



Warrell Creek to Nambucca Heads – Pacific Highway Upgrade Project

ENVIRONMENT PROTECTION AUTHORITY MONTHLY REPORT

■ November 2017

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

Contents

1. Introduction	2
2. Weather	5
3. Surface Water Monitoring	8
4. Sediment Basin Water Monitoring	12
5. Noise Monitoring	13
6. Vibration Monitoring	13
7. Dust Monitoring	13
8. Groundwater Monitoring	14
9. Acoustic Investigations	15
10. Complaints	16
11. Non-Compliance	16

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 16th 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 November 2017 included the following:

- Bitumen sealing work
- Earthworks
- Continuing bridge works including deck unit installation and deck concrete pours
- Continuing works in the Pergola area near Upper Warrell Creek
- Continuing drainage works
- Scour rock installation
- Batter stabilisation using hydromulch (permanent design seed mix)
- Topsoil Amelioration and Blending
- Concrete Lined Drains and turnouts
- Basin Decommissioning
- Basin Maintenance including dewatering and desilting
- Permanent Basin Fit-out
- Installation and maintenance of Erosion and Sediment Controls
- Pavement (Asphalt and Concrete)
- Line marking
- Decommissioning of the Precast Facility
- Verge / Median Placement including median Topsoil Placement
- Operation of concrete and asphalt batch plants
- Glider Pole and Rope Bridge Installation
- Landscape Planting Works

Works scheduled for next month include

- Bitumen sealing work
- Earthworks
- Continuing bridge works including deck unit installation and deck concrete pours

- Rail switch onto the Rail Pergola
- Continuing drainage works
- Scour rock installation
- Batter stabilisation using hydromulch (permanent design seed mix)
- Topsoil Amelioration and Blending
- Concrete Lined Drains and turnouts
- Basin Decommissioning
- 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 November 2017 included the following:

Table 1 – Consultation Activities

Groups	Date	Key Topics
Environmental Review Group	7 th November	Project update, environmental monitoring, upcoming out of hours, site inspection
Toolboxes	Wednesday each week	Environmental and community issues communicated to the workforce.
North Facing Ramps group	Meet every 3 weeks	Matters pertaining to ongoing works nearby

Other Consultation Activities:

The following notifications were distributed to the community during November 2017:

- Appropriate notification about out of hours work at the north facing ramps;
- Agreements for the asphalt batch plant OOH;
- 26 notifications letterbox dropped for the OOH operation of the concrete plant;
- 28 agreements for the OOH and Sunday operation of the asphalt plant; and
- 24 agreements for Sunday asphalting work;

The notifications distributed throughout November 2017 targeted specific groups of sensitive receivers about the following construction activities:

- Out of Hours work for the asphalt batch plant;
- Out of Hours work for the concrete batch plant;
- Ongoing work on the North Facing Ramps;
- Project wide requirements for Out of Hours work;

- Ongoing Out of Hours work at the Upper Warrell Creek bridge and rail diversion; and
- Out of Hours work asphalt paving;

One informal tri-weekly North Facing Ramps roadside community meeting attended by Pacifico and RMS occurred on 20th of November. Discussion items were in relation to upcoming works, future traffic switches, street lighting and timeframes.

At House Noise Treatments

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

Upcoming Community and stakeholder activities during November 2017:

- Business Information Session, Wednesday 13 December to inform business of changes with the road opening
- Conduct next North Facing Ramps tri-weekly roadside community meetings scheduled for Monday 11 December;
- Issue notification for opening of new highway
- Opening event and community bridge walk opportunity, 16 December at Nambucca River bridge
- New highway opening on 18 December
- Continue to seek project wide agreements with potentially impacted residents for all anticipated Out of Hours construction works through to March 2018;
- Continue to consult stakeholders impacted by visual mounds along the entire alignment;
- Develop communications for southern interchange traffic switch in December 2017;
- Draft and present communications material and collateral for the opening event for the new highway to be held on 16th December; and
- Draft and present communications material in relation to the new highway opening to traffic pre-Christmas 2017;

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
1/11/2017 – 30/11/2017	92.0mm	Northern Compound
1/11/2017 – 30/11/2017	70.0mm	Albert Drive Compound

The site experienced a total of fifteen (15) rain days throughout the month of November 2017.

During November 2017, rainfall received on site was lower than the November monthly average of 117.1mm. 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 November 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

November 2017		
Date	Time	TOTAL Rain Gauge (mm)
1/11/2017	9:00:00	0
2/11/2017	9:00:00	0
3/11/2017	9:00:00	0
4/11/2017	9:00:00	0
5/11/2017	9:00:00	0.2
6/11/2017	9:00:00	15
7/11/2017	9:00:00	6.8
8/11/2017	9:00:00	0
9/11/2017	9:00:00	0
10/11/2017	9:00:00	0
11/11/2017	9:00:00	0
12/11/2017	9:00:00	1.6
13/11/2017	9:00:00	3.8
14/11/2017	9:00:00	0
15/11/2017	9:00:00	0.2
16/11/2017	9:00:00	0
17/11/2017	9:00:00	0
18/11/2017	9:00:00	14
19/11/2017	9:00:00	4.4
20/11/2017	9:00:00	8.4
21/11/2017	9:00:00	1.2
22/11/2017	9:00:00	4.2
23/11/2017	9:00:00	5.8
24/11/2017	9:00:00	0
25/11/2017	9:00:00	0
26/11/2017	9:00:00	0
27/11/2017	9:00:00	0
28/11/2017	9:00:00	1.6
29/11/2017	9:00:00	1.4
30/11/2017	9:00:00	1.4

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

November 2017		
Date	Time	TOTAL Rain Gauge (mm)
1/11/2017	9:00:00	0
2/11/2017	9:00:00	0
3/11/2017	9:00:00	0
4/11/2017	9:00:00	0
5/11/2017	9:00:00	0.6
6/11/2017	9:00:00	14.8
7/11/2017	9:00:00	18.4
8/11/2017	9:00:00	0.4
9/11/2017	9:00:00	0.2
10/11/2017	9:00:00	0.2
11/11/2017	9:00:00	0
12/11/2017	9:00:00	4
13/11/2017	9:00:00	0
14/11/2017	9:00:00	0
15/11/2017	9:00:00	0
16/11/2017	9:00:00	0
17/11/2017	9:00:00	0
18/11/2017	9:00:00	22
19/11/2017	9:00:00	13.2
20/11/2017	9:00:00	7
21/11/2017	9:00:00	0.4
22/11/2017	9:00:00	10.2
23/11/2017	9:00:00	0.2
24/11/2017	9:00:00	0
25/11/2017	9:00:00	0
26/11/2017	9:00:00	0
27/11/2017	9:00:00	0
28/11/2017	9:00:00	0
29/11/2017	9:00:00	0
30/11/2017	9:00:00	0.4

Table 2.3: Weather conditions recorded in November 2017 at Smoky Cape by the Bureau of Meteorology.

November 2017			
Date	Minimum temperature (°C)	Maximum temperature (°C)	Rainfall (mm)
1/11/2017	14.5	24.5	0
2/11/2017	14	25.4	0
3/11/2017	17.4	26.9	0
4/11/2017	18.3	27.2	1.2
5/11/2017	16.5	25.5	1.4
6/11/2017	18.6	25.1	15.4
7/11/2017	14.5	23	6
8/11/2017	13.8	23.1	0.6
9/11/2017	13	23.8	0.8
10/11/2017	14.1	24.8	1
11/11/2017	14.2		1
12/11/2017		26	
13/11/2017	14.5	25.9	16.4
14/11/2017	15.4	25.9	0.4
15/11/2017	16.5	26.9	0
16/11/2017	18.5	25	0
17/11/2017	20	26	0
18/11/2017	17.3	25.1	0
19/11/2017	17	27	8.4
20/11/2017	16	27	3.2
21/11/2017	17.3	28	0
22/11/2017	15.6	26.4	4.4
23/11/2017	16.3	26.5	0
24/11/2017	18.1	28	0
25/11/2017	18.3	28.7	0
26/11/2017	19	28.5	0
27/11/2017	20.3	28.8	0.8
28/11/2017	19.6	29.3	2.2
29/11/2017	20.2		0
30/11/2017		29.8	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):

Dry Sampling Event

A “dry” sampling event was undertaken on the 10th November 2017, 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 7.17 recorded upstream, pH 7.03 recorded downstream, pH 7.02 trigger). It is noted that bridge construction works have been completed at this location with only isolated finishing works being undertaken. The pH levels also decreased between upstream and downstream and are unlikely to be due to construction impacts. These results are consistent with previous results for the site (e.g. pH 7.46 upstream, pH 7.48 downstream, October 2017).

Nambucca River recorded elevated levels upstream (pH 7.55) and downstream (pH 7.73). 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 these levels are within ANZECC criteria (6.5-8.0). These results are consistent with previous results for the site (pH 7.88 upstream, pH 7.73 downstream in August 2017, pH 7.93 upstream, pH 7.96 downstream in July 2017).

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

Stony Creek recorded slightly elevated NTU levels downstream (12.6 NTU recorded, 5.97 NTU trigger). This was compared with the upstream result of 5.9 NTU which shows a increase of 6.7 NTU between upstream and downstream. 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. Pacifico believe this exceedance is most likely due to localised NTU changes within the waterway at the sampling locations. It is noted that Total Suspended Solids for the site were within trigger levels (<5mg/L recorded, 5.8mg/L trigger).

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

Stony Creek upstream (1.25mg/L recorded, 2.6mg/L trigger) and downstream (2.08mg/L recorded, trigger level 3.52mg/L). It is noted that levels increased from upstream to downstream sites and are unlikely to be as a result of construction impacts. These levels are consistent with previous results for the site (e.g. 1.66mg/L upstream, 3.42mg/L downstream February 2017).

Nambucca River recorded low levels upstream (3.45mg/L recorded, trigger level 7.4mg/L) and downstream (7.22mg/L recorded, trigger level 7.4mg/L). It is noted that levels increased between upstream and downstream sites and works within the waterway had been completed (i.e. piling, headstocks etc). It is also noted that downstream levels are within ANZECC criteria (5mg/L). These levels are consistent with previous results for the site (2.99mg/L upstream, 2.68mg/L downstream in April 2017).

Metals noted to be above trigger levels at:

Stony Creek recorded elevated levels of iron upstream (1.29mg/L recorded, 0.82mg/L trigger level) and downstream (1.16mg/L recorded, 0.78mg/L trigger level) and manganese downstream (0.127mg/L recorded, 0.052mg/L trigger). It is noted that

manganese levels were within ANZECC criteria (1.9mg/L) and that there is no ANZECC 95% species protection criteria for dissolved iron. It is also noted that iron levels decreased from upstream to downstream sites and are not likely to be due to construction impacts. These levels are consistent with previous results for the site (e.g. manganese levels 0.116mg/L upstream, 0.127mg/L downstream, iron levels 1.06mg/L upstream, 1.11mg/L downstream, January 2017).

Lower Warrell Creek recorded elevated levels of manganese downstream (0.302mg/L recorded downstream, 0.182mg/L recorded upstream, 0.26mg/L trigger level), nickel downstream (0.002mg/L recorded downstream, <0.001mg/L recorded upstream, 0.001mg/L trigger level), zinc downstream (0.012mg/L recorded downstream, <0.005mg/L recorded upstream, 0.006mg/L trigger), and elevated iron downstream (0.93mg/L recorded downstream, 0.58mg/L recorded upstream, 0.83mg/L trigger). It is noted that manganese and nickel levels were within ANZECC criteria (1.9mg/L for manganese, 0.011mg/L for nickel). It is noted that manganese, zinc and nickel levels were consistent with previous results for the site (manganese recorded 0.282mg/L downstream April 2016, nickel recorded 0.002mg/L downstream, May 2017 and zinc recorded 0.034mg/L downstream, July 2017).

Nambucca River recorded elevated levels of manganese upstream and downstream (0.068mg/L recorded upstream, 0.06mg/L recorded downstream, 0.03mg/L trigger level). It is noted that levels are within ANZECC criteria (0.08mg/L for marine environments, 1.9mg/L for freshwater environments). It is also noted that levels decreased between upstream and downstream sites and were unlikely to be due to construction impacts. These levels are consistent with previous results for the site (0.067mg/L upstream, 0.049mg/L downstream recorded, May 2017).

Nutrients noted to be above trigger levels at:

Upper Warrell Creek recorded elevated levels of nitrate upstream and downstream (0.28mg/L recorded upstream, 0.07mg/L recorded downstream, 0.04mg/L trigger). It is noted that levels were within ANZECC criteria (0.7mg/L). It is noted that results decreased from upstream to downstream sites and are therefore unlikely to be due to construction impacts. Results were consistent with previous monitoring results for the site (0.07mg/L upstream and downstream May 2017). A potential source of the elevated levels is runoff from the surrounding agricultural land.

Stony Creek recorded elevated levels of nitrate upstream (0.05mg/L recorded, 0.03mg/L trigger) and downstream (0.15mg/L recorded, 0.03mg/L trigger) and total phosphorus downstream (0.04mg/L recorded downstream, 0.01mg/L recorded upstream, 0.02mg/L trigger level). It is noted that levels were within ANZECC criteria (0.7mg/L for nitrate, 0.05mg/L for phosphorus). Results are consistent with previous monitoring results for the site (e.g. nitrate recorded 0.17mg/L upstream, 0.19mg/L downstream, March 2017 and phosphorus recorded 0.07mg/L upstream, 0.12mg/L downstream, September 2017). A potential source of the elevated levels is due to runoff from the surrounding agricultural land. Stony Creek has had a soft scour treatment undertaken as part of the rehabilitation works in the area.

Nambucca River recorded elevated levels of ammonia upstream (0.16mg/L recorded, 0.03mg/L trigger level) and downstream (0.07mg/L recorded, 0.03mg/L trigger). It is noted that levels decreased from upstream to downstream sites and are unlikely to be due to construction impacts. These results are consistent with previous results for the site (0.09mg/L recorded upstream, 0.14mg/L recorded downstream, September 2017). A

potential source for the elevated levels is runoff from agricultural land within the catchment.

Wet Sampling Event

A "wet" sampling event was undertaken on the 18th of November 2017 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 slightly elevated pH levels upstream and downstream (pH 7.20 upstream, pH 7.16 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).

Gumma Wetlands downstream recorded slightly elevated pH levels (pH 7.16 recorded upstream, pH 7.10 recorded downstream, pH 6.90 trigger level). It is noted that these levels decreased from upstream to downstream sites and are unlikely to be due to construction impacts. These results are consistent with previous results for the site (pH 8.08 upstream, pH 7.42 downstream recorded, February 2016).

Nambucca River recorded slightly elevated pH levels (pH 7.86 recorded upstream, pH 7.88 recorded downstream, pH 7.56 trigger level). It is noted that levels were consistent between upstream and downstream sites and are unlikely to be due to construction impacts. These results are consistent with previous results for the site (pH 7.93 upstream, pH 7.99 downstream recorded January 2017).

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

Nambucca River recorded elevated NTU upstream and downstream (29.1 NTU upstream, 28.1 NTU downstream). It is noted that levels decreased between upstream and downstream sites, with construction impacts unlikely to be the cause of the elevated levels. These levels are consistent with previous results for the site.

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

Stony Creek recorded low DO levels upstream and downstream (0.5mg/L recorded upstream, 5.08mg/L trigger, 0.59mg/L recorded downstream, 2.63mg/L trigger). It is noted that levels increased from upstream to downstream sites and are unlikely to be due to construction impacts. A potential cause for these levels is decaying vegetation within the waterway. These levels are consistent with previous results for the site (1.5mg/L upstream, 1.26mg/L downstream recorded February 2017).

Lower Warrell Creek recorded low DO levels upstream and downstream (2.07 mg/L recorded upstream, 2.01 mg/L recorded downstream, 5.02 mg/L trigger). It is noted that these levels are consistent between upstream and downstream sites, with these levels unlikely to be due to construction impacts. A potential cause for these results is decaying vegetation within the waterway. These levels are consistent with previous results for the site (1.27mg/L recorded upstream, 1.8mg/L recorded downstream in June 2017).

Nambucca River recorded low DO levels upstream and downstream (6.11mg/L recorded upstream, 5.2mg/L recorded downstream, 6.88mg/L trigger). It is noted that these levels are above ANZECC criteria (5mg/L). These levels are consistent with previous results for the site (3.42 mg/L recorded upstream, 5.69 mg/L recorded downstream October 2017).

Metals noted to be above trigger levels at:

Upper Warrell Creek recorded slightly elevated levels of manganese downstream (0.202 mg/L recorded downstream, 0.158 mg/L trigger, 0.208 mg/L recorded upstream, 0.3 mg/L trigger). It is noted that levels decreased from upstream to downstream sites, with elevated levels unlikely to be due to construction impacts. It is noted that these levels are well within ANZECC criteria (1.9mg/L). These levels are consistent with previous results for the site (e.g. 0.328mg/L downstream recorded November 2016).

Stony Creek recorded elevated levels of manganese upstream and downstream (0.187 mg/L recorded upstream, 0.0726 mg/L trigger and 0.171 mg/L recorded downstream, 0.083 mg/L trigger). It is noted that levels decreased from upstream to downstream sites, with elevated levels unlikely to be due to construction impacts. It is noted that these levels are within ANZECC criteria (1.9mg/L). These levels are consistent with previous results for the site (0.385 mg/L recorded upstream, 0.115 mg/L recorded downstream February 2017).

Gumma Wetlands recorded elevated levels of copper upstream and downstream (0.002mg/L and 0.006mg/L recorded upstream, 0.003mg/L recorded downstream, 0.001mg/L trigger). These levels are consistent with previous results for the site (0.003mg/L recorded downstream October 2017).

4. Sediment Basin Water Monitoring

Water was released from commissioned basins after rainfall on the 5th-10th, 12th-13th and 18th-23rd of November 2017. 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.

Table 3 below has the water quality results recorded for the water release events:

Table 3 – Water Release Register November 2017

Date	Basin ID	Oil and Grease (visible) (Limit = No visible)	pH (6.5-8.5)	Turbidity (NTU) (Limit <85 NTU)	TSS (mg/L) (Limit <50mg/L)	Approx Volume Discharged (kL)	Comments
9/11/2017	B42.80	N	6.59	14.4	<5	360	
9/11/2017	B47.96	N	8.03	33.3	8	200	
9/11/2017	B53.50	N	7.47	47.2	18	400	
11/11/2017	B53.80	N	7.45	32.9		250	
11/11/2017	B53.90	N	7.29	45.6		350	
13/11/2017	B47.96	N	6.63	22.4		40	
20/11/2017	B47.96	N	7.57	32.7		300	
21/11/2017	B53.80	N	7.38	19		200	
22/11/2017	B53.80	N	8.01	23		100	
23/11/2017	B53.90	N	7.9	42		250	
23/11/2017	B53.50	N	7.89	39		900	
24/11/2017	B53.90	N	7.89	68.2		50	

5. Noise Monitoring

Monthly routine construction noise monitoring was undertaken on the 16th and 27th of November 2017 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 November 2017.

7. Dust Monitoring

Dust deposition gauges (DDG) were placed at nearby sensitive receivers from the 29th September and 3rd October 2017 to 31st October 2017. DDG results are available in Appendix A.

All dust deposition gauges were below the level of concern for Total Insoluble Matter (TIM) and Ash Content (AC) (4g/m².month or increase of 2g/m²/month) during the monitoring period with the exception of DDG1, DDG6 and DDG9E.

DDG1 recorded an elevated result (29.8g/m².month TIM, 25.0g/m².month AC). The result at this gauge is unusual as the bulk earthworks in this area has completed, with batters hydromulched and the section of alignment closest to the gauge sealed and paved. The high reading from DDG1 during October 2017 is not believed to be due to construction activities, with another source of contamination

impacting on the results. Community has contacted the resident and asked for any tampering with the gauge to be reported to AFJV. DDG6 recorded slightly elevated levels of TIM (4.6g/m²/month). AC (which is associated with construction impacts more so than TIM) was within allowable levels at 3.6g/m²/month. The construction of a headlight screening mound near this location has recently been completed with batters hydromulched since this monitoring period. DDG6N, an additional gauge within the catchment installed due to previous suspected tampering with DDG6, was broken in transit with no result able to be obtained. DDG9E, located next to the stockpile area ASF1-B at Albert Drive, recorded a TIM of 3.6g/m²/month, an increase of 2.6g/m²/month. Monitoring of dust and mitigation measures including water carts will continue to be used in this area.

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

8. Groundwater Monitoring

ACCIONA (Pacífico) undertook groundwater monitoring on the 22nd of November 2017. 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:

Cut 11 bores recorded low pH at upslope bore 4BH022c (pH 5.17 recorded, pH 5.93 trigger). It is noted that the upslope bore was relocated from its original location due to it being located within the construction footprint, with the trigger levels not necessarily correlating with the new bore location. These results are consistent with previous results e.g. pH 4.23 at 4BH022c in April 2017.

Fill 15 bores recorded elevated pH at 4BH037a (pH 6.93 recorded, pH 6.51 trigger) and 4BH038 (pH 7.51 recorded, 7.30 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 and 4BH038 e.g. pH 8.03 recorded in August 2017.

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

4BH037a – Fill 15 west bore recorded elevated conductivity levels (9.68mS/cm recorded, 5.55mS/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. 10.40mS/cm recorded in August 2017.

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

Cut 11 bores recorded elevated TDS levels at upgradient bore 4BH022c (1.20g/L recorded, 0.1306g/L trigger) and downgradient bore 4BH021 (0.123g/L recorded, 0.0946g/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. 1.12g/L recorded at 4BH022c, 0.104g/L recorded at 4BH021 in October 2017.

4BH037a – Fill 15 west bore recorded elevated TDS (6.10g/L recorded, 0.1326g/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. 6.09g/L in July 2017, 6.20g/L in April 2017, 5.74g/L in January 2017.

4BH058c – Cut 15 upgradient bore recorded elevated TDS (0.139g/L recorded, 0.111g/L 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. These results are consistent with previous results in this cut e.g. 0.67g/L recorded November 2015.

Water depth noted to be below trigger levels at:

4BH058c – Cut 15 upslope bore recorded low water depth (15.62m from top of casing recorded, 13.84m 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.

9. Acoustic Investigations

Out of Hours Works undertaken during the month of November 2017 under Condition L4.2(d) of the EPL are outlined in Table 4.

Table 4 – November Out of Hours Works approved under L4.2 (d)

Out of Hours Activity	>5dB(A) above background	Complete? Y/N
CC05 Pavement Ride Testing	N	Y
CC05 Earthworks and Finishing Works	N	Ongoing
Floodplain Bridges 1 and 2 Concreting Works	N	Ongoing
Nambucca River Bridge Stitch Pour Finishing Work	N	Y
Old Coast Road North Drilling Tie Bars	N	Y
Mattick Road Crossover	N	Y
CC04 Finishing Works	N	Ongoing

Acoustic Investigations (field monitoring) have been conducted for Out of Hours Works during the month of November 2017, results are included in Appendix A.

Out of Hours Works undertaken during the month of November 2017 undertaken under Condition L4.5 of the EPL are outlined below:

1. Northern Concrete Batch Plant Operation (Approved under EPL Condition L4.5 16/11/2017)

10. Complaints

10.1 Summary of Complaints for the month of November 2017

2/11/2017 – A resident contacted Pacifico regarding concerns around dust generation from material on the road outside of their house. The area foreman was immediately contacted, a street sweeper was sent to the area and cleaned the roadway. No further issues were raised.

2/11/2017 and 3/11/2017 – Two (2) residents contacted Pacifico regarding concerns around light spill from the new Letitia roundabout lighting. Community team visited the site, noted the light spill and discussed potential mitigation measures with the resident. It was found that the lighting towers supplied were not the correct type (and did not have shielding for the lighting built-in), these were changed over to the correct type including shielding.

6/11/2017 – A resident contacted Pacifico regarding concerns around a traffic control vehicle disposing of litter inappropriately. Identification of the vehicle was not able to be obtained however a toolbox was delivered to all staff regarding driver behaviour.

22/11/2017 – A resident contacted Pacifico regarding concerns around mud tracking from a site access gate onto a roadway. The area superintendent was immediately contacted and was aware of the issue, with a street sweeper being used to rectify the issue and clean the road. The area superintendent discussed the issue with site workers and asked that they wait for a water cart to clean tires if needed before leaving site onto a public roadway. Pacifico Environmental Manager attended site and noted that the roadway entry point was compliant with the EWMS – Access and Egress.

29/11/2017 – A resident contacted Pacifico regarding concerns around light spill from night works asphaltting. Pacifico Community and Environment teams contacted the supervisor for the following night works and ensured workers were aware of light spill at the property and to ensure that lights are not directed towards the property. No issues were raised the following night.

11. Non-Compliance

11.1 Summary of Non-compliances

No Non-Compliances were raised against ACCIONA's Environmental Protection Licence during the month of November 2017.

Table 2 - Noise Monitoring Results November 2017

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
16/11/2017	10:50 AM	Albert Drive	74	1	50	Cut	62	49.9	66.7	41.2	51.5	47.5	45.2	Excavator	N	N/A	Construction noise not dominant. Dominant noise sources: highway (45-52). Stockpile area behind cut to mitigate noise impacts.
27/11/2017	1:15 PM	Bald Hill Rd	197	3	50	Cut	73	48.4	64.6	42.6	49.8	47.6	46.1	Excavator	N	N/A	Construction noise not dominant. Dominant noise sources: highway (45-48), local traffic (50-55). Stockpile in place on east side of alignment to reduce noise levels from construction activities.
27/11/2017	12:23 PM	Letitia Rd	413	4	59	Trucks hauling	58	56	76.6	43.4	58.3	48.9	45.6	Trucks hauling	Y	N/A	Within predicted levels. Regular consultation undertaken with residents impacted by NFR construction activities.
27/11/2017	3:06 PM	Mattick Rd	442	6	44	Fill	78	46.9	68.8	40.1	48.1	44	42.2	Roller	Y	N/A	Within predicted levels. Permanent noise mounds in place to reduce construction noise at sensitive receivers.
27/11/2017	2:05 PM	Gumma Rd	383	3	50	Trucks hauling	60	51	72.4	41.6	52.6	47.6	45.2	Trucks hauling	N	N/A	Construction noise not dominant. Dominant noise sources: highway (46-49), local traffic (47-58)

Table 3 – Dust Monitoring Results October – November 2017

			DDG ID	DDG1	DDG2	DDG3	DDG4	DDG5	DDG6	DDG6N	DDG7	DDG8A	DDG9NE	DDG9E	DDG10	DDG A1	DDG A2	
			Start date of sampling	3/10/2017	29/09/2017	29/09/2017	29/09/2017	29/09/2017	29/09/2017	29/09/2017	29/09/2017	3/10/2017	29/09/2017	29/09/2017	3/10/2017	29/09/2017	29/09/2017	
			Finish date of sampling	31/10/2017	31/10/2017	31/10/2017	31/10/2017	31/10/2017	31/10/2017	31/10/2017	31/10/2017	31/10/2017	31/10/2017	31/10/2017	31/10/2017	31/10/2017	31/10/2017	
Analyte	Time Period	Unit	Levels of Concern	LOR														
Ash Content	Current Month	g/m ² .month	4	0.1	25	NA	1	0.4	0.6	3.6	NA	2.5	1.5	0.9	2.9	0.7	----	----
		mg	N/A	1	413	NA	19	8	12	68	NA	47	25	17	54	11	----	----
	Previous Month	g/m ² .month			0.8	0.3	1.6	0.7	32.8	0.8	0.5	0.8	1.1	0.3	0.3	1.8	----	----
	Change	g/m ² .month	Increase of 2		24.2	NA	-0.6	-0.3	-32.2	2.8	NA	1.7	0.4	0.6	2.6	-1.1	----	----
Combustible Matter	Current Month	g/m ² .month	N/A	0.1	4.8	NA	0.5	0.2	0.4	1	NA	1	0.8	0.3	0.7	<0.1	----	----
		mg	N/A	1	78	NA	9	3	7	19	NA	19	13	6	13	<1	----	----
Total Insoluble Matter (TIM)	Current Month	g/m ² .month	4	0.1	29.8	NA	1.5	0.6	1	4.6	NA	3.5	2.3	1.2	3.6	0.7	----	----
		mg	N/A	1	491	NA	28	11	19	87	NA	66	38	23	67	11	----	----
	Previous Month	g/m ² .month		0.1	1.6	1.2	3.3	1.4	37.3	1.2	1.1	1.8	2.1	0.9	1	2.4	----	----
	Change	g/m ² .month	Increase of 2	0.1	28.2	NA	-1.8	-0.8	-36.3	3.4	NA	1.7	0.2	0.3	2.6	-1.7	----	----
Arsenic	Current Month	mg/L		0.001	----	----	----	----	----	----	----	----	----	----	----	0.006	<0.001	
Comments					Insects and material in gauge	Gauge broken in transit. House under construction across road from gauge					Insects in gauge	Gauge broken in transit		Flying ants in gauge		Insects and grass material in gauge		

Table 4 – Groundwater Monitoring Results November 2017

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			22/11/2017		22/11/2017		22/11/2017		22/11/2017		22/11/2017		22/11/2017		22/11/2017		22/11/2017									
			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																							
Field Physical data																										
Depth to standing water level from TOC	m	-	16.802	16.35	8.7420	7.44	16.0140	1.43	8.4500	-	1.2000	0.74	1.3520	0.80	17.4120	-	13.84	15.62								
pH	pH	-	6.26	4.74	6.02	6.78	5.81	6.09	7.09	5.93	5.17	6.78	6.21	-	6.51	5.92	6.93	7.30	6.77	7.51	6.98	5.24	-	6.3960	5.56	6.23
Conductivity	mS/cm	-	3630.000	2.95	111.300	0.188	231.000	1.88	0.342	-	5.550	9.68	8366.000	1.060	121.100	-	132.660	0.214								
Temperature	°C	-	22.4420	22.77	22.3600	22.26	21.1500	23.04	22.6040	-	25.9820	24.29	22.5600	23.03	22.8200	-	23.1940	22.71								
Total Dissolved Solids	g/L	-	3.5720	1.89	0.0946	0.123	0.1306	1.20	0.1326	-	0.1326	6.10	8.10	0.671	0.106	-	0.111	0.139								
			Exceedance of trigger level																							

Table 5 – Field Monitoring for Out of Hours Works November 2017 (Acoustic Investigation)

Description of Works	Date	Time	Location	NCA	NML (dB(A))	Laeq (dB(A))	Distance to receiver (m)	Compliant	Notes
Nambucca Bridge Stitch Pour Finishing	2/11/2017	6:10 PM	River Street	3	41	52.6	125m	Yes	Construction activity not dominant noise source. Local traffic (55.1-65.7dBA) dominant noise sources. Monitoring to verify compliance with L4.2(d)
CC05 Earthworks/Finishing Works	4/11/2017	2:10 PM	Old Coast Road	5	46	52.9	600m	Yes	Construction activity not audible. Local traffic dominant noise source (44.8-58.2dBA). Monitoring to verify compliance with L4.2(d)
Old Coast Road North Drilling Tie Bars	12/11/2017	10:11 AM	Alexandra Drive	5	44	53.0	600m	Yes	Construction activity not audible. Highway (48-51 dBA), local traffic (60-70dBA), birds (44-48dBA) dominant noise sources. Monitoring to verify compliance with L4.2(d)
CC05 Earthworks/Finishing Works	26/11/2017	10:22 AM	Alexandra Drive	5	44	62.2	640m	Yes	Construction activity not audible. Cicadas (55-68dBA), Highway (50-60dBA) dominant noise sources. Monitoring to verify compliance with L4.2(d)
Mattick Road Crossover	26/11/2017	9:51 AM	Mattick Road	6	38	52.7	250m	Yes	Construction activity not dominant noise source. Local traffic (48-53dBA) and lawn mower (55-60dBA) dominant noise sources. Monitoring to verify compliance with L4.2(d)
Fill 16 Finishing Works	26/11/2017	9:22 AM	Nambucca Bridge Northern Abutment	4	46	51.3	210m	Yes	Construction activity not dominant noise source. Highway (45-55dBA) dominant noise source. Monitoring to verify compliance with L4.2(d)