be considered for construction				All works undertaken outside of standard construction hours comply with the approved Out of Hours Works

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	activities which cannot be undertaken during the construction hours specified in conditions C3 for technical or other justifiable reasons and will be considered on a case by case or activity-specific basis. Any request for Out of Hours Works must be accompanied by:				Procedure.
	a details of the nature and need for activities to be conducted during the varied construction hours;				
	b written evidence to the EPA and the Director General that activities undertaken during the varied construction hours are justified, appropriate consultation with potentially affected receivers and notification of Council has been undertaken, issues raised have been addressed, and all feasible and reasonable mitigation measures have been put in place; and				
	c evidence of consultation with the EPA on the proposed variation in standard construction hours. Despite the above, Out of Hours Works may also occur in accordance with an approved Construction Environment Management Plan or Construction Noise and Vibration Management Plan for this project, where that plan provides a process for considering the above on a case by case or activity specific basis by the Proponent, including factors a) to c) above.				
C6	Blasting associated with the project shall only be undertaken during the following hours	Stage 1 and 2	Construction	Open	Blasting activities have commenced on the Project in July 2015. All blasts are undertaken in accordance with the hours specified in this condition.
	<ul><li>a 9:00 am to 5:00 pm, Mondays to Fridays, inclusive;</li><li>b 9:00 am to 1:00 pm on Saturdays; and</li></ul>				nours specified in this condition.

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	c at no time on Sundays or public holidays.  This condition does not apply in the event of a direction from police or other relevant authority for safety or emergency reasons to avoid loss of life, property loss and/or to prevent environmental harm.  Noise and vibration impacts – construction noise and vib	ration goals			
C7	The Proponent shall implement all feasible and reasonable noise mitigation measures with the aim of achieving the construction noise management levels detailed in the <i>Interim Construction Noise Guideline</i> (DECC, 2009) during construction activities, 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 required under condition B31(c) of this approval.	Stage 1 and 2	Preconstruction and Construction	Open	Proposed noise mitigation measures are included within the NVMP Sub-plan for implementation by AFJV during construction.  AFJV have commenced monitoring construction noise levels in accordance with the NVMP. The levels recorded are within the criteria specified in the NVMP. Where the noise levels exceed the Noise Management Levels provided in the NVMP, AFJV provides an explanation and investigates additional mitigation measures in the EPA Monthly Report. AFJV also presents noise monitoring results at the monthly ERG meeting and a discussion regarding reasonable mitigation measures is also undertaken.
C8	The Proponent shall implement all feasible and reasonable mitigation measures with the aim of achieving the following construction vibration goals and ground-borne noise levels:  a for structural damage vibration, the vibration limits set out in the German Standard D/N 4150 Part 3-1999 Structural Vibration in Buildings - Effects on Structures;	Stage 1 and 2	Construction	Open	Proposed construction noise and vibration goals are included within the NVMP Sub-plan for implementation by AFJV during construction.  The mitigation measures included in the NVMP are based on the standards provided in Condition C8.  Vibration monitoring has been conducted for the blasting undertaken on the Project and for the use of vibratory equipment. Vibration monitoring has also been

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	<ul> <li>for works in the vicinity of the heritage structures, the vibration limits set out in the German Standard DIN 4150-3: 1999 Structural Vibration - part 3: Effects of vibration on structures; and</li> <li>for human exposure, the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration: A Technical Guideline (DEC 2006); and</li> <li>the ground-borne noise levels set out in the Interim Construction Noise Guidelines (DECC, 2009).</li> </ul>				undertaken in response to complaints received on the Project from nearby sensitive receivers in accordance with the Project EPL requirements. The results have been compared to the NVMP which is based on the standards set out in Condition C8. Results of monitoring is summarised in Section 7 above.  Noise monitoring is conducted in accordance with the NVMP. The results are summarised in Section 7 above.  No monitoring results have shown exceedances of the requirements for structural damage (there are no heritage structures in the vicinity of the Project that require monitoring). There have been no breaches of the human comfort criteria when monitoring vibration in response to complaints.

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C9	generated by blasting not exceed the criteria measured at the most sensitive receiver. To at the most affected receiver, blasting trials commencement of the results from the trials	ensure that air blast overpressure associated with the project does a specified in Table 1 when a taffected residence or other ensure that criteria are satisfied esidence or other sensitive shall be undertaken prior to the exproject blasting program, with used to determine site specific the criteria specified in Table 1.  Allowable exceedance  5% of total number of blasts over a 12 month period  0%	Stage 1 and 2	Construction	Open	The requirements of this condition are included within the NVMP Sub-plan and subordinate Blast Management program for implementation by AFJV during construction.  AFJV sought approval from DPE in accordance with Condition C11 to increase the blast vibration and airblast overpressure limits.  An approval request was submitted to DPE on the 08/07/15 to increase the airblast overpressure limit to 125 dB(L) and the ground vibration limit to 25mm/s (PPV). An approval was obtained from DPE on 17/7/2015 subject to conditions being met.  A request was submitted to DPE to increase the number of blasts in Cut 10. This was approved by DPE on the 26/2/2016.  Production blasting undertaken to date has shown compliance with the airblast overpressure requirements of 125 dB(L). Blasting on the Project was completed on the 31/8/16.
C10	generated by blasting not exceed the criteria measured at the most sensitive receiver. To at the most affected receiver, blasting trials	ensure that ground vibration associated with the project does a specified in Table 2 when t affected residence or other ensure that criteria are satisfied esidence or other sensitive s shall be undertaken prior to the e project blasting program, with	Stage 1 and 2	Construction	Open	The requirements of this condition are included within the NVMP Sub-plan and subordinate Blast Management program for implementation by AFJV during construction.  AFJV sought approval from DPE in accordance with Condition C11 to increase the blast vibration and airblast overpressure limits.  An approval request was submitted to DPE on the

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	results from the trials used to determine site specific blast design to satisfy the criteria specified in Table 2.  Table 2 Peak particle velocity criteria					08/07/15 to increase the airblast overpressure limit to 125 dB(L) and the ground vibration limit to 25mm/s (PPV). An approval was obtained from DPE on 17/7/2015 subject to conditions being met.
	Peak particle velocity (mms-1)	Allowable exceedance				A request was submitted to DPE to increase the number of blasts in Cut 10. This was approved by DPE on the 26/2/2016.
	5	5% of total number of blasts over a 12 month period				No exceedances of the approved limit increases have been measured. Blasting on the Project was completed on the 31/8/16.
	10	0%				
C11	C10 do not apply whagreement with the criteria identified in a Director General has agreement. In obtain for any such agreement the Director General a details of the projustification for the criteria including relevant);  b an assessment increased blast environment and	identified in condition C9 and/ or nere the Proponent has a written relevant landowner to exceed the condition C9 and/ or C10 and the sapproved the terms of the written ning the Director General approval nent, the Proponent shall submit to l:  oposed blasting program and he proposed increase to blasting galternatives considered (where of the environmental impacts of the limits on the surrounding d most affected residences or other ters including, but not limited to	Stage 1 and 2	Construction	Open	The requirements of this condition are included within the NVMP Sub-plan and subordinate Blast Management Program for implementation by AFJV during construction.  An approval request was submitted to DPE on the 08/07/15 to increase the airblast overpressure limit to 125 dB(L) and the ground vibration limit to 25mm/s (PPV). Approval was received from DPE on 17/07/2015. This approval request contained information to comply with this condition.

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	noise, vibration and air quality and any risk to surrounding utilities, services or other structures;  c details of the blast management, mitigation and monitoring procedures to be implemented; and  d details of consultation undertaken and agreement reached with the relevant landowners (including a copy of the agreement in relation to increased blasting limits).  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;  b the blasting limit agreed to under any agreement can at no time exceed a maximum Peak Particle Velocity vibration level of 25 mm/s or maximum Airblast Overpressure level of 125 dBL; and  c the provisions under condition C11 (to increase applicable blast criteria in agreement with the relevant landowners) do not apply where the property is a heritage property.  Operational noise mitigation review				
C12	Unless otherwise agreed to by the Director General, within six months of commencing construction, the Proponent shall in consultation with EPA prepare and submit for the approval of the Director General, a review of the operational noise mitigation measures proposed to be implemented for the project. The review shall:	Stage 1 and 2	Construction	Open	A draft Operational Noise Report has been provided to RMS for review by AFJV. The report has also been provided to the EPA to review.  RMS submitted a letter requesting an extension of time from DPE for submission of the Operational Noise Mitigation Review (5/8/2015). DPE approved the extension of time on 14/8/2015 for 9 months. A further

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	a confirm the operational noise predictions of project based on detailed design. This oper noise assessment shall be based on an appropriately calibrated noise model (which incorporated additional noise monitoring, who necessary for calibration purposes). The assessment shall specifically include verific noise levels at Nambucca Heads Rest Area on additional noise monitoring undertaken a location;	has nere ation of , based			extension of time was granted by the DPE on the 20/05/16 allowing the report to be submitted for approval on the 8 May 2017. An update on the progress of the report is to be provided to DPE on the 8 February 2017.
	b review the suitability of the operational noise mitigation measures identified in the docum listed under condition A1 to achieve the criticoutlined in the Environmental Criteria for Ro Traffic Noise (EPA, 1999) and the Industrial Policy (EPA, 2000) in relation to the Nambu Heads Rest Area, based on the operational performance of the project predicted under above; and	ents eria vad Noise cca noise			
	c where necessary, investigate additional fea and reasonable noise mitigation measures achieve the criteria outlined in the Environm Criteria for Road Traffic Noise (EPA, 1999) Industrial Noise Policy (EPA, 2000) in relation the Nambucca Heads Rest Area including the applicability of noise walls in the vicinity of Road in Macksville.	ental and the on to ne			
	Heritage impacts				
C13	This approval does not allow the Proponent to comodify or otherwise physically affect human ren		Preconstruction, Construction and Operations	Open	The approved Heritage Management Plan includes the Standard Management Procedure: Unexpected Archaeological Finds Roads and Maritime August 2013. The HMP also includes Aboriginal and Non-Aboriginal

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					heritage induction training packages. These controls will be implemented by AFJV.
					No human remains have been encountered on the Project.
C14	The Proponent shall not destroy, modify or otherwise physically affect the Aboriginal cultural sites identified in Table 15-3 of the Environmental Assessment	Stage 1 and 2	Preconstruction, Construction and Operations	Open	Site surveys within the WC2NH project area have been undertaken to determine relevant sites, and no-go zone fencing and signage has been erected.
	(including AHIMS site numbers 21-6-36, 21-6-0287, 21-6-0016, 21-6-0163, 21-6-0039, 21-6-0090, 21-6-0102, 21-6-0141, 21-6-0164, 21-6-0064, and 21-6-0044), Boggy Creek spiritual area, Buchanan Conflict				Impacts to the Cabbage tree palm resource site and potentially PAD 31 (for fencing works), have been addressed through a modification of the approval by DPE (Mod 7) which was approved on the 15/01/15.
	Site at Cow Creek (21-6-00286), burial site, Cabbage tree palm resource site, Aboriginal mirrah (21-3-0034), Rosewood Scarred Tree or potential archaeological deposits (PAD) 31.				The Rosewood Scarred Tree has been permanently fenced and protected from construction activities.
C15	The Proponent shall not destroy, modify or otherwise physically affect the following historic sites: the ferry/punt crossing at Boulton Hill; old municipal tip; Valla Gold Mine; former stock route; tramway and quarry, Martells Road; and the native swamp conservation area.	Stage 1 and 2	Preconstruction, Construction and Operations	Open	Relevant site surveys for WC2NH (Ferry Punt at Boulton Hill, and old municipal tips) have been undertaken to determine relevant sites, and no-go zone fencing and signage has been erected. No impacts have occurred to the ferry/punt crossing at Boulton Hill and the Old Municipal Tip.
C16	The measures to protect any Aboriginal or historic heritage sites near or adjacent to the project during construction shall be detailed in the Heritage Management Plan required under condition B31 (e).	Stage 1 and 2	Preconstruction, Construction and Operations	Open	The requirement of this condition has been incorporated by AFJV into management and mitigation measures and procedures within the approved Heritage Management Plan. Sites are protected using no-go zone fencing and signage which is regularly inspected and maintained.
C16A	a i) Where permanent works (including utilities, services and permanent access and service roads, or similar works required for the project) located outside the approved project footprint and	Stage 1 and 2	Preconstruction and Construction	Open	The approved methodology - Methodology for Aboriginal and Historical Heritage Investigation for Works Outside the Project Corridor", is incorporated as Appendix A to the approved Heritage Management Plan for implementation

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No.	described in the documents listed in condition A1 are required, and those works have the potential to impact upon previously unidentified non-Aboriginal and Aboriginal archaeology, the proponent shall undertake archaeological investigations to determine the impacts of those works.  ii) The proponent shall undertake the investigations required in accordance with condition C16A (a)(i) consistent with the Construction Heritage Management Plan required under Condition B31 (e), or using a methodology prepared in consultation with OEH and approved by the Director General.  iii) The proponent shall report on the results of the archaeological investigations prior to commencement of permanent works, and:  • where the potential heritage impacts identified in the report are less than those described in the documents listed in condition A1, the report shall be provided to the Director General;  • where the potential heritage impacts identified in the report are the same as those described in the documents listed in condition A1, the report shall be prepared in consultation with OEH and submitted to the Director General;  • where the potential heritage impacts identified in the report are greater than those described in the documents listed in condition A1, the report shall be prepared in consultation with OEH and submitted to the satisfaction of the				by AFJV. Accordingly, archaeological reports will be required to be submitted to DPE for approval or advice.  Heritage assessments have been undertaken for Public Utility realignment works, private property adjustments and design refinements outside of the previous approved Project Boundary. The approved Methodology has been followed under the guidance of the Project Archaeologist Jacobs and the Registered Aboriginal Parties. In all circumstances, a report has been prepared and approved by RMS and the ER. No impacts to heritage items have been identified from additional permanent work activities. The Cultural Heritage Assessment Reports for the Project permanent works were submitted to DPE in December 2015.

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	Director General.  iv) The report on the results of the archaeological investigation is to include recommendations (such as for further archaeological work) and shall include, but not necessarily be limited to, consideration of measures to avoid or minimise disturbance to Aboriginal objects where objects of moderate to high significance are found to be present.  b i) The proponent shall undertake salvage work with the approval of the Director General, when recommended by the results of the archaeological investigation required under condition C16A.  ii) In determining whether to approve salvage work, the Director General is to have reference to the results of all relevant archaeological investigations undertaken under condition C16A(a) and the views of OEH.				
C17	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 Soils And Construction Vols 2A and 2D Main Road Construction (DECC 2008) shall be employed during the construction of the project for erosion and sediment control.	Stage 1 and 2	Preconstruction and Construction	Open	Non-compliance has been raised in this reporting period relating to dewatering of sediment basins within the required timeframe after a rainfall event.  AFJV has incorporated soil and water management measures consistent with the requirements of this condition, into the approved Soil and Water Quality Management Sub-plan (SWMP).  Details of the NCR's and incidents raised for this condition during the reporting period are included in Section 3

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					above.						
C18	Where available, and of appropriate chemical and biological quality, the Proponent shall use stormwater, recycled water or other water sources in preference to	Stage 1 and 2	Preconstruction and Construction	Open	The Project has constructed several large water holding dams to hold water captured during rainfall events in sediment basins located on site.						
	potable water for construction activities, including concrete mixing and dust control.				AFJV have also sought approval from the NSW Office of Water to extract water from Upper Warrell Creek and Lower Warrell Creek. Groundwater bores have been installed. However, due to drier than usual weather and poor water yield from the groundwater bores, potable water is currently being used to supplement the water supply for dust suppression in the northern extent of the Project. Groundwater is used in preference to the potable water, however due to the high volume of water required during peak earthworks, a supplementary source of water was required. Due to community feedback, other local sources of surface water were not available to the Project.						
	Property and landuse – property impacts	1									
C19	The Proponent shall construct the project in a manner that minimises impacts to private properties and other public or private structures (such as dams, fences,	Stage 1 and 2	Preconstruction and Construction	Open	The WC2NH Project has been designed to minimise the impacts to private property and private property structures.						
	utilities, services etc.) along the project corridor. In the event that construction of the project results in direct or indirect damage to any such property or structure, the Proponent shall arrange and fund repair of the damage										AFJV has obtained building condition surveys of existing structures located adjacent to the alignment to ensure all damage is rectified to the pre-existing standard prior to construction commencing.
	to a standard comparable to the in existence prior to the damage.				Several complaints have been received regarding impacts to property from the Project works during the reporting period. All damage has been rectified or is in the process of being rectified at the time of this report.						

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C20	The Proponent shall ensure that access to all properties is maintained during construction unless agreed with the property owner in advance and that any access physically affected by the Project is reinstated to at least an equivalent standard, in consultation with the landowner.	Stage 1 and 2	Construction	Open	The AFJV will ensure that access to properties is maintained during construction. No complaints have been received in relation to this condition during the reporting period.
C21	The Proponent shall in consultation with relevant landowners construct the project in a manner that minimises intrusion and disruption to agricultural operations/activities in surrounding properties (e.g. stock access, access to farm dams etc.).	Stage 1 and 2	Construction	Open	AFJV has consulted with relevant landowners on construction of the project, addressing construction activities and approach to minimise intrusion and disruption to agricultural operations/activities in surrounding properties (e.g. stock access, access to farm dams etc.).  AFJV has provided stock access through the alignment where necessary.
	Property and landuse – forestry impacts				
C22	Where the project traverses Nambucca, Newry and Little Newry State Forests, the Proponent shall in consultation with DPI (Forestry) ensure that construction activities do not unduly disrupt existing forestry activities, access for firefighting and recreation activities during construction.	Stage 1 and 2	Preconstruction and Construction	Open	AFJV has consulted with Forestry Corporation to ensure that construction activities do not unduly disrupt existing forestry activities, access for firefighting and recreation activities during construction.  Forests NSW were notified in May 2015 that vegetation clearing was due to commence and access through the alignment would be limited. No issues were raised by Forests NSW regarding impacts to access, fire-fighting or recreational use. The Project is in regular communication with Forests NSW to ensure there are no impacts to access for forestry operations.

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CoA No.	Requirement	Stage	Timing	Status	Reference / Comment
	Traffic impacts	1	1		
C23	Road dilapidation reports shall be prepared for all local roads likely to be used by construction traffic prior to use by construction heavy vehicles. A copy of the relevant report shall be provided to the relevant Council. Any damage resulting from the construction of the project, aside from that resulting from normal wear and tear, shall be repaired at the cost of the Proponent. The roads likely to be used by heavy construction vehicles should be identified in the Traffic Management Plan required under condition B31 (a).	Stage 1 and 2	Preconstruction and Construction	Open	In accordance with the approved Traffic and Safety Management Plan, a road dilapidation review has been undertaken by the Project for i) the Pacific Hwy and ii) Local Roads affected by the project.  A copy of the dilapidation report has been provided to the relevant road authority, RMS and Nambucca Shire Council respectively.
	Waste management	I			
C24	The Proponent shall not cause, permit or allow any waste generated outside the site to be received at the site for storage, treatment, processing, reprocessing, or disposal on the site, except as expressly permitted by a licence under the <i>Protection of the Environment Operations Act 1997</i> , if such a licence is required in relation to that waste.	Stage 1 and 2	Preconstruction and Construction	Open	No waste generated offsite is being brought on to the project unless it is in accordance with EPA's resource recovery waste orders and exemptions.
C25	The Proponent shall maximise the reuse and/or recycling of waste materials generated on site as far as practicable, to minimise the need for treatment or disposal of those materials off site.	Stage 1 and 2	Preconstruction and Construction	Open	AFJV has detailed the requirements of this condition within the approved Waste and Energy Management Plan (WEMP). The Plan includes measures to reduce wastage and provide recycling for construction waste.  The Project has reused crushed concrete and demolition materials on site. Recycling receptacles are available for comingled paper, cardboard, plastics, etc.
					The Project is also currently reusing mulch material generated on the Project and excess soil material is being

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					incorporated into noise and visual barriers.
C26	The Proponent shall ensure that all liquid and/or non-liquid waste generated on the site is assessed and classified in accordance with <i>Waste Classification Guidelines</i> (DECC, 2008), or any future guideline that	Stage 1 and 2	Construction	Open	AFJV has detailed the requirements of this condition within the approved Waste and Energy Management Plan (WEMP). All liquid and non-liquid wastes are classified prior to transportation and disposal.  The waste classification is recorded in the Pacifico Waste
	may supersede that document and where removed from the site is only directed to a waste management				Tracking register for all materials removed from site.
	facility lawfully permitted to accept the materials.				All wastes are being classified and recorded in accordance with EPA's guidelines.
	Ancillary facilities	1			
C27	Unless otherwise approved by the Director General in accordance with this condition, the sites for ancillary facilities associated with the construction of the project shall:	Stage 1 and 2	e 1 and Construction	on Open	Both the main site compounds in the northern and southern ends of the Project have been approved under Major Consistency Reviews and were both compliant with this condition.  The approved methodology - Methodology for Aboriginal and Historical Heritage Investigation for Works Outside the Project Corridor", is incorporated as Appendix A to the approved Heritage Management Plan for implementation
	a be located more than 50 metres from a waterway;				
	b have ready access to the road network or direct access to the construction corridor;				
	c be located in areas of low ecological significance and require minimal clearing of native vegetation (not beyond that already required by the project);				by AFJV.  An approval from the DPE was received on 17 December 2015 for the Northern Concrete Batch plant to operate
	d be located on relatively level land;				within 300m of a nearby sensitive receiver.
	e be separated from the nearest residences by at least 200 metres (or at least 300 metres for a temporary batching plant);				
	f be above the 20 ARI flood level unless a contingency plan to manage flooding is prepared and implemented;				

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	g not unreasonably affect the land use of adjacent properties;				
	h provide sufficient area for the storage of raw materials to minimise, to the greatest extent practical, the number of deliveries required outside standard construction hours; and				
	i be located in areas of low heritage conservation significance (including identified Aboriginal cultural value) and not impact on heritage sites beyond those already impacted by the project.				
	Ancillary sites identified that do not meet the above criteria shall be assessed against this criteria to demonstrate how any impacts can be mitigated and managed to acceptable standards (including demonstrating consistency with project impacts identified in the documents listed under condition 41, to the satisfaction of the Director General. Such assessment(s) can be submitted separately or as part of the Construction Environmental Management Plan required under condition B30.				
C27A	<ul> <li>a The Proponent may undertake archaeological investigations at ancillary sites that do not meet the criterion set out in condition C27(i) of this approval, where this is required to assess the potential non-Aboriginal and Aboriginal archaeological impacts of the ancillary facility on previously unidentified heritage sites.</li> <li>b Any archaeological investigations undertaken under this condition must be undertaken consistent</li> </ul>	Stage 1 and 2	Preconstruction and Construction	Open	Archaeological assessments of nominated ancillary site facilities have been undertaken in accordance with the approved Methodology for aboriginal heritage and historic investigation for works outside the project corridor. The assessment results have been provided to Roads and Maritime and the ER as part the Consistency Review for the Albert Drive Compound and the Northern Compound. No impacts to areas or items of heritage significance have been undertaken for either of the Ancillary Site Facilities
	with the Construction Heritage Management Plan				approved for the Project.  The Project currently has a register of Minor Ancillary

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	required under Condition B31 (e) or a methodology prepared in consultation with OEH and approved by the Director General.				Facilities that is provided to the ER for approval. There are currently 19 approved Minor Ancillary Facilities on the Project. The register compares the Minor Ancillary Facility
	c The results of any relevant archaeological investigations undertaken under this condition must be described				to this condition and also to C27.

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CoA No.	Requirement	Stage	Timing	Status	Reference / Comment
C28	The Director General's approval is not required for minor ancillary facilities (e.g. lunch sheds, office sheds, and portable toilet facilities) that do not comply with the criteria set out in condition C27 of this approval and which:	Stage 1 and 2	Preconstruction and Construction	Open	The Project currently has a register of Minor Ancillary Facilities that is provided to the ER for approval. There are currently 19 approved Minor Ancillary Facilities on the Project. The register compares the Minor Ancillary Facility to this condition and also to C27.
	a are located within an active construction zone within the approved project footprint; and				
	b have been assessed by the Environmental Representative to have:				
	(i) minimal amenity impacts to surrounding residences, with consideration to matters such as noise and vibration impacts, traffic and access impacts, dust and odour impacts, and visual (including light spill) impacts, and				
	(ii) minimal environmental impact in respect to waste management, and no impacts on flora and fauna, soil and water, and heritage beyond those approved for the project; and				
	c have environmental and amenity impacts that can be managed through the implementation of environmental measures detailed in a Construction Environment Management Plan for the project.				
	Part D – Prior to Operations				
	Operational Environment Management System				
D1	Prior to the commencement of operation, the Proponent shall incorporate the project into its existing environmental management system.	Stage 1 and 2	Operations	Open	RMS will incorporate the works as executed within RMS operational management systems per the requirements for both stage 1 and stage 2 within 6 months of the stages being deemed fully operational.

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CoA No.	Requirement	Stage	Timing	Status	Reference / Comment												
	Part E – During Operations	1															
	Operational noise																
E1	Within 12 months of the commencement of operation of the project, or as otherwise agreed by the Director General, the Proponent shall undertake operational noise monitoring to compare actual noise performance of the project against noise performance predicted in the review of noise mitigation measures required by condition C12 and prepare an Operational Noise Report to document this monitoring. The Report shall include, but not necessarily be limited to:	Stage 1 and 2	Operations	Open	Not yet commenced.												
	a noise monitoring to assess compliance with the operational noise levels predicted in the review of operational noise mitigation measures required under condition C12 and documents specified under condition A1 of this approval;																
	b a review of the operational noise levels in terms of criteria and noise goals established in the Environmental Criteria for Road Traffic Noise (EPA, 1999);																
	c methodology, location and frequency of noise monitoring undertaken, including monitoring sites at which project 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 project between the date of commencement of operation and the date the report was prepared;																

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	e any required recalibrations of the noise model taking into consideration factors such as 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 all feasible and reasonable mitigation measures; and				
	g identification of any additional feasible and reasonable measures to those identified in the review of noise mitigation measures required by condition C12, that would be implemented with the objective of meeting the criteria outlined in the <i>Environmental Criteria for Road Traffic Noise</i> (EPA, 1999), when these measures would be implemented and how their effectiveness would be measured and reported to the Director General and the EPA.				
	The Proponent shall provide the Director General and the EPA with a copy of the Operational Noise Report within 60 days of completing the operational noise monitoring referred to a) above and no later than 12 months after the date of the commencement of operation, or as otherwise agreed by the Director General.				

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## E.2 Revised statement of commitments

SoC No.	Requirement	Stage	Timing	Status	Reference / Comment
	Environmental management				
M1	The head contractor for the project will have an environmental management system.	Stage 1 and 2	Preconstruction and Construction	Open	Refer to CoA B30 and B31 for status update.
M2	Suitably qualified and experienced personnel will develop and implement project specific environmental management plans and procedures, incorporating as a minimum the mitigation and management measures in the environmental assessment.	Stage 1 and 2	Preconstruction and Construction	Open	Refer to CoA B30 and B31 for status update.
M3	RTA and the contractor will implement a performance and compliance program.	Stage 1 and 2	Preconstruction and Construction	Open	Refer to CoA B25 for status update.
	Community consultation				
CC1	<ul> <li>Keeping the community informed will include:</li> <li>regular project updates.</li> <li>prior notice of project activities.</li> <li>changes to traffic and access and works outside standard working hours.</li> <li>contact details for enquiries.</li> <li>Targeted consultation with affected individuals or groups will occur as necessary (e.g. waterway users, farmers, noise affected residents, etc.).</li> </ul>	Stage 1 and 2	Preconstruction and Construction	Open	Refer to CoA B28 for status update.

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SoC No.	Requirement	Stage	Timing	Status	Reference / Comment
CC2	<ul> <li>Complaint management will include:</li> <li>A published 24 hour toll free complaints number.</li> <li>Directions on how to register a complaint.</li> <li>Acknowledgment of complaints within eight working hours.</li> <li>Complaint recording.</li> <li>Tracking of complaints until resolution.</li> </ul>	Stage 1 and 2	Preconstruction and Construction	Open	AFJV have implemented a Construction Complaints Management System consistent with AS 4269 Complaints Handling.  AFJV has established the following methods and tools for community complaints and enquiries about construction activities:  (a) a telephone number for registration of complaints and enquiries  (b) a postal address enabling written complaints and enquiries to be received  (c) an email address to which electronic complaints and enquiries may be transmitted.  An advertisement advising of the commencement of Early Works was undertaken on the 31/11/2015 and was presented in the Bellingen Shire Courier-Sun on 31/10/2015
	Traffic and transport				
T1	Construction vehicle movements and work programs will incorporate traffic control measures to minimise traffic and transport impacts on local roads and the existing Pacific Highway.	Stage 1 and 2	Preconstruction and Construction	Open	The Traffic Management & Safety Plan (TM&SP) has been prepared by AFJV and approved by DPE on the 16/12/14. In accordance with the TM&SP, AFJV will submit Area / Discipline specific Traffic Management Plans (TMP) to the Roads and Maritime Representative.  The TMP has been implemented to identify the Traffic Control Plans, access requirements and vehicle movement plans to ensure adequate and safe accesses are provided

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					to minimise impact to all road users.
					The TMP details the specific road safety and traffic management measures that will be applied during the staged delivery of the elements of a specific area of the project.
T2	Any use of non-arterial roads by construction traffic will require the preparation of pre-construction and post construction dilapidation reports, with copies to go to the relevant roads authority. Repair of any damage resulting from construction (normal wear and tear), will occur, unless there are alternative arrangements with the relevant roads authority.	Stage 1 and 2	Preconstruction and Construction	Open	Refer to CoA B23 for status update
Т3	Construction vehicle movement arrangements will limit impacts on other road users (including pedestrians, vehicles, cyclists and disabled persons), having regard to other road works in the area, local traffic movement requirements, and peak traffic volumes, including those during long weekends and holiday periods.	Stage 1 and 2	Preconstruction and Construction	Open	The Project must comply with the Road Occupancy Licence (ROL) regime, which limits the use of traffic control during peak times, weekends and major events/holiday periods.  TCP's are developed to incorporate all road users and construction requirements.  Vehicle Movement Plans (VMP) are developed to ensure that all construction personnel are aware of the permitted vehicle movements, inter action between plant and workers on foot and any site specific details such as bus stops, pedestrian routes and characteristics of local vehicle movements.
T4	Where the Proposal temporarily or permanently affects any legal property access, the provision of feasible and reasonable alternative access to an equivalent standard will be necessary, unless a property owner agrees to alternative arrangements.	Stage 1 and 2	Preconstruction and Construction	Open	AFJV consults with relevant landowners on construction of the project, addressing construction activities and approach to minimise intrusion and disruption to property access. Property access has been maintained to an equivalent standard unless agreed with the resident.

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SoC No.	Requirement	Stage	Timing	Status	Reference / Comment
T5	Construction vehicle movements and work programs will incorporate traffic control measures to maintain access to state forests.	Stage 1 and 2	Preconstruction and Construction	Open	Refer to CoA B22 for status update
	Noise and vibration				
N1	Further investigation of all feasible and reasonable mitigation and management measures to minimise construction noise at sensitive receivers will occur as part of detailed design (including consideration of early implementation of operational noise mitigation measures). Noise and vibration monitoring will measure against predicted levels and assess effectiveness. Implementation of further feasible and reasonable mitigation measures will occur where necessary.	Stage 1 and 2	Preconstruction, Construction and Operation	Open	Measures to minimise construction noise have been investigated during detailed design. Mitigation measures have been incorporated into the approved Noise and Vibration Management Plan (NVMP). The NVMP also prescribes the noise monitoring requirements to be undertaken during construction. Visual and noise mounds have been included in the detailed design and have been constructed as early as practical during the construction phase. Noise mounds in the vicinity of Albert Drive, Rosewood Drive and Mattick Road are currently under construction.  Roads and Maritime will undertake at residence noise mitigation treatments in regards to operational noise mitigation early in the construction program.
N2	Consultation with affected education institutions during construction works in their vicinity will attempt to limit audible construction works during important events, such as examination periods.	Stage 1 and 2	Construction	Open	Noise sensitive areas have been investigated as part of developing the NVMP covering requirements for mitigation of potential noise impacts to educational institutions during construction. It is noted that no educational institutions will be impacted by construction noise from the WC2NH project.
N3	Best practice mitigation and management measures will be used to minimise construction noise and vibration at	Stage 1 and 2	Preconstruction and Construction	Open	Mitigation measures are incorporated into the approved NVMP.

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	sensitive receivers.				This is addressed in MCoAs C3 to C11 in regards to construction noise.
N4	Construction would normally be limited to the following hours:  Between 6am and 6pm Monday to Friday.  Between 7am and 4pm Saturday.	Stage 1 and 2	Preconstruction and Construction	Open	The requirements of this SoC are included within the approved NVMP Sub-plan for implementation by AFJV during construction.  Refer to CoA C3 & C4 for status update.
	There would be no works outside these hours or on Sundays or public holidays except:				
	a) Works that do not cause construction noise to be audible at any sensitive receivers.				
	b) For the delivery of materials required outside these hours by the Police or other authorities for safety reasons.				
	c) Where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm.				
	d) Any other work as agreed through negotiations between the RTA and potentially affected sensitive receivers. Any such agreement must be recorded in writing and a copy kept on site for the duration of the works.				
	e) Where the work is identified in the CNVMP and approved as part of the Construction Environmental Management Plan.				
	f) As agreed by Department of Planning and or Department of Environment, Climate Change and Water in an EPL for the construction of the Proposal Local residents and the Department of Environment, Climate Change and Water				

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	must be informed of the timing and duration of work approved under items (d) and (e) at least 48 hours before that work commences.				
N5	All reasonable attempts will be made to contact sensitive receivers located within 500 metres of a blast location. The contact will be at least 48 hours before a blast and will include a schedule of blast time(s), and a telephone contact name and number.	Stage 1 and 2	Preconstruction and Construction	Open	The Project's Blast Management Plan outlines the requirements for community consultation leading up to a blast. The Blast Management Plan includes notification to be made with residents 500m from the blast at least 48 hours prior to the blast via email or SMS which will include the date, time and no. of blasts. This is currently being undertaken throughout the production blasting program.
N6	Where complaints relating to noise or vibration impacts as a result of extended workings cannot be satisfactorily resolved with the affected residents then works hours will revert back to standard working hours at that particular location for that particular activity. Resident(s) will be consulted before recommencing any works outside standard working hours. Any complaints received in relation to working hours will be made available to DoP and DECCW.	Stage 1 and 2	Construction	Open	The requirements of this SoC are included within the NVMP Sub-plan and OOHW Procedure for implementation by AFJV during construction.  One complaint has been received regarding works outside of standard construction hours have been received by the Project to date. The resident no longer had any issues with the work once reminded he had signed a written agreement which he had forgotten about signing.
N7	Confirmation of all feasible and reasonable mitigation and management measures to minimise operational noise at sensitive receivers will occur as part of detailed design. Implementation of the measures would occur as construction proceeds.	Stage 1 and 2	Preconstruction, Construction and Operations	Open	The Operational Noise Modelling and Mitigation Report are currently in draft form and is being finalised following EPA review. Roads and Maritime have commenced at-house noise treatments to mitigate operational noise impacts to over 150 residences. Residences that are highly affected have been targeted in the first package and remaining residences will be progressively rolled out over the course of the project. To date, two properties have received

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					treatment with the remaining residences to receive treatment in a continuous rollout.  Package 1 has been awarded and has commenced construction. Two of the 17 houses have been completed  Package 2 involves 20 houses. Contracts have been awarded and the successful contractor has ordered material  Package 3 involves 20 houses. Tenders closed on 22nd Sep 2016 and are currently being assessed  Package 4 aims to have 23 houses. Proposed scopes have been approved. Tender documentation is currently being prepared tender to be released in the next two weeks  Package 5 aims to have 23 houses. Proposed scopes are currently being reviewed. Tender documentation is currently being prepared, with target date of releasing to tender in late October/early November  The remaining houses will be progressively packaged for treatment.
N8	Monitoring of operational noise will be undertaken within one year after completion of construction. If monitoring indicates a clear trend that traffic noise levels exceed those predicted, investigation of all further feasible and reasonable management measures will occur. Consultation with a suitably qualified and experienced acoustic specialist and the affected property owner will be necessary during the development of any additional mitigation measures.		Operations	Open	Not yet required

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	Flora and Fauna						
F1	Clearing of native vegetation (including endangered ecological communities (EECs)) will be restricted to the minimum area necessary for construction.	Stage 1 and 2	Preconstruction and Construction	Open	Refer to CoA C1 for status update.		
F2	A qualified ecologist will identify any vegetation (including Marsdenia longiloba) to be retained and to be clearly delineated on work plans within the construction corridor. Erection of flagging/fencing on-site prior to any construction works, which is to remain in place for the full construction period, will clearly delineate this vegetation.	Stage 1 and 2	Preconstruction and Construction	Open	A qualified Project Ecologist has been engaged by AFJV as part of the project team to advise on erection of vegetation flagging/fencing to be in place throughout construction.  Flagging is inspected on a weekly basis and reinstated where needed.		
F3	A threatened flora survey will be undertaken prior to clearing to identify individuals to be translocated and to confirm the extent of clearing.  Erection of exclusion fencing to prevent any further encroachment into Newry State Forest to the east of the construction footprint.  Threatened species directly impacted by the Proposal will be translocated to a suitable location outside the impact zone.  A further visual inspection will be conducted post clearance to identify threatened species which may be indirectly impacted outside the cleared zone.  Landscape planting to commence along the road boundary as soon as possible during construction.	Stage 1 and 2	Preconstruction and Construction	Open	AFJV has undertaken ground truthing ecological surveys of the alignment to identify threatened flora individuals that require translocation. Threatened flora noted in the Threatened Flora Management Plan as Directly or Indirectly impacted has been translocated to protected areas outside of the clearing limits. These areas have been delineated with no-go zone fencing and signage. Additional threatened plants have been identified during the Pre-clearing inspections undertaken by the Project Ecologist. These plants have been translocated in accordance with the TFMP. Note: requirements for Newry State Forest not applicable to Project (Newry State Forest north of WC2NH).  The Urban Design and Landscape Plan has been approved by the DPE. Permanent landscaping including batter stabilisation has commenced in accordance with this Plan.		

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F4	Plantings of rusty plum ( <i>Amorphospermum whitei</i> ) in areas of suitable habitat adjacent to the Proposal will follow from seed collection and propagation.	Stage 1 and 2	Construction	Open	Seed collection and propagation of <i>A.whitei</i> has commenced. The individuals will be nursery raised and planted along the alignment once suitable.
F5	Site induction of construction workers will inform and instruct them of vegetation to be retained and on the identification of threatened species	Stage 1 and 2	Preconstruction and Construction	Open	The site induction covers the identification of key threatened flora species located along the alignment.
F6	A suitably qualified ecologist will undertake pre-clearance surveys for threatened species including frogs. Searches will include nests and hollow bearing trees. Re-location of fauna species at risk of injury found in pre-clearance surveys or during construction will be in suitable habitat as close as possible to the area in which they were found.  Immediately prior to clearing an inspection will confirm that the sites subject to pre-clearance surveys remain free of fauna.	Stage 1 and 2	Preconstruction and Construction	Open	A qualified Project Ecologist has been engaged by AFJV as part of the project team.  The Project Ecologist undertakes inspections of all areas prior to clearing to inspect for potential fauna habitat, nests and hollow bearing trees. Fauna at risk of injury is relocated outside of the clearing area where practical.
F7	Where feasible and reasonable the identification and distribution of natural and artificial habitat features and resources (such as hollow-bearing trees, hollow logs, nest boxes and bush rocks) will occur along the Proposal. This relocation will limit injury to fauna and damage to existing vegetation.  A nest box plan will be developed for the Proposal.	Stage 1 and 2	Preconstruction and Construction	Open	The AFJV Project Ecologist has identified hollows and coarse woody debris that has been reused within the Project alignment for habitat.  The Nest Box plan prepared by Roads and Maritime was approved by DPE on 20/03/2013. All nest boxes to be installed prior to clearing commencing have been installed. Installation of next boxes post clearing is currently underway.
F8	Retention of mature trees in the median at locations identified in the environmental assessment will provide a stepping stone for gliders. Protection of these trees will	Stage 1 and 2	Preconstruction and Construction	Open	Refer to CoA B4 for status update.

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	occur (F2), and lopping and pruning is not to occur without expert advice.				
F9	Provision of fauna crossings will be as identified in the environmental assessment. All fauna crossings will be confirmed with the DECCW and I&I (Fisheries) during the detailed design phase.	Stage 1 and 2	Preconstruction and Construction	Open	Refer to CoA B1, B2 and B3 for status update.
F10	Design and construction of waterway crossings will be in accordance with the fish habitat classification of each waterway and in consultation with the Department of Industry and Investment. All fauna crossings will be confirmed with the DECCW and I&I (Fisheries) during the detailed design phase.	Stage 1 and 2	Preconstruction and Construction	Open	Refer to CoA B5 for status update.
F11	Erection of fauna exclusion fencing (e.g. floppy-top fencing) along the Proposal at appropriate locations will direct fauna movement towards fauna-crossing structures.	Stage 1 and 2	Preconstruction and Construction	Open	Refer to CoA B3 for status update.
F12	Development of an offset strategy will occur in consultation with the Department of Environment, Climate Change and Water.	Stage 1 and 2	Preconstruction, Construction and Operations	Open	Refer to CoA B8 for status update.
F13	A targeted, adaptive monitoring program will be undertaken for a minimum of 12 months to assess the effectiveness of fauna and flora impact mitigation measures. After 12 months a report will be completed to assess the need for additional measures and/or further targeted monitoring.	Stage 1 and 2	Preconstruction and Construction	Open	The Ecological Monitoring Program was approved by DPE as part of the Flora and Fauna Management Plan on the 16/12/14.

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F14	The RTA will set bed levels for culverts and ledges for combined fauna passage in consultation with the	Stage 1 and 2	Preconstruction and Construction	Open	Early design consultation with DPI (Fisheries) have been undertaken and included in tender documentation.
	Department of Environment, Climate Change and Water.				The culverts requiring fish passage as agreed with Fisheries have been noted in Table 4.1 of the SWTC.
					The Design is currently progressing to incorporate the requirements of Table 4.1.
					The bed levels and ledges for fauna culverts have been designed. AFJV has provided agencies with design drawings for review and comment.
					Issues are being raised at the monthly ERG meetings and closed out through site visits and/or ongoing communication.
	Aboriginal heritage				
AH1	The protection of items and areas of archaeological significance not directly affected by construction will occur.	Stage 1 and 2	Preconstruction and Construction	Open	Heritage sites identified during the EA and subsequent Cultural Heritage Assessments are identified on the Project's Sensitive Area Plans. The areas are flagged on site with no-go zone flagging and signage to prevent construction access.
AH2	There will be protocols will be established and implemented to manage any previously unidentified Aboriginal objects or skeletal remains encountered during construction. All works in the vicinity of the find will cease to obtain Aboriginal heritage specialist advice and inform the Department of Environment, Climate Change and	Stage 1 and 2	Preconstruction and Construction	Open	The approved HMP incorporates specific plans and procedures including Roads and Maritime Standard Management Procedure – Unexpected Heritage Items

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	Water.				
AH3	The management of any Aboriginal heritage items directly affected will be in consultation with Aboriginal stakeholders and the Department of Environment, Climate Change and Water.	Stage 1 and 2	Preconstruction and Construction	Open	Archaeological Salvage works have been undertaken by Roads and Maritime with consultation with Aboriginal stakeholders and DPE. Sites located within the Project Boundary have been cleared to commence construction.
					Subsequent Cultural Heritage Assessments undertaken for the Project have not identified any Aboriginal Heritage items that will be directly affected. However a section of the permanent design in the southern section of the Project will require salvage of an artefact. The Cultural Heritage Assessment for this work has been provided to the RAP's and the proposed design was discussed during the Aboriginal Focus Group, including OEH during a meeting in September 2015. Approval will be sought from DPE prior to undertaking work in relocating the salvaged artefacts with consultation with the AFGs.
AH4	All construction personnel will receive training on their obligations for protection of Aboriginal cultural materials, including information on site locations, conservation	Stage 1 and 2	Preconstruction and Construction	Open	The HMP includes an Aboriginal heritage education and training package.
	management and legal obligations in regard to Aboriginal cultural materials.				AFJV will implement the requirements of the HMP and subordinate management procedures, and training packages for heritage induction and training. The first training session was held in October 2015.
AH5	The RTA will comply with the NSW Government's Aboriginal Participation in Construction Guidelines.	Stage 1 and 2	Preconstruction and Construction	Open	An Aboriginal Participation Plan is currently being implemented by AFJV.
					Compliance with the Aboriginal Participation Plan is discussed in the quarterly Aboriginal Focus Group

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					Meetings.
	Non-Aboriginal heritage				
NH1	The detailed design will minimise impacts to identified non-Aboriginal heritage items where feasible and reasonable.	Stage 1 and 2	Preconstruction and Construction	Open	Relevant site surveys for WC2NH (Ferry Punt at Boulton Hill, and old municipal tips) have been undertaken to determine relevant sites, these areas have been identified with no-go zone flagging and signage.
					The detailed design has avoided impacts to non-aboriginal heritage items identified in the approved HMP.
NH2	If any material of potential archaeological significance is unearthed, work will cease to obtain specialist heritage advice.	Stage 1 and 2	Construction	Open	The approved HMP incorporates specific plans and procedures including Roads and Maritime Standard Management Procedure – Unexpected Heritage Items
NH3	Preparation of archival and photographic records for impacted heritage items would be in accordance with relevant guidelines.	0	Preconstruction and Construction	Open	The Old Farm House in North Macksville has been subject to archival recording during demolition in accordance with relevant procedures and guidelines. The archival recording has been undertaken by the Project Archaeologist/Heritage consultant – Jacobs.
	Water quality and hydrology				
W1	Minimisation of the area of soil exposure during construction.	Stage 1 and 2	Preconstruction and Construction	Open	The Project works are inspected on a fortnightly basis by the Project Soil Conservationist who provides guidance and advice to reduce the area of soil exposed during construction. The clearing and topsoil strip phases of construction have been undertaken progressively to avoid exposing soil to erosion.

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					Batter stabilisation and progressive rehabilitation has commenced and will be ongoing until earthworks are complete.
W2	Detailed design will further investigate any additional feasible and reasonable mitigation and management measures to minimise construction erosion and sedimentation.		Preconstruction and Construction	Open	Sediment basins and other water quality control measures have been designed and managed by AFJV during the detailed design phase. These have been further developed and managed by AFJV and the Project Soil Conservationist after the detailed design was released. The design of the alignment aims to minimise the footprint where possible in order to minimise potential for erosion and sedimentation.
W3	Monitoring of groundwater impacts and surface water quality upstream and downstream of the site during construction will determine the effectiveness of mitigation strategies. Implementation of additional feasible and reasonable management measures will occur if necessary.		Preconstruction and Construction	Open	<ul> <li>The SWMP incorporates a:</li> <li>Water Quality Monitoring Program; and</li> <li>Groundwater Management Strategy</li> <li>AFJV is currently undertaking the monitoring of groundwater and surface water during construction in accordance with the approved plans. Monitoring results are discussed during the monthly ERG meetings and are provided to the EPA in the EPA Monthly Report. Monitoring data is also available on the ACCIONA website.</li> </ul>
W4	Development and implementation of specific construction measures for in-stream works to limit water quality impacts will occur in consultation with relevant government agencies.	Stage 1 and 2	Preconstruction and Construction	Open	AFJV have developed specific EWMS's for works in or near waterways. The EWMS's have been reviewed by DPI Fisheries and the EPA. DPI Fisheries are specifically notified prior to undertaking works in or near waterways. These areas are also regularly inspected during ERG meetings by DPI Fisheries and the EPA.

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W5	Managing operational water quality will occur by applying RTA's Code of Practice for Water Management – Road Development and Management (1999).	Stage 1 and 2	Construction and Operations	Open	Operational water quality basins are being designed in accordance with the SWTC.  Roads and Maritime will manage operational water quality during the operational phase.
W6	Investigation of the potential for changes in the groundwater table will take place before starting any major earthworks. Where a potential for change is identified, the significance of the change and any resultant impacts will be determined and measures to manage the changes will be designed and implemented as necessary.	Stage 1 and 2	Preconstruction and Construction	Open	Roads and Maritime has prepared the monitoring program and implementation for the pre and post construction requirements. AFJV is currently monitoring groundwater in accordance with the approved groundwater monitoring program.  A Groundwater Management Strategy is a part of the approved SWMP. This Strategy includes management and mitigation measures for groundwater resource areas that may be impacted by the Project. Monitoring results for groundwater are discussed during the monthly ERG and any changes from the trigger levels are discussed in the EPA Monthly Report.
W7	Baseline monitoring of groundwater levels and chemical levels at cutting sites near springs, creeks or endangered ecological communities prior to construction commencing.	Stage 1 and 2	Preconstruction and Construction	Open	Roads and Maritime has undertaken baseline monitoring up to construction commencing. AFJV is currently implementing the construction-phase monitoring requirements.
	Soils and fill				
S1	Identification and management of Acid Sulphate Soils will be in accordance with the Guidelines for the Management of Acid Sulphate materials: Acid Sulphate Soils, Acid Sulphate Rock and Mono-sulphidic Black Ooze (RTA	Stage 1 and 2	Preconstruction and Construction	Open	The approved SWMP includes an Acid Sulphate Material Management Plan which is based on this guideline document. This is currently being implemented on site.

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	2005).				
S2	There will be identification, investigation and appropriate management of areas of potential soil contamination (including works in the vicinity of the old municipal tip site in Nambucca State Forest).	Stage 1 and 2	Preconstruction and Construction	Open	Potential contamination within and adjacent to the Project site has been assessed and will be managed in consideration of design requirements and construction. All known areas assessed in reports prepared by Coffeys, including the April 2014 report. Contaminated areas are managed in accordance with RMS specification requirements including the preparation and implementation of a Remedial Action Plan.
					In addition, procedures have been included within the SWMP in dealing with unexpected contamination detected during construction.
	Air quality				
AQ1	To minimise windblown, traffic generated or equipment generated dust emissions, there will be feasible and reasonable mitigation and management measures.	Stage 1 and 2	Preconstruction and Construction	Open	AFJV has detailed management and mitigation measures to achieve this requirement within the approved Air Quality Management Plan (AQMP). Refer to CoA C2.
AQ2	Dust generating activities will stop where visible dust is being emitted outside the construction corridor and dust suppression measures are ineffective.	Stage 1 and 2	Preconstruction and Construction	Open	AQMP includes the locations of dust sensitive areas and indicative monitoring locations. Specific controls for managing potential for air quality (dust) impacts are prescribed within the approved AQMP.
					Refer to CoA C2.
	Greenhouse gases and energy				

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G1	Wherever feasible and reasonable detailed design will consider whole of life reductions in greenhouse gas emissions and energy consumption.	Stage 1 and 2	Preconstruction and Construction	Open	AFJV has detailed the requirements of this SoC within the approved Waste and Energy Management Plan (WEMP). The detailed design has endeavoured to reuse material won from the Project alignment to reduce the need for carting material to and from the worksite. The long term design also supports less vehicle emissions through smarter road design (e.g. less inclines, less stopping and starting, etc.).
G2	Energy efficient work practices will be adopted to limit energy use.  Where reasonable and feasible, equipment and management measures will be adopted to minimise energy use and greenhouse gas production.	Stage 1 and 2	Preconstruction and Construction	Open	AFJV has detailed the requirements of this SoC within the approved Waste and Energy Management Plan (WEMP).  Construction machinery is inspected to ensure it is operating efficiently prior to commencing on site. Machinery is regularly maintained to minimise emissions. Operators are tool-boxed to switch of machinery when not in use. Solar lighting towers are also used when practical.
	Visual amenity and design				
UD1	The preparation of detailed urban and landscape design will be in consultation with Nambucca and Bellingen Shire councils and the community.  The detailed design and implementation of built elements and landscapes and the mitigation of residual impacts will be in accordance with the visual and urban design objectives and principles of the Proposal.	Stage 1 and 2	Preconstruction and Construction	Open	Refer to CoA B21
UD2	The species to be used in the landscaping treatments will include native and locally indigenous plants.	Stage 1 and 2	Preconstruction and Construction	Open	Included in SWTC App 15, R176, R178 and R179 in regards to urban design and landscape treatments. Refer to CoA B21.
UD3	Landscape and rehabilitation works will be subject to monitoring and maintenance where necessary for a minimum of two years after construction.	Stage 1 and 2	Construction and Operation	Open	Not yet commenced

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	Hazards and risks				
HR1	Hazardous materials used during construction will be stored in bunded areas within construction sites.  Hazardous materials will not be stored on the floodplain below the 20 year ARI flood level. Use of hazardous materials in floodplain areas will be limited to a daily or weekly threshold.  Containers, workshops, plant, material stores and storage tanks will not be sited on the floodplain of watercourses where avoidable.	Stage 1 and 2	Preconstruction and Construction	Open	These requirements are incorporated as part of the CEMP in the approved SWMP. For site/activity specific works, EWMS's have been prepared and implemented for the prevention and mitigation of potential hazards and risk. Hazardous materials are not stored within the floodplain or adjacent to creek lines.
HR2	Potentially hazardous and contaminating activities (such as washing construction plant and handling hazardous chemicals) and activities with the potential for spillage such as refuelling, maintenance of equipment, mixing of cutting oil and bitumen will be in bunded areas or in other areas where suitable containment measures are in place to prevent discharge into watercourses.	Stage 1 and 2	Preconstruction and Construction	Open	These requirements are incorporated as part of the approved SWMP. Activities that may cause contaminated run-off are undertaken in appropriately bunded areas.
	Waste and resource management				
WR1	The waste minimisation hierarchy principles of avoid / reduce / re-use / recycle / dispose will apply to all aspects of the Proposal, including work programs, purchase strategies and site inductions. Quarterly assessments will identify opportunities for improvement.	Stage 1 and 2	Preconstruction and Construction	Open	AFJV has detailed the requirements of this SoC within the approved Waste and Energy Management Plan (WEMP). Waste management is reviewed quarterly in line with ACCIONA infrastructure internal reporting requirements.
WR2	Where reuse or recycling of water is not possible, it will be sent to an appropriately licensed facility.	Stage 1 and 2	Preconstruction and Construction	Open	Complies Currently AFJV has detailed the requirements of this SoC within the approved Waste and Energy Management Plan (WEMP). Water is reused or disposed in accordance with the Environment Protection Licence 20533.

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	Landuse and property				
P1	Negotiation of all property acquisitions will be in accordance with the RTA Land Acquisition Policy Statement.  Compensation assessment will be in accordance with the Land Acquisition (Just Terms Compensation) Act 1991.	Stage 1 and 2	Preconstruction and Construction	Open	Property purchases have all been completed in February 2016. Refer CoA B24
P2	The Department of Industry and Investment will have access to state forest land identified for acquisition by RTA to remove any harvestable timber within the footprint of the Proposal prior to commencement of construction. Access to state forest land adjacent to the Proposal will provide for forestry operations, fire management activities and recreation purposes.	Stage 1 and 2	Preconstruction and Construction	Open	Roads and Maritime has reached agreement with Forestry Corporation in regards to this requirement, with proposal from Forestry Corporation on the work it will undertake in State Forests.
P3	Where the Proposal adversely affects a licensed bore, dam or other property water supply, RTA will investigate an alternate source or negotiate compensation for the loss with the landowner.	Stage 1 and 2	Preconstruction and Construction	Open	The Project has not impacted on any licenced bores or dams to date.
	Socio economic impacts				
S1	There will be ongoing consultation with affected businesses, agricultural and aquaculture landowners.	Stage 1 and 2	Preconstruction and Construction	Open	AFJV has an approved Community Involvement Plan (which covers the requirements of the Condition B28 Community Communication Strategy) to provide the mechanisms to facilitate communication between the Proponent, the Contractor, the Environmental Representative, the relevant Council and the local community (broader and local stakeholders) on the construction and environmental management of the project, covering all tasks and procedures in meeting the requirements of this SoC.
S2	The identification of utilities and services potentially affected by construction, including requirements for diversion, protection and / or support will occur prior to the	Stage 1 and 2	Preconstruction and Construction	Open	The AFJV has actively consulted with Utilities providers and has prepared a design of the relocation of impacted public utilities. This is currently being implemented on site to

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	start of construction. Consultation with the service providers will determine alterations to services, the limitation of disruptions and requirements for advice to customers.				prevent damage to necessary public utilities.
S3	Sites chosen for ancillary facilities will satisfy criteria outlined in Chapter 7 of the EA.  Occupation and use of compound and work sites will seek to minimise disturbance to adjacent residents.	Stage 1 and 2	Preconstruction and Construction	Open	Consistency Assessments for two Ancillary Site Facilities (Southern Compound and Northern Compound) addressing the facilities compliance with the Planning Approval have shown the facilities are consistent with the EA and Planning Approval Ancillary Facilities are checked for compliance on a register which is regularly sent to the ER for approval. The register ensures the facility is compliant with this condition and the MCoA requirements.
S4	Fencing will be erected around construction activities to prevent livestock from adjacent properties entering construction areas.  Inclusion of water quality protection measures during the installation of in-stream structures to protect aquaculture.	Stage 1 and 2	Preconstruction and Construction	Open	Rural fencing was installed prior to the commencement of substantial construction to prevent livestock entering active construction zones.  The works in-stream incorporate water quality protection measures such as silt curtains and hydrocarbon booms.

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