# NAMOI MINING PTY LTD

**(ABN 24 071 158 373)**

# ANNUAL ENVIRONMENTAL MANAGEMENT REPORT

**FOR THE**

# SUNNYSIDE COAL MINE (ML 1624)


**01 December 2011 – 30 November 2012**

# Namoi Mining Pty Ltd

# Annual Environmental Management Report for the Sunnyside Coal Mine (ML 1624 and PA 06_0308)

MOP Commencement Date ***15-10-2008*** – MOP Completion Date ***31-09-2015***
AEMR Commencement Date ***01-12-2011*** – AEMR Completion Date ***30-11-2012***

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**Distribution:**

- Office of Environment and Heritage/Environment Protection Authority
- Department of Planning and Infrastructure
- NSW Trade and Investment, Regional Infrastructure & Services – Division of Resources and Energy
- NSW Trade and Investment, Regional Infrastructure & Services – Primary Industries, Food and Water
- NSW Office of Water
- Gunnedah Shire Council
- Sunnyside Coal Mine Community Consultative Committee

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# 1 INTRODUCTION AND OBJECTIVES

## 1.1 Scope

### 1.1.1 Introduction and Period of Reporting

This is the fourth Annual Environmental Management Report (AEMR) produced for the Sunnyside Coal Mine, and it has been prepared in accordance with Conditions 4 and 5 of Mining Lease (ML 1624) (Mining Act 1992) and Condition 5 (Schedule 5) of PA 06_0308. The AEMR generally follows the format identified in the Department of Primary Industries - Mineral Resources (DPI-MR) document entitled *"Guidelines to the Mining, Rehabilitation and Environmental Management Process"* Version 3, dated January 2006.

Though primarily covering the period from 1st December 2011 to 30th November 2012 (the reporting period), where relevant the AEMR provides information on historical aspects of the operation and longer term trends in environmental monitoring results.

The Sunnyside Coal Mine is located within the Gunnedah Shire, approximately 15 km west of Gunnedah (Figure 1).

### 1.1.2 The Company

Sunnyside Coal Mine is owned by Namoi Mining Pty Ltd (NMPL) and operated by Whitehaven Coal Mining Pty Ltd. Both companies are wholly owned subsidiaries of Whitehaven Coal Limited (WCL), a publicly listed company which has several coal mining interests in the Gunnedah region of NSW.

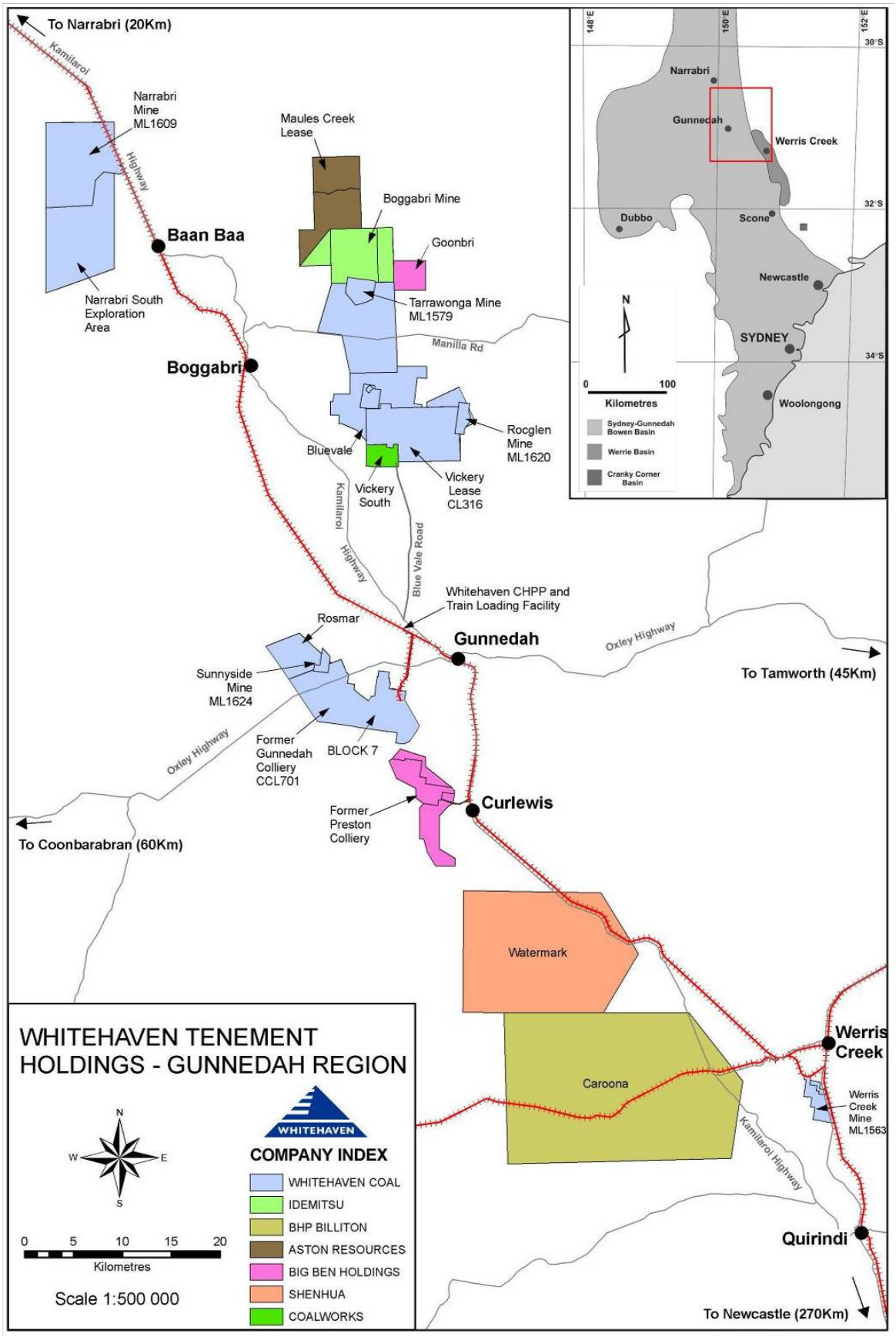


**Figure 1 - Locality Plan**

### 1.1.3 Background and History of the Sunnyside Coal Mine

The Sunnyside Coal Mine was developed after substantial investigations were undertaken under Exploration Licence 5831, granted in December 1996 and renewed in June 2006 and May 2008. Following completion of relevant assessments and studies, the Department of Planning provided approval to the development via Project Approval (PA) 06_0308 on the 24th September 2008. Environment Protection Licence (EPL) 12957 was granted on the 15th December 2008.

The Project Approval provided for the extraction of approximately 7 million tonnes of ROM coal, at a maximum rate of 1 million tonnes per year. The consent allows for the crushing and screening of ROM coal at the mine site prior to transport to the Whitehaven Siding Coal Handling and Preparation Plant (CHPP) near Gunnedah. The external boundary of ML 1624 corresponds to the area referred to in PA 06_0308 and covers an area of approximately 234 ha.

On the 25th October 2012, Whitehaven announced that mining operations would be suspended at Sunnyside and the mine would be placed in a care and maintenance phase. The decision was made as a result of declining coal prices applicable to the quality of marketable coal at Sunnyside. Mining operations ceased on the 29th November 2012, with ROM coal stockpiled at site to be crushed and transported to the CHPP for approximately 3 months of the next reporting period (until stockpiles are exhausted). A Care and Maintenance Mining Operations Plan (MOP) is to be submitted to Department of Trade and Investment, Regional Infrastructure and Services, Division of Resources and Energy (DTIRIS – DRE) for the remainder of the project approval period, or until coal markets improve and allow mining to recommence. The MOP will address ongoing rehabilitation and final closure of the mine if economic conditions do not improve.

### 1.1.4 Products and Markets

The Hoskissons Coal Seam within the Sunnyside Mine can be described as a medium volatile bituminous coal. Overall, the coal is 9 metres thick subdivided into three run-of-mine coal plies. These plies are as follows:

- Low Ash (12%) lower section;
- High Ash (25 to 30%) mid section and
- High-high Ash (35%) upper section.

All coal is crushed directly to -50mm at site and transported to the CHPP. The high ash is washed to produce a 15% ash coal at good yields (70 to 75%), while the other two (Low ash and high-high ash) are directly bypassed to the product stockpiles at the rail load out. All coal is transported to Port of Newcastle for export thermal shipments.

## 1.1.5 Operational and Environmental Management

### 1.1.5.1 Contacts

The management personnel responsible for operational and environmental performance at the Sunnyside Coal Mine and their relevant contact details are as follows:

- Mr Lloyd Hain, Manager Mining Engineering - retains statutory responsibility for mining activities at the site. Contact: 02 6740 7000.
- Mr Peter Wilkinson, General Manager, Operations - oversees Open Cut Operations for the Whitehaven Group. Contact: 02 6741 9301.
- Mr Danny Young, Environmental Manager – oversees day to day environmental and rehabilitation performance across the site. Contact: (02) 6741 9316, 0427 497 710.

### 1.1.5.2 Support Personnel

In addition to the personnel identified in Section 1.1.5.1, Sunnyside Coal Mine utilises specialist assistance as and when required. Specialist environmentally-based or related companies or consultants involved in activities at the mine during the reporting period included:

- ALS Acirl Pty Ltd;
- Countrywide Ecological Services;
- Orica Blasting Limited;
- Greg Ward Earthmoving Solutions;
- Fields Tree Planting;
- Heritage Seeds; and
- Ag Solutions Australia.

All mining and environmental management activities have been undertaken generally in accordance with the current MOP, management plans and procedures prepared in satisfaction of Sunnyside's Mining Lease, Environment Protection Licence (EPL 12957), Project Approval and the relevant legislation.

## 1.1.6 Corporate Occupational Health, Safety and Environmental Policy

Whitehaven Coal intends to conduct business in a way that maintains a safe and healthy workplace for its workers visitors and the surrounding community, and protect the

environment in all stages of exploration, project development and construction, mining, processing and train loading.

Whitehaven Coal aims to:

- *Achieve zero workplace injuries and illnesses.*
- *Achieve zero plant and equipment damage.*
- *Achieve zero environmental incidents.*

Whitehaven Coal will strive to achieve these goals by:

- *Considering health, safety, welfare and environmental matters when planning and completing work activities.*
- *Consulting and communicating in a fair and effective manner regarding health, safety, welfare and environment matters.*
- *Having in place processes for identifying hazards and eliminating or minimising health, safety, welfare and environmental risks and impacts.*
- *Having in place processes for receiving and considering information regarding incidents, hazards, and risks and impacts, and responding to that information in a timely way, including learning's applied and shared.*
- *Working to improve safety and environmental performance through continuous improvement.*
- *Providing an effective injury management and return to work program for employees. Complying with applicable health, safety and environmental legal and other requirements.*
- *Providing workers with necessary health, safety, welfare and environment information, instruction, training and supervision to allow for the safe performance of their work.*
- *Making available for use, and using, health, safety, welfare and environment resources and processes to implement and maintain the requirements of this Policy and associated health, safety, welfare and environment management systems.*
- *Verifying the availability and use of health, safety and welfare resources and processes.*

Responsibilities of Workers:

- *Workers have a responsibility to comply with the applicable legislation, this policy and associated health, safety and environment management systems. No work is to be undertaken without a clear understanding of a safe method that minimises the risk of injury or illness, plant or equipment damage and environmental harm.*

- *Workers must take reasonable care for their own health and safety and have an obligation to take reasonable care that their acts or omissions don't adversely affect themselves or the health and safety of others at the operation.*
- *Workers must also comply with any reasonable instruction given by Whitehaven Coal and cooperate with any reasonable policy or procedure relating to health or safety notified to them.*

This policy applies to all sites managed by Whitehaven Coal and its subsidiaries, and to all workers, visitors and clients of Whitehaven Coal.

## 1.2 Approval Status

### 1.2.1 Leases, Licences and Approvals

Table 1 identifies the leases, licences and approvals in place for the Sunnyside Coal Mine at the end of the reporting period, the issuing / responsible Authority, dates of issue, duration (where limited) and relevant comments. The list is presented chronologically according to the date of issue.

Reviews of compliance/performance with the conditions identified in PA 06_0308 (Appendix 1), EPL 12957 (Appendix 2), and ML 1624, are presented in Appendix 3, Tables A3-1, A3-2 and A3-3 respectively.

**Table 1 - Tenements, Licences and Approvals**

| Issuing / Responsible Authority | Type of Lease, Licence, Approval | Date of Issue | Expiry | Comments |
|---|---|---|---|---|
| Department of Mineral Resources*[1] | Exploration Licence (EL 5183) | 23rd December 1996 (Renewed 8th June 2005 and 6th May 2008) | 22nd December 2010 | Instrument of Renewal received Feb 2013. Renewal imminent. |
| Minister for Planning | Project Approval (PA) 06_0308 (Appendix 1) | 24th September 2008 | 5th November 2015 (7 years from the grant of the ML) | Approval for the Mine |
| Department of Environment and Climate Change*[2] | Environment Protection Licence No. 12957 (Appendix 2) | 15th June 2012 (Replaces EPL issued 20th December 2011) | Nil Anniversary date: 15th December Next review: 15th June 2017 | Approval for Mining for Coal and Coal Works to 2 Mtpa. Varied 15th June 2012. |
| Department of Primary Industries (DPI) *[1] | ML 1624 | 5th November 2008 | 5th November 2029 | Approval of open cut |

| Issuing / Responsible Authority | Type of Lease, Licence, Approval | Date of Issue | Expiry | Comments |
|---|---|---|---|---|
| Department of Water and Energy (DWE)* | Water Licence 90BL254961 | 27th April 2009 | 27th April 2014 | Mining |
| | 90BL253767 | 9th Feb 2007 | Perpetuity | Test |
| | 90BL253768 | 9th Feb 2007 | Perpetuity | Test |
| | 90BL253769 | 9th Feb 2007 | Perpetuity | Test |
| | 90BL254686 | 26th Mar 2008 | Perpetuity | Monitoring |
| | 90BL254687 | 26th Mar 2008 | Perpetuity | Monitoring |
| | 90BL254688 | 26th Mar 2008 | Perpetuity | Monitoring |
| | 90BL254689 | 26th Mar 2008 | Perpetuity | Monitoring |
| | 90BL254690 | 26th Mar 2008 | Perpetuity | Monitoring |

*[1] Now, Department of Trade and Investment, Regional Infrastructure and Services, Division of Resources and Energy (DTIRIS – DRE)

*[2] Now, Office of Environment and Heritage (OEH)/Environment Protection Authority (EPA)

*[3] Now, NSW Office of Water (NOW)

### 1.2.2 Amendments to Leases, Licences and Approvals

The Environmental Protection Licence was varied in June 2012, to remove the requirement to monitor $PM_{10}$ at the Whitehaven owned "Lilydale" property (consistent with other sites) and to change an error in the frequency of which $PM_{10}$ is monitored. The previous EPL had the frequency listed as continuous, where $PM_{10}$ is monitored every 6 days.

As the site is in care and maintenance, Whitehaven will seek further variation to the EPL in the next reporting period to remove the requirement to monitor noise until such time as mining recommences. Management plans will be updated to align with EPL requirements.

## 1.3 Actions Requested at Previous AEMR Review

The 2010-2011 AEMR was submitted to the former Industry & Investment NSW (I&I NSW – now DRE) and other relevant agencies in April 2012. Review of the document was undertaken by DRE. The Department found the report acceptable and therefore no specific actions were requested. DRE reminded Whitehaven that an approved closure plan is required within 2 years of closure. A Closure Plan was developed in accordance with the Project Approval requirements, with updates to this plan to be made in advance of final closure. A Care and Maintenance MOP, incorporating proposed rehabilitation activities during the care and maintenance term, will be submitted to DRE in the first quarter 2013.

# 2 SUMMARY OF OPERATIONS

## 2.1 Exploration, Resources / Reserves and Mine Life

### 2.1.1 Exploration

Exploration drilling during the period was directed to refining the limits of the Hoskissons resource and identifying a possible resource in the Melville seam.

During the period, 26 open holes for a total of 1,557m of drilling, and seven core holes for a total of 380.18m, were drilled on ML1624.

### 2.1.2 Resources and Reserves

Regionally, the Sunnyside Coal Mine lies in the Mullaley sub-basin of the central Gunnedah Coalfield. Coal extraction is from the Hoskissons Seam, part of the Late Permian Black Jack Group. Two major coal seams occur at Mining Lease 1624, namely the Hoskissons Seam and the underlying Melville Seam.

The Hoskissons Seam generally ranges in thickness from 6m to 9m and consists of three main plies. An upper high-high ash ply (30% ash), a middle high-ash (25 to 30% ash) and a lower low-ash ply (~12% ash). The depth of weathering extends approximately 20 to 35 metres below the surface, with the depth to the top of the Hoskissons Seam extending from the base of weathering in the north to approximately 80m below surface in the south. Seam rolls, minor faults, igneous dykes and sills also affect open cut operations.

A resource estimate in November 2012 showed there was 10.2 million tonnes of open cut coal within ML1624. A mineable reserve of approximately 2.01 million tonnes of recoverable coal and 1.79 million tonnes of marketable coal was estimated to exist in the current open cut consent area.

### 2.1.3 Estimated Mine Life

Estimated mine life at full production is approximately 12 months.

## 2.2 Land Preparation

Land preparation activities undertaken at the Sunnyside Coal Mine during the reporting period were conducted in accordance with commitments identified in Section 3 of the MOP and included:

- Mining and waste emplacement in an area formally comprising Community 1 – Cleared Cropland and Pastureland Community.

- No topsoil or subsoil stripping, with soils used for rehabilitation sourced from existing soil stockpiles. Stockpile locations are shown on Plan 3.

Table 2, the "Production and Waste Summary", shows that at the end of the reporting period, 31,624m$^3$ of topsoil and subsoil had been replaced from existing stockpiles for rehabilitation purposes.

**Table 2 - Production and Waste Summary**

| | Cumulative Production | | | |
|---|---|---|---|---|
| | **Start of Reporting period (up to 01/12/11)** | **During Reporting period (1/12/11 to 30/11/12)** | **Cumulative Total at End of Reporting period** | **Cumulative Total at End of next Reporting period (estimated)** |
| Soil Stripped (m$^3$) | 177,286 | 0 | 177,286 | 177,286 |
| Soil Used/spread (m$^3$) | 21,170 | 31,624 | 52,794 | 62,424 |
| Waste Rock (m$^3$) | 7,636,500 | 5,271,503 | 12,908,003 | 12,908,003 |
| ROM Coal (t)* | 770,901 | 690,014 | 1,460,915 | 1,460,915 |
| Processing Waste (t)** | 79,937 | 57,494 | 137,431 | 146,400*** |
| Product (t) | 617,484 | 462,600 | 1,080,084 | 1,255,562*** |

* ROM Coal is total production at the mine site. The difference between ROM Coal and final Product is related to changes in stockpile volumes both at the mine and the CHPP during the Reporting period.

** Sunnyside waste produced at Whitehaven CHPP.

***Based on ROM coal stockpiled at end of period, which is to be transported to CHPP for washing and bypass to port.

## 2.3 Construction

No construction occurred during the reporting period.

## 2.4 Mining

### 2.4.1 Mining Method

All mining during the reporting period was undertaken by open cut methods using the techniques identified in the MOP, namely:

- Drilling and blasting the underlying competent overburden;
- Overburden (and interburden) removal by bulldozers and/or excavator and dump trucks, with the overburden placed in waste emplacements; and
- Coal extraction by excavator loading into haul trucks for transport to the ROM stockpile.

All coal was assessed in pit and depending on the quality was classified into “high-high ash”, “high ash” and “low ash” for stockpiling. The in-pit classification determines the form of subsequent processing undertaken on-site or off-site.

During the reporting period, 5,271,503 bcm of friable and competent overburden was removed to produce 690,014t ROM coal at an average overburden:coal stripping ratio of 7.6:1 (See Table 2).

Plan 4 presents the status of mine and infrastructure development as of 30th November 2012 and includes the limit of mining at the commencement of the reporting period.

At the end of the reporting period, the open cut, which was developed as a series of approximately 8 x 50 m wide strips, covered an area of approximately 500m x 300m. Mining activities were undertaken in areas formerly identified as Community 1 – Cleared Cropland and Pastureland Community.

### 2.4.2 Mining Constraints

Day to day mining activities at the Sunnyside Coal Mine are primarily constrained by economic considerations which, in turn, are determined to a large extent by factors beyond the Company’s control (i.e. coal price and demand). Economic factors determine the overburden:coal stripping ratio and hence the lateral extent of mining undertaken.

Other constraints to mining operations at the Sunnyside Coal Mine have included or continue to include:

- The potential presence of faulting and intrusions within the seam structure which may influence, coal quality, the sequence and possibly the method of mining;
- The potential for an uneven coal seam floor which could potentially complicate vehicular access to the coal;
- Restricted operating hours, as per PA 06_0308 and
- Major wet weather periods.

### 2.4.3 Mining Equipment

Table 3 presents a list of mining equipment in use at the Sunnyside Coal Mine at the end of the reporting period, together with its principal function(s).

**Table 3 - Mining Equipment**

| Item (or equivalent) | # on site | Function |
|---|---|---|
| Excavator (Liebherr 994) | 1 | Overburden and coal excavation |
| Volvo IT Front-End Loader | 1 | Coal excavation and loading |
| Komatsu 785 Rear Dump Truck (90t Capacity) | 3 | Overburden and coal haulage |
| CAT D10T | 1 | Overburden removal and ancillaries |
| CAT 14H Grader | 1 | Ancillaries |
| CAT 980H Wheel Loader | 1 | ROM coal loading |
| 16 kL Water Truck | 1 | Dust suppression |
| Lighting Plants | 6 | Lighting |
| 100 kVA Diesel Generator | 1 | Electricity generation (for site services) |
| 840 kVA Diesel Generator | 1 | Electricity generation (for crushing plant) |

### 2.4.4 Hours of Operations

Sunnyside is permitted to undertake mining operations between 7:00am to 10:00pm Monday to Friday and 7:00am to 6:00pm on Saturdays, with the exception of public holidays. During the period a split shift of day/evening was in rotation, with day shift working from 7:00am to 2:30pm and evening shift working from 2:30pm to 10pm. Maintenance crews generally worked 12 hour shifts (6:00am to 6:00pm), 5 days per week.

Coal transportation from the mine site is permitted to be undertaken between the hours of 7:00am to 6:00pm Monday to Friday (or between 7:00am to 8:00pm during Eastern Summer Time) and 7:00am to 4:00pm on Saturdays. Coal transportation is not permitted on Sundays and public holidays. Blasting activities were carried out between 10:00am and 5:00pm Monday to Friday and 10:00am to 2:00pm on Saturdays (except public holidays).

The above hours of operation are consistent with the permitted hours of operation identified in PA 06_0308.

## 2.5 Processing

### 2.5.1 Outline of Processing Activities

With the exception of coal crushing to <150 mm, no coal processing was undertaken within the DA Area.

During the reporting period, Sunnyside coal was transported to the Whitehaven Siding CHPP (Figure 2) where 40% was washed and 60% was by-passed (unwashed) for despatch to export markets.

Figure 2 presents a schematic of coal movements and washery inputs, outputs and yields for the reporting period. The figure shows that during the reporting period, a total of 690,014 tonnes of ROM coal was produced at the Sunnyside site, producing 314,674 tonnes by-pass coal (i.e. crushed product coal not requiring washing), and 147,926 tonnes of washed product (at an average yield of 72% from the plant).

The slight variations in totals (ie. washery input + bypass does not total coal from site and washery output + bypass coal does not total coal sales) are simply a result of variations in stockpiles.

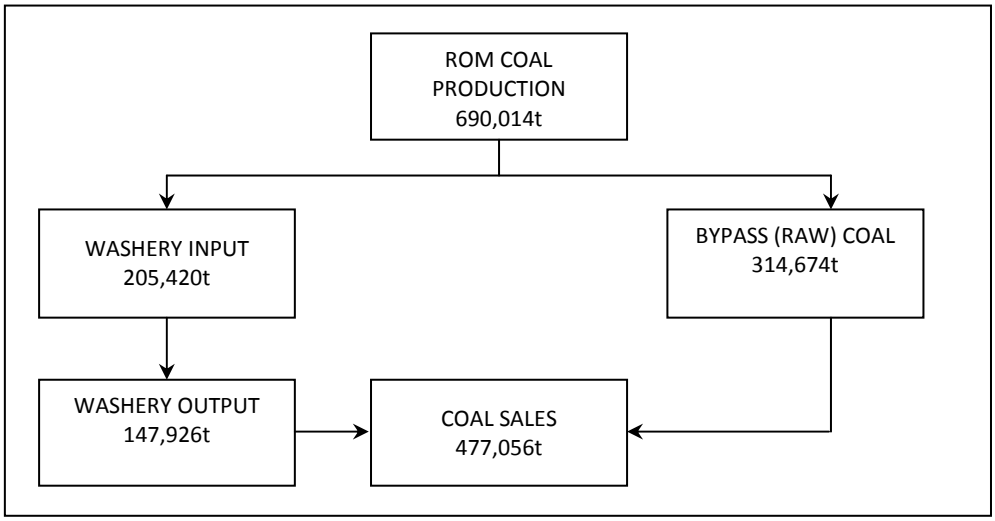


**Figure 2 - Coal Movement and Production Summary**

**(2011/2012 Reporting Period)**

### 2.5.2 Changes or Additions to the Process or Facilities

No changes or additions to the process or facilities occurred during the reporting period.

## 2.6 Waste Management

### 2.6.1 Introduction

Wastes produced from the Sunnyside Coal Mine during the reporting period remain unchanged from those identified in the original EIS and are comprised of:

- General domestic-type wastes from on-site buildings and routine maintenance consumables;
- Oils and grease;
- Sewage;

- Overburden and interburden;
- Mine equipment tyres; and
- Coarse and fine coal rejects from any coal preparation undertaken (at the Whitehaven CHPP).

The following sub-sections identify the management procedures adopted for each of these wastes throughout the reporting period.

### 2.6.2 Domestic Type Wastes

All general wastes were collected on-site and placed into large storage receptacles on a daily basis. An industrial waste collector collected this waste on a fortnightly basis. Sunnyside maintains a recycling program for office and general recyclables (paper, cardboard, bottles, cans etc) at the site office and crib room, as well as scrap steel, timber and waste oils from the workshop.

### 2.6.3 Oil Containment and Disposal

Waste oils from maintenance activities were pumped from equipment to bulk storage tanks contained within a bunded area (also see Section 2.8.2). When breakdown maintenance was undertaken away from this location, oil was pumped from the equipment to a tank on the service truck from which it was subsequently transferred to the bulk storage tank. Waste oil stored at the maintenance workshop was collected and disposed of by a licensed contractor on an intermittent basis, approximately once every three months.

Runoff from the concrete vehicle and equipment wash pad was directed to an oil separator and containment system for subsequent pump out and disposal.

### 2.6.4 Sewage Treatment and Disposal

Effluent from the sewage and ablutions facilities at the Sunnyside Coal Mine was managed through the Council-approved septic system, with pump outs undertaken by a licensed waste disposal contractor on an as-needs-basis.

### 2.6.5 Mine Equipment Tyres

No tyres were disposed at site during the reporting period. Records of tyre burial are maintained through detailed survey.

## 2.6.6 Overburden and Interburden

Overburden materials at the Sunnyside Coal Mine comprise weathered conglomerates and siltstone with some fracturing. The overburden is cast into the mined-out areas by blasting or removed from above the coal seam by a combination of dozer pushing and excavator loading and hauling using dump trucks. Interburden removal to enable lower coal ply excavation is undertaken by excavator and dump truck.

During the reporting period, all overburden and interburden was blasted / pushed / dumped within areas nominated in the MOP.

## 2.6.7 Processing Plant Residues

### 2.6.7.1 Physical and Chemical Characteristics

The coarse and fine rejects produced from washing Sunnyside coal comprise a mixture of coal and non-coal materials, e.g. sedimentary rocks such as shale, mudstone or claystone, and sand, silts and clays which either occur naturally within the coal seam or represent overburden or interburden materials which dilute the coal during its extraction.

### 2.6.7.2 Reject Handling and Disposal Procedures

**Coarse Reject** – No coarse reject produced at the Whitehaven CHPP was disposed of at the Sunnyside Mine during the reporting period. Reject is currently being disposed of at Tarrawonga Mine, which is owned by Whitehaven.

**Fine Reject** – Pumped to a series of ten fine reject ponds within the Whitehaven CHPP balloon loop and adjacent to the Whitehaven CHPP for consolidation. Reject produced throughout the reporting period was pumped to the reject ponds within the rail loop and those adjacent to the CHPP. The ponds are encircled by bunding and drains to contain fine reject in the event of a pond failure. Following consolidation, the fine rejects are excavated and transported to the former Gunnedah Colliery for use in final landform development and emplacement in the Melville and North Cut Void.

### 2.6.7.3 Monitoring and Management of Containment Facilities

Routine management and monitoring of reject material at the Whitehaven Siding is undertaken by Whitehaven Coal personnel under the direction of the Plant Manager. Inspections of the reject ponds at the Whitehaven CHPP are undertaken by officers of DRE, the statutorily responsible Authority.

## 2.7 Stockpile Capacity

All ROM coal produced at the Sunnyside Coal Mine is delivered to high ash or low ash ROM stockpiles. The average stockpile volume during the reporting period was 110,318t, which is measured on an end of month basis. The higher than usual stockpile volumes are due to the mining of the high-high ash coal during the period; this coal was not mined in previous periods hence not contributing to ROM stockpiles.

## 2.8 Water Management

### 2.8.1 Objectives

The Sunnyside Coal Mine lies within the catchment of the Namoi River. The majority of the surface water runoff flows northwards across the mine site. It then flows into Coocooboonah Creek which flows north-west within a constructed waterway paralleling Coocooboonah Lane. From there, it flows into Rock Well Creek then into Native Cat Creek which continues to flow north-west for 6km. Runoff then flows northwards within Collygra Creek where it flows across a floodplain area before flowing into the Namoi River some 25km north of the Mine Site. The remainder of the mine's surface water flows south into Coocooboonah Creek ultimately flowing into the Namoi River to the north. The design of sediment detention basins within the disturbed area of the mine limits the opportunity for discharge of runoff from mine-disturbed area, i.e. after appropriate detention time to satisfy licensed discharge criteria.

Two wet weather discharge points are nominated in the current EPL 12957. These are Storage Dam 3 (EPL ID No. 9) and Storage Dam 4 (EPL ID No. 10). Two ambient monitoring points are also nominated on the EPL for water quality monitoring during discharge events. These are Coocooboonah Creek Upstream (CCUS – EPL ID No. 11) and Coocooboonah Creek Downstream (CCDS – EPL ID No. 12).

The management of water at the Sunnyside Coal Mine is undertaken with the following objectives.

i. To ensure sufficient quantities of water can be obtained through the capture of "dirty" water, harvesting of "clean" water, and extraction/harvesting of groundwater to meet the requirements of dust suppression on the mine site.

ii. To ensure the segregation of "dirty" water from "clean" water, with "dirty" water directed to and detained in sediment basins which, on discharge, flow to storage dams. "Clean" water, comprising clarified water originating from the sediment basins and run-on water collected in accordance with the Company's harvestable right, will be directed to and/or collected in storage dams.

iii. To ensure the treatment and separation of "contaminated" water from the workshop and wash bay area by diversion to an oil separating unit, with clarified water reporting to sediment basins.

iv. To ensure segregation of "pit" water from surface flows by collection in isolated pit dewatering dams.

v. To maximise the use of "dirty" and "pit" water for dust suppression purposes and minimise the necessity to harvest "clean" run-on water.

vi. To minimise the volume of water discharged from the mine site, but, should the discharge of water prove necessary, ensure sufficient settlement time is provided prior to discharge such that suspended sediment within the water meets the water quality criteria as specified in the EPL 12957.

vii. To minimise erosion and sedimentation from all active and rehabilitated areas of the mine site.

viii. To monitor the effectiveness of surface water controls and ensure all relevant surface and groundwater quality criteria are met.

ix. To monitor the impact on groundwater level, quality and availability.

x. To minimise any impacts on the availability of surface water or groundwater to surrounding residents and landholders.

xi. To establish a method of assessing the level of impact on groundwater supply attributable to the mine.

### 2.8.2 Surface Water Management

Water within the Project Approval area is nominally classified either as "clean", "dirty", "contaminated" or "pit water" depending on the source of the flow and it's potential for physical or chemical contamination.

All sediment basins, storage dams and associated banks and drains have been designed and constructed by Department of Lands – Soil Services personnel and Greg Ward Earthmoving Solutions.

***"Clean water"*** comprises surface runoff from catchments undisturbed or relatively undisturbed by mining or related activities and rehabilitated catchments. Within the Project Approval area, clean surface water flows either flow to natural drainage lines and hence off-site or are collected by diversion banks and directed to the storage dams for use on-site. All water flowing from sediment basins ultimately flows to storage dams to provide a final "polishing" storage prior to potential off-site discharge.

*"**Dirty water**"* comprises surface runoff from disturbed catchments such as the active mine area and overburden emplacement, ROM and product coal stockpiles, soil and subsoil stockpiles and rehabilitated areas (until stabilised), all of which could contain sediments.

Dirty water originating from surface runoff is collected by catch banks located down slope of the potential sources of pollution and directed to the sediment basins. Water collecting within the sediment basins is used for dust suppression in addition to waters in the storage dams to avoid potential for off-site water discharge.

Sediment basins have been designed to meet the requirements of the 90% 5 day event of the Urban Stormwater Guide. The Site Water Management Plan provides further details regarding storage capacity. Sediment levels in all sediment basins generally remain low due to the high vegetation cover and water management structures existing on rehabilitated areas which assist in reducing sediment load of waters during runoff. This is reflected by the results of the two wet weather discharges, where sediment levels were below EPL criteria.

Sediment basins are either cleaned out once their capacity is reduced by 25% or supplementary structures are installed to provide the required storage volume. In the event of structure replacement, the contents of the former structure will be allowed to dry prior to being capped and rehabilitated.

The principal components of the "clean" and "dirty" water management systems in place at the end of the reporting period are shown on Plan 4.

"***Contaminated Water Management***" comprises runoff water which could potentially contain hydrocarbons. One 68,000 L self bunded diesel fuel tank is maintained adjacent to the Sunnyside workshop area. This ensures that in the event of a leak from the tanks, there is sufficient capacity to adequately store the full complement of diesel from those tanks. An additional concrete bund has been installed adjacent to the workshop to house other oils and lubricants in a safe and efficient manner. Any associated spills within the bund then report to an oil separating unit for disposal by an appropriately licensed contractor. Waters potentially contaminated with hydrocarbons from the workshop area are also diverted to the oil separator, with clean water used for dust suppression purposes. Spill kits are also maintained on the mine site.

The likelihood of localised spills of fuel or oil external to bunded areas is kept to a minimum by the adoption of the above practice. In the event that localised spills do occur, immediate action would be undertaken to ensure appropriate clean-up and minimisation of harm.

"***Pit Water***" comprises water contained within the open cut sump or pumped to the void water dam for containment and use for dust suppression across the site.

### 2.8.3 Discharges

During the reporting period, two wet weather discharges have occurred as shown in Appendix 4. On the 12th December 2011, a wet weather discharge occurred from storage dam SD4 (licensed discharge point), after 65mm of rain on the 11th December 2011. SD4 recorded results which were compliant with EPL thresholds, recording a total suspended solid (TSS) of 48mg/L. Electrical Conductivity (EC) (95µs/cm), oil and grease (<5mg/L) and pH (7.06) were all within acceptable levels. Coocooboonah Creek upstream (CCUS) and downstream (CCDS) samples were also taken at the time of discharge, recording acceptable levels of pH, Electrical Conductivity, TSS and oil and grease.

On the 6th February 2012, discharge occurred from SD4, following 67.4mm of rainfall in the preceding 5 days. Results confirmed compliance with all EPL thresholds, including a TSS level of 16mg/L. EC was 272 µs/cm, pH was 8.23 and oil and grease was <5mg/L. Downstream sampling occurred at CCDS, recording acceptable quality. Upstream sampling did not take place at CCUS due to lack of access caused by regional flooding, following the heavy rainfall during late January and early February 2012.

### 2.8.4 Water Sources, Demand and Use

Within the Project Approval Area and immediate vicinity of Sunnyside Coal Mine, surface water resources are limited to a number of ephemeral drainage lines which flow for a short period after substantial rainfall, farm dams, water storage dams and a series of interlinked sediment basins as shown on Plans 3 and 4.

Water is required on the mine site primarily for dust suppression purposes, with minor quantities required for potable, toilet and ablutions purposes. Where practicable, water collected on-site is retained or reused, with water for dust suppression sourced from a combination of on-site water harvesting, inflows from the exposed coal seam, overburden and interburden, and groundwater extraction. Water for potable, toilet and ablutions purposes is trucked to the site from Gunnedah.

During the reporting period, a total of approximately 61.63 ML was used on the mine site and at the processing facility, generally for dust suppression purposes. The approximate volumes obtained from the various sources are as follows:

- 37.91 ML from groundwater sourced under licence from the production bore located on the “Werona” property;
- 8.72 ML from surface water storages; and
- 15 ML sourced from within the pit and the designated Void Water Dam as a result of groundwater seepage/rainfall capture in pit.

The above water use is lower than predicted in the EA (75-100ML per year for dust suppression and processing requirements) and higher compared to the previous AEMR period. The higher use compared to last year is attributable to higher production levels as well as dry periods experienced during the second half of the reporting period. However the volume of water used is substantially less than that predicted in the EA for the site on the basis that the site was not producing at the nominated production level of up to 1mtpa as assessed during the EA process.

### 2.8.5 Stored Water

Water volumes are measured on an end of month basis through survey. Table 4 presents the volume of stored water at the beginning and end of the reporting period. Water volumes are measured on an end of month basis through survey.

**Table 4 - Stored Water**

| | Volumes Held ($m^3$) | | Storage Capacity at the end of the Reporting period ($m^3$) |
|---|---|---|---|
| | **Start of Reporting period** | **At end of Reporting period** | |
| Clean Water (in Storage Dams) | 6,300 | 400 | 30,400 |
| Dirty Water (in Sediment Basins) | 3,990 | 500 | 31,200 |
| Pit Water | 0 | 0 | 29,200* |
| * Void water dam | | | |

### 2.8.6 Groundwater Management

Inflows into the open cut result from a combination of:

- Direct rainfall runoff and infiltration through the emplaced overburden which flows down-dip to the open cut sump(s); and
- Inflows from the exposed coal seam.

As noted in Section 2.8.4, during the reporting period, approximately 15 ML was produced in the pit from rainfall and groundwater seepage. This water was used for dust suppression purposes and was pumped to the designated Void Water Dam.

Contamination of groundwater is controlled by the management of chemical, oil and grease spills and storage, with:

- Vehicle maintenance carried out in designated areas;
- Any spills being cleaned up; and
- Fuels, oil and grease being stored within a bunded area, constructed in accordance with AS 1240-2004 (also see Section 2.8.2) and/or EPA requirements.

Groundwater from surrounding bores, as well as the mine production bore, is monitored on a regular basis to detect and assess any changes in groundwater quality or level that may be attributable to the mine (see Section 3.4.2). The mine production bore is monitored monthly for usage against allocation.

## 2.9 Hazardous and Explosive Material Management

No explosive materials are retained within the Sunnyside Mine Site. Orica Mining Services has a storage facility located between the Tarrawonga and Canyon sites which remove the requirement for on-site storage.

Mixing of nitropril with distillate to produce an explosive is undertaken on the day of each blast using a purpose built explosives mixer and in a quantity adequate only for that particular blast.

Materials Safety Data Sheets (MSDS) are retained on-site for all hazardous materials, independent of the quantity. Additionally, all contractors are required to supply MSDS sheets for any hazardous goods they may bring onto the site.

## 2.10 Infrastructure Management

Management of infrastructure (e.g. buildings, roads, generators and pumps) and other facilities not specified elsewhere within this AEMR is undertaken on an as-needs basis or in accordance with Statutory requirements in order to maintain them in an operationally efficient, safe, neat and tidy condition, and one which does not result in the direct or indirect generation of unacceptable environmental impacts.

## 2.11 Product Transport

Approximately 517,453 tonnes of coal was transported from the mine to the Whitehaven CHPP over the reporting period at an average of 81 truck loads per day. This is more than the last reporting period due to higher ROM produced at Sunnyside.

Product coal from the CHPP is transported by train to the Port of Newcastle.

# 3 ENVIRONMENTAL MANAGEMENT AND PERFORMANCE

The following sub-sections document the implementation and effectiveness of the various control strategies adopted at the Sunnyside Coal Mine, together with monitoring data for the reporting period. Existing monitoring sites are shown in Figure 3. Life of mine monitoring data will be included in future AEMRs, where relevant, to allow for discussion on longer-term trends. A risk identification matrix and the relevant environmental management procedures are identified in the Sunnyside Coal Mine MOP.

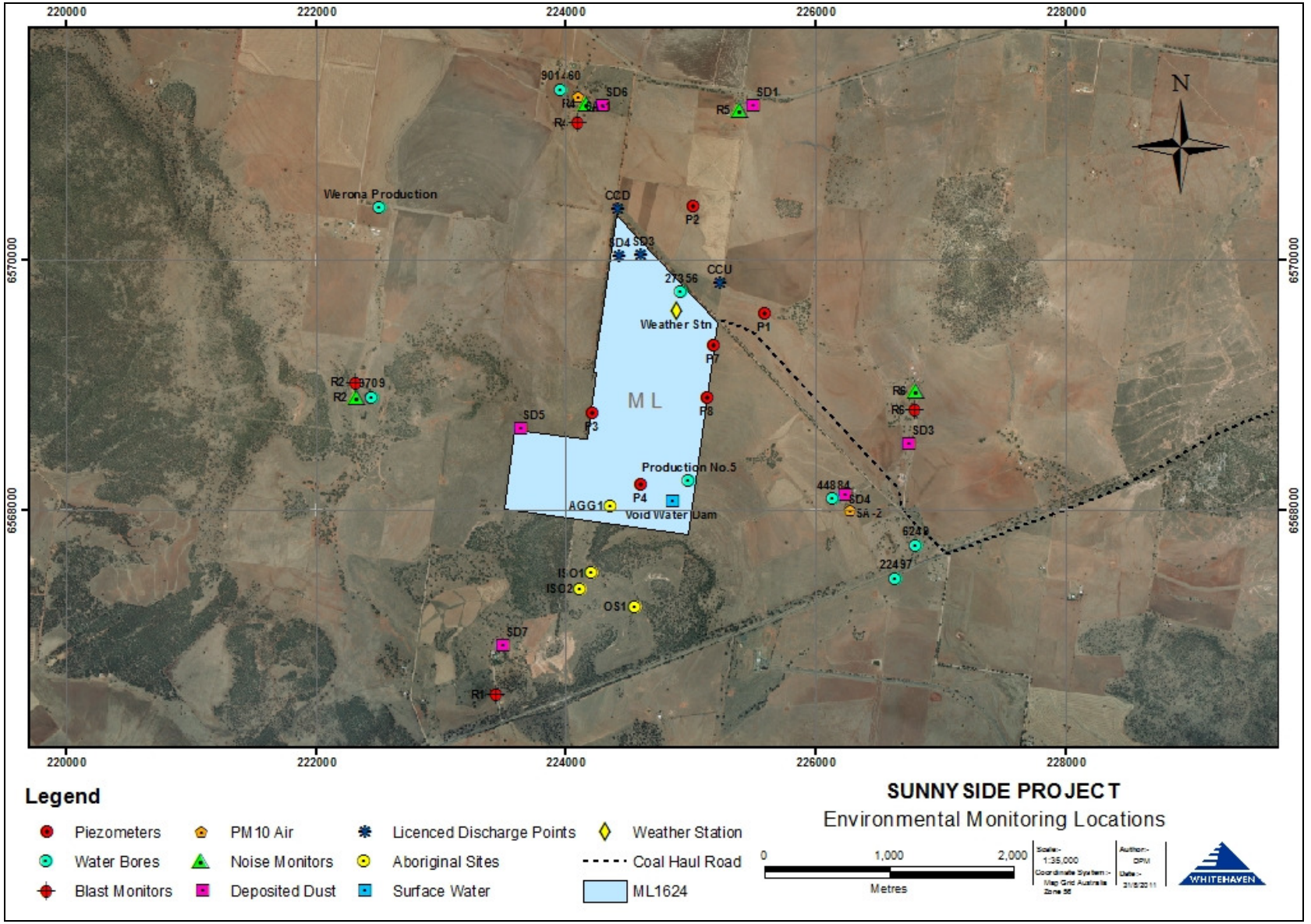


**Figure 3 - Monitoring Locations**

## 3.1 Air Pollution

### 3.1.1 Criteria

The air quality criteria applicable to the Sunnyside Coal Mine are specified in PA 06_0308 Schedule 3, Tables 7, 8 & 9 (Appendix 1), which is summarised below.

- Acceptable mean annual increase in deposited dust – 2 g/$m^2$/month.
- Mean annual dust deposition (all sources) – 4 g/$m^2$/month.
- Mean annual Total Suspended Particulate (TSP) matter (all sources) concentration – 90 µg/$m^3$.
- Mean annual $PM_{10}$ particulate level – 30 µg/$m^3$.
- 24 hour average $PM_{10}$ particulate level – 50 µg/$m^3$.

Notwithstanding the diversity of the criteria identified above, routine air quality monitoring at the Sunnyside Coal Mine is required for deposited dust and $PM_{10}$ particulates.

Monitoring of deposited dust is undertaken on a monthly basis whilst $PM_{10}$ levels are monitored every 6 days.

### 3.1.2 Control Procedures

In order to satisfy the criteria identified above, Sunnyside Coal Mine employs a range of air pollution control measures including:

- Limiting groundcover removal in advance of mining consistent with operational requirements. Under normal operational circumstances, a maximum of 100 m is prepared in advance of mining;
- Groundcover removal as part of the topsoil removal activities, rather than prior to topsoil removal;
- Where practicable, limiting soil stripping activities to periods when there is sufficient soil moisture to prevent significant dust lift-off and avoiding periods of high winds;
- Soil stripping using open bowl scrapers, thereby eliminating the dust generated from elevated scrapers;
- Application of water to exposed surfaces, with emphasis on those areas subject to frequent vehicle / equipment movements which may cause dust generation and dispersal;
- Use of water injection on the drilling rig;
- Use of imported aggregates for blast hole stemming;

- Water application at the crusher;
- Cessation of coal processing activities during periods of concurrent high winds and temperatures which cause coal dust dispersal, independent of water applications. This situation did not arise during the reporting period;
- ROM coal pad watering;
- Progressive shaping and rehabilitation of areas once they are no longer required for mining purposes;
- Speed limit restrictions on all vehicles and equipment on the mine site;
- Equipment exhaust positioning to avoid exhausts impinging on the ground and causing dust lift-off; and
- Use of covers on all product coal trucks. Toll is the principal contractor engaged in the haulage of coal from the Sunnyside Mine to the CHPP. All Toll vehicles and those operated by its contractors are fitted with roll-over tarpaulins.

### 3.1.3 Dust Monitoring

Table 5 presents a summary of the deposited dust monitoring data presented in Appendix 5. A graphical representation of the total insoluble solids and ash content data for each of the sites monitored during the reporting period is also included in Appendix 5. Figure 3 identifies the locations of the various deposited dust gauges maintained during the reporting period.

**Table 5 - Deposited Dust Monitoring Data**
**(December 2011 to November 2012)**

| Site (see Figure 3) | Property Name | Mean Total Insoluble Solids ($g/m^2$/month) | Mean Ash ($g/m^2$/month) |
|---|---|---|---|
| SD-1 | FERNDALE | 1.1 | 0.8 |
| SD-3 | PLAINVIEW | 1.6 | 0.9 |
| SD-4 | LILYDALE | 2.2 | 0.7 |
| SD-5 | IVANHOE | 3.0 | 1.1 |
| SD-6 | ILLILI | 1.4 | 0.7 |
| SD-7 | INNISVALE | 1.4 | 0.8 |
| SD-8 | WOODLAWN | 2.1 | 0.9 |

A review of Table 5 and Appendix 5 shows that:

- The mean annual total insoluble solids (deposited dust) criterion was satisfied at all monitoring locations during the reporting period.

- The mean ash content (i.e. the mineralogical component of the total deposited dust measured and that component possibly attributable to mining-related activities) percentage across the sites was as follows: SD-1 (72%), SD-3 (56%), SD-4 (31%), SD-5 (36%), SD-6 (50%), SD-7 (57%) and SD-8 (43%). This indicates that all monitoring locations are regularly influenced by non-dust sources (eg. insects, bird droppings and vegetation).

Sunnyside Coal Mine has one High Volume Air Sampler (HVAS - $PM_{10}$) located at the property "Illili" (licensed within the EPL), to the north-west of the mine site, and one HVAS unit on the "Lilydale" property (Whitehaven owned), to the east of the mine site. Each sampler runs for 24 hours every 6 days, with filter papers sent to an accredited laboratory for analysis.

Overall, the $PM_{10}$ results have indicated compliance with the annual average criteria for both sites, as indicated in Figure 4 and Figure 5. Since the last reporting period, results have shown a slight increase in the running annual average which has been below 15 $\mu g/m^3$. This is likely to be due to very dry conditions experienced in the second half of the reporting period.

One 24hr exceedance was recorded in November 2012 at the "Lilydale" monitor, where 135 $\mu g/m^3$ was recorded. At the time of monitoring, it was noted that agricultural operations (cultivation) were taking place in close proximity to the monitor which is thought to be the cause of the anomalous result. The full data set for $PM_{10}$ monitoring is contained within Appendix 5.

During September and October 2012, the "Lilydale" monitor was not operational as it was being repaired following a mechanical fault. The monitor was recommissioned for subsequent monitoring in November 2012.

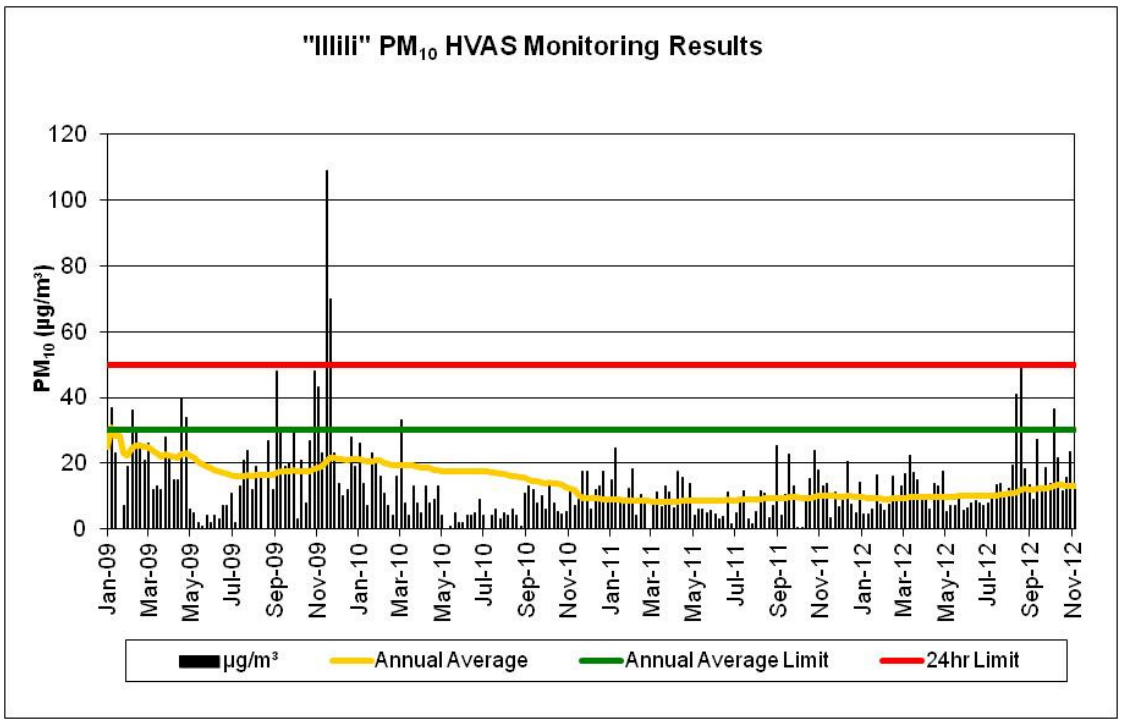


**Figure 4 – "Illili" HVAS $PM_{10}$ Data**

**January 2009 – November 2012**

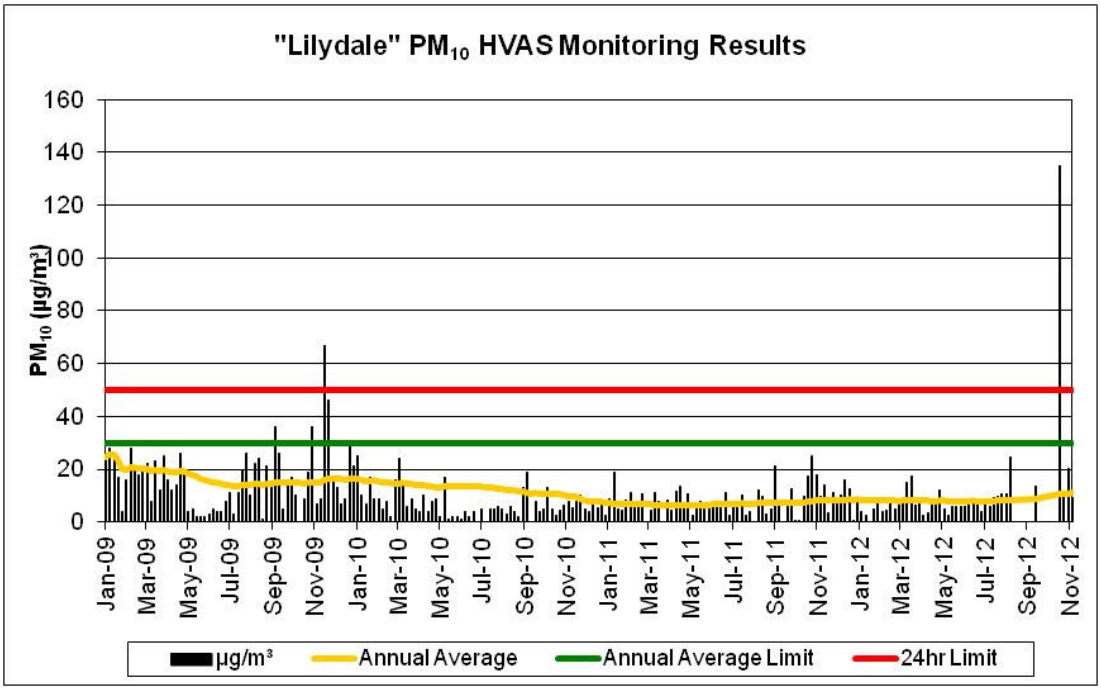


**Figure 5 – "Lilydale" HVAS $PM_{10}$ Data**

**January 2009 – November 2012**

## 3.2 Erosion and Sedimentation

### 3.2.1 Management

Methods for the management of erosion and sediment control at the Sunnyside Coal Mine are presented in the MOP and Site Water Management Plan prepared in accordance with PA 06_0308.

Control of erosion and sediment generation is achieved primarily through the implementation of water management controls identified in Section 2.8.2 and shown on Plan 4 as well as water usage for dust suppression which ensures adequate storage capacity is available within the various water containment structures to receive inflows. Additional measures which assist in the control of erosion and sedimentation include:

- Minimising the extent of disturbance consistent with operational requirements. Where possible, a maximum of 2 x 50 m is generally disturbed in advance of mining;
- Revegetation of long-term subsoil and topsoil stockpiles, areas shaped to their final landform and areas no longer required for mining-related purposes;
- Undertaking soil management activities generally in accordance with the soil stripping and stockpiling recommendations from Geoff Cunningham Natural Resource Consultants; and
- Installation of contour banks and sediment ponds/weirs on the final landform following soil application.

Soil stockpiles have been placed in gently sloping or near flat areas surrounded by grassland which effectively reduces the runoff velocity, and hence erosive potential, from any run-on waters. However, NMPL is aware of the potential for stockpile erosion and monitor accordingly to minimise impacts as required over the remaining life of the mine. All soil stockpiles on the Sunnyside site have, or will be, sown to cover crops on completion (and when weather conditions permit) to aid in stabilisation.

### 3.2.2 Performance

The effectiveness of the procedures for erosion and sedimentation management are assessed as part of routine monthly environmental inspections, undertaken by the Sunnyside Coal Mine Environmental Officer. Items such as water management structures, vegetation cover and sediment basins are inspected, with any ameliorative works initiated as and when required.

During the reporting period, to assist with the capture of sediment, additional sediment traps were installed upstream of sediment traps which were installed last reporting period, between the eastern amenity bund and the north eastern emplacement (see Plate 1). This

drainage line drains from the active emplacement and production areas and carries a large amount of dirty water during wet weather. The additional traps have proved successful through their overflow system in reducing velocity of this water and capturing sediment which drains directly into Sediment Basin 3 (SB3).

The continued installation of contour banks on the northern emplacement has ensured correct drainage occurs on the rehabilitated slopes and plateau. These have been installed with the intention of draining water from rehabilitated areas through the dirty water system at a low velocity.

One contour bank was identified to have failed, due to heavy rainfall in January and February 2012 and was subsequently repaired. Sufficient vegetation cover on slopes has also reduced the amount of erosion and sedimentation of water storages.

**Plate 1 – Additional Sediment Trap, November 2012**

## 3.3 Surface Water Pollution

### 3.3.1 Management

The prevention of surface water pollution is achieved through the management of surface water as presented in Section 2.8.2.

### 3.3.2 Performance

Surface water management controls have operated well throughout the reporting period, with only two wet weather discharges occurring following rainfall amounts greater than the design 90%ile 5 day storm event criteria (see Section 2.8.3). On both occasions, the discharge water was still within the compliance criteria that apply to discharges within the 90%ile design criteria.

Sunnyside Coal Mine has a schedule to undertake surface water monitoring on a quarterly basis, in addition to any wet weather discharge monitoring. Above average rainfall, particularly during the first half of the reporting period has provided adequate storage of water to undertake quarterly surface water monitoring, as required. Quarterly surface water results are shown in Appendix 4.

The quarterly monitoring results show that water quality within onsite storages was generally good, with the exception of marginally elevated Total Suspended Solids within sediment basins, which is expected with the higher than average rainfall experienced at site during the first half of the period. The elevated suspended solids did not impact on any downstream water bodies, with sediment settling prior to two discharges from the one licensed discharge point during the period (see section 2.9.3).

Elevated electrical conductivity was detected in SB3 and SB4 late in the reporting period due to very low dam levels. Results during previous sampling in the period identified acceptable EC levels when water levels were higher. Throughout the period, pH levels were generally alkaline which has been the trend since monitoring commenced. Void water electrical conductivity levels were consistent with previous reporting periods (~4500µs/cm) with the exception of February 2012 (1810µs/cm) when groundwater seepage in the void was diluted with significant rainfall runoff. Oil and grease levels were not detected in any water storage throughout the period.

## 3.4 Groundwater Pollution

### 3.4.1 Management

With the exception of fuels and oils, no materials occur, or are retained on the mine site which is likely to be a source of groundwater pollution.

The methods for management of potential pollutants are summarised in Section 2.8.6. Ongoing monitoring to assess trends in groundwater chemistry will enable assessment of potential contaminants to groundwater, with particular emphasis on heavy metals, and major cations and anions. Groundwater monitoring requirements are identified in Table 6.

### 3.4.2 Performance

Throughout the life of the mine to date, Sunnyside Mine's performance with respect to groundwater management, the prevention of pollution and the assessment of impacts on groundwater availability to other surrounding users, has been assessed through groundwater level and chemistry monitoring undertaken at a series of piezometers and bores within ML 1624 and extending to adjacent properties, where practicable, at the frequency and for the parameters identified in Table 6.

**Table 6 - Groundwater Monitoring**

| Site (see Figure 3) | Registered Bore No. & Licence No | Property/ Location | Frequency | | Purpose |
|---|---|---|---|---|---|
| | | | SWL*[2], EC*[3] and pH | Representative Metals and Ions | |
| P1*[1] | GW968386 90BL253767 | "Plainview" | Quarterly | Annually | To determine existing status and any impacts |
| P2*[1] | GW968387 90BL253768 | "Ferndale" | Quarterly | Annually | To determine existing status and any impacts |
| P3 | GW968388 90BL253769 | "Sunnyside" | Quarterly | Annually | To determine existing status and any impacts |
| P4 | GW968389 90BL254686 | "Sunnyside" | Destroyed by mining | | |
| P5 | GW968390 90BL254687 | "Sunnyside" | Destroyed by mining | | |
| P6 | GW968391 90BL254688 | "Sunnyside" | Destroyed by mining | | |
| P7 | GW968392 90BL254689 | "Sunnyside" | Quarterly | Annually | To determine existing status and any impacts |
| P8 | GW968393 90BL254690 | "Sunnyside" | Quarterly | Annually | To determine existing status and any impacts |
| 3709*[1] | | "Ivanhoe" | Quarterly | Annually | To determine existing status and any impacts |
| 22497*[1] | | "Coocooboonah" | Quarterly | Annually | To determine existing status and any impacts |
| 44677*[1] | | "Werona" | Quarterly | Annually | To determine existing status and any impacts |
| 44884*[1] | | "Lilydale" | Quarterly | Annually | To determine existing status and any impacts |
| 6249*[1] | | "Lilydale" | Quarterly | Annually | To determine existing status and any impacts |
| No 5 Entry*[4] | 90BL254691 | "Sunnyside" | Quarterly | Annually | To determine existing status and any impacts |
| 901460 | GW901460 90BL249138 | "Illili" | Quarterly | - | To determine existing status and any impacts |
| 27356 | GW027356 90BL020042 | "Sunnyside" | Quarterly | Annually | To determine existing status and any impacts |
| 45061 | | "Coocooboonah" | Quarterly | Annually | To determine existing status and any impacts |
| Werona Production | 90BL255246 | Werona | Quarterly | Annually | To determine existing status and any impacts |

*[1] Non-Company owned bore *[2] SWL – Standing Water Level *[3] EC = Electrical Conductivity
*[4] Company production bore

Appendix 6 presents the results of the groundwater monitoring undertaken since commencement of mining. Monitoring sites are shown on Figure 3. Below are some points to note regarding monitoring locations and frequencies:

- Monitoring site 44677 is now being sampled for water quality, with standing water levels inaccessible due to the covered bore.
- The bore into the No. 5 has been dry and was inaccessible at the end of the period due to mining operations.
- Water level data loggers, which store SWL data at 12 hourly intervals, have remained in P2 and P3 during the reporting period, and are monitored by Geoterra Pty Ltd.

Groundwater sampling and analysis was conducted by ALS Acirl Pty Ltd during the reporting period. A review of the groundwater monitoring results presented in Appendix 6 shows the following trends:

**Groundwater levels**

- Groundwater levels have remained relatively consistent at all monitoring locations, with the exception of P7 and P8.
- P7 has been affected by inflow of surface water resulting from a broken standpipe. The standpipe was repaired in late April 2012 with its SWL lowering during September 2012 monitoring, and returning to expected levels.
- The standing water level (SWL) in P8 has consistently been between 15m and 20m for the last four years, however the June 2012 SWL was recorded as less than 3m below ground level. The piezometer was re-measured in mid July 2012, to confirm the first reading was not an error, with a SWL of 3.5m recorded. An investigation was initiated which determined that P8 may have been influenced by water seepage from the Void Water Dam located on the southern side of the active pit, as approximately 15ML of water was pumped to the Void Water Dam during June and July 2012. The Void Water Dam was constructed in early 2009 and was designed and constructed to achieve a low permeability to avoid such seepage. It has generally remained empty since construction (due to negligible pit water and this prolonged period of exposure may have compromised the permeability of the dam. As a means of addressing the issue, a dam sealing polymer was applied to the dam and onsite observations and the continued drop in SWL (4.79m in September 2012) indicates that seepage has been reduced. At the end of the reporting period the Void Water Dam was holding negligible water due to the limited water produced in pit. P8 is expected to continue to drop in SWL and will continue to be monitored.

- No. 5 bore has continued to record a dry standing water level since June 2011. This is most likely due to the variable nature of storage within the former workings. No water has been extracted from the No. 5 workings since 2009.
- Continual monitoring will provide stronger data in standing water level of surrounding bores over time.

**Groundwater quality**

- The water in most bores is generally neutral in pH.
- The water in all bores can be described as fresh to brackish.
- As reported in the previous AEMR, during the September 2011 sampling, P7 recorded an elevated result in Ammonia as Nitrogen (224mg/L), with the sample value confirmed upon re-analysis. The casing of P7 had been broken off at ground level and was subsequently repaired to eliminate surface water inflows. In May 2012, an investigation took place where the bore was sampled then purged and re-sampled. This process found that Ammonia levels dropped from 374mg/L to 28mg/L once groundwater recovery had occurred. September 2012 monitoring confirmed lower Ammonia levels, with 10.9mg/L recorded.
- P8 has recorded slightly elevated Aluminium results of 6 and 7.12 mg/L in April and September 2012. Although unlikely to be attributed to Sunnyside, in the event of another elevated result during subsequent monitoring, an investigation will take place into the possible cause of the levels. Even with the apparent influence from Void Water Dam seepage, it is not believed that void water has contributed to this spike in Aluminium levels as previously recorded Aluminium levels in void water have been 0.03 and 0.1mg/L.
- Water quality has been compared to the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2000) (ANZECC) guidelines. Water quality at all other monitoring points is generally within the guidelines for stock watering purposes.
- Based on the monitoring data available to date, water quality at all other monitoring points appears relatively consistent since monitoring commenced.

## 3.5 Contaminated or Polluted Land

Prior to mining, the Project Approval Area was a greenfields site. Discussion with landowners during the preparation of the EA revealed that no environmentally harmful products had been used on their landholding nor had there been any disposal of potential environmental contaminants. This situation has remained unchanged throughout the life of the mine to-

date and consequently there is no reason to expect that contaminated lands would be present within the Project Approval Area.

## 3.6 Threatened Flora

Investigations into the occurrence of threatened flora within the Project Approval Area were undertaken as part of the Environmental Assessment by Geoff Cunningham Natural Resource Consultants Pty Ltd in 2007 following field surveys in October and December 2006. The investigation identified no significant impact on threatened flora species, endangered ecological communities, endangered flora populations or critical habitat as a consequence of the development, either because they do not exist in the area or avoidance is possible due to project design.

Investigations identified a remnant of the White Box Yellow Box Blakely's Red Gum Woodland endangered ecological community within the study area but concluded that it would not be affected in any significant manner by the mine.

A remnant of the Native Vegetation on Cracking Clay Soils of the Liverpool Plains endangered ecological community was also identified within the study area. It was noted that a small section of this community would be temporarily affected by the Coocooboonah Lane re-alignment but the community would be rehabilitated and enhanced following rehabilitation after mining ceases. It was assessed that this action, due to its temporary impact and final environmental enhancement, would not require approval under the Commonwealth EPBC Act.

Much of the area has been cleared in the past and most of this cleared area has been cultivated. The vegetation on the cleared areas has been invaded by introduced species. The establishment of the mine site does not involve clearing of native vegetation and as such no biodiversity offsets were required.

The initial flora quadrat establishment and monitoring was undertaken in June 2010 by Geoff Cunningham Natural Resource Consultants Pty Ltd. The vegetation communities present at Sunnyside include:

- **Community 1** – Cleared Cropland and Pastureland Community;
- **Community 2** – Regenerating Grasslands Community;
- **Community 3** – Bare Disturbed Land with Minimal Vegetation Cover;
- **Community 4** – *Atalaya hemiglauca* [Whitewood] Community;
- **Community 5** – Dry Scrub Community of the Rocky Scarp;
- **Community 6** – *Eucalyptus dealbata* [Tumbledown Gum] – *Geijera* parviflora [Wilga] – *Callitris glaucophylla* [White Cypress Pine] Community;

- **Community 7** – *Eucalyptus albens* [White Box] Community;
- **Community 8** – *Eucalyptus populnea* subsp. *bimbil* [Bimble Box] – *Eucalyptus melliodora* [Yellow Box] - *Eucalyptus albens* [White Box] Woodland Community; and
- **Community 9** - Degraded *Austrostipa aristiglumis* [Plains Grass] Grassland.

The mine is located wholly within Community 1 and therefore two quadrats are established within the mine site to monitor ground cover and other vegetation changes in the area. Quadrat 1 is located in the north-eastern corner of the site and Quadrat 2 is located in the western corner of the site.

Additional quadrats will be established on the mined area once a care and maintenance MOP is finalised. Once these plots are established, monitoring campaigns will be carried out to measure the performance of rehabilitation on a progressive basis.

## 3.7 Threatened Fauna

Investigations into the occurrence of threatened fauna within the Project Approval Area were undertaken by Kevin Mills and Associates as part of the Environmental Assessment, following surveys conducted in September 2006. These investigations identified that the proposed development was unlikely to significantly affect any of the threatened species, fauna populations or communities listed under the *Threatened Species Conservation Act 1995*, or their habitats.

It was also concluded that development of the mine was not likely to have a significant impact on any matter of national environmental significance listed under the *Environment Protection and Biodiversity Conservation Act 1999*. Referral to the Commonwealth Minister for the Environment for assessment and approval was therefore not warranted.

The area surrounding the mine site supports a viable Koala population. NMPL has committed to a number of measures to minimise the impacts on this population, including:

- Relocating the southern section of Coocooboonah Lane to avoid disturbing remnant Koala habitat;
- Erecting a Koala-proof fence around the active mine area;
- Minimising clearing and utilising local tree species for revegetation with an emphasis on Koala feed trees. This has continued since the last reporting period with Koala feed trees planted across rehabilitation areas, consisting of White Box, Bimble Box and Kurrajong tree species.

The initial fauna quadrat establishment was undertaken in November 2010 by Dr Leong Lim (Countrywide Ecological Services), where two grassland monitoring plots were established. Since establishment, roof tiles have been scattered throughout the quadrats to enhance the

ground habitat structure and provide refuges for the ground fauna. The establishment of two woodland plots to the south of the active mining area occurred in February 2011, during a monitoring campaign. These plots are placed in open woodland, and open woodland with grassy understory communities.

In early September 2012, an annual monitoring campaign was undertaken by Countrywide Ecological Services. A rehabilitation plot was established on the north east section of the rehabilitated slope of the waste emplacement for subsequent monitoring campaigns. This round of monitoring occurred in very early spring, with daytime temperatures in the low to mid 20's, but nights still very cool. These conditions may have limited the actual species counts. Sightings of Grey Crowned Babbler families continue to be made both inside and adjacent to the mining lease which is indicative of limited impacts as a consequence of mining operations. The Koala population located around the mine site also appears unaffected by operations with several sitings of Koala's around the mining lease.

## 3.8 Weeds

### 3.8.1 Management

Weed management within the ML area involves targeted monthly inspections to determine levels of weed infestation. Weed control is undertaken by contractors or Whitehaven's own qualified personnel. All persons involved with weed control hold required chemical handling certificates.

### 3.8.2 Performance

Minor ongoing weed management comprised spot spraying of Bathurst Burr, Galvanised Burr, Mexican Poppy along the haul road and around the office facilities. Prior to tree planting, tree lines were sprayed out to remove any broadleaf weeds to enhance tree growth. No major weed infestations were identified on rehabilitation areas.

## 3.9 Blasting

### 3.9.1 Blast Criteria and Control Procedures

#### 3.9.1.1 Blast Criteria

Blasting criteria for the Sunnyside Coal Mine is nominated in Project Approval PA 06_0308 (Appendix 1), and Condition L5 of Environment Protection Licence 12957 (Appendix 2) and specify that:

- Blasting must only be carried out between 10:00 am and 5:00 pm, Monday to Friday, 10:00am to 2:00pm on Saturdays and at no time on Sundays or Public Holidays.

- The overpressure level from blasting operations must not:

  (a) exceed 115dB (Lin Peak) for more than 5% of the total number of blasts over each reporting period; and

  (b) Exceed 120dB (Lin Peak) at any time.

  At any residence on privately-owned land.

- Ground vibration peak particle velocity from the blasting operations must not:

  (a) exceed 5mm/s for more than 5% of the total number of blasts during each reporting period; and

  (b) exceed 10mm/s at any time,

  At any residence on privately-owned land.

PA 06_0308 also specifies that the mine shall not carry out more than:

(a) 2 blasts a day; and

(b) 5 blasts a week, averaged over a 12 month period.

#### 3.9.1.2 Control Procedures

Flyrock, air vibration, ground vibration and dust from blasting are controlled using a combination of blast design and operational methods which are detailed in the MOP and/or documented blasting procedures.

## 3.9.2 Performance

During the reporting period, a total of 20 blasts were initiated. Of the 20 blasts initiated, one did not perform as expected, exceeding the overpressure criteria of 120dBL. The exceedance occurred on the 18th January 2012, during blast 43, with a reading of 122.2dBL at monitoring point “Plain View”. The monitor at nearby “Ferndale” recorded an overpressure reading of 116.4dBL which falls within the allowable exceedance of 115dBL for no more than 5% of blasts in a 12 month period.

An investigation into the cause of the overpressure exceedance at “Plain View” was carried out by the blasting contractor Orica. After a review of blast design, loading data, video and photographic evidence as well as environmental monitors, the root cause of the overpressure exceedance was identified as the reinforcement of blast hole signals arriving at the monitor at the same time. Upon reviewing the initiation sequences, up to 19 holes would have arrived at the “Plain View” monitor within a 8ms window. This was caused by a deficiency in the blast timing design. Other factors including vertical movement due to

inadequate stemming and inadequate survey may have contributed to the exceedance. Orica provided and implemented a number of recommendations following the investigation.

All parties, including DoPI, EPA and the affected landholder were notified of the exceedance. Consequently a Penalty Infringement Notice was issued by the EPA on the 5th May 2012. All blasts have been compliant since this exceedance.

The maximum recorded ground vibration during the reporting period was 2.3 mm/s recorded at "Plain View" on the 11th February 2012. This is well inside the consent criteria of 5 mm/s.

All blast monitoring results for the reporting period, including the time of initiation has been included in Appendix 7.

## 3.10 Operational Noise

### 3.10.1 Criteria

#### 3.10.1.1 EPA Criteria

The EPA-nominated noise emission criteria, identified in Environment Protection Licence 12957 as applicable to the Sunnyside Coal Mine, are as follows.

L6.1 *Noise from the premises must not exceed:*

*(a) an $L_{10(15minute)}$ noise emission criterion of 40 dB(A) during initial construction period; and*

*(b) and $L_{Aeq(15\ minute)}$ noise emission criterion of 35 dB(A) at all times (day, evening and night time periods).*

L6.2 (Provides definitions)

L6.3 *The noise emission limits identified in this licence apply under all meteorological conditions except:*

*(a) during rain and wind speeds (at 10m height) greater than 3m/s; and*

*(b) under "non-significant weather conditions".*

L6.4 *The noise limits set by condition L6.1 of the licence do not apply where a current legally binding agreement exists between the licensee and the occupant of a residential property that:*

*a) agrees to an alternative noise limit for that property; or*

*b) provides an alternative means of compensation to address noise impacts from the premises.*

*A copy of any agreement must be provided to the EPA before the licensee can take advantage of the agreement.*

### 3.10.1.2 Consent Criteria

Noise emission criteria nominated in Project Approval PA 06_0308 (Condition Schedule 3(2) and Schedule 3(3)) is as follows:

*3(2) The Proponent shall ensure that the noise generated during the construction of the project does not exceed the level set out in Table 1.*

*Table 1: Construction noise impact assessment criterion dB(A)*

| ***Day/Evening*** $L_{A10(15\ minute)}$ | ***Land*** |
|---|---|
| *40* | *Any residence on, or more than 25% of, any privately owned land (except at "Lilydale")* |

*3(3) The Proponent shall ensure that the noise generated during mining operations and other activities on the site does not exceed the level set out in Table 2:*

*Table 2: Operational noise impact assessment criterion dB(A)*

| ***Day*** $L_{Aeq(15\ minute)}$ | ***Land*** |
|---|---|
| *35* | *Any residence on, or more than 25% of, any privately owned land (except at "Lilydale")* |

*However, if the Proponent has a written negotiated noise agreement with the landowner of any land, and a copy of this agreement has been forwarded to the Department and DECC, then the Proponent may exceed the noise limits in Table 1 or Table 2 on that land in accordance with the negotiated noise agreement.*

*3(6) The Proponent shall implement all reasonable and feasible measures to ensure that the traffic noise generated by the project combined with the traffic noise generated by other mines does not exceed the level in Table 4:*

| ***Day/Evening*** $L_{A1eq(1\ hour)}$ | ***Road*** |
|---|---|
| *55* | *Any residence adjacent to Torrens Road* |

*Note: Traffic noise generated by the project is to be measured in accordance with the relevant procedures in the DECC's Environmental Criteria for Road Traffic Noise.*

## 3.10.2 Control Procedures

Control of noise generation and propagation on the Sunnyside Coal Mine site is by a combination of general source and propagation path methods including, where practical:

- Installation and maintenance of appropriate mufflers on plant and equipment;
- Where operationally feasible, scheduling activities to minimise operation of equipment in exposed locations when winds are blowing towards residences;
- Equipment removal or replacement;
- Changing operational procedures;
- Restricting hours of operations;
- Enclosure of fixed items of plant, e.g. generators;
- Bunding close to noise sources to create obstructions to the propagation path;
- On-going site road maintenance using the mine-based grader; and
- Regular equipment maintenance.

Sunnyside Coal Mine also regularly liaises with the majority of surrounding neighbours to seek feedback not only on noise, but on all mining activities. Any issues raised are investigated and appropriate measures are implemented to alleviate further impacts.

## 3.10.3 Operational Noise Monitoring

### 3.10.3.1 Introduction

The Noise Monitoring Program details the requirements for attended noise monitoring for construction, transport and operational noise associated with the Sunnyside Coal Mine. The noise monitoring sites are identified on Figure 3.

The following sub-sections present a summary of the outcomes of each monitoring event. Copies of all monitoring reports are presented in Appendix 8.

### 3.10.3.2 February 2012 Noise Monitoring

On the 7th February 2012 attended noise monitoring was undertaken at “Illili” (R4), “Ferndale” (R5), “Plain View” (R6), “Lilydale” (R9) and “Glendower” (R15). “Ivanhoe” (R2) was not recorded as the property is not permanently occupied and access was unavailable. Spectrum Acoustics reported that mine noise was below the criterion of 35 dB(A) or inaudible at all monitoring locations during the day and evening monitoring events except for the “Plain View” monitoring point where 38 dB(A) was recorded, exceeding the criteria

by 3 dB(A) during the day period. Haul truck revs were the dominant noise source. The “Plain View” property is privately owned and upon notification of the exceedance, Whitehaven indicated to the landholders an intention to discuss options for a private noise agreement.

In addition to the site noise monitoring, traffic noise from the transport trucks was measured at the “Roslyn” property on Torrens Lane, near the CHPP, over a one hour period. The noise levels from 6 trucks (3 full, 2 empty and 1 other heavy vehicle) passing the site were measured from 5:00pm on the 7th February 2012. The measured Leq noise level from mine vehicles was 49.8 dB(A), below the noise criterion of 55 dB(A) Leq (1 hour).

#### 3.10.3.3 May 2012 Noise Monitoring

On the 29th May 2012 attended noise monitoring was undertaken at “Illili” (R4), “Ferndale” (R5), “Plain View” (R6), “Lilydale” (R9) and “Glendower” (R15). “Ivanhoe” (R2) was not recorded as the property is not accessible.

The results indicated that, under the operational and atmospheric conditions at the time, noise emissions from the operations at Sunnyside exceeded the noise criterion of 35 dB(A) Leq (15 min) by 2 dB at "Ferndale" during the evening survey and by 1 dB at "Glendower" during the daytime survey. Mine hum, truck revs and dozer tracks were the dominant audible mine noise sources at these receivers. Atmospheric conditions recorded at the Sunnyside meteorological station during evening monitoring at "Ferndale" confirmed that a temperature inversion was present of a strength of up to 6.5°C/100m. There was no inversion present during the monitoring at "Glendower”. The option of a private agreement was discussed with the residents of “Glendower” however the landholders have not sought a formal agreement at this time.

In addition to the site noise monitoring, traffic noise from the transport trucks was measured at the “Roslyn” property on Torrens Lane, near the CHPP, over a one hour period. The noise levels from 18 trucks (9 full, 8 empty and 1 other heavy vehicle) passing the site were measured from 8:00am on the 30th May 2012. The measured Leq noise level from mine vehicles was 57 dB(A), exceeding the noise criterion of 55 dB(A) Leq (1 hour). “Roslyn” is owned by Whitehaven, hence no further action was taken.

#### 3.10.3.4 September 2012 Noise Monitoring

On the 17th, 18th and 19th September 2012 attended noise monitoring was undertaken at “Illili” (R4), “Ferndale” (R5), “Plain View” (R6), and “Glendower” (R15). Monitoring was undertaken in accordance with updated EPL noise monitoring requirements at licensed monitoring points, where monitoring is to be undertaken for 1.5 hours during the day and 30 minutes during the evening and occur for three consecutive operating days. The results

indicated the mine noise exceeded the operational noise criterion at the "Plain View" monitoring location during the evening of September 19th, recording 39 dB(A). Noise from haul truck engines was the dominant audible mine noise source at this receiver. Whitehaven entered into a private agreement with the owner of the "Plain View" property on the 1st August 2012 which allows for a higher noise limit. A copy of this agreement was supplied to the EPA and the DoPI. On this basis, the measured noise level of 39 dB(A) at "Plain View" is not considered an exceedance of the noise criteria. All other results were compliant.

Additionally on the 8th August 2012 at 8:00 am, traffic noise was measured at the "Roslyn" property on Torrens Lane, near the CHPP. A total of 18 heavy vehicles travelled along Torrens Lane during the monitoring period. These consisted of 9 full and 9 empty coal haulage trucks. Over the approximate 1 hour monitoring period the measured Leq noise level from vehicles on Torrens Lane was 56 dB(A). This is above the noise criterion for a local road of 55 dB(A) Leq (1 hour). The "Roslyn" property is project related, hence no additional mitigation measures on road transport noise was undertaken.

As the mine is currently in care and maintenance, Whitehaven will seek to remove the requirement to monitor noise from the EPL and Noise Monitoring Program until operations recommence.

## 3.11 Visual, Light

### 3.11.1 Management

Light from the Sunnyside Coal Mine is visible from the Oxley Highway, Quia Road and Coocooboonah Lane, particularly during the winter months. The most affected residences are "Lilydale" (project related), "Ferndale", "Illili", "Glendower" and "Plain View". General lighting at night is restricted to the workshop and office facilities. A maximum of 6 lighting plants were used during the reporting period. These plants ran within the operating hours of up to 10pm Monday to Friday and 6pm on Saturdays. The lights were generally directed away from surrounding residences, where possible. No issues or complaints have been received by the mine in regards to the use of lighting plants to date.

Management / minimisation of local and more distant visual impacts are achieved by:

- Undertaking activities in accordance with the various management plans applicable to the mine, all of which incorporate safeguards which indirectly reduce visual impact;
- Minimising the extent of land disturbance / clearing in advance of mining;

- Construction of amenity bunds on the northern and eastern boundaries of the mine site;
- Progressive rehabilitation of disturbed areas; and
- Sympathetic positioning and direction of lights to avoid impacting on local residences.

### 3.11.2 Performance

Sunnyside Coal Mine did not receive any complaints during the reporting period which related to visual or light impacts.

The eastern amenity bund was designed to reduce the visual impacts at the "Lilydale" property to the east of the mine. Although "Lilydale" is mine owned the bund provides an effective screen to all residences east of the mine.

The northern amenity bund continues to reduce visual impacts from Coocooboonah Lane and neighbouring properties. The bund has well established pasture and reduces impact from the coal stockpile and the coal load out bin.

All practicable measures are taken to minimise impacts on surrounding landholders, whilst ensuring safe operations at the mine site, and Sunnyside Coal Mine will endeavour to address any issues or concerns which may be raised by landholders in the future.

## 3.12 Aboriginal Heritage Management

### 3.12.1 Sites Management and Performance

An assessment of the cultural heritage of the mine site was conducted by Archaeological Surveys and Reports Pty Ltd (ASR). Prior to the investigation, ASR contacted the Red Chief Local Aboriginal Land Council (LALC) and Bigundi Biame Gunnedarr Traditional People to arrange for site officers to assist in the survey. A representative from each group was present for the site survey conducted on the 12$^{th}$ September 2006 and the coal transport route survey on the 7$^{th}$ December 2006. The ASR assessment was used in the preparation of the Environmental Assessment for the mine, undertaken by R.W. Corkery & Co. Pty Ltd on behalf of Namoi Mining Pty.

Four sites were recorded during the investigation, as detailed in Table 7. Only one site (AGG1) was recorded within the mine site while the three isolated artefact sites were identified to the south of the mine site.

**Table 7 - Aboriginal Artefacts**

| Site Name | Site Type | Site Description/Comments |
|---|---|---|
| Sunnyside AGG1 | Axe Grinding Groove | Axe grinding groove at the rim of a cliff-like scarp (beside a small water-filled natural depression in the rock). Dimensions: 28cm (L) x 6cm (W) x 2cm (D). Located approximately 150m from the southern side of the open cut area. |
| Sunnyside ISO1 | Isolated Artefact | Flake with possible retouch to one margin located on the bank beside the upper reaches of a dry creek (on a vehicle track). Dimensions: 21 x 12 x 3mm |
| Sunnyside ISO2 | Isolated Artefact | Proximal fragment of a flake located on the bank beside the upper reaches of a dry creek. Dimensions: 22 x 22 x 5mm. |
| Sunnyside OS1 | Artefact Scatter | Artefact scatter of at least ten artefacts in a lozenge-shaped area of 30 x 8m, on the upper slopes down slope of a contour bank down slope of a saddle. Artefact types: flakes and flaked pieces, including a backed blade. |
| Source: Modified after ASR (2007) – EA SCSC Part 7 | | |

All Aboriginal Heritage sites are managed in accordance with the Sunnyside Coal Mine Aboriginal Cultural Heritage Management Plan, prepared in accordance with Condition 3(32) of PA 06_0308. The specific management measures for each of the identified sites are as follows:

**AGG1**

Although the site will not be directly impacted upon by mining operations and associated facilities, there is some potential for indirect impact from fly-rock as the site is located approximately 150 m from the extent of open cut operations.

In consultation with the relevant Aboriginal groups, it was determined that the site requires measures to ensure it is not damaged from flyrock. This has been achieved by the covering of the site with a layer of thick rubber (conveyor belt).

**Sites ISO1, ISO2 and OS1**

Each of these artefact sites are located outside the site boundary and more than 500m from any mining related activity. On this basis no specific protection mechanisms are considered necessary.

In the event that additional protective measures are required in the future, Sunnyside Coal Mine will initiate such actions in consultation with local Aboriginal groups and the OEH.

### 3.12.2 Consultation

Sunnyside Coal Mine, through the soil stripping contractor, regularly consults with representatives of the local Aboriginal community. In accordance with the agreement with the representative aboriginal groups, notification of planned topsoil stripping is provided by the soil stripping contractor or the environmental officer directly to the nominated Aboriginal site monitors approximately 2 to 3 days in advance of planned activities.

Given that pre-stripping (separate stripping of topsoil, subsoil and friable overburden) is undertaken well in advance of mining and the soil stripping contractor is also engaged in other activities on the mine site, the flexibility exists to delay topsoil stripping activities should the situation ever arise in the future where monitors are temporarily unavailable.

No soil stripping took place during the reporting period. No additional Aboriginal Cultural Heritage items have been discovered during the operation of the mine over the reporting period.

## 3.13 Natural Heritage

There are no features of Natural Heritage within the Project Approval Area and hence, no specific management procedures are required.

## 3.14 Spontaneous Combustion

### 3.14.1 Management

Sunnyside Coal Mine is located within the Hoskissons Coal Seam which has been mined for over 120 years with a number of reported outbreaks of spontaneous combustion. Tests have confirmed that coal from the Sunnyside Coal Mine has the potential to spontaneously combust. On this basis, a Spontaneous Combustion Management Plan has been developed to prevent and manage spontaneous combustion issues.

In the event of spontaneous combustion, Sunnyside Coal Mine personnel are present within the area of the ROM coal stockpiles during work hours and are trained to watch for indications of spontaneous combustion. Any incident would be followed by excavation to identify the source and extinguishment through water saturation.

### 3.14.2 Performance

There were no incidents of spontaneous combustion during the reporting period.

## 3.15 Bushfire Management

Sunnyside Coal Mine is located within an area of cleared agricultural land. The mine maintains fire fighting equipment as well as earthmoving equipment and a water truck which could be used in the control of fires. Sunnyside personnel also liaise with the local (Coocooboonah) Rural Fire Service, as required.

There have been no bushfire incidents on or adjacent to the mine site since development commenced.

## 3.16 Hydrocarbon Contamination

### 3.16.1 Management

It is Sunnyside Coal Mine's objective that:

- All bulk hydrocarbons, i.e. fuel, oils, grease etc (both new and waste) retained at the mine be contained within bunded areas within the contained water management system as described in Section 2.8.2.
- All fixed or portable equipment incorporate self-contained bunding;
- Hydrocarbon-contaminated materials be disposed of appropriately; and
- Minor spillages, if occurring, are cleaned up and the contaminated soil either bio-remediated or transferred off-site to an appropriately licensed waste disposal area.

Major spillages, if occurring, would be treated in the mine's Hydrocarbon Management Plan and Pollution Incident Response Management Plan.

### 3.16.2 Performance

Sunnyside Coal Mine's procedures for hydrocarbon management have been effective throughout the reporting period with:

- No surface or groundwater contamination evident or reported by landowners; and
- No requirement for off-site disposal of contaminated materials.

### 3.16.3 Greenhouse Gas Emissions

Diesel Consumption

During the reporting period, a total of 2,956,942 litres of diesel fuel was used on site for mining related activity. Assuming an energy content of diesel fuel of 38.6GJ/kL, and using Table 3 of the "National Greenhouse Accounts (NGA) Factors" – July 2012, the estimated

direct – scope 1, Greenhouse Gas Emissions including all $CO_2$ and non $CO_2$ gases are as follows.

**Table 8 - GHG Emissions - Diesel Fuel**

| | Diesel Fuel Usage kL | Emission Factor T $CO_{2-e}$/kL | Equivalent Tonnes |
|---|---|---|---|
| **GHG 2011/12** | 2,957 | 2.7 | 7,984 |

The site does not utilise electricity from the power grid, but via number of diesel powered gensets. The emissions associated with diesel consumption by the gensets are included in the table above.

Explosives

During the reporting period, a total of 2,041 t of explosives was used at Sunnyside Coal Mine. Assuming a conversion factor of 0.1778, it is estimated that blasting at the mine yielded 363 equivalent tonnes of $CO_2$.

Fugitive Emissions

ROM coal production is used to estimate fugitive emission factors. Based on 690,014 tonnes of ROM coal production during the reporting period and a conversion factor of 0.045 (from Table 7 of the "National Greenhouse Accounts (NGA) Factors" – July 2012), it is estimated that 31,051 tonnes of $CO_2$ were emitted during the reporting period.

Summary

A summary of calculated total $CO_2$ equivalent tonnes/year for the reporting period is provided in Table 9.

**Table 9 - GHG Emissions Summary**

| Source | Calculated Total $CO_2$ Equivalent tonnes/year |
|---|---|
| Diesel | 7,984 |
| Explosives | 363 |
| Fugitive Emissions | 31,051 |
| **TOTAL** | **39,398** |

The potential for reducing greenhouse gas emissions at Sunnyside is related predominantly to consumption of diesel use by plant and equipment. Methods are in place at site to maximise efficiency from the mining fleet through regular maintenance scheduling and, where possible, minimising the gradient and length of loaded haul runs for the operating dump trucks.

Sunnyside Coal Mine is committed to a reduction in emission levels as a result of operations at the mine site. As part of this process, the mine continues to operate a newer fleet of new Caterpillar rear dump trucks which burn less diesel fuel as compared to older trucks with the same capacity. Fuel burn during the reporting period was approximately 4.2 litres/tonne ROM coal as compared to 8.2 litres/tonne ROM coal in the previous reporting period. This decrease in fuel burn is due to the extraction of high-high ash coal during the reporting period, increasing the total ROM coal. This high-high ash coal was not mined in previous periods.

Sunnyside's Energy Savings Action Plan predicted diesel use throughout the life of mine production to be 3,770,550 litres which has not been met has a result of lower than predicted production levels. Whitehaven reported greenhouse gas emissions for the Whitehaven Group (including Sunnyside) for the 2011/2012 financial year via the Federal Government's National Greenhouse and Energy Reporting Scheme (NGERS). Reporting was undertaken and submitted in October 2012.

## 3.17 Public Safety

The Sunnyside Coal Mine is located wholly on NMPL owned land in a relatively remote area. The northern boundary of the mine site is adjacent to Coocooboonah Lane, an unsealed road used by local traffic only. The site is fenced and appropriate signs have been installed. The access gates are locked when the mine is not operating.

Visitors to the mine are required to report to the mine office, where a site sign in register is in place and unauthorised personnel are not permitted to move around the mine area unaccompanied. Procedures are in place with respect to blasting to ensure the area around each blast site is clear of personnel and that all surrounding residents are advised in advance of proposed blasts.

The procedures in place have been effective throughout the reporting period.

## 3.18 Feral Animal Control

Feral animals are not a significant land management issue on Sunnyside Coal Mine's landholding and are limited to isolated occurrences of foxes, hares and rabbits. In view of the low frequency of occurrence, and in the absence of an extensive programme by all surrounding landowners, no broad scale feral animal control programme was considered warranted during the reporting period. In accordance with prior commitments, Sunnyside Coal will continue to monitor feral animal occurrences and implement necessary control programmes if and when necessary.

## 3.19 Land Capability

All land currently disturbed by mining is classified as Land Capability Class II, III and VII. On completion of all mining activities, the successful rehabilitation of areas of disturbance and the relinquishment of the mining leases, the land affected by mining within the Project Approval area will, in the main, be returned to a classification similar to that prior to mining. Sections of the waste emplacement will continue to be returned to Class IV whilst the depression formed by the re-shaped final void will be Class VIII.

## 3.20 Meteorological Monitoring

### 3.20.1 Introduction

The Sunnyside meteorological station, shown on Figure 3, has been operating continuously since 2007 recording 15 minute wind speed, wind direction, temperatures, humidity and rainfall. Daily meteorological data for is presented in Appendix 9.

### 3.20.2 Rainfall

Rainfall data from the previous 12 months is presented in Table 10 and Figure 6. Full station data is presented in Appendix 9.

**Table 10 - Rainfall Data**
**(December 2011 – November 2012)**

| Month | Monthly Rainfall Reporting period | Long Term Average Rainfall*[1] | Rain days Reporting period | Long Term Average Rain days*[1] |
|---|---|---|---|---|
| December 2011 | 134.2 | 70.0 | 10 | 4.8 |
| January 2012 | 160.0 | 71.7 | 14 | 4.5 |
| February 2012 | 167.8 | 67.3 | 12 | 5.4 |
| March 2012 | 23.4 | 47.7 | 3 | 5.7 |
| April 2012 | 19.8 | 37.5 | 5 | 6.0 |
| May 2012 | 37.6 | 42.5 | 5 | 5.5 |
| June 2012 | 37.4 | 43.6 | 16 | 5.1 |
| July 2012 | 67.6 | 42.7 | 9 | 3.9 |
| August 2012 | 9.2 | 41.3 | 3 | 3.4 |
| September 2012 | 18.2 | 40.3 | 2 | 4.1 |
| October 2012 | 0.0 | 55.1 | 0 | 4.8 |
| November 2012 | 15.0 | 62.2 | 3 | 4.8 |
| **TOTAL** | **690.2** | **621.9** | **82** | **58** |

* Gunnedah Pool (Station 055 023) averages from 1876-2012.

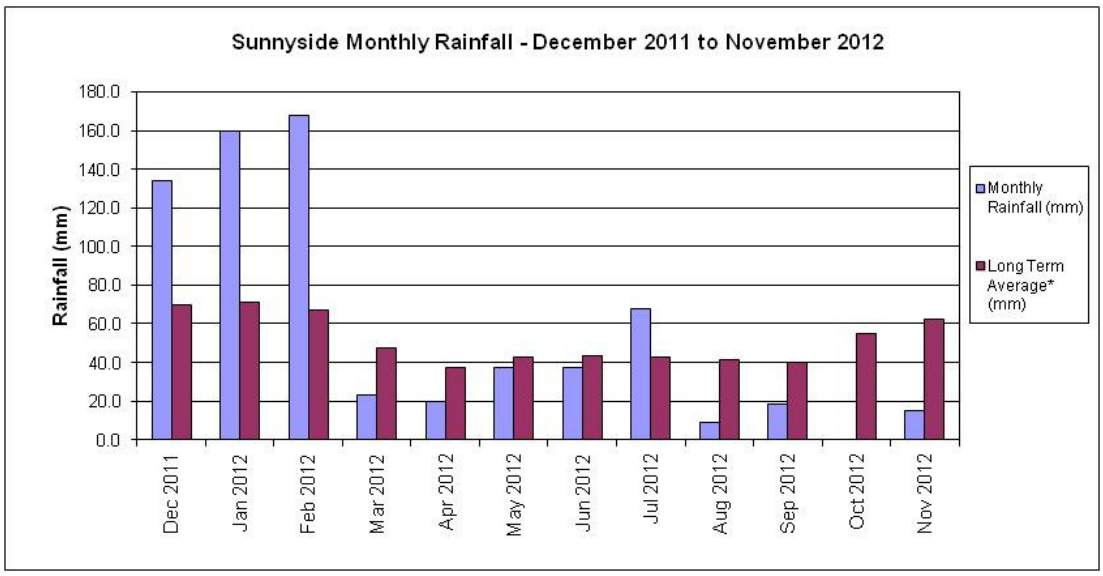


**Figure 6 - Monthly Rainfall Data**

A review of Table 10 and Figure 6 shows that the total rainfall at the mine during the reporting period was 690.2mm. The total rainfall recorded at the site was 68.3mm higher than the annual average rainfall for Gunnedah and 43mm higher than the previous reporting period. Above average falls occurred in December 2011 and January and February 2012 where 462mm was recorded for the three months. Below average rainfall was recorded for 8 months of the year, in particular the last four months of the reporting period, where only 42.4mm of rainfall was recorded. No rainfall was recorded in October 2012.

A high number of rain days (falls equal or above 1mm) occurred during the reporting period, where it exceeded the annual average by 24 days. Monthly rain day averages were exceeded in the summer months, June and July 1012.

### 3.20.3 Temperature

Average maximum and minimum temperatures for the reporting period are presented in Table 10 together with long-term monthly averages for Gunnedah Pool (Bureau of Meteorology Station 055023).

**Table 11 - Average Monthly Temperatures**
**(December 2011 – November 2012)**

| Month | Average Daily Temperature | | | |
|---|---|---|---|---|
| | Reporting period (°C) | | Station 055023 (Gunnedah Pool)* (°C) | |
| | Min | Max | Min | Max |
| December 2011 | 14.9 | 27.3 | 16.8 | 32.9 |
| January 2012 | 17.0 | 30.0 | 18.4 | 34.0 |
| February 2012 | 17.2 | 29.8 | 18.1 | 32.9 |
| March 2012 | 15.2 | 28.7 | 15.8 | 30.7 |
| April 2012 | 10.4 | 25.8 | 11.4 | 26.4 |
| May 2012 | 3.0 | 21.9 | 7.1 | 21.3 |
| June 2012 | 4 | 18 | 4.3 | 17.6 |
| July 2012 | 3 | 17 | 3.0 | 16.9 |
| August 2012 | 3 | 20 | 4.2 | 18.9 |
| September 2012 | 15 | 25 | 7.0 | 22.8 |
| October 2012 | 8.0 | 28.4 | 10.8 | 26.7 |
| November 2012 | 15.5 | 33.0 | 14.2 | 30.3 |

* Gunnedah Pool (Station 055 023) averages from 1876-2012.

Table 11 shows that:

- Average minimum temperatures at the mine site were below or equal to the Gunnedah average for the reporting period except for September and November.
- Average maximum temperatures were below the Gunnedah averages for the first 5 months of the reporting period. Higher than average temperatures were recorded during the 7 months of the remainder of the reporting period.

### 3.20.4 Wind Speed and Direction

Fifteen minute average wind speed and direction data is collected from the meteorological station as it, together with operational records and environmental monitoring results, can be used to assess the environmental effects or consequences of specific activities undertaken at the mine or in surrounding areas.

Monthly wind roses are presented in Appendix 9, and show the following:

- The predominant wind direction during the reporting period was from the east/south-east, and upon review of previous years, is a common trend.
- Wind speeds were generally in the range of 1-5m/s, with gusts greater than 5m/s, which is common at Sunnyside.

- Westerly and north-westerly winds, often at speeds greater than 5m/s, were more prevalent in August, September and October 2012, these winds generally occur in spring at Sunnyside.

### 3.20.5 Inversions

Sunnyside's meteorological station is fitted with temperature sensors at 2m and 10m intervals to assist in the determination of inversion conditions. Meteorological data was used to identify inversion conditions which were present during a recorded noise exceedance in May 2012 (see Section 3.10.3).

# 4 COMMUNITY RELATIONS

## 4.1 Environmental Complaints

Sunnyside Coal Mine maintains a designated complaints line, with messages checked on a daily basis (seven days/week) by the Environmental Manager. In the event of a complaint, details pertaining to the complainant, complaint and action taken are recorded on a "Complaints Form".

Two complaints were received during the reporting period in relation to operations at the mine. One complaint was received via the designated complaints line and one complaint was received directly by the Environmental Manager. The nature of the complaints, details and responses to each complaint are presented in Table 12.

**Table 12 - Complaints Summary**

| Date/Time of Complaint | Nature of Complaint | Investigation | Action Taken / Follow-up |
|---|---|---|---|
| 25/01/2012 11:48am | Complaint in relation to a blast on the 25th January 2012. Complainant described as significant explosion that shook the house. | Review of blast monitoring results at monitors in closer proximity to the blast site indicated compliance with both overpressure and vibration at all points. Cloud conditions may have exacerbated overpressure impacts, however, were well below consent criteria and it was deemed appropriate to proceed with the blast at the time. Delaying the blast may have resulted in worse conditions due to predicted rain and the potential for post blast fume that this may create. | The complainant advised that no requirement to respond to the complaint. The complainant requested that the complaint be placed on the public record only. |
| 22/05/2012 12:13pm | Complaint in relation to blast on 22nd May that shook the complainant's house in what appeared to be two separate blasts. Complainant said people working outdoors on his property didn't notice the blast. | Blast monitor results at property between the mine and the complainant's property confirmed compliance. Environmental Officer spoke with the Project Manager who confirmed the blast appeared to be slightly louder than normal. There was only one blast; however it was low down in the pit therefore noise/vibration may have been received at the complainant's property as what appeared to be two blasts in quick succession. | Environmental Officer contacted the complainant to advise that the blast monitor confirmed compliance, despite the blast being slightly larger and louder than normal. A structural assessment was conducted at the complainant's property, which indicated no detrimental impacts from blasting. |

Any complaints that are made are reported to the Community Consultative Committee and documented in the AEMR as shown above. A complaints register is also maintained on

Whitehaven's website. Last reporting period, four complaints were recorded, compared to two for this reporting period. The nature of complaints received portrays general concern relating to blasting at the Sunnyside operation. Blasting performance and management is addressed in Section 3.9.

## 4.2 Employment Status, Demography and Socio-Economic Contributions

### 4.2.1 Employment Status and Demography

During the reporting period, the mine had an average of 16 full-time and 2 part-time personnel. Mining contractor MMG, which assists in mining and maintenance, had an average of 14 fulltime casual staff onsite. In addition personnel were employed by contractors in the haulage of coal from the mine site back to the Whitehaven CHPP. All Namoi Mining employees reside in the Gunnedah region.

### 4.2.2 Social and Economic Contributions

In addition to direct and indirect employment, and the purchase of goods and services from local suppliers, the Whitehaven Group continues to support the local community. Namoi Mining Pty Ltd has contributed $120,000 to the community during the reporting period. Whitehaven also contributes to the annual maintenance of the coal haul roads for this mine.

Whitehaven also contributes to the provision of cadetships and vacation work to a number of young students from the regional area who study at various universities.

As members of the Gunnedah / Boggabri area community, mine-related employees also contribute socially and economically through their involvement in community sporting, educational and social organisations and expenditure of a component of their disposable income.

## 4.3 Community Liaison

In accordance with Condition 9 of Schedule 5 of PA 06_0308 a Community Consultative Committee (CCC) was formed in January 2009. The committee, which meets on a quarterly basis, comprises representatives of Gunnedah Shire Council, Sunnyside Coal Mine and the community and is chaired by Mr Michael Broekman.

During the reporting period meetings were held on the 14th December 2011, 14th March 2012, 13th June 2012 and 12th September 2012. Minutes of these meeting are made available on Whitehaven's website.

Sunnyside Mine representatives and Whitehaven's Manager Community continue to maintain regular personal contact with the neighbours in the vicinity of the mine. These contacts not only provide a means of information dissemination, but also enable Whitehaven to ascertain and address any potential issues which may arise from time to time.

Community organisations and other local businesses and institutions regularly identify an interest with activities occurring at the mine site. In this regard, and to maintain links with those business and community members, information is provided as required, and on occasion, guided tours of the facility have been undertaken.

# 5 REHABILITATION

## 5.1 Buildings

No removal of buildings was undertaken over the reporting period.

## 5.2 Rehabilitation of Disturbed Land

### 5.2.1 Objectives

Sunnyside Coal Mine's rehabilitation/land use objectives for the mine site are as follows:

**(a) Areas affected by mining – short term**

(i) Stabilising all earthworks, drainage lines and disturbed areas that are no longer required for mine related activities; and

(ii) Reducing the visibility of mining activities from adjacent properties and the local road network.

**(b) Areas affected by mining – long term**

(i) Creating a low maintenance, geotechnically stable and safe landform which is commensurate with the agricultural and nature conservation land uses on and around the mine site;

(ii) Blending of the final landform with the surrounding topography such that the visual impact of the post-mining landform is minimised; and

(iii) Re-establishing 100ha of agricultural land over the areas disturbed by the mine with approximately 16ha of land rehabilitated to a woodland vegetation community.

**(c) Areas to be unaffected by mining**

(i) Stock exclusion through fencing of the entire mining lease. This includes areas disturbed and rehabilitated with native vegetation and existing agricultural land fenced to exclude stock and allowed to naturally revegetate.

### 5.2.2 Achievements During the Reporting Period

Table 13 and Table 14 present a Rehabilitation Summary and listing of maintenance activities as required in the DMR Guidelines. Rehabilitation works during the reporting period focussed on the rehabilitation of the emplacement areas slopes and plateau area with a total area of approximately 13.6 ha completed. This included approximately 3.6 ha of the emplacement's north eastern slope (see Plate 3) and 10 ha of the emplacement's plateau. Works included soil replacement, drainage structure installation (contour banks and small sediment basins), seeding and fertilising. In consultation with Ag Solutions Australia,

"Natramin" fertiliser was sourced and spread on topsoiled areas with the aim of increasing nutritional, biological and structural characteristics of the soil applied from existing stockpiles. Mixed with the "Natramin", locally sourced chicken manure was spread to add organic matter and nitrogen to the soil.

Earlier in the reporting period, soil tests of existing stockpiles were taken with the aim of developing a seed mix suited for the soil type at Sunnyside to achieve maximum vegetative cover. As a result a seed mix was developed by Ag Solutions Australia and supplied by Heritage Seeds. The mix was spread at a rate of 25kg/ha and included the following species:

- Premier Digit (Perennial Grass)
- Sabi Grass (Perennial Grass)
- Hatch Creeping Bluegrass (Perennial Grass)
- Green Panic (Perennial Grass)
- Rose Clover (Annual Legume)
- Casbah Biserrula (Annual Legume)
- Arrow leaf Clover (Annual Legume)

At the end of the reporting period, limited germination had occurred on seeded areas of the slope and plateau, due to extremely low rainfall since spreading the seed. The seed however is expected to germinate following adequate rainfall, as all seed spread is treated to allow for a delayed germination period.

For the development of woodland on rehabilitated slopes, 7,077 trees were planted during late winter 2012, as shown in Plate 3. Fields Tree Planting supplied and planted the seedlings on rehabilitation slopes within freshly cultivated mounds installed by Greg Ward Earthmoving (to eliminate competition grasses). The planting of trees on the rehabilitation included the following species, which included koala feed species for koala habitat enhancement:

- White Box (Koala feed species)
- Pilliga Grey Box
- Bimble Box (Koala feed species)
- Silver leaf Ironbark
- Grey Box
- Kurrajong (Koala feed species)
- Belah
- Narrow leaf Ironbark

The trees were watered by Fields Tree Planting upon planting to increase survival rates and have shown a good survival rate especially given the below average rainfall that occurred in the months immediately following planting.

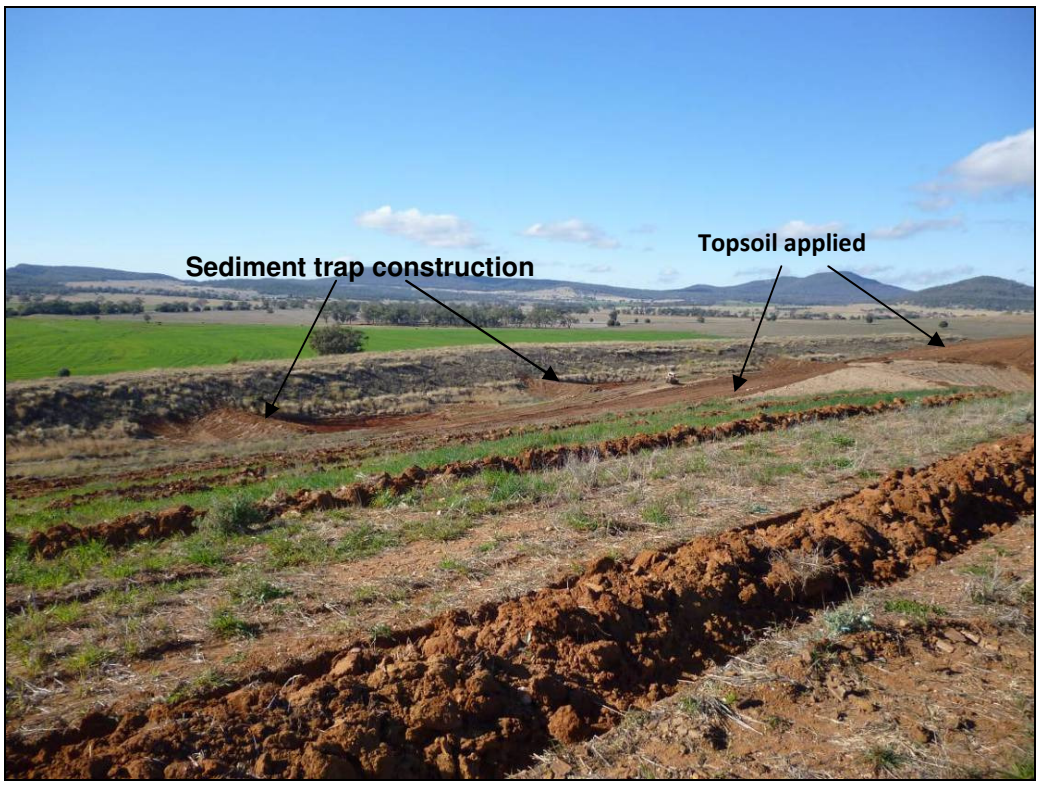


**Plate 2 – Water Management Structures and Mounding for Tree Planting, June 2012**

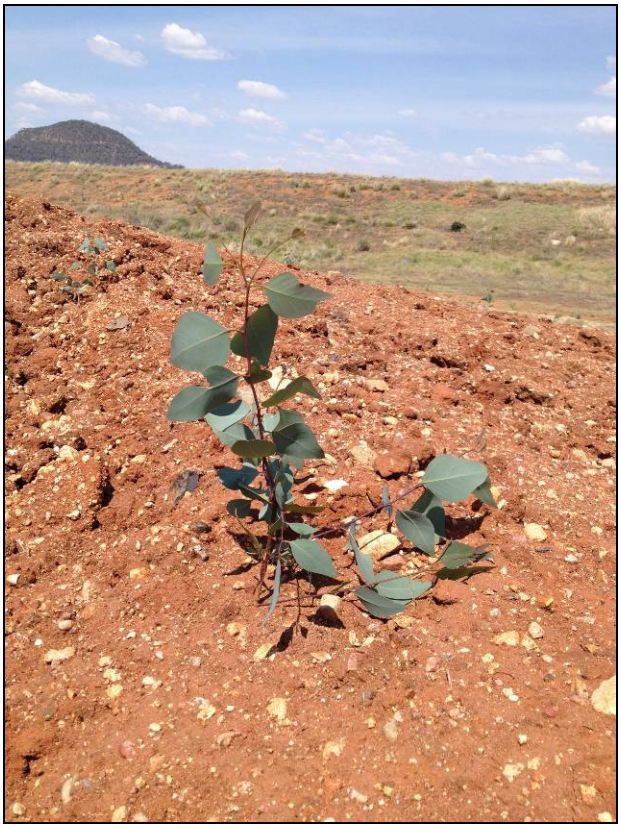

**Plate 3 – One of the 7,077 trees planted on the Emplacement, June 2012**

**Table 13 - Rehabilitation Summary**

| | | Area Affected (hectares) | | | |
|---|---|---|---|---|---|
| | | **This Report Period (as of 30.11.2012)** | **Last Report Period (30.11.11)** | **Cumulative Next Report Period (estimated)** | |
| **A:** | **MINE LEASE AREA** | | | | |
| **A1** | **Mine Lease(s) Area** | 233.9 | | | |
| **B:** | **DISTURBED AREAS** | | | | |
| **B1** | **Infrastructure area** (other disturbed areas to be rehabilitated at closure including facilities, roads) | 9 | 9 | 9 | |
| **B2:** | **Active Mining Area** (excluding items B3 - B5 below) | 10.87 | 30.6 | 10.87 | |
| **B3** | **Waste emplacements**, (active/unshaped/in or out-of-pit) | 31.78 | 25.8 | 31.78 | |
| **B4** | **Tailings emplacements,** (active/unshaped/uncapped) | N/A | N/A | N/A | |
| **B5** | **Shaped waste emplacement** (awaits final vegetation) | 2.14 | 0 | 0 | |
| **ALL DISTURBED AREAS** | | 53.79 | 65.4 | 51.65 | F1 |
| **C** | **REHABILITATION PROGRESS** | | | | |
| **C1** | **Total Rehabilitated area*** (except for maintenance) | 36.27 | 22.6** | 38.41 | F2 |
| **D:** | **REHABILITATION ON SLOPES** | | | | |
| **D1** | **10 to 18 degrees** | 14.45 | 7.67 | 16.59 | |
| **D2** | **Greater than 18 degrees** | 0 | 0 | 0 | |
| **E:** | **SURFACE OF REHABILITATED LAND** | | | | |
| **E1** | **Pasture and grasses** | 34.27 | 21.6** | 35.41 | |
| **E2** | **Native forest/ecosystems*** | 2 | 1 | 3 | |
| **E3** | **Plantations and crops** | 0 | 0 | 0 | |
| **E4** | **Other** (include non vegetative outcomes) | 0 | 0 | 0 | |

* Areas with established tube stock are considered to be “native forest/ecosystem”. “Pasture and Grasses” also includes areas with recently planted tubestock that are not yet established. C1 – Total Rehabilitated Area includes all rehabilitation regardless of progress.

** Includes area for northern and eastern amenity bunds

**Table 14 - Maintenance Activities on Rehabilitated Land**

| NATURE OF TREATMENT | Area Treated (ha) | | |
|---|---|---|---|
| | **Report period** | **Next period** | **Comment/control strategies/ treatment detail** |
| **Additional erosion control works** (drains re-contouring, rock protection) | 1 | ~1 | Minor erosion repairs/maintenance to be carried out on rehabilitated waste emplacement on an as needed basis, areas will be re-profiled and re-seeded. |
| **Re-covering** (detail - further topsoil, subsoil sealing etc) | Nil | Nil | |
| **Soil treatment** (detail - fertilizer, lime, gypsum etc) | Nil | Nil | |
| **Treatment/Management** (detail - grazing, cropping, slashing etc) | Nil | Nil | |
| **Re-seeding/Replanting** (detail - species density, season etc) | 3 | Nil | Re-seeding of grass and clover species in areas on an as needed basis. 3 ha were re-seeded with grass species on the waste emplacement during the period. |
| **Adversely Affected by Weeds** (detail - type and treatment) | Nil | ~1 | Flaxleaf Fleabane to be controlled through slashing and herbicides in tree planting areas on an as needed basis. |
| **Feral animal control** (detail - additional fencing, trapping, baiting etc) | Nil | Nil | |

## 5.3 Rehabilitation Monitoring and Performance

Rehabilitation is monitored through monthly environmental inspections, in accordance with the approved Rehabilitation and Landscape Management Plan. Monitoring of rehabilitation efforts is completed through the regular inspections of ground cover, trees and the presence of erosion and weeds.

In terms of the rehabilitation that was completed this period, extensive works were undertaken on the emplacements slopes and plateau. Due to limited rainfall following these works, limited cover has been established. Despite this, minimal erosion has occurred during storm events as a result of sufficient and effective drainage structures. One contour bank on the emplacement was repaired due to structural failure caused by storm water draining from the plateau prior to rehabilitation works. This was addressed with small sediment basins and catch banks installed to decrease the velocity and concentration of water draining from the plateau down slope and into the dirty water management system.

Approximately 3 ha of the emplacements slope were re-seeded with the seed mix listed in Section 5.2.2 to increase grass cover. The remainder of the existing rehabilitation areas have shown good grass and legume establishment, with tree seedlings planted on these areas showing excellent survival rates.

# 6 CONTINUOUS IMPROVEMENT AND TARGET INITIATIVES

## 6.1 Objectives

Namoi Mining Pty Ltd has an ongoing commitment to environmental management and aims to minimise any adverse impacts on the physical, biological, cultural and socio-economic environment in the area of the mine and in surrounding areas.

Improvements in environmental management will be achieved through the effective implementation of the operational and monitoring aspects of the current and pending Care and Maintenance Mining Operations Plan, which in turn, will incorporate relevant aspects of various management plans and monitoring programs prepared in accordance with the Mine's Project Approval.

## 6.2 Achievements to Date

Achievements at the mine over this reporting period have included:

- The continued implementation of a working environmental management program and the establishment of culture of environmental awareness / responsibility within all levels of the workforce;
- Routine implementation of all relevant aspects of approved management plans;
- The establishment and maintenance of an open and honest relationship with the neighbours, community in general, regulatory authorities, Local Government and other groups such as the local Aboriginal community;
- Demonstration of adequate surface water controls through water management, drainage and sediment control structures, with no exceedance of water quality criteria during two discharges from site, despite above average rainfalls;
- Commencement of pasture establishment rehabilitation on the plateau of the waste emplacement;
- Continuation of rehabilitated woodland establishment through tree seedling plantation of 7,077 trees on the slopes of the rehabilitated waste emplacement, totalling nearly 7,500 trees since commencement; and
- Continuation of koala habitat enhancement, through establishment of seedlings of koala feed tree species.

## 6.3 Targets and Goals

- The ongoing development of rehabilitation of the reshaped out of pit overburden emplacement;
- The continuation of development and maintenance of the koala habitat enhancement area;
- The development and maintenance of woodland on the rehabilitated waste emplacements slopes;
- Continued community liaison, support and involvement / education in the mines activities;
- Compliance with all relevant conditions of the lease, licences and consents;
- The continuation of environmental monitoring and management despite the mine not being operational; and
- The development of a Care and Maintenance MOP, in consultation with DRE, which includes further rehabilitation strategies to assist in the final closure of the site.

N6570000
N6569500
N6569000
N6568500
N6568000
E223000
E223500
E224000
E224500
E225000
E225500

163 DP 755503
494 DP 755503
12 DP 755503
3 DP 1140891
118 DP 755503
1 DP 393755
DP 755503
216
217
164 DP 755503

ML 1624

SD1
SD2
SD3
SD4
SB2
SB3
SB4
VOID WATER DAM
ROM PAD
Weighbridge
ACCESS TS
SITE OFFICE & FACILITIES
HELIPAD
KOALA FENCE
TS
Aboriginal Site
SUNNYSIDE HAUL ROAD
COOCOOBOONAH LANE

N
W
E
S

0 100 200 300 400 500
1:10000@A3

## LEGEND

- Soil Stripping Area (2010/2011 AEMR)
- Soil Stripping Area (2011/2012 AEMR)
- Stockpile Areas
- Infrastructure Areas
- Sediment Basin (Dirty)
- Storage Dam (Clean)
- Limit of Open Cut
- Mining Lease Boundary
- Vegetation Boundary
- TS Topsoil
- Aboriginal Site
- * Pre-existing Farm Dam
- ① Fauna/Vegetation Monitoring

# PLAN 3
# LAND PREPARATION
# SUNNYSIDE MINE

| | |
|---|---|
| File Ref: | 4213 |
| Surveyor: | |
| Date: | 30/11/2012 |

N6570000
N6569500
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N6568500
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E223000
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E225000
E225500

163 DP 755503
494 DP 755503
12 DP 755503
3 DP 1140891
118 DP 755503
1 DP 393755
DP 755503
216
217
164 DP 755503

ML 1624

SD4
SD3
SB4
SB5
SB3
SB2
SD1
SD2

Weighbridge
ACCESS
SITE OFFICE & FACILITIES
ROM PAD
HELIPAD
VOID WATER DAM
KOALA FENCE

2009/2010
2010/2011

SUNNYSIDE HAUL ROAD
COOCOOBOONAH LANE

Aboriginal Site

① ② ③ ④

N
W
E
S

00 100 200 300 400 500
1:10000@A3

## LEGEND

- Soil Covered Slopes (10°- 18°)
- Soil Covered Slopes (<10°)
- Infrastructure Areas
- Stockpile Areas
- Sediment Basin (Dirty)
- Storage Dam (Clean)
- Area shaped not soiled
- Mining Lease Boundary
- Flow (Dirty)
- Flow (Clean)
- Extent of Mining (To 30.11.11)
- Extent of Mining (This AEMR)
- Waste Emplacement (To 30.11.11)
- Waste Emplacement (This AEMR)
- Contour banks
- Coal Stockpile
- Pre-existing Farm Dam
- Aboriginal Site
- ① Fauna/Vegetation Monitoring

# PLAN 4
# MINING & REHABILITATION
# SUNNYSIDE MINE

| | |
|---|---|
| File Ref: | 4213 |
| Surveyor: | |
| Date: | 30/11/2012 |

# Appendix 1

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# PA 06_0308

# Project Approval

## Section 75J of the *Environmental Planning and Assessment Act 1979*

I approve the project referred to in schedule 1, subject to the conditions in schedules 2 to 5.

These conditions are required to:
- prevent and/or minimise adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the project.

The Honourable Kristina Keneally MP
**Minister for Planning**

24/5/08

Sydney 2008

**SCHEDULE 1**

| | |
|---|---|
| **Application No:** | 06_0308 |
| **Proponent:** | Namoi Mining Pty Limited |
| **Approval Authority:** | Minister for Planning |
| **Land:** | See Appendix 1 |
| **Project:** | Sunnyside Coal Project |

## TABLE OF CONTENTS

## DEFINITIONS

| | |
|---|---|
| AEMR | Annual Environmental Management Report |
| AgQuip | The AqQuip Festival, held at Blackjack Road, generally during the 3rd week in August |
| BCA | Building Code of Australia |
| CCC | Community Consultative Committee |
| CHPP | Coal handling and preparation plant |
| Council | Gunnedah Shire Council |
| Day | The period from 7am to 6pm on Monday to Saturday |
| DECC | Department of Environment and Climate Change |
| Department | Department of Planning |
| Director-General | Director-General of Department of Planning, or delegate |
| DPI | Department of Primary Industries |
| DWE | Department of Water and Energy |
| EA | Environmental Assessment prepared for Namoi Mining Pty Limited entitled *Environmental Assessment Sunnyside Coal Project via Gunnedah* and *Specialist Consultant Studies Compendium,* Volumes 1 & 2 (April 2008) |
| EP&A Act | *Environmental Planning and Assessment Act 1979* |
| EP&A Regulation | *Environmental Planning and Assessment Regulation 2000* |
| EPL | Environment Protection Licence issued under the *Protection of the Environment Operations Act 1997* |
| Evening | The period from 6pm to 10pm |
| Land | The whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this approval |
| Material harm to the environment | Material harm to the environment as defined in *Protection of the Environment Operations Act 1997* |
| Mining operations | The removal and emplacement of overburden and the extraction, processing and transportation of coal on and from the site |
| Minister | Minister for Planning, or delegate |
| Privately-owned land | Land that is not owned by a public agency, or a mining company (or its subsidiary) |
| Proponent | Namoi Mining Pty Limited or any other person or persons who rely on this approval to carry out the project that is subject to this approval |
| Project | The Sunnyside Coal Project described in the EA |
| Reasonable and Feasible | Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements. Feasible relates to engineering corrections and what is practical to build |
| RTA | Roads and Traffic Authority |
| ROM | Run-of-mine |
| Site | Land to which the project application applies (see Appendix 1 and 2) |
| Statement of Commitments | The Proponent's Final Statement of Commitments for Site Operations and Management in Appendix 3 |

## SCHEDULE 2
## ADMINISTRATIVE CONDITIONS

**Obligation to Minimise Harm to the Environment**

1. The Proponent shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project.

**Terms of Approval**

2. The Proponent shall carry out the project generally in accordance with the:
   (a) EA;
   (b) Sunnyside Coal Project Response to Public and Government Agency Submissions (June 2008);
   (c) Sunnyside Coal Project Supplementary Response to Submissions (July 2008);
   (d) Statement of Commitments (see Appendix 3); and
   (e) conditions of this approval.

   *Notes:*
   - *The general layout of the project is shown in Figure 1 of Appendix 2; and*
   - *The Statement of Commitments is reproduced in Appendix 3.*

3. If there is any inconsistency between the above documents, the latter document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency.

4. The Proponent shall comply with any reasonable and feasible requirements of the Director-General arising from the Department's assessment of:
   (a) any reports, plans, programs, strategies or correspondence that are submitted in accordance with the conditions of this approval; and
   (b) the implementation of any actions or measures contained in these reports, plans, programs, strategies or correspondence.

**Limits on Approval**

5. Mining operations may take place on the site for 7 years from the grant of the mining lease for the project.

   *Note: Under this Approval, the Proponent is required to rehabilitate the site to the satisfaction of the Director-General and DPI. Consequently this approval will continue to apply in all other respects other than the right to conduct mining operations until the site has been rehabilitated to a satisfactory standard.*

6. The Proponent shall not extract more than 1 million tonnes of ROM coal a year from the site.

7. The Proponent shall use the coal transport route shown in Figure 2 of Appendix 2 to transport all coal from the site to the Whitehaven Siding CHPP.

**Hours of Operation**

8. Construction activities may take place only between 7 am to 6 pm each Monday to Friday and 7 am to 4 pm on Saturdays, and not on Public Holidays.

9. Mining operations may take place only between 7 am to 10 pm each Monday to Friday and 7 am to 6 pm on Saturdays, and not on Public Holidays.

10. Transport of coal may take place only between 7 am to 6 pm Monday to Friday (or between 7 am to 8 pm during Eastern Summer Time) and between 7 am to 4 pm on Saturdays, and not on Public Holidays.

    *Note: See condition 39 of Schedule 3.*

**Management Plans / Monitoring Programs**

11. With the approval of the Director-General, the Proponent may submit any management plan or monitoring program required by this approval on a progressive basis.

**Structural Adequacy**

12. The Proponent shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.

*Notes:*
- *Under Part 4A of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the proposed building works.*
- *Part 8 of the EP&A Regulation sets out the requirements for the certification of the project.*

**Demolition**

13. The Proponent shall ensure that all demolition work is carried out in accordance with *Australian Standard AS 2601-2001: The Demolition of Structures*, or its latest version.

**Operation of Plant and Equipment**

14. The Proponent shall ensure that all plant and equipment used on site is:
    (a) maintained in a proper and efficient condition; and
    (b) operated in a proper and efficient manner.

**Community Enhancement Funds**

15. By 31 November 2008, and on each anniversary of that date until and including 2012, the Proponent shall provide development contributions of $100,000 per annum to the Gunnedah Shire Council for expenditure by the Council on community enhancement projects.

## SCHEDULE 3
## SPECIFIC ENVIRONMENTAL CONDITIONS

### ACQUISITION OF AFFECTED PROPERTIES

#### Acquisition Upon Request

1. Upon receiving a written request for acquisition from the owner of "Lilydale", the Proponent shall acquire the land in accordance with the procedures in conditions 8-10 of schedule 4.

### NOISE

*Note: These conditions must be read in conjunction with Section 8 of the Statement of Commitments.*

#### Construction Noise Impact Assessment Criteria

2. The Proponent shall ensure that the noise generated during the construction of the project does not exceed the level set out in Table 1.

*Table 1: Construction noise impact assessment criterion dB(A)*

| ***Day/Evening*** $L_{A10(15\ minute)}$ | ***Land*** |
|---|---|
| 40 | Any residence on, or more than 25% of, any privately owned land (except at "Lilydale") |

#### Operational Noise Impact Assessment Criteria

3. The Proponent shall ensure that the noise generated during mining operations and other activities on the site does not exceed the level set out in Table 2:

*Table 2: Operational noise impact assessment criterion dB(A)*

| ***Day/Evening*** $L_{Aeq(15\ minute)}$ | ***Land*** |
|---|---|
| 35 | Any residence on, or more than 25% of, any privately owned land (except at "Lilydale") |

*Notes:*

- *To determine compliance with the $L_{Aeq(15\ minute)}$ limit, noise from the project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the project is impractical, the DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*
- *These limits apply under meteorological conditions of:*
  - *wind speeds of 3 m/s at 10 metres above ground level; or*
  - *up to 3°C/100 m temperature inversion strength for all receivers, plus a 2 m/s source-to-receiver component drainage flow wind at 10 metres above ground level for those receivers where applicable.*

However, if the Proponent has a written negotiated noise agreement with the landowner of any land, and a copy of this agreement has been forwarded to the Department and DECC, then the Proponent may exceed the noise limits in Table 1 or Table 2 on that land in accordance with the negotiated noise agreement.

**Land Acquisition Criteria**

4. If the noise generated by the project exceeds the level in Table 3, the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 8-10 of schedule 4.

*Table 3: Land acquisition criterion dB(A)*

| ***Day/Evening*** $L_{Aeq(15\ minute)}$ | ***Land*** |
|---|---|
| 40 | Any residence on, or more than 25% of, any privately owned land (except at "Lilydale") |

*Note: Noise generated by the project is to be measured in accordance with the notes presented below Table 1.*

**Additional Operational Noise Mitigation Measures**

5. Upon receiving a written request from the landowner of:
   (a) "Illili", "Ferndale", or
   (b) any residence on privately owned land where noise generated by the project exceeds 37 dB(A) $L_{Aeq(15\ minute)}$,

   the Proponent shall implement additional noise mitigation measures such as double glazing, insulation, and/or air conditioning at any residence on the land in consultation with the landowner.

   These additional mitigation measures must be reasonable and feasible.

   If within 3 months of receiving this request from the landowner, the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.

   Within 3 months of this approval, the Proponent shall notify all applicable landowners of their entitlements under this condition.

**Traffic Noise Impact Assessment Criteria**

6. The Proponent shall implement all reasonable and feasible measures to ensure that the traffic noise generated by the project combined with the traffic noise generated by other mines does not exceed the level in Table 4:

*Table 4: Traffic noise criterion dB(A)*

| ***Day/Evening*** $L_{Aeq(1\ hour)}$ | ***Road*** |
|---|---|
| 55 | Any residence adjacent to Torrens Road |

*Note: Traffic noise generated by the project is to be measured in accordance with the relevant procedures in the DECC's Environmental Criteria for Road Traffic Noise.*

**Additional Traffic Noise Mitigation Measures**

7. If the traffic noise generated by the project exceeds the criterion in Table 4, the Proponent shall, upon receiving a written request from any landowner adjacent to Torrens Road, implement noise mitigation measures such as double glazing, insulation, and/or air conditioning at any residence on the land in consultation with the landowner.

   These additional mitigation measures must be reasonable and feasible.

   If within 3 months of receiving this request from the landowner, the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.

   Within 3 months of this approval, the Proponent shall notify all applicable landowners of their entitlements under this condition.

**Continuous Improvement**

8. The Proponent shall:
   (a) implement all reasonable and feasible best practice noise mitigation measures;
   (b) investigate ways to reduce the noise generated by the project, including off-site road noise; and
   (c) report on these investigations and the implementation and effectiveness of these measures in the AEMR,

   to the satisfaction of the Director-General.

**Monitoring**

9. The Proponent shall prepare and implement a detailed Noise Monitoring Program for the project to the satisfaction of the Director-General. This program must:
   (a) be prepared in consultation with DECC;
   (b) be submitted to the Director-General for approval prior to carrying out any development on site; and
   (c) include:
      - attended monitoring measures; and
      - a noise monitoring protocol for evaluating compliance with the noise impact assessment and land acquisition criteria in this approval.

**BLASTING AND VIBRATION**

*Note: These conditions should be read in conjunction with section 8 of the Statement of Commitments.*

**Airblast Overpressure Limits**

10. The Proponent shall ensure that the airblast overpressure level from blasting at the project does not exceed the criteria in Table 5 at any residence on privately-owned land.

*Table 5: Airblast overpressure impact assessment criteria*

| Airblast overpressure level (dB(Lin Peak)) | Allowable exceedance |
|---|---|
| 115 | 5% of the total number of blasts in a 12 month period |
| 120 | 0% |

*Note: The overpressure values in Table 5 apply when the measurements are performed with equipment having a lower cut-off frequency of 2 Hz or less. If the instrumentation has a higher cut-off frequency a correction of 5 dB should be added to the measured value. Equipment with a lower cut-off frequency exceeding 10 Hz should not be used.*

**Ground Vibration Impact Assessment Criteria**

11. The Proponent shall ensure that the ground vibration level from blasting, or any other activity at the project does not exceed the levels in Table 6 at any residence on privately-owned land.

*Table 6: Ground vibration impact assessment criteria*

| Peak particle velocity (mm/s) | Allowable exceedance |
|---|---|
| 5 | 5% of the total number of blasts in a 12 month period |
| 10 | 0% |

**Blasting Hours**

12. The Proponent shall carry out blasting on site only between 10 am and 5 pm each Monday to Friday and 10 am and 2 pm on Saturdays (excepting Public Holidays).

**Blasting Frequency**

13. The Proponent shall not carry out more than:
    (a) 2 blasts a day; and
    (b) 5 blasts a week, averaged over any 12 month period;
    on site.

**Property Inspections**

14. At least 2 months before carrying out any blasting on the site, the Proponent shall advise all landowners within 2 km of proposed blasting activities, and any other landowner nominated by the Director-General, that they are entitled to a property inspection to establish the baseline condition of the property.

15. If the Proponent receives a written request for a property inspection from any such landowner, the Proponent shall:
    (a) commission a suitably qualified person, whose appointment has been approved by the Director-General, to inspect and report on the condition of any building or structure on the land, and recommend measures to mitigate any potential blasting impacts; and
    (b) give the landowner a copy of this property inspection report.

    *Note: It is preferable for the property inspection to be carried out prior to the commencement of blasting activities on the site, and the Proponent should facilitate this occurring wherever possible.*

**Property Investigations**

16. If any landowner within 2 km of proposed blasting activities, or any other landowner nominated by the Director-General, claims that his/her property, including vibration-sensitive infrastructure such as water supply or underground irrigation mains, has been damaged as a result of blasting at the project, the Proponent shall within 3 months of receiving this request:
    (a) commission a suitably qualified person whose appointment has been approved by the Director-General to investigate the claim and prepare a property investigation report; and
    (b) give the landowner a copy of the report.

    If this independent investigation confirms the landowner's claim, and both parties agree with these findings, then the Proponent shall repair the damage to the satisfaction of the Director-General.

    If the Proponent or landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Director-General for resolution.

**Monitoring**

17. Prior to the commencement of blasting, the Proponent shall prepare and implement a detailed Blast Monitoring Program for the project, in consultation with the DECC and to the satisfaction of the Director-General.

**AIR QUALITY**

*Note: These conditions must be read in conjunction with Section 11 of the Statement of Commitments.*

**Impact Assessment Criteria**

18. The Proponent shall ensure that dust emissions generated by the project do not cause additional exceedances of the criteria listed in Tables 7 to 9 at any residence on privately owned land, or on more than 25 percent of any privately-owned land.

*Table 7: Long term impact assessment criteria for particulate matter*

| Pollutant | Averaging period | Criterion |
|---|---|---|
| Total suspended particulate (TSP) matter | Annual | 90 µg/m$^3$ |
| Particulate matter < 10 µm ($PM_{10}$) | Annual | 30 µg/m$^3$ |

*Table 8: Short term impact assessment criterion for particulate matter*

| Pollutant | Averaging period | Criterion |
|---|---|---|
| Particulate matter < 10 µm ($PM_{10}$) | 24 hour | 50 µg/m$^3$ |

*Table 9: Long term impact assessment criterion for deposited dust*

| Pollutant | Averaging period | Maximum increase in deposited dust level | Maximum total deposited dust level |
|---|---|---|---|
| Deposited dust | Annual | 2 g/m$^2$/month | 4 g/m$^2$/month |

*Note: Deposited dust is assessed as insoluble solids as defined by Standards Australia, 1991, AS/NZS 3580.10.1-2003: Methods for Sampling and Analysis of Ambient Air - Determination of Particulates - Deposited Matter - Gravimetric Method.*

**Monitoring**

19. The Proponent shall prepare and implement an Air Quality Monitoring Program for the project to the satisfaction of the Director-General. This program must:
    (a) be submitted to the Director-General prior to the commencement of construction activities;
    (b) be prepared in consultation with the DECC; and
    (c) use a combination of high volume samplers and dust deposition gauges to monitor the performance of the project.

**METEOROLOGICAL MONITORING**

*Note: This condition must be read in conjunction with Section 11 of the Statement of Commitments*

20. During the project, the Proponent shall ensure there is a suitable continuously operating meteorological station on site that complies with the requirements in *Approved Methods for Sampling of Air Pollutants in New South Wales* (DECC, 2007), or its latest version.

**WATER MANAGEMENT**

*Note: These conditions must be read in conjunction with Section 7 & 10 of the Statement of Commitments.*

**Discharge**

21. Except as may be expressly provided for by an EPL, or in accordance with section 120 of the *Protection of the Environment Operations Act 1997*, the Proponent shall not discharge any mine water from the site.

**Water Management Plan**

22. The Proponent shall prepare and implement a Water Management Plan for the project to the satisfaction of the Director-General. This plan must be submitted to the Director-General for approval prior to the commencement of construction activities (not including public road upgrades other than the realignment of Coocooboonah Lane) in consultation with the DECC and DWE by suitably qualified expert/s whose appointment/s have been approved by the Director-General and include a:
    (a) Site Water Balance;
    (b) Erosion and Sediment Control Plan;
    (c) Surface Water Monitoring Plan;
    (d) Groundwater Monitoring Program; and
    (e) Groundwater Contingency Plan.

**Site Water Balance**

23. The Site Water Balance must:
    (a) include details of:
        - sources and security of water supply;
        - water use on site;
        - water management on site;
        - off-site water transfers;
        - reporting procedures;
    (b) describe measures to minimise water use by the project; and
    (c) be reviewed and recalculated each year using the most recent water monitoring data.

**Erosion and Sediment Control**

24. The Erosion and Sediment Control Plan must:
    (a) be consistent with the requirements of *Managing Urban Stormwater: Soils and Construction* manual (Landcom, 2004), or its latest version;
    (b) identify activities that could cause soil erosion and generate sediment;
    (c) describe measures to minimise soil erosion and the potential for transport of sediment to downstream waters;
    (d) describe the location, function, and capacity of erosion and sediment control structures; and
    (e) describe what measures would be implemented to monitor and maintain the structures over time.

**Surface Water Monitoring Program**

25. The Surface Water Monitoring Program must include:
    (a) detailed baseline data on surface water flows and quality in creeks and other waterbodies that could be affected by the project;
    (b) surface water impact assessment criteria;
    (c) a program to monitor the impact of the project on surface water flows and quality; and
    (d) procedures for reporting the results of this monitoring.

**Groundwater Monitoring Program**

26. The Groundwater Monitoring Program must include:
    (a) further development of the regional and local groundwater model;
    (b) detailed baseline data to benchmark the natural variation in groundwater levels, yield and quality (including at any privately owned bores in the vicinity of the site);
    (c) groundwater impact assessment criteria;
    (d) a program to monitor the impact of the project on groundwater levels, yield and quality; and
    (e) procedures for reporting the results of this monitoring.

**Groundwater Contingency Plan**

27. The Groundwater Contingency Plan must:
    (a) provide measures to mitigate any impacts of the mine on the quality or quantity of groundwater supplies available on privately-owned land;
    (b) establish trigger levels, benchmarks and contingency criteria; and
    (c) provide for negotiated agreements with affected landowners, including compensation where mining impacts result in increased extraction costs for landowners.

**LANDSCAPE MANAGEMENT**

**Koala Habitat**

*Note: This condition must be read in conjunction with Sections 2, 9 and 18 of the Statement of Commitments.*

28. The Proponent shall implement the Koala habitat management and enhancement actions described in the EA (shown conceptually in Figure 6 in Appendix 4) in consultation with the DECC and to the satisfaction of the Director-General.

*Note: Conditions 29 – 31 must be read in conjunction with Section 17 of the Statement of Commitments.*

**Rehabilitation**

29. The Proponent shall rehabilitate the site to the satisfaction of the Director-General and DPI.

**Rehabilitation and Landscape Management Plan**

30. The Proponent shall prepare and implement a detailed Rehabilitation and Landscape Management Plan for the site to the satisfaction of the Director-General and DPI. This plan must:
    (a) be prepared in consultation with DECC, DWE and Council by suitably qualified expert/s whose appointment/s have been approved by the Director-General; and
    (b) be submitted to the Director-General and DPI for approval by 1 March 2009;
    (c) include:
        - the rehabilitation objectives for the site;
        - a description of how the rehabilitation of the site would be integrated with the landscape of the surrounding area;
        - detailed performance and completion criteria for the rehabilitation of the site;
        - a detailed description of the measures that would be implemented to achieve the performance and completion criteria for each site, including the procedures to be implemented for
            - protection and enhancement of koala habitat;
            - progressively rehabilitating the areas disturbed by mining operations;
            - restoration of agricultural land suitability;
            - revegetating the site;
            - protecting and/or enhancing areas in the vicinity of the disturbance area;
            - conserving and re-using any topsoil;
            - controlling weeds and feral pests;
            - controlling access; and
            - bushfire management.
        - a program to monitor the performance of the rehabilitation against the stated objectives, performance and completion criteria;
        - a description of the potential risks to successful rehabilitation, and a description of the contingency measures that would be implemented to minimise these risks; and
        - details of who is responsible for monitoring, reviewing and implementing the plan.

**Mine Closure Plan**

31. At least 2 years prior to the cessation of mining operations on the site the Proponent shall prepare a Mine Closure Plan. This plan must:
    (a) define the objectives and criteria for mine closure;
    (b) investigate options for the future use of the site;
    (c) provide a detailed methodology for decommissioning the site's storage dams;
    (d) investigate ways to minimise the adverse socio-economic effects associated with mine closure, including reduction in local and regional employment levels;
    (e) describe the measures that would be implemented to minimise or manage the on-going environmental effects of the project; and
    (f) describe how the performance of these measures would be monitored over time.

**HERITAGE**

*Note: These conditions must be read in conjunction with Section 12 of the Statement of Commitments.*

**Aboriginal Cultural Heritage Management Plan**

32. The Proponent shall not destroy any known Aboriginal objects (as defined in the *National Parks and Wildlife Act 1974*) without the written approval of the Director-General.

33. The Proponent shall prepare and implement an Aboriginal Cultural Heritage Management Plan for the project to the satisfaction of the Director-General. This plan must:
    (a) be submitted to the Director-General prior to the commencement of construction activities (not including public road upgrades other than the realignment of Coocooboonah Lane);
    (b) be prepared in consultation with the DECC and the local Aboriginal community;

(c) include a protocol for the ongoing consultation and involvement of Aboriginal communities in the conservation and management of Aboriginal heritage on site; and
(d) describe the measures that would be implemented to protect Aboriginal sites on site, or if any new Aboriginal objects or skeletal remains are discovered during the project.

**TRANSPORT**

*Note: These conditions must be read in conjunction with Section 2 of the Statement of Commitments.*

**Monitoring of Coal Transport**

34. The Proponent shall keep records of the amount of coal transported from the site each year, and include these records in the AEMR.

**Traffic Management**

35. Prior to transporting any coal off-site, the Proponent shall:
(a) construct a realignment of Coocooboonah Lane to the satisfaction of the landowner and Council;
(b) upgrade the intersection of Coocooboonah Lane and the Oxley Highway to the satisfaction of the RTA and Council;
(c) upgrade the intersection of the Oxley Highway and Blackjack Road to the satisfaction of the RTA and Council;
(d) upgrade the section of Blackjack Road to be used for coal transport to the satisfaction of Council;
(e) upgrade the intersection of Blackjack Road and Quia Road to the satisfaction of Council;
(f) upgrade the section of Quia Road to be used for coal transport to the satisfaction of Council;
(g) upgrade the intersection of Quia Road and Farrar Road to the satisfaction of Council;
(h) upgrade the intersection of Quia Road and Torrens Road to the satisfaction of Council; and
(i) upgrade Torrens Road to the satisfaction of Council.

36. Prior to carrying out any development on site, the Proponent shall prepare, and subsequently implement, a Construction Traffic Management Plan for the project to the satisfaction of the RTA and Council.

37. Within 6 months of this approval the Proponent shall enter into an agreement with Council for the maintenance of the section of the Oxley Highway between Coocooboonah Lane and Blackjack Road.

38. Prior to transporting coal from the site the Proponent shall construct 2 bus stops on the Oxley Highway to the satisfaction of Council.

39. Notwithstanding condition 10 of Schedule 2, the Proponent shall ensure no coal is transported from the site during AgQuip.

**VISUAL IMPACT**

**Visual Amenity**

40. The Proponent shall minimise the visual impacts of the project to the satisfaction of the Director-General.

**Lighting Emissions**

41. The Proponent shall ensure that:
(a) no outdoor lights shine above the horizontal; and
(b) all external lighting associated with the project complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting*.

**GREENHOUSE GAS**

**Energy Savings Action Plan**

42. The Proponent shall prepare and implement an Energy Savings Action Plan for the project to the satisfaction of the Director-General. This plan must:
    (a) be prepared in accordance with the *Guidelines for Energy Savings Action Plans* (DEUS, 2005), or its latest version;
    (b) include consideration of energy use by mobile equipment;
    (c) be submitted to the Director-General for approval within 3 months of this approval; and
    (d) include a program to monitor the effectiveness of measures to reduce energy use on site.

**WASTE**

**Waste Minimisation**

43. The Proponent shall prepare and implement a Waste Management Plan for the project to the satisfaction of the Director-General. This plan must:
    (a) be submitted to the Director-General for approval prior to commencing of construction;
    (b) identify the various waste streams of the project;
    (c) describe what measures would be implemented to reuse, recycle, or minimise the waste generated by the project;
    (d) ensure irrigation of treated wastewater is undertaken in accordance with *Environmental Guidelines: Use of Effluent by Irrigation* (DEC, 2004), or its latest version; and
    (e) include a program to monitor the effectiveness of these measures.

## SCHEDULE 4
## ADDITIONAL PROCEDURES

### NOTIFICATION OF LANDOWNERS

1. Within 1 month of this approval, the Proponent shall notify the owner of "Lilydale" in writing that he/she has the right to require the Proponent to acquire their land at any stage during the project.

2. If the results of monitoring required in schedule 3 identify that impacts generated by the project are greater than the relevant impact assessment criteria in schedule 3, then the Proponent shall notify the Director-General and the affected landowners and/or existing or future tenants (including tenants of mine owned properties) accordingly, and provide quarterly monitoring results to each of these parties until the results show that the project is complying with the criteria in schedule 3. However, no notification is required if the impact is predicted in the EA or where an agreement has been negotiated with a landowner that excludes the requirement for ongoing notification of such impacts.

### INDEPENDENT REVIEW

3. If a landowner considers the project to be exceeding the impact assessment criteria in schedule 3, except where this is predicted in the EA, then he/she may ask the Director-General in writing for an independent review of the impacts of the project on his/her land.

   If the Director-General is satisfied that an independent review is warranted, the Proponent shall within 2 months of the Director-General's decision:
   (a) consult with the landowner to determine his/her concerns;
   (b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to conduct monitoring on the land, to:
      - determine whether the project is complying with the relevant impact assessment criteria in schedule 3; and
      - identify the source(s) and scale of any impact on the land, and the project's contribution to this impact; and
   (c) give the Director-General and landowner a copy of the independent review.

   If the independent review determines that the project is complying with the relevant impact assessment criteria in schedule 3, then the Proponent may discontinue the independent review with the approval of the Director-General.

4. If the independent review determines that the project is not complying with the relevant impact assessment criteria in schedule 3, and that the project is primarily responsible for this non-compliance, then the Proponent shall:
   (a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the project complies with the relevant criteria; and
   (b) conduct further monitoring to determine whether these measures ensure compliance; or
   (c) secure a written agreement with the landowner to allow exceedances of the relevant criteria,
   to the satisfaction of the Director-General.

   If further monitoring under paragraph (b) determines that the project is complying with the relevant criteria, then the Proponent may discontinue the independent review with the approval of the Director-General.

5. If further monitoring under condition 4(b) determines that measures implemented under condition 4(a) have not achieved compliance with the land acquisition criteria in schedule 3, and the Proponent cannot then secure within 3 months a written agreement with the landowner under condition 4(c) to allow these exceedances, then the Proponent shall, upon receiving a written request from the landowner, acquire all or part of the landowner's land in accordance with the procedures in conditions 7-9 below.

6. If:
   (a) the landowner disputes the results of the independent review; or
   (b) the Proponent is unable to secure a written agreement under condition 4(c) with the landowner
   then (subject to condition 5) either the Proponent or the landowner may refer the matter to the Director-General for resolution.

Where matters referred to the Director-General under this condition cannot be resolved by the Director-General within 28 days, the Director-General shall refer the matter to an Independent Dispute Resolution Process.

**LAND ACQUISITION**

7. Within 3 months of receiving a written request from a landowner with acquisition rights, the Proponent shall make a binding written offer to the landowner based on:
   (a) the current market value of the landowner's interest in the property at the date of this written request, as if the property was unaffected by the project the subject of the project application, having regard to the:
      - existing and permissible use of the land, in accordance with the applicable planning instruments at the date of the written request; and
      - presence of improvements on the property and/or any approved building or structure which has been physically commenced at the date of the landowner's written request, and is due to be completed subsequent to that date, but excluding any improvements that have resulted from the implementation of the 'additional noise mitigation measures' in conditions 5 and 7 of schedule 3;
   (b) the reasonable costs associated with:
      - relocating within the Gunnedah local government area, or to any other local government area determined by the Director-General;
      - obtaining legal advice and expert advice for determining the acquisition price of the land, and the terms upon which it is required; and
   (c) reasonable compensation for any disturbance caused by the land acquisition process.

   However, if at the end of this period, the Proponent and landowner cannot agree on the acquisition price of the land, and/or the terms upon which the land is to be acquired, then either party may refer the matter to the Director-General for resolution.

   Upon receiving such a request, the Director-General shall request the President of the NSW Division of the Australian Property Institute to appoint a qualified independent valuer or Fellow of the Institute, to consider submissions from both parties, and determine a fair and reasonable acquisition price for the land, and/or terms upon which the land is to be acquired.

   The appointed valuer is to provide a full report and explanation of the determination and proposed terms to the Proponent, landowner and the Director-General.

   Within 14 days of receiving the independent valuer's determination, the Proponent shall make a written offer to purchase the land at a price not less than the independent valuer's determination.

   If the landowner refuses to accept this offer within 6 months of the date of the Proponent's offer, the Proponent's obligations to acquire the land shall cease, unless otherwise agreed by the Director-General.

8. The Proponent shall bear the costs of any valuation or survey assessment requested by the independent valuer, or the Director-General and the costs of determination referred above.

9. If the Proponent and landowner agree that only part of the land shall be acquired, then the Proponent shall pay all reasonable costs associated with obtaining Council approval for any plan of subdivision (where permissible), and registration of the plan at the Office of the Registrar-General.

## SCHEDULE 5

## ENVIRONMENTAL MANAGEMENT, MONITORING, AUDITING AND REPORTING

*Note: This schedule must be read in conjunction with section 18 of the Statement of Commitments.*

### ENVIRONMENTAL MANAGEMENT STRATEGY

1. The Proponent shall prepare and implement an Environmental Management Strategy for the project to the satisfaction of the Director-General. This strategy must be submitted to the Director-General prior to the commencement of construction activities, and:
   (a) provide the strategic context for environmental management of the project;
   (b) identify the statutory requirements that apply to the project;
   (c) describe in general how the environmental performance of the project would be monitored and managed;
   (d) describe the procedures that would be implemented to:
      - keep the local community and relevant agencies informed about the operation and environmental performance of the project;
      - receive, handle, respond to, and record complaints;
      - resolve any disputes that may arise during the course of the project;
      - respond to any non-compliance;
      - manage cumulative impacts; and
      - respond to emergencies; and
   (e) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project.

### ENVIRONMENTAL MONITORING PROGRAM

2. The Proponent shall prepare and implement an Environmental Monitoring Program for the project to the satisfaction of the Director-General. This program must be submitted to the Director-General within 6 months of this approval and consolidate the various monitoring requirements in schedule 3 of this approval into a single document.

### REPORTING

#### Incident Reporting

3. As soon as practicable, and in any event within 24 hours of detecting an exceedance of the limits/performance criteria in this approval or the occurrence of an incident that causes (or may cause) material harm to the environment, the Proponent shall notify the Department and other relevant agencies of the exceedance/incident.

4. Within 6 days of notifying the Department and other relevant agencies of an exceedance/incident, the Proponent shall provide the Department and these agencies with a written report that:
   (a) describes the date, time, and nature of the exceedance/incident;
   (b) identifies the cause (or likely cause) of the exceedance/incident;
   (c) describes what action has been taken to date; and
   (d) describes the proposed measures to address the exceedance/incident.

#### Annual Reporting

5. Within 12 months of this approval, and annually thereafter, the Proponent shall submit an AEMR to the Director-General and to all relevant agencies. This report must:
   (a) identify the standards and performance measures that apply to the project;
   (b) describe the works carried out in the last 12 months;
   (c) describe the works that would be carried out in the next 12 months;
   (d) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;
   (e) include a summary of the monitoring results for the project during the past year;
   (f) include an analysis of these monitoring results against the relevant:
      - impact assessment criteria/limits;
      - monitoring results from previous years; and

- predictions in the EA;

(g) identify any trends in the monitoring results over the life of the project;
(h) identify any non-compliance during the previous year; and
(i) describe what actions were, or are being, taken to ensure compliance.

**INDEPENDENT ENVIRONMENTAL AUDIT**

6. Within 2 years of this approval, and every 3 years thereafter, unless the Director-General directs otherwise, the Proponent shall commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:
   (a) be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Director-General;
   (b) include consultation with the relevant agencies;
   (c) assess the environmental performance of the project and assess whether it is complying with the relevant requirements of this approval and any relevant mining lease or EPL (including any strategy, plan or program required under these approvals);
   (d) review the adequacy of strategies, plans or programs required under these approvals; and, if appropriate,
   (e) recommend measures or actions to improve the environmental performance of the project, and/or any strategy, plan or program required under these approvals.

   *Note: This audit team must be led by a suitably qualified auditor and include experts in the fields of water, noise management and mine rehabilitation.*

7. Within 6 weeks of the completing of this audit, or as otherwise agreed by the Director-General, the Proponent shall submit a copy of the audit report to the Director-General, together with its response to any recommendations contained in the audit report.

8. Within 3 months of submitting the audit report to the Director-General, the Proponent shall review, and if necessary revise the strategies/plans/programs required under this approval to the satisfaction of the Director-General.

**COMMUNITY CONSULTATIVE COMMITTEE**

9. Within 3 months of this approval, the Proponent shall establish a Community Consultative Committee (CCC) for the project. This CCC must be established and operated in accordance with the *Guideline for Establishing and Operating Community Consultative Committees for Mining Projects (Department of Planning, 2007)*, or its latest version, and to the satisfaction of the Director-General.

**ACCESS TO INFORMATION**

10. Within 3 months of the approval of any strategy/plan/ program required under this approval (or any subsequent revision of these strategies/plans/ programs), or the completion of the audits or AEMRs required under this approval, the Proponent shall:
    (a) provide a copy of the relevant document/s to the relevant agencies and CCC; and
    (b) put a copy of the relevant document/s on its website.

11. During the project, the Proponent shall:
    (a) make a summary of all monitoring results required under this approval publicly available at the mine and on its website; and
    (b) update these results on a regular basis (at least every three months).

**APPENDIX 1**
**SCHEDULE OF PROJECT LAND**

| ***Parish*** | ***Land Title Reference*** |
|---|---|
| *Gill* | *Lot 1 DP 393755*<br>*Lot 12 DP 755503*<br>*Lot 16 DP 7555031*<br>*Lot 162 DP 755503*<br>*Various Road Reserves* |

**APPENDIX 2**
**PROJECT MAPS**

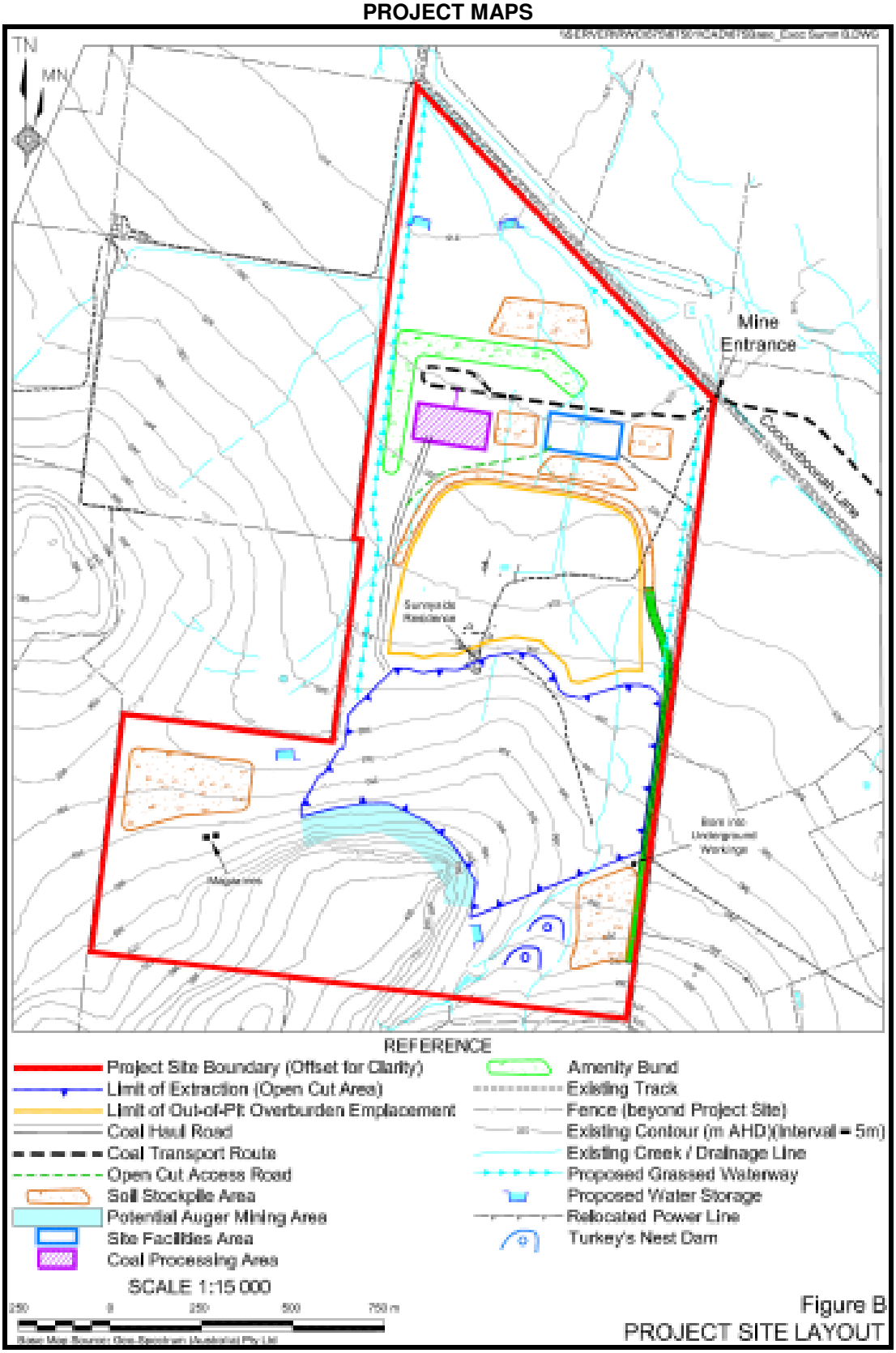



***Figure 1:*** *Project Layout*

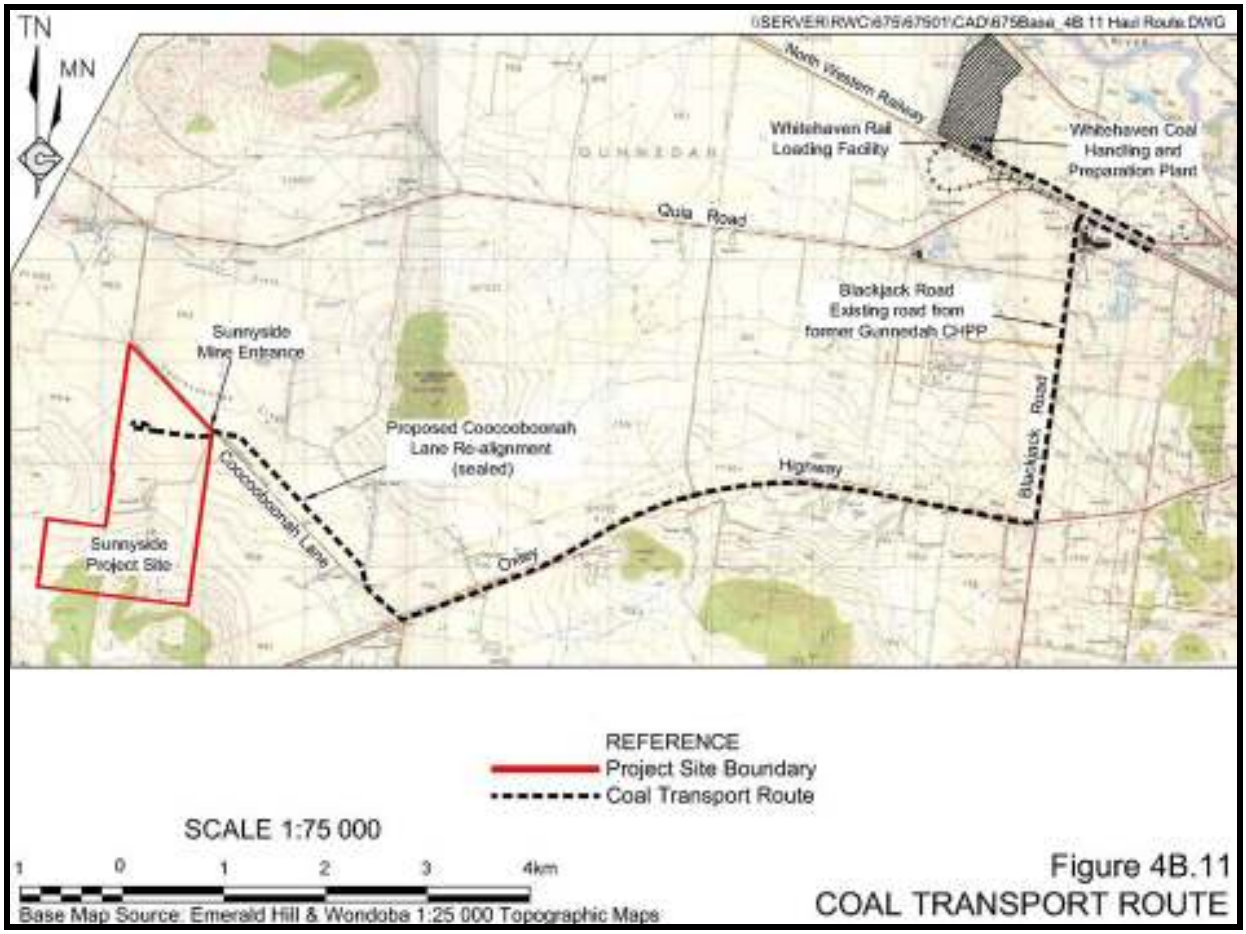



***Figure 2:*** *Coal transport route*

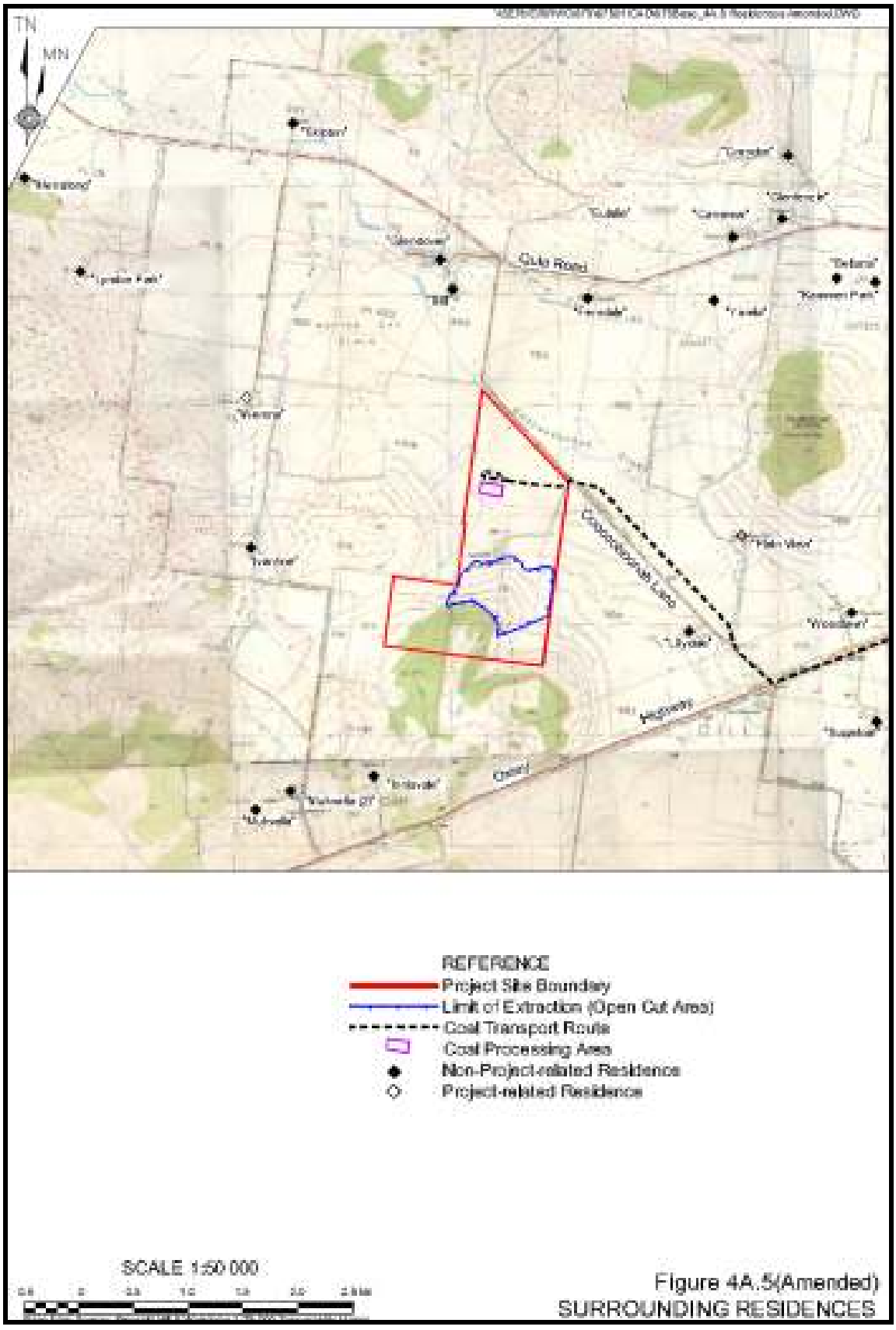



***Figure 3:*** *Residences in proximity to the site*

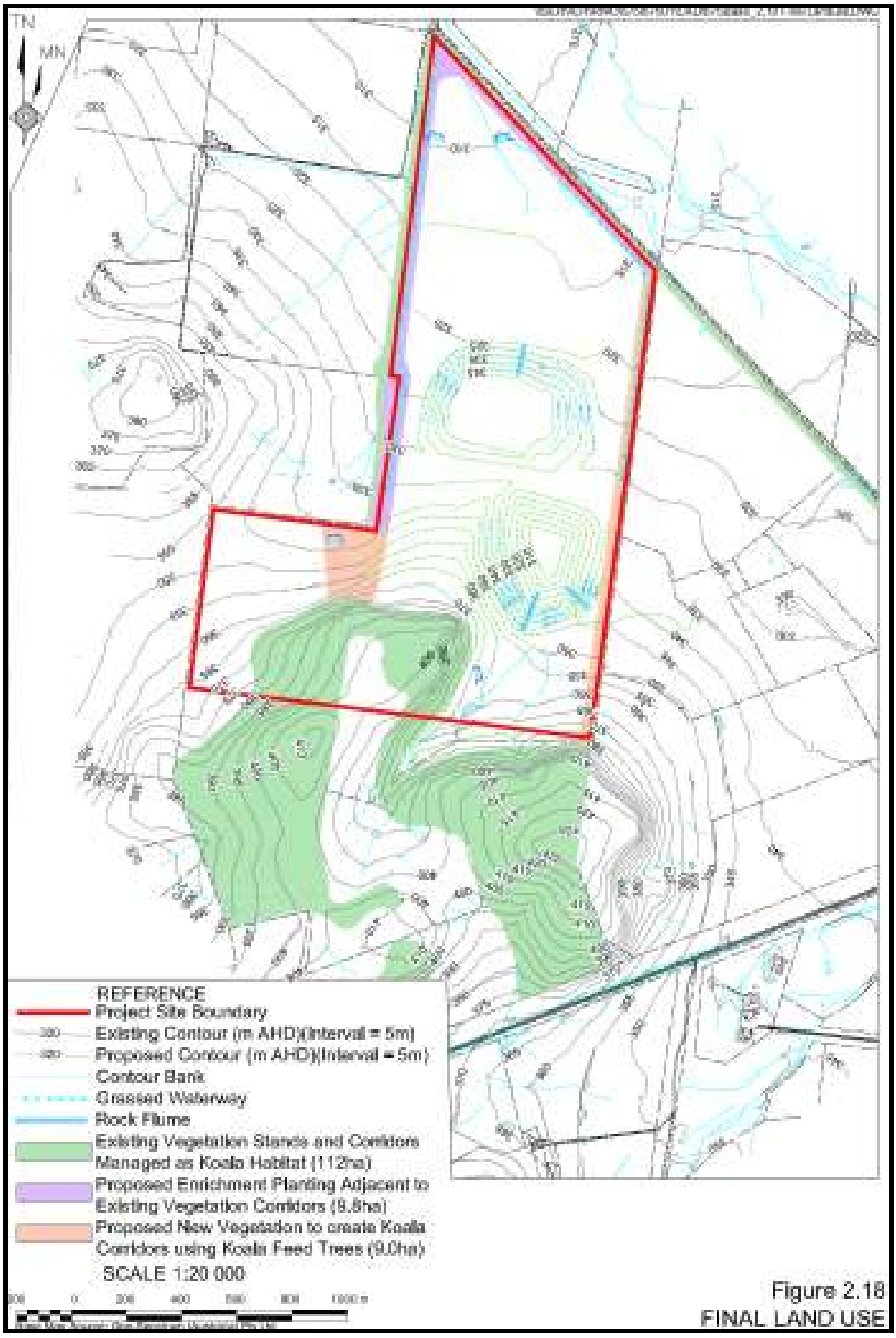



***Figure 4:*** *Conceptual final land-use showing Koala habitat protection and enhancement areas*

## APPENDIX 3
## STATEMENT OF COMMITMENTS

| Desired Outcome | Action | | Timing |
|---|---|---|---|
| **1. General Project Development** | | | |
| Operate the Project to ensure that all component activities are undertaken in a responsible and proactive manner | 1.1 | All activities will be subject to the Mining, Rehabilitation and Environmental Management Process managed by the Department of Primary Industries – Mineral Resources. | Ongoing. |
| | 1.2 | Operate the mine with comprehensive systems to manage and monitor groundwater, surface water, noise, blasting, air quality, visibility, Aboriginal heritage, flora, fauna, traffic, visual and socio-economic aspects. | Ongoing. |
| | 1.3 | Apply for a Mining Lease with boundaries generally coincident with the Project Site. | Late 2007. |
| | 1.4 | Obtain all necessary certifications for all buildings constructed or relocated on site from Gunnedah Shire Council. | Mid 2008. |
| | 1.5 | Seek approval from Gunnedah Shire Council to install a septic system on site. | Prior to Project commencement. |
| | 1.6 | Undertake all rehabilitation and site decommissioning within 12 months of the end of mining. This would include re-instating Coocooboonah Lane to its pre-mining alignment | Approximately December 2013. |
| | 1.7 | Implement management strategies to minimise the likelihood of spontaneous combustion. | Ongoing. |
| | 1.8 | Construct the out-of-pit overburden emplacement in a manner that would ensure the initial emplaced overburden would form an acoustic barrier around the operating area within the emplacement. | During Year 1 of mining operations. |
| | 1.9 | Undertake a geological and geotechnical assessment prior to any auger mining to confirm it is both safe and economic to proceed. | During mining operations. |
| | 1.10 | Direct surface runoff water around the final void. | Ongoing. |
| | 1.11 | Potable water would be transported from Gunnedah to supplement rainwater collected off site buildings and stored in tanks. Ablutions water would be transported from Gunnedah. | Ongoing. |

| Desired Outcome | Action | Timing |
|---|---|---|
| **1. General Project Development** | | |
| Operate the Project to ensure that all component activities are undertaken in a responsible and proactive manner (Cont'd). | 1.12 Operational water will initially be supplied from water within the Gunnedah Coal Mine N$^{o}$ 5 Entry underground workings. This will eventually augment the pit groundwater inflow and water drawn from the various sedimentation and fresh water dams that would form part of the site surface water management system. | Ongoing. |
| | 1.13 Power will be predominantly generated on site by diesel powered generators. | Ongoing. |
| | 1.14 There will be capacity to store 68 000L of diesel and 10 000L of oil on site in self-bunded fuel tanks. | Ongoing. |
| | 1.15 An Environment Protection Licence to be applied for. | Mid 2008. |
| | 1.16 RTA approval to be sought for proposed roadworks along the Oxley Highway. | Mid 2008. |
| | 1.17 Road Construction Permit to be applied for from Gunnedah Shire Council prior to modifications and other roadworks associated with re-alignment of Coocooboonah Lane and public road intersections along the coal transport route. | Mid 2008. |
| | 1.18 A Water Licence be applied for and granted before installation and operation of a water bore into the Gunnedah N$^{o}$ 5 Colliery workings. | Mid 2008. |
| | 1.19 A licence be applied and granted from WorkCover for the installation of explosives magazine within the Project Site area. | Mid 2008. |
| **2. Traffic and Transport** | | |
| | 2.1 Ensure all trucks transporting coal are well maintained and that drivers act in a courteous manner at all times. | Ongoing. |
| | 2.2 Avoid loading trucks that are unroadworthy or not carrying covers. | Ongoing. |
| | 2.3 Ensure all truck drivers operate in accordance with a Transport Policy and Code of Conduct. | Ongoing. |

| Desired Outcome | Action | Timing |
|---|---|---|
| **2. Traffic and Transport (cont'd)** | | |
| | 2.4 Contact all potentially affected landowners and surrounding residents prior to initial construction and the commencement of any upgrading works to inform / discuss the proposed works. | Prior to initial construction and ongoing. |
| | 2.5 Liaise routinely with local residents to ensure their satisfaction with all aspects of changed traffic conditions. | Ongoing. |
| | 2.6 Relocate part of Coocooboonah Lane to avoid disturbing remnant Koala habitat. RTA requested changes will result in approximately three trees being removed. | Prior to mining commencing. |
| | 2.7 Upgrade parts of the proposed coal transport route beyond Coocooboonah Lane and various intersections to improve traffic flow and safety aspects. | Prior to coal transportation. |
| | 2.8 The truck fleet will consist of a mix of standard 28t capacity semi-trailers and 40t capacity B-Double vehicles. | Ongoing. |
| | 2.9 Develop a Road Maintenance and Capital Improvement Agreement with Gunnedah Shire Council. | Prior to mining commencing. |
| | 2.10 Erect appropriate road signage. | Prior to coal transportation. |
| | 2.11 Ensure all employees and contractors are regularly informed about the safe driving requirements to and from the Project Site. | Ongoing. |
| | 2.12 Transport all oversize loads with all necessary permits. | During transport of oversize loads (primarily during site establishment). |
| | 2.13 Erect a blast board at the Project Site entrance and update at least 24 hours prior to each blast. | Prior to initial blast. |

| Desired Outcome | Action | | Timing |
|---|---|---|---|
| **3. Operating Hours – Site Establishment** | | | |
| Management of construction activities in accordance with the approved operating hours. | 3.1 | Undertake on-site construction within the hours of: 7.00am to 6.00pm / Monday to Friday, 7.00am to 4.00pm / Saturday. | During site establishment. |
| | 3.2 | Undertake coal transport route construction within the hours of: 7:00am to 6:00pm / Monday to Friday with the contingency to extend to 8.00pm if light and seasonal conditions permit, 7.00am to 4.00pm / Saturday | During site establishment. |
| **4. Operating Hours – Operations** | | | |
| Management of operating hours of work in accordance with the approved consent conditions | 4.1 | Undertake vegetation clearing / soil removal within the hours: 7.00am to 6.00pm Monday to Friday with a contingency to extend operations to 8.00pm if light and seasonal conditions permit. Saturday activity would be between 7.00am and 4.00pm with contingency to extend through to 6.00pm | During vegetation clearing and soil removal. |
| | 4.2 | Undertake drilling within the hours: 7.00am to 8.00pm / Monday to Friday and 7.00am to 6.00pm Saturday. | During drilling. |
| | 4.3 | Undertake blasting within the hours: 10.00am to 5.00pm / Monday to Friday and 10.00am to 2.00pm Saturday | During blasting. |
| | 4.4 | Undertake overburden / interburden removal and placement within the hours 7.00am to 10.00pm Monday to Friday and 7.00am to 4.00pm Saturday. | During overburden / interburden removal and placement. |
| | 4.5 | Undertake internal transport of coal product to ROM stockpile within the hours 7.00am to 10.00pm Monday to Friday and 7.00am to 4.00pm Saturday. | During internal transport of coal. |
| | 4.6 | Undertake on-site processing within the hours 7.00am to 10.00pm Monday to Friday and 7.00am to 6.00pm Saturday. | Ongoing. |
| | 4.7 | Undertake coal transport to Whitehaven CHPP and Rail Loading Facility within the hours 7.00am to 6.00pm Monday to Friday with contingency to extend to 8.00pm light and seasonal conditions permitting. | During coal transport. |
| | 4.8 | Undertake maintenance within the hours: 24 hours over 7 days. | During maintenance. |
| | 4.9 | Undertake rehabilitation within the hours: 7.00am to 6.00pm / Monday to Friday and 7.00am to 4.00pm Saturday. | During rehabilitation. |

| Desired Outcome | Action | | Timing |
|---|---|---|---|
| **5. Waste Management** | | | |
| Minimisation of general waste creation and maximisation of recycling wherever possible. | 5.1 | Place all paper and general wastes originating from the Site Facilities Area, together with routine maintenance consumables from the daily servicing of equipment in garbage bins located adjacent to the various buildings. | Continuous. |
| Minimisation of the potential risk of environmental impact due to waste creation, storage and/or disposal. | 5.2 | Collect general waste bins and place contents in large waste skip bins positioned adjacent to the heavy vehicle maintenance building to await removal by licensed contractor. | Daily - wastebins. As required – skip bins. |
| | 5.3 | Collect industrial waste regularly. | Fortnightly. |
| | 5.4 | Collect waste oils and grease and pump to bulk storage tanks. | As required. |
| | 5.5 | Store waste oils and grease at the maintenance workshop for collection by a licensed waste recycling contractor. | Bi-monthly. |
| | 5.6 | Collect all parts and packaging and transfer to the maintenance workshop for disposal or recycling. | As required. |
| | 5.7 | Install adequate toilet and ablution facilities within the mine facilities area for the site workforce and visitors. | During site establishment. |
| | 5.8 | Direct sewage to a bio-cycle (or equivalent system) with effluent irrigation to land – to be approved by Gunnedah Shire Council. | Ongoing following installation. |
| | 5.9 | Store potentially hydrocarbon-contaminated water in the oil/water separator for regular removal from site by a licensed contractor. | As required. |
| | 5.10 | Assemble all proposed waste management practices in a Waste Management Plan. | Within 6 months of the start of site establishment. |
| **6. Safety and Security** | | | |
| To protect the safety of employees (including contractors), visitors to the mine, the public as well as local land owners and land users. | 6.1 | Ensure compliance with statutory regulations and maintain awareness of changes. | Ongoing. |
| | 6.2 | Eliminate or control safety and health hazards in the work environment. | Ongoing. |
| | 6.3 | Provide relevant occupational health and safe working practices and job training. | Ongoing. |
| | 6.4 | Conduct regular safety meetings and provide open forum for input from all employees. | Ongoing. |
| | 6.5 | Provide effective emergency arrangements for all employees and general public protection. | Ongoing. |
| | 6.6 | Undertake regular employee assessment and counselling if required. | Ongoing. |

| Desired Outcome | Action | | Timing |
|---|---|---|---|
| **6. Safety and Security (cont'd)** | | | |
| | 6.7 | Ensure all contractors adopt the NMPL's policy objectives and maintain safety standards at all times while working on the premises. | Ongoing. |
| To protect the safety of employees (including contractors), visitors to the mine, the public as well as local land owners and land users. (Cont'd) | 6.8 | Develop an Occupational Health and Safety Management System and Major Hazard Management System to be approved by the Chief Inspector of Coal Mines. | Prior to mining and Ongoing. |
| | 6.9 | Erect and maintain all boundary fencing encompassing the Project Site. | During site establishment. |
| | 6.10 | Install lockable mine entrance gate. | During site establishment. |
| | 6.11 | Erect appropriate security fencing signs at key locations in and around the Project Site. | During site establishment. |
| | 6.12 | Erect advisory truck traffic warning signage prior to intersection of private sections of the proposed coal transport route along the re-aligned Coocooboonah Lane. | During site establishment. |
| | 6.13 | Ensure all equipment complies with Mine Design Guidelines (MDG15). | Prior to commencement of operations. |
| | 6.14 | Submit Mining Operations Plan to the Department of Primary Industries. | Prior to commencement of operations. |
| **7. Groundwater** | | | |
| Access to groundwater resources within the N$^{o}$ 5 underground as a supplementary water source for mine operations. | 7.1 | Obtain all necessary approvals and construct a groundwater bore (see **Figure A**) to withdraw water collected in the void of the Gunnedah N$^{o}$ 5 underground workings. | During site establishment. |
| Prevention of groundwater contamination. | 7.2 | Control dirty or contaminated surface water within surface structures (see Commitments in Section 10). | Ongoing. |
| | 7.3 | Refuel the mining fleet within designated areas of the Project surface facilities. | Ongoing. |
| | 7.4 | Undertake all maintenance works requiring the use of oils, greases and lubricants within designated areas of the Project surface facilities. | Ongoing. |
| | 7.5 | Direct all water from wash-down areas and workshops, except some mobile equipment to oil / water separators and containment systems. | Ongoing. |
| | 7.6 | Ensure all storage tanks are either self-bunded tanks or bunded with an impermeable surface and a capacity to contain a minimum 110% of the largest storage tank capacity. | Prior to mining and Ongoing. |

| Desired Outcome | Action | | Timing |
|---|---|---|---|
| **7. Groundwater (Cont'd)** | | | |
| Prevention of groundwater contamination. (Cont'd) | 7.7 | Construct two turkey's nest dams for the storage of any surplus open cut pit inflows (rather than direct placement into underground workings). | Ongoing. |
| | 7.8 | Preferentially use water in the two turkey's nest dams for on-site dust suppression (rather than placing water from these dams underground). | Ongoing. |
| | 7.9 | Construct a suitable bore and install appropriate pumping equipment to place diluted pit water (from Turkey's Nest Dam N$^{o}$ 2) into the N$^{o}$ 5 underground workings. (All bores would be licenced by DWE). | Prior to the completion of construction of Turkey's Nest Dam N$^{o}$ 2. |
| | 7.10 | Pump water to the N$^{o}$ 5 underground workings only from the second turkey's nest dam (to ensure only diluted water is placed underground). This would occur in the event of excessive wet weather when the second turkey's nest dam is approaching its capacity. | As required. |
| Preparation of a contingency plan in the event that the availability or quality of groundwater is reduced for local groundwater users. | 7.11 | Undertake remedial action if the available groundwater for existing groundwater users is reduced by over 15% due to mine activities. | As required. |
| Implement a groundwater monitoring program to confirm predictions and to identify emerging issues. | 7.12 | Implement the water monitoring programme outlined in Section 4B.1.6.1 including ongoing review and modification as required. | Before commencement of Project and ongoing throughput life of Project. |
| | 7.13 | Develop contingency measures identified to address any impacts identified by monitoring. | Ongoing. |
| | 7.14 | Include relevant data in the Sunnyside Mine Annual Environmental Management Report (AEMR) | Annually. |
| | 7.15 | Prepare a monitoring report at the conclusion of mining to outline changes in the local groundwater system. | At conclusion of mining. |
| | 7.16 | Establish and maintain a coverage of piezometers to the satisfaction of DWE in the vicinity of the open pit and the Project Site. | Within 12 months after the commencement of mining operations. |

| Desired Outcome | Action | Timing |
|---|---|---|
| **8. Noise and Vibration** | | |
| Noise generated by site establishment, construction and operational activities does not exceed DECC nominated criteria nor significantly impact on neighbouring landowners and/or residents. | 8.1 Seal the re-aligned Coocooboonah Lane and all other upgraded road sections. | Prior to commencement of coal transportation. |
| | 8.2 Regularly maintain all roads comprising the proposed coal transport route under a contribution plan with Gunnedah Shire Council. | Ongoing. |
| | 8.3 Avoid all noisy activities occurring concurrently during construction particularly before 9.00am when the affects of local inversions may be noticeable. | During construction. |
| | 8.4 Construct the out-of-pit overburden emplacement to provide an acoustic barrier between the open cut and Non-Project-related residences. | During emplacement construction in Year 1. |
| | 8.5 Construct the amenity bund around the coal processing area to act as an acoustic barrier. | At commencement of overburden stripping. |
| | 8.6 Adhere strictly to hours of operation, including transport activities, enforced by Mine Management. | Ongoing. |
| | 8.7 Use equipment with lower sound power levels in preference to more noisy equipment. | Ongoing. |
| | 8.8 Regularly service all equipment used on site to ensure the power sound levels remain at or below the levels used in the modelling to assess generated noise levels and compliance with the criteria. | Ongoing. |
| | 8.9 Ensure that bulldozers either operate in first gear when reversing on the out-of-pit emplacement (and demonstrating compliance with noise criteria) **or** suspends operations (when compliance is not achieved with noise criteria). | During adverse weather conditions, particularly during periods of temperature inversions. |
| | 8.10 Manage scraper operations through seasonal / daily programming to avoid operations during inversion conditions and, when necessary to reduce the number of scrapers operating from two to one when noise monitoring demonstrates the $L_{Aeq\ (15\ minute)}$ criteria of 35dB(A) is or will be exceeded. | Under inversion conditions or as required. |
| | 8.11 Confine operations to lower levels of the in-pit overburden emplacement to mitigate noise exceedances under adverse wind conditions, ie. avoid operations on elevated section of the overburden emplacements during inversions and SSW winds. | Under adverse wind conditions or as required. |

| Desired Outcome | Action | Timing |
|---|---|---|
| **8. Noise and Vibration (cont'd)** | | |
| Noise generated by site establishment, construction and operational activities does not exceed DECC nominated criteria nor significantly impact on neighbouring landowners and/or residents. | 8.12 Fit mid frequency broadband reversing beepers to mobile mining equipment, decreasing sound power levels by 2dB(A) to 3dB(A). | At start of Project. |
| | 8.13 Ensure the on-site road network is well maintained to limit body noise from empty trucks travelling on internal roads. | Ongoing. |
| | 8.14 Maintain dialogue with neighbours and local community to ensure any concerns over construction, operational or transport noise are addressed. | Ongoing. |
| | 8.15 Establish a noise monitoring program, in consultation with the DECC, prior to the commencement of the Project, designed to initially validate the predictions arising from the modelling and then record noise levels against the Project noise criteria. | Prior to construction. |
| | 8.16 Document all proposed noise management strategies formally in a Noise Management Plan. | Prior to construction and mining activity. |
| | 8.17 Monitor construction noise near "Lilydale" when the realignment of Coocooboonah Lane is being undertaken. | During construction. |
| | 8.18 Conduct operational noise monitoring monthly for the first six months of mining operations, reverting to quarterly for the remainder of the year. | Ongoing. |
| | 8.19 Instruct all truck drivers to avoid the use of engine brakes when approaching the Project Site entrance and coal transport route intersections and to be mindful when accelerating. | During inductions and ongoing. |
| | 8.20 Adhere strictly to approved hours of coal transportation. | Ongoing. |
| | 8.21 Ensure all blasts are designed to comply with blast limits specified in the Environment Protection Licence. | All blasts. |
| | 8.22 Install a blast monitor at all residences within a 2km radius of the active blasting area to monitor blast parameters. | Ongoing. |

| Desired Outcome | Action | Timing |
|---|---|---|
| **9. Flora and Fauna** | | |
| | 8.23 Use aggregates for blast hole stemming to prevent venting of explosion gases. | During blasting. Ongoing. |
| | 8.24 Use average size blasts (MIC 960kg) when within the range of 150m to 210m of axe grinding groove (AGGI). | When mining near axe grinding groove. |
| | 9.1 Re-align Coocooboonah Lane to avoid removal of Koala habitat. | Prior to off-site coal transportation. |
| | 9.2 Erect fencing to exclude livestock from Koala habitat areas. | Prior to topsoil removal. |
| | 9.3 Erect a Koala-proof fence around the active mine area. | Progressively, as required. |
| | 9.4 Restrict speeds of all vehicles on the Project Site to 40kph. | Entire mine life. |
| | 9.5 Utilise local tree species in revegetation of disturbed areas with an emphasis on Koala feed trees. | During rehabilitation. |
| | 9.6 Re-establish a small area of the Endangered ecological community Native Vegetation on Cracking Clay Soils of the Liverpool Plains. | After Coocooboonah Lane is re-established in pre-mining location. |
| | 9.7 Undertake clearing so the extent is minimised and consistent with operational requirements. | Ongoing. |
| | 9.8 Clearly define all areas to be cleared. | Ongoing. |
| | 9.9 Transfer soil material and biomass removed beyond the first 18 to 24 months of mining directly to an active rehabilitation area, where practicable. | Ongoing. |
| | 9.10 Undertake progressive rehabilitation of all disturbed areas. | Ongoing. |
| | 9.11 Control noxious weeds at all times. | Ongoing. |
| | 9.12 Adopt a strategy to rehabilitate specific areas of the Project Site to native vegetation, create and / or improve habitat corridors on and adjacent to the Project Site, and protect areas of native vegetation from agricultural activities on NMPL land external to the Project Site. | Ongoing. |
| | 9.13 Maintain, expand and / or create several Koala habitat corridors to promote the linkage of remnant vegetation in the local area. | Ongoing. |

| Desired Outcome | Action | | Timing |
|---|---|---|---|
| **9. Flora and Fauna (cont'd)** | | | |
| | 9.14 | Conserve the existing native vegetation on the Project Site during the life of the proposal and in the final landform. | Ongoing. |
| | 9.15 | Carry out, where possible, tree removal, especially the mature trees in late spring and early autumn to avoid spring nesting birds and over-wintering bats. | Ongoing. |
| | 9.16 | Undertake inspections of mature trees for nesting birds and roosting bats prior to each clearing campaign where mature tree with hollows are to be removed. | Prior to clearing. |
| | 9.17 | Relocate any nesting and roosting hollows, as well as nests, used by listed threatened species to appropriate locations nearby. | Prior to clearing. |
| | 9.18 | Bury all stumps, branches and tree trunks from felled timber within the overburden emplacements. | Ongoing. |
| | 9.19 | Commence post-mining rehabilitation of the Box Cut area as soon as possible. Re-establish the connectivity of habitat corridor along Coocooboonah Lane. Commence post-mining establishment of the Koala habitat corridors between Coocooboonah Lane and the remnant woodlands south of the Project Site as soon as practicable to re-establish and enhance the connectivity of local Koala habitat corridors. | As early as possible during mining activity. |
| | 9.20 | Include a vertebrate pest control program as part of the mining operation and management plan. | Ongoing. |
| | 9.21 | Avoid the clearing of native vegetation along the road shoulders where the proposed coal transport route utilizes public roads. | Ongoing. |
| **10. Surface Water** | | | |
| Prevention of discharge of dirty, saline or contaminated water from the Project Site. | 10.1 | Securely store all hydrocarbon products in accordance with the approved Hydrocarbon Management Plan. | Ongoing. |
| | 10.2 | Refuel all of the NMPL's mining fleet within designated areas of the Project surface facilities. | Ongoing. |
| | 10.3 | Direct all water from wash-down areas and workshops to oil/water separators and containment systems. | Ongoing. |

| Desired Outcome | Action | Timing |
|---|---|---|
| **10. Surface Water (cont'd)** | | |
| Prevention of discharge of dirty, saline or contaminated water from the Project Site. | 10.4 Ensure all storage tanks are either self-bunded tanks or bunded with an impermeable surface and have a capacity to contain a minimum 110% of the largest storage tank capacity. | Ongoing. |
| | 10.5 Construct catchment banks / drains directing sediment-laden water to sediment basins. | Prior to commencing activities in relevant catchment. |
| | 10.6 Maintain groundcover on all land that is not being used for processing facilities, administration / maintenance facilities, roads, mining activities and the overburden emplacement. | Ongoing. |
| | 10.7 Add flocculants to dirty water within the sediment basins, if required, to expedite the settlement process. | Ongoing. |
| | 10.8 Implement the monitoring program nominated in the Environment Protection Licence to enable appropriate auditing and management. | Ongoing. |
| | 10.9 Record any periods when elevated levels of sediment occur in water discharged from site. | As required. |
| | 10.10 Enlarge the sediment basins or construct additional sediment basins, if required, to capture a minimum of a 5 day 90%ile storm event. | As required.<br>Ongoing. |
| Minimisation of erosion and sedimentation. | 10.11 Construct an additional storage dam downstream, if required. This dam would become the new site discharge point and monitoring location. | As required.<br>Ongoing. |
| | 10.12 Implement a 3-phase remedial action plan in the event of a major hydrocarbon spill. | As required.<br>Ongoing. |
| Adequate water is available for site dust suppression. | 10.13 Prepare an annual review of the water balance for management of surface and pit water. | Annually. |
| **11. Air Quality** | | |
| Site activities are undertaken without exceeding DECC air quality criteria or goals. | 11.1 Fence off all land which is not to be disturbed to encourage natural regeneration. | At start of mining. |
| | 11.2 Establish ground cover on disturbed areas and emplacement area as soon as possible. | Ongoing. |
| | 11.3 Undertake soil stripping at a time when there is sufficient soil moisture to prevent significant lift-off of dust. | Ongoing. |
| | 11.4 Avoid stripping soil in periods of high wind. | Ongoing. |
| | 11.5 Use water application for dust suppression to increase soil moisture should stripping occur during periods of high wind or low soil moisture. | As required. |

| Desired Outcome | Action | Timing |
|---|---|---|
| **11. Air Quality (cont'd)** | | |
| | 11.6 Utilise water injection on the drill rigs or alternatively fit them with dust collectors. | Ongoing. |
| | 11.7 Use aggregates for blast hole stemming to prevent venting of explosion gases. | Ongoing. |
| | 11.8 Conduct blasting both before the establishment, and after the break up of low-level atmospheric temperature inversions. | As required. |
| | 11.9 Avoid ripping of softer overburden material during periods of high wind. | As required. |
| | 11.10 Spray low moisture coal with water prior to excavation to raise moisture content to >6%. | As required. |
| | 11.11 Minimise clearing ahead of construction activities. | Ongoing. |
| | 11.12 Water cleared areas regularly during construction activities. | During construction. |
| | 11.13 Minimise clearing ahead of road construction. | During construction. |
| | 11.14 Water active construction areas regularly. | Ongoing. |
| Site activities are undertaken without exceeding DECC air quality criteria or goals. (Cont'd) | 11.15 Restrict truck speeds on roads under construction to <50kph. | During construction. |
| | 11.16 Apply water to the coal at the feed hopper, crusher and all conveyor transfer and discharge points at the rate of approximately 2.0L/t coal processed. | Ongoing. |
| | 11.17 Temporarily cease operation in the event of protracted dry periods, high winds and significant dust generation and dispersal towards the surrounding residences. | As required. |
| | 11.18 Minimise the extent of clearing / site preparation in advance of mining. | Ongoing. |
| | 11.19 Clearly define any access or haul roads and restrict vehicles and equipment to those roads. | Ongoing. |
| | 11.20 Routinely apply water with or without chemical dust suppressants. | Ongoing. |
| | 11.21 Progressively rehabilitate areas of disturbance including topsoil and subsoil stockpiles. | Ongoing. |
| | 11.22 Install bund walls and wind breaks as required. | Ongoing. |
| | 11.23 Regularly water haul roads. | Ongoing. |
| | 11.24 Avoid coal being loaded above the truck body sides. | Ongoing. |

| Desired Outcome | Action | Timing |
|---|---|---|
| **11. Air Quality (cont'd)** | | |
| | 11.25 Cover all trucks carrying product coal from the mine with approved covers and securely fix the tailgates to prevent windblown dust emission or spillages. | Ongoing. |
| | 11.26 Fit all earthmoving equipment on-site with exhaust controls which satisfy NSW DECC emission requirements. | Prior to commencing site activity.<br>Ongoing. |
| | 11.27 Ensure all equipment is properly maintained to ensure no unacceptable exhaust emissions occur and commit to the removal of any vehicle or item of mobile equipment from on-site activities which is observed not to comply with NSW DECC guidelines. | Ongoing. |
| | 11.28 Direct the exhausts of all equipment upwards or to the side so as not to impinge on the ground and cause dust lift-off. | Ongoing. |
| | 11.29 Undertake an air quality monitoring program to demonstrate compliance with the nominated goals specified in the Environment Protection Licence.<br>•1 Deposited dust at selected residences and strategic locations surrounding the Project Site.<br>•2 Continuous wind speed and direction at the Project Site weather station.<br>•3 $PM_{10}$ dust at a residence nearby six day cycle.<br>Refer Section 4B.5.8. | Ongoing.<br>Monthly / Ongoing<br>Continuous.<br>Six day cycle. |
| | 11.30 Avoid burning vegetation. | Ongoing. |
| | 11.31 Use water injection or dust collectors during drilling. | During drilling. |
| Site activities are undertaken without exceeding DECC air quality criteria or goals. (Cont'd) | 11.32 Avoid ripping softer overburden material during periods of high wind. | Ongoing. |
| | 11.33 Establish and maintain a dust monitoring program in line with recommended locations. | Ongoing. |
| | 11.34 Install and maintain an automatic weather station within the Project Site. | Established |
| Minimise Greenhouse Gas Emissions wherever possible. | 11.35 Adopt strategies to reduce GHG environs as nominated in EA Section 4B.5.5.4. | Ongoing. |
| Avoidance of accumulation of coal dust in domestic water tanks. | 11.36 Install first flush devices on the domestic water tanks at "Werona", "Ivanhoe"," Mulwalla"," Mulwalla (2)","Innisvale","Sugarloaf", "Lilydale", "Woodlawn", "Plain View", "Illili", "Glendower", "Ferndale" and"Eulalie". | Prior to recovery of coal. |

| Desired Outcome | Action | | Timing |
|---|---|---|---|
| **12. Aboriginal Heritage** | | | |
| Provide appropriate protection to identified Aboriginal artefacts. | 12.1 | Undertake medium sized blasts when open cut pit is near axe grinding groove. | As required. |
| | 12.2 | Cover axe grinding groove with straw bales to prevent possible fly rock damage when blasting is nearby. | As required. |
| Minimise potential to impact upon unidentified Aboriginal artefacts. | 12.3 | Invite Aboriginal monitors to site for all soil stripping and ground disturbance activities. Manage any sites detected in accordance with the relevant acts. | Ongoing. |
| | 12.4 | Cease work at any area if further Aboriginal objects are uncovered during the course of the Project, and contact the NSW DECC for advice. | Ongoing. |
| Employees who are sensitive and respectful of possible identified Aboriginal sites and artefacts. | 12.5 | Conduct a Cultural Heritage Awareness Induction Course for staff, contractors and any heritage monitors working on the Project Site to help raise awareness and ameliorate any impact on heritage sites during site establishment and subsequent mining activities. | During induction of employees/contractors. |
| **13. Visibility** | | | |
| Restriction of vantage points of Project activities from neighbouring residences and public roads. | 13.1 | Minimise cleared or non-vegetated areas by progressively rehabilitating the Project Site. | Ongoing. |
| | 13.2 | Design the overburden emplacements to as much as possible, replicate existing topographic features. | During planning and design. |
| | 13.3 | Minimise the extent of land disturbance / clearing in advance of mining. | Ongoing. |
| | 13.4 | Implement air quality controls as identified in Section 4B.5.5. | Ongoing. |
| | 13.5 | Maintain the mine and associated areas of disturbance in a clean and tidy condition at all times. | Ongoing. |
| . | 13.6 | Construct amenity bund around coal processing area to provide visual screening. | At start of Project. |
| The operation of the Siding Springs Observatory is not affected by Project operations. | 13.7 | Use a maximum of six lighting plants for night-time activities. | Ongoing. |
| | 13.8 | Position and direct floodlights to minimise emissions. | Ongoing. |
| Ongoing communication with neighbours. | 13.9 | Maintain regular communications with those residents whose visual amenity is affected by the Project and implement any reasonable additional controls to further reduce the impact on their visual amenity. | Ongoing. |

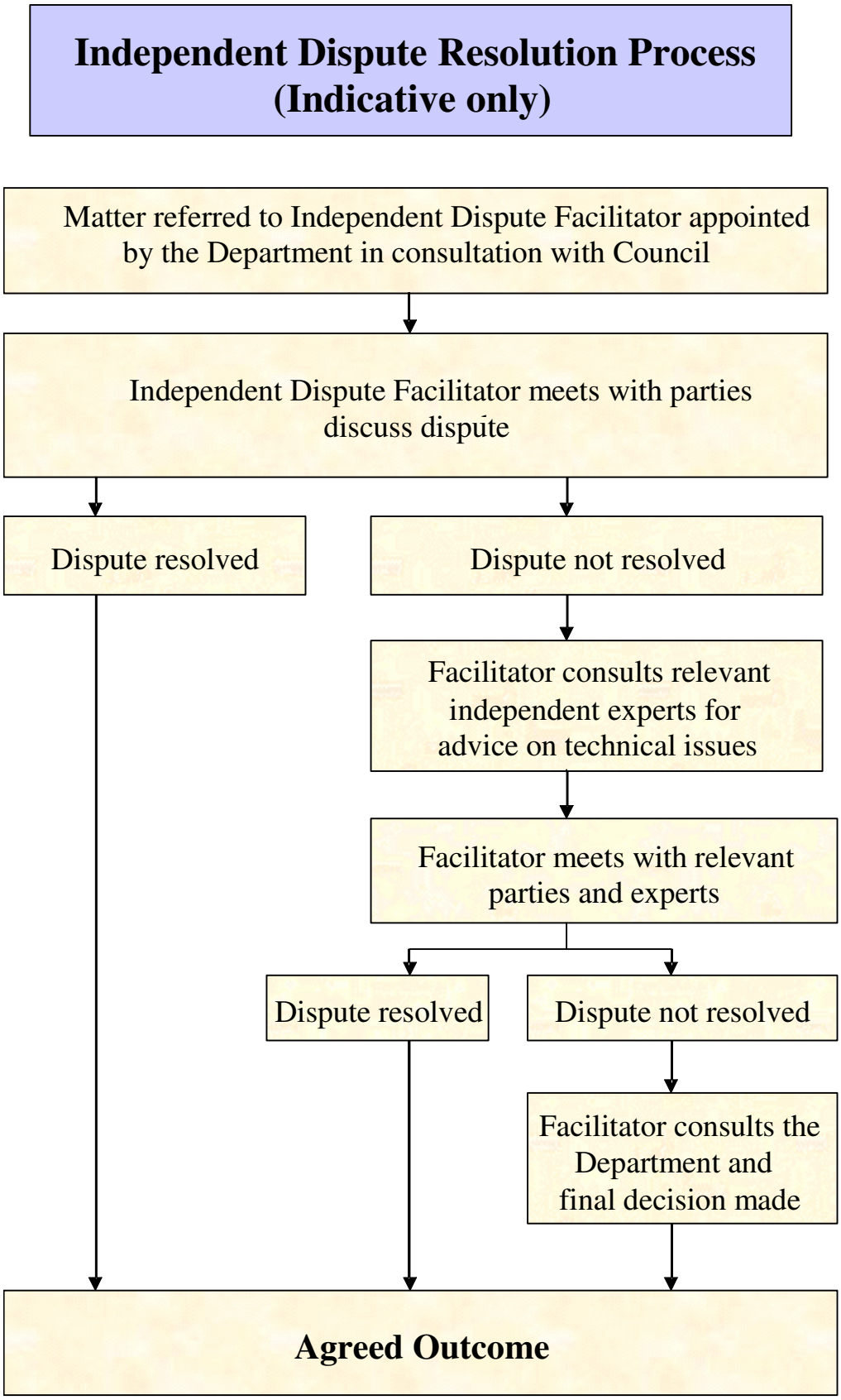
| Desired Outcome | Action | | Timing |
|---|---|---|---|
| **14. Soils, Land Capability and Agricultural Suitability** | | | |
| Maintenance of soil value for rehabilitation and minimisation of soil loss though erosion. | 14.1 | Strip topsoil from each SMU to a depth of 15cm. Stockpile topsoil for later retrieval and spreading over specific areas during the first 18 to 24 months of mine operations. Beyond this period, Project Site topsoil would be typically directly transferred onto sections of the final landform. | Ongoing. |
| | 14.2 | Strip subsoil from each SMU to a depth of 50cm below the topsoil. Stockpiles would be available for re-spreading as areas become available for rehabilitation. | Ongoing. |
| | 14.3 | Strip further subsoil to bedrock and segregate each SMU. | Ongoing. |
| | 14.4 | Place higher alkalinity soils over the surface of the overburden emplacement to provide neutralising capacity in the event pockets of acid forming rock are encountered. | Ongoing. |
| | 14.5 | Install erosion protection around stockpiles of this material with direct transfer from source to sink commenced as soon as practicable. | Ongoing. |
| | 14.6 | Topsoil stockpiles not exceed 2m in height and where practicable, be maintained as windrows in preference to larger structures. | Ongoing. |
| | 14.7 | Seed any stockpiles with a non-persistent cover crop as soon as possible after they have been established to reduce erosion potential and assist in the maintenance of the biological viability of the soil. | Ongoing. |
| | 14.8 | Subsoil stockpiles to generally not exceed 3m in height and typically be placed in larger stockpiles than the topsoil. | Ongoing. |
| | 14.9 | Maintain and regularly reconcile with rehabilitation requirements an inventory of soil resources present on the Project Site, ie. both in stockpiles and awaiting stripping. | Ongoing. |
| | 14.10 | Utilise water management structures to divert surface water flow away from soil stockpile areas to reduce the potential for erosion. | Ongoing. |
| | 14.11 | Place silt-stop fencing or similar immediately downslope of stockpiles where required, until stable vegetation cover is established. | Ongoing. |
| | 14.12 | Monitor erosion from soil stockpiles or rehabilitated surfaces throughout the life of the Project with remedial works undertaken should erosion be observed. | Ongoing. |

| Desired Outcome | Action | Timing |
|---|---|---|
| **14. Soils, Land Capability and Agricultural Suitability (cont'd)** | | |
| | 14.13 Undertake all clearing and topsoil stripping in campaigns on an as-needs basis. | Ongoing. |
| **15. Bushfire Controls** | | |
| Avoid fire initiation. | 15.1 Clear vegetation away from blast (>20m). | During blasting. |
| | 15.2 Remove all coal from open cut around blast. | As required. Ongoing |
| | 15.3 Undertake blast design by qualified personnel. | Ongoing. |
| | 15.4 Undertake refuelling within designated fuel bays or within cleared area of the Project Site. | Ongoing. |
| | 15.5 Turn vehicle engines off during refuelling. | Ongoing. |
| | 15.6 Enforce no smoking policy in designated areas of the Project Site. | Ongoing. |
| | 15.7 Maintain fire extinguishers within all site vehicles. | Ongoing. |
| | 15.8 Regularly inspect and water stockpiles. | Ongoing. |
| | 15.9 Control stockpile height and volume to limit the duration coal is retained in stockpiles. | Ongoing. |
| | 15.10 Maintenance of housekeeping by mine management. | Ongoing. |
| | 15.11 Ensure water cart is available to assist in extinguishing any fire ignited. | Ongoing. |
| **16. Socio-Economic** | | |
| | 16.1 Implement a policy which encourages employment of local district personnel with training and certification of suitable local persons provided. | During recruitment and induction. Ongoing. |
| | 16.2 Provide a local induction kit to any new workers (from outside the district) including contact details for community groups and services throughout the region. | New arrivals. Ongoing. |
| | 16.3 Inform Gunnedah Council of the predicted increase of population based on employment at the Project. | During recruitment. Ongoing. |
| | 16.4 Establish a community enhancement fund to the value of $500,000. | Five equal annual payments commencing within 3 months of the receipt of Project Approval. |

| Desired Outcome | Action | | Timing |
|---|---|---|---|
| **17. Rehabilitation** | | | |
| Ensure ongoing viable landuse post-mining. | 17.1 | Stabilise earthworks, drainage lines and disturbed areas no longer required for mine-related activities in order to minimise erosion and the associated generation of sediment-laden water, and to reduce the visibility of activities from adjacent properties and the local road network. | Ongoing. |
| | 17.2 | Provide a low maintenance, geotechnically snd safe landform which is commensurate with a variety of agricultural land uses and / or nature conservation. | Ongoing. |
| | 17.3 | Blend the created landforms with the surrounding land fabric as far as practicable. | Ongoing. |
| | 17.4 | Utilise native tree, shrub and grass species and / or pasture species comparable with either the existing vegetation communities or those which occurred in the area prior to mining and agriculture-related disturbance. | Ongoing. |
| | 17.5 | Rehabilitate out-of-pit emplacement with agricultural pasture species and incorporate random tree plantings. | Ongoing. |
| **18. Management Plans** | | | |
| Develop and implement a series of Management Plans to assist with appropriate control of potentially impacting activities. | 18.1 | Mining Operations Plan. | Prior to commencement of any site activities. |
| | 18.2 | Koala Management Plan. | Prior to commencing site activities. |
| | 18.3 | Vegetation Management Plan. | Prior to commencing site activities. |
| | 18.4 | Blast Monitoring Plan. | Prior to blasting commencing and ongoing. |
| | 18.5 | Surface Water Management Plan. | Already produced and to be updated prior to site activities. |
| | 18.6 | Waste Management Plan. | Within 6 months of the start of site establishment. |
| | 18.7 | Spontaneous Combustion Monitoring Plan. | Within 6 months of the start of mining operations. |
| | 18.8 | Hydrocarbon Management Plan. | Prior to commencing site activities. |
| | 18.9 | Mine Closure Plan. | At least 2 years prior to mine closure. |

| Desired Outcome | Action | | Timing |
|---|---|---|---|
| **18. Management Plans (cont'd)** | | | |
| | 18.10 | Prepare a Traffic Management Plan to ensure appropriate procedures are in place for public traffic during the realignment of Coocooboonah Lane and intersection upgrades – for submission with Section 138 permit applications to Gunnedah Shire Council and RTA. | Prior to commencement of the realignment of Coocooboonah Lane and intersection upgrades. |
| | 18.11 | Construction Noise Management Plan. | Prior to commencement of site activities. |
| | 18.12 | Operations Noise Management Plan. | Prior to commencing Project Operations stage. |
| | 18.13 | Traffic Noise Management Plan. | Prior to commencement of coal transportation. |
| | 18.14 | Air Quality Monitoring Plan. | Prior to commencing site activities. |
| | 18.15 | Groundwater Management Plan | Within 6 months of the start of mining operations. |
| | 18.16 | Archaeological Site Management Plan. | Prior to blasting commencing. |
| | 18.17 | Bushfire Management Plan. | Prior to commencing site activities. |

**APPENDIX 4**
**INDEPENDENT DISPUTE RESOLUTION PROCESS**



# Appendix 2

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# ENVIRONMENT PROTECTION

# LICENCE 12957

# Environment Protection Licence

Licence - 12957

| Licence Details | |
|---|---|
| Number: | 12957 |
| Anniversary Date: | 15-December |

| Licensee |
|---|
| NAMOI MINING PTY. LTD. |
| PO BOX 600 |
| GUNNEDAH NSW 2380 |

| Premises |
|---|
| SUNNYSIDE COAL PROJECT |
| 259 COOCOOBOONAH LANE |
| GUNNEDAH NSW 2380 |

| Scheduled Activity |
|---|
| Coal Works |
| Mining for Coal |

| Fee Based Activity | Scale |
|---|---|
| Coal works | 0-2000000 T handled |
| Mining for coal | > 500000-2000000 T produced |

| Region |
|---|
| North West - Armidale |
| Level 1, NSW Govt Offices, 85 Faulkner Street<br>ARMIDALE NSW 2350 |
| Phone: (02) 6773 7000 |
| Fax: (02) 6772 2336 |
| |
| PO Box 494 ARMIDALE |
| NSW 2350 |

# Environment Protection Licence

Licence - 12957

# Environment Protection Licence

Licence - 12957

# Environment Protection Licence

Licence - 12957

## Information about this licence

### Dictionary

A definition of terms used in the licence can be found in the dictionary at the end of this licence.

### Responsibilities of licensee

Separate to the requirements of this licence, general obligations of licensees are set out in the Protection of the Environment Operations Act 1997 ("the Act") and the Regulations made under the Act. These include obligations to:

- ensure persons associated with you comply with this licence, as set out in section 64 of the Act;
- control the pollution of waters and the pollution of air (see for example sections 120 - 132 of the Act); and
- report incidents causing or threatening material environmental harm to the environment, as set out in Part 5.7 of the Act.

### Variation of licence conditions

The licence holder can apply to vary the conditions of this licence. An application form for this purpose is available from the EPA.

The EPA may also vary the conditions of the licence at any time by written notice without an application being made.

Where a licence has been granted in relation to development which was assessed under the Environmental Planning and Assessment Act 1979 in accordance with the procedures applying to integrated development, the EPA may not impose conditions which are inconsistent with the development consent conditions until the licence is first reviewed under Part 3.6 of the Act.

### Duration of licence

This licence will remain in force until the licence is surrendered by the licence holder or until it is suspended or revoked by the EPA or the Minister. A licence may only be surrendered with the written approval of the EPA.

### Licence review

The Act requires that the EPA review your licence at least every 5 years after the issue of the licence, as set out in Part 3.6 and Schedule 5 of the Act. You will receive advance notice of the licence review.

### Fees and annual return to be sent to the EPA

For each licence fee period you must pay:

- an administrative fee; and
- a load-based fee (if applicable).

# Environment Protection Licence

Licence - 12957

The EPA publication “A Guide to Licensing” contains information about how to calculate your licence fees. The licence requires that an Annual Return, comprising a Statement of Compliance and a summary of any monitoring required by the licence (including the recording of complaints), be submitted to the EPA. The Annual Return must be submitted within 60 days after the end of each reporting period. See condition R1 regarding the Annual Return reporting requirements.

Usually the licence fee period is the same as the reporting period.

**Transfer of licence**

The licence holder can apply to transfer the licence to another person. An application form for this purpose is available from the EPA.

**Public register and access to monitoring data**

Part 9.5 of the Act requires the EPA to keep a public register of details and decisions of the EPA in relation to, for example:

- licence applications;
- licence conditions and variations;
- statements of compliance;
- load based licensing information; and
- load reduction agreements.

Under s320 of the Act application can be made to the EPA for access to monitoring data which has been submitted to the EPA by licensees.

## This licence is issued to:

| |
|---|
| **NAMOI MINING PTY. LTD.** |
| **PO BOX 600** |
| **GUNNEDAH NSW 2380** |

subject to the conditions which follow.

# Environment Protection Licence

Licence - 12957

## 1 Administrative Conditions

### A1 What the licence authorises and regulates

A1.1 This licence authorises the carrying out of the scheduled development work listed below at the premises listed in A2:
Construction of surface infrastructure including but not limited to access roads, intersection and surface facilities prior to mining.

A1.2 This licence authorises the carrying out of the scheduled activities listed below at the premises specified in A2. The activities are listed according to their scheduled activity classification, fee-based activity classification and the scale of the operation.

Unless otherwise further restricted by a condition of this licence, the scale at which the activity is carried out must not exceed the maximum scale specified in this condition.

| Scheduled Activity | Fee Based Activity | Scale |
|---|---|---|
| Coal Works | Coal works | 0 - 2000000 T handled |
| Mining for Coal | Mining for coal | > 500000 - 2000000 T produced |

A1.3 The licensee must not carry on any scheduled activities until the scheduled development works are completed, except as elsewhere provided in this licence.

### A2 Premises or plant to which this licence applies

A2.1 The licence applies to the following premises:

| Premises Details |
|---|
| **SUNNYSIDE COAL PROJECT** |
| **259 COOCOOBOONAH LANE** |
| **GUNNEDAH** |
| **NSW 2380** |
| **LOT 1 DP 393755, LOT 16 DP 755031, LOT 12 DP 755503, LOT 162 DP 755503** |

### A3 Information supplied to the EPA

A3.1 Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.

In this condition the reference to "the licence application" includes a reference to:
a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998; and

b) the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence.

# 2 Discharges to Air and Water and Applications to Land

## P1 Location of monitoring/discharge points and areas

P1.1 The following points referred to in the table below are identified in this licence for the purposes of monitoring and/or the setting of limits for the emission of pollutants to the air from the point.

***Air***

| EPA identification no. | Type of Monitoring Point | Type of Discharge Point | Location Description |
|---|---|---|---|
| 1 | Ambient Air Monitoring | | Deposited dust location labelled 'SD1' on property Ferndale identified on Figure titled "Sunnyside Coal Mine - Air Quality Monitoring Network and Sunnyside Meteorological Station, 10 December 2008" submitted to DECC in email dated 12 December 2008. |
| 2 | Ambient Air Monitoring | | Deposited dust location labelled 'SD3' on property PlainView identified on Figure titled "Sunnyside Coal Mine - Air Quality Monitoring Network and Sunnyside Meteorological Station, 10 December 2008" submitted to DECC in email dated 12 Dec 2008. |
| 4 | Ambient Air Monitoring | | Deposited dust location labelled 'SD5' on property Ivanhoe identified on Figure titled "Sunnyside Coal Mine - Air Quality Monitoring Network and Sunnyside Meteorological Station, 10 December 2008" submitted to DECC in email dated 12 December 2008. |
| 5 | Ambient Air Monitoring | | Deposited dust location labelled 'SD6' on property Illili identified on Figure titled "Sunnyside Coal Mine - Air Quality Monitoring Network and Sunnyside Meteorological Station, 10 December 2008" submitted to DECC in email dated 12 December 2008. |
| 6 | Ambient Air Monitoring | | Deposited dust location labelled 'SD7' on property Innisvale identified on Figure titled "Sunnyside Coal Mine - Air Quality Monitoring Network and Sunnyside Meteorological Station, 10 December 2008" submitted to DECC in email dated 12 December 2008. |

# Environment Protection Licence

Licence - 12957

| | | |
|---|---|---|
| 7 | Ambient Air Monitoring | PM10 location labelled 'SA1' on property Illili identified on Figure titled "Sunnyside Coal Mine - Air Quality Monitoring Network and Sunnyside Meteorological Station, 10 December 2008" submitted to DECC in email dated 12 December 2008. |

P1.2 The following points referred to in the table are identified in this licence for the purposes of the monitoring and/or the setting of limits for discharges of pollutants to water from the point.

P1.3 The following utilisation areas referred to in the table below are identified in this licence for the purposes of the monitoring and/or the setting of limits for any application of solids or liquids to the utilisation area.

***Water and land***

| EPA Identification no. | Type of Monitoring Point | Type of Discharge Point | Location Description |
|---|---|---|---|
| 9 | Wet weather discharge<br><br>Discharge water quality monitoring | Wet weather discharge<br><br>Discharge water quality monitoring | Discharge point from Storage Dam 3 located on northern side of premises labelled "SD3" on figure ttitled "Proposed Wet Weather Discharge Monitoring Points" submitted with licence variation application dated 14 May 2009. |
| 10 | Wet weather discharge<br><br>Discharge water quality monitoring | Wet weather discharge<br><br>Discharge water quality monitoring | Discharge point from Storage Dam 4 located on northern side of premises labelled "SD4" on figure ttitled "Proposed Wet Weather Discharge Monitoring Points" submitted with licence variation application dated 14 May 2009. |
| 11 | Ambient water quality monitoring | | Monitoring point on Coocooboonah Creek upstream of project site labelled "CCUS" on figure ttitled "Proposed Wet Weather Discharge Monitoring Points" submitted with licence variation application dated 14 May 2009. |
| 12 | Ambient water quality monitoring | | Monitoring point on Coocooboonah Creek downstream of project site labelled "CCDS" on figure ttitled "Proposed Wet Weather Discharge Monitoring Points" submitted with licence variation application dated 14 May 2009. |

P1.4 The following point(s) in the table are identified in this licence for the purpose of the monitoring of weather parameters at the point.

| EPA identification number | Type of monitoring point | Description of location |
|---|---|---|

| | | |
|---|---|---|
| W1 | Weather analysis | Weather monitoring station on Sunnyside labelled as W1in figure titled "Sunnyside Coal Mine - Air Quality Monitoring Network and Sunnyside Meteorological Station, dated 10 December 2008" |

# 3 Limit Conditions

## L1 Pollution of waters

L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

## L2 Concentration limits

L2.1 For each monitoring/discharge point or utilisation area specified in the table\s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.

L2.4 Water and/or Land Concentration Limits

**POINT 9,10**

| Pollutant | Units of Measure | 50 percentile concentration limit | 90 percentile concentration limit | 3DGM concentration limit | 100 percentile concentration limit |
|---|---|---|---|---|---|
| Oil and Grease | milligrams per litre | - | - | - | 10 |
| pH | pH | - | - | - | 6.5 - 8.5 |
| Total suspended solids | milligrams per litre | - | - | - | 50 |

L2.5 The Total Suspended Solids concentration limits specified for Points 9 and 10 may be exceeded for water discharged provided that:

(a) the discharge occurs solely as a result of rainfall measured at the premises that exceeds

38.4 millimetres over any consecutive 5 day period immediately prior to the discharge occurring; and

(b) all practical measures have been implemented to dewater all sediment dams within 5 days of rainfall such that they have sufficient capacity to store run off from a 38.4 millimetre, 5 day rainfall event.

Note: 38.4 mm equates to the 5 day 90%ile rainfall depth for Gunnedah sourced from Table 6.3a Managing Urban Stormwater: Soils and Construction Volume 1: 4th edition, March 2004.

## L3 Waste

L3.1 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L3.2 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence.

## L4 Noise limits

L4.1 Noise generated at the premises must not exceed the noise limits in the table below.

| Locality and Location | Day- LAeq (15 minute) | Evening- LAeq (15 minute) | Night- LAeq (15 minute) | Night- LA1 (1 minute) |
|---|---|---|---|---|
| All surrounding residences | 35 | 35 | 35 | 45 |

L4.2 For the purpose of the table above:

a) Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays;
b) Evening is defined as the period from 6pm to 10pm;
c) Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays.

L4.3 **Determining Compliance**

To determine compliance:
a) with the Leq(15 minute) noise limits in the Noise Limits table, the noise measurement equipment must be located:
i) approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or
ii) within 30 metres of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable

iii) within approximately 50 metres of the boundary of a National Park or a Nature Reserve.
b) with the LA1(1 minute) noise limits in the Noise Limits table, the noise measurement equipment must be located within 1 metre of a dwelling façade.
c) with the noise limits in the Noise Limits table, the noise measurement equipment must be located:
i) at the most affected point at a location where there is no dwelling at the location; or
ii) at the most affected point within an area at a location prescribed by part (a) or part (b) of this condition.

L4.4 The noise limits set out in the Noise Limits table apply under all meteorological conditions except for the following:
a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or
b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
c) Stability category G temperature inversion conditions.

For the purposes of this condition:
a) Data recorded by the meteorological station identified as EPA Identification Point(s) W1 must be used to determine meteorological conditions; and
b) Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.

L4.5 For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

L4.6 The noise limits set by this licence do not apply where a current legally binding agreement exists between the licensee and the occupant of a residential property that:

a) agrees to an alternative noise limit for that property; or

b) provides an alternative means of compensation to address noise impacts from the premises.

A copy of any agreement must be provided to the EPA before the licensee can take advantage of the agreement.

## L5 Blasting

L5.1 The airblast overpressure level from blasting operations at the premises must not exceed 115dB (Lin Peak) at any noise sensitive locations for more than five per cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L5.2 The airblast overpressure level from blasting operations at the premises must not exceed 120dB (Lin Peak) at any time at any noise sensitive locations. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L5.3 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 5mm/sec at any noise sensitive locations for more than five per cent of the total number of blasts over each reporting period. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

L5.4 Ground vibration peak particle velocity from the blasting operations at the premises must not exceed 10mm/sec at any time at any noise sensitive locations. Error margins associated with any monitoring equipment used to measure this are not to be taken into account in determining whether or not the limit has been exceeded.

## L6 Hours of operation

L6.1 Construction activities covered by this licence must only be carried out between the hours of 0700 to 1800 hrs Monday to Friday and between 0700 and 1600 hrs Saturday and at no time on Sundays and Public Holidays.

L6.2 Mining operations covered by this licence (other than transport of coal from the premises and blasting) must only be carried out between the hours of 0700 and 2200 hrs Monday to Friday, and 0700 and 1800 hrs Saturday, and at no time on Sundays and Public Holidays.

L6.3 Transportation of coal from the premises must only be carried out between the hours of 0700 and 1800 (Eastern Standard Time) hrs Monday to Friday, and 0700 and 2000 hrs (Eastern Summer Time) Monday to Friday, and 0700 to 1600 hrs on Saturdays, and at no time on Sundays and Public Holidays.

L6.4 Blasting in or on the premises must only be carried out between the hours of 1000 and 1700 hours Monday to Friday, and 1000 and 1400 hrs on Saturdays, and no time on Sundays and Public Holidays.

L6.5 Conditions L6.1, L6.2, L6.3 and L6.4 do not apply to the delivery of material, and mining operation, if required by police or other authorities for safety reasons; and/or the operation or personnel or equipment are endangered. In such circumstances notification must be provided to the EPA and affected residents as soon as practicable.

L6.6 The hours of operation specified in conditions L6.1, L6.2, L6.3 and L6.4 may be varied with written consent if the EPA is satisfied that the amenity of the residents in the locality will not be adversely affected.

## L7 Other limit conditions

L7.1 Extraction limits

The maximum tonnage of extraction of ROM coal at the premises during the reporting period must not exceed 1 million tonnes

# Environment Protection Licence

Licence - 12957

## 4 Operating Conditions

### O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

### O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

### O3 Dust

O3.1 All operations and activities occurring at the premises must be carried out in a manner that will minimise the emission of dust from the premises.

O3.2 Trucks transporting coal from the premises must be covered immediately after loading to prevent wind blown emissions and spillage. The covering must be maintained until immediately before unloading the trucks.

## 5 Monitoring and Recording Conditions

### M1 Monitoring records

M1.1 The results of any monitoring required to be conducted by this licence or a load calculation protocol must be recorded and retained as set out in this condition.

M1.2 All records required to be kept by this licence must be:
a) in a legible form, or in a form that can readily be reduced to a legible form;
b) kept for at least 4 years after the monitoring or event to which they relate took place; and
c) produced in a legible form to any authorised officer of the EPA who asks to see them.

M1.3 The following records must be kept in respect of any samples required to be collected for the purposes of this licence:
a) the date(s) on which the sample was taken;
b) the time(s) at which the sample was collected;
c) the point at which the sample was taken; and
d) the name of the person who collected the sample.

# Environment Protection Licence

Licence - 12957

## M2 Requirement to monitor concentration of pollutants discharged

M2.1 For each monitoring/discharge point or utilisation area specified below (by a point number), the licensee must monitor (by sampling and obtaining results by analysis) the concentration of each pollutant specified in Column 1. The licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns:

M2.2 Air Monitoring Requirements

**POINT 1,2,4,5,6**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Particulates - Deposited Matter | grams per square metre per month | Continuous | AM-19 |

**POINT 7**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| PM10 | micrograms per cubic metre | Every 6 days | AM-18 |

M2.3 Water and/ or Land Monitoring Requirements

**POINT 9,10**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Conductivity | microsiemens per centimetre | Special Frequency 1 | In situ |
| Oil and Grease | milligrams per litre | Special Frequency 1 | Grab sample |
| pH | pH | Special Frequency 1 | In situ |
| Total organic carbon | milligrams per litre | Special Frequency 1 | Grab sample |
| Total suspended solids | milligrams per litre | Special Frequency 1 | Grab sample |

**POINT 11,12**

| Pollutant | Units of measure | Frequency | Sampling Method |
|---|---|---|---|
| Conductivity | microsiemens per centimetre | Special Frequency 2 | In situ |
| Oil and Grease | milligrams per litre | Special Frequency 2 | Grab sample |
| pH | pH | Special Frequency 2 | In situ |
| Total organic carbon | milligrams per litre | Special Frequency 2 | Grab sample |
| Total suspended solids | milligrams per litre | Special Frequency 2 | Grab sample |

M2.4 For the purposes of the table(s) above Special Frequency 1 means the collection of samples as soon as practicable after each discharge commences and in any case not more than 12 hours after each discharge commences.

M2.5 For the purposes of the table(s) above Special Frequency 2 means the collection of samples quarterly (in the event of a flow during the quarter) at a time when there is flow and as soon as practicable after each wet weather discharge from points 9 and 10 commences and in any case not more than 12 hours after each discharge commences.

Note: Water monitoring requirements will be included as part of a licence variation following completion of construction works of the approved site water management plan as documented in the report “Site Water Management Plan for the Sunnyside Coal Mine, Namoi Mining Pty. Ltd., 8/8/2008”

Note: Groundwater monitoring points have not been formally included in the licence. However, the licensee is required to undertake groundwater monitoring in accordance with a Department of Planning approved Water Management Plan required under Schedule 3, condition 2 Project Approval 06-0308 dated 24 May 2008. The licensee has submitted the document “Site Water Management Plan for the Sunnyside Coal Mine, Namoi Coal Mining Pty Ltd, 2008.” This document has been approved by Planning following consultation by the licensee with the EPA. The results of this monitoring are required to be reported in the Annual Environmental Management Report (AEMR) and submitted to the EPA under the conditions of approval.

## M3 Testing methods - concentration limits

M3.1 Monitoring for the concentration of a pollutant emitted to the air required to be conducted by this licence must be done in accordance with:
a) any methodology which is required by or under the Act to be used for the testing of the concentration of the pollutant; or
b) if no such requirement is imposed by or under the Act, any methodology which a condition of this licence requires to be used for that testing; or
c) if no such requirement is imposed by or under the Act or by a condition of this licence, any methodology approved in writing by the EPA for the purposes of that testing prior to the testing taking place.

Note: The *Protection of the Environment Operations (Clean Air) Regulation 2010* requires testing for certain purposes to be conducted in accordance with test methods contained in the publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW".

M3.2 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

## M4 Weather monitoring

M4.1 For each monitoring point specified in the table below, the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1. The licensee must use the sampling method, units of measure, averaging period and sample at the frequency, specified opposite in the other columns.

Point W1

| Parameter | Units of Measure | Frequency | Averaging Period | Sampling Method |
|---|---|---|---|---|
| Rainfall | mm/h | Continuous | 1 hour | AM-4 |
| Wind speed @10 metres | m/s | Continuous | 15 minute | AM-2 & AM-4 |
| Wind direction @10 metres | ° | Continuous | 15 minute | AM-2 & AM-4 |
| Temperature @2 metres | °C | Continuous | 15 minute | AM-4 |
| Temperature @10 metres | °C | Continuous | 15 minute | AM-4 |
| Sigma theta @10 metres | ° | Continuous | 15 minute | AM-2 & AM-4 |
| Solar radiation | W/m2 | Continuous | 15 minute | AM-4 |
| Additional requirements - Siting | - | - | - | AM-1 & AM-4 |
| Additional requirements - Measurement | - | - | - | AM-2 & AM-4 |

M4.2 The meteorological weather station must be maintained so as to be capable of continuously monitoring the parameters specified in this section.

## M5 Recording of pollution complaints

M5.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M5.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M5.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M5.4 The record must be produced to any authorised officer of the EPA who asks to see them.

## M6 Telephone complaints line

M6.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M6.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

M6.3 The preceding two conditions do not apply until 3 months after:
a) the date of the issue of this licence or
b) if this licence is a replacement licence within the meaning of the Protection of the Environment Operations (Savings and Transitional) Regulation 1998, the date on which a copy of the licence was served on the licensee under clause 10 of that regulation.

## M7 Blasting

M7.1 To determine compliance with condition(s) L5.1, L5.2, L5.3 and L5.4:

a) Airblast overpressure and ground vibration levels experienced at the following noise sensitive locations must be measured and recorded for all blasts carried out in or on the premises;
- and electronically recorded at receptors R1, R2, R4 and R6

b) Instrumentation used to measure the airblast overpressure and ground vibration levels must meet the requirements of Australian Standard AS 2187.2-2006.

Note: A breach of the licence will still occur where airblast overpressure or ground vibration levels from the blasting operations at the premises exceeds the limit specified in this licence at any “noise sensitive locations” other than the locations identified in the above condition.

M7.2 For the purpose of conditions M8.1 and M9.1, the noise monitoring locations are described as:

| EPA identification number | Description of location |
|---|---|
| R1 | Property ‘Innisvale’ residence |
| R2 | Property ‘Ivanhoe’ residence |
| R4 | Property ‘Illili’ residence |
| R5 | Property “Ferndale” residence |
| R6 | Property ‘Plain View’ residence |

Note: The location, frequency of monitoring and the parameters to be monitored may be varied by

the EPA once the variability of the noise impact is established.

### M8 Other monitoring and recording conditions

M8.1 For each monitoring point specified below, the Licensee must monitor the noise or vibration parameter specified in Column 1. The Licensee must use the sampling method, units of measure, and sample at the frequency, specified opposite in the other columns.

POINTS: R2, R4, R5, and R6

| Parameter | Units of Measure | Frequency | Sampling Method |
|---|---|---|---|
| Ambient Noise | LAeq (15 minute)<br>LAmax<br>LA10<br>LA90<br>LAmin | Frequency of monitoring as detailed in the document "Noise Monitoring Program for the Sunnyside Coal Project, incorporating a Noise Management Protocol and Noise Monitoring Program, Namoi Mining Pty. Ltd, dated 1/8/08" | Type 1 Noise Meter – Attended monitoring as detailed in the document "Noise Monitoring Program for the Sunnyside Coal Project, incorporating a Noise Management Protocol and Noise Monitoring Program, Namoi Mining Pty. Ltd, dated 1/8/08" |

M8.2 To assess compliance with the noise limits presented in the Noise Limits table, attended noise monitoring must be undertaken in accordance with the condition titled Determining Compliance, outlined above, and:
a) at each one of the locations listed in the Noise Limits table;
b) occur $Parameter1$ in a reporting period;
c) occur during each day and evening period as defined in the NSW Industrial Noise Policy for a minimum of:
i) 1.5 hours during the day; and
ii) 30 minutes during the evening.
d) occur for three consecutive operating days.

## 6 Reporting Conditions

### R1 Annual return documents

R1.1 The licensee must complete and supply to the EPA an Annual Return in the approved form comprising:
a) a Statement of Compliance; and
b) a Monitoring and Complaints Summary.
At the end of each reporting period, the EPA will provide to the licensee a copy of the form that must be completed and returned to the EPA.

R1.2 An Annual Return must be prepared in respect of each reporting period, except as provided below.

# Environment Protection Licence



Note: The term "reporting period" is defined in the dictionary at the end of this licence. Do not complete the Annual Return until after the end of the reporting period.

R1.3 Where this licence is transferred from the licensee to a new licensee:
a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and
b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period.

Note: An application to transfer a licence must be made in the approved form for this purpose.

R1.4 Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:
a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or
b) in relation to the revocation of the licence - the date from which notice revoking the licence operates.

R1.5 The Annual Return for the reporting period must be supplied to the EPA by registered post not later than 60 days after the end of each reporting period or in the case of a transferring licence not later than 60 days after the date the transfer was granted (the 'due date').

R1.6 The licensee must retain a copy of the Annual Return supplied to the EPA for a period of at least 4 years after the Annual Return was due to be supplied to the EPA.

R1.7 Within the Annual Return, the Statement of Compliance must be certified and the Monitoring and Complaints Summary must be signed by:
a) the licence holder; or
b) by a person approved in writing by the EPA to sign on behalf of the licence holder.

R1.8 A person who has been given written approval to certify a certificate of compliance under a licence issued under the Pollution Control Act 1970 is taken to be approved for the purpose of this condition until the date of first review of this licence.

## R2 Notification of environmental harm

Note: The licensee or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the Act.

R2.1 Notifications must be made by telephoning the Environment Line service on 131 555.

R2.2 The licensee must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred.

# Environment Protection Licence



## R3 Written report

R3.1 Where an authorised officer of the EPA suspects on reasonable grounds that:
a) where this licence applies to premises, an event has occurred at the premises; or
b) where this licence applies to vehicles or mobile plant, an event has occurred in connection with the carrying out of the activities authorised by this licence,
and the event has caused, is causing or is likely to cause material harm to the environment (whether the harm occurs on or off premises to which the licence applies), the authorised officer may request a written report of the event.

R3.2 The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request.

R3.3 The request may require a report which includes any or all of the following information:
a) the cause, time and duration of the event;
b) the type, volume and concentration of every pollutant discharged as a result of the event;
c) the name, address and business hours telephone number of employees or agents of the licensee, or a specified class of them, who witnessed the event;
d) the name, address and business hours telephone number of every other person (of whom the licensee is aware) who witnessed the event, unless the licensee has been unable to obtain that information after making reasonable effort;
e) action taken by the licensee in relation to the event, including any follow-up contact with any complainants;
f) details of any measure taken or proposed to be taken to prevent or mitigate against a recurrence of such an event; and
g) any other relevant matters.

R3.4 The EPA may make a written request for further details in relation to any of the above matters if it is not satisfied with the report provided by the licensee. The licensee must provide such further details to the EPA within the time specified in the request.

## R4 Other reporting conditions

R4.1 BLAST REPORTING

R4.2 The licensee must report any exceedence of the licence blasting limits to the regional office of the EPA as soon as practicable after the exceedence becomes known to the licensee or to one of the licensee's employees or agents.

R4.3 The results of the blast monitoring required by this licence must be submitted to the EPA at the end of each reporting period.

R4.4 A noise compliance assessment report must be submitted to the EPA within thirty (30) days of the completion of the quarterly noise monitoring. The assessment must be prepared by a suitably qualified and experienced acoustical consultant and include:
a) an assessment of compliance with noise limits detailed in the limit conditions of this licence; and
b) an outline of any management actions taken within the monitoring period to address any

exceedences of the limits detailed in the limit conditions of this licence.

# 7 General Conditions

## G1 Copy of licence kept at the premises or plant

G1.1 A copy of this licence must be kept at the premises to which the licence applies.

G1.2 The licence must be produced to any authorised officer of the EPA who asks to see it.

G1.3 The licence must be available for inspection by any employee or agent of the licensee working at the premises.

# 8 Pollution Studies and Reduction Programs

## U1 PRP 1: Coal Mine Particulate Matter Control Best Practice

U1.1 The Licensee must conduct a site specific Best Management Practice (BMP) determination to identify the most practicable means to reduce particle emissions.

U1.2 The Licensee must prepare a report which includes, but is not necessarily limited to, the following:
- identification, quantification and justification of existing measures that are being used to minimise particle emissions;
- identification, quantification and justification of best practice measures that could be used to minimise particle emissions;
- evaluation of the practicability of implementing these best practice measures; and
- a proposed timeframe for implementing all practicable best practice measures.

In preparing the report, the Licensee must utilise the document entitled Coal Mine Particulate Matter Control Best Practice – Site Specific Determination Guideline - November 2011.

U1.3 All cost related information is to be included as Appendix 1 of the Report required by condition U1.2 above.

U1.4 The report required by condition U1.2 must be submitted by the Licensee to the Environment Protection Authority, Manager Armidale Region, at PO Box 494 Armidale NSW 2350 by 29 June 2012.

U1.5 The report required by condition U1.2 above, except for cost related information contained in Appendix 1 of the Report, must be made publicly available by the Licensee on the Licensee's website 6 July 2012.

# Environment Protection Licence

Licence - 12957

## Dictionary

### General Dictionary

| | |
|---|---|
| **3DGM [in relation to a concentration limit]** | Means the three day geometric mean, which is calculated by multiplying the results of the analysis of three samples collected on consecutive days and then taking the cubed root of that amount. Where one or more of the samples is zero or below the detection limit for the analysis, then 1 or the detection limit respectively should be used in place of those samples |
| **Act** | Means the Protection of the Environment Operations Act 1997 |
| **activity** | Means a scheduled or non-scheduled activity within the meaning of the Protection of the Environment Operations Act 1997 |
| **actual load** | Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009 |
| **AM** | Together with a number, means an ambient air monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*. |
| **AMG** | Australian Map Grid |
| **anniversary date** | The anniversary date is the anniversary each year of the date of issue of the licence. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act. |
| **annual return** | Is defined in R1.1 |
| **Approved Methods Publication** | Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009 |
| **assessable pollutants** | Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009 |
| **BOD** | Means biochemical oxygen demand |
| **CEM** | Together with a number, means a continuous emission monitoring method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*. |
| **COD** | Means chemical oxygen demand |
| **composite sample** | Unless otherwise specifically approved in writing by the EPA, a sample consisting of 24 individual samples collected at hourly intervals and each having an equivalent volume. |
| **cond.** | Means conductivity |
| **environment** | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| **environment protection legislation** | Has the same meaning as in the Protection of the Environment Administration Act 1991 |
| **EPA** | Means Environment Protection Authority of New South Wales. |
| **fee-based activity classification** | Means the numbered short descriptions in Schedule 1 of the Protection of the Environment Operations (General) Regulation 2009. |
| **general solid waste (non-putrescible)** | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |

# Environment Protection Licence

Licence - 12957

| | |
|---|---|
| **flow weighted composite sample** | Means a sample whose composites are sized in proportion to the flow at each composites time of collection. |
| **general solid waste (putrescible)** | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environmen t Operations Act 1997 |
| **grab sample** | Means a single sample taken at a point at a single time |
| **hazardous waste** | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |
| **licensee** | Means the licence holder describe d at the front of this licence |
| **load calculation protocol** | Has the same meaning as in the Protection of the Environment Operations (General) Regulation 2009 |
| **local authority** | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| **material harm** | Has the same meaning as in section 147 Protection of the Environment Operations Act 1997 |
| **MBAS** | Means methylene blue active substances |
| **Minister** | Means the Minister administering the Protection of the Environment Operations Act 1997 |
| **mobile plant** | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |
| **motor vehicle** | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| **O&G** | Means oil and grease |
| **percentile [in relation to a concentration limit of a sample]** | Means that percentage [eg.50%] of the number of samples taken that must meet the concentration limit specified in the licence for that pollutant over a specified period of time. In this licence, the specified period of time is the Reporting Period unless otherwise stated in this licence. |
| **plant** | Includes all plant within the meaning of the Protection of the Environment Operations Act 1997 as well as motor vehicles. |
| **pollution of waters [or water pollution]** | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| **premises** | Means the premises described in condition A2.1 |
| **public authority** | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| **regional office** | Means the relevant EPA office referred to in the Contacting the EPA document accompanying this licence |
| **reporting period** | For the purposes of this licence, the reporting period means the period of 12 months after the issue of the licence, and each subsequent period of 12 mo nths. In the case of a licence continued in force by the Protection of the Environment Operations Act 1997, the date of issue of the licence is the first anniversary of the date of issue or last renewal of the licence following the commencement of the Act. |
| **restricted solid waste** | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |
| **scheduled activity** | Means an activity listed in Schedule 1 of the Protection of the Environment Operations Act 1997 |
| **special waste** | Has the same meaning as in Part 3 of Schedule 1 of the Protection of the Environment Operations Act 1997 |
| **TM** | Together with a number, means a test method of that number prescribed by the *Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales*. |

# Environment Protection Licence

Licence - 12957

| | |
|---|---|
| **TSP** | Means total suspended particles |
| **TSS** | Means total suspended solids |
| **Type 1 substance** | Means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements |
| **Type 2 substance** | Means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements |
| **utilisation area** | Means any area shown as a utilisation area on a map submitted with the application for this licence |
| **waste** | Has the same meaning as in the Protection of the Environment Operations Act 1997 |
| **waste type** | Means liquid, restricted solid waste, general solid waste (putrescible), general solid waste (non-putrescible), special waste or hazardous waste |

Mr Stephen O'Donoghue

Environment Protection Authority

(By Delegation)

Date of this edition: 15-December-2008

## End Notes

1 Licence varied by notice 1103274, issued on 18-Aug-2009, which came into effect on 18-Aug-2009.

2 Licence varied by notice 1126972, issued on 13-Jul-2011, which came into effect on 13-Jul-2011.

3 Licence varied by notice 1503266 issued on 20-Dec-2011

4 Licence varied by notice 1503675 issued on 15-Jun-2012

# Appendix 3

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## COMPLIANCE REVIEWS

- PA 06_0308 (Table A3-1)
- Environment Protection Licence No 12957 (Table A3-2)
- ML 1624 (Table A3-3)

## TABLE A3.1

## Compliance Review – PA 06_0308

| Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| **Schedule 2: Administrative Conditions** | | | |
| 1. | The Proponent shall implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the project. | Yes | Activities on site are undertaken on the basis of minimising harm to the environment. |
| 2. | The Proponent shall carry out the project generally in accordance with the:<br>a) EA;<br>b) Sunnyside Coal Project Response to Public and government Agency Submissions Government Agency Submissions (June 2008);<br>c) Sunnyside Coal Project Supplementary Response to Submissions (July 2008)<br>d) Statement of Commitments (see Appendix 3); and<br>e) Conditions of this approval. | Yes | The activities on site were being undertaken in accordance with the nominated documents. |
| 3. | If there is an inconsistency between the above documents, the latter document shall prevail to the extent of the inconsistency. However, the conditions of this approval shall prevail to the extent of any inconsistency. | Not Applicable | |
| 4. | The Proponent shall comply with any reasonable and feasible requirements of the Director-General arising from the Departments assessment of:<br>(a) any reports, plans, programs, strategies or correspondence that are submitted in accordance with the conditions of this approval; and<br>(b) the implementation of any actions or measures contained in these reports, plans, programs, strategies or correspondence. | Yes | Any requests by the Department have been addressed. |
| 5. | Mining operations may take place on the site for 7 years from the grant of the mining lease for the project.<br>*Note: Under this Approval, the Proponent is required to rehabilitate the site to the satisfaction of the Director-General and DPI. Consequently this approval will continue to apply in all other respects other than the right to conduct mining operations until the site has been rehabilitated to a satisfactory standard.* | Not Yet Applicable | |
| 6. | The Proponent shall not extract more than 1 million tonnes of ROM coal a year from the site. | Yes | During the reporting period 690,014 tonnes of ROM coal was extracted. |
| 7. | The Proponent shall use the coal transport route shown in Figure 2 of Appendix 2 to transport all coal from the site to the Whitehaven Siding CHPP. | Yes | As per condition. |
| 8. | Construction activities may take place only between 7 am to 6 pm each Monday to Friday and 7 am to 4pm on Saturdays, and not on Public Holidays. | Yes | All construction activities were undertaken within the hours set out in this condition. |
| 9. | Mining operations may take place only between 7 am to 10 pm each Monday to Friday and 7 am to 6 pm on Saturdays, and not on Public Holidays. | Yes | As per condition. |
| 10. | Transport of coal may take place only between 7 am to 6 pm Monday to Friday (or between 7 am to 8 pm during Eastern Summer Time) and between 7 am to 4 pm on Saturdays, and not on Public Holidays. | Yes | As per condition. |

| Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| 11. | With the approval of the Director-General, the Proponent may submit any management plan or monitoring program required by this approval on a progressive basis. | Not Applicable | |
| 12. | The Proponent shall ensure that all new buildings and structures, and any alterations or additions to existing buildings and structures, are constructed in accordance with the relevant requirements of the BCA.<br>*Notes:*<br>• *Under Part 4A of the EP&A Act, the Proponent is required to obtain construction and occupation certificates for the proposed building works.*<br>• *Part 8 of the EP&A Regulation sets out the requirements for the certification of the project.* | Yes | As per condition. |
| 13. | The Proponent shall ensure that all demolition work is carried out in accordance with *Australian Standard 2601-2001: The Demolition of Structures*, or its latest version. | Not Yet Applicable | No demolition works during Reporting Period. |
| 14. | The Proponent shall ensure that all plant and equipment used on site is:<br>(a) maintained in a proper and efficient condition; and<br>(b) operated in a proper and efficient manner. | Yes | All plant and equipment maintained in a proper and efficient manner. |
| 15. | By 31 November 2008, and on each anniversary of that date until and including 2012, the Proponent shall provide development contributions of $100,000 per annum to the Gunnedah Shire Council for expenditure by the Council on community enhancement projects. | Yes | $120,000 contributed during the period. |
| **Schedule 3: Specific Environmental Conditions** | | | |
| 1. | Upon receiving a written request for acquisition from the owner of "Lilydale", the Proponent shall acquire the land in accordance with the procedures in conditions 8-10 of schedule 4. | Not Applicable | Property purchased at commencement of the project. |
| 2. | The Proponent shall ensure that the noise generated during the construction of the project does not exceed the level set out in Table 1.<br>• Over the day/evening limit of 40 $L_{A10(15\ minute)}$, for any residences on, or more than 25% of, any privately owned land (except at "Lilydale") | Yes | As per condition. |
| 3. | The Proponent shall ensure that the noise generated during mining operations and other activities on the site does not exceed the level set out in Table 2:<br>• Over the day/evening limit of 35 $L_{Aeq(15\ minute)}$, for any residences on, or more than 25% of, any privately owned land (except at "Lilydale")<br>However, if the Proponent has a written negotiated noise agreement with the landowner of any land, and a copy of this agreement has been forwarded to the Department and DECC, then the Proponent may exceed the noise limits in Table 1 or Table 2 on that land in accordance with the negotiated noise agreement. | No | See Section 3.10.3 for details regarding exceedances. Private agreement established to address noise impacts at the "Plain View" property. |

| Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| 4. | If the noise generated by the project exceeds the level in Table 3, the Proponent shall, upon receiving a written request for acquisition from the landowner, acquire the land in accordance with the procedures in conditions 8-10 of schedule 4.<br>• Over the day/evening limit of 40 $L_{Aeq(15\ minute)}$, for any residences on, or more than 25% of, any privately owned land (except at "Lilydale") | Not Applicable | No written requests received to date. |
| 5. | Upon receiving a written request from the landowner of:<br>(a) "Illili", "Ferndale", or<br>(b) any residence on privately owned land where noise generated by the project exceeds 37 dB(A) $L_{Aeq(15\ minute)}$, the Proponent shall implement additional noise mitigation measures such as double glazing, insulation, and/or air conditioning at any residence on the land in consultation with the landowner. These additional mitigation measures must be reasonable and feasible.<br><br>If within 3 months of receiving this request from the landowner, the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.<br><br>Within 3 months of this approval, the Proponent shall notify all applicable landowners of their entitlements under this condition. | Not Applicable | No written requests received to date. |
| 6. | The Proponent shall implement all reasonable and feasible measures to ensure that the traffic noise generated by the project combined with the traffic noise generated by other mines does not exceed the level in Table 4:<br>• Over the day/evening limit of 55 $L_{Aeq(1\ hour)}$, for any residence adjacent to Torrens Road<br>*Note: Traffic noise generated by the project is to be measured in accordance with the relevant procedures in the DECC's Environmental Criteria for Road Traffic Noise.* | No | See Section 3.10.3 for details regarding exceedances. |
| 7. | If the traffic noise generated by the project exceeds the criterion in Table 4, the Proponent shall, upon receiving a written request from any landowner adjacent to Torrens Road, implement noise mitigation measures such as double glazing, insulation, and/or air conditioning at any residence on the land in consultation with the landowner.<br><br>These additional mitigation measures must be reasonable and feasible.<br><br>If within 3 months of receiving this request from the landowner, the Proponent and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Director-General for resolution.<br><br>Within 3 months of this approval, the Proponent shall notify all applicable landowners of their entitlements under this condition. | Not yet applicable | No written requests received to date. |

| Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| 8. | The Proponent shall:<br>(a) implement all reasonable and feasible best practice noise mitigation measures;<br>(b) investigate ways to reduce the noise generated by the project, including off-site road and rail noise and;<br>(c) report on these investigations and the implementation and effectiveness of these measures in the AEMR,<br>to the satisfaction of the Director-General. | Yes | See Section 3.10.3 for further details on noise mitigation initiatives. |
| 9. | The Proponent shall prepare and implement a Noise Monitoring Program for the project to the satisfaction of the Director-General. This program must:<br>(a) be prepared in consultation with the DECC;<br>(b) be submitted to the Director-General for approval prior to carrying out any development on site; and<br>(c) include:<br>• attended monitoring measures; and<br>• a noise monitoring protocol for evaluating compliance with the noise impact assessment and | Yes | Plan approved by DG – 20th October 2008. |
| 10. | The Proponent shall ensure that the airblast overpressure level from blasting at the project does no exceed the criteria in Table 5 and any residence on privately-owned land.<br>• 115dBL, Allowable exceedances: 5% of the total number of blasts in a 12 month period.<br>• 120dBL at any time. | No | See Section 3.9 and Appendix 6. |
| 11. | The Proponent shall ensure that the ground vibration level from blasting, or any other activity at the project does not exceed the criteria in Table 6 at any residence on privately-owned land.<br>• 5mm/s, Allowable exceedances: 5% of the total number of blasts in a 12 month period.<br>• 10mm/s at any time. | Yes | All ground vibration levels at non-project-related residences were less than 5mm/s. See Section 3.9 and Appendix 6. |
| 12. | The Proponent shall carry out blasting on site only between 10 am and 5 pm each Monday to Friday and 10am and 2 pm on Saturdays (excepting Public Holidays). | Yes | As per condition. See Appendix 6. |
| 13. | The Proponent shall not carry out more than:<br>(a) 2 blasts a day; and<br>(b) 5 blasts a week, averaged over any 12 month period on site. | Yes | As per condition. See Appendix 6. |
| 14. | At least 2 months before carrying out any blasting on the site, the Proponent shall advise all landowners within 2 km of proposed blasting activities, and any other landowner nominated by the Director-General that they are entitled to a property inspection to establish the baseline condition of the property. | Yes | As per condition. |

| Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| 15. | If the Proponent receives a written request for a property inspection from any such landowner, the Proponent shall:<br>(a) commission a suitably qualified person, whose appointment has been approved by the Director-General, to inspect and report on the condition of any building or structure on the land, and recommend measures to mitigate any potential blasting impacts; and<br>(b) give the landowner a copy of this property inspection report.<br><br>*Note: It is preferable for the property inspection to be carried out prior to the commencement of blasting activities on the site, and the Proponent should facilitate this occurring wherever possible.* | Yes | As per condition. |
| 16. | If any landowner within 2 km of proposed blasting activities, or any other landowner nominated by the Director-General, claims that his/her property, including vibration-sensitive infrastructure such as water supply or underground irrigation mains, has been damaged as a result of blasting at the project, the Proponent shall within 3 months of receiving this request:<br>(a) commission a suitably qualified person whose appointment has been approved by the Director-General to investigate the claim and prepare a property investigation report; and<br>(b) give the landowner a copy of the report. If this independent investigation confirms the landowner's claim, and both parties agree with these findings, then the Proponent shall repair the damage to the satisfaction of the Director-General. If the Proponent or landowner disagrees with the findings of the independent property investigation, then either party may refer the matter to the Director-General for resolution. | Yes | Claims of blast related damage at the Property Lot 159 Oxley Highway. A structural engineer was engaged to assess property. Assessment carried out 16th April 2012 and report provided by structural engineer did not indicate blast related damage. Copy of report provided to owners of the property. |
| 17. | Prior to the commencement of blasting, the Proponent shall prepare and implement a detailed Blast Monitoring Program for the project, in consultation with the DECC and to the satisfaction of the Director-General. | Yes | Approved by DG – 20th October 2008. |
| 18. | The Proponent shall ensure that dust emissions generated by the project do not cause additional exceedances of the criteria listed in Tables 7 to 9 at any residence on privately owned land, or on more than 25 percent of any privately-owned land.<br>• Total suspended particulate (TSP) matter – Annual average: 90µg/m3<br>• Particulate matter <10 µm(PM10) – Annual average: 30 µg/m3<br>• Particulate matter <10 µm(PM10) – 24 hour period - 50 µg/m3<br>• Deposited dust – Annual average:<br>  o Maximum increase in deposited dust level – 2 g/$m^2$/month<br>  o Maximum total deposited dust level – 4 g/$m^2$/month | Yes | See Section 3.1.3. |

| Condition | Conditional Requirement | Compliance | Comments |
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| 19. | The Proponent shall prepare and implement an Air Quality Monitoring Program for the project to the satisfaction of the Director-General. This program must:<br>(a) be submitted to the Director-General prior to the commencement of construction activities;<br>(b) be prepared in consultation with the DECC; and<br>(c) use a combination of high volume samplers and dust deposition gauges to monitor the performance of the project. | Yes | Approved by DG – 20th October 2008. |
| 20. | During the project, the Proponent shall ensure there is a suitable continuously operating meteorological station on site that complies with the requirements in *Approved Methods for Sampling of Air Pollutants in New South Wales* (DECC, 2007), or its latest version. | Yes | As per condition. See Section 3.22 and Appendix 8 for meteorological data. |
| 21. | Except as may be expressly provided for by an EPL, or in accordance with section 120 of the *Protection of the Environment Operations Act 1997*, the Proponent shall not discharge any mine water from the site. | Yes | Two discharges during the reporting period, all within EPL limits. See Section 2.9.3. |
| 22. | The Proponent shall prepare and implement a Water Management Plan for the project to the satisfaction of the Director-General. This plan must be submitted to the Director-General for approval prior to the commencement of construction activities (not including public road upgrades other than the realignment of Coocooboonah Lane) in consultation with the DECC and DWE by suitably qualified expert/s whose appointment/s have been approved by the Director-General and include a:<br>(a) Site Water Balance;<br>(b) Erosion and Sediment Control Plan;<br>(c) Surface Water Monitoring Plan;<br>(d) Groundwater Monitoring Program; and<br>(e) Groundwater Contingency Plan. | Yes | Approved by DG – 20th October 2008. |
| 23. | The Site Water Balance must:<br>(a) include details of:<br>• sources and security of water supply;<br>• water use on site;<br>• water management on site;<br>• off-site water transfers;<br>• reporting procedures;<br>(b) describe measures to minimise water use by the project; and<br>(c) be reviewed and recalculated each year using the most recent water monitoring data. | Yes | As per condition. |
| 24. | The Erosion and Sediment Control Plan must:<br>(a) be consistent with the requirements of *Managing Urban Stormwater: Soils and Construction* manual (Landcom, 2004), or its latest version;<br>(b) identify activities that could cause soil erosion and generate sediment;<br>(c) describe measures to minimise soil erosion and the potential for transport of sediment to downstream waters;<br>(d) describe the location, function, and capacity of erosion and sediment control structures; and<br>(e) describe what measures would be implemented to monitor and maintain the structures over time. | Yes | As per condition. |

| Condition | Conditional Requirement | Compliance | Comments |
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| 25. | The Surface Water Monitoring Program must include:<br>(a) detailed baseline data on surface water flows and quality in creeks and other waterbodies that could be affected by the project;<br>(b) surface water impact assessment criteria;<br>(c) a program to monitor the impact of the project on surface water flows and quality; and<br>(d) procedures for reporting the results of this monitoring. | Yes | As per condition. |
| 26. | The Groundwater Monitoring Program must include:<br>(a) further development of the regional and local groundwater model;<br>(b) detailed baseline data to benchmark the natural variation in groundwater levels, yield and quality (including at any privately owned bores in the vicinity of the site);<br>(c) groundwater impact assessment criteria;<br>(d) a program to monitor the impact of the project on groundwater levels, yield and quality; and<br>(e) procedures for reporting the results of this monitoring. | Yes | As per condition. |
| 27. | The Groundwater Contingency Plan must:<br>(a) provide measures to mitigate any impacts of the mine on the quality or quantity of groundwater supplies available on privately-owned land;<br>(b) establish trigger levels, benchmarks and contingency criteria; and<br>(c) provide for negotiated agreements with affected landowners, including compensation where mining impacts result in increased extraction costs for landowners. | Yes | As per condition. |
| 28. | The Proponent shall implement the Koala habitat management and enhancement actions described in the EA (shown conceptually in Figure 6 in Appendix 4) in consultation with the DECC and to the satisfaction of the Director-General. | Yes | Planting of koala feed tree species within the enrichment area on the north-eastern boundary, and rehabilitation areas have taken place. |
| 29. | The Proponent shall rehabilitate the site to the satisfaction of the Director-General and DPI. | Not yet applicable | |

| Condition | Conditional Requirement | Compliance | Comments |
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| 30. | The Proponent shall prepare and implement a detailed Rehabilitation and Landscape Management Plan for the site to the satisfaction of the Director-General and DPI. This plan must:<br>(a) be prepared in consultation with DECC, DWE and Council by suitably qualified expert/s whose appointment/s have been approved by the Director-General; and<br>(b) be submitted to the Director-General and DPI for approval by 1 March 2009;<br>(c) include:<br>• the rehabilitation objectives for the site;<br>• a description of how the rehabilitation of the site would be integrated with the landscape of the surrounding area;<br>• detailed performance and completion criteria for the rehabilitation of the site;<br>• a detailed description of the measures that would be implemented to achieve the performance and completion criteria for each site, including the procedures to be implemented for<br>- protection and enhancement of koala habitat;<br>- progressively rehabilitating the areas disturbed by mining operations;<br>- restoration of agricultural land suitability;<br>- revegetating the site;<br>- protecting and/or enhancing areas in the vicinity of the disturbance area;<br>- conserving and re-using any topsoil;<br>- controlling weeds and feral pests;<br>- controlling access; and<br>- bushfire management.<br>• a program to monitor the performance of the rehabilitation against the stated objectives,<br>• performance and completion criteria;<br>• a description of the potential risks to successful rehabilitation, and a description of the contingency measures that would be implemented to minimise these risks;<br>• and details of who is responsible for monitoring, reviewing and implementing the plan. | No | The plan was submitted in September 2011 and was approved by DoPI in October 2011. |
| 31. | At least 2 years prior to the cessation of mining operations on the site the Proponent shall prepare a Mine Closure Plan. This plan must:<br>(a) define the objectives and criteria for mine closure;<br>(b) investigate options for the future use of the site;<br>(c) provide a detailed methodology for decommissioning the site's storage dams;<br>(d) investigate ways to minimise the adverse socio-economic effects associated with mine closure, including reduction in local and regional employment levels;<br>(e) describe the measures that would be implemented to minimise or manage the on-going environmental effects of the project; and<br>(f) describe how the performance of these measures would be monitored over time. | Yes | Mine Closure Plan was developed as part of the Rehabilitation and Landscape Management Plan. |

| Condition | Conditional Requirement | Compliance | Comments |
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| 32. | The Proponent shall not destroy any known Aboriginal objects (as defined in the *National Parks and Wildlife Act 1974*) without the written approval of the Director-General. | Yes | As per condition. |
| 33. | The Proponent shall prepare and implement an Aboriginal Cultural Heritage Management Plan for the project to the satisfaction of the Director-General. This plan must:<br>(a) be submitted to the Director-General prior to the commencement of construction activities (not including public road upgrades other than the realignment of Coocooboonah Lane);<br>(b) be prepared in consultation with the DECC and the local Aboriginal community;<br>(c) include a protocol for the ongoing consultation and involvement of Aboriginal communities in the conservation and management of Aboriginal heritage on site; and<br>(d) describe the measures that would be implemented to protect Aboriginal sites on site, or if any new Aboriginal objects or skeletal remains are discovered during the project. | Yes | Approved by DG – 20th October 2008 |
| 34. | The Proponent shall keep records of the amount of coal transported from the site each year, and include these records in the AEMR. | Yes | As per condition. See Section 2.12. |
| 35. | Prior to transporting any coal off-site, the Proponent shall:<br>(a) construct a realignment of Coocooboonah Lane to the satisfaction of the landowner and Council;<br>(b) upgrade the intersection of Coocooboonah Lane and the Oxley Highway to the satisfaction of the RTA and Council;<br>(c) upgrade the intersection of the Oxley Highway and Blackjack Road to the satisfaction of the RTA and Council;<br>(d) upgrade the section of Blackjack Road to be used for coal transport to the satisfaction of Council;<br>(e) upgrade the intersection of Blackjack Road and Quia Road to the satisfaction of Council;<br>(f) upgrade the section of Quia Road to be used for coal transport to the satisfaction of Council;<br>(g) upgrade the intersection of Quia Road and Farrar Road to the satisfaction of Council;<br>(h) upgrade the intersection of Quia Road and Torrens Road to the satisfaction of Council; and<br>(i) upgrade Torrens Road to the satisfaction of Council. | Yes<br>No<br>No<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes<br>Yes | NMPL received approval from RTA and Council to commence haulage prior to upgrade of the Oxley Highway/Coocooboonah Lane intersection and Oxley Highway/Blackjack Road intersection.<br>All transport route upgrades have been completed. |
| 36. | Prior to carrying out any development on site, the Proponent shall prepare, and subsequently implement, a Construction Traffic Management Plan for the project to the satisfaction of the RTA and Council. | Yes | As per condition. |
| 37. | Within 6 months of this approval the Proponent shall enter into an agreement with Council for the maintenance of the section of the Oxley Highway between Coocooboonah Lane and Blackjack Road. | No | Road Maintenance Agreement finalised August 2009. |
| 38. | Prior to transporting coal from the site the Proponent shall construct 2 bus stops on the Oxley Highway to the satisfaction of Council. | Yes | As per condition. |

| Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| 39. | Notwithstanding condition 10 of Schedule 2, the Proponent shall ensure no coal is transported from the site during AgQuip. | Yes | As per condition. |
| 40. | The Proponent shall minimise the visual impacts of the project to the satisfaction of the Director-General | Yes | As per condition (eg. rehabilitation establishment, amenity bund construction). See Section 3.11.2 |
| 41. | The Proponent shall ensure that:<br>(a) no outdoor lights shine above the horizontal; and<br>(b) all external lighting associated with the project complies with *Australian Standard AS4282 (INT) 1995 – Control of Obtrusive Effects of Outdoor Lighting.* | Yes | As per condition. |
| 42. | The Proponent shall prepare and implement an Energy Savings Action Plan for the project to the satisfaction of the Director-General. This plan must:<br>(a) be prepared in accordance with the *Guidelines for Energy Savings Action Plans (DEUS, 2005)*, or its latest version;<br>(b) include consideration of energy use by mobile equipment;<br>(c) be submitted to the Director-General for approval within 3 months of this approval; and<br>(d) include a program to monitor the effectiveness of measures to reduce energy use on site. | No | Approved by DG – July 2009. |
| 43. | The Proponent shall prepare and implement a Waste Management Plan for the project to the satisfaction of the Director-General. This plan must:<br>(a) be submitted to the Director-General for approval prior to commencing of construction;<br>(b) identify the various waste streams of the project;<br>(c) describe what measures would be implemented to reuse, recycle, or minimise the waste generated by the project;<br>(d) ensure irrigation of treated wastewater is undertaken in accordance with Environmental Guidelines :Use of Effluent by Irrigation (DEC, 2004), or its latest version; and<br>(e) include a program to monitor the effectiveness of these measures. | Yes | Approved by DG – 28th October 2008. |
| **Schedule 4: Additional Procedures** | | | |
| 1. | Within 1 month of this approval, the Proponent shall notify the owner of "Lilydale" in writing that he/she has the right to require the Proponent to acquire their land at any stage during the project. | Not Applicable | See Condition 3(1). |
| 2. | If the results of monitoring required in schedule 3 identify that impacts generated by the project are greater than the relevant impact assessment criteria in schedule 3, then the Proponent shall notify the Director- General and the affected landowners and/or existing or future tenants (including tenants of mine owned properties) accordingly, and provide quarterly monitoring results to each of these parties until the results show that the project is complying with the criteria in schedule 3. However, no notification is required if the impact is predicted in the EA or where an agreement has been negotiated with a landowner that excludes the requirement for ongoing notification of such impacts. | Yes | As per condition. |

| Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| 3. | If a landowner considers the project to be exceeding the impact assessment criteria in schedule 3, except where this is predicted in the EA, then he/she may ask the Director-General in writing for an independent review of the impacts of the project on his/her land. If the Director-General is satisfied that an independent review is warranted, the Proponent shall within 2 months of the Director-General's decision:<br>(a) consult with the landowner to determine his/her concerns;<br>(b) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Director-General, to conduct monitoring on the land, to:<br>o determine whether the project is complying with the relevant impact assessment criteria in schedule 3;<br>o and identify the source(s) and scale of any impact on the land, and the project's contribution to this impact; and<br>(c) give the Director-General and landowner a copy of the independent review.<br><br>If the independent review determines that the project is complying with the relevant impact assessment criteria in schedule 3, then the Proponent may discontinue the independent review with the approval of the Director-General. | Not Yet Applicable | No requests from adjoining landowners. |
| 4. | If the independent review determines that the project is not complying with the relevant impact assessment criteria in schedule 3, and that the project is primarily responsible for this non-compliance, then the Proponent shall:<br>(a) take all reasonable and feasible measures, in consultation with the landowner, to ensure that the project complies with the relevant criteria; and<br>(b) conduct further monitoring to determine whether these measures ensure compliance; or<br>(c) secure a written agreement with the landowner to allow exceedances of the relevant criteria, to the satisfaction of the Director-General.<br><br>If further monitoring under paragraph (b) determines that the project is complying with the relevant criteria, then the Proponent may discontinue the independent review with the approval of the Director-General. | Not Yet Applicable | |
| 5. | If further monitoring under condition 4(b) determines that measures implemented under condition 4(a) have not achieved compliance with the land acquisition criteria in schedule 3, and the Proponent cannot then secure within 3 months a written agreement with the landowner under condition 4(c) to allow these exceedances, then the Proponent shall, upon receiving a written request from the landowner, acquire all or part of the landowner's land in accordance with the procedures in conditions 7-9 below. | Not Yet Applicable | |

| Condition | Conditional Requirement | Compliance | Comments |
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| 6. | If:<br>(a) the landowner disputes the results of the independent review; or<br>(b) the Proponent is unable to secure a written agreement under condition 4(c) with the landowner then (subject to condition 5) either the Proponent or the landowner may refer the matter to the Director-General for resolution.<br><br>Where matters referred to the Director-General under this condition cannot be resolved by the Director-General within 28 days, the Director-General shall refer the matter to an Independent Dispute Resolution Process. | Not Yet Applicable | |
| **Schedule 5: Environmental Management, Monitoring, Auditing and Reporting** | | | |
| 1. | The Proponent shall prepare and implement an Environmental Management Strategy for the project to the satisfaction of the Director-General. This strategy must be submitted to the Director-General prior to the commencement of construction activities, and:<br>(a) provide the strategic framework for environmental management of the project;<br>(b) identify the statutory requirements that apply to the project;<br>(c) describe in general how the environmental performance of the project would be monitored and managed;<br>(d) describe the procedures that would be implemented to:<br>• keep the local community and relevant agencies informed about the operation and environmental performance of the project;<br>• receive, handle, respond to, and record complaints;<br>• resolve any disputes that may arise during the course of the project;<br>• respond to any non-compliance;<br>• manage cumulative impacts; and<br>• respond to emergencies; and<br>(e) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the project. | Yes | Approved by DG – 20th October 2008. |
| 2. | The Proponent shall prepare and implement an Environmental Monitoring Program for the project to the satisfaction of the Director-General. This program must be submitted to the Director-General within 6 months of this approval and consolidate the various monitoring requirements in schedule 3 of this approval into a single document. | No | Completed and approved by DoPI on 10th October 2011. |
| 3. | As soon as practicable, and in any event within 24 hours of detecting an exceedance of the limits/performance criteria in this approval or the occurrence of an incident that causes (or may cause) material harm to the environment, the Proponent shall notify the Department and other relevant agencies of the exceedance/incident. | No | EPA and DoPI and the affected residents are notified as soon as possible after detecting an exceedance however notifications have not always been within 24 hours. |

| Condition | Conditional Requirement | Compliance | Comments |
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| 4. | Within 6 days of notifying the Department and other relevant agencies of an exceedance/incident, the Proponent shall provide the Department and these agencies with a written report that:<br>(a) describe the date, time and nature of the exceedance/incident;<br>(b) identifies the cause (or likely cause) of the exceedance/incident;<br>(c) describes what action has been taken to date; and<br>(d) describes the proposed measures to address the exceedance/incident. | No | Written notification provided as soon as possible on detecting an exceedance however written reports have not always been provided within 6 days. |
| 5. | Within 12 months of this approval, and annually thereafter, the Proponent shall submit an AEMR to the Director-General and to all relevant agencies. This report must:<br>(a) identify the standards and performance measures that apply to the project;<br>(b) describe the works carried out in the last 12 months;<br>(c) describe the works that would be carried out in the next 12 months;<br>(d) include a summary of the complaints received during the past year, and compare this to the complaints received in previous years;<br>(e) include a summary of the monitoring results for the project during the past year;<br>(f) include an analysis of these monitoring results against the relevant:<br>o impact assessment criteria/limits;<br>o monitoring results from previous years; and<br>o predictions in the EA;<br>(g) identify any trends in the monitoring results over the life of the project;<br>(h) identify any non-compliance during the previous year; and<br>(i) describe what actions were, or are being, taken to ensure compliance. | Yes | As per condition. |

| Condition | Conditional Requirement | Compliance | Comments |
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| 6. | Within 2 years of this approval, and every 3 years thereafter, unless the Director-General directs otherwise, the Proponent shall commission and pay the full cost of an Independent Environmental Audit of the project. This audit must:<br>(a) include consultation with the relevant agencies;<br>(b) assess the environmental performance of the project and assess whether it is complying with the relevant requirements in this approval and any associated EPL or Mining Lease (including any strategy, plan or program required under these approvals);<br>(c) review the adequacy of strategies, plans or programs required under these approvals; and, if appropriate,<br>(d) recommend measures or actions to improve the environmental performance of the project, and/or any strategy, plan or program required under these approvals.<br>*Note: This audit team must be led by a suitably qualified auditor and include experts in the fields of water, noise management and mine rehabilitation.* | No | Audit team approved by DG on 3/11/10 with the audit completed in April 2011. |
| 7. | Within 6 weeks of the completing of this audit, or as otherwise directed by the Director-General, the Proponent shall submit a copy of the audit report to the Director-General, together with its response to any recommendations contained in the audit report. | Yes | Audit report and action plan submitted to DoPI on 27th May 2011. Approved 17th June 2011. |
| 8. | Within 3 months of submitting the audit report to the Director-General, the Proponent shall review, and if necessary revise the strategies/plans/programs required under this approval to the satisfaction of the Director-General. | Yes | Audit action plan implemented with update provided to DoPI 30th November 2011 and approved by DoPI on 1st December 2011. |
| 9. | Within 3 months of this approval, the Proponent shall establish a Community Consultative Committee (CCC) for the project. This CCC must be established and operated in accordance with the *Guideline for Establishing and Operating Community Consultative Committees for Mining Projects (Department of Planning, 2007)*, or its latest version, and to the satisfaction of the Director-General. | Yes | Sunnyside Community Consultative Committee established in January 2009. |
| 10. | Within 3 months of the approval of any strategy/plan/program required under this approval (or any subsequent revision of these strategies/plans/programs), or the completion of the audits or AEMRs required under this approval, the Proponent shall:<br>(a) provide a copy of the relevant document/s to the relevant agencies and CCC; and<br>(b) put a copy of the relevant document/s on its website. | Yes | All relevant documentation available on the Whitehaven website. AEMR also provided to relevant agencies and CCC. |
| 11. | During the project, the Proponent shall:<br>(a) make a summary of all monitoring results required under this approval publicly available at the mine and on its website; and<br>(b) update these results on a regular basis (at least every three months). | Yes | Data provided on website in CCC monitoring reports, EPL monitoring data and AEMR. |

**TABLE A3.2**

**Compliance Review – Environment Protection Licence 12957**

| Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| A1.2 | Carry out of the scheduled development work at specified premises at a scale not exceeding >500,000 – 2,000,000t.<br>Coal works: 0 – 2,000,000 t loaded | Yes | ROM coal production in 2011/2012 reporting period = 690,014 tonnes<br>Coal loaded within specified limits. |
| A1.3 | The licensee must not carry on any scheduled activities until the scheduled development works are completed, except as elsewhere provided in this licence. | Yes | As per condition. |
| A3.1 | Works and activities must be carried out in accordance with the proposal contained in the licence application, except as expressly provided by a condition of this licence.<br>In this condition the reference to "the licence application" includes a reference to:<br>(a) the applications for any licences (including former pollution control approvals) which this licence replaces under the Protection of the Environment Operations (Savings and Transitional) Regulation 1998;<br>(b) and the licence information form provided by the licensee to the EPA to assist the EPA in connection with the issuing of this licence. | Yes | As per condition. |
| L1.1 | Comply with Section 120 of the POEO Act 1997 (re pollution of waters). | Yes | All efforts are maintained to ensure compliance with Section 120. |
| L2.4 | Comply with concentration limits:<br>Oil & Grease 10 mg/L<br>pH 6.5 – 8.5<br>TSS 50 mg/L | Yes | During two discharge events, water was below concentration limits for all parameters. |
| L2.5 | The Total Suspended Solids concentration limits specified may be exceeded for water discharged provided that:<br>(a) the discharge occurs solely as a result of rainfall measured at the premises that exceeds 38.4 millimetres over any consecutive 5 day period immediately prior to the discharge occurring; and<br>(b) all practical measures have been implemented to dewater all sediment dams within 5 days of rainfall such that they have sufficient capacity to store run off from a 38.4 millimetres, 5 day rainfall event.<br>Note: 38.4 mm equates to the 5 day 90%ile rainfall depth for Gunnedah sourced from Table 6.3a Managing Urban Stormwater: Soils and Construction Volume 1: 4th edition, March 2004. | Not yet applicable | Total Suspended Solids concentration limit was not exceeded during two discharges from site. |

| Condition | Conditional Requirement | Compliance | Comments |
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| L3.1 | The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence. | Yes | As per condition. |
| L3.2 | This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if those activities require an environment protection licence. | Yes | As per condition. |
| L4.1 | Ensure noise compliance:<br>(a) $L_{Aeq(15min)}$ criterion of 35dB(A) at all times (day, evening and night time periods); and<br>(b) $L_{10(15\ min)}$ criterion of 40dB(A) during initial construction period. | No | See Section 3.10.3 for details regarding exceedances. |
| L4.3 | To determine compliance with L4.1:<br>noise measurement equipment must be located: i) approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or<br>ii) within 30 metres of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30 metres from the property boundary closest to the premises;<br>or, where applicable:<br>iii) within approximately 50 metres of the boundary of a National Park or a Nature Reserve.<br>b) with the LA1(1 minute) noise limits in the Noise Limits table, the noise measurement equipment must be located within 1 metre of a dwelling façade.<br>c) with the noise limits in the Noise Limits table, the noise measurement equipment must be<br>located:<br>i) at the most affected point at a location where there is no dwelling at the location; or<br>ii) at the most affected point within an area at a location prescribed by part (a) or part (b) of this condition. | Yes | As per condition. |

| Condition | Conditional Requirement | Compliance | Comments |
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| L4.6 | The noise limits set this licence do not apply where a current legally binding agreement exists between the licensee and the occupant of a residential property that:<br>(a) agrees to an alternative noise limit for that property; or<br>(b) provides an alternative means of compensation to address noise impacts from the premises.<br>A copy of any agreement must be provided to the EPA before the licensee can take advantage of the agreement. | Not Applicable | Agreement in place with "Plain View" property, monitoring point R6. |
| L5.1 | The overpressure level from blasting operations at the premises must not exceed 115dB(Lin Peak) for more than 5% of total number of blasts over reporting period. | Yes | See Section 3.9 and Appendix 7. |
| L5.2 | The overpressure level from blasting operations at the premises must not exceed 120dB(Lin Peak) at any time. | No | One exceedance. See Section 3.9 and Appendix 7. |
| L5.3 | Ground vibration peak particle velocity from blasting operations must not exceed 5mm/s for more than 5% of the total number of blasts during each reporting period. | Yes | See Appendix 7. No exceedances during reporting period. |
| L5.4 | Ground vibration peak particle velocity from blasting operations must not exceed 10mm/s at any time. | Yes | See Appendix 7. No exceedances during reporting period. |
| L6.1 | Construction activities covered by this licence must only be carried out between the hours of 0700 to 1800 hrs Monday to Friday and between 0700 and 1600 hrs Saturday and at no time on Sundays and Public Holidays. | Yes | As per condition. |
| L6.2 | Mining operations covered by this licence (other than transport of coal from the premises and blasting) must only be carried out between the hours of 0700 and 2200 hrs Monday to Friday, and 0700 and 1800 hrs Saturday, and at no time on Sundays and Public Holidays. | Yes | As per condition. |
| L6.3 | Transportation of coal from the premises must only be carried out between the hours of 0700 and 1800 (Eastern Standard Time) hrs Monday to Friday, and 0700 and 2000 hrs (Eastern Summer Time) Monday to Friday, and 0700 to 1600 hrs on Saturdays, and at no time on Sundays and<br>Public Holidays. | Yes | As per condition. |
| L6.4 | Blasting in or on the premises must only be carried out between the hours of 1000 and 1700 hours Monday to Friday, and 1000 and 1400 hrs on Saturdays, and no time on Sundays and Public Holidays. | Yes | As per condition. |

| Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| L6.5 | Conditions L6.1, L6.2, L6.3 and L6.4 do not apply to the delivery of material, and mining operation, if required by police or other authorities for safety reasons; and/or the operation or personnel or equipment are endangered. In such circumstances notification must be provided to the EPA and affected residents as soon as practicable. | Not yet applicable | |
| L6.6 | The hours of operation specified in conditions L6.1, L6.2, L6.3 and L6.4 may be varied with written consent if the EPA is satisfied that the amenity of the residents in the locality will not be adversely affected. | Not yet applicable | |
| L7.1 | The maximum tonnage of extraction of ROM coal at the premises during the reporting period must not exceed 1 million tonnes. | Yes | ROM coal during reporting period – 690,014 tonnes. |
| O1.1 | Carry out licensed activities in a competent manner, i.e.<br>(a) processing, handling, movement and storage of materials and substances; and<br>(b) treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity. | Yes<br>Yes | As per licence condition. |
| O2.1 | All plant and equipment installed at the premises or used in connection with the licensed activity must:<br>(a) be maintained in a proper and efficient condition; and<br>(b) be operated in a proper and efficient manner. | Yes | All plant and equipment is closely monitored and regularly serviced by Sunnyside Coal Mine personnel. |
| O3.1 | Minimise or prevent emission of dust from the premises. | Yes | Dust emissions are minimised (unable to “prevent” dust emission) principally through watering and progressive rehabilitation. |
| 03.2 | Ensure all trucks cover their loads after loading to prevent wind blown emissions and spillage. The covering must be maintained until immediately before unloading the trucks. | Yes | All trucks are required to use tarpaulins in the transport of coal. |
| M1.1 | Record and retain monitoring results required as per this licence. | Yes | Monitoring records maintained as per condition. |
| M1.2 | Keep all monitoring records associated with this licence:<br>(a) in a legible form;<br>(b) for at least 4 years;<br>(c) produced in a legible form to any authorised officer of the EPA who asks to see them. | Yes | As per condition. |

| Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| M1.3 | Keep the following records in respect to samples required:<br>(a) sampling date;<br>(b) sampling time;<br>(c) sampling location; and<br>(d) sample collector's name. | <br><br>Yes<br>Yes<br>Yes<br>Yes | As per condition. |
| M2.1 | Monitor the concentration of each pollutant specified using the sampling method, units and frequency specified. | Yes | As per condition. |
| M3.1 | Monitor air pollutants in accordance with the Approved Methods publication or as approved by EPA. | Yes | Test method used refers to the EPA approved publication "Approved Methods for the Sampling and Analysis of Air Pollutants in NSW." |
| M3.2 | Monitor pollutants discharged to waters in accordance with the Approved Methods publication or as approved by EPA. | Yes | All pollutants monitored for two discharge events during the reporting period. The Site Water Management Plan sets out the requirements for monitoring discharge events. |
| M4.1 | Monitor meteorological conditions as specified. | Yes | As per condition. |
| M5.1 | Keep a legible record of all complaints re pollution arising from licenced activity. | Yes | Complaints register maintained by Environmental Manager. |
| M5.2 | Keep the following records of complaints.<br>(a) date and time of complaint;<br>(b) method complaint made;<br>(c) any personal details of complainant;<br>(d) nature of complaint;<br>(e) licensee's action in response, any follow-up contact; and<br>(f) if no action – reason why. | <br>Yes<br>Yes<br>Yes<br>Yes<br>Yes<br><br>Yes | Complaints records are compiled in accordance with the condition. |
| M5.3 | Keep records of complaints for 4 years. | Yes | All records have been kept to date. |
| M5.4 | Present records to EPA upon request. | Yes | All records would be made available to the EPA upon request. |
| M6.1 | Operate telephone complaints line for receipt of complaints from the public. | Yes | Sunnyside Coal Mine operates a complaints hotline on telephone No. 0427 106 384. |
| M6.2 | Notify the public of the complaints telephone line number. | Yes | Complaints hotline advertised in local press. |
| M7.1 | a) Monitor airblast and ground vibration at receptors R1, R2, R4 and R6.<br>b) Instrumentation used to measure airblast and vibration must meet AS2187.2-2006. | Yes | As per condition. |

| Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| M8.1 | For each monitoring point R2, R4, R5 and R6 the Licensee must monitor the noise or vibration parameter specified. | Yes | As per condition. |
| M8.2 | Attended noise monitoring must be undertaken:<br>a) at each one of the locations listed in the Noise Limits table;<br>b) occur quarterly in a reporting period;<br>c) occur during each day and evening period as defined in the NSW Industrial Noise Policy for a minimum of:<br>i) 1.5 hours during the day; and<br>ii) 30 minutes during the evening.<br>d) occur for three consecutive operating days. | Yes | See section 3.10.3. |
| R1.1 | Complete and supply Annual Return to EPA comprising:<br>(a) Statement of Compliance;<br>(b) Monitoring & Complaints Summary. | Yes | Third Annual Return submitted on the 19/1/2012 for the period 15/12/2011 to 14/12/2012.<br>Next Annual Return due in February 2013. |
| R1.2 | An Annual Return must be prepared in respect of each reporting period, except as provided below | Yes | Third Annual Return submitted on the 19/1/2012 for the period 15/12/2011 to 14/12/2012.<br>Next Annual Return due in February 2013. |
| R1.3 | Where this licence is transferred from the licensee to a new licensee:<br>(a) the transferring licensee must prepare an Annual Return for the period commencing on the first day of the reporting period and ending on the date the application for the transfer of the licence to the new licensee is granted; and<br>(b) the new licensee must prepare an Annual Return for the period commencing on the date the application for the transfer of the licence is granted and ending on the last day of the reporting period. | Not Yet Applicable | |
| R1.4 | Where this licence is surrendered by the licensee or revoked by the EPA or Minister, the licensee must prepare an Annual Return in respect of the period commencing on the first day of the reporting period and ending on:<br>(a) in relation to the surrender of a licence - the date when notice in writing of approval of the surrender is given; or<br>(b) in relation to the revocation of the licence - the date from which notice revoking the licence operates. | Not Yet Applicable | |
| R1.5 | Provide EPA with Annual Return no later than 60 days after end of each reporting period. | Yes | Third Annual Return submitted on the 19/1/2012 for the period 15/12/2011 to 14/12/2012. |

| Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| R1.6 | Retain copy of Annual Return for 4 years. | Yes | As per condition |
| R1.7 | Certify the Statement of Compliance within the Annual Return and sign the Monitoring and Complaints Summary by:<br>(a) licence holder; or<br>(b) approved person. | Yes | As per condition |
| R2.1 | Notify EPA of threatening or harmful incidents as soon as practicable by phoning EPA's Pollution Line service. | Not Yet Applicable | No incidents during reporting period. |
| R2.2 | Provide written details of the incident to EPA within 7 days of incident. | Not Yet Applicable | No incidents during reporting period. |
| R3.1 | Upon an EPA officer suspecting that an event is causing or likely to cause environmental harm:<br>(a) at the premises; or<br>(b) in connection with vehicles or plant associated with the licenced activities;<br>a request may be made for a written report of the event. | Not Yet Applicable | No requests received from EPA during Reporting Period (or to date). |
| R3.2 | The licensee must make all reasonable inquiries in relation to the event and supply the report to the EPA within such time as may be specified in the request. | Not Yet Applicable | No requests received from EPA during reporting period (or to date). |
| R3.3 | The report may be required to include:<br>(a) event cause, time and duration;<br>(b) type, volume and concentration of every pollutant discharged;<br>(c) contact details of employees or agents of licensee who witnessed event;<br>(d) contact details of any other persons witnessing the event;<br>(e) the action taken and follow-up contact with complainants in relation to event;<br>(f) mitigation measures proposed to prevent recurrence;<br>(g) any other relevant matters. | Not Yet Applicable | No requests received from EPA during reporting period (or to date). |
| R3.4 | EPA may request further details – must be supplied within specified time. | Not Yet Applicable | No requests received from EPA during reporting period (or to date). |
| R4.2 | Report any exceedance of the licence blasting limits to the regional office of the EPA as soon as practicable after the exceedance becomes known. | Yes | Blasting exceedance reported. |
| R4.3 | The results of the blast monitoring required by this licence must be submitted to the EPA at the end of each reporting period. | Yes | Blast results are provided in Appendix 7. |

| Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| R4.4 | A noise compliance assessment report must be submitted to the EPA within thirty (30) days of the completion of the quarterly noise monitoring. The assessment must be prepared by a suitably qualified and experienced acoustical consultant and include:<br>a) an assessment of compliance with noise limits detailed in the limit conditions of this licence; and<br>b) an outline of any management actions taken within the monitoring period to address any exceedances of the limits detailed in the limit conditions of this licence. | Yes | Noise reports submitted to EPA within 30 days. |
| G1.1 | Retain a copy of this licence at premises to which the licence applies. | Yes | Retained in the Sunnyside Site Office. |
| G1.2 | Produce licence to EPA officer upon request. | Not Yet Applicable | Sunnyside Coal Mine personnel would produce the licence upon request. |
| G1.3 | Make licence available for inspection by any employee or agent of licensee working at premises. | Yes | Licence is located in Sunnyside Site Office if required. Sunnyside Coal Mine personnel would produce the licence upon request. |
| U1.1 | The Licensee must conduct a site specific Best Management Practice (BMP) determination to identify the most practicable means to reduce particle emissions. | Yes | BMP conducted by PAE Holmes. |
| U1.2 | The licensee must prepare a report addressing items identified in the licence and utilise the document entitled Coal Mine Particulate Matter Control Best Practice – Site Specific Determination Guideline - November 2011. | Yes | Report compiled by PAE Holmes follows guideline. |
| U1.3 | All cost related information is to be included as Appendix 1 of the Report required by condition U1.2 above. | Yes | Costs included in Appendices of report. |
| U1.4 | The report required by condition U1.2 must be submitted by the Licensee to the Environment Protection Authority by 29 June 2012. | Yes | Report submitted to EPA 29th June 2012. |
| U1.5 | The report required by condition U1.2 above, except for cost related information contained in Appendix 1 of the Report, must be made publicly available by the Licensee on the Licensee's website 6 July 2012. | Yes | Report made available on website 29th June 2012. |

## TABLE A3-3

## Compliance Review – ML 1624

| Relevant Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| 1 | Service of notice on landholders within 3 months of granting of mining lease. | Not Applicable. | NMPL only landholders on mining lease. |
| 2 | Implement all practicable measures to prevent and/or minimise any harm to the environment that may result from the construction, operation or rehabilitation of the development. | Yes | As per condition. |
| 3 | Prepare and submit a MOP in accordance with DG's guidelines. | Yes | Initial MOP lodged with DPI and accepted on the 25th September 2008. MOP period ends September 2015. |
| 4 | Lodge an annual Environmental Management Report with DG annually. | Yes | This is the fourth AEMR since commencement of the mine in 2008. |
| 5. | Prepare the EMR in accordance with requirements in the Mining Lease. | Yes | Prepared in accordance with the requirements. |
| 6 | Submit additional environmental reports as directed by the DG. | Not Yet Applicable | No directions issued. |
| 7 | Rehabilitate disturbed land to a sustainable/agreed end land use to the satisfaction of the DG. | Yes | Progressive rehabilitation occurring, with satisfaction of the DG evident from previous AEMR approval. |
| 8 | Prepare a Subsidence Management Plan prior to commencing underground mining, in accordance with specified requirements | Not Applicable | Open cut operation. |
| 9 | (a) Ensure that at least 10 competent people are efficiently employed on the lease area on each day week day except Sunday or any week day that is a public holiday, OR<br>(b) Expend on operations an amount of not less than $175, 000 per annum whilst the lease is in force. | Yes | As per condition. |
| 10 | Comply with any direction given by an Environmental Officer of the Department in regard to non-compliance with the Act or any condition of this lease. | Not Yet Applicable | No direction received during reporting period. |
| 11 | Provide an exploration report, within a period of 28 days after each anniversary of the date this lease has effect. The report must be to the satisfaction of the DG and contain the specified requirements. | Yes | Report was submitted on 30th November 2012 for the reporting period 5th November 2011 – 4th November 2012. |

| Relevant Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| 15(a) | Ensure that ground vibration peak particle velocity generated by any blasting does not exceed 10mm/sec and does not exceed 5mm/sec in more than 5% of the total number of blasts over a period of 12 months at any dwelling or occupied premises. | Yes | No exceedances recorded.<br>See Appendix 7. |
| 15(b) | Ensure that blast overpressure noise level generated by any blasting does not exceed 120 dB (linear) and does not exceed 115 dB (linear) more than 5% of the total number of blasts over a period of 12 months, at any dwelling or occupied premises. | No | One exceedance recorded.<br>See Section 3.9 and Appendix 7. |
| 16 | Carry out operations in a manner that ensures the safety of persons and stock. | Yes | As per condition. |
| 17(a) | Advise DWE Regional hydrogeologist of intention to drill exploration holes 28 days prior to commencement. | Yes | The DWE Regional hydrogeologist was advised on 2nd July 2012 of the proposed exploration drill holes within ML 1624. |
| 17(b) | All exploration drill holes must be completed to the satisfaction of the Director General in relation to:-<br>• adequate marking/survey<br>• sealed to prevent collapse<br>• sealed with cement plugs to prevent discharge of groundwaters<br>• if meets gas, it is plugged to prevent escape<br>• if meets artesian or sub-artesian flow is sealed to prevent contamination of aquifer<br>• once no longer used, is sealed according to Department guidelines<br>• once no longer used, the land is left in a clean, tidy and stable condition. | Yes | As per condition. |
| 18 | Operations must be carried out so as not to cause or aggravate air pollution, water pollution or soil contamination or erosion. | Yes | As per Air Quality and Site Water Management Plans. |
| 19 | Operations must not interfere with transmission lines, communication lines, pipelines or any other utility, without prior written approval of the DG and subject to any conditions he may stipulate. | Yes | As per condition. |
| 20 | Activities must not interfere with or damage fences and gates must be closed or left open in accordance with landholder requirements. | Yes | As per condition. |

| Relevant Condition | Conditional Requirement | Compliance | Comments |
|---|---|---|---|
| 21(a) | Operations must not affect any road unless in accordance with the MOP or written approval of Director General. | Yes | As per condition. |
| 21(b) | Leaseholder must pay to the authority responsible for the road the cost incurred in fixing any damage to the roads caused by the operations. | Yes | Agreement in place with GSC. |
| 22 | Access tracks kept to a minimum and positioned so as not to cause unnecessary damage. Temporary tracks to be ripped, topsoiled and revegetated when no longer required. | Yes | As per condition. |
| 23(a) | Trees must not be felled without the consent of the landholder who is entitled to the use of the timber. | Yes | As per condition. |
| 23(b) | Trees must not be felled on the lease area except where it directly obstructs or prevents the carrying out of operations. | Yes | As per condition. |
| 23(c) | Timber from Crown land within the lease area must not be used until all relevant approvals have been obtained. | Yes | As per condition. |
| 25 | Comply with direction of Director General if notice is issued with regard to resource recovery | Not Yet Applicable | No notice issued. |
| 27 | Provision of Security of $3,175,000 to the Minister to ensure fulfilment of lease conditions. | Yes | As per condition. |
| 31 | Make every reasonable attempt, and demonstrate attempts, to enter into a cooperation agreement with the holder(s) of any overlapping petroleum title(s). | Not Yet Applicable | |

# Appendix 4

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# SURFACE WATER AND WET WEATHER DISCHARGES

## Surface Water Monitoring Data

| Sample No. | Date | Time | Sample Location | pH Field | pH Lab | Electrical Conductivity @25C (µS/cm) | Electrical Conductivity (µS/cm) | Total Suspended Solids (mg/L) | Total Organic Carbon (TOC) | Grease & Oil (mg/L) | Total Alkalinity | Hydroxide Alkalinity as CaCO3 | Carbonate Alkalinity as CaCO3 | Bicarbonate Alkalinity as CaCO3 | Aluminium | Antimony | Chloride | Sulfates | Calcium | Magnesium | Molybdenum | Selenium | Sodium | Potassium | Arsenic | Cadmium | Chromium | Copper | Mercury | Nickel | Lead | Manganese | Iron | Zinc | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ES1004139 | 4 March 2010 | 12:50 | SB5 | | 7.85 | | 412 | 30 | 6 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1004139 | 4 March 2010 | 13:00 | SB2 | | 8.3 | | 554 | 17 | <1 | 8 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1004139 | 4 March 2010 | 13:15 | SD4 | | 8.08 | | 321 | 12 | <1 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1009878 | 24 May 2010 | 9:35 | SB2 | | 8.14 | | 586 | 30 | 2 | 7 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1009878 | 24 May 2010 | 9:25 | SD4 | | 8.11 | | 351 | 9 | 2 | 6 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1016142-001 | 11 August 2010 | 13:00 | SD4 | | 7.82 | | 312 | 26 | <1 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1023171-001 | 15 November 2010 | 9:20 | SD4 | | 7.81 | | 186 | 56 | 3 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1023171-002 | 15 November 2010 | 9:40 | SD3 | | 7.54 | | 166 | 140 | 3 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1104965-001 | 8 March 2011 | 9:30 | SB3 | | 8.49 | | 1300 | 20 | <1 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1104965-002 | 8 March 2011 | 9:50 | SD4 | | 8.72 | | 271 | 15 | 2 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1104965-003 | 8 March 2011 | 9:15 | VOID | | 7.68 | | 4220 | 23 | <1 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1109425-001 | 5 May 2011 | 9:55 | SB3 | | 8.3 | | 3020 | 147 | 6 | <5 | | | | | | | | | | | | | | | | | | | | | | | | Appearance Turbid/Odour |
| ES1109425-002 | 5 May 2011 | 10:30 | SB2 | | 8.85 | | 663 | 233 | 9 | <1 | | | | | | | | | | | | | | | | | | | | | | | | Appearance Turbid/Odour |
| ES1109425-003 | 5 May 2011 | 11:40 | SB5 | | 8.93 | | 759 | 36 | 4 | <5 | | | | | | | | | | | | | | | | | | | | | | | | Appearance Turbid/Odour |
| ES1109617-001 | 9 May 2011 | 11:51 | SD4 | | 8.43 | | 394 | 62 | 5 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1109617-002 | 9 May 2011 | 12:05 | SB4 | | 8.65 | | 512 | 32 | 14 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1109617-003 | 9 May 2011 | 12:40 | VOID | | 8.3 | | 4550 | 6 | 58 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1117295-001 | 10 August 2011 | 11:15 | SD4 | 8.9 | 8.17 | 360 | 313 | 13 | 10 | <5 | | | | | | <0.001 | | | | | 0.003 | <0.01 | | | <0.001 | | | | | | | | | |
| ES1117295-002 | 10 August 2011 | 10:45 | SB1 | 9.3 | 9.07 | 648 | 536 | 46 | 47 | <5 | | | | | | <0.001 | | | | | 0.007 | <0.01 | | | 0.002 | | | | | | | | | |
| ES1117295-003 | 10 August 2011 | 10:30 | SB2 | 8.9 | 8.2 | 608 | 513 | 82 | 11 | <5 | | | | | | <0.001 | | | | | 0.005 | <0.01 | | | 0.001 | | | | | | | | | |
| ES1117295-004 | 10 August 2011 | 10:10 | SB3 | 8.8 | 8.35 | 2250 | 1800 | 82 | 12 | <5 | | | | | | <0.001 | | | | | 0.012 | <0.01 | | | <0.001 | | | | | | | | | |
| ES1117295-005 | 10 August 2011 | 11:40 | SB4 | 8.8 | 8.36 | 546 | 474 | 62 | 8 | <5 | | | | | | <0.001 | | | | | 0.008 | <0.01 | | | <0.001 | | | | | | | | | |
| ES1117295-006 | 10 August 2011 | 8:45 | SB5 | 9.3 | 8.9 | 940 | 768 | 88 | 24 | <5 | | | | | | <0.001 | | | | | 0.01 | <0.01 | | | 0.002 | | | | | | | | | |
| ES1117295-007 | 10 August 2011 | 12:15 | VOID | 8.4 | 8.3 | 5240 | 4050 | 10 | 5 | <5 | 444 | <1 | <1 | 444 | 0.1 | | 1140 | | | | | | 720 | | 0.005 | | | | | | | 0.054 | 0.11 | | |
| ES1016142-001 | 11 August 2011 | 13:00 | SD4 | | 7.82 | 312 | | 26 | <1 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1123157-001 | 18 October 2011 | 16:00 | SB3 | 7.84 | 7.84 | | 267 | 91 | 4 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1125734-001 | 22 November 2011 | 10:45 | SD4 | 9.5 | 8.74 | 372 | 299 | 19 | 8 | <5 | | | | | | <0.001 | | | | | 0.005 | <0.01 | | | 0.002 | | | | | | | | | |
| ES1125734-002 | 22 November 2011 | 10:15 | SB1 | 10.1 | 9.22 | 592 | 486 | 208 | 73 | <5 | | | | | | <0.001 | | | | | 0.008 | <0.01 | | | 0.009 | | | | | | | | | |
| ES1125734-003 | 22 November 2011 | 10:00 | SB2 | 10.2 | 9.24 | 486 | 389 | 64 | 5 | <5 | | | | | | <0.001 | | | | | 0.018 | <0.01 | | | 0.002 | | | | | | | | | |
| ES1125734-004 | 22 November 2011 | 9:15 | SB3 | 8.8 | 8.26 | 353 | 283 | 79 | 3 | <5 | | | | | | <0.001 | | | | | 0.003 | <0.01 | | | 0.002 | | | | | | | | | |
| ES1125734-005 | 22 November 2011 | 10:30 | SB4 | 9.7 | 8.95 | 352 | 286 | 40 | 4 | <5 | | | | | | <0.001 | | | | | 0.006 | <0.01 | | | <0.001 | | | | | | | | | |
| ES1125734-006 | 22 November 2011 | 9:30 | SB5 | 9.5 | 8.65 | 636 | 504 | 352 | 43 | <5 | | | | | | <0.001 | | | | | 0.002 | <0.01 | | | 0.012 | | | | | | | | | |
| ES1203324-001 | 14 February 2012 | 10:40 | SD4 | 8.9 | 8.2 | 274 | 227 | 16 | 5 | <5 | | | | | | <0.001 | | | | | 0.006 | <0.01 | | | <0.001 | | | | | | | | | |
| ES1203324-002 | 14 February 2012 | 10:00 | SB1 | 9.1 | 9.02 | 329 | 279 | 100 | 14 | <5 | | | | | | 0.001 | | | | | 0.004 | <0.01 | | | 0.005 | | | | | | | | | |
| ES1203324-003 | 14 February 2012 | 11:50 | SB2 | 9.5 | 9.12 | 481 | 398 | 51 | 3 | <5 | | | | | | <0.001 | | | | | 0.018 | <0.01 | | | 0.002 | | | | | | | | | |
| ES1203324-004 | 14 February 2012 | 12:10 | SB3 | 9.3 | 8.83 | 437 | 360 | 26 | 1 | <5 | | | | | | <0.001 | | | | | 0.014 | <0.01 | | | 0.002 | | | | | | | | | |
| ES1203324-005 | 14 February 2012 | 11:30 | SB4 | 9 | 8.74 | 335 | 276 | 13 | 2 | <5 | | | | | | <0.001 | | | | | 0.011 | <0.01 | | | <0.001 | | | | | | | | | |
| ES1203324-006 | 14 February 2012 | 12:00 | SB5 | 8.8 | 8.46 | 464 | 382 | 14 | 3 | <5 | | | | | | <0.001 | | | | | 0.016 | <0.01 | | | <0.001 | | | | | | | | | |
| ES1203324-007 | 14 February 2012 | 12:45 | VOID | 8.6 | 8.59 | 2280 | 1810 | 10 | <1 | <5 | 398 | <1 | 46 | 352 | 0.03 | | 278 | | | | | | 420 | | 0.005 | | | | | | | 0.004 | 0.06 | | |
| ES1210728-002 | 1 May 2012 | 11:00 | SD4 | 8.1 | 7.9 | 330 | 276 | 26 | 2 | <5 | | | | | | <0.001 | | | | | 0.005 | <0.01 | | | 0.001 | | | | | | | | | |
| ES1210728-003 | 1 May 2012 | 10:00 | SB1 | 8.7 | 9.82 | 422 | 364 | 136 | 21 | <5 | | | | | | <0.001 | | | | | 0.005 | <0.01 | | | 0.006 | | | | | | | | | |
| ES1210728-004 | 1 May 2012 | 9:40 | SB2 | 8.2 | 8.92 | 682 | 562 | 356 | 9 | <5 | | | | | | <0.001 | | | | | 0.017 | <0.01 | | | 0.007 | | | | | | | | | |
| ES1210728-005 | 1 May 2012 | 9:00 | SB3 | 8 | 8.44 | 498 | 417 | 42 | 2 | <5 | | | | | | <0.001 | | | | | 0.015 | <0.01 | | | 0.002 | | | | | | | | | |
| ES1210728-006 | 1 May 2012 | 10:30 | SB4 | 8.1 | 8.21 | 400 | 334 | 39 | 1 | <5 | | | | | | <0.001 | | | | | 0.011 | <0.01 | | | 0.001 | | | | | | | | | |
| ES1210728-007 | 1 May 2012 | 9:20 | SB5 | 8.3 | 8.74 | 543 | 452 | 34 | 3 | <5 | | | | | | <0.001 | | | | | 0.016 | <0.01 | | | 0.001 | | | | | | | | | |
| ES1219038-001 | 2 August 2012 | 11:30 | SD4 | 8.94 | 8.63 | 269 | 311 | 8 | 5 | <5 | | | | | | <0.001 | | | | | 0.005 | <0.01 | | | <0.001 | | | | | | | | | |
| ES1219038-002 | 2 August 2012 | 10:40 | SB2 | 8.85 | 8.84 | 376 | 441 | 24 | 11 | <5 | | | | | | <0.001 | | | | | 0.008 | <0.01 | | | <0.001 | | | | | | | | | |
| ES1219038-003 | 2 August 2012 | 10:20 | SB3 | 8.78 | 8.47 | 349 | 393 | 14 | 5 | <5 | | | | | | <0.001 | | | | | 0.008 | <0.01 | | | 0.002 | | | | | | | | | |
| ES1219038-004 | 2 August 2012 | 11:10 | SB4 | 8.89 | 8.79 | 298 | 339 | 8 | 3 | <5 | | | | | | <0.001 | | | | | 0.008 | <0.01 | | | <0.001 | | | | | | | | | |
| ES1219038-005 | 2 August 2012 | 11:00 | SB5 | 8.48 | 7.98 | 351 | 401 | 10 | 2 | <5 | | | | | | <0.001 | | | | | 0.009 | <0.01 | | | <0.001 | | | | | | | | | |
| ES1219038-006 | 2 August 2012 | 10:00 | VOID | 8.64 | 8.4 | 3490 | 4400 | 9 | <1 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |
| ES1227200-001 | 15 November 2012 | 9:10 | SD4 | 8.22 | 8.24 | 582 | 546 | 66 | 6 | <5 | | | | | | <0.001 | | | | | 0.007 | <0.01 | | | 0.003 | | | | | | | | | |
| ES1227200-002 | 15 November 2012 | 9:45 | SB3 | 9.18 | 8.89 | 1120 | 926 | 96 | 29 | <5 | | | | | | <0.001 | | | | | 0.025 | <0.01 | | | 0.004 | | | | | | | | | Dam level low |
| ES1227200-003 | 15 November 2012 | 9:20 | SB4 | 8.37 | 8.36 | 939 | 754 | 149 | 5 | <5 | | | | | | <0.001 | | | | | 0.02 | <0.01 | | | 0.001 | | | | | | | | | Dam level low |
| ES1227200-004 | 15 November 2012 | 10:30 | VOID | 8.46 | 8.44 | 5360 | 4720 | 30 | <1 | <5 | | | | | | | | | | | | | | | | | | | | | | | | |

**Wet Weather Discharge Monitoring Data**

| Sample No. | Sample Location | Date | Time | pH | Electrical Conductivity (µS/cm) | Total Suspended Solids (mg/L) | Grease & Oil (mg/L) | Total Organic Carbon (mg/L) | Aluminium (mg/L) | Arsenic (mg/L) | Cadmium (mg/L) | Copper (mg/L) | Lead (mg/L) | Manganese (mg/L) | Molybdenum (mg/L) | Zinc (mg/L) | Iron (mg/L) | Mercury (mg/L) | NOX Nitrite + Nitrate as N (mg/L) | Total Nitrogen as N (mg/L) | Total Nitrogen as N (mg/L) | Total Phosphorous as P (mg/L) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ES1025676-001 | CCU | 10/12/2010 | 16:00:00 | 7.17 | 76 | 646 | <5 | 6 | | | | | | | | | | | | | | | |
| ES1025676-002 | CCD | 10/12/2010 | 16:30:00 | 6.95 | 74 | 2030 | <5 | 8 | | | | | | | | | | | | | | | |
| ES1025676-003 | SD4 | 10/12/2010 | 10:00:00 | 7.30 | 243 | 50 | <5 | 4 | | | | | | | | | | | | | | | |
| ES1025676-004 | SD3 | 10/12/2010 | 10:15:00 | 7.18 | 110 | 44 | <5 | 7 | | | | | | | | | | | | | | | |
| ES1127394-001 | SD4 | 12/12/2011 | 10:40:00 | 7.06 | 95 | 48 | <5 | 11 | | | | | | | | | | | | | | | |
| ES1127394-002 | CCU | 12/12/2011 | 10:30:00 | 7.09 | 101 | 46 | <5 | 13 | 6.7 | 0.003 | <0.0001 | 0.007 | 0.002 | 0.055 | <0.001 | 0.015 | 6.3 | <0.0001 | 0.01 | 2 | 2 | 1.2 | |
| ES1127394-003 | CCD | 12/12/2011 | 10:35:00 | 7.16 | 89 | 34 | <5 | 13 | 7.17 | 0.005 | <0.0001 | 0.007 | 0.002 | 0.06 | <0.001 | 0.02 | 6.48 | <0.0001 | 0.01 | 1.3 | 1.3 | 1.22 | |
| ES1202680-001 | CCD | 1/02/2012 | 13:00 | 6.9 | 48 | 36 | <5 | 5 | | | | | | | | | | | | | | | |
| ES1202680-002 | SD4 | 6/02/2012 | 12:00 | 8.23 | 272 | 16 | <5 | 3 | | | | | | | | | | | | | | | Regional flooding |

# Appendix 5

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# DUST MONITORING RESULTS

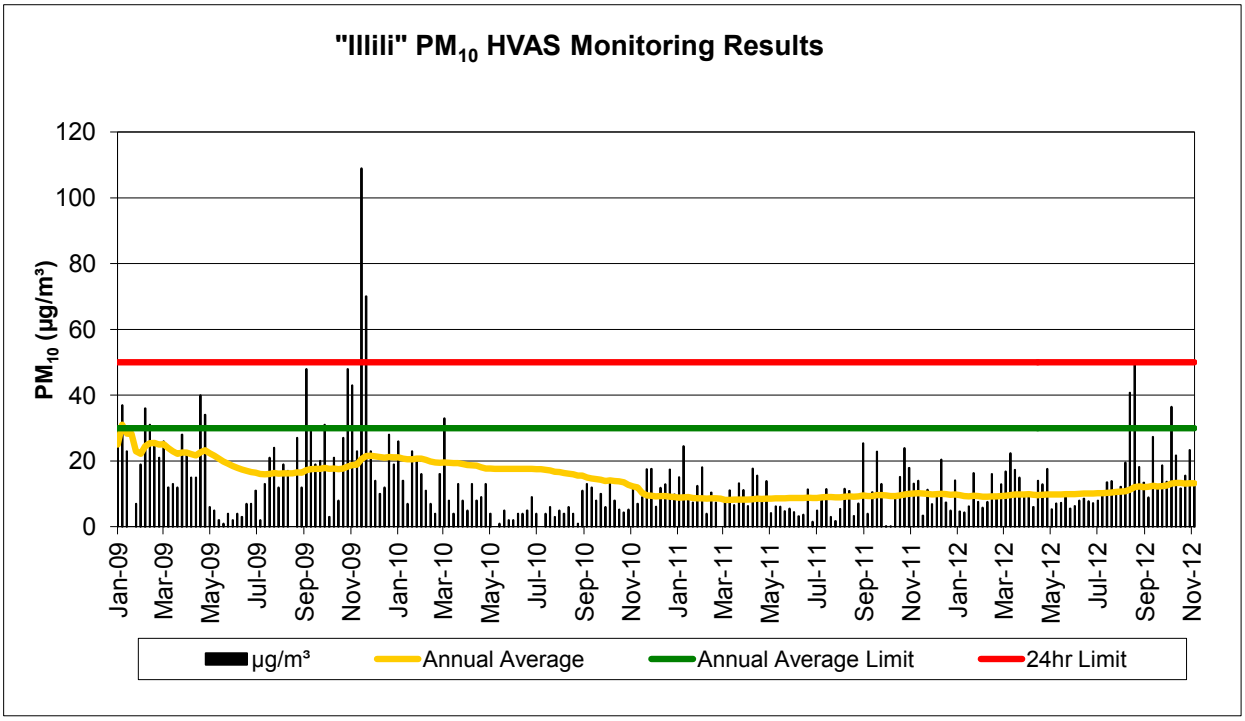
# PM10 - SA1 "Illili"

| Date | mg/paper | µg/m³ | Annual Average | Annual Average | 24hr Limit |
|---|---|---|---|---|---|
| 24/01/2009 | 37.4 | 25 | 25.00 | 30 | 50 |
| 30/01/2009 | 56.5 | 37 | 31.00 | 30 | 50 |
| 5/02/2009 | 34.9 | 23 | 28.33 | 30 | 50 |
| 11/02/2009 | | | 28.33 | 30 | 50 |
| 17/02/2009 | 11.3 | 7 | 23.00 | 30 | 50 |
| 23/02/2009 | 28.7 | 19 | 22.20 | 30 | 50 |
| 1/03/2009 | 55.5 | 36 | 24.50 | 30 | 50 |
| 7/03/2009 | 49.3 | 31 | 25.43 | 30 | 50 |
| 13/03/2009 | 41.3 | 26 | 25.50 | 30 | 50 |
| 19/03/2009 | 33.6 | 21 | 25.00 | 30 | 50 |
| 25/03/2009 | 41.3 | 26 | 25.10 | 30 | 50 |
| 31/03/2009 | 18.8 | 12 | 23.91 | 30 | 50 |
| 6/04/2009 | 20.1 | 13 | 23.00 | 30 | 50 |
| 12/04/2009 | 18.9 | 12 | 22.15 | 30 | 50 |
| 18/04/2009 | 45 | 28 | 22.57 | 30 | 50 |
| 24/04/2009 | 34.6 | 22 | 22.53 | 30 | 50 |
| 30/04/2009 | 24.2 | 15 | 22.06 | 30 | 50 |
| 6/05/2009 | 23.5 | 15 | 21.65 | 30 | 50 |
| 12/05/2009 | 64.7 | 40 | 22.67 | 30 | 50 |
| 18/05/2009 | 55.2 | 34 | 23.26 | 30 | 50 |
| 24/05/2009 | 21.7 | 6 | 22.40 | 30 | 50 |
| 30/05/2009 | 19 | 5 | 21.57 | 30 | 50 |
| 5/06/2009 | 3.1 | 2 | 20.68 | 30 | 50 |
| 11/06/2009 | 2.1 | 1 | 19.83 | 30 | 50 |
| 17/06/2009 | 6.7 | 4 | 19.17 | 30 | 50 |
| 23/06/2009 | 5.5 | 2 | 18.48 | 30 | 50 |
| 29/06/2009 | 3.7 | 4 | 17.92 | 30 | 50 |
| 5/07/2009 | 4.6 | 3 | 17.37 | 30 | 50 |
| 11/07/2009 | 12 | 7 | 17.00 | 30 | 50 |
| 17/07/2009 | 11.4 | 7 | 16.66 | 30 | 50 |
| 23/07/2009 | 17.8 | 11 | 16.47 | 30 | 50 |
| 29/07/2009 | 2.6 | 2 | 16.00 | 30 | 50 |
| 4/08/2009 | 20.7 | 13 | 15.91 | 30 | 50 |
| 10/08/2009 | 33.4 | 21 | 16.06 | 30 | 50 |
| 16/08/2009 | 39 | 24 | 16.29 | 30 | 50 |
| 22/08/2009 | 19.2 | 12 | 16.17 | 30 | 50 |
| 28/08/2009 | 28.6 | 19 | 16.25 | 30 | 50 |
| 3/09/2009 | 27.6 | 17 | 16.27 | 30 | 50 |
| 9/09/2009 | <0.1 | <1 | 16.27 | 30 | 50 |
| 15/09/2009 | 42.6 | 27 | 16.55 | 30 | 50 |
| 21/09/2009 | 19.2 | 12 | 16.44 | 30 | 50 |
| 27/09/2009 | 75.6 | 48 | 17.23 | 30 | 50 |
| 3/10/2009 | 47.6 | 30 | 17.54 | 30 | 50 |
| 9/10/2009 | 30.5 | 19 | 17.57 | 30 | 50 |
| 15/10/2009 | 31.1 | 20 | 17.63 | 30 | 50 |
| 21/10/2009 | 48.7 | 31 | 17.93 | 30 | 50 |
| 27/10/2009 | 5.5 | 3 | 17.60 | 30 | 50 |
| 2/11/2009 | 32.7 | 21 | 17.67 | 30 | 50 |
| 8/11/2009 | 12.4 | 8 | 17.47 | 30 | 50 |
| 14/11/2009 | 42.6 | 27 | 17.67 | 30 | 50 |
| 20/11/2009 | 75.4 | 48 | 18.29 | 30 | 50 |
| 26/11/2009 | 65.6 | 43 | 18.78 | 30 | 50 |
| 2/12/2009 | 36.5 | 23 | 18.86 | 30 | 50 |
| 8/12/2009 | 161.7 | 109 | 20.60 | 30 | 50 |
| 14/12/2009 | 107.8 | 70 | 21.53 | 30 | 50 |
| 20/12/2009 | 36 | 23 | 21.56 | 30 | 50 |
| 26/12/2009 | 21.3 | 14 | 21.42 | 30 | 50 |
| 1/01/2010 | 15.3 | 10 | 21.21 | 30 | 50 |
| 7/01/2010 | 18.9 | 12 | 21.05 | 30 | 50 |
| 13/01/2010 | 42.6 | 28 | 21.17 | 30 | 50 |
| 19/01/2010 | 30.4 | 19 | 21.14 | 30 | 50 |
| 25/01/2010 | 39.6 | 26 | 21.15 | 30 | 50 |
| 31/01/2010 | 20.8 | 14 | 20.76 | 30 | 50 |
| 6/02/2010 | 10.3 | 7 | 20.49 | 30 | 50 |
| 12/02/2010 | 34.4 | 23 | 20.53 | 30 | 50 |
| 18/02/2010 | 31.1 | 20 | 20.75 | 30 | 50 |
| 24/02/2010 | 24.2 | 16 | 20.70 | 30 | 50 |
| 2/03/2010 | 16.4 | 11 | 20.28 | 30 | 50 |
| 8/03/2010 | 11.1 | 7 | 19.88 | 30 | 50 |
| 14/03/2010 | 6.6 | 4 | 19.52 | 30 | 50 |
| 20/03/2010 | 24.9 | 16 | 19.43 | 30 | 50 |

| Date | mg/paper | µg/m³ | Annual Average | Annual Average | 24hr Limit |
|---|---|---|---|---|---|
| 26/03/2010 | 50.8 | 33 | 19.55 | 30 | 50 |
| 1/04/2010 | 11.6 | 8 | 19.48 | 30 | 50 |
| 7/04/2010 | 6.7 | 4 | 19.33 | 30 | 50 |
| 13/04/2010 | 20.6 | 13 | 19.35 | 30 | 50 |
| 19/04/2010 | 12.8 | 8 | 19.02 | 30 | 50 |
| 25/04/2010 | 8.4 | 5 | 18.73 | 30 | 50 |
| 1/05/2010 | 20.9 | 13 | 18.70 | 30 | 50 |
| 7/05/2010 | 13.3 | 8 | 18.58 | 30 | 50 |
| 13/05/2010 | 14.2 | 9 | 18.07 | 30 | 50 |
| 19/05/2010 | 20.4 | 13 | 17.72 | 30 | 50 |
| 25/05/2010 | 7 | 4 | 17.68 | 30 | 50 |
| 31/05/2010 | 0 | 0 | 17.60 | 30 | 50 |
| 6/06/2010 | 1 | 1 | 17.58 | 30 | 50 |
| 12/06/2010 | 9 | 5 | 17.65 | 30 | 50 |
| 18/06/2010 | 3.8 | 2 | 17.62 | 30 | 50 |
| 24/06/2010 | 3.2 | 2 | 17.62 | 30 | 50 |
| 30/06/2010 | 5.9 | 4 | 17.62 | 30 | 50 |
| 6/07/2010 | 6 | 4 | 17.63 | 30 | 50 |
| 12/07/2010 | 8 | 5 | 17.60 | 30 | 50 |
| 18/07/2010 | 14.1 | 9 | 17.63 | 30 | 50 |
| 24/07/2010 | 6.9 | 4 | 17.52 | 30 | 50 |
| 30/07/2010 | 0.1 | 0 | 17.48 | 30 | 50 |
| 5/08/2010 | 7 | 4 | 17.33 | 30 | 50 |
| 11/08/2010 | 8.9 | 6 | 17.08 | 30 | 50 |
| 17/08/2010 | 4.6 | 3 | 16.73 | 30 | 50 |
| 23/08/2010 | 8.2 | 5 | 16.62 | 30 | 50 |
| 29/08/2010 | 6.4 | 4 | 16.37 | 30 | 50 |
| 4/09/2010 | 8.9 | 6 | 16.18 | 30 | 50 |
| 10/09/2010 | 7.1 | 4 | 15.98 | 30 | 50 |
| 16/09/2010 | 1.7 | 1 | 15.56 | 30 | 50 |
| 22/09/2010 | 17.9 | 11 | 15.54 | 30 | 50 |
| 28/09/2010 | 20 | 13 | 14.97 | 30 | 50 |
| 4/10/2010 | 18.9 | 12 | 14.67 | 30 | 50 |
| 10/10/2010 | 12.9 | 8 | 14.49 | 30 | 50 |
| 16/10/2010 | 16.6 | 10 | 14.33 | 30 | 50 |
| 22/10/2010 | 9.8 | 6 | 13.92 | 30 | 50 |
| 28/10/2010 | 22.4 | 14 | 14.10 | 30 | 50 |
| 3/11/2010 | 13.1 | 8 | 13.89 | 30 | 50 |
| 9/11/2010 | 8.4 | 5.2 | 13.84 | 30 | 50 |
| 15/11/2010 | 7.1 | 4.4 | 13.47 | 30 | 50 |
| 21/11/2010 | 8.4 | 5.2 | 12.77 | 30 | 50 |
| 27/11/2010 | 18.7 | 11.5 | 12.25 | 30 | 50 |
| 3/12/2010 | 11.7 | 7 | 11.99 | 30 | 50 |
| 9/12/2010 | 15.1 | 9 | 10.35 | 30 | 50 |
| 15/12/2010 | 29.4 | 17.5 | 9.49 | 30 | 50 |
| 21/12/2010 | 29.6 | 17.6 | 9.40 | 30 | 50 |
| 27/12/2010 | 10.3 | 6.1 | 9.27 | 30 | 50 |
| 2/01/2011 | 20 | 11.9 | 9.30 | 30 | 50 |
| 8/01/2011 | 21.7 | 12.9 | 9.32 | 30 | 50 |
| 14/01/2011 | 29.2 | 17.4 | 9.14 | 30 | 50 |
| 20/01/2011 | 16.6 | 9.8 | 8.99 | 30 | 50 |
| 26/01/2011 | 25.4 | 15.1 | 8.81 | 30 | 50 |
| 1/02/2011 | 41.2 | 24.5 | 8.99 | 30 | 50 |
| 7/02/2011 | 14.3 | 8.5 | 9.01 | 30 | 50 |
| 13/02/2011 | 12.5 | 7.4 | 8.75 | 30 | 50 |
| 19/02/2011 | 20.9 | 12.4 | 8.63 | 30 | 50 |
| 25/02/2011 | 30.4 | 18.1 | 8.66 | 30 | 50 |
| 3/03/2011 | 6.8 | 4 | 8.55 | 30 | 50 |
| 9/03/2011 | 17.6 | 10.4 | 8.60 | 30 | 50 |
| 15/03/2011 | 12.4 | 7.4 | 8.66 | 30 | 50 |
| 21/03/2011 | <0.1 | <0.1 | 8.54 | 30 | 50 |
| 27/03/2011 | 14.5 | 8.6 | 8.13 | 30 | 50 |
| 2/04/2011 | 18.7 | 11.1 | 8.18 | 30 | 50 |
| 8/04/2011 | 11 | 6.6 | 8.23 | 30 | 50 |
| 14/04/2011 | 21.8 | 13.2 | 8.23 | 30 | 50 |
| 20/04/2011 | 18.7 | 11.2 | 8.28 | 30 | 50 |
| 26/04/2011 | 10.6 | 6.3 | 8.31 | 30 | 50 |
| 2/05/2011 | 29.8 | 17.7 | 8.38 | 30 | 50 |
| 8/05/2011 | 26.2 | 15.6 | 8.51 | 30 | 50 |
| 14/05/2011 | 13.3 | 7.9 | 8.49 | 30 | 50 |
| 20/05/2011 | 23.4 | 13.9 | 8.51 | 30 | 50 |
| 26/05/2011 | 7.1 | 4.2 | 8.51 | 30 | 50 |

| Date | mg/paper | µg/m³ | Annual Average | Annual Average | 24hr Limit |
|---|---|---|---|---|---|
| 1/06/2011 | 10.4 | 6.2 | 8.61 | 30 | 50 |
| 7/06/2011 | 10.2 | 6.1 | 8.70 | 30 | 50 |
| 13/06/2011 | 8 | 4.8 | 8.70 | 30 | 50 |
| 19/06/2011 | 9.3 | 5.5 | 8.75 | 30 | 50 |
| 25/06/2011 | 7.6 | 4.5 | 8.80 | 30 | 50 |
| 1/07/2011 | 5.3 | 3.2 | 8.78 | 30 | 50 |
| 7/07/2011 | 6.2 | 3.7 | 8.78 | 30 | 50 |
| 13/07/2011 | 19.1 | 11.4 | 8.88 | 30 | 50 |
| 19/07/2011 | 2.5 | 1.5 | 8.76 | 30 | 50 |
| 25/07/2011 | 8.4 | 5 | 8.78 | 30 | 50 |
| 31/07/2011 | 14.6 | 8.7 | 8.92 | 30 | 50 |
| 6/08/2011 | 19.3 | 11.5 | 9.05 | 30 | 50 |
| 12/08/2011 | 5 | 3 | 9.00 | 30 | 50 |
| 18/08/2011 | 2.9 | 1.7 | 8.97 | 30 | 50 |
| 24/08/2011 | 9.1 | 5.4 | 8.98 | 30 | 50 |
| 30/08/2011 | 19.5 | 11.6 | 9.11 | 30 | 50 |
| 5/09/2011 | 18.3 | 10.9 | 9.19 | 30 | 50 |
| 11/09/2011 | 5.6 | 3.3 | 9.18 | 30 | 50 |
| 17/09/2011 | 11.9 | 7.1 | 9.28 | 30 | 50 |
| 23/09/2011 | 42.7 | 25.4 | 9.52 | 30 | 50 |
| 29/09/2011 | 6.7 | 4 | 9.37 | 30 | 50 |
| 5/10/2011 | 17.6 | 10.5 | 9.34 | 30 | 50 |
| 11/10/2011 | 38.4 | 22.9 | 9.59 | 30 | 50 |
| 17/10/2011 | 21.8 | 13 | 9.64 | 30 | 50 |
| 23/10/2011 | 0.4 | 0.2 | 9.55 | 30 | 50 |
| 29/10/2011 | 0.4 | 0.2 | 9.32 | 30 | 50 |
| 4/11/2011 | 15.6 | 9.3 | 9.34 | 30 | 50 |
| 10/11/2011 | 25.6 | 15.2 | 9.50 | 30 | 50 |
| 16/11/2011 | 40.2 | 23.9 | 9.83 | 30 | 50 |
| 22/11/2011 | 30 | 17.9 | 10.04 | 30 | 50 |
| 28/11/2011 | 19.6 | 13.1 | 10.07 | 30 | 50 |
| 4/12/2011 | 23.5 | 14 | 10.18 | 30 | 50 |
| 10/12/2011 | 5.7 | 3.4 | 10.09 | 30 | 50 |
| 16/12/2011 | 19 | 11.3 | 9.99 | 30 | 50 |
| 22/12/2011 | 11.6 | 6.9 | 9.81 | 30 | 50 |
| 28/12/2011 | 17.2 | 10.2 | 9.88 | 30 | 50 |
| 3/01/2012 | 34.2 | 20.4 | 10.02 | 30 | 50 |
| 9/01/2012 | 12.4 | 7.4 | 9.93 | 30 | 50 |
| 15/01/2012 | 8.4 | 5.0 | 9.72 | 30 | 50 |
| 21/01/2012 | 23.7 | 14.1 | 9.79 | 30 | 50 |
| 27/01/2012 | 7.9 | 4.7 | 9.62 | 30 | 50 |
| 2/02/2012 | 7.4 | 4.4 | 9.28 | 30 | 50 |
| 8/02/2012 | 10.4 | 6.2 | 9.25 | 30 | 50 |
| 14/02/2012 | 27.3 | 16.3 | 9.39 | 30 | 50 |
| 20/02/2012 | 12.7 | 7.6 | 9.31 | 30 | 50 |
| 26/02/2012 | 9.8 | 5.8 | 9.11 | 30 | 50 |
| 3/03/2012 | 12.8 | 7.6 | 9.17 | 30 | 50 |
| 9/03/2012 | 26.8 | 16 | 9.26 | 30 | 50 |
| 15/03/2012 | 14.4 | 8.6 | 9.28 | 30 | 50 |
| 21/03/2012 | 21.6 | 12.9 | 9.34 | 30 | 50 |
| 27/03/2012 | 28.2 | 16.8 | 9.48 | 30 | 50 |
| 2/04/2012 | 37.7 | 22.4 | 9.66 | 30 | 50 |
| 8/04/2012 | 29.1 | 17.3 | 9.84 | 30 | 50 |
| 14/04/2012 | 25.1 | 15.0 | 9.87 | 30 | 50 |
| 20/04/2012 | 15.2 | 9 | 9.83 | 30 | 50 |
| 26/04/2012 | 16.1 | 9.6 | 9.88 | 30 | 50 |
| 2/05/2012 | 10.1 | 6.0 | 9.69 | 30 | 50 |
| 8/05/2012 | 23.6 | 14 | 9.67 | 30 | 50 |
| 14/05/2012 | 21.6 | 12.9 | 9.75 | 30 | 50 |
| 20/05/2012 | 29.5 | 17.6 | 9.81 | 30 | 50 |
| 26/05/2012 | 8.9 | 5.3 | 9.83 | 30 | 50 |
| 1/06/2012 | 12 | 7.1 | 9.84 | 30 | 50 |
| 7/06/2012 | 12.3 | 7.3 | 9.86 | 30 | 50 |
| 13/06/2012 | 15.5 | 9.2 | 9.93 | 30 | 50 |
| 19/06/2012 | 9.3 | 5.5 | 9.93 | 30 | 50 |
| 25/06/2012 | 10.6 | 6.3 | 9.96 | 30 | 50 |
| 1/07/2012 | 13.4 | 8 | 10.04 | 30 | 50 |
| 7/07/2012 | 14.5 | 8.6 | 10.12 | 30 | 50 |
| 13/07/2012 | 13.1 | 7.8 | 10.06 | 30 | 50 |
| 19/07/2012 | 12.1 | 7.2 | 10.16 | 30 | 50 |
| 25/07/2012 | 13.5 | 8.0 | 10.20 | 30 | 50 |
| 31/07/2012 | 17.8 | 10.6 | 10.24 | 30 | 50 |

| Date | mg/paper | µg/m³ | Annual Average | Annual Average | 24hr Limit |
|---|---|---|---|---|---|
| 6/08/2012 | 22.6 | 13.5 | 10.27 | 30 | 50 |
| 12/08/2012 | 23.4 | 13.9 | 10.45 | 30 | 50 |
| 18/08/2012 | 17.2 | 10.2 | 10.59 | 30 | 50 |
| 24/08/2012 | 20.4 | 12.2 | 10.70 | 30 | 50 |
| 30/08/2012 | 32.7 | 19.5 | 10.83 | 30 | 50 |
| 5/09/2012 | 68.2 | 40.8 | 11.32 | 30 | 50 |
| 11/09/2012 | 82.3 | 49.3 | 12.07 | 30 | 50 |
| 17/09/2012 | 30.4 | 18.2 | 12.25 | 30 | 50 |
| 23/09/2012 | 22.4 | 13.4 | 12.06 | 30 | 50 |
| 29/09/2012 | 14.8 | 8.9 | 12.14 | 30 | 50 |
| 5/10/2012 | 45.9 | 27.3 | 12.41 | 30 | 50 |
| 11/10/2012 | 19.2 | 11.4 | 12.22 | 30 | 50 |
| 17/10/2012 | 31.4 | 18.7 | 12.32 | 30 | 50 |
| 23/10/2012 | 23 | 13.7 | 12.54 | 30 | 50 |
| 29/10/2012 | 61.4 | 36.5 | 13.13 | 30 | 50 |
| 4/11/2012 | 36.5 | 21.7 | 13.34 | 30 | 50 |
| 10/11/2012 | 19.6 | 11.7 | 13.28 | 30 | 50 |
| 16/11/2012 | 26.2 | 15.6 | 13.14 | 30 | 50 |
| 22/11/2012 | 39.1 | 23.3 | 13.23 | 30 | 50 |
| 28/11/2012 | 20.8 | 12.4 | 13.22 | 30 | 50 |



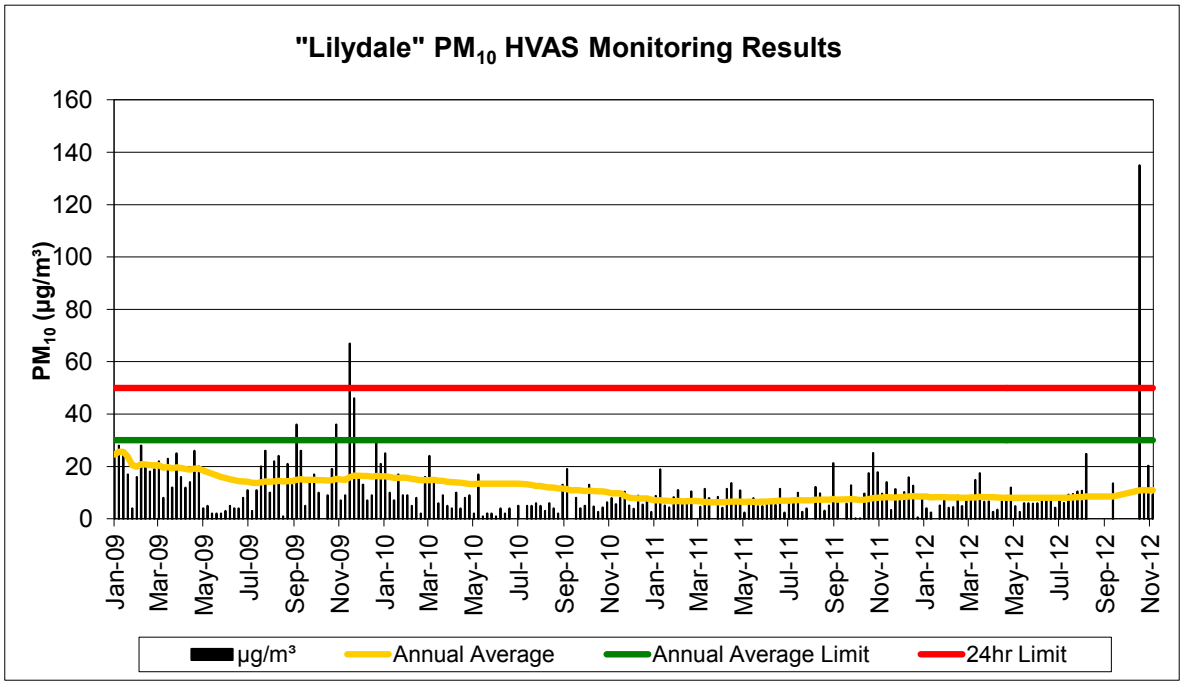
# PM10 - SA2 "Lilydale"

| Date | mg/paper | µg/m³ | Annual Average | Annual Average | 24hr Limit |
|---|---|---|---|---|---|
| 14/1/2009 | 36.7 | 24 | 24.00 | 30 | 50 |
| 24/01/2009 | 36.9 | 25 | 24.50 | 30 | 50 |
| 30/01/2009 | 42.3 | 28 | 25.67 | 30 | 50 |
| 5/02/2009 | 37.7 | 25 | 25.50 | 30 | 50 |
| 11/02/2009 | 27.1 | 17 | 23.80 | 30 | 50 |
| 17/02/2009 | 6.8 | 4 | 20.50 | 30 | 50 |
| 23/02/2009 | 25.2 | 16 | 19.86 | 30 | 50 |
| 1/03/2009 | 42.7 | 28 | 20.88 | 30 | 50 |
| 7/03/2009 | 31.1 | 20 | 20.78 | 30 | 50 |
| 13/03/2009 | 28.5 | 18 | 20.50 | 30 | 50 |
| 19/03/2009 | 30.2 | 19 | 20.36 | 30 | 50 |
| 25/03/2009 | 34.5 | 22 | 20.50 | 30 | 50 |
| 31/03/2009 | 13 | 8 | 19.54 | 30 | 50 |
| 6/04/2009 | 37.1 | 23 | 19.79 | 30 | 50 |
| 12/04/2009 | 19 | 12 | 19.27 | 30 | 50 |
| 18/04/2009 | 40.2 | 25 | 19.63 | 30 | 50 |
| 24/04/2009 | 24.8 | 16 | 19.41 | 30 | 50 |
| 30/04/2009 | 19.6 | 12 | 19.00 | 30 | 50 |
| 6/05/2009 | 22.5 | 14 | 18.74 | 30 | 50 |
| 12/05/2009 | 41.9 | 26 | 19.10 | 30 | 50 |
| 18/05/2009 | 31.9 | 20 | 19.14 | 30 | 50 |
| 24/05/2009 | 13 | 4 | 18.45 | 30 | 50 |
| 30/05/2009 | 17 | 5 | 17.87 | 30 | 50 |
| 5/06/2009 | 3.5 | 2 | 17.21 | 30 | 50 |
| 11/06/2009 | 4 | 2 | 16.60 | 30 | 50 |
| 17/06/2009 | 3.4 | 2 | 16.04 | 30 | 50 |
| 23/06/2009 | 6.6 | 3 | 15.56 | 30 | 50 |
| 29/06/2009 | 4.1 | 5 | 15.18 | 30 | 50 |
| 5/07/2009 | 6.9 | 4 | 14.79 | 30 | 50 |
| 11/07/2009 | 6 | 4 | 14.43 | 30 | 50 |
| 17/07/2009 | 13.1 | 8 | 14.23 | 30 | 50 |
| 23/07/2009 | 17.1 | 11 | 14.13 | 30 | 50 |
| 29/07/2009 | 4.7 | 3 | 13.79 | 30 | 50 |
| 4/08/2009 | 17.8 | 11 | 13.71 | 30 | 50 |
| 10/08/2009 | 31.7 | 20 | 13.89 | 30 | 50 |
| 16/08/2009 | 41.1 | 26 | 14.22 | 30 | 50 |
| 22/08/2009 | 16.5 | 10 | 14.11 | 30 | 50 |
| 28/08/2009 | 33.9 | 22 | 14.32 | 30 | 50 |
| 3/09/2009 | 38.2 | 24 | 14.56 | 30 | 50 |
| 9/09/2009 | 1.2 | 1 | 14.23 | 30 | 50 |
| 15/09/2009 | 32.5 | 21 | 14.39 | 30 | 50 |
| 21/09/2009 | 20.6 | 13 | 14.36 | 30 | 50 |
| 27/09/2009 | 57.3 | 36 | 14.86 | 30 | 50 |
| 3/10/2009 | 41.5 | 26 | 15.11 | 30 | 50 |
| 9/10/2009 | 8.8 | 5 | 14.89 | 30 | 50 |
| 15/10/2009 | 21.4 | 14 | 14.87 | 30 | 50 |
| 21/10/2009 | 27.1 | 17 | 14.91 | 30 | 50 |
| 27/10/2009 | 16.3 | 10 | 14.81 | 30 | 50 |
| 2/11/2009 | Power Failure | Power Failure | 14.81 | 30 | 50 |
| 8/11/2009 | 14.7 | 9 | 14.69 | 30 | 50 |
| 14/11/2009 | 29.2 | 19 | 14.78 | 30 | 50 |
| 20/11/2009 | 55.8 | 36 | 15.20 | 30 | 50 |
| 26/11/2009 | 12.5 | 7 | 15.04 | 30 | 50 |
| 2/12/2009 | 13.6 | 9 | 14.92 | 30 | 50 |
| 8/12/2009 | 99.9 | 67 | 15.89 | 30 | 50 |
| 14/12/2009 | 71.2 | 46 | 16.44 | 30 | 50 |
| 20/12/2009 | 24.8 | 16 | 16.43 | 30 | 50 |
| 26/12/2009 | 20.8 | 13 | 16.37 | 30 | 50 |
| 1/01/2010 | 10.9 | 7 | 16.37 | 30 | 50 |
| 7/01/2010 | 14.3 | 9 | 16.08 | 30 | 50 |
| 13/01/2010 | 43.2 | 29 | 16.30 | 30 | 50 |
| 19/01/2010 | 33 | 21 | 16.25 | 30 | 50 |
| 25/01/2010 | 38.5 | 25 | 16.25 | 30 | 50 |
| 31/01/2010 | 15.9 | 10 | 15.95 | 30 | 50 |
| 6/02/2010 | 10.6 | 7 | 15.65 | 30 | 50 |
| 12/02/2010 | 25.7 | 17 | 15.65 | 30 | 50 |
| 18/02/2010 | 13.3 | 9 | 15.73 | 30 | 50 |
| 24/02/2010 | 12.7 | 9 | 15.62 | 30 | 50 |
| 2/03/2010 | 8 | 5 | 15.23 | 30 | 50 |
| 8/03/2010 | 11.9 | 8 | 15.03 | 30 | 50 |

| Date | mg/paper | µg/m³ | Annual Average | Annual Average | 24hr Limit |
|---|---|---|---|---|---|
| 14/03/2010 | 3.8 | 2 | 14.77 | 30 | 50 |
| 20/03/2010 | 24.7 | 16 | 14.72 | 30 | 50 |
| 26/03/2010 | 36.7 | 24 | 14.75 | 30 | 50 |
| 1/04/2010 | 21.9 | 14 | 14.85 | 30 | 50 |
| 7/04/2010 | 9.2 | 6 | 14.57 | 30 | 50 |
| 13/04/2010 | 14.6 | 9 | 14.52 | 30 | 50 |
| 19/04/2010 | 8.2 | 5 | 14.18 | 30 | 50 |
| 25/04/2010 | 6.9 | 4 | 13.98 | 30 | 50 |
| 1/05/2010 | 16.1 | 10 | 13.95 | 30 | 50 |
| 7/05/2010 | 6.2 | 4 | 13.78 | 30 | 50 |
| 13/05/2010 | 12.5 | 8 | 13.48 | 30 | 50 |
| 19/05/2010 | 14.3 | 9 | 13.30 | 30 | 50 |
| 25/05/2010 | 3 | 2 | 13.27 | 30 | 50 |
| 31/05/2010 | 26.8 | 17 | 13.47 | 30 | 50 |
| 6/06/2010 | 2.4 | 1 | 13.45 | 30 | 50 |
| 12/06/2010 | 3.1 | 2 | 13.45 | 30 | 50 |
| 18/06/2010 | 3.9 | 2 | 13.45 | 30 | 50 |
| 24/06/2010 | 1.6 | 1 | 13.42 | 30 | 50 |
| 30/06/2010 | 6.9 | 4 | 13.40 | 30 | 50 |
| 6/07/2010 | 3.4 | 2 | 13.37 | 30 | 50 |
| 12/07/2010 | 6.8 | 4 | 13.37 | 30 | 50 |
| 24/07/2010 | 8 | 5 | 13.36 | 30 | 50 |
| 30/07/2010 | 0.4 | 0 | 13.31 | 30 | 50 |
| 5/08/2010 | 7.9 | 5 | 13.20 | 30 | 50 |
| 11/08/2010 | 7.4 | 5 | 12.95 | 30 | 50 |
| 17/08/2010 | 9.3 | 6 | 12.61 | 30 | 50 |
| 23/08/2010 | 7.4 | 5 | 12.53 | 30 | 50 |
| 29/08/2010 | 5 | 3 | 12.20 | 30 | 50 |
| 4/09/2010 | 8.6 | 6 | 11.90 | 30 | 50 |
| 10/09/2010 | 5.9 | 4 | 11.95 | 30 | 50 |
| 16/09/2010 | 3 | 2 | 11.63 | 30 | 50 |
| 22/09/2010 | 20.6 | 13 | 11.63 | 30 | 50 |
| 28/09/2010 | 29.1 | 19 | 11.34 | 30 | 50 |
| 4/10/2010 | 0.5 | 0 | 10.90 | 30 | 50 |
| 10/10/2010 | 12.9 | 8 | 11.00 | 30 | 50 |
| 16/10/2010 | 6.6 | 4 | 10.83 | 30 | 50 |
| 22/10/2010 | 8.1 | 5 | 10.62 | 30 | 50 |
| 28/10/2010 | 19.5 | 13 | 10.67 | 30 | 50 |
| 3/11/2010 | 7.7 | 4.7 | 10.57 | 30 | 50 |
| 9/11/2010 | 4.3 | 2.6 | 10.46 | 30 | 50 |
| 15/11/2010 | 7.1 | 4.4 | 10.46 | 30 | 50 |
| 21/11/2010 | 10.3 | 6.3 | 10.25 | 30 | 50 |
| 27/11/2010 | 12.9 | 7.9 | 9.77 | 30 | 50 |
| 3/12/2010 | 9.5 | 5.6 | 9.75 | 30 | 50 |
| 9/12/2010 | 13.4 | 8 | 9.73 | 30 | 50 |
| 15/12/2010 | 17.5 | 10.4 | 8.77 | 30 | 50 |
| 21/12/2010 | 8.5 | 5.1 | 8.08 | 30 | 50 |
| 27/12/2010 | 6.5 | 3.9 | 7.87 | 30 | 50 |
| 2/01/2011 | 14.9 | 8.9 | 7.80 | 30 | 50 |
| 8/01/2011 | 9.3 | 5.5 | 7.78 | 30 | 50 |
| 14/01/2011 | 12.4 | 7.4 | 7.75 | 30 | 50 |
| 20/01/2011 | 4.3 | 2.6 | 7.30 | 30 | 50 |
| 26/01/2011 | 14.7 | 8.8 | 7.10 | 30 | 50 |
| 1/02/2011 | 28.1 | 18.9 | 6.99 | 30 | 50 |
| 7/02/2011 | 8.6 | 5.1 | 6.91 | 30 | 50 |
| 13/02/2011 | 7.4 | 4.4 | 6.87 | 30 | 50 |
| 19/02/2011 | 13.9 | 8.3 | 6.72 | 30 | 50 |
| 25/02/2011 | 18.5 | 11 | 6.75 | 30 | 50 |
| 3/03/2011 | 9.3 | 5.5 | 6.69 | 30 | 50 |
| 9/03/2011 | 12.6 | 7.5 | 6.74 | 30 | 50 |
| 15/03/2011 | 17.7 | 10.5 | 6.78 | 30 | 50 |
| 21/03/2011 | <0.1 | <0.1 | 6.86 | 30 | 50 |
| 27/03/2011 | 7.8 | 4.6 | 6.66 | 30 | 50 |
| 2/04/2011 | 19.2 | 11.4 | 6.45 | 30 | 50 |
| 8/04/2011 | 26.4 | 7.9 | 6.34 | 30 | 50 |
| 14/04/2011 | No Access | No Access | 6.35 | 30 | 50 |
| 20/04/2011 | 14.1 | 8.4 | 6.34 | 30 | 50 |
| 26/04/2011 | 7.3 | 4.3 | 6.32 | 30 | 50 |
| 2/05/2011 | 19.4 | 11.5 | 6.46 | 30 | 50 |
| 8/05/2011 | 23 | 13.7 | 6.52 | 30 | 50 |
| 14/05/2011 | 9.4 | 5.6 | 6.55 | 30 | 50 |
| 20/05/2011 | 18.1 | 10.8 | 6.60 | 30 | 50 |

| Date | mg/paper | µg/m³ | Annual Average | Annual Average | 24hr Limit |
|---|---|---|---|---|---|
| 26/05/2011 | 4 | 2.4 | 6.48 | 30 | 50 |
| 1/06/2011 | 11.8 | 7 | 6.57 | 30 | 50 |
| 7/06/2011 | 13.3 | 7.9 | 6.41 | 30 | 50 |
| 13/06/2011 | 8.2 | 4.9 | 6.48 | 30 | 50 |
| 19/06/2011 | 8.3 | 4.9 | 6.53 | 30 | 50 |
| 25/06/2011 | 11.7 | 7 | 6.62 | 30 | 50 |
| 1/07/2011 | 11.9 | 7.1 | 6.72 | 30 | 50 |
| 7/07/2011 | 9.1 | 5.4 | 6.75 | 30 | 50 |
| 13/07/2011 | 19.2 | 11.4 | 6.91 | 30 | 50 |
| 19/07/2011 | 4 | 2.4 | 6.89 | 30 | 50 |
| 25/07/2011 | 10.7 | 6.4 | 6.91 | 30 | 50 |
| 31/07/2011 | 11.3 | 6.7 | 7.03 | 30 | 50 |
| 6/08/2011 | 16.7 | 10 | 7.12 | 30 | 50 |
| 12/08/2011 | 4.2 | 2.7 | 7.08 | 30 | 50 |
| 18/08/2011 | 6.8 | 4 | 7.04 | 30 | 50 |
| 24/08/2011 | <0.1 | <0.1 | 7.08 | 30 | 50 |
| 30/08/2011 | 20.4 | 12.2 | 7.24 | 30 | 50 |
| 5/09/2011 | 16.5 | 9.8 | 7.31 | 30 | 50 |
| 11/09/2011 | 5.3 | 3.2 | 7.29 | 30 | 50 |
| 17/09/2011 | 8.6 | 5.1 | 7.35 | 30 | 50 |
| 23/09/2011 | 35.6 | 21.2 | 7.50 | 30 | 50 |
| 29/09/2011 | 11.7 | 7 | 7.28 | 30 | 50 |
| 5/10/2011 | 0.7 | Power Failure | 7.41 | 30 | 50 |
| 11/10/2011 | 9.7 | 5.8 | 7.39 | 30 | 50 |
| 17/10/2011 | 21.5 | 12.8 | 7.54 | 30 | 50 |
| 23/10/2011 | 0.4 | 0.2 | 7.46 | 30 | 50 |
| 29/10/2011 | 0.4 | 0.2 | 7.23 | 30 | 50 |
| 4/11/2011 | 16.1 | 9.6 | 7.32 | 30 | 50 |
| 10/11/2011 | 29.2 | 17.4 | 7.58 | 30 | 50 |
| 16/11/2011 | 42.2 | 25.1 | 7.89 | 30 | 50 |
| 22/11/2011 | 29.8 | 17.8 | 8.09 | 30 | 50 |
| 28/11/2011 | 16.2 | 9.6 | 8.12 | 30 | 50 |
| 4/12/2011 | 23.5 | 14 | 8.27 | 30 | 50 |
| 10/12/2011 | 5.7 | 3.4 | 8.19 | 30 | 50 |
| 16/12/2011 | 19 | 11.3 | 8.20 | 30 | 50 |
| 22/12/2011 | 11.6 | 6.9 | 8.23 | 30 | 50 |
| 28/12/2011 | 17.2 | 10.2 | 8.34 | 30 | 50 |
| 3/01/2012 | 26.6 | 15.8 | 8.46 | 30 | 50 |
| 9/01/2012 | 21.3 | 12.7 | 8.59 | 30 | 50 |
| 15/01/2012 | 1.1 | 0.6 | 8.47 | 30 | 50 |
| 21/01/2012 | 12.8 | 7.6 | 8.56 | 30 | 50 |
| 27/01/2012 | 6.7 | 4 | 8.48 | 30 | 50 |
| 2/02/2012 | 4.1 | 2.4 | 8.19 | 30 | 50 |
| 8/02/2012 | 0.4 | | 8.24 | 30 | 50 |
| 14/02/2012 | 8.5 | 5.1 | 8.25 | 30 | 50 |
| 20/02/2012 | 14.8 | 8.8 | 8.26 | 30 | 50 |
| 26/02/2012 | 7.1 | 4.2 | 8.14 | 30 | 50 |
| 3/03/2012 | 7.5 | 4.5 | 8.12 | 30 | 50 |
| 9/03/2012 | 15 | 8.9 | 8.15 | 30 | 50 |
| 15/03/2012 | 8.2 | 4.9 | 8.05 | 30 | 50 |
| 21/03/2012 | 12.7 | 7.6 | 8.04 | 30 | 50 |
| 27/03/2012 | 14.4 | 8.6 | 8.11 | 30 | 50 |
| 2/04/2012 | 25 | 14.9 | 8.17 | 30 | 50 |
| 8/04/2012 | 29.4 | 17.5 | 8.34 | 30 | 50 |
| 14/04/2012 | 11.1 | 6.6 | 8.31 | 30 | 50 |
| 20/04/2012 | 11.3 | 6.7 | 8.28 | 30 | 50 |
| 26/04/2012 | 4.5 | 2.7 | 8.25 | 30 | 50 |
| 2/05/2012 | 5.9 | 3.5 | 8.12 | 30 | 50 |
| 8/05/2012 | 11 | 6.7 | 7.99 | 30 | 50 |
| 14/05/2012 | 12.8 | 7.6 | 8.03 | 30 | 50 |
| 20/05/2012 | 20 | 11.9 | 8.05 | 30 | 50 |
| 26/05/2012 | 8.1 | 4.8 | 8.09 | 30 | 50 |
| 1/06/2012 | 4.4 | 2.6 | 8.01 | 30 | 50 |
| 7/06/2012 | 9.9 | 5.9 | 7.98 | 30 | 50 |
| 13/06/2012 | 9.9 | 5.9 | 8.00 | 30 | 50 |
| 19/06/2012 | 9.8 | 5.8 | 8.01 | 30 | 50 |
| 25/06/2012 | 10.1 | 6 | 7.99 | 30 | 50 |
| 1/07/2012 | 13.3 | 7.9 | 8.01 | 30 | 50 |
| 7/07/2012 | 12.9 | 7.7 | 8.05 | 30 | 50 |
| 13/07/2012 | 12.6 | 7.5 | 7.98 | 30 | 50 |
| 19/07/2012 | 7.1 | 4.2 | 8.01 | 30 | 50 |
| 25/07/2012 | 12.8 | 7.6 | 8.03 | 30 | 50 |

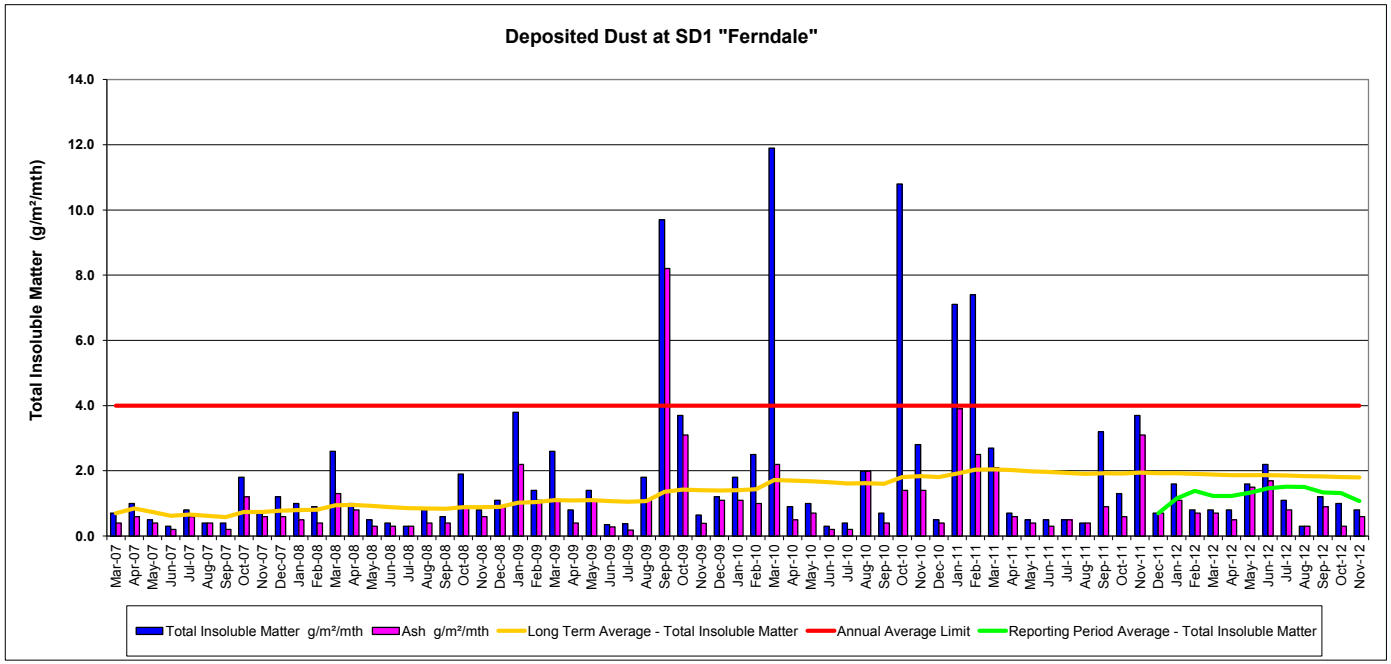
| Date | mg/paper | µg/m³ | Annual Average | Annual Average | 24hr Limit |
|---|---|---|---|---|---|
| 31/07/2012 | 10.3 | 6.1 | 8.02 | 30 | 50 |
| 6/08/2012 | 15.6 | 9.3 | 8.01 | 30 | 50 |
| 12/08/2012 | 16 | 9.5 | 8.13 | 30 | 50 |
| 18/08/2012 | 17.7 | 10.5 | 8.24 | 30 | 50 |
| 24/08/2012 | 18 | 10.7 | 8.28 | 30 | 50 |
| 30/08/2012 | 41.7 | 24.8 | 8.49 | 30 | 50 |
| 5/10/2012 | 23 | 13.5 | 8.56 | 30 | 50 |
| 10/11/2012 | 220 | 135 | 10.79 | 30 | 50 |
| 16/11/2012 | 19.3 | 11.8 | 10.91 | 30 | 50 |
| 22/11/2012 | 32.9 | 20.2 | 10.89 | 30 | 50 |
| 28/11/2012 | 15.2 | 9.3 | 10.93 | 30 | 50 |



## Deposited Dust - SD1 "Ferndale"

| Sample Number | Sample Location | Sample Date | Sample Month | Sampler | Time: (d) | Volume Collected (ml) | Total Insoluble Matter g/m²/mth | Reporting Period Average - Total Insoluble Matter | Long Term Average - Total Insoluble Matter | Annual Average Limit | Ash g/m²/mth | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26519.01 | SD1 - Ferndale | 03-Apr-07 | Mar-07 | Client | 1620 | 440 | 0.7 | | 0.7 | 4.0 | 0.4 | |
| 26630.01 | SD1 - Ferndale | 02-May-07 | Apr-07 | Client | 1550 | 375 | 1.0 | | 0.9 | 4.0 | 0.6 | |
| 26959.01 | SD1 - Ferndale | 05-Jun-07 | May-07 | Client | 1555 | 1170 | 0.5 | | 0.7 | 4.0 | 0.4 | |
| 27233.01 | SD1 - Ferndale | 02-Jul-07 | Jun-07 | Client | 1600 | 1310 | 0.3 | | 0.6 | 4.0 | 0.2 | |
| 27530.01 | SD1 - Ferndale | 03-Aug-07 | Jul-07 | Client | 1225 | 215 | 0.8 | | 0.7 | 4.0 | 0.6 | |
| 27819.01 | SD1 - Ferndale | 04-Sep-07 | Aug-07 | Client | 1400 | 1145 | 0.4 | | 0.6 | 4.0 | 0.4 | |
| 28118.01 | SD1 - Ferndale | 05-Oct-07 | Sep-07 | Client | 0915 | 60 | 0.4 | | 0.6 | 4.0 | 0.2 | |
| 28397.01 | SD1 - Ferndale | 02-Nov-07 | Oct-07 | Client | 1415 | 825 | 1.8 | | 0.7 | 4.0 | 1.2 | |
| 28661.01 | SD1 - Ferndale | 05-Dec-07 | Nov-07 | Client | 940 | 1075 | 0.7 | | 0.7 | 4.0 | 0.6 | |
| 28922.01 | SD1 - Ferndale | 02-Jan-08 | Dec-07 | Client | 1645 | 2110 | 1.2 | | 0.8 | 4.0 | 0.6 | |
| 29223.01 | SD1 - Ferndale | 04-Feb-08 | Jan-08 | Client | 1545 | 1375 | 1.0 | | 0.8 | 4.0 | 0.5 | |
| 29524.01 | SD1 - Ferndale | 05-Mar-08 | Feb-08 | Client | - | 1635 | 0.9 | | 0.8 | 4.0 | 0.4 | |
| 29772.01 | SD1 - Ferndale | 04-Apr-08 | Mar-08 | Client | 1405 | 165 | 2.6 | | 0.9 | 4.0 | 1.3 | |
| 30054.01 | SD1 - Ferndale | 08-May-08 | Apr-08 | Client | 1545 | 330 | 1.0 | | 1.0 | 4.0 | 0.8 | |
| 30385.01 | SD1 - Ferndale | 03-Jun-08 | May-08 | Client | 0835 | 770 | 0.5 | | 0.9 | 4.0 | 0.3 | |
| 30659.01 | SD1 - Ferndale | 09-Jul-08 | Jun-08 | Client | 0845 | 670 | 0.4 | | 0.9 | 4.0 | 0.3 | |
| 30901.01 | SD1 - Ferndale | 04-Aug-08 | Jul-08 | Client | 1545 | 455 | 0.3 | | 0.9 | 4.0 | 0.3 | |
| 31209.01 | SD1 - Ferndale | 02-Sep-08 | Aug-08 | Client | 0800 | 510 | 0.8 | | 0.9 | 4.0 | 0.4 | |
| 31526.01 | SD1 - Ferndale | 03-Oct-08 | Sep-08 | Client | 1020 | 815 | 0.6 | | 0.8 | 4.0 | 0.4 | |
| 31774.01 | SD1 - Ferndale | 05-Nov-08 | Oct-08 | Client | 1050 | 1160 | 1.9 | | 0.9 | 4.0 | 0.9 | |
| 32022.01 | SD1 - Ferndale | 02-Dec-08 | Nov-08 | Client | 1115 | 1760 | 0.8 | | 0.9 | 4.0 | 0.6 | |
| 32517.01 | SD1 - Ferndale | 06-Jan-09 | Dec-08 | Client | 0950 | 1005 | 1.1 | | 0.9 | 4.0 | 0.9 | |
| 32245.01 | SD1 - Ferndale | 03-Feb-09 | Jan-09 | Client | 1051 | 300 | 3.8 | | 1.0 | 4.0 | 2.2 | |
| 32862.01 | SD1 - Ferndale | 03-Mar-09 | Feb-09 | Client | 1024 | 1200 | 1.4 | | 1.0 | 4.0 | 1.1 | |
| 2600 1005 - 00 | SD1 - Ferndale | 02-Apr-09 | Mar-09 | ALS | 1105 | 50 | 2.6 | | 1.1 | 4.0 | 1.1 | Insects |
| 2600 1016 - 00 | SD1 - Ferndale | 04-May-09 | Apr-09 | ALS | 1035 | 350 | 0.8 | | 1.1 | 4.0 | 0.4 | Insects |
| 2600 1035 - 01 | SD1 - Ferndale | 03-Jun-09 | May-09 | ALS | 1420 | 600 | 1.4 | | 1.1 | 4.0 | 1.1 | |
| 2600 1040 - 02 | SD1 - Ferndale | 06-Jul-09 | Jun-09 | ALS | 1455 | 600 | 0.3 | | 1.1 | 4.0 | 0.3 | Insects |
| 2600 1052 - 01 | SD1 - Ferndale | 03-Aug-09 | Jul-09 | ALS | 1658 | 400 | 0.4 | | 1.0 | 4.0 | 0.2 | Insects, Bird Droppings |
| 2600 1063 - 00 | SD1 - Ferndale | 01-Sep-09 | Aug-09 | ALS | 0916 | 10 | 1.8 | | 1.1 | 4.0 | 1.1 | Insects |
| 2600 1099 - 01 | SD1 - Ferndale | 30-Sep-09 | Sep-09 | ALS | 1244 | 1100 | 9.7 | | 1.4 | 4.0 | 8.2 | Dust storm 23/9, Insects, Bird Droppings |
| 2600 1129 - 00 | SD1 - Ferndale | 04-Nov-09 | Oct-09 | ALS | 1047 | 700 | 3.7 | | 1.4 | 4.0 | 3.1 | Insects |
| 2600 1204 - 116 | SD1 - Ferndale | 02-Dec-09 | Nov-09 | ALS | 1021 | 10 | 0.6 | | 1.4 | 4.0 | 0.4 | Insects, Plant Material |
| 2600 1222 - 116 | SD1 - Ferndale | 31-Dec-09 | Dec-09 | ALS | 900 | 2200 | 1.2 | | 1.4 | 4.0 | 1.1 | |
| 2600 1234 - 000 | SD1 - Ferndale | 02-Feb-10 | Jan-10 | ALS | 1230 | 2100 | 1.8 | | 1.4 | 4.0 | 1.1 | Insects, Plant Material |
| 2600 1247 - 000 | SD1 - Ferndale | 04-Mar-10 | Feb-10 | ALS | 1005 | 2000 | 2.5 | | 1.4 | 4.0 | 1.0 | Insects,One Frog |
| 2600 1260 - 000 | SD1 - Ferndale | 01-Apr-10 | Mar-10 | ALS | 950 | 900 | 11.9 | | 1.7 | 4.0 | 2.2 | Insects,Plant Material |
| 2600 1268 - 000 | SD1 - Ferndale | 29-Apr-10 | Apr-10 | ALS | 1230 | 100 | 0.9 | | 1.7 | 4.0 | 0.5 | Insects,Plant Material |
| 2600 1277 - 000 | SD1 - Ferndale | 27-May-10 | May-10 | ALS | 1335 | 40 | 1.0 | | 1.7 | 4.0 | 0.7 | Insects,Plant Material |
| 2600 1288 - 778 | SD1 - Ferndale | 24-Jun-10 | Jun-10 | ALS | 1330 | 300 | 0.3 | | 1.6 | 4.0 | 0.2 | Insects,Plant Material |
| 26001289-879 | SD1 - Ferndale | 22-Jul-10 | Jul-10 | ALS | 1430 | 800 | 0.4 | | 1.6 | 4.0 | 0.2 | Insects,Plant Material |
| 2600-1309-912 | SD1 - Ferndale | 23-Aug-10 | Aug-10 | ALS | 1150 | 1800 | 2.0 | | 1.6 | 4.0 | 2.0 | Insects,Plant Material |
| 2600-1319 | SD1 - Ferndale | 22-Sep-10 | Sep-10 | ALS | 1150 | 1000 | 0.7 | | 1.6 | 4.0 | 0.4 | Insects, Plant Material |
| 2600-1340-17 | SD1 - Ferndale | 22-Oct-10 | Oct-10 | ALS | 1055 | 2500 | 10.8 | | 1.8 | 4.0 | 1.4 | dead frog in bottle |
| 1002974-001 | SD1 - Ferndale | 23-Nov-10 | Nov-10 | ALS | 1055 | 2500 | 2.8 | | 1.8 | 4.0 | 1.4 | N/A |
| 1003112-001 | SD1 - Ferndale | 23-Dec-10 | Dec-10 | ALS | 10:30 | ? | 0.5 | | 1.8 | 4.0 | 0.4 | No field observations |
| 1100198-001 | SD1 - Ferndale | 24-Jan-11 | Jan-11 | ALS | 11:20 | 1400 | 7.1 | | 1.9 | 4.0 | 3.9 | Insects, Bird droppings, plant material-Dead frog in bottle |
| 1100461-001 | SD1 - Ferndale | 23-Feb-11 | Feb-11 | ALS | 12:30 | ? | 7.4 | | 2.0 | 4.0 | 2.5 | No field observations |
| 1100716-001 | SD1 - Ferndale | 25-Mar-11 | Mar-11 | ALS | 12:25 | 400 | 2.7 | | 2.0 | 4.0 | 2.1 | Insects, plant material |
| 1100964-001 | SD1 - Ferndale | 21-Apr-11 | Apr-11 | ALS | 13:30 | 400 | 0.7 | | 2.0 | 4.0 | 0.6 | Insects, plant material |
| 1101206-001 | SD1 - Ferndale | 23-May-11 | May-11 | ALS | 12:40 | 400 | 0.5 | | 2.0 | 4.0 | 0.4 | No field observations |
| 1101487-001 | SD1 - Ferndale | 23-Jun-11 | Jun-11 | ALS | 11:10 | 500 | 0.5 | | 2.0 | 4.0 | 0.3 | Plant material |
| 1101835-001 | SD1 - Ferndale | 20-Jul-11 | Jul-11 | ALS | 9:00 | 50 | 0.5 | | 1.9 | 4.0 | 0.5 | No field observations |
| 1102364-001 | SD1 - Ferndale | 19-Aug-11 | Aug-11 | ALS | 10:20 | 400 | 0.4 | | 1.9 | 4.0 | 0.4 | Insects, Plant material |

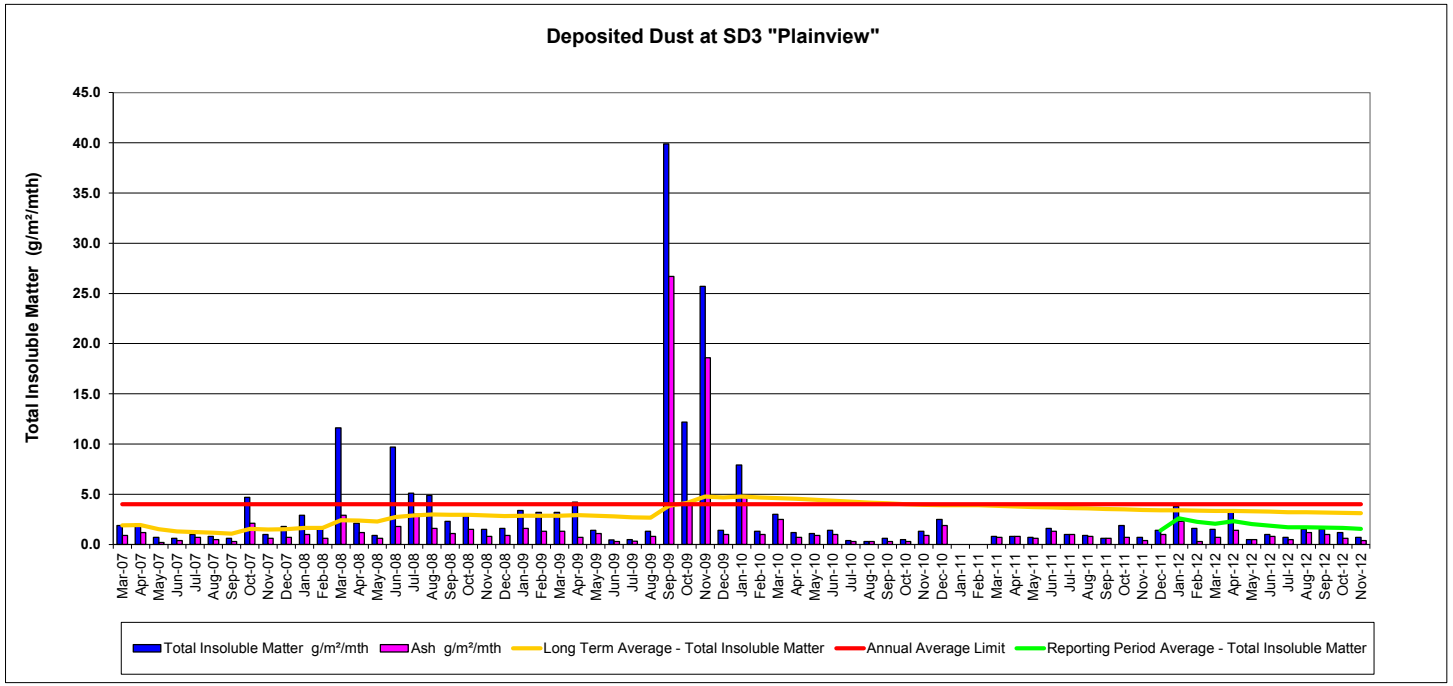
| Sample Number | Sample Location | Sample Date | Sample Month | Sampler | Time: (d) | Volume Collected (ml) | Total Insoluble Matter g/m²/mth | Reporting Period Average - Total Insoluble Matter | Long Term Average - Total Insoluble Matter | Annual Average Limit | Ash g/m²/mth | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1102817-001 | SD1 - Ferndale | 20-Sep-11 | Sep-11 | ALS | 11:55 | 600 | 3.2 | | 1.9 | 4.0 | 0.9 | Insects, Bird Droppings, Plant material |
| 1103134-001 | SD1 - Ferndale | 18-Oct-11 | Oct-11 | ALS | 11:10 | 900 | 1.3 | | 1.9 | 4.0 | 0.6 | Insects, Plant material |
| 1103513-001 | SD1 - Ferndale | 18-Nov-11 | Nov-11 | ALS | 10:25 | 800 | 3.7 | | 1.9 | 4.0 | 3.1 | Insects, Plant material |
| 1104388-001 | SD1 - Ferndale | 19-Dec-11 | Dec-11 | ALS | 11:40 | 2500 | 0.7 | 0.7 | 1.9 | 4.0 | 0.7 | N/A |
| 1200253-001 | SD1 - Ferndale | 17-Jan-12 | Jan-12 | ALS | 11:30 | 800 | 1.6 | 1.2 | 1.9 | 4.0 | 1.1 | Insects, Plant material |
| 1200664-001 | SD1 - Ferndale | 16-Feb-12 | Feb-12 | ALS | 10:45 | 1600 | 0.8 | 1.4 | 1.9 | 4.0 | 0.7 | Insects, Plant material |
| 1201070-001 | SD1 - Ferndale | 19-Mar-12 | Mar-12 | ALS | 10:40 | 800 | 0.8 | 1.2 | 1.9 | 4.0 | 0.7 | Insects, Plant material |
| 1201471-001 | SD1 - Ferndale | 18-Apr-12 | Apr-12 | ALS | 10:45 | 200 | 0.8 | 1.2 | 1.9 | 4.0 | 0.5 | Insects, Plant material |
| 1201905-001 | SD1 - Ferndale | 18-May-12 | May-12 | ALS | 12:10 | 500 | 1.6 | 1.3 | 1.9 | 4.0 | 1.5 | Insects, Plant material |
| 1202280-001 | SD1 - Ferndale | 19-Jun-12 | Jun-12 | ALS | 13:15 | 500 | 2.2 | 1.5 | 1.9 | 4.0 | 1.7 | Insects, Plant material |
| 1202698-001 | SD1 - Ferndale | 19-Jul-12 | Jul-12 | ALS | 9:00 | 900 | 1.1 | 1.5 | 1.9 | 4.0 | 0.8 | Insects, Plant material |
| 1203137-001 | SD1 - Ferndale | 20-Aug-12 | Aug-12 | ALS | 12:30 | 100 | 0.3 | 1.5 | 1.8 | 4.0 | 0.3 | Insects, Plant material |
| 1203602-001 | SD1 - Ferndale | 19-Sep-12 | Sep-12 | ALS | 10:10 | 100 | 1.2 | 1.3 | 1.8 | 4.0 | 0.9 | Insects, Plant material |
| 1204037-001 | SD1 - Ferndale | 19-Oct-12 | Oct-12 | ALS | 10:10 | 300 | 1.0 | 1.3 | 1.8 | 4.0 | 0.3 | Insects, Plant material |
| 1204424-001 | SD1 - Ferndale | 20-Nov-12 | Nov-12 | ALS | 10:55 | 150 | 0.8 | 1.1 | 1.8 | 4.0 | 0.6 | Insects, Plant material |



## Deposited Dust - SD3 "Plainview"

| Sample Number | Sample Location | Sample Date | Sample Month | Sampler | Time: (d) | Volume Collected (ml) | Total Insoluble Matter g/m²/mth | Reporting Period Average - Total Insoluble Matter | Long Term Average - Total Insoluble Matter | Annual Average Limit | Ash g/m²/mth | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26519.03 | SD3 - Plainview | 03-Apr-07 | Mar-07 | Client | 1630 | 660 | 1.9 | | 1.9 | 4.0 | 0.9 | |
| 26630.03 | SD3 - Plainview | 02-May-07 | Apr-07 | Client | 1715 | 400 | 2.0 | | 2.0 | 4.0 | 1.2 | |
| 26959.03 | SD3 - Plainview | 05-Jun-07 | May-07 | Client | 1645 | 1255 | 0.7 | | 1.5 | 4.0 | 0.2 | |
| 27233.03 | SD3 - Plainview | 02-Jul-07 | Jun-07 | Client | 1650 | 1400 | 0.6 | | 1.3 | 4.0 | 0.4 | |
| 27530.03 | SD3 - Plainview | 03-Aug-07 | Jul-07 | Client | 1400 | 165 | 1.0 | | 1.2 | 4.0 | 0.7 | |
| 27819.03 | SD3 - Plainview | 04-Sep-07 | Aug-07 | Client | 1505 | 1300 | 0.8 | | 1.2 | 4.0 | 0.5 | |
| 28118.03 | SD3 - Plainview | 05-Oct-07 | Sep-07 | Client | 0830 | 80 | 0.6 | | 1.1 | 4.0 | 0.3 | |
| 28397.03 | SD3 - Plainview | 02-Nov-07 | Oct-07 | Client | 1515 | 870 | 4.7 | | 1.5 | 4.0 | 2.1 | |
| 28661.03 | SD3 - Plainview | 05-Dec-07 | Nov-07 | Client | 0830 | 1290 | 1.0 | | 1.5 | 4.0 | 0.6 | |
| 28922.03 | SD3 - Plainview | 02-Jan-08 | Dec-07 | Client | 1730 | 2235 | 1.8 | | 1.5 | 4.0 | 0.7 | |
| 29223.03 | SD3 - Plainview | 04-Feb-08 | Jan-08 | Client | 1635 | 1535 | 2.9 | | 1.6 | 4.0 | 1.0 | |
| 29524.03 | SD3 - Plainview | 05-Mar-08 | Feb-08 | Client | 0810 | 2070 | 1.6 | | 1.6 | 4.0 | 0.6 | |
| 29772.03 | SD3 - Plainview | 04-Apr-08 | Mar-08 | Client | 1510 | 325 | 11.6 | | 2.4 | 4.0 | 2.9 | |
| 30054.03 | SD3 - Plainview | 08-May-08 | Apr-08 | Client | 1730 | 500 | 2.1 | | 2.4 | 4.0 | 1.2 | |
| 30385.03 | SD3 - Plainview | 03-Jun-08 | May-08 | Client | 1025 | 950 | 0.9 | | 2.3 | 4.0 | 0.6 | |
| 30659.03 | SD3 - Plainview | 09-Jul-08 | Jun-08 | Client | 1100 | 790 | 9.7 | | 2.7 | 4.0 | 1.8 | |
| 30901.03 | SD3 - Plainview | 04-Aug-08 | Jul-08 | Client | 1625 | 590 | 5.1 | | 2.9 | 4.0 | 3.0 | |
| 31209.03 | SD3 - Plainview | 02-Sep-08 | Aug-08 | Client | 0910 | 570 | 4.9 | | 3.0 | 4.0 | 1.6 | |
| 31526.03 | SD3 - Plainview | 03-Oct-08 | Sep-08 | Client | 1150 | 930 | 2.3 | | 3.0 | 4.0 | 1.1 | |
| 31774.03 | SD3 - Plainview | 05-Nov-08 | Oct-08 | Client | 1140 | 1250 | 2.8 | | 3.0 | 4.0 | 1.5 | |
| 32022.03 | SD3 - Plainview | 02-Dec-08 | Nov-08 | Client | 1245 | 2070 | 1.5 | | 2.9 | 4.0 | 0.8 | |
| 32517.03 | SD3 - Plainview | 06-Jan-09 | Dec-08 | Client | 1347 | 1580 | 1.6 | | 2.8 | 4.0 | 0.9 | |
| 32245.02 | SD3 - Plainview | 03-Feb-09 | Jan-09 | Client | 1208 | 585 | 3.4 | | 2.8 | 4.0 | 1.6 | |
| 32862.03 | SD3 - Plainview | 03-Mar-09 | Feb-09 | Client | 1142 | 1410 | 3.2 | | 2.9 | 4.0 | 1.3 | |
| 2600 1005 - 00 | SD3 - Plainview | 02-Apr-09 | Mar-09 | ALS | 1115 | 50 | 3.2 | | 2.9 | 4.0 | 1.3 | Insects |
| 2600 1016 - 00 | SD3 - Plainview | 04-May-09 | Apr-09 | ALS | 1045 | 300 | 4.2 | | 2.9 | 4.0 | 0.7 | Insects |
| 2600 1035 - 01 | SD3 - Plainview | 03-Jun-09 | May-09 | ALS | 1330 | 600 | 1.4 | | 2.9 | 4.0 | 1.1 | |
| 2602 1040 - 02 | SD3 - Plainview | 06-Jul-09 | Jun-09 | ALS | 1420 | 600 | 0.5 | | 2.8 | 4.0 | 0.3 | Insects, Plant Material |
| 2601 1052 - 01 | SD3 - Plainview | 03-Aug-09 | Jul-09 | ALS | 1708 | 450 | 0.5 | | 2.7 | 4.0 | 0.3 | Insects, Plant Material, Bird Droppings |
| 2600 1063 - 00 | SD3 - Plainview | 01-Sep-09 | Aug-09 | ALS | 0824 | 10 | 1.3 | | 2.7 | 4.0 | 0.8 | Insects, Plant Material |
| 2600 1063 - 00 | SD3 - Plainview | 30-Sep-09 | Sep-09 | ALS | 1222 | 1200 | 39.9 | | 3.9 | 4.0 | 26.7 | Insects, Bird Droppings, |
| 2600 1129 - 00 | SD3 - Plainview | 04-Nov-09 | Oct-09 | ALS | 1141 | 300 | 12.2 | | 4.1 | 4.0 | 4.0 | Dust storm - 23/9, sample contamination |
| 2600 1204 - 116 | SD3 - Plainview | 02-Dec-09 | Nov-09 | ALS | 0932 | 100 | 25.7 | | 4.8 | 4.0 | 18.6 | Insects, Bird Droppings, Plant Material |
| 2600 1222 - 116 | SD3 - Plainview | 31-Dec-09 | Dec-09 | ALS | 819 | 2000 | 1.4 | | 4.7 | 4.0 | 1 | Insects |
| 2600 1234 - 000 | SD3 - Plainview | 02-Feb-10 | Jan-10 | ALS | 1145 | 2400 | 7.9 | | 4.8 | 4.0 | 4.7 | Insects, Plant Material |
| 2601 1247 - 000 | SD3 - Plainview | 04-Mar-10 | Feb-10 | ALS | 1120 | 2200 | 1.3 | | 4.7 | 4.0 | 1 | Insects |
| 2600 1260 - 000 | SD3 - Plainview | 01-Apr-10 | Mar-10 | ALS | 925 | 900 | 3 | | 4.6 | 4.0 | 2.5 | Insects,Plant Material |
| 2600 1268 - 000 | SD3 - Plainview | 29-Apr-10 | Apr-10 | ALS | 1130 | 100 | 1.2 | | 4.5 | 4.0 | 0.7 | Insects,Plant Material |
| 2600 1277 - 000 | SD3 - Plainview | 27-May-10 | May-10 | ALS | 1300 | 50 | 1.1 | | 4.4 | 4.0 | 0.9 | Insects,Plant Material |
| 2600 1288 - 778 | SD3 - Plainview | 24-Jun-10 | Jun-10 | ALS | 1405 | 300 | 1.4 | | 4.4 | 4.0 | 1 | Plant Material |
| 26001289-879 | SD3 - Plainview | 22-Jul-10 | Jul-10 | ALS | 1510 | 800 | 0.4 | | 4.3 | 4.0 | 0.3 | Insects |
| 2600-1309-912 | SD3 - Plainview | 23-Aug-10 | Aug-10 | ALS | 1325 | 1800 | 0.3 | | 4.2 | 4.0 | 0.3 | Insects |
| 2600-1319 | SD3 - Plainview | 22-Sep-10 | Sep-10 | ALS | 1325 | 900 | 0.6 | | 4.1 | 4.0 | 0.3 | Insects, Plant Material |
| 2600-1340-17 | SD3 - Plainview | 22-Oct-10 | Oct-10 | ALS | 1250 | 2500 | 0.5 | | 4.0 | 4.0 | 0.3 | N/A |
| 1002974-002 | SD3 - Plainview | 23-Nov-10 | Nov-10 | ALS | 1250 | 2500 | 1.3 | | 4.0 | 4.0 | 0.9 | N/A |
| 1003112-002 | SD3 - Plainview | 23-Dec-10 | Dec-10 | ALS | 10:00 | N/A | 2.5 | | 3.9 | 4.0 | 1.9 | No field observations |
| N/A | SD3 - Plainview | N/A | Jan-11 | ALS | N/A | N/A | N/A | | 3.9 | 4.0 | N/A | SD3 Damaged. To be replaced. |
| N/A | SD3 - Plainview | N/A | Feb-11 | ALS | N/A | N/A | N/A | | 3.9 | 4.0 | N/A | SD3 Damaged. To be replaced. |
| 1100716-002 | SD3 - Plainview | 25-Mar-11 | Mar-11 | ALS | 13:05 | 500 | 0.8 | | 3.9 | 4.0 | 0.7 | Insects, plant material |
| 1100964-002 | SD3 - Plainview | 21-Apr-11 | Apr-11 | ALS | 13:50 | 500 | 0.8 | | 3.8 | 4.0 | 0.8 | Insects, plant material |
| 1101206-002 | SD3 - Plainview | 23-May-11 | May-11 | ALS | 13:35 | 500 | 0.7 | | 3.7 | 4.0 | 0.6 | Insects |
| 1101487-002 | SD3 - Plainview | 23-Jun-11 | Jun-11 | ALS | 11:50 | 500 | 1.6 | | 3.7 | 4.0 | 1.3 | Insects/Plant material |
| 1101835-002 | SD3 - Plainview | 20-Jul-11 | Jul-11 | ALS | 9:10 | 100 | 1.0 | | 3.6 | 4.0 | 1.0 | Insects, Plant material |
| 1102364-002 | SD3 - Plainview | 19-Aug-11 | Aug-11 | ALS | 10:40 | 400 | 0.9 | | 3.6 | 4.0 | 0.8 | Plant material |

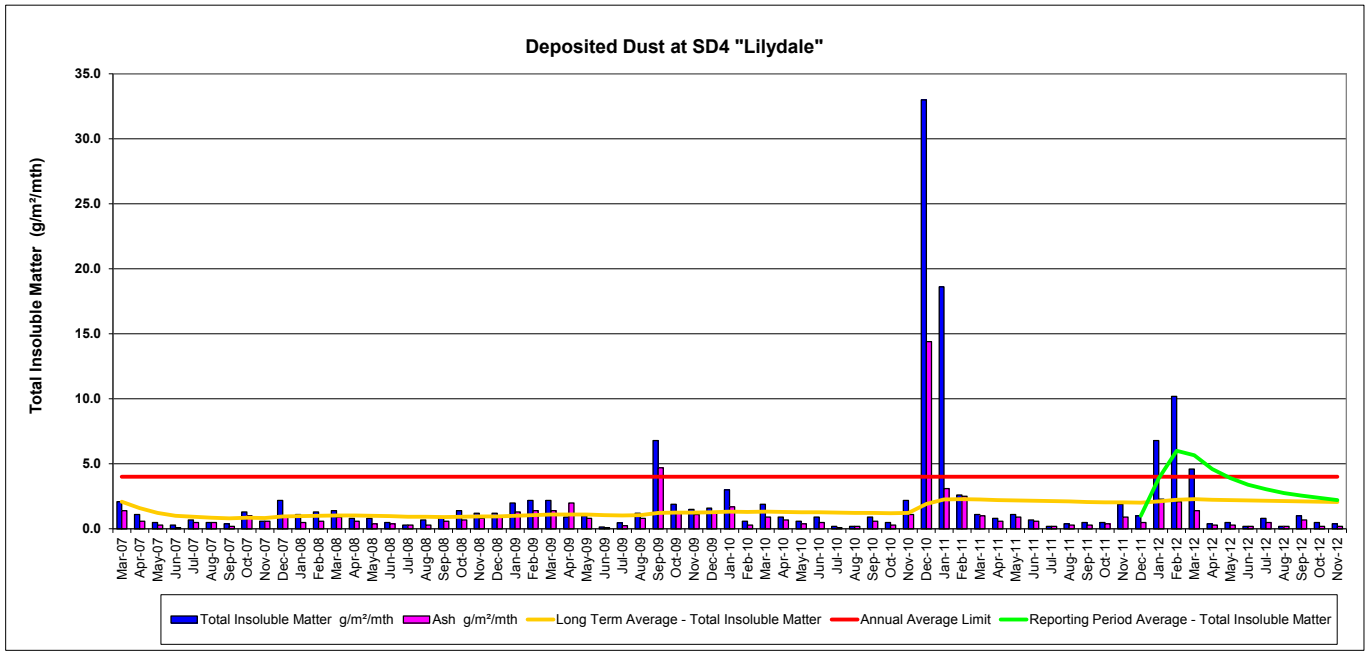
| Sample Number | Sample Location | Sample Date | Sample Month | Sampler | Time: (d) | Volume Collected (ml) | Total Insoluble Matter g/m²/mth | Reporting Period Average - Total Insoluble Matter | Long Term Average - Total Insoluble Matter | Annual Average Limit | Ash g/m²/mth | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1102817-002 | SD3 - Plainview | 20-Sep-11 | Sep-11 | ALS | 10:00 | 800 | 0.6 | | 3.5 | 4.0 | 0.6 | Insects |
| 1103134-002 | SD3 - Plainview | 18-Oct-11 | Oct-11 | ALS | 11:50 | 1100 | 1.9 | | 3.5 | 4.0 | 0.7 | Insects, Bird Droppings, Plant material |
| 1103513-002 | SD3 - Plainview | 18-Nov-11 | Nov-11 | ALS | 11:10 | 800 | 0.7 | | 3.4 | 4.0 | 0.4 | Insects, Plant material |
| 1104388-002 | SD3 - Plainview | 19-Dec-11 | Dec-11 | ALS | 13:20 | 2500 | 1.4 | 1.4 | 3.4 | 4.0 | 1.0 | Plant Material |
| 1200253-002 | SD3 - Plainview | 17-Jan-12 | Jan-12 | ALS | 9:20 | 1100 | 3.8 | 2.6 | 3.4 | 4.0 | 2.3 | Insects, Plant material |
| 1200664-002 | SD3 - Plainview | 16-Feb-12 | Feb-12 | ALS | 11:50 | 1500 | 1.6 | 2.3 | 3.4 | 4.0 | 0.3 | Insects, Plant material |
| 1201070-002 | SD3 - Plainview | 19-Mar-12 | Mar-12 | ALS | 9:10 | 800 | 1.5 | 2.1 | 3.4 | 4.0 | 0.7 | Insects, Plant material |
| 1201471-002 | SD3 - Plainview | 18-Apr-12 | Apr-12 | ALS | 10:00 | 200 | 3.3 | 2.3 | 3.4 | 4.0 | 1.4 | Insects, Plant material |
| 1201905-002 | SD3 - Plainview | 18-May-12 | May-12 | ALS | 13:20 | 500 | 0.5 | 2.0 | 3.3 | 4.0 | 0.5 | Insects, Plant material |
| 1202280-002 | SD3 - Plainview | 19-Jun-12 | Jun-12 | ALS | 14:30 | 500 | 1.0 | 1.9 | 3.3 | 4.0 | 0.8 | Plant material |
| 1202698-002 | SD3 - Plainview | 19-Jul-12 | Jul-12 | ALS | 11:35 | 900 | 0.7 | 1.7 | 3.2 | 4.0 | 0.5 | Insects, Plant material |
| 1203137-002 | SD3 - Plainview | 20-Aug-12 | Aug-12 | ALS | 11:30 | 100 | 1.5 | 1.7 | 3.2 | 4.0 | 1.2 | Insects, Plant material |
| 1203602-002 | SD3 - Plainview | 19-Sep-12 | Sep-12 | ALS | 9:15 | 100 | 1.5 | 1.7 | 3.2 | 4.0 | 1.0 | Insects, Plant material |
| 1204037-002 | SD3 - Plainview | 19-Oct-12 | Oct-12 | ALS | 11:00 | 300 | 1.2 | 1.6 | 3.1 | 4.0 | 0.6 | Insects, Plant material |
| 1204424-002 | SD3 - Plainview | 20-Nov-12 | Nov-12 | ALS | 11:45 | 150 | 0.7 | 1.6 | 3.1 | 4.0 | 0.4 | Insects, Plant material |



## Deposited Dust - SD4 "Lilydale"

| Sample Number | Sample Location | Sample Date | Sample Month | Sampler | Time: (d) | Volume Collected (ml) | Total Insoluble Matter g/m²/mth | Reporting Period Average - Total Insoluble Matter | Long Term Average - Total Insoluble Matter | Annual Average Limit | Ash g/m²/mth | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26519.04 | SD4 - Lilydale | 03-Apr-07 | Mar-07 | Client | 1635 | 365 | 2.1 | | 2.1 | 4.0 | 1.4 | |
| 26630.04 | SD4 - Lilydale | 02-May-07 | Apr-07 | Client | 1705 | 405 | 1.1 | | 1.6 | 4.0 | 0.6 | |
| 26959.04 | SD4 - Lilydale | 05-Jun-07 | May-07 | Client | 1640 | 1180 | 0.5 | | 1.2 | 4.0 | 0.3 | |
| 27233.04 | SD4 - Lilydale | 02-Jul-07 | Jun-07 | Client | 1645 | 1360 | 0.3 | | 1.0 | 4.0 | 0.1 | |
| 27530.04 | SD4 - Lilydale | 03-Aug-07 | Jul-07 | Client | 1345 | 115 | 0.7 | | 0.9 | 4.0 | 0.5 | |
| 27819.04 | SD4 - Lilydale | 04-Sep-07 | Aug-07 | Client | 1500 | 1190 | 0.5 | | 0.9 | 4.0 | 0.5 | |
| 28118.04 | SD4 - Lilydale | 05-Oct-07 | Sep-07 | Client | 0840 | 65 | 0.4 | | 0.8 | 4.0 | 0.2 | |
| 28397.04 | SD4 - Lilydale | 02-Nov-07 | Oct-07 | Client | 1505 | 640 | 1.3 | | 0.9 | 4.0 | 1.0 | |
| 28661.04 | SD4 - Lilydale | 05-Dec-07 | Nov-07 | Client | 0840 | 1240 | 0.6 | | 0.8 | 4.0 | 0.6 | |
| 28922.04 | SD4 - Lilydale | 02-Jan-08 | Dec-07 | Client | 1720 | 2075 | 2.2 | | 1.0 | 4.0 | 1.0 | |
| 29223.04 | SD4 - Lilydale | 04-Feb-08 | Jan-08 | Client | 1625 | 1510 | 1.1 | | 1.0 | 4.0 | 0.5 | |
| 29524.04 | SD4 - Lilydale | 05-Mar-08 | Feb-08 | Client | 0820 | 1740 | 1.3 | | 1.0 | 4.0 | 0.6 | |
| 29772.04 | SD4 - Lilydale | 04-Apr-08 | Mar-08 | Client | 1500 | 140 | 1.4 | | 1.0 | 4.0 | 0.9 | |
| 30054.04 | SD4 - Lilydale | 08-May-08 | Apr-08 | Client | 1725 | 355 | 0.8 | | 1.0 | 4.0 | 0.6 | |
| 30385-04 | SD4 - Lilydale | 03-Jun-08 | May-08 | Client | 1020 | 915 | 0.8 | | 1.0 | 4.0 | 0.4 | |
| 30659.04 | SD4 - Lilydale | 09-Jul-08 | Jun-08 | Client | 1050 | 670 | 0.5 | | 1.0 | 4.0 | 0.4 | |
| 30901.04 | SD4 - Lilydale | 04-Aug-08 | Jul-08 | Client | 1615 | 465 | 0.3 | | 0.9 | 4.0 | 0.3 | |
| 31209.04 | SD4 - Lilydale | 02-Sep-08 | Aug-08 | Client | 0900 | 525 | 0.7 | | 0.9 | 4.0 | 0.3 | |
| 31526.04 | SD4 - Lilydale | 03-Oct-08 | Sep-08 | Client | 1135 | 785 | 0.9 | | 0.9 | 4.0 | 0.6 | |
| 31774.04 | SD4 - Lilydale | 05-Nov-08 | Oct-08 | Client | 1130 | 1030 | 1.4 | | 0.9 | 4.0 | 0.7 | |
| 32022.04 | SD4 - Lilydale | 02-Dec-08 | Nov-08 | Client | 1235 | 1895 | 1.2 | | 1.0 | 4.0 | 0.8 | |
| 32517.04 | SD4 - Lilydale | 06-Jan-09 | Dec-08 | Client | 1338 | 1090 | 1.2 | | 1.0 | 4.0 | 0.9 | |
| 32245.03 | SD4 - Lilydale | 03-Feb-09 | Jan-09 | Client | 1151 | 125 | 2.0 | | 1.0 | 4.0 | 1.3 | |
| 32862.04 | SD4 - Lilydale | 03-Mar-09 | Feb-09 | Client | 1127 | 1090 | 2.2 | | 1.1 | 4.0 | 1.4 | |
| 2600 1005 - 00 | SD4 - Lilydale | 02-Apr-09 | Mar-09 | ALS | 1036 | 50 | 2.2 | | 1.1 | 4.0 | 1.4 | Insects |
| 2600 1016 - 00 | SD4 - Lilydale | 04-May-09 | Apr-09 | ALS | 1109 | 250 | 0.9 | | 1.1 | 4.0 | 2.0 | Insects |
| 2600 1035 - 01 | SD4 - Lilydale | 03-Jun-09 | May-09 | ALS | 1325 | 500 | 1.0 | | 1.1 | 4.0 | 0.8 | |
| 2603 1040 - 02 | SD4 - Lilydale | 06-Jul-09 | Jun-09 | ALS | 1415 | 650 | 0.1 | | 1.1 | 4.0 | 0.1 | Insects, Plant Material |
| 2602 1052 - 01 | SD4 - Lilydale | 03-Aug-09 | Jul-09 | ALS | 1635 | 450 | 0.5 | | 1.0 | 4.0 | 0.3 | |
| 2600 1063 - 00 | SD4 - Lilydale | 01-Sep-09 | Aug-09 | ALS | 0830 | 10 | 1.2 | | 1.0 | 4.0 | 0.8 | Insects |
| 2600 1063 - 00 | SD4 - Lilydale | 30-Sep-09 | Sep-09 | ALS | 1139 | 900 | 6.8 | | 1.2 | 4.0 | 4.7 | Dust storm 23/9 |
| 2600 1129 - 00 | SD4 - Lilydale | 04-Nov-09 | Oct-09 | ALS | 1127 | 600 | 1.9 | | 1.3 | 4.0 | 1.2 | Insects, Bird Dropping, Plant Material |
| 2600 1204 - 116 | SD4 - Lilydale | 02-Dec-09 | Nov-09 | ALS | 0925 | 15 | 1.5 | | 1.3 | 4.0 | 1.1 | Insects, Plant Material |
| 2600 1222 - 116 | SD4 - Lilydale | 31-Dec-09 | Dec-09 | ALS | 8:30 | 2200 | 1.6 | | 1.3 | 4.0 | 1.3 | |
| 2600 1234 - 000 | SD4 - Lilydale | 02-Feb-10 | Jan-10 | ALS | 11:25 | 2200 | 3.0 | | 1.3 | 4.0 | 1.7 | Insects, Plant Material |
| 2602 1247 - 000 | SD4 - Lilydale | 04-Mar-10 | Feb-10 | ALS | 11:15 | 1800 | 0.6 | | 1.3 | 4.0 | 0.3 | Insects, Bird droppings, Plant Material |
| 2600 1260 - 000 | SD4 - Lilydale | 01-Apr-10 | Mar-10 | ALS | 915 | 800 | 1.9 | | 1.3 | 4.0 | 0.9 | Insects,Plant Material |
| 2600 1268 - 000 | SD4 - Lilydale | 29-Apr-10 | Apr-10 | ALS | 1115 | 75 | 0.9 | | 1.3 | 4.0 | 0.7 | Insects,Bird Droppings,Plant Material, Frogs |
| 2600 1277 - 000 | SD4 - Lilydale | 27-May-10 | May-10 | ALS | 1245 | 50 | 0.6 | | 1.3 | 4.0 | 0.4 | Plant Material |
| 2600 1288 - 778 | SD4 - Lilydale | 24-Jun-10 | Jun-10 | ALS | 1415 | 200 | 0.9 | | 1.3 | 4.0 | 0.5 | Insects,Plant Material |
| 26001289-879 | SD4 - Lilydale | 22-Jul-10 | Jul-10 | ALS | 15:00 | 600 | 0.2 | | 1.3 | 4.0 | 0.1 | Insects |
| 2600-1309-912 | SD4 - Lilydale | 23-Aug-10 | Aug-10 | ALS | 10:05 | 1800 | 0.2 | | 1.2 | 4.0 | 0.2 | Insects |
| 2600-1319 | SD4 - Lilydale | 22-Sep-10 | Sep-10 | ALS | 10:05 | 800 | 0.9 | | 1.2 | 4.0 | 0.6 | Insects |
| 2600-1340-17 | SD4 - Lilydale | 22-Oct-10 | Oct-10 | ALS | 12:15 | 2500 | 0.5 | | 1.2 | 4.0 | 0.3 | dead frog in bottle |
| 1002974-003 | SD4 - Lilydale | 23-Nov-10 | Nov-10 | ALS | 12:15 | 2500 | 2.2 | | 1.2 | 4.0 | 1.1 | N/A |
| 1003112-003 | SD4 - Lilydale | 23-Dec-10 | Dec-10 | ALS | 9:00 | N/A | 33.0 | | 1.9 | 4.0 | 14.4 | No field observations |
| 1100198-003 | SD4 - Lilydale | 24-Jan-11 | Jan-11 | ALS | 12:30 | 1000 | 18.6 | | 2.3 | 4.0 | 3.1 | Insects, plant material |
| 1100461-003 | SD4 - Lilydale | 23-Feb-11 | Feb-11 | ALS | 13:45 | N/A | 2.6 | | 2.3 | 4.0 | 2.5 | No field observations |
| 1100716-003 | SD4 - Lilydale | 25-Mar-11 | Mar-11 | ALS | 13:25 | 600 | 1.1 | | 2.3 | 4.0 | 1.0 | Insects, plant material |
| 1100964-003 | SD4 - Lilydale | 21-Apr-11 | Apr-11 | ALS | 14:05 | 400 | 0.8 | | 2.2 | 4.0 | 0.6 | Insects, plant material |
| 1101206-003 | SD4 - Lilydale | 23-May-11 | May-11 | ALS | 13:50 | 300 | 1.1 | | 2.2 | 4.0 | 0.9 | Insects |
| 1101487-003 | SD4 - Lilydale | 23-Jun-11 | Jun-11 | ALS | 12:05 | 500 | 0.7 | | 2.2 | 4.0 | 0.6 | Insects/Plant material |
| 1101835-003 | SD4 - Lilydale | 20-Jul-11 | Jul-11 | ALS | 8:30 | 100 | 0.2 | | 2.1 | 4.0 | 0.2 | Insects |
| 1102364-003 | SD4 - Lilydale | 19-Aug-11 | Aug-11 | ALS | 10:50 | 400 | 0.4 | | 2.1 | 4.0 | 0.3 | Insects, Plant material |
| 1102817-003 | SD4 - Lilydale | 20-Sep-11 | Sep-11 | ALS | 10:30 | 600 | 0.5 | | 2.1 | 4.0 | 0.3 | Insects, Plant material |

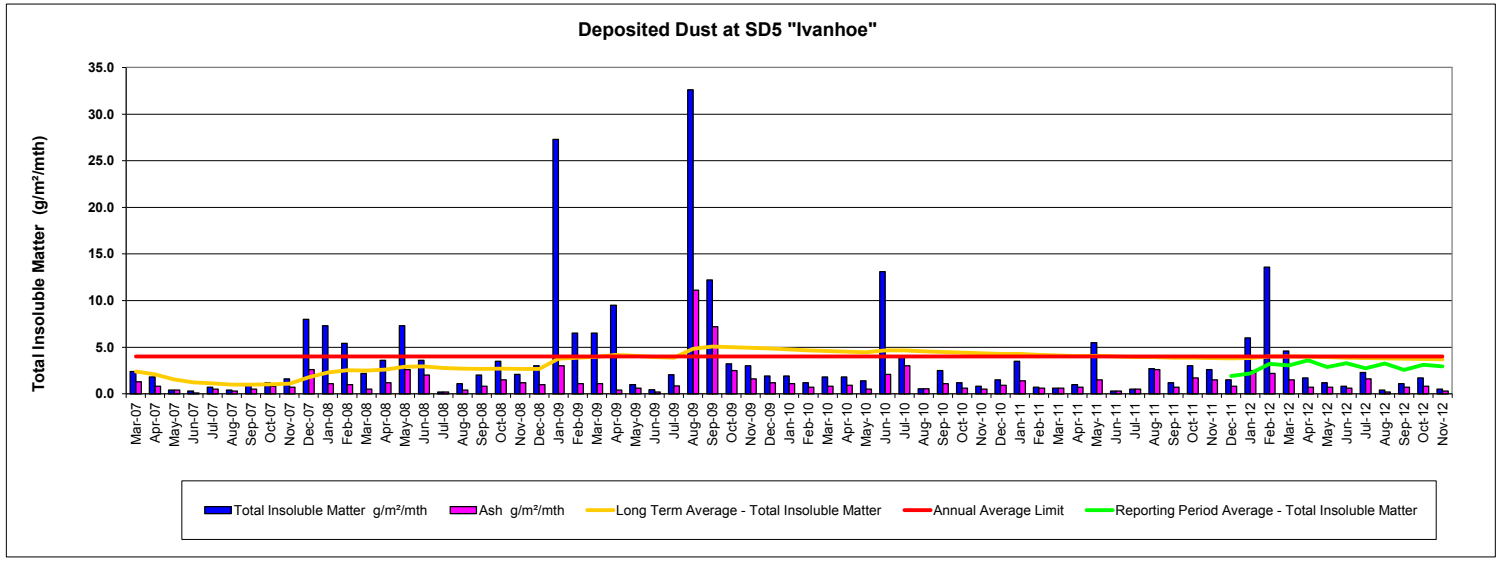
| Sample Number | Sample Location | Sample Date | Sample Month | Sampler | Time: (d) | Volume Collected (ml) | Total Insoluble Matter g/m²/mth | Reporting Period Average - Total Insoluble Matter | Long Term Average - Total Insoluble Matter | Annual Average Limit | Ash g/m²/mth | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1103134-003 | SD4 - Lilydale | 18-Oct-11 | Oct-11 | ALS | 12:15 | 900 | 0.5 | | 2.0 | 4.0 | 0.4 | Insects, Plant material |
| 1103513-003 | SD4 - Lilydale | 18-Nov-11 | Nov-11 | ALS | 11:20 | 800 | 1.9 | | 2.0 | 4.0 | 0.9 | Insects, Plant material |
| 1104388-003 | SD4 - Lilydale | 19-Dec-11 | Dec-11 | ALS | 12:50 | 2500 | 1.0 | 1.0 | 2.0 | 4.0 | 0.5 | Insects, Plant material |
| 1200253-003 | SD4 - Lilydale | 17-Jan-12 | Jan-12 | ALS | 9:30 | 1100 | 6.8 | 3.9 | 2.1 | 4.0 | 2.3 | Insects, Plant material |
| 1200664-003 | SD4 - Lilydale | 16-Feb-12 | Feb-12 | ALS | 11:35 | 1400 | 10.2 | 6.0 | 2.2 | 4.0 | 2.1 | Insects, Plant material |
| 1201070-003 | SD4 - Lilydale | 19-Mar-12 | Mar-12 | ALS | 9:30 | 800 | 4.6 | 5.7 | 2.3 | 4.0 | 1.4 | Insects, Bird droppings, Plant material |
| 1201471-003 | SD4 - Lilydale | 18-Apr-12 | Apr-12 | ALS | 10:15 | 200 | 0.4 | 4.6 | 2.2 | 4.0 | 0.3 | Insects, Plant material |
| 1201905-003 | SD4 - Lilydale | 18-May-12 | May-12 | ALS | 12:35 | 400 | 0.5 | 3.9 | 2.2 | 4.0 | 0.3 | Insects, Plant material |
| 1202280-003 | SD4 - Lilydale | 19-Jun-12 | Jun-12 | ALS | 14:10 | 400 | 0.2 | 3.4 | 2.2 | 4.0 | 0.2 | Plant material |
| 1202698-003 | SD4 - Lilydale | 19-Jul-12 | Jul-12 | ALS | 11:25 | 900 | 0.8 | 3.1 | 2.2 | 4.0 | 0.5 | Insects, Plant material |
| 1203137-003 | SD4 - Lilydale | 20-Aug-12 | Aug-12 | ALS | 12:00 | 100 | 0.2 | 2.7 | 2.1 | 4.0 | 0.2 | Insects, Plant material |
| 1203602-003 | SD4 - Lilydale | 19-Sep-12 | Sep-12 | ALS | 9:00 | 100 | 1.0 | 2.6 | 2.1 | 4.0 | 0.7 | Insects, Plant material |
| 1204037-003 | SD4 - Lilydale | 19-Oct-12 | Oct-12 | ALS | 11:10 | 300 | 0.5 | 2.4 | 2.1 | 4.0 | 0.2 | Insects, Plant material |
| 1204424-003 | SD4 - Lilydale | 20-Nov-12 | Nov-12 | ALS | 12:10 | 150 | 0.4 | 2.2 | 2.1 | 4.0 | 0.2 | Insects, Plant material |



## Deposited Dust - SD5 "Ivanhoe"

| Sample Number | Sample Location | Sample Date | Sample Month | Sampler | Time: (d) | Volume Collected (ml) | Total Insoluble Matter g/m²/mth | Reporting Period Average - Total Insoluble Matter | Long Term Average - Total Insoluble Matter | Annual Average Limit | Ash g/m²/mth | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 26519.05 | SD5 - Ivanhoe | 03-Apr-07 | Mar-07 | Client | 1655 | 410 | 2.4 | | 2.4 | 4.0 | 1.3 | |
| 26630.05 | SD5 - Ivanhoe | 02-May-07 | Apr-07 | Client | 1445 | 430 | 1.8 | | 2.1 | 4.0 | 0.8 | |
| 26959.05 | SD5 - Ivanhoe | 05-Jun-07 | May-07 | Client | 1625 | 1345 | 0.4 | | 1.5 | 4.0 | 0.4 | |
| 27233.05 | SD5 - Ivanhoe | 02-Jul-07 | Jun-07 | Client | 1630 | 1570 | 0.3 | | 1.2 | 4.0 | 0.1 | |
| 27530.05 | SD5 - Ivanhoe | 03-Aug-07 | Jul-07 | Client | 1330 | 185 | 0.7 | | 1.1 | 4.0 | 0.5 | |
| 27819.05 | SD5 - Ivanhoe | 04-Sep-07 | Aug-07 | Client | 1440 | 1325 | 0.4 | | 1.0 | 4.0 | 0.3 | |
| 28118.05 | SD5 - Ivanhoe | 05-Oct-07 | Sep-07 | Client | 0905 | 80 | 0.9 | | 1.0 | 4.0 | 0.5 | |
| 28397.05 | SD5 - Ivanhoe | 02-Nov-07 | Oct-07 | Client | 1450 | 830 | 1.2 | | 1.0 | 4.0 | 0.8 | |
| 28661.05 | SD5 - Ivanhoe | 05-Dec-07 | Nov-07 | Client | 0920 | 1545 | 1.6 | | 1.1 | 4.0 | 0.7 | |
| 28922.05 | SD5 - Ivanhoe | 02-Jan-08 | Dec-07 | Client | 1705 | 2265 | 8.0 | | 1.8 | 4.0 | 2.6 | |
| 29223.05 | SD5 - Ivanhoe | 04-Feb-08 | Jan-08 | Client | 1610 | 1330 | 7.3 | | 2.3 | 4.0 | 1.1 | |
| 29524.05 | SD5 - Ivanhoe | 05-Mar-08 | Feb-08 | Client | 0940 | 1415 | 5.4 | | 2.5 | 4.0 | 1.0 | |
| 29772.05 | SD5 - Ivanhoe | 04-Apr-08 | Mar-08 | Client | 1425 | 155 | 2.2 | | 2.5 | 4.0 | 0.5 | |
| 30054.05 | SD5 - Ivanhoe | 08-May-08 | Apr-08 | Client | 1635 | 480 | 3.6 | | 2.6 | 4.0 | 1.2 | |
| 30385-05 | SD5 - Ivanhoe | 03-Jun-08 | May-08 | Client | 931 | 1060 | 7.3 | | 2.9 | 4.0 | 2.6 | |
| 30659.05 | SD5 - Ivanhoe | 09-Jul-08 | Jun-08 | Client | 1015 | 695 | 3.6 | | 2.9 | 4.0 | 2.0 | |
| 30901.05 | SD5 - Ivanhoe | 04-Aug-08 | Jul-08 | Client | 1600 | 375 | 0.2 | | 2.8 | 4.0 | 0.2 | |
| 31209.05 | SD5 - Ivanhoe | 02-Sep-08 | Aug-08 | Client | 0830 | 535 | 1.1 | | 2.7 | 4.0 | 0.4 | |
| 31526.05 | SD5 - Ivanhoe | 03-Oct-08 | Sep-08 | Client | 1100 | 865 | 2.0 | | 2.7 | 4.0 | 0.8 | |
| 31774.05 | SD5 - Ivanhoe | 05-Nov-08 | Oct-08 | Client | 1114 | 1060 | 3.5 | | 2.7 | 4.0 | 1.5 | |
| 32022.05 | SD5 - Ivanhoe | 02-Dec-08 | Nov-08 | Client | 1145 | 2030 | 2.1 | | 2.7 | 4.0 | 1.2 | |
| 32517.05 | SD5 - Ivanhoe | 06-Jan-09 | Dec-08 | Client | 1321 | 1395 | 3.0 | | 2.7 | 4.0 | 1.0 | |
| 32245.04 | SD5 - Ivanhoe | 03-Feb-09 | Jan-09 | Client | 1130 | 375 | 27.3 | | 3.8 | 4.0 | 3.0 | |
| 32862.05 | SD5 - Ivanhoe | 03-Mar-09 | Feb-09 | Client | 1100 | 1550 | 6.5 | | 3.9 | 4.0 | 1.1 | |
| 2600 1005 - 00 | SD5 - Ivanhoe | 02-Apr-09 | Mar-09 | ALS | 1044 | 150 | 6.5 | | 4.0 | 4.0 | 1.1 | Insects, Bird droppings |
| 2600 1016 - 00 | SD5 - Ivanhoe | 04-May-09 | Apr-09 | ALS | 1120 | 300 | 9.5 | | 4.2 | 4.0 | 0.4 | Insects, |
| 2600 1035 - 01 | SD5 - Ivanhoe | 03-Jun-09 | May-09 | ALS | 1345 | 600 | 1.0 | | 4.1 | 4.0 | 0.6 | Insects, plant material |
| 2604 1040 - 02 | SD5 - Ivanhoe | 06-Jul-09 | Jun-09 | ALS | 1520 | 700 | 0.4 | | 3.9 | 4.0 | 0.2 | |
| 2603 1052 - 01 | SD5 - Ivanhoe | 03-Aug-09 | Jul-09 | ALS | 1642 | 450 | 2.1 | | 3.9 | 4.0 | 0.8 | Insects, Bird Droppings |
| 2600 1063 - 00 | SD5 - Ivanhoe | 01-Sep-09 | Aug-09 | ALS | 0847 | 10 | 32.6 | | 4.8 | 4.0 | 11.1 | Insects, Bird Droppings, Plant Material |
| 2600 1063 - 00 | SD5 - Ivanhoe | 30-Sep-09 | Sep-09 | ALS | 1206 | 1100 | 12.2 | | 5.1 | 4.0 | 7.2 | Dust storm 23/9, sample contamination |
| 2600 1129 - 00 | SD5 - Ivanhoe | 04-Nov-09 | Oct-09 | ALS | 1113 | 600 | 3.2 | | 5.0 | 4.0 | 2.5 | Insects, Plant Material |
| 2600 1204 - 116 | SD5 - Ivanhoe | 02-Dec-09 | Nov-09 | ALS | 1000 | 100 | 3 | | 4.9 | 4.0 | 1.6 | Insects, Bird Droppings, Plant Material |
| 2600 1222 - 116 | SD5 - Ivanhoe | 31-Dec-09 | Dec-09 | ALS | 10:35 | 2500 | 1.9 | | 4.9 | 4.0 | 1.2 | Insects, Plant Material |
| 2600 1234 - 000 | SD5 - Ivanhoe | 02-Feb-10 | Jan-10 | ALS | 12:00 | 300 | 1.9 | | 4.8 | 4.0 | 1.1 | Insects, Bird droppings, Plant Material |
| 2603 1247 - 000 | SD5 - Ivanhoe | 04-Mar-10 | Feb-10 | ALS | 10:45 | 1800 | 1.2 | | 4.7 | 4.0 | 0.7 | Insects |
| 2600 1260 - 000 | SD5 - Ivanhoe | 06-Apr-10 | Mar-10 | ALS | 930 | 1000 | 1.8 | | 4.6 | 4.0 | 0.8 | Insects, Bird droppings |
| 2600 1268 - 000 | SD5 - Ivanhoe | 29-Apr-10 | Apr-10 | ALS | 1150 | 100 | 1.8 | | 4.5 | 4.0 | 0.9 | Insects,Plant Material |
| 2600 1277 - 000 | SD5 - Ivanhoe | 27-May-10 | May-10 | ALS | 1310 | 50 | 1.4 | | 4.4 | 4.0 | 0.5 | Insects,Plant Material |
| 2600 1288 - 778 | SD5 - Ivanhoe | 24-Jun-10 | Jun-10 | ALS | 1350 | 300 | 13.1 | | 4.7 | 4.0 | 2.1 | Insects,Plant Material, Bird Droppings |
| 26001289-879 | SD5 - Ivanhoe | 22-Jul-10 | Jul-10 | ALS | 14:45 | 800 | 4 | | 4.6 | 4.0 | 3 | Insects, Bird Droppings |
| 2600-1309-912 | SD5 - Ivanhoe | 23-Aug-10 | Aug-10 | ALS | 11:00 | 1800 | 0.6 | | 4.5 | 4.0 | 0.6 | Insects, Bird Droppings |
| 2600-1319 | SD5 - Ivanhoe | 22-Sep-10 | Sep-10 | ALS | 11:00 | 900 | 2.5 | | 4.5 | 4.0 | 1.1 | Insects |
| 2600-1340-17 | SD5 - Ivanhoe | 22-Oct-10 | Oct-10 | ALS | 11:50 | 2500 | 1.2 | | 4.4 | 4.0 | 0.6 | N/A |
| 1002974-004 | SD5 - Ivanhoe | 23-Nov-10 | Nov-10 | ALS | 11:50 | 2500 | 0.8 | | 4.3 | 4.0 | 0.5 | N/A |
| 1003112-004 | SD5 - Ivanhoe | 23-Dec-10 | Dec-10 | ALS | 9:30 | N/A | 1.5 | | 4.3 | 4.0 | 0.9 | No field observations |
| 1100198-004 | SD5 - Ivanhoe | 24-Jan-11 | Jan-11 | ALS | 12:00 | 1100 | 3.5 | | 4.3 | 4.0 | 1.4 | Insects, bird droppings, plant material-Oiley substance in bottle |
| 1100461-004 | SD5 - Ivanhoe | 23-Feb-11 | Feb-11 | ALS | 13:10 | N/A | 0.7 | | 4.2 | 4.0 | 0.6 | No field observations |
| 1100716-004 | SD5 - Ivanhoe | 25-Mar-11 | Mar-11 | ALS | 12:50 | 700 | 0.6 | | 4.1 | 4.0 | 0.6 | Insects, plant material |
| 1100964-004 | SD5 - Ivanhoe | 21-Apr-11 | Apr-11 | ALS | 14:30 | 300 | 1.0 | | 4.1 | 4.0 | 0.7 | Insects, plant material |
| 1101206-004 | SD5 - Ivanhoe | 23-May-11 | May-11 | ALS | 13:10 | 500 | 5.5 | | 4.1 | 4.0 | 1.5 | Insects/Bird Droppings/Plant material |
| 1101487-004 | SD5 - Ivanhoe | 23-Jun-11 | Jun-11 | ALS | 11:40 | 500 | 0.3 | | 4.0 | 4.0 | 0.3 | Plant material |
| 1101835-004 | SD5 - Ivanhoe | 20-Jul-11 | Jul-11 | ALS | 14:00 | 100 | 0.5 | | 3.9 | 4.0 | 0.5 | Insects, Plant material |
| 1102364-004 | SD5 - Ivanhoe | 19-Aug-11 | Aug-11 | ALS | 12:10 | 400 | 2.7 | | 3.9 | 4.0 | 2.6 | Insects, Plant material |
| 1102817-004 | SD5 - Ivanhoe | 20-Sep-11 | Sep-11 | ALS | 11:30 | 600 | 1.2 | | 3.9 | 4.0 | 0.7 | Insects, Bird Droppings, Plant material |

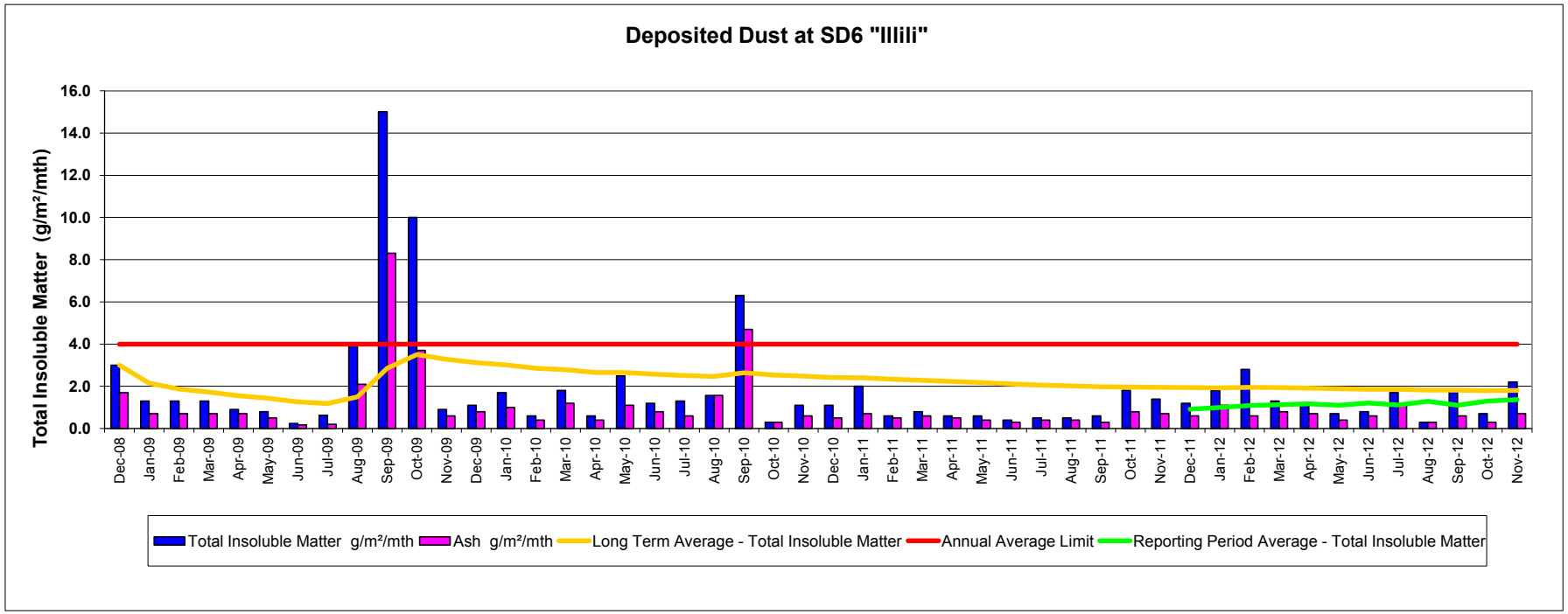
| Sample Number | Sample Location | Sample Date | Sample Month | Sampler | Time: (d) | Volume Collected (ml) | Total Insoluble Matter g/m²/mth | Reporting Period Average - Total Insoluble Matter | Long Term Average - Total Insoluble Matter | Annual Average Limit | Ash g/m²/mth | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1103134-004 | SD5 - Ivanhoe | 18-Oct-11 | Oct-11 | ALS | 11:35 | 900 | 3.0 | | 3.9 | 4.0 | 1.7 | Insects, Plant material |
| 1103513-004 | SD5 - Ivanhoe | 18-Nov-11 | Nov-11 | ALS | 10:50 | 800 | 2.6 | | 3.8 | 4.0 | 1.5 | Insects, Bird Droppings, Plant material |
| 1104388-004 | SD5 - Ivanhoe | 19-Dec-11 | Dec-11 | ALS | 12:30 | 2500 | 1.5 | 1.9 | 3.8 | 4.0 | 0.8 | Insects, Plant material |
| 1200253-004 | SD5 - Ivanhoe | 17-Jan-12 | Jan-12 | ALS | 9:15 | 1100 | 6.0 | 2.2 | 3.8 | 4.0 | 2.5 | Insects, Plant material |
| 1200664-004 | SD5 - Ivanhoe | 16-Feb-12 | Feb-12 | ALS | 11:20 | 1400 | 13.6 | 3.2 | 4.0 | 4.0 | 2.2 | Insects, Plant material |
| 1201070-004 | SD5 - Ivanhoe | 19-Mar-12 | Mar-12 | ALS | 8:15 | 800 | 4.6 | 3.1 | 4.0 | 4.0 | 1.5 | Insects, Plant material-dead spider in bottle |
| 1201471-004 | SD5 - Ivanhoe | 18-Apr-12 | Apr-12 | ALS | 9:45 | 200 | 1.7 | 3.6 | 4.0 | 4.0 | 0.7 | Insects, Plant material |
| 1201905-004 | SD5 - Ivanhoe | 18-May-12 | May-12 | ALS | 13:40 | 400 | 1.2 | 2.9 | 3.9 | 4.0 | 0.7 | Insects, Plant material |
| 1202280-004 | SD5 - Ivanhoe | 19-Jun-12 | Jun-12 | ALS | 13:55 | 400 | 0.8 | 3.3 | 3.9 | 4.0 | 0.6 | Insects, Plant material |
| 1202698-004 | SD5 - Ivanhoe | 19-Jul-12 | Jul-12 | ALS | 12:50 | 900 | 2.3 | 2.7 | 3.9 | 4.0 | 1.6 | Insects, Plant material |
| 1203137-004 | SD5 - Ivanhoe | 20-Aug-12 | Aug-12 | ALS | 11:20 | 100 | 0.4 | 3.2 | 3.8 | 4.0 | 0.2 | Insects, Plant material |
| 1203602-004 | SD5 - Ivanhoe | 19-Sep-12 | Sep-12 | ALS | 9:40 | 100 | 1.1 | 2.6 | 3.8 | 4.0 | 0.7 | Insects, Plant material, lage amount of insects |
| 1204037-004 | SD5 - Ivanhoe | 19-Oct-12 | Oct-12 | ALS | 10:45 | 300 | 1.7 | 3.1 | 3.7 | 4.0 | 0.8 | Insects, Plant material-large amount of insects in bottle |
| 1204424-004 | SD5 - Ivanhoe | 20-Nov-12 | Nov-12 | ALS | 11:30 | 150 | 0.5 | 3.0 | 3.7 | 4.0 | 0.3 | Insects, Plant material |



## Deposited Dust - SD6 "Illili"

| Sample Number | Sample Location | Sample Date | Sample Month | Sampler | Time: (d) | Volume Collected (ml) | Total Insoluble Matter g/m²/mth | Reporting Period Average - Total Insoluble Matter | Long Term Average - Total Insoluble Matter | Annual Average Limit | Ash g/m²/mth | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32517.06 | SD6 - Illili | 06-Jan-09 | Dec-08 | Client | 1219 | 1090 | 3.0 | | 3.0 | 4.0 | 1.7 | |
| 32245.05 | SD6 - Illili | 03-Feb-09 | Jan-09 | Client | 1104 | 210 | 1.3 | | 2.2 | 4.0 | 0.7 | |
| 32862.06 | SD6 - Illili | 03-Mar-09 | Feb-09 | Client | 1030 | 1425 | 1.3 | | 1.9 | 4.0 | 0.7 | |
| 2600 1005 - 00 | SD6 - Illili | 02-Apr-09 | Mar-09 | ALS | 1055 | 50 | 1.3 | | 1.7 | 4.0 | 0.7 | Insects, Bird droppings |
| 2600 1016 - 00 | SD6 - Illili | 04-May-09 | Apr-09 | ALS | 1130 | 300 | 0.9 | | 1.6 | 4.0 | 0.7 | Insects, Bird droppings |
| 2600 1035 - 01 | SD6 - Illili | 03-Jun-09 | May-09 | ALS | 1400 | 700 | 0.8 | | 1.4 | 4.0 | 0.5 | Plant material |
| 2605 1040 - 02 | SD6 - Illili | 06-Jul-09 | Jun-09 | ALS | 1440 | 650 | 0.2 | | 1.3 | 4.0 | 0.2 | Insects, Plant Material |
| 2604 1052 - 01 | SD6 - Illili | 03-Aug-09 | Jul-09 | ALS | 1653 | 350 | 0.6 | | 1.2 | 4.0 | 0.2 | Insects, Plant Material |
| 2600 1063 - 00 | SD6 - Illili | 01-Sep-09 | Aug-09 | ALS | 0902 | 20 | 4.0 | | 1.5 | 4.0 | 2.1 | |
| 2600 1063 - 00 | SD6 - Illili | 30-Sep-09 | Sep-09 | ALS | 1236 | 1200 | 15.0 | | 2.8 | 4.0 | 8.3 | Dust storm 23/9, contamination |
| 2600 1129 - 00 | SD6 - Illili | 04-Nov-09 | Oct-09 | ALS | 1057 | 700 | 10.0 | | 3.5 | 4.0 | 3.7 | Insects, Plant Material |
| 2600 1204 - 116 | SD6 - Illili | 02-Dec-09 | Nov-09 | ALS | 0940 | 20 | 0.9 | | 3.3 | 4.0 | 0.6 | Insects |
| 2600 1222 - 116 | SD6 - Illili | 31-Dec-09 | Dec-09 | ALS | 8:51 | 2400 | 1.1 | | 3.1 | 4.0 | 0.8 | Insects, Bird Droppings |
| 2600 1234 - 000 | SD6 - Illili | 02-Feb-10 | Jan-10 | ALS | 12:20 | 2100 | 1.7 | | 3.0 | 4.0 | 1.0 | Insects, Plant Material |
| 2604 1247 - 000 | SD6 - Illili | 04-Mar-10 | Feb-10 | ALS | 10:20 | 2200 | 0.6 | | 2.9 | 4.0 | 0.4 | Insects |
| 2600 1260 - 000 | SD6 - Illili | 01-Apr-10 | Mar-10 | ALS | 940 | 1000 | 1.8 | | 2.8 | 4.0 | 1.2 | Insects, Plant Material |
| 2600 1268 - 000 | SD6 - Illili | 29-Apr-10 | Apr-10 | ALS | 1215 | 100 | 0.6 | | 2.7 | 4.0 | 0.4 | Insects, Plant Material |
| 2600 1277 - 000 | SD6 - Illili | 27-May-10 | May-10 | ALS | 1330 | 50 | 2.5 | | 2.6 | 4.0 | 1.1 | Insects, Bird Dtroppings, Plant Material |
| 2600 1288 - 778 | SD6 - Illili | 24-Jun-10 | Jun-10 | ALS | 1340 | 300 | 1.2 | | 2.6 | 4.0 | 0.8 | Insects, Plant Material |
| 26001289-879 | SD6 - Illili | 22-Jul-10 | Jul-10 | ALS | 14:35 | 800 | 1.3 | | 2.5 | 4.0 | 0.6 | Insects, Bird Droppings |
| 2600-1309-912 | SD6 - Illili | 23-Aug-10 | Aug-10 | ALS | 11:35 | 1800 | 1.6 | | 2.5 | 4.0 | 1.6 | Insects, Bird Droppings |
| 2600-1319 | SD6 - Illili | 22-Sep-10 | Sep-10 | ALS | 11:35 | 900 | 6.3 | | 2.6 | 4.0 | 4.7 | Insects, Plant Material |
| 2600-1340-17 | SD6 - Illili | 22-Oct-10 | Oct-10 | ALS | 11:15 | 2500 | 0.3 | | 2.5 | 4.0 | 0.3 | N/A |
| 1002974-005 | SD6 - Illili | 23-Nov-10 | Nov-10 | ALS | 11:15 | 2500 | 1.1 | | 2.5 | 4.0 | 0.6 | N/A |
| 1003112-005 | SD6 - Illili | 23-Dec-10 | Dec-10 | ALS | 10:15 | ? | 1.1 | | 2.4 | 4.0 | 0.5 | No field observations |
| 1100198-005 | SD6 - Illili | 24-Jan-11 | Jan-11 | ALS | 11:30 | 1000 | 2.0 | | 2.4 | 4.0 | 0.7 | Insects, plant material |
| 1100461-005 | SD6 - Illili | 23-Feb-11 | Feb-11 | ALS | 12:45 | ? | 0.6 | | 2.3 | 4.0 | 0.5 | No field observations |
| 1100716-005 | SD6 - Illili | 25-Mar-11 | Mar-11 | ALS | 12:15 | 400 | 0.8 | | 2.3 | 4.0 | 0.6 | Insects, plant material |
| 1100964-005 | SD6 - Illili | 21-Apr-11 | Apr-11 | ALS | 13:35 | 200 | 0.6 | | 2.2 | 4.0 | 0.5 | Plant material |
| 1101206-005 | SD6 - Illili | 23-May-11 | May-11 | ALS | 12:50 | 400 | 0.6 | | 2.2 | 4.0 | 0.4 | Insects |
| 1101487-005 | SD6 - Illili | 23-Jun-11 | Jun-11 | ALS | 11:20 | 500 | 0.4 | | 2.1 | 4.0 | 0.3 | Insects/Plant material/dead spider in bottle |
| 1101835-005 | SD6 - Illili | 20-Jul-11 | Jul-11 | ALS | 8:40 | 100 | 0.5 | | 2.1 | 4.0 | 0.4 | Insects, Bird droppings, Plant material |
| 1102364-005 | SD6 - Illili | 19-Aug-11 | Aug-11 | ALS | 10:30 | 400 | 0.5 | | 2.0 | 4.0 | 0.4 | Plant material |
| 1102817-005 | SD6 - Illili | 20-Sep-11 | Sep-11 | ALS | 11:10 | 600 | 0.6 | | 2.0 | 4.0 | 0.3 | Insects, Plant material |
| 1103134-005 | SD6 - Illili | 18-Oct-11 | Oct-11 | ALS | 11:25 | 900 | 1.8 | | 2.0 | 4.0 | 0.8 | Insects, Plant material |
| 1103513-005 | SD6 - Illili | 18-Nov-11 | Nov-11 | ALS | 10:30 | 800 | 1.4 | | 2.0 | 4.0 | 0.7 | Insects, Plant material |
| 1104388-005 | SD6 - Illili | 19-Dec-11 | Dec-11 | ALS | 12:00 | 2500 | 1.2 | 0.9 | 1.9 | 4.0 | 0.6 | Insects, Plant material |
| 1200253-005 | SD6 - Illili | 17-Jan-12 | Jan-12 | ALS | 12:20 | 1100 | 1.8 | 1.0 | 1.9 | 4.0 | 1.1 | Insects, Plant material |
| 1200664-005 | SD6 - Illili | 16-Feb-12 | Feb-12 | ALS | 11:00 | 1200 | 2.8 | 1.1 | 2.0 | 4.0 | 0.6 | Insects, Plant material |
| 1201070-005 | SD6 - Illili | 19-Mar-12 | Mar-12 | ALS | 8:50 | 800 | 1.3 | 1.1 | 1.9 | 4.0 | 0.8 | Insects, Plant material |
| 1201471-005 | SD6 - Illili | 18-Apr-12 | Apr-12 | ALS | 10:30 | 200 | 1.1 | 1.2 | 1.9 | 4.0 | 0.7 | Insects, Plant material |

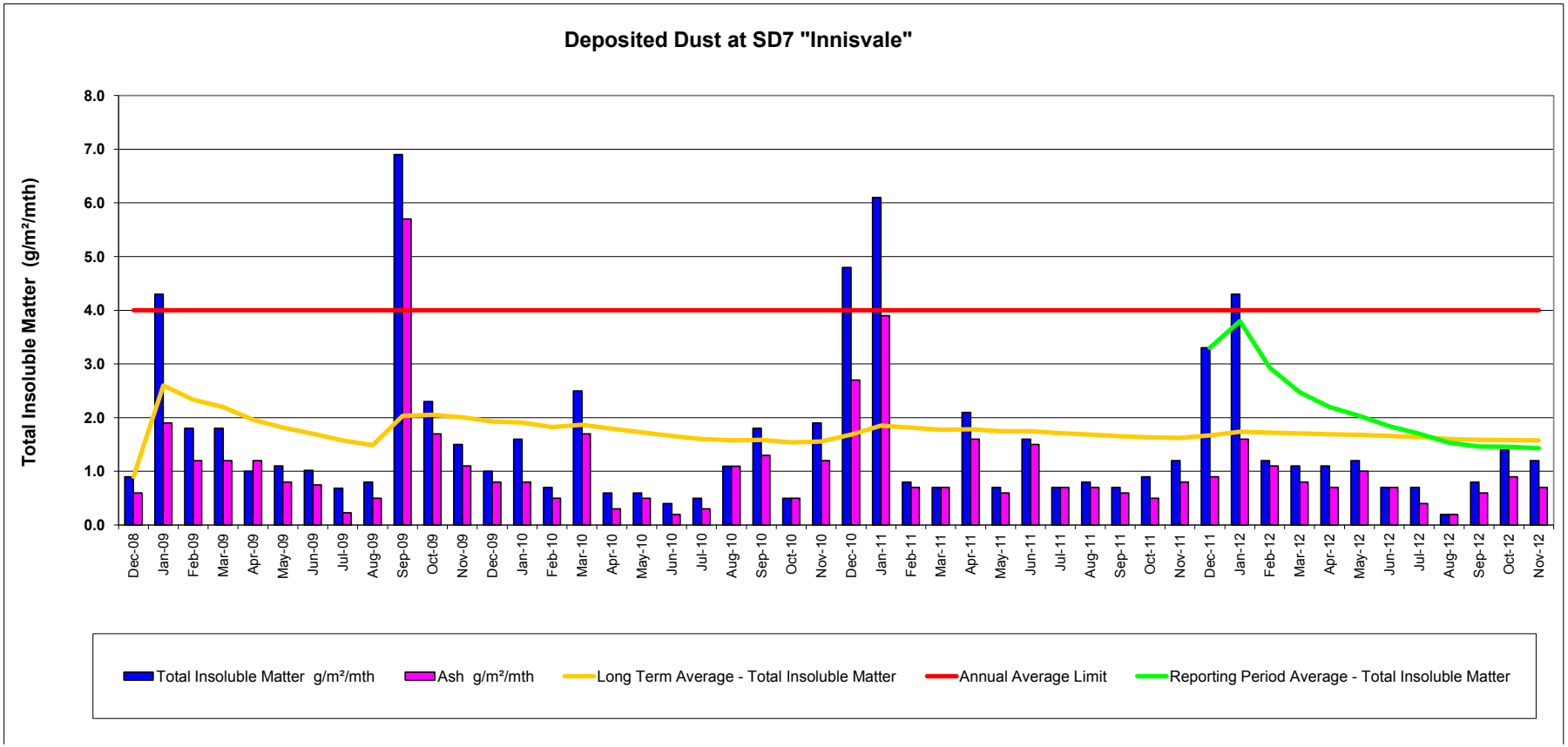
| Sample Number | Sample Location | Sample Date | Sample Month | Sampler | Time: (d) | Volume Collected (ml) | Total Insoluble Matter g/m²/mth | Reporting Period Average - Total Insoluble Matter | Long Term Average - Total Insoluble Matter | Annual Average Limit | Ash g/m²/mth | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1201905-005 | SD6 - Illili | 18-May-12 | May-12 | ALS | 12:20 | 500 | 0.7 | 1.1 | 1.9 | 4.0 | 0.4 | Insects, Plant material |
| 1202280-005 | SD6 - Illili | 19-Jun-12 | Jun-12 | ALS | 13:30 | 500 | 0.8 | 1.2 | 1.9 | 4.0 | 0.6 | Plant material |
| 1202698-005 | SD6 - Illili | 19-Jul-12 | Jul-12 | ALS | 9:10 | 900 | 1.7 | 1.1 | 1.9 | 4.0 | 1.1 | Insects, Plant material |
| 1203137-005 | SD6 - Illili | 20-Aug-12 | Aug-12 | ALS | 12:15 | 100 | 0.3 | 1.3 | 1.8 | 4.0 | 0.3 | Insects, Plant material |
| 1203602-005 | SD6 - Illili | 19-Sep-12 | Sep-12 | ALS | 10:00 | 100 | 1.8 | 1.1 | 1.8 | 4.0 | 0.6 | Insects, Plant material |
| 1204037-005 | SD6 - Illili | 19-Oct-12 | Oct-12 | ALS | 10:30 | 300 | 0.7 | 1.3 | 1.8 | 4.0 | 0.3 | Insects, Plant material |
| 1204424-005 | SD6 - Illili | 20-Nov-12 | Nov-12 | ALS | 11:10 | 150 | 2.2 | 1.4 | 1.8 | 4.0 | 0.7 | Insects, Plant material |



## Deposited Dust - SD7 "Innisvale"

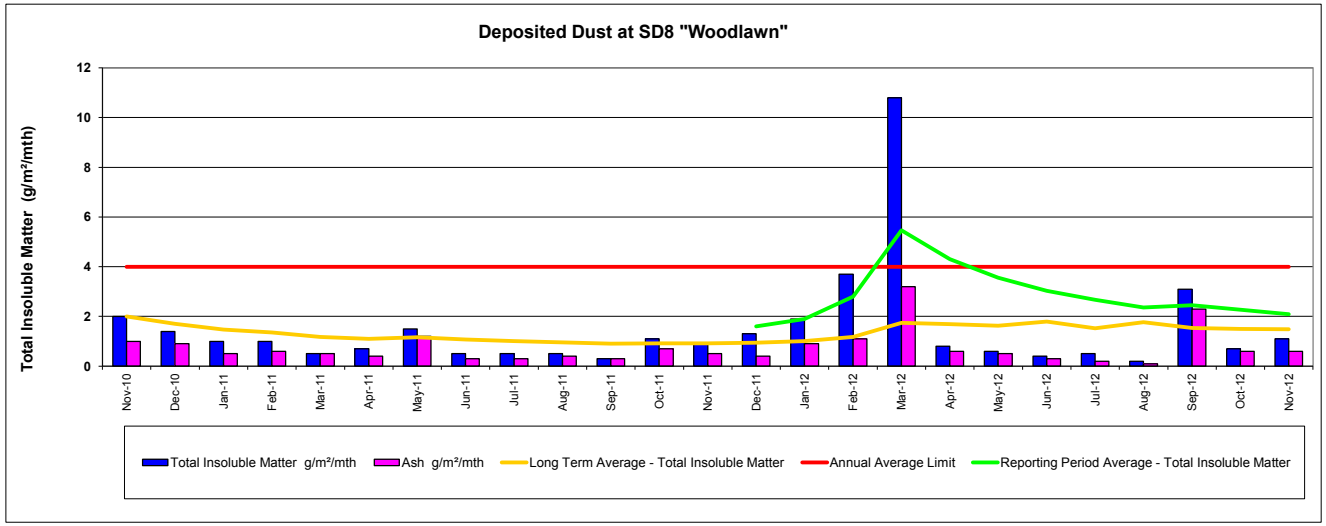
| Sample Number | Sample Location | Sample Date | Sample Month | Sampler | Time: (d) | Volume Collected (ml) | Total Insoluble Matter g/m²/mth | Reporting Period Average - Total Insoluble Matter | Long Term Average - Total Insoluble Matter | Annual Average Limit | Ash g/m²/mth | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32517.07 | SD7 - Innisvale | 06-Jan-09 | Dec-08 | Client | 1400 | 975 | 0.9 | | 0.9 | 4.0 | 0.6 | |
| 32245.06 | SD7 - Innisvale | 03-Feb-09 | Jan-09 | Client | 1238 | 200 | 4.3 | | 2.6 | 4.0 | 1.9 | |
| 32862.07 | SD7 - Innisvale | 03-Mar-09 | Feb-09 | Client | 1158 | 1495 | 1.8 | | 2.3 | 4.0 | 1.2 | |
| 2600 1005 - 00 | SD7 - Innisvale | 02-Apr-09 | Mar-09 | ALS | 1025 | 50 | 1.8 | | 2.2 | 4.0 | 1.2 | Insects |
| 2600 1016 - 00 | SD7 - Innisvale | 04-May-09 | Apr-09 | ALS | 1215 | 300 | 1.0 | | 2.0 | 4.0 | 1.2 | |
| 2600 1035 - 01 | SD7 - Innisvale | 03-Jun-09 | May-09 | ALS | 1305 | 800 | 1.1 | | 1.8 | 4.0 | 0.8 | |
| 2606 1040 - 02 | SD7 - Innisvale | 06-Jul-09 | Jun-09 | ALS | 1405 | 750 | 1.0 | | 1.7 | 4.0 | 0.7 | Insects, Plant Material |
| 2605 1052 - 01 | SD7 - Innisvale | 03-Aug-09 | Jul-09 | ALS | 1625 | 350 | 0.7 | | 1.6 | 4.0 | 0.2 | |
| 2600 1063 - 00 | SD7 - Innisvale | 01-Sep-09 | Aug-09 | ALS | 0815 | 20 | 0.8 | | 1.5 | 4.0 | 0.5 | Insects, Plant Material |
| 2600 1063 - 00 | SD7 - Innisvale | 30-Sep-09 | Sep-09 | ALS | 1126 | 1000 | 6.9 | | 2.0 | 4.0 | 5.7 | Insects, Plant Material |
| 2600 1129 - 00 | SD7 - Innisvale | 04-Nov-09 | Oct-09 | ALS | 1155 | 400 | 2.3 | | 2.1 | 4.0 | 1.7 | Plant Material |
| 2600 1204 - 116 | SD7 - Innisvale | 02-Dec-09 | Nov-09 | ALS | 0910 | 10 | 1.5 | | 2.0 | 4.0 | 1.1 | Insects, Plant Material |
| 2600 1222 - 116 | SD7 - Innisvale | 31-Dec-09 | Dec-09 | ALS | 8:05 | 2000 | 1.0 | | 1.9 | 4.0 | 0.8 | Insects |
| 2600 1234 - 000 | SD7 - Innisvale | 02-Feb-10 | Jan-10 | ALS | 11:15 | 2200 | 1.6 | | 1.9 | 4.0 | 0.8 | Insects, Plant Material |
| 2605 1247 - 000 | SD7 - Innisvale | 04-Mar-10 | Feb-10 | ALS | 11:30 | 1200 | 0.7 | | 1.8 | 4.0 | 0.5 | Insects |
| 2600 1260 - 000 | SD7 - Innisvale | 01-Apr-10 | Mar-10 | ALS | 905 | 800 | 2.5 | | 1.9 | 4.0 | 1.7 | Bird Droppings, Plant Material |
| 2600 1268 - 000 | SD7 - Innisvale | 29-Apr-10 | Apr-10 | ALS | 1105 | 75 | 0.6 | | 1.8 | 4.0 | 0.3 | Insects, Plant Material |
| 2600 1277 - 000 | SD7 - Innisvale | 27-May-10 | May-10 | ALS | 1235 | 50 | 0.6 | | 1.7 | 4.0 | 0.5 | Insects |
| 2600 1288 - 778 | SD7 - Innisvale | 24-Jun-10 | Jun-10 | ALS | 1420 | 300 | 0.4 | | 1.7 | 4.0 | 0.2 | Insects, Plant Material |
| 26001289-879 | SD7 - Innisvale | 22-Jul-10 | Jul-10 | ALS | 15:20 | 700 | 0.5 | | 1.6 | 4.0 | 0.3 | Plant Material |
| 2600-1309-912 | SD7 - Innisvale | 23-Aug-10 | Aug-10 | ALS | 13:00 | 1800 | 1.1 | | 1.6 | 4.0 | 1.1 | Plant Material |
| 2600-1319 | SD7 - Innisvale | 22-Sep-10 | Sep-10 | ALS | 13:00 | 800 | 1.8 | | 1.6 | 4.0 | 1.3 | Insects, Plant Material |
| 2600-1340-17 | SD7 - Innisvale | 22-Oct-10 | Oct-10 | ALS | 13:05 | 2500 | 0.5 | | 1.5 | 4.0 | 0.5 | N/A |
| 1002974-006 | SD7 - Innisvale | 23-Nov-10 | Nov-10 | ALS | 13:05 | 2500 | 1.9 | | 1.6 | 4.0 | 1.2 | N/A |
| 1003112-006 | SD7 - Innisvale | 23-Dec-10 | Dec-10 | ALS | 8:35 | ? | 4.8 | | 1.7 | 4.0 | 2.7 | No field observations |
| 1100198-006 | SD7 - Innisvale | 24-Jan-11 | Jan-11 | ALS | 12:45 | 1000 | 6.1 | | 1.9 | 4.0 | 3.9 | Insects, plant material-Two dead frogs |
| 1100461-006 | SD7 - Innisvale | 23-Feb-11 | Feb-11 | ALS | 14:10 | ? | 0.8 | | 1.8 | 4.0 | 0.7 | No field observations |
| 1100716-006 | SD7 - Innisvale | 25-Mar-11 | Mar-11 | ALS | 13:40 | 600 | 0.7 | | 1.8 | 4.0 | 0.7 | Insects, plant material |
| 1100964-006 | SD7 - Innisvale | 21-Apr-11 | Apr-11 | ALS | 14:50 | 600 | 2.1 | | 1.8 | 4.0 | 1.6 | Insects, plant material |
| 1101206-006 | SD7 - Innisvale | 23-May-11 | May-11 | ALS | 14:00 | 200 | 0.7 | | 1.7 | 4.0 | 0.6 | No field observations |
| 1101487-006 | SD7 - Innisvale | 23-Jun-11 | Jun-11 | ALS | 12:20 | 400 | 1.6 | | 1.7 | 4.0 | 1.5 | Plant material |
| 1101835-006 | SD7 - Innisvale | 20-Jul-11 | Jul-11 | ALS | 9:25 | 50 | 0.7 | | 1.7 | 4.0 | 0.7 | Insects, Plant material |
| 1102364-006 | SD7 - Innisvale | 19-Aug-11 | Aug-11 | ALS | 10:45 | 400 | 0.8 | | 1.7 | 4.0 | 0.7 | Plant material |
| 1102817-006 | SD7 - Innisvale | 20-Sep-11 | Sep-11 | ALS | 10:45 | 600 | 0.7 | | 1.7 | 4.0 | 0.6 | Insects, Plant material |
| 1103134-006 | SD7 - Innisvale | 18-Oct-11 | Oct-11 | ALS | 12:30 | 900 | 0.9 | | 1.6 | 4.0 | 0.5 | Insects, Plant material, Spider in bottle |
| 1103513-006 | SD7 - Innisvale | 18-Nov-11 | Nov-11 | ALS | 11:30 | 800 | 1.2 | | 1.6 | 4.0 | 0.8 | Insects, Plant material |
| 1104388-006 | SD7 - Innisvale | 19-Dec-11 | Dec-11 | ALS | 13:40 | 2500 | 3.3 | 3.3 | 1.7 | 4.0 | 0.9 | N/A |
| 1200253-006 | SD7 - Innisvale | 17-Jan-12 | Jan-12 | ALS | 9:45 | 600 | 4.3 | 3.8 | 1.7 | 4.0 | 1.6 | Insects, Plant material |
| 1200664-006 | SD7 - Innisvale | 16-Feb-12 | Feb-12 | ALS | 12:00 | 1800 | 1.2 | 2.9 | 1.7 | 4.0 | 1.1 | Insects, Plant material |
| 1201070-006 | SD7 - Innisvale | 19-Mar-12 | Mar-12 | ALS | 10:10 | 800 | 1.1 | 2.5 | 1.7 | 4.0 | 0.8 | Insects, Plant material-dead spider in bottle |
| 1201471-006 | SD7 - Innisvale | 18-Apr-12 | Apr-12 | ALS | 9:15 | 400 | 1.1 | 2.2 | 1.7 | 4.0 | 0.7 | Insects, Plant material |
| 1201905-006 | SD7 - Innisvale | 18-May-12 | May-12 | ALS | 13:10 | 500 | 1.2 | 2.0 | 1.7 | 4.0 | 1.0 | Insects, Plant material |
| 1202280-006 | SD7 - Innisvale | 19-Jun-12 | Jun-12 | ALS | 14:40 | 500 | 0.7 | 1.8 | 1.7 | 4.0 | 0.7 | Plant material |

| Sample Number | Sample Location | Sample Date | Sample Month | Sampler | Time: (d) | Volume Collected (ml) | Total Insoluble Matter g/m²/mth | Reporting Period Average - Total Insoluble Matter | Long Term Average - Total Insoluble Matter | Annual Average Limit | Ash g/m²/mth | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1202698-006 | SD7 - Innisvale | 19-Jul-12 | Jul-12 | ALS | 11:15 | 900 | 0.7 | 1.7 | 1.6 | 4.0 | 0.4 | Insects, Plant material |
| 1203137-006 | SD7 - Innisvale | 20-Aug-12 | Aug-12 | ALS | 12:40 | 100 | 0.2 | 1.5 | 1.6 | 4.0 | 0.2 | Insects, Plant material |
| 1203602-006 | SD7 - Innisvale | 19-Sep-12 | Sep-12 | ALS | 8:50 | 100 | 0.8 | 1.5 | 1.6 | 4.0 | 0.6 | Insects, Plant material |
| 1204037-006 | SD7 - Innisvale | 19-Oct-12 | Oct-12 | ALS | 11:25 | 300 | 1.4 | 1.5 | 1.6 | 4.0 | 0.9 | Insects, Plant material |
| 1204424-006 | SD7 - Innisvale | 20-Nov-12 | Nov-12 | ALS | 12:30 | 150 | 1.2 | 1.4 | 1.6 | 4.0 | 0.7 | Insects, Bird Droppings, Plant material |



## Deposited Dust - SD8 "Woodlawn"

| Sample Number | Sample Location | Sample Date | Sample Month | Sampler | Time: (d) | Volume Collected (ml) | Total Insoluble Matter g/m²/mth | Reporting Period Average - Total Insoluble Matter | Long Term Average - Total Insoluble Matter | Annual Average Limit | Ash g/m²/mth | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1002974-007 | SD8 - Woodlawn | 23-Nov-10 | Nov-10 | ALS | 14:05 | 2500 | 2 | | 2.0 | 4.0 | 1 | No field observations |
| 1003112-007 | SD8 - Woodlawn | 23-Dec-10 | Dec-10 | ALS | 8:25 | N/A | 1.4 | | 1.7 | 4.0 | 0.9 | No field observations |
| 1100198-007 | SD8 - Woodlawn | 24-Jan-11 | Jan-11 | ALS | 13:00 | 800 | 1 | | 1.5 | 4.0 | 0.5 | Insects, plant material |
| 1100461-007 | SD8 - Woodlawn | 23-Feb-11 | Feb-11 | ALS | 14:20 | N/A | 1 | | 1.4 | 4.0 | 0.6 | No field observations |
| 1100716-007 | SD8 - Woodlawn | 25-Mar-11 | Mar-11 | ALS | 14:05 | N/A | 0.5 | | 1.2 | 4.0 | 0.5 | Insects, plant material |
| 1100964-007 | SD8 - Woodlawn | 21-Apr-11 | Apr-11 | ALS | 14:15 | 300 | 0.7 | | 1.1 | 4.0 | 0.4 | Insects, plant material |
| 1101206-007 | SD8 - Woodlawn | 23-May-11 | May-11 | ALS | 14:10 | 400 | 1.5 | | 1.2 | 4.0 | 1.2 | Insects/Plant material |
| 1101487-007 | SD8 - Woodlawn | 23-Jun-11 | Jun-11 | ALS | 12:30 | 400 | 0.5 | | 1.1 | 4.0 | 0.3 | Plant material |
| 1101835-007 | SD8 - Woodlawn | 20-Jul-11 | Jul-11 | ALS | 9:40 | 100 | 0.5 | | 1.0 | 4.0 | 0.3 | Insects, Plant material |
| 1102364-007 | SD8 - Woodlawn | 19-Aug-11 | Aug-11 | ALS | 11:00 | 400 | 0.5 | | 1.0 | 4.0 | 0.4 | Plant material |
| 1102817-007 | SD8 - Woodlawn | 20-Sep-11 | Sep-11 | ALS | 11:00 | 600 | 0.3 | | 0.9 | 4.0 | 0.3 | Insects, Plant material |
| 1103134-007 | SD8 - Woodlawn | 18-Oct-11 | Oct-11 | ALS | 12:45 | 900 | 1.1 | | 0.9 | 4.0 | 0.7 | Insects, Plant material |
| 1103513-007 | SD8 - Woodlawn | 18-Nov-11 | Nov-11 | ALS | 12:45 | 800 | 0.9 | | 0.9 | 4.0 | 0.5 | Insects, Plant material |
| 1104388-007 | SD8 - Woodlawn | 19-Dec-11 | Dec-11 | ALS | 14:00 | 2500 | 1.3 | 1.6 | 0.9 | 4.0 | 0.4 | N/A |
| 1200253-007 | SD8 - Woodlawn | 17-Jan-12 | Jan-12 | ALS | 10:00 | 800 | 1.9 | 1.9 | 1.0 | 4.0 | 0.9 | Insects, Plant material |
| 1200664-007 | SD8 - Woodlawn | 16-Feb-12 | Feb-12 | ALS | 12:20 | 1400 | 3.7 | 2.8 | 1.2 | 4.0 | 1.1 | Insects, Plant material |
| 1201070-007 | SD8 - Woodlawn | 19-Mar-12 | Mar-12 | ALS | 10:20 | 600 | 10.8 | 5.5 | 1.7 | 4.0 | 3.2 | Insects, Plant material-dead frog in bottle |
| 1201471-007 | SD8 - Woodlawn | 18-Apr-12 | Apr-12 | ALS | 9:00 | 200 | 0.8 | 4.3 | 1.7 | 4.0 | 0.6 | Insects, Plant material |
| 1201905-007 | SD8 - Woodlawn | 18-May-12 | May-12 | ALS | 13:00 | 400 | 0.6 | 3.6 | 1.6 | 4.0 | 0.5 | Insects, Plant material |
| 1202280-007 | SD8 - Woodlawn | 19-Jun-12 | Jun-12 | ALS | 14:55 | 400 | 0.4 | 3.0 | 1.8 | 4.0 | 0.3 | Plant material |
| 1202698-007 | SD8 - Woodlawn | 19-Jul-12 | Jul-12 | ALS | 13:10 | 900 | 0.5 | 2.7 | 1.5 | 4.0 | 0.2 | Insects, Plant material |
| 1203137-007 | SD8 - Woodlawn | 20-Aug-12 | Aug-12 | ALS | 12:50 | 100 | 0.2 | 2.4 | 1.8 | 4.0 | 0.1 | Insects, Plant material |
| 1203602-007 | SD8 - Woodlawn | 19-Sep-12 | Sep-12 | ALS | 8:30 | 100 | 3.1 | 2.4 | 1.5 | 4.0 | 2.3 | Insects, Plant material, spider in bottle |
| 1204037-007 | SD8 - Woodlawn | 19-Oct-12 | Oct-12 | ALS | 11:35 | 300 | 0.7 | 2.3 | 1.5 | 4.0 | 0.6 | Insects, Plant material |
| 1204424-007 | SD8 - Woodlawn | 20-Nov-12 | Nov-12 | ALS | 12:45 | 150 | 1.1 | 2.1 | 1.5 | 4.0 | 0.6 | Insects, Plant material |



# Appendix 6

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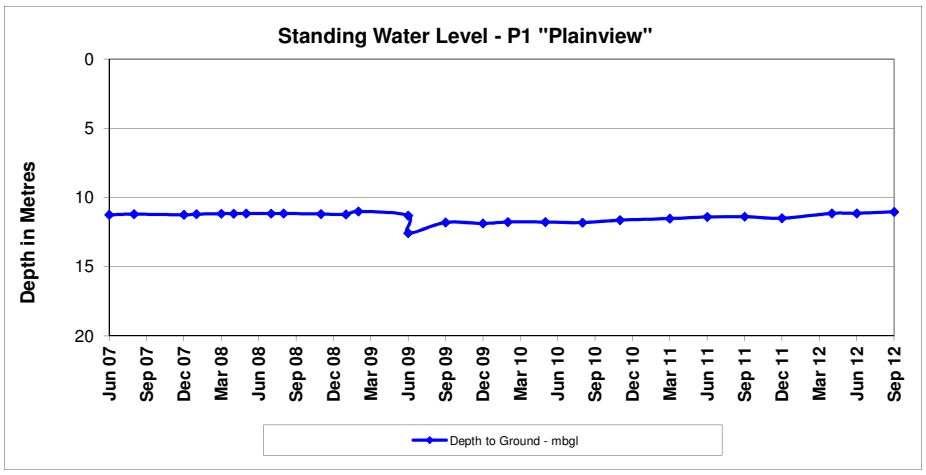
# GROUNDWATER MONITORING DATA

| Site ID | Date | Time | Depth to Ground - mbgl | Depth to Stand - mbtoc | Field Parameters | | | Dissolved Metals | | | | | | | | | | | | | | pH - Lab | EC - Lab - µs/cm | Major Cations | | | | Total Cations - meq/L | Major Anions | | | | | | Total Anions - meq/L | Ionic Balance | Ammonia as Nitrogen (N) | Nitrite as N | Nitrate as N | Nitrite and Nitrate as N (NOX) | Total Dissolved Solids | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | pH - Field | EC - Field - µs/cm | Temp - Field - °C | Aluminium (Al) - mg/L | Arsenic (As) - mg/L | Barium (Ba) - mg/L | Beryllium (Be) - mg/L | Cadmium (Cd) - mg/L | Chromium (Cr) - mg/L | Cobalt (Co) - mg/L | Copper (Cu) - mg/L | Iron (Fe) - mg/L | Lead (Pb) - mg/L | Manganese (Mn) - mg/L | Nickel (Ni) - mg/L | Vanadium (V) - mg/L | Zinc (Zn) - mg/L | Mercury (Hg) - mg/L | | | Calcium (Ca) - mg/L | Magnesium (Mg) - mg/L | Sodium (Na) - mg/L | Potassium (K) - mg/L | | Chloride (Cl) - mg/L | Sulfate (SO4) - mg/L | Hydroxide Alkalinity as CaCO3 - mg/L | Carbonate Alkalinity as CaCO3 - mg/L | Bicarbonate Alkalinity as CaCO3 - mg/L | Alkalinity - mg/L | | | | | | | |
| **ANZECC guideline*** | | | | | | | | **5** | **0.5** | | | **0.01** | **1** | **1** | **1** | | **0.1** | | **1** | | **20** | **0.002** | | | **1000** | | | | | | **1000** | | | | | | | | | **4000** | |
| **P1** | **15-Jun-07** | | 11.25 | 11.51 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Registered Number: | **7-Aug-07** | 0835 | 11.20 | 11.46 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GW968386 | **19-Dec-07** | 1535 | 11.25 | 11.51 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Licence Number: | **24-Jan-08** | 1140 | 11.21 | 11.47 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90BL253767 | **5-Mar-08** | 0835 | 11.17 | 11.43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **7-Apr-08** | 1515 | 11.17 | 11.43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **8-May-08** | 1550 | 11.16 | 11.42 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Jun-08** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Too Wet to Access |
| | **9-Jul-08** | 0905 | 11.16 | 11.42 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **11-Aug-08** | 0845 | 11.15 | 11.41 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Nov-08** | 1655 | 11.19 | 11.45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **19-Jan-09** | 1355 | 11.22 | 11.48 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **26-Feb-09** | 1645 | 11 | 11.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Jun-09** | 1015 | 11.3 | 11.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **23-Jun-09** | 1000 | 12.57 | 12.83 | 7.1 | 3790 | 20.6 | | 0.007 | 0.04 | <0.001 | <0.0001 | 0.006 | 0.005 | 0.005 | 1.11 | 0.013 | 0.592 | 0.047 | <0.01 | 0.274 | <0.0001 | | 3610 | 45 | 160 | 585 | 8 | 41.1 | 725 | 39 | <1 | <1 | 1010 | 1010 | 41.4 | 0.4 | 0.53 | | | | 2240 | |
| | **9-Sep-09** | 1230 | 11.8 | 12.76 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **2-Dec-09** | 1205 | 11.87 | 12.83 | 7.32 | 4140 | 32.4 | <0.01 | 0.008 | | | | <0.005 | | <0.001 | 0.31 | <0.001 | 0.872 | 0.015 | | <0.005 | <0.0001 | 7.35 | 3700 | 58 | 195 | 537 | 6 | 42.5 | 781 | 39.1 | <1 | <1 | 962 | 962 | 42 | 0.48 | | <0.01 | <0.01 | <0.01 | | |
| | **16-Feb-10** | 1320 | 11.77 | 12.73 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-May-10** | 1230 | 11.77 | 12.73 | 6.89 | 6320 | 21.2 | <0.01 | 0.019 | | | | <0.005 | | <0.001 | <0.05 | <0.001 | 0.918 | 0.027 | | 0.006 | <0.0001 | 7.16 | 4150 | 104 | 226 | 541 | 4 | 47.5 | 982 | 81.9 | <1 | <1 | 758 | 758 | 44.6 | 3.16 | | <0.01 | 0.19 | | | |
| | **31-Aug-10** | 1030 | 11.81 | 12.77 | 7.27 | 2136 | 22.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **15-Nov-10** | 1150 | 11.63 | 12.59 | 6.81 | 2770 | 23.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Mar-11** | 1220 | 11.52 | 12.48 | 7.33 | 3340 | 24.6 | 1 | 0.004 | | | | 0.003 | | 0.096 | 1.98 | 0.022 | 1.27 | 0.013 | | 0.277 | <0.0001 | 8.51 | 3860 | 94 | | 443 | 20 | 41.8 | 866 | 68 | <1 | 116 | 886 | 860 | 43 | 1.45 | | 0.03 | 0.36 | 0.39 | | |
| | **14-Jun-11** | 1220 | 11.40 | 12.36 | 7.2 | 3270 | 19.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **20-Sep-11** | 1120 | 11.38 | 12.34 | 7.2 | 2960 | 22.6 | 0.52 | 0.006 | 0.164 | <0.001 | 0.0006 | 0.002 | 0.003 | 0.028 | 1.15 | 0.023 | 1.16 | 0.011 | 0.01 | 0.435 | <0.0001 | 7.49 | 4200 | 114 | 236 | 416 | 7 | 43.4 | 802 | 76 | <1 | <1 | 835 | 835 | 40.9 | 2.95 | 1.19 | 0.29 | 0.29 | 0.58 | 2120 | |
| | **15-Dec-11** | 1050 | 11.49 | 12.45 | 7.04 | 3350 | 22.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **2-Apr-12** | 1110 | 11.14 | 12.1 | 7.15 | 2960 | 24.6 | 4.25 | 0.011 | 0.254 | <0.001 | 0.0008 | 0.01 | 0.011 | 0.121 | 7.07 | 0.084 | 0.858 | 0.02 | 0.1 | 0.943 | <0.0001 | 7.61 | 3860 | 131 | 260 | 434 | 9 | 47 | 872 | 47 | <1 | <1 | 904 | 904 | 43.6 | 3.74 | 4.35 | 0.2 | <0.01 | 0.2 | 2370 | |
| | **20-Jun-12** | 1110 | 11.14 | 12.1 | 7.19 | 3480 | 21.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **12-Sep-12** | 1145 | 11.04 | 12 | 7.2 | 3560 | 22.1 | 0.4 | 0.001 | 0.178 | <0.001 | 0.0003 | 0.001 | <0.001 | 0.02 | 0.84 | 0.008 | 0.503 | 0.004 | <0.01 | 0.252 | <0.0001 | 7.62 | 4000 | 98 | 247 | 410 | 8 | 43.3 | 854 | 26 | <1 | <1 | 1050 | 1050 | 45.6 | 2.67 | 6.26 | <0.01 | 0.07 | 0.07 | 2300 | |
| **P2** | **15-Jun-07** | | 16.77 | 17.61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Registered Number: | **7-Aug-07** | 0850 | 16.77 | 17.61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GW968387 | **19-Dec-07** | 1545 | 16.70 | 17.54 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Licence Number: | **24-Jan-08** | 1155 | 16.69 | 17.53 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90BL253768 | **5-Mar-08** | 0845 | 11.69 | 12.53 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **4-Apr-08** | 1450 | 16.61 | 17.45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **8-May-08** | 1600 | 16.58 | 17.42 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Jun-08** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Too wet to access |
| | **9-Jul-08** | 0916 | 16.58 | 17.42 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **11-Aug-08** | 0856 | 16.56 | 17.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Nov-08** | 1703 | 16.50 | 17.34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **19-Jan-09** | 1404 | 16.50 | 17.34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **26-Feb-09** | 1630 | 16.25 | 17.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Jun-09** | 0950 | 16.61 | 17.45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **23-Jun-09** | 0900 | 16.53 | 17.38 | 7.4 | 4650 | 21.6 | | 0.003 | 0.087 | <0.001 | <0.0001 | 0.032 | 0.012 | 0.024 | 1.96 | 0.006 | 0.414 | 0.154 | 0.07 | 0.064 | <0.0001 | | 4560 | 114 | 320 | 476 | 10 | 53 | 1030 | 410 | <1 | <1 | 973 | 973 | 57 | 3.62 | 0.02 | | | | 3280 | |
| | **9-Sep-09** | 1215 | 16.49 | 17.31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **2-Dec-09** | 1240 | 16.56 | 17.38 | 6.84 | 4520 | 31.8 | <0.01 | 0.01 | | | | <0.005 | | 0.001 | <0.05 | <0.001 | 0.613 | 0.24 | | 0.01 | <0.0001 | 7.03 | 4090 | 145 | 298 | 395 | 9 | 49.2 | 855 | 401 | <1 | <1 | 852 | 852 | 49.5 | 0.3 | | <0.01 | 3.81 | 3.81 | | |
| | **16-Feb-10** | 1300 | 16.45 | 17.27 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-May-10** | 1150 | 16.38 | 17.20 | 7 | 6420 | 20.1 | <0.01 | 0.002 | | | | <0.005 | | 0.008 | <0.05 | <0.001 | 0.178 | 0.015 | | 0.086 | <0.0001 | 7.09 | 4250 | 173 | 281 | 457 | 7 | 51.8 | 832 | 444 | <1 | <1 | 807 | 807 | 48.8 | 2.93 | | 0.02 | 5.09 | | | |
| | **19-Jul-10** | 1226 | 16.89 | 17.71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **31-Aug-10** | 1015 | 16.33 | 17.15 | 7.06 | 4150 | 21.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **15-Nov-10** | 1220 | 16.26 | 17.08 | 7.01 | 3580 | 22.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Mar-11** | 1150 | 16.35 | 17.17 | 7 | 3410 | 24.7 | 3.28 | 0.002 | | | | 0.023 | | 0.255 | 8.13 | 0.038 | 0.352 | 0.042 | | 2.64 | <0.0001 | 8.59 | 3860 | 161 | 282 | 405 | 10 | 49.1 | 839 | 362 | <1 | 199 | 842 | 832 | 47.8 | 1.3 | | 0.02 | 4.41 | 4.44 | | |
| | **14-Jun-11** | 1150 | 15.77 | 16.59 | 7.05 | 3400 | 19.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **20-Sep-11** | 1150 | 15.63 | 16.45 | 7.05 | 3240 | 21.9 | 0.24 | 0.003 | 0.075 | <0.001 | 0.0003 | 0.003 | 0.004 | 0.114 | 0.77 | 0.006 | 0.324 | 0.013 | 0.02 | 0.422 | <0.0001 | 7.45 | 4550 | 154 | 269 | 409 | 8 | 47.8 | 828 | 346 | <1 | <1 | 767 | 767 | 45.9 | 2.05 | 0.18 | <0.01 | 6.94 | 6.94 | 2560 | |
| | **15-Dec-11** | 1240 | 15.65 | 16.47 | 6.85 | 3610 | 22.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **2-Apr-12** | 1150 | 15.38 | 16.20 | 7.1 | 3210 | 24.3 | 0.14 | 0.001 | 0.054 | <0.001 | <0.0001 | <0.001 | 0.002 | 0.069 | 0.29 | 0.004 | 0.064 | 0.013 | 0.01 | 0.331 | <0.0001 | 7.56 | 3970 | 169 | 276 | 402 | 9 | 48.9 | 871 | 330 | <1 | <1 | 734 | 734 | 46.1 | 2.9 | <0.01 | 0.02 | 5.66 | 5.68 | 2670 | |
| | **20-Jun-12** | 1140 | 15.27 | 16.09 | 7.08 | 3710 | 21.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Piezo-Ferndale |
| | **12-Sep-12** | 1145 | 14.58 | 15.40 | 7.15 | 3860 | 22 | 0.02 | 0.001 | 0.048 | <0.001 | <0.0001 | <0.001 | 0.006 | 0.094 | 0.1 | 0.002 | 0.171 | 0.008 | 0.01 | 0.365 | <0.0001 | 7.5 | 4230 | 145 | 270 | 409 | 10 | 47.5 | 866 | 316 | <1 | <1 | 844 | 844 | 47.9 | 0.4 | <0.01 | <0.01 | 5.98 | 5.98 | 2630 | |
| **P3** | **15-Jun-07** | | 12.50 | 12.92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Registered Number: | **7-Aug-07** | 0945 | 12.72 | 13.14 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GW968388 | **19-Dec-07** | 1620 | 12.99 | 13.41 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Licence Number: | **24-Jan-08** | 1235 | 13.08 | 13.50 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90BL253769 | **5-Mar-08** | 0925 | 13.15 | 13.57 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **4-Apr-08** | 1430 | 13.20 | 13.62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **8-May-08** | 1626 | 13.25 | 13.67 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Jun-08** | 0942 | 13.29 | 13.71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Jul-08** | 0958 | 13.36 | 13.78 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **11-Aug-08** | 0940 | 13.41 | 13.83 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Nov-08** | 1726 | 13.57 | 13.99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **19-Jan-09** | 1308 | 13.65 | 14.07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **26-Feb-09** | 1430 | 14.10 | 14.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Jun-09** | 0845 | 14.29 | 14.71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **23-Jun-09** | 1045 | 14.28 | 14.70 | 7.1 | 14200 | 23.3 | | <0.001 | 0.167 | <0.001 | <0.0001 | 0.008 | 0.002 | 0.008 | 4.11 | 0.018 | 0.376 | 0.038 | <0.01 | 0.207 | <0.0001 | | 6670 | 160 | 310 | 852 | 40 | 71.6 | 2120 | 90 | <1 | <1 | 859 | 859 | 78.8 | 4.82 | 2.05 | | | | 4210 | |
| | **9-Sep-09** | 1340 | 14.46 | 14.90 | | | | | <0.001 | 0.147 | <0.001 | <0.0001 | 0.003 | 0.002 | 0.007 | 1.5 | 0.005 | 0.408 | 0.027 | <0.01 | 0.151 | <0.0001 | | 7980 | 189 | 330 | 1130 | 50 | 86.8 | 2220 | 225 | <1 | <1 | 882 | 882 | 84.9 | 1.14 | 1.25 | | | | 5780 | |
| | **2-Dec-09** | 1415 | 14.72 | 15.16 | 6.57 | 14040 | 25.4 | <0.01 | 0.002 | | | | <0.005 | | 0.002 | 0.26 | <0.001 | 0.475 | 0.011 | | 0.026 | <0.0001 | 6.73 | 11900 | 219 | 521 | 1840 | 83 | 136 | 4360 | 549 | <1 | <1 | 637 | 637 | 147 | 3.95 | | 0.01 | 0.16 | 0.17 | | |
| | **16-Feb-10** | 1045 | 14.33 | 14.77 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-May-10** | 1315 | 14.15 | 14.59 | 6.88 | 14400 | 19.9 | <0.01 | 0.002 | | | | <0.005 | | 0.007 | <0.05 | <0.001 | 0.433 | 0.018 | | 0.198 | <0.0001 | 6.77 | 12300 | 319 | 532 | 2000 | 59 | 148 | 4560 | 717 | <1 | <1 | 718 | 718 | 158 | 3.18 | | <0.01 | 1.09 | | | |
| | **19-Jul-10** | 1204 | 14.37 | 14.81 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **31-Aug-10** | 1210 | 14.45 | 14.89 | 6.75 | 12580 | 23.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **15-Nov-10** | 1110 | 14.52 | 14.96 | 6.52 | 10230 | 22.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **8-Mar-11** | 1100 | 14.31 | 14.75 | 6.56 | 10350 | 26.4 | 0.26 | 0.001 | | | | 0.001 | | 0.016 | 0.42 | <0.001 | 0.32 | 0.008 | | 0.067 | <0.0001 | 6.6 | 12400 | 290 | 534 | 2040 | 87 | 72.7 | 4340 | 502 | <1 | <1 | 791 | 791 | 149 | 0.14 | | <0.01 | 0.17 | 0.17 | | |
| | **21-Jun-11** | 1030 | 14.15 | 14.59 | 6.60 | 10540 | 19.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **21-Sep-11** | 950 | 14.47 | 14.91 | 6.80 | 9650 | 22.4 | 0.41 | 0.002 | 0.081 | <0.001 | <0.0001 | <0.001 | 0.008 | 0.018 | 0.82 | 0.00 | 0.46 | 0.009 | <0.01 | 0.143 | <0.0001 | 7.14 | 14100 | 267 | 0.459 | 1960 | 76 | 138 | 4350 | 494 | <1 | <1 | 747 | 747 | 148 | 3.55 | <0.10 | <0.01 | 0.57 | 0.57 | | |
| | **30-Dec-11** | 1420 | 14.26 | 14.70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | SWL taken during logger changeover |
| | **6-Jan-12** | No Access | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Apr-12** | 0920 | 14.02 | 14.46 | 7.2 | 8650 | 22.4 | 0.06 | 0.002 | 0.081 | <0.001 | <0.0001 | <0.001 | 0.016 | 0.015 | 0.16 | 0.001 | 0.385 | 0.008 | <0.01 | 0.285 | <0.0001 | 7.39 | 11200 | 307 | 502 | 2010 | 79 | 146 | 3950 | 493 | <1 | <1 | 656 | 656 | 135 | 4.01 | <0.10 | 0.04 | 1.53 | 1.57 | 7230 | |
| | **22-Jun-12** | 1200 | 13.90 | 14.34 | 6.85 | 8750 | 20.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Piezo |
| | **20-Sep-12** | 1500 | 14.46 | 14.90 | 6.68 | 11700 | 21.2 | 1.13 | 0.002 | 0.092 | <0.001 | 0.0003 | 0.002 | 0.012 | 0.052 | 2.29 | 0.007 | 0.464 | 0.012 | <0.01 | 0.285 | <0.0001 | 7.37 | 13600 | 287 | 503 | 1980 | 76 | 144 | 4610 | 608 | <1 | <1 | 726 | 726 | 157 | 4.47 | <0.10 | <0.01 | 0.57 | 0.57 | 8710 | |
| **P4** | **15-Jun-07** | | 60.48 | 60.90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Registered Number: | **7-Aug-07** | 0925 | 60.53 | 60.95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GW968389 | **19-Dec-07** | 1645 | 60.57 | 60.99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Licence Number: | **24-Jan-08** | 1255 | 60.98 | 61.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90BL254686 | **5-Mar-08** | 0910 | 60.57 | 60.99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **7-Apr-08** | 1540 | 60.56 | 60.98 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **8-May-08** | 1700 | 60.53 | 60.95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Jun-08** | 0958 | 60.98 | 61.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Jul-08** | 1038 | 60.98 | 61.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **11-Aug-08** | 1000 | 60.57 | 60.99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Nov-08** | 1735 | 61.23 | 61.65 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **19-Jan-09** | 1318 | 65.03 | 65.45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **26-Feb-09** | 1505 | 66.37 | 66.67 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Jun-09** | 0910 | 67.74 | 68.16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **23-Jun-09** | 1230 | 67.73 | 68.15 | 7.3 | 3960 | 20.9 | | 0.006 | 0.519 | <0.001 | 0.0008 | 0.001 | 0.009 | 0.034 | 1.07 | 0.1 | 0.157 | 0.077 | <0.01 | 0.434 | <0.0001 | | 4300 | 44 | 141 | 622 | 55 | 42.2 | 901 | 110 | <1 | <1 | 950 | 950 | 46.7 | 5 | 0.74 | | | | 2270 | |
| | **9-Sep-09** | 1317 | 67.44 | 67.88 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **21-Dec-09** | 1545 | 68.16 | 68.60 | 6.58 | 4850 | 24.2 | <0.01 | <0.001 | | | | <0.005 | | 0.004 | <0.05 | <0.001 | 0.16 | 0.017 | | 0.161 | <0.0001 | 7.14 | 4920 | 7 | 163 | 782 | 54 | 49.2 | 1220 | 14.6 | <1 | <1 | 906 | 906 | 52.7 | 3.49 | | <0.01 | 0.15 | 0.15 | | |
| | **16-Feb-10** | 1115 | 67.99 | 68.43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-May-10** | 1510 | 67.69 | 68.13 | 7.4 | 4840 | 22.9 | <0.01 | <0.001 | | | | <0.005 | | 0.016 | <0.05 | 0.001 | 0.101 | 0.02 | | 0.442 | <0.0001 | 7.25 | 3820 | 97 | 130 | 605 | 38 | 42.8 | 816 | 65.3 | <1 | <1 | 852 | 852 | 41.4 | 1.68 | | <0.01 | 0.52 | | | |
| | **31-Aug-10** | 1245 | 67.31 | 67.75 | 7.33 | 3720 | 23.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **15-Nov-10** | 1010 | 67.06 | 67.50 | 6.92 | 2850 | 24.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Mar-11** | 1320 | 67.00 | 67.44 | 7.15 | 3790 | 24.90 | 1.57 | 0.002 | | | | 0.004 | | 0.511 | 4.1 | 0.136 | 0.223 | 0.019 | | 1.35 | <0.0001 | 8.64 | 3550 | 95 | 139 | 537 | 51 | 40.8 | 764 | 95 | <1 | 178 | 943 | 962 | 42.8 | 2.33 | | <0.01 | 0.67 | 0.67 | | |
| | **21-Jun-11** | 1115 | 67.07 | 67.51 | 7.2 | 4190 | 21.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **21-Sep-11** | 1020 | 67.76 | 68.20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | No longer exists | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **P5** | **15-Jun-07** | | 40.25 | 40.75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Registered Number: | **7-Aug-07** | 0915 | 39.69 | 40.19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GW968390 | **19-Dec-07** | 1635 | 40.42 | 40.92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Licence Number: | **24-Jan-08** | 1250 | 40.40 | 40.90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90BL254687 | **5-Mar-08** | 0905 | 40.49 | 40.99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **7-Apr-08** | 1530 | 40.51 | 41.01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **8-May-08** | 1644 | 40.52 | 41.02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Jun-08** | 0953 | 40.52 | 41.02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Jul-08** | 1034 | 40.59 | 41.09 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **11-Aug-08** | 0955 | 40.52 | 41.02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Site ID | Date | Time | Depth to Ground - mbgl | Depth to Stand - mbtoc | Field Parameters | | | Dissolved Metals | | | | | | | | | | | | | | | pH - Lab | EC - Lab - µs/cm | Major Cations | | | | Total Cations - meq/L | Major Anions | | | | | | Total Anions - meq/L | Ionic Balance | Ammonia as Nitrogen (N) | Nitrite as N | Nitrate as N | Nitrite and Nitrate as N (NOX) | Total Dissolved Solids | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | pH - Field | EC - Field - µs/cm | Temp - Field - °C | Aluminium (Al) - mg/L | Arsenic (As) - mg/L | Barium (Ba) - mg/L | Beryllium (Be) - mg/L | Cadmium (Cd) - mg/L | Chromium (Cr) - mg/L | Cobalt (Co) - mg/L | Copper (Cu) - mg/L | Iron (Fe) - mg/L | Lead (Pb) - mg/L | Manganese (Mn) - mg/L | Nickel (Ni) - mg/L | Vanadium (V) - mg/L | Zinc (Zn) - mg/L | Mercury (Hg) - mg/L | | | Calcium (Ca) - mg/L | Magnesium (Mg) - mg/L | Sodium (Na) - mg/L | Potassium (K) - mg/L | | Chloride (Cl) - mg/L | Sulfate (SO4) - mg/L | Hydroxide Alkalinity as CaCO3 - mg/L | Carbonate Alkalinity as CaCO3 - mg/L | Bicarbonate Alkalinity as CaCO3 - mg/L | Alkalinity - mg/L | | | | | | | |
| **ANZECC guideline*** | | | | | | | | **5** | **0.5** | | | **0.01** | **1** | **1** | **1** | | **0.1** | | **1** | | **20** | **0.002** | | | **1000** | | | | | | **1000** | | | | | | | | | **4000** | |
| | **17-Nov-08** | 1731 | 40.90 | 41.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **19-Jan-09** | 1314 | 41.50 | 42.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **27-Feb-09** | 1500 | 41.50 | 42.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Jun-09** | 0900 | 47.11 | 47.61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **23-Jun-09** | 1140 | 47.16 | 47.62 | 7.5 | 4480 | 24.1 | | 0.001 | 1.65 | <0.001 | 0.0004 | 0.026 | 0.006 | 0.024 | 13.2 | 0.028 | 0.277 | 0.095 | 0.02 | 0.075 | <0.0001 | | 4200 | 24 | 58 | 854 | 27 | 43.8 | 1080 | <10 | <1 | <1 | 893 | 893 | 48.2 | 4.89 | 1.67 | | | | 2240 | |
| | **9-Sep-09** | 1315 | 48.77 | 49.28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **2-Dec-09** | 1510 | 49.96 | 50.47 | 7.69 | 4440 | 25.4 | <0.01 | <0.001 | | | | <0.005 | | 0.002 | 0.2 | <0.001 | 0.052 | 0.016 | | 0.049 | <0.0001 | 7.53 | 4400 | 12 | 44 | 870 | 23 | 42.7 | 985 | 1.62 | <1 | <1 | 907 | 907 | 46 | 3.76 | | <0.01 | 0.04 | 0.04 | | |
| | **16-Feb-10** | 1055 | 51.12 | 51.63 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-May-10** | 1420 | 52.50 | 53.01 | 7.38 | 6520 | 20.8 | <0.01 | 0.001 | | | | <0.005 | | <0.001 | <0.05 | <0.001 | 0.06 | 0.004 | | <0.005 | <0.0001 | 7.49 | 4270 | 32 | 40 | 979 | 16 | 47.9 | 928 | 1.73 | <1 | <1 | 894 | 894 | 44.1 | 4.13 | | <0.01 | 0.05 | | | |
| | | | No longer exists | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **P6** | **15-Jun-07** | | 16.70 | 17.20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Registered Number: | **7-Aug-07** | 1000 | 17.79 | 18.29 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GW968391 | **19-Dec-07** | 1605 | 17.79 | 18.29 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Licence Number: | **24-Jan-08** | 1225 | 17.81 | 18.31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90BL254688 | **5-Mar-08** | 950 | 17.83 | 18.33 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **4-Apr-08** | 1445 | 17.75 | 18.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **8-May-08** | 1618 | 17.76 | 18.26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Jun-08** | 0913 | 17.76 | 18.26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Jul-08** | 0948 | 17.78 | 18.28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **11-Aug-08** | 0928 | 17.78 | 18.28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Nov-08** | 1719 | 17.78 | 18.28 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **19-Jan-09** | 1256 | 17.83 | 18.33 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **2-Mar-09** | 1230 | 17.79 | 18.29 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | Destroyed by mining | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **P7** | **15-Jun-07** | | 12.77 | 13.04 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Registered Number: | **7-Aug-07** | 0905 | 12.75 | 13.02 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GW968392 | **20-Dec-07** | 1050 | 12.73 | 13.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Licence Number: | **24-Jan-08** | 1345 | 12.72 | 12.99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90BL254689 | **5-Mar-08** | 0855 | 12.74 | 13.01 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **7-Apr-08** | 1520 | 12.70 | 12.97 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **8-May-08** | 1712 | 12.71 | 12.98 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Jun-08** | 1006 | 12.72 | 12.99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Jul-08** | 1045 | 12.73 | 13.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **11-Aug-08** | 1013 | 12.72 | 12.99 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Nov-08** | 1750 | 12.70 | 12.97 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **19-Jan-09** | 1343 | 13.70 | 13.97 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **26-Feb-09** | 1410 | 12.65 | 12.90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Jun-09** | 0925 | 11.13 | 11.40 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **23-Jun-09** | 1315 | 11.36 | 11.61 | 6.8 | 7590 | 22.7 | | <0.001 | 0.103 | <0.001 | 0.0027 | <0.001 | <0.001 | 0.002 | <0.05 | <0.001 | 0.029 | 0.002 | <0.01 | <0.005 | <0.0001 | | 7140 | 171 | 413 | 826 | 23 | 79.1 | 2370 | 231 | <1 | <1 | 782 | 782 | 87.4 | 4.98 | 0.04 | | | | 4170 | |
| | **9-Sep-09** | 1333 | 10.68 | 10.94 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **2-Dec-09** | 1610 | 11.24 | 11.50 | 6.85 | 7900 | 23.3 | <0.01 | <0.001 | <0.005 | | | 0.002 | | | <0.05 | <0.001 | 0.024 | 0.002 | | 0.006 | <0.0001 | 7 | 6940 | 148 | 420 | 779 | 24 | 76.5 | 2190 | 290 | <1 | <1 | 654 | 654 | 80.9 | 2.83 | | <0.01 | 5.9 | 5.9 | | |
| | **16-Feb-10** | 1145 | 9.89 | 10.15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-May-10** | 1530 | 10.64 | 10.90 | 7.09 | 8500 | 20.2 | <0.01 | <0.001 | | | | <0.005 | | 0.002 | <0.05 | <0.001 | 0.009 | 0.003 | | 0.015 | <0.0001 | 7 | 7180 | 218 | 456 | 876 | 18 | 87 | 2220 | 349 | <1 | <1 | 681 | 681 | 83.6 | 2 | | <0.01 | 6.29 | | | |
| | **31-Aug-10** | 1330 | 9.73 | 9.99 | 6.95 | 7700 | 22.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **15-Nov-10** | 1040 | 9.60 | 9.86 | 6.82 | 6190 | 23.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **8-Mar-11** | 1330 | 8.72 | 8.98 | 6.83 | 4760 | 26.5 | 2.34 | <0.001 | | | | 0.003 | | 0.021 | 2.52 | 0.002 | 0.046 | 0.004 | | 0.081 | <0.0001 | 6.91 | 6330 | 172 | 365 | 769 | 24 | 72.7 | 1630 | 352 | <1 | <1 | 708 | 708 | 67.4 | 3.76 | | <0.01 | 4.31 | 4.31 | | |
| | **21-Jun-11** | 1210 | 9.17 | 9.43 | 6.85 | 4810 | 21.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **21-Sep-11** | 1120 | 10.51 | 10.77 | 6.85 | 2380 | 24.2 | 3.25 | 0.002 | 0.107 | <0.001 | <0.0001 | <0.001 | 0.005 | 0.046 | 5.24 | 0.009 | 0.423 | 0.024 | 0.02 | 0.256 | <0.0001 | 7.34 | 3200 | 35 | 49 | 127 | 49 | | 306 | <1 | <1 | <1 | 974 | 974 | 28.1 | | 224 | <0.01 | 0.16 | 0.16 | | |
| | **6-Jan-12** | 930 | 8.31 | 8.57 | 6.83 | 2810 | 22.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Apr-12** | | 8.16 | 8.42 | 7.25 | 3820 | 24.7 | 0.52 | <0.001 | 0.03 | <0.001 | <0.0001 | 0.001 | <0.001 | 0.04 | 1.4 | 0.003 | 0.096 | 0.004 | <0.01 | 0.236 | <0.0001 | 7.36 | 4860 | 34 | 75 | 214 | 76 | 49.9 | 494 | 65 | <1 | <1 | 1640 | 1640 | 48.1 | 1.84 | 432 | <0.01 | 0.22 | 0.22 | 3250 | Standpipe repaired 20/4 - new "stick up" = 0.5m |
| | **11-May-12** | 1245 | | | | | | 2.97 | 0.002 | 0.138 | <0.001 | <0.0001 | 0.009 | 0.006 | 0.111 | 4.8 | 0.009 | 0.365 | 0.02 | 0.02 | 0.319 | <0.0001 | 7.27 | 4750 | 51 | 92 | 247 | 64 | 49.2 | 548 | 7 | <1 | <1 | 1580 | 1580 | 47.2 | 2.07 | 374 | <0.01 | 0.02 | 0.02 | 1390 | |
| | **11-May-12** | 1330 | | | | | | 1.34 | <0.001 | 0.078 | <0.001 | <0.0001 | 0.006 | 0.001 | 0.016 | 1.89 | 0.004 | 0.083 | 0.006 | <0.01 | 0.062 | <0.0001 | 7.32 | 4760 | 119 | 232 | 588 | 24 | 51.2 | 1020 | 235 | <1 | <1 | 696 | 696 | 47.6 | 3.68 | 28 | 0.08 | 3.03 | 3.11 | 2810 | |
| | **22-Jun-12** | 1300 | 8.12 | 8.62 | 7.26 | 3690 | 20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **20-Sep-12** | 1500 | 9.70 | 10.20 | 7.18 | 4310 | 21.9 | 1.06 | 0.001 | 0.065 | <0.001 | <0.0001 | 0.003 | 0.002 | 0.032 | 1.65 | 0.004 | 0.096 | 0.005 | <0.01 | 0.128 | <0.0001 | 7.67 | 5030 | 121 | 230 | 597 | 21 | 51.5 | 1100 | 327 | <1 | <1 | 648 | 648 | 50.8 | 0.66 | 10.9 | 0.07 | 0.12 | 0.19 | 2930 | |
| **P8** | **15-Jun-07** | | 15.63 | 15.63 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Registered Number: | **7-Aug-07** | 0910 | 15.70 | 15.70 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GW968393 | **19-Dec-07** | 1630 | 21.25 | 21.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Licence Number: | **24-Jan-08** | 1240 | 21.30 | 21.30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90BL254690 | **5-Mar-08** | 0900 | 19.25 | 19.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **7-Apr-08** | 1525 | 20.13 | 20.13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **8-May-08** | 1710 | 20.49 | 20.49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Jun-08** | 1003 | 18.79 | 18.79 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Jul-08** | 1043 | 19.12 | 19.12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **11-Aug-08** | 1010 | 19.72 | 19.72 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Windmill pumping |
| | **17-Nov-08** | 1747 | 16.74 | 16.74 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **2-Mar-09** | 1300 | 15.85 | 15.95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Windmill pumping |
| | **17-Jun-09** | 0920 | 16.90 | 16.90 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **23-Jun-09** | 1245 | 16.59 | 16.69 | 6.9 | 6460 | 21.8 | | <0.001 | 0.068 | <0.001 | 0.0022 | <0.001 | <0.001 | 0.004 | 0.35 | 0.002 | 0.023 | 0.01 | <0.01 | 0.046 | <0.0001 | | 6220 | 158 | 306 | 771 | 24 | 79.1 | 1930 | 245 | <1 | <1 | 710 | 710 | 73.6 | 4.54 | <0.01 | | | | 3600 | |
| | **9-Sep-09** | 1330 | 16.58 | 16.71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Windmill pumping |
| | **2-Dec-09** | 1555 | 17.67 | 17.80 | 6.96 | 6440 | 23.8 | <0.01 | <0.001 | | | | <0.005 | | 0.014 | <0.05 | <0.001 | 0.004 | 0.022 | | 0.063 | <0.0001 | 7.05 | 6000 | 119 | 308 | 723 | 24 | 63.3 | 1830 | 238 | <1 | <1 | 601 | 601 | 68.7 | 4.08 | | <0.01 | 8.64 | 8.64 | | Bore equipped |
| | **16-Feb-10** | 1140 | 16.94 | 17.07 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-May-10** | 1550 | 16.94 | 17.07 | 7.41 | 4380 | 20.6 | <0.01 | <0.001 | | | | <0.005 | | 0.002 | <0.05 | <0.001 | 0.003 | 0.003 | | 0.02 | <0.0001 | 7.02 | 6000 | 185 | 320 | 793 | 18 | 70.5 | 1730 | 259 | <1 | <1 | 690 | 690 | 68.1 | 1.77 | | <0.01 | 8.99 | | | Bore equipped |
| | **31-Aug-10** | 1330 | 16.96 | 17.09 | 6.87 | 6220 | 22.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bore equipped |
| | **15-Nov-10** | 1030 | 16.88 | 17.01 | 6.67 | 5400 | 23.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **8-Mar-11** | 1250 | 17.02 | 17.15 | 6.82 | 4790 | 26.1 | 0.18 | <0.001 | | | | 0.002 | | 0.0034 | 1 | 0.004 | 0.053 | 0.004 | | 0.171 | <0.0001 | 6.98 | 6280 | 194 | 337 | 760 | 18 | 71.2 | 1660 | 50 | <1 | 23 | 144 | 765 | 66.4 | 3.48 | | 0.03 | 0.57 | 0.6 | | |
| | **21-Jun-11** | 1150 | 16.79 | 16.92 | 6.8 | 4920 | 21.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **21-Sep-11** | 1100 | 16.91 | 17.04 | 6.75 | 5040 | 24.2 | 1.53 | <0.001 | 0.084 | <0.001 | <0.0001 | <0.001 | 0.005 | 0.012 | 3.64 | 0.002 | 0.062 | 0.008 | <0.01 | 0.036 | <0.0001 | 7.31 | 7180 | 198 | 330 | 786 | 23 | 71.8 | 1710 | 261 | <1 | <1 | 660 | 660 | 66.9 | 3.57 | 0.86 | 0.02 | 3.71 | 3.73 | | |
| | **6-Jan-12** | 950 | 16.89 | 17.02 | 6.64 | 5590 | 23.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Apr-12** | 1010 | 16.15 | 16.28 | 6.95 | 5140 | 24.6 | 6 | 0.002 | 0.156 | <0.001 | <0.0001 | 0.016 | 0.011 | 0.023 | 7.42 | 0.005 | 0.162 | 0.011 | 0.02 | 0.048 | <0.0001 | 7.46 | 6520 | 196 | 334 | 710 | 21 | 68.7 | 1800 | 276 | <1 | <1 | 677 | 677 | 70 | 0.98 | 1.86 | 0.03 | 0.79 | 0.82 | 4180 | |
| | **22-Jun-12** | 1315 | 2.86 | 3.66 | 7.29 | 6150 | 19.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **11-Jul-12** | 1200 | 3.46 | 4.26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Dipped to confirm previous reading |
| | **20-Sep-12** | 1500 | 4.79 | 5.59 | 7.04 | 725 | 21.7 | 7.12 | 0.01 | 0.198 | <0.001 | 0.0003 | 0.013 | 0.018 | 0.069 | 12 | 0.021 | 2.54 | 0.028 | 0.02 | 0.191 | <0.0001 | 7.55 | 803 | 42 | 29 | 49 | 9 | 7.48 | 123 | 50 | <1 | <1 | 151 | 151 | 7.53 | 0.33 | 4.12 | 0.01 | 0.12 | 0.13 | 426 | |
| **27356** | **7-Aug-07** | 1005 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Registered Number: | **19-Dec-07** | 1555 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GW027356 | **24-Jan-08** | 1220 | 14.30 | 14.61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Licence Number: | **5-Mar-08** | 1000 | 14.25 | 14.56 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90BL020042 | **4-Apr-08** | 1447 | 14.11 | 14.42 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **8-May-08** | 1605 | 15.30 | 15.61 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Jun-08** | 0852 | 17.61 | 17.92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Jul-08** | 0925 | 14.12 | 14.43 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | No access |
| | **11-Aug-08** | 0908 | 16.05 | 16.36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | No access |
| | **17-Nov-08** | 1710 | 13.92 | 14.23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **19-Jan-09** | 1250 | 14.45 | 14.76 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **26-Feb-09** | 1400 | 14.50 | 14.80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Sep-09** | 1255 | | | 7.47 | 4350 | 20.2 | | <0.001 | 0.182 | <0.001 | <0.0001 | <0.001 | 0.003 | 0.035 | 0.47 | <0.001 | 0.08 | 0.003 | <0.01 | 0.031 | <0.0001 | | 4260 | 143 | 247 | 446 | 17 | 47.3 | 946 | 164 | <1 | <1 | 745 | 745 | 45 | 2.5 | 0.15 | | | | 2910 | |
| | **2-Dec-09** | 1340 | | | 7.07 | 4620 | 26.2 | <0.01 | <0.001 | | | | <0.005 | | 0.021 | <0.05 | <0.001 | 0.074 | 0.002 | | 0.018 | <0.0001 | 7.24 | 4160 | 77 | 245 | 433 | 18 | 73.3 | 1070 | 196 | <1 | <1 | 654 | 654 | 47.2 | 4.33 | | <0.01 | 1.57 | 1.57 | | |
| | **16-Feb-10** | 1205 | 13.41 | 13.71 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-May-10** | 1600 | | | 8.26 | 5400 | 23.5 | <0.01 | 0.002 | | | | <0.005 | | 0.015 | 0.06 | <0.001 | 0.056 | 0.002 | | 0.013 | <0.0001 | 7.78 | 4810 | 172 | 306 | 538 | 14 | 57.6 | 1280 | 268 | <1 | <1 | 680 | 680 | 55.2 | 2.1 | | <0.01 | 0.28 | | | Bore Covered |
| | **31-Aug-10** | 1100 | | | 7.8 | 4610 | 17.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bore Covered |
| | **15-Nov-10** | 1320 | | | 7.65 | 4100 | 23.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bore Covered |
| | **9-Mar-11** | 1350 | | | 7.35 | 4700 | 25.4 | 0.02 | 0.003 | | | | <0.001 | | 0.021 | 1.34 | 0.002 | 0.142 | 0.006 | | 0.1 | <0.0001 | 7.54 | 5520 | 173 | 366 | 573 | 24 | 64.3 | 1840 | 198 | <1 | <1 | 636 | 636 | 68.7 | 3.34 | | <0.01 | 0.7 | 0.7 | | Bore Covered |
| | **14-Jun-11** | 1020 | | | 7.4 | 4141 | 15.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bore Covered |
| | **21-Sep-11** | 1150 | | | 7.55 | 3900 | 18.4 | 0.05 | <0.001 | 0.368 | <0.001 | <0.0001 | <0.001 | 0.002 | 0.049 | 1.09 | 0.001 | 0.036 | 0.003 | <0.01 | 0.104 | <0.0001 | 7.84 | 5650 | 170 | 330 | 474 | 19 | 56.8 | 1350 | 139 | <1 | <1 | 694 | 694 | 54.8 | 1.7 | 0.03 | 0.03 | 1.93 | 1.96 | | Bore Covered |
| | **15-Dec-11** | 1310 | | | 7.49 | 4360 | 23.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Apr-12** | 1240 | | | 8.3 | 4150 | 25.9 | 0.28 | 0.003 | 0.528 | <0.001 | <0.0001 | <0.001 | 0.004 | 0.079 | 2.2 | 0.003 | 0.114 | 0.004 | <0.01 | 0.184 | <0.0001 | 7.89 | 5550 | 89 | 406 | 567 | 25 | 63.2 | 1540 | 152 | <1 | <1 | 556 | 556 | 57.7 | 4.49 | 0.29 | <0.01 | 0.07 | 0.07 | 3820 | |
| | **20-Jun-12** | 1210 | | | 8.12 | 4310 | 19.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Tank fed by windmill |
| **45098** | **7-Aug-07** | 0935 | 10.58 | 10.92 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Registered Number: | **19-Dec-07** | 1615 | 10.69 | 11.03 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GW045098 | **24-Jan-08** | 1230 | 10.76 | 11.10 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Insufficient water |
| Licence Number: | **5-Mar-08** | 0920 | 10.82 | 11.16 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 90BL105097 | **4-Apr-08** | 1440 | 10.87 | 11.21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bore covered |
| | **8-May-08** | 1622 | 10.89 | 11.23 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bore covered |
| | **3-Jun-08** | 0919 | 10.91 | 11.25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Jul-08** | 0952 | 10.96 | 11.30 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **11-Aug-08** | 0933 | 11.00 | 11.34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Nov-08** | 1723 | 11.19 | 11.53 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **19-Jan-09** | 1300 | 11.49 | 11.83 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **26-Feb-09** | 1330 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-Jun-09** | 0830 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **23-Jun-09** | 1205 | 12.12 | 12.52 | 6.9 | 7090 | 22.5 | | <0.001 | 0.07 | <0.001 | 0.0014 | <0.001 | 0.004 | 0.012 | 4.37 | 0.003 | 0.406 | 0.004 | <0.01 | 0.573 | <0.0001 | | 6660 | 149 | 345 | 807 | 42 | 72 | 2100 | 201 | <1 | <1 | 808 | 808 | 79.6 | 4.99 | 0.03 | | | | 3950 | |
| | **9-Sep-09** | 1310 | 12.36 | 12.78 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Site ID | Date | Time | Depth to Ground - mbgl | Depth to Stand - mbtoc | Field Parameters | | | Dissolved Metals | | | | | | | | | | | | | | | pH - Lab | EC - Lab - µs/cm | Major Cations | | | | Total Cations - meq/L | Major Anions | | | | | Total Anions - meq/L | Ionic Balance | Ammonia as Nitrogen (N) | Nitrite as N | Nitrate as N | Nitrite and Nitrate as N (NOX) | Total Dissolved Solids | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | pH - Field | EC - Field - µs/cm | Temp - Field - °C | Aluminium (Al) - mg/L | Arsenic (As) - mg/L | Barium (Ba) - mg/L | Beryllium (Be) - mg/L | Cadmium (Cd) - mg/L | Chromium (Cr) - mg/L | Cobalt (Co) - mg/L | Copper (Cu) - mg/L | Iron (Fe) - mg/L | Lead (Pb) - mg/L | Manganese (Mn) - mg/L | Nickel (Ni) - mg/L | Vanadium (V) - mg/L | Zinc (Zn) - mg/L | Mercury (Hg) - mg/L | | | | Calcium (Ca) - mg/L | Magnesium (Mg) - mg/L | Sodium (Na) - mg/L | Potassium (K) - mg/L | | Chloride (Cl) - mg/L | Sulfate (SO4) - mg/L | Hydroxide Alkalinity as CaCO3 - mg/L | Carbonate Alkalinity as CaCO3 - mg/L | Bicarbonate Alkalinity as CaCO3 - mg/L | Alkalinity - mg/L | | | | | | | | |
| **ANZECC guideline*** | | | | | | | | **5** | **0.5** | | | **0.01** | **1** | **1** | **1** | | **0.1** | | **1** | | **20** | **0.002** | | | **1000** | | | | | | **1000** | | | | | | | | | | |
| | **2-Dec-09** | 1440 | 12.62 | 13.04 | 7.1 | 7120 | 23.5 | <0.01 | <0.001 | | | | <0.005 | | 0.014 | <0.05 | <0.001 | 0.365 | 0.013 | | 0.406 | <0.0001 | 7.21 | 6100 | 48 | 340 | 756 | 45 | 64.5 | 1920 | 170 | <1 | <1 | 675 | 675 | 71.2 | 5.01 | | 0.02 | 0.1 | 0.12 | | Bore covered |
| | **16-Feb-10** | 1050 | 12.17 | 12.59 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bore covered, tank empty |
| | **17-May-10** | 1405 | 11.93 | 12.35 | 7.39 | 6930 | 19.8 | <0.01 | <0.001 | | | | <0.005 | | 0.002 | <0.05 | <0.001 | 0.257 | 0.003 | | 0.23 | <0.0001 | 7.08 | 6180 | 170 | 358 | 814 | 34 | 74.3 | 1880 | 190 | <1 | <1 | 748 | 748 | 71.9 | 1.6 | | 0.03 | 0.19 | | | Bore covered |
| | | | No longer exists | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bore covered, tank empty |
| **901460** | **10-Dec-08** | 0900 | 15.38 | 15.80 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bore covered |
| Registered Number: | **19-Jan-09** | 1414 | 15.53 | 15.95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bore covered |
| GW901460 | **2-Mar-09** | 1320 | 19.73 | 20.15 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bore covered |
| | **8-Apr-11** | 1410 | 15.18 | 15.60 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bore covered |
| | **14-Jun-11** | 1120 | 15.03 | 15.45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Windmill over bore |
| | **20-Sep-11** | 1230 | 14.97 | 15.39 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Windmill over bore |
| | **15-Dec-11** | 1130 | 15.03 | 15.45 | lllll windmill over bore | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **2-Apr-12** | 1230 | 14.87 | 15.29 | lllll windmill over bore | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **20-Jun-12** | 1240 | 14.74 | 15.16 | Pump cap over bore | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | lllll-broken windmill |
| **No 5 Bore** | **19-Jan-09** | 1335 | | 48.45 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **26-Feb-09** | 1630 | | 49.37 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Sep-09** | 1320 | | | 8.5 | 2810 | 19.2 | | <0.001 | 0.097 | <0.001 | <0.0001 | 0.001 | <0.001 | 0.002 | 0.46 | <0.001 | 0.10 | 0.002 | <0.01 | 0.024 | <0.0001 | | 2720 | 43 | 108 | 386 | 20 | 28.4 | 570 | 104 | <1 | 54 | 403 | 457 | 27.4 | 1.78 | <0.01 | | | | 1580 | |
| | **2-Dec-09** | 1537 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **16-Feb-10** | 1130 | 47.11 | 47.63 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-May-10** | 1520 | | | 8.29 | 388 | 18.7 | 0.04 | <0.001 | | | | <0.001 | | 0.002 | <0.05 | <0.001 | <0.001 | 0.001 | | <0.005 | <0.0001 | 8.9 | 349 | 16 | 11 | 32 | 7 | 3.31 | 23.9 | 4.39 | <1 | 13 | 117 | 130 | 3.36 | 0.82 | | <0.01 | 0.02 | | | |
| | **31-Aug-10** | 1324 | | | 9.86 | 238 | 22.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **15-Nov-10** | 1020 | 46.42 | 46.94 | 8.67 | 210 | 24.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **8-Mar-11** | 1140 | | | 8.54 | 1020 | 27.5 | 0.88 | 0.002 | | | | 0.001 | | 0.003 | 0.67 | <0.001 | <0.001 | 0.068 | | <0.005 | <0.0001 | 8.84 | 792 | 23 | 29 | 114 | 18 | 8.99 | 161 | 50 | <1 | 23 | 144 | 167 | 8.93 | 0.32 | | <0.01 | 0.01 | 0.01 | | Pump over bore |
| | **21-Jun-11** | 1130 | Dry | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **21-Sep-11** | 1040 | Dry | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **6-Jan-12** | 1010 | Dry | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **6249** | **9-Sep-09** | 1500 | 10.10 | | 7.75 | 2340 | 19.6 | | 0.002 | 0.346 | <0.001 | 0.0001 | 0.002 | 0.005 | 0.062 | 9.15 | 0.012 | 0.798 | 0.018 | <0.01 | 1.01 | <0.0001 | | 2300 | 70 | 94 | 281 | 13 | 23.7 | 596 | 16.9 | <1 | <1 | 272 | 272 | 22.6 | 2.41 | 2.47 | | | | | |
| | **2-Dec-09** | 1100 | 10.22 | 9.89 | 7.5 | 3480 | 23.7 | <0.01 | <0.001 | | | | <0.005 | | 0.001 | <0.05 | <0.001 | 1.14 | 0.004 | | 0.101 | <0.0001 | 7.48 | 3370 | 67 | 135 | 361 | 12 | 30.5 | 980 | 11 | <1 | <1 | 289 | 289 | 33.6 | 4.98 | | <0.01 | 0.93 | 0.93 | | |
| | **16-Feb-10** | 1000 | 9.87 | 10.20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1770 | |
| | **17-May-10** | 1025 | 9.96 | 10.29 | 7.1 | 5930 | 20.8 | <0.01 | <0.001 | | | | <0.005 | | <0.001 | <0.05 | <0.001 | 1.80 | 0.003 | | 0.122 | <0.0001 | 7.53 | 3890 | 106 | 198 | 480 | 4 | 42.5 | 1070 | 71.6 | <1 | <1 | 372 | 372 | 39.1 | 4.14 | | <0.01 | 1.31 | | | |
| | **31-Aug-10** | 0820 | 9.91 | 10.24 | 7.9 | 3260 | 17.3 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **23-Nov-10** | 1330 | 9.86 | 10.19 | 7.4 | 2430 | 24.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Mar-11** | 1040 | 10.02 | 10.35 | 7.6 | 2230 | 23.5 | 0.22 | 0.001 | | | | 0.001 | | 0.079 | 2.29 | 0.01 | 0.51 | 0.007 | | 0.768 | <0.0001 | 7.84 | 2420 | 69 | 125 | 283 | 8 | 26.3 | 700 | 44 | <1 | <1 | 284 | 284 | 26.3 | 0.12 | | 0.26 | 2.36 | 2.63 | | |
| | **14-Jun-11** | 950 | 9.62 | 9.95 | 7.6 | 2420 | 18.7 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **20-Sep-11** | 1010 | 9.65 | 9.98 | 7.7 | 2520 | 22.3 | 0.06 | 0.003 | 0.324 | <0.001 | 0.0001 | 0.002 | <0.001 | 0.035 | 0.96 | 0.00 | 0.67 | 0.007 | <0.01 | 0.264 | <0.0001 | 7.86 | 3470 | 80 | 155 | 369 | 7 | 33 | 868 | 44 | <1 | <1 | 278 | 278 | 31 | 3.16 | 0.32 | <0.01 | 10.9 | 10.9 | 1640 | |
| | **15-Dec-11** | 1010 | 9.69 | 10.02 | 7.31 | 3020 | 21.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **2-Apr-12** | 1010 | 9.35 | 9.68 | 7.75 | 2350 | 22.9 | 0.02 | <0.001 | 0.317 | <0.001 | <0.0001 | <0.001 | 0.002 | 0.021 | 1.47 | 0.003 | 1.96 | 0.006 | <0.01 | 0.387 | <0.0001 | 7.78 | 2760 | 80 | 131 | 295 | 10 | 27.9 | 785 | 28 | <1 | <1 | 321 | 321 | 29.1 | 2.25 | 3.4 | 0.14 | 1.05 | 1.19 | 1700 | |
| | **20-Jun-12** | 1020 | 9.21 | 9.54 | 7.7 | 3100 | 20.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | TSR near tanks |
| | **12-Sep-12** | 1000 | 9.11 | 9.44 | 7.6 | 3090 | 21.2 | 0.02 | 0.002 | 0.362 | <0.001 | <0.0001 | <0.001 | <0.001 | 0.01 | 5.14 | 0.005 | 2.48 | 0.003 | <0.01 | 0.191 | <0.0001 | 7.72 | 3490 | 89 | 179 | 388 | 9 | 36.3 | 956 | 19 | <1 | <1 | 413 | 413 | 35.6 | 0.92 | 3.92 | 0.14 | 0.02 | 0.16 | 2180 | |
| **44884** | **9-Sep-09** | 1155 | | | 7.50 | 3050 | 20.2 | | 0.007 | 0.624 | <0.001 | 0.0005 | <0.001 | 0.004 | 0.004 | 5.32 | 0.002 | 0.787 | 0.001 | <0.01 | 0.223 | <0.0001 | | 2950 | 45 | 102 | 527 | 5 | 33.7 | 442 | 16.2 | <1 | <1 | 1040 | 1040 | 33.7 | 0.02 | 0.14 | | | | | |
| | **2-Dec-09** | 1145 | | | 7.4 | 3700 | 25 | <0.01 | 0.002 | | | | <0.005 | | <0.001 | <0.05 | <0.001 | 0.89 | 0.002 | | 0.076 | <0.0001 | 7.47 | 3340 | 30 | 149 | 504 | 5 | 35.8 | 655 | 25 | <1 | <1 | 933 | 933 | 37.6 | 2.51 | | <0.01 | <0.01 | <0.01 | | |
| | **16-Feb-10** | 1010 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-May-10** | 1135 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **31-Aug-10** | 0945 | | | 8.5 | 2720 | 17 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **15-Nov-10** | 1130 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Mar-11** | 1100 | 13.10 | 13.57 | 7.9 | 1385 | 24 | 1.04 | 0.005 | | | | 0.003 | | 0.226 | 14.5 | 0.165 | 1.05 | 0.008 | | 3.63 | <0.0001 | 8.76 | 1280 | 23 | 36 | 279 | 15 | 16.6 | 203 | 9 | <1 | 109 | 552 | 547 | 16.8 | 0.72 | | <0.01 | 0.06 | 0.06 | | |
| | **14-Jun-11** | 1000 | 27.79 | 28.26 | 7.7 | 2080 | 18 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **20-Sep-11** | 1050 | 30.78 | 31.25 | 7.9 | 2460 | 17.3 | <0.01 | 0.005 | 0.592 | <0.001 | 0.0001 | 0.002 | 0.004 | 0.008 | 2.29 | 0.004 | 0.738 | 0.001 | <0.01 | 0.795 | <0.0001 | 8.01 | 3330 | 47 | 104 | 558 | 4 | 35.3 | 530 | 21 | <1 | <1 | 931 | 931 | 34 | 1.82 | 0.04 | <0.01 | 0.04 | 0.04 | 1740 | |
| | **15-Nov-11** | 1030 | 14.51 | 14.98 | 8.05 | 2800 | 23.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **2-Apr-12** | 1040 | 14.83 | 15.30 | 8.25 | 1620 | 24 | 0.03 | <0.001 | 0.277 | <0.001 | <0.0001 | <0.001 | <0.001 | 0.008 | 0.07 | <0.001 | 0.011 | <0.001 | <0.01 | 0.534 | <0.0001 | 8.23 | 1970 | 29 | 81 | 327 | 3 | 22.4 | 390 | 19 | <1 | <1 | 528 | 528 | 22 | 1.02 | <0.01 | <0.01 | 0.19 | 0.19 | 1050 | |
| | **20-Jun-12** | 1040 | 15.42 | 15.89 | 8.2 | 1160 | 18.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Lillydale windmill |
| | **12-Sep-12** | 1020 | 15.13 | 15.60 | 8.14 | 2590 | 18.1 | <0.01 | 0.002 | 0.325 | <0.001 | 0.0031 | <0.001 | <0.001 | 0.033 | 0.33 | <0.001 | 0.066 | 0.006 | <0.01 | 0.599 | <0.0001 | 8.3 | 2770 | 29 | 74 | 549 | 5 | 31.6 | 420 | 16 | <1 | <1 | 1030 | 1030 | 32.8 | 1.93 | <0.01 | <0.01 | 0.1 | 0.1 | 1640 | |
| **Werona Bore** | **9-Sep-09** | 1245 | | | 7.68 | 5150 | 19.3 | | <0.001 | 0.325 | <0.001 | <0.0001 | 0.001 | <0.001 | 0.001 | <0.05 | <0.001 | 0.014 | <0.001 | <0.01 | 0.01 | <0.0001 | | 5210 | 152 | 257 | 572 | 10 | 53.9 | 1390 | 108 | <1 | <1 | 501 | 501 | 51.4 | 2.3 | 0.1 | | | | | |
| (bore equipped) | **2-Dec-09** | 1405 | | | 8.0 | 5770 | 25.9 | <0.01 | <0.001 | | | | <0.005 | | 0.01 | <0.05 | <0.001 | 0.00 | <0.001 | | <0.005 | <0.0001 | 8.16 | 5220 | 48 | 280 | 624 | 11 | 52.9 | 16580 | 120 | <1 | <1 | 354 | 354 | 56.1 | 2.98 | | 0.07 | 1.83 | 1.9 | | |
| | **16-Feb-10** | 1235 | 16.73 | 17.36 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-May-10** | 1255 | | | 7.8 | 5510 | 16.8 | <0.01 | <0.001 | | | | <0.005 | | 0.001 | <0.05 | <0.001 | 0.01 | <0.001 | | <0.005 | <0.0001 | 7.74 | 5100 | 157 | 288 | 656 | 7 | 60.2 | 1520 | 141 | <1 | <1 | 497 | 497 | 55.7 | 3.94 | | 0.02 | 1.31 | | | |
| | **31-Aug-10** | 1200 | | | 8.4 | 4410 | 19.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **15-Nov-10** | 1245 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | No access |
| | **8-Mar-11** | 1020 | | | 7.76 | 4200 | 25 | 0.18 | <0.001 | | | | <0.001 | | 0.002 | 0.29 | <0.001 | 0.01 | 0.001 | | 0.006 | <0.0001 | 7.96 | 5060 | 136 | 262 | 601 | 11 | 54.8 | 1380 | 117 | <1 | <1 | 514 | 514 | 51.5 | 3.08 | | 0.02 | 1.06 | 1.08 | | Bore covered by pump |
| | **14-Jun-11** | 1100 | | | 7.85 | 3870 | 17.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Bore covered by pump |
| | **21-Sep-11** | 910 | | | 8.05 | 3200 | 19.7 | 0.08 | <0.001 | 0.172 | <0.001 | <0.0001 | <0.001 | <0.001 | 0.002 | 0.07 | <0.001 | 0.02 | 0.002 | <0.01 | 0.018 | <0.0001 | 8.03 | 4410 | 122 | 208 | 486 | 8 | 44.6 | 1070 | 92 | <1 | <1 | 512 | 512 | 42.3 | 2.55 | 0.03 | 0.02 | 1.09 | 1.11 | | Bore covered by pump |
| | **6-Jan-12** | 1030 | bore covered by pump | | 7.92 | 2745 | 23.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Apr-12** | 0840 | bore covered by pump | | 7.55 | 3150 | 22.2 | 0.05 | <0.001 | 0.251 | <0.001 | <0.0001 | <0.001 | <0.001 | 0.003 | 0.06 | <0.001 | 0.01 | 0.001 | <0.01 | 0.008 | <0.0001 | 8.14 | 3840 | 94 | 201 | 483 | 8 | 42.4 | 1030 | 93 | <1 | <1 | 462 | 462 | 40.2 | 2.68 | 0.16 | <0.01 | 0.04 | 0.04 | 2230 | |
| | **20-Jun-12** | 1230 | bore covered by pump | | 8.13 | 3070 | 14.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | From dam fed by bore |
| | **20-Sep-12** | 0950 | bore covered by pump | | 7.68 | 3730 | 22 | 0.81 | 0.001 | 0.184 | <0.001 | 0.0001 | 0.002 | 0.001 | 0.006 | 0.92 | <0.001 | 0.076 | 0.002 | <0.01 | 0.021 | <0.0001 | 8.04 | 4290 | 71 | 199 | 461 | 10 | 40.2 | 1040 | 96 | <1 | <1 | 513 | 513 | 41.6 | 1.67 | <0.01 | <0.01 | 0.42 | 0.42 | 2260 | |
| **22497** | **21-Dec-09** | 1520 | 15.31 | 15.31 | 5.59 | 3600 | 25.4 | <0.01 | <0.001 | | | | <0.001 | | 0.004 | <0.05 | <0.001 | 0.180 | 0.006 | | 0.261 | <0.0001 | 7.41 | 3600 | 12 | 155 | 770 | 54 | 48.2 | 1140 | 12 | <1 | <1 | 246 | 246 | 37.4 | 12.5 | | <0.01 | 0.05 | 0.05 | | |
| | **16-Feb-10** | 0950 | 15.19 | 15.19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **17-May-10** | 1010 | 15.36 | 15.36 | 7.3 | 5400 | 19.3 | <0.01 | <0.001 | | | | <0.005 | | 0.001 | <0.05 | <0.001 | 0.236 | 0.004 | | 0.214 | <0.0001 | 7.69 | 3460 | 69 | 201 | 350 | 14 | 35.6 | 1010 | 8.29 | <1 | <1 | 233 | 233 | 33.2 | 3.43 | | <0.01 | 0.09 | | | |
| | **31-Aug-10** | 0920 | 15.47 | 15.47 | 7.8 | 3770 | 19.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **23-Nov-10** | 1410 | 15.46 | 15.46 | 7.3 | 2730 | 24.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **9-Mar-11** | 950 | 15.05 | 15.35 | 7.73 | 2210 | 23.1 | 0.2 | <0.001 | | | | <0.001 | | 0.147 | 9.89 | 0.016 | 0.24 | 0.001 | | 0.946 | <0.0001 | 8.21 | 2190 | 49 | 127 | 211 | 24 | 22.7 | 665 | 5 | <1 | <1 | 232 | 232 | 23.5 | 1.66 | | 0.31 | 1.16 | 1.47 | | |
| | **14-Jun-11** | 930 | 15.02 | 15.32 | 7.75 | 2880 | 19.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **20-Sep-11** | 940 | 15.18 | 15.48 | 7.8 | 2450 | 23.1 | 0.02 | 0.001 | 0.217 | <0.001 | <0.0001 | <0.001 | <0.001 | 0.017 | | | 0.22 | 0.002 | 0.178 | 6.89 | <0.0001 | 7.79 | 3500 | 58 | 171 | 303 | 23 | 30.7 | 898 | <1 | <1 | <1 | 251 | 251 | 30.4 | 0.63 | 16.4 | 0.07 | 0.07 | 0.14 | 1530 | |
| **45061** | **17-May-10** | 1000 | 9.10 | 9.20 | 5.59 | 3600 | 25.4 | <0.01 | <0.001 | | | | <0.001 | | 0.004 | <0.05 | <0.001 | 0.180 | 0.006 | | 0.261 | <0.0001 | 7.41 | 3600 | 12 | 155 | 770 | 54 | 48.2 | 1140 | 12 | <1 | <1 | 246 | 246 | 37.4 | 12.5 | | <0.01 | 0.05 | 0.05 | | |
| | **31-Aug-10** | 850 | 9.10 | 9.20 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **23-Nov-10** | 1345 | 9.05 | 9.15 | 7.3 | 5400 | 19.3 | <0.01 | <0.001 | | | | <0.005 | | 0.001 | <0.05 | <0.001 | 0.236 | 0.004 | | 0.214 | <0.0001 | 7.69 | 3460 | 69 | 201 | 350 | 14 | 35.6 | 1010 | 8.29 | <1 | <1 | 233 | 233 | 33.2 | 3.43 | | <0.01 | 0.09 | | | |
| | **9-Mar-11** | 920 | 9.06 | 9.16 | 7.8 | 3770 | 19.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **14-Jun-11** | 910 | 8.95 | 9.05 | 7.3 | 2730 | 24.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **20-Sep-11** | 910 | 8.86 | 8.96 | 7.73 | 2210 | 23.1 | 0.2 | <0.001 | | | | <0.001 | | 0.147 | 9.89 | 0.016 | 0.24 | 0.001 | | 0.946 | <0.0001 | 8.21 | 2190 | 49 | 127 | 211 | 24 | 22.7 | 665 | 5 | <1 | <1 | 232 | 232 | 23.5 | 1.66 | | 0.31 | 1.16 | 1.47 | | |
| | **15-Dec-11** | 920 | 8.86 | 8.96 | 7.75 | 2880 | 19.4 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **2-Apr-12** | 915 | 8.67 | 8.77 | 7.8 | 2450 | 23.1 | 0.02 | 0.001 | 0.217 | <0.001 | <0.0001 | <0.001 | <0.001 | 0.017 | | | 0.22 | 0.002 | 0.178 | 6.89 | <0.0001 | 7.79 | 3500 | 58 | 171 | 303 | 23 | 30.7 | 898 | <1 | <1 | <1 | 251 | 251 | 30.4 | 0.63 | 16.4 | 0.07 | 0.07 | 0.14 | 1530 | |
| | **20-Jun-12** | 920 | 8.52 | 8.62 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Windmill over bore |
| | **12-Sep-12** | 900 | 8.39 | 3.49 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Windmill over bore |
| **3709** | **21-Jun-11** | 910 | Covered by Pump | | 7.05 | 4420 | 18.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **22-Sep-11** | 1100 | Ivanhoe tank tap | | 6.76 | 4937 | 20.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **3-Apr-12** | 1200 | Ivanhoe tank tap | | 7.05 | 4340 | 25.5 | 0.57 | 0.011 | 0.314 | <0.001 | 0.0003 | 0.002 | <0.001 | 1.41 | 26 | 0.117 | 0.048 | 0.003 | 0.03 | 4.15 | <0.0001 | 7.9 | 5520 | 128 | 232 | 848 | 18 | 62.8 | 1400 | 100 | <1 | <1 | 767 | 767 | 56.9 | 4.94 | <0.01 | 0.02 | 6.12 | 6.14 | 3220 | |
| | **11-Jul-12** | 1115 | Pump over bore | | 7.29 | 4480 | 17.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **11-Oct-12** | 850 | Ivanhoe tank tap | | 7.08 | 5570 | 19.2 | 0.01 | 0.001 | 0.294 | <0.001 | <0.0001 | <0.001 | <0.001 | 0.034 | 3.36 | 0.004 | 0.033 | 0.002 | <0.01 | 1.93 | <0.0001 | 7.76 | 6550 | 157 | 235 | 925 | 15 | 67.8 | 1710 | 142 | <1 | <1 | 849 | 849 | 68.2 | 0.28 | 0.02 | 0.05 | 0.47 | 0.52 | 3560 | |
| **44677** | **15-Dec-11** | 1200 | Bore covered | | 7.1 | 4080 | 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **2-Apr-12** | 1300 | Bore covered | | 7.2 | 3810 | 25.2 | <0.01 | <0.001 | 0.462 | <0.001 | <0.0001 | <0.001 | <0.001 | 0.004 | <0.05 | <0.001 | <0.001 | <0.001 | <0.01 | 0.019 | <0.0001 | 7.71 | 4790 | 202 | 253 | 531 | 6 | 54.2 | 1380 | 81 | <1 | <1 | 524 | 524 | 51.1 | 2.91 | <0.01 | <0.01 | 3.18 | 3.18 | 2980 | |
| | **20-Jun-12** | 1320 | Bore covered with scale and grass | | 7.1 | 4370 | 18.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | **12-Sep-12** | 1230 | | | 7.1 | 4360 | 22.8 | <0.01 | <0.001 | 0.406 | <0.001 | <0.0001 | <0.001 | <0.001 | 0.002 | <0.05 | <0.001 | <0.001 | <0.001 | <0.01 | 0.013 | <0.0001 | 7.53 | 4880 | 99 | 244 | 504 | 6 | 47.1 | 1280 | 72 | <1 | <1 | 586 | 586 | 49.3 | 2.31 | 0.06 | <0.01 | 3.01 | 3.01 | 2750 | |

* ANZECC guideline - stock drinking water (cattle)


Standing Water Level - P1 "Plainview"
Depth in Metres
0
5
10
15
20
Jun 07
Sep 07
Dec 07
Mar 08
Jun 08
Sep 08
Dec 08
Mar 09
Jun 09
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Jun 10
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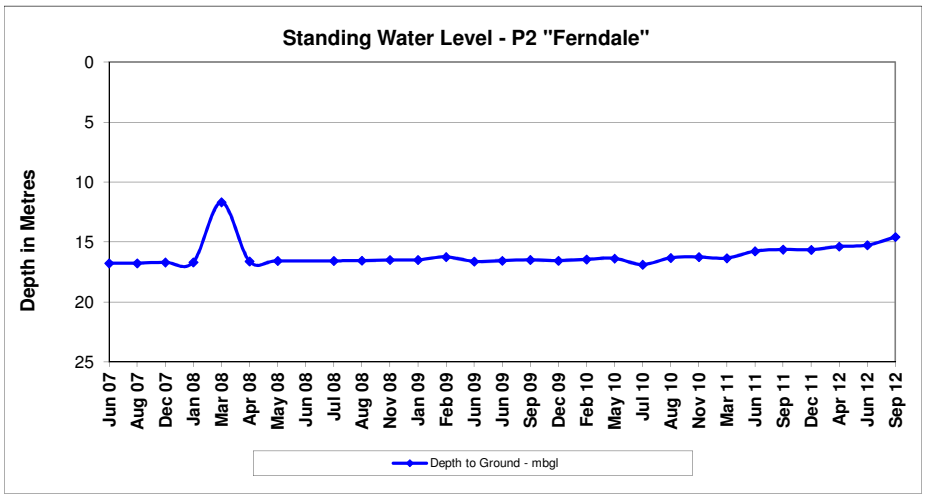
Dec 10
Mar 11
Jun 11
Sep 11
Dec 11
Mar 12
Jun 12
Sep 12
Depth to Ground - mbgl


Standing Water Level - P2 "Ferndale"
Depth in Metres
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5
10
15
20
25
Jun 07
Aug 07
Dec 07
Jan 08
Mar 08
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Jun 08
Jul 08
Aug 08
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Jan 09
Feb 09
Jun 09
Jun 09
Sep 09
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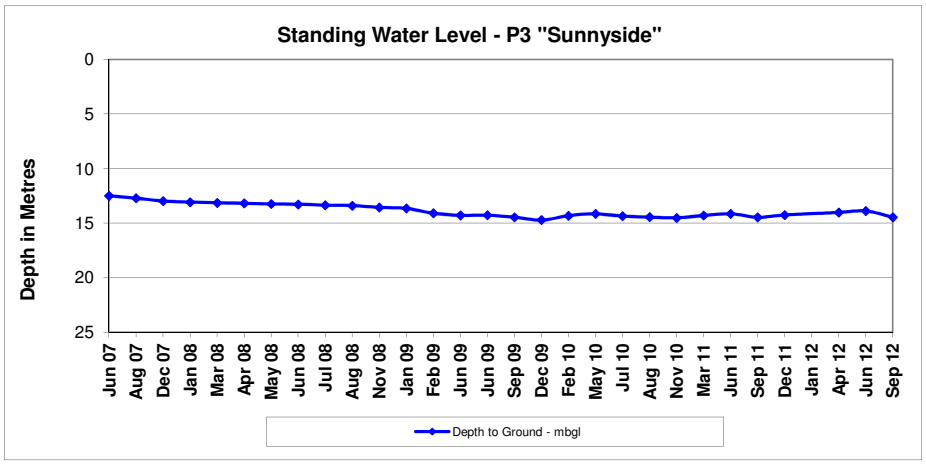
Sep 11
Dec 11
Apr 12
Jun 12
Sep 12
Depth to Ground - mbgl


Standing Water Level - P3 "Sunnyside"
Depth in Metres
0
5
10
15
20
25
Jun 07
Aug 07
Dec 07
Jan 08
Mar 08
Apr 08
May 08
Jun 08
Jul 08
Aug 08
Nov 08
Jan 09
Feb 09
Jun 09
Jun 09
Sep 09
Dec 09
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Mar 11
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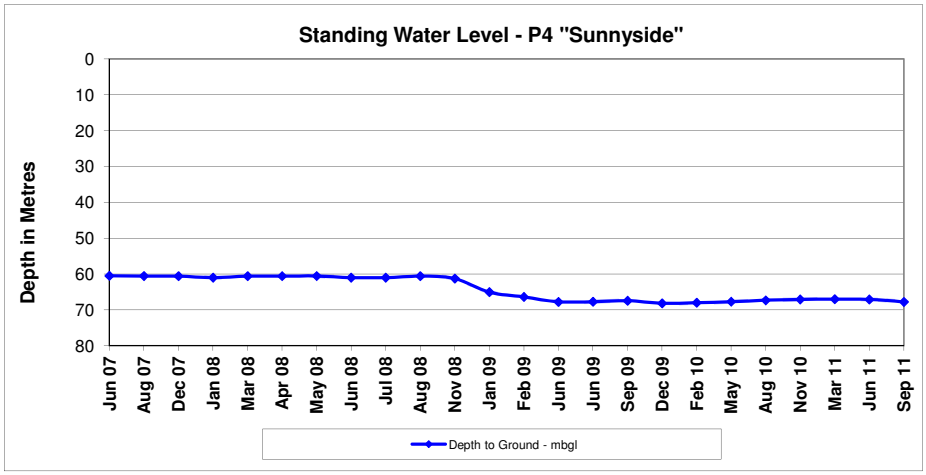
Sep 11
Dec 11
Jan 12
Apr 12
Jun 12
Sep 12
Depth to Ground - mbgl


Standing Water Level - P4 "Sunnyside"
Depth in Metres
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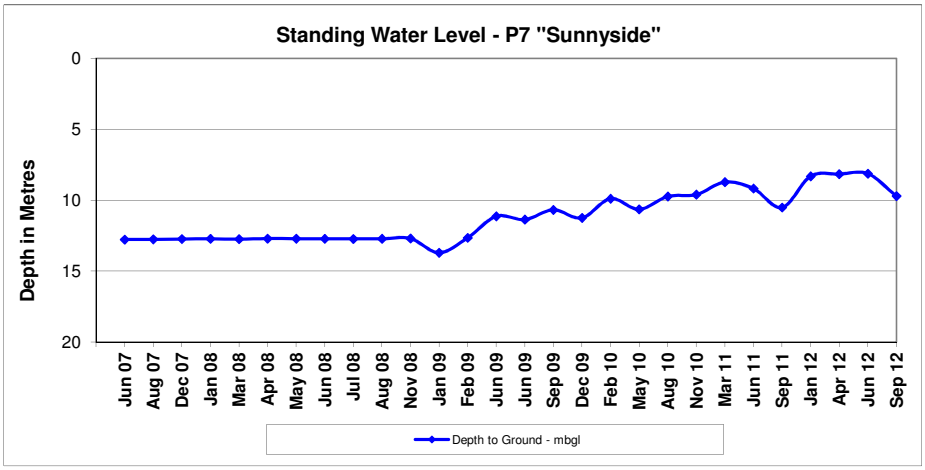
10
20
30
40
50
60
70
80
Jun 07
Aug 07
Dec 07
Jan 08
Mar 08
Apr 08
May 08
Jun 08
Jul 08
Aug 08
Nov 08
Jan 09
Feb 09
Jun 09
Jun 09
Sep 09
Dec 09
Feb 10
May 10
Aug 10
Nov 10
Mar 11
Jun 11
Sep 11
Depth to Ground - mbgl


Standing Water Level - P7 "Sunnyside"
Depth in Metres
0
5
10
15
20
Jun 07
Aug 07
Dec 07
Jan 08
Mar 08
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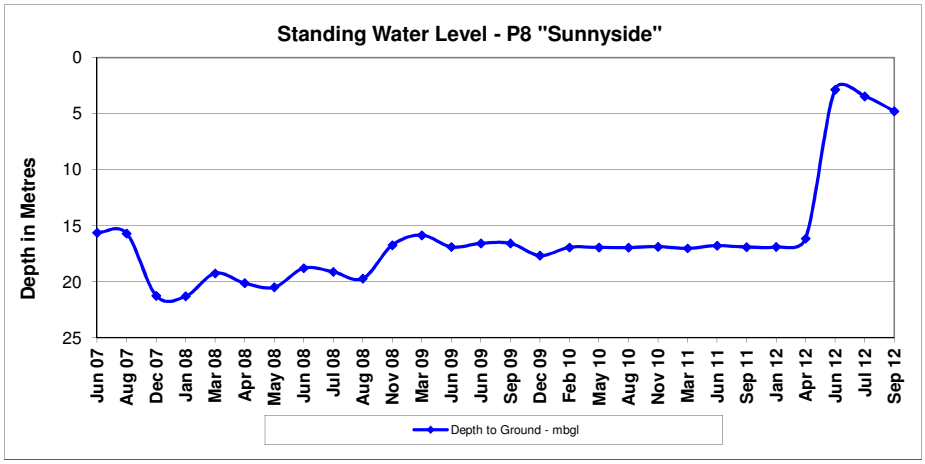
May 08
Jun 08
Jul 08
Aug 08
Nov 08
Jan 09
Feb 09
Jun 09
Jun 09
Sep 09
Dec 09
Feb 10
May 10
Aug 10
Nov 10
Mar 11
Jun 11
Sep 11
Jan 12
Apr 12
Jun 12
Sep 12
Depth to Ground - mbgl


Standing Water Level - P8 "Sunnyside"
Depth in Metres
0
5
10
15
20
25
Jun 07
Aug 07
Dec 07
Jan 08
Mar 08
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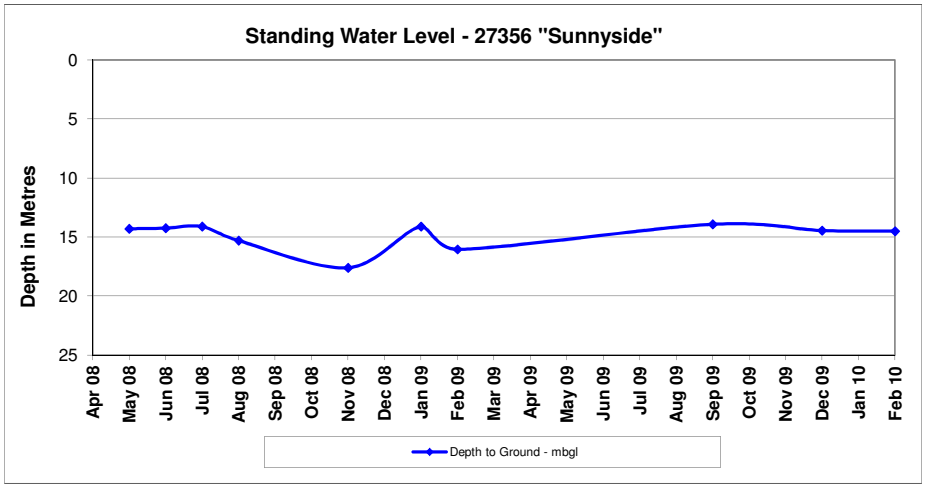
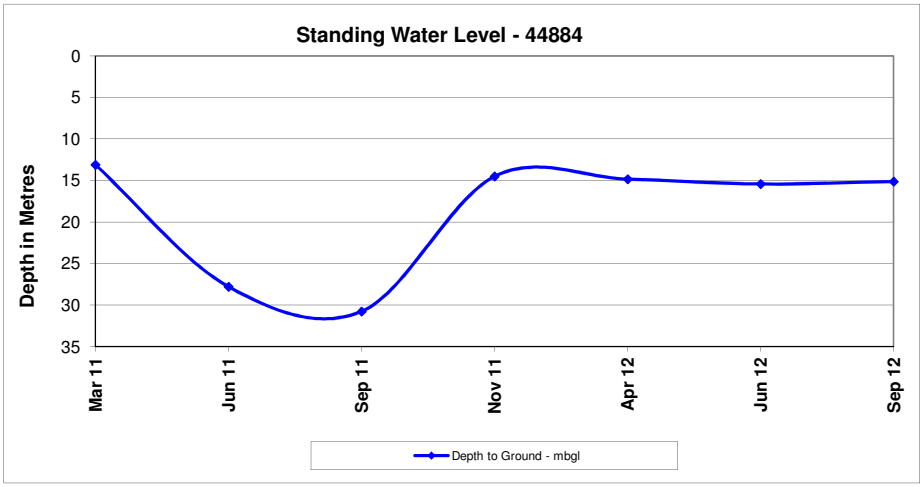
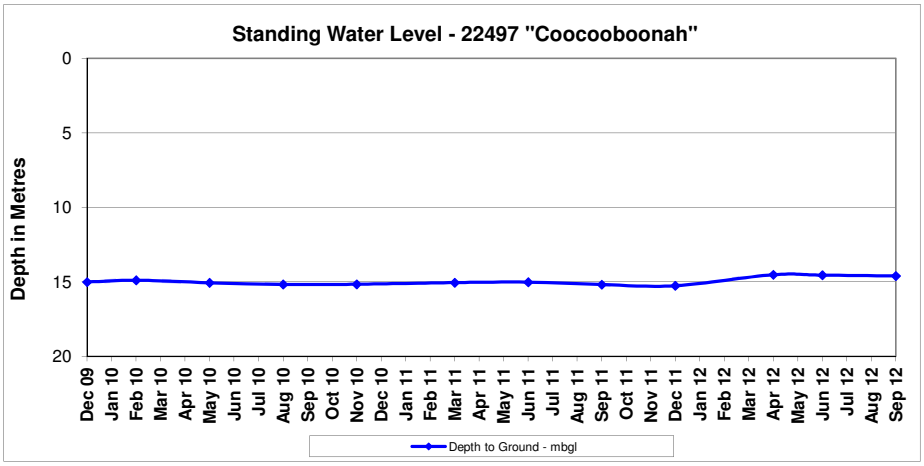
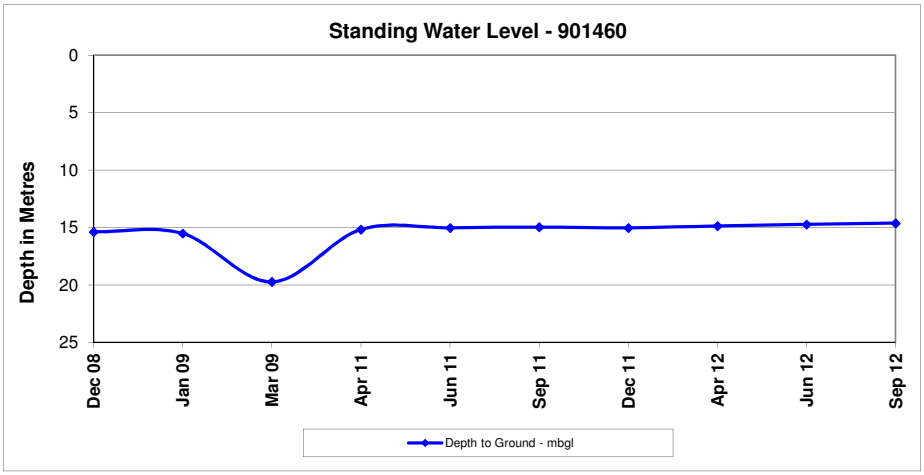
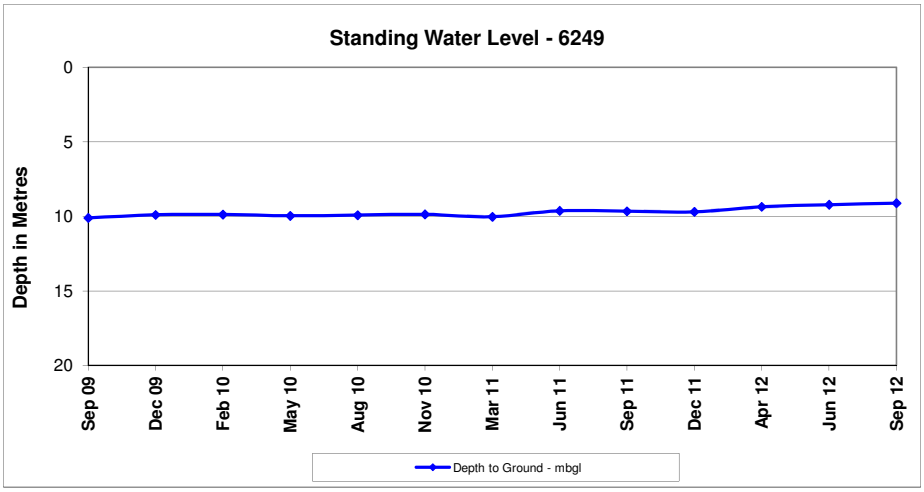
May 08
Jun 08
Jul 08
Aug 08
Nov 08
Mar 09
Jun 09
Jun 09
Sep 09
Dec 09
Feb 10
May 10
Aug 10
Nov 10
Mar 11
Jun 11
Sep 11
Jan 12
Apr 12
Jun 12
Jul 12
Sep 12
Depth to Ground - mbgl

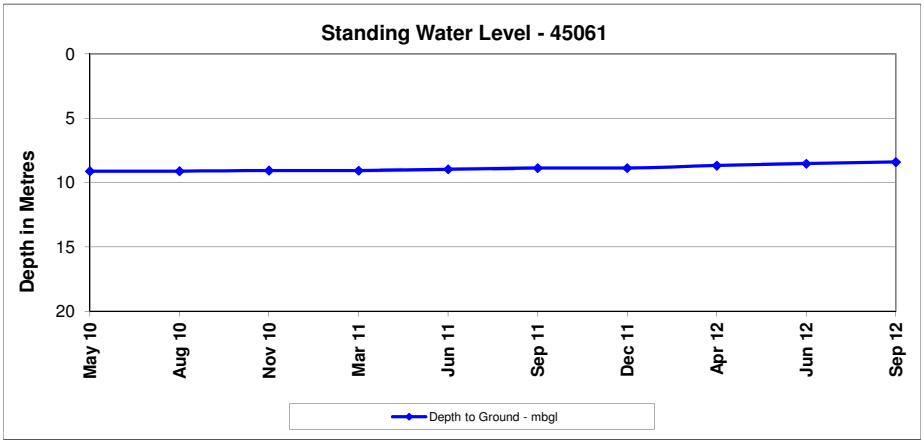

Standing Water Level - 27356 "Sunnyside"
Depth in Metres
0
5
10
15
20
25
Apr 08
May 08
Jun 08
Jul 08
Aug 08
Sep 08
Oct 08
Nov 08
Dec 08
Jan 09
Feb 09
Mar 09
Apr 09
May 09
Jun 09
Jul 09
Aug 09
Sep 09
Oct 09
Nov 09
Dec 09
Jan 10
Feb 10
Depth to Ground - mbgl


Standing Water Level - 44884
Depth in Metres
0
5
10
15
20
25
30
35
Mar 11
Jun 11
Sep 11
Nov 11
Apr 12
Jun 12
Sep 12
Depth to Ground - mbgl


Standing Water Level - 22497 "Coocooboonah"
Depth in Metres
0
5
10
15
20
Dec 09
Jan 10
Feb 10
Mar 10
Apr 10
May 10
Jun 10
Jul 10
Aug 10
Sep 10
Oct 10
Nov 10
Dec 10
Jan 11
Feb 11
Mar 11
Apr 11
May 11
Jun 11
Jul 11
Aug 11
Sep 11
Oct 11
Nov 11
Dec 11
Jan 12
Feb 12
Mar 12
Apr 12
May 12
Jun 12
Jul 12
Aug 12
Sep 12
Depth to Ground - mbgl


Standing Water Level - 901460
Depth in Metres
0
5
10
15
20
25
Dec 08
Jan 09
Mar 09
Apr 11
Jun 11
Sep 11
Dec 11
Apr 12
Jun 12
Sep 12
Depth to Ground - mbgl


Standing Water Level - 6249
Depth in Metres
0
5
10
15
20
Sep 09
Dec 09
Feb 10
May 10
Aug 10
Nov 10
Mar 11
Jun 11
Sep 11
Dec 11
Apr 12
Jun 12
Sep 12
Depth to Ground - mbgl


Standing Water Level - 45061
Depth in Metres
0
5
10
15
20
May 10
Aug 10
Nov 10
Mar 11
Jun 11
Sep 11
Dec 11
Apr 12
Jun 12
Sep 12
Depth to Ground - mbgl

# Appendix 7

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# BLAST MONITORING RESULTS

# Sunnyside Coal Mine
# Environmental Blast Monitoring

*Consent Criteria = 5mm/s and 115 dbL*

| SHOT NO. | DATE | MONITOR LOCATION | PEAK GROUND PRESSURE (mm/s) | PEAK OVERPRESSURE (dBL) | TIME |
|---|---|---|---|---|---|
| 1 | 18/Nov/08 | Ivanhoe | 0.91 | 110.7 | 1:44:48 PM |
| 1 | 18/Nov/08 | Plain View | 0.86 | 107.8 | 1:44:58 PM |
| 1 | 18/Nov/08 | Illilli | 0.56 | 107.4 | 1:42:25 PM |
| 2 | 25/Nov/08 | Innisvale | 0.40 | 103.2 | 3:10:59 PM |
| 2 | 25/Nov/08 | Plain View | DNT | DNT | DNT |
| 2 | 25/Nov/08 | Illilli | 0.61 | 105.5 | 3:10:48 PM |
| 3 | 28/Nov/08 | Ivanhoe | 0.65 | 96.7 | 9:59:16 AM |
| 3 | 28/Nov/08 | Plain View | 0.50 | 112.3 | 9:59:16 AM |
| 3 | 28/Nov/08 | Illilli | 1.24 | 100.9 | 9:59:07 AM |
| 4 | 28/Jan/09 | Illilli | 0.10 | 112.0 | 9:59:26 AM |
| 4 | 28/Jan/09 | Ivanhoe | DNT | DNT | DNT |
| 4 | 28/Jan/09 | Plain View | DNT | DNT | DNT |
| 5 | 09/Mar/09 | Ivanhoe | 0.28 | 109.4 | 2:04:23 PM |
| 5 | 09/Mar/09 | Innisvale | 0.33 | 109.7 | 2:04:29 PM |
| 6 | 06/Apr/09 | Illilli | 0.35 | 97.4 | 1:53:19 PM |
| 6 | 06/Apt/09 | Ivanhoe | DNT | DNT | DNT |
| 6 | 06/Apr/09 | Plain View | DNT | DNT | DNT |
| 7 | 11/Jun/09 | Innisvale | 0.30 | 97.0 | 12:21:02 PM |
| 7 | 11/Jun/09 | Ivanhoe | 0.53 | 99.6 | 12:20:57 PM |
| 7 | 11/Jun/09 | Plain View | 0.53 | 109.3 | 12:12:21 AM |
| 8 | 18/Jun/09 | Illili | 0.35 | 106.7 | 2:58:16 PM |
| 8 | 18/Jun/09 | Ivanhoe | 0.37 | 96.4 | 2:57:20 PM |
| 8 | 18/Jun/09 | Plain View | DNT | DNT | DNT |
| 9/10 | 21/Aug/09 | Innisvale | 0.61 | 111.0 | 10:06:36 AM |
| 9/10 | 21/Aug/09 | Ivanhoe | 0.97 | 111.8 | 10:07:46 AM |
| 9/10 | 21/Aug/09 | Plain View | 0.51 | 111.5 | 10:06:49 AM |
| 11 | 24/Nov/09 | Innisvale | DNT | DNT | DNT |
| 11 | 24/Nov/09 | Ivanhoe | DNT | DNT | DNT |
| 11 | 24/Nov/09 | Plain View | DNT | DNT | DNT |
| 11 | 24/Nov/09 | Illili | 0.43 | 109.6 | 12:11:41 PM |
| 12 | 18/Dec/09 | Innisvale | 1.09 | 101.9 | 12:07:40 PM |
| 12 | 18/Dec/09 | Ivanhoe | 1.70 | 107.0 | 12:05:20 PM |
| 12 | 18/Dec/09 | Plain View | 1.16 | 101.9 | 12:05:34 PM |
| 12 | 18/Dec/09 | Illili | 0.05* | 114.1 | 12:05:50 PM |
| 13 | 11/Feb/10 | Innisvale | DNT | DNT | DNT |
| 13 | 11/Feb/10 | Ivanhoe | DNT | DNT | DNT |
| 13 | 11/Feb/10 | Plain View | 0.91 | 107.4 | 12:06:42 PM |
| 13 | 11/Feb/10 | Illili | 0.41 | 106.5 | 12:05:52 PM |
| 14 | 17/Apr/10 | Innisvale | 0.96 | 108.6 | 12:01:29 PM |
| 14 | 17/Apr/10 | Ivanhoe | 2.04 | 110.1 | 11:57:36 AM |
| 14 | 17/Apr/10 | Plain View | 2.39 | 96.3 | 12:03:38 PM |

| *SHOT NO.* | *DATE* | *MONITOR LOCATION* | *PEAK GROUND PRESSURE (mm/s)* | *PEAK OVERPRESSURE (dBL)* | *TIME* |
|---|---|---|---|---|---|
| 14 | 17/Apr/10 | Illili | 0.61 | 114.8 | 11:59:07 AM |
| 15 | 23/Jun/10 | Innisvale | 1.10 | 102.4 | 12:13:47 PM |
| 15 | 23/Jun/10 | Ivanhoe | 1.54 | 114.1 | 12:13:59 PM |
| 15 | 23/Jun/10 | Plain View | DNT | DNT | DNT |
| 15 | 23/Jun/10 | Illili | 0.09 | 114.8 | 12:15:17 PM |
| 16 | 09/Jul/10 | Innisvale | 0.42 | 100.8 | 10:04:11 AM |
| 16 | 09/Jul/10 | Ivanhoe | DNT | DNT | DNT |
| 16 | 09/Jul/10 | Plain View | 1.11 | 103.2 | 10:04:27 AM |
| 16 | 08/Jul/10 | Illili | 1.60 | 99.1 | 10:04:29 AM |
| 17 | 12/Aug/10 | Innisvale | DNT | DNT | DNT |
| 17 | 12/Aug/10 | Ivanhoe | DNT | DNT | DNT |
| 17 | 12/Aug/10 | Plain View | 0.18 | 110.3 | 11:57:01 AM |
| 17 | 12/Aug/10 | Illili | 0.52 | 108.0 | 11:56:56 AM |
| 18 | 01/Sep/10 | Innisvale | 0.52 | 101.4 | 11:59:00 AM |
| 18 | 01/Sep/10 | Ivanhoe | 0.53 | 103.6 | 12:02:42 PM |
| 18 | 01/Sep/10 | Plain View | DNT | DNT | DNT |
| 18 | 01/Sep/10 | Illili | DNT | DNT | DNT |
| 20 | 30/Sep/10 | Innisvale | 0.58 | 105.6 | 12:00:08 PM |
| 20 | 30/Sep/10 | Ivanhoe | 0.83 | 86.6 | 12:04:38 PM |
| 20 | 30/Sep/10 | Plain View | 1.20 | 92.5 | 12:00:53 PM |
| 20 | 30/Sep/10 | Illili | 0.47 | 87.5 | 11:58:03 AM |
| 21 | 22/Nov/10 | Inisvale | 0.66 | 108.4 | 15:04:15 PM |
| 21 | 22/Nov/10 | Ivanhoe | No access to property - monitor not set | | |
| 21 | 22/Nov/10 | Plain View | DNT | DNT | DNT |
| 21 | 22/Nov/10 | Illili | 0.45 | 107.9 | 15:05:12 PM |
| 22 | 24/Nov/10 | Inisvale | DNT | DNT | DNT |
| 22 | 24/Nov/10 | Plain View | 0.76 | 100.2 | 12:14:40 PM |
| 22 | 24/Nov/10 | Illili | DNT | DNT | DNT |
| 22 | 24/Nov/10 | Ivanhoe | DNT | DNT | DNT |
| 23 | 21/Jan/11 | Innisvale | 0.49 | 83.70 | 0.52 |
| 23 | 21/Jan/11 | Plain View | 0.55 | 110.1 | 12:24:14 PM |
| 23 | 21/Jan/11 | Illili | 0.24 | 100.20 | 0.52 |
| 23 | 21/Jan/11 | Ivanhoe | 0.56 | 80.70 | 0.52 |
| 24 | 16/Feb/11 | Innisvale | 0.57 | 104.50 | 0.51 |
| 24 | 16/Feb/11 | Plain View | DNT | DNT | 12:13:00 PM |
| 24 | 16/Feb/11 | Illili | 1.45 | 106.10 | 0.51 |
| 24 | 16/Feb/11 | Ivanhoe | DNT | DNT | 0.51 |
| 25 | 21/Feb/11 | Innisvale | DNT | DNT | 0.51 |
| 25 | 21/Feb/11 | Plain View | 1.73 | 97.7 | 12:09:27 PM |
| 25 | 21/Feb/11 | Illili | 0.26 | 109.00 | 0.51 |
| 25 | 21/Feb/11 | Ivanhoe | DNT | DNT | 0.51 |
| 26 | 16/Mar/11 | Innisvale | 0.49 | 108.30 | 0.50 |
| 26 | 16/Mar/11 | Plain View | DNT | DNT | 12:02:00 PM |
| 26 | 16/Mar/11 | Illili | DNT | DNT | 0.50 |
| 26 | 16/Mar/11 | Ivanhoe | DNT | DNT | 0.50 |

| SHOT NO. | DATE | MONITOR LOCATION | PEAK GROUND PRESSURE (mm/s) | PEAK OVERPRESSURE (dBL) | TIME |
|---|---|---|---|---|---|
| 27 | 09/Apr/11 | Innisvale | 0.99 | 105.30 | 0.45 |
| 27 | 09/Apr/11 | Plain View | DNT | DNT | 10:51:00 AM |
| 27 | 09/Apr/11 | Illili | DNT | DNT | 0.45 |
| 27 | 09/Apr/11 | Ivanhoe | No data | No data | No data |
| 28 | 03/May/11 | Innisvale | 0.52 | 128.80 | 0.46 |
| 28 | 03/May/11 | Plain View | 0.40 | 120.6 | 11:02:59 AM |
| 28 | 03/May/11 | Ferndale | 0.10 | 124.0 | 11:03:05 AM |
| 28 | 03/May/11 | Illili | 0.13 | 120.30 | 0.46 |
| 28 | 03/May/11 | Ivanhoe | No Data | No Data | No Data |
| 29 | 18/May/11 | Innisvale | 0.47 | 104.50 | 0.50 |
| 29 | 18/May/11 | Plain View | 0.78 | 106.9 | 12:01:42 PM |
| 29 | 18/May/11 | Ferndale | No monitor available | No monitor available | |
| 29 | 18/May/11 | Illili | DNT | DNT | 0.50 |
| 29 | 18/May/11 | Ivanhoe | 0.42 | 103.30 | 0.50 |
| 30 | 31/May/11 | Innisvale | DNT | DNT | 0.50 |
| 30 | 31/May/11 | Plain View | DNT | DNT | 12:01:00 PM |
| 30 | 31/May/11 | Ferndale | DNT | DNT | 12:01:00 PM |
| 30 | 31/May/11 | Illili | DNT | DNT | 0.50 |
| 30 | 31/May/11 | Ivanhoe | DNT | DNT | 0.50 |
| 31 | 25/Jun/11 | Innisvale | 0.44 | 104.30 | 0.56 |
| 31 | 25/Jun/11 | Plain View | 0.50 | 115.9 | 1:27:00 PM |
| 31 | 25/Jun/11 | Ferndale | 0.72 | 104.8 | 1:27:21 PM |
| 31 | 25/Jun/11 | Illili | 1.92 | 99.10 | 0.56 |
| 31 | 25/Jun/11 | Ivanhoe | 0.69 | 90.50 | 0.56 |
| 32 | 15/Jul/11 | Innisvale | 0.12 | 113.40 | 0.43 |
| 32 | 15/Jul/11 | Plain View | 0.70 | 113.3 | 10:13:25 AM |
| 32 | 15/Jul/11 | Ferndale | No monitor available | No monitor available | |
| 32 | 15/Jul/11 | Illili | DNT | DNT | 0.43 |
| 32 | 15/Jul/11 | Ivanhoe | 0.11 | 112.80 | 0.43 |
| 33 | 01/Aug/11 | Innisvale | DNT | DNT | 0.47 |
| 33 | 01/Aug/11 | Plain View | DNT | DNT | 11:11:00 AM |
| 33 | 01/Aug/11 | Ferndale | No monitor available | No monitor available | |
| 33 | 01/Aug/11 | Illili | DNT | DNT | 0.47 |
| 33 | 01/Aug/11 | Ivanhoe | DNT | DNT | 0.47 |
| 34 | 11/Aug/11 | Innisvale | DNT | DNT | 0.63 |
| 34 | 11/Aug/11 | Plain View | 0.70 | 105.9 | 3:03:25 PM |
| 34 | 11/Aug/11 | Ferndale | No monitor available | No monitor available | |
| 34 | 11/Aug/11 | Illili | DNT | DNT | 0.63 |
| 34 | 11/Aug/11 | Ivanhoe | 0.58 | 81.02 | 0.63 |
| 35 | 29/Aug/11 | Innisvale | 0.72 | 109.70 | 0.42 |
| 35 | 29/Aug/11 | Plain View | 0.54 | 113.5 | 10:10:58 AM |
| 35 | 29/Aug/11 | Ferndale | 0.38 | 110.20 | 10:11:21 AM |
| 35 | 29/Aug/11 | Illili | 0.1 | 113.40 | 0.42 |
| 35 | 29/Aug/11 | Ivanhoe | 0.91 | 84.51 | 0.42 |

| SHOT NO. | DATE | MONITOR LOCATION | PEAK GROUND PRESSURE (mm/s) | PEAK OVERPRESSURE (dBL) | TIME |
|---|---|---|---|---|---|
| 36 | 31/Aug/11 | Innisvale | DNT | DNT | 0.51 |
| 36 | 31/Aug/11 | Plain View | DNT | DNT | 12:12:00 PM |
| 36 | 31/Aug/11 | Ferndale | DNT | DNT | 12:12:00 PM |
| 36 | 31/Aug/11 | Illili | DNT | DNT | 0.51 |
| 36 | 31/Aug/11 | Ivanhoe | DNT | DNT | 0.51 |
| 37 | 14/Sep/11 | Innisvale | 0.58 | 112.00 | 0.50 |
| 37 | 14/Sep/11 | Plain View | DNT | DNT | 12:03:00 PM |
| 37 | 14/Sep/11 | Ferndale | DNT | DNT | 12:03:00 PM |
| 37 | 14/Sep/11 | Illili | DNT | DNT | 0.50 |
| 37 | 14/Sep/11 | Ivanhoe | DNT | DNT | 0.50 |
| 38 | 25/Oct/11 | Innisvale | DNT | DNT | 0.50 |
| 38 | 25/Oct/11 | Plain View | 1.31 | 115.1 | 11:59:20 AM |
| 38 | 25/Oct/11 | Ferndale | 0.52 | 88.80 | 11:59:23 AM |
| 38 | 25/Oct/11 | Illili | 0.41 | 102.60 | 40841.50 |
| 38 | 25/Oct/11 | Ivanhoe | 1.37 | 110.80 | 0.50 |
| 39 | 28/Oct/11 | Innisvale | DNT | DNT | 0.50 |
| 39 | 28/Oct/11 | Plain View | DNT | DNT | 12:01:00 PM |
| 39 | 28/Oct/11 | Ferndale | DNT | DNT | 12:01:00 PM |
| 39 | 28/Oct/11 | Illili | DNT | DNT | 0.50 |
| 39 | 28/Oct/11 | Ivanhoe | DNT | DNT | 0.50 |
| 40 | 10/Nov/11 | Innisvale | DNT | DNT | 0.56 |
| 40 | 10/Nov/11 | Plain View | DNT | DNT | 1:20:00 PM |
| 40 | 10/Nov/11 | Ferndale | DNT | DNT | 1:20:00 PM |
| 40 | 10/Nov/11 | Illili | DNT | DNT | 0.56 |
| 40 | 10/Nov/11 | Ivanhoe | DNT | DNT | 0.56 |
| 41 | 08/Dec/11 | Innisvale | 0.39 | 109.4 | 12:00:22 PM |
| 41 | 08/Dec/11 | Plain View | 0.37 | 109.9 | 12:00:23 PM |
| 41 | 08/Dec/11 | Ferndale | 0.08 | 109.5 | 12:00:29 PM |
| 41 | 08/Dec/11 | Illili | DNT | DNT | 12:00:00PM |
| 41 | 08/Dec/11 | Ivanhoe | 0.51 | 110.7 | 12:00:22 PM |
| 42 | 05/Jan/12 | Innisvale | DNT | DNT | 3:40:00 PM |
| 42 | 05/Jan/12 | Plain View | DNT | DNT | 3:40:00 PM |
| 42 | 05/Jan/12 | Ferndale | DNT | DNT | 3:40:00 PM |
| 42 | 05/Jan/12 | Illili | DNT | DNT | 3:40:00 PM |
| 42 | 05/Jan/12 | Ivanhoe | DNT | DNT | 3:40:00 PM |
| 43 | 18/Jan/12 | Innisvale | 0.11 | 114.7 | 12:01:22 PM |
| 43 | 18/Jan/12 | Plain View | 0.11 | 122.2 | 12:01:22 PM |
| 43 | 18/Jan/12 | Ferndale | 0.10 | 116.4 | 12:01:23 PM |
| 43 | 18/Jan/12 | Illili | DNT | DNT | 12:01:00 PM |
| 43 | 18/Jan/12 | Ivanhoe | 0.73 | 111.8 | 12:01:16 PM |
| 44 | 25/Jan/12 | Innisvale | 0.98 | 109.8 | 11:42:12 AM |
| 44 | 25/Jan/12 | Plain View | 0.72 | 104.1 | 11:42:12 AM |
| 44 | 25/Jan/12 | Ferndale | No monitor available | No monitor available | |
| 44 | 25/Jan/12 | Illili | 0.36 | 112.5 | 11:43:14 AM |
| 44 | 25/Jan/12 | Ivanhoe | 2.15 | 111.3 | 11:42:13 AM |

| *SHOT NO.* | *DATE* | *MONITOR LOCATION* | *PEAK GROUND PRESSURE (mm/s)* | *PEAK OVERPRESSURE (dBL)* | *TIME* |
|---|---|---|---|---|---|
| 45 | 11/Feb/12 | Innisvale | 0.86 | 112.5 | 11:04:23 AM |
| 45 | 11/Feb/12 | Plain View | 2.30 | 107.0 | 11:04:21 AM |
| 45 | 11/Feb/12 | Ferndale | 0.67 | 104.8 | 11:04:23 AM |
| 45 | 11/Feb/12 | Illili | DNT | DNT | 11:04:00 AM |
| 45 | 11/Feb/12 | Ivanhoe | 1.20 | 111.4 | 11:04:23 AM |
| 46 | 01/Mar/12 | Innisvale | Monitor Malfunction | Monitor Malfunction | |
| 46 | 01/Mar/12 | Plain View | 0.36 | 105.9 | 12:03:01 PM |
| 46 | 01/Mar/12 | Ferndale | No monitor available | No monitor available | |
| 46 | 01/Mar/12 | Illili | 1.07 | 102.5 | 12:03:00 PM |
| 46 | 01/Mar/12 | Ivanhoe | 0.96 | 102.9 | 12:02:23 PM |
| 47 | 08/Mar/12 | Innisvale | 0.33 | 105.3 | 11:59:59 AM |
| 47 | 08/Mar/12 | Plain View | DNT | DNT | 12:00:00 PM |
| 47 | 08/Mar/12 | Ferndale | DNT | DNT | 12:00:00 PM |
| 47 | 08/Mar/12 | Illili | DNT | DNT | 12:00:00 PM |
| 47 | 08/Mar/12 | Ivanhoe | 0.40 | 106.1 | 11:59:59 AM |
| 48 | 21/Mar/12 | Innisvale | DNT | DNT | 12:00:00 PM |
| 48 | 21/Mar/12 | Plain View | DNT | DNT | 12:00:00PM |
| 48 | 21/Mar/12 | Ferndale | DNT | DNT | 12:00:00 PM |
| 48 | 21/Mar/12 | Illili | DNT | DNT | 12:00:00PM |
| 48 | 21/Mar/12 | Ivanhoe | DNT | DNT | 12:00:00PM |
| 49 | 26/Mar/12 | Innisvale | DNT | DNT | 11:57:00 AM |
| 49 | 26/Mar/12 | Plain View | 1.17 | 99.62 | 11:57:31 AM |
| 49 | 26/Mar/12 | Ferndale | 0.33 | 100.5 | 11:57:52 AM |
| 49 | 26/Mar/12 | Illili | DNT | DNT | 11:57:00 AM |
| 49 | 26/Mar/12 | Ivanhoe | 1.02 | 105.0 | 11:57:30 AM |
| 50 | 04/Apr/12 | Innisvale | 0.29 | 101.3 | 1:03:01 PM |
| 50 | 04/Apr/12 | Plain View | 0.37 | 98.6 | 1:03:00 PM |
| 50 | 04/Apr/12 | Ferndale | DNT | DNT | 1:03:00 PM |
| 50 | 04/Apr/12 | Illili | DNT | DNT | 1:03:00 PM |
| 50 | 04/Apr/12 | Ivanhoe | DNT | DNT | 1:03:00 PM |
| 51 | 07/May/12 | Innisvale | 0.55 | 103.5 | 3:59:26 PM |
| 51 | 07/May/12 | Plain View | 1.07 | 107.9 | 3:59:39 PM |
| 51 | 07/May/12 | Ferndale | 0.49 | 102.1 | 1:59:32 PM |
| 51 | 07/May/12 | Illili | DNT | DNT | 3:59:00 PM |
| 51 | 07/May/12 | Ivanhoe | 0.96 | 104.2 | 3:59:37 PM |
| 52 | 10/May/12 | Innisvale | DNT | DNT | 12:12:00 PM |
| 52 | 10/May/12 | Plain View | DNT | DNT | 12:12:00 PM |
| 52 | 10/May/12 | Ferndale | DNT | DNT | 12:12:00 PM |
| 52 | 10/May/12 | Illili | DNT | DNT | 12:12:00 PM |
| 52 | 10/May/12 | Ivanhoe | 0.30 | 97.5 | 12:12:43 PM |
| 53 | 22/May/12 | Innisvale | 1.80 | 101.1 | 12:03:00 PM |
| 53 | 22/May/12 | Plain View | 0.90 | 107.6 | 12:03:00 PM |
| 53 | 22/May/12 | Ferndale | DNT | DNT | 12:03:00 PM |
| 53 | 22/May/12 | Illili | DNT | DNT | 12:03:00 PM |
| 53 | 22/May/12 | Ivanhoe | 1.06 | 107.0 | 12:03:00 PM |

| *SHOT NO.* | *DATE* | *MONITOR LOCATION* | *PEAK GROUND PRESSURE (mm/s)* | *PEAK OVERPRESSURE (dBL)* | *TIME* |
|---|---|---|---|---|---|
| 54 | 15/Jun/12 | Innisvale | DNT | DNT | 11:58:00 AM |
| 54 | 15/Jun/12 | Plain View | DNT | DNT | 11:58:00 AM |
| 54 | 15/Jun/12 | Ferndale | 0.31 | 99.4 | 12:00:19 PM |
| 54 | 15/Jun/12 | Illili | 0.24 | 100.2 | 11:59:33 AM |
| 54 | 15/Jun/12 | Ivanhoe | 0.44 | 99.5 | 11:58:57 AM |
| 55 | 04/Jul/12 | Innisvale | 0.70 | 103.5 | 11:58:40 AM |
| 55 | 04/Jul/12 | Plain View | 0.80 | 106.1 | 11:56:57AM |
| 55 | 04/Jul/12 | Ferndale | 0.61 | 104.8 | 11:58:04 AM |
| 55 | 04/Jul/12 | Illili | 0.24 | 108.9 | 11:57:55 AM |
| 55 | 04/Jul/12 | Ivanhoe | 0.48 | 106.9 | 11:57:43 AM |
| 56 | 18/Jul/12 | Innisvale | DNT | DNT | 11:58:00AM |
| 56 | 18/Jul/12 | Plain View | DNT | DNT | 11:58:00AM |
| 56 | 18/Jul/12 | Ferndale | DNT | DNT | 11:58:00 AM |
| 56 | 18/Jul/12 | Illili | 0.25 | 100.9 | 11:58:17 AM |
| 56 | 18/Jul/12 | Ivanhoe | DNT | DNT | 11:58:00AM |
| 57 | 23/Jul/12 | Innisvale | 0.05 | 108.9 | 12:03:18 PM |
| 57 | 23/Jul/12 | Plain View | 0.05 | 109.9 | 12:02:04 PM |
| 57 | 23/Jul/12 | Ferndale | 0.18 | 104.3 | 12:02:36 PM |
| 57 | 23/Jul/12 | Illili | DNT | DNT | 12:02:00 PM |
| 57 | 23/Jul/12 | Ivanhoe | DNT | DNT | 12:02:00 PM |
| 58 | 03/Aug/12 | Innisvale | 0.93 | 101.8 | 12:02:19 PM |
| 58 | 03/Aug/12 | Plain View | 1.10 | 114.8 | 12:02:26 PM |
| 58 | 03/Aug/12 | Ferndale | 1.05 | 108.1 | 12:02:20 PM |
| 58 | 03/Aug/12 | Illili | 0.26 | 104.0 | 12:02:13 PM |
| 58 | 03/Aug/12 | Ivanhoe | 0.35 | 107.5 | 12:03:03 PM |
| 59 | 31/Aug/12 | Innisvale | 1.08 | 102.1 | 11:59:04 AM |
| 59 | 31/Aug/12 | Plain View | 0.67 | 110.6 | 11:58:44 AM |
| 59 | 31/Aug/12 | Ferndale | 0.66 | 109.8 | 11:58:49 AM |
| 59 | 31/Aug/12 | Illili | 0.35 | 109.7 | 11:59:45 AM |
| 59 | 31/Aug/12 | Ivanhoe | 0.62 | 104.9 | 11:58:04 AM |
| 60 | 27/Sep/12 | Innisvale | DNT | DNT | 12:02:00 PM |
| 60 | 27/Sep/12 | Plain View | 1.07 | 111.2 | 12:02:08 PM |
| 60 | 27/Sep/12 | Ferndale | 0.57 | 108.3 | 12:02:08 PM |
| 60 | 27/Sep/12 | Illili | 0.45 | 107.5 | 12:02:08 PM |
| 60 | 27/Sep/12 | Ivanhoe | 0.79 | 104.9 | 12:01:37 PM |

* Orica believes the monitor was triggered by something other than the blast. This assumption is based on the high overpressure and very low ground pressure

# Appendix 8

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# NOISE MONITORING DATA

**20 February 2012**

Ref: 06248/4273

**Mr Danny Young**
Whitehaven Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

**RE: FEBRUARY 2012 ATTENDED NOISE MONITORING RESULTS – SUNNYSIDE MINE**

This letter report presents the results of attended noise compliance monitoring conducted for the Sunnyside Coal Mine (SCM) on Tuedday 7th February 2012. Noise monitoring was carried out in accordance with the conditions of the SCM Noise Monitoring Programme (NMP) as detailed below.

## NOISE CRITERIA

The following is an extract from the Sunnyside NMP:

### Impact Assessment Criteria

7. Ensure that the noise generated by the Project does not exceed the noise impact assessment criteria set out in Table 1 at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.

| Location | Day $L_{Aeq(15\ minute)}$ | Evening $L_{Aeq(15\ minute)}$ |
|---|---|---|
| All privately owned residences | 35 | 35 |

*Table 1: Impact assessment criteria dB(A)*

If a written negotiated noise agreement with any landowner has been reached and a copy of this agreement has been forwarded to the Department and DECC, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated noise agreement.

*Notes:*

- *To determine compliance with the $L_{Aeq(15\ minute)}$ noise limits, noise from the Project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the Project is impractical, the Department and DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*

- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Noise Policy.*
- *To determine compliance with the $L_{A1(1\ minute)}$ noise limits, noise from the Project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the Project is impractical, the Department and DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*

## NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below (and shown in the attached figure):

Location R2: Ivanhoe[1]
Location R4: Illili
Location R5: Ferndale
Location R6: Plain View
Location R9: Lilydale

[1] Gates at the entrance to Ivanhoe were locked and access was not possible. No monitoring was, therefore, undertaken at this residence.

## NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 or 2250 Precision Sound Analyser. These instruments have Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from a hand held weather station with measurements made at approximately 2m above ground level.

Mine noise levels were measured over two monitoring surveys, one during the afternoon and one during the evening of 7th February, 2012. Traffic noise monitoring was also undertaken during the afternoon of 7th February.

## RESULTS

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the mine and other significant noise sources to the overall to be quantified.

In keeping with requirements of the SCM Noise Monitoring Programme noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for the operational phase of the SCM project is **35 dB(A) $L_{eq\ (15\ min)}$** for all operating times.

The results shown in **Tables 2** and **3**, below, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. This is the compliance criterion for the operation of the mine. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. Note that the mine does not operate at night (i.e. between

10 pm and 7 am) and, therefore, the L1 (1 min) (which is the standard measure of sleep disturbance) does not apply. Noise from SCM is shown in bold type. Where noise from SCM is listed as inaudible, this means the maximum levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

**Table 2**
**SCM Noise Monitoring Results – 7 February (Day)**

| Location | Time | dB(A),Leq (15 min) | Wind speed/ direction | Identified Noise Sources as dB(A) Leq (15 min) |
|---|---|---|---|---|
| Illili | 4:19 pm | 47 | 2m/s SW | Traffic (45), Birds (38), wind (38), **SCM inaudible** |
| Ferndale | 5:05 pm | 46 | 1-2m/s SW | Birds (45), domestic noise (35), **SCM inaudible** |
| Plain View | 4:21 pm | 42 | 1-2m/s SW | **SCM (38)**, wind (38), Birds & insects (33) |
| Lilydale | 3:55 pm | 44 | 2m/s SW | Birds & insects (40), Traffic (38), **SCM (31)** |

**Table 3**
**SCM Noise Monitoring Results – 7 February 2011 (Evening)**

| Location | Time | dB(A),Leq | Wind speed/ direction | Identified Noise Sources |
|---|---|---|---|---|
| Illili | 8:19 pm | 44 | 2-3m/s SW | Birds & insects (42), wind (36), **SCM (30)** |
| Ferndale | 8:44 pm | 50 | 2-3m/s SW | Birds & insects (50), **SCM (28)** |
| Plain View | 8:31 pm | 54 | 2-3m/s SW | Birds & insects (53), traffic (42), **SCM inaudible** |
| Lilydale | 8:09 pm | 45 | 1-2m/s SW | Traffic (43), Birds & insects (36), **SCM (<30)** |

The results shown in Tables 2 and 3 indicate that, under the operational and atmospheric conditions at the time, noise emissions from the operations at SCM did not exceed the noise criterion of 35 dB(A) Leq (15 min) at any monitoring location at any time, except for a 3 dB exceedance at "Plain view" during the daytime survey. Truck revs were the dominant audible mine noise source at this receiver.

Data for the 15 minute Leq noise levels were analysed using the *"Evaluator"* software. These analyses showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

The transport of coal from Sunnyside is carried out on a relatively sporadic basis, and trucks using this route do not travel at the regular intervals that are associated with other Whitehaven projects in the area.

The sound level meter was set up in the yard at "Roslyn" on Torrens Lane, at the same distance from the road as the façade of the residence. The monitoring was carried out over a one hour period from 5.00 pm on Monday 7th November.

A total of 6 heavy vehicles travelled along Torrens Lane during the monitoring period. These consisted of 3 full and 2 empty coal haulage trucks entering and leaving the CPP site and 1 fuel truck leaving the site.

The measured Leq noise level from all vehicles on Torrens Lane was of **49.8 dB(A) Leq (1 hour)**. This is in compliance with the noise criterion for a local road of 55 dB(A) Leq (1 hour).

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,

**SPECTRUM ACOUSTICS PTY LIMITED**

Author:

**Ross Hodge**
Acoustical Consultant

Review:

**Neil Pennington**
Acoustical Consultant

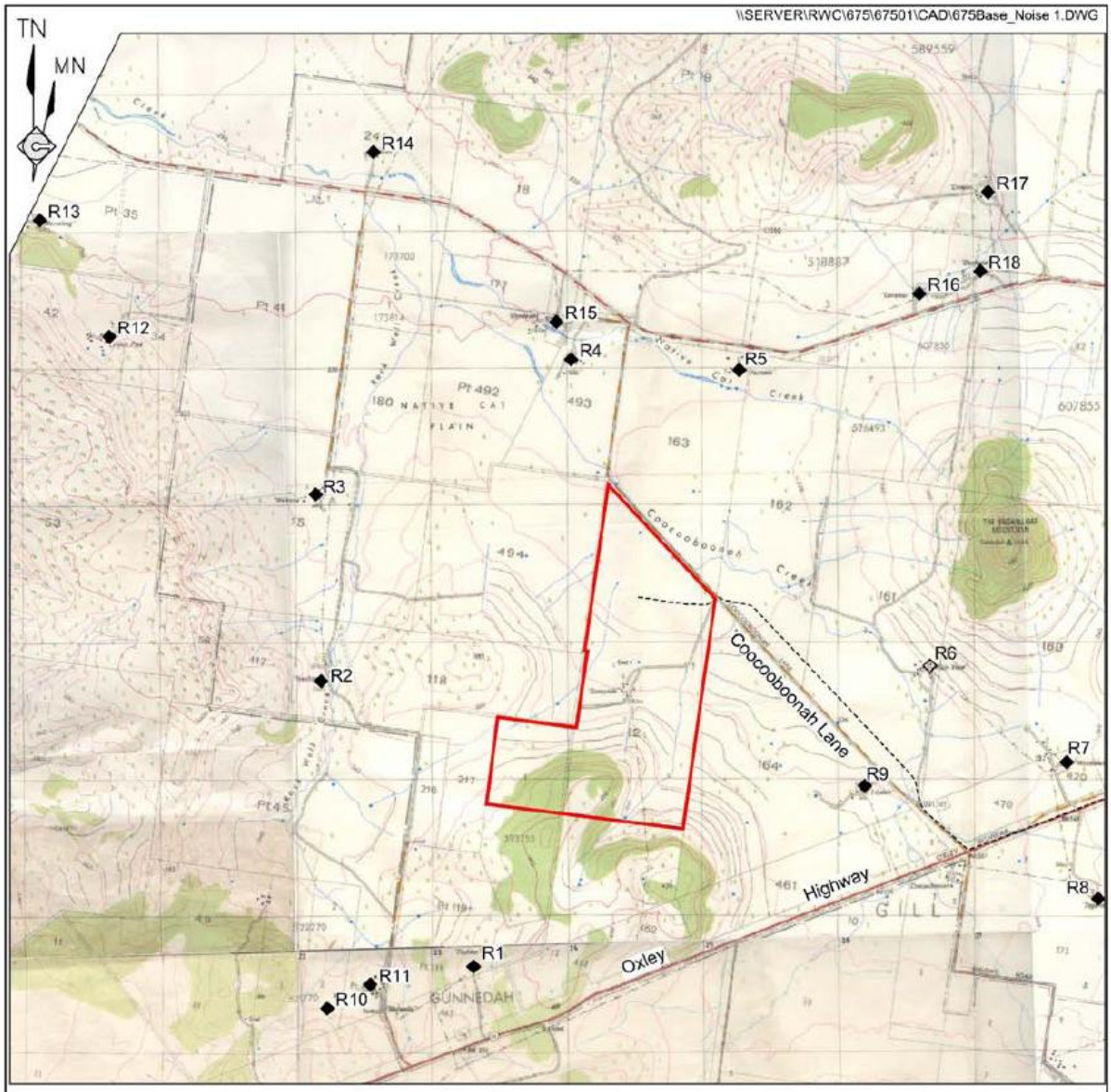


Figure 1
PROJECT SITE AND NOISE RECEIVER LOCATIONS

Figure Prepared by R.W. Corkery & Co. Pty Ltd

**20 February 2012**

Ref: 06248/4274

**Mr Danny Young**
Whitehaven Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

**RE: FEBRUARY 2012 ATTENDED NOISE MONITORING RESULTS – SUNNYSIDE MINE – "GLENDOWER"**

This letter report presents the results of attended noise compliance monitoring conducted at the "Glendower" property on behalf of Sunnyside Coal Mine (SCM) on Tuesday 7th February, 2012. Noise monitoring was carried out in accordance with the conditions of the SCM Noise Monitoring Programme (NMP) as detailed below.

## NOISE CRITERIA

The following is an extract from the Sunnyside NMP:

### Impact Assessment Criteria

7. Ensure that the noise generated by the Project does not exceed the noise impact assessment criteria set out in Table 1 at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.

| Location | Day $L_{Aeq(15\ minute)}$ | Evening $L_{Aeq(15\ minute)}$ |
|---|---|---|
| All privately owned residences | 35 | 35 |

*Table 1: Impact assessment criteria dB(A)*

If a written negotiated noise agreement with any landowner has been reached and a copy of this agreement has been forwarded to the Department and DECC, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated noise agreement.

*Notes:*

- *To determine compliance with the $L_{Aeq(15\ minute)}$ noise limits, noise from the Project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the Project is impractical, the Department and DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*

- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Noise Policy.*
- *To determine compliance with the $L_{A1(1\ minute)}$ noise limits, noise from the Project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the Project is impractical, the Department and DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*

## NOISE MONITORING LOCATIONS

The noise measurement location for the attended noise survey is listed below (and shown in the attached figure):

Location R15: Glendower

## NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 or 2250 Precision Sound Analyser. These instruments have Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from a hand held weather station with measurements made at approximately 2m above ground level.

Noise levels were measured over two monitoring surveys, one during the afternoon and one during the evening of 7th February, 2012.

## RESULTS

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the mine and other significant noise sources to the overall to be quantified.

In keeping with requirements of the SCM Noise Monitoring Programme noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for the operational phase of the SCM project is **35 dB(A) $L_{eq\ (15\ min)}$** for all operating times.

The results shown in **Table 2**, below, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. This is the compliance criterion for the operation of the mine. Levels for the other percentiles are not shown as they have no compliance criteria for comparison, but are available on request. Note that the mine does not operate at night (i.e. between 10 pm and 7 am) and, therefore, the L1 (1 min) (which is the standard measure of sleep disturbance) does not apply.

Noise from SCM is shown in bold type. Where noise from SCM is listed as inaudible, this means the maximum levels from the mine were at least 10 dB below the background level during the measurement and not measurable.

**Table 2**
**SCM Noise Monitoring Results – 7 February 2012 - Glendower**

| Date | Time | dB(A),Leq (15 min) | Wind speed/ direction | Identified Noise Sources as dB(A) Leq (15 min) |
|---|---|---|---|---|
| 7 February | 4:39 pm | 47 | 2m/s SW | Birds (44), traffic (41), wind (41), **SCM inaudible** |
| 7 February | 7:58 pm | 49 | 1-2m/s SW | Insects (48), wind (40), **SCM (32)** |

The results shown in Table 2 indicate that, under the operational and atmospheric conditions at the time of both monitoring periods, noise emissions from the operations at SCM did not exceed the noise criterion of 35 dB(A) at the monitoring location at Glendower.

Data for the 15 minute Leq noise levels were analysed using the *"Evaluator"* software. These analyses showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
**SPECTRUM ACOUSTICS PTY LIMITED**

Author:

**Ross Hodge**
Acoustical Consultant

Review:

**Neil Pennington**
Acoustical Consultant

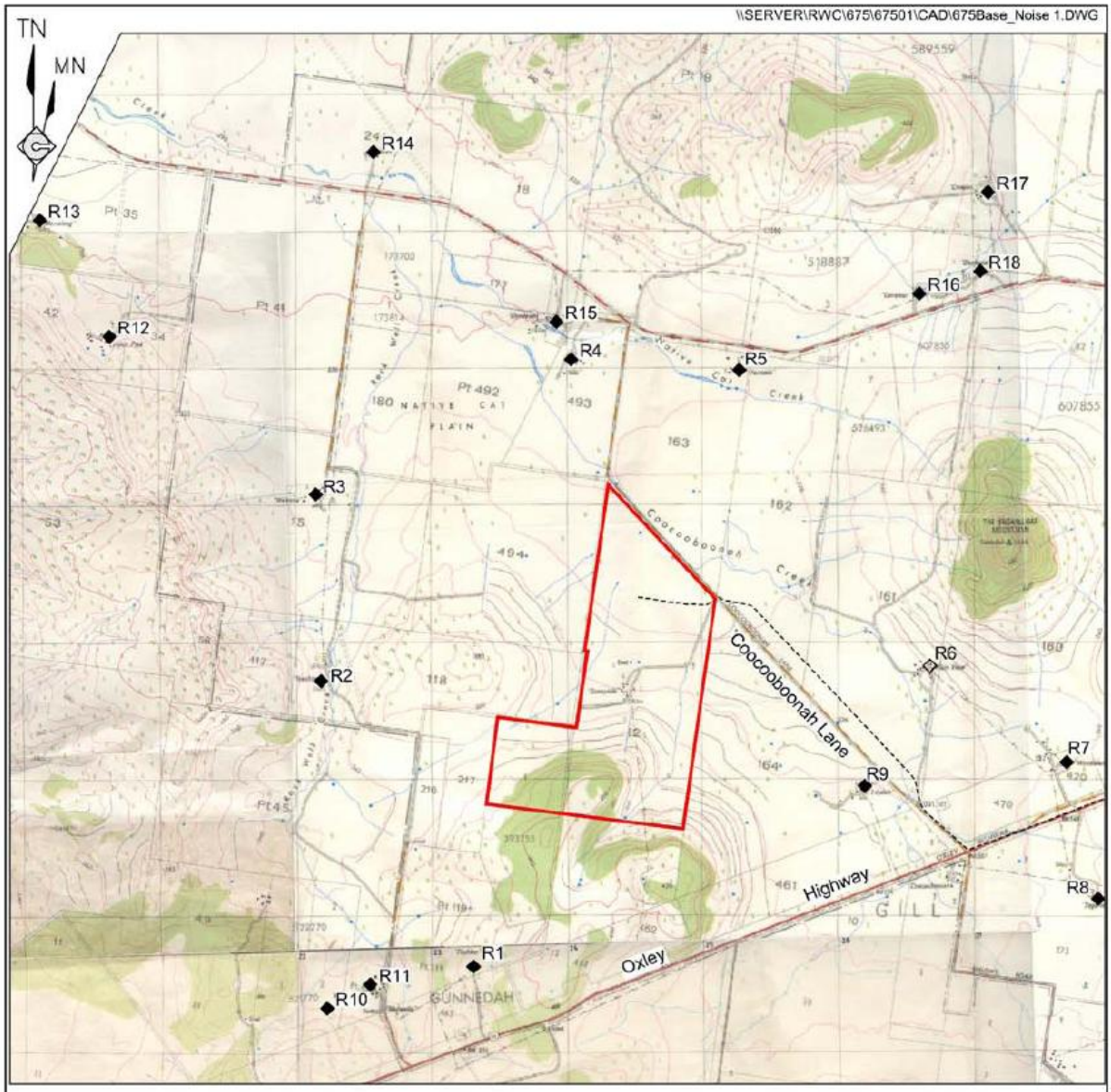


Figure 1
PROJECT SITE AND NOISE RECEIVER LOCATIONS

Figure Prepared by R.W. Corkery & Co. Pty Ltd

**1 June 2012**

Ref: 06248/4393

**Mr Danny Young**
Whitehaven Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

**RE: MAY 2012 ATTENDED NOISE MONITORING RESULTS – SUNNYSIDE MINE**

This letter report presents the results of attended noise compliance monitoring conducted for the Sunnyside Coal Mine (SCM) on Tuesday 29th May 2012. Noise monitoring was carried out in accordance with the conditions of the SCM Noise Monitoring Programme (NMP) as detailed below.

## NOISE CRITERIA

The following is an extract from the Sunnyside NMP:

### Impact Assessment Criteria

7. Ensure that the noise generated by the Project does not exceed the noise impact assessment criteria set out in Table 1 at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.

| Location | Day $L_{Aeq(15\ minute)}$ | Evening $L_{Aeq(15\ minute)}$ |
|---|---|---|
| All privately owned residences | 35 | 35 |

*Table 1: Impact assessment criteria dB(A)*

If a written negotiated noise agreement with any landowner has been reached and a copy of this agreement has been forwarded to the Department and DECC, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated noise agreement.

*Notes:*

- *To determine compliance with the $L_{Aeq(15\ minute)}$ noise limits, noise from the Project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the Project is impractical, the Department and DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*

- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Noise Policy.*
- *To determine compliance with the $L_{A1(1\ minute)}$ noise limits, noise from the Project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the Project is impractical, the Department and DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*

## NOISE MONITORING LOCATIONS

Noise measurement locations for the attended noise survey are listed below (and shown in the attached figure):

Location R2: Ivanhoe[1]
Location R4: Illili
Location R5: Ferndale
Location R6: Plain View
Location R9: Lilydale

[1] Gates at the entrance to Ivanhoe were locked and access was not possible. No monitoring was, therefore, undertaken at this residence.

## NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 or 2250 Precision Sound Analyser. These instruments have Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from a hand held weather station with measurements made at approximately 2m above ground level.

Mine noise levels were measured over two monitoring surveys, one during the afternoon and one during the evening of 29th May, 2012. Traffic noise monitoring was also undertaken during the morning of 30th May.

## RESULTS

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the mine and other significant noise sources to the overall to be quantified.

In keeping with requirements of the SCM Noise Monitoring Programme noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for the operational phase of the SCM project is **35 dB(A) $L_{eq\ (15\ min)}$** for all operating times.

The results shown in **Tables 2** and **3**, below, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. This is the compliance criterion for the operation of the mine. Levels for the other percentiles are not shown as they have no compliance criteria for comparison but are available on request. Note that the mine does not operate at night (i.e. between

10 pm and 7 am) and, therefore, the L1 (1 min) (which is the standard measure of sleep disturbance) does not apply. Noise from SCM is shown in bold type. Where noise from SCM is listed as inaudible, this means the maximum levels from the mine were at least 10 dB below the ambient level during the measurement and not measurable.

**Table 2**
**SCM Noise Monitoring Results – 29 May 2012 (Day)**

| Location | Time | dB(A),Leq (15 min) | Wind speed/ direction | Identified Noise Sources as dB(A) Leq (15 min) |
|---|---|---|---|---|
| Illili | 4:23 pm | 41 | 1m/s S | Birds (41), **SCM (35)**, traffic (32) |
| Ferndale | 5:12 pm | 46 | 1.5m/s S | Traffic (45), **SCM (35)**, birds (33) |
| Plain View | 3:58 pm | 48 | 2-3m/s S | Birds (47), wind in trees (40), traffic (32), **SCM inaudible** |
| Lilydale | 3:35 pm | 44 | 1.5m/s S | Traffic (42), birds & insects (41), **SCM inaudible** |

**Table 3**
**SCM Noise Monitoring Results – 29 May 2012 (Evening)**

| Location | Time | dB(A),Leq | Wind speed/ direction | Identified Noise Sources |
|---|---|---|---|---|
| Illili | 8:08 pm | 39 | 2m/s S | Birds & insects (36), **SCM (33)**, traffic (30), wind in trees (30) |
| Ferndale | 9:01 pm | 41 | 1.5m/s S | Birds (38), **SCM (37)**, traffic (30) |
| Plain View | 7:36 pm | 51 | 2-3m/s S | Insects (51), wind in trees (44), traffic (35), **SCM inaudible** |
| Lilydale | 7:10 pm | 41 | 1.5m/s S | Traffic (39), birds & insects (33), **SCM inaudible** |

The results shown in Tables 2 and 3 indicate that, under the operational and atmospheric conditions at the time, noise emissions from the operations at SCM exceeded the noise criterion of 35 dB(A) Leq (15 min) at the Ferndale monitoring location during the evening survey. Mine hum, truck revs and dozer tracks were the dominant audible mine noise sources at this receiver.

Data for the 15 minute Leq noise levels were analysed using the *"Evaluator"* software. These analyses showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

The transport of coal from Sunnyside is carried out on a relatively sporadic basis, and trucks using this route do not travel at the regular intervals that are associated with other Whitehaven projects in the area.

The sound level meter was set up in the yard at "Roslyn" on Torrens Lane, at the same distance from the road as the façade of the residence. The monitoring was carried out over a one hour period from 8.00 am on Wednesday 30th May.

A total of 18 heavy vehicles travelled along Torrens Lane during the monitoring period. These consisted of 9 full and 8 empty coal haulage trucks entering and leaving the CPP site and 1 water cart leaving the site.

The measured Leq noise level from all vehicles on Torrens Lane was of **57 dB(A) Leq (1 hour)**. This is in exceedance of the noise criterion for a local road of 55 dB(A) Leq (1 hour).

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,

**SPECTRUM ACOUSTICS PTY LIMITED**

Author:

**Ross Hodge**
Acoustical Consultant

Review:

**Neil Pennington**
Acoustical Consultant

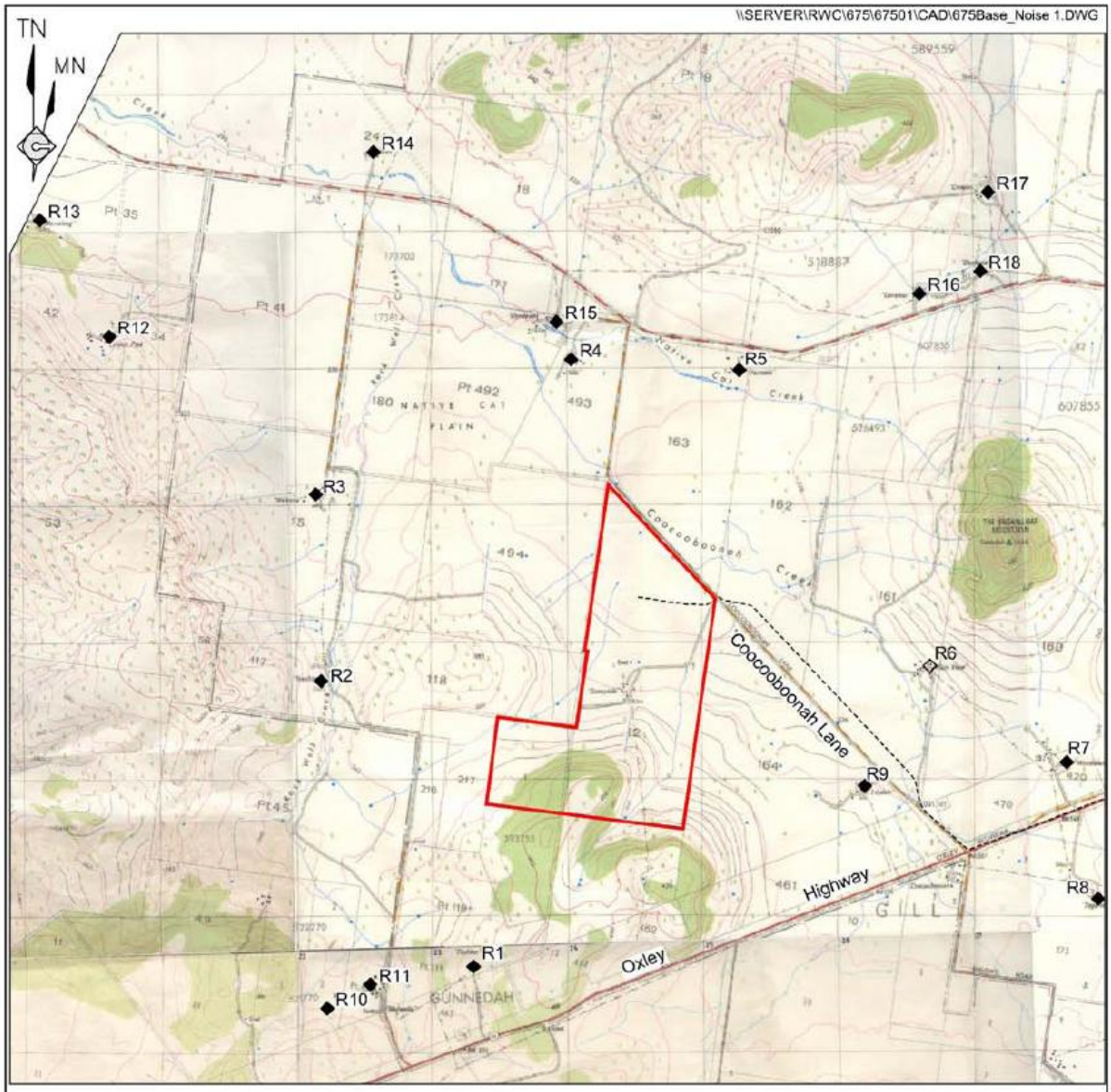


Figure 1
PROJECT SITE AND NOISE RECEIVER LOCATIONS

Figure Prepared by R.W. Corkery & Co. Pty Ltd

**4 June 2012**

Ref: 06248/4394

**Mr Danny Young**
Whitehaven Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

**RE: MAY 2012 ATTENDED NOISE MONITORING RESULTS – SUNNYSIDE MINE – "GLENDOWER"**

This letter report presents the results of attended noise compliance monitoring conducted at the "Glendower" property on behalf of Sunnyside Coal Mine (SCM) on Tuesday 29th May, 2012. Noise monitoring was carried out in accordance with the conditions of the SCM Noise Monitoring Programme (NMP) as detailed below.

## NOISE CRITERIA

The following is an extract from the Sunnyside NMP:

### Impact Assessment Criteria

7. Ensure that the noise generated by the Project does not exceed the noise impact assessment criteria set out in Table 1 at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.

| Location | Day $L_{Aeq(15\ minute)}$ | Evening $L_{Aeq(15\ minute)}$ |
|---|---|---|
| All privately owned residences | 35 | 35 |

*Table 1: Impact assessment criteria dB(A)*

If a written negotiated noise agreement with any landowner has been reached and a copy of this agreement has been forwarded to the Department and DECC, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated noise agreement.

*Notes:*

- *To determine compliance with the $L_{Aeq(15\ minute)}$ noise limits, noise from the Project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the Project is impractical, the Department and DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*

- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Noise Policy.*
- *To determine compliance with the $L_{A1(1\ minute)}$ noise limits, noise from the Project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the Project is impractical, the Department and DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*

## NOISE MONITORING LOCATIONS

The noise measurement location for the attended noise survey is listed below (and shown in the attached figure):

Location R15: Glendower

## NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 or 2250 Precision Sound Analyser. These instruments have Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from a hand held weather station with measurements made at approximately 2m above ground level.

Noise levels were measured over two monitoring surveys, one during the afternoon and one during the evening of 29th May, 2012.

## RESULTS

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the mine and other significant noise sources to the overall to be quantified.

In keeping with requirements of the SCM Noise Monitoring Programme noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for the operational phase of the SCM project is **35 dB(A) $L_{eq\ (15\ min)}$** for all operating times.

The results shown in **Table 2**, below, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. This is the compliance criterion for the operation of the mine. Levels for the other percentiles are not shown as they have no compliance criteria for comparison, but are available on request. Note that the mine does not operate at night (i.e. between 10 pm and 7 am) and, therefore, the L1 (1 min) (which is the standard measure of sleep disturbance) does not apply.

Noise from SCM is shown in bold type. Where noise from SCM is listed as inaudible, this means the maximum levels from the mine were at least 10 dB below the background level during the measurement and not measurable.

**Table 2**
**SCM Noise Monitoring Results – 29 May 2012 - Glendower**

| Date | Time | dB(A),Leq (15 min) | Wind speed/ direction | Identified Noise Sources as dB(A) Leq (15 min) |
|---|---|---|---|---|
| 29 May | 4:50 pm | 44 | 1.5m/s S | Birds (43), **SCM (36)**, traffic (35) |
| 29 May | 7:58 pm | 36 | 1m/s S | **SCM (35)**, insects (28) |

The results shown in Table 2 indicate that, under the operational and atmospheric conditions at the time of the monitoring, noise emissions from the operations at SCM exceeded the noise criterion of 35 dB(A) at the monitoring location at Glendower during the day time period.

Data for the 15 minute Leq noise levels were analysed using the *"Evaluator"* software. These analyses showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
**SPECTRUM ACOUSTICS PTY LIMITED**

Author:

**Ross Hodge**
Acoustical Consultant

Review:

**Neil Pennington**
Acoustical Consultant

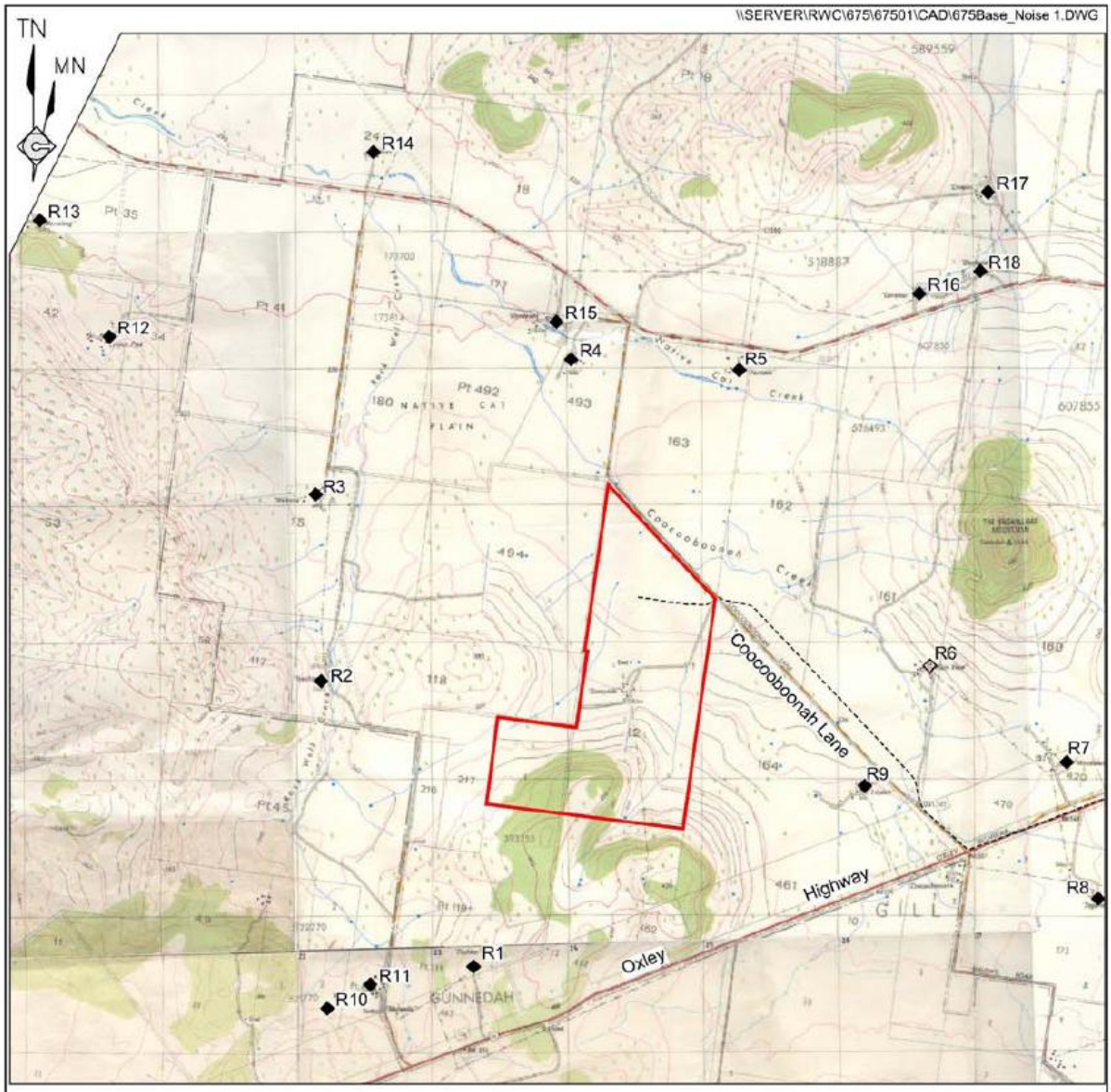


Figure 1
PROJECT SITE AND NOISE RECEIVER LOCATIONS

Figure Prepared by R.W. Corkery & Co. Pty Ltd

Project No: 06248

# ATTENDED NOISE MONITORING – SEPTEMBER 2012
# Sunnyside Coal Mine
# Gunnedah, NSW

Prepared for:

Whitehaven Coal Pty Limited
PO Box 600
Gunnedah NSW 2380


Author:

**Ross Hodge**
*B.Sc.(Hons)*
Principal / Director

Review:

**Neil Pennington**
*B.Sc., B. Math.(Hons), MAAS, MASA*
Principal / Director


September 2012

# TABLE OF CONTENTS

# 1.0 INTRODUCTION

This letter report presents the results of attended noise compliance monitoring and measurements conducted for the Sunnyside Coal Mine (SCM) between Monday 17th and Wednesday 19th September, 2012.

## 1.1 Noise Monitoring Locations

Section M7.2 and M8.1 of EPL 12957 identifies that noise monitoring should be carried out at the residences listed below and shown in **Figure 1**:

R2 Ivanhoe
R4 Illili
R5 Ferndale
R6 Plain View

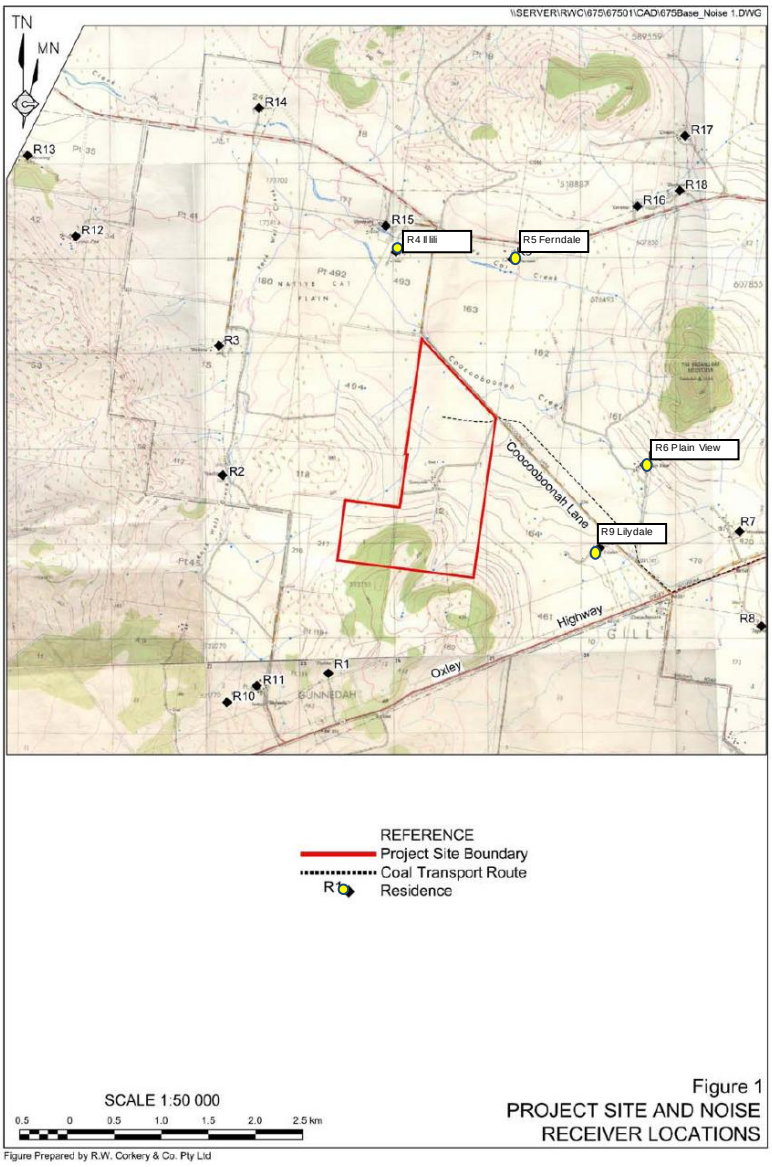


**Figure 1**
**Noise Monitoring Locations**

### 1.2 Monitoring Frequency and Duration

Section M8.2 of EPL 12957 indicates that the attended noise monitoring must be conducted;

a) at each of the locations detailed above.
b) quarterly in a reporting period.
c) during each day, evening and night period for a minimum of:
    - 1.5 hours during the day; and
    - 30 minutes during the evening.
d) occur for three consecutive operating days.

# 2.0 NOISE CRITERIA AND CONDITIONS

### 2.1 Noise Assessment Criteria

At all of the residences, the noise criterion is **35 dB(A) Leq (15 min)** (operational noise criterion) for each of the day, evening and night time periods, with "day" defined as 7am to 10pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays, "evening" being 6pm to 10pm and "night" being all other times (note that SCM only operates during the day and evening).

### 2.2 Monitoring Location Definition

EPL 12957 states that to determine compliance with the Leq (15 min) operational noise criteria the noise measurement equipment must be located:

- Approximately on the property boundary, where any dwelling is situated 30m or less from the property boundary closest to the premises; or
- Within 30m of a dwelling façade, but not closer than 3m, where any dwelling on the property is situated more than 30m from the property boundary closest to the premises; or, where applicable
- Within 50m of the boundary of a National Park or Nature Reserve.

### 2.3 Applicable Meteorological Conditions

The noise limits apply under all meteorological conditions except for the following;

1. Wind speeds greater than 3m/s at 10m above ground level; or
2. Stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level; or
3. Stability category G temperature inversion conditions.

### 2.4 Other Conditions

To determine compliance with the Leq (15 min) operational noise criteria the modification factors detailed in Section 4 of the NSW industrial Noise policy must be applied, as appropriate, to the measured noise levels.

The noise limits do not apply where a current legally binding agreement exists between the licensee and the occupant of a residential property that:

a) Agrees to an alternative noise limit for that property: or

b) Provides an alternative means of compensation to address noise impacts from the premises.

# 3.0 NOISE MONITORING PROCEDURE

## 3.1 Monitoring Equipment

Attended noise monitoring was conducted with Brüel & Kjær Type 2250 and 2260 Precision Sound Analysers. These instruments have Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters" and have current NATA calibration. Field calibration is carried out at the start and end of each monitoring period.

A-weighted noise levels were measured over the appropriate monitoring periods (90 minutes/day, 30 minutes/evening and 60 minutes/night) with data acquired at 1 or 2 second statistical intervals and the meter set to "fast" response. Each 1 or 2 second measurement is accompanied by a third-octave band spectrum from 20 - 20k Hz which is required for analysing INP 'modifying factors'. Time based field notes allow for determination of the relative contributions to the overall noise level of all significant noise sources.

## 3.2 Measurement Analysis

The operational noise criteria for compliance with Section L4.1 of EPL 12957 are based on a 15 minute Leq noise level. The procedures detailed in Section M 8.2 of EPL 12957 require noise monitoring for significantly longer periods than that of the compliance criteria. To determine compliance with the EPL conditions the worst case 15 minute period, in relation to mine noise, was extracted from each measurement and compared to the criteria in Section L 4.1.

This worst case 15 minute Leq noise level for each monitoring period is shown in the tables below. Where the noise from SCM was audible Bruel & Kjaer "*Evaluator*" analysis software was used to quantify the contributions of the mine and other significant noise sources to the overall. Mine noise from SCM is shown in the tables in bold type.

When no mine noise was audible at a monitoring location, a representative 15 minute noise measurement was made with observations carried out for the remainder of the applicable time period. In these instances, the measured noise level for the representative 15 minute period is that shown in the tables below.

## 3.3 Meteorological Data

Meteorological data used in this report were taken from measurements made with a hand held weather station at a height of approximately 2.5 above ground level.

## 3.4 Special Conditions

Before the noise surveys, Spectrum Acoustics personnel were briefed on the current location(s) of activities.

The gates to Ivanhoe are locked and entry is not possible, therefore, no monitoring was undertaken there.

In keeping with the SCM Noise Management Programme noise monitoring was also undertaken at the Lilydale property for a 15 minute compliance period over one day and evening. This property is now mine owned

# 4.0 RESULTS AND DISCUSSION

## 4.1 Measured Operational Noise Levels

Measured noise levels for each monitoring location and each day are summarised in **Tables 1 - 6**.

**Table 1**
**SCM Operational Noise Monitoring Results – 17 September 2012 (day)**

| Location | Time | Total dB(A), Leq (15 min) | Wind speed/ direction | Identified Noise Sources |
|---|---|---|---|---|
| Illili | 3:55 pm | 44 | 3 m/s NW | Birds & insects (44), traffic (35), **SCM (25)** |
| Ferndale | 12:25 pm | 42 | 2 m/s NW | Birds & insects (42), **SCM inaudible** |
| Plain View | 2:02 pm | 42 | 1.5 m/s NW | Birds & insects (42), **SCM (22)** |
| Lilydale | 3:35 pm | 46 | 3 m/s NW | Traffic (44), birds & insects (39), **SCM (32)** |

**Table 2**
**SCM Operational Noise Monitoring Results – 17 September 2012 (evening)**

| Location | Time | Total dB(A), Leq (15 min) | Wind speed/ direction | Identified Noise Sources |
|---|---|---|---|---|
| Illili | 7:30 pm | 30 | 0.5 m/s SE | Insects (27), traffic (27), **SCM (<20)** |
| Ferndale | 8:10 pm | 25 | Calm | Insects (23), **SCM (21)** |
| Plain View | 6:48 pm | 42 | 0.5 m/s SE | Insects (41), traffic (35), **SCM (21)** |
| Lilydale | 6:30 pm | 43 | 0.5 m/s SE | Traffic (41), birds & insects (38), **SCM (<20)** |

**Table 3**
**SCM Operational Noise Monitoring Results – 18 September 2012 (day)**

| Location | Time | Total dB(A), Leq (15 min) | Wind speed/ direction | Identified Noise Sources |
|---|---|---|---|---|
| Illili | 12:49 pm | 36 | 1.5 m/s NW | Birds & insects (36), **SCM (<20)** |
| Ferndale | 2:27 pm | 47 | 1 m/s N | Traffic (45), birds & insects (42), **SCM inaudible** |
| Plain View | n/a | n/a | 3 m/s NW | Rain - no mining from mid afternoon |

**Table 4**
**SCM Operational Noise Monitoring Results – 18 September 2012 (evening)**

| Location | Time | Total dB(A), Leq (15 min) | Wind speed/ direction | Identified Noise Sources |
|---|---|---|---|---|
| Illili | 8:40 pm | 25 | 1 m/s N | Traffic (23), insects (20), **SCM inaudible** |
| Ferndale | 8:03 pm | 29 | 1 m/s N | Sheep (26), insects (25), traffic (20), **SCM inaudible** |
| Plain View | 9:19 pm | 33 | 0.5 m/s N | Traffic (31), insects (29), **SCM inaudible** |

| Table 5<br>SCM Operational Noise Monitoring Results – 19 September 2012 (day) | | | | |
|---|---|---|---|---|
| **Location** | **Time** | **Total dB(A), Leq (15 min)** | **Wind speed/ direction** | **Identified Noise Sources** |
| Illili | 2:08 pm | 45 | 1.5 m/s, NW | Birds & insects (45), traffic (30), **SCM inaudible** |
| Ferndale | 12:34 pm | 47 | 1.5 m/s NW | Traffic (46), birds & insects (43), **SCM barely audible** |
| Plain View | 4:05 pm | 41 | 0.5 m/s NW | Birds & insects (40), traffic (35), **SCM (25)** |

| Table 6<br>SCM Operational Noise Monitoring Results – 19 September 2012 (evening) | | | | |
|---|---|---|---|---|
| **Location** | **Time** | **Total dB(A), Leq (15 min)** | **Wind speed/ direction** | **Identified Noise Sources** |
| Illili | 6:26 pm | 35 | Calm | Traffic (35), insects (25), **SCM inaudible** |
| Ferndale | 6:59 pm | 47 | Calm | Traffic (47), insects (32), **SCM (<20)** |
| Plain View | 7:39 pm | 41 | Calm | **SCM (39)**, traffic (33), plane (32), insects (26) |

## 4.2 Discussion of Results

The results in Tables 1 to 6 show that, under the operating and meteorological conditions at the times, for the worst case 15 minute compliance measurement periods, the mine noise exceeded the operational noise criterion at the Plain View monitoring location during the evening of September 19. Noise from haul truck engines was the dominant audible mine noise source at this receiver. Whitehaven has entered into a private agreement with the owner of the "Plain View" property. This agreement specifies an alternate noise limit applicable at the property of 45dB(A). A copy of this agreement has been supplied to the Environment Protection Authority and the Department of Planning and Infrastructure. On this basis, the measured noise level of 39 dB(A) at "Plain View" is not considered an exceedance of the noise criteria.

During the afternoon of September 18 storms and rain caused the cessation of mining prior to the commencement of the noise monitoring at Plain View. Mining, and hence noise monitoring, recommenced in early evening.

### 4.2.1 Modifying Factor Corrections

Data from those times where SCM operations were audible were analysed using the *"Evaluator"* software. This analysis showed the noise did not contain any tonal, impulsive or low frequency components as per definitions of "modifying factor corrections" in the NSW Industrial Noise Policy.

## 4.3 Transport Noise Levels

The transport of coal from Sunnyside is carried out on a relatively sporadic basis, and trucks using the route do not travel at the regular intervals that are associated with other Whitehaven projects in the area.

The sound level meter was set up in the yard at "Roslyn" on Torrens Lane, at the same distance from the road as the façade of the residence. The monitoring was carried out over a one hour period from 8.00 am on Wednesday 8th August.

A total of 18 heavy vehicles travelled along Torrens Lane during the monitoring period. These consisted of 9 full and 9 empty coal haulage trucks entering and leaving the CPP site.

The measured Leq noise level from all vehicles on Torrens Lane was **56 dB(A) Leq (1 hour)**. This is in exceedance of the noise criterion for a local road of 55 dB(A) Leq (1 hour). This represents a minor exceedance of noise criteria, measured from a property that is project related or Whitehaven owned. Due to the sporadic nature of coal transport from the Sunnyside Mine, and that the "Roslyn" property is project related, no additional mitigation measures on road transport noise are considered warranted at this time.

# APPENDIX A

# DESCRIPTION OF ACOUSTICAL TERMS

## Table A1
## Definition of acoustical terms

| Term | Description |
|---|---|
| dB(A) | The quantitative measure of sound heard by the human ear, measured by the A-Scale Weighting Network of a sound level meter expressed in decibels (dB). |
| SPL | Sound Pressure Level. The incremental variation of sound pressure above and below atmospheric pressure and expressed in decibels. The human ear responds to pressure fluctuations, resulting in sound being heard. |
| STL | Sound Transmission Loss. The ability of a partition to attenuate sound, in dB. |
| Lw | Sound Power Level radiated by a noise source per unit time re 1pW. |
| Leq | Equivalent Continuous Noise Level - taking into account the fluctuations of noise over time. The time-varying level is computed to give an equivalent dB(A) level that is equal to the energy content and time period. |
| L1 | Average Peak Noise Level - the level exceeded for 1% of the monitoring period. |
| L90 | "Background" Noise Level - the level exceeded for 90% of the monitoring period. |

**26 September 2012**

Ref: 06248/4516

**Mr Danny Young**
Whitehaven Coal Pty Ltd
PO Box 600
GUNNEDAH NSW 2380

## RE: SEPTEMBER 2012 ATTENDED NOISE MONITORING RESULTS – SUNNYSIDE MINE – "GLENDOWER"

This letter report presents the results of attended noise compliance monitoring conducted at the "Glendower" property on behalf of Sunnyside Coal Mine (SCM) on Wednesday 19th September, 2012. Noise monitoring was carried out in accordance with the conditions of the SCM Noise Monitoring Programme (NMP) as detailed below.

## NOISE CRITERIA

The following is an extract from the Sunnyside NMP:

### Impact Assessment Criteria

7. Ensure that the noise generated by the Project does not exceed the noise impact assessment criteria set out in Table 1 at any residence on privately-owned land, or on more than 25 percent of any privately-owned land.

| Location | Day $L_{Aeq(15\ minute)}$ | Evening $L_{Aeq(15\ minute)}$ |
|---|---|---|
| All privately owned residences | 35 | 35 |

*Table 1: Impact assessment criteria dB(A)*

If a written negotiated noise agreement with any landowner has been reached and a copy of this agreement has been forwarded to the Department and OEH, then the Proponent may exceed the noise limits in Table 1 in accordance with the negotiated noise agreement.

*Notes:*

- *To determine compliance with the $L_{Aeq(15\ minute)}$ noise limits, noise from the Project is to be measured at the most affected point within the residential boundary, or at the most affected point within 30 metres of a dwelling (rural situations) where the dwelling is more than 30 metres from the boundary. Where it can be demonstrated that direct measurement of noise from the Project is impractical, the Department and DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy). The modification factors in Section 4 of the NSW Industrial Noise Policy shall also be applied to the measured noise levels where applicable.*

- *These limits apply under the relevant meteorological conditions outlined in the assessment procedures in Chapter 5 of the NSW Industrial Noise Policy.*
- *To determine compliance with the $L_{A1(1\ minute)}$ noise limits, noise from the Project is to be measured at 1 metre from the dwelling façade. Where it can be demonstrated that direct measurement of noise from the Project is impractical, the Department and DECC may accept alternative means of determining compliance (see Chapter 11 of the NSW Industrial Noise Policy).*

## NOISE MONITORING LOCATIONS

The noise measurement location for the attended noise survey is listed below (and shown in the attached figure):

Location R15: Glendower

## NOISE MEASUREMENTS

Noise emission levels were measured with a Brüel & Kjær Type 2260 or 2250 Precision Sound Analyser. These instruments have Type 1 characteristics as defined in AS1259-1982 "Sound Level Meters". Calibration of the instrument was confirmed with a Brüel & Kjær Type 4231 Sound Level Calibrator prior to and at the completion of measurements.

Meteorological data used in this report was obtained from a hand held weather station with measurements made at approximately 2m above ground level.

Noise levels were measured over two monitoring surveys, one during the afternoon and one during the evening of 19th September, 2012.

## RESULTS

The measured noise levels, over 1 second intervals, were analysed using Brüel & Kjær "*Evaluator*" software. The software enables the contributions of the mine and other significant noise sources to the overall to be quantified.

In keeping with requirements of the SCM Noise Monitoring Programme noise levels were recorded for each of the Leq (15 min), Lmax, L1, L10, L90 and Lmin percentiles. As shown in Table 1, the noise criterion for the operational phase of the SCM project is **35 dB(A) $L_{eq\ (15\ min)}$** for all operating times.

The results shown in **Table 2**, below, represent the total 15 minute Leq noise level for all noise sources and the relative contributions of each. This is the compliance criterion for the operation of the mine. Levels for the other percentiles are not shown as they have no compliance criteria for comparison, but are available on request. Note that the mine does not operate at night (i.e. between 10 pm and 7 am) and, therefore, the L1 (1 min) (which is the standard measure of sleep disturbance) does not apply.

Noise from SCM is shown in bold type. Where noise from SCM is listed as inaudible, this means the maximum levels from the mine were at least 10 dB below the background level during the measurement and not measurable.

**Table 2**
**SCM Noise Monitoring Results – 19 September 2012 - Glendower**

| Date | Time | dB(A),Leq (15 min) | Wind speed/ direction | Identified Noise Sources as dB(A) Leq (15 min) |
|---|---|---|---|---|
| 19 September | 3:42 pm | 40 | 1 m/s NW | Birds 7 insects (40), **SCM (25)** |
| 19 September | 6:05 pm | 47 | Calm | Birds & insects (47), traffic (34), **SCM (20)** |

The results shown in Table 2 indicate that, under the operational and atmospheric conditions at the time of the monitoring, noise emissions from the operations at SCM did not exceed the noise criterion of 35 dB(A) at the monitoring location at Glendower.

Data for the 15 minute Leq noise levels were analysed using the *"Evaluator"* software. These analyses showed the noise did not contain any tonal, impulsive or low frequency components as per definitions in the NSW Industrial Noise Policy.

We trust this report fulfils your requirements at this time, however, should you require additional information or assistance please contact the undersigned on 4954 2276.

Yours faithfully,
**SPECTRUM ACOUSTICS PTY LIMITED**

Author:

**Ross Hodge**
Acoustical Consultant

Review:

**Neil Pennington**
Acoustical Consultant

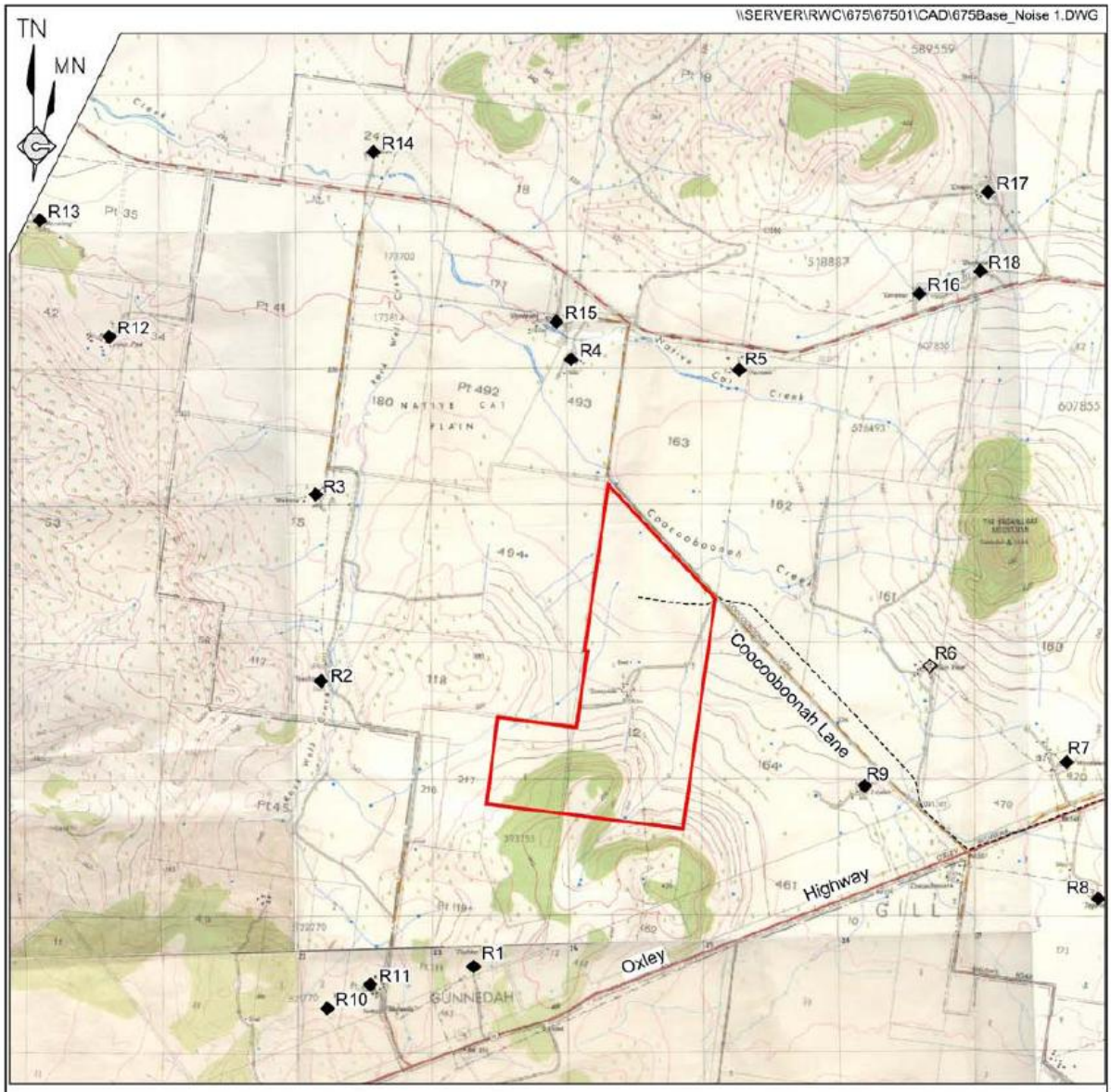


Figure 1
PROJECT SITE AND NOISE RECEIVER LOCATIONS

Figure Prepared by R.W. Corkery & Co. Pty Ltd

# Appendix 9

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# METEOROLOGICAL DATA

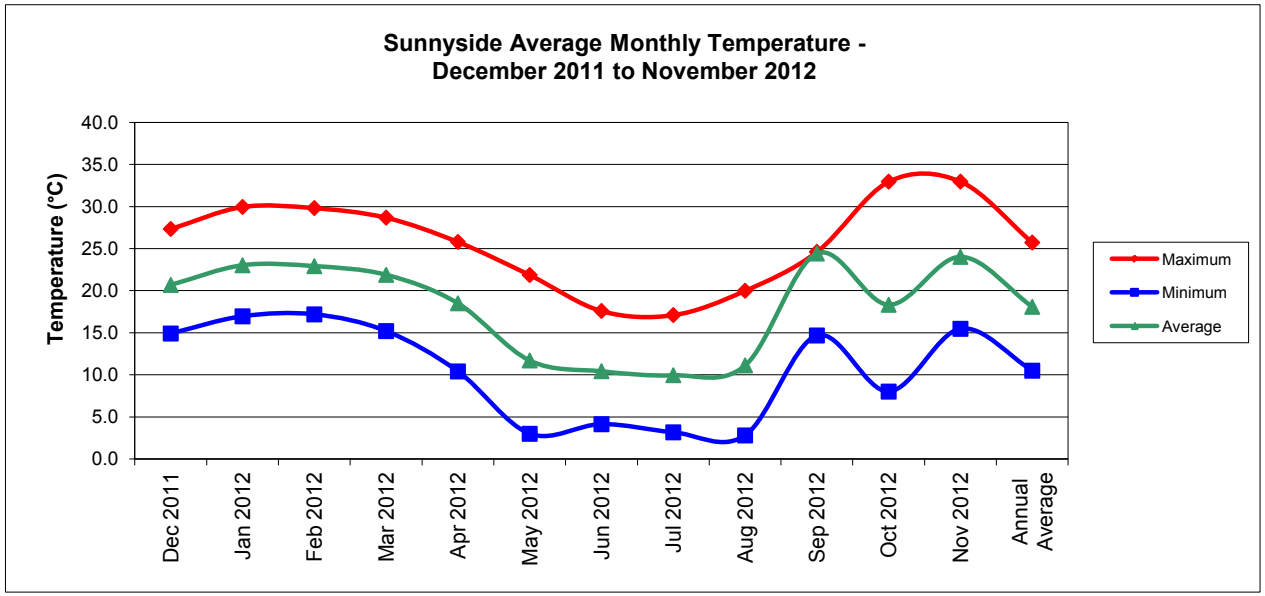
## Sunnyside Coal Mine Average Monthly Results

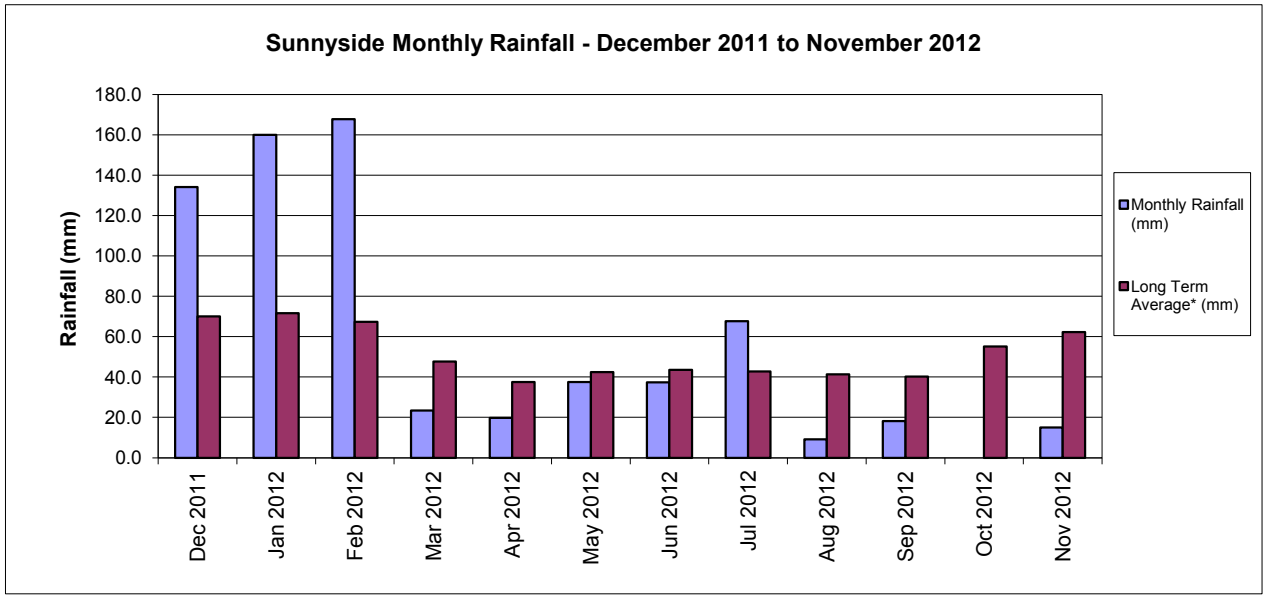
| *Month*** | *Minimum Air Temp (°C)* | *Average Air Temp(°C)* | *Maximum Air Temp (°C)* | *Minimum Relative Humidity (%)* | *Average Relative Humidity(%)* | *Maximum Relative Humidity (%)* | *Minimum Wind Speed (m/s)* | *Average Wind Speed (m/s)* | *Maximum Wind Speed (m/s)* |
|---|---|---|---|---|---|---|---|---|---|
| Dec 2011 | 14.9 | 20.7 | 27.3 | 44 | 66 | 84 | 0.2 | 2.0 | 5.5 |
| Jan 2012 | 17.0 | 23.0 | 30.0 | 44 | 65 | 86 | 4.9 | 2.1 | 5.9 |
| Feb 2012 | 17.2 | 22.9 | 29.8 | 47 | 69 | 88 | 0.1 | 1.4 | 4.8 |
| Mar 2012 | 15.2 | 21.9 | 28.7 | 46 | 67 | 86 | 0.2 | 1.7 | 4.6 |
| Apr 2012 | 10.4 | 18.5 | 25.8 | 32 | 63 | 92 | 0.0 | 3.6 | 9.1 |
| May 2012 | 3.0 | 11.7 | 21.9 | 35 | 64 | 89 | 0.0 | 0.8 | 3.4 |
| Jun 2012 | 4.1 | 10.4 | 17.6 | 52 | 76 | 91 | 0.0 | 1.2 | 4.0 |
| Jul 2012 | 3.2 | 10.0 | 17.1 | 50 | 74 | 90 | 0.0 | 0.9 | 3.6 |
| Aug 2012 | 2.8 | 11.1 | 20.0 | 37 | 63 | 87 | 0.0 | 1.5 | 5.7 |
| Sep 2012 | 14.7 | 24.4 | 24.6 | 31 | 58 | 86 | 0.0 | 1.6 | 5.6 |
| Oct 2012 | 8.0 | 18.3 | 33.0 | 24 | 48 | 79 | 0.0 | 1.7 | 5.8 |
| Nov 2012 | 15.5 | 24.0 | 33.0 | 27 | 49 | 76 | 0.0 | 2.1 | 6.5 |
| ***Annual Average*** | **10.5** | **18.1** | **25.7** | **39** | **64** | **86** | **0.4** | **1.7** | **5.4** |
| ***Minimum*** | **2.8** | **10.0** | **17.1** | **24** | **48** | **76** | **0.0** | **0.8** | **3.4** |
| ***Maximum*** | **17.2** | **24.4** | **33.0** | **52** | **76** | **92** | **4.9** | **3.6** | **9.1** |

| *Month*** | *Monthly Rainfall (mm)* | *Long Term Average* (mm)* | *Cumulative Rainfall (mm)* | *Number of Rain Days* |
|---|---|---|---|---|
| Dec 2011 | 134.2 | 70 | 134.2 | 10 |
| Jan 2012 | 160.0 | 71.7 | 294.2 | 14 |
| Feb 2012 | 167.8 | 67.3 | 462.0 | 12 |
| Mar 2012 | 23.4 | 47.7 | 485.4 | 3 |
| Apr 2012 | 19.8 | 37.5 | 505.2 | 5 |
| May 2012 | 37.6 | 42.5 | 542.8 | 5 |
| Jun 2012 | 37.4 | 43.6 | 580.2 | 16 |
| Jul 2012 | 67.6 | 42.7 | 647.8 | 9 |
| Aug 2012 | 9.2 | 41.3 | 657.0 | 3 |
| Sep 2012 | 18.2 | 40.3 | 675.2 | 2 |
| Oct 2012 | 0.0 | 55.1 | 675.2 | 0 |
| Nov 2012 | 15.0 | 62.2 | 690.2 | 3 |
| ***Total*** | **690.2** | **621.9** | **690.2** | **82** |

* Long term average is from Gunnedah Pool (Station 055023) 1877 - 2012

**April 2012 is Bureau of Meteorology data due to weather station malfunction


Sunnyside Average Monthly Temperature -
December 2011 to November 2012
Temperature (°C)
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
Dec 2011
Jan 2012
Feb 2012
Mar 2012
Apr 2012
May 2012
Jun 2012
Jul 2012
Aug 2012
Sep 2012
Oct 2012
Nov 2012
Annual Average
Maximum
Minimum
Average


Sunnyside Monthly Rainfall - December 2011 to November 2012
Rainfall (mm)
180.0
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
Dec 2011
Jan 2012
Feb 2012
Mar 2012
Apr 2012
May 2012
Jun 2012
Jul 2012
Aug 2012
Sep 2012
Oct 2012
Nov 2012
Monthly Rainfall (mm)
Long Term Average* (mm)

**Daily Summary December 2011 Sunnyside Weather Station**

| Date | Min Temp (°C) | Ave Temp (°C) | Max Temp (°C) | Min RH (%) | Ave RH (%) | Max RH (%) | Rain (mm) | Min WS (m/s) | Ave WS (m/s) | Max WS (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|
| 01/12/11 | 15 | 20 | 24 | 55 | 72 | 90 | 6.6 | 0 | 4 | 9 |
| 02/12/11 | 12 | 18 | 24 | 38 | 57 | 72 | 0.0 | 1 | 3 | 7 |
| 03/12/11 | 11 | 19 | 27 | 34 | 59 | 82 | 0.0 | 0 | 1 | 4 |
| 04/12/11 | 11 | 21 | 31 | 30 | 58 | 87 | 0.0 | 0 | 2 | 8 |
| 05/12/11 | 12 | 18 | 25 | 42 | 57 | 75 | 0.0 | 3 | 5 | 7 |
| 06/12/11 | 14 | 18 | 24 | 44 | 55 | 63 | 0.0 | 0 | 2 | 4 |
| 07/12/11 | 13 | 16 | 19 | 59 | 78 | 89 | 11.2 | 0 | 2 | 4 |
| 08/12/11 | 15 | 19 | 24 | 58 | 79 | 89 | 0.8 | 0 | 1 | 5 |
| 09/12/11 | 16 | 22 | 28 | 44 | 63 | 84 | 0.0 | 0 | 1 | 5 |
| 10/12/11 | 17 | 20 | 26 | 61 | 80 | 90 | 5.8 | 0 | 1 | 5 |
| 11/12/11 | 15 | 20 | 29 | 51 | 84 | 94 | 65.0 | 0 | 1 | 5 |
| 12/12/11 | 15 | 20 | 25 | 56 | 78 | 93 | 0.2 | 0 | 2 | 5 |
| 13/12/11 | 13 | 21 | 29 | 32 | 63 | 92 | 0.0 | 0 | 2 | 7 |
| 14/12/11 | 13 | 21 | 28 | 34 | 58 | 83 | 0.0 | 0 | 2 | 5 |
| 15/12/11 | 14 | 21 | 28 | 41 | 60 | 76 | 0.0 | 0 | 3 | 5 |
| 16/12/11 | 15 | 21 | 28 | 33 | 58 | 76 | 0.0 | 0 | 2 | 5 |
| 17/12/11 | 13 | 21 | 27 | 38 | 56 | 76 | 0.0 | 0 | 2 | 5 |
| 18/12/11 | 16 | 21 | 28 | 45 | 62 | 80 | 0.0 | 0 | 1 | 3 |
| 19/12/11 | 17 | 20 | 24 | 60 | 81 | 92 | 12.2 | 0 | 0 | 5 |
| 20/12/11 | 16 | 22 | 32 | 39 | 76 | 94 | 0.2 | 0 | 1 | 5 |
| 21/12/11 | 18 | 22 | 30 | 52 | 74 | 91 | 31.8 | 0 | 2 | 9 |
| 22/12/11 | 17 | 22 | 30 | 45 | 73 | 89 | 0.0 | 0 | 2 | 7 |
| 23/12/11 | 18 | 22 | 27 | 61 | 76 | 90 | 0.0 | 0 | 1 | 5 |
| 24/12/11 | 17 | 24 | 31 | 40 | 66 | 88 | 0.0 | 0 | 1 | 5 |
| 25/12/11 | 16 | 24 | 32 | 38 | 65 | 86 | 0.0 | 0 | 1 | 4 |
| 26/12/11 | 17 | 22 | 26 | 58 | 71 | 88 | 0.4 | 0 | 2 | 8 |
| 27/12/11 | 15 | 22 | 28 | 46 | 64 | 89 | 0.0 | 0 | 3 | 7 |
| 28/12/11 | 16 | 22 | 28 | 34 | 57 | 79 | 0.0 | 1 | 4 | 6 |
| 29/12/11 | 15 | 22 | 28 | 40 | 56 | 78 | 0.0 | 0 | 3 | 5 |
| 30/12/11 | 13 | 21 | 28 | 38 | 54 | 79 | 0.0 | 0 | 3 | 5 |
| 31/12/11 | 15 | 22 | 30 | 32 | 55 | 76 | 0.0 | 0 | 3 | 6 |
| *Average* | 14.9 | 20.7 | 27.3 | 44.5 | 65.9 | 84.2 | | 0.2 | 2.0 | 5.5 |
| *Maximum* | 18.3 | 23.6 | 31.7 | 61.0 | 83.6 | 94.0 | 65.0 | 3.1 | 5.1 | 8.9 |
| *Minimum* | 10.9 | 15.8 | 18.9 | 30.0 | 54.0 | 63.0 | 0.0 | 0.0 | 0.2 | 2.7 |
| *Total* | | | | | | | 134.2 | | | |

**Daily Summary  January 2012  Sunnyside Weather Station**

| Date | Min Temp (°C) | Ave Temp (°C) | Max Temp (°C) | Min RH (%) | Ave RH (%) | Max RH (%) | Rain (mm) | Min WS (m/s) | Ave WS (m/s) | Max WS (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|
| 01/01/12 | 15.0 | 23.5 | 31.9 | 26.0 | 50.1 | 80.0 | 0.0 | 7.0 | 1.5 | 4.0 |
| 02/01/12 | 13.3 | 23.8 | 33.9 | 22.0 | 49.0 | 78.0 | 0.0 | 6.9 | 0.9 | 2.7 |
| 03/01/12 | 15.1 | 25.0 | 34.7 | 34.0 | 56.8 | 85.0 | 0.0 | 6.7 | 1.1 | 4.0 |
| 04/01/12 | 16.4 | 26.2 | 35.2 | 34.0 | 58.4 | 87.0 | 0.0 | 6.0 | 1.7 | 5.4 |
| 05/01/12 | 19.5 | 26.0 | 35.9 | 36.0 | 63.9 | 92.0 | 9.6 | 5.2 | 2.6 | 8.0 |
| 06/01/12 | 16.9 | 23.4 | 30.2 | 51.0 | 72.6 | 94.0 | 0.2 | 6.4 | 1.8 | 5.8 |
| 07/01/12 | 16.6 | 24.8 | 33.6 | 42.0 | 64.0 | 85.0 | 0.0 | 5.9 | 1.6 | 5.4 |
| 08/01/12 | 19.8 | 27.0 | 34.8 | 43.0 | 67.2 | 91.0 | 33.2 | 6.3 | 2.6 | 8.5 |
| 09/01/12 | 18.9 | 25.5 | 32.1 | 36.0 | 66.0 | 94.0 | 0.0 | 7.2 | 2.4 | 7.2 |
| 10/01/12 | 13.0 | 22.3 | 30.2 | 28.0 | 52.4 | 84.0 | 0.0 | 9.3 | 1.4 | 5.8 |
| 11/01/12 | 15.7 | 23.0 | 29.8 | 27.0 | 43.6 | 71.0 | 0.0 | 6.7 | 3.8 | 8.9 |
| 12/01/12 | 8.2 | 19.1 | 28.9 | 23.0 | 44.7 | 81.0 | 0.0 | 6.1 | 1.1 | 4.9 |
| 13/01/12 | 13.2 | 21.7 | 30.2 | 33.0 | 56.0 | 78.0 | 0.0 | 4.0 | 1.1 | 4.0 |
| 14/01/12 | 15.7 | 21.1 | 29.7 | 43.0 | 68.6 | 91.0 | 42.8 | 2.5 | 1.1 | 10.3 |
| 15/01/12 | 15.8 | 18.2 | 23.9 | 48.0 | 80.6 | 93.0 | 5.0 | 4.2 | 1.7 | 4.5 |
| 16/01/12 | 16.5 | 21.4 | 27.9 | 42.0 | 65.0 | 88.0 | 0.2 | 7.3 | 2.8 | 4.5 |
| 17/01/12 | 15.8 | 23.2 | 29.9 | 41.0 | 55.3 | 75.0 | 0.0 | 3.1 | 3.6 | 7.2 |
| 18/01/12 | 17.4 | 21.5 | 27.7 | 54.0 | 74.7 | 87.0 | 4.6 | 2.3 | 2.6 | 4.9 |
| 19/01/12 | 18.8 | 20.6 | 22.1 | 75.0 | 85.0 | 90.0 | 12.8 | 4.6 | 3.4 | 5.8 |
| 20/01/12 | 20.9 | 23.7 | 29.7 | 56.0 | 73.3 | 90.0 | 5.2 | 4.9 | 3.4 | 7.2 |
| 21/01/12 | 20.7 | 23.9 | 28.4 | 55.0 | 66.6 | 77.0 | 0.2 | 2.2 | 3.9 | 8.5 |
| 22/01/12 | 19.8 | 21.7 | 24.2 | 64.0 | 74.5 | 86.0 | 2.4 | 2.3 | 1.6 | 4.9 |
| 23/01/12 | 18.5 | 21.4 | 25.2 | 64.0 | 79.6 | 90.0 | 1.4 | 2.6 | 2.3 | 4.0 |
| 24/01/12 | 20.9 | 24.0 | 30.9 | 62.0 | 80.5 | 93.0 | 22.0 | 2.0 | 1.9 | 7.2 |
| 25/01/12 | 21.4 | 23.4 | 28.0 | 71.0 | 87.9 | 94.0 | 20.4 | 0.0 | 0.7 | 4.5 |
| ***Average*** | 17.0 | 23.0 | 30.0 | 44.4 | 65.5 | 86.2 | | 4.9 | 2.1 | 5.9 |
| ***Maximum*** | 21.4 | 27.0 | 35.9 | 75.0 | 87.9 | 94.0 | 42.8 | 9.3 | 3.9 | 10.3 |
| ***Minimum*** | 8.2 | 18.2 | 22.1 | 22.0 | 43.6 | 71.0 | 0.0 | 0.0 | 0.7 | 2.7 |
| ***Total*** | | | | | | | 160.0 | | | |

***Weather station malfunction***

Daily Summary February 2012 Sunnyside Weather Station

| Date | Min Temp (°C) | Ave Temp (°C) | Max Temp (°C) | Min RH (%) | Ave RH (%) | Max RH (%) | Rain (mm) | Min WS (m/s) | Ave WS (m/s) | Max WS (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|
| 01/02/12 | 17.3 | 18.6 | 21.8 | 84.0 | 90.6 | 93.0 | 46.2 | 1.8 | 3.5 | 5.8 |
| 02/02/12 | 17.1 | 18.0 | 18.8 | 87.0 | 90.7 | 92.0 | 17.0 | 0 | 3.3 | 6.7 |
| 03/02/12 | 17.2 | 19.0 | 22.1 | 81.0 | 87.6 | 92.0 | 10.6 | 0 | 1.4 | 5.4 |
| 04/02/12 | 14.4 | 22.5 | 31.9 | 42.0 | 75.7 | 95.0 | 0.2 | 0 | 0.3 | 1.8 |
| 05/02/12 | 17.7 | 25.0 | 32.6 | 43.0 | 68.5 | 91.0 | 0.0 | 0 | 0.4 | 2.2 |
| 06/02/12 | 18.7 | 25.6 | 35.1 | 42.0 | 71.4 | 92.0 | 2.6 | 0 | 0.5 | 6.3 |
| 07/02/12 | 17.9 | 24.9 | 32.3 | 33.0 | 68.9 | 92.0 | 0.0 | 0 | 1.4 | 4.0 |
| 08/02/12 | 18.8 | 23.0 | 30.5 | 47.0 | 71.8 | 87.0 | 13.2 | 0 | 2.8 | 5.8 |
| 09/02/12 | 17.2 | 23.7 | 30.9 | 41.0 | 63.8 | 82.0 | 0.0 | 0 | 1.5 | 4.5 |
| 10/02/12 | 18.4 | 23.1 | 31.3 | 37.0 | 65.7 | 89.0 | 2.6 | 0 | 1.8 | 6.7 |
| 11/02/12 | 16.3 | 23.3 | 31.3 | 37.0 | 61.7 | 87.0 | 1.2 | 0 | 1.9 | 7.2 |
| 12/02/12 | 13.4 | 22.8 | 32.6 | 26.0 | 60.4 | 90.0 | 0.0 | 0 | 0.4 | 2.7 |
| 13/02/12 | 16.4 | 24.0 | 32.9 | 29.0 | 57.2 | 82.0 | 0.0 | 0 | 1.5 | 6.3 |
| 14/02/12 | 16.6 | 23.7 | 31.3 | 30.0 | 53.0 | 76.0 | 0.0 | 0 | 2.2 | 4.5 |
| 15/02/12 | 16.0 | 23.2 | 31.2 | 34.0 | 59.4 | 84.0 | 0.0 | 0 | 1.6 | 4.9 |
| 16/02/12 | 15.9 | 23.0 | 31.9 | 32.0 | 58.4 | 83.0 | 0.0 | 0 | 0.9 | 2.7 |
| 17/02/12 | 15.0 | 24.2 | 34.5 | 31.0 | 57.2 | 89.0 | 0.0 | 0 | 1.0 | 4.0 |
| 18/02/12 | 16.7 | 25.2 | 33.8 | 37.0 | 56.3 | 79.0 | 0.0 | 0 | 1.3 | 7.6 |
| 19/02/12 | 17.7 | 24.6 | 33.4 | 41.0 | 67.4 | 91.0 | 5.2 | 0 | 1.1 | 7.6 |
| 20/02/12 | 18.9 | 23.0 | 33.2 | 49.0 | 81.2 | 93.0 | 43.8 | 0 | 1.4 | 12.5 |
| 21/02/12 | 18.9 | 22.5 | 28.2 | 52.0 | 75.2 | 93.0 | 0.0 | 0 | 1.4 | 4.5 |
| 22/02/12 | 17.2 | 21.2 | 25.7 | 57.0 | 70.5 | 82.0 | 0.0 | 0 | 2.0 | 4.9 |
| 23/02/12 | 16.8 | 23.6 | 32.1 | 36.0 | 63.0 | 84.0 | 0.0 | 0 | 1.3 | 3.1 |
| 24/02/12 | 15.3 | 24.5 | 31.1 | 34.0 | 56.9 | 90.0 | 0.0 | 0 | 1.9 | 4.0 |
| 25/02/12 | 16.7 | 22.6 | 27.1 | 55.0 | 65.9 | 78.0 | 0.0 | 0 | 1.5 | 4.5 |
| 26/02/12 | 18.2 | 20.7 | 23.7 | 66.0 | 83.0 | 92.0 | 25.2 | 0 | 1.2 | 3.1 |
| 27/02/12 | 19.6 | 23.8 | 30.1 | 49.0 | 70.4 | 90.0 | 0.0 | 0 | 0.4 | 1.8 |
| 28/02/12 | 17.3 | 24.5 | 32.6 | 44.0 | 70.7 | 92.0 | 0.0 | 0 | 1.0 | 5.4 |
| 29/02/12 | 20.7 | 20.8 | 20.9 | 87.0 | 87.0 | 87.0 | 0.0 | 0 | 0.0 | 0.0 |
| *Average* | 17.2 | 22.9 | 29.8 | 47.0 | 69.3 | 87.8 | | 0.1 | 1.4 | 4.8 |
| *Maximum* | 20.7 | 25.6 | 35.1 | 87.0 | 90.7 | 95.0 | 46.2 | 1.8 | 3.5 | 12.5 |
| *Minimum* | 13.4 | 18.0 | 18.8 | 26.0 | 53.0 | 76.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| *Total* | | | | | | | 167.8 | | | |

**Daily Summary March 2012 Sunnyside Weather Station**

| Date | Min Temp (°C) | Ave Temp (°C) | Max Temp (°C) | Min RH (%) | Ave RH (%) | Max RH (%) | Rain (mm) | Min WS (m/s) | Ave WS (m/s) | Max WS (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|
| 01/03/12 | *18* | 25 | 32 | *48* | *71* | *92* | 0.2 | 0 | 3 | 9 |
| 02/03/12 | **19.7** | 23.0 | 26.1 | 68.0 | 80.0 | 91.0 | 0.6 | 0.0 | 2.9 | 6.7 |
| 03/03/12 | 17.0 | 22.2 | 28.7 | 56.0 | 75.4 | 92.0 | **15.0** | 0.4 | 3.2 | 4.9 |
| 04/03/12 | 18.7 | **25.5** | 32.8 | 43.0 | 65.2 | 86.0 | 0.0 | 0.0 | 1.4 | 4.5 |
| 05/03/12 | 18.8 | 22.2 | 25.5 | **69.0** | 83.8 | 90.0 | 4.4 | 0.0 | 1.1 | 4.0 |
| 06/03/12 | 17.0 | 21.4 | 27.3 | 51.0 | 68.7 | 85.0 | 0.0 | 0.9 | 3.7 | 6.3 |
| 07/03/12 | 15.0 | 18.8 | 23.1 | 48.0 | 66.5 | 81.0 | 0.0 | 0.0 | 4.0 | 7.2 |
| 08/03/12 | 9.3 | 17.9 | 25.6 | 41.0 | 67.3 | 92.0 | 0.0 | 0.0 | 1.1 | 4.9 |
| 09/03/12 | 9.0 | 18.8 | 28.8 | 35.0 | 65.8 | 92.0 | 0.0 | 0.0 | 0.9 | 4.9 |
| 10/03/12 | 10.4 | 20.9 | 30.8 | **29.0** | 58.4 | 92.0 | 0.0 | 0.0 | 0.7 | 3.6 |
| 11/03/12 | 14.1 | 21.9 | 31.3 | 33.0 | 62.3 | 83.0 | 0.0 | 0.0 | 0.8 | 3.1 |
| 12/03/12 | 14.1 | 22.9 | 30.8 | 38.0 | 63.4 | 86.0 | 0.0 | 0.0 | 1.0 | 4.5 |
| 13/03/12 | 16.8 | 23.2 | 29.7 | 41.0 | 60.4 | 78.0 | 0.0 | 0.0 | 1.1 | 2.7 |
| 14/03/12 | 16.8 | 22.7 | 29.4 | 37.0 | 60.2 | 80.0 | 0.0 | 0.0 | 0.9 | 2.2 |
| 15/03/12 | 18.3 | 23.1 | 28.9 | 43.0 | 63.5 | 79.0 | 0.0 | 0.0 | 0.8 | 3.1 |
| 16/03/12 | 16.2 | 23.5 | 30.9 | 46.0 | 67.6 | 88.0 | 0.0 | 0.0 | 0.5 | 3.6 |
| 17/03/12 | 18.6 | 21.6 | 25.7 | 68.0 | 82.1 | 90.0 | 3.2 | 0.0 | 0.4 | 4.0 |
| 18/03/12 | 16.9 | 20.8 | 26.2 | 45.0 | 65.3 | 85.0 | 0.0 | **2.2** | **4.5** | 8.0 |
| 19/03/12 | 14.4 | 20.4 | 27.5 | 44.0 | 64.7 | 81.0 | 0.0 | 0.0 | 4.4 | 6.7 |
| 20/03/12 | 15.8 | 22.2 | 29.6 | 45.0 | 67.8 | 88.0 | 0.0 | 0.0 | 3.1 | 5.8 |
| 21/03/12 | 16.3 | 22.0 | 30.9 | 40.0 | 67.3 | 87.0 | 0.0 | 0.0 | 0.8 | 2.7 |
| 22/03/12 | 15.4 | 23.5 | **33.4** | 37.0 | 63.3 | 88.0 | 0.0 | 0.0 | **0.2** | **1.8** |
| 23/03/12 | 10.7 | 20.1 | 28.1 | 33.0 | 61.6 | 90.0 | 0.0 | 0.0 | 2.0 | 7.6 |
| 24/03/12 | **7.9** | **12.0** | **14.4** | 61.0 | 68.4 | 81.0 | 0.0 | 0.0 | 0.6 | 2.2 |
| ***Average*** | 15.2 | 21.9 | 28.7 | 45.7 | 67.3 | 86.3 | | 0.2 | 1.7 | 4.6 |
| ***Maximum*** | **19.7** | **25.5** | **33.4** | **69.0** | **83.8** | **92.0** | **15.0** | **2.2** | **4.5** | **8.5** |
| ***Minimum*** | **7.9** | **12.0** | **14.4** | **29.0** | **58.4** | **78.0** | **0.0** | **0.0** | **0.2** | **1.8** |
| ***Total*** | | | | | | | **23.4** | | | |

***Weather station malfunction***

**Daily Summary April 2012 Sunnyside Weather Station**

| Date | Min Temp (°C) | Ave Temp (°C) | Max Temp (°C) | Min RH (%) | Ave RH (%) | Max RH (%) | Rain (mm) | Min WS (m/s) | Ave WS (m/s) | Max WS (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|
| 01/04/12 | - | - | - | - | - | - | - | - | - | - |
| 02/04/12 | - | - | - | - | - | - | - | - | - | - |
| 03/04/12 | - | - | - | - | - | - | - | - | - | - |
| 04/04/12 | - | - | - | - | - | - | - | - | - | - |
| 05/04/12 | - | - | - | - | - | - | - | - | - | - |
| 06/04/12 | - | - | - | - | - | - | - | - | - | - |
| 07/04/12 | - | - | - | - | - | - | - | - | - | - |
| 08/04/12 | - | - | - | - | - | - | - | - | - | - |
| 09/04/12 | - | - | - | - | - | - | - | - | - | - |
| 10/04/12 | - | - | - | - | - | - | - | - | - | - |
| 11/04/12 | - | - | - | - | - | - | - | - | - | - |
| 12/04/12 | - | - | - | - | - | - | - | - | - | - |
| 13/04/12 | - | - | - | - | - | - | - | - | - | - |
| 14/04/12 | - | - | - | - | - | - | - | - | - | - |
| 15/04/12 | - | - | - | - | - | - | - | - | - | - |
| 16/04/12 | - | - | - | - | - | - | - | - | - | - |
| 17/04/12 | - | - | - | - | - | - | - | - | - | - |
| 18/04/12 | - | - | - | - | - | - | - | - | - | - |
| 19/04/12 | - | - | - | - | - | - | - | - | - | - |
| 20/04/12 | - | - | - | - | - | - | - | - | - | - |
| 21/04/12 | - | - | - | - | - | - | - | - | - | - |
| 22/04/12 | - | - | - | - | - | - | - | - | - | - |
| 23/04/12 | - | - | - | - | - | - | - | - | - | - |
| 24/04/12 | - | - | - | - | - | - | - | - | - | - |
| 25/04/12 | - | - | - | - | - | - | - | - | - | - |
| 26/04/12 | - | - | - | - | - | - | - | - | - | - |
| 27/04/12 | - | - | - | - | - | - | - | - | - | - |
| 28/04/12 | - | - | - | - | - | - | - | - | - | - |
| 29/04/12 | - | - | - | - | - | - | - | - | - | - |
| 30/04/12 | - | - | - | - | - | - | - | - | - | - |
| ***Average*** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | | **0.0** | **0.0** | **0.0** |
| ***Maximum*** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** |
| ***Minimum*** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** | **0.0** |
| ***Total*** | | | | | | | **0.0** | | | |

***Weather station malfunction***

**Daily Summary May 2012 Sunnyside Weather Station**

| Date | Min Temp (°C) | Ave Temp (°C) | Max Temp (°C) | Min RH (%) | Ave RH (%) | Max RH (%) | Rain (mm) | Min WS (m/s) | Ave WS (m/s) | Max WS (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|
| 04/05/12 | 9 | 17 | 23 | 37 | 45 | 67 | 0.0 | 0 | 3 | 8 |
| 05/05/12 | 3 | 12 | 22 | 38 | 65 | 89 | 0.0 | 0 | 1 | 5 |
| 06/05/12 | 3 | 11 | 21 | 33 | 64 | 91 | 0.0 | 0 | 0 | 3 |
| 07/05/12 | 6 | 13 | 23 | 31 | 60 | 88 | 0.0 | 0 | 1 | 4 |
| 08/05/12 | 3 | 13 | 25 | 29 | 65 | 90 | 0.0 | 0 | 0 | 2 |
| 09/05/12 | 3 | 14 | 27 | 25 | 62 | 90 | 0.0 | 0 | 0 | 3 |
| 10/05/12 | 4 | 14 | 28 | 25 | 61 | 90 | 0.0 | 0 | 0 | 4 |
| 11/05/12 | 4 | 14 | 27 | 29 | 62 | 89 | 0.0 | 0 | 0 | 3 |
| 12/05/12 | 4 | 14 | 25 | 33 | 60 | 87 | 0.4 | 0 | 1 | 6 |
| 13/05/12 | -1 | 9 | 18 | 35 | 62 | 89 | 0.0 | 0 | 1 | 7 |
| 14/05/12 | 0 | 9 | 19 | 30 | 61 | 89 | 0.0 | 0 | 0 | 3 |
| 15/05/12 | -2 | 9 | 20 | 25 | 59 | 90 | 0.0 | 0 | 0 | 1 |
| 16/05/12 | -1 | 9 | 23 | 24 | 62 | 90 | 0.0 | 0 | 0 | 1 |
| 17/05/12 | 2 | 11 | 23 | 26 | 64 | 91 | 0.0 | 0 | 0 | 2 |
| 18/05/12 | 1 | 10 | 24 | 23 | 61 | 89 | 0.0 | 0 | 0 | 1 |
| 19/05/12 | 0 | 9 | 23 | 25 | 59 | 87 | 0.0 | 0 | 0 | 3 |
| 20/05/12 | 0 | 10 | 21 | 23 | 57 | 88 | 0.0 | 0 | 1 | 3 |
| 21/05/12 | 5 | 13 | 23 | 40 | 65 | 87 | 0.0 | 0 | 1 | 3 |
| 22/05/12 | 1 | 10 | 23 | 26 | 64 | 91 | 0.0 | 0 | 0 | 2 |
| 23/05/12 | -1 | 10 | 23 | 25 | 59 | 88 | 0.0 | 0 | 0 | 2 |
| 24/05/12 | 12 | 16 | 21 | 43 | 72 | 92 | 24.4 | 0 | 0 | 3 |
| 25/05/12 | 5 | 11 | 16 | 58 | 83 | 93 | 12.4 | 0 | 2 | 7 |
| 26/05/12 | 1 | 7 | 16 | 51 | 76 | 92 | 0.0 | 0 | 0 | 2 |
| 27/05/12 | 2 | 9 | 18 | 47 | 77 | 92 | 0.2 | 0 | 0 | 2 |
| 28/05/12 | 3 | 11 | 19 | 51 | 72 | 97 | 0.2 | 0 | 2 | 5 |
| 29/05/12 | 4 | 13 | 20 | 51 | 72 | 90 | 0.0 | 0 | 2 | 5 |
| 30/05/12 | 8 | 14 | 20 | 46 | 67 | 87 | 0.0 | 0 | 2 | 4 |
| 31/05/12 | 7 | 13 | 21 | 43 | 67 | 89 | 0.0 | 0 | 1 | 5 |
| ***Average*** | 3.0 | 11.7 | 21.9 | 34.7 | 64.4 | 89.0 | | 0.0 | 0.8 | 3.4 |
| ***Maximum*** | 11.5 | 17.2 | 28.3 | 58.0 | 82.8 | 97.0 | 24.4 | 0.0 | 2.9 | 8.0 |
| ***Minimum*** | -1.9 | 7.3 | 15.6 | 23.0 | 44.8 | 67.0 | 0.0 | 0.0 | 0.1 | 1.3 |
| ***Total*** | | | | | | | 37.6 | | | |

***Weather station malfunction***

**Daily Summary June 2012 Sunnyside Weather Station**

| Date | Min Temp (°C) | Ave Temp (°C) | Max Temp (°C) | Min RH (%) | Ave RH (%) | Max RH (%) | Rain (mm) | Min WS (m/s) | Ave WS (m/s) | Max WS (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|
| 01/06/12 | 9 | 14 | 19 | 56 | 72 | 87 | 0.6 | 0 | 1 | 4 |
| 02/06/12 | 13 | 13 | 14 | 76 | 87 | 91 | 11.2 | 0 | 1 | 3 |
| 03/06/12 | 10 | 13 | 15 | 86 | 91 | 95 | 16.6 | 0 | 0 | 3 |
| 04/06/12 | 6 | 12 | 17 | 63 | 84 | 93 | 1.4 | 0 | 2 | 6 |
| 05/06/12 | 1 | 7 | 12 | 69 | 85 | 92 | 0.6 | 0 | 1 | 6 |
| 06/06/12 | 6 | 11 | 16 | 55 | 74 | 90 | 0.0 | 0 | 2 | 6 |
| 07/06/12 | 7 | 11 | 16 | 55 | 73 | 88 | 0.0 | 0 | 2 | 5 |
| 08/06/12 | 4 | 10 | 19 | 37 | 72 | 90 | 0.0 | 0 | 0 | 2 |
| 09/06/12 | 3 | 9 | 19 | 40 | 71 | 89 | 0.0 | 0 | 1 | 3 |
| 10/06/12 | 2 | 11 | 18 | 35 | 66 | 90 | 0.0 | 0 | 1 | 5 |
| 11/06/12 | 7 | 12 | 16 | 66 | 77 | 90 | 0.0 | 0 | 3 | 5 |
| 12/06/12 | 8 | 13 | 18 | 59 | 74 | 89 | 0.0 | 0 | 3 | 6 |
| 13/06/12 | 5 | 13 | 19 | 51 | 75 | 91 | 0.0 | 0 | 2 | 5 |
| 14/06/12 | 5 | 11 | 21 | 43 | 74 | 91 | 0.2 | 0 | 1 | 3 |
| 15/06/12 | 3 | 11 | 23 | 41 | 74 | 92 | 0.2 | 0 | 1 | 5 |
| 16/06/12 | 8 | 13 | 19 | 53 | 77 | 91 | 2.8 | 0 | 1 | 4 |
| 17/06/12 | 2 | 10 | 17 | 45 | 79 | 93 | 0.2 | 0 | 0 | 2 |
| 18/06/12 | 3 | 10 | 18 | 45 | 73 | 91 | 0.0 | 0 | 1 | 3 |
| 19/06/12 | -1 | 8 | 18 | 48 | 75 | 92 | 0.0 | 0 | 1 | 4 |
| 20/06/12 | -1 | 7 | 18 | 43 | 78 | 92 | 0.2 | 0 | 0 | 1 |
| 21/06/12 | -1 | 9 | 19 | 39 | 67 | 92 | 0.2 | 0 | 1 | 6 |
| 22/06/12 | 3 | 11 | 15 | 60 | 71 | 90 | 0.0 | 0 | 2 | 6 |
| 23/06/12 | -2 | 5 | 14 | 50 | 78 | 92 | 0.2 | 0 | 0 | 2 |
| 24/06/12 | -4 | 5 | 16 | 42 | 74 | 91 | 0.2 | 0 | 0 | 2 |
| 25/06/12 | -3 | 6 | 18 | 37 | 73 | 92 | 0.2 | 0 | 0 | 2 |
| 26/06/12 | 0 | 10 | 19 | 43 | 73 | 91 | 0.0 | 0 | 2 | 5 |
| 27/06/12 | 9 | 12 | 15 | 67 | 80 | 89 | 2.4 | 0 | 2 | 5 |
| 28/06/12 | 9 | 13 | 19 | 49 | 71 | 84 | 0.2 | 0 | 1 | 5 |
| 29/06/12 | 6 | 12 | 20 | 54 | 78 | 90 | 0.0 | 0 | 0 | 2 |
| 30/06/12 | 4 | 11 | 20 | 39 | 73 | 92 | 0.0 | 0 | 1 | 5 |
| ***Average*** | 4.1 | 10.4 | 17.6 | 51.5 | 75.7 | 90.7 | | 0.0 | 1.2 | 4.0 |
| ***Maximum*** | 12.6 | 14.2 | 22.6 | 86.0 | 90.9 | 95.0 | 16.6 | 0.0 | 3.1 | 6.3 |
| ***Minimum*** | -3.7 | 4.9 | 11.6 | 35.0 | 66.0 | 84.0 | 0.0 | 0.0 | 0.2 | 1.3 |
| ***Total*** | | | | | | | 37.4 | | | |

**Daily Summary July 2012 Sunnyside Weather Station**

| Date | Min Temp (°C) | Ave Temp (°C) | Max Temp (°C) | Min RH (%) | Ave RH (%) | Max RH (%) | Rain (mm) | Min WS (m/s) | Ave WS (m/s) | Max WS (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|
| 01/07/12 | -1 | 8 | 16 | 38 | 67 | 88 | 0.0 | 0 | 1 | 6 |
| 02/07/12 | -2 | 6 | 14 | 51 | 74 | 91 | 0.0 | 0 | 1 | 6 |
| 03/07/12 | -1 | 8 | 15 | 45 | 69 | 91 | 0.0 | 0 | 1 | 5 |
| 04/07/12 | -3 | 6 | 15 | 45 | 72 | 90 | 0.0 | 0 | 0 | 2 |
| 05/07/12 | 2 | 9 | 16 | 49 | 69 | 91 | 0.0 | 0 | 2 | 5 |
| 06/07/12 | 5 | 10 | 16 | 52 | 71 | 85 | 0.0 | 0 | 2 | 6 |
| 07/07/12 | 3 | 10 | 18 | 36 | 67 | 90 | 0.0 | 0 | 2 | 4 |
| 08/07/12 | 5 | 11 | 18 | 36 | 64 | 81 | 0.0 | 0 | 1 | 2 |
| 09/07/12 | 6 | 12 | 19 | 35 | 61 | 82 | 0.0 | 0 | 1 | 3 |
| 10/07/12 | 9 | 14 | 20 | 49 | 69 | 88 | 3.4 | 0 | 2 | 4 |
| 11/07/12 | 11 | 14 | 19 | 68 | 86 | 93 | 20.8 | 0 | 0 | 4 |
| 12/07/12 | 11 | 14 | 16 | 90 | 92 | 93 | 20.4 | 0 | 0 | 0 |
| 13/07/12 | 12 | 15 | 16 | 93 | 93 | 94 | 15.6 | 0 | 0 | 3 |
| 14/07/12 | 10 | 12 | 15 | 68 | 88 | 93 | 3.8 | 0 | 0 | 6 |
| 15/07/12 | 2 | 9 | 15 | 49 | 79 | 93 | 0.2 | 0 | 1 | 4 |
| 16/07/12 | -1 | 7 | 17 | 47 | 76 | 91 | 0.2 | 0 | 0 | 1 |
| 17/07/12 | 2 | 11 | 20 | 44 | 72 | 91 | 0.2 | 0 | 0 | 2 |
| 18/07/12 | -2 | 8 | 19 | 34 | 69 | 91 | 3.0 | 0 | 1 | 6 |
| 19/07/12 | -2 | 6 | 18 | 34 | 68 | 90 | 0.0 | 0 | 0 | 1 |
| 20/07/12 | -2 | 8 | 19 | 33 | 66 | 89 | 0.0 | 0 | 0 | 1 |
| ***Average*** | 3.2 | 10.0 | 17.1 | 49.8 | 73.6 | 89.8 | | 0.0 | 0.9 | 3.6 |
| ***Maximum*** | 12.2 | 14.9 | 20.0 | 93.0 | 93.0 | 94.0 | 20.8 | 0.0 | 2.5 | 6.3 |
| ***Minimum*** | -3.4 | 5.7 | 14.1 | 33.0 | 60.9 | 81.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| ***Total*** | | | | | | | 67.6 | | | |

***Weather station malfunction***

**Daily Summary August 2012 Sunnyside Weather Station**

| Date | Min Temp (°C) | Ave Temp (°C) | Max Temp (°C) | Min RH (%) | Ave RH (%) | Max RH (%) | Rain (mm) | Min WS (m/s) | Ave WS (m/s) | Max WS (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|
| 09/08/12 | 3 | 11 | 16 | 44 | 55 | 76 | 0.0 | 0 | 1 | 5 |
| 10/08/12 | 3 | 9 | 15 | 39 | 58 | 80 | 0.0 | 0 | 5 | 8 |
| 11/08/12 | 4 | 10 | 17 | 43 | 61 | 83 | 0.0 | 0 | 2 | 5 |
| 12/08/12 | 5 | 11 | 17 | 43 | 62 | 79 | 0.0 | 0 | 2 | 6 |
| 13/08/12 | 3 | 11 | 20 | 39 | 66 | 89 | 0.0 | 0 | 1 | 3 |
| 14/08/12 | 0 | 9 | 21 | 33 | 69 | 91 | 0.0 | 0 | 1 | 4 |
| 15/08/12 | 1 | 10 | 23 | 28 | 62 | 88 | 0.0 | 0 | 2 | 8 |
| 16/08/12 | 1 | 10 | 21 | 31 | 61 | 86 | 0.0 | 0 | 1 | 5 |
| 17/08/12 | 0 | 10 | 21 | 29 | 59 | 90 | 0.0 | 0 | 4 | 10 |
| 18/08/12 | 1 | 9 | 17 | 41 | 59 | 80 | 0.0 | 0 | 3 | 7 |
| 19/08/12 | 2 | 9 | 19 | 35 | 65 | 89 | 0.0 | 0 | 0 | 2 |
| 20/08/12 | -1 | 8 | 19 | 33 | 66 | 90 | 0.0 | 0 | 0 | 3 |
| 21/08/12 | 2 | 12 | 22 | 40 | 63 | 83 | 0.0 | 0 | 1 | 5 |
| 22/08/12 | 10 | 16 | 24 | 46 | 71 | 90 | 2.2 | 0 | 2 | 7 |
| 23/08/12 | 10 | 17 | 24 | 46 | 74 | 92 | 6.8 | 0 | 1 | 10 |
| 24/08/12 | 3 | 12 | 20 | 34 | 65 | 92 | 0.2 | 0 | 1 | 5 |
| 25/08/12 | 2 | 11 | 20 | 38 | 65 | 88 | 0.0 | 0 | 1 | 4 |
| 26/08/12 | 2 | 10 | 18 | 37 | 63 | 92 | 0.0 | 0 | 1 | 5 |
| 27/08/12 | -1 | 9 | 21 | 31 | 64 | 90 | 0.0 | 0 | 0 | 3 |
| 28/08/12 | 2 | 12 | 21 | 40 | 67 | 89 | 0.0 | 0 | 1 | 5 |
| 29/08/12 | 3 | 14 | 24 | 40 | 66 | 90 | 0.0 | 0 | 2 | 8 |
| 30/08/12 | 9 | 16 | 23 | 30 | 54 | 84 | 0.0 | 0 | 3 | 7 |
| 31/08/12 | 2 | 9 | 18 | 30 | 57 | 84 | 0.0 | 0 | 2 | 7 |
| ***Average*** | 2.8 | 11.1 | 20.0 | 37 | 63 | 87 | | 0.0 | 1.5 | 5.7 |
| ***Maximum*** | 10.3 | 16.7 | 24.2 | 46.0 | 74.1 | 92.0 | 6.8 | 0.0 | 4.7 | 10.3 |
| ***Minimum*** | -0.7 | 7.8 | 15.0 | 28.0 | 54.0 | 76.0 | 0.0 | 0.0 | 0.3 | 2.2 |
| ***Total*** | | | | | | | 9.2 | | | |

***Weather station malfunction***

**Daily Summary September 2012 Sunnyside Weather Station**

| Date | Min Temp (°C) | Ave Temp (°C) | Max Temp (°C) | Min RH (%) | Ave RH (%) | Max RH (%) | Rain (mm) | Min WS (m/s) | Ave WS (m/s) | Max WS (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|
| 01/09/12 | 8.5 | 20.9 | 17.2 | 25.0 | 57.2 | 85.0 | 0.0 | 0 | 1.2 | 3.6 |
| 02/09/12 | 10.1 | 23.3 | 20.9 | 28.0 | 62.4 | 90.0 | 0.0 | 0 | 0.3 | 2.2 |
| 03/09/12 | 11.4 | 24.8 | 23.3 | 25.0 | 59.2 | 89.0 | 0.0 | 0 | 0.3 | 2.2 |
| 04/09/12 | 14.2 | 24.2 | 24.8 | 25.0 | 56.6 | 87.0 | 0.0 | 0 | 0.3 | 2.7 |
| 05/09/12 | 18.3 | 25.4 | 24.2 | 33.0 | 53.1 | 88.0 | 0.0 | 0 | 3.3 | 9.4 |
| 06/09/12 | 11.9 | 23.2 | 25.4 | 35.0 | 51.8 | 80.0 | 0.0 | 0 | 4.9 | 10.3 |
| 07/09/12 | 9.8 | 20.7 | 23.2 | 28.0 | 56.4 | 90.0 | 0.0 | 0 | 2.7 | 9.8 |
| 08/09/12 | 10.7 | 21.8 | 20.7 | 34.0 | 60.9 | 88.0 | 0.0 | 0 | 1.8 | 7.6 |
| 09/09/12 | 15.2 | 24.6 | 21.8 | 32.0 | 63.6 | 89.0 | 0.0 | 0 | 0.4 | 3.1 |
| 10/09/12 | 15.7 | 26.3 | 24.6 | 37.0 | 59.3 | 81.0 | 0.0 | 0 | 0.8 | 4.0 |
| 11/09/12 | 16.5 | 26.7 | 26.3 | 34.0 | 63.7 | 88.0 | 0.0 | 0 | 0.4 | 2.2 |
| 12/09/12 | 14.2 | 27.2 | 26.7 | 32.0 | 60.0 | 84.0 | 0.0 | 0 | 1.7 | 7.2 |
| 13/09/12 | 12.2 | 19.8 | 27.2 | 29.0 | 63.6 | 85.0 | 0.0 | 0 | 4.5 | 12.1 |
| 14/09/12 | 12.2 | 22.5 | 19.8 | 23.0 | 48.8 | 87.0 | 0.0 | 0 | 2.1 | 6.3 |
| 15/09/12 | 14.8 | 23.7 | 22.5 | 30.0 | 54.5 | 86.0 | 0.0 | 0 | 0.7 | 4.0 |
| 16/09/12 | 15.1 | 24.2 | 23.7 | 37.0 | 59.1 | 80.0 | 0.0 | 0 | 1.2 | 5.4 |
| 17/09/12 | 14.9 | 23.9 | 24.2 | 39.0 | 63.9 | 89.0 | 0.0 | 0 | 1.5 | 5.4 |
| 18/09/12 | 14.3 | 24.5 | 23.9 | 43.0 | 71.6 | 90.0 | 3.8 | 0 | 0.9 | 7.6 |
| 19/09/12 | 17.2 | 29.5 | 24.5 | 31.0 | 67.0 | 91.0 | 0.0 | 0 | 0.8 | 5.4 |
| 20/09/12 | 19.5 | 27.8 | 29.5 | 26.0 | 53.9 | 89.0 | 0.0 | 0 | 0.4 | 2.2 |
| 21/09/12 | 15.6 | 26.1 | 27.8 | 36.0 | 55.8 | 73.0 | 0.2 | 0 | 2.0 | 9.4 |
| 22/09/12 | 16.2 | 29.7 | 26.1 | 24.0 | 51.5 | 87.0 | 0.0 | 0 | 0.7 | 4.5 |
| 23/09/12 | 17.2 | 24.1 | 29.7 | 22.0 | 52.5 | 85.0 | 0.0 | 0 | 0.5 | 2.2 |
| 24/09/12 | 15.5 | 27.2 | 24.1 | 25.0 | 43.3 | 77.0 | 0.0 | 0 | 2.9 | 6.3 |
| 25/09/12 | 17.5 | 26.6 | 27.2 | 20.0 | 47.9 | 79.0 | 0.0 | 0 | 1.3 | 4.9 |
| 26/09/12 | 18.5 | 28.0 | 26.6 | 31.0 | 56.8 | 75.0 | 0.0 | 0 | 0.8 | 3.1 |
| 27/09/12 | 21.1 | 30.1 | 28.0 | 38.0 | 60.4 | 86.0 | 0.0 | 0 | 0.7 | 4.0 |
| 28/09/12 | 17.6 | 23.7 | 30.1 | 34.0 | 54.7 | 85.0 | 0.0 | 0 | 2.8 | 8.5 |
| 29/09/12 | 13.0 | 20.8 | 23.7 | 44.0 | 68.9 | 92.0 | 14.2 | 0 | 4.2 | 8.0 |
| 30/09/12 | 11.3 | 11.3 | 20.8 | 25.0 | 49.6 | 90.0 | 0.0 | 0 | 1.1 | 4.5 |
| ***Average*** | 14.7 | 24.4 | 24.6 | 31 | 58 | 86 | | 0.0 | 1.6 | 5.6 |
| ***Maximum*** | 21.1 | 30.1 | 30.1 | 44.0 | 71.6 | 92.0 | 14.2 | 0.0 | 4.9 | 12.1 |
| ***Minimum*** | 8.5 | 11.3 | 17.2 | 20.0 | 43.3 | 73.0 | 0.0 | 0.0 | 0.3 | 2.2 |
| ***Total*** | | | | | | | 18.2 | | | |

**Daily Summary October 2012 Sunnyside Weather Station**

| Date | Min Temp (°C) | Ave Temp (°C) | Max Temp (°C) | Min RH (%) | Ave RH (%) | Max RH (%) | Rain (mm) | Min WS (m/s) | Ave WS (m/s) | Max WS (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|
| 01/10/12 | 2.1 | 14.2 | 24.0 | 29.0 | 53.3 | 89.0 | 0.0 | 0.0 | 0.6 | 2.7 |
| 02/10/12 | 9.9 | 16.8 | 23.6 | 29.0 | 53.0 | 78.0 | 0.0 | 0.0 | 2.1 | 4.0 |
| 03/10/12 | 8.9 | 17.4 | 27.4 | 29.0 | 55.1 | 80.0 | 0.0 | 0.0 | 0.4 | 2.2 |
| 04/10/12 | 6.8 | 17.9 | 29.9 | 26.0 | 56.5 | 88.0 | 0.0 | 0.0 | 0.8 | 3.6 |
| 05/10/12 | 9.2 | 21.0 | 33.6 | 23.0 | 48.9 | 79.0 | 0.0 | 0.0 | 1.3 | 5.8 |
| 06/10/12 | 11.6 | 23.1 | 33.4 | 20.0 | 40.8 | 71.0 | 0.0 | 0.0 | 2.2 | 7.6 |
| 07/10/12 | 12.2 | 19.3 | 26.3 | 19.0 | 38.9 | 65.0 | 0.0 | 0.0 | 2.6 | 5.4 |
| 08/10/12 | 10.1 | 16.9 | 26.7 | 21.0 | 45.5 | 69.0 | 0.0 | 0.0 | 1.8 | 4.9 |
| 09/10/12 | 5.9 | 16.4 | 25.7 | 27.0 | 44.8 | 73.0 | 0.0 | 0.0 | 1.4 | 5.4 |
| 10/10/12 | 5.7 | 18.5 | 30.2 | 22.0 | 45.6 | 82.0 | 0.0 | 0.0 | 1.7 | 6.3 |
| 11/10/12 | 3.8 | 13.5 | 18.8 | 36.0 | 60.4 | 85.0 | 0.0 | 0.0 | 1.8 | 6.3 |
| 12/10/12 | 2.7 | 9.4 | 16.8 | 43.0 | 67.7 | 89.0 | 0.0 | 0.0 | 3.0 | 10.3 |
| 13/10/12 | 0.8 | 12.5 | 23.1 | 26.0 | 55.5 | 92.0 | 0.0 | 0.0 | 1.5 | 4.9 |
| 14/10/12 | 2.9 | 14.5 | 23.7 | 27.0 | 51.5 | 86.0 | 0.0 | 0.0 | 0.9 | 3.6 |
| 15/10/12 | 8.6 | 17.4 | 28.3 | 22.0 | 50.3 | 78.0 | 0.0 | 0.0 | 0.8 | 2.7 |
| 16/10/12 | 5.6 | 18.5 | 30.3 | 26.0 | 50.3 | 79.0 | 0.0 | 0.0 | 1.2 | 4.5 |
| 17/10/12 | 10.1 | 23.2 | 34.3 | 16.0 | 39.9 | 79.0 | 0.0 | 0.0 | 3.2 | 7.2 |
| 18/10/12 | 5.9 | 21.0 | 34.6 | 21.0 | 41.7 | 81.0 | 0.0 | 0.0 | 1.0 | 4.5 |
| 19/10/12 | 11.0 | 21.6 | 31.6 | 28.0 | 49.9 | 73.0 | 0.0 | 0.0 | 0.9 | 4.5 |
| 20/10/12 | 12.5 | 24.4 | 36.0 | 12.0 | 37.3 | 74.0 | 0.0 | 0.0 | 2.7 | 9.8 |
| 21/10/12 | 11.2 | 18.8 | 30.9 | 25.0 | 54.9 | 87.0 | 0.0 | 0.0 | 0.8 | 10.3 |
| 22/10/12 | 9.6 | 17.7 | 27.3 | 17.0 | 51.8 | 91.0 | 0.0 | 0.0 | 4.2 | 9.4 |
| 23/10/12 | 10.1 | 16.8 | 24.3 | 24.0 | 43.9 | 62.0 | 0.0 | 0.0 | 3.9 | 9.4 |
| 24/10/12 | 8.8 | 18.0 | 29.9 | 19.0 | 43.0 | 71.0 | 0.0 | 0.0 | 1.0 | 4.0 |
| 25/10/12 | 6.5 | 20.2 | 32.7 | 22.0 | 42.8 | 69.0 | 0.0 | 0.0 | 1.8 | 5.4 |
| 26/10/12 | 12.3 | 22.0 | 31.6 | 23.0 | 43.4 | 78.0 | 0.0 | 0.0 | 2.3 | 9.4 |
| 27/10/12 | 11.3 | 23.8 | 33.1 | 22.0 | 39.8 | 81.0 | 0.0 | 0.0 | 0.8 | 3.1 |
| *Average* | 8.0 | 18.3 | 28.4 | 24.2 | 48.4 | 78.9 | | 0.0 | 1.7 | 5.8 |
| *Maximum* | 12.5 | 24.4 | 36.0 | 43.0 | 67.7 | 92.0 | 0.0 | 0.0 | 4.2 | 10.3 |
| *Minimum* | 0.8 | 9.4 | 16.8 | 12.0 | 37.3 | 62.0 | 0.0 | 0.0 | 0.4 | 2.2 |
| *Total* | | | | | | | 0.0 | | | |

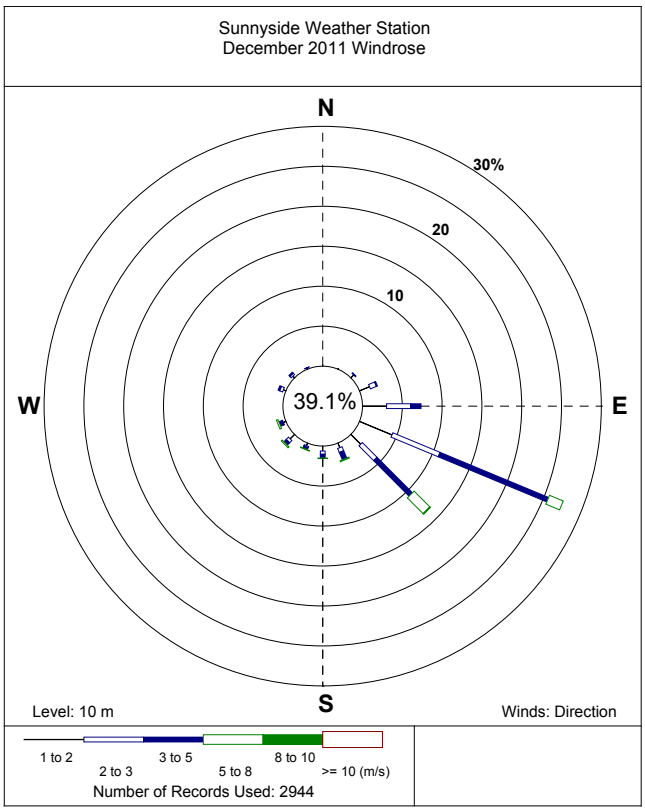
**Weather station malfunction*

**Daily Summary November 2012 Sunnyside Weather Station**

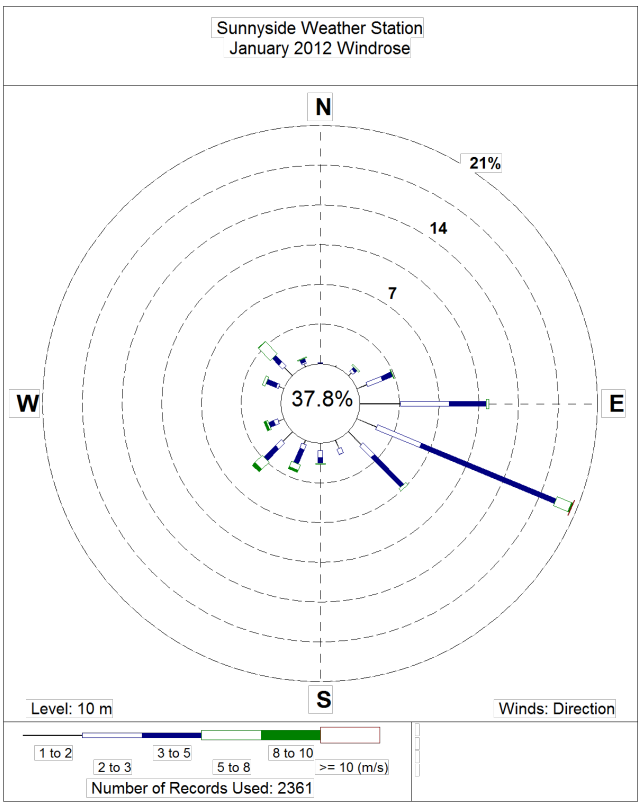
| Date | Min Temp (°C) | Ave Temp (°C) | Max Temp (°C) | Min RH (%) | Ave RH (%) | Max RH (%) | Rain (mm) | Min WS (m/s) | Ave WS (m/s) | Max WS (m/s) |
|---|---|---|---|---|---|---|---|---|---|---|
| 01/11/12 | 10.9 | 24.0 | 35.3 | 22.0 | 42.3 | 75.0 | 0.0 | 0.0 | 3.6 | 11.2 |
| 02/11/12 | 11.7 | 21.4 | 29.8 | 19.0 | 35.8 | 59.0 | 0.0 | 0.0 | 2.7 | 7.2 |
| 03/11/12 | 13.7 | 19.8 | 25.6 | 39.0 | 49.4 | 63.0 | 0.0 | 0.0 | 2.8 | 5.4 |
| 04/11/12 | 15.9 | 22.4 | 31.1 | 32.0 | 50.2 | 68.0 | 0.0 | 0.0 | 0.8 | 3.6 |
| 05/11/12 | 13.4 | 24.1 | 33.6 | 27.0 | 49.1 | 80.0 | 0.0 | 0.0 | 0.7 | 3.1 |
| 06/11/12 | 19.6 | 26.9 | 34.6 | 25.0 | 42.4 | 64.0 | 0.0 | 0.0 | 1.2 | 4.9 |
| 07/11/12 | 17.3 | 25.1 | 33.3 | 28.0 | 47.6 | 75.0 | 0.0 | 0.0 | 3.5 | 8.5 |
| 08/11/12 | 18.1 | 23.6 | 32.3 | 35.0 | 63.3 | 86.0 | 0.4 | 0.0 | 2.0 | 8.0 |
| 09/11/12 | 18.4 | 22.3 | 29.2 | 37.0 | 65.8 | 91.0 | 0.6 | 0.0 | 1.1 | 5.4 |
| 10/11/12 | 14.6 | 20.2 | 26.0 | 37.0 | 53.4 | 70.0 | 0.0 | 0.0 | 3.0 | 6.7 |
| 11/11/12 | 12.8 | 19.7 | 27.2 | 27.0 | 47.4 | 71.0 | 0.0 | 0.4 | 2.7 | 4.5 |
| 12/11/12 | 11.2 | 21.1 | 32.0 | 22.0 | 43.6 | 70.0 | 0.0 | 0.0 | 0.8 | 2.7 |
| 13/11/12 | 11.6 | 23.5 | 34.4 | 23.0 | 43.3 | 66.0 | 0.4 | 0.0 | 1.5 | 7.6 |
| 14/11/12 | 17.1 | 26.4 | 35.7 | 22.0 | 42.0 | 74.0 | 0.0 | 0.0 | 3.0 | 8.0 |
| 15/11/12 | 13.1 | 26.2 | 36.7 | 16.0 | 39.6 | 85.0 | 0.0 | 0.0 | 1.6 | 5.4 |
| 16/11/12 | 16.5 | 22.7 | 29.3 | 23.0 | 44.1 | 86.0 | 0.4 | 0.0 | 2.6 | 8.9 |
| 17/11/12 | 14.3 | 22.2 | 32.6 | 28.0 | 58.8 | 85.0 | 0.0 | 0.0 | 3.2 | 8.0 |
| 18/11/12 | 15.0 | 23.1 | 31.9 | 19.0 | 49.1 | 87.0 | 6.8 | 0.0 | 2.3 | 6.7 |
| 19/11/12 | 9.1 | 21.2 | 28.8 | 18.0 | 36.2 | 75.0 | 0.0 | 0.0 | 3.1 | 9.4 |
| 20/11/12 | 13.4 | 20.3 | 28.1 | 34.0 | 51.0 | 69.0 | 0.0 | 0.9 | 4.3 | 8.5 |
| 21/11/12 | 13.3 | 22.8 | 33.8 | 24.0 | 45.5 | 69.0 | 0.0 | 0.0 | 1.1 | 4.0 |
| 22/11/12 | 14.7 | 25.2 | 37.6 | 17.0 | 43.5 | 66.0 | 0.0 | 0.0 | 3.0 | 7.6 |
| 23/11/12 | 16.7 | 24.7 | 34.1 | 28.0 | 52.1 | 72.0 | 0.0 | 0.0 | 3.5 | 6.7 |
| 24/11/12 | 19.4 | 26.4 | 36.2 | 25.0 | 50.3 | 70.0 | 0.0 | 0.0 | 2.6 | 5.4 |
| 25/11/12 | 17.5 | 27.4 | 36.3 | 29.0 | 49.2 | 79.0 | 0.0 | 0.0 | 1.5 | 7.6 |
| 26/11/12 | 18.7 | 27.7 | 37.2 | 29.0 | 50.4 | 85.0 | 0.0 | 0.0 | 2.0 | 8.9 |
| 27/11/12 | 19.3 | 24.6 | 32.1 | 39.0 | 66.9 | 90.0 | 0.2 | 0.0 | 0.8 | 4.0 |
| 28/11/12 | 19.0 | 27.5 | 35.9 | 31.0 | 55.5 | 87.0 | 1.8 | 0.0 | 1.4 | 7.6 |
| 29/11/12 | 17.9 | 27.2 | 38.1 | 30.0 | 62.1 | 92.0 | 4.4 | 0.0 | 0.6 | 3.6 |
| 30/11/12 | 19.8 | 31.0 | 40.2 | 26.0 | 46.5 | 81.0 | 0.0 | 0.0 | 1.0 | 4.5 |
| ***Average*** | 15.5 | 24.0 | 33.0 | 27.0 | 49.2 | 76.3 | | 0.0 | 2.1 | 6.5 |
| ***Maximum*** | 19.8 | 31.0 | 40.2 | 39.0 | 66.9 | 92.0 | 6.8 | 0.9 | 4.3 | 11.2 |
| ***Minimum*** | 9.1 | 19.7 | 25.6 | 16.0 | 35.8 | 59.0 | 0.0 | 0.0 | 0.6 | 2.7 |
| ***Total*** | | | | | | | 15.0 | | | |

# Sunnyside Wind Roses

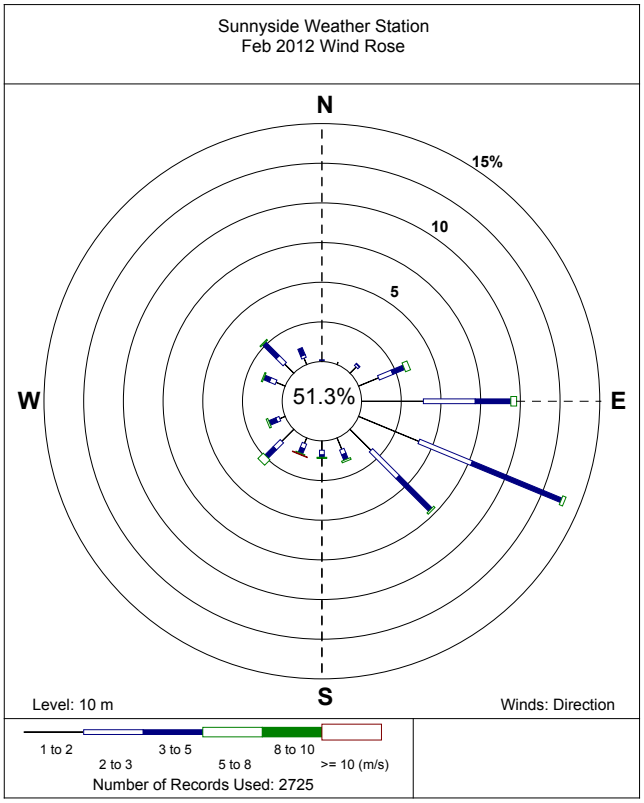
## December 2011



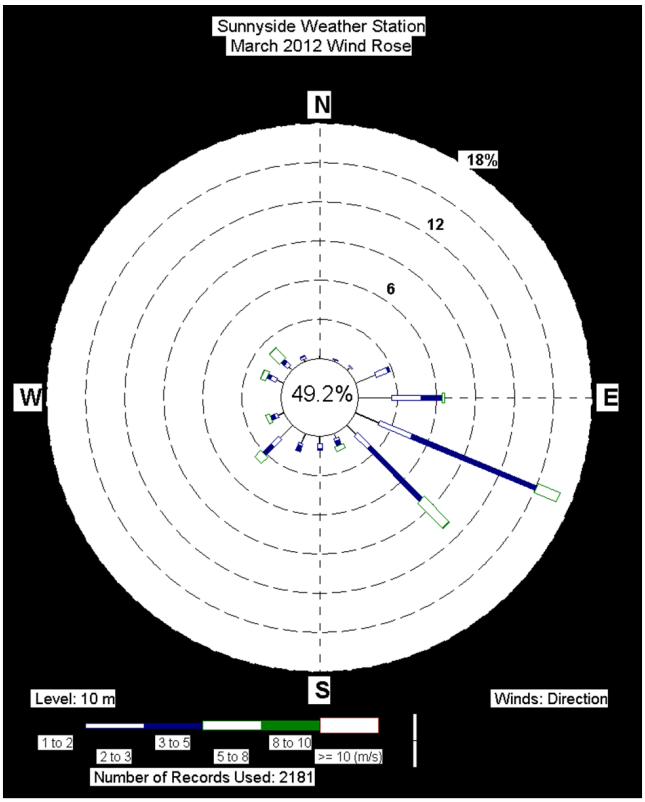

## January 2012



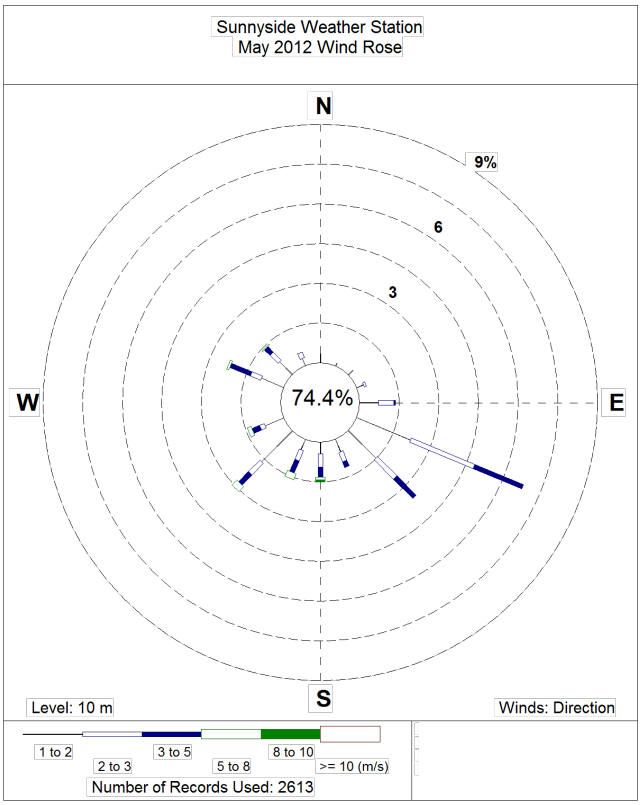
## February 2012



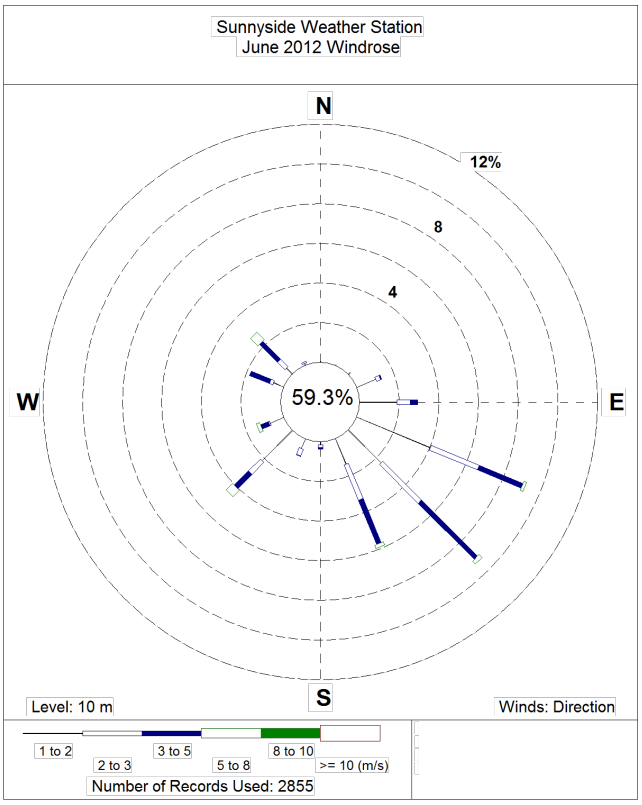

## March 2012



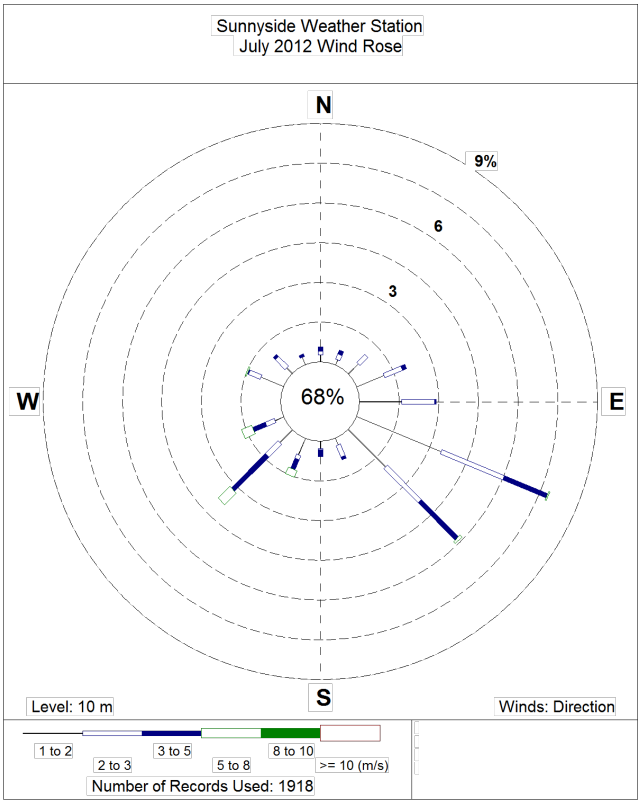
## May 2012



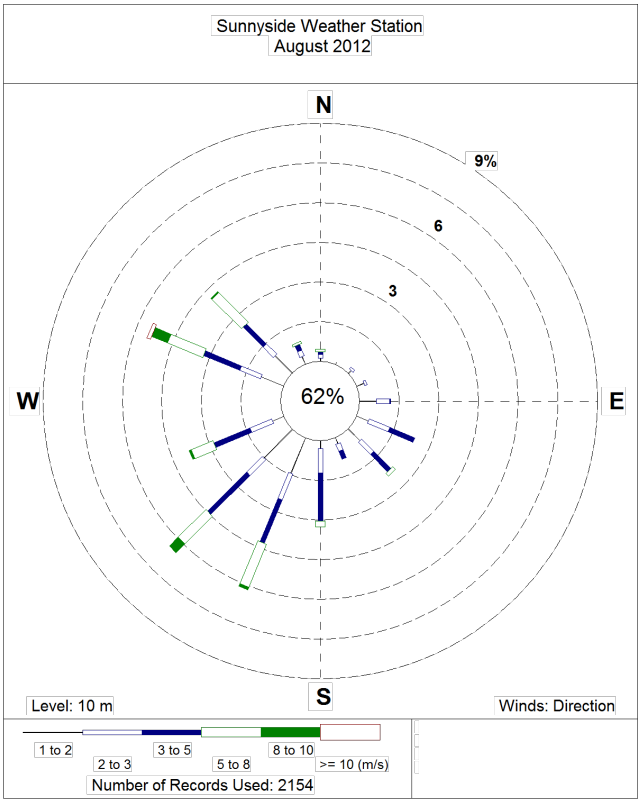

## June 2012



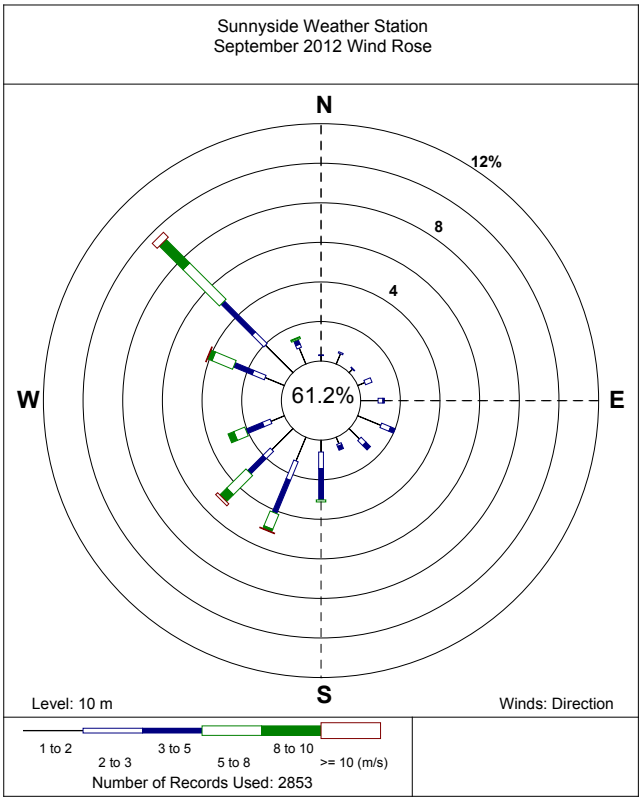
## July 2012



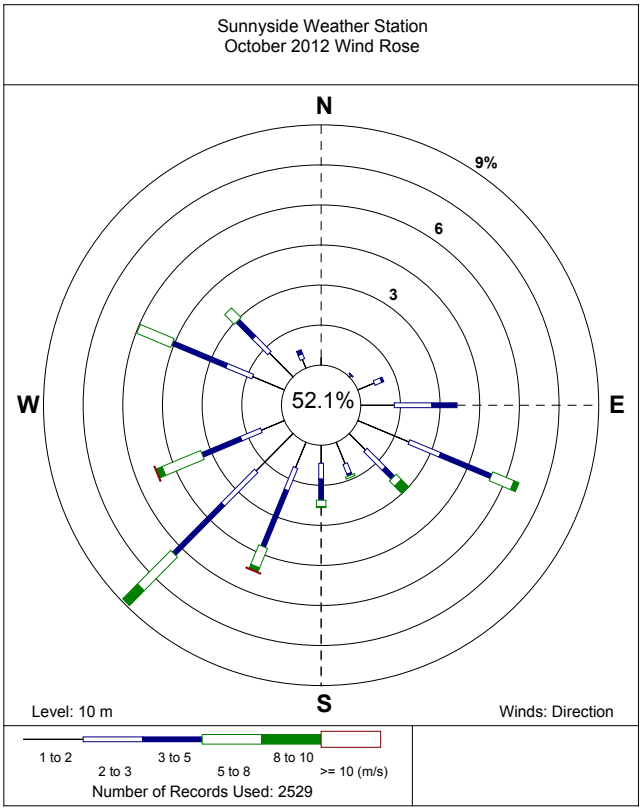

## August 2012



## September 2012




## October 2012



## November 2012