

NEWCASTLE COAL INFRASTRUCTURE GROUP
COAL EXPORT TERMINAL

ANNUAL ENVIRONMENTAL MANAGEMENT REPORT
2010



July 2010

Revision 1

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LIST OF ATTACHMENTS

Attachment A	Dust Deposition Monitoring Results
Attachment B	Surface Water Monitoring Results

1 INTRODUCTION

This Annual Environmental Management Report (AEMR) has been prepared for the Newcastle Coal Infrastructure Group (NCIG) Coal Export Terminal project (the Project) in accordance with the conditions (Section 5.2) of the approved Construction Environmental Management Plan (CEMP). The CEMP was prepared in accordance with Condition 7.2, Schedule 2 of the Project Approval (06_0009) which was granted on 13 April 2007.

This is the second AEMR prepared for the NCIG Project and it covers the period April 2009 to March 2010 (i.e. a 12 month period), which includes the continuation of Stage 1 construction and the commencement of commissioning activities relating to the operation of the terminal.

The AEMR reviews the performance of the Project against the requirements of the Project Approval and provides an overview of environmental management actions and summarises monitoring results over the 12 month reporting period. The AEMR will be distributed to relevant government agencies and stakeholders, and copies provided to other interested parties, if requested.

During the AEMR reporting period dredging operations by NCIG were predominantly completed. Additionally, these activities and related environmental management are not the subject of this AEMR. Only the environmental management requirements of both the CEMP and the commencement of operations which are associated with the terrestrially based coal export terminal construction activities are detailed by this AEMR. Details of the compliance of dredging activities are outlined in separate reports.

1.1 APPROVALS, LEASES, LICENCES AND PERMITS

The Project is being undertaken under the approvals, leases, licences and permits presented in Table 1.

Table 1: Project Approval, Leases, Licences and Permits

Instrument	Relevant Authority	Date Granted	Duration of Approval
Project Approval (06_0009)	Department of Planning	13 April 2007	5 years unless substantially commenced
Project Lease	State Property Authority	22 January 2008	35 years
Environmental Protection Licence (EPL) (No. 12693)	Department of Environment and Climate Change	26 October 2007	Until the licence is surrendered or revoked. The licence is subject to review every 5 years.
Environment Protection and Biodiversity Conservation Act 1999	Department of the Environment and Heritage	11 October 2007	Perpetuity
Maritime Services Act 1935 s13JE	NSW Maritime	02 October 2007	Perpetuity
Environmental Representative	Department of Planning	03 October 2007	Perpetuity
Project Ecologist	Department of Planning	02 May 2007 & 25 October 2007	Perpetuity

1.2 MANAGEMENT PLANS AND MONITORING PROGRAMMES

In accordance with the Project Approval, the Project is currently being undertaken under a number of environmental management plans and monitoring programmes, including:

- Construction Environmental Management Plan
- Construction Noise Management Plan
- Environmental Monitoring Programme
- Acid Sulfate Soil Management Plan
- Construction Surface Water Management Plan
- Erosion and Sediment Control Plan
- Surface Water Monitoring Programme
- Construction Traffic Management Protocol
- Vehicle Traffic Management Plan
- Site Water Management Plan
- Green and Golden Bell Frog Management Plan
- Compensatory Habitat Environmental Management Plan
- Vegetation Clearance Protocol
- Coordinated Works Programme
- Compliance Tracking Programme
- Green and Golden Bell Frog Monitoring Programme
- Avifauna Monitoring Programme
- Operation Environmental Management Plan
- Operation Dust Management Plan
- Operation Noise Management Plan
- Operation Spontaneous Combustion Management Plan
- Operation Water Management Plan

1.3 PROJECT CONTACTS

Contact Details for the Project are provided below:

General Manager

Paul Beale

Phone: (02) 4920 3952

Email: pbeale@ncig.com.au

Project Manager

Brian Cole

Phone: (02) 4915 4955

Email: bcole@ncig.com.au

HSEC Manager

(Environmental Representative)

Nathan Juchau

Phone: (02) 4920 3965

Email: njuchau@ncig.com.au

1.4 PROJECT BACKGROUND

The Newcastle Coal Infrastructure Group (NCIG) Coal Export Terminal (CET) (the Project) is located on Kooragang Island in Newcastle, New South Wales (NSW) (Figure 1.1). The Project includes the construction and operation of a CET up to 66 million tonnes per annum (Mtpa), including associated rail and coal handling infrastructure and wharf/shiploading facilities on the south arm of the Hunter River.



Figure 1.1: Project Location

NCIG is the proponent of the Project and is a consortium of the following six companies:

- Hunter Valley Energy Coal Limited;
- Centennial Coal Company Limited;
- Donaldson Coal Pty Limited;
- Peabody Energy Australia Coal Pty Limited;
- Felix Resources Limited; and
- Whitehaven Coal Mining Pty Ltd.

NCIG was formed in response to a call for Expressions of Interest for the development of land on Kooragang Island by the NSW State Government in 2004. The outcome of this process was that in 2006 NCIG was awarded the right to develop the parcel of land that is now the Project site. Project Approval (06_0009) was granted in April 2007 and construction of Stage 1 of the coal export terminal (30 Mtpa) commenced in April 2008. The majority of Stage 1 has reached mechanical completion and this has been handed over to NCIG for operation. Some minor works related to Stage 1 are being completed.

The Project general arrangement is shown on Figure 1.2. The general arrangement is based on the planned maximum coal throughput of 66 Mtpa. The main activities associated with the construction of the Project include:

- re-use of dredged materials from the south arm of the Hunter River as preload and engineering fill for construction of the coal storage area, rail corridor and wharf facilities;
- construction of a coal storage area including coal stockpiles, conveyors, transfer points and combined stacker/reclaimers;
- construction of wharf facilities, shiploaders, conveyors and buffer bins;
- foundation preparation, formation construction and capping of a rail corridor traversing the existing Kooragang Island Waste Emplacement Facility (KIWEF) for the development of the rail spurs, rail sidings and rail loops;
- construction of rail spurs, rail sidings and rail loops, rail overpass, train unloading stations and connecting conveyors;
- development of water management infrastructure including site drainage works, stormwater settlement ponds, primary and secondary settling ponds, site water pond, water tanks and stockpile spray system;
- installation of electricity reticulation and control systems;
- development of access roads and internal roads;
- construction of administration and workshop buildings; and
- other associated minor infrastructure, plant, equipment and activities.

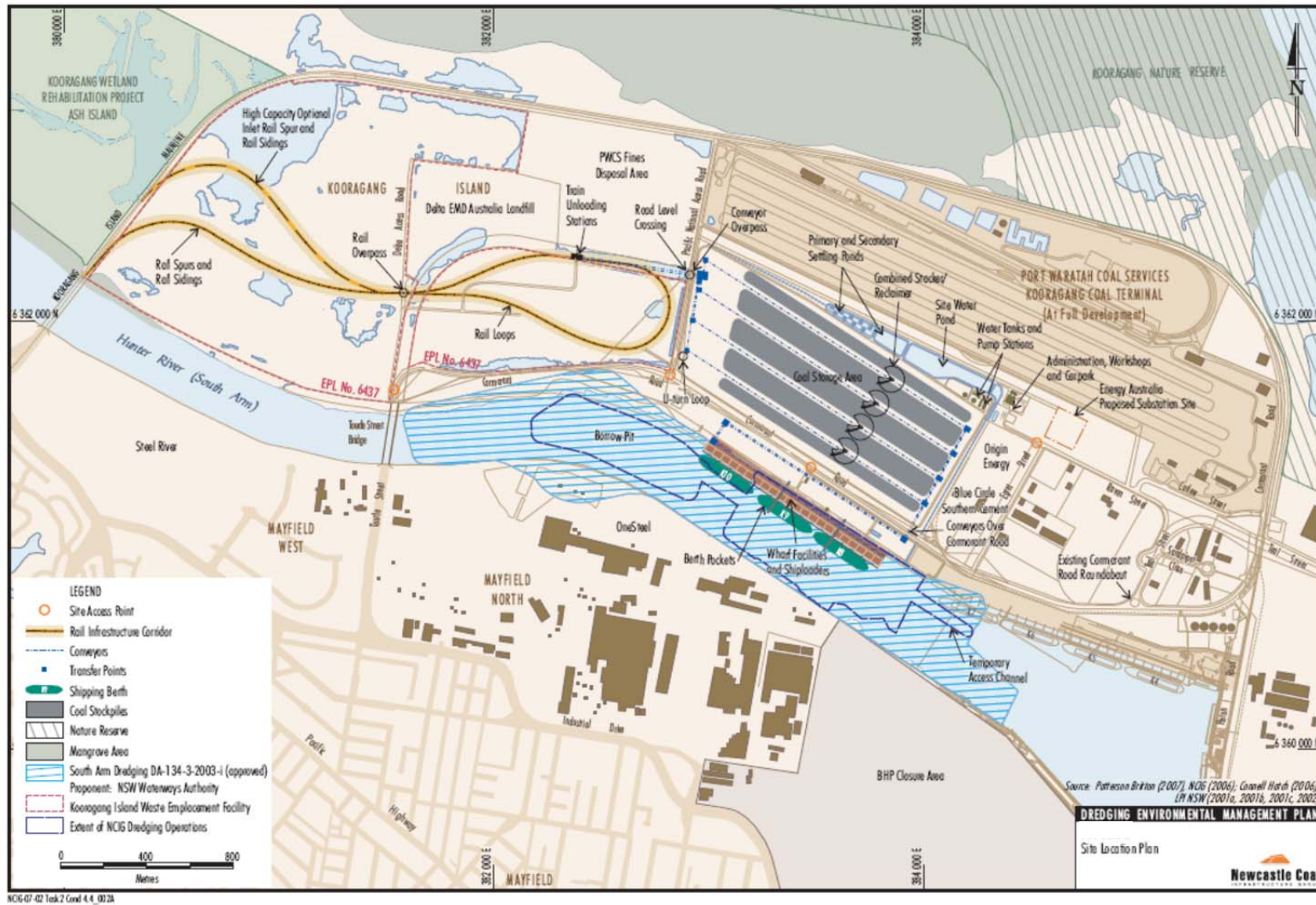


Figure 1.2: Project Layout

2 OVERVIEW OF ACTIVITIES

2.1 CONSTRUCTION

Construction of Stage 1 of the NCIG Coal Export Terminal development commenced in April 2008 with the initiation of the reclamation of general fill material from the Hunter River. During the previous period (April 2008 – March 2009) the construction works were primarily focussed on fill reclamation, geotechnical ground improvement and earthwork. Erection of the structural elements of the project site was also commenced during the previous period.

Construction of Stage 1 was practically completed during this reporting period. The overall progress of construction activities during the reporting period was such that by the end of the reporting period the Project was 97.9% complete. The primary construction activities undertaken during the reporting period include:

- Completed ground improvement works across stockyard area.
- Completed all major earthworks across site including the rail embankments and stacker/reclaimer berms (see Figure 2.1).
- Completed construction of wharf facilities (see Figure 2.2).
- Completed erection of stacker/reclaimers and shiploader (Figures 2.3 to 2.6).
- Completed construction of conveyor infrastructure (Figures 2.7 to 2.9).
- Completed construction of the rail infrastructure including rail spurs, rail sidings and rail loops (see Figure 2.10).
- Completed construction of train unloading station (see Figure 2.11).
- Development of access roads and internal roads.
- Completed construction of administration and workshop buildings (see Figure 2.12).
- Installation of all support infrastructure and services.

The overall progress of construction activities on the project is clearly illustrated through a comparison of aerial photographs taken in March 2009 (see Figure 2.13) and March 2010 (see Figure 2.14).



Figure 2.1: Earthworks on SR02 Machine Berm



Figure 2.2: Completion of Terminal Berths



Figure 2.3: Stacker Reclaimer Erection



Figure 2.4: Stacker Reclaimer Erection



Figure 2.5: Delivery of Shiploader to Newcastle Port



Figure 2.6: Shiploader Unloaded onto NCIG Wharf



Figure 2.7: Erection of Gantry Linking Stockyard to Wharf



Figure 2.8: Erection of Buffer Bin



Figure 2.9: Conveyor Infrastructure



Figure 2.10: NCIG Rail Loop



Figure 2.11: Rail Unloading Station Nearing Completion



Figure 2.12: Water Storage Tanks



Figure 2.13: March 2009 Aerial Photograph of Project



Figure 2.14: March 2010 Aerial Photograph of Project

2.2 OPERATION

The commissioning of Stage 1 of the NCIG Coal Export Terminal development infrastructure commenced in this reporting period. This commissioning activity involved initially operating the completed infrastructure unloaded and at low speed then progressing to loaded scenarios.

The loaded commissioning of the inbound system (train unloading station through to stacker/reclaimer) was undertaken utilising “sacrificial” coal that was delivered to the terminal by train. “Sacrificial” coal is a low quality coal that was used to line the base of the stockyard to act as a buffer between export coal and the sand base. The first delivery of “sacrificial” coal occurred in February 2010 (see Figure 2.15) and was stacked in the stockyard (see Figure 2.17) continued during February / March 2010 period.



Figure 2.15: Train Arrival at NCIG Terminal

The loaded commissioning of the outbound system (stacker/reclaimer through shiploader onto a ship) was initiated in March 2010. As the material required for loaded commissioning needed to go onto a ship, and subsequently shipped from the terminal, export quality coal was required for this task. Trains delivered export material to the NCIG Terminal (see Figure 2.16) and once a cargo of approximately 40,000 tonnes was accumulated this was loaded onto a Handimax sized vessel (see Figure 2.18).

At the end of the reporting period commissioning activities were still ongoing. Commissioning activities are programmed to be undertaken until June 2010, with operational activities, against a commitment schedule, expected to commence in July 2010.



Figure 2.16: Train Delivering Coal at NCIG Terminal



Figure 2.17: Stacking “Sacrificial” Coal on Stockyard



Figure 2.18: Loading Export Coal



Figure 2.19: Overview of NCIG Terminal (March 2010)

3 ENVIRONMENTAL MANAGEMENT AND PERFORMANCE

3.1 METEOROLOGY

3.1.1 Environmental Management

In accordance with Condition 2.8, Schedule 2 of the Project Approval (06_0009), an on-site meteorological monitoring station was operated during the reporting period to monitor weather conditions representative of the site. This station was installed on the NCIG site (see Figure 3.1.1) in accordance with the requirements of the CEMP.

3.1.2 Environmental Performance

Table 3.1.1 outlines the monitoring locations, meteorological parameters recorded and frequency of monitoring for the Project in accordance with the CEMP.

Table 3.1.1: Summary of the Meteorological Monitoring Programme

Monitoring Parameter	Monitoring Sites	Frequency	Criteria
<ul style="list-style-type: none"> • Temperature • Relative humidity • Net solar radiation • Rainfall • Wind speed and direction • Sigma theta (rate of change of wind direction). 	Project automated meteorological station ¹ .	Continuously monitored and the data averaged over 15 minute periods.	N/A.

¹ The location of monitoring sites is shown on Figure 3.1.1.

The meteorological monitoring results for the reporting period are summarised below.

The monthly statistical information for each of the meteorological monitoring parameters is detailed in Table 3.1.2. From this information Figure 3.1.2 illustrates the variation in average temperature during the reporting period. These variations from the winter to summer seasons are the expected seasonal norms.

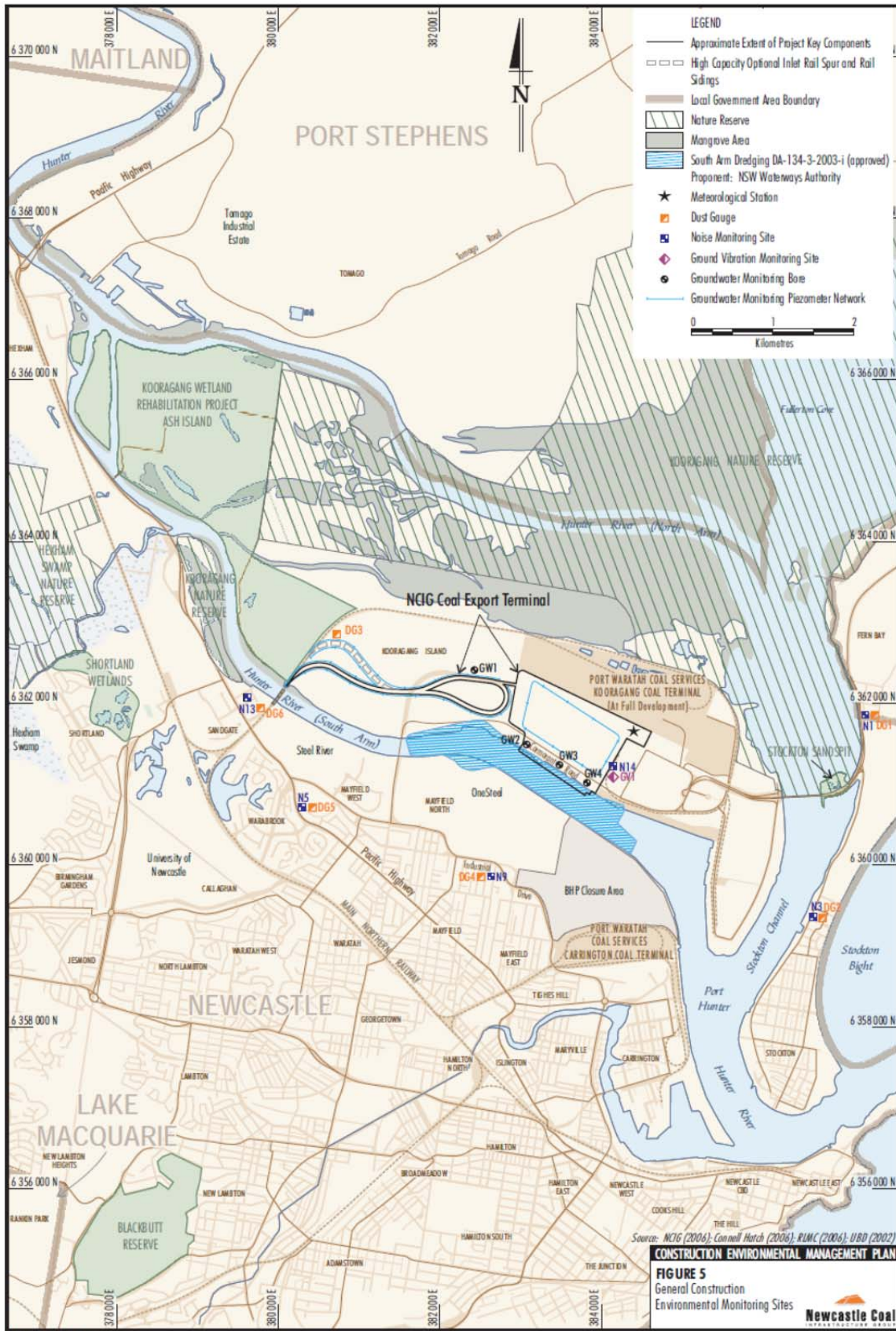


Figure 3.1.1: Environmental Monitoring Sites

Table 3.1.2: Meteorological Monitoring Information

	Daily Rainfall				Wind Direction				Sigma Theata				Wind Speed			
	Mean	SD	Max	Min	Mean	SD	Max	Min	Mean	SD	Max	Min	Mean	SD	Max	Min
Apr-09	5.1	12.5	61.6	0.00	195.49	89.14	359	0.00	9.71	8.4	92	0.00	3.39	2.35	15.62	0.00
May-09	7	11.9	40.8	0.00	215.72	95.4	359	0.00	8.55	9.06	96	0.00	3.09	2.35	10.91	0.00
Jun-09	3.8	10.2	48	0.00	229.09	111.26	359	0.00	10.31	10.21	98	0.00	2.45	1.48	7.19	0.00
Jul-09	1.6	4.3	20.4	0.00	267.62	77.1	359	0.00	8.17	7.84	95	0.00	3.36	2.01	11.4	0.00
Aug-09	0	0.1	0.4	0.00	246.41	106.35	359	0.00	9.92	8.74	83	0.00	2.99	2.18	12.39	0.00
Sep-09	0.7	1.9	8.2	0.00	232.06	101.72	359	0.00	10.08	8.73	91	0.00	3.6	2.61	15.37	0.00
Oct-09	3.3	7.1	31.8	0.00	184.59	91.5	359	0.00	10.55	8.03	92	0.00	3.72	2.3	13.39	0.00
Nov-09	2.1	4.4	14.8	0.00	165.38	87.74	359	0.00	11.07	7.95	88	0.00	3.47	2.08	13.63	0.00
Dec-09	1.8	3.5	13.8	0.00	149.73	78.01	359	0.00	12.14	7.39	86	0.00	3.62	1.84	10.66	0.00
Jan-10	2.7	5.7	27.6	0.00	170.48	87.41	359	0.00	11.2	7.19	84	0.00	3.39	1.72	12.15	0.00
Feb-10	0.3	0.8	3.4	0.00	139.87	82	359	0.00	12.06	6.93	100	0.00	3.4	1.86	10.16	0.00
Mar-10	0.2	8.3	4.7	0.00	151.51	90.42	359	0.00	12.33	8.43	93	0.00	3.43	1.97	13.14	0.00

	Temperature 2m				Solar Radiation				Relative humidity				Temperature 10m			
	Mean	SD	Max	Min	Mean	SD	Max	Min	Mean	SD	Max	Min	Mean	SD	Max	Min
Apr-09	19.33	3.03	28	9.4	128.9	197.71	912	0	73.46	16.1	99	0	18.83	2.91	27.4	9
May-09	16.41	3.04	23.1	8.1	101.31	162.69	741	0	73.39	15.21	99	0	15.99	2.97	22.5	7.8
Jun-09	13.78	2.99	20	6	81.92	129.06	547	0	73.16	15.28	99	0	13.4	2.87	19.1	5.7
Jul-09	12.63	3.45	23.7	5.1	107.1	161.87	641	0	67.67	15.29	99	0	12.19	3.34	23.1	4.8
Aug-09	14.98	4.87	28.3	5.4	150.21	211.12	771	0	60.78	17.79	97	0	14.54	4.69	27.4	5.1
Sep-09	17.37	4.45	32.5	8.1	186.45	258.82	912	0	63.56	19.35	100	0	16.77	4.27	31.6	7.5
Oct-09	18.04	3.79	34.4	9.4	196.94	280	1018	0	70.44	18.37	99	0	17.4	3.65	33.2	8.7
Nov-09	22.54	4.62	42	14.2	226.67	307.49	1124	0	78.75	17.39	100	0	21.86	4.52	41.1	13.9
Dec-09	22.62	3.16	39.3	12.4	211.01	293.48	1018	0	76.41	13.17	101	0	21.89	3.04	37.7	11.8
Jan-10	24.3	3.47	42	15.2	222.77	304.43	1018	0	67.64	15.6	99	0	23.56	3.3	40.8	14.8
Feb-10	24.61	2.85	37.4	17.9	201.87	276.61	1029	0	77.72	12.01	99	0	23.88	2.62	36.2	17.3
Mar-10	22.89	3.05	34.4	15.2	177.09	252.16	1188	0	75.84	12.39	102	0	22.26	2.85	33.2	14.2

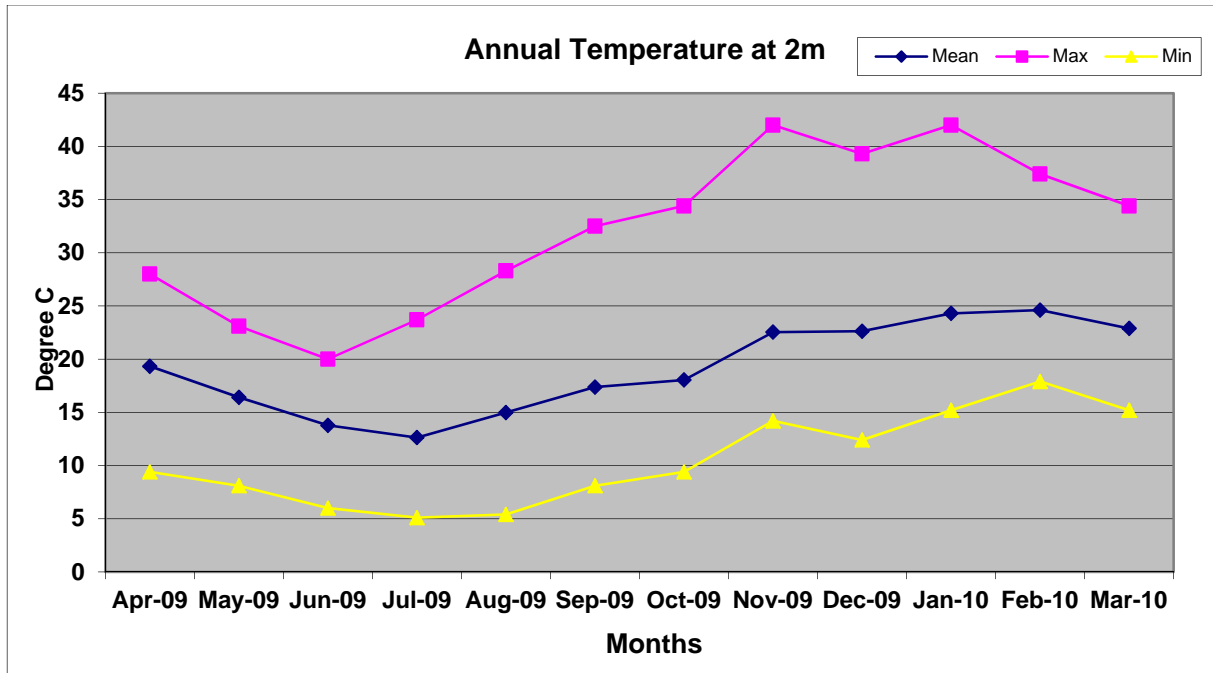


Figure 3.1.2: Average Temperature

The daily rainfall recorded at the project site is illustrated by Figure 3.1.3. A total of 874mm of rain was received on the site during the reporting period with the highest rainfall events recorded in the April 2009 to June 2009 period. Relatively low rainfall was also received during the August to September 2009 period and the February to March 2010 period

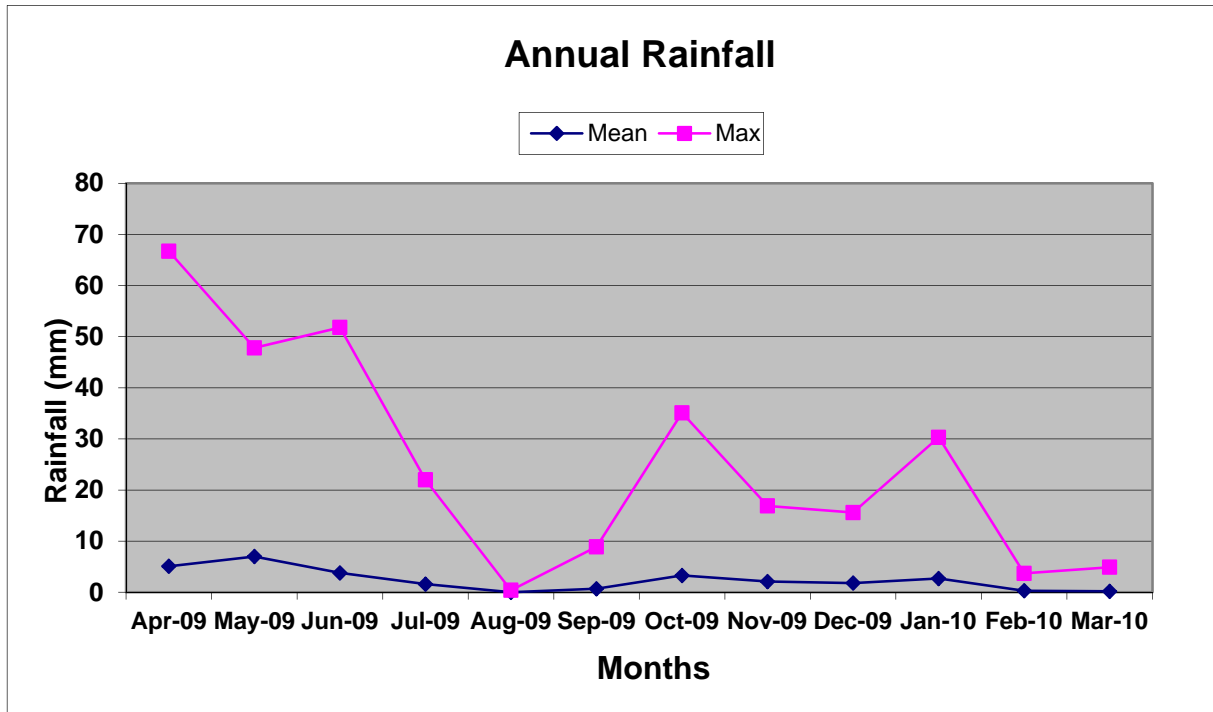


Figure 3.1.3: Daily and Average Rainfall

Figure 3.1.4 also illustrates the seasonal variation in wind speed and direction at the site which highlights that the dominant conditions in relation to wind has a westerly aspect during the winter period and is predominately easterly with a notable portion southerly during the summer period.

Annual and seasonal windroses for NCIG Kooragang Island (April 2009 - March 2010)

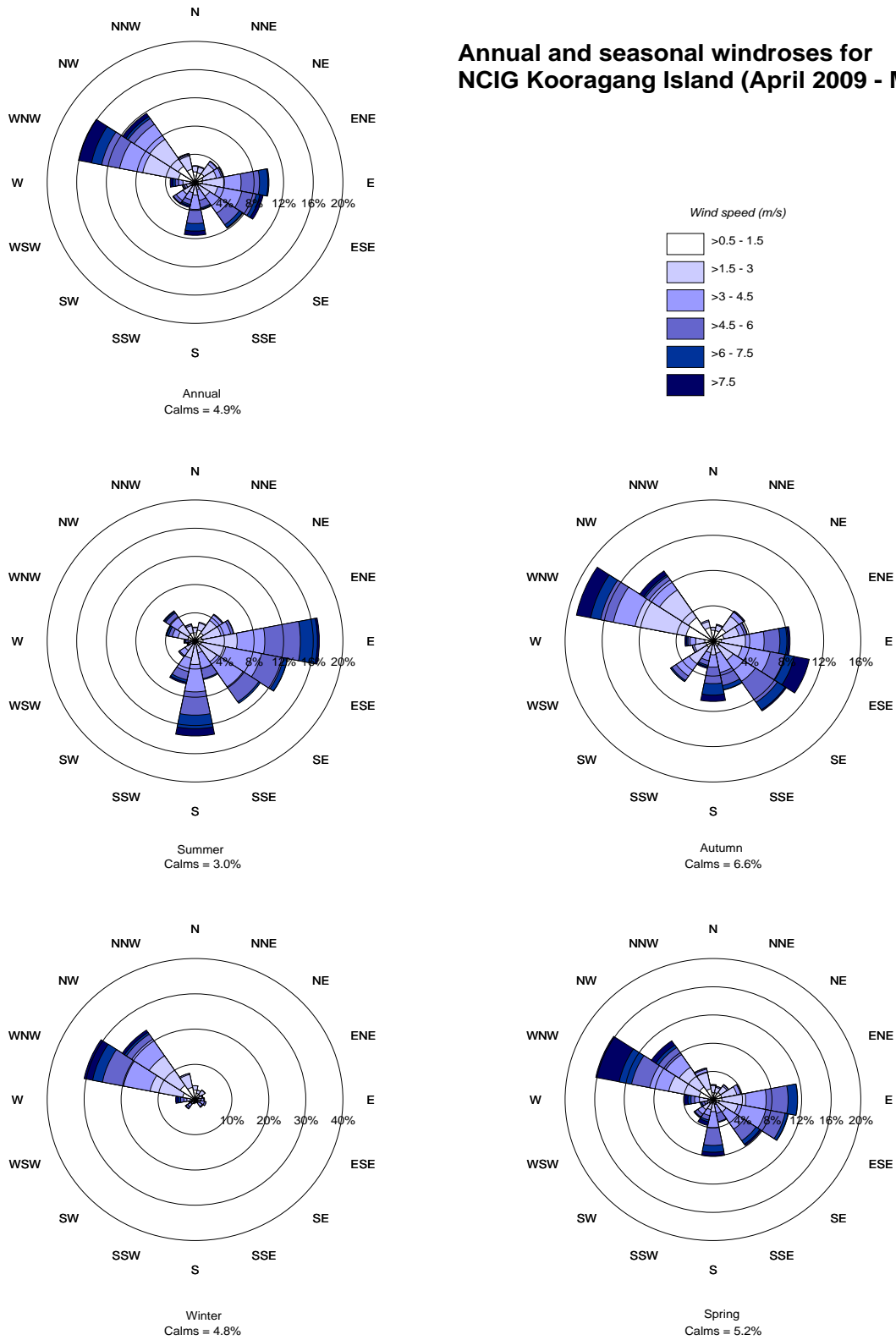


Figure 3.1.4: Seasonal Wind Conditions

3.1.3 Reportable Incidents

No environmental incidents or complaints relating to meteorological conditions were made during the reporting period.

3.1.4 Further Improvements

No improvement to meteorological monitoring is required for the next period. The output of the automated meteorological monitoring station will however be incorporated into the site management system of NCIG operational activities in 2010.

3.2 AIR QUALITY

3.2.1 Environmental Management

In accordance with Conditions 2.2 and 2.4, Schedule 2 of the Project Approval (06_0009) NCIG designed and constructed the Project in a manner that minimises or prevents the emission of visible dust beyond the boundary of the site (including windblown and traffic generated dust).

In accordance with Condition 2.5, Schedule 2 of the Project Approval (06_0009) dust emissions are being controlled on all internal roads, trafficable areas and manoeuvring areas by sealing, or otherwise treating surfaces to minimise the potential for dust generation.

In accordance with Condition 2.1, Schedule 2 of the Project Approval (06_0009) NCIG did not permit any offensive odour, as defined under section 129 of the *Protection of the Environment Operations Act, 1997*, to be emitted beyond the boundary of the Project site.

3.2.2 Environmental Performance

Table 3.2.1 outlines the monitoring locations, air quality parameters recorded, frequency of monitoring and air quality criteria for the Project in accordance with the CEMP.

Table 3.2.1: Summary of the Meteorological Monitoring Programme

Monitoring Parameter	Monitoring Sites	Frequency	Criteria
Dust deposition ² .	DG1, DG2, DG3, DG4, DG5 and DG6 ¹ .	Monthly during the first three months of construction, then quarterly.	4 g/m ² /month.

¹ The location of monitoring sites is shown on Figure 3.1.1.

² Dust deposition was analysed in accordance with AS/NZS 3580.10.1-2003 *Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method*.

The air quality monitoring results for the reporting period are summarised in Table 3.2.2 below.

Table 3.2.2: Depositional Dust Monitoring Results

	DG01	DG02	DG03	DG04	DG05	DG06
Average Monthly Insoluble Matter (g/m ² /month)	6.37	1.33	3.13	1.27	5.24	2.80

Average depositional dust results were below the monthly criteria of 4 grams per square metre per month at DG02, DG03, DG04 and DG06. Average results for DG01 were above the criteria. This monitoring location is in Fern Bay and is operated by PWCS, with data shared between both PWCS and NCIG. Monthly results causing an elevated yearly average (April-June 09) were noted by the laboratory to be contaminated (i.e. insects or bulk objects in sample). There was also an elevated monthly dust level in October 2009 (4.8g/m²/month) that was due to a major dust storm on the 23 September and two minor dust storms in the following two weeks. DG05 also reported a monthly depositional dust average above the criteria. This relates specifically to the month of February, 2010 (43.9 g/m²/month). This was investigated and identified to be caused from metallic particles resulting from electrical works carried out by Energy Australia directly adjacent to DG05. Full dust deposition data for the reporting period is provided in Attachment A.

The dust control measures implemented during construction of the Project include the following:

- demarcation and minimisation of ground disturbance areas;
- paving of appropriate internal roads;
- watering of exposed ground disturbance areas and high traffic areas using water trucks to minimise the generation of dust;
- establishment of grass pasture on disturbed areas as soon as possible;
- confining vehicle movements to designated access routes;
- limiting the speed of vehicles on unpaved roads; and
- limiting ground disturbance activities during identified windy conditions.

All stockpiled construction materials were also managed to minimise wind-blown dispersal of the materials in accordance with Condition 2.45 of Project Approval (06_0009) by limiting the height of the stockpiles and watering of the stockpiles during windy conditions. All fill/preload material, brought to the Project site as a part of the dredge material reclamation process, that remained on site was managed to minimise the generation of wind-blown dust by maintaining high moisture content within the primary settling ponds and containment within the perimeter bunds during the preloading activities.

Reclamation activities for Stage 1 were concluded in March 2009, prior to this reporting period. As such, olfactory reception monitoring conducted by Project personnel was scaled back. Random spot checks were conducted during civil works to identify potential isolated odour issues in reclaimed material. Project personnel were trained in olfactory reception methods and their olfactory sensitivity was tested and accredited in accordance with (AS/NZS) 4323.3.2001 *Stationary Source Emissions: Part 3 Determination of Odour Concentration by Dynamic Olfactometry*.

During the monitoring period there were no significant odour issues and an odour classified as offensive was not identified.

3.2.3 Reportable Incidents

No environmental incidents were reported during the reporting period relating to air quality conditions. Complaints regarding air quality received during the reporting period (see Section 3.13) were responded to in accordance with the Complaint Response Procedure.

3.2.4 Further Improvements

Air quality monitoring will be upgraded for the next monitoring period. In accordance with Conditions 7.5 and 3.2 a Dust Management Plan and an Ambient Dust Monitoring Program were developed for operational activities and submitted to the Department of Planning and Department of Environment, Climate Change and Water for approval. The air quality monitoring network as required by the Program will be incorporated into an extended monitoring system prior to the commencement of NCIG operational activities.

3.3 WATER QUALITY

3.3.1 Environmental Management

In accordance with Condition 7.3b), Schedule 2 of Project Approval (06_0009), a Construction Surface Water Management Plan (CSWMP) was developed which defines how surface water and stormwater is managed on the NCIG Project site during construction. The Plan includes the definition of appropriately-sized stormwater controls, in accordance with *Managing Urban Stormwater: Soils and Construction* (Landcom, 2004). The Plan also includes specific measures designed to avoid sediment-laden stormwater from entering Deep Pond, wetland areas or the Hunter River, and a monitoring programme for stormwater leaving the Site.

The CSWMP identified the surface water runoff from disturbance areas during the construction of the Project that could potentially contain sediments, soluble salts, fuels, oils, grease and other contaminants. The potential surface water quality impacts that relate to these contaminants from each area of the Project site are summarised in Table 3.3.1.

Table 3.3.1: Potential Surface Water Quality Impacts

Project Site	Potential Impact Scenario	Potential Contaminant
Rail Infrastructure Corridor	Uncontrolled drainage of sediment laden runoff to downstream waterbodies within the Kooragang Island Waste Emplacement Facility (KIWEF) during construction of rail embankments.	Sediments, soluble salts, heavy metals, organic contaminants, fuels, oils and grease.
	Uncontrolled drainage of runoff from access roads and construction areas to downstream waterbodies within the KIWEF.	
	Uncontrolled drainage of runoff from exposed soils within the existing KIWEF to downstream waterbodies.	
	Potential erosion and sedimentation resulting from runoff from the rail corridor and associated drainage system.	
Coal Storage Area	Uncontrolled drainage to downstream waterbodies during construction of the coal storage area.	Sediments, soluble salts, fuels, oils and grease.
	Uncontrolled drainage of runoff from access roads and construction areas to downstream waterbodies.	
	Spillage/overflow of site water to downstream waterbodies.	
Wharf Facilities and Shiploader Area	Uncontrolled drainage of sediment laden runoff to the south arm of the Hunter River during construction of the berths and wharf structure, excavation on or near the banks of the South Arm of the Hunter River and during piling operations.	Sediments, soluble salts, fuels, oils and grease.
	Uncontrolled drainage of runoff to the south arm of the Hunter River from access roads and wharf construction areas including excavation on or near the banks of the South Arm of the of the Hunter River.	

This identification of surface water flows was utilised to develop the monitoring programme defined in the CSWMP which aims to ensure adjacent waterbodies are not impacted by NCIG construction activities. The CSWMP was approved by the Department of Planning as part of the Construction Environmental Management Plan (CEMP) for the Project.

The construction surface water management strategy for the Project is based on:

- the separation of surface water runoff generated from within the active Project construction areas from that generated from surrounding areas;
- the implementation of adequate water management controls to minimise the potential for impacts to off-site water resources such as adjacent wetland areas, Deep Pond and the Hunter River (Figure 3).

Note that the management of supernatant waters liberated from the dredged material back to the south arm of the Hunter River did not apply during the reporting period as this activity had been previously completed.

A separate Soil and Water Management Plan was developed in accordance with Condition B4.5(b), Sub-Schedule B, Schedule 2, of the Port Consent. The Soil and Water Management Plan outlines the measures employed to manage surface water and to minimise soil erosion and the discharge of sediments and other pollutants to lands and/or waters for the duration of dredging and excavation works conducted as part of the extension of shipping channels in the Port of Newcastle. As mentioned, dredging works were not undertaken during this reporting period. While the results for

monitoring requirements under the Soil and Water Management Plan are not included in this report, the general aim of protecting water quality in the south arm of the Hunter River was maintained.

The management of erosion and sedimentation is outlined in Section 3.4

3.3.2 Environmental Performance

Table 3.3.2 outlines the monitoring locations, frequency of monitoring parameters for the Project in accordance with the CEMP. These monitoring elements form the Surface Water Monitoring Programme for the Project.

Table 3.3.2: Surface Water Monitoring Program

Monitoring Locations	Frequency	Parameters
EPL No. 12693 Discharge Points. ¹	Continuous.	<ul style="list-style-type: none"> • Turbidity; • pH; and • Flow rate.
Primary settling ponds. ¹	Weekly.	<ul style="list-style-type: none"> • pH; • Electrical conductivity (EC); • Total dissolved solids (TDS); and • Total suspended solids (TSS).
	During period of heavy rainfall (i.e. more than 20 mm of rainfall in a 24 hour period).	<ul style="list-style-type: none"> • Water level.
Surface water monitoring sites. ¹	Monthly.	<ul style="list-style-type: none"> • pH; • EC; • TDS; and • TSS.
Drainage, erosion and sediment control infrastructure.	During period of heavy rainfall (i.e. more than 20 mm of rainfall in a 24 hour period).	<ul style="list-style-type: none"> • Structural stability and effectiveness in controlling sediment migration.

¹ Monitoring locations are shown on Figure 3.1.1 and 3.3.2.

A site drainage network was established to capture site runoff. This was predominately designed to manage sea water draining from material dredged under the Port Consent that was subsequently used in preloading on the Project site (undertaken in previous reporting period). The topography grades to the north and west of the Project site. An existing flow path for surface runoff was incorporated into the drainage of runoff from the placement of dredged material. Dredge reclamation activities ceased in March 2009, at which point the flow of dredged material under Cormorant Road and onto the preload area ended.

The drainage network that was established for dredging activities was incorporated into the design of the permanent water management infrastructure on the site. This design involves stormwater draining from east to west in the coal stockpile area at which point it collects in an open drain and is directed to the north-west of the site (see Figure 3.3.1). Water is then captured in primary settling ponds across the north of the site where fines were allowed to settle. This water cascades from the primary ponds into a secondary settlement pond prior to collection in the clearwater pond where it is available for reuse on the site. This water resource is to be utilised primarily for dust suppression purposes across the site.

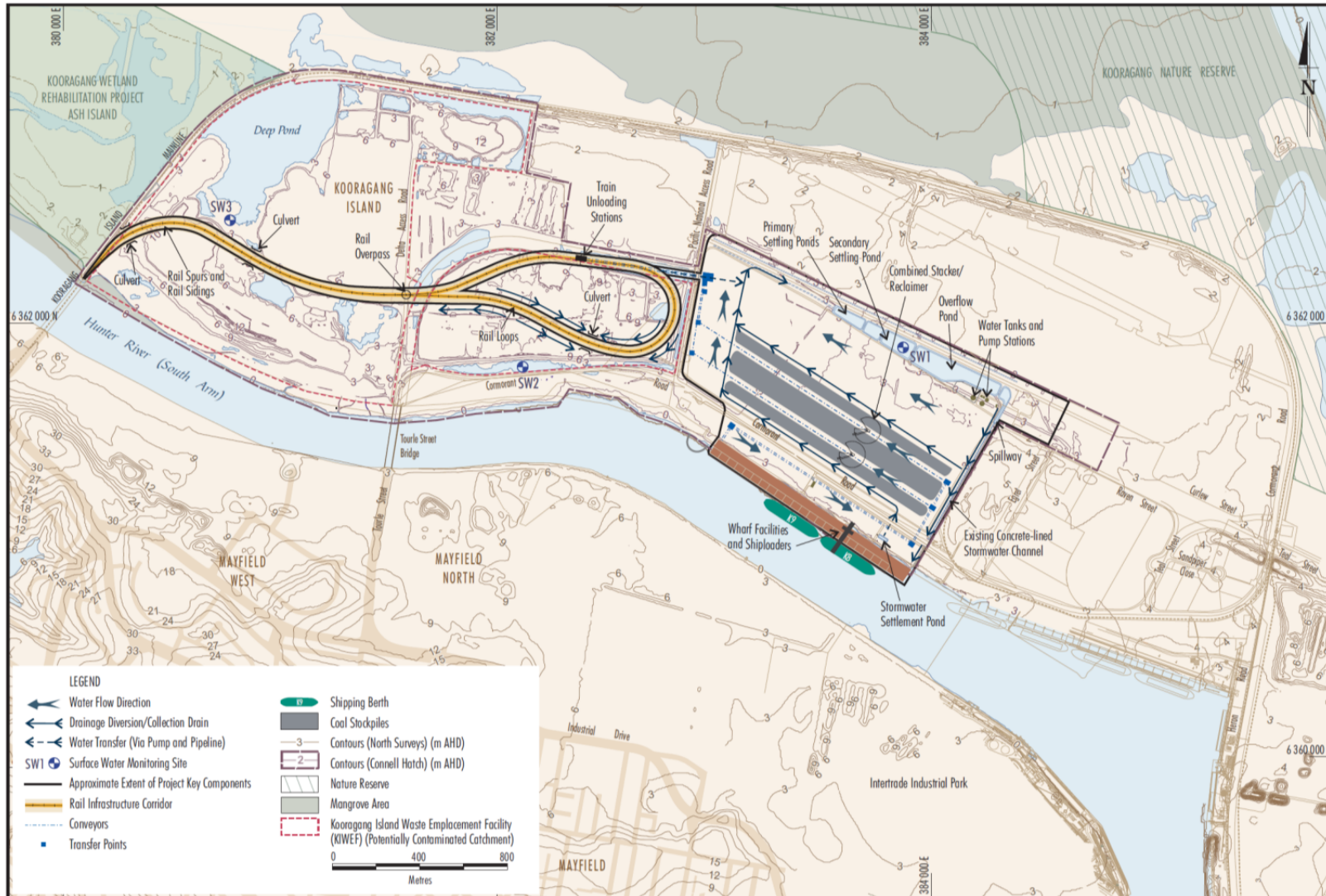


Figure 3.3.1: Permanent Site Drainage Layout

Within the design of the drainage network, stormwater from the wharf and rail areas of the site are also directed into the stockyard water management system. Stormwater collected on the wharf is accumulated in an on-site pond and then pumped across Cormorant Road and stormwater captured in the vicinity of the train unloading station is also pumped to the stockyard, with both sources eventually made available for reuse after treatment in the northern settlement ponds.

Sampling of surface water ponds was also undertaken during the reporting period in accordance with the CSWMP. The location of the sampling undertaken is illustrated in Figure 3.3.2 with the water quality results recorded detailed in Attachment B.

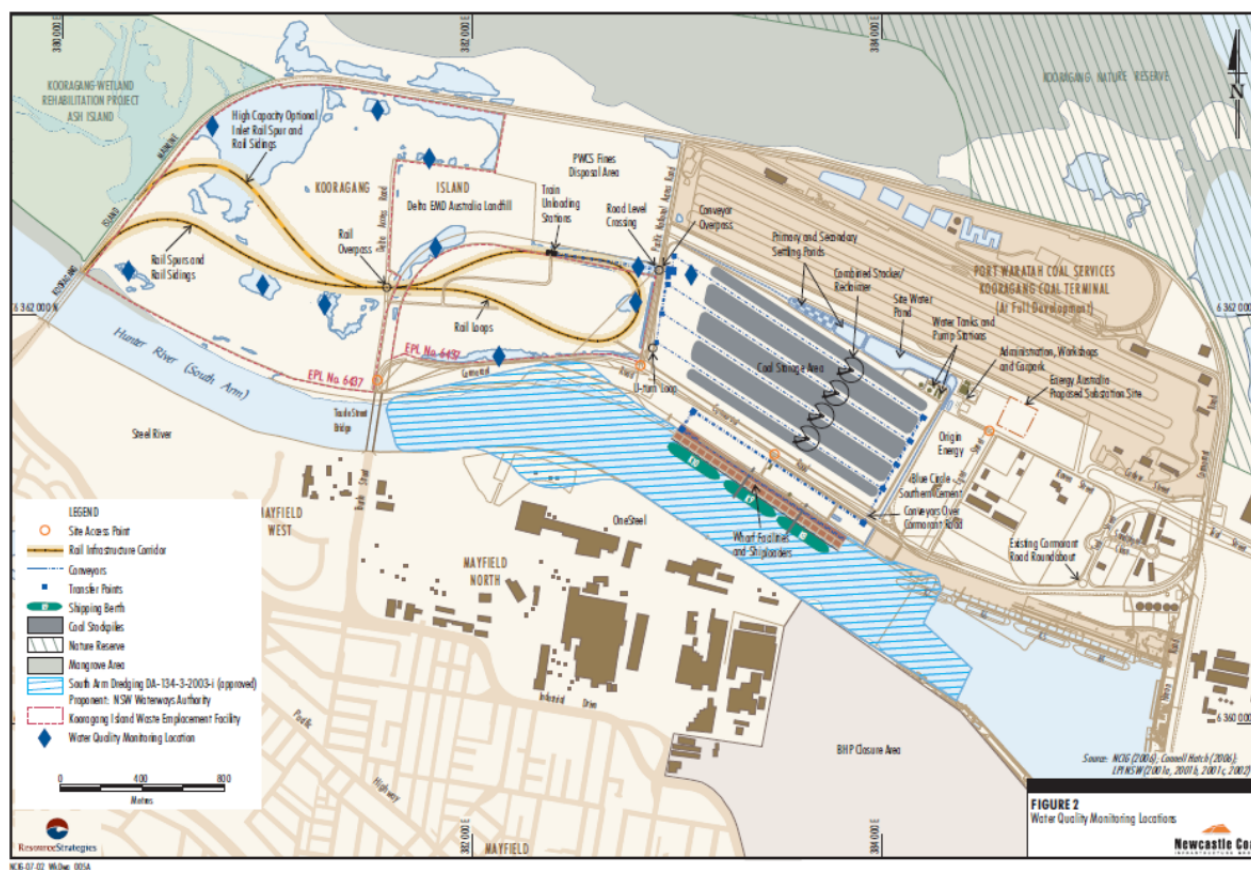


Figure 3.3.2: Surface Water Monitoring Locations

In addition to the surface water monitoring undertaken by NCIG the Hunter Development Corporation continue to conduct surface water monitoring in accordance with Condition M2.1 of EPL No. 6437 for the Kooragang Island Waste Emplacement Facility.

3.3.3 Reportable Incidents

No environmental incidents or complaints were reported relating to water quality management were made during the reporting period.

3.3.4 Further Improvements

There will be a considerable change in water quality management in the next reporting period. The primary settling ponds used for preloading activities were decommissioned and construction of the permanent primary and secondary settling ponds and clearwater pond was well advanced by the end

of the reporting period. The new constructed ponds were due to go into operation prior to the commencement of operational activities. Stormwater from the construction site will be incorporated into the operating system on an ongoing basis, with water captured in the constructed settling ponds redirected to storage tanks that will supply water to activities requiring water on site (eg. Dust suppression, fire fighting).

In accordance with Conditions 7.5 a Water Management Plan was developed for operational activities and submitted to the Department of Planning and Department of Environment, Climate Change and Water for approval. The water monitoring network as required by the Program will be incorporated into an extended monitoring system prior to the commencement of NCIG operational activities.

3.4 EROSION AND SEDIMENT CONTROL

3.4.1 Environmental Management

In accordance with Condition 2.43, Schedule 2 of the Project Approval (06_0009) NCIG took all reasonable measures to prevent soil erosion and the discharge of sediments and pollutants from the site during construction activities.

In accordance with Condition 2.42, Schedule 2 of the Project Approval (06_0009) NCIG has designed and constructed surface water and stormwater management infrastructure on the site to accommodate a 1 in 100 annual recurrence interval (ARI) rainfall event.

All erosion, sediment and pollution control infrastructure is being maintained on the Project site at or above design capacity during construction of the Project and will continue to be until such time as all ground disturbed by the works has been stabilised and rehabilitated so that it no longer acts as a source of sediment, in accordance with Condition 2.44, Schedule 2 of Project Approval (06_0009).

All stockpiled construction materials have been managed to minimise erosion or dispersal of the materials in accordance with Condition 2.45 of Project Approval (06_0009). All fill/preload material brought to the Project site is managed in a manner that minimises erosion and dispersal of those materials to the downstream waters (e.g. south arm of the Hunter River).

Erosion and sediment control measures and general surface water management measures for the Project are documented in the approved Construction Surface Water Management Plan.

3.4.2 Environmental Performance

Table 3.4.1 outlines the monitoring locations, erosion and sediment control parameters recorded, frequency of monitoring and air quality criteria for the Project in accordance with the CEMP.

Table 3.4.1: Summary of the Erosion and Sediment Control Monitoring Programme

Monitoring Parameter	Monitoring Sites	Frequency	Criteria
Structural stability and effectiveness in controlling sediment migration.	Drainage, erosion and sediment control infrastructure.	Monthly and following significant rainfall events (i.e. greater than 20 mm in 24 hours).	N/A.

The management of erosion and sedimentation for the NCIG Project is detailed by the Erosion and Sediment Control Plan (ESCP). The ESCP is a document that is continually modified to account for project areas and activities of identified risk of erosion and sedimentation. Activities that have the potential to cause or increase soil erosion at the Project have been identified and are primarily due to exposure of soils during construction activities.

The general erosion and sediment control principles adopted take into account the general recommendations for site drainage works presented in *Managing Urban Stormwater: Soils and Construction – Volume 1* (Landcom, 2004) which underpin the goal of protecting adjacent wetland areas, Deep Pond and the Hunter River. These principles involve:

- Minimising surface disturbance and restricting access to undisturbed areas.
- Separation of runoff from disturbed and undisturbed areas where practicable.
- Construction of surface drains to facilitate the efficient transport of surface runoff or utilisation of existing stormwater systems.
- Construction of the site drainage network including perimeter bunds, internal bunds, primary settling ponds and hydraulically controlled discharge structures.
- Construction of primary and secondary settling ponds, site water pond and sediment dams to contain runoff up to specified design criterion.
- Installation of a silt curtain in the south arm of the Hunter River local to the disturbance area during construction of the shipping berth batters, wharf structure and during piling operations (in the River) that may create excessive material disturbance.
- Installation of a silt curtain in the south arm of the Hunter River during construction around the outlet of the existing concrete-lined stormwater channel and concrete pipelines.

In ensuring the erosion and sediment control principles are adhered to, development activities on the Project have been typically undertaken in the following order:

1. Construction of sediment fences (down slope of disturbance areas) where required.
2. Installation of silt curtains in identified water bodies, including the Hunter River, where required.
3. General construction works are only commenced once erosion and sediment control measures are in place.
4. Construction of drainage diversions (typically upslope of disturbance areas) – these were only constructed where they significantly reduced the runoff catchment of disturbance areas and connected to the site drainage network where practicable.
5. Construction of the perimeter bunds, internal bunds, primary settling ponds and hydraulically controlled discharge structures initially to manage runoff and sea water draining from dredged material during preloading of the coal storage area.
6. Construction of the primary and secondary settling ponds and a clearwater pond.
7. Construction of collection drains (down slope of disturbance areas) where required to convey runoff to the site drainage network (including primary and secondary settling ponds and a site water pond).

Erosion and Sediment Control Plans (ESCP), detailing specific erosion and sediment control measures, are developed in a progressive manner prior to the development of each Project component requiring land disturbance. This is undertaken through a risk assessment process associated with the individual task proposed and are modified as required to ensure that the goal of protecting water bodies from erosion and sedimentation is achieved.

Temporary erosion and sediment controls (e.g. silt fences and sediment control structures) are installed prior to the commencement of construction activities on the Project site. Routine (i.e. monthly) inspections of sediment control structures, as well as inspections following significant rainfall events (e.g. 20 millimetres (mm) or more in a 24 hour period), are conducted by NCIG personnel. During these inspections, sediment control structures were inspected for capacity, structural integrity and

effectiveness. Any deficiencies identified by these inspections are assessed, prioritised and rectified in the appropriate timeframe.

A network of permanent stormwater structures has been partially construction to manage runoff around the site. All long-term site water management structures are lined with low permeability materials (e.g. compacted clay) to minimise the potential for leakage. Water management structures are designed with sufficient capacity for a 1 in 100 year average recurrence interval (ARI) rainfall event. The construction of these structures was close to completion at the end of this reporting period as illustrated by Figures 3.4.1 and 3.4.2.



Figure 3.4.1: Construction of Stormwater Infrastructure



Figure 3.4.2: Completed Stormwater Infrastructure

3.4.3 Reportable Incidents

No environmental incidents or complaints relating to erosion or sediment control were made during the reporting period.

3.4.4 Further Improvements

No improvement to erosion and sediment control is required for the next period. The construction of the permanent stormwater network was close to completion at the end of this reporting period and will be incorporated into the operating system prior to the commencement of NCIG operational activities. Stormwater from the construction site will be incorporated into the operating system on an ongoing basis, with water captured in the constructed settling ponds redirected to storage tanks that will supply water to activities requiring water on site (eg. Dust suppression, fire fighting).

In accordance with Conditions 7.5 a Water Management Plan was developed for operational activities and submitted to the Department of Planning and Department of Environment, Climate Change and Water for approval. The water monitoring network as required by the Program will be incorporated into an extended monitoring system prior to the commencement of NCIG operational activities.

3.5 GROUNDWATER

3.5.1 Environmental Management

In accordance with the requirements of the Construction Environmental Management Plan (CEMP) groundwater quality monitoring was undertaken on a monthly basis.

3.5.2 Environmental Performance

Table 3.5.1 outlines the monitoring locations, groundwater monitoring parameters recorded, frequency of monitoring and groundwater criteria for the Project in accordance with the CEMP.

Table 3.5.1: Summary of the Groundwater Monitoring Programme

Monitoring Parameter	Monitoring Sites	Frequency	Criteria
pH, EC, TDS, TSS, sulfate, polycyclic aromatic hydrocarbons (PAH), As III, Cd, Cu, Pb, Hg, Zn, Cr VI, Mn and Ni (refer Table 5).	GW1 to GW4, and piezometer network ¹ .	Monthly.	Refer CEMP.
Groundwater level.		Monthly.	N/A.

¹ The location of monitoring sites is shown on Figure 3.1.1.

The Project site includes a relatively shallow groundwater table in areas of fill from previous landuse activities. Consequently, any interception of the groundwater table during Project construction activities or effect on the groundwater system as a result of Project operations is being managed. NCIG has incorporated into the design of the Project a comprehensive suite of construction methods and design systems. In response to groundwater conditions encountered on the project site the following groundwater management contingency measures were adopted for specific Project elements:

- piled foundations together with diaphragm sub-surface perimeter walls and jet-grouted base for construction of the train unloading stations base and adjacent conveyors were constructed to minimise groundwater inflow or connection (this was completed for Stage 1 in the previous reporting period);
- a low permeability capping layer was incorporated into the rail embankment formation to minimise infiltration; and
- groundwater bores were established to monitor groundwater levels, and water quality around the perimeter of the coal storage area and along the rail infrastructure corridor.

A summary of the groundwater monitoring results recorded during the reporting period is illustrated in Table 3.5.2.

Table 3.5.2: Summary of the Groundwater Monitoring

		Depth	pH	EC	TDC	TSS	SO ₄	PAH	Mg	Na	K	Al	As III	Cd	Co	Cu	Pb	Mn	Ni	Zn	Fe	Hg	Cr VI
		m	mg/L											µg/L									
GW1	Min	1.15	7.51	8050	4440	8	437	<1	74	1610	102	<1	<1	<0.1	<1	<1	<1	8	<1	<1	<1	<0.1	<1
	Max	4.45	8.12	9950	6540	62	773	<1	91	1890	117	10	2	1	<1	15	<1	240	7	40	60	<0.1	<1
GW2	Min	3.36	7.23	448	308	33	<1	<1	2	58	7	20	<1	<0.1	<1	<1	<1	68	<1	6	390	<0.1	<1
	Max	4.4	8.2	9000	4400	332	87	<1	23	1110	37	260	3	0.3	<1	6	6	246	6	59	5600	<0.1	<1
GW3	Min	3.07	7.06	753	406	8	47.7	<1	10	60	9	<1	4	<0.1	<1	<1	<1	92	<1	<1	<1	<0.1	<1
	Max	4.6	7.9	7140	5210	428	504	<1	118	919	30	20	7	0.4	3	5	<1	701	7	34	<1	<0.1	<1
GW4	Min	2.22	6.77	3110	2070	72	18	<1	36	389	20	10	<1	<0.1	1	1	<1	554	<1	7	<1	<0.1	<1
	Max	4.3	7.63	19300	13800	1160	652	<1	485	3920	130	130	2	<0.1	2	3	1	1980	7	44	1090	<0.1	<1

An assessment of the monitoring records found that the variability and magnitude of the groundwater quality results was relatively consistent with the baseline water quality which was defined prior to commencement of project activities and results from the previous reporting period. Depth to groundwater was slightly more variable in this period, although this is likely a reflection of weather conditions over the year, which included long periods of little to no rain and other periods of high rainfall. It is also noted that there were no concentrations of PAH or Hexavalent Chromium reported above the limit of detection in this reporting period. There was no activity undertaken during the reporting period that would have impacted detrimentally on the quality of the groundwater system, as all Stage 1 ground intrusive works of a significant magnitude were completed prior to this period

3.5.3 Reportable Incidents

No environmental incidents or complaints relating to groundwater quality conditions were made during the reporting period.

3.5.4 Further Improvements

No improvement to groundwater quality monitoring is required for the next period. The current groundwater quality monitoring network will be incorporated into an extended monitoring system prior to the commencement of NCIG operational activities.

In accordance with Conditions 7.5 a Water Management Plan was developed for operational activities and submitted to the Department of Planning and Department of Environment, Climate Change and Water for approval. The groundwater monitoring network, as outlined in this plan, will be incorporated into an extended monitoring system prior to the commencement of NCIG operational activities.

3.6 LAND CONTAMINATION

3.6.1 Environmental Management

In accordance with Condition 2.53, Schedule 2 of the Project Approval (06_0009) NCIG engaged an appropriately qualified person to audit construction of the rail infrastructure over land used as part of the Kooragang Island Waste Emplacement Facility (KIWEF) against the commitments contained in the NCIG Project Environmental Assessment and supporting documents.

Prior to any excavation on the Project, a comprehensive surface and sub-surface soil sampling and analysis programme was undertaken in order to characterise the material to be excavated. The sampling programme was undertaken in accordance with the NSW Environment Protection Authority (EPA) (2004b) *Guidelines for the Assessment, Classification and Management of Liquid and Non-Liquid Waste*. The aim of the programme was to identify the risk associated with contamination across the stockyard and rail areas and to determine the suitability of the site for the development of the NCIG project. The findings of this process were that there existed a manageable risk associated with contamination and that the site was suitable for the proposed development.

In accordance with Condition 2.54, Schedule 2 of the Project Approval (06_0009) NCIG did not direct any contaminated materials removed from the site to a waste management facility that was not lawfully permitted to accept the materials.

3.6.2 Environmental Performance

There were minimal excavations into the existing ground surface during the construction of the stockyard and rail infrastructure areas. The construction activities in these area primarily focussed on filling to raise the level of the existing ground therefore there was little disturbance with potentially contaminated soils.

The construction of the train unloading station and associated rail infrastructure was commenced in the previous reporting period. This work required excavation into existing ground for the preparation of foundations.

In accordance with the NCIG Environmental Assessment, capping of the rail infrastructure area with a low permeability material commenced in the previous reporting period. This capping activity was undertaken to ensure that the entire footprint of the NCIG rail infrastructure in the KIWEF area is capped with low permeability material in accordance with the commitments made in the NCIG Environmental Assessment and to DECC. This capping was undertaken throughout the previous monitoring period and completed in August 2009.

In accordance with the requirements of Condition 2.53 auditing was undertaken of the capping works to ensure that quality of the works undertaken met the necessary standards. Three audit reports were produced by ENVIRON Australia (March-May 2009, June-August 2009 and Capping Finalisation Report) over this reporting period, which were subsequently provided to the Department of Planning and Department of Environment, Climate Change and Water. ENVIRON consistently found during the reporting period that the works undertaken by NCIG were in accordance with the project approval conditions and the commitments made in the NCIG Environmental Assessment. The Finalisation Report also confirmed that the entirety of the capping works completed by NCIG were in accordance with the requirements of the Conditions of Consent (06_0009).

3.6.3 Reportable Incidents

No environmental incidents or complaints were reported relating to land contamination were made during the reporting period.

3.6.4 Further Improvements

No improvement to land contamination management is required for the next period.

3.7 ACID SULFATE SOILS

3.7.1 Environmental Management

In accordance with Condition 7.3(a), Schedule 2 of Project Approval (06_0009), an Acid Sulfate Soil Management Plan (ASSMP) was developed in accordance with the guidance provided in the *Acid Sulfate Soil Manual* (ASSMAC, 1998). This addresses the management of Acid Sulfate Soils (ASS) identified during excavations on the Project site. The ASSMP was approved by the Department of Planning.

3.7.2 Environmental Performance

Table 3.7.1 outlines the monitoring locations, ASS monitoring parameters recorded, frequency of monitoring and ASS criteria for the Project in accordance with the ASSMP.

Table 3.7.1: Summary of the ASS Monitoring Programme

Monitoring Parameter	Monitoring Sites	Frequency	Criteria
Presence of acid sulfate soils or potential acid sulfate soils.	Excavation sites.	Prior to any excavation.	See ASSMP.
	ASS treatment area.	After treatment.	

Soil testing and assessments of the ASS risk was undertaken during excavations and major earthworks in the previous reporting period and it was determined the potential and actual ASS risk associated with these activities was limited. The ASSMP was however prepared to provide sampling, validation and management measures if ASS is encountered during further construction of the Project.

The NSW Acid Sulfate Soil Management Advisory Committee (ASSMAC), *Acid Sulfate Soil Manual* (1998), presents guidelines for the sampling, determination and management of ASS materials dependent on the quantity of material to be disturbed and the type of disturbance (linear, bulk). The guidelines provided in the *Acid Sulfate Soil Manual* (ASSMAC, 1998) are considered appropriate for use at the Project site.

The *Acid Sulfate Soil Manual* (ASSMAC, 1998) outlines 'Action Criteria' based on laboratory analysis of ASS characteristics. These Action Criteria are based on the soil texture together with the volume of material which is to be disturbed to determine if the material is to be managed as an ASS. The Action Criteria was used to assess 'neutralisation' of lime treated soils.

During the reporting period there were no excavations undertaken that required initiation of the representative surface and sub-surface soil sampling and analysis programme. Excavations conducted on site were consistently conducted in fill imported onto site or material reclaimed from the Hunter River. The ASS risk associated with these sources of material was known to be low.

3.7.3 Reportable Incidents

No incidents or complaints were reported relating to acid sulphate soils management during the reporting period.

3.7.4 Further Improvements

No improvement to acid sulphate soils management is required for the next period.

3.8 NOISE AND VIBRATION

3.8.1 Environmental Management

In accordance with Condition 2.9, Schedule 2 of the Project Approval (06_0009) NCIG and its contractors minimised noise emissions from plant and equipment operated on the Project site as outlined in the *NSW Industrial Noise Policy* (EPA, 2000).

In accordance with Condition 2.10, Schedule 2 of the Project Approval (06_0009), general site preparation, filling/preloading and construction works that may generate an audible noise at any residential receptor was only undertaken between 7.00 am and 6.00 pm.

In accordance with Condition 2.11, Schedule 2 of the Project Approval (06_0009) piling works was not to be conducted on Sundays or public holidays.

Construction noise management measures are further detailed in the Construction Noise Management Plan (CNMP).

3.8.2 Environmental Performance

Table 3.8.1 outlines the monitoring locations, noise and vibration monitoring parameters recorded, frequency of monitoring and noise and vibration criteria for the Project in accordance with the CEMP.

Table 3.8.1: Summary of the Meteorological Monitoring Programme

Monitoring Parameter	Monitoring Sites	Frequency	Criteria
Attended and unattended noise monitoring.	N1, N3, N5, N9, N13 and N14 ¹ .	Monthly for first 3 months then quarterly.	See below.
Unattended continuous noise monitoring.	Selected locations.	Minimum period of one week per quarter.	See below.
Attended noise monitoring.	Reference locations proximal to the Project ¹ .	At the commencement of night-time land-based dredging support works and at two monthly intervals thereafter.	See below.
Ground vibration.	Adjacent industrial receivers within 180 m of piling activities.	Weekly when piling within 180m of industrial receiver.	See CNMP.

¹ The location of monitoring sites is shown on Figure 3.1.1.

The noise impact assessment criteria as defined by the Project approval and the Environmental Protection Licence (EPL12693) are provided in Table 3.8.2.

Table 3.8.2: Noise Impact Assessment Criteria

Location	Day, Evening, Night	Night	
	At all times	10:00pm to 7:00am Monday to Saturday 10:00pm to 8:00am on Sundays and Public Holidays	
	LAeq(15 minute)	LAeq(night)	LA1(1 minute)
Fullerton Lane (FW1) Fern Bay West	41 dBA	37 dBA	57 dBA
Fern Bay East	39 dBA	36 dBA	55 dBA
Fullerton Street (SW1), Stockton West	41 dBA	37 dBA	57 dBA
Stockton East	38 dBA	35 dBA	56 dBA
Mangrove Road (SG1), Stevenson Avenue (W1) Warabrook/Mayfield West	45 dBA	40 dBA	55 dBA
Simpson Crescent (M2), Mayfield	44 dBA	39 dBA	62 dBA
Arthur Street (M4), Mayfield	44 dBA	39 dBA	62 dBA
Blue Circle Southern (KI1), Kooragang Island	70 dBA	70 dBA	70 dBA

Where: a) wind speeds up to 3 ms⁻¹ (measured at 10m above ground level).
b) temperature inversion conditions up to 3°C per 100 m and wind speeds up to 2 ms⁻¹ (measured at 10 m above ground level).

Noise and vibration monitoring was undertaken by specialists acoustic consultants during the reporting period. This monitoring was conducted on a quarterly basis to coincide with construction works on the project throughout the reporting period.

The monitoring undertaken principally consisted of:

- Unattended noise monitoring – two (2) Type EL316 environmental noise loggers were deployed at the nearest potentially affected receptors for a period of one week. The noise loggers were programmed to record statistical noise level indices continuously in 15 minute intervals, including L_{Amax}, L_{A1}, L_{A50}, L_{A90}, L_{A99}, L_{Amin} and L_{Aeq}.
- Attended noise monitoring - operator attended noise survey was conducted at each noise logger location to assist in defining noise sources and the character of noise in the area and therefore to qualify unattended noise logging results. These measurements were conducted over 15 minute periods using a Bruel & Kjaer Type 2250 sound level meter.
- Vibration monitoring - In accordance with the CNMP, vibration monitoring was conducted during construction piling activities within 180m of adjacent industrial receivers (i.e. Blue Circle Southern) on a weekly basis. Vibration surveys were conducted weekly for a significant amount of the monitoring period whilst piling activities were conducted on the northern bank of the Hunter River (South Arm) and the eastern section of the stockyard area to determine vibration levels at the nearest industrial receiver (Blue Circle Southern).

The conclusion of the specialised acoustic consultants was that throughout the reporting period noise and vibration surveys identified that current construction and piling activities were conducted below the relevant noise and vibration criteria.

3.8.3 Reportable Incidents

No environmental incidents were reported relating to noise or vibration during the reporting period. Complaints regarding noise received during the reporting period (see Section 3.13) were responded to in accordance with the Complaint Response Procedure.

In accordance with Conditions 7.5 a Noise Management Plan was developed for operational activities and submitted to the Department of Planning and Department of Environment, Climate Change and Water for approval. The noise monitoring requirements, as outlined in this plan, will be incorporated into an extended monitoring system prior to the commencement of NCIG operational activities.

3.8.4 Further Improvements

No improvement to noise monitoring is required for the next period. An operational noise monitoring procedure will be developed in the next period to be incorporated into the environmental monitoring system for the commencement of NCIG operational activities.

3.9 HERITAGE

3.9.1 Environmental Management

The DECCW advised that as the Project construction site has been the subject of extensive disturbance over a period of more than 50 years, it considers that no Aboriginal heritage objects of significance will be present (DEC, pers. comm. 15 February 2007).

Notwithstanding, the management of items of Aboriginal cultural heritage significance during construction of the Project incorporated the following elements:

- During induction training, NCIG personnel were advised of their responsibility to advise management if they uncover any item that could be of Aboriginal heritage significance.
- If potential archaeological material is identified, construction activities proximal to the potential archaeological material will cease and DECCW's North East Branch - Environment Protection and Regulation Division, Regional Archaeologist will be contacted to determine appropriate management requirements.
- If items of Aboriginal cultural heritage significance are salvaged on-site, they will be stored in a keeping place on-site for the duration of the Project.
- At the cessation of the Project, if any salvaged Aboriginal objects are stored on-site their ongoing management will be determined in consultation with the Aboriginal community and the DECCW.

3.9.2 Environmental Performance

During the reporting period induction training was attended by all NCIG personnel. This training included information relating to aboriginal heritage and the potential identification of items of archaeological significance.

During the reporting period there were no items of potential Aboriginal cultural heritage significance identified.

3.9.3 Reportable Incidents

No incidents or complaints were reported relating to heritage during the reporting period.

3.9.4 Further Improvements

No improvement to heritage is required for the next period.

3.10 FLORA AND FAUNA

3.10.1 Environmental Management

In accordance with Conditions 2.16 and 2.19, Schedule 2 of the Project Approval (06_0009) NCIG employed two qualified ecologists (Dr David Goldney and Dr Arthur White), approved by the Director-General, to undertake a pre-construction survey of areas affected by construction works for the presence of *Litoria aurea* (the Green and Golden Bell Frog) (see Figure 3.10.1). These ecologists also provided advice on the mitigation and management of impacts to listed threatened species that may be affected by the NCIG Project works.

While Green and Golden Bell Frog individuals were not identified during the pre-construction survey, previous surveys have identified the presence of the species on the Project site. Therefore a management plan for the relocation of Green and Golden Bell Frog individuals was prepared in accordance with Condition 2.16, Schedule 2 of the Project Approval (06_0009). The Green and Golden Bell Frog Management Plan (GGBFMP) was developed in consultation with DECC and the Regional Land Management Corporation.

In accordance with Condition 2.17, Schedule 2 of the Project Approval (06_0009) NCIG has designed and constructed relevant rail infrastructure associated with the Project to include culverts, underpasses or other similar measures to permit the movement of *Litoria aurea* and other amphibian species under the NCIG rail infrastructure (see Figure 3.10.2). The culverts and underpasses were installed to include suitable habitat for the Green and Golden Bell Frogs and to provide protection from predators in accordance with guidance provided by Dr Arthur White.



Figure 3.10.1: The Green and Golden Bell Frog (*Litoria aurea*)



Figure 3.10.2: Installed Rail Culverts for Green and Golden Bell Frog Movement

In accordance with Condition 2.18, Schedule 2 of the Project Approval (06_0009) all employees and contractors involved in construction of the Project are trained in site hygiene management in accordance with *Hygiene Protocol for the Control of Disease in Frogs* (NPWS, 2001) prior to the commencement of work.

A Compensatory Habitat Environmental Management Plan (CHEMP) has also been prepared to guide the construction of Green and Golden Bell Frog habitat which suitably replaces habitat damaged or destroyed by construction works. This plan was submitted to DECCW and DoP in 2008 and at the end of this reporting period discussion was still being undertaken with the regulators to finalise this Plan for approval.

A Vegetation Clearance Protocol (VCP) was also prepared to satisfy those commitments of the Project Environmental Assessment (EA) that relate to vegetation clearance during construction of the Project.

3.10.2 Environmental Performance

The Green and Golden Bell Frog *Litoria aurea* is listed as Endangered under the *Threatened Species Conservation Act, 1995* (TSC Act) and Vulnerable under the EPBC Act. The Green and Golden Bell Frog is estimated to have disappeared from 90% of its former range within NSW.

Known and potential Green and Golden Bell Frog habitat is located across the Project site and surrounds. Disturbance to Green and Golden Bell Frog habitat occurred as a result of construction activities which primarily involved completely infilling Big Pond and partial disturbance of Ponds H, K and Q (see Figure 3.10.3). Most of the known and potential Green and Golden Bell Frog habitat recorded across the Project site and surrounds (i.e. Ponds A, B, C, D, E, F, G, I, J, L, O, T, U, V, AA, AC, AD) was not however be directly disturbed by Project activities.



Figure 3.10.3: Green and Golden Bell Frog Habitat Areas.

In order to minimise Project-related impacts on the Green and Golden Bell Frog the following management procedures were implemented in accordance with the GGBFMP:

- environmental induction training;
- site hygiene management;
- delineation of disturbance areas;
- pre-clearance surveys;
- Green and Golden Bell Frog relocation procedures; and
- construction works procedures.

All employees and contractors involved in construction of the Project were informed about the presence and importance of the Green and Golden Bell Frog as a part of the site induction process. Training was also provided on appropriate site hygiene practices in accordance with *Hygiene Protocol for the Control of Disease in Frogs* (NPWS, 2001) prior to the commencement of work.

All ground disturbance activities were completed previously on the site, therefore there were no pre-clearance surveys undertaken during the reporting period. Areas of active earthworks continued to be delineated by fencing, however, in order to prevent the movement of amphibian species back into a construction area that had been previously cleared. These fencelines were regularly monitored for the presence of the Green and Golden Bell Frog to confirm that there were no individuals in the vicinity that may be at risk.

If individual frogs were identified, either adjacent to the constructed delineation fencelines or elsewhere on the site and thought to be at potential risk of harm, they were captured and translocated in accordance with the Green and Golden Bell Frog Management Plan. Details of the individual Green and Golden Bell Frogs managed in accordance to this process are outlined in Table 3.10.1.

Table 3.10.1: Translocated Green and Golden Bell Frogs

Date	Health	Size (cm)	Location Identified	Location Translocated
1/4/09	Good	1	Nth of Dump Station	Pond Z
4/4/09	Good	2	Rail Loop	Pond Z
4/4/09	Good	2	Rail Loop	Pond Z
16/4/09	Good	2	Rail Loop	Pond L
17/4/09	Good	2	Rail Loop	Pond L
15/1/10	Good	4	Dump Station	Pond Y
15/1/10	Good	5	Stockyard Pumphouse	Pond Y

During the reporting period a total of 7 Green and Golden Bell Frogs were sighted on site and assessed as being at risk and subsequently translocated in accordance with the Green and Golden Bell Frog Management Plan. All specimens were alive and in good condition, ranging from 1 - 5cm in length. The majority of these frogs were juveniles and found in the area around the dump station and rail loop.

In accordance with the Project requirements under the *Environment Protection and Biodiversity Conservation Act, 1999* (EPBC Act) approval, NCIG undertook Green and Golden Bell Frog monitoring during the reporting period. The overall objective of this Green and Golden Bell Frog monitoring programme is to monitor the dynamics of the Green and Golden Bell Frog within habitat areas adjacent to the Project site (within the Kooragang Island Waste Emplacement Facility), and any other locations where captured frogs have been relocated. Table 3.10.2 details the monitoring programme components.

Table 3.10.2: Green and Golden Bell Frog Monitoring Programme

Monitoring Component	Details
Timing	<p>Surveys will be conducted during favourable seasonal and climatic conditions (e.g. between September and February, after heavy rain). Where logistically practicable, diurnal and nocturnal monitoring surveys will be conducted for a period of approximately two to four days and generally covering the locations identified in Figure 2, and will include locations where captured frogs have been released.</p> <p>A minimum of two surveys will be conducted each year during favourable seasonal and climatic conditions. Surveys will be separated by at least 2 weeks. Monitoring will be conducted annually until 2020. Thereafter, monitoring will be undertaken on a three-yearly basis until 2030. The requirement to monitor beyond 2030 will be determined at that time in consultation with the DEWR.</p>
Locations	<p>Monitoring locations will include Green and Golden Bell Frog habitat within the Kooragang Island Waste Emplacement Facility (Figure 2) and any other locations where captured frogs have been relocated (Section 3.2)</p>
Methodology	<p>Monitoring methodology may include, however not necessarily be limited to, frog call recording, active searches, spotlighting and call playback. The monitoring programme will be conducted in accordance with <i>Threatened Species Survey and Assessment: Guidelines for Developments and Activities (Working Draft)</i> (DEC, 2004). In addition, the monitoring surveys will be conducted in accordance with relevant DECC permits.</p>
Parameters	<p>Monitoring parameters will include, but not necessarily be limited to:</p> <ul style="list-style-type: none"> • Green and Golden Bell Frog presence/absence, distribution, habitat utilisation, behaviour and abnormalities. • Observations of other frog species distribution, relative abundance and abnormalities. • Observations of other threatened frog species (listed under the TSC Act and/or the EPBC Act). • Water quality (i.e. salinity and pH) and habitat condition. <p>Additional general information recorded during monitoring surveys may include:</p> <ul style="list-style-type: none"> • date; • time of day; • rainfall (mm); • site location (GPS co-ordinates and map location); • survey methodology utilised; • sampling effort; • habitats surveyed; • weather conditions (including temperature); • number of observers; • photographs taken; and • any other relevant information.

The results of the monitoring programme conducted by Dr Arthur White during favourable seasonal and climatic conditions between September 2009 and March 2010 are illustrated in Table 3.10.3.

Table 3.10.3: Green and Golden Bell Frog Monitoring Results


Pond ID	Survey Date						
	Sept 09	Oct 09	Nov 09	Dec 09	Jan 10	Feb 10	March 10
A	-	-	-	©	-	-	©
R1 Culvert	-	-	Dry	-	-	-	-
Deep Pond SW	-	-	-	-	-	-	-
2W Pond	Dry	-	-	Dry	Dry	No Access	No Access
B	Dry	Dry	Dry	Dry		Dry	©
C	-	©	©	©	©	-	©
D	Dry	Dry	Dry	Dry	-	Dry	Dry
DPE1	-	-	-	-	-	-	-
Deep Pond North	-	-	-	-	©	-	-
H	-	-	-	-	-	-	-
I	-	-	-	-	-	-	-
J	-	-	-	-	-	-	-
K	-	-	-	-	-	-	-
F	-	-	-	-	-	-	-
G	-	-	-	-	-	-	-
Q	©	-	-	-	-	-	-
Dump Station Channel	-	-	-	-	-	-	-
ASH ISLAND	-	-	-	-	-	-	©

NS = NOT SURVEYED
 ASH ISLAND = ponds along Bell Frog track
 © calling
 Dry – survey location dry at the time of survey

A monitoring programme was also conducted during the reporting period to survey the utilisation of Deep Pond, adjacent to the NCIG rail infrastructure area, by bird species with the primary focus on Australasian Bittern and shorebirds. This Avifauna Monitoring Programme was undertaken by the Hunter Bird Observers Club and the resulting information was provided to NCIG by way of agreement. The results of the monthly surveys conducted during the 2009 calendar year are illustrated by Table 3.10.4. The aim of the monitoring programme is to identify the pattern of usage of Deep Pond by all birds over the annual cycle and determined the extent of any potential impact by the NCIG activities on this usage.

A brief assessment of the avifauna utilisation of Deep Pond determined that there has been some variation in the usage pattern by individual species, however, overall the total number of individual birds identified during the survey has increased from 3481 to 8364 during 2008 and 2009 period respectively.

Table 3.10.4: Avifauna Monitoring Results



Avifauna Survey - Kooragang Island - Deep Pond

Species	1/10/2009	2/7/2009	3/28/2009	4/25/2009	5/23/2009	6/27/2009	7/25/2009	8/22/2009	9/19/2009	10/17/2009	11/14/2009	12/19/2009
Brown Quail								4				
Maggie Goose	1											
Musk Duck	1		9	1	1	1		2	2	1	2	1
Black Swan	15	51	38	14	2	9	10	5	13	13	12	15
Pacific Black Duck	25	65	17	12	2	15	20	14	126	3	10	14
Australian Shoveler	20	56	8	4		89		5	95	14	1	4
Grey Teal	16	34	69	72	2	100	300	148	2	255	473	264
Chestnut Teal	430	446	818	374	7	44	200	182	117	148	143	182
Pink-eared Duck		2		28	129	267	150	187	168	109	1	
Hardhead	17	58	40	25	18	12		19	13	70	32	8
Australian Grebe	13	9		19	6	1	10			10	1	
Hourly-headed Grebe	1	3	5	5	20	3	6	17	17	3	43	27
Darwin	1	1										
Little Pied Cormorant	3		1			1		1	1			1
Little Black Cormorant	37	3	5						5		2	13
Great Cormorant	1					1		3	4	9	3	1
Australian Pelican	7	72							2	5	2	11
White-faced Heron	2			1	1			1	1	1		1
Little Egret												5
Great Egret	3	1			1	1			1			4
Intermediate Egret				1								
Australian White Ibis	3	7	2	10					1		5	2
Royal Spoonbill	1	14								3	2	18
Whistling Kite	2	2	2		1					2	1	
White-bellied Sea-Eagle		3	2	1	1	1		2				
Spotted Harrier								1				
Swamp Harrier	2		1			2			3	1	2	2
Brown Falcon				1						1		
Nankeen Kestrel			1					1				
Buff-banded Rail					1							
Baillon's Crane									1		1	
Australian Spotted Crane											1	1
Purple Swamphen	11	2	2	8	5	5			4	3	2	2
Dusky Moorhen	1	11	2									
Eurasian Coot	17			9	18	41	100		19		1	
Marsh Sandpiper		1										4
Sharp-tailed Sandpiper										19		33
Black-winged Stilt	3	4										158
Red-necked Avocet		14										2
Black-bellied Dotterel	2	3							2	1	2	1
Red-kneed Dotterel		1										
Masked Lapwing	3				1				8	2	2	3
Silver Gull	1		1									
Whiskered Tern		1										2
Horsfield's Bronze-Cuckoo									3			
Superb Fairy-wren										5		
White-bellied Chat								2				
Australian Raven		50		12		1				1		
Richard's Pipit				3						1		
Clamorous Reed-Warbler	11	5							20	3	5	
Tawny Grassbird	20	7						20	20	1	5	
Little Grassbird	3	2							5		5	
Golden-headed Cisticola	10	3							20	2	10	
Total	683	931	1023	690	216	593	796	614	674	686	769	779

Source: Hunter Bird Observers Club

The VCP was implemented to minimise impacts on threatened flora and fauna species within the Project area. The key components of the VCP are outlined below and include:

- delineation of areas to be cleared of existing vegetation;
- pre-clearance surveys;
- managing impacts on fauna; and
- vegetation clearance procedures.

The delineation of areas that were identified to be cleared of existing vegetation was undertaken to prevent any accidental damage to vegetation not targeted for removal. Pre-clearance surveys involved habitat assessments to identify potential habitat features located within areas requiring vegetation clearance for construction of the Project.

Features with the potential to provide roosting and/or nesting resources for birds and/or arboreal mammals (e.g. grass tussocks and hollow openings, cracks, loose bark of trees) or shelter and/or breeding resources for frogs and/or reptiles (e.g. grass swales, grass tussocks and rock crevices) were identified during the habitat assessment.

Following the preliminary habitat assessment, a secondary habitat assessment was conducted to assess the usage of habitat features by fauna. The secondary habitat assessment may include:

- active searches and/or spotlighting for arboreal mammals, frogs and or reptiles; and/or
- observation of hollows and nests/roosts for usage by bird species.

The vast majority of vegetation clearance occurred during the previous reporting period. Some isolated areas of vegetation were cleared during this period. For these areas the vegetation clearance procedure was undertaken either by the approved ecologist (Dr Arthur White) or by an appropriate NCIG environmental representative. Each of the assessments undertaken determined that there was no habitat or fauna species of significance within the delineated areas of vegetation. Areas of vegetation were felled/cleared as soon as practicable following the completion of the pre-clearance surveys habitat assessments to ensure that the occupation status of the cleared area did not change in the intervening time period.

3.10.3 Reportable Incidents

No incidents or complaints were reported relating to flora and fauna management during the reporting period.

3.10.4 Further Improvements

No improvement to flora and fauna management is required for the next period.

3.11 TRAFFIC MANAGEMENT

3.11.1 Environmental Management

The Project Approval (06_0009) contains a range of requirements that pertain to road transport (Conditions 2.21 to 2.37, Schedule 2). These requirements are addressed where relevant in the Construction Traffic Management Protocol.

3.11.2 Environmental Performance

The road improvements proposed to conform to the Conditions of the Project Approval for the construction phase of the CET are generally those permanent works that would be required during the future operation of the proposed coal loader.

Traffic management during the construction phase focussed on the immediate imposition of movement restrictions at key intersections to limit the potential for delays to traffic flows on Cormorant Road.

NCIG has developed a Vehicle Traffic Management Plan (VTMP) in accordance with the Construction Traffic Management Protocol. This plan provides the approved traffic routes for NCIG construction traffic across the site. This plan also dictates the approved traffic routes for construction traffic on adjacent public roads, including the prevention of right-hand turns onto Cormorant Road from Egret Street, Pacific National Road and the NCIG Wharf Access Road intersection, in order to minimise any disruption to through traffic on this road. Each contractor on the NCIG project site also developed VTMPs to ensure that construction traffic is adequately managed on internal and external roads.

NCIG continues to work with the NSW Roads and Traffic Authority (RTA) to finalise the design and gain approval to undertake works on three intersections on Cormorant Road. This work will focus on the construction of permanent infrastructure to prevent right-hand turns from Egret Street, Pacific National Road and the NCIG Wharf Access Road onto Cormorant Road.

3.11.3 Reportable Incidents

No incidents or complaints were reported relating to traffic management during the reporting period.

3.11.4 Further Improvements

No improvement to traffic management is required for the next period. A Vehicle Traffic Management Plan has been developed for operational vehicles to be incorporated into the environmental management system at the commencement of NCIG operational activities.

3.12 WASTE MANAGEMENT

3.12.1 Environmental Management

Measures to avoid and minimise the generation of wastes and promote waste re-use and recycling have been adopted during construction of the Project and include:

- waste avoidance – practices were developed that reduce the amount of waste on-site, via selective purchasing procedures and the use of bulk purchasing, where practicable;
- material reuse – reuse of recyclable or reusable materials where practicable; and
- recycling – materials such as metals, oil, timber, plastics, glass and paper were recycled where practicable.

In accordance with Conditions 2.54 and 2.56, Schedule 2 of the Project Approval (06_0009), all waste materials removed from the site was directed to a waste management facility lawfully permitted to accept the materials.

In accordance with Condition 2.57, Schedule 2 of the Project Approval (06_0009), waste was not received at the site during the reporting period. In addition, NCIG complied with the requirements of EPL No. 6437 as it relates to the on-going management of the Kooragang Island Waste Emplacement Facility.

3.12.2 Environmental Performance

The principles of waste management, being waste avoidance, material reuse and recycling have been adopted by NCIG and all construction contractors on the site during the reporting period. The focus of this process has been the avoidance of waste, however the recycling of waste products was also actively pursued with paper, aluminium, steel, plastics, timber and glass being the primary materials collected. Recycled concrete was also been incorporated into the pavement design for the rail and stockyard areas as a means of improving reuse of waste materials.

A 12,000 litre (L) waste oil tank has been incorporated into the project design to enable the collection and storage of waste hydrocarbons during NCIG operational activities, before being removed by licensed waste transporters on a periodic basis. A purpose built oil/water separator system has also been installed at the workshop and truck washdown areas, which will be inspected and maintained on a regular basis during operations.

During the reporting period there was no waste material stored, treated, processed or reprocessed or disposed of on the Kooragang Island Waste Emplacement Facility that would constitute a breach of the conditions of EPL No. 6437.

3.12.3 Reportable Incidents

No incidents or complaints were reported relating to waste management during the reporting period.

3.12.4 Further Improvements

No improvement to waste management is required for the next period. A Waste Management Plan has been developed to be incorporated into the environmental management system at the commencement of NCIG operational activities.

3.13 COMMUNITY RELATIONS

3.13.1 Environmental Management

During Project construction the following complaints handling system was implemented:

- In accordance with Conditions 6.2, Schedule 2 of the Project Approval (06_0009), NCIG established a telephone number, postal address and email address prior to the commencement of construction for community complaints and enquiries. Current details are provided below:
 - 24-hour complaints telephone hotline: 1800 016 304
 - Postal address for written complaints: PO Box 644
Newcastle NSW 2300
 - Email address for electronic complaints: enquiries@ncig.com.au
- In accordance with Condition 6.2, Schedule 2 of the Project Approval (06_0009), the community were informed of the phone, email and postal addresses via the NCIG website (www.ncig.com.au), notices in local newspapers and signage adjacent to the Project.
- In accordance with Conditions 6.3, Schedule 2 of the Project Approval (06_0009), NCIG recorded all complaints received in a Complaints Register.

- In accordance with Condition 6.4 of the Project Approval (06_0009), NCIG established and maintained a website for the provision of electronic information associated with the Project including all relevant Management Plans.

3.13.2 Environmental Performance

The general structure of Complaint Response Procedure is shown on Figure 3.13.1. Upon receiving a complaint all details relating to the issue of concern were recorded in the Complaints Register including:

- the date and time, where relevant, of the complaint;
- the means by which the complaint was made (telephone, mail or email);
- any personal details of the complainant that were provided, or if no details were provided, a note to that effect;
- the nature of the complaint; and
- a record of any operational or meteorological conditions that may have potentially contributed to the complaint.

Within 2 working days of a complaint being registered, an initial response was provided to the complainant and a preliminary assessment commenced to determine likely causes of the complaint using relevant available information (i.e. climatic conditions, environmental monitoring results and current construction activities). Table 3.13.1 provides a summary of the complaints received during the reporting period. In every case the investigation of the complaint determined that the issue of concern was not as a result of an exceedence of relevant Project Approval or EPL criteria.

The outcome of the complaints handling process was recorded in the Complaints Register, including:

- action taken by NCIG in relation to the complaint, including all follow-up contact with the complainant; and
- details of the finding of the investigation and the reason(s) why no action was taken.

Every effort was made to ensure that the concerns of the complainant were addressed in a manner that resulted in a mutually acceptable outcome.

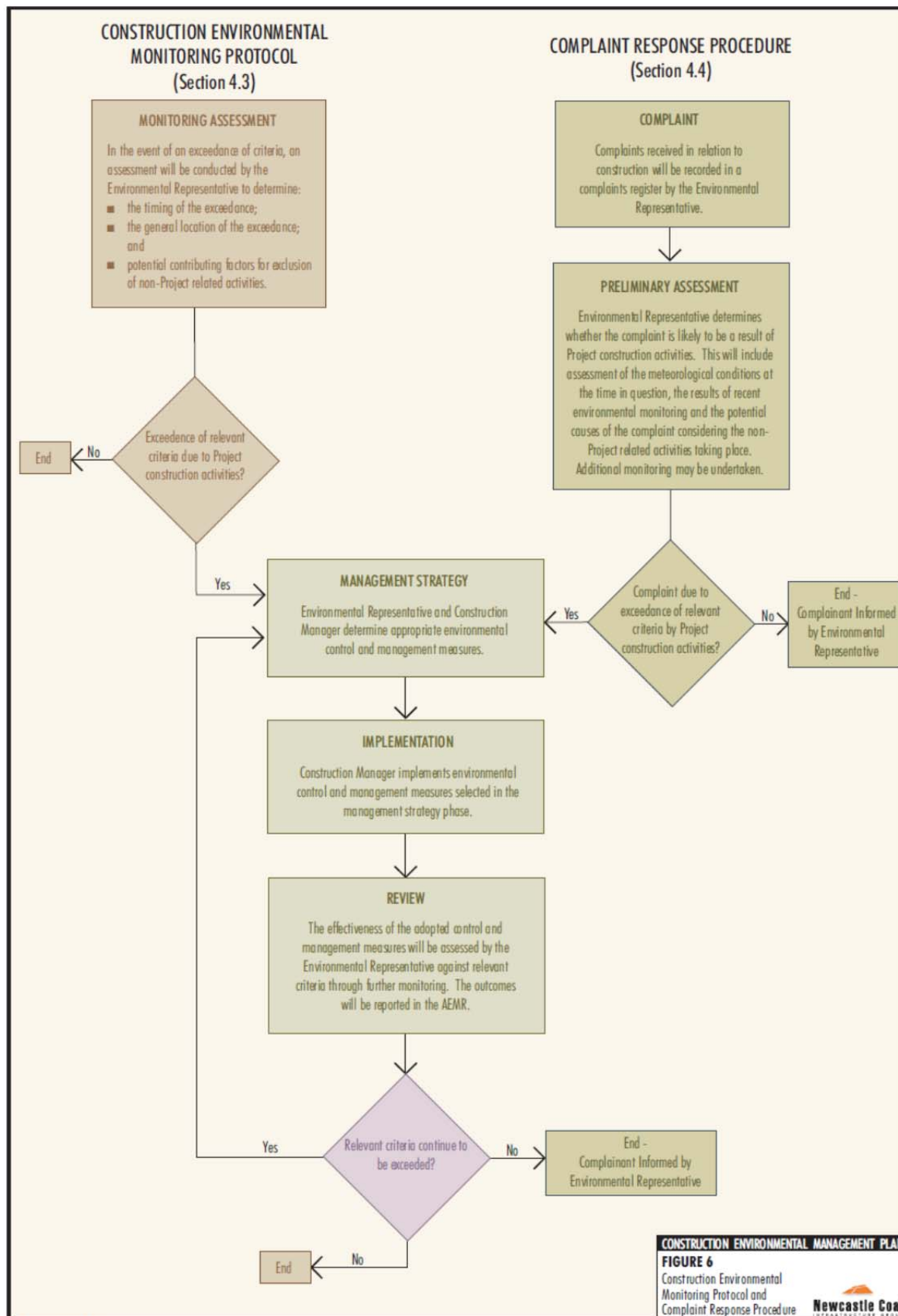


Figure 3.13.1: Complaint Response Procedure

Table 3.13.1: Community Complaints Register Summary

Date of Complaint	Environmental Concern Raised	Issue	Action Taken
04/08/09	Noise	Loud noise over 2 night period	Logged as complaint via email. Contact made with complainant. Investigation undertaken. Attended and unattended noise monitoring arranged for residence. Noise as described by resident found not to be from NCIG construction works. Noise was likely to be coming from other industry in Kooragang/Mayfield area. This was communicated to resident. No further action required.
26/03/10	Dust	Dust on house suspected to be from NCIG stockpiles	Logged as complaint via phone. Explained that stockpile sprays were being commissioned the following week. Offered to visit house. Resident declined and said they would monitor how things progress and ask for a dust sample to be collected if dust issues continued. No further action required.

In addition to the management of community complaint NCIG also liaised with local community groups in the form of presentations and information sessions. This liaison was typically undertaken on request and was designed to provide information about the progress of the project to interested parties.

A Project newsletter was also prepared by NCIG and distributed to surrounding residents of the suburbs of Fern Bay, Stockton, Mayfield West, Mayfield East, Mayfield North, Warrabrook, Tighes Hill, Sandgate and Shortland. The newsletter provided residents with general information on the progress of the Project and to notify residents of the commencement of Project construction activities and outline noise and vibration generating construction activities to be undertaken that may affect their noise and vibration amenity. The newsletter included details for registering community complaints and enquiries (i.e. telephone number, postal address and email address). The chronology of community liaison held during the reporting period is outlined in Table 3.13.2.

Table 3.13.2: Community Liaison Summary

Date	Type
September 2009	Community Reference Group Meeting
October 2009	Community Newsletter
November 2009	Media advertising and notices for Cormorant Road gantry lift

3.13.3 Reportable Incidents

No incidents were reported relating to community relations during the reporting period. Complaints received during the period are detailed in the section above

3.13.4 Further Improvements

No improvement to community relations is required for the next period.

3.14 ENVIRONMENTAL MONITORING PROGRAM

An Environmental Monitoring Programme was implemented to monitor the environmental performance of the Project during construction in accordance with the Project Approval (06_0009), environmental licences and other statutory conditions. The programme was established and implemented at the commencement of construction works.

The Environmental Representative was responsible for the implementation of the construction environmental monitoring programme and is responsible for ensuring that adequate environmental monitoring is maintained throughout the Project construction.

The details of the monitoring undertaken are provided in the previous sections, however, an overview of the construction Environmental Monitoring Programme is provided in Table 3.14.1.

Table 3.14.1: Construction Environmental Monitoring Program

Monitoring Focus	Monitoring Sites	Frequency
Meteorology		
Temperature, relative humidity, net solar radiation rainfall, wind speed and direction and sigma theta (rate of change of wind direction).	Project automated meteorological station ¹ .	Continuously monitored and the data averaged over 15 minute periods.
Erosion and Sediment Control		
Structural stability and effectiveness in controlling sediment migration.	Drainage, erosion and sediment control infrastructure.	Monthly and following significant rainfall events (i.e. greater than 20 mm in 24 hours).
Noise		
Attended and unattended noise monitoring.	N1, N3, N5, N9, N13 and N14 ¹ .	Monthly.
Unattended continuous noise monitoring.	Selected locations.	Minimum period of one week per quarter.
Attended noise monitoring.	Reference locations proximal to the Project ¹ .	At the commencement of night-time land-based dredging support works and at two monthly intervals thereafter.
Air Quality		
Dust deposition ² .	DG1, DG2, DG3, DG4, DG5 and DG6 ¹ .	Monthly.
Vibration		
Ground vibration.	Adjacent industrial receivers within 180 m of piling activities.	Weekly during piling activities.
Surface Water		
pH, electrical conductivity (EC), total dissolved solids (TDS) and total suspended solids (TSS).	Primary settling ponds and EPL Release Point.	Weekly.
	Surface water monitoring sites.	Monthly.
	Excavation sites that have accumulated water.	Weekly.
Water level.	Primary settling pond and EPL Release Point.	Following heavy rainfall (i.e. more than 20 mm of rainfall in a 24 hour period).
Groundwater		
pH, EC, TDS, TSS, sulfate, polycyclic aromatic hydrocarbons (PAH), As III, Cd, Cu, Pb, Hg, Zn, Cr VI, Mn and Ni (refer Table 5).	GW1 to GW4, and piezometer network ¹ .	Monthly.
Groundwater level.		Monthly.
Acid Sulfate Soils		
Presence of acid sulfate soils or potential acid sulfate soils.	Excavation sites.	Prior to any excavation.
	ASS treatment area.	After treatment.

¹ The location of monitoring sites is shown on Figure 3.1.1.

² Dust deposition was analysed in accordance with AS/NZS 3580.10.1-2003 *Methods for Sampling and Analysis of Ambient Air – Determination of Particulate Matter – Deposited Matter – Gravimetric Method*.

4 COMPLIANCE AUDITS

Audits were undertaken in relation to NCIG Construction activities which considered the compliance status of the Project for the reporting period. These reviews were conducted to meet the requirements of Condition 5.1 of development Approval 06-009 a) as outlined below:

- 5.1 The Proponent shall develop and implement a **Compliance Tracking Program** to track compliance with the requirements of this approval. The Program shall include, but not necessarily limited to:
 - a) provisions for periodic review of the compliance status of the project against the requirements of this approval;

The details and outcomes of the audits conducted are illustrated below:

4.1 JULY 2009

Environmental Resources Management Australia Pty Ltd (ERM) undertook a review of the compliance status of the NCIG Coal Export Terminal Construction activities for the period up until the end of July 2009. This review was conducted as a component of an Environmental and Social Due Diligence Assessment.

This review was undertaken to confirm the compliance status of the project against the requirements of the project approvals, being for both the terminal construction (06_0009) and dredging (DA-134-3-2003-i) activities. The outcome of the ERM assessment of the NCIG compliance status is as follows:

the assessment found that NCIG is implementing construction activities in accordance with its formal Environmental Assessment (EA) (compliance with which is a condition of development consent (Project Approval 06_0009), the relevant components of the Port Consent (DA-134-3-2003-i) for dredging, and associated management plans, approvals, licences and permits.

On this basis NCIG continued to undertake the Stage 1 NCIG Coal Export Terminal construction works in accordance with the approved management plans, licences and permits.

4.2 OCTOBER 2009

A review of the Compliance Tracking Program document was undertaken in October 2009 to confirm the ongoing compliance of the NCIG project against the requirements of the development consent (06_0009). This review determined that NCIG met the requirements for all aspects of the consent that were relevant to the stage of the project development as at October 2009 (i.e. elements of the consent relating to operational activities had not achieved as operations were not yet initiated). With completion of the review, the Compliance Tracking Program document was revised and submitted to the Department of Planning.

5 ACTIVITIES PROPOSED IN NEXT AEMR PERIOD

The construction of Stage 1 of the NCIG Coal Export Terminal was primarily completed and commissioning activities had been initiated by the conclusion of this reporting period. Significant activity is proposed to be undertaken in the next AEMR period in accordance with the Project Approval and environmental management and monitoring programmes. The principle elements are:

- Commencement of operation of 30 Mtpa Stage 1 of the NCIG Coal Export Terminal.
- Construction of Stage 2 of the NCIG Coal Export Terminal is scheduled to commence.

ATTACHMENT A
DUST DEPOSITION MONITORING RESULTS

	DG1				DG2				DG3			
	IS	Limit	Ash	Com.	IS	Limit	Ash	Com.	IS	Limit	Ash	Com.
Apr-09	18.6	4.0	2.9	15.7	0.6	4.0	0.2	0.4	2.8	4.0	0.7	2.1
May-09	16.4	4.0	2.9	13.5	1.6	2.6	0.9	0.7	1.9	4.0	0.8	1.1
Jun-09	20.0	N/A	2.6	17.4	0.7	3.6	0.3	0.4	0.6	3.9	0.3	0.3
Jul-09	4.0	N/A	1.0	3.0	1.3	2.7	0.8	0.5	8.6	2.6	1.8	6.8
Aug-09	1.9	N/A	0.8	1.1	1.2	3.3	0.7	0.5	0.9	4.0	0.5	0.4
Sep-09	2.1	4.0	1.3	0.8	2.6	4.0	1.9	0.7	4.9	4.0	3.1	1.8
Oct-09	4.8	4.0	3.1	1.7	1.1	4.0	0.7	0.4	1.1	4.0	0.7	0.4
Nov-09	2.3	4.0	1.6	0.7	1.7	4.0	1.2	0.5	7.9	4.0	4.9	3.0
Dec-09	1.8	4.0	1.3	0.5	1.5	4.0	0.9	0.6	2.2	4.0	1.0	1.2
Jan-10	1.8	4.0	1.6	0.2	1.5	4.0	0.9	0.6	2.2	4.0	1.0	1.2
Feb-10	1.5	4.0	1.2	0.3	1.0	4.0	0.4	0.6	2.6	4.0	1.5	1.1
Mar-10	1.2	4.0	0.5	0.7	1.2	4.0	0.6	0.6	1.8	4.0	1.3	0.5

	DG4				DG5			
	IS	Limit	Ash	Com.	IS	Limit	Ash	Com.
Apr-09	1.0	4.0	0.2	0.8	1.5	4.0	0.8	0.7
May-09	0.8	3.0	0.4	0.4	1.4	3.5	0.9	0.5
Jun-09	0.3	2.8	0.0	0.3	1.2	3.4	0.5	0.7
Jul-09	1.5	2.3	0.7	0.8	0.7	3.2	0.3	0.4
Aug-09	0.7	3.5	0.4	0.3	1.1	2.7	0.7	0.4
Sep-09	2.5	4.0	2.0	0.5	3.5	4.0	2.8	0.7
Oct-09	1.3	4.0	0.8	0.5	1.4	4.0	0.9	0.5
Nov-09	2.4	4.0	1.7	0.7	2.6	4.0	1.9	0.7
Dec-09	1.6	4.0	0.9	0.7	2.3	4.0	1.6	0.7
Jan-10	1.6	4.0	0.9	0.7	2.3	4.0	1.6	0.7
Feb-10	0.9	4.0	0.4	0.5	43.9	4.0	43.0	0.9
Mar-10	0.6	4.0	0.3	0.3	1.0	4.0	0.6	0.4

	DG6				Comments
	IS	Limit	Ash	Com.	
Apr-09	1.9	4.0	1.0	0.9	DG01 samples found to be contaminated
May-09	2.0	3.9	1.4	0.6	DG01 samples found to be contaminated
Jun-09	1.6	4.0	1.1	0.5	DG01 samples found to be contaminated
Jul-09	0.1	3.6	0.0	0.1	DG01 samples found to be contaminated, Insects and Tree Litter found in DG3
Aug-09	2.6	2.1	2.1	0.5	DG01 samples found to be contaminated
Sep-09	8.0	4.0	6.9	1.1	DG01 samples found to be contaminated
Oct-09	2.6	4.0	1.8	0.8	
Nov-09	4.8	4.0	3.5	1.3	Insects and Tree Litter found in DG3 and DG6
Dec-09	2.4	4.0	1.7	0.7	
Jan-10	2.4	4.0	1.7	0.7	
Feb-10	3.2	4.0	2.2	1.0	Metallic particles found in DG5 belongs
Mar-10	2.0	4.0	1.3	0.7	to Energy Australia electrical works onsite

ATTACHMENT B
SURFACE WATER MONITORING RESULTS

Temperature (°C)

	S1	S2	S4	S5	S6	S8	S9	S10	S11
30-Apr	19.3	19.6		16.6	16.4	16.4	17.3	16.7	16.8
30-May	17.4	17.7		17.4	16.4	17.9	16.2	16.3	17.4
30-Jun	14.5	15.9		15.9	15.3	14.5	14.1	13.7	14.2
27-Jul	17.2	17.1		14.4	13.9	16.9	15.8	14.2	18
28-Aug	22	19.8		19.7	19.6	21.3	21.5	18.4	18.7
29-Sep		27.8	26.8	25.1	24.5	30.3	30.5	22	22.5
28-Oct		19.6	18.7	19.5	19.7	26	21.3	22.5	23.4
27-Nov		28.5	28.2	27.6	27.5	29	28.5	23.5	24.8
25-Dec		32.6	24.4	26.5	27.8				
28-Jan		26.5	28	31.5	34.6				
25-Feb		26.5	32.2	28	27.3				
26-Mar		All Ponds are dry							

Turbidity (NTU)

	S1	S2	S4	S5	S6	S8	S9	S10	S11
30-Apr	2.4	4.4		3.4	3.8	117	12	5.3	2.2
30-May	6.8	14.1		43.8	2.7	99.6	96	2.9	5.5
30-Jun	3.6	19.7		5.3	7.3	122.7	32	7.5	9.5
27-Jul	4.4	12.1		2.1	4	103.4	18.4	6.3	3.5
28-Aug	5.4	29.1		39.1	7.3	89.3	27.9	7.6	30.9
29-Sep		30.7	39.1	102.5	18.3	340	49.5	65.1	13.3
28-Oct		102.5	48.5	19.4	15	265	75.3	66.8	92.4
27-Nov		30.8	65.3	18	24.5	152.5	85.6	75.5	92.3
25-Dec		36.4	17.5	18.9	226.5				
28-Jan		17.5	57.6	210.8	365.4				
25-Feb		45.6	70.8	180.7	344.5				
26-Mar		All Ponds are dry							

pH

	S1	S2	S4	S5	S6	S8	S9	S10	S11
30-Apr	8.12	7.49		8.6	9.09	8.71	7.61	8.16	7.65
30-May	7.79	7.8		8.2	8.69	8.55	6.8	7.73	7.77
30-Jun	7.53	8.25		10.8	7.65	8.72	8.19	8.5	7.37
27-Jul	7.69	7.64		10.7	9.29	8.77	8.23	8.94	8.93
28-Aug	8.51	8.1		8.32	8	8.58	9.29	8.92	8.5
29-Sep		6	5.5	5.2	5.14	5.73	6.08	5.82	5.9
28-Oct		9.45	9.51	9.62	9.3	9.35	11.4	9.2	9.5
27-Nov		7.55	7.4	7.3	7.35	8.5	10.5	8.2	8.3
25-Dec		7.5	7.65	8.5	8.2				
28-Jan		8.9	8	7.7	7.4				
25-Feb		8.6	7.9	8.2	7.6				
26-Mar		All Ponds are dry							

Electrical Conductivity (μS)

	S1	S2	S4	S5	S6	S8	S9	S10	S11
30-Apr	15840	20400		2380	2600	2120	2000	766	877
30-May	12070	18090		1931	2390	2060	1697	715	751
30-Jun	18450	21600		1967	2910	1859	1870	826	786
27-Jul	28200	33300		1278	2630	1860	2330	883	553
28-Aug	26300	10680		2640	3220	2070	2020	942	1001
29-Sep									
28-Oct									
27-Nov									
25-Dec									
28-Jan									
25-Feb									
26-Mar	All Ponds are dry								

Total Dissolved Solids (PPM)

	S1	S2	S4	S5	S6	S8	S9	S10	S11
30-Apr	11930	15300		1630	1800	1440	1919	498	576
30-May	8510	12570		1212	1150	1280	1027	468	455
30-Jun	13060	15100		1258	1880	1170	1170	501	476
27-Jul	20200	24100		761	1680	1160	2110	533	524
28-Aug	18500	7210		1660	1990	1320	1270	581	651
29-Sep									
28-Oct									
27-Nov									
25-Dec									
28-Jan									
25-Feb									
26-Mar	All Ponds are dry								

