



# Warrell Creek to Nambucca Heads – Pacific Highway Upgrade Project

## ENVIRONMENT PROTECTION AUTHORITY MONTHLY REPORT

■ February 2018

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Pacifico Project Number: WC2NH



A team consisting of RMS and Pacifico (ACCIONA Ferrovia JV) to upgrade the Pacific Highway at Warrell Creek to Nambucca Heads

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## 1. Introduction

Environmental Protection Licence (EPL) 20533 was issued to ACCIONA Infrastructure for the Warrell Creek to Nambucca Heads Pacific Highway Upgrade project on the 16<sup>th</sup> December 2014. Condition R1.8 of the EPL requires the licensee to provide the EPA with a monthly report containing the following information:

- a) details of all non-compliances with the conditions of this licence and measures taken, or proposed, to prevent a recurrence of such a non-compliance; and
- b) details of all discharges from the sediment basins where the water quality results exceed the limits prescribed by Condition L2.4 including the results of rainfall measurements to demonstrate compliance with Condition L2.5; and
- c) details of results of any acoustic investigation made in relation to Condition L4.2d); and

The report referred to in this condition must be received by the EPA within 10 working days of the end of each month.

This document has been prepared to fulfil the requirements of Condition R1.8.

### 1.1 Description of Works

The project's construction activities during February 2018 included the following:

- Bitumen sealing work
- Earthworks including removal of the plug at the Rail Pergola area
- Continuing bridge works including deck unit installation and deck concrete pours
- Continuing drainage works
- Scour rock installation
- Batter stabilisation using hydromulch (permanent design seed mix)
- Topsoil Amelioration and Blending
- Concrete Lined Drains and turnouts
- Basin Maintenance including dewatering and desilting
- Installation and maintenance of Erosion and Sediment Controls
- Pavement (Asphalt and Concrete)
- Decommissioning of the Precast Facility
- Decommissioning of the Northern Earthworks Office
- Decommissioning of the Southern Concrete Batch Plant
- Verge / Median Placement including median Topsoil Placement
- Operation of concrete and asphalt batch plants

Works scheduled for next month include the following:

- Bitumen sealing work
- Earthworks

- Continuing bridge works including deck concrete pours, parapet installation and stitch pours
- Continuing drainage works
- Scour rock installation
- Batter stabilisation using hydromulch (permanent design seed mix)
- Topsoil Amelioration and Blending
- Concrete Lined Drains and turnouts
- Basin Maintenance including dewatering and desilting
- Permanent Basin Fit-out
- Installation and maintenance of Erosion and Sediment Controls
- Pavement (Asphalt)
- Line marking
- Decommissioning of the Precast Facility
- Verge / Median Placement including median Topsoil Placement
- Operation of concrete and asphalt batch plants
- Landscape Planting Works

## 1.2 Consultation Activities

The project's consultation activities during February 2018 included the following:

**Table 1 – Consultation Activities**

Groups	Date	Key Topics
Toolboxes	Wednesday each week	Environmental and community issues communicated to the workforce.
RMS	Fortnightly	Communications look ahead, stakeholder issues.
Nambucca Council meeting	Monthly	Project progress and completion issues.
Environment Review Group (ERG)	6 February	Project update, environmental monitoring, upcoming out of hours and site inspection.

### Other Consultation Activities:

- Followed up light spill and operational noise issues in conjunction with RMS;
- Coordinated vegetation removal and revegetation activities with stakeholders;
- Obtained a further agreement for OOHW asphaltting at Browns Crossing Rd;
- Following up property adjustment works to gain Schedule 35 sign off; and
- One on one stakeholder meetings;

### At House Noise Treatments

The at house noise treatment program is currently being managed by RMS and is not part of the ACCIONA (Pacifco) Scope of Works and Technical Criteria.

Upcoming Community and stakeholder activities:

- Nambucca Shire Council liaison meeting – 13 March;
- Issue notification for traffic diversion at the southern interchange near Browns Crossing Road;
- Continue to seek project wide agreements with potentially impacted residents for all anticipated Out of Hours construction works through to 31 March 2018; and
- Develop new project wide out of hours agreement to replace expiring agreements;

## 2. Weather

### 2.1 Discussion

The automatic recording weather stations at the main site compounds (North and South) records rainfall totals daily at 9AM. The total rainfall received for the month is as follows: -

**Table 2 – Rainfall recorded at the two weather stations operated by Pacifico**

Month	Total monthly rainfall	Location
1/02/2018 – 28/02/2018	73.0 mm	Northern Compound
1/02/2018 – 28/02/2018	47.6 mm	Albert Drive Compound

The site experienced a total of fourteen (14) rain days throughout the month of February 2018.

During February 2018, rainfall received on site was lower than the February monthly average of 171.30 mm. A summary of weather conditions recorded over the month for Smoky Cape by the Bureau of Meteorology is detailed below in Table 2.3.

The daily summaries for rainfall received in February 2018 at the Albert Drive Compound and Northern Compound are shown below in Table 2.1 and 2.2.

Table 2.1 – Rainfall recorded at Albert Drive Southern Compound Automated Weather Station

February 2018

Date	Time	TOTAL Rain Gauge (mm)
1/02/2018	9:00:00	0
2/02/2018	9:00:00	0
3/02/2018	9:00:00	0
4/02/2018	9:00:00	22.4
5/02/2018	9:00:00	0.6
6/02/2018	9:00:00	0
7/02/2018	9:00:00	0
8/02/2018	9:00:00	0
9/02/2018	9:00:00	0
10/02/2018	9:00:00	0.4
11/02/2018	9:00:00	0
12/02/2018	9:00:00	0
13/02/2018	9:00:00	0
14/02/2018	9:00:00	0.2
15/02/2018	9:00:00	0
16/02/2018	9:00:00	0
17/02/2018	9:00:00	0
18/02/2018	9:00:00	0
19/02/2018	9:00:00	0
20/02/2018	9:00:00	0
21/02/2018	9:00:00	14.4
22/02/2018	9:00:00	0
23/02/2018	9:00:00	0.4
24/02/2018	9:00:00	3
25/02/2018	9:00:00	0.2
26/02/2018	9:00:00	6
27/02/2018	9:00:00	0
28/02/2018	9:00:00	0

Table 2.2 – Rainfall recorded at the Northern Compound Automated Weather Station

February 2018

Date	Time	TOTAL Rain Gauge (mm)
1/02/2018	9:00:00	0.2
2/02/2018	9:00:00	0
3/02/2018	9:00:00	0
4/02/2018	9:00:00	25.2

5/02/2018	9:00:00	4.8
6/02/2018	9:00:00	0
7/02/2018	9:00:00	0
8/02/2018	9:00:00	2.2
9/02/2018	9:00:00	0
10/02/2018	9:00:00	0.8
11/02/2018	9:00:00	0
12/02/2018	9:00:00	0
13/02/2018	9:00:00	0.2
14/02/2018	9:00:00	0
15/02/2018	9:00:00	0.4
16/02/2018	9:00:00	0
17/02/2018	9:00:00	0
18/02/2018	9:00:00	0
19/02/2018	9:00:00	0
20/02/2018	9:00:00	0
21/02/2018	9:00:00	24
22/02/2018	9:00:00	0.2
23/02/2018	9:00:00	0.2
24/02/2018	9:00:00	4.4
25/02/2018	9:00:00	0.6
26/02/2018	9:00:00	5.8
27/02/2018	9:00:00	4
28/02/2018	9:00:00	0

Table 2.3: Weather conditions recorded in February 2018 at Smoky Cape by the Bureau of Meteorology.

<b>February 2018</b>			
Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)
1/02/2018	17.5	23.9	0
2/02/2018	16.5	24.5	0
3/02/2018	16.9	27	2.2
4/02/2018	17	26	42.4
5/02/2018	17.2	28	3.2
6/02/2018	18.6	29	0
7/02/2018	18.7	27.9	0
8/02/2018	19	29.3	0
9/02/2018	20.1	27.8	0
10/02/2018	20.8		1.4
11/02/2018		29.8	0
12/02/2018	21.1	32.1	0
13/02/2018	23.9	32.1	0
14/02/2018	24.5	31.4	0

Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)
15/02/2018	22	32.4	0
16/02/2018	24.5	32.8	0
17/02/2018	20.2	31	0
18/02/2018	23	32	0
19/02/2018	21	31.9	0
20/02/2018	20	27.3	2.2
21/02/2018	16.8	25.6	17.2
22/02/2018	18.9	28.1	0
23/02/2018	20.1	25	3
24/02/2018	21.2	27.6	3.2
25/02/2018	23	30.8	0
26/02/2018	21	25	1
27/02/2018	17.1	26.8	10.2
28/02/2018	18.4	28.1	0

### 3. Surface Water Monitoring

Pacifico have been provided trigger levels for baseline monitoring from RMS, these will be compared against monthly data as well as between upstream and downstream sites to determine works impact.

Monthly sampling was undertaken by ACCIONA (Pacifico):

#### Wet Sampling Event

A "wet" sampling event was undertaken on the 21<sup>st</sup> February 2018 after an event was triggered (>10mm of rain in 24 hour period). Field testing and lab sampling was undertaken. Results are attached in Appendix A.

#### pH levels noted to be outside of trigger levels at:

Lower Warrell Creek recorded elevated pH levels upstream and downstream (pH 7.38 upstream, pH 7.46 downstream, 6.86 trigger level). It is noted that these levels are within ANZECC criteria (pH 6.5-8.0). These results are consistent with previous results for the site (pH 7.33 upstream, pH 7.3 downstream recorded, February 2017 and pH 7.18 upstream, pH 7.35 downstream recorded, October 2017). No construction works were completed at this location during February which may have contributed to elevated pH levels, this section of the roadway was opened as part of the partial opening of the WC2NH Project in December 2017.

Unnamed Creek Gumma North recorded elevated pH level downstream (pH 7.17, pH 6.9 trigger level). It is noted that this result is within ANZECC criteria (pH 6.5 – 8.0). All controls were in place for the site, with no construction activities undertaken within or adjacent to the waterway in February 2018. It should also be noted that this section of the Project was within the partial opening of the WC2NH project in December 2017.



Dissolved Oxygen (DO) noted to be below trigger levels at:

Nambucca River recorded low DO levels upstream and downstream (5.43 mg/L recorded upstream, 5.80 mg/L recorded downstream, 6.88 mg/L trigger). It is noted that these levels are above ANZECC criteria (5mg/L). It should be noted that these levels increased from upstream to downstream and are therefore unlikely to be due to construction impacts. No works occurred within or adjacent to this waterway in February 2018.

Stony Creek recorded low DO levels upstream (3.41 mg/L recorded upstream, 5.08 mg/L trigger). It should be noted that Stony Creek downstream recorded a DO level within trigger values during the monitoring event. Decaying vegetation within the waterway may have contributed to the low DO level recorded at this location.

Metals noted to be above trigger levels at:

Upper Warrell Creek recorded elevated levels of Manganese (0.37 mg/L upstream, 0.30 mg/L trigger level and 0.441 mg/L downstream, 0.158 mg/L trigger level). These levels are consistent with previous results for the site (e.g. 0.472 mg/L recorded upstream and 0.28 mg/L recorded downstream, April 2016). It should be noted that these levels are within ANZECC criteria for freshwater (1.9 mg/L).

Stony Creek recorded elevated levels of Manganese (0.282 mg/L upstream, 0.0726 mg/L trigger level and 0.343 mg/L downstream, 0.083 mg/L trigger). These levels are consistent with previous results for the site (e.g. 0.389 mg/L upstream and 0.398 mg/L downstream, recorded in December 2017). Stony Creek also recorded an elevated level of Zinc downstream (0.0008 mg/L recorded, 0.006 mg/L trigger level). It should be noted that this level was within ANZECC criteria for freshwater (0.008 mg/L) and consistent with previous monitoring results (e.g. 0.007mg/L downstream, recorded March 2017).

Unnamed Creek Gumma (West and East) recorded elevated levels of Arsenic upstream (0.003 mg/L recorded (West), 0.003 mg/L recorded (East) and 0.002 mg/L trigger level). Unnamed Creek Gumma (West and East) also recorded elevated levels of Copper upstream (0.003 mg/L recorded (West), 0.002 mg/L (East) and 0.001 mg/L trigger). Arsenic and Copper levels at Unnamed Creek Gumma (North), downstream were within trigger levels of 0.002 mg/L and 0.001 mg/L respectively. As levels decreased from upstream to downstream it is unlikely that these elevated levels are due to construction impacts.

Unnamed Creek Gumma (North) recorded a slightly elevated level of Zinc downstream (0.013 mg/L recorded, 0.011 mg/L trigger). This result is consistent with previous results for the site (e.g. 0.096 mg/L recorded downstream, October 2017).

Nutrients noted to be outside trigger levels at

Upper Warrell Creek recorded elevated levels of Ammonia upstream (0.04 mg/L recorded, 0.036 mg/L trigger) and downstream (0.03 mg/L recorded, 0.02 mg/L trigger), Nitrate downstream (0.12 mg/L recorded, 0.054 mg/L trigger) and Nitrogen upstream (0.6 mg/L recorded, 0.56 mg/L trigger). All controls were verified to be in place for the site and it should be noted that Nitrogen and Ammonia decreased from upstream to downstream and therefore it is unlikely to be attributable to construction activities. In terms of the elevated Nitrate downstream a possible source of the elevated level is the surrounding agricultural and forestry activities.

Lower Warrell Creek recorded elevated levels of Nitrogen upstream and downstream (0.8 mg/L upstream, 0.6 mg/L downstream, 0.547 mg/L trigger). Lower Warrell Creek also recorded elevated levels of Total Kjeldahl Nitrogen upstream (0.7 mg/L recorded, 0.5 mg/L trigger) and Nitrate upstream (0.08 mg/L recorded, 0.05 mg/L trigger). It should be noted that Nitrogen, Total Kjeldahl Nitrogen and Nitrate all decreased from upstream to downstream at Lower Warrell Creek and therefore it is unlikely that these results are attributable to construction activities. It should also be noted that for Total Kjeldahl Nitrogen and Nitrate that downstream results were within trigger values at this location. A potential cause of the elevated levels is runoff from the surrounding agricultural properties.

Unnamed Creek Gumma recorded low levels of Phosphorus upstream and downstream (0.02 mg/L recorded upstream, 0.02 mg/L recorded downstream, 0.03 mg/L trigger) and elevated levels of Nitrate (0.06 mg/L and 0.09 mg/L recorded upstream, 0.05 mg/L recorded downstream, 0.03 mg/L trigger). Unnamed Creek Gumma also recorded a slightly elevated level of Ammonia upstream (0.07 mg/L recorded, 0.06 mg/L trigger). It should be noted that for Phosphorus, Nitrate and Ammonia levels were equal or decreased from upstream to downstream and are therefore unlikely to be due to construction activities. It should be noted that no works have occurred within the waterway during the month of February 2018.

Total Suspended Solids noted to be outside trigger levels at:

Stony Creek downstream recorded elevated Suspended Solids levels downstream (10 mg/L recorded, 8.7 mg/L trigger). All controls were verified to be in place for the site as per the Progressive Erosion and Sediment Control Plan, with no uncontrolled discharges noted from site. A potential cause of the elevated levels is from runoff from the nearby roadway or adjacent agricultural activities.

Dry Sampling Event

A "dry" sampling event was undertaken on 1<sup>st</sup> February 2018. Field testing was undertaken. Results are attached in Appendix A.

pH levels noted to be outside of trigger levels at:

Upper Warrell Creek recorded a low pH result upstream (pH 6.37 recorded, pH 6.48 trigger level). It is noted that this result is within ANZECC criteria (pH 6.5 – 8.0). It should also be noted that pH increased from upstream to downstream with the downstream pH result being within trigger levels (pH 6.61 recorded downstream, pH 6.4 trigger level). As results increased from upstream to downstream it is unlikely that the low pH recorded upstream is due to construction impacts.

Lower Warrell Creek recorded elevated PH results upstream and downstream (pH 7.18 recorded upstream, pH 7.25 recorded downstream, pH 7.02 trigger level). These results are consistent with previous results for the site (e.g. pH 7.39 upstream, pH 7.17 downstream, recorded December 2017). It is also noted that these levels are within ANZECC criteria (6.5-8.0).

Nambucca River recorded elevated levels upstream (pH 7.61) and downstream (pH 7.37). It is noted that trigger levels are pH 7.00, with any value outside of this being outside of trigger levels. It is also noted that bridge construction works have been completed at this location with only isolated finishing works being undertaken. It is also noted that these levels are within ANZECC criteria (6.5-8.0).

Turbidity (NTU) noted to be outside of trigger levels at:

Lower Warrell Creek recorded elevated NTU levels upstream and downstream (24.5 NTU recorded upstream, 28.2 NTU recorded downstream, 6.82 NTU trigger). Controls were noted to be installed onsite as per the Progressive Erosion and Sediment Control Plan with no site runoff or dewatering activities being undertaken during the monitoring session. It is also noted that bridge construction works have been completed at this location with only isolated finishing works being undertaken. Upstream and downstream NTU readings at Lower Warrell Creek were consistent with an elevated upstream NTU result highlighting that the source of this turbidity result was from upstream catchment activities.

Nambucca River recorded elevated NTU results upstream and downstream (26.9 NTU upstream, 23.6 NTU downstream, 19.3 NTU trigger). Controls were noted to be installed onsite as per the Progressive Erosion and Sediment Control Plan with no site runoff or dewatering activities being undertaken during the monitoring session. It is noted that bridge construction works have been completed at this location with only isolated finishing works being undertaken. It should also be noted that upstream and downstream NTU readings were consistent with an elevated upstream NTU result highlighting that the source of this elevated NTU result was from upstream catchment activities.

Dissolved Oxygen (DO) noted to be below trigger levels at:

Upper Warrell Creek recorded high DO levels upstream and downstream (7.47 mg/L recorded upstream, 4.98 mg/L trigger and 7.55 mg/L recorded downstream, 4.8 mg/L trigger). It is noted that this result is above the 80<sup>th</sup> percentile and that DO level increased from upstream to downstream.

Stony Creek recorded high DO levels upstream (5.78 mg/L recorded, 4.8 mg/L trigger level). Stony Creek recorded a DO level downstream within trigger levels (6.17 mg/L recorded). It is noted that this result for upstream is above the 80<sup>th</sup> percentile and that DO levels increased from upstream to downstream.

Unnamed Creek Gumma (West and North) recorded high DO levels (9.95 mg/L upstream, 9.79 mg/L recorded downstream, 6.4 mg/L trigger). It is noted that the results for upstream and downstream were consistent and above the 80<sup>th</sup> percentile.

## 4. Sediment Basin Water Monitoring

Water was transferred from commissioned basins into watercarts for site reuse after rainfall received on the 4<sup>th</sup> and 21<sup>st</sup> of February 2018. No direct releases from commissioned basins occurred during February 2018 and no overtopping of commissioned sediment basins occurred during the reporting period (February 2018).

A statistical correlation has been developed which identified the relationship between Turbidity (NTU) and Total Suspended Solids (TSS) for water quality in the WC2NH Project sediment basins in order to determine the NTU equivalent of 50mg/L TSS. This statistical correlation has been developed to meet EPL Licence No 20533 Condition L2.7 to determine compliance with the Water and/or Land Concentration Limits Condition L2.4. A positive correlation has been calculated between Total Suspended Solids (TSS) and Turbidity (NTU) ( $R^2 = 0.4941$ ,  $p < 0.00001$ ,  $n=227$ ). The regression equation for the analytical results calculates a turbidity (NTU) value of 120.716 for a TSS value of 50mg/L. A safety factor of 30% has been applied to the NTU result of the correlation, providing a turbidity (NTU) value of 84.50, rounded to an NTU value of 85. To measure NTU in the field a Horiba U-52G multi-parameter water quality meter has been utilised, which is maintained and calibrated in accordance with manufacturer's specifications. TSS sampling is being undertaken to ensure compliance with 1 in 10 sampling to validate the correlation.

## 5. Noise Monitoring

Monthly routine construction noise monitoring was undertaken on 13<sup>th</sup> of February 2018 at five locations near to construction works. Monitoring results are available in Appendix A, Table 2.

All sites were within predicted levels for the activity being undertaken or were not the dominant noise source at the nearest residence.

## 6. Vibration Monitoring

No Vibration monitoring was undertaken during the month of February 2018.

## 7. Dust Monitoring

Dust deposition gauges (DDG) were placed at nearby sensitive receivers from the 3<sup>rd</sup> January 2018 to the 1<sup>st</sup> February 2018. DDG results are available in Appendix A, Table 3.

All dust deposition gauges were below the level of concern for Total Insoluble Matter (TIM) and Ash Content (AC) (4g/m<sup>2</sup>.month or increase of 2g/m<sup>2</sup>/month) during the monitoring period with the exception of DDG5.

DDG5 recorded an elevated level of Total Insoluble Matter (TIM) of 11.6 g/m<sup>2</sup>/month. It should be noted that Ash Content (AC) was below the level of concern (3.8 g/m<sup>2</sup>/month). It should also be noted that during gauge collection the grass adjacent to the gauge had been mown and this may have contributed to the elevated TIM result. This is inline with the results for the gauge where AC was significantly lower than TIM which highlights that additional organic material has been collected within the gauge during the monitoring period.

No result could be obtained from one gauge (DDG8) during the reporting period as it was knocked over during the monitoring period and was located adjacent to the monitoring location within a grassed area. This gauge was reinstated on the 1<sup>st</sup> of February 2018.

Dust mitigation measures including water carts, surfactant additives and wetting of quarry material before arrival and during placement will continue.

## 8. Groundwater Monitoring

ACCIONA (Pacifico) undertook groundwater monitoring on the 7<sup>th</sup> of February 2018. Field testing was undertaken. The results from the groundwater monitoring is available in Appendix A.

### pH levels noted to be outside of trigger levels at:

Fill 15 bore recorded elevated pH at 4BH037a (pH 7.25 recorded, pH 6.51 trigger). It is noted that 4BH037a has been relocated from its original location due to it being within the construction footprint, with trigger levels not necessarily corresponding with the new bore location. These are consistent with previous results for 4BH037a e.g. pH 7.07 in April 2017

### Conductivity (mS/cm) noted to be above trigger levels at:

4BH037a – Fill 15 west bore recorded elevated conductivity levels (9.90 mS/cm recorded, 5.55 mS/cm trigger). It is noted that this bore had to be relocated from its original location due to it being within the construction footprint, with trigger levels not necessarily corresponding with the new bore location. This result is consistent with previous results for the bore e.g. 10.60 mS/cm recorded in January 2018.

### Total Dissolved Solids (TDS) noted to be above trigger levels at:

Cut 11 bore recorded an elevated TDS level at upgradient bore 4BH022c (1.18 g/L recorded, 0.1306 g/L trigger). It is noted that TDS levels decreased from upgradient to downgradient bores and are unlikely to be due to construction impacts. This result is consistent with previous results for the bores e.g. 1.05 g/L recorded at 4BH022c in January 2018.

Fill 15 west bore (4BH037a) recorded an elevated TDS (6.23 g/L recorded, 0.1326 g/L trigger level). It is noted that this bore had to be relocated from its original location due to it being within the construction footprint, with trigger levels not necessarily corresponding with the new bore location. This is consistent with previous results for the bore e.g. 5.74g/L in January 2017.

### Water depth noted to be below trigger levels at:

4BH058c – Cut 15 upslope bore recorded low water depth (15.63 m from top of casing recorded, 13.84 m trigger). It is noted that this bore had to be relocated from its original location due to it being within the construction footprint, with trigger levels not necessarily corresponding with the new bore location. It is also noted that bulk earthworks have been completed in this area, with no groundwater seepage from cut faces or groundwater ingress noted. This is consistent with previous results for the bore e.g. 15.51 m from top of casing recorded in January 2018.

4BH037a – Fill 15 West bore recorded low water depth (1.21 m from top of casing recorded, 1.2 m trigger). It is noted that this bore had to be relocated

from its original location due to it being within the construction footprint, with trigger levels not necessarily corresponding with the new bore location. It is also noted that bulk earthworks have been completed in this area, with no groundwater seepage from cut faces or groundwater ingress noted. This is consistent with previous results for the bore e.g. 1.67 m from top of casing recorded in January 2017.

## 9. Acoustic Investigations

No Out of Hours Works were undertaken during the month of February 2018 under Condition L4.2(d) or Condition L4.5 of the Environmental Protection Licence.

## 10. Complaints

### 10.1 Summary of Complaints for the month of February 2018

13/02/2018 – A resident from Upper Warrell Creek contacted Pacifico regarding Out of Hours Works on the Existing Pacific Highway. The resident was concerned about air braking from trucks within the traffic control queue and acceleration at the queue which was impacting them during nightworks. The Pacifico community team offered the resident alternative accommodation which was not accepted. The community team also contacted the adjacent residents to enquire if any impacts were being experienced and also to offer alternative accommodation. The resident did not revoke the global out of hours works agreement at this location and the traffic queue location was modified to ensure that traffic was not accelerating or breaking directly adjacent to the resident. Traffic control also contacted trucks on the UHF on approach to ask for them to limit air braking. No further complaints were received for this out of hours works on subsequent night works at this location.

## 11. Non-Compliance

### 11.1 Summary of Non-compliances

No Non-compliances were raised against ACCIONA's Environmental Protection Licence during the month of February 2018.

# Appendix A – Monitoring Results

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

Surface Water Results - Feb 2018 - Wet		Weather:		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			
		ANZECC 2000 95% species protected	Marine	Upstream	Downstream	Result	Upstream	Downstream	Result	Upstream	Downstream	Result	Upstream	Downstream	Result	Upstream	Downstream	Result	Upstream	Downstream	Result	Upstream	Downstream	Result	Upstream	Downstream	Result	Upstream	Downstream	Result	Upstream	Downstream	Result				
Date of Sampling	Time of Sampling	Comments	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					
<b>Laboratory data</b>																																					
<b>Metals</b>																																					
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	0.001	0.001	<0.001	0.002	0.001	0.001	0.001	0.002	0.001	0.002	0.001	0.002	0.001	0.002	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	-	-	<0.01	-	-	<0.01	
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	0.001	0.001	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	0.076	0.006	0.076	0.006	
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	0.002	0.001	0.002	0.001	<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	-	-	<0.01	-	-	<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	-	-	<0.01	-	-	<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	0.006	0.018	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	0.09	0.52	0.05	<0.005	1.65	0.37	0.27	1.65	0.37	0.27	1.65	0.37	0.27	1.65	0.37	0.27	<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	
<b>Total Recoverable Hydrocarbons</b>																																					
Naphthalene	µg/L	16	50	16	NA	16	NA	16	NA	16	NA	16	NA	16	NA	16	NA	16	NA	16	NA	16	NA	16	NA	16	NA	16	NA	16	NA	16	NA	16	NA	16	NA
06 - C10 Fraction	µg/L	-	-	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA
06 - C10 Fraction minus BTEX (F1)	µg/L	-	-	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	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	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA
>C16 - C34 Fraction	µg/L	-	-	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	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	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA
>C10 - C40 Fraction (sum)	µg/L	-	-	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	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	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA
<b>BTEX</b>																																					
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	950	NA	950	NA	950	NA	950	NA	950	NA	950	NA	950	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	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	80	NA	80	NA	80	NA	80	NA	80	NA	80	NA	80	NA
m,p-Xylenes	µg/L	-	-	-	NA	-	NA	-	NA	-	NA	-	NA	-	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	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	-	NA	-	NA	-	NA	-	NA	-	NA
Sum of BTEX	µg/L	-	-	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA	-	NA
<b>Nutrients</b>																																					
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	0.03	0.11	0.03	0.03	0.02	0.11	0.03	0.02	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	0.013	0.005	<0.01	0.029	0.01	0.02	
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	-</																																		

**Table 1b – Surface Water 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			
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	10.96	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	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 2 - Noise Monitoring Results February 2018**

Date	Time	Location	Rec ID	NCA	NML	Activity	Predicted levels for activity	Laeq	LAFMAX	LAFMIN	LAF10	LAF50	LAF90	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 3 – Dust Monitoring Results October - February 2018**

			DDG ID	DDG1	DDG2	DDG3	DDG4	DDG5	DDG6	DDG6N	DDG7	DDG8A	DDG9NE	DDG9E	DDG10	DDG A1	DDG A2	
			Start date of sampling	3/01/2018	3/01/2018	3/01/2018	3/01/2018	3/01/2018	3/01/2018	3/01/2018	3/01/2018	3/01/2018	3/01/2018	3/01/2018	3/01/2018	3/01/2018	3/01/2018	
			Finish 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	
Analyte	Time Period	Unit	Levels of Concern	LOR														
Ash Content	Current Month	g/m <sup>2</sup> .month mg	4 N/A	0.1 1	0.5 9	0.3 5	0.2 4	0.4 7	3.8 65	0.5 8	2.9 49	0.5 8	NA NA	0.5 9	0.4 7	0.8 13	----	----
	Previous Month	g/m <sup>2</sup> .month			0.6	0.7	0.6	2.7	598	1	2.3	1.5	1.1	1.1	1.2	1.2	----	----
	Change	g/m <sup>2</sup> .month	Increase of 2		-0.1	-0.4	-0.4	-2.3	-594.2	-0.5	0.6	-1	NA	-0.6	-0.8	-0.4	----	----
Combustible Matter	Current Month	g/m <sup>2</sup> .month mg	N/A N/A	0.1 1	0.6 9	0.3 5	0.3 5	<0.1 <1	7.8 134	0.1 3	0.6 10	<0.1 1	NA NA	2.4 41	<0.1 <1	0.3 5	----	----
	Previous Month	g/m <sup>2</sup> .month			1.1	0.6	0.5	0.4	11.6	0.6	3.5	0.5	NA	2.9	0.4	1.1	----	----
Total Insoluble Matter (TIM)	Current Month	g/m <sup>2</sup> .month mg	4 N/A	0.1 1	18	10	9	7	199	11	59	9	NA	50	7	18	----	----
	Change	g/m <sup>2</sup> .month	Increase of 2	0.1	-1.2	-1.3	-1	-3.1	-628.4	-0.6	-2.2	-1.8	NA	1.3	-2	-0.8	----	----
Arsenic	Current Month	mg/L		0.001	----	----	----	----	----	----	----	----	----	----	----	<0.001	<0.001	
Comments					grass mown adjacent, raking and moving soil		grass mown next to, insects in gauge	grass mown next to gauge	insects in gauge			Knocked over during month. Found in Grass adjacent to gauge location.	grass mown near, insects in gauge	bird droppings in funnel	insects in gaugae	insects in gauge		

