



# **SHELL COVE BOATHARBOUR STAGE 2 AND BREAKWATERS MONTHLY MONITORING SUMMARY July, 2018**

## **COASTWIDE CIVIL PTY LTD**

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## **1. Preliminaries**

### **1.1. Background**

This project involves the construction of a boat harbour consisting of inner and outer harbour basins located behind an existing beach dune system in what is currently a degraded swamp, and an access channel across the beach. Included in the boat harbour project are:

- inner and outer harbour basins;
- boardwalk/promenade surrounding the inner and outer harbours;
- regional boat launching ramp located in the outer harbour;
- 470m long rock breakwater on the northern side of the access channel;
- 282m long rock groyne on the southern side of the access channel;
- dune construction and beach nourishment;
- land platform works for hotel, shopping centre, residential development, marina support facilities and dry boat storage surrounding the boat harbour;
- a staged 300 berth floating marina in the inner harbour;
- vessel fuelling facilities and sewage pump out facilities in the outer harbour; and
- a boat lift and hardstand area for vessel maintenance.

The works are to be conducted over multiple stages. Coastwide Civil have won the contract to conduct Stage 2 works. In addition, Coastwide Civil have also won the contract to construct the breakwaters for the boatharbour. The environmental management plan and practices in place for the Stage 2 project have broadened to also cover the breakwater works.

The main components of Stage 2 works are:

- Excavation of the remainder of the Boatharbour which was not excavated in Stage 1
- Surcharging (and removal) of the P2B Surcharge Area and any incomplete portions of the P3 Surcharge Area
- Removal of the surcharge material from Surcharge P1A, P1B and P2A
- Construct edge treatment for the Boatharbour
- Install boardwalk piles
- Construct boat ramp in the Outer Harbour

The main components of the Breakwater works are:

- the construction of a 470m long breakwater north of the channel
- 280m groyne (smaller breakwater) south of the channel
- full excavation of the entrance channel
- Installation of navigation aids (navigation lights and buoys)
- Construction of permanent access roads along the breakwater and groyne

### **1.2. Introduction**

This document provides a summary of monthly environmental performance on site. It includes the following:

- Section 2 outlines monitoring requirements as per the conditions of the Environmental Protection Licence (EPL), the Site Environmental Management Plan (SEMP) and the Construction Environmental Management Plan (CEMP);
- Sections 3 to 5 detail the results of environmental monitoring undertaken on site; and
- Results of any lab testing are included as Appendix B. A copy of rainfall monitoring results for the month is attached as Appendix C.



## 2. Monitoring Requirements

### 2.1. Water Quality

#### Water Quality Inbound and Outbound Channels

*Monitoring Locations – See Appendix A - Site Map for location of monitoring points*  
 As nominated in EPL 12426, Section 2, P1.3

Station no.	Location	Testing Required
10	Upstream Location – Runoff into site from West	Oil and Grease, pH, Total Suspended Solids, Turbidity and Colour
11	Upstream Location– Runoff into site from North	Oil and Grease, pH, Total Suspended Solids, Turbidity and Colour
14	Upstream Location – Runoff into site from South	Oil and Grease, pH, Total Suspended Solids, Turbidity and Colour
20	Beach Zone Rectangular Pond – Discharge into near shore zone	Oil and Grease, pH, Total Suspended Solids, Turbidity and Colour
21	Southern Channel – Downstream of Precinct B1 and C1	Oil and Grease, pH, Total Suspended Solids, Turbidity and Colour

#### *Monitoring Requirements*

As nominated in EPL 12426, Section 5, M2.

No limit values for monitoring of inflows and outflows are specified in the EPL.

Station no.	Testing Requirement	Compliance Criteria	Frequency
10,11,14, 20,21	Oil and Grease	Not specified in EPL	Special Frequency 2 – daily if turbidity >5NTU at MP8,9,12, otherwise weekly
	pH	Not specified in EPL	
	Total Suspended solids	Not specified in EPL	
	Turbidity	Not specified in EPL	



**Near Shore Monitoring**

*Monitoring Locations – See Appendix A - Site Map for location of monitoring points*

As nominated in EPL 12426, Section 2, P1.3 for MP8, 9 and 20:

Station no.	Location	Testing Required
8	Surf zone, 100m south of groyne	Colour, Turbidity
9	Surf zone 100m north of breakwater	Colour, Turbidity
20	Beach zone rectangular pond	Colour, Turbidity

*Monitoring Requirements*

Limit criteria for points 8 and 9 are as established in the SEMP Section 11.4.

The EPL establishes a 5 NTU turbidity trigger value at points 8, 9 and 20 to initiate monitoring at monitoring points 10, 11, 14, 20 and 21 as per special frequency 2.

Station no.	Testing Requirement	Compliance Criteria	Frequency
8,9,20	Turbidity	<5 NTU	Special Frequency 1 – weekly during dry weather, daily during wet weather (>20mm rainfall within 24 hours in rain gauge), daily during any water break out on site Daily during marine works
	Colour	Visual Assessment	

The amber alert level triggers an investigation and review of the source of turbidity, and may prompt and adjustment in site practices if the source of turbidity is due to marine construction.

Station no.	Testing Requirement	Action Criteria	Frequency
8, 9	Turbidity	>15 NTU (Amber Alert)	Special Frequency 1 – weekly during dry weather, daily during wet weather (>20mm rainfall within 24 hours in rain gauge), daily during any water break out on site Daily during marine works



**Storage Pond Monitoring**

*Monitoring Locations – See Appendix A - Site Map for location of monitoring points*

As nominated in EPL 12426, Section 2, P1.3:

Station no.	Location	Testing Required
22	West of Boatharbour Excavation	Oil and Grease, Suspended Solids, Acidity, Turbidity, Nitrate, Nitrogen (Ammonia), Biochemical Oxygen Demand (BOD)
23	Outer Boatharbour	Oil and Grease, Suspended Solids, Acidity, Turbidity, Nitrate, Nitrogen (Ammonia), Biochemical Oxygen Demand (BOD)
24	Landscape Mound – west of Quarry Haul Road	Oil and Grease, Suspended Solids, Acidity, Turbidity

*Monitoring Requirements*

As nominated in EPL 12426, Section 5, M2 for monitoring requirements and Section 3, L2 for concentration limits:

Station no.	Testing Requirement	Compliance Criteria	Frequency
22, 23, 24	Oil and Grease	Not visible	Prior to any release into the clean water system. Daily during any discharge from the storage pond.
	Suspended Solids	<50 mg/L	
	Acidity	4.0 – 8.5 pH 6.5 – 8.5 pH (MP24)	
	Turbidity	Not specified in EPL /CEMP	
	Nitrate	Not specified in EPL /CEMP	
	Nitrogen (Ammonia)	Not specified in EPL /CEMP	
	Biochemical Oxygen Demand (BOD)	Not specified in EPL /CEMP	



## 2.2. Noise

*Monitoring Locations – See Appendix A - Site Map for location of monitoring points*

As nominated in EPL 12426, Section 2, P1.4:

Station no.	Location
17	Southernmost property on Boollwarroo Parade
18	Nearest residence on Mary, William or Sophia Streets
19	Nearest residence on Marina Drive

### *Monitoring Requirements*

As nominated in EPL 12426, Section 3, L4:

“For any exceedance of the background noise level by more than 10 dB(A) the licensee must undertake community liaison and consultation in order to identify and implement any additional reasonable and feasible noise mitigation options.

L4.2 5dB(A) must be added to the measured noise levels if the noise is substantially tonal or impulsive in character.”

Table 4.6 of the CEMP summarises noise trigger values based on background levels determined by Wilkinson Murray in 2005 as:

Parameter	Trigger Value	Measurement Location
Construction Noise	LAeq,15 min: 52 dBA	Nearest residence on Boollwarroo Parade
	LAeq,15 min: 44 dBA	Nearest residence on Mary, William or Sophia Streets
	LAeq,15 min: 44 dBA	Nearest residence on Marina Drive



### 2.3. Air Quality

*Monitoring Locations – See Appendix A - Site Map for location of monitoring points*

As nominated in EPL 12426 Section 2, P1.1:

Station no.	Location
1	Southernmost property on Boollwarroo Parade
2	Nearest residence on Mary, William or Sophia Streets
3	Nearest residence on Marina Drive

#### *Monitoring Requirements*

Compliance limit criteria are not specified in the EPL. As per SEMP, Section 8:

Station no.	Testing Requirement	Compliance Criteria	Frequency
1,2,3	Dust	<4g / m <sup>2</sup> / month, or <2g / m <sup>2</sup> / month over background levels	Monthly

### 2.4. Vibration

*Monitoring Locations – See Appendix A - Site Map for location of monitoring points*

Monitoring Points are not specified in the EPL. Points as nominated in SEMP Section 8 are:

Station no.	Location
1	Southernmost property on Boollwarroo Parade
2	Nearest residence on Mary, William or Sophia Streets
3	Nearest residence on Marina Drive

#### *Monitoring Requirements*

As per CEMP, Section 4.7.4:

Station no.	Testing Requirement	Compliance Criteria	Frequency
1,2,3	vibration	Vibration dose: <0.4 m/s <sup>1.75</sup>	Once during initial stages of work by plant likely to cause vibration





## 2.5. Blasting

*Monitoring Locations – See Appendix A - Site Map for location of monitoring points*

As nominated in EPL 12426 Section 5, M7.1:

Station no.	Location
1	Southernmost property on Boollwarroo Parade
2	Nearest residence on Mary, William or Sophia Streets
3	Nearest residence on Whitsunday or Apollo Drives

*Monitoring Requirements*

As nominated in EPL 12426 Section 3 L5.1 – 5.4 and Section 5, M7.2:

Station no.	Testing Requirement	Compliance Criteria	Frequency
1,2,3	vibration	<5mm/s for 95% of blasts <10mm/s for all blasts	During each blast
1,2,3	overpressure	<115 dB for 95% of blasts <120 dB for 100% of blasts	During each blast

## 2.6. Acid Sulphate Soils

*Monitoring Requirements*

As nominated in EPL 12426 Section 4, O5.11-5.14:

“Any acid sulphate soils disturbed during the project must be managed in accordance with the document titled “ACID SULPHATE SOIL MANUAL, ASSMAC 1998”.

From the time when the acid sulphate soil is exposed to the atmosphere:

- a) the licensee must complete a log of odour observations. These observations must continue for a duration of 20 consecutive days and be used to assess compliance with the odour condition/s of this licence and to assess the risks of odours impacting residential areas under worst-case wind conditions.
- b) the licensee has 30 days to submit the log of odour observations to the EPA together with an assessment of actual and potential odour impacts on the nearest residential areas.



### 3. Water Quality

#### 3.1. Near Shore Monitoring – Monitoring Points 8, 9 and 20

##### Test Results

Test frequency: Special Frequency 1 (Weekly in dry weather, daily in wet weather and daily during break out). To be completed daily during marine works.

Date	Pollutant	Point 8	Point 9	Point 20
31/07/2018	Colour	Clear	Clear	Clear
	Turbidity	4.69	<b>5.07</b>	53
30/07/2018	Colour	Clear	Clear	Closed and Dry
	Turbidity	<b>7.64</b>	3.99	0
27/07/2018	Colour	Clear	Clear	Clear
	Turbidity	4.33	<b>5.59</b>	28.64
26/07/2018	Colour	Clear	Clear	Clear
	Turbidity	<b>7.16</b>	2.49	29.66
25/07/2018	Colour	Clear	Clear	Clear
	Turbidity	<b>12.32</b>	3.48	22.15
24/07/2018	Colour	Clear	Clear	Clear
	Turbidity	<b>6.82</b>	<b>8.19</b>	48.13
23/07/2018	Colour	Clear	Clear	Clear
	Turbidity	<b>10.22</b>	<b>13.6</b>	41.79
20/07/2018	Colour	Clear	Clear	Clear
	Turbidity	<b>7.54</b>	<b>7.07</b>	23.78
19/07/2018	Colour	Clear	Clear	Clear
	Turbidity	<b>6.4</b>	3.29	30.8
18/07/2018	Colour	Clear	Clear	Clear
	Turbidity	<b>19.33</b>	<b>7.49</b>	26.38
17/07/2018	Colour	Clear	Clear	Clear
	Turbidity	<b>10.93</b>	<b>8.88</b>	22.06
16/07/2018	Colour	Clear	Clear	Clear
	Turbidity	<b>10.95</b>	4.23	24.88
CEMP Compliance Limit	Turbidity	5	5	
SEMP Amber Alert Level	Turbidity	<b>15</b>	<b>15</b>	
EPL Special Frequency 2 Trigger Value	Turbidity	5	5	



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Date	Pollutant	Point 8	Point 9	Point 20
13/07/2018	Colour	Clear	Clear	Clear
	Turbidity	<b>8.77</b>	<b>9.36</b>	20.4
12/07/2018	Colour	Clear	Clear	Clear
	Turbidity	<b>6.67</b>	4.82	12.39
11/07/2018	Colour	Clear	Clear	Clear
	Turbidity	<b>15.95</b>	<b>6.31</b>	21.77
10/07/2018	Colour	Clear	Clear	Not Clear
	Turbidity	3.83	<b>6.05</b>	22.93
09/07/2018	Colour	Clear	Clear	Not Clear
	Turbidity	<b>14.72</b>	<b>7.43</b>	118.0
06/07/2018	Colour	Clear	Clear	Not Clear
	Turbidity	<b>13.36</b>	<b>14.55</b>	57.0
05/07/2018	Colour	Clear	Clear	Not Clear
	Turbidity	<b>7.52</b>	4.3	76.0
04/07/2018	Colour	Clear	Clear	Not Clear
	Turbidity	<b>7.81</b>	<b>6.2</b>	59.0
03/07/2018	Colour	Clear	Clear	Not Clear
	Turbidity	<b>11.28</b>	0.04	64.0
02/07/2018	Colour	Clear	Clear	Not Clear
	Turbidity	<b>9.16</b>	1.07	71.0
CEMP Compliance Limit	Turbidity	5	5	
SEMP Amber Alert Level	Turbidity	<b>15</b>	<b>15</b>	
EPL Special Frequency 2 Trigger Value	Turbidity	5	5	

**Comments on Results**

- Since the commencement of breakwater construction in the ocean on 07/09/16, a red and amber alert system has been implemented. As part of this system, an exceedance of 15 NTU at MP8 or MP9 triggers an amber alert, as detailed in Section 11.4 of the Site Environmental Management Plan.
    - Two amber alerts were recorded at MP8 on 11/07/2018– Turbidity of 15.95 NTU and the 18/07/18 – Turbidity of 19.33 NTU.
  - Both days the water was visibly clear.
- While turbidity at MP8 and MP9 regularly exceeded the 5 NTU trigger value, exceedances were typically minor and likely due to wave action, discolouration was not observed in the water at these locations.
- The 5 NTU trigger value was exceeded regularly at MP20.
    - Turbidity levels were generally similar to the previous month.



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**3.2. Surface Water: Inbound flow– Monitoring Points 10, 11, 14, 21 and Outbound Flow – Monitoring Point 20**

**Test Results**

Test frequency: Special Frequency 2 (Weekly, or daily when turbidity at MP8, 9 or 20 is greater than 5 NTU).  
 On days where a monitoring point is not listed below, water was not flowing at that location.

Date	Monitoring Point	Oil and Grease	pH	Turbidity (NTU)	Colour	Total Suspended Solids (mg/L)
31/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not visible	8.01	53	Slightly Brown	N/A
	MP21	Not Visible				
30/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not visible		0	Dry	N/A
	MP21	Not Visible				
27/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not visible	8.61	28.64	Clear	N/A
	MP21	No water flowing				
26/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.65	29.66	Clear	N/A
	MP21	No water flowing				
25/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.62	22.15	Clear	N/A
	MP21	No water flowing				
24/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.68	48.13	Slightly Brown	N/A
	MP21	No water flowing				



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Date	Monitoring Point	Oil and Grease	pH	Turbidity (NTU)	Colour	Total Suspended Solids (mg/L)
23/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.49	41.79	Slightly Brown	Awaiting Results
	MP21	No water flowing				
20/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	7.80	23.78	Clear	13
	MP21	No water flowing				
19/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	7.55	30.8	Clear	14
	MP21	No water flowing				
18/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.59	26.38	Clear	11
	MP21	No water flowing				
17/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.70	22.06	Clear	10
	MP21	No water flowing				
16/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.37	24.88	Clear	18
	MP21	No water flowing				
13/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.17	20.40	Clear	4
	MP21	No water flowing				
12/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.33	12.39	Clear	<1
	MP21	No water flowing				



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Date	Monitoring Point	Oil and Grease	pH	Turbidity (NTU)	Colour	Total Suspended Solids (mg/L)
11/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	7.89	21.77	Clear	8
	MP21	No water flowing				
10/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	7.90	22.93	Not Clear	11
	MP21	No water flowing				
09/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	7.89	118.00	Not Clear	235
	MP21	No water flowing				
06/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.42	57.00	Not Clear	28
	MP21	No water flowing				
05/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.25	76	Slightly Brown	41
	MP21	No water flowing				
04/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.19	59	Not Clear	21
	MP21	No water flowing				
03/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.33	64	Not Clear	16
	MP21	No water flowing				
02/07/2018	MP10	No water flowing				
	MP11	No water flowing				
	MP14	No water flowing				
	MP20	Not Visible	8.26	71	Not Clear	24
	MP21	No water flowing				



***Comments on Results***

- Southern channel opening (MP20):
  - Channel was closed to the ocean on 10 out of 22 days this month and was otherwise open to the ocean.
  - The large spike in Turbidity and Total suspended solids on the 9/07/18, where believed to be due to the channel being very shallow and turbulent.
- Inbound streams:
  - MP10 did not flow this month.
  - MP11 did not flow this month.
  - MP14 did not flow this month.
- Notable Rainfall Events:
  - No notable Rain events in the Month of July.
  - 6.0 mm total over the Month.



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**3.3. Storage Pond – Monitoring Points 22, 23 and 24**

**Test Results**

Test frequency: Daily during discharge.

<b>MP22</b>							
<b>Date</b>	<b>Pollutant</b>						
	Oil and Grease	pH*	Total Suspended Solids (mg/L)	Turbidity* (NTU)	Biochemical Oxygen Demand (BOD) (mg/L)	Nitrate (mg/L)	Nitrogen (Ammonia) (mg/L)
3/07/2018	Not Visible	7.88	2	18.42	1	0.649	0.104
4/07/2018	Not Visible	7.93	4	14.56	1	0.675	0.102
5/07/2018	Not Visible	7.73	3	28.12	1	0.639	0.09
6/07/2018	Not Visible	8.25	18	29.3	1	0.211	0.03
9/07/2018	Not Visible	7.26	9	18.71	0.9	0.922	0.09
10/07/2018	Not Visible	7.56	14	23.08	0.9	0.83	0.064
13/07/2018	Not Visible	8.06	17	31.18	1.6	0.064	0.04
18/07/2018	Not Visible	8.39	8	26.12	<1	0.876	0.058
19/07/2018	Not Visible	7.98	6	20.91	1	0.624	0.037
20/07/2018	Not Visible	7.87	13	24.93	<1	0.428	0.042
6/07/2018		<b>4.0 – 8.5</b>	<b>50</b>	-	-	-	-

*\*Tests undertaken on site by Coastwide Civil*

**Remarks – MP22**

- Discharge was undertaken on the above listed days. All site based monitoring and received lab testing results are compliant with discharge criteria. Still waiting for results.
- Some results were not received in time for inclusion with this report. These will be included in the July report.

<b>MP23</b>							
<b>Date</b>	<b>Pollutant</b>						
	Oil and Grease	pH*	Total Suspended Solids (mg/L)	Turbidity* (NTU)	Biochemical Oxygen Demand (BOD) (mg/L)	Nitrate (mg/L)	Nitrogen (Ammonia) (mg/L)
13/07/2018	Not Visible	7.87	10	21.35	1.6	0.237	0.057
<b>EPA Discharge Criteria</b>		<b>4.0 – 8.5</b>	<b>50</b>	-	-	-	-

**Remarks – MP23**





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- Discharge was undertaken on the above listed days. All site-based monitoring and received lab testing results are compliant with discharge criteria.

MP24							
Date	Pollutant						
	Oil and Grease	pH*	Total Suspended Solids (mg/L)	Turbidity* (NTU)	Biochemical Oxygen Demand (BOD) (mg/L)	Nitrate (mg/L)	Nitrogen (Ammonia) (mg/L)
3/07/2018	Not Visible	7.24	8	18.41	2	3.16	0.094
13/07/2018	Not Visible	8.47	28	31.93	3.6	1.43	0.173
<b>EPA Discharge Criteria</b>		<b>4.0 – 8.5</b>	<b>50</b>	-	-	-	-

**Remarks – MP24**

- Discharge was undertaken on the above listed days. All site-based monitoring and received lab testing results are compliant with discharge criteria. Still waiting for results.



## 4. Air, Noise and Vibration Testing

### 4.1. Noise Testing

#### Test Results

Test frequency: Weekly

Date	Location	Time	Measured Noise Levels	Observed Noise Sources and notes (sound levels in dB)	Estimated LAeq Contribution	CEMP Trigger Value
25/07/2018	MP17	9:10am – 9:25am	LA10 = 64.0 LA90 = 47.3 <b>LAeq = 62.5</b> Lmax = 80.8 Lmin = 44.3	Vehicles: 7 No. Av: 73.8 Birds Av: 59.2 Cars were the dominant sound, CWC noise slightly within background. Site contribution = LA90 – 6dB	<b>41.3</b>	<b>52.0</b>
	MP18	10:05am – 10:20am	LA10 = 50.2 LA90 = 43.5 <b>LAeq = 48.7</b> Lmax = 68.3 Lmin = 39.5	Birds: 5 Av: 61.4 CWC noise could be heard slightly in background, birds were the dominant noise. Site contribution = LA90 – 3dB	<b>40.5</b>	<b>44.0</b>
	MP19	9:45am – 10:00am	LA10 = 65.5 LA90 = 55.3 <b>LAeq = 62.8</b> Lmax = 81.9 Lmin = 52.0	Non CWC construction Av: 67.4 Vehicles: 6 No. Av: 73.5 CWC noise could be heard lightly, Non CWC construction were the dominant noise. Site contribution = LA90 – 15dB	<b>40.3</b>	<b>44.0</b>

Date	Location	Time	Measured Noise Levels	Observed Noise Sources and notes (sound levels in dB)	Estimated LAeq Contribution	CEMP Trigger Value
16/07/2018	MP17	2:30pm- 2:45pm	LA10 = 69.8 LA90 = 47.3 <b>LAeq = 65.9</b> Lmax = 82.4 Lmin = 42.7	Vehicles: 10 No. Av: 76.76 Cars were the dominant sound, CWC noise audible in background. Site contribution = LA90 – 3dB	<b>44.3</b>	<b>52.0</b>
	MP18	2:50pm- 3:05pm	LA10 = 53.5 LA90 = 44.1 <b>LAeq = 50.7</b> Lmax = 66.1 Lmin = 41.2	Birds: 5 Av: 57.3 CWC noise could be heard slightly in background, birds were the dominant noise. Site contribution = LA90 – 3dB	<b>41.4</b>	<b>44.0</b>
	MP19	3:10pm – 3:25pm	LA10 = 68.8 LA90 = 55.5 <b>LAeq = 67.5</b> Lmax = 91.8 Lmin = 50.9	Non CWC construction Av: 64.5 Vehicles: 6 No. Av: 78.5 CWC noise inaudible, Non CWC construction were the dominant noise. Site contribution = LA90 – 15dB	<b>40.5</b>	<b>44.0</b>



Date	Location	Time	Measured Noise Levels	Observed Noise Sources and notes (sound levels in dB)	Estimated $L_{Aeq}$ Contribution	CEMP Trigger Value
11/07/2018	MP17	2:15pm – 2:30pm	$L_{A10}$ = 65.8 $L_{A90}$ = 44.3 <b><math>L_{Aeq}</math> = 64</b> $L_{max}$ = 82.5 $L_{min}$ = 42.5	Vehicles: 8 No. Av: 75.8 Birds Av: 53.7 Cars were the dominant sound, CWC noise inaudible. Site contribution = $L_{A90} - 10dB$	<b>34.3</b>	<b>52.0</b>
	MP18	2:35pm – 2:50pm	$L_{A10}$ = 55.1 $L_{A90}$ = 44.2 <b><math>L_{Aeq}</math> = 51.8</b> $L_{max}$ = 41.5 $L_{min}$ = 69.4	Birds: 9 Av: 59.4 CWC noise could be heard slightly in background, birds were the dominant noise. Site contribution = $L_{A90} - 6dB$	<b>38.2</b>	<b>44.0</b>
	MP19	2:55pm – 3:10pm	$L_{A10}$ = 60.3 $L_{A90}$ = 57.6 <b><math>L_{Aeq}</math> = 61.4</b> $L_{max}$ = 84.5 $L_{min}$ = 40.1	Non CWC construction Av: 74.2 Vehicles: 6 No. Av: 70.4 CWC noise could be heard lightly, Non CWC construction were the dominant noise. Site contribution = $L_{A90} - 10dB$	<b>47.6</b>	<b>44.0</b>

Date	Location	Time	Measured Noise Levels	Observed Noise Sources and notes (sound levels in dB)	Estimated $L_{Aeq}$ Contribution	CEMP Trigger Value
3/07/2018	MP17	10:55am – 11:10am	$L_{A10}$ = 65.5 $L_{A90}$ = 42.6 <b><math>L_{Aeq}</math> = 64.7</b> $L_{max}$ = 87.5 $L_{min}$ = 40.7	Vehicles: 13 No., Av: 75.2 Birds: 52.6, 54.4, 60.9 Cars were the dominant noise source. Site noise almost inaudible. Site contribution = $L_{A90} - 10dB$	<b>32.6</b>	<b>52.0</b>
	MP18	11:12am – 11:28am	$L_{A10}$ = 45.6 $L_{A90}$ = 39.6 <b><math>L_{Aeq}</math> = 44.1</b> $L_{max}$ = 59.7 $L_{min}$ = 37.3	Birds: 5 No., Av: 56.2 Car: 57.4 Birds were the dominant noise source. CWC site noise audible in background. = $L_{Aeq} - 6 dB$	<b>38.1</b>	<b>44.0</b>
	MP19	11:36am – 11:51am	$L_{A10}$ = 62.5 $L_{A90}$ = 53.0 <b><math>L_{Aeq}</math> = 62.9</b> $L_{max}$ = 81.7 $L_{min}$ = 50.4	Non CWC Construction: Av: 61.5 Vehicles: 8 No., Av: 74.4 CWC Site Construction noise inaudible over Vehicles and Non CWC Construction noise Site contribution = $L_{A90} - 10dB$	<b>43</b>	<b>44.0</b>

**Comments on Results**

- At MP19, weekly  $L_{Aeq}$  exceeded the trigger value on 11/07/2018
- Consultation with the community about the project has been ongoing. A community newsletter is being distributed monthly, explaining current works on site. The newsletter contains contact information to allow any residents to communicate concerns about noise levels.
- No complaints have been received in this month about noise levels.



#### 4.2. Air Quality

##### Test Results

Test frequency: Monthly

Date	Pollutant	Point 1	Point 2	Point 3
22/06/18 - 22/07/18 Awaiting Results	Ash Content (g/m <sup>2</sup> / month)			
	Combustible Matter (g/m <sup>2</sup> / month)			
	Total dust (g/m <sup>2</sup> / month)			
<b>SEMP Compliance Limit</b>	<b>Total dust (g/m<sup>2</sup>/ month)</b>	<b>4.0</b>	<b>4.0</b>	<b>4.0</b>

##### Comments on Results

All results were below our SEMP Compliance limits

#### 4.3. Vibration

##### Test Results

Test frequency: During initial stages of potentially vibratory work

No testing has been required this month.

#### 4.4. Blasting

No Blasting has taken part this month.

##### Test Results

Test frequency:



## **5. Acid Sulphate Soils**

### **5.1. Odour Monitoring**

The monitoring of odour from any encountered Acid Sulphate Soil areas is ongoing as per the requirements of the EPL. Completed odour monitoring logs have been forwarded to the EPA as required.



**Appendix A**  
**– Site Map**



**Appendix B**  
**– Lab Testing Results**



**Appendix C**  
**– Site Rainfall Measurements**