Warrell Creek to Nambucca Heads Pacific Highway Upgrade

Construction Compliance Tracking Report

February 2018 – August 2018

Roads and Maritime Services | September 2018

NSW GOVERNMENT

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Contents

Terms and Abbreviations

ACCIONA	ACCIONA Infrastructure Australia Pty Ltd
AFG	Aboriginal Focus Group
AFJV	ACCIONA and Ferrovial Joint Venture
CEMP	Construction Environmental Management Plan
D&C	Design and Construction
DoEE	Department of Environment and Energy
DP&E	Department of Planning and Environment
EPA	Environment Protection Authority
EPL	Environment Protection Licence
ERG	Environmental Review Group
Ferrovial	Ferrovial Agroman (Australia) Pty Ltd
MCoA	Ministers Conditions of Approval
NSW	New South Wales
OEH	Office of Environment and Heritage
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)

1. Introduction

The Pacific Highway Warrell Creek to Nambucca Heads Upgrade project (the Project) is being designed and constructed by AFJV, a joint venture consisting of ACCIONA Infrastructures Pty Ltd (ACCIONA) and Ferrovial Agroman (Australia) Pty Ltd (Ferrovial), herein referred to as the AFJV - 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. Figure 1-1 shows the location of the project.

The project includes:

- 19.6 km of new four lane divided carriageway with safe driving conditions for speeds of 110 km/h;
- a continuous local road between Warrell Creek and Nambucca Heads combining the existing Pacific Highway and new local roads. The local road would:
    - Offer safer access to properties that currently have direct access to the highway.
    - Let residents travel to local shops and other facilities without having to use the new highway.
    - Provide another route between Warrell Creek and Nambucca Heads for motorists and cyclists.
- new grade-separated interchanges at:
    - Warrell Creek at Browns Crossing Road
    - South Macksville at Bald Hill Road
- a northbound on-ramp and southbound off-ramp at Letitia Close, 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;
- no direct property access to or from the highway;
- measures to reduce environmental, noise and visual effects; and

- associated infrastructure.

1.2 Commencement of Construction

Construction of the Warrell Creek to Nambucca Heads Pacific Highway Upgrade commenced on 9 February 2015.

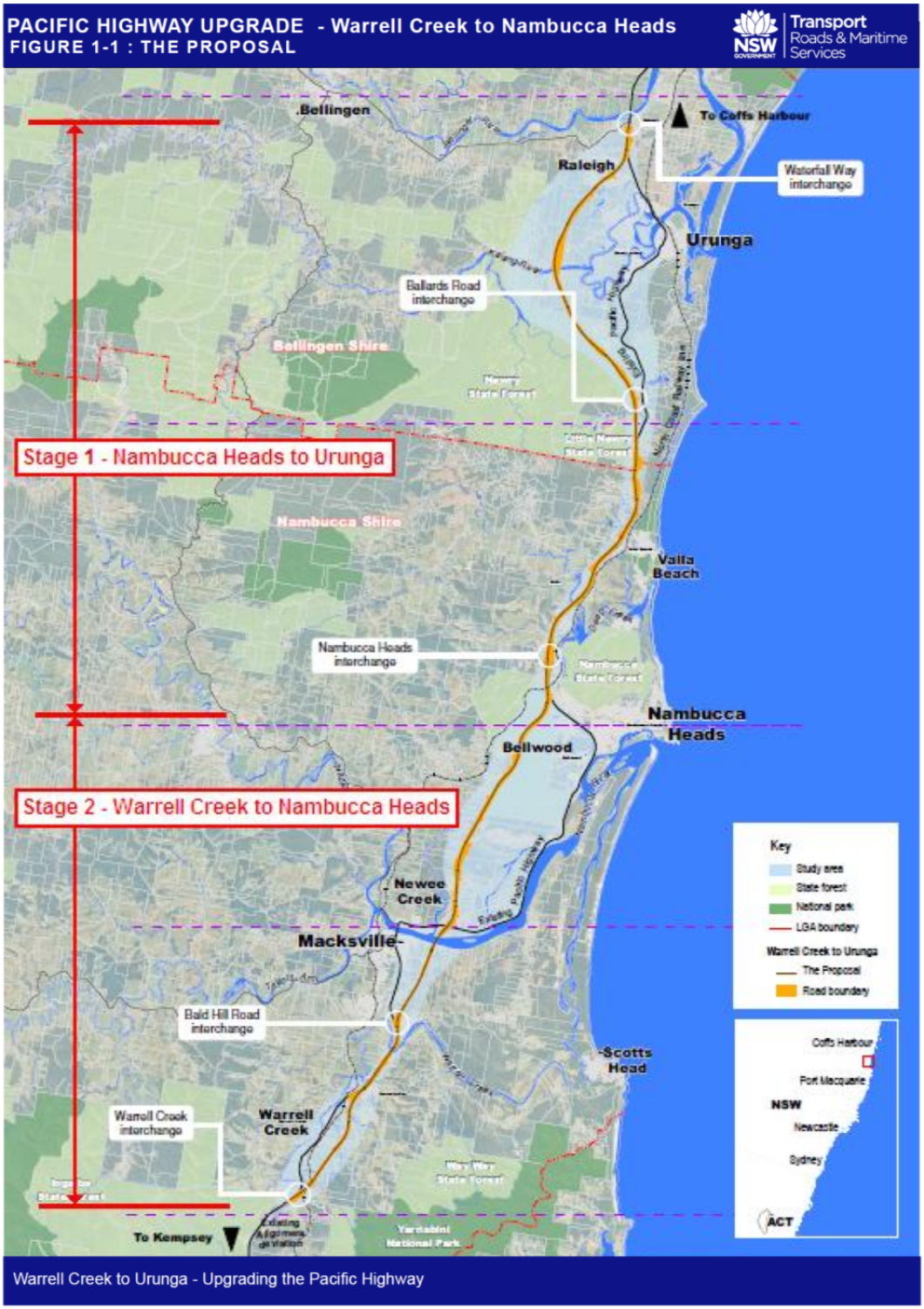

Figure 1.1. Location of the Warrell Creek to Nambucca Heads Project.

1.3 Purpose of this report

This report has been prepared to fulfil the requirements of MCoA B25 for the period 9 February 2018 to 8 August 2018. Table 1 details the requirements of MCoA B25 and where each has been addressed in this report.

Table 1 – Compliance reference.

MCoA Reference	Comment	Section Reference
B25 The Proponent shall develop and implement a **Compliance Tracking Program** 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 9th 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 prior to each stage, where works are being staged);	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 commence construction on the 9th February 2015.	NA
(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 for the Director General 6 months after the commencement of construction and for every six-month period thereafter during the construction phase of the Project.	This report Section 2
(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	A Compliance Tracking Report will be prepared and submitted to the Director General for the six month period after the commencement of construction and for every six month period thereafter throughout the construction phase of the WC2NH Project.	This report

MCoA Reference	Comment	Section Reference
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*;	The Compliance Tracking Program and the Project Construction Environmental Management Plan include the requirements for regular independent auditing. 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. The six-monthly audit frequency has been extended to annually during year 3 of construction. The last independent audit was undertaken by SNC Lavalin on 30 October – 1 November 2017.	Section 2
(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 and operation; and	This Compliance Tracking Report will include a brief description of the incidents that have occurred in the reporting period, including the corrective and preventative actions to prevent reoccurrence.	Section 6
(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 non-compliance raised. This report will also address the corrective/preventative actions undertaken to rectify the non-compliance. The Compliance Tracking Program	Section 4

MCoA Reference	Comment	Section Reference
	includes procedures for rectifying non-compliance in Section 2.7.	

1.4 Scope of Activities undertaken during reporting period

The Construction works undertaken during the reporting period include:

- Ongoing minor earthworks including cut excavation and embankment filling works;
- Bridge deck construction / finishing works
- Concrete batch plant decommissioning (North and South);
- Decommissioning of the girder precast facility;
- Operation / decommissioning of the asphalt batch plant;
- Fauna fence and drop-down installation;
- Installation of permanent rural fencing;
- Environmental monitoring including water quality, noise, vibration, air and ecological monitoring;
- Permanent landscaping (including hydromulching and landscape planting);
- Temporary waterway crossing removal;
- Installation of permanent noise mounds;
- Installation of longitudinal pavement drainage;
- Ongoing concrete and asphalt paving operations;
- Ongoing work on the pergola near Upper Warrell Creek;
- Basin augmentation, decommissioning and dewatering activities;
- Operational sediment basin fit-out;
- Verge and median placement including median topsoil placement;
- Fauna furniture installation;
- Wire rope and F type barrier installation;
- Full opening (Stage 2B) to traffic;

The following photographs provide some general examples of activities undertaken during the period.

Photo 1: Opening of Stage 2B (Full Opening) – north bound traffic escorted by police under the ARTC railway at Upper Warrell Creek

Photo 2: South Western view of Warrell Creek Bridge with the Pergola in the background

Photo 3: Upper Warrell Creek – rehabilitation of Giant Barred Frog habitat following removal of temporary waterway crossing.

Photo 4: Finishing Works prior to opening - Fauna Fencing and guardrail installation

1.5 Opening of the Project to Traffic

On 29 June 2018, the Warrell Creek to Nambucca Heads Pacific Highway upgrade achieved the major milestone of opening the remaining 6.0km section of the newly upgraded section of highway between the northern end of the Allgomera deviation and Lower Warrell Creek Bridge. (refer Figure 2-1).

The opening was managed as a separate sub-stage of the project, referred to as Stage 2B for the purposes of this report.

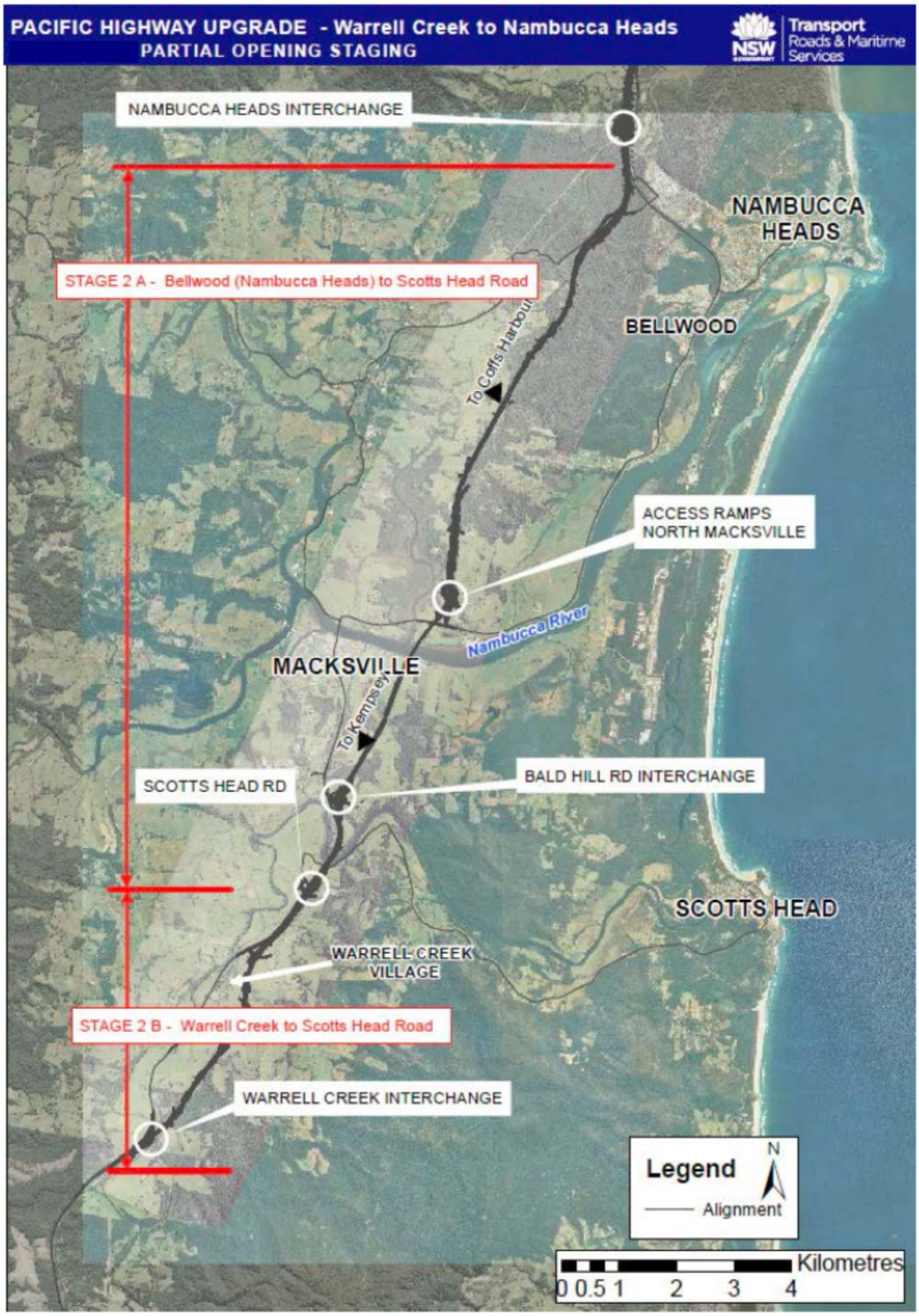

Figure 1.2. The two opening stages of the Warrell Creek to Nambucca Heads Upgrade.

2. Statutory matters

2.1 Project Approval

Roads and Maritime Services completed an environmental assessment of the Warrell Creek to

Urunga Pacific Highway Upgrade (the Project EA) in January 2010. The Project EA identified a range of environmental, social and planning issues associated with the construction and operation of the Warrell Creek to Urunga Pacific Highway Upgrade and proposed measures to mitigate or manage those potential impacts.

The Project EA was publicly exhibited from 28 January to 29 March 2010 for a period of 60 days. Following public exhibition, submissions from stakeholders were received and addressed by RMS in the Submissions Report which was lodged with the Director-General in November 2010.

After consideration of the Project EA and Submissions Report, the Minister for Planning approved the Warrell Creek to Urunga Pacific Highway Upgrade under Section 75J of the Environmental Planning and Assessment Act 1979 (EP&A Act) on 19 July 2011 subject to the Minister's Conditions of Approval (CoA) being met.

Approval was also granted under Part 9 of the Environment Protection and Biodiversity Conservation (EPBC) Act 1999 for the Warrell Creek to Nambucca Heads Pacific Highway upgrade (EPBC 2013/7101) on 11 December 2014.

The AFJV - Acciona Ferrovial JV (AFJV) was awarded the contract to construct the Warrell Creek to Nambucca Heads section which is Stage 2 of the overall Warrell Creek to Urunga Pacific Highway Upgrade.

Appendix E of this report present the conditions of the NSW Minister for Planning Project approval and associated Roads and Maritime's statement of commitments and provides detail on the status of compliance for each. No non-compliances were found during the reporting conditions.

2.2 Licensing, Permits and Reviews

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.

Acciona holds an environment protection licence (EPL 20533) for the construction activities of the project. 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 2.

Table 2 – Groundwater and Surface Water Permits

Type of Permit	Permit Number	Location
Groundwater Bore Licence – Industrial Use (Road Construction and dust suppression) [1]	30BL207257	Lot 5 DP258324
Groundwater Bore Licence – Industrial Use (Road Construction and dust suppression) [1]	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	30BL207307	Lot 1 DP1209891

Type of Permit	Permit Number	Location
suppression) [1]		
Groundwater Bore Licence – Industrial Use (Road Construction and dust suppression) [1]	30BL207307	Lot 1 DP1209891
Groundwater Bore Licence – Industrial Use (Road Construction and dust suppression)	30BL207310	Lot 22 DP1185837
Groundwater Bore Licence – Industrial Use (Road Construction and dust suppression) [1]	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

No new licences or permits were required during this reporting period, however, the EPL underwent one variation in March 2018 to reduce the fee based activities scales (Crushing, grinding and screen; and Land based extractive industry).

2.3 Environment Protection Licence performance

Acciona holds an environment protection licence (EPL 20533) for the construction activities of the project. There were no non-compliances with the EPL during the reporting period.

2.4 Outcome of Independent Audits

No independent audits were undertaken during the reporting period as the six-monthly audit frequency has been extended to annually during year 3 of construction. The last independent audit was undertaken by SNC Lavalin on 30 October – 1 November 2017. A final audit is planned for September 2018.

2.5 Outcomes of ERG Inspections

The Project held one Environmental Review Group meeting during the reporting period. The February 2018 ERG meeting was held prior to the start of this reporting period and at the April 2018 ERG, formal ERG meetings were not considered necessary by the group going forward due to the stage of the project. The meeting involved the following discussions / briefings:

- Site inspection
- Approval Update (CEMP, Sub-plans, Consistency Assessments);
- Development Application – Health Infrastructure
- Design Updates;
- Construction Status Updates and Activities Completed;
- Ecologist Update (Flora and Fauna)

[1] Decommissioned or surrendered during the reporting period

- Upper Warrell Creek Temporary Waterway Crossing Removal
- Monitoring Update (Air Quality, Noise Monitoring, Water Quality etc.);
- Environmental Incidents and complaints;
- Upcoming Out of Hours Works
- At house noise treatments
- Community Consultation

This meeting included a site inspection by the attending stakeholders 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 landscaping, basin inspections (including augmentation and decommissioning), stockpile management, erosion and sediment controls for works adjacent to sensitive areas, creek realignments (Williamson Creek and Upper Warrell Creek)), 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 3 below provides a summary of the items discussed at the ERG undertaken during the reporting period.

Table 3 – ERG Discussion Notes

Date	Stakeholder Attendees	Summary of Items Discussed
ERG # 45 10/04/2018	David Bone (DB) – ER Kris Hincks (KH) - RMS Stan Viney (SV) – EPA Jason Haslett (JH) – Pacifico Alex Dwyer (AD) – Pacifico Sean Hardiman – (SH) RMS Jim Steen (JSt) – RMS Tyler Manser (TM) – Pacifico	• Site inspection • Approval Update (CEMP, Sub-plans, Consistency Assessments); • Development Application – Health Infrastructure • Design Updates; • Construction Status Updates and Activities Completed; • Ecologist Update (Flora and Fauna) • Upper Warrell Creek Temporary Waterway Crossing Removal • Monitoring Update (Air Quality, Noise Monitoring, Water Quality etc.); • Environmental Incidents and complaints; • Upcoming Out of Hours Works

Date	Stakeholder Attendees	Summary of Items Discussed
		• At house noise treatments • Community Consultation

2.6 Environmental 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.

Environmental incidents are identified by the AFJV in accordance with the Roads and Maritime Incident Classification and Reporting Procedure (Sept 2017). 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 eight environmental related unplanned events categorised as environmental incidents occurred on the project during the reporting period. Seven of the incidents were of a minor nature; with the remaining one classified as a Category 1 incident 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, non-compliance with EPL / approval conditions, and unauthorised activities.
- Category 2: Generally less environmental 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 in Table 4.

Table 4 – Category 1 incident reported during this reporting period.

Date	Description
07/08/2018	Mulch from the mulch stockpile within the project EPL was applied to land adjacent to the stockpile without a validation report or sampling plan required under the pasteurized garden organics exemption and order 2016. Note: Mulch was stockpiled on a landowners property under an approved Minor Consistency Assessment was applied to land adjacent to the stockpile under landowner direction and an signed s143. Sampling and testing prior to the incident included a negative sample for Phytophthora and all major Oomycetes plant pathogens and plant propagules were absent after 21 days. The material has subsequently been validated meeting the pasteurised garden organics resource recovery order 2016 and is being disposed of in accordance with the exemption.

In accordance with the Roads and Maritime Incident Classification and Reporting Procedure, the AFJV reported a number of minor incidents and spills. During the reporting period of 26 working weeks, the AFJV reported on:

- 1 illegal dumping occurrence of domestic waste on site,
- 1 occurrence relating to dust emissions from a sweeper truck.
- 2 minor oil spills on land (including oil and hydraulic oil leaks).
- 1 failure of a batter chute following a 174.4mm rainfall event.
- 1 minor disturbance (no clearing) outside of clearing boundary, within project boundary.
- 1 uncovered truck incident.

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. All incidents were managed in a manner to ensure that the recurrence of such an incident was mitigated.

3. Initiatives and Innovations

AFJV have undertaken a number of initiatives and innovations this reporting period which have enhanced the environment within and surrounding the construction site including the restoration of Giant Barred Frog habitat at Upper Warrell Creek.

3.1 Restoration of Giant Barred Frog Habitat – Upper Warrell Creek

Prior to the opening of Stage 2B of the project, the concrete temporary crossing and adjacent rock platforms at Upper Warrell Creek was required to be removed as the area underneath the Upper Warrell Creek bridge would become inaccessible post opening. This area was mapped as Giant Barred Frog habitat and was subject to the projects approved Giant Barred Frog Management Strategy.

In NSW, the Giant Barred Frog is listed as Endangered pursuant to the NSW Threatened Species Conservation Act (1995) and the Commonwealth Environmental Protection and Biodiversity Conservation Act (1999).

The proposed staging of the removal of the temporary crossing and rock platform was discussed in ERG 45 in April 2018 including the two-stage removal process and associated erosion and sediment control plans prepared by an independent certified soil conservationist. The removal commenced following consultation and agreement with DPI Fisheries and EPA Biodiversity regarding the proposed scheduling and the long-range weather forecast.

The removal proceeded as planned as minimal rainfall was received over an approximate two week period. No visible plumes were observed downstream of the works outside of controls which included three silt curtains. The project ecologist undertook surveys as required to allow the removal and reposition of frog fencing throughout the duration of the removal activity. DPI Fisheries and EPA Biodiversity were regularly updated on the progress on the works including photos. Both agency representatives inspected during the activity and any suggested improvements were implemented.

Additional plantings to the approved Urban Design and Landscaping Plan were undertaken, including species recommended by the project ecologist for restoration of GBF habitat. Root balls and large rocks were also placed to recreate a more natural stream bank which assists with Australian Bass migration.

Photo 5: Upper Warrell Creek – restoration of Giant Barred Frog Habitat

4. Outcome of monitoring undertaken

1.1 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 80th and 20th percentile trigger values , as well as ANZECC guidelines where no trigger values were provided in the final interpretive report.

Surface water quality monitoring trends are similar to the previous reporting period and has generally shown elevated nutrient levels, lower dissolved oxygen levels, particularly in Warrell Creek (Upper and Lower) and Stoney Creek and occasionally elevated turbidity levels in the creeks and rivers adjacent to the project post rainfall both upstream and downstream of the Project (not associated with the Project activities). Metal levels have generally been consistent with the trigger values or marginally above these levels, particularly copper, manganese, nickel, zinc and occasionally iron and aluminum. The pH is generally lower after rainfall and the turbidity is generally higher during rainfall (due to background sources). Water temperature and conductivity have generally been within trigger levels during the reporting period.

Groundwater trigger levels have also been developed for comparison with data collected during construction. The groundwater quality is within or only marginally above the trigger levels provided for metals except for iron at Cut 6 and aluminum at Cut 11.

Similar to the previous reporting period, fill 15 groundwater monitoring bores have recorded elevated pH, total dissolved solids, conductivity and temperature. Cut 11 has shown higher temperatures, nutrients and metals / major anions and cations outside of trigger values. The elevated levels have not been contributed to by construction activities as bulk earthworks within the cut/fill areas is complete, evidence of groundwater ingress is negligible. Where available, down-gradient results are compared with the up-gradient results to confirm the changes in groundwater quality are not attributed to the Project. Levels recorded outside of the trigger values are likely attributed to seasonal variation, low rainfall and natural variability within the groundwater table.

The water quality monitoring results are available in Appendix A

1.2 Noise and Vibration Monitoring

Noise monitoring has been undertaken in accordance with the approved Noise and Vibration Management Plan (NVMP). Monthly noise monitoring was conducted at five locations alongside the project alignment from October 2017. As per Section 9.3.1 of the NVMP the frequency of monitoring was reduced from eight to five sites in September 2017 due to consistently compliant noise monitoring results being obtained at Macksville, Wallace Street & Nursery Road and Pacific Highway (southern extent of alignment). This was approved by the Project Environment Representative (ER) as per the NVMP in August 2017 with an ER approval letter provided during February 2018.

Noise levels have been monitored above Noise Management Levels on 2 occasions during the reporting period out of 25 monitoring sessions. 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 or when vibratory activities are occurring within 50m of a resident in accordance with RMS specifications. Vibration monitoring has been undertaken on five (5) occasions during the reporting period at the request of the resident due to a poorly constructed dwelling. The monitoring results have shown levels below or marginally above the human comfort criteria set out in the Environmental Noise Management Assessing Vibration: A Technical Guideline (DEC 2006) in accordance with MCoA C8. Results are explained to the resident and reasonable and feasible mitigation measures are agreed upon. Vibration monitoring results have not exceeded the threshold of causing building damage 5mm/s, maximum peak particle velocity = 2.864mm/s.

Noise monitoring has also been undertaken to verify noise modelling conducted for activities occurring outside of standard construction hours as required by the project approved Out of Hours Works Procedure.

The noise and vibration monitoring results are available in Appendix B.

1.3 Air Quality Monitoring

Air Quality Monitoring has been undertaken in accordance with the approved Air Quality Management Plan (AQMP). Thirteen dust deposition gauges are placed at strategic locations alongside the Project alignment. Nine dust deposition gauges were previously placed at strategic locations alongside the Project alignment, with an additional four installed in response to complaints or to further identify sources of dust exceedances as reported in the last period. The air quality monitoring results are available in Appendix C.

During the reporting period, the ER approved on two separate occasions a reduction in dust monitoring locations (02/05/2018 and 01/08/2018) due to earthworks ceasing in these areas, ongoing tampering causing excessive results and the road being open to traffic.

02/05/2018 DDGs no longer to be monitored:

- DDG5 – Nambucca Floodplain – River Street
- DDGA1 – Bald Hill Road
- DDGA2 – Bald Hill Road

01/08/2018 DDGs no longer to be monitored:

- DDG1 – 46 Rosewood Road, Warrell Creek
- DDG2 – 17 Albert Drive, Donnellyville

- DDG3 – 4 Scotts Head Road, Donnellyville
- DDG4 – 157 Kerr Drive, Macksville

The Project has recorded dust levels above annual average amenity criteria during eleven (2) monitoring events at the following locations (DDG5, DDG6, DDG6N, DDG 7 and DDG9E) (out of 73 monitoring events) during this review period. Although the project recorded dust levels above annual average amenity criteria on eleven (2) occasions during the reporting period only one (1) of these exceedances may have been attributed to construction impacts, however we cannot be certain as the dust gauge had overtopped with water. The remaining one (1) exceedance is not believed to be due to construction as this dust gauge has continually produced excessive results (DDG5 in February 2018 recording TIM = 191g/m2/mth) with the ERG agreeing that it highly likely to be due to tampering. This is a decrease of nine (9) exceedances from the previous reporting period where eleven (11) exceedances were noted within the compliance tracking report.

AFJV continue to implement dust control measures in the vicinity of the dust generating works including:

- Dedicated water carts for the earthworks activities;
- Stopping earthworks in periods of high winds;
- Adding an additional water fill point near Letitia Close to ensure water carts have easy access to water without having to leave the vicinity of the work area;
- Application of soil binders to the exposed areas and batters;
- Topsoiling and hydromulching batters as soon as possible.

The rolling 12 month averages for the monthly dust levels shown below in Figure 1 indicate that all gauges are below the level of concern. A reduction in dust generation has coincided with the opening of the project: Stage 2B - 29th June 2018. It is anticipated that dust levels will continue to decrease for the remaining construction period.

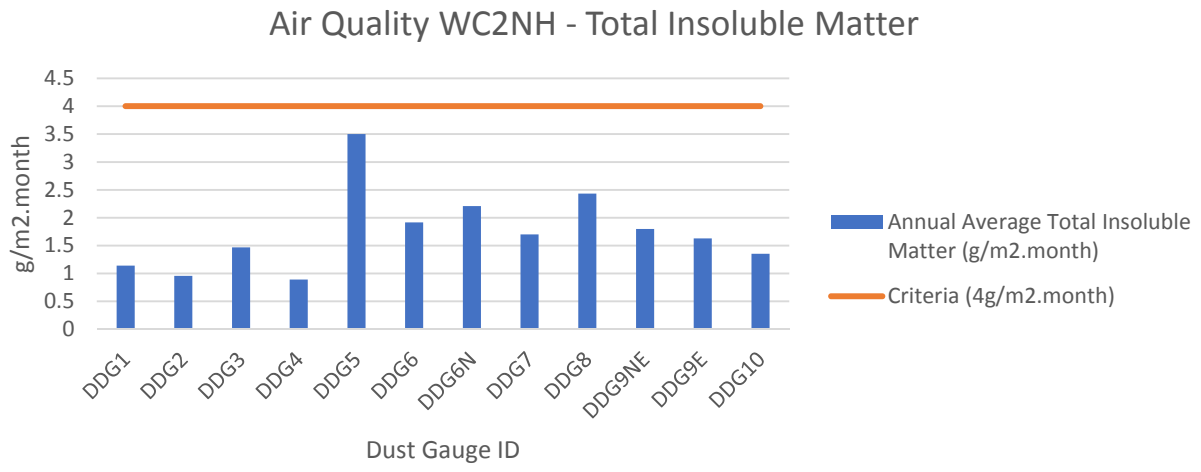

Figure 1: Dust monitoring results 12 month rolling average for Total Insoluble Matter (TIM) Note Outliers removed were those suspected of sabotage > 100gm/m^2/mth

1.4 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 9 February 2018 – 8 August 2018:

- Grey-Headed Flying Fox – monthly population monitoring;
- Grey-Headed Flying Fox –habitat monitoring;
- Nest Box Monitoring (Winter 2018);
- Microbat Monitoring including:
    - Roost Box Monitoring (Autumn and Winter 2018);
    - Habitat (Flyway) Monitoring (monthly February 2018 – July 2018)
- 6-Monthly Weed Monitoring Report (June 2018);
- Roadkill monitoring in accordance with the Roadkill Monitoring Strategy;
- Landscape Rehabilitation Monitoring (Monthly photo points and a quarterly checklist is completed).

1.5 Heritage Monitoring

Aboriginal Focus Group (AFG) Meeting #8 was undertaken on 24 July 2018 to discuss the reburial locations of 125 artefacts excavated near Butchers, Stoney and Warrell Creek. Representatives from RMS, DP&E (the project ER) and UNKYA LALC were present. The meeting was facilitated by Senior Archaeologist from Jacobs Pty Ltd.

On 25 July 2018, reburial of all the artefacts took place within the RMS road reserve near where they were salvaged during the project. The locations were recorded by GPS and have been placed on the AHIMS registrar.

Monitoring of heritage significant areas is undertaken during the weekly Environmental Inspections. No-go zone fencing as placed is inspected and rectified as and where necessary. No non-conformances with the approved heritage management plan occurred this reporting period.

5. Community Engagement

Roads and Maritime has an approved Community Involvement Plan (CIP) (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, its contractor AFJV, the Environmental Representative, Nambucca Shire Council and the local community (broader and local stakeholders).

The Plan was approved by DP&E on the 16/12/14. AFJV has been maintaining and implementing the Plan throughout construction of the project. The Community Involvement Plan has been reviewed and updated during this reporting period. The revised CIP was provided to DP&E on 14th September 2017 and approval obtained from DP&E on 29th September 2017 as per MCoA B28.

5.1 Community Complaints

Twenty-nine complaints were received during the reporting period. Nineteen of those related to operational noise. General themes of complaints received included:

- Property and motor vehicle damage;
- Noise and vibration; and
- Dust.

There are also a number of residents who have ongoing issues that are being are being managed by RMS and the AFJV. The EPA and DP&E are aware of these issues, which were discussed at Environment Review Group meetings. In general, these residents have concerns relating to property damage and at house noise treatments and are being worked through with the community members to resolve their concerns.

5.1.1 Damage to property

There were five complaints broadly categorised as “damage to property” received across the project during the period. Three complaints were in relation to motor vehicle damage (windscreen damage and wheel alignment) through use of the public road network. One complaint was related to potential property damage following regional flooding and one was in relation to fence damage. In each case the complaint was recorded, and rectification works completed as required.

5.1.2 Noise and vibration

There were three complaints relating to construction noise and vibration received across the project during the period. In all cases the complainants were contacted, and the cause of the noise and vibration rectified as soon as possible. The AFJV had obtained written agreements from residents advising of out of hours activities during the reporting period ensuring community was aware of upcoming works and reducing complaints.

5.1.1 Operational Noise

During the reporting period, nineteen people have complained about impacts from traffic noise from the highway. RMS has worked closely with the community in informing them of the Post Construction Noise assessment process and has published a noise fact sheet on the project website which address the most frequently asked questions by the community. RMS have also undertaken a number of meetings with the affected residents to understand and consider their concerns.

5.1.2 Dust and mud tracking

One dust complaint was received during the reporting period, which is a reduction from the four dust complaints received during the previous reporting period. There was one complaint relating to mud tracking. This result was generally expected as progress on rehabilitation and paving activities continue.

Throughout the project, complaints relating to dust emissions from site have been dealt with directly by construction personnel. The increased frequency of water cart use has been a direct response to drier conditions where either construction traffic and/or strong winds have resulted in dust emissions on site. In other instances, the use of street sweepers to remove dirt and debris accumulating on local roads has assisted with reducing nuisance dust emissions. These actions have been implemented as per the project approved Air Quality Management Plan (AQMP). Among other things, the AQMP includes the following management measures within air quality catchment areas:

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.

While a complaint relating to dust was received during the reporting period, it should be noted that dust monitoring results from across the project remain below the annual rolling average of 4g/m^2/month.

5.1.3 Breakdown of complaints by type

Figure 2 below shows the breakdown of the complaints by type and number recorded this reporting period.

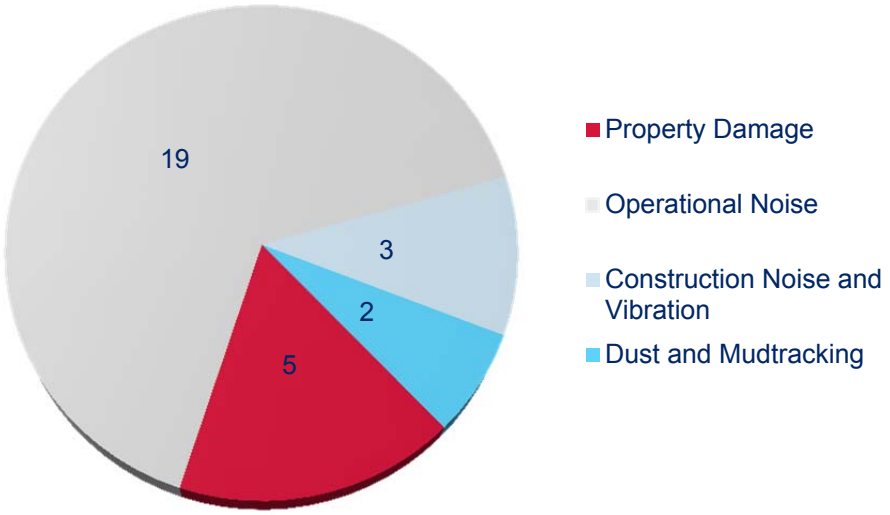

Figure 2 Complaints by type and number

5.2 Community Engagement

During the reporting period the AFJV Community Team published and distributed 8 community notifications.

The tri-weekly Roadside Meetings held with Resident impacted by the North Facing Ramps continued until March 2018

Relevant and timely community relations topics were provided to the Construction Team through “Toolbox Talks” every week during this period.

During the reporting period, feedback from the Community to the Project team can be made at the following locations:

- Site compound at 124 Albert Drive, Warrell Creek
- Nambucca Shire Council

- via the project phone No1800 074 588 or
- via email community@afjv.com.au

6. 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).

APPENDIX A – Surface Water and Groundwater Monitoring

Monitoring results for Surface Water

Table 1a Surface Water Quality Results – February 2018 Wet Event

Surface Water Results - Feb 2018 - Wet						Weather:	Fine											Low Tide:	8:55am																				
				SW01			SW02			SW03			SW04			SW05			SW06			SW07			SW08			SW09			SW10			SW11		
Location	Units	Levels of Concern		Upper Warrell Creek			Upper Warrell Creek			Stony Creek			Stony Creek			Lower Warrell Creek			Lower Warrell Creek			Unnamed Creek Gumma West			Unnamed Creek Gumma East			Unnamed Creek Gumma North			Nambucca River South			Nambucca River South		
				Upstream			Downstream			Upstream			Downstream			Upstream			Downstream			Upstream			Upstream			Downstream			Upstream			Downstream		
Freshwater / Estuarine		ANZECC 2000 95% species protected		Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Estuarine			Estuarine		
Date of Sampling				21-Feb-18			21-Feb-18			21-Feb-18			21-Feb-18			21-Feb-18			21-Feb-18			21-Feb-18			21-Feb-18			21-Feb-18			21-Feb-18			21-Feb-18		
Time of Sampling		Freshwater	Marine	11:45 AM			11:30 AM			12:30 PM			12:15 PM			2:40 PM			2:30 PM			1:10 PM			1:00 PM			12:50 PM			2:10 PM			2:30 PM		
Comments																																						
Type				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 %ile	20th %ile	Result	80th %ile	20th %ile	Result
Laboratory data																																						
Metals																																						
Aluminium	mg/L	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	<0.01	0.28	0.01	<0.01	0.25	0.02	0.02	0.25	0.02	0.01	0.25	0.02	0.02	0.11	0.01	<0.1	0.11	0.01	<0.1
Arsenic	mg/L	0.024	0.0023	0.001	0.001	<0.001	0.001	0.001	<0.001	0.002	0.001	0.002	0.002	0.001	0.002	0.001	0.001	<0.001	0.001	0.001	0.001	0.002	0.001	0.003	0.002	0.001	0.003	0.002	0.001	0.002	0.002	0.001	<0.01	0.002	0.001	<0.01
Cadmium	mg/L	0.0002	0.0055	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	0.0002	0.0001	<0.0001	0.0002	0.0001	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.001	-	-	<0.001
Chromium	mg/L	0.001	0.0044	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	0.002	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.01	-	-	<0.01
Copper	mg/L	0.0014	0.0013	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	0.001	0.001	0.003	0.001	0.001	0.002	0.001	0.001	<0.001	0.001	0.001	<0.01	0.001	0.001	<0.01
Lead	mg/L	0.0034	0.0044	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.01	-	-	<0.01
Manganese	mg/L	1.9	0.08	0.3	0.01	0.37	0.158	0.0178	0.441	0.0726	0.0218	0.282	0.083	0.0164	0.343	0.35	0.087	0.288	0.35	0.087	0.282	0.49	0.011	0.163	0.49	0.011	0.111	0.49	0.011	0.148	0.076	0.006	0.065	0.076	0.006	0.058
Nickel	mg/L	0.011	0.07	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	0.0034	0.001	0.001	0.0034	0.001	0.001	0.002	0.001	0.001	0.002	0.001	0.002	0.002	0.001	0.002	-	-	<0.01	-	-	<0.01
Selenium	mg/L	11	-	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.1	-	-	<0.01
Silver	mg/L	0.00005	0.0014	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.01	-	-	<0.01
Zinc	mg/L	0.008	0.015	0.007	0.005	<0.005	0.0062	0.0042	<0.005	0.0064	0.005	<0.005	0.006	0.005	0.008	0.018	0.005	0.006	0.018	0.005	<0.005	0.011	0.005	<0.005	0.011	0.005	0.007	0.011	0.005	0.013	0.005	0.005	<0.05	0.005	0.005	<0.05
Iron	mg/L	-	-	1.38	0.48	0.06	0.99	0.366	0.07	1.4	0.41	<0.05	1.48	0.35	<0.05	0.52	0.05	0.09	0.52	0.05	0.08	1.65	0.37	0.27	1.65	0.37	0.27	1.65	0.37	0.25	0.26	0.05	<0.01	0.26	0.05	<0.01
Mercury	mg/L	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	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	µg/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
>C10 - C16 Fraction	µg/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
>C34 - C40 Fraction	µg/L	-	-	-		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
>C10 - C16 Fraction minus Naphthalene (F2)	µg/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA
BTEX																																						
Benzene	µg/L	950	700	950		NA	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	180		NA
Ethylbenzene	µg/L	80	5	80		NA	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	µg/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	350		NA
Xylenes - Total	µg/L	-	-	-		NA	-		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
Nutrients																																						
Total Phosphorus	mg/L	0.05	0.03	0.05	0.02	0.04	0.044	0.016	0.02	0.03	0.016	0.02	0.034	0.01	0.03	0.04	0.01	0.03	0.04	0.01	0.03	0.11	0.03	0.03	0.11	0.03	0.02	0.11	0.03	0.02	0.07	0.02	<0.05	0.07	0.02	<0.05
Phosphate (reactive phosphorus)	-	-	-	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	<0.01	0.029	0.01	0.02	0.029	0.01	0.01
Total Nitrogen	mg/L	0.5	0.3	0.56	0.3	0.6	0.52	0.2	0.5	0.48	0.2	0.2	0.63	0.2	0.5	0.54	0.31	0.8	0.54	0.31	0.6	3.1	0.9	1.2	3.1	0.9	1	3.1	0.9	1	0.46	0.2	<0.5	0.46	0.2	<0.5
Total Kjeldahl Nitrogen	mg/L	-	-	0.5	0.3	0.5	0.5	0.2	0.4	0.34	0.2	0.2	0.6	0.2	0.4	0.5	0.2	0.7	0.5	0.2	0.5	2.8	0.8	1.1	2.8	0.8	0.9	2.8	0.8	0.9	0.3	0.2	<0.5	0.3	0.2	<0.5
Nitrate	mg/L	0.7	-	0.102	0.01	0.07	0.054	0.01	0.12	0.208	0.01	0.02	0.2	0.01	0.12	0.05	0.01	0.08	0.05	0.01	0.05	0.03	0.01	0.06	0.03	0.01	0.09	0.03	0.01	0.05	0.04	0.01	<0.01	0.04	0.01	0.01
Nitrite	mg/L	-	-	-	-	<0.01	-	-	<0.01	-	-	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	0.01	0.02	0.01	<0.01
Ammonia	mg/L	0.9	-	0.036	0.01	0.04	0.02	0.01	0.03	0.046	0.02	0.04	0.062	0.012	0.02	0.116	0.022	0.04	0.116	0.022	0.03	0.06	0.01	0.07	0.06	0.01	0.05	0.06	0.01	0.03	0.15	0.024	0.08	0.15	0.024	0.13
TSS																																						
TSS	mg/L	<40	<10	19	5	12	12.8	5	11	14.8	5	10	8.7	5	12	25	5.5	8	25	5.5	11	350	9	10	350	9	8	350	9	14			10			30
Field Physical data																																						
Temperature	°C	-	-	24.3	16.27	23.86	24.52	16.79	23.41	23.98	17.36	22.83	24.7	17.65	22.42	25.9	19.5	26.59	25.9	19.5	26.64	25.84	19.1	21.79	25.84	19.1	21.69	25.84	19.1	21.23	26.56	21.32	27.18	26.56	21.32	26.43
pH	pH	-	6.5-8	7.478	6.23	6.75	7.192	6.42	6.63	7.138	6.61	6.77	6.98	6.21	6.81	6.86	6.46	7.38	6.86	6.46	7.46	6.9	6.08	6.22	6.9	6.08	6.57	6.9	6.08	7.17	7.56	6.58	7.46	7.56	6.58	7.47
Conductivity	mS/cm	0.125-2.2	-	0.3204	0.20184	0.251	0.3242	0.19076	0.254	0.313	0.2024	0.229	0.309	0.20188	0.271	20.918	0.50928	5.63	20.918	0.50928	6.12	0.842	0.334	0.652	0.842	0.334	0.73	0.842	0.334	0.766	48.42	12.65	45	48.42	12.65	45.2
Turbidity	NTU	50	10	26.16	5.94	11.7	27.32	3.72	19.4	14.98	3.34	12.2	17.16	4.59	16	26.1	2.4	5.3	26.1	2.4	6.2	66.8	11.6	12.1	66.8	11.6	9.5	66.8	11.6	14.3	19.04	5.81	18.9	19.04	5.81	18.7
Dissolved Oxygen	mg/L	5	5	7.43	1.5	2.75	6.88	2.28	3.34	8.472	5.08	3.41	7.59	2.63	2.83	6.65	5.02	5.22	6.65	5.02	6.29	7.3	1.78	2.47	7.3	1.78	3.92	7.3	1.78	4.73	8.47	6.88	5.43	8.47	6.88	5.8
Dissolved Oxygen	%			-		33.3	-		40.1	-		40.5	-		34	-		67.1	-		81	-		28.9	-		45.7	-		54.9	-		82.1	-		87
TDS	g/L	-	-	-		0.163	-		0.165	-		0.153	-		0.176	-		3.54	-		3.85	-		0.417	-		0.467	-		0.49	-		27.4	-		27.6

Taken from ANZECC guidelines 95% protected species levels where no 80/20 trigger values provided

Taken from alternative trigger levels provided in ANZECC Water Guidelines Volume 1 and Volume 2 where insufficient data was available for 95%

Exceedances of trigger values

Table 1b – Surface Water Quality Results – February 2018 Dry Event

Surface Water Results -February 2018 - Dry						Weather: Fine												Low Tide:	10:47 PM																				
				SW01			SW02			SW03			SW04			SW05			SW06			SW07			SW08			SW09			SW10			SW11		
Location	Units	Levels of Concern		Upper Warrell Creek			Upper Warrell Creek			Stony Creek			Stony Creek			Lower Warrell Creek			Lower Warrell Creek			Unnamed Creek Gumma West			Unnamed Creek Gumma East			Unnamed Creek Gumma North			Nambucca River South			Nambucca River South		
				Upstream			Downstream			Upstream			Downstream			Upstream			Downstream			Upstream			Upstream			Downstream			Upstream			Downstream		
Freshwater / Estuarine		ANZECC 2000 95% species protected		Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Estuarine			Estuarine		
Date of Sampling				1-Feb-18			1-Feb-18			1-Feb-18			1-Feb-18			1-Feb-18			1-Feb-18			1-Feb-18			1-Feb-18			1-Feb-18			1-Feb-18			1-Feb-18		
Time of Sampling		Freshwater	Marine	2:10PM			1:20PM			1:45PM			12:45PM			4:50PM			4:40PM			3:55PM			3:40PM			3:20PM			4:20PM			4:10PM		
Comments																																						
Type				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 %ile	20th %ile	Result	80th %ile	20th %ile	Result
Field Physical data																																						
Temperature	°C	-	-	24.86	14.99	23.27	25.1	16.3	19.93	24.4	16	21.99	26.46	15.94	22.37	27.9	18.4	26.99	27.9	18.4	26.92	26.5	16.3	24.04	26.5	16.3	23.35	26.5	16.3	27.01	27.9	18.1	22.98	27.9	18.1	23.49
pH	pH	-	6.5-8	7.25	6.48	6.37	7.3	6.4	6.61	7.5	6.6	6.78	7.33	6.26	6.62	7.02	6.57	7.18	7.02	6.57	7.25	7	6.1	7.21	7	6.1	6.77	7	6.1	7.2	7	7	7.55	7	7	7.64
Conductivity	mS/cm	0.125-2.2	-	0.316	0.232	0.252	0.348	0.227	0.243	0.348	0.227	0.24	0.3338	0.2168	0.273	20.946	0.679	1.43	20.946	0.679	1.43	0.808	0.4234	0.579	0.808	0.4234	0.637	0.808	0.4234	0.565	47.32	29.44	44.1	47.32	29.44	45.4
Turbidity	NTU	50	10	10.96	4	5.5	9.9	3.5	7.3	9.9	3.5	5.1	5.97	3.74	4.8	6.82	1.83	24.5	6.82	1.83	28.2	52.78	11.3	24.4	52.78	11.3	5.8	52.78	11.3	30.3	19.3	6.7	26.9	19.3	6.7	23.6
Dissolved Oxygen	mg/L	5	5	4.98	1.91	7.47	4.8	2.6	7.55	4.8	2.6	5.78	6.34	3.52	6.17	7.98	5.07	4.59	7.98	5.07	5.6	6.4	1.75	9.95	6.4	1.75	3.64	6.4	1.75	9.79	9.1	7.4	8.42	9.1	7.4	7.29
Dissolved Oxygen	%			-	-	89.5	-	-	101.2	-	-	67.8	-	-	72.8	-	-	58.6	-	-	71.4	-	-	126.5	-	-	43.7	-	-	121	-	-	120.3	-	-	109.1
TDS	g/L	-	-	-		0.164	-		0.158	-		0.156	-		0.178	-		0.915	-		0.932	-		0.371	-		0.408	-		0.368	-		30.1	-		27.7

Taken from ANZECC guidelines 95% protected species levels where no 80/20 trigger values provided

Taken from alternative trigger levels provided in ANZECC Water Guidelines Volume 1 and Volume 2 where insufficient data was available for 95%

Exceedances of trigger values

Table 2a – Surface Water Quality Results – March 2018 – Wet Event1

Surface Water Results -MAR 2018 - Wet							Weather:	Fine											Low Tide:	9:15AM																
				SW01						SW03			SW04			SW05			SW06			SW07			SW08			SW09			SW10			SW11		
Location	Units	Levels of Concern		Upper Warrell Creek			Upper Warrell Creek			Stony Creek			Stony Creek			Lower Warrell Creek			Lower Warrell Creek			Unnamed Creek Gumma West			Unnamed Creek Gumma East			Unnamed Creek Gumma North			Nambucca River South			Nambucca River South		
				Upstream			Downstream			Upstream			Downstream			Upstream			Downstream			Upstream			Upstream			Downstream			Upstream			Downstream		
Freshwater / Estuarine		ANZECC 2000 95% species protected		Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Estuarine			Estuarine		
Date of Sampling				7-Mar-18			7-Mar-18			7-Mar-18			7-Mar-18			7-Mar-18			7-Mar-18			7-Mar-18			7-Mar-18			7-Mar-18			7-Mar-18			7-Mar-18		
Time of Sampling		Freshwater	Marine	12:15 PM			12:00 PM			8:15 AM			8:00 AM			9:00 AM			8:45 AM			11:15 AM			11:30 AM			11:00 AM			9:30 AM			9:15 AM		
Comments																																				
Type				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 %ile	20th %ile	Result	80th %ile	20th %ile	Result
Laboratory data																																				
Metals																																				
Aluminium	mg/L	0.055	-	0.244	0.0162	0.04	0.194	0.016	0.04	0.098	0.02	0.02	0.114	0.01	0.03	0.28	0.01	0.08	0.28	0.01	0.03	0.25	0.02	0.03	0.25	0.02	0.03	0.25	0.02	0.23	0.11	0.01	0.01	0.11	0.01	0.02
Arsenic	mg/L	0.024	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	<0.001	0.002	0.001	0.002	0.002	0.001	0.002	0.002	0.001	<0.001	0.002	0.001	0.001	0.002	0.001	0.001
Cadmium	mg/L	0.0002	0.0055	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	0.0002	0.0001	0.0005	0.0002	0.0001	<0.0001	-	-	<0.0001	-	-	0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001
Chromium	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	-	-	<0.001
Copper	mg/L	0.0014	0.0013	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	0.002	-	-	0.001	0.001	0.001	0.005	0.001	0.001	0.003	0.001	0.001	0.003	0.001	0.001	<0.001	0.001	0.001	<0.001
Lead	mg/L	0.0034	0.0044	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001
Manganese	mg/L	1.9	0.08	0.3	0.01	0.248	0.158	0.0178	0.228	0.0726	0.0218	0.045	0.083	0.0164	0.046	0.35	0.087	0.783	0.35	0.087	0.286	0.49	0.011	0.073	0.49	0.011	0.115	0.49	0.011	0.036	0.076	0.006	0.084	0.076	0.006	0.083
Nickel	mg/L	0.011	0.07	-	-	0.001	-	-	0.001	-	-	0.001	-	-	0.002	0.0034	0.001	0.02	0.0034	0.001	0.004	0.002	0.001	0.002	0.002	0.001	0.002	0.002	0.001	0.003	-	-	0.001	-	-	<0.001
Selenium	mg/L	11	-	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01
Silver	mg/L	0.00005	0.0014	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001
Zinc	mg/L	0.008	0.015	0.007	0.005	<0.005	0.0062	0.0042	<0.005	0.0064	0.005	<0.005	0.006	0.005	<0.005	0.018	0.005	0.08	0.018	0.005	<0.005	0.011	0.005	0.008	0.011	0.005	0.008	0.011	0.005	0.024	0.005	0.005	0.007	0.005	0.005	<0.005
Iron	mg/L	-	-	1.38	0.48	0.32	0.99	0.366	0.27	1.4	0.41	0.1	1.48	0.35	0.11	0.52	0.05	0.14	0.52	0.05	0.32	1.65	0.37	0.09	1.65	0.37	0.09	1.65	0.37	0.2	0.26	0.05	0.07	0.26	0.05	0.08
Mercury	mg/L	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	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	µg/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
>C10 - C16 Fraction	µg/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
>C34 - C40 Fraction	µg/L	-	-	-		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
>C10 - C16 Fraction minus Naphthalene (F2)	µg/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA
BTEX																																				
Benzene	µg/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
Ethylbenzene	µg/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	µg/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	µg/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA
Nutrients																																				
Total Phosphorus	mg/L	0.05	0.03	0.05	0.02	0.05	0.044	0.016	0.08	0.03	0.016	0.06	0.034	0.01	0.05	0.04	0.01	0.06	0.04	0.01	0.09	0.11	0.03	0.03	0.11	0.03	0.04	0.11	0.03	0.13	0.07	0.02	0.08	0.07	0.02	0.06
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	0.02	0.013	0.005	<0.01	0.013	0.005	<0.01	0.013	0.005	0.02	0.029	0.01	0.02	0.029	0.01	<0.01
Total Nitrogen	mg/L	0.5	0.3	0.56	0.3	0.9	0.52	0.2	1	0.48	0.2	0.6	0.63	0.2	0.9	0.54	0.31	0.8	0.54	0.31	0.7	3.1	0.9	1	3.1	0.9	0.9	3.1	0.9	1.6	0.46	0.2	0.7	0.46	0.2	0.9
Total Kjeldahl Nitrogen	mg/L	-	-	0.5	0.3	0.8	0.5	0.2	0.9	0.34	0.2	0.5	0.6	0.2	0.8	0.5	0.2	0.6	0.5	0.2	0.6	2.8	0.8	0.9	2.8	0.8	0.9	2.8	0.8	1.6	0.3	0.2	0.7	0.3	0.2	0.8
Nitrate	mg/L	0.7	-	0.102	0.01	0.09	0.054	0.01	0.12	0.208	0.01	0.09	0.2	0.01	0.11	0.05	0.01	0.18	0.05	0.01	0.07	0.03	0.01	0.07	0.03	0.01	0.04	0.03	0.01	0.03	0.04	0.01	0.03	0.04	0.01	0.08
Nitrite	mg/L	-	-	-	-	<0.01	-	-	<0.01	-	-	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	0.01	0.02	0.01	<0.01
Ammonia	mg/L	0.9	-	0.036	0.01	0.05	0.02	0.01	0.03	0.046	0.02	<0.01	0.062	0.012	0.02	0.116	0.022	0.07	0.116	0.022	0.07	0.06	0.01	0.11	0.06	0.01	0.1	0.06	0.01	0.12	0.15	0.024	0.11	0.15	0.024	0.18
TSS																																				
TSS	mg/L	<10	<10	19	5	18	12.8	5	14	14.8	5	8	8.7	5	8	25	5.5	8	25	5.5	12	350	9	10	350	9	8	350	9	6			6			11
Field Physical data																																				
Temperature	°C	-	-	24.3	16.27	21.24	24.52	16.79	21.31	23.98	17.36	21.18	24.7	17.65	21.29	25.9	19.5	22.78	25.9	19.5	22.85	25.84	19.1	21.9	25.84	19.1	22.06	25.84	19.1	22.2	26.56	21.32	22.86	26.56	21.32	22.75
pH	pH	-	6.5-8	7.478	6.23	6.39	7.192	6.42	6.54	7.138	6.61	6.61	6.98	6.21	6.69	6.86	6.46	6.61	6.86	6.46	6.8	6.9	6.08	6.39	6.9	6.08	6.08	6.9	6.08	6.36	7.56	6.58	7.28	7.56	6.58	7.24
Conductivity	mS/cm	0.125-2.2	-	0.3204	0.20184	0.226	0.3242	0.19076	0.228	0.313	0.2024	0.219	0.309	0.20188	0.263	20.918	0.50928	3.77	20.918	0.50928	3.75	0.842	0.334	0.326	0.842	0.334	0.287	0.842	0.334	0.316	48.42	12.65	25.7	48.42	12.65	26.5
Turbidity	NTU	50	10	26.16	5.94	32.6	27.32	3.72	35.3	14.98	3.34	13.6	17.16	4.59	16	26.1	2.4	16.5	26.1	2.4	10.9	66.8	11.6	19.8	66.8	11.6	14.8	66.8	11.6	9.1	19.04	5.81	9.9	19.04	5.81	10.7
Dissolved Oxygen	mg/L	5	5	7.43	1.5	5.47	6.88	2.28	6.77	8.472	5.08	6.68	7.59	2.63	7	6.65	5.02	3.48	6.65	5.02	5.35	7.3	1.78	5.03	7.3	1.78	4.54	7.3	1.78	7.1	8.47	6.88	7.75	8.47	6.88	8.43
Dissolved Oxygen	%			-		63.4	-		78.4	-		77.2	-		81	-		41.8	-		64.4	-		59	-		53.3	-		90.7	-		100.7	-		109.6
TDS	g/L	-	-	-		0.147	-		0.148	-		0.142	-		0.171	-		2.41	-		2.4	-		0.212	-		0.186	-		0.205	-		15.9	-		16.4

Taken from ANZECC guidelines 95% protected species levels where no 80/20 trigger values provided

Taken from alternative trigger levels provided in ANZECC Water Guidelines Volume 1 and Volume 2 where insufficient data was available for 95%

Exceedances of trigger values

Table 2b – Surface Water Monitoring – March 2018 – Wet Event 2

Surface Water Results - March 2018 - Wet							Weather:	Fine											Low Tide:	9:15am																
				SW01						SW03			SW04			SW05			SW06			SW07			SW08			SW09			SW10			SW11		
Location	Units	Levels of Concern		Upper Warrell Creek			Upper Warrell Creek			Stony Creek			Stony Creek			Lower Warrell Creek			Lower Warrell Creek			Unnamed Creek Gumma West			Unnamed Creek Gumma East			Unnamed Creek Gumma North			Nambucca River South			Nambucca River South		
				Upstream			Downstream			Upstream			Downstream			Upstream			Downstream			Upstream			Upstream			Downstream			Upstream			Downstream		
Freshwater / Estuarine		ANZECC 2000 95% species protected		Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Estuarine			Estuarine		
Date of Sampling				22-Mar-18			22-Mar-18			22-Mar-18			22-Mar-18			22-Mar-18			22-Mar-18			22-Mar-18			22-Mar-18			22-Mar-18			22-Mar-18			22-Mar-18		
Time of Sampling		Freshwater	Marine	8:45 AM			8:30AM			11:30 AM			11:15 AM			9:15 AM			9:05 AM			10:45 AM			11:00 AM			10:30 AM			9:45 AM			9:30 AM		
Comments																																				
Type				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 %ile	20th %ile	Result	80th %ile	20th %ile	Result
Field Physical data																																				
Temperature	°C	-	-	24.3	16.27	22.14	24.52	16.79	21.94	23.98	17.36	21.52	24.7	17.65	21.74	25.9	19.5	25.6	25.9	19.5	25.51	25.84	19.1	22.92	25.84	19.1	22.56	25.84	19.1	23.21	26.56	21.32	26.33	26.56	21.32	26.12
pH	pH	-	6.5-8	7.478	6.23	6.89	7.192	6.42	6.94	7.138	6.61	6.86	6.98	6.21	6.91	6.86	6.46	6.95	6.86	6.46	6.89	6.9	6.08	6.9	6.9	6.08	7	6.9	6.08	7.05	7.56	6.58	7.56	7.56	6.58	7.4
Conductivity	mS/cm	0.125-2.2	-	0.3204	0.20184	0.228	0.3242	0.19076	0.271	0.313	0.2024	0.245	0.309	0.20188	0.222	20.918	0.50928	4.49	20.918	0.50928	4.3	0.842	0.334	0.579	0.842	0.334	0.577	0.842	0.334	0.748	48.42	12.65	35.9	48.42	12.65	35.4
Turbidity	NTU	50	10	26.16	5.94	13.2	27.32	3.72	7.6	14.98	3.34	9.9	17.16	4.59	10.9	26.1	2.4	12.3	26.1	2.4	7.8	66.8	11.6	13.4	66.8	11.6	10.3	66.8	11.6	13	19.04	5.81	11.2	19.04	5.81	9.2
Dissolved Oxygen	mg/L	5	5	7.43	1.5	3.86	6.88	2.28	3.58	8.472	5.08	6.74	7.59	2.63	6.89	6.65	5.02	5.71	6.65	5.02	5.9	7.3	1.78	4.09	7.3	1.78	3.17	7.3	1.78	6.17	8.47	6.88	5.47	8.47	6.88	6.4
Dissolved Oxygen	%			-		45.3	-		42	-		78.3	-		80.4	-		71.9	-		74.2	-		48.8	-		37.6	-		73.9	-		78.3	-		91.2
TDS	g/L	-	-	-		0.148	-		0.176	-		0.149	-		0.145	-		2.88	-		2.75	-		0.371	-		0.369	-		0.479	-		21.9	-		21.6

Taken from ANZECC guidelines 95% protected species levels where no 80/20 trigger values provided

Taken from alternative trigger levels provided in ANZECC Water Guidelines Volume 1 and Volume 2 where insufficient data was available for 95%

Exceedances of trigger values

Table 2c – Surface Water Quality Results – March 2018 Dry Event

Surface Water Results - Mar 2018 - Dry					Weather:	Fine											Low Tide:	4:00pm																					
				SW01			SW03			SW04			SW05			SW06			SW07			SW08			SW09			SW10			SW11								
Location	Units	Levels of Concern		Upper Warrell Creek			Upper Warrell Creek			Stony Creek			Stony Creek			Lower Warrell Creek			Lower Warrell Creek			Unnamed Creek Gumma West			Unnamed Creek Gumma East			Unnamed Creek Gumma North			Nambucca River South			Nambucca River South					
				Upstream			Downstream			Downstream			Upstream			Downstream			Upstream			Upstream			Downstream			Upstream			Downstream					
Freshwater / Estuarine		ANZECC 2000 95% species protected		Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Estuarine			Estuarine					
Date of Sampling				16-Mar-18			16-Mar-18			16-Mar-18			16-Mar-18			16-Mar-18			16-Mar-18			16-Mar-18			16-Mar-18			16-Mar-18			16-Mar-18					
Time of Sampling		Freshwater	Marine	12:45pm			12:30pm			1:15pm			1:00pm			3:45pm			3:30pm			2:45pm			3:00pm			2:30pm			4:15pm			4:00pm					
Comments																																						
Type				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 %ile	20th %ile	Result	80th %ile	20th %ile	Result			
Laboratory data																																						
Metals																																						
Aluminium	mg/L	0.055	-	0.06	0.01	0.05	0.05	0.01	0.02	0.05	0.01	0.01	0.04	0.01	0.02	0.06	0.01	0.02	0.06	0.01	0.02	0.1	0.01	0.04	0.1	0.01	0.03	0.1	0.01	0.02	0.02	0.01	<0.01	0.02	0.01	<0.01			
Arsenic	mg/L	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	0.002	0.002	0.001	<0.001	0.002	0.001	0.002	0.002	0.001	0.002			
Cadmium	mg/L	0.0002	0.0055	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	0.0001	0.0001	<0.0001	0.0001	0.0001	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	0.0002	-	-	<0.0001	-	-	<0.0001			
Chromium	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	-	-	<0.001			
Copper	mg/L	0.0014	0.0013	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	0.001	-	-	0.006	0.001	0.001	<0.001	0.001	0.001	<0.001			
Lead	mg/L	0.0034	0.0044	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001			
Manganese	mg/L	1.9	0.08	0.21	0.02	0.145	0.2	0.03	0.128	0.06	0.02	0.088	0.052	0.013	0.084	0.26	0.08	0.24	0.26	0.08	0.24	0.23	0.019	0.307	0.23	0.019	0.268	0.23	0.019	0.007	0.03	0.002	0.076	0.03	0.002	0.091			
Nickel	mg/L	0.011	0.07	-	-	<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	0.001	0.005	-	-	<0.001	-	-	<0.001			
Selenium	mg/L	11	-	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01			
Silver	mg/L	0.00005	0.0014	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001			
Zinc	mg/L	0.008	0.015	-	-	<0.005	-	-	<0.005	0.005	0.005	0.007	0.005	0.005	<0.005	0.006	0.005	0.01	0.006	0.005	0.006	0.005	0.005	0.007	0.005	0.005	0.009	0.005	0.005	0.016	0.005	0.005	<0.005	0.005	0.005	<0.005			
Iron	mg/L	-	-	0.99	0.46	0.89	0.93	0.31	0.32	0.82	0.42	0.19	0.78	0.37	0.06	0.83	0.05	0.28	0.83	0.05	0.13	2.01	0.25	0.88	2.01	0.25	0.53	2.01	0.25	<0.05	-	-	<0.05	-	-	<0.05			
Mercury	mg/L	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	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	µg/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			
>C10 - C16 Fraction	µg/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			
>C34 - C40 Fraction	µg/L	-	-	-		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			
>C10 - C16 Fraction minus Naphthalene (F2)	µg/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA			
BTEX																																						
Benzene	µg/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			
Ethylbenzene	µg/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	µg/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	µg/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA			
Nutrients																																						
Total Phosphorus	mg/L	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	<0.01	0.12	0.03	0.05	0.04	0.02	0.03	0.04	0.02	0.02			
Phosphate (reactive phosphorus)	mg/L	-	-	-	-	<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	<0.01	0.01	0.008	<0.01	0.01	0.008	<0.01			
Total Nitrogen	mg/L	0.5	0.3	0.62	0.2	0.4	0.6	0.2	1	0.3	0.1	<0.1	0.41	0.1	<0.1	0.5	0.2	0.7	0.5	0.2	1.2	2.8	1.1	0.8	2.8	1.1	0.7	2.8	1.1	1	0.5	0.2	0.2	0.5	0.2	0.2			
Total Kjeldahl Nitrogen	mg/L	-	-	0.6	0.2	0.4	0.6	0.2	0.8	0.3	0.1	<0.1	0.4	0.1	<0.1	0.5	0.2	0.5	0.5	0.2	0.6	2.4	1	0.6	2.4	1	0.6	2.4	1	1	0.5	0.2	0.2	0.5	0.2	0.2			
Nitrate	mg/L	0.7	-	0.04	0.01	0.02	0.03	0.01	0.19	0.03	0.01	<0.01	0.03	0.01	<0.01	0.04	0.01	0.16	0.04	0.01	0.65	0.04	0.01	0.18	0.04	0.01	0.07	0.04	0.01	0.01	0.02	0.01	0.02	0.02	0.01	<0.01			
Nitrite	mg/L	-	-	-	-	<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	mg/L	0.9	-	-	-	0.02	-	-	0.18	-	-	<0.01	-	-	<0.01	0.16	0.06	0.12	0.16	0.06	0.07	0.04	0.01	<0.01	0.04	0.01	0.02	0.04	0.01	0.04	0.03	0.01	0.03	0.03	0.01	0.02			
TSS																																						
TSS	mg/L	<40	<10	14.8	5	10	8	5	8	9	5	8	5.8	5	<5	17.6	5	10	17.6	5	10	290	15	9	290	15	20	290	15	8	71	19	42	71	19	38			
Field Physical data																																						
Temperature	°C	-	-	24.86	14.99	22.12	25.1	16.3	22.13	24.4	16	21.33	26.46	15.94	21.13	27.9	18.4	27.9	27.9	18.4	28.16	26.5	16.3	25.61	26.5	16.3	24.59	26.5	16.3	24.72	27.9	18.1	28.16	27.9	18.1	27.53			
pH	pH	-	6.5-8	7.25	6.48	6.9	7.3	6.4	6.95	7.5	6.6	6.55	7.33	6.26	6.68	7.02	6.57	7.48	7.02	6.57	7.5	7	6.1	7.13	7	6.1	6.99	7	6.1	7.55	7	7	8.08	7	7	8.06			
Conductivity	mS/cm	0.125-2.2	-	0.316	0.232	0.231	0.348	0.227	0.277	0.348	0.227	0.222	0.3338	0.2168	0.223	20.946	0.679	3.41	20.946	0.679	3.39	0.808	0.4234	0.623	0.808	0.4234	0.585	0.808	0.4234	1.28	47.32	29.44	33.4	47.32	29.44	33.3			
Turbidity	NTU	50	10	10.96	4	1.9	9.9	3.5	2.5	9.9	3.5	9.2	5.97	3.74	4.3	6.82	1.83	1.8	6.82	1.83	2.6	52.78	11.3	7.9	52.78	11.3	10.5	52.78	11.3	6.4	19.3	6.7	28.4	19.3	6.7	24.4			
Dissolved Oxygen	mg/L	5	5	4.98	1.91	8.95	4.8	2.6	4.16	4.8	2.6	8.17	6.34	3.52	8.58	7.98	5.07	6.23	7.98	5.07	6.31	6.4	1.75	3.88	6.4	1.75	3.46	6.4	1.75	6.4	9.1	7.4	9.67	9.1	7.4	10			
Dissolved Oxygen	%			-	-	94.3	-	-	48.9	-	-	94.7	-	-	99.1	-	-	81.1	-	-	82.3	-	-	49.7	-	-	42.4	-	-	84.1	-	-	143	-	-	146.5			
TDS	g/L	-	-	-		0.150	-		0.180	-		0.144	-		0.145	-		2.180	-		2.170	-		0.399	-		0.374	-		0.83	-		20.4	-		20.3			

Taken from ANZECC guidelines 95% protected species levels where no 80/20 trigger values provided

Taken from alternative trigger levels provided in ANZECC Water Guidelines Volume 1 and Volume 2 where insufficient data was available for 95%

Exceedances of trigger values

Table 3a – Surface Water Quality Results – April 2018 Wet Event 1

Surface Water Results -APR 2018 - Wet					Weather:	Fine										Low Tide:	5:30pm																	
				SW01			SW03			SW04			SW05			SW06			SW07			SW08			SW09			SW10			SW11		
Location	Units	Levels of Concern		Upper Warrell Creek			Upper Warrell Creek			Stony Creek			Stony Creek			Low er Warrell Creek			Low er Warrell Creek			Unnamed Creek Gumma West			Unnamed Creek Gumma East			Unnamed Creek Gumma North			Nambucca River South			Nambucca River South		
				Upstream			Dow nstream			Upstream			Dow nstream			Upstream			Dow nstream			Upstream			Upstream			Dow nstream			Upstream			Dow nstream		
Freshw ater / Estuarine		ANZECC 2000 95% species protected		Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Estuarine			Estuarine		
Date of Sampling				4-Apr-18			4-Apr-18			4-Apr-18			4-Apr-18			4-Apr-18			4-Apr-18			4-Apr-18			4-Apr-18			4-Apr-18			4-Apr-18		
Time of Sampling		Freshw ater	Marine	12:15 PM			12:00 PM			12:45 PM			12:30 PM			3:45 PM			3:30 PM			2:30 PM			2:45 PM			2:15 PM			3:15 AM			3:00 PM		
Comments																																		
Type				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 %ile	20th %ile	Result	80th %ile	20th %ile	Result
Laboratory data																																		
Metals																																		
Aluminium	mg/L	0.055	-	0.244	0.0162	0.02	0.194	0.016	0.02	0.098	0.02	<0.01	0.114	0.01	<0.01	0.28	0.01	0.11	0.28	0.01	0.08	0.25	0.02	0.02	0.25	0.02	0.09	0.25	0.02	0.02	0.11	0.01	<0.01	0.11	0.01	0.01
Arsenic	mg/L	0.024	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	<0.001	0.002	0.001	0.002	0.002	0.001	0.003	0.002	0.001	0.003	0.002	0.001	0.001	0.002	0.001	0.001
Cadmium	mg/L	0.0002	0.0055	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	0.0002	0.0001	<0.0001	0.0002	0.0001	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001
Chromium	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	-	-	<0.001
Copper	mg/L	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	0.003	0.001	0.001	0.002	0.001	0.001	<0.001	0.001	0.001	<0.001
Lead	mg/L	0.0034	0.0044	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001
Manganese	mg/L	1.9	0.08	0.3	0.01	0.06	0.158	0.0178	0.061	0.0726	0.0218	0.094	0.083	0.0164	0.09	0.35	0.087	0.138	0.35	0.087	0.142	0.49	0.011	0.396	0.49	0.011	0.324	0.49	0.011	0.401	0.076	0.006	0.13	0.076	0.006	0.12
Nickel	mg/L	0.011	0.07	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	0.0034	0.001	0.003	0.0034	0.001	0.003	0.002	0.001	0.002	0.002	0.001	0.002	0.002	0.001	0.001	-	-	0.002	-	-	<0.001
Selenium	mg/L	11	-	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01
Silver	mg/L	0.00005	0.0014	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001
Zinc	mg/L	0.008	0.015	0.007	0.005	<0.005	0.0062	0.0042	<0.005	0.0064	0.005	<0.005	0.006	0.005	<0.005	0.018	0.005	<0.005	0.018	0.005	0.009	0.011	0.005	<0.005	0.011	0.005	0.01	0.011	0.005	<0.005	0.005	0.005	<0.005	0.005	0.005	<0.0005
Iron	mg/L	-	-	1.38	0.48	0.08	0.99	0.366	0.11	1.4	0.41	0.06	1.48	0.35	<0.05	0.52	0.05	0.3	0.52	0.05	0.22	1.65	0.37	0.59	1.65	0.37	0.84	1.65	0.37	0.64	0.26	0.05	<0.05	0.26	0.05	<0.05
Mercury	mg/L	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	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	µg/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
>C10 - C16 Fraction	µg/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
>C34 - C40 Fraction	µg/L	-	-	-		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
>C10 - C16 Fraction minus Naphthalene (F2)	µg/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA
BTEX																																				
Benzene	µg/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
Ethylbenzene	µg/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	µg/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	µg/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA
Nutrients																																				
Total Phosphorus	mg/L	0.05	0.03	0.05	0.02	0.03	0.044	0.016	0.02	0.03	0.016	0.01	0.034	0.01	<0.01	0.04	0.01	0.03	0.04	0.01	0.03	0.11	0.03	0.03	0.11	0.03	0.02	0.11	0.03	0.03	0.07	0.02	1.17	0.07	0.02	0.07
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	<0.01	0.029	0.01	<0.01	0.029	0.01	<0.01
Total Nitrogen	mg/L	0.5	0.3	0.56	0.3	0.6	0.52	0.2	0.7	0.48	0.2	0.3	0.63	0.2	0.6	0.54	0.31	0.4	0.54	0.31	0.6	3.1	0.9	0.6	3.1	0.9	0.8	3.1	0.9	0.6	0.46	0.2	1.3	0.46	0.2	0.6
Total Kjeldahl Nitrogen	mg/L	-	-	0.5	0.3	0.4	0.5	0.2	0.5	0.34	0.2	0.2	0.6	0.2	0.4	0.5	0.2	0.4	0.5	0.2	0.5	2.8	0.8	0.6	2.8	0.8	0.8	2.8	0.8	0.6	0.3	0.2	1.3	0.3	0.2	0.5
Nitrate	mg/L	0.7	-	0.102	0.01	0.18	0.054	0.01	0.24	0.208	0.01	0.11	0.2	0.01	0.19	0.05	0.01	0.05	0.05	0.01	0.07	0.03	0.01	0.03	0.03	0.01	0.02	0.03	0.01	0.02	0.04	0.01	0.04	0.04	0.01	0.08
Nitrite	mg/L	-	-	-	-	<0.01	-	-	<0.01	-	-	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01
Ammonia	mg/L	0.9	-	0.036	0.01	0.02	0.02	0.01	0.04	0.046	0.02	0.09	0.062	0.012	0.04	0.116	0.022	<0.01	0.116	0.022	<0.01	0.06	0.01	<0.01	0.06	0.01	0.02	0.06	0.01	0.01	0.15	0.024	0.05	0.15	0.024	<0.01
TSS																																				
TSS	mg/L	<40	<10	19	5	6	12.8	5	8	14.8	5	<5	8.7	5	<5	25	5.5	8	25	5.5	6	350	9	14	350	9	6	350	9	10			16			17
Field Physical data																																				
Temperature	°C	-	-	24.3	16.27	21.9	24.52	16.79	22.32	23.98	17.36	22.9	24.7	17.65	22.84	25.9	19.5	26.57	25.9	19.5	26.5	25.84	19.1	24.73	25.84	19.1	24.79	25.84	19.1	25.12	26.56	21.32	27.68	26.56	21.32	27.83
pH	pH	-	6.5-8	7.478	6.23	6.44	7.192	6.42	6.49	7.138	6.61	6.56	6.98	6.21	6.52	6.86	6.46	7.16	6.86	6.46	7.35	6.9	6.08	6.51	6.9	6.08	6.48	6.9	6.08	6.57	7.56	6.58	8.24	7.56	6.58	8.21
Conductivity	mS/cm	0.125-2.2	-	0.3204	0.20184	0.201	0.3242	0.19076	0.237	0.313	0.2024	0.174	0.309	0.20188	0.176	20.918	0.50928	0.398	20.918	0.50928	0.581	0.842	0.334	0.288	0.842	0.334	0.31	0.842	0.334	0.301	48.42	12.65	17.6	48.42	12.65	17.4
Turbidity	NTU	50	10	26.16	5.94	11.6	27.32	3.72	7.5	14.98	3.34	3.4	17.16	4.59	2.6	26.1	2.4	9.5	26.1	2.4	8.2	66.8	11.6	11.6	66.8	11.6	10.6	66.8	11.6	14.4	19.04	5.81	19	19.04	5.81	17.4
Dissolved Oxygen	mg/L	5	5	7.43	1.5	6.35	6.88	2.28	7.04	8.472	5.08	7.21	7.59	2.63	7.52	6.65	5.02	5.09	6.65	5.02	5.47	7.3	1.78	2.46	7.3	1.78	3.31	7.3	1.78	5.02	8.47	6.88	7.81	8.47	6.88	8.47
Dissolved Oxygen	%			-		74.4	-		83	-		85.8	-		89.5	-		64.3	-		69.1	-		30.2	-		40.3	-		62	-		100.9	-		101
TDS	g/L	-	-	-		0.131	-		0.154	-		0.113	-		0.114	-		0.26	-		0.372	-		0.187	-		0.201	-		0.195	-		10.8	-		10.8

Taken from ANZECC guidelines 95% protected species levels where no 80/20 trigger values provided

Taken from alternative trigger levels provided in ANZECC Water Guidelines Volume 1 and Volume 2 where insufficient data was available for 95%

Exceedances of trigger values

Table 3b – Surface Water Quality Results – April 2018 Wet Event 2

Surface Water Results - April 2018 - Wet					Weather:	Showers										Low Tide:	11.43am																	
				SW01			SW03			SW04			SW05			SW06			SW07			SW08			SW09			SW10			SW11		
Location	Units	Levels of Concern		Upper Warrell Creek			Upper Warrell Creek			Stony Creek			Stony Creek			Low er Warrell Creek			Low er Warrell Creek			Unnamed Creek Gumma West			Unnamed Creek Gumma East			Unnamed Creek Gumma North			Nambucca River South			Nambucca River South		
				Upstream			Dow nstream			Upstream			Dow nstream			Upstream			Dow nstream			Upstream			Upstream			Dow nstream			Upstream			Dow nstream		
Freshw ater / Estuarine		ANZECC 2000 95% species protected		Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Estuarine			Estuarine		
Date of Sampling				24-Apr-18			24-Apr-18			24-Apr-18			24-Apr-18			24-Apr-18			24-Apr-18			24-Apr-18			24-Apr-18			24-Apr-18			24-Apr-18		
Time of Sampling		Freshw ater	Marine	2:00pm			1:40PM			1:25PM			11:15 AM			1pm			12.45pm			2:50 PM			2:35 PM			2:25 PM			12:45 PM			12:10 PM		
Comments										cow s active, clear						clear			clear												Clear			Clear		
Type				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 %ile	20th %ile	Result	80th %ile	20th %ile	Result
Field Physical data																																				
Temperature	°C	-	-	24.3	16.27	19.01	24.52	16.79	19.24	23.98	17.36	18.79	24.7	17.65	20.65	25.9	19.5	19.33	25.9	19.5	19.46	25.84	19.1	20.41	25.84	19.1	19.51	25.84	19.1	19.51	26.56	21.32	20.36	26.56	21.32	21.41
pH	pH	-	6.5-8	7.478	6.23	6.62	7.192	6.42	6.71	7.138	6.61	6.58	6.98	6.21	6.51	6.86	6.46	6.61	6.86	6.46	6.81	6.9	6.08	6.99	6.9	6.08	6.91	6.9	6.08	7	7.56	6.58	7.42	7.56	6.58	7.35
Conductivity	mS/cm	0.125-2.2	-	0.3204	0.20184	0.243	0.3242	0.19076	0.269	0.313	0.2024	0.216	0.309	0.20188	0.176	20.918	0.50928	0.483	20.918	0.50928	0.481	0.842	0.334	0.441	0.842	0.334	0.386	0.842	0.334	0.5	48.42	12.65	20.3	48.42	12.65	20.5
Turbidity	NTU	50	10	26.16	5.94	17.2	27.32	3.72	20.9	14.98	3.34	17.8	17.16	4.59	12.4	26.1	2.4	15.6	26.1	2.4	11.1	66.8	11.6	6.7	66.8	11.6	7	66.8	11.6	9.8	19.04	5.81	9.9	19.04	5.81	7.1
Dissolved Oxygen	mg/L	5	5	7.43	1.5	6.55	6.88	2.28	4.83	8.472	5.08	6.79	7.59	2.63	7.66	6.65	5.02	5.59	6.65	5.02	5.36	7.3	1.78	6.36	7.3	1.78	3.57	7.3	1.78	8.08	8.47	6.88	6.35	8.47	6.88	6.59
Dissolved Oxygen	%			-		71.3	-		34.9	-		77.1	-		95.2	-		62	-		59.3	-		72.7	-		40	-		90.9	-		68.4	-		69.7
TDS	g/L	-	-	-		0.158	-		0.176	-		0.14	-		0.118	-		0.28	-		0.306	-		0.285	-		0.251	-		0.321	-		12.6	-		13.7

Taken from ANZECC guidelines 95% protected species levels where no 80/20 trigger values provided

Taken from alternative trigger levels provided in ANZECC Water Guidelines Volume 1 and Volume 2 where insufficient data was available for 95%

Exceedances of trigger values

Table 3c – Surface Water Quality Monitoring – April 2018 Dry Event

Surface Water Results -April 2018 - Dry				Weather: Fine													Low Tide:	10:47 PM																	
				SW01			SW02			SW03			SW04			SW05			SW06			SW07			SW08			SW09			SW10			SW11		
Location	Units	Levels of Concern		Upper Warrell Creek			Upper Warrell Creek			Stony Creek			Stony Creek			Lower Warrell Creek			Lower Warrell Creek			Unnamed Creek Gumma West			Unnamed Creek Gumma East			Unnamed Creek Gumma North			Nambucca River South			Nambucca River South		
				Upstream			Downstream			Upstream			Downstream			Upstream			Downstream			Upstream			Upstream			Downstream			Upstream			Downstream		
Freshwater / Estuarine		ANZECC 2000 95% species protected		Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Estuarine			Estuarine		
Date of Sampling				13-Apr-18			13-Apr-18			13-Apr-18			13-Apr-18			13-Apr-18			13-Apr-18			13-Apr-18			13-Apr-18			13-Apr-18			13-Apr-18			13-Apr-18		
Time of Sampling		Freshwater	Marine	12:00PM			11:45AM			11:30AM			11:15AM			1:15PM			1:00PM			12:30PM			12:40PM			12:15PM			2:15PM			2:00PM		
Comments																																				
Type				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 %ile	20th %ile	Result	80th %ile	20th %ile	Result
Field Physical data																																				
Temperature	C	-	-	24.86	14.99	20.54	25.1	16.3	20.37	24.4	16	19.9	26.46	15.94	20.08	27.9	18.4	27.73	27.9	18.4	28.04	26.5	16.3	22.53	26.5	16.3	21.94	26.5	16.3	26.08	27.9	18.1	27.18	27.9	18.1	27.22
pH	pH	-	6.5-8	7.25	6.48	6.49	7.3	6.4	6.87	7.5	6.6	6.85	7.33	6.26	6.46	7.02	6.57	7.13	7.02	6.57	7.17	7	6.1	6.54	7	6.1	6.47	7	6.1	6.51	7	7	7.66	7	7	7.57
Conductivity	mS/cm	0.125-2.2	-	0.316	0.232	0.272	0.348	0.227	0.237	0.348	0.227	0.228	0.3338	0.2168	0.218	20.946	0.679	0.872	20.946	0.679	0.82	0.808	0.4234	0.812	0.808	0.4234	0.475	0.808	0.4234	0.516	47.32	29.44	31.9	47.32	29.44	32.3
Turbidity	NTU	50	10	10.96	4	10	9.9	3.5	4.1	9.9	3.5	10.2	5.97	3.74	5.4	6.82	1.83	10.8	6.82	1.83	10.9	52.78	11.3	20.1	52.78	11.3	11.3	52.78	11.3	16.4	19.3	6.7	17.2	19.3	6.7	18.1
Dissolved Oxygen	mg/L	5	5	4.98	1.91	4.81	4.8	2.6	4.15	4.8	2.6	8.55	6.34	3.52	7.79	7.98	5.07	4.82	7.98	5.07	6.19	6.4	1.75	0.91	6.4	1.75	0.75	6.4	1.75	3.97	9.1	7.4	6.04	9.1	7.4	5.79
Dissolved Oxygen	%			-	-	54.9	-	-	47.3	-	-	96.6	-	-	88.2	-	-	62.1	-	-	80.1	-	-	10.7	-	-	8.8	-	-	49.8	-	-	81.4	-	-	76.9
TDS	g/L	-	-	-		0.137	-		0.137	-		0.128	-		0.130	-		0.307	-		0.333	-		0.250	-		0.218	-		0.260	-		14.3	-		13.8

Taken from ANZECC guidelines 95% protected species levels where no 80/20 trigger values provided

Taken from alternative trigger levels provided in ANZECC Water Guidelines Volume 1 and Volume 2 where insufficient data was available for 95%

Exceedances of trigger values

Table 4a – Surface Water Quality Monitoring – May 2018 Dry Event

Surface Water Results - May 2018 - Dry				Weather:	Fine													Low Tide:	4:00pm																	
				SW01			SW02			SW03			SW04			SW05			SW06			SW07			SW08			SW09			SW10			SW11		
Location	Units	Levels of Concern		Upper Warrell Creek			Upper Warrell Creek			Stony Creek			Stony Creek			Lower Warrell Creek			Lower Warrell Creek			Unnamed Creek Gumma West			Unnamed Creek Gumma East			Unnamed Creek Gumma North			Nambucca River South			Nambucca River South		
				Upstream			Downstream			Upstream			Downstream			Upstream			Downstream			Upstream			Upstream			Downstream			Upstream			Downstream		
Freshwater / Estuarine		ANZECC 2000 95% species protected		Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Freshwater			Estuarine			Estuarine		
Date of Sampling				4-May-18			4-May-18			4-May-18			4-May-18			4-May-18			4-May-18			4-May-18			4-May-18			4-May-18			4-May-18			4-May-18		
Time of Sampling		Freshwater	Marine	11:45AM			11:30AM			12:15PM			12:00PM			10:15AM			10:00AM			12:45PM			1:00PM			12:30PM			8:30AM			8:15AM		
Comments																																				
Type				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 %ile	20th %ile	Result	80th %ile	20th %ile	Result
Laboratory data																																				
Metals																																				
Aluminium	mg/L	0.055	-	0.06	0.01	<0.01	0.05	0.01	0.01	0.05	0.01	<0.01	0.04	0.01	<0.01	0.06	0.01	0.02	0.06	0.01	0.02	0.1	0.01	0.01	0.1	0.01	0.02	0.1	0.01	<0.01	0.02	0.01	<0.10	0.02	0.01	<0.10
Arsenic	mg/L	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	0.002	0.002	0.001	<0.001	0.002	0.001	<0.010	0.002	0.001	<0.010
Cadmium	mg/L	0.0002	0.0055	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	0.0001	0.0001	<0.0001	0.0001	0.0001	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0010	-	-	<0.0010
Chromium	mg/L	0.001	0.0044	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.010	-	-	<0.010
Copper	mg/L	0.0014	0.0013	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	0.004	0.001	0.001	<0.010	0.001	0.001	<0.010
Lead	mg/L	0.0034	0.0044	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.010	-	-	<0.010
Manganese	mg/L	1.9	0.08	0.21	0.02	0.05	0.2	0.03	0.054	0.06	0.02	0.094	0.052	0.013	0.1	0.26	0.08	0.064	0.26	0.08	0.073	0.23	0.019	0.204	0.23	0.019	0.264	0.23	0.019	0.004	0.03	0.002	0.064	0.03	0.002	0.063
Nickel	mg/L	0.011	0.07	-	-	<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	0.003	-	-	<0.010	-	-	<0.010
Selenium	mg/L	11	-	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.10	-	-	<0.10
Silver	mg/L	0.00005	0.0014	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.010	-	-	<0.010
Zinc	mg/L	0.008	0.015	-	-	<0.005	-	-	<0.005	0.005	0.005	<0.005	0.005	0.005	<0.005	0.006	0.005	<0.005	0.006	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	<0.050	0.005	0.005	<0.050
Iron	mg/L	-	-	0.99	0.46	0.07	0.93	0.31	0.11	0.82	0.42	0.13	0.78	0.37	0.11	0.83	0.05	0.11	0.83	0.05	0.08	2.01	0.25	0.26	2.01	0.25	0.44	2.01	0.25	<0.05	-	-	<0.10	-	-	<0.10
Mercury	mg/L	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	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	µg/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
>C10 - C16 Fraction	µg/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
>C34 - C40 Fraction	µg/L	-	-	-		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
>C10 - C16 Fraction minus Naphthalene (F2)	µg/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA
BTEX																																				
Benzene	µg/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
Ethylbenzene	µg/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	µg/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	µg/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA
Nutrients																																				
Total Phosphorus	mg/L	0.05	0.03	0.04	0.01	0.02	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	0.02	0.12	0.03	0.02	0.12	0.03	<0.01	0.04	0.02	<0.05	0.04	0.02	<0.05
Phosphate (reactive phosphorus)	mg/L	-	-	-	-	<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	<0.01	0.01	0.008	0.01	0.01	0.008	0.01
Total Nitrogen	mg/L	0.5	0.3	0.62	0.2	0.5	0.6	0.2	0.7	0.3	0.1	0.3	0.41	0.1	0.1	0.5	0.2	0.5	0.5	0.2	0.4	2.8	1.1	0.8	2.8	1.1	0.8	2.8	1.1	0.5	0.5	0.2	<0.5	0.5	0.2	<0.5
Total Kjeldahl Nitrogen	mg/L	-	-	0.6	0.2	0.4	0.6	0.2	0.6	0.3	0.1	0.2	0.4	0.1	0.1	0.5	0.2	0.4	0.5	0.2	0.3	2.4	1	0.8	2.4	1	0.8	2.4	1	0.4	0.5	0.2	<0.5	0.5	0.2	<0.5
Nitrate	mg/L	0.7	-	0.04	0.01	0.06	0.03	0.01	0.13	0.03	0.01	0.07	0.03	0.01	0.04	0.04	0.01	0.11	0.04	0.01	0.1	0.04	0.01	0.04	0.04	0.01	0.04	0.04	0.01	0.06	0.02	0.01	0.01	0.02	0.01	0.03
Nitrite	mg/L	-	-	-	-	<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	mg/L	0.9	-	-	-	<0.01	-	-	0.14	-	-	0.02	-	-	<0.01	0.16	0.06	0.04	0.16	0.06	0.03	0.04	0.01	0.04	0.04	0.01	0.04	0.04	0.01	<0.01	0.03	0.01	<0.05	0.03	0.01	<0.05
TSS																																				
TSS	mg/L	<40	<10	14.8	5	<5	8	5	5	9	5	<5	5.8	5	<5	17.6	5	<5	17.6	5	<5	290	15	6	290	15	<5	290	15	<5	71	19	<5	71	19	<5
Field Physical data																																				
Temperature	C	-	-	24.86	14.99	18.51	25.1	16.3	19.27	24.4	16	18.44	26.46	15.94	18.47	27.9	18.4	23.18	27.9	18.4	22.98	26.5	16.3	20.87	26.5	16.3	20.38	26.5	16.3	20.4	27.9	18.1	24.05	27.9	18.1	23.95
pH	pH	-	6.5-8	7.25	6.48	6.69	7.3	6.4	6.71	7.5	6.6	6.64	7.33	6.26	6.6	7.02	6.57	7.41	7.02	6.57	7.31	7	6.1	6.39	7	6.1	6.89	7	6.1	7.12	7	7	7.84	7	7	7.79
Conductivity	mS/cm	0.125-2.2	-	0.316	0.232	0.253	0.348	0.227	0.343	0.348	0.227	0.216	0.3338	0.2168	0.21	20.946	0.679	0.679	20.946	0.679	1.13	0.808	0.4234	0.539	0.808	0.4234	0.427	0.808	0.4234	0.741	47.32	29.44	32.0	47.32	29.44	32.4
Turbidity	NTU	50	10	10.96	4	6.3	9.9	3.5	4	9.9	3.5	8.3	5.97	3.74	4	6.82	1.83	6.2	6.82	1.83	6.7	52.78	11.3	8.9	52.78	11.3	7.9	52.78	11.3	8.1	19.3	6.7	7.5	19.3	6.7	7.1
Dissolved Oxygen	mg/L	5	5	4.98	1.91	7.36	4.8	2.6	7.4	4.8	2.6	8.65	6.34	3.52	7.29	7.98	5.07	7.1	7.98	5.07	7.23	6.4	1.75	3.98	6.4	1.75	3.28	6.4	1.75	7.14	9.1	7.4	7.93	9.1	7.4	8.02
Dissolved Oxygen	%			-	-	81	-	-	82.6	-	-	95.1	-	-	80.2	-	-	77.2	-	-	72.8	-	-	45.7	-	-	37.3	-	-	73.2	-	-	81.6	-	-	86.5
TDS	g/L	-	-	-		0.164	-		0.236	-		0.140	-		0.141	-		0.430	-		0.725	-		0.345	-		0.273	-		1.04	-		19.5	-		19.8

Taken from ANZECC guidelines 95% protected species levels where no 80/20 trigger values provided

Taken from alternative trigger levels provided in ANZECC Water Guidelines Volume 1 and Volume 2 where insufficient data was available for 95%

Exceedances of trigger values

Table 5a – Surface Water Quality Monitoring – June 2018 Wet Event

Surface Water Results -JUNE 2018 - Wet																																									
				SW01						SW03			SW04			SW05			SW06			SW07			SW08			SW09			SW10			SW11					
Location	Units	Levels of Concern		Upper Warrell Creek			Upper Warrell Creek			Stony Creek			Stony Creek			Low er Warrell Creek			Low er Warrell Creek			Unnamed Creek Gumma West			Unnamed Creek Gumma East			Unnamed Creek Gumma North			Nambucca River South			Nambucca River South					
				Upstream			Dow nstream			Upstream			Dow nstream			Upstream			Dow nstream			Upstream			Upstream			Dow nstream			Upstream			Dow nstream					
Freshw ater / Estuarine		ANZECC 2000 95% species protected		Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Estuarine			Estuarine					
Date of Sampling				6-Jun-18			6-Jun-18			6-Jun-18			6-Jun-18			6-Jun-18			6-Jun-18			6-Jun-18			6-Jun-18			6-Jun-18			6-Jun-18			6-Jun-18					
Time of Sampling		Freshw ater	Marine	1:45PM			1:30PM			1:15PM			1:00PM			11:45AM			11:30AM			12:15PM			12:30PM			12:00PM			10:45AM			10:30AM					
Comments																																									
Type				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 %ile	20th %ile	Result	80th %ile	20th %ile	Result			
Laboratory data																																									
Metals																																									
Aluminium	mg/L	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	0.01	0.28	0.01	<0.01	0.25	0.02	0.03	0.25	0.02	0.02	0.25	0.02	<0.01	0.11	0.01	<0.10	0.11	0.01	<0.10			
Arsenic	mg/L	0.024	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	<0.001	0.002	0.001	0.001	0.002	0.001	0.001	0.002	0.001	<0.001	0.002	0.001	<0.010	0.002	0.001	<0.010			
Cadmium	mg/L	0.0002	0.0055	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	0.0002	0.0001	<0.0001	0.0002	0.0001	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0001	-	-	<0.0010	-	-	<0.0010			
Chromium	mg/L	0.001	0.0044	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.010	-	-	<0.010			
Copper	mg/L	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	0.001	<0.010	0.001	0.001	<0.010			
Lead	mg/L	0.0034	0.0044	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.010	-	-	<0.010			
Manganese	mg/L	1.9	0.08	0.3	0.01	0.054	0.158	0.0178	0.053	0.0726	0.0218	0.051	0.083	0.0164	0.051	0.35	0.087	0.144	0.35	0.087	0.142	0.49	0.011	0.285	0.49	0.011	0.267	0.49	0.011	0.118	0.076	0.006	0.042	0.076	0.006	0.05			
Nickel	mg/L	0.011	0.07	-	-	<0.001	-	-	0.001	-	-	<0.001	-	-	<0.001	0.0034	0.001	0.001	0.0034	0.001	0.001	0.002	0.001	0.001	0.002	0.001	0.001	0.002	0.001	0.001	-	-	<0.010	-	-	<0.010			
Selenium	mg/L	11	-	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.01	-	-	<0.10	-	-	<0.10			
Silver	mg/L	0.00005	0.0014	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.001	-	-	<0.010	-	-	<0.010			
Zinc	mg/L	0.008	0.015	0.007	0.005	<0.005	0.0062	0.0042	<0.005	0.0064	0.005	<0.005	0.006	0.005	<0.005	0.018	0.005	<0.005	0.018	0.005	<0.005	0.011	0.005	<0.005	0.011	0.005	<0.005	0.011	0.005	<0.005	0.005	0.005	<0.050	0.005	0.005	<0.050			
Iron	mg/L	-	-	1.38	0.48	<0.05	0.99	0.366	<0.05	1.4	0.41	<0.05	1.48	0.35	<0.05	0.52	0.05	0.06	0.52	0.05	0.05	1.65	0.37	0.44	1.65	0.37	0.35	1.65	0.37	0.19	0.26	0.05	<0.10	0.26	0.05	<0.10			
Mercury	mg/L	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	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	µg/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			
>C10 - C16 Fraction	µg/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			
>C34 - C40 Fraction	µg/L	-	-	-		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			
>C10 - C16 Fraction minus Naphthalene (F2)	µg/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA			
BTEX																																									
Benzene	µg/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			
Ethylbenzene	µg/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	µg/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	µg/L	-	-	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA	-		NA			
Nutrients																																									
Total Phosphorus	mg/L	0.05	0.03	0.05	0.02	0.06	0.044	0.016	0.01	0.03	0.016	<0.01	0.034	0.01	<0.01	0.04	0.01	0.02	0.04	0.01	<0.01	0.11	0.03	0.02	0.11	0.03	0.01	0.11	0.03	0.08	0.07	0.02	<0.05	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	<0.01	0.029	0.01	0.01	0.029	0.01	<0.01			
Total Nitrogen	mg/L	0.5	0.3	0.56	0.3	1	0.52	0.2	0.3	0.48	0.2	<0.1	0.63	0.2	<0.1	0.54	0.31	0.6	0.54	0.31	0.3	3.1	0.9	1	3.1	0.9	0.8	3.1	0.9	0.4	0.46	0.2	<0.5	0.46	0.2	<0.5			
Total Kjeldahl Nitrogen	mg/L	-	-	0.5	0.3	0.9	0.5	0.2	0.2	0.34	0.2	<0.1	0.6	0.2	<0.1	0.5	0.2	0.5	0.5	0.2	0.2	2.8	0.8	1	2.8	0.8	0.8	2.8	0.8	0.4	0.3	0.2	<0.5	0.3	0.2	<0.5			
Nitrate	mg/L	0.7	-	0.102	0.01	0.09	0.054	0.01	0.09	0.208	0.01	0.04	0.2	0.01	0.06	0.05	0.01	0.07	0.05	0.01	0.07	0.03	0.01	0.02	0.03	0.01	0.02	0.03	0.01	0.04	0.04	0.01	0.04	0.04	0.01	<0.01			
Nitrite	mg/L	-	-	-	-	<0.01	-	-	<0.01	-	-	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01	0.02	0.01	<0.01			
Ammonia	mg/L	0.9	-	0.036	0.01	0.05	0.02	0.01	0.02	0.046	0.02	0.03	0.062	0.012	0.02	0.116	0.022	0.06	0.116	0.022	0.06	0.06	0.01	0.08	0.06	0.01	0.07	0.06	0.01	0.05	0.15	0.024	0.13	0.15	0.024	0.08			
TSS																																									
TSS	mg/L	<40	<10	19	5	<5	12.8	5	<5	14.8	5	<5	8.7	5	8	25	5.5	<5	25	5.5	<5	350	9	<5	350	9	17	350	9	<5			8			10			
Field Physical data																																									
Temperature	°C	-	-	24.3	16.27	14.92	24.52	16.79	14.3	23.98	17.36	14.66	24.7	17.65	14.57	25.9	19.5	16.25	25.9	19.5	16.31	25.84	19.1	15.23	25.84	19.1	15.01	25.84	19.1	15.8	26.56	21.32	17.14	26.56	21.32	17.26			
pH	pH	-	6.5-8	7.478	6.23	7.02	7.192	6.42	6.71	7.138	6.61	6.92	6.98	6.21	6.68	6.86	6.46	7.16	6.86	6.46	7.31	6.9	6.08	6.86	6.9	6.08	6.83	6.9	6.08	6.7	7.56	6.58	7.77	7.56	6.58	7.72			
Conductivity	mS/cm	0.125-2.2	-	0.3204	0.20184	0.25	0.3242	0.19076	0.229	0.313	0.2024	0.218	0.309	0.20188	0.222	20.918	0.50928	6.35	20.918	0.50928	6.55	0.842	0.334	0.643	0.842	0.334	0.618	0.842	0.334	0.831	48.42	12.65	39.7	48.42	12.65	37.8			
Turbidity	NTU	50	10	26.16	5.94	8.8	27.32	3.72	6.9	14.98	3.34	7.9	17.16	4.59	5.8	26.1	2.4	5.6	26.1	2.4	5.3	66.8	11.6	4.9	66.8	11.6	11.2	66.8	11.6	5.7	19.04	5.81	5.4	19.04	5.81	4.4			
Dissolved Oxygen	mg/L	5	5	7.43	1.5	7.42	6.88	2.28	6.31	8.472	5.08	7.5	7.59	2.63	6.64	6.65	5.02	4.61	6.65	5.02	5.07	7.3	1.78	5.23	7.3	1.78	5.14	7.3	1.78	5.81	8.47	6.88	6.89	8.47	6.88	6.96			
Dissolved Oxygen	%			-		76	-		63.7	-		76.4	-		67.4	-		49.4	-		54.4	-		54	-		52.7	-		60.6	-		79.2	-		83.4			
TDS	g/L	-	-	-		0.162	-		0.149	-		0.142	-		0.144	-		4.00	-		4.13	-		0.411	-		0.395	-		0.544	-		24.2	-		23.1			

Taken from ANZECC guidelines 95% protected species levels where no 80/20 trigger values provided

Taken from alternative trigger levels provided in ANZECC Water Guidelines Volume 1 and Volume 2 where insufficient data was available for 95%

Exceedances of trigger values

Table 5b – Surface Water Quality Monitoring – June 2018 Dry Event

Surface Water Results -JUNE 2018 - Dry					Weather: Fine													Low Tide:																							
				SW01			SW02			SW03			SW04			SW05			SW06			SW07			SW08			SW09			SW10			SW11					
Location	Units	Levels of Concern		Upper Warrell Creek			Upper Warrell Creek			Stony Creek			Stony Creek			Low er Warrell Creek			Low er Warrell Creek			Unnamed Creek Gumma West			Unnamed Creek Gumma East			Unnamed Creek Gumma North			Nambucca River South			Nambucca River South					
				Upstream			Dow nstream			Upstream			Dow nstream			Upstream			Dow nstream			Upstream			Upstream			Dow nstream			Upstream			Dow nstream					
Freshw ater / Estuarine		ANZECC 2000 95% species protected		Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Freshw ater			Estuarine			Estuarine					
Date of Sampling				12-Jun-18			12-Jun-18			12-Jun-18			12-Jun-18			12-Jun-18			12-Jun-18			12-Jun-18			12-Jun-18			12-Jun-18			12-Jun-18			12-Jun-18					
Time of Sampling		Freshw ater	Marine	10:50AM			10:35AM			9:50AM			9:35AM			2:15PM			2:00PM			12:15PM			12:30PM			12:00PM			2:55PM			2:40PM					
Comments																																									
Type				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 %ile	20th %ile	Result	80th %ile	20th %ile	Result			
Field Physical data																																									
Temperature	°C	-	-	24.86	14.99	14.33	25.1	16.3	14.45	24.4	16	13.35	26.46	15.94	13.55	27.9	18.4	17.81	27.9	18.4	17.52	26.5	16.3	15.54	26.5	16.3	14.66	26.5	16.3	17.26	27.9	18.1	19.35	27.9	18.1	19.36			
pH	pH	-	6.5-8	7.25	6.48	6.75	7.3	6.4	6.93	7.5	6.6	6.87	7.33	6.26	6.78	7.02	6.57	6.78	7.02	6.57	6.82	7	6.1	6.66	7	6.1	6.69	7	6.1	6.76	7	7	7.61	7	7	7.56			
Conductivity	mS/cm	0.125-2.2	-	0.316	0.232	0.275	0.348	0.227	0.278	0.348	0.227	0.229	0.3338	0.2168	0.224	20.946	0.679	5.67	20.946	0.679	5.68	0.808	0.4234	0.591	0.808	0.4234	0.571	0.808	0.4234	0.672	47.32	29.44	36.2	47.32	29.44	36.6			
Turbidity	NTU	50	10	10.96	4	9.8	9.9	3.5	9.4	9.9	3.5	11.3	5.97	3.74	9.7	6.82	1.83	13.2	6.82	1.83	13.6	52.78	11.3	21.5	52.78	11.3	14.7	52.78	11.3	4.1	19.3	6.7	15.7	19.3	6.7	10.1			
Dissolved Oxygen	mg/L	5	5	4.98	1.91	4.46	4.8	2.6	5.67	4.8	2.6	6.21	6.34	3.52	6.42	7.98	5.07	6.04	7.98	5.07	6.09	6.4	1.75	4.13	6.4	1.75	5.23	6.4	1.75	6.34	9.1	7.4	6.14	9.1	7.4	6.89			
Dissolved Oxygen	%			-	-	45.1	-	-	57.4	-	-	65.7	-	-	63.7	-	-	66.6	-	-	66.8	-	-	42.8	-	-	53.2	-	-	72.5	-	-	78.2	-	-	87.9			
TDS	g/L	-	-	-		0.179	-		0.180	-		0.014	-		0.146	-		3.530	-		3.580	-		0.378	-		0.366	-		0.430	-		22.1	-		22.3			

Taken from ANZECC guidelines 95% protected species levels where no 80/20 trigger values provided

Taken from alternative trigger levels provided in ANZECC Water Guidelines Volume 1 and Volume 2 where insufficient data was available for 95%

Exceedances of trigger values

Groundwater Monitoring Results

Table 7 – Groundwater Monitoring Results – February 2018

Location	Units	Groundwater Investigation Levels (GILs) from Interpretive Report	4BH010			4BH021			4BH022c			4BH025a			4BH037a			4BH038			4BH057			4BH058c		
Cut/Fill			Cut 6 - West (DS)			Cut 11 - West (DS)			Cut 11 - East (US)			Cut 12 - West (DS)			Fill 15 - West			Fill 15 - East			Cut 15 - West (DS)			Cut 15 - East (US)		
Date of Sampling			14/12/2017			14/12/2017			14/12/2017			14/12/2017			14/12/2017			14/12/2017			14/12/2017			14/12/2017		
			Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results
Comments												DRY									DRY					
Depth to standing water level from TOC	m	-	16.802		16.48	8.7420		7.40	16.0140		2.24	8.4500		-	1.2000		1.21	1.3520		1.34	17.4120		-	13.84		15.63
pH	pH	-	6.26	4.74	6.03	6.78	5.81	5.95	7.09	5.93	5.2300	6.78	6.21	-	6.51	5.92	7.25	7.30	6.77	7.05	6.98	5.24	-	6.3960	5.56	5.56
Conductivity	mS/cm	-	3630		2.74	111.3		0.136	231		1.840	0.342		-	5.550		9.9	8366		3.6	121.100		-	132.660		0.137
Temperature	○C	-	22.4420		21.94	22.3600		23.49	21.1500		24.7200	22.6040		-	25.9820		25.18	22.5600		26.03	22.8200		-	23.1940		22.9100
Total Dissolved Solids	g/L		3.5720		1.75	0.0946		0.088	0.1306		1.18	0.1326		-	0.1326		6.23	8.10		2.310	0.106		-	0.111		0.089
		Exceedance of trigger level																								

Table 8 – Groundwater Monitoring Results – March 2018

March 2018 Groundwater Monitoring

Location	Units	Groundwater Investigation Levels (GILs) from Interpretive Report	4BH010			4BH021			4BH022c			4BH025a			4BH037a			4BH038			4BH057			4BH058c		
Cut/Fill			Cut 6 - West (DS)			Cut 11 - West (DS)			Cut 11 - East (US)			Cut 12 - West (DS)			Fill 15 - West			Fill 15 - East			Cut 15 - West (DS)			Cut 15 - East (US)		
Date of Sampling			8/03/2018			8/03/2018			8/03/2018			8/03/2018			8/03/2018			8/03/2018			8/03/2018			8/03/2018		
			Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results
Comments												DRY									DRY					
Depth to standing water level from TOC	m	-	16.802		16.98	8.7420		7.71	16.0140		1.33	8.4500		-	1.2000		1.39	1.3520		1.60	17.4120		-	13.84		15.63
pH	pH	-	6.26	4.74	6.22	6.78	5.81	5.89	7.09	5.93	5.21	6.78	6.21	-	6.51	5.92	6.98	7.30	6.77	6.87	6.98	5.24	-	6.3960	5.56	7.02
Conductivity	mS/cm	-	3630		0.37	111.3		0.192	231		1.640	0.342		-	5.550		9.9	8366		4.0	121.100		-	132.660		0.282
Temperature	oC	-	22.4420		25.87	22.3600		25.03	21.1500		26.4600	22.6040		-	25.9820		27.66	22.5600		25.90	22.8200		-	23.1940		26.22
Total Dissolved Solids	g/L		3.5720		0.24	0.0946		0.145	0.1306		1.05	0.1326		-	0.1326		6.26	8.10		3.320	0.106		-	0.111		0.183
		Exceedance of trigger level																								

Table 9 – Groundwater Monitoring Results – April 2018

April 2018 Groundwater Monitoring

Location	Units	Groundwater Investigation Levels (GILs) from Interpretive Report	4BH010			4BH021			4BH022c			4BH025a			4BH037a			4BH038			4BH057			4BH058c		
Cut/Fill			Cut 6 - West (DS)			Cut 11 - West (DS)			Cut 11 - East (US)			Cut 12 - West (DS)			Fill 15 - West			Fill 15 - East			Cut 15 - West (DS)			Cut 15 - East (US)		
Date of Sampling			18/04/2018			18/04/2018			18/04/2018			18/04/2018			18/04/2018			18/04/2018			18/04/2018			18/04/2018		
			Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results
Comments												DRY									DRY					
Laboratory data - awaiting results																										
Metals																										
Aluminium	mg/L	0.055	0.2740		0.04	0.0216		0.01	0.0122		0.29	0.0324		-	0.0264		0.01	0.0050		<0.01	0.0050		-	0.0050		<0.01
Arsenic	mg/L	0.024	0.0009		0.001	I		<0.001	0.0001		<0.001	0.0005		-	0.0005		<0.001	0.0010		<0.001	0.0010		-	0.0005		<0.001
Cadmium	mg/L	<LOR	0.0005		<0.0001	0.0001		<0.0001	0.0001		0.0068	0.0002		-	0.0002		0.0002	0.0005		0.0004	0.0005		-	0.0005		<0.0001
Chromium	mg/L	0.001	0.0013		<0.001	0.0001		<0.001	0.0002		<0.001	0.0007		-	0.0010		<0.001	0.0007		<0.001	0.0005		-	0.0005		<0.001
Copper	mg/L	0.0014	0.1620		0.002	0.0108		0.003	0.0030		0.008	0.0139		-	0.0139		0.002	0.0026		0.003	0.0009		-	0.0082		0.002
Lead	mg/L	0.0034	0.0010		<0.001	0.0002		<0.001	0.0016		<0.001	0.0022		-	0.0005		<0.001	0.0005		<0.001	0.0009		-	0.0005		<0.001
Manganese	mg/L	-	0.2258		0.14	0.0139		0.016	0.4856		1.23	0.0124		-	5.2480		1.93	1.5084		0.843	0.4518		-	0.0800		0.013
Nickel	mg/L	0.011	0.0196		0.004	0.0058		0.001	0.0036		0.091	0.0007		-	0.0068		0.01	0.006		0.014	0.0030		-	0.0033		0.001
Selenium	mg/L	-	0.0050		<0.01	0.0050		<0.01	0.0050		<0.01	0.0050		-	0.0050		<0.01	0.0050		<0.01	0.0050		-	0.0050		<0.01
Silver	mg/L	<LOR	0.0005		<0.001	0.0001		<0.001	0.0001		<0.001	0.0005		-	0.0005		<0.001	0.0005		<0.001	0.0005		-	0.0005		<0.001
Zinc	mg/L	0.008	0.0532		0.026	0.0176		0.121	0.0085		0.367	0.0102		-	0.0196		0.023	0.0132		0.065	0.0090		-	0.0100		0.009
Iron	mg/L	-	6.5800		21.3	0.0354		<0.05	1.1600		0.1	0.0322		-	84.5600		3.05	1.7500		0.7	4.6344		-	0.0600		<0.05
Mercury	mg/L	0.0006	0.0003		<0.0001	0.0001		<0.0001	0.0001		<0.0001	0.0001		-	0.0001		<0.0001	0.0003		<0.0001	0.0003		-	0.0003		<0.0001
Total Petroleum Hydrocarbons		-																								
C6-C9 Fraction	µg/L or ppb	-	10		<20	16		<20	16		<20	10		-	10.0000		<20	10.0000		<20	10.0000		-	10.0000		<20
C10-C14 Fraction	µg/L or ppb	-	85		<50	25		<50	45		<50	25		-	219.0000		<50	25.0000		<50	25.0000		-	25.0000		<50
C15-C28 Fraction	µg/L or ppb	-	50		<100	50		<100	50		<100	50		-	190.0000		<100	50.0000		<100	25.0000		-	25.0000		<100
C29-C36 Fraction	µg/L or ppb	-	50		<50	50		<50	50		<50	35		-	35.0000		<50	50.0000		<50	25.0000		-	25.0000		<50
C10-C36 Fraction	µg/L or ppb	-	178		<50	35		<50	226		<50	25		-	556.0000		<50	25.0000		<50	1426.0000		-	149.0000		<50
BTEX		-																								
Benzene	µg/L or ppb	950	0.5		<1	0.5		<1	0.5		<1	0.5		-	0.5000		<1	0.5000		<1	0.5000		-	0.5000		<1
Toluene	µg/L or ppb	-	1		<2	1		<2	1		<2	1		-	1.0000		<2	1.0000		<2	1.0000		-	1.0000		<2
Ethylbenzene	µg/L or ppb	-	1		<2	1		<2	1		<2	1		-	1.0000		<2	1.0000		<2	1.0000		-	1.0000		<2
m+p-Xylene	µg/L or ppb	-	1		<2	1		<2	1		<2	1		-	1.0000		<2	1.0000		<2	1.0000		-	1.0000		<2
o-Xylene	µg/L or ppb	-	1		<2	1		<2	1		<2	1		-	1.0000		<2	1.0000		<2	1.0000		-	1.0000		<2
Naphthalene	µg/L or ppb	-	3		<5	2		<5	2		<5	2		-	2.5000		<5	2.5000		<5	2.0000		-	2.0000		<5
Nutrients		-																								
Total Phosphorus	mg/L	-	0.0284		0.02	0.0568		0.03	0.0480		<0.01	0.0680		-	0.1260		0.04	0.4064		0.1	0.0740		-	0.0300		0.16
Phosphate	mg/L	-	0.0110		<0.01	0.0142		<0.01	0.0126		<0.01	0.0070		-	0.0160		<0.01	0.0410		<0.01	0.0090		-	0.0070		<0.01
Total Nitrogen	mg/L	-	0.5800		0.3	0.3800		0.5	0.5786		2.7	0.7000		-	2.1600		1.2	1.1232		0.6	0.6600		-	0.7000		0.8
Total Kjeldahl Nitrogen	mg/L	-	0.5800		0.3	0.1936		0.3	0.2536		0.3	0.4000		-	2.1600		0.5	0.7752		0.6000	0.3678		-	0.7000		0.60
Nitrate	mg/L	-	0.0250		0.02	0.2460		0.23	0.4000		2.38	0.3840		-	0.4000		0.7500	0.4546		0.0400	0.2712		-	0.1200		0.34
Nitrite	mg/L	-	0.0050		<0.01	0.0050		<0.01	0.0050		<0.01	0.0050		-	0.0130		<0.01	0.0160		<0.01	0.0050		-	0.0050		<0.01
Ammonia	mg/L	-	0.1148		<0.01	0.0640		0.08	0.0940		0.05	0.0440		-	0.7920		0.02	0.2300		0.60	0.0672		-	0.0310		0.1200
Major anions																										
Chloride	mg/L	-	1704.3		842	15.2		12	78.8		202	24.4		-	949			2340		1580	22.2000		-	39.1000		16
Sulfate	mg/L	-	53.000		25	10.392		5	61.8		655	10.6		-	2056		3400	2752		1620	22.9680		-	35.0000		12
Bicarbonate	mg/L	-	63.6		45	27.4		23	142.2		<1	18.4		-	61		727	942		684	34.4000		-	29.0000		11
Major cations																										
Sodium	mg/L	-	866		381	18		13	72.0000		180	29.0800		-	720		1340	1872		587	28.2000		-	52		18
Potassium	mg/L	-	2.00		5	0.96		4	5.0000		9	0.5000		-	41		75	97		35	1.5509		-	1		1
Calcium	mg/L	-	5.99		6	1.4797		4	50.4000		80	1.4000		-	190		391	266		128	2.7120		-	1		<1
Magnesium	mg/L	-	135		57	2		2	11.8000		74	0.9280		-	306		590	565		150	8.0077		-	3		2
Field Physical data																										
Depth to standing water level from TOC	m	-	16.802		16.46	8.7420		8.60	16.0140		1.93	8.4500		-	1.2000		1.69	1.3520		1.75	17.4120		-	13.84		15.21
pH	pH	-	6.26	4.74	6.12	6.78	5.81	6.27	7.09	5.93	6.81	6.78	6.21	-	6.51	5.92	7.15	7.30	6.77	7.18	6.98	5.24	-	6.3960	5.56	6.14
Conductivity	mS/cm	-	3630		2.04	111.3		0.124	231		1.57	0.342		-	5.550		9.36	8366		4.150	121.100		-	132.660		0.122
Temperature	oC	-	22.4420		21.99	22.3600		25.62	21.1500		22.90	22.6040		-	25.9820		22.62	22.5600		23.01	22.8200		-	23.1940		24.80
Total Dissolved Solids	g/L	-	3.5720		1.31	0.0946		0.080	0.1306		1.00	0.1326		-	0.1326		5.90	8.10		2.660	0.106		-	0.111		0.079

Exceedance of trigger level

Table 10 – Groundwater Monitoring Results – May 2018

May 2018 Groundwater Monitoring

Location	Units	Groundwater Investigation Levels (GILs) from Interpretive Report	4BH010			4BH021			4BH022c			4BH025a			4BH037a			4BH038			4BH057			4BH058c		
Cut/Fill			Cut 6 - West (DS)			Cut 11 - West (DS)			Cut 11 - East (US)			Cut 12 - West (DS)			Fill 15 - West			Fill 15 - East			Cut 15 - West (DS)			Cut 15 - East (US)		
Date of Sampling			10/05/2018			10/05/2018			10/05/2018			10/05/2018			10/05/2018			10/05/2018			10/05/2018			10/05/2018		
			Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results
Comments			2.15pm			11am			12.45pm			DRY			11.45am			11-Jan-00			DRY			3pm		
Field Physical data																										
Depth to standing water level from TOC	m	-	16.802		**16.23**	8.7420		**7.33**	16.0140		**2.39**	8.4500		-	1.2000		1.33	1.3520		**1.17**	17.4120		-	13.84		15.13
pH	pH	-	6.26	4.74	**6.06**	6.78	5.81	**6.47**	7.09	5.93	**6.10**	6.78	6.21	-	6.51	5.92	7.18	7.30	6.77	**7.25**	6.98	5.24	-	6.3960	5.56	6.68
Conductivity	mS/cm	-	3630		**2.81**	111.3		**0.120**	231		**1.84**	0.342		-	5.550		9.00	8366		**10.000**	121.100		-	132.660		**0.157**
Temperature	oC	-	22.4420		25.84	22.3600		**20.35**	21.1500		**23.90**	22.6040		-	25.9820		**22.34**	22.5600		**21.07**	22.8200		-	23.1940		**21.11**
Total Dissolved Solids	g/L	-	3.5720		**1.80**	0.0946		**0.085**	0.1306		1.18	0.1326		-	0.1326		5.67	8.10		**6.210**	0.106		-	0.111		**0.102**

Exceedance of trigger level

Table 11 – Groundwater Monitoring Results – June 2018

June 2018 Groundwater Monitoring

Location	Units	Groundwater Investigation Levels (GILs) from Interpretive Report	4BH010			4BH021			4BH022c			4BH025a			4BH037a			4BH038			4BH057			4BH058c		
Cut/Fill			Cut 6 - West (DS)			Cut 11 - West (DS)			Cut 11 - East (US)			Cut 12 - West (DS)			Fill 15 - West			Fill 15 - East			Cut 15 - West (DS)			Cut 15 - East (US)		
Date of Sampling			20/06/2018			20/06/2018			20/06/2018			20/06/2018			21/06/2018			21/06/2018			20/06/2018			20/06/2018		
			Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results	Trigger levels 80 / 20%ile		Results
Comments			2.15pm			11am			12.45pm			DRY			11.45am			11-Jan-00			DRY			3pm		
Field Physical data																										
Depth to standing water level from TOC	m	-	16.802		**16.70**	8.7420		**7.53**	16.0140		**2.40**	8.4500		-	1.2000		1.27	1.3520		**1.24**	17.4120		-	13.84		15.38
pH	pH	-	6.26	4.74	**5.94**	6.78	5.81	**6.27**	7.09	5.93	**6.16**	6.78	6.21	-	6.51	5.92	7.05	7.30	6.77	7.60	6.98	5.24	-	6.3960	5.56	**5.76**
Conductivity	mS/cm	-	3630		**3.05**	111.3		**0.218**	231		**1.26**	0.342		-	5.550		10.50	8366		**6.540**	121.100		-	132.660		**0.122**
Temperature	oC	-	22.4420		**17.70**	22.3600		**20.17**	21.1500		**13.41**	22.6040		-	25.9820		**14.97**	22.5600		**19.34**	22.8200		-	23.1940		**21.18**
Total Dissolved Solids	g/L	-	3.5720		**1.95**	0.0946		0.142	0.1306		0.81	0.1326		-	0.1326		6.51	8.10		**4.120**	0.106		-	0.111		**0.079**

Exceedance of trigger level

APPENDIX B – Noise and Vibration Monitoring

Table 1 – Noise Monitoring Results – February 2018

Date	Time	Location	Rec ID	NCA	NML	Activity	Predicted levels for activity	L_{Aeq}	L_{AFMAX}	L_{AFMIN}	L_{AF10}	L_{AF50}	L_{AF90}	Principal sources/ operations	Construction noise dominant?	Corrective actions	Notes
13/02/2018	7:30AM	Albert Drive	74	1	50	Cut	62	41.6	61.2	33.2	43.3	39.8	36.4	Birds/HWY	N	N/A	Within predicted levels and NML. Construction noise not dominant. Stockpile area behind cut to mitigate noise impacts.
13/02/2018	8:23AM	Bald Hill Rd	197	3	50	Fil	63	51.4	71.8	38.2	53	46.8	43	Bald Hill Road	N	N/A	Within predicted levels. Construction noise not dominant. Dominant noise sources: BHR (50-70) Noise mound and noise wall in place to reduce impact.
13/02/2018	12:28 PM	Letitia Rd	413	4	59	HTR	58	50.4	70.5	39.2	53.1	49.6	42.6	Resident (leaf Blower)	N	N/A	Within predicted levels and NML. Regular consultation undertaken with residents impacted by NFR construction activities.
13/02/2018	11:55AM	Mattick Rd	442	6	44	SER	70	60.5	76.5	43.1	62.8	55.8	47.9	5t Excavator	Y	N/A	Within predicted levels. Permanent noise mounds in place to reduce construction noise at sensitive receivers.
13/02/2018	10:50AM	Gumma Rd	383	3	50	Services	59	56.9	74.3	42.6	59.8	51.8	47	HWY	N	N/A	Within predicted levels. Construction noise not dominant. Dominant noise sources: highway (46.5-70.2).

Table 2 – Noise Monitoring Results – March 2018

Monthly Noise Monitoring Results March 2018

Date	Time	Location	Rec ID	NCA	NML	Activity	Predicted levels for activity	LAeq	LAFMAX	LAFMIN	LAF1	LAF5	LAF90	Principal sources/ operations	Construction noise dominant?	Corrective actions	Notes
13/03/2018	12:49PM	Albert Drive	74	1	50	Cut	62	41.9	64	33	43.6	37.3	35.4	Dogs	N	N/A	Within predicted levels and NML. Construction noise not dominant. Dogs dominant (41.9-52.4) Stockpile area behind cut to mitigate noise impacts.
13/03/2018	10:50AM	Bald Hill Rd	197	3	50	Fil	63	49.8	68.1	39.6	51.5	47.1	43.2	Bald Hill Road	N	N/A	Within predicted levels. Construction noise not dominant. Dominant noise sources: BHR (50.9-67.6) Noise mound and noise wall in place to reduce impact.
13/03/2018	2:41PM	Letitia Rd	413	4	59	HTR	58	43.6	61	35.7	45.6	41.7	39.2	PAC HWY	N	N/A	Within predicted levels and NML. Regular consultation undertaken with residents impacted by NFR construction activities. HWY dominant (38.1-48.6)
13/03/2018	3:27PM	Mattick Rd	442	6	44	Cut	62	54.6	65.2	47.3	57.4	53.1	51	PAC HWY	N	N/A	Within predicted levels. Permanent noise mounds in place to reduce construction noise at sensitive receivers. PAC HWY dominant (53.5-61.8)
13/03/2018	11:40AM	Gumma Rd	383	3	50	Ser	59	57.4	77.5	35.8	60.4	51.8	45.3	PAC HWY	N	N/A	Within predicted levels. Construction noise not dominant. Dominant noise sources: highway (50.3-77.7).

Table 3 – Noise Monitoring Results April 2018

Monthly Noise Monitoring Results April 2018

Date	Time	Location	Rec ID	NCA	NML	Activity	Predicted levels for activity	LAeq	LAFMAX	LAFMIN	LAF10	LAF90	LAF01	Principal sources/ operations	Construction noise dominant?	Corrective actions	Notes
11/04/2018	1:02PM	Albert Drive	74	1	50	Cut	62	44.7	54.4	40.2	46.3	44.3	42.5	Construction	Y	N/A	Within predicted levels and NML. Construction dominant (42.5-50.2) Stockpile area behind cut to mitigate noise impacts.
11/04/2018	2:20PM	Bald Hill Rd	197	3	50	KCB	79	52.7	73.1	39	55.3	47.3	42.8	Bald Hill Road	N	N/A	Within predicted levels. Construction noise not dominant. Dominant noise sources: BHR (50.9-70.1) Noise mound and noise wall in place to reduce impact.
11/04/2018	3:41PM	Letitia Rd	413	4	59	HTR	58	54.8	74.6	43.1	55.2	49.5	46.6	PAC HWY	N	N/A	Within predicted levels and NML. Regular consultation undertaken with residents impacted by NFR construction activities. HWY dominant (45.5-54.1)
11/04/2018	4:15PM	Mattick Rd	442	6	44	HTR	71	50.1	70.1	40.6	52	48.7	45.4	Birds	N	N/A	Within predicted levels. Permanent noise mounds in place to reduce construction noise at sensitive receivers. Birds dominant (44.1-55.6)
11/04/2018	3:00PM	Gumma Rd	383	3	50	Ser	59	59.7	77.8	44.7	62.3	55	48.9	PAC HWY	N	N/A	Construction noise not dominant. Dominant noise sources: highway (50.4-71.1).

Table 4 – Noise Monitoring Results May 2018

Monthly Noise Monitoring Results May 2018

Date	Time	Location	Rec ID	NCA	NML	Activity	Predicted levels for activity	LAeq	LAFMAX	LAFMIN	LAF10	LAF90	LAF90	Principal sources/ operations	Construction noise dominant?	Corrective actions	Notes
15/05/2018	8:40AM	Albert Drive	74	1	50	Cut	62	46.1	61.9	39	49.7	43.8	40.9	Construction	Y	N/A	Within predicted levels and NML. Construction dominant (42.3-50.0) Stockpile area behind cut to mitigate noise impacts.
15/05/2018	9:20AM	Bald Hill Rd	197	3	50	KCB	79	52.5	66.7	39.7	55.6	49.5	44.1	Bald Hill Road	N	N/A	Within predicted levels. Construction noise not dominant. Dominant noise sources: BHR (48.6-66.7) Noise mound and noise wall in place to reduce impact.
15/05/2018	11:25AM	Letitia Rd	413	4	59	HTR	58	51.6	76.3	37	51.7	43.9	39.3	PAC HWY	N	N/A	Within predicted levels and NML. Regular consultation undertaken with residents impacted by NFR construction activities. HWY dominant (40.1-51.7)
15/05/2018	12:50AM	Mattick Rd	442	6	44	HTR	71	51	68.8	41.2	54.2	48.8	45.7	PAC HWY	N	N/A	Within predicted levels. Permanent noise mounds in place to reduce construction noise at sensitive receivers. HWY dominant (47.5-59.1)
11/04/2018	10:00AM	Gumma Rd	383	3	50	Ser	59	56.5	72.1	41.6	59.3	53.5	47.1	PAC HWY	N	N/A	Construction noise not dominant. Dominant noise sources: highway (51.2 -70.4).

Table 5 – Noise Monitoring Results – June 2018

Monthly Noise Monitoring Results June 2018

Date	Time	Location	Rec ID	NCA	NML	Activity	Predicted levels for activity	L_{Aeq}	L_{AFMax}	L_{AFMin}	L_{AF1}	L_{AF5}	L_{AF9}	Principal sources/ operations	Construction noise dominant?	Corrective actions	Notes
19/06/2018	11:42 AM	Albert Drive	74	1	50	Cut	62	55.9	71.8	50.9	58.1	54.9	52.7	PAC HWY	N	N/A	Within predicted levels and NML. Construction noise not dominant. Stockpile area behind cut to mitigate noise impacts.
19/06/2018	12:36 PM	Bald Hill Rd	197	3	50	KCB	79	54.5	76.9	46.2	55.3	50.4	47.3	Bald Hill Road	N	N/A	Within predicted levels. Construction noise not dominant. Dominant noise sources: BHR (51.1-74.5dB(A)) Noise mound and noise wall in place to reduce impact.
19/06/2018	3:42 PM	Letitia Rd	413	4	59	HTR	58	54.5	65.9	43.2	58.4	51.1	47.4	PAC HWY	N	N/A	Within predicted levels and NML. Construction noise not dominant. HWY dominant (48.9-60.6dB(A))
19/06/2018	4:12 PM	Mattick Rd	442	6	44	HTR	71	65.4	91	46.1	64	54.9	50	PAC HWY	N	N/A	Within predicted levels. Permanent noise mounds in place to reduce construction noise at sensitive receivers. HWY dominant (47.5-59.1dB(A))
19/06/2018	2:34 PM	Gumma Rd	383	3	50	Ser	59	62.5	74.9	41.6	59.3	53.5	47.1	PAC HWY	N	N/A	Construction noise not dominant. Dominant noise sources: highway (61 - 74dB(A)).

Table 6 – Vibration Monitoring

Location	DATE	TIME	Triggered	Vector Sum (mm/s)	Comments
4227 Pacific Highway	14-05-18	10:32:00	Continuous	2.325	Heavy Vibe Padfoot Roller ~20m
4227 Pacific Highway	28-05-18	12:58:00	Continuous	0.567	Heavy Vibe Padfoot Roller~ 120m
4227 Pacific Highway	30-05-18	14:33:00	Continuous	1.666	Heavy Vibe Padfoot Roller ~ 80m
4227 Pacific Highway	31-05-18	12:49:00	Continuous	0.824	Heavy Vibe Padfoot Roller ~ 130m
4227 Pacific Highway	15-06-18	12:47:00	Continuous	2.864	Heavy Vibe Padfoot Roller ~ 25m

APPENDIX C – Air Quality Monitoring

Table 1: Air Quality Monitoring Results – February 2018

Monthly Dust Monitoring Results - Febuary 2018 - March 2018

			DDG ID		DDG1	DDG2	DDG3	DDG4	DDG5	DDG6	DDG6N	DDG7	DDG8A	DDG9N E	DDG9E	DDG10	DDG A1	DDG A2
			Start date of sampling		1/02/2018	1/02/2018	1/02/2018	1/02/2018	1/02/2018	1/02/2018	1/02/2018	1/02/2018	1/02/2018	1/02/2018	1/02/2018	1/02/2018	1/02/2018	1/02/2018
			Finish date of sampling		1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018
Analyte	Time Period	Unit	Levels of Concern	LOR														
Ash Content	Current Month	g/m².month	4	0.1	0.5	0.5	0.4	0.2	175	0.5	0.5	0.5	0.4	0.3	0.4	0.8	---	---
		mg	N/A	1	8	8	7	4	2880	8	9	9	6	5	6	14	---	---
	Previous Month	g/m².month			0.5	0.3	0.2	0.4	3.8	0.5	2.9	0.5	NA	0.5	0.4	0.8	---	---
	Change	g/m².month	Increase of 2		0	0.2	0.2	-0.2	171.2	0	-2.4	0	NA	-0.2	0	0	---	---
Combustible Matter	Current Month	g/m².month	N/A	0.1	0.4	0.8	1.1	0.2	15.8	0.3	1.1	0.4	1.2	0.5	0.1	0.4	---	---
		mg	N/A	1	7	14	17	3	260	5	18	6	20	8	3	6	---	---
Total Insoluble Matter (TIM)	Current Month	g/m².month	4	0.1	0.9	1.3	1.5	0.4	191	0.8	1.6	0.9	1.6	0.8	0.5	1.2	---	---
		mg	N/A	1	15	22	24	7	3140	13	27	15	26	13	9	20	---	---
	Previous Month	g/m².month		0.1	1.1	0.6	0.5	0.4	11.6	0.6	3.5	0.5	NA	2.9	0.4	1.1	---	---
	Change	g/m².month	Increase of 2	0.1	-0.2	0.7	1	0	179.4	0.2	-1.9	0.4	NA	-2.1	0.1	0.1	---	---
Arsenic	Current Month	mg/L		0.001	---	---	---	---	---	---	---	---	---	---	---		<0.001	<0.001
Comments						grass mown adjacent, raking and moving soil, insects in gauge		grass mown next to	gras mown, insects in gauge.	insects in gauge	hydromulch in funnel and gauge		-	grass mown near, insects in gauge	bird droppings in funnel	insects in gaugae	insects in gauge	

Table 2: Air Quality Monitoring Results – March 2018

Monthly Dust Monitoring Results -March 2018 - April 2018

			DDG ID		DDG1	DDG2	DDG3	DDG4	DDG5	DDG6	DDG6N	DDG7	DDG8A	DDG9NE	DDG9E	DDG10	DDG A1	DDG A2
			Start date of sampling		1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018	1/03/2018
			Finish date of sampling		4/04/2018	4/04/2018	4/04/2018	4/04/2018	4/04/2018	4/04/2018	4/04/2018	4/04/2018	4/04/2018	4/04/2018	4/04/2018	4/04/2018	4/04/2018	4/04/2018
Analyte	Time Period	Unit	Levels of Concern	LOR														
Ash Content	Current Month	g/m².month	4	0.1	0.7	0.3	1.5	0.4	1.4	1	0.4	0.5	0.2	0.6	5.8	1	---	---
		mg	N/A	1	14	7	30	8	28	20	9	10	4	13	117	21	---	---
	Previous Month	g/m².month			0.5	0.5	0.4	0.2	125	0.5	0.5	0.5	0.4	0.3	0.4	0.8	---	---
	Change	g/m².month	Increase of 2		0.2	-0.2	1.1	0.2	-173.6	0.5	-0.1	0	NA	0.3	5.4	0.2	---	---
Combustible Matter	Current Month	g/m².month	N/A	0.1	0.5	1.5	0.2	1	1.4	0.2	0.7	0.6	0.6	0.3	1.6	0.3	---	---
		mg	N/A	1	11	29	5	20	28	5	13	12	12	5	31	5	---	---
Total Insoluble Matter (TIM)	Current Month	g/m².month	4	0.1	1.2	1.8	1.7	1.4	2.8	1.2	1.1	1.1	0.8	0.9	7.4	1.3	---	---
		mg	N/A	1	25	36	35	28	56	25	22	22	16	18	148	26	---	---
	Previous Month	g/m².month		0.1	0.9	1.3	1.5	0.4	198	0.8	1.6	0.9	1.6	0.8	0.5	1.2	---	---
	Change	g/m².month	Increase of 2	0.1	0.3	0.5	0.2	1	-188.2	0.4	-0.5	0.2	NA	0.1	6.9	0.1	---	---
Arsenic	Current Month	mg/L		0.001	---	---	---	---	---	---	---	---	---	---	---		0.002	<0.001
Comments					overtopped with water	overtopped with water	overtopped with water	grass mown next to, overtopped with water	gras mown, overtopped with water	funnel broken off inside, overtopped with water	hydromulch in funnel and gauge, overtopped with water	overtopped with water	overtopped with water	grass mown near, overtopped with water	overtopped with water	overtopped with water	insects in gauge, overtopped with water	overtopped with water

Table 3: Air Quality Monitoring Results – April 2018

Monthly Dust Monitoring Results -April 2018 - May 2018

			DDG ID		DDG1	DDG2	DDG3	DDG4	DDG5	DDG6	DDG6N	DDG7	DDG8A	DDG9NE	DDG9E	DDG10	DDG A1	DDG A2
			Start date of sampling		04-04-18	04-04-18	04-04-18	04-04-18	04-04-18	04-04-18	04-04-18	04-04-18	04-04-18	04-04-18	04-04-18	04-04-18	04-04-18	04-04-18
			Finish date of sampling		01-05-18	01-05-18	01-05-18	01-05-18	01-05-18	01-05-18	01-05-18	01-05-18	01-05-18	01-05-18	01-05-18	01-05-18	01-05-18	01-05-18
Analyte	Time Period	Unit	Levels of Concern	LOR														
Ash Content	Current Month	g/m².month	4	0.1	0.4	0.2	0.4	0.1	0.5	1.8	3.4	3.1	0.1	0.4	0.8	0.6	----	----
		mg	N/A	1	6	3	6	2	8	28	54	49	2	6	13	9	----	----
	Previous Month	g/m².month			0.7	0.3	1.5	0.4	1.4	1	0.4	0.5	0.2	0.6	5.8	1	----	----
	Change	g/m².month	Increase of 2		-0.3	-0.1	-1.1	-0.3	-0.9	0.8	3	2.6	-0.1	-0.2	-5	-0.4	----	----
Combustible Matter	Current Month	g/m².month	N/A	0.1	0.3	0.2	0.4	0.2	0.6	4	0.8	1.1	0.5	0.2	0.5	0.2	----	----
		mg	N/A	1	5	4	7	3	10	65	13	18	8	3	8	4	----	----
Total Insoluble Matter (TIM)	Current Month	g/m².month	4	0.1	0.7	0.4	0.8	0.3	1.1	5.8	4.2	4.2	0.6	0.6	1.3	0.8	----	----
		mg	N/A	1	11	7	13	5	18	93	67	67	10	9	21	13	----	----
	Previous Month	g/m².month		0.1	1.2	1.8	1.7	1.4	2.8	1.2	1.1	1.1	0.8	0.9	7.4	1.3	----	----
	Change	g/m².month	Increase of 2	0.1	-0.5	-1.4	-0.9	-1.1	-1.7	4.6	3.1	3.1	-0.2	-0.3	-6.1	-0.5	----	----
Arsenic	Current Month	mg/L		0.001	----	----	----	----	----	----	----	----	----	----	----		<0.001	0.005
Comments								grass mown next to,				works observed by resident next to gauge, material in and around gauge		grass mown near,				

Table 4: Air Quality Monitoring Results – May 2018

Monthly Dust Monitoring Results May 2018

			DDG ID		DDG1	DDG2	DDG3	DDG4	DDG6	DDG6N	DDG7	DDG8A	DDG9NE	DDG9E	DDG10
			Start date of sampling		1/05/2018	1/05/2018	1/05/2018	1/05/2018	1/05/2018	1/05/2018	1/05/2018	1/05/2018	1/05/2018	1/05/2018	1/05/2018
			Finish date of sampling		31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018
Analyte	Time Period	Unit	Levels of Concern	LOR											
Ash Content	Current Month	g/m².month	4	0.1	1.5	0.1	0.5	0.2	0.4	0.8	0.5	0.2	0.3	1.3	2.1
		mg	N/A	1	26	2	9	3	7	15	8	4	6	23	37
	Previous Month	g/m².month			0.4	0.2	0.4	0.1	1.8	3.4	3.1	0.1	0.4	0.8	0.6
	Change	g/m².month	Increase of 2		1.1	-0.1	0.1	0.1	-1.4	-2.6	-2.6	0.1	-0.1	0.5	1.5
Combustible Matter	Current Month	g/m².month	N/A	0.1	0.5	0.2	0.3	<0.1	0.9	0.7	0.2	0.4	0.3	0.3	0.2
		mg	N/A	1	10	3	6	<1	16	12	5	7	5	6	4
Total Insoluble Matter (TIM)	Current Month	g/m².month	4	0.1	2	0.3	0.8	0.2	1.3	1.5	0.7	0.6	0.6	1.6	2.3
		mg	N/A	1	36	5	15	3	23	27	13	11	11	29	41
	Previous Month	g/m².month		0.1	0.7	0.4	0.8	0.3	5.8	4.2	4.2	0.6	0.6	1.3	0.8
	Change	g/m².month	Increase of 2	0.1	1.3	-0.1	0	-0.1	-4.5	-2.7	-3.5	0	0	0.3	1.5

Table 5: Air Quality Monitoring Results – June 2018

Monthly Dust Monitoring Results June 2018

			DDG ID		DDG1	DDG2	DDG3	DDG4	DDG6	DDG6N	DDG7	DDG8A	DDG9NE	DDG9E	DDG10
			Start date of sampling		31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018	31/05/2018
			Finish date of sampling		29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018	29/06/2018
Analyte	Time Period	Unit	Levels of Concern	LOR											
Ash Content	Current Month	g/m².month	4	0.1	1.3	0.3	2.2	0.2	0.2	0.6	0.3	0.1	0.4	0.3	0.9
		mg	N/A	1	22	5	37	4	4	10	5	2	7	5	16
	Previous Month	g/m².month			1.5	0.1	0.5	0.2	0.4	0.8	0.5	0.2	0.3	1.3	2.1
	Change	g/m².month	Increase of 2		-0.2	0.2	1.7	0	-0.2	-0.2	-0.2	-0.1	0.1	-1	-1.2
Combustible Matter	Current Month	g/m².month	N/A	0.1	0.1	0.3	0.2	1.8	0.2	0.2	0.2	0.1	0.2	0.3	0.1
		mg	N/A	1	6	4	31	2	3	4	1	3	2	3	1
Total Insoluble Matter (TIM)	Current Month	g/m².month	4	0.1	1.6	0.5	4	0.4	0.4	0.8	0.4	0.3	0.5	0.5	1
		mg	N/A	1	28	9	68	6	7	14	6	5	9	8	17
	Previous Month	g/m².month		0.1	2	0.3	0.8	0.2	1.3	1.5	0.7	0.6	0.6	1.6	2.3
	Change	g/m².month	Increase of 2	0.1	-0.4	0.2	3.2	0.2	-0.9	-0.7	-0.3	-0.3	-0.1	-1.1	-1.3

Table 6: Air Quality Monitoring Results – July 2018

Monthly Dust Monitoring Results June 2018

			DDG ID		DDG1	DDG2	DDG3	DDG6	DDG6N	DDG7	DDG8A	DDG9NE	DDG9E	DDG10
			Start date of sampling		29-06-18	29-06-18	29-06-18	29-06-18	29-06-18	29-06-18	29-06-18	29-06-18	29-06-18	29-06-18
			Finish date of sampling		27-07-18	27-07-18	27-07-18	27-07-18	27-07-18	27-07-18	27-07-18	27-07-18	27-07-18	27-07-18
Analyte	Time Period	Unit	Levels of Concern	LOR										
Ash Content	Current Month	g/m².month	4	0.1	0.2	0.8	0.4	0.2	0.7	0.5	0.1	0.4	0.4	0.4
		mg	N/A	1	3	13	6	4	11	9	1	7	7	6
	Previous Month	g/m².month			1.5	0.1	0.5	0.4	0.8	0.5	0.2	0.3	1.3	2.1
	Change	g/m².month	Increase of 2		-1.3	0.7	-0.1	-0.2	-0.1	0	-0.1	0.1	-0.9	-1.7
Combustible Matter	Current Month	g/m².month	N/A	0.1	<0.1	<0.1	0.4	0.3	<0.1	0.2	0.1	0.1	0.3	<0.1
		mg	N/A	1	<1	1	7	4	1	2	2	2	4	1
Total Insoluble Matter (TIM)	Current Month	g/m².month	4	0.1	0.2	0.8	0.8	0.5	0.7	0.7	0.2	0.5	0.7	0.4
		mg	N/A	1	3	14	13	8	12	11	3	9	11	7
	Previous Month	g/m².month		0.1	2	0.3	0.8		1.3	1.5	0.7	0.6	0.6	1.6
	Change	g/m².month	Increase of 2	0.1	-1.8	0.5	0	0.5	-0.6	-0.8	-0.5	-0.1	0.1	-1.2
Comments														

APPENDIX D – Compliance Tracking Tables

MCoA	Requirement	Comment	Status
ADMINISTRATIVE CONDITIONS			
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 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);	Roads and Maritime has identified relevant commitments, obligations, undertakings and requirements (COURs) in the environmental assessment and approval documentation for the Warrell Creek to Urunga Project. A COURs database has been developed; the database will assist Roads and Maritime to manage compliance and contractual risk. Further confirmation has been provided through the compliance reporting and independent audit program developed in response to condition B25. Ongoing operational requirements as they relate to Stage 2, subject to this condition, will be incorporated into Roads and Maritime's existing operational management systems. Stage 2a was opened to traffic on 19 December 2017. Stage 2b was opened to traffic on 29 June 2018. It is anticipated that the construction will be complete in mid to late 2018.	Compliance with the condition is ongoing throughout all stages of the project.

MCoA	Requirement	Comment	Status
	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); l 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 *m* The conditions of this approval.		
A2	In the event of an inconsistency between: *a* 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.	Noted	Compliance with the condition is ongoing throughout all stages of the project.
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.	Noted	Compliance with the condition is ongoing throughout all stages of the project.
A4	Subject to confidentiality, the Proponent shall make all documents required under this approval available for public inspection on request.	A project website has been established and is accessible through the Roads and Maritime corporate website. The project website is at	Compliance with the condition is ongoing throughout all stages of the project.

MCoA	Requirement	Comment	Status
		http://www.rms.nsw.gov.au/projects/northern-nsw/warrell-creek-to-nambucca-heads/index.html. The website is updated at regular intervals and contains information, as a minimum, required by MCoA B26 and conditions included in the project EPBC approval. Any documentation unable to be made available through the project website and not subject to restrictions imposed by confidentiality will be made available upon request at a nominated project site office or Roads and Maritime regional office.	
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 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: *a* 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	Initial staging report issued to DP&E on 12 March 2013 in regards to 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 DP&E on 19 February 2014. DP&E responded 23 March 2014 noting the staging report satisfactorily addressed requirements of MCoA A5. An updated Staging Report was submitted to DP&E on the 14th September 2017 describingd the scope of project staging for Stage 2 (Warrell Creek to Nambucca Heads) of the project to permit: * the early opening to traffic of the section of Stage 2 between Scotts Head Road and Stage 1 of the project (providing a bypass of the townships of Macksville and Bellwood (Nambucca Heads)) referred to a Stage 2a; and * the later opening to traffic of the remainder of Stage 2 referred to as Stage 2b.	Closed. The project is open to traffic. The final staging report was approved by DP&E on the 5 October 2017.

MCoA	Requirement	Comment	Status
	agreed to by the Director General.		
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.	Roads and Maritime, and its construction partner, have obtained all necessary licenses and approvals relevant to Stage 2 of the project.	Compliance with the condition is ongoing throughout all stages of the project. To be closed following completion of construction of the entire Project in mid to late 2018 and following the surrender of licenses (eg EPA licence) and permits in effect at that time.
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.	Construction for WC2NH commenced on 9 February 2015	Closed.
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.	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.	Closed.
A9	The proposed trailer exchange facility located in the vicinity of the Nambucca Heads rest area does not form part of this approval.	Not included within the scope of works of the Warrell Creek to Nambucca Heads Stage of the Project.	NA
PRIOR TO CONSTRUCTION			
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.	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	Closed

MCoA	Requirement	Comment	Status
		ecological input. 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. 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 DP&E by RMS on 17/7/2015. A letter confirming compliance was received by DP&E on the 21st April 2016. Construction of the crossings has been undertaken in accordance with the approved design and above referenced report.	
B2	As part of detailed design, the Proponent shall further investigate design	Note that chainages referred to in the approval are	Closed

MCoA	Requirement	Comment	Status
	refinements to improve fauna connectivity between Chainages 19150 and 19820.	based the chainages from the Environmental Assessment (EA). During construction chainages will be based on a distance north of Kempsey, the correction factor for this is an additional chainage of 41765. 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 regard 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 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. Only 2 crossing points were identified 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	

MCoA	Requirement	Comment	Status
		poles and rope bridges. Roads and Maritime have approved 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 design and construction of the additional crossing points is being undertaken by AFJV with the support of RMS. Three additional dedicated fauna connectivity culverts have been installed. The details have been included in the Fauna Connectivity Report provided to DP&E in July 2015. A letter confirming compliance was received from DP&E on the 21st 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.	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	Closed

MCoA	Requirement	Comment	Status
		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 has been undertaken, and final locations have been determined. A refined design of the structure has also been accepted by RMS. The installation of the structures is ongoing with the installation of the fencing and shall be completed prior to operation of Stage 1, Stage 2A and Stage 2B, respectively. The Fauna Connectivity Report was submitted to DP&E in accordance with the approval conditions on 17th July 2015. A letter confirming compliance was received from DP&E on the 21st April 2016. Additional fauna fencing has been incorporated into the design of the Project at the request of the EPA between Floodplain Bridge 1 and Floodplain Bridge 2 on the Gumma Floodplain to ensure fauna species are directed to the designated fauna crossing points underneath the plank bridges on the floodplain.	
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 enhancement of habitat within the medians and corresponding carriageway boundaries) where the alignment crosses areas of recognised glider habitat.	See response provided for condition B1.	Closed
B5	The Proponent shall in consultation with DPI (Fisheries) ensure that all waterway crossings are designed and constructed consistent with the principles of the *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*	Temporary and permanent waterway crossings associated with Stage 2 were designed to fulfill the requirements of this condition. See further detailed provided in response to conditions B1.	Closed

MCoA	Requirement	Comment	Status
	Similar Structures (NSl4/ Fisheries). 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.		
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.	The Nest Box plan prepared by Roads and Maritime was approved by DP&E on 20/03/2013.	Open To be closed following the completion of the operational monitoring in accordance with the approved Ecological Monitoring Program Rev C June 2018.
B7	Prior to the commencement of any construction work that would result in the disturbance of Amorphospermum whitei and Marsdenia longiloba, the Proponent shall in consultation with the EPA develop a management plan for these species which: investigates the potential for the translocation of plants impacted by the project; 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 2OO4: Guidelines for the Translocation of Threatened Species in Australia, including details of ongoing maintenance such as responsibilities, timing and duration; 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 includes detail of mitigation measures to be implemented during	Open Potential impacts to *Amorphospermum whitei* and Marsdenia longiloba are incorporated into the Threatened Flora Management Plan (Ver 4) (TFMP) which was provided to DP&E 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 and Energy (Ver 5). A minor change to the TFMP to incorporate an additional monitoring event for November 2016 (as only 3 monitoring events were completed in year 1 of construction) was accepted by the ER in June 2016.	Closed

MCoA	Requirement	Comment	Status
	construction to avoid and minimise impacts to areas identified to contain these species, including excluding construction plant, equipment, materials and unauthorised personnel. Unless otherwise agreed to by the Director General, the Plan shall be submitted for the Director General's approval prior to the commencement of any construction work that would result in the disturbance of Amorphospermum whitei and Marsdenia longiloba.		
B8	The Proponent shall, in consultation with the EPA and DPI (Fisheries), develop a Biodiversity Offset Strategy that identifies available options for offsetting the biodiversity impacts of the project in perpetuity, with consideration to EPA's *Principles for the Use of Biodiversity Offsets in NSW* (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; 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	Roads and Maritime have developed a Biodiversity Offset Strategy to address the requirements of this condition in consultation with OEH and DPI (Fishing and Aquaculture). Comments were received from DP&E on the draft Biodiversity Offset Strategy for Warrell Creek to Urunga (12 September 2013, April 2014). The final Biodiversity Offset Strategy was submitted to DP&E on 23/10/2014 for approval DP&E approved the WC2U Biodiversity Offset Strategy on the 24 November 2014.	Closed 24 November 2014.

MCoA	Requirement	Comment	Status
	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; *ii.* changes to predicted impacts resulting from changes to mitigation measures; *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 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.		
B9	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 **Biodiversity Offset Package** 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:	Roads and Maritime have engaged a suitably qualified and experienced ecological consultant to identify and assess requisite lands to fulfill the requirements of the approved Biodiversity Offset Strategy. The WC2NH Biodiversity Offset Package was approved by DP&E on 13 June 2017.	Closed 13 June 2017

MCoA	Requirement	Comment	Status
	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); 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.		
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 consultation with EPA and prepared by a suitably qualified ecologist and shall include but not necessarily be limited to: 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 appropriate and justified monitoring periods and 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; b mechanism for developing additional monitoring protocols to assess the effectiveness of any additional mitigation measures implemented to address additional impacts in the case of design 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; c monitoring shall be undertaken during construction (for construction-related impacts) and from opening of the project to traffic (for operation/ongoing impacts) until such time as the effectiveness of	Ecological Monitoring Program for WC2NH was submitted to DP&E 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 DP&E on the 16/12/14. The Ecological Monitoring Program was updated on 5 March 2018 Update Table 3.1 to align with approved management plans. This revision was approved by DP&E on 14 March 2018. The Ecological Monitoring Program was further updated to make a minor change to the operational landscape monitoring methodology. DP&E approved the project ER endorsement of the minor change on 1 June 2018.	Open To be closed following the completion of the operational monitoring in accordance with the approved Ecological Monitoring Program Rev C June 2018.

MCoA	Requirement	Comment	Status
	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.		
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.	The Flood Modelling and Hydrology Report for the Nambucca River and Floodplain were provided to DP&E 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 DP&E were received on the 22/05/15 which was addressed by AFJV and a revised report submitted to DP&E on 24th July 2015. DP&E approval obtained on 10/8/2015. No changes to the document or the design has occurred between Compliance Tracking Report #5	Closed on 10 August 2015

MCoA	Requirement	Comment	Status
		and this report.	
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 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 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; 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 strategies including stock.	See response provided for condition B11.	Closed
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: a identify all properties likely to have an increased flooding impact and detail the predicted increased flooding impact; b identify mitigation measures to be implemented where increased flooding is predicted to adversely affect access, property or	See response provided for condition B11.	Closed

MCoA	Requirement	Comment	Status
	infrastructure; 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 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 e identify operational and maintenance responsibilities for items (a) to (e) inclusive. 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 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 mitigation measures shall be provided to the relevant Council and the Department prior to the implementation / construction of the mitigation measures on the property.	See response provided for condition B11.	Closed
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.	WMA are the project hydrological consultant used for independent review/ comment of designs eg. the B12/B13 report as approved	Compliance with the condition is ongoing throughout all stages of the project.

MCoA	Requirement	Comment	Status
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.	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 characteristics as a result of the project. Email sent from RMS to DP&E detailing consultation on 31/7/2015. RMS undertook a review of the flood studies for Warrell Creek in the vicinity of Browns Crossing Road and the Upper Warrell Creek crossing. The review did not result in changes to the Flood Modelling and Hydrology Report for the Nambucca River and Floodplain.	Closed
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 water and	Roads and Maritime have developed a Water Quality Monitoring Program in consultation with OEH and DPI to address the requirements of this condition. WQMP plan as approved by DP&E 23 May 2014. An updated Groundwater Monitoring Program to remove several bores from the program that have been dry throughout construction was approved on 29 September 2017 The requirements of this condition are ongoing for all stages throughout construction and up to three years following completion of the project.	Open To be closed following the completion of the three year operational Water Quality Monitoring in accordance with the approved CEMPs after completion of construction of the entire Project in mid to late 2018.

MCoA	Requirement	Comment	Status
	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 standards against which any changes to surface water quality will be assessed, having regard to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 (ANZECC, 2000); e contingency and ameliorative measures in the event that adverse impacts to surface water quality are identified; f a minimum monitoring period of three years following the completion of construction or until any disturbed waterways/ groundwater resources are certified by an independent expert as being rehabilitated to an acceptable condition. The monitoring shall also confirm the establishment of operational water control measures (such as sedimentation basis and vegetation swales); and g reporting of the monitoring results to the Department, EPA and DPI. The Program shall be submitted to the Director General for approval six (6) months prior to the commencement of construction of the project, or as otherwise agreed by the Director General. A copy of the Program shall be submitted to EPA and DPI prior to its implementation.		
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).	Not included within the scope of works of the Warrell Creek to Nambucca Heads Stage of the Project.	NA
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);	Archaeological Salvage works have been undertaken by Roads and Maritime. RMS submitted salvage report to LALC's in August 2012. RMS submitted the results of the salvage report to DP&E on 1/8/2012	Closed 1 August 2012

MCoA	Requirement	Comment	Status

	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);
	l Tyson's Flat I (previously PAD 28); and
	m Tyson's Flat 2 (previously PAD 27).
	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.		

B20	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.	Not included within the scope of works of the Warrell Creek to Nambucca Heads Stage of the Project.	NA
B21	Prior to the commencement of construction (unless otherwise agreed to by the Director General), the Proponent shall prepare and implement an	Roads and Maritime and its construction partner for Roads and Maritime and its construction partners	Compliance with the condition is ongoing throughout all

MCoA	Requirement	Comment	Status
	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 necessarily be limited to: a a principle goal of achieving the urban design objectives outlined in Section 13.4 of Volume 1 of the Environmental Assessment; 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; 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; e strategies for progressive landscaping incorporating other environmental controls such as erosion and sedimentation controls, drainage, noise mitigation; 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;	have completed an Urban Design and Landscape Plan for each stage of the project in consultation with council, relevant stakeholders and the community. A letter seeking approval for a staged Plan and to submit the UDLP after the commencement of construction was provided to DP&E on the 25/11/14. A letter confirming staged submission of the Project UDLP was provided by DP&E on the 04/12/14. Stage 1 of the UDLP was provided to DP&E on the 01/06/15. Stage 1 of the UDLP included the Project design at the 15% detailed design phase. It included a methodology for bushland regeneration, riparian zone rehabilitation, preferred seed mixes and concepts for the design of built elements. Comments were received from DP&E 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 DP&E 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 DP&E on the 15/1/2016. The comments were addressed by AFJV and a response provided by RMS to DP&E on the 5/2/2016. Approval of the Stage 2 of the UDLP was provided by DP&E on 19/02/2016 The UDLP has been updated to include the North	stages of the project including operational landscape maintenance.

MCoA	Requirement	Comment	Status
	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. j 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.	Macksville Ramps into the design. The design has incorporated headlight screening measures as required by Modification 8. Advice was received from DP&E that construction on the North Macksville Ramps could commence prior to the submission of the updated UDLP. This was confirmed in an email from DP&E in May 2016. This update to the UDLP formed Stage 3 of the UDLP approval with DP&E The UDLP design in the vicinity of the North Macksville Ramps (Stage 3) was displayed for public exhibition and feedback between 16 – 30 October 2017. No Submissions were received during the exhibition period. An updated UPLP and associated drawing sheets were submitted to DP&E on 22 November 2017 and 6 December 2017 seeking the Secretary's consideration of the North Macksville Ramps. DP&E approved the updated UDPL Design report and drawings on 20 December 2017. An updated UPLP was submitted to DP&E on 16 July 2018 amending the rehabilitation requirements for the Northern Site Compound ancillary facility pending the NSW Health proposal for the new Macksville Hospital on the site. DP&E approved the updated UDPL Design report on 14 August 2018.	
B22	The Proponent shall ensure that the project is designed in consultation with DPI (Forests NSW) to ensure that access of a standard that is at least 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 and operation.	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. 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. The finalised Property Adjustments were accepted by Forestry NSW in October 2016.	Compliance with the condition is ongoing throughout all stages of the project

MCoA	Requirement	Comment	Status
		Further adjustments have been made to the design of the several Property Adjustments Drawings in discussions with Forestry NSW.	
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 in the towns. The signage policy shall be developed, consistent with the RTA's standard signposting 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 bypass.	Consultation is ongoing in accordance with requirements of this condition, and forms part of a wider consultation strategy for the whole Pacific Highway upgrade program. Community consultation for directional signage was undertaken from 19 July 2017 through to 14 August 2017. The Project received more than 60 items of feedback via feedback forms, telephone, email, and an on-line survey.	Compliance with the condition is ongoing throughout all stages of the project
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.	The acquisition for the final property to the south of the Project was executed in February 2016. The design of the project has been optimised to minimise land take and best serve adjacent business and private land use practices. The viability of agricultural operations would not be substantially affected by the project.	Closed
B25	The Proponent shall develop and implement a Compliance Tracking Program 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	Roads and Maritime submitted Compliance Tracking Program to DP&E on 7 March 2013, which was subsequently approved by DP&E on 20 March 2013.	Open Compliance with the condition is ongoing throughout all construction stages of the

MCoA	Requirement	Comment	Status
	limited to: 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); b provisions for periodic review of project compliance with the requirements of this approval, Statement of Commitments and documents listed under condition A1; 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 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.	This construction compliance tracking report outlines the status of compliance in accordance with the approved compliance tracking program developed in response to this condition. This report covers the seventh construction compliance tracking period between 9 February 2018 and 8 August 2018.	project.
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	A project website has been established and is accessible through the Roads and Maritime corporate website. The project website is at http://www.rms.nsw.gov.au/projects/northern-nsw/warrell-creek-to-nambucca-heads/index.html. The website is updated at regular intervals and contains information, as a minimum, required by this condition and conditions included in the project	Compliance with the condition is ongoing throughout all stages of the project.

MCoA	Requirement	Comment	Status
	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 B25.	EPBC approval. Any documentation unable to be made available through the project website and not subject to restrictions imposed by confidentiality will be made available upon request at a nominated project site office or Roads and Maritime regional office.	
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: a a telephone number on which complaints and enquiries about construction and operation activities may be registered; b a postal address to which written complaints and enquiries may be sent; 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 project operation. The above details shall also be provided on the website (or dedicated pages) required by this approval. 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 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.	Roads and Maritime and its construction partners developed a Community Communications Strategy for each stage of the project that among other things, address the requirements of this condition. 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 advising the community of the anticipated commencement of the various stages of construction and also how to establish contact with Roads and Maritime and its construction partners via telephone, post and email. This information is also supplied with all community notifications and published on the project website.	Compliance with the condition is ongoing throughout all stages of the project.

MCoA	Requirement	Comment	Status
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: a identification of stakeholders to be consulted as part of the Strategy, including affected and adjoining landowners; b procedures and mechanisms for the regular distribution of information to stakeholders on the progress of the project and matters associated with environmental management; 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; d procedures and mechanisms through which the Proponent can respond to any enquires or feedback from stakeholders in relation to the 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.	Roads and Maritime and its construction partners developed a Community Communications Strategy for each stage of the project that among other things, address the requirements of this condition. The Community Involvement Plan was approved by DP&E on the 16/12/14. The Plan has been reviewed and revised. An updated version of the Plan was provided to DP&E in August 2017 with approval obtained from DP&E 29 September 2017	Compliance with the condition is ongoing throughout all stages of the project.
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	DP&E approved Mr David Bone – Onsite Environmental Management as the Environmental Representative on 17 May 2013.	Compliance with the condition is ongoing throughout all construction stages of the project. Completion of construction is anticipated to

MCoA	Requirement	Comment	Status
	construction personnel. The Proponent shall employ the Environmental Representative(s) for the duration of 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 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.		be mid to late 2018.
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	A Construction Environmental Management Plan (CEMP), including relevant sub-plans, was prepared for each stage of the project in consultation with EPA, DPI (Fishing and Aquaculture) and Nambucca Shire Council to	Compliance with the condition is ongoing throughout all construction stages of the project.

MCoA	Requirement	Comment	Status
	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, including contractors and sub-contractors are aware of their environmental and compliance obligations under these conditions of approval; d identification of ancillary facility site locations, including an assessment against the location criteria outlined in condition C27; e an 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	address the relevant requirements of this condition. DP&E approved the WC2NH CEMP and Sub-plans on the 16/12/14. The CEMP was reviewed and updated during the period to address personnel changes and to update the Appendices to the latest revisions. The CEMP Rev 9 was approved by the Project Environment Representative (ER) in February 2018. Several updates have been incorporated into the relevant sub-plans as discussed below.	

MCoA	Requirement	Comment	Status
	wherever feasible and reasonable; procedures for dealing with green waste including timber and much from clearing activities; and measures for reducing demand on water resources (including the potential for reuse of treated water from sediment control basins); *iii.* measures to monitor and manage **spoil and 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); *iv.* measures to monitor and manage **hazard and risks** including emergency management; and *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 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):	A Construction Traffic Management Plan (TMP) to address the requirements of this condition was prepared for each stage of the Project. DP&E approved the WC2NH CEMP and associated Sub-	Compliance with the condition is ongoing throughout all construction stages of the project.

MCoA	Requirement	Comment	Status
	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 intersection level of service and potential disruptions to arrangements for pedestrians, property access, public transport, parking and/ or cyclist; *iv.* details of temporary and interim traffic arrangements including intersections, property access and alternative traffic routes; *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; *vi.* a response procedure for dealing with traffic incidents; and *vii.* mechanism for the monitoring, review and amendment of this plan;	plans on the 16/12/14.	
	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: *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	A Construction Flora and Fauna Management Plan (FFMP) to address the requirements of this condition was prepared in consultation with EPA for each stage of the Project. DP&E approved the 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:	Compliance with the condition is ongoing throughout all construction stages of the project.

MCoA	Requirement	Comment	Status
	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 Giant Barred Frog within and in the vicinity of the project corridor undertaken during suitable conditions; *ii.* updated sensitive area vegetation maps based on B31(b)(i) above and previous survey work; *iii.* a Giant Barred Frog management plan, in the case that this species or its habitat is identified to occur in the project corridor or its vicinity, based on surveys undertaken as part of B31(b)(i); *iv.* a micro-bat management strategy, in the case that micro bats or evidence of roosting are identified during pre-construction surveys. The strategy shall detail measures to avoid, minimise and mitigate impacts to these species and identified roost sites, including short and long term management measures; *v.* details of general work practices to minimise the potential for damage to native vegetation (particularly EECs) not proposed to be cleared as part of the project and native fauna during construction, including (but not necessary limited to): fencing of sensitive areas, a protocol for the removal and relocation of fauna during clearing, presence of an experienced ecologist to oversee clearing activities and facilitate fauna rescues and re-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 worker education, weed management, erosion and sediment control and progressive re-vegetation; *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	• Giant Barred Frog Management Strategy • Grey-Headed Flying Fox Management Plan • Koala Management Plan • Spotted Tail Quoll Management Plan • Threatened Flora Management Plan • Nest Box Management • Ecological Monitoring Program • Green-Thighed Frog Management Strategy • Microchiropteran Bat Management Strategy • Pre-Clearing Checklist • Working Around Trees Guideline • Fauna Handling and rescue Procedure • Unexpected Threatened Species/EEC Procedure • Weed Management Plan Roads and Maritime has developed a construction and operational phase monitoring strategy for the Yellow - Bellied Glider.	

MCoA	Requirement	Comment	Status
	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;		
	c 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: *i.* identification of nearest sensitive receptors and relevant construction noise and vibration goals applicable; *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; *iii.* identification of all feasible and reasonable measures proposed to be implemented to minimise construction noise and vibration impacts (including construction traffic noise impacts); *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); *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; *vi.* procedures for notifying sensitive receivers of construction	A Construction Noise and Vibration Management Plan (NVMP) to address the requirements of this condition was prepared in consultation with EPA for the Project. DP&E approved the NVMP on the 16/12/14.	Compliance with the condition is ongoing throughout all construction stages of the project.

MCoA	Requirement	Comment	Status
	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: *i.* a contingency plan, consistent with the *Acid Sulfate Soils Manual*, to deal with the unexpected discovery of actual or potential acid sulfate soils; *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; *iii.* details of how construction activities would be managed and mitigated to minimise erosion and sedimentation consistent with condition C17; *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;	A Construction Water Quality Management Plan (SWMP) to address the requirements of this condition was prepared in consultation with OEH, DPI (Fishing and Aquaculture) and NOW for each stage of the Project. DP&E approved the SWMP on the 16/12/14. The Groundwater Monitoring Program was updated and provided to DP&E for approval. Approval was obtained by DP&E on 7 September 2017.	Compliance with the condition is ongoing throughout all stages of the project.

MCoA	Requirement	Comment	Status
	v. construction water quality monitoring requirements consistent with condition B17; and *vi.* a groundwater management strategy, including (but not necessarily limited to): 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); 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; iii. measures to manage identified impacts on water table, flow regimes and quality and to groundwater users and ecosystems; iv. groundwater inflow control, handling, treatment and disposal methods; and v. a detailed monitoring plan to identify monitoring methods, locations, frequency, duration and analysis requirements; and		
	e a **Construction Heritage Management Plan** to detail how construction impacts on Aboriginal and non-Aboriginal heritage will be minimised and managed. The Plan shall be developed in consultation with the OEH (Heritage Branch) (for non-Aboriginal heritage) and EPA and Registered 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	A Construction Heritage Management Plan (HMP) to address the requirements of this condition was prepared in consultation with OEH and registered Aboriginal Stakeholders, where relevant, for each stage of the project. DP&E approved the WC2NH Heritage Management Plan (HMP) on the 16/12/14. An Aboriginal Focus Group Meeting was held on 24 July 2018 to discuss the reburial of artefacts salvaged from Butchers, Stoney and Warrell Creek. The reburial occurred on 25 July 2018 in locations close to the site of the salvaging.	Compliance with the condition is ongoing throughout all stages of the project.

MCoA	Requirement	Comment	Status
	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 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 re-commence 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.		

MCoA	Requirement	Comment	Status
DURING CONSTRUCTION			
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.	The requirements of this condition were incorporated into the CEMPs and associated FFMP for each stage of the project. See discussion provided for MCoA B30 and MCoA B31(b).	Compliance with the condition is ongoing throughout all construction stages of the project.
C2	The Proponent shall employ all feasible and reasonable measures (including temporary cessation 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, traffic-generated dust, stockpiles and material tracking from construction sites onto public roads.	The requirements of this condition were incorporated into a Construction Air Quality Management Sub-plan (AQMP) prepared as part of the CEMP for each stage of the project. See discussion provided for MCoA B30.	Compliance with the condition is ongoing throughout all construction stages of the project.
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 c at no time on Sundays or public holidays.	The requirements of this condition were incorporated into the NVMP for each stage of the project. See discussion provided for MCoA B31(c).	Compliance with the condition is ongoing throughout all construction stages of the project.
C4	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; b for delivery of materials required outside these hours by the Police or other authorities for safety reasons; or c where it is required in an emergency to avoid the loss of lives, property and/or to prevent environmental harm; or d 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	The requirements of this condition were incorporated into the NVMP for each stage of the project. See discussion provided for MCoA B31(c).	Compliance with the condition is ongoing throughout all construction stages of the project.

MCoA	Requirement	Comment	Status
	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 e 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	For the purposes of condition C4 (f), certain construction activities (Out of Hours Works) may be allowed to occur outside the construction hours specified in conditions C3 with the prior written approval of the Director General. Requests for out of hours approval will be considered for construction 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: 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.	The requirements of this condition were incorporated into the NVMP for each stage of the project. See discussion provided for MCoA B31(c).	Compliance with the condition is ongoing throughout all construction stages of the project.
C6	Blasting associated with the project shall only be undertaken during the	The requirements of this condition were incorporated into the NVMP for each stage of the	Closed 31 August 2016

MCoA	Requirement	Comment	Status
	following hours a 9:00 am to 5:00 pm, Mondays to Fridays, inclusive; b 9:00 am to 1:00 pm on Saturdays; and 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.	project. See discussion provided for MCoA B31(c). Blasting activities have commenced on the Project in July 2015 and were completed by the 31st August 2016. All blasts are undertaken in accordance with the hours specified in this condition.	
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 *Interim Construction Noise Guideline* (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.	The requirements of this condition were incorporated into the NVMP for each stage of the project. See discussion provided for MCoA B31(c).	Compliance with the condition is ongoing throughout all construction stages of the project.
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; b 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 c for human exposure, the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration: A Technical Guideline (DEC 2006); and d the ground-borne noise levels set out in the Interim Construction Noise Guidelines (DECC, 2009).	The requirements of this condition were incorporated into the NVMP for each stage of the project. See discussion provided for MCoA B31(c).	Compliance with the condition is ongoing throughout all construction stages of the project.

<table>
<tr><th>MCoA</th><th>Requirement</th><th>Comment</th><th>Status</th></tr>
<tr><td>C9</td><td>The Proponent shall ensure that air blast overpressure generated by blasting associated with the project does not exceed the criteria specified in Table 1 when measured at the most affected residence or other sensitive receiver. To ensure that criteria are satisfied at the most affected residence or other sensitive receiver, blasting trials shall be undertaken prior to the commencement of the project blasting program, with results from the trials used to determine site specific blast design to satisfy the criteria specified in Table 1.
Table 1 Airblast overpressure criteria<table><tr><td>Airblast overpressure (dB(Lin Peak))</td><td>Allowable exceedance</td></tr><tr><td>115</td><td>5% of total number of blasts over a 12 month period</td></tr><tr><td>120</td><td>0%</td></tr></table></td><td>The requirements of this condition were incorporated into the NVMP for each stage of the project. See discussion provided for MCoA B31(c).
Blasting activities have commenced on the Project in July 2015 and were completed by the 31st August 2016. All blasts are undertaken in accordance with the hours specified in this condition.</td><td>Closed 31 August 2016</td></tr>
<tr><td>C10</td><td>The Proponent shall ensure that ground vibration generated by blasting associated with the project does not exceed the criteria specified in Table 2 when measured at the most affected residence or other sensitive receiver. To ensure that criteria are satisfied at the most affected residence or other sensitive receiver, blasting trials shall be undertaken prior to the commencement of the project blasting program, with 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<table><tr><td>Peak particle velocity</td><td>Allowable exceedance</td></tr></table></td><td>The requirements of this condition were incorporated into the NVMP for each stage of the project. See discussion provided for MCoA B31(c).
Blasting activities have commenced on the Project in July 2015 and were completed by the 31st August 2016. All blasts are undertaken in accordance with the hours specified in this condition.</td><td>Closed 31 August 2016</td></tr>
</table>

MCoA	Requirement	Comment	Status
	(mms-1) | 5 | 5% of total number of blasts over a 12 month period 10 | 0%		
C11	The blasting criteria identified in condition C9 and/ or C10 do not apply where the Proponent has a written agreement with the relevant landowner to exceed the criteria identified in condition C9 and/ or C10 and the Director General has approved the terms of the written agreement. In obtaining the Director General approval for any such agreement, the Proponent shall submit to the Director General: a details of the proposed blasting program and justification for the proposed increase to blasting criteria including alternatives considered (where relevant); b an assessment of the environmental impacts of the increased blast limits on the surrounding environment and most affected residences or other sensitive receivers including, but not limited to noise, vibration and air quality and any risk to surrounding utilities, services or other structures; 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	The requirements of this condition were incorporated into the NVMP for each stage of the project. See discussion provided for MCoA B31(c). Blasting activities have commenced on the Project in July 2015 and were completed by the 31st August 2016. All blasts are undertaken in accordance with the hours specified in this condition.	Closed 31 August 2016

MCoA	Requirement	Comment	Status
	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.		
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: a confirm the operational noise predictions of the project based on detailed design. This operational noise assessment shall be based on an appropriately calibrated noise model (which has incorporated additional noise monitoring, where necessary for calibration purposes). The assessment shall specifically include verification of noise levels at Nambucca Heads Rest Area, based on additional noise monitoring undertaken at this location; b review the suitability of the operational noise mitigation measures identified in the documents listed under condition A1 to achieve the criteria outlined in the Environmental Criteria for Road Traffic Noise (EPA, 1999) and the Industrial Noise Policy (EPA, 2000) in relation to the Nambucca Heads Rest Area, based on the operational noise performance of the project predicted under (a) above; and c where necessary, investigate additional feasible and reasonable noise mitigation measures to achieve the criteria outlined in the Environmental Criteria for Road Traffic Noise (EPA, 1999) and the Industrial Noise Policy (EPA, 2000) in relation to the Nambucca Heads Rest Area including the applicability of noise walls in the vicinity of River Road in Macksville.	RMS submitted a letter requesting an extension of time from DP&E for submission of the Operational Noise Mitigation Review (5/8/2015). DP&E approved the extension of time on 14/8/2015 for 9 months. A further extension of time was granted by the DP&E 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 was provided to DP&E on the 8 February 2017. Additional background noise monitoring and traffic counts were undertaken during the reporting period to supplement the information provided in the document. A revised document including changes requested by RMS was submitted to RMS in February 2017. The document was further revised in August 2017 after additional comments were received from RMS and the ER. A draft report and a further extension of time request to 8 October 2017 were submitted to DP&E on 2 May 2017. The final Operational Noise Mitigation Review was submitted to EPA and DP&E on 14 September 2017. Comments received were addressed by AFJV in September 2017 with the updated report provided to RMS on 26 October 2017. RMS provided the updated report for approval to DP&E and the EPA on 1 November 2017 which was approved by DP&E on the 29th November 2017.	Closed 29 November 2017

MCoA	Requirement	Comment	Status
C13	This approval does not allow the Proponent to destroy, modify or otherwise physically affect human remains.	Noted	Compliance with the condition is ongoing throughout all construction stages of 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 (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 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~~.	Noted	Compliance with the condition is ongoing throughout all construction stages of the project.
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.	Noted	Compliance with the condition is ongoing throughout all construction stages of the project.
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).	The requirement of this condition has been incorporated 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.	Closed
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 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	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 by AFJV. Accordingly, archaeological reports have been provided to DP&E in accordance with this condition. 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	Compliance with the condition is ongoing throughout all construction stages of the project.

MCoA	Requirement	Comment	Status
	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 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.	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 DP&E in December 2015.	
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.	The requirements of this condition were incorporated into the SWMPs for each stage of the project. See discussion provided for MCoA B31(d).	Compliance with the condition is ongoing throughout all construction stages of the project.

MCoA	Requirement	Comment	Status
C18	Where available, and of appropriate chemical and biological quality, the Proponent shall use stormwater, recycled water or other water sources in preference to potable water for construction activities, including concrete mixing and dust control.	The requirements of this condition were incorporated into the SWMPs for each stage of the project. The Project constructed several large water holding dams to hold water captured during rainfall events in sediment basins located on site. The Project has constructed several large water holding dams to hold water captured during rainfall events in sediment basins located on site. AFJV have also sought approval from the NSW Office of Water to extract water from Upper Warrell Creek and Lower Warrell Creek and from groundwater bores that have been installed adjacent to the alignment. 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. Also, potable water is used for concrete batching due to quality issues arising from recycled water and bore water.	Compliance with the condition is ongoing throughout all construction stages of the project.
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, 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 to a standard comparable to the in existence prior to the damage.	The WC2NH Project has been designed to minimise the impacts to private property and private property structures. 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.	Compliance with the condition is ongoing throughout all construction stages of the project.
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	The project has ensured that access to properties is maintained during construction. No complaints have been received in relation to this condition during the	Compliance with the condition is ongoing throughout all construction stages of the project.

MCoA	Requirement	Comment	Status
	an equivalent standard, in consultation with the landowner.	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.).	The project 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.). The project has provided stock access through the alignment where necessary. The project have also allowed access to creeks and waterways along the alignment for cattle during drier than average conditions.	Compliance with the condition is ongoing throughout all construction stages of the project.
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.	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.	Compliance with the condition is ongoing throughout all construction stages of the project.
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	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	Compliance with the condition is ongoing throughout all construction stages of the project.

MCoA	Requirement	Comment	Status
	should be identified in the Traffic Management Plan required under condition B31 (a).	to the relevant road authority, RMS and Nambucca Shire Council respectively	
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 *Protection of the Environment Operations Act 1997*, if such a licence is required in relation to that waste.	No waste generated offsite is being brought on to the project. All imported materials meet the general waste exemptions approved under the POEO Act where applicable.	Compliance with the condition is ongoing throughout all construction stages of the project.
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.	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 incorporated into noise and visual barriers. The Project has an Asphalt Manufacturing Plant on site that is capable of reusing waste asphalt products.	Compliance with the condition is ongoing throughout all construction stages of the project.
C26	The Proponent shall ensure that all liquid and/or non-liquid waste generated on the site is assessed and classified in accordance with *Waste Classification Guidelines* (DECC, 2008), or any future guideline that may supersede that document and where removed from the site is only directed to a waste management facility lawfully permitted to accept the materials.	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 AFJV Waste Tracking Register for all materials removed	Compliance with the condition is ongoing throughout all construction stages of the project.

MCoA	Requirement	Comment	Status
		from site. All wastes are being classified and recorded in accordance with EPA's guidelines.	
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: 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); d be located on relatively level land; 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; 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	The requirements of this condition were incorporated into the CEMPs for each stage of construction. See discussion provided for MCoA B30. 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. An approval from the DP&E was received on 17 December 2015 for the Northern Concrete Batch plant to operate within 300m of a nearby sensitive receiver. A Major Consistency Review to construct and operate a concrete batch plant opposite Scotts Head Road, Macksville was approved during the reporting period. An approval to place the batch plant within 300m of a resident was received from DPE on the 28/9/17. A Major Consistency Review to construct and operate an asphalt batch plant at 124 Albert Drive, Warrell Creek was approved during the reporting period. This facility is more than 300m from the nearest residence. An addendum to the Minor Consistency Review for Temporary Stockpiles outside of the Project Boundary was prepared to include crushing operations at one of the stockpile sites. The crushing operations were located more than 300m from the nearest sensitive receiver.	Compliance with the condition is ongoing throughout all construction stages of the project.

MCoA	Requirement	Comment	Status
	Environmental Management Plan required under condition B30.		
C27A	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. b Any archaeological investigations undertaken under this condition must be undertaken consistent with the Construction Heritage Management Plan required under Condition B31 (e) or a methodology prepared in consultation with OEH and approved by the Director General. c The results of any relevant archaeological investigations undertaken under this condition must be described	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 approved for the Project. The Project currently has a register of Minor Ancillary Facilities that is provided to the ER for approval. There are currently 21 approved Minor Ancillary Facilities on the Project. The register compares the Minor Ancillary Facility to this condition and also to C27. No archaeological investigations were required for the concrete batch plant located near Scotts Head Road, Macksville.	Compliance with the condition is ongoing throughout all construction stages of the project.
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: 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,	The Project currently has a register of Minor Ancillary Facilities that is provided to the ER for approval. There are currently 21 approved Minor Ancillary Facilities on the Project with four of these operational during the reporting period. The register compares the Minor Ancillary Facility to this condition and also to C27.	Compliance with the condition is ongoing throughout all construction stages of the project.

MCoA	Requirement	Comment	Status
	and no impacts on flora and fauna, soil and water, and heritage beyond those approved for the project; and 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.		

MCoA	Requirement	Comment	Status
PRIOR TO OPERATIONS			
D1	Prior to the commencement of operation, the Proponent shall incorporate the project into its existing environmental management system.	Ongoing operational requirements, subject to this approval, will be incorporated into the Roads and Maritime operational management system.	Closed
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: 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; 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	Noted. As detailed in the Staging Report, within 12 months of the commencement of operation on Stage 2a and Stage 2b or as otherwise agreed, Roads and Maritime will undertake operational noise monitoring, and prepare and submit a report addressing the requirements of this condition. Note, it is anticipated that Stage 2a will operate at a reduced speed limited until opening of the entire project. Operational noise monitoring therefore would not take place until the design speed limit is in place (ie 110 kilometres per hour). Also, due to the geographical relationship between Stage 2a and Stage 2b, one operational noise report would be prepared to cover both stages. The report would be prepared and submitted within 60 days of completion of the operation noise monitoring as prescribed by this condition. A specialist acoustic consultancy has been engaged to undertake the works.	Open To be closed approximately 12 months following opening of the entire project on 29 June 2018.

MCoA	Requirement	Comment	Status
	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 *Environmental Criteria for Road Traffic Noise* (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.		

SoC	Requirement	Stage	Comment	Status
ENVIRONMENTAL MANAGEMENT				
M1	The head contractor for the project will have and environmental management system.	Preconstruction and Construction	AFJV were appointed the Roads and Maritime construction partner for Stage 2. AFJV Venture has an environmental management system in place that fulfills the requirements of ISO 14001.	Compliance with the condition is ongoing throughout all construction stages of the project.
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.	Preconstruction and Construction	A CEMP and associated sub-plans were developed to address the requirements of this commitment on Stage 2 of the project. See response provided in Table 1 / MCoA B30.	Compliance with the condition is ongoing throughout all construction stages of the project.
M3	RTA and the contractor will implement a performance and compliance program.	Preconstruction and Construction	Roads and Maritime has developed and implemented a Compliance Tracking Program in accordance with MCoA B25 which was approved by DP&E on 20 March 2013 and updated and approved by DP&E on the 16/12/14.	Compliance with the condition is ongoing throughout all construction stages of the project.
COMMUNITY CONSULTATION				
CC1	Keeping the community informed will include: • regular project updates. • prior notice of project activities. • changes to traffic and access and works	Preconstruction and Construction	Refer to additional detail provided in response MCoA B28 for status update	Compliance with the condition is ongoing throughout all construction stages of the project.

SoC	Requirement	Stage	Comment	Status
	outside standard working hours. • contact details for enquiries. Targeted consultation with affected individuals or groups will occur as necessary (e.g. waterway users, farmers, noise affected residents, etc.).			
CC2	Complaint management will include: • A published 24 hour toll free complaints number. • Directions on how to register a complaint. • Acknowledgment of complaints within eight working hours. • Complaint recording. • Tracking of complaints until resolution.	Preconstruction and Construction	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.	Compliance with the condition is ongoing throughout all construction stages of the project.
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.	Preconstruction and Construction	The Traffic Management & Safety Plan (TM&SP) has been prepared by AFJV and approved by DPE on the 16/12/14. Refer to additional detail provided in response MCoA B31(a) for status update	Compliance with the condition is ongoing throughout all construction stages of the project.
T2	Any use of non-arterial roads by construction traffic will require the preparation of pre-construction and	Preconstruction and Construction	Refer to additional detail provided in response MCoA B23 for status update	Compliance with the condition is ongoing throughout all construction

SoC	Requirement	Stage	Comment	Status
	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.			stages of the project.
T3	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.	Preconstruction and Construction	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, interaction between plant and workers on foot and any site specific details such as bus stops, pedestrian routes and characteristics of local vehicle movements.	Compliance with the condition is ongoing throughout all construction stages of the project.
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.	Preconstruction and Construction	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.	Compliance with the condition is ongoing throughout all construction stages of the project.

SoC	Requirement	Stage	Comment	Status
T5	Construction vehicle movements and work programs will incorporate traffic control measures to maintain access to state forests.	Preconstruction and Construction	Refer to additional detail provided in response MCoA B22 for status update	Compliance with the condition is ongoing throughout all construction stages of the project.
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.	Preconstruction, Construction and Operation	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). Refer to additional detail provided in response MCoA B31(c) for status update	Compliance with the condition is ongoing throughout all construction stages of the project.
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.	Construction	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 the nearest educational institute is located approximately 400m to the west of the alignment at the floodplain south of Nambucca River. Refer to additional detail provided in response MCoA B31(c) for status update	Compliance with the condition is ongoing throughout all construction stages of the project.
N3	Best practice mitigation and management measures will be used to minimise construction noise and vibration at sensitive receivers.	Preconstruction and Construction	Mitigation measures are incorporated into the approved NVMP. This is addressed in MCoAs C3 to C11	Compliance with the condition is ongoing throughout all construction stages of the project.

SoC	Requirement	Stage	Comment	Status
			in regard 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. 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 must be	Preconstruction and Construction	The requirements of this SoC are included within the approved NVMP Sub-plan for implementation by AFJV during construction. Refer to additional detail provided in response MCoA C3 & C4 for status update.	Compliance with the condition is ongoing throughout all construction stages of the project.

SoC	Requirement	Stage	Comment	Status
	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.	Preconstruction and Construction	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 was undertaken throughout the production blasting program which was completed on the 31/8/16.	Closed 31 August 2016
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.	Construction	The requirements of this SoC are included within the NVMP Sub-plan and OOHW Procedure for implementation by AFJV during construction. Isolated complaints have been received in relation to works occurring outside of standard construction hours. All complaints have been satisfactorily resolved, with ongoing works being cancelled on one occasion.	Compliance with the condition is ongoing throughout all construction stages of the project.
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.	Preconstruction, Construction and Operations	Roads and Maritime recommended at-house noise treatments to mitigate operational noise impacts to over 150 residences. Residences that are highly affected were targeted in the first package and remaining residences progressively rolled out over the course of the project. RMS engaged the contractor GHD to oversee the installation of at house noise mitigation	Compliance with the condition is ongoing throughout all construction stages of the project.

SoC	Requirement	Stage	Comment	Status
			treatments and is in regular communication with DP&E regarding the status of at house noise mitigation treatments. As of the 30 August 2018, the status of at-house noise treatments for the 150 eligible residences is as follows: • 146 residences have been completed with all scoped noise treatments installed • 2 residences are currently having their noise treatments installed. • 1 residence requires repairs to the house before any treatment works can commence • 1 resident owner has recently declined to have the treatments installed. In summary, of the 149 residences receiving treatment, 146 residences (98%) have been treated. The 2 residences currently having treatments installed are anticipated to be completed by the end of October 2018. The remaining 1 residence on hold will commence as soon as the resident is able to confirm that the required construction works to fix existing termite damage has been completed.	

SoC	Requirement	Stage	Comment	Status
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	Refer to additional detail provided in response MCoA E1 for status update.	To be closed approximately 12 months following opening of the entire project on 29 June 2018.
FLORA AND FAUNA				
F1	Clearing of native vegetation (including endangered ecological communities (EECs)) will be restricted to the minimum area necessary for construction.	Preconstruction and Construction	Refer to additional detail provided in response MCoA C1 for status update.	Compliance with the condition is ongoing throughout all construction stages of the project
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.	Preconstruction and Construction	Threatened flora species are protected from the Project works during the construction period using delineation flagging. The location of protected vegetation is shown on the Project's Sensitive Area Plan mapping. 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.	Compliance with the condition is ongoing throughout all construction stages of the project
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	Preconstruction and Construction	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	Compliance with the condition is ongoing throughout all construction stages of the project

SoC	Requirement	Stage	Comment	Status
	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.		Indirectly impacted have 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.	
F4	Plantings of rusty plum (*Amorphospermum whitei*) in areas of suitable habitat adjacent to the Proposal will follow from seed collection and propagation.	Construction	Seed collection and propagation of A.whitei is being managed by Eco's Environmental on behalf of AFJV in accordance with the TFMP. The enhancement component of the Rusty Plum translocation aimed to establish additional individuals by direct seedling. Rusty Plum seeds were collected from the Nambucca State Forest and the Coffs Harbour Botanical gardens. Monitoring of the success of the prorogation is undertaken in accordance with the Threatened Flora Management Plan.	Compliance with the condition is ongoing throughout all construction stages of the project
F5	Site induction of construction workers will inform and instruct them of vegetation to be retained and on the identification of threatened species	Preconstruction and Construction	The site induction covers the identification of key threatened flora species located along the alignment	Compliance with the condition is ongoing throughout all construction stages of the project

SoC	Requirement	Stage	Comment	Status
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.	Preconstruction and Construction	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.	Compliance with the condition is ongoing throughout all construction stages of the project
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.	Preconstruction and Construction	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 now complete.	Compliance with the condition is ongoing throughout all construction stages of the project
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 occur (F2), and lopping and pruning is not to occur without expert advice.	Preconstruction and Construction	Refer to additional detail provided in response MCoA B4 for status update.	Compliance with the condition is ongoing throughout all construction stages of the project
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.	Preconstruction and Construction	Refer to additional detail provided in response MCoA B1, B2 and B3 for status update.	Closed

SoC	Requirement	Stage	Comment	Status
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.	Preconstruction and Construction	Refer to additional detail provided in response MCoA B1, B2 and B3 for status update.	Closed
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.	Preconstruction and Construction	Refer to additional detail provided in response MCoA B3 for status update.	Closed
F12	Development of an offset strategy will occur in consultation with the Department of Environment, Climate Change and Water.	Preconstruction, Construction and Operations	Refer to additional detail provided in response MCoA B8 for status update.	Closed
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.	Preconstruction and Construction	The Ecological Monitoring Program was approved by DP&E as part of the Flora and Fauna Management Plan on the 16/12/14. An updated Ecological Monitoring Program was submitted to DP&E on 5 March 2018 which was approved on 14 March 2018. An Annual Report of the Ecological Monitoring outcomes was produced after the first, second and third years of construction.	To be closed following operational monitoring which will commence in full following the construction of the entire Project in mid to late 2018
F14	The RTA will set bed levels for culverts and ledges for combined fauna passage in consultation with the Department of Environment, Climate Change and Water.	Preconstruction and Construction	Early design consultation with DPI (Fisheries) have been undertaken and included in tender documentation. The culverts requiring fish passage as agreed with Fisheries have been noted in Table 4.1 of the SWTC.	To be closed following completion of construction of the entire Project in mid to late 2018

SoC	Requirement	Stage	Comment	Status
			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.	Preconstruction and Construction	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.	Compliance with the condition is ongoing throughout all construction stages of the project
AH2	There will be protocols 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 Water.	Preconstruction and Construction	The approved HMP incorporates specific plans and procedures including Roads and Maritime Standard Management Procedure – Unexpected Heritage Items	Compliance with the condition is ongoing throughout all construction stages of the project
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.	Preconstruction and Construction	Archaeological Salvage works have been undertaken by Roads and Maritime in consultation with Aboriginal stakeholders and DP&E. 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	Compliance with the condition is ongoing throughout all construction stages of the project

SoC	Requirement	Stage	Comment	Status
			Heritage items that will be directly affected. An artefact has been salvaged to permit the construction of a permanent access road. 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. The item has been salvaged and provided to the RAP's for safe keeping until the end of the Project. RMS will provide correspondence to DP&E closer to project completion verifying reburial if required.	
AH4	All construction personnel will receive training on their obligations for protection of Aboriginal cultural materials, including information on site locations, conservation management and legal obligations in regard to Aboriginal cultural materials.	Preconstruction and Construction	The HMP includes an Aboriginal heritage education and training package. 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. A follow up training session was held in March 2017.	Compliance with the condition is ongoing throughout all construction stages of the project
AH5	The RTA will comply with the NSW Government's Aboriginal Participation in Construction Guidelines.	Preconstruction and Construction	An Aboriginal Participation Plan is currently being implemented by AFJV.	Compliance with the condition is ongoing throughout all construction stages of the project
NON-ABORIGINAL HERITAGE				
NH1	The detailed design will minimise impacts to	Preconstruction	Relevant site surveys for WC2NH (Ferry	Closed

SoC	Requirement	Stage	Comment	Status
	identified non-Aboriginal heritage items where feasible and reasonable.	and Construction	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.	Construction	The approved HMP incorporates specific plans and procedures including Roads and Maritime Standard Management Procedure – Unexpected Heritage Items	Compliance with the condition is ongoing throughout all construction stages of the project
WATER QUALITY AND HYDROLOGY				
W1	Minimisation of the area of soil exposure during construction.	Preconstruction and Construction	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. Batter stabilisation and progressive rehabilitation has commenced and positive landscaping outcomes are being achieved in accordance with the approved Urban Design and Landscaping Plan.	Compliance with the condition is ongoing throughout all construction stages of the project
W2	Detailed design will further investigate any additional feasible and reasonable mitigation and management measures to minimise construction erosion and sedimentation.	Preconstruction and Construction	Sediment basins and other water quality control measures have been designed and managed by AFJV during the detailed design phase. These have been	Compliance with the condition is ongoing throughout all construction stages of the project

SoC	Requirement	Stage	Comment	Status
			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	The SWMP incorporates a:Water Quality Monitoring Program; and Groundwater Management Strategy 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.	Compliance with the condition is ongoing throughout all construction stages of the project
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.	Preconstruction and Construction	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.	Compliance with the condition is ongoing throughout all construction stages of the project
W5	Managing operational water quality will occur by applying RTA's Code of Practice for Water Management – Road Development and Management (1999).	Construction and Operations	Operational water quality basins have been designed in accordance with the SWTC. Roads and Maritime will manage operational water quality during the operational phase.	Compliance with the condition is ongoing throughout all construction stages of the project

SoC	Requirement	Stage	Comment	Status
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.	Preconstruction and Construction	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.	Compliance with the condition is ongoing throughout all construction stages of the project
W7	Baseline monitoring of groundwater levels and chemical levels at cutting sites near springs, creeks or endangered ecological communities prior to construction commencing.	Preconstruction and Construction	Roads and Maritime has undertaken baseline monitoring up to construction commencing. AFJV is currently implementing the construction-phase monitoring requirements.	Closed
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 2005).	Preconstruction and Construction	The approved SWMP includes an Acid Sulphate Material Management Plan which is based on this guideline document. This is currently being implemented on site. A small quantity of Acid Sulphate soil has been generated from the piling works within the floodplain and adjacent to Nambucca River and Lower Warrell Creek. This has been treated in accordance with the approved SWMP.	Compliance with the condition is ongoing throughout all construction stages of the project
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).	Preconstruction and Construction	Potential contamination within and adjacent to the Project site has been assessed and will be managed in consideration of design requirements and	Compliance with the condition is ongoing throughout all construction stages of the project

SoC	Requirement	Stage	Comment	Status
			construction. All known areas of soil contamination were 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.	Preconstruction and Construction	AFJV has detailed management and mitigation measures to achieve this requirement within the approved Air Quality Management Plan (AQMP). Refer to additional detail provided in response MCoA C2.	Compliance with the condition is ongoing throughout all construction stages of the project
AQ2	Dust generating activities will stop where visible dust is being emitted outside the construction corridor and dust suppression measures are ineffective.	Preconstruction and Construction	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 additional detail provided in response MCoA C2.	Compliance with the condition is ongoing throughout all construction stages of the project
GREENHOUSE GASES AND ENERGY				
G1	Wherever feasible and reasonable detailed design will consider whole of life reductions in greenhouse gas emissions and energy consumption.	Preconstruction and Construction	The requirements of this commitment were incorporated into a Construction Waste and Energy Management Sub-plan prepared as part of the CEMP for Stage 2 of the project. Refer to additional detail provided in MCoA B30.	Compliance with the condition is ongoing throughout all construction stages of the project

SoC	Requirement	Stage	Comment	Status
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.	Preconstruction and Construction	The requirements of this commitment were incorporated into a Construction Waste and Energy Management Sub-plan prepared as part of the CEMP for Stage 2 of the project. Refer to additional detail provided in MCoA B30.	Compliance with the condition is ongoing throughout all construction stages of the project.
VISUAL AMENITY AND DESIGN				

SoC	Requirement	Stage	Comment	Status
D1	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.	Preconstruction and Construction	Refer to additional detail provided in response MCoA B3 for status update.	Compliance with the condition is ongoing throughout all stages of the project.
UD2	The species to be used in the landscaping treatments will include native and locally indigenous plants.	Preconstruction and Construction	Included in SWTC App 15, R176, R178 and R179 in regards to urban design and landscape treatments. Refer to additional detail provided in response MCoA B3 for status update.	Compliance with the condition is ongoing throughout all stages of the project.
UD3	Landscape and rehabilitation works will be subject to monitoring and maintenance where necessary for a minimum of two years after construction.	Construction and Operation	An Ecological Monitoring Program in response to MCoA B10 included a requirement for landscape monitoring for 4 years after operation. Contract deeds between RMS and AFJV requires landscape and rehabilitation monitoring and maintenance three years after construction.	Not yet commenced.
HAZARDS AND RISKS				

SoC	Requirement	Stage	Comment	Status
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.	Preconstruction and Construction	See discussion provided for MCoA B30. 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.	Compliance with the condition is ongoing throughout all stages of the project.
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.	Preconstruction and Construction	The requirements of this condition were incorporated into the SWPs of the CEMPs for each stage of construction.	Compliance with the condition is ongoing throughout all stages of the project.
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.	Preconstruction and Construction	The requirements of this commitment were incorporated into a Construction Waste and Energy Management Sub-plan prepared as part of the CEMP for Stage 2 of the project. Refer to additional detail provided in response MCoA B30 for status update.	Open To be closed following completion of construction of the entire Project in mid to late 2018

SoC	Requirement	Stage	Comment	Status
WR2	Where reuse or recycling of water is not possible, it will be sent to an appropriately licensed facility.	Preconstruction and Construction	The requirements of this commitment were incorporated into a Construction Waste and Energy Management Sub-plan prepared as part of the CEMP for Stage 2 of the project. Water is reused or disposed in accordance with the Environment Protection Licence 20533. Refer to additional detail provided in in response to MCoA B30.	Compliance with the condition is ongoing throughout all stages of the project.
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.	Preconstruction and Construction	All property acquisitions associated with Stage 2 of the project have been undertaken in accordance with the requirements of this commitment. No further acquisitions are required Property purchases have all been completed in February 2016.	Closed
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.	Preconstruction and Construction	Roads and Maritime reached agreement with Forestry Corporation in regards to this requirement, with proposal from Forestry Corporation on the work it will undertake in State Forests	Closed
P3	Where the Proposal adversely affects a licensed bore, dam or other property water supply, RTA will investigate an alternate source or negotiate	Preconstruction and Construction	The Project has not impacted on any licenced bores to date. Supplementary water supplies (such as water tanks)	Compliance with the condition is ongoing throughout all stages of the project.

SoC	Requirement	Stage	Comment	Status
	compensation for the loss with the landowner.		have been provided to landowners where farm dams have been removed.	
SOCIO ECONOMIC IMPACTS				
S1	There will be ongoing consultation with affected businesses, agricultural and aquaculture landowners.	Preconstruction and Construction	Roads and Maritime and AFJV nave 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.	Compliance with the condition is ongoing throughout all stages of the project.
S2	The identification of utilities and services potentially affected by construction, including requirements for diversion, protection and / or support will occur prior to the start of construction. Consultation with the service providers will determine alterations to services, the limitation of disruptions and requirements for advice to customers.	Preconstruction and Construction	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 prevent damage to necessary public utilities.	Compliance with the condition is ongoing throughout all stages of the project..

SoC	Requirement	Stage	Comment	Status
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.	Preconstruction and Construction	Refer to additional detail provided in response MCoA C27 for status update.	Compliance with the condition is ongoing throughout all stages of the project.
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.	Preconstruction and Construction	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.	Compliance with the condition is ongoing throughout all stages of the project.