



# SHELL COVE BOATHARBOUR - STAGE 2

## MONTHLY MONITORING SUMMARY

June, 2014

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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.

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

### **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
12	Surface Water leaving site into the near shore zone	Oil and Grease, pH, Total Suspended Solids, Turbidity and Colour
13	Upstream Location – Runoff into site from West	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

#### 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
10,11,12,13, 14	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 12, Section 8 E1.3 for MP20 (Note that MP20 is referred to only as Beach Zone Rectangular Pond in the EPL):

Station no.	Location	Testing Required
8	Surf zone, 100m south of groyne	Colour, Turbidity
9	Surf zone 100m north of breakwater	Colour, Turbidity
12	Surface Water leaving site into the near shore zone	Colour, Turbidity
20	Beach zone rectangular pond	Oil and Grease, Colour, pH, Turbidity



*Monitoring Requirements*

Limit criteria for points 8 and 9 are as established in the SEMP Section 7.4.4. The EPL establishes a 5 NTU turbidity trigger value to initiate monitoring at monitoring points 10-14 as per special frequency 2.

Station no.	Testing Requirement	Compliance Criteria	Frequency
8,9,12	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	
20	Oil and Grease	Not specified in EPL	
	Colour	Not specified in EPL	
	pH	Not specified in EPL	
	Turbidity	Not specified in EPL	

**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
7	Storage Pond	Oil and Grease, Suspended Solids, Acidity, Turbidity, Nitrate, Nitrogen (Ammonia), Biochemical Oxygen Demand (BOD)
15	Trommel Pad Sediment Basin	Oil and Grease, pH, Total Suspended Solids
16	Acid Sulphate Soil Treatment Area	Oil and Grease, pH, Total Suspended Solids

*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
7	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	
	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	
15, 16	Oil and Grease	Not visible	Prior to any release into the clean water system. Daily during any discharge from either sediment basin.
	Suspended Solids	50	
	Acidity	6.5 – 8.5 pH	



## 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 Whitsunday or Apollo Drives

### *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 Whitsunday or Apollo Drives



### 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 Whitsunday or Apollo Drives

#### *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 Whitsunday or Apollo Drives

#### *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. 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, 12 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 12
30/06/2014	Colour	Clear	Clear	Clear
	Turbidity	4.15	2.36	3.22
27/06/2014	Colour	Clear	Clear	Clear
	Turbidity	2.80	3.81	<b>6.58</b>
26/06/2014	Colour	Clear	Clear	Clear
	Turbidity	1.77	3.60	<b>7.06</b>
25/06/2014	Colour	Clear	Clear	Light brown
	Turbidity	1.32	4.38	<b>20.63</b>
24/06/2014	Colour	Clear	Clear	Clear
	Turbidity	1.48	1.13	<b>15.30</b>
23/06/2014	Colour	Clear	Clear	Clear
	Turbidity	1.77	3.54	<b>10.02</b>
20/06/2014	Colour	Clear	Clear	Clear
	Turbidity	1.92	4.72	<b>12.16</b>
19/06/2014	Colour	Clear	Clear	Clear
	Turbidity	1.12	1.61	1.90
18/06/2014	Colour	Clear	Clear	Clear
	Turbidity	1.53	4.48	<b>15.08</b>
17/06/2014	Colour	Clear	Clear	Light brown
	Turbidity	1.37	2.12	<b>26.11</b>
16/06/2014	Colour	Clear	Clear	Light brown
	Turbidity	3.25	7.04	<b>15.19</b>
13/06/2014	Colour	Clear	Clear	Clear
	Turbidity	2.32	1.37	4.88
12/06/2014	Colour	Clear	Clear	Clear
	Turbidity	1.28	0.00	<b>6.72</b>
11/06/2014	Colour	Clear	Clear	Clear
	Turbidity	2.59	1.61	4.72
06/06/2014	Colour	Clear	Clear	Clear
	Turbidity	1.51	3.21	4.87
05/06/2014	Colour	Clear	Clear	Clear
	Turbidity	2.97	3.63	<b>8.73</b>
CEMP Compliance Limit	Turbidity	5	5	
EPL Special Frequency 2 Trigger Value	Turbidity	5	5	5





Date	Pollutant	Point 8	Point 9	Point 12
04/06/2014	Colour	Clear	Clear	Clear
	Turbidity	3.91	3.40	<b>17.42</b>
03/06/2014	Colour	Clear	Clear	Clear
	Turbidity	3.10	0.19	<b>10.22</b>
02/06/2014	Colour	Clear	Clear	Clear
	Turbidity	4.51	1.31	1.27
CEMP Compliance Limit	Turbidity	<b>5</b>	<b>5</b>	
EPL Special Frequency 2 Trigger Value	Turbidity	<b>5</b>	<b>5</b>	<b>5</b>

Date	Pollutant	Point 20
30/06/14	Oil and Grease	Not visible
	pH	8.2
	Turbidity	4.23
	Colour	Clear
27/06/14	Oil and Grease	Not visible
	pH	8.2
	Turbidity	5.30
	Colour	Clear
26/06/14	Oil and Grease	Not visible
	pH	8.3
	Turbidity	4.43
	Colour	Clear
25/06/14	Oil and Grease	Not visible
	pH	8.1
	Turbidity	4.33
	Colour	Clear
24/06/14	Oil and Grease	Not visible
	pH	8.1
	Turbidity	4.09
	Colour	Clear
23/06/14	Oil and Grease	Not visible
	pH	8.0
	Turbidity	3.84
	Colour	Clear
20/06/14	Oil and Grease	Not visible
	pH	8.2
	Turbidity	4.91
	Colour	Clear
18/06/14	Oil and Grease	Not visible
	pH	8.2
	Turbidity	3.33
	Colour	Clear

Date	Pollutant	Point 20
17/06/14	Oil and Grease	Not visible
	pH	8.1
	Turbidity	3.47
	Colour	Clear
16/06/14	Oil and Grease	Not visible
	pH	8.0
	Turbidity	3.27
	Colour	Clear
12/06/14	Oil and Grease	Not visible
	pH	8.2
	Turbidity	2.15
	Colour	Clear
05/06/14	Oil and Grease	Not visible
	pH	7.8
	Turbidity	1.79
	Colour	Clear
04/06/14	Oil and Grease	Not visible
	pH	8.1
	Turbidity	3.24
	Colour	Clear
03/06/14	Oil and Grease	Not visible
	pH	7.9
	Turbidity	2.73
	Colour	Clear
02/06/14	Oil and Grease	Not visible
	pH	7.9
	Turbidity	2.00
	Colour	Clear



***Comments on Results***

- The 5 NTU trigger value was exceeded at MP12 on a number of occasions.
  - The elevated turbidity recorded at MP12 was mostly due to natural turbidity in the swamp system. There was no works undertaken in the entrance channel on any of these days.
  - Rainfall recorded on 02/06/14 and 11/06/14 (see page 13) and associated storm conditions may also have impacted upon turbidity in the swamp during this period.
- Water quality in the beach zone rectangular pond has been consistently good and water level stable at around RL 1.0m.



**3.2. Surface Water: Inbound flow– Monitoring Points 10, 11, 13, 14 and Outbound Flow – Monitoring Point 12**

**Test Results**

Test frequency: Special Frequency 2 (Weekly, or daily when turbidity at MP8, 9 or 12 is greater than 5 NTU)

Date	Pollutant	Point 10	Point 11	Point 13	Point 14	Point 12	Point 7
27/06/14	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not measured; no discharge
	pH					8.2	
	Total Suspended Solids (mg/L)					15	
	Turbidity (NTU)					6.58	
	Colour					Clear	
26/06/14	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not measured; no discharge
	pH					8.4	
	Total Suspended Solids (mg/L)					12	
	Turbidity (NTU)					7.06	
	Colour					Clear	
25/06/14	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not measured; no discharge
	pH					8.2	
	Total Suspended Solids (mg/L)					37	
	Turbidity (NTU)					20.63	
	Colour					Light brown	
24/06/14	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not measured; no discharge
	pH					7.7	
	Total Suspended Solids (mg/L)					13	
	Turbidity (NTU)					15.30	
	Colour					Clear	
23/06/14	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not measured; no discharge
	pH					7.4	
	Total Suspended Solids (mg/L)					11	
	Turbidity (NTU)					10.02	
	Colour					Clear	
20/06/14	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not measured; no discharge
	pH					7.8	
	Total Suspended Solids (mg/L)					18	
	Turbidity (NTU)					12.16	
	Colour					Clear	



Date	Pollutant	Point 10	Point 11	Point 13	Point 14	Point 12	Point 7
18/06/14	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not measured; no discharge
	pH					7.6	
	Total Suspended Solids (mg/L)					22	
	Turbidity (NTU)					15.08	
	Colour					Clear	
17/06/14	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not measured; no discharge
	pH					7.8	
	Total Suspended Solids (mg/L)					32	
	Turbidity (NTU)					26.11	
	Colour					Light brown	
16/06/14	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not measured; no discharge
	pH					7.8	
	Total Suspended Solids (mg/L)					21	
	Turbidity (NTU)					15.19	
	Colour					Light brown	
12/06/14	Oil and Grease	No water flowing	No water flowing	Not visible	No water flowing	Not visible	Not measured; no discharge
	pH			8.4		8.2	
	Total Suspended Solids (mg/L)			2		10	
	Turbidity (NTU)			4.46		6.72	
	Colour			Clear		Clear	
05/06/14	Oil and Grease	Not visible	No water flowing	Not visible	No water flowing	Not visible	Not measured; no discharge
	pH	8.2		8.2		7.7	
	Total Suspended Solids (mg/L)	9		3		8	
	Turbidity (NTU)	23.48		7.53		8.73	
	Colour	Light brown		Clear		Clear	
04/06/14	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not measured; no discharge
	pH					7.4	
	Total Suspended Solids (mg/L)					17	
	Turbidity (NTU)					17.42	
	Colour					Clear	



Date	Pollutant	Point 10	Point 11	Point 13	Point 14	Point 12	Point 7
03/06/14	<i>Oil and Grease</i>	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not measured; no discharge
	<i>pH</i>					7.3	
	<i>Total Suspended Solids (mg/L)</i>					20	
	<i>Turbidity (NTU)</i>					10.22	
	<i>Colour</i>					Clear	
02/06/14	<i>Oil and Grease</i>	Not visible	Not visible	Not visible	No water flowing	Not visible	Not measured; no discharge
	<i>pH</i>	8.4	7.1	8.2		8.0	
	<i>Total Suspended Solids (mg/L)</i>	19	2	26		7	
	<i>Turbidity (NTU)</i>	29.02	4.83	35.63		1.27	
	<i>Colour</i>	Clear	Clear	Clear		Clear	

**Comments on Results**

- Discharge of the main storage pond:
  - Commenced 30/06/14 and is ongoing.
- Swamp entrance:
  - Was mechanically opened 16/06/14
  - Was mechanically opened 18/06/14 and closed over the weekend prior to Monday 30/06/14.
  - Was mechanically opened 30/06/14 and has remained open.
- Notable Rainfall Events:
  - 19 mm recorded on Monday 02/06/14, being rainfall for the entire weekend.
  - 25 mm recorded Wednesday 11/06/14, being rainfall over the long weekend.



### 3.3. Storage Pond – Monitoring Point 7

#### Test Results

Test frequency: Daily during discharge.

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)
30/06/2014	Not visible	8.2	Awaiting results	23.94	Awaiting results	Awaiting results	Awaiting results
EPA Discharge Criteria	Not visible	4.0 – 8.5	50	-	-	-	-

\*Tests undertaken on site by Coastwide Civil

#### Remarks

- Discharge commenced on 30/06/14 and is ongoing.
  - All monitoring results are compliant with discharge criteria.
  - Some lab results have not yet been received.



## 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 $L_{Aeq}$ Contribution	CEMP Trigger Value
26/06/14	MP17	12:00pm – 12:15pm	$L_{A10}$ = 63.1 $L_{A90}$ = 51.7 <b><math>L_{Aeq}</math> = 61.0</b> $L_{max}$ = 79.9 $L_{min}$ = 46.9	Vehicles: 7 No, Av: 72.53 Site plant/machinery: 55.5, 52.8, 59.6, 48.6, 56.7 Birds: 59.6, 61.2, 58.2, 57.6  Continuous passing vehicles observed to be twice as loud as site noise. Site contribution = $L_{Aeq} - 10dB$	<b>51.0</b>	<b>52.0</b>
	MP18	12:17pm – 12:32pm	$L_{A10}$ = 59.6 $L_{A90}$ = 45.0 <b><math>L_{Aeq}</math> = 56.6</b> $L_{max}$ = 78.1 $L_{min}$ = 41.4	Birds: 52.6, 62.7, 51.4, 53.9, 46.3 Lawn mower at sports oval: 61.8, 59.6, 67.7, 63.5, 64.1  Lawnmower and bird noises observed constantly through monitoring period. Site noise inaudible. Site contribution = $L_{A90} - 10dB$	<b>35.0</b>	<b>44.0</b>
	MP19	12:40pm – 12:45pm	$L_{A10}$ = 53.6 $L_{A90}$ = 45.0 <b><math>L_{Aeq}</math> = 51.0</b> $L_{max}$ = 66.4 $L_{min}$ = 42.0	Adjacent house construction sites: 53.4, 61.4, 62.3, 48.3, 47.6 Vehicles: 61.7, 58.2, 55.6, 63.2.  House construction is the dominant noise source. Site noise inaudible. Site contribution = $L_{A90} - 10dB$	<b>35.0</b>	<b>44.0</b>
17/06/14	MP17	10:15am – 10:30am	$L_{A10}$ = 63.2 $L_{A90}$ = 54.0 <b><math>L_{Aeq}</math> = 61.8</b> $L_{max}$ = 79.8 $L_{min}$ = 51.6	Site plant/machinery: 62.3, 63.1, 58.3, 58.6, 55.6 Vehicles: 9 No, Av: 71.42  Excavator, dump truck and unloading of rock in the P2B area is audible, however the apparent volume of site noise is half that of the passing traffic. Site contribution = $L_{Aeq} - 10dB$ .	<b>51.8</b>	<b>52.0</b>
	MP18	10:35am – 10:50am	$L_{A10}$ = 59.4 $L_{A90}$ = 48.3 <b><math>L_{Aeq}</math> = 55.8</b> $L_{max}$ = 71.2 $L_{min}$ = 45.1	Birds: 61.7, 62.3, 63.1 Vehicles: 63.1, 65.2, 61.4 Site plant/ machinery: 53.5, 54.2, 56.1, 55.3  Site works were audible throughout monitoring. Site noise was roughly half the volume of ongoing bird noise throughout monitoring.  Site contribution = $L_{Aeq} - 10dB$	<b>45.8</b>	<b>44.0</b>
	MP19	10:55am – 11:10am	$L_{A10}$ = 59.6 $L_{A90}$ = 46.3 <b><math>L_{Aeq}</math> = 62.3</b> $L_{max}$ = 90.6 $L_{min}$ = 42.8	Subdivision site works: 55.3, 68.2, 73.2, 68.4, 73.1, 82.5, 88.1, 90.1, 83.5, 76.1, 58.5  Works at the adjacent house construction sites are the dominant noise source. Site noise inaudible. Site contribution = $L_{A90} - 10dB$	<b>36.3</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
11/06/14	MP17	12:00pm – 12:15pm	$L_{A10}$ = 68.0 $L_{A90}$ = 48.9 <b><math>L_{Aeq}</math> = 64.6</b> $L_{max}$ = 81.8 $L_{min}$ = 44.5	Site excavator in NE corner of P2B surcharge area: 69.5, 66.4, 65.2, 68.0, 65.5, 57.8, 63.2, 61.3 Vehicles: 13 No. Av: 69.72.  Noise from site was generally dominant, though passing vehicles were of equal noise intensity to site noise. Site contribution = $L_{Aeq} - 3dB$	<b>61.3</b>	<b>52.0</b>
		12:20pm – 12:35pm	$L_{A10}$ = 47.0 $L_{A90}$ = 42.6 <b><math>L_{Aeq}</math> = 44.6</b> $L_{max}$ = 47.0 $L_{min}$ = 42.6	Aeroplane: 49.8, 43.2 Site plant/ machinery: 46.8, 43.9, 44.6, 43.3, 48.8, 46.5 Birds: 41.2, 50.2, 47.2, 43.7, 58.3, 59.4, 45.9  Site noise was generally faint, approximately half the intensity of ongoing noise due to birds during monitoring. Site contribution = $L_{Aeq} - 10dB$	<b>34.6</b>	<b>44.0</b>
	12:45pm – 1:00pm	$L_{A10}$ = 53.8 $L_{A90}$ = 40.0 <b><math>L_{Aeq}</math> = 57.3</b> $L_{max}$ = 82.6 $L_{min}$ = 35.9	Subdivision site works: 41.7, 52.4, 48.1, 46.5, 50.7, 44.8 Vehicles: 58.1, 71.6, 69.8  Works at the adjacent house construction sites are the dominant noise source. Site noise inaudible. Site contribution = $L_{A90} - 10dB$	<b>30.0</b>	<b>44.0</b>	
03/06/14	MP17	8:30am – 8:45am	$L_{A10}$ = 70.8 $L_{A90}$ = 59.5 <b><math>L_{Aeq}</math> = 68.3</b> $L_{max}$ = 90.4 $L_{min}$ = 55.1	Site plant/machinery: 47.6, 46.6, 48.5, 46.3, 47.8, 45.2, 64.8, 52.8, 62.2, 69.3, 70.9 Vehicles: 72.1, 72.3, 70.9, 73.9, 69.3, 62.5, 71.7, 79.3 Pedestrians/ Bicycles: 63.4, 62.1, 64.0, 62.8, 62.4  Site noise is the dominant noise source. Site contribution = $L_{Aeq}$	<b>68.3</b>	<b>52.0</b>
		8:47am – 9:02am	$L_{A10}$ = 50.2 $L_{A90}$ = 38.4 <b><math>L_{Aeq}</math> = 49.8</b> $L_{max}$ = 66.9 $L_{min}$ = 36.5	Birds: 42.2, 41.3, 40.5, 42.8, 43.3, 49.5, 48.3 Aeroplane: 39.4, 40.1, 42.0  Birds are the dominant noise source; no noise from site is audible. Site contribution = $L_{A90} - 10dB$	<b>28.4</b>	<b>44.0</b>
	9:40am – 9:55am	$L_{A10}$ = 56.6 $L_{A90}$ = 46.6 <b><math>L_{Aeq}</math> = 54.1</b> $L_{max}$ = 78.0 $L_{min}$ = 42.8	House construction site: 50.8, 51.3, 49.8, 46.6, 54.3, 52.7, 53.3 Vehicles: 59.0  Works at the adjacent house construction sites are the dominant noise source. Site noise inaudible. Site contribution = $L_{A90} - 10dB$	<b>36.6</b>	<b>44.0</b>	

**Comments on Results**

- At MP17, weekly  $L_{Aeq}$  exceeded the trigger value in the first and second weeks of the period.
- At MP18, weekly  $L_{Aeq}$  exceeded the trigger value in the third week of the period.
- At MP19, weekly  $L_{Aeq}$  did not exceed the trigger value.
- Consultation with the community about the project has been ongoing. A community newsletter is being distributed monthly, explaining current works on site. A signboard has been erected at the site entrance providing a general explanation of the project. Both the newsletter and signboard contain 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
23/05/14 – 24/06/14	Ash Content (g/m <sup>2</sup> / month)	0.8	0.4	0.9
	Combustible Matter (g/m <sup>2</sup> / month)	0.2	0.2	0.3
	Total dust (g/m <sup>2</sup> / month)	1.0	0.6	1.2
<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

- Dust results were below compliance limits

## 4.3. Vibration

### Test Results

Test frequency: During initial stages of potentially vibratory work

No testing has been required this month.



## **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**