



AUSTAR COAL MINE

Annual Environmental Management Report

July 2007 – June 2008

TITLE BLOCK

Name of mine: Austar Coal Mine (previously known as Southland Colliery)

Titles/Mining Leases: Refer to Table 1 and 2

MOP Commencement Date: May 2008 / **MOP Completion Date:** May 2015

AEMR Commencement Date : 30/06/2007 **AEMR End Date** 30/06/2008

Name of leaseholder: Austar Coal Mine Pty Ltd

Reporting Officer: Sarah Harvey

Title: Environmental Coordinator

Date: 29 August 2008

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PLANS

- 1 Austar Regional Location
- 2 Austar Environmental Monitoring Network

APPENDICES

- 1 Dust Monitoring Data
- 2 Water Quality Data
- 3 Location of Known Aboriginal Archaeological Sites
- 4 Community Complaints



1.0 Introduction

1.1 Scope

This Annual Environmental Management Report (AEMR) covers the twelve month period ending June 2008. The purpose of the AEMR is to provide a summary of the environmental performance for Austar Coal Mine. This report outlines:

- details of mining activities;
- monitoring activities and results;
- compliance with statutory provisions;
- community relations; and
- rehabilitation.

1.2 Background

Austar is an aggregate of the former Pelton, Ellalong, Cessnock No.1 (Kalingo) Colliery and Bellbird South Collieries owned by Yancoal. Austar is located on Middle Road, Paxton, NSW. See **Figure 1**.

Underground mining commenced in 1916 at Pelton Colliery and continued until 1992. Kalingo Colliery began as an underground mine in 1921 and ceased operations in 1961. In the late 1960's the Kalingo Colliery was amalgamated into the Pelton Colliery. Longwall production commenced at the Pelton Colliery in 1983 and continued until the mine, then known as Ellalong Colliery, was closed in May 1998 by Oakbridge. Southland Coal then acquired the assets of Ellalong and Pelton Collieries and amalgamated those with Bellbird South, which was also owned by Southland Coal.

Southland Coal developed a longwall operation that mined the substantial Bellbird South coal reserves utilising the existing Ellalong facilities and infrastructure. Equipment was upgraded and replaced as required.

In December 2003, spontaneous combustion in SL4 resulted in Southland Coal ceasing mining activities. The site of the underground fire was sealed and the mine was placed on a 'care and maintenance' program for 18 months. Yancoal purchased the mine in December 2004 and changed the name to Austar Coal Mine (Austar).

Austar introduced an enhanced form of the conventional retreat longwall system to the Australian Coal Mining Industry in 2006 called Longwall Top Coal Caving (LTCC).



To allow for the introduction of LTCC to panels A1 and A2, a modification under section 96(2) of the Environmental Planning and Assessment Act was sought in 2006. The Minister for Planning approved the modification to allow the extraction of up to 6.5 metres of coal in panels A1 and A2 subject to a number of conditions. In 2008, consent was granted for A3, A4 and A5 under a second modification.

1.3 Consents, Leases and Licences

1.3.1 Approved Development Consents held by Austar Coal Mine

A summary of development approvals and consents held by Austar is outlined in Table 1.

Table 1 - Leases, Licences and Approvals

Consent Description	Date	Approval Authority	Approved Development
DA 74/75/79	4 December 1975	Cessnock City Council (CCC)	Development Consent for a coal mine at Ellalong. <ul style="list-style-type: none"> • Approval for an underground coal mining. • Construction of a new access drift, upcast shaft and ventilation shaft. • Expansion of the Pelton CHPP. • Conveyance of coal from the Ellalong pit top to the Pelton CHPP Operation of the Pelton CHPP for the washing and handling of coal. • Water management systems. • Upgrade of the Pelton rail loading facility and railway spur. • reject emplacement underground, company owned land, open cut areas adjoining Pelton and other abandoned mine sites.
DA 118/680/93	8 October 1980	CCC	Downcast Ventilation Shaft and Man Access Shaft, Bathhouse and Offices at Ellalong Colliery.
DA 118/691/181	26 November 1992	CCC	Pelton Open Cut Coal Mine. <ul style="list-style-type: none"> • Approval of an open cut coal mine adjoining Pelton Colliery up to 300,000 t of coal and underground mining of approximately 27,000 t of coal from a section of prior workings south of the proposed open cut.
DA 118/691/181	11 January 1993	CCC	Pelton Open Cut Coal Mine – Modification. <ul style="list-style-type: none"> • Extension of open cut mining area. • Infrastructure and water management modifications.

Consent Description	Date	Approval Authority	Approved Development
DA 118/691/229	7 January 1993	CCC	<p>Pelton Coal Handling Preparation Plant – Raw Coal Handling Facility, Washed Coal Facility and Upgrading Water Management System.</p> <ul style="list-style-type: none"> • Upgrade and replacement of coal handling infrastructure such as surge bin, automatic stacking system, reclaim facilities and skyline conveyor. • Increase in stockpile capacity. • Upgrade to water management system. • Extension of the reclaim tunnel. • Construction of a mine water transfer pipeline from Ellalong Colliery to Pelton. • Provision of underground workings for emergency mine water disposal. • Upgrade of lime treatment plant.
DA 118/693/42	26 November 1993	CCC	<p>Extension of Pelton Open Cut Mine.</p> <ul style="list-style-type: none"> • Extension of open cut mining area including emplacement of overburden in previously mined blocks and extension of the mine's water management system.
DA 118/694/152	7 July 1994	CCC	Relocatable Office and Temporary Bathhouse at Pelton Colliery.
DA 118/695/22	12 July 1995	CCC	<p>Establishment of Overburden Stockpile at Pelton Colliery.</p> <ul style="list-style-type: none"> • Establishment of an overburden stockpile for the Pelton Open Cut Operations.
DA 118/695/81	12 July 1995	CCC	<p>Additions for Bathhouse, Office and Car park at Ellalong Colliery.</p> <ul style="list-style-type: none"> • Extension to the bathhouse at the Ellalong drift site. • Extension of existing offices or construction of portable offices. • Construction of a 4000 square metre car park.
DA 8/1999/1658	18 February 2000	CCC	<p>Relocation of Ventilation Facilities at Bellbird South Underground Mine.</p> <ul style="list-style-type: none"> • Installation of a ventilation shaft and fan house. • Upgrading of the existing access track to the site from the Pelton-Ellalong Road.
DA 8/2002/655/1	16 October 2002	CCC	Compressor and Pump Enclosure Buildings at Ellalong Colliery.
DA 118/695/18	21 February 1995	CCC	Relocatable Office at Pelton Colliery.



Consent Description	Date	Approval Authority	Approved Development
DA 29/95	14 February 1996	Minister for Urban Affairs and Planning	<p>Ellalong Colliery Extension into Bellbird South.</p> <ul style="list-style-type: none"> • Extension of underground mining activities into Bellbird South area (CML 2). • Mine life of 21 years with a production of 3 Mtpa. • Reject emplacement. • Construction and operation of a new infrastructure site including new ventilation shaft and fan(s) (No. 2 Shaft) adjacent to Sandy Creek Road. • Use of Pelton CHPP for washing and handling of coal. • Provision of a maximum raw coal stockpile of 100,000 t. • Reopening of disused Cessnock No. 1 Colliery shafts for ventilation and access, or the sinking of new shafts, as required. • Construction of various water management devices including sedimentation and clean water dams and drainage systems.
DA 29/95	27 September 2006 8 June 2008 Stage 2	Minister for Planning	<p>Extension of Underground Mining Activities into Bellbird South (Ellalong Colliery) – Modification.</p> <ul style="list-style-type: none"> • Use of long wall top coal caving mining methods in two longwall panels. • Installation of a larger capacity fan at the site approved for DA 8/1999/1658. • Installation of a new downcast ventilation shaft. • Installation of a new 10 MVA substation. • Installation of a nitrogen inertisation plant with a 2,000 cubic metre capacity. • Provision of a diesel and emulsion fluid storage area and dispatch system. • Installation of a tube bundle shed to house electronic monitoring equipment. • Upgrade of the existing water treatment plant. • Upgrade of water reticulation and pumps. • Minor embankment stabilisation works at Kalingo Dam.

1.3.2 Mining Leases

Details of the relevant mining leases are summarised in Table 2 below:

Table 2 - Mining Leases

Mining Title	Date Granted	Expiry Date	Area	Surface	Depth Restriction
Dam Site Lease 89 (1906)	04/04/1908	04/04/2010	3.961	Yes	Surface to 15.24 metres
Mineral Lease No. 1157 (1906)	8/07/1949	08/07/2028	10.24	Yes	Surface to 15.24 metres
Mineral Lease No. 1283 (1906)	13/07/1961	13/07/2022	1.973	No (subsurface)	7.62 to 15.24 metres
Mining Purposes Lease No. 23 (1906)	17/05/1909	17/05/2010	2.421	Yes	Surface to 15.24 metres
Mining Purposes Lease No. 204 (1906)	03/02/1916	03/02/2018	1.2	Yes	Surface to 15.24 metres
Mining Purposes Lease No. 217 (1906)	12/04/1916	12/04/2018	0.6298	Yes	Surface to 15.24 metres
Mining Purposes Lease No. 223 (1906)	01/08/1916	01/08/2016	1.973	Yes	Surface to 7.62 metres
Mining Purposes Lease No. 269 (1906)	07/12/1917	07/12/2018	2.663	Yes	Surface to 6.1 metres below the level of the rails when laid
Mining Purposes Lease No. 1364 (1906)	28/10/1968	28/10/2009	0.4527	Yes	Surface to 15.24 metres
Private Lands Lease No. 150 (1906)	27/12/1922	27/12/2023	46.54	No (subsurface)	15.24 metres to unlimited depth
Consolidated Coal Lease No. 728 (1973)	10/10/1989	30/12/2023	3251	Various	Various
Consolidated Coal Lease No. 752 (1973)	23/05/1990	30/12/2023	3802	Various	Various
Mining Purposes Lease No. 324 (1973)	14/04/1994	14/04/2015	12.89	Yes	Surface to 15.24 metres
Consolidated Mining Lease No. 2 (1992)	24/03/1993	15/05/2009	3397	Various	Various
Mining Lease No. 1345 (1992)	23/03/1995	30/12/2023	95.08	Yes	Surface to unlimited depth
Mining Lease No. 1347 (1991)	28/04/1994	28/04/2015	16.88	Yes	Surface to 15.24 metres
Mining Lease No. 1388 (1992)	02/04/1996	02/04/2017	15.12	No (subsurface)	30.48 to unlimited depth
Mining Lease No. 1550	24/06/2004	23/06/2025	14.4	Yes	Surface to 20 metres

1.3.3 Environment Protection Licence

Austar holds an Environmental Protection Licence (EPL) No. 416 for its operations. The EPL was granted on 7 May 2002 and is reviewed annually.



1.4 Mine Contacts

Austar Coal Mine is owned and operated by Yancoal Australia Limited. Contact details for responsible site personnel are provided in Table 3.

Table 3 - Site Personnel

Position	Name	Company	Contact No
General Manager	Frank Fulham	Austar Coal Mine	4993 7354
Mine Manager	John Sherrell	Austar Coal Mine	4993 7303
CHPP Manager	Greg Cross	Austar Coal Mine	4993 7501
Logistics and Property Manager	Phil Welsh	Austar Coal Mine	4993 7298
Environmental Coordinator	Sarah Harvey	Austar Coal Mine	49937334

1.5 Actions Required at Previous AEMR Review

Table 4 – Actions Required

Issue/ Observation	Action Required	Progress to Date
1. AEMR rehabilitation reporting	The AEMR 2006-2007 required presentation of Table 4 as an annexure within 30 days	Table 4 submitted to Greg Summerhayes on 25/01/2008
2. Austar MOP review and security calculation	MOP documentation is to be completed and presented to DPI within 1 st quarter 2008, together with a rehabilitation cost calculation according to DPI policy and guidelines. The MOP is to include a Life of Mine Rejects Management Strategy.	Security calculation and Section 102 application are complete. MOP submitted and approved by DPI on 30 th June 2008.
3. Aberdare Extended Rejects Emplacement Area	MOP requires rehabilitation of areas 12 and 13 to be completed. Part cancellation of ML1345 is to be reviewed pending agreement with landowner.	Currently in progress.



Issue/ Observation	Action Required	Progress to Date
4. Removal of derelict mine buildings at Pelton and Kalingo.	<p>Make dilapidated horse stable buildings safe at Pelton site.</p> <p>Demolition and rehabilitation of the Kalingo site buildings, and permanent sealing of one of the two shafts.</p>	Heritage and structural assessments have been undertaken and now in process of seeking approval to demolish.
5. Mining lease applications over the Pelton tailings cells	Mining lease application for the northern section of the Pelton CHPP site outside of the Colliery Holding to be processed in 1 st Quarter 2008	Currently in progress.
6. Poor management of oil separator and hydrocarbon handling procedures at Ellalong pit top	<p>Poor management and containment of hydrocarbons requires systematic improvement in responsibilities, procedures and training.</p> <p>The total waste management requires improvement in light of pending waste contractor review.</p>	<p>Improvement works on oil water separator tank and pipe are in progress.</p> <p>Improvement works on diesel containment bay and refuelling area have been completed.</p> <p>Responsibilities for hydrocarbon management and training were undertaken and are ongoing with management and employees.</p>
7. Rubbish and waste in drive in sump at Ellalong pit top	Drive in sumps are not to be used to store rubbish and waste dirt cleaned up from the site. Training of staff is required on the correct management of material cleaned up within the pit top area.	Training/Tool Box Talks were undertaken during 1 st Quarter 2008 and are ongoing with management and employees. Weekly/Monthly and 6 monthly inspections are also carried out.
8. Containment of equipment on the eastern side of the pit top, storage of surplus equipment and stores, and removal of scrap materials at Ellalong pit top.	Systematic management review is required. Equipment and stores are to be removed from unsuitable areas like the side of roads and contained within bunded designated areas to prevent equipment and contaminated runoff affecting native bushland	A management review and cleanup has been undertaken at the pit top between December 2007 and February 2008.

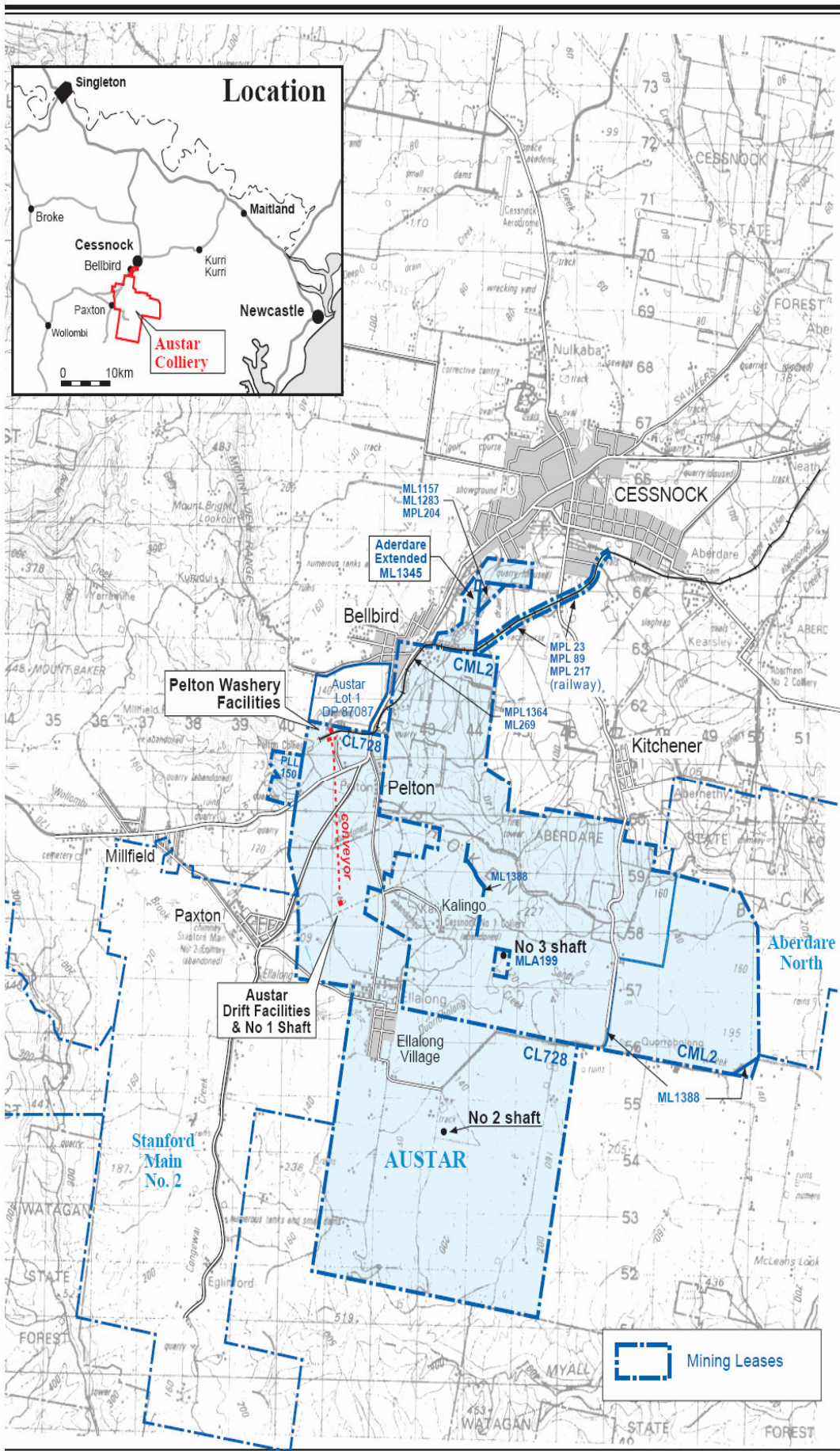


FIGURE 1
Locality Plan

2.0 Operations During the Reporting Period

2.1 Exploration

In 2007-2008 coal exploration was undertaken across Austar mining and exploration leases. This exploration was undertaken to assess coal resources for Stage 3 mining activities planned for Austar.

As part of this program a total of six (6) boreholes for 3720 metres were drilled.

Consistent with previous years and in accordance with site procedures, environmental issues were well managed in exploration areas in 2007-2008. This was evidenced by the fact there was no landowner complaints being recorded for any holes drilled on private land. In accordance with site procedures, grouting of completed boreholes was signed off by the driller who completed the task. This was checked by the supervising geologist prior to the grouting records being archived. Boreholes that are yet to be grouted or that require additional testing have been secured with borehole caps.

In accordance with the drill procedure, environmental assessments were conducted for each drill site prior to drilling commencing with the view to preventing impacts in accordance with legal and other requirements. This included reviewing proposed drilling programs against the locations of known artefacts, conservation areas, remnant or mature native vegetation and other sensitive environmental features to prevent impacts as much as possible. Consistent with previous years, this process led to the relocation of many drill sites to prevent impacts.

2.2 Land Preparation

Austar Mine is an underground mining operation and no land preparation is required prior to mining. There are several areas on site that are to be rehabilitated and continual minor maintenance is performed on water management and sediment control structures on site.

2.3 Construction

There were no construction activities undertaken during the reporting period.



2.4 Mining

The Austar Coal resource covers a large area of the Greta Seam in the Newcastle Coalfield. The Bellbird South reserves are situated north-east of and adjoin the original Ellalong Colliery.

Mining in panel A2, part of Stage 1, is ongoing with development on target to complete the development of the A3 block in Stage 2.

Since July 2007 the Longwall has completed the A1 block and relocated to the A2 Installation face, that commenced extraction in November of 2007. As with A1 the resource recovery achieved with the LTCC equipment as been approaching 90% of the seam. As of the end of June 2008 62% of the A2 block had been mined.

As part of the relocation between the A1 and A2 blocks Austar took the opportunity to make modifications to the LTCC equipment to correct issues that were identified during the extraction of the A1 block.

Roadway development at Austar since July 2007 has seen a relocation from the Stage 1 area to a focus on development for the Stage 2 longwall panels. As part of this change of focus the two continuous miners used in Stage 1 have been off hired and an overhauled miner was mobilised to site. This miner, coupled with Austar's own machine, has extended the mains and gateroad development in preparation for the commencement of mining in the A3 block in late 2008 or early 2009.

Utilising the award winning Positive Pressure Balance Chambers, developed by Austar, the spontaneous combustion risk in the goaf areas at the mine have been well managed. The chambers work by maintaining a positive pressure of nitrogen, an inert gas, alongside the goaf areas preventing the ingress of oxygen. The technique was particularly effective for the take off and sealing of the A1 panel.

2.4.1 Production and Forecast Production

The production statistics for the past 12 months is summarised in Table 5.

Table 5 – Production and Waste Summary

Production July 2007 –June 2008	Tonnes
Longwall (ROM)	1,396,413
Development (ROM)	149,233
Total –(ROM)	1,545,646
Total - Washed	1,460,683



Production at Austar is still constrained by the quota restrictions at the Port of Newcastle. In September 2007 Austar completed a corporate and operational restructure to reduce production to a 5 day per week operation.

Since May 2008 Longwall production has recommenced on the weekend day shift due to operational issues. Development remains on a 5 day operation.

ROM production in the 2008 – 2009 period is expected to be approximately 1.69 million tonnes.

2.5 Mineral Processing

The Coal Handling Preparation Plant (CHPP) is a Heavy Medium Plant. There are two circuits that treat different fractions:

- No.1 Circuit treats the -12mm x 1mm coal; and
- No.2 Circuit treats the -50mm x 12mm coal.

Coal enters the plant and passes over a set of sizing screens. Oversize material (+120mm) is removed from the plant as refuse and the fines (-1mm coal) are treated in the fine coal circuit.

The +50mm material reports to the plant MMD sizer, where it is sized to -50mm. The -50mm +0mm material then reports to the No.2 heavy medium circuit. The -12 x 1mm material is fed over the desliming screens and to the No.1 heavy medium circuit. The -1mm fraction is fed to the fines circuit.

2.6 Waste (Coal Reject) Management

2.6.1 Chemical/Physical Characteristics of Reject

Analysis of the waste materials at Austar indicates that it contains sulphur mostly in the form of pyrite, and therefore has the potential for acid mine drainage (AMD). Details regarding the control of acid water onsite are outlined in the approved Austar Site Water Management Plan (SWMP). Rehabilitation strategies have been developed to reduce the potential for acid mine drainage offsite with emplacement areas designed to drain to old mine workings.

2.6.2 Coarse Reject Material

As per the Section 102 application submitted to the DPI in 2008, coarse reject emplacement at Austar is undertaken at the following three sites:



1. Aberdare Extended Open Cut Void (Aberdare Extended)

Subject to finalisation with an agreement with the landholder, the Aberdare Extended Open Cut area will be the primary reject emplacement area utilised by Austar during the approved MOP term. Rejects are hauled by truck along a private haul road from the CHPP to the emplacement area. Dumping at this emplacement area is normally restricted to day-time activities only in order to minimise impacts to the adjacent residential area. No emplacement of coarse reject has occurred at Aberdare Extended since 2005 however emplacement of coarse reject at Aberdare Extended is proposed during the approved MOP period.

It is envisaged that following the emplacement of rejects, the area will be rehabilitated to a final landform that has been agreed with the private landowner of the property. The area is proposed to be rehabilitated during the MOP term. At this time, the voids on the CHPP site will become the primary Austar coal reject emplacement areas.

2. East Open Cut Void (East Open Cut)

The East Open Cut is a small void on the CHPP site covering an area of approximately 15 hectares. Previously the remaining void has been used as an emergency emplacement area when dumping at the Aberdare Extended area has been unavailable due to heavy rain. Since the mine recommenced in June 2005, coarse reject has been emplaced in the East Open Cut void.

It is intended that in the future until the Aberdare Extended reject emplacement area is complete, the East Open Cut reject emplacement area will be primarily utilised during night time period or at other times when the Aberdare Extended Emplacement Area is not available. Restricting night reject emplacement to East Open Cut will reduce the potential to disrupt nearby residences at the Aberdare Extended site. Once the Aberdare Extended emplacement area has reached its maximum capacity, the East Open Cut will become the primary emplacement area for Austar.

3. West Open Cut Emplacement Area (West Open Cut)

The west open cut area has been utilised as a clean material overburden emplacement area during previous open cut operations at the site. This area provides a source of inert capping material, which will be utilised as part of the rehabilitation of reject emplacement areas. After removal of the clean overburden for capping purposes at Aberdare Extended and East Open Cut emplacement areas, it is planned to use the resultant void at the West Open Cut for ongoing reject emplacement.



2.6.3 Tailings Disposal

The tailings flow from the CHPP is discharged into Underground Mine workings. The return water from these tailings gravitates through the mine workings and is recovered into the Austar Coal Mine to return the decanted water to the mines contaminated water circuit for treatment and then either use in the CHPP, discharge off-site or re-circulated back into the system.

2.6.4 Historic Rejects Disposal

No reject material was excavated or otherwise removed from site during the reporting period. This material is potentially a valuable resource and may be recovered as part of the ongoing operation and rehabilitation of the site.

2.6.5 Solid Waste

The ongoing waste disposal program includes the progressive removal of scrap metals for recycling and sale of disused equipment that is of value and the removal of non-recyclable material to approved waste disposal facilities.

Licensed waste contractors are employed to dispose of waste from the site on a regular basis. Austar Coal Mine has recently reviewed and upgraded its waste management practices and will continue to work with external waste contractors and mine site personnel to implement a total waste management system.

2.6.6 Oil and Grease

All necessary measures are taken to ensure that operations at the colliery are conducted in a responsible manner, minimising the risk of pollution of the environment. All oil management systems were designed and installed in accordance with Australian Standards and EPA guidelines.

The CHPP oil management systems includes a covered oil store, covered and bunded empty drum store, heavy vehicle lubrication service area and an oil evacuation system.

At the drift site, the oil management systems include a covered oil store, a bunded diesel tank and an oily water treatment system for the washdown bay and surface runoff. A bunded storage tank for longwall fluid was constructed at the No. 3 shaft infrastructure site.



The bulk diesel tank is bunded with a capacity of 64,000 litres. The floor of the bund drains to a sump which is emptied by pump out when required. Water pumped from the bund enters the concrete washdown pit which in turn flows into the oil separator. The tank outlet is fitted with a firesafe valve and the drain valve is plugged.

2.7 Ore and Product Stockpiles

The raw coal stockpile has a live capacity of 50,000 tonnes, and an overall capacity of 500,000 tonnes. Under normal conditions the maximum amount of coal to be stored is in order of 100,000 tonnes. All coal stored in excess of the live storage capacity of the system is handled using tracked bulldozers.

The washed coal stockpile has a maximum capacity of 350,000 tonnes, however it is normally maintained under 100,000 tonnes.

2.8 Water Management

2.8.1 Overview

There are a number of interrelated systems that are managed as a whole to ensure that the operational needs of the mine are addressed whilst also meeting EPA licence requirements.

An interactive model has been developed that allows analysis across the operation such that the individual's components can be forecast. There are many large water storage areas, both on the surface and underground, that act as buffers such that individual systems can operate independently of each other.

The water management system at Austar comprises three (3) main components:

- Underground water storage;
- Pelton CHPP; and
- Surface water storage systems.

Water treatment onsite includes pH adjustment, flocculation and settlement of suspended sediments in addition to a reverse osmosis water treatment plant. With the use of the reverse osmosis water treatment plant, the site operates largely independent of the town potable supply and only discharges treated water off site.



2.8.2 Surface Water

Austar surface water management system design basis was to achieve a surface transfer flow rate higher than the maximum dewatering rate from underground systems. The two main surface water storages (apart from the water pollution control dams at the CHPP) are Kalingo Dam and Austar Dam.

1. *Kalingo Dam*

Kalingo Dam receives water from underground via No. 2 shaft pump and is used as a staging and storage facility. This dam assists in the removal of iron and manganese via oxidation.

2. *Austar Dam*

Austar Dam receives water from Kalingo Dam via a buried 315mm HDPE pipe line. It also receives water from 16 cut through main south underground pumping station via a rising main along the drift. Aeration within the storage promotes oxidation and assists in the removal of iron and manganese.

2.8.3 Underground Mine Water Management

Due to inflow from historic mine workings, Austar has a complex underground mine water management system. This system is discussed in detail in the following sections.

2.8.3.1 Inflow Sources

Inflow water sources into the mine workings can be described as:

- Fairly static natural strata inflow of groundwater:
- Water piped underground for mining and ancillary underground operations (e.g. dust control). A large proportion of this is returned to the surface in ROM coal; and
- Water from high rainfall periods that enter shallow mine workings via cracks.

All inflow sources have been identified and systems put in place to measure the cumulative volumes. Measurements are generally recorded on a monthly basis and results logged in a database that allows analysis of long term trends and inflows.

Water levels are also monitored for the old workings of the neighbouring Kalingo and Aberdare Central Collieries by means of dipping shafts and a bore for Bellbird mine.



2.8.3.2 Underground Water Storages

The main underground water storages include the following:

- East Pelton;
- West Pelton;
- Ellalong (2 East Panel, Longwalls 1-12);
- Ellalong13; and
- SL2 Panel.

For more detail, refer to approved Site Water Management Plan (approved October 2007, available on Austar Website and on request).

2.8.3.3 Underground Pumping

There are two (2) underground pumping systems that deliver mine water to the surface water management system, and are described as follows:

1. 16 Cut Through (East Pelton and West Pelton)

The 16 c/t Main South Pump Station has been designed and installed to pump mine water from the old Pelton (East and West) Mine workings. The pump station receives water via instream boreholes and pumps water to the surface to Austar Dam via a rising main installed in the drift.

2. Two Shaft

The old Ellalong Colliery workings (Longwalls 1 to 12) within Austar Coal Mine are utilised as the main underground water storage reservoir for the mine.

A large diameter, multistage bore hole pump operating at the No. 2 shaft site pumps water from these underground workings to Kalingo Dam via a vertical rising main and a overland polyethylene pipe line. This system is currently being upgraded as part of the site water management improvements.

3. Groundwater Interception

The mine is licensed for total incidental groundwater interception of approximately 2.1 ML/day. Currently the water is intercepted through barriers as follows:

- Kalingo old workings;
- Aberdare Central old workings;
- Bellbird old workings; and



- Austar workings.

These rates will continue to be reviewed as mining progresses. The Site Water Management Plan will be reviewed and updated as may be required to reflect any significant changes that may occur over time.

2.8.3.4 Monitoring System

The site has a centralised monitoring and communication system (CITECT) that is managed 24 hours a day by the Control Room Operator. The system enables remote control of the major components and communications across the entire mine site. The real time monitoring system includes a wide range of parameters including water pressure, flow rates and storage dam levels.

In addition, a range of water quality and flow data is collected underground. The following component areas are monitored regularly:

- water pumped underground by events or processes controlled at the CHPP;
- inflow from in-seam drilled boreholes;
- flow from stored water bodies;
- water piped underground and used for mining operations; and
- water intercepted underground and pumped out of the mine.

2.8.4 CHPP Water Management System

2.8.4.1 Overview

All mine water pumped from underground inflow sources and the surface dirty water systems is pumped to No. 7 dam at the CHPP.

Depending on dam levels, flow rate and demand within the system, water is managed via the:

- reverse osmosis (RO) water treatment system;
- coal washing and handling system; and
- stormwater runoff and management system.

Dirty water from the three systems is discharged back into the old underground mine workings where settling of sediment occurs prior to the water being collected and pumped to the surface again.



Clean permeate from the treatment plant is used as the potable water supply for all operations except drinking and bathing. Excess treated water that is not utilised on site is discharged into Bellbird Creek in accordance with the conditions of EPL 416.

2.8.4.2 Reverse Osmosis Water Treatment System

Mine water collected from underground workings is pre-treated prior to the reverse osmosis plant primarily by aeration to promote oxidation which is followed by pH adjustment. Oxidation occurs in Austar, Kalingo and the No. 7 dams. From dam No. 7 water is pumped to the lime treatment plant where the pH is adjusted to 8. This encourages the precipitation of iron and other metals. The water is then fed into the precipitation dam where the excess lime, precipitated metals and gypsum are allowed to settle out. Water then flows to the process dam from where it is pumped to the CHPP for use or the RO plant for treatment.

The RO plant contains 3 units and can treat up to 7.5 ML in total of mine water per day with 3 units running in parallel at 40% efficiency. The current configuration is 2 in parallel with the third used to scavenge additional clean water from the brine of the primary units. This reduces the capacity to treat only 5 ML of mine water per day at 60% efficiency. Since the brine returns underground, a more efficient configuration for the total mine water balance is used.

Each treatment unit has 2 compartments, one containing multi-media filters and the other the RO unit itself. Water pumped from the process dam undergoes primary filtration through standard filters, secondary filtration through multi-media filters and final tertiary filtration through cartridge filters. The feed water is then pumped into the RO elements where the brine and permeate are separated. The brine (approximately 60% of feed water to the RO plant) is returned underground via the Pelton Borehole. The clean permeate is used in the CHPP or underground mine with any excess discharged to Bellbird Creek in accordance with EPL requirements.

2.8.4.3 Coal Washing and Handling System

The Austar CHPP is a Dense Medium Cyclone and spirals plant that operates at a nominal 500 tph. The raw coal stockpiles nominal maximum capacity is 350,000 T and the clean coal maximum capacity is 350,000 T. Both stockpiles typically operate with approximately 100,000 tonnes on each. Run of mine coal is conveyed from the mine to the CHPP and the majority of clean coal product is transported from site by train.



The CHPP requires approximately 1.0 – 1.3 ML/day of water to operate. This water is a blend of process dam water and permeate from the RO plant. Approximately 1.0 – 1.3 ML/day of fine tailings (approximately 20% solids) are returned underground at the Pelton Borehole, dependent upon the level of operation of the CHPP.

2.8.4.4 Storm Water Run-Off and Management System

Dirty water runoff from the CHPP surface is contained within the mine water management system.

Stormwater management at the CHPP aims to contain runoff in surface dams and as a last resort any excess is pumped underground. Water levels in the surface dams are monitored and pump status checked regularly. In the event of a storm, water can be pumped from the Water Pollution Control Dam, where all the runoff will be collected into No. 7 dam. From No. 7 dam the water is treated through the lime treatment plant and RO units. If the system can not handle the water quantity, the water can be pumped underground to East Pelton via the Pelton Borehole.

2.9 Hazardous and Explosive Materials Management

An explosive magazine storage facility is located at the Austar Pit Top. Two relocatable type magazines are installed in a bunded area. The magazines were prepared in accordance with AS 2187.1 – 1998, behind an earth embankment that is approximately 10 metres high. The magazine stores have been located to provide appropriate separation distances from other buildings and facilities on the site, with appropriate security in place.

In addition, the following dangerous goods depots are located on site:

- Packaged oil store (20,000 litres), in accordance with AS 1940 - 1993;
- Flammables cabinet (<100 litres);
- Compressed gas store (<7 Size G Cylinders) containing no more than 4x E oxygen and 2x E acetylene plus nitrogen and argon in store.

2.10 Other Infrastructure Management

Other infrastructure associated with Austar Coal Mine includes the following:

- Austar Pit Top Facilities;
- Pelton CHPP;
- No. 1 Shaft;



- No. 2 Shaft;
- No. 3 and No.4 Shaft service facilities; and
- Kalingo Pit Top (including Kalingo Dam)

2.11 Product Coal Transport

The existing approved transport system has continued to be utilised to transport product from the site. The majority of product coal is transported 65km by rail from the site to the Port Waratah Coal Loader for sale on the export market.



3.0 Environmental Management and Performance

3.1 Summary of Key Environmental Monitoring Sites

Environmental monitoring undertaken on site is summarised in Table 6 below. The monitoring undertaken on site is an integral part of the overall environmental management strategy for the site and is reviewed on a regular basis. Dust monitoring and surface water monitoring locations are shown on **Figure 2**.

Table 6 - Environmental Monitoring

Element	Frequency	Method
Air	Monthly and 6 daily	5 x Static dust gauge 2 x HVAS
Noise	Quarterly	Attended monitoring at 5 locations
Water – surface	Monthly	Sampling at 6 locations as per EPL 416 and SWMP
Water – groundwater	Quarterly	Sampling at range of locations in accordance with SWMP
Vibration	Daily	Triaxial geophone at 2 locations
Subsidence	Quarterly	Field survey and surface extensometer
Meteorology	Daily	Weather station
General environmental conditions	Monthly	Visual inspection of key facilities
Community	Checked daily during business hours	24 hour community complaint/enquiry line

3.2 Meteorological Data

Meteorological data has been obtained from Austar's weather station and from the Bureau of Meteorology, site number 061242, located at Cessnock, NSW. The following section summarises the meteorological data for the reporting period July 2007 to June 2008.

3.2.1 Rainfall

The total monthly rainfall (mm) and number of rain days during the reporting period is shown in Table 7 below. A total of 1022.4 mm was recorded during the reporting period.



Table 7 - Total Monthly Rainfall (mm)												
Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Tot
15.8	70.6	19	10.6	134.1	121.4	158.3	186.1	50.2	147	0.8	108.5	1022.4
Number of Rain Days												
5	10	7	10	12	14	12	21	8	16	2	13	130

3.2.2 Temperature

Mean monthly maximum and minimum temperatures recorded during the reporting period are shown in Table 8 below.

Table 8 - Mean Minimum and Maximum Monthly Temperatures (°C)												
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Min	4.6	7.8	8.7	11.3	15.1	16.7	18.4	17.2	13.8	10.7	6	9.2
Max	17.3	20.7	22.9	29	26.9	27.4	28.7	26.2	27.2	22.1	21.5	19

3.2.3 Wind speed

Average monthly wind speeds are shown in Table 9 below.

Table 9 – Mean Monthly Wind Speed		
	9 am Speed (km/h)	3pm Speed (km/h)
July	11.5	14.8
August	14	21.6
September	12.6	21.6
October	15.8	18.7
November	8.6	17.3
December	9.7	16.6
January	12.2	18
February	10.8	17.3
March	9.4	14
April	11.5	14.8
May	7.9	9.7
June	7.9	11.2

3.3 Air Pollution

3.3.1 Control Measures

The current surface operation has established particulate matter control systems including water sprays on both sides of the raw coal conveyor and coal stockpiles. The stockpile sprays have the capacity to dampen the stockpile over a 30 m radius



from the spray locations. The existing spray system on the washed coal stockpile has been upgraded to meet the same specifications.

The dust suppression sprays on the stockpiles deliver water at a rate equivalent to 1.2 mm/m²/hr over the area. The dust suppression sprays are activated when moisture content falls or when higher wind speeds are experienced and dust generation is excessive. Dust generated from traffic around the CHPP, workshops and access roads is controlled by a water cart during active use of these areas. Generally, the majority of the site is stable, and does not generate excessive dust.

3.3.2 Dust Monitoring

An Air Quality Monitoring Program and Protocol has been developed and implemented by Austar. The monitoring program utilises five (5) dust depositional gauges and two (2) high volume air samplers (HVAS), which measure PM₁₀. The location of the monitoring equipment is listed in Table 10 below.

Table 10 - Location of Air Quality Monitoring Points

Site	Location Description
Dust Gauge 1	Bimbadeen Road, Bellbird
Dust Gauge 2	Ellalong Road, Pelton Village
Dust Gauge 3	Austar Coal property boundary, Doyle Street, Bellbird
Dust Gauge 4	Ellalong Village
Dust Gauge 5	Austar Coal property south west of upcast ventilation shaft
HVAS (PM ₁₀)	Bimbadeen Road, Bellbird
HVAS (PM ₁₀)	Ellalong Road, Pelton Village

The air quality criteria for deposited dust, particulate matter <10µm (PM₁₀) and total suspended particulates are provided in Table 11.

Table 11 - Air Quality Criteria for Particulate Matter

	Pollutant	Criterion	Averaging Period
Long Term Impact Assessment Criteria for Particulate Matter	Total Suspended Particulate (TSP) matter	90 µg/m ³	Annual
	Particulate Matter < 10µm (PM10)	30 µg/m ³	Annual
Short Term Impact Assessment Criterion for Particulate Matter	Particulate Matter < 10µm (PM10)	50 µg/m ³	24 hour



Long Term Impact Assessment Criteria for Deposited Dust	Depositional Dust	2 g/m ² /month (maximum increase in deposited dust level)	Annual
		4 g/m ² /month (maximum total deposited dust level)	Annual

Note: Deposited Dust is assessed as insoluble solids as defined by Standards Australia, 2003 AS3580.10.1 -2003: Methods for Sampling and Analysis of Ambient Air – Determination of Particulates – Deposited Matter – Gravimetric Method.

3.3.3 Results

In accordance with the air quality monitoring plan, five (5) static dust gauges and two (2) high volume air samplers were installed in March 2007. All dust samples were collected by qualified consultants and analysed by NATA certified laboratories. This work is carried out in accordance with statutory requirements and relevant standards. Monitoring equipment is maintained in accordance with the manufacturer's specifications. A compilation of dust deposition results and PM₁₀ monitoring data is provided in **Appendix 1**.

1. Dust Deposition

Results for the monitoring undertaken during the reporting period were generally well below the statutory requirement criteria of 4 g/m²/month.

Table 12 provides a summary of the project average for the reporting period for insoluble solids.

Table 12 - Dust Gauges Annual Average

No	Location	Project Average Insoluble Solids g/m ²
DG01	Bimbadeen Road	0.7
DG02	Pelton	0.8
DG03	Bellbird	1.5
DG04	Ellalong	0.7
DG05	Kalingo Infrastructure Site	1.4

In 2007-2008, only one of the five (5) dust deposition gauges recorded an annual average above the 4g/m²/month criteria (DG05) on two occasions. This elevated result was related to contamination from organic matter.

Two (2) of the Austar depositional dust gauges showed a decrease in their annual averages for 2007-2008 when compared with 2006-2007 data. The annual average for DG04 and DG05 decreased from 0.9 g/m²/month to 0.7g/m²/month and 1.5 g/m²/month to 1.47g/m²/month respectively. This value remains well below the statutory limit of 4g/m²/month.



The annual averages for DG01, DG 02 and DG03 showed a slight increase when compared to 2006-2007 values, going from 0.4g/m²/month to 0.7g/m²/month; 0.6g/m²/month to 0.8g/m²/month and 1.1g/m²/month to 1.5g/m²/month respectively.

The decreases in annual average values recorded for 2007-2008 may be attributable to the increased rain periods experienced throughout the latter half of the year. Results such as those recorded during 2007-2008 also help to confirm that existing controls such as dust suppression sprays and water carts are proving effective in mitigating the potential dust impacts from the site.

2. PM₁₀ (Fine Dust)

The current project average for PM₁₀ is well below the annual average criterion of 30 µg/m³. The measured PM₁₀ exceeded the 24 hour average criterion of 50 µg/m³ on one occasion during the reporting period (55 µg/m³) on the 31/12/2007 at HVAS1. High winds were present during the afternoon of the 31/12/2007 and wind speed reached a maximum 9.7 metres per second while wind direction was predominately from the east. The project average for insoluble solids is provided in Table 13.

Table 13 - PM 10 HVAS Results (March to June)

No	Location	Project Average Insoluble Solids µm /m ³
HVAS1	Bimbadeen Road	16.9
HVAS2	Pelton village	16.8

Overall, results have generally remained stable across both sites over the reporting period. The annual averages for HVAS1 and HVAS2 indicated a slight increase when compared to 2006-2007 data, going from 15.8 µg /m³ to 16.9 µg /m³ and 16.2 µg /m³ and 16.8 µg /m³ respectively.

3.4 Erosion and Sediment

Several types of erosion control measures have been implemented on site with the aim of preventing soil erosion and the entry of sediments into any of the surrounding water bodies. These measures are discussed in sections 3.4.1 and 3.4.2.

3.4.1 Drainage Channels



All drains have been constructed with either a parabolic or trapezoidal cross-section rather than a V-shape which can be easily eroded. Where possible, channels have been constructed with an adjacent earth bank.

All channels and associated banks have been grassed where possible to assist with stability during water flows. All channels are periodically inspected (at least every three months or after rain) to repair damage caused by scour, sediment deposition, channel obstruction and loss of vegetative cover.

3.4.2 Sediment Basins

Several small sediment basins have been constructed within the dirty water system. These are in addition to the main pollution control structures. The sediment control basins have been designed and located to contain dirty water from disturbed areas on site. The primary purpose of these basins is to contain sediment from normal rainfall events as well as reduce flow velocity during high rainfall events.

These structures are regularly maintained and cleaned out once capacity has reduced by over 10%. The structures are inspected after major rainfall events and any erosion of the spillway is corrected.

3.4.3 Sediment Fences

The use of sediment fences and hay bales provides interim protection from sediment runoff at Austar. Regular inspection of sediment fences and hay bales is undertaken at Austar following significant rainfall events.

3.5 Surface Water

3.5.1 Monitoring

Carbon Based Environmental is engaged by Austar Coal Mine to undertake routine surface water sampling and analysis of a total of four (4) monitoring locations and one (1) discharge points as specified in the EPA Licence. Grab samples are taken opportunistically from other points around the mine when required (sediment dams and mine water storage dams). The surface water monitoring sites include:

- Discharge and Monitoring Point 1 – Spillway of the emergency dam at the Pelton CHPP Site;
- Monitoring Point 2 – Bellbird Creek at the Wollombi Road Boundary of the Pelton Mine landholding;



- Monitoring Point 3 – Bellbird Creek downstream of the Emergency Dam at the Pelton CHPP Site;
- Monitoring Point 4 - Bellbird Creek at the Northern Boundary of the Pelton Mine landholding;
- Monitoring Point 5 - the unnamed creek at the Western Boundary of the Pelton Mine landholding; and
- Discharge and Monitoring Point 6 – Discharge from the Water Treatment Plant.

The following parameters are monitored at the above points:

- Conductivity (Salinity);
- Iron;
- Total Suspended Solids;
- pH; and
- Volume (for Point 1 and 6 only).

3.5.2 Water Monitoring Results

Surface water EC ranged between 133 $\mu\text{S}/\text{cm}$ and 5250 $\mu\text{S}/\text{cm}$, which is generally consistent when compared to 2006-2007 results. The pH measured at individual sites remained relatively constant ranging between 6.1 and 8.56. This range is generally constant with 2006-2007 results. Total suspended solids also remained relatively constant throughout the reporting period. Water qualities in natural watercourses surrounding the mine including Quorrobolong Creek were subject to normal variations in response to local geology and rainfall. This data suggests that no adverse impacts from mining on surface waters around the mine site occurred.

Water quality data is presented in full in **Appendix 2**.

3.6 Ground Water Pollution

There have been no known incidences of groundwater pollution as a result of Austar operations to date. A detailed review of groundwater sources and groundwater water movement in and around the mining operations was undertaken by Connell Wagner (2007) and reported as part of SWMP.

Groundwater resources in the vicinity of Austar operations include:



- shallow alluvial aquifers associated with Bellbird Creek downstream of the CHPP. These groundwater resources are very limited in extent. Potential for Austar mining operations to cause pollution of this groundwater resource is very low and is mitigated by the surface water management controls that are in place at the CHPP and the leachate controls at the East and West Open Cut emplacement areas;
- shallow alluvial aquifers associated with the Black Creek system. These groundwater resources are also very limited in extent. Potential for Austar mining operations to cause pollution of this groundwater resource is very low and is mitigated by leachate controls at the Aberdare Extended emplacement area and the surface water management controls that are proposed for the final landform at the CHPP. The proposed new surface infrastructure site off Quorrobolong Road will also drain to the Black Creek system. The potential for groundwater pollution to result from operations at the new surface infrastructure site is limited to spills and surface runoff and will be mitigated by the surface water management system that will be implemented at the site;
- shallow alluvial aquifers associated with the Quorrobolong Creek system in the vicinity of Stage 2 and Stage 3 underground mining areas. Analysis indicates that underground mining operations have negligible to low potential to impact on these shallow alluvial resources and negligible potential to result in pollution of this groundwater resource;
- fractured rock aquifers in the vicinity of the underground mining area. Monitoring indicates that there are very limited groundwater reserves in the fractured rock aquifer and that what groundwater there is, exhibits high salinity. Mining operations have negligible potential to result in pollution of these resources; and
- coal seam aquifers including groundwater contained in abandoned underground workings. Monitoring indicates that there are extensive volumes of this mine water associated with the coal seams and abandoned underground workings with the mine water exhibiting low pH, high iron concentrations, high manganese concentrations and high salinity. The mine contributes to the ongoing management of this groundwater and through the control of groundwater levels in the abandoned underground workings, minimises the potential for this poor quality groundwater to discharge into surrounding surface waters. Reverse osmosis permeate derived from the treatment of the mine water pumped from the underground workings and tailings are discharged underground into abandoned workings. This process effectively returns the existing contaminants from the coal seams and underground mine water to the abandoned underground workings. As a result operations at Austar mine have low potential to pollute these groundwater reserves.



3.7 Contaminated Polluted Land

To date, no significant areas of contaminated land have been found on site. A Phase 1 contamination assessment of the potential for contamination on site will be undertaken during the approved MOP term and will continue to be periodically undertaken through the life of the operation and immediately prior to site decommissioning.

In regards to the areas on site that may be identified from the Phase 1 assessment as posing low to moderate risk of resulting in contamination off-site, it is planned that further investigations will be postponed until the decommissioning phase or at the time of demolition/decommissioning of particular infrastructure. Alternatively, where there is a high risk of contamination that may lead to environmental harm, a Phase 2 – Detailed Investigation (e.g. soil sampling and analysis) will be undertaken to verify the type, extent and level of contamination that may exist.

In the event that the results of the detailed investigation suggest that the site poses unacceptable risks to human health or the environment then a remedial action plan (Phase 3) will be prepared and implemented. This will be followed by Phase 4 – Site Validation and Reporting to provide that the site clean-up complies with the relevant DECC criteria.

During the operational phase of the site, contamination resulting from environmental incidents (e.g. spills) and areas of high risk associated with hydrocarbon storage infrastructure will be cleaned up and appropriately managed (e.g. remediated or disposed off site by an authorised waste contractor) as soon as possible after they occur.

3.8 Threatened Flora & Fauna

There are no rare or threatened flora or fauna known to occur within colliery holding land that require active management. Austar owns approximately 2600 hectares of land which is predominantly vegetated and threatened flora and fauna are known to occur in the area. As such, any land disturbance that is required for the ongoing operation is only carried out following appropriate assessments.

3.9 Weeds

Austar Coal Mine has engaged contractors to control noxious weeds across the site over the past twelve (12) months. The following weeds have been treated as a result:



- Mother of Millions;
- Green Cestrum;
- Blackberry; and
- Patersons Curse.

3.10 Vibration and Blasting

No surface blasting activities are undertaken at Austar Coal Mine.

A vibration monitoring plan has been implemented to monitor vibration resulting from mining in longwall panels A1 and A2. Two standard Instantel Minimate Plus monitors with external triaxial geophones have been installed to monitor vibration. One site is located directly over the LWA1 extraction panel and the second site is approximately 400 metres from the A1 goaf edge and 150metres from longwall panel A2.

3.11 Operational Noise

Periodic noise monitoring was conducted on a quarterly basis in July/ October 2007 and January/June 2008 in accordance with Austar Noise Monitoring Program. Five (5) key monitoring locations representative of the surrounding receivers have been selected as reference locations and form the basis for assessing and evaluating noise emissions from the operation. The locations are listed in Table 14 below.

Table 14 - Noise Impact Assessment Criteria and Goals

Receiver	Location	Receiver Description	Criteria/Goal
<i>Nearest Potentially Affected Receivers to CHPP</i>			
A	Pelton Village	South-east of CHPP	43 dB(A) _{L₉₀} <i>(Specified in EPL No 416)</i>
B	South of Bimbadeen Road Mt View	West of CHPP	40 dB(A) _{L₉₀} <i>(Specified in EPL No 416)</i>
C	Bimbadeen Road, Mt View	North-west of CHPP	37 dB(A) _{L₉₀} <i>(Specified in EPL No 416)</i>
<i>Nearest Potentially Affected Receiver Locations near Kalingo infrastructure</i>			
D	Nash Lane Quorrobolong	East of Kalingo infrastructure site	35 dB(A) _{LAeq} (15 minute) <i>(Specified in Notice of</i>



			<i>Modification)</i>
E	Glennie St Ellalong	West of Kalingo infrastructure site	35 dB(A) LAeq (15 minute) <i>(Specified in Notice of Modification)</i>

The results from the four (4) quarterly noise surveys undertaken during the reporting period show that the mine is compliant with the noise criteria specified for the site. Consistent with previous years, periodic monitoring identified the dominant noise sources surrounding the mine as being local traffic and natural causes. Specific noise sources recorded during periodic monitoring included road traffic, insects, frogs, dogs and birds. A summary of results from the attended component of this monitoring is provided in Table 15. No exceedances of the LAeq (15 minute) acquisition criteria were attributed to Austar's operations in 2007-2008.

Table 15 - Austar Periodic Attended Noise Monitoring Results 2007-2008

Location	A	B	C	D	E
Criteria (LA EQ 15 Min)	43	40	37	35	35
24/7/07 (Day)	IA	33	32	27*	17*
24/7/07 (Evening)	40	IA	IA	27*	17*
24/7/07 (Night)	32	26	23	27*	17*
30/10/07 (Day)	IA	IA	IA	27*	17*
30/10/07 (Evening)	IA	32	IA	27*	17*
30/10/07 (Night)	29	IA	IA	27*	17*
29/1/08 (Day)	IA	33	28	27*	16*
29/1/08 (Evening)	33	38	28	27*	16*
29/1/08 (Night)	26	28	25	27*	16*
23/6/08 (Day)	40	35	30	28*	16*
23/6/08 (Evening)	42	NM	32	28*	16*
23/6/08 (Night)	43	35	28	28*	16*

IA-Austar operations could not be heard or measured.

NM-Austar operations were audible but were too low to be measured by sound level meters.

* Monitoring at reference points (D and E) was validated using ENM, a noise model package. Levels were then calculated for the nearest monitoring locations (D and E) for the same meteorological conditions that occurred throughout the survey and additionally for worst case meteorological conditions as per Note (b) of the consent variation.



3.12 Visual and Light Management

All of the sites within Austar Coal Mine are well screened from a visual perspective. Native vegetation surrounding the mine limits views from public areas. The mine operates 24 hours per day, seven days per week so there is a need for surface lighting of the facilities areas. While light may be seen from some public areas, they are positioned to minimise extraneous light off site. The principles followed for the use of lights are as follows:

- main flood lights are directed away from the nearest residences;
- portable lights used are also be directed away from residences;
- flood lights attached to towers are adjustable to enable fine tuning; and
- if necessary, the location of portable lights are varied to ensure that extraneous light catchment is minimised.

3.13 Aboriginal Heritage

Previous archaeological research has identified 22 Aboriginal archaeological sites within the CML2 mining lease and proposed Stage 3 lease extension, as detailed in **Appendix 3**.

The majority of known sites listed **Appendix 3** have been assessed to be of low scientific significance, being small artefact scatters or isolated finds found in open (and frequently disturbed) contexts. Site types that are rarer or sites that have research potential and are of higher scientific significance, include the grinding groove site recorded as ACM6 and the artefact scatter recorded as ACM14, both of which are considered to be of moderate scientific significance. Aboriginal stakeholders involved in previous investigations of the area have identified that all archaeological sites are of cultural significance, but that grinding groove sites and larger artefact scatters are of particular significance. No additional places of cultural significance have been identified within the CML2 mining lease and proposed Stage 3 area to date.

Aboriginal heritage assessments of the CML2 mining lease and proposed Stage 3 area provide a framework for assessment and management of proposed exploration borehole sites. Due diligence inspections prior to the commencement of drilling is required for all borehole locations not previously inspected.

Due diligence inspections prior to the commencement of drilling is also required for any proposed boreholes located within 50 metres of a known archaeological site or area of archaeological potential.



3.14 Historic Heritage

Two early brick built buildings are located within the Pelton Colliery, a stable and a workshop/laboratory building. These buildings, in particular the stables, are likely to be associated with the 1920s construction and operation of the mine.

An early brick built engine room and upcast shaft (and associated structure) are present at the Kalingo Colliery. These buildings are likely to date to the 1930s operation of the Kalingo mine. These buildings have been proposed for demolition as part of the site's rehabilitation.

The Pelton and Kalingo Collieries are listed as heritage items on the *Hunter Regional Environmental Plan 1989 (Heritage)* (REP).

Historic Heritage assessments of the Bellbird, Pelton and Kalingo Collieries were completed in early 2008 as part of rehabilitation proposals for the site.

3.15 Spontaneous Combustion

The Greta Seam has a long history of susceptibility to spontaneous combustion. The most recent evidence of this is the fire in the Southland Mine in December 2003. Austar Coal Mine has revised the Spontaneous Combustion Management Plan (SCMP) at the mine to control spontaneous combustion risks. This plan utilises enhanced gas monitoring and management through use of:

- An improved tube bundle system and gas monitoring analyses;
- An on-site gas chromatograph for gas analysis;
- Air free gas analysis techniques;
- Training of mine officials;
- Nitrogen rich, pressurised balance chambers that help to seal goaved voids;
- Installation of a nitrogen inertisation plant; and
- An infrared camera for scanning of hot areas on coal pillars and stockpiles.

3.16 Bushfire

Austar owns significant areas of land surrounding the pit top and coal preparation plant. These properties are covered predominantly by native woodland and forests, with occasional grassland paddocks. These areas are considered valuable in providing a buffer zone to reduce the impact of operations on nearby private residences, however, do require active management to minimise the risk of bushfires originating, or spreading through Austar property.



A fire management plan was developed in September 2002 to ensure the land owned by the mine is managed in a way that minimises the risk of bushfire and to reduce the risk of fire originating on Austar owned land and spreading to adjacent properties.

The fire management plan was developed in consultation with the Bellbird Fire Brigade and the Rural Fire Service (RFS). It outlines Austar's strategy for managing fuel loads and fire break maintenance on their property, all of which are aimed at minimising the risk of surrounding villages and properties in the event of a bushfire.

Extensive work on firebreak construction has been conducted during the reporting period and these firebreaks will be maintained in the future. In addition, reduction of fuel loads through hazard reduction burning will be conducted by the RFS.

3.17 Mine Subsidence

Subsidence monitoring was conducted at the mine during the reporting period in accordance with the subsidence inspection procedure. Monitoring is conducted in affected areas pre and post mining, monthly and quarterly.

3.18 Hydrocarbon Contamination

All fuel and oil storages at the CHPP and Austar Pit Top areas are bunded. Hydrocarbon waste material and liquids are disposed of off site via an authorised waste contractor.

In consultation with the DPI, measures that have been adopted or scheduled for implementation at Austar to improve hydrocarbon management include:

- Rationalisation of the surface storage area;
- Designating specific areas within the pit top area to prevent the spread of equipment as well as limiting the storage of equipment containing oil to hardstand areas;
- Upgrades to the oily water waste treatment system; and
- Bunding of hydrocarbon fill and dispensing points.

3.19 Methane drainage / ventilation

A mine gas monitoring station is located on the surface near the No.3 Shaft facility. Monitoring data indicates comparatively low levels of seam gas emissions and a composition that is predominantly CO₂ with some CH₄ under normal operating



conditions. Gas desorption tests have also been carried out previously in several boreholes and at development faces in the mining area. This indicated seam gas levels in this area were low.

3.20 Public Safety

Entry to the site is managed as follows:

- all visitors and members of the public are required to report to the main office prior to entering the mine;
- the private haul road has gates which are locked outside of operating hours;
- key facilities and areas are fenced as appropriate;
- when public access is required, inductions are undertaken and inspections supervised by colliery personnel; and
- a private security company is employed to patrol the site particularly after hours.

3.21 Other Issues and Risks

Other environmental risks which have been previously recognised and addressed in the management systems at Austar include:

- Acid mine drainage;
- Pollution events from excessive rainfall;
- Noise issues arising from the operation;
- Rehabilitation liability;
- Mine subsidence; and
- Risk of trespasser entering onto the property from the adjacent town, surrounding bushland and roads.



4.0 Community Relations

4.1 Environmental Complaints

Austar Coal Mine has a procedure for receiving, investigating, responding and reporting complaints received from the community. This procedure provides a 24-hour-a-day, 7 days a week, free call number to receive environmental complaints and other enquiries.

4.2 Results

In the 2007-2008 reporting period, a total of 44 complaints were received compared to 41 in 2006-2007. A complete listing of all the complaints is provided in **Appendix 4**.

The majority of the complaints were related to noise (88%) associated with the CHPP. Nevertheless, the level of the community concern regarding noise triggered an investigation by the Environmental Department at Austar assisted by acoustics engineers from Global Acoustics. Austar are currently awaiting results of the noise investigation and will implement corrective measures when recommendations become available. Austar Coal Mine is aware of the community concerns regarding noise and is committed to its effective management.

4.3 Community Liaison

The mine continues to maintain close relationships with all neighbouring properties as well as nearby communities.

4.3.1 Community Consultative Committee (CCC)

The Austar Community Consultative Committee (CCC) was appointed by the Department of Planning in January 2007. Meetings are held on a quarterly basis and the membership is made up as follows, shown in Table 16:

Table 16 - Austar Community Consultative Committee (CCC)

Organisation/ Representative	Name
Independent Chairperson	Hon Garry West
Cessnock Council Representative	Clr Jeff Maybury (or delegate)
Community Representative	Ms Louise Dews
Community Representative	Mr Harry Snaith
Community Representative	Dr Paul McGreevy
Community Representative	Mr Roger Lewis
Company Representative	Ms Sarah Harvey
Company Representative	Mr Frank Fulham



Austar coordinates these meetings and provides information before and during the meetings on mining progress, community programs and environmental performance. Minutes from meetings are prepared by Austar Coal in a format and manner acceptable to CCC members. The major discussion points from the Austar meetings in 2007-2008 were:

- Mining progress and rehabilitation
- Monitoring results
- Noise complaints management
- Stage 3 Extension Project Status

These discussions led to outcomes aimed at improving the understanding and management of these issues. In 2007-2008, this included improvements to the way in which monitoring and other data is presented at meetings.

4.3.2 Resident Consultation

During 2007-2008, Austar Coal Mine consulted with individual residents who live in areas potentially affected by the mine. This consultation was often conducted informally, in a manner that allowed the residents to openly discuss issues of importance to them. Monitoring results were often provided and discussed as part of this resident consultation. The main focus of discussion was to update residents on the progress of the impact assessment works related to Stage 3 Extension project and the existing operation. This consultation was effective in identifying issues that local residents wanted to see addressed as part of the continuing operation and within the impact assessment processes for the new mining proposals.



5.0 Rehabilitation

This section describes land management within the mining lease area and includes land use objectives, landscaping operations, and a review of the rehabilitation performance of mining and infrastructure areas.

5.1 Buildings

No buildings were erected/demolished during the reporting period. Buildings that are proposed to be demolished include the remaining buildings at the Bellbird site, Kalingo site and the pony stables at the CHPP site. Details regarding the buildings at each site are discussed in **Section 3.14** and are further detailed in the approved 2008 MOP.

It is proposed that building demolition works will be conducted at the No.2 Shaft site during the next AEMR period. Works will include demolition of minor buildings.

5.2 Rehabilitation of Disturbed Land

As reported in the 2008 MOP, various rehabilitation works have been undertaken at the mine since 1998, primarily in the following areas:

- CHPP site;
- Remote emplacement areas; and
- Kalingo site.

In regard to other infrastructure areas, rehabilitation works during the reporting period have been minimal as the majority of these areas continue to be utilised as part of the mining operation.

Significant effort has been made to remove mining equipment and scrap metal from Ellalong drift site and CHPP, dumped vehicles on land adjacent to Werakata State Conservation Area and Kalingo as well as to address rehabilitation issues outlined in the DPI's 2007 DPI Inspection Report (dated 13 December 2007 File No: C94/2226) addressing the progressive rehabilitation of the site.

5.3 Other Infrastructure

Other infrastructure that has been rehabilitated during the reporting period includes exploration sites and boreholes. Rehabilitation of these areas included filling and sealing the boreholes in accordance with DPI guidelines, installing appropriate erosion controls (where required) and revegetating drill sites.



5.4 Rehabilitation Trials and Research

The majority of rehabilitation to be undertaken in the future will principally involve reshaping of disturbed areas once demolition works and rubbish removal has been completed and establishment of a stable vegetative cover in these areas. Methods for these rehabilitation works are well understood and require no further investigation.

Rehabilitation of coarse reject emplacement areas that contain acid generating material may require further investigation to confirm or refine capping thickness and the design of leachate control measures.

The Aberdare Extended Reject Emplacement Area will be the first coarse reject emplacement area to be rehabilitated and will be used to refine emplacement and rehabilitation requirements at the East Open Cut and West Open Cut reject emplacement areas. All of these areas have been selected as they directly drain to former underground workings providing a suitable long term control for acid leachate from the emplaced reject.

Aberdare Extended is to be rehabilitated as future open space under agreement with the landholder. This will involve:

- installing leachate controls to convey leachate to underground workings;
- filling the site to within 1 metre of the agreed final landform with coarse reject material;
- capping the coarse reject with at least 1 metre of suitable overburden material from the West Open Cut;
- shaping the landform to be free draining in accordance with the agreed final landform;
- topsoiling the shaped landform;
- establishing a stable grass cover over the reshaped landform.

These works will be undertaken on an ongoing basis over the recently approved MOP period.

Further research may include:

- an evaluation (e.g. soil analysis) of previously remediated acidic areas on site to determine whether further treatment is required. This information is to assist in determining the level of acid treatment required for other areas on site;



- the extent of acid amelioration requirements over areas to be rehabilitated during the MOP term (e.g. lime application rates);
- investigation of mechanisms for controlling the drainage of acid leachate from the emplacement areas to underground workings;
- monitoring of leachate levels within the emplaced reject material to gain an understanding of maximum leachate levels and potential height of associated capillary rise to determine the need for additional capping material or establishment of a capillary break;
- broad chemical characterisation of the reject material and its acid generation potential to explore the amount of acid that may be generated, rate of acid generation and period over which significant amounts of acid may continue to be generated; and
- investigation of required cover thickness and engineering design criteria for capping/cover material.



6.0 Activities Proposed in the Next AEMR Period

Table 17 – Rehabilitation Summary

	Areas Affected / Rehabilitated (hectares)		
	To Date	Last Report	Next Report (estimated)
A. MINE LEASE AREA			
A1 Mine Lease(s) Area	10592.4		
B. DISTURBED AREAS			
B1 Infrastructure Area (other disturbed areas to be rehabilitated at closure including facilities, roads)	74.7	74.7	74.7
B2 Active Mining Area (excluding items B3 – B5 below)	NA	NA	NA
B3 Waste Emplacements (active/unshaped/uncapped)	79.5	79.5	79.5
B4 Tailings Emplacements (active/unshaped/uncapped)	0	0	0
B5 Shaped Waste Emplacement (awaits final vegetation)	0	0	0
ALL DISTURBED AREAS			
C REHABILITATION PROGRESS			
C1 Total Rehabilitated Area (except for maintenance)	27.2	27.2	54.8
D. REHABILITATION ON SLOPES			
D1 10 to 18 degrees	0.5	0.5	0
D2 Greater than 18 degrees	0	0	0
E SURFACE OF REHABILITATED LAND			
E1 Pasture and grasses	25	25	1.6
E2 Native forest/ecosystems	2	2	26
E3 Plantations and crops	0	0	0
E4 Other (include non vegetative outcomes)	0	0	0

Table 18 - Maintenance Activities on Rehabilitated Land

Nature of treatment	Area Treated (ha)		Comment/control strategies/ treatment detail
	Report period	Next period	
Additional erosion control works (drains re-contouring, rock protection)	1	2	Rehabilitation and routine maintenance of drains
Re-topsoiling	0	0	Nil
Soil treatment	0	0	Nil

Pasture Management	0	0	
Reseeding/Replanting	1.5	2	Tube stock planting of native species
Adversely Affected by Weeds	3	5	Weed spraying program continued throughout 2007-2008
Feral animal control	0	0	Nil

Austar will endeavour to carry out the following activities during the 2008-2009 reporting period.

- Review and update existing management plans;
- Implement Noise Pollution Reduction Program;
- Review environmental monitoring network ; and
- Rehabilitate areas as stated in 2008 MOP.



APPENDIX 1

Dust Monitoring Data



APPENDIX 2

Water Quality Data



APPENDIX 3

Location of Aboriginal Artefacts



APPENDIX 4

Community Complaints

