



SHELL COVE BOATHARBOUR - STAGE 2

MONTHLY MONITORING SUMMARY

December, 2015

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.

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	Shellharbour Swamp – Discharge into near shore zone	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
10,11,12,14, 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 12, Section 8 E1.3 for MP20:

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	Colour, 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 at points 8, 9, 12 and 20 to initiate monitoring at monitoring points 10-14 as per special frequency 2.

Station no.	Testing Requirement	Compliance Criteria	Frequency
8,9,12,20	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	

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)
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)



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, 22, 23	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	

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 ² / month, or <2g / m ² / 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 ^{1.75}	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:

- 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.
- 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	Point 20
30/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	2.99	2.74	14.50	7.21
28/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	3.76	2.86	20.15	8.21
27/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	3.98	2.88	20.42	8.63
26/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	4.48	2.98	19.10	10.94
23/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	4.18	1.56	18.01	28.15
22/12/2015	Colour	Clear	Clear	V. Light Brown	Clear
	Turbidity	6.23	9.23	44.21	19.77
21/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	16.38	20.86	9.40	7.06
18/12/2015	Colour	Clear	Clear	V. Light Brown	V. Light Brown
	Turbidity	1.34	1.18	16.56	36.82
17/12/2015	Colour	Clear	Clear	V. Light Brown	V. Light Brown
	Turbidity	2.33	2.85	40.83	37.27
16/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	4.00	6.59	5.09	9.44
15/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	11.06	19.61	10.81	6.46
14/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	8.40	7.61	14.87	16.83
11/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	1.91	2.49	3.94	4.62
10/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	1.61	1.72	3.04	3.76
09/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	3.06	4.81	4.50	4.98
CEMP Compliance Limit	Turbidity	5	5		
EPL Special Frequency 2 Trigger Value	Turbidity	5	5	5	



Date	Pollutant	Point 8	Point 9	Point 12	Point 20
08/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	2.39	4.53	4.37	3.55
07/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	1.39	0.81	2.29	3.86
04/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	3.29	4.42	4.86	4.48
03/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	3.25	2.36	7.65	4.62
02/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	3.29	2.11	6.58	8.34
01/12/2015	Colour	Clear	Clear	Clear	Clear
	Turbidity	6.38	4.40	20.48	7.28
CEMP Compliance Limit	Turbidity	5	5		
EPL Special Frequency 2 Trigger Value	Turbidity	5	5	5	

Comments on Results

- The 5 NTU trigger value was exceeded on a number of occasions at MP8, MP9, MP12 and MP20.
 - The majority of turbidity elevations were minor and are attributed to natural variation in ocean conditions.
 - Turbidity was elevated between 17/12/15 and 22/12/15 due to intense rainfall on 16/12/15, and ongoing rainfall from 21/12/15 to 23/12/15. This caused increased stormwater flows through site. There was no measured impact on ocean turbidity at MP8 or MP9 on most days during this period, except 21/12/15 where a slight elevation was recorded.
 - Turbidity remained slightly elevated on a number of days after the site holiday shutdown commenced on 23/12/15 at MP12 and MP20. This is attributed to turbidity being retained at these points in water which was not flowing significantly to the ocean. There was no impact on turbidity at MP8 or MP9 on these days.



3.2. Surface Water: Inbound flow– Monitoring Points 10, 11, 14, 21 and Outbound Flow – Monitoring Points 12 and 20

Test Results

Test frequency: Special Frequency 2 (Weekly, or daily when turbidity at MP8, 9, 12 or 20 is greater than 5 NTU)

Date	Pollutant	Point 10	Point 11	Point 14	Point 21	Point 12	Point 20
30/12/15	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not visible
	pH					8.28	7.86
	Total Suspended Solids (mg/L)					Awaiting results	Awaiting results
	Turbidity (NTU)					14.50	7.21
	Colour					Clear	Clear
28/12/15	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not visible
	pH					7.74	7.87
	Total Suspended Solids (mg/L)					Awaiting results	Awaiting results
	Turbidity (NTU)					20.15	11.47
	Colour					Clear	Clear
27/12/15	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not visible
	pH					7.86	7.68
	Total Suspended Solids (mg/L)					Awaiting results	Awaiting results
	Turbidity (NTU)					20.42	8.63
	Colour					Clear	Clear
26/12/15	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not visible
	pH					7.84	7.86
	Total Suspended Solids (mg/L)					Awaiting results	Awaiting results
	Turbidity (NTU)					19.10	10.94
	Colour					Clear	Clear
23/12/15	Oil and Grease	Not visible	Not visible	No water flowing	Not visible	Not visible	Not visible
	pH	7.70	7.83		7.40	7.68	7.73
	Total Suspended Solids (mg/L)	Awaiting results	Awaiting results		Awaiting results	Awaiting results	Awaiting results
	Turbidity (NTU)	8.36	55		22.52	18.01	28.15
	Colour	Clear	V. light brown		Clear	Clear	Clear
22/12/15	Oil and Grease	Not visible	Not visible	No water flowing	Not visible	Not visible	Not visible
	pH	7.66	7.60		7.84	7.82	7.89
	Total Suspended Solids (mg/L)	Awaiting results	Awaiting results		Awaiting results	Awaiting results	Awaiting results
	Turbidity (NTU)	12.69	47.80		31.67	44.21	19.77
	Colour	Clear	V. light brown		V. light brown	V. light brown	Clear



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Date	Pollutant	Point 10	Point 11	Point 14	Point 21	Point 12	Point 20
21/12/15	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not visible
	pH					7.79	7.98
	Total Suspended Solids (mg/L)					Awaiting results	Awaiting results
	Turbidity (NTU)					9.40	7.06
	Colour					Clear	Clear
18/12/15	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not visible
	pH					7.79	7.63
	Total Suspended Solids (mg/L)					21	32
	Turbidity (NTU)					16.56	36.82
	Colour					V. light brown	V. light brown
17/12/15	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not visible
	pH					7.18	7.48
	Total Suspended Solids (mg/L)					49	41
	Turbidity (NTU)					40.83	37.27
	Colour					V. light brown	V. light brown
16/12/15	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not visible
	pH					7.97	8.22
	Total Suspended Solids (mg/L)					4	5
	Turbidity (NTU)					5.09	9.44
	Colour					Clear	Clear
15/12/15	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not visible
	pH					8.05	8.16
	Total Suspended Solids (mg/L)					5	6
	Turbidity (NTU)					10.81	6.46
	Colour					Clear	Clear
14/12/15	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not visible
	pH					8.11	8.82
	Total Suspended Solids (mg/L)					6	10
	Turbidity (NTU)					14.87	16.83
	Colour					Clear	Clear



Date	Pollutant	Point 10	Point 11	Point 14	Point 21	Point 12	Point 20
03/12/15	Oil and Grease	No water flowing	No water flowing	No water flowing	Not visible	Not visible	Not visible
	pH				8.14	8.02	7.94
	Total Suspended Solids (mg/L)				27	5	5
	Turbidity (NTU)				30.26	7.65	4.62
	Colour				V. light brown	Clear	Clear
02/12/15	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not visible
	pH					7.98	7.97
	Total Suspended Solids (mg/L)					4	11
	Turbidity (NTU)					6.58	8.34
	Colour					Clear	Clear
01/12/15	Oil and Grease	No water flowing	No water flowing	No water flowing	No water flowing	Not visible	Not visible
	pH					8.04	8.23
	Total Suspended Solids (mg/L)					26	12
	Turbidity (NTU)					20.48	7.28
	Colour					Clear	Clear

Comments on Results

- Northern channel opening (MP12):
 - Opened mechanically 09/12/15 and closed naturally the next day
 - Opened mechanically 16/12/15 and closed naturally the next day
 - Opened naturally 27/12/15 and closed naturally the next day
- Southern channel opening (MP20):
 - Opened mechanically 01/12/15 and closed naturally 03/12/15
 - Opened mechanically 09/12/15 and closed naturally 14/12/15
 - Opened mechanically 16/12/15 and closed naturally the next day
 - Opened naturally 22/12/15 and closed naturally 26/12/15
 - Opened naturally 27/12/15 and closed naturally the next day
 - Opened naturally 30/12/15 and remained open to the end of the month
- Notable Rainfall Events:
 - 60mm measured 17/12/15 – this rainfall was recorded over a period of approximately 1 hour on 16/12/15 between 11:30am and 12:30pm. This would qualify as a 1 hour, 1 in 5 year event. The rainfall requirement for this event is 55.3mm of rainfall.
 - 30mm measured 22/12/15
 - 15mm measured 23/12/15
 - Full rainfall records included in Appendix C
- A number of lab results were not received in time for inclusion with this report. This was due to the Christmas holiday shutdown at the lab. These results will be included in the next report.



3.3. Storage Pond – Monitoring Point 7 and 22

Test Results

Test frequency: Daily during discharge.

MP22							
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)
30/12/2015	Not Visible	7.83	Awaiting results	10.66	Awaiting results	Awaiting results	Awaiting results
28/12/2015	Not Visible	7.65	Awaiting results	4.08	Awaiting results	Awaiting results	Awaiting results
27/12/2015	Not Visible	7.62	Awaiting results	9.85	Awaiting results	Awaiting results	Awaiting results
26/12/2015	Not Visible	7.67	Awaiting results	12.75	Awaiting results	Awaiting results	Awaiting results
23/12/2015	Not Visible	8.27	Awaiting results	19.00	Awaiting results	Awaiting results	Awaiting results
22/12/2015	Not Visible	6.66	Awaiting results	16.16	Awaiting results	Awaiting results	Awaiting results
21/12/2015	Not Visible	6.97	Awaiting results	9.77	Awaiting results	Awaiting results	Awaiting results
18/12/2015	Not Visible	7.87	16	19.60	<1.0	0.503	<0.005
17/12/2015	Not Visible	7.93	15	10.58	<1.0	0.491	<0.005
16/12/2015	Not Visible	7.62	6	6.81	<1.0	<0.005	<0.005
15/12/2015	Not Visible	7.73	12	9.03	<1.0	<0.005	<0.005
14/12/2015	Not Visible	7.84	10	8.78	<1.0	<0.005	<0.005
10/12/2015	Not Visible	7.57	6	5.48	<1.0	<0.005	0.028
09/12/2015	Not Visible	7.87	23	16.45	<1.0	<0.005	0.044
08/12/2015	Not Visible	7.54	8	6.39	<1.0	<0.005	<0.005
07/12/2015	Not Visible	7.49	4	5.76	<1.0	<0.005	<0.005
04/12/2015	Not Visible	6.78	8	26.74	1.0	<0.005	<0.005
03/12/2015	Not Visible	7.04	12	26.52	1.2	<0.005	<0.005
EPA Discharge Criteria		4.0 – 8.5	50	-	-	-	-



MP23							
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)
30/12/2015	Not Visible	8.24	Awaiting results	13.39	Awaiting results	Awaiting results	Awaiting results
28/12/2015	Not Visible	7.68	Awaiting results	8.21	Awaiting results	Awaiting results	Awaiting results
27/12/2015	Not Visible	8.14	Awaiting results	14.33	Awaiting results	Awaiting results	Awaiting results
26/12/2015	Not Visible	7.75	Awaiting results	9.45	Awaiting results	Awaiting results	Awaiting results
23/12/2015	Not Visible	6.89	Awaiting results	17.68	Awaiting results	Awaiting results	Awaiting results
22/12/2015	Not Visible	7.63	Awaiting results	32.64	Awaiting results	Awaiting results	Awaiting results
21/12/2015	Not Visible	7.46	Awaiting results	6.71	Awaiting results	Awaiting results	Awaiting results
18/12/2015	Not Visible	7.36	20	31.68	<1.0	0.529	0.012
17/12/2015	Not Visible	7.55	16	33.39	<1.0	0.682	<0.005
16/12/2015	Not Visible	8.23	5	6.70	<1.0	<0.005	<0.005
14/12/2015	Not Visible	8.06	14	12.11	1.10	<0.005	0.007
10/12/2015	Not Visible	7.99	47	25.62	2.0	<0.005	0.052
09/12/2015	Not Visible	7.87	11	9.34	1.10	0.009	0.035
08/12/2015	Not Visible	8.12	5	6.75	<1.0	<0.005	<0.005
04/12/2015	Not Visible	8.05	11	3.96	1.0	<0.005	<0.005
01/12/2015	Not Visible	7.85	8	5.44	<1.0	0.008	0.046
EPA Discharge Criteria		4.0 – 8.5	50	-	-	-	-

**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

Remarks – MP23

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



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
23/12/15	MP17	10:50am – 11:05am	L_{A10} = 65.1 L_{A90} = 46.8 L_{Aeq} = 63.8 L_{max} = 84.7 L_{min} = 44.1	Vehicles: 23 No., Av: 74.29 Dog: 4 No Av: 53.03 Plane: 5 No., Av: 62.96 Birds: 4 No., Av: 55.45 Site noise inaudible. Site contribution = $L_{A90} - 10dB$	36.8	52.0
	MP18	11:10am – 11:25am	L_{A10} = 51.5 L_{A90} = 44.4 L_{Aeq} = 49.2 L_{max} = 70.5 L_{min} = 41.4	Birds: 11 No., Av: 54.73 Wind: 4 No., Av: 52.63 Plane: 55.6, 54.1 Site noise inaudible. Site contribution = $L_{A90} - 10dB$	34.4	44.0
	MP19	11:30 am – 11:45am	L_{A10} = 59.1 L_{A90} = 48.2 L_{Aeq} = 57.2 L_{max} = 76.9 L_{min} = 43.7	Lawn Mower: 7 No., Av: 59.49 Birds: 3 No., Av: 53.57 Vehicles: 4 No., Av: 67.63 Wind: 4 No., Av: 54.70 Site noise inaudible. Site contribution = $L_{A90} - 10dB$	38.2	44.0
15/12/15	MP17	3:20pm – 3:35pm	L_{A10} = 71.0 L_{A90} = 54.7 L_{Aeq} = 68.3 L_{max} = 87.2 L_{min} = 47.2	Site noise: 8 No., Av: 58.34 Vehicles: 15 No., Av: 80.06 Site noise audible, but similar in intensity to other noise sources. Site contribution = $L_{Aeq} - 3dB$	65.3	52.0
	MP18	3:00pm – 3:15pm	L_{A10} = 53.9 L_{A90} = 42.7 L_{Aeq} = 52.6 L_{max} = 73.2 L_{min} = 37.9	Birds: 6 No., Av: 57.17 Vehicles: 3 No., Av: 57.90 Pedestrians: 68.2, 70.4 Site noise inaudible. Site contribution = $L_{A90} - 10dB$	32.7	44.0
	MP19	2:35pm – 2:50pm	L_{A10} = 47.5 L_{A90} = 39.0 L_{Aeq} = 48.9 L_{max} = 68.1 L_{min} = 37.3	Plane: 51.3 Leaf blower: 3 No., Av: 50.27 Vehicles: 3 No., Av: 66.6 Site noise inaudible. Site contribution = $L_{A90} - 10dB$	29.0	44.0
10/12/15	MP17	12:05pm – 12:20pm	L_{A10} = 62.9 L_{A90} = 46.1 L_{Aeq} = 63.7 L_{max} = 85.6 L_{min} = 43.9	Vehicles: 13 No., Av: 76.31 Dogs: 59.3, 57.4 Birds: 50.3, 54.1 Site noise inaudible. Site contribution = $L_{A90} - 10dB$	36.1	52.0
	MP18	11:45pm – 12:00pm	L_{A10} = 60.9 L_{A90} = 49.6 L_{Aeq} = 57.8 L_{max} = 73.9 L_{min} = 47.0	Vehicles: 3 No., Av: 67.0 Lawnmower: 7 No., Av: 64.91 Birds: 55.6, 53.7, 58.7 Site noise inaudible. Site contribution = $L_{A90} - 10dB$	39.6	44.0
	MP19	11:20pm – 11:35pm	L_{A10} = 50.4 L_{A90} = 39.5 L_{Aeq} = 50.5 L_{max} = 69.8 L_{min} = 37.1	Vehicles: 7 No., Av: 61.29 Birds: 50.7 Plane: 51.6 Site noise inaudible. Site contribution = $L_{A90} - 10dB$	29.5	44.0



Date	Location	Time	Measured Noise Levels	Observed Noise Sources and notes (sound levels in dB)	Estimated L_{Aeq} Contribution	CEMP Trigger Value
02/12/15	MP17	3:10pm – 3:25pm	L_{A10} = 70.8 L_{A90} = 55.6 L_{Aeq} = 68.0 L_{max} = 87.0 L_{min} = 53.2	Wind: 6 No., Av: 68.37 Vehicles: 15 No., Av: 79.21 Site noise: 3 No., Av: 56.53 CWC Site noise could be heard faintly in the background. Passing cars were the dominant noise source. Site contribution = $L_{Aeq} - 10dB$	58.0	52.0
	MP18	2:50pm – 3:05pm	L_{A10} = 64.7 L_{A90} = 56.5 L_{Aeq} = 62.5 L_{max} = 78.7 L_{min} = 53.5	Wind: 9 No., Av: 71.48 Vehicles: 63.4 Pedestrians: 3 No., Av: 62.76 Site noise inaudible. Site contribution = $L_{A90} - 10dB$	46.5	44.0
	MP19	2:20pm – 2:35pm	L_{A10} = 61.7 L_{A90} = 48.5 L_{Aeq} = 59.2 L_{max} = 79.6 L_{min} = 44.3	Wind: 8 No., Av: 66.3, Other construction sites: 3 No., Av: 59.83 Birds: 3 No., Av: 60.53 Plane: 54.8, 63.5 Vehicles: 72.2 Site noise inaudible. Site contribution = $L_{A90} - 10dB$	38.5	44.0

Comments on Results

- At MP17, weekly L_{Aeq} exceeded the trigger value on 02/12/15, 15/12/15
- At MP18, weekly L_{Aeq} exceeded the trigger value on 02/12/15
- 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. 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
25/11/15 – 23/12/15	<i>Ash Content (g/m²/ month)</i>	Awaiting results	Awaiting results	Awaiting results
	<i>Combustible Matter (g/m²/ month)</i>	Awaiting results	Awaiting results	Awaiting results
	<i>Total dust (g/m²/ month)</i>	Awaiting results	Awaiting results	Awaiting results
SEMP Compliance Limit	<i>Total dust (g/m²/ month)</i>	4.0	4.0	4.0

Comments on Results

- Dust results were not received in time for inclusion with this report due to the Christmas holiday shutdown period at the lab. These will be included in next month's report.



4.3. Vibration

Test Results

Test frequency: During initial stages of potentially vibratory work

No testing has been required this month.

4.4. Blasting

Test Results

Test frequency: During each blast

Blast #	Blast Date	Blast Vibration (mm/s)			Blast Overpressure (dB)		
		MP1	MP2	MP3	MP1	MP2	MP3
043	03/12/2015	0.19	0.19	Nil trigger	100.6	96.3	Nil trigger
044	14/12/2015	Nil trigger	Nil trigger	Nil trigger	Nil trigger	Nil trigger	Nil trigger
045	14/12/2015	Nil trigger	Nil trigger	0.43	Nil trigger	Nil trigger	98.0
EPL Compliance Limits		5	5	5	115	115	115

Comments on Results

- Vibration and overpressure results were below compliance limits at all monitoring points during the blast.



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